Clinton Creek Remediation Project

2018 Site Investigation Report
Clinton Creek, Yukon
Project # VE52705C.100.2

Prepared for:

Government of Yukon Energy, Mines and Resources
Assessment and Abandoned Mines
2C – 4114 4th Avenue, Whitehorse, Yukon, Y1A 4N7

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List of Acronyms and Abbreviations

AACE	American Association of Cost Engineers
AAM	Assessment and Abandoned Mines
CCME	Canadian Council of Ministers of the Environment
CIRNAC	Crown-Indigenous Relations and Northern Affairs Canada
CCRP	Clinton Creek Remediation Project
CoC	Contaminants of Concern
FAL	Freshwater Aquatic Life
GY	Government of Yukon
HHERA	Human Health and Ecological Risk Assessment
IPRP	Independent Project Review Panel
LCCE	Life Cycle Cost Analysis
CPT	Cone Penetration Test
PPE	Personal Protective Equipment
sCPTs	Seismic Cone Penetrometer Tests
SI	Slope Inclinometer
SSHSP	Site-Specific Health and Safety Plan
SWP	Safe Work Procedure
TA	Task Authorization
TH	Tr'ondëk Hwëch'in
VWP	Vibrating Wire Piezometer
Wood	Wood Environment & Infrastructure Solutions, a Division of Wood Canada
YG	Yukon Government

1.0 Introduction and Site Description

1.1 Wood Scope

Wood Environment & Infrastructure Solutions, a division of Wood Canada Ltd. (Wood) was retained by the Government of Yukon (YG) to provide engineering services to inform a 10% design and cost estimate for the Clinton Creek Remediation Project (CCRP). Wood's work has been authorized by YG under a master services agreement (MSA) #C00034680.

This project is being managed by YG, with their project partners, Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) and the Tr'ondëk Hwëch'in (TH) First Nation. Additional technical input and recommendations are provided to the project partners though an Independent Project Review Panel (IPRP).

1.2 Report Scope

This report has been prepared to describe the conduct and data outcomes of field investigative activity completed by Wood at the Clinton Creek property during the late summer and fall of 2018. The report presents all data compiled for both the Geotechnical and Environmental components of the investigative scope (see Section 2 for a description of these scopes). Interpretive characterizations and engineering judgements deriving from these data for the geotechnical component of the scope are presented under separate cover in a report entitled 'Clinton Creek Remediation Project, Geotechnical Site Characterization' (Wood 2019). Complete interpretations of the environmental data in this document are provided under separate cover in a report entitled 'Clinton Creek Remediation Project, Environmental Site Characterization Update' (Wood 2019a) .

1.3 Site Description

The Clinton Creek Mine Site (the Site) is a former asbestos mine which was operated between 1968 and 1978. The site is located approximately 100 km northwest of Dawson City, Yukon, near the confluence of Fortymile River and the Yukon River (Figure 1.1). The site is accessed from the Top of the World Highway (Yukon Highway 9), then the Clinton Creek Road. These roads are typically maintained between the months of June and September when George Black River Ferry is running between East Dawson and West Dawson. During the fall and winter months the site is only accessible by helicopter or snowmobile.

Major elements of the site are shown on Figure 1.2. During mine operations, material was removed from three ore sources, the Porcupine Pit (the largest pit), Horseshoe Pit and the Creek Pit. Waste was placed in the following locations:

1. Clinton Creek Waste Dump, where waste was placed along the south valley wall of the Clinton Creek valley. It is estimated that 60 million tonnes of waste were placed in the Clinton Creek Waste Dump;
2. Porcupine Creek Waste Dump, where waste was placed into the Porcupine Creek valley (Porcupine Creek Waste Dump); and
3. Snowshoe Pit Waste Dump, where waste was placed on the north side of the Snowshoe Pit along the top of the south Clinton Creek valley wall.

During mining operations, ore was transported from the south side of the Clinton Creek valley to the Mill Site, located on high ground on the north side of Clinton Creek, at the top of the west valley wall of Wolverine Creek, via an aerial tramway. The ore, a serpentine rock containing chrysotile asbestos, was processed in the mill and the waste material, or tailings, were transported via conveyor to two piles along

the steep west slope of Wolverine Creek, one pile located north of the other. Approximately 12 million tonnes of tailings were deposited in these two piles. It is understood from conversations with former mine workers that material was never dozed over the valley wall, and that the piles were gravity stacked.

In 1974, waste material placed on the south slope of the Clinton Creek valley, the Clinton Creek Waste Dump, is believed to have failed and blocked the Clinton Creek flow path. It should be noted that Clinton Creek was diverted north of the natural creek alignment, which originally flowed along the toe of the south slope of the Clinton Creek valley, prior to the failure of the Clinton Creek Waste Dump. The failure created a landslide dam, which impounded water upstream, producing what is now known as Hudgeon Lake. Additional information about the formation of Hudgeon Lake is provided in Amec Foster Wheeler (2018a). It is currently believed that only a portion of the Clinton Creek Waste Dump failed, and that efforts were made to stabilize the resulting landslide dam. Currently, water discharging from Hudgeon Lake travels southeast via Clinton Creek to Fortymile River, approximately 8 km downstream, through four gabion drop structures (DS1, DS2, DS3 and DS4), constructed between 2002 and 2004. DS4 was upgraded and repaired in 2015, following damage sustained in 2010. Damage to DS4 was noted in the field following the spring freshet in 2018, and additional damage was caused to the drop structure during a flood event in August 2018.

The south tailings lobe also failed in 1974, blocking Wolverine Creek. It is understood that the initial failure of the tailings was relatively rapid, and there was considerable mobility of the initially steep tailings cone down the slope, blocking Wolverine Creek, and then down the Wolverine Creek valley following the breach of the temporary landslide dam. Per Amec Foster Wheeler (2018b), there is some evidence that suggests liquefaction may have been a factor in the failure of the tailings pile. At some time post mine-closure, the north tailings pile also blocked Wolverine Creek. At present, there are two ponds which have formed along Wolverine Creek, one upstream of the north tailings lobe and one between the two tailings lobes, referred to as North and South Ponds, respectively. The North Pond discharges into the South Pond and flows from the South Pond is conveyed south via Wolverine Creek, finally discharging into Clinton Creek near the site gate.

Additional locations of interest on the Site, referred to as the Common Elements, include the following locations and/or features:

- Former mill site;
- Air strip;
- Some pieces of equipment;
- Clinton Creek access road;
- Clinton Creek site roads;
- Other roads;
- Clinton Creek ford crossings;
- Hudgeon Lake outlet abutments and log boom;
- Ore piles;
- Miscellaneous borrow areas;
- Miscellaneous infrastructure; and
- Miscellaneous waste.

Additional information on these Common Elements is provided in Amec Foster Wheeler (2018a, 2018b, 2018c).

2.0 Site Investigation Background

2.1 Basis for Geotechnical Investigation

In 2018, Amec Foster Wheeler (a predecessor company to Wood) completed a geotechnical data gap assessment for the site, based on gathering and assessing all available data from the site (Amec Foster Wheeler 2018a) and a geotechnical design gap report (Amec Foster Wheeler 2018b). Based on the identified gaps, a geotechnical investigative scope of work was proposed as initially presented in Amec Foster Wheeler (2018a). This proposed scope of work was presented to the Project Partners and the IPRP at a meeting in Whitehorse, YT on 11 April 2018.

The intention of the geotechnical investigative scope of work was to expand the site dataset in ways that mitigated the potential for major geotechnical surprises during closure design and/or execution. Justification for the number of boreholes, borehole locations, and proposed instrumentation was presented in Amec Foster Wheeler (2018a). The proposed geotechnical investigation program was separated into three main areas: Clinton Creek Waste Dump, the Tailings Dump and the Porcupine Creek Waste Dump.

The plan for the geotechnical investigation was presented in Wood's proposal for the delivery of 10% design phase services (Wood 2018c) and in the Investigation Execution Plan (IEP) prepared by Wood prior to mobilization to site in August 2018 (Wood 2018a).

2.2 Basis for Environmental Investigation

Environmental data gaps and their significance were identified and assessed by Amec Foster Wheeler in a report entitled General Site Characterization and Gap Assessment (Amec Foster Wheeler 2018c). Based on the data gaps identified and discussions with the Project Partners and the IPRP, an environmental scope of work was developed. This environmental scope of work was also presented in Wood's proposal for the delivery of 10% design phase services (Wood 2018a) and in the IEP (Wood 2018a).

2.3 Site Specific Health and Safety Plan

A Site-Specific Health and Safety Plan (SSHSP) for the project was prepared to address the safety issues on site, with particular focus on the asbestos risk on site. Due to the complexities generated by the presence of asbestos, the SSHSP was reviewed by an asbestos safety professional within Wood, as well as by senior Health & Safety professionals within Wood. The first version of the SSHSP was issued on 2018 July 2018 and a revised SSHSP was issued on 04 September 2018, incorporating some initial lessons learned on the project (Wood 2018b).

The main components of the SSHSP were as follows :

- Roles and Responsibilities;
- Hazard Identification and Risk Management;
- Site Access and Check-in Protocols;
- Personal Protective Equipment (PPE);
- Site Safety Equipment;
- Waste Collection, Storage, Handling and Disposal;
- Site Orientation and Required Training;
- Emergency Response Plan;

- Air Quality Monitoring Program (specific to the asbestos risk); and
- an Asbestos Safe Work Procedure (SWP).

2.4 Investigation Execution Plan

An Investigation Execution Plan (IEP) was prepared prior to mobilization (Wood 2018a). The purpose of the IEP was to outline the final scope of work and was issued to be read in conjunction with the SSHSP (Wood 2018b). In addition to presenting the final proposed scope of work for the site investigation, the IEP outlined the following execution tasks:

- Testing protocols and sample management;
- Staffing plan and organizational chart;
- Reporting, cost control and change management; and
- Site operational protocols.

3.0 Project Execution

Wood issued a Drilling Tender to four invited contractors on 27 June 2018 with addendums issued on 04 July 2018 and 12 July 2018. Bids were received from two contractors on 20 July 2018. On 27 July 2018 Midnight Sun was awarded the contract for the drilling & testing services on the project (Wood 2018d). A summary of key dates for the execution of the program are presented in Table 3-1.

Table 3-1: Key Project Dates

Date	Activity
27 June 2018	Request for Tenders issued to four contractors
20 July 2018	Request for Tenders deadline
27 July 2018	Contract issued for drilling and support services
09 August 2018	Borehole locations laid out by Challenger Geomatics
08 August 2018	Start of mobilization of equipment to site
12 August 2018	Dozer started preparation of drill pads and access roads
11-12 August 2018	Office trailer mobilized to site and internet communications set up
13 August 2018	Drill Rig 1 (Midnight Sun Drilling) begins drilling
17 August 2018	Start of air monitoring on site
20 August 2018	Drill Rig 2 (MudBay Drilling; under subcontract to MDS) start drilling
22-23 August 2018	Site shut down due to high water in Clinton Creek and unsafe conditions at the creek ford.
06 September 2018	Demobilization of ConeTec
15-19 September 2018	Wood small mammals trapping program undertaken on site
17 September 2018	Midnight Sun Drilling drill rig demobilized from site
19 September 2018	MudBay drill rig demobilized from site
19 September 2018	As-built borehole survey completed by Challenger Geomatics
19 September 2018	Wood and Midnight Sun (and sub contractors) demobilized from site

A summary of the key sub-contractors, either under contract directly to Wood or under a sub-contract to Midnight Sun, are presented in Table 3-2.

Table 3-2: Summary of Sub-contractors

Contractor	Scope
ASL	Laboratory testing of environmental samples
Challenger Geomatics	Laid out borehole locations prior to the start of drilling and surveyed borehole as-builts following completion of drilling
ConeTec	Provided equipment and an engineer for completion of the CPT work, under contract to Midnight Sun Drilling
EMSL	Laboratory testing of air samples for asbestos content
Midnight Sun Drilling	General drilling and site services contractor providing two drill rigs and staff, CPT equipment and staff, camp facilities, site office and internet, medic, and decontamination supplies.
MudBay Drilling	Provided a sonic drill rig under contract to Midnight Sun Drilling
RST Instruments	Provided the vibrating wire piezometers, thermistors, slope inclinometer casing and data loggers

Per the IEP, Wood completed daily reports, which were submitted to YG on a daily basis via email. Copies of the daily reports are included in Appendix A.

Variances from the plans laid out in the IEP resulted from conditions on the ground, constraints imposed by weather and/or limitations in staff and equipment availability. Variances that influenced the program generally and the geotechnical component of the scope specifically are outlined below. More detailed variances relating to the environmental scope components are included in the descriptions of execution activities and data outcomes provided in Section 4.

General execution and geotechnical scope variances from the IEP were as follows:

- Coring capabilities for the second (MudBay) sonic rig were late in mobilizing and this limited the compilation of bedrock data;
- Concerns about the adequacy of the Asbestos Safe Work practice and its execution led to work refusals by some Wood staff. These concerns were mitigated via upgrades to protocols and practices and supplementary staff rotations. This process resulted in a four-day shutdown in on-site operations;
- In general, boreholes were drilled as close to the proposed locations as possible; however, BH18-11 and BH18-17 were moved more than 15 m from the original location for safety reasons;
- No slope inclinometer (SI) was installed in BH18-05;
- Only one Vibrating Wire Piezometer (VWP) was installed in BH18-16;
- BH18-07 was intended to have two boreholes drilled so that the piezometers and thermistor installed in one borehole and the SI could be installed in a separate borehole; however, due to time constraints, it was decided to drill a single borehole and install all instruments in a single borehole;
- A VWP was installed in the lake to measure lake levels;

- Cone Penetration Tests (CPTs) were not completed in BH18-13 and BH18-15; and
- BH18-11 was not drilled into bedrock, as the borehole was at 91 m depth and bedrock had not yet been encountered.

4.0 Site Investigation Activities

4.1 Geotechnical Site Investigation

4.1.1 Survey

Borehole locations were laid out by a surveyor from Challenger Geomatics under contract to Wood on 09 August 2018. The surveyor was accompanied on site by Wood staff. All boreholes were staked within 1 m of the proposed location, with the exception of BH18-04, which was moved to be located at the bottom of a local slope, rather than on the steep slope. As-built borehole locations are shown on Figures 4.1 and 4.2.

4.1.2 Geotechnical Boreholes and CPTs

Wherever possible, boreholes were drilled on the stakes. Some of the borehole locations had to be moved in the field to accommodate access and to allow for safe drilling of the boreholes. A summary of the drilled boreholes is presented in Table 4-1, the as-built locations are presented in Figures 4.1 and 4.2, and borehole logs are presented in Appendix B.

All boreholes were drilled using sonic drilling techniques, starting with 152 mm (6") casing at ground surface; where friction was too great to continue to advance the borehole, the borehole was overdrilled using 178 mm (7") drill casing. HQ3 coring was completed at eight borehole locations: three locations within the Clinton Creek waste pile, one location on the north slope of the Clinton Creek valley, two locations below the Tailings dump, one location located outside of the Tailings dump footprint on the Wolverine Creek valley wall and one location within the Porcupine Creek Waste dump.

Seismic Cone Penetrometer Tests (sCPTs) were planned for six locations paired with geotechnical boreholes in the tailings area and were completed at four locations. The details of the completed sCPTs are presented in Table 4-2, the locations are shown on Figure 4.1, and the report summarizing the results is presented in Appendix C. A sCPT test was not completed adjacent to BH18-15 due to the presence of shallow bedrock and gravelly material at surface, while the sCPT adjacent to BH18-13 was cancelled due to time constraints, after determining that the quality of the data collected at the other four locations was sufficient for the 10% design. In addition to the sCPT testing completed at BH18-17, downhole seismic testing was also conducted in the completed borehole. Details on how the sCPT and downhole seismic testing is completed is included in ConeTec's report (Appendix C).

Table 4-1: Clinton Creek Geotechnical Borehole Summary

Borehole	Start Date	Completion Date	Proposed Depth (m)	Drilled Depth (m)	Easting (m)	Northing (m)	Elevation (m)
BH18-01	13 August	20 August	75.0	67.1	512758.92	7147190.90	433.0
BH18-01A	22 August	25 August	65.0	62.8	512885.27	7147187.91	433.0
BH18-02	13 September	15 September	80.0	71.9	512927.25	7147170.95	442.2
BH18-03	05 September	09 September	50.0	59.7	512927.26	7147304.22	418.4

Borehole	Start Date	Completion Date	Proposed Depth (m)	Drilled Depth (m)	Easting (m)	Northing (m)	Elevation (m)
BH18-04	13 September	15 September	40.0	52.0	513195.27	7146922.16	428.7
BH18-05	16 September	18 September	80.0	69.8	513015.01	7147097.72	446.9
BH18-06	29 August	02 September	70.0	75.0	513044.00	7147188.84	441.3
BH18-07	02 September	05 September	50.0	57.3	513071.69	7147278.84	427.2
BH18-08	16 September	16 September	25.0	15.2	513073.57	7147492.78	440.8
BH18-09	20 August	26 August	75.0	81.1	513234.04	7147050.61	434.9
BH18-10	27 August	29 August	40.0	42.1	513292.63	7147227.89	405.8
BH18-10A	29 August	29 August	35.0	35.0	513290.96	7147226.94	405.8
BH18-11	03 September	08 September	65.0	91.4	513398.20	7148076.22	609.8
BH18-12	26 August	26 August	40.0	35.1	513950.58	7148077.08	420.9
BH18-13	08 September	11 September	60.0	61.0	513545.39	7148310.71	549.1
BH18-14	29 August	30 August	45.0	22.3	513872.03	7148331.14	428.7
BH18-15	11 September	12 September	15.0	15.2	513701.36	7147905.30	493.8
BH18-16	12 September	12 September	20.0	21.3	513949.18	7147905.14	404.1
BH18-17	30 August	02 September	50.0	54.9	513517.34	7148026.54	549.2
BH18-18	12 September	13 September	45.0	47.6	513349.92	7146035.27	495.8
BH18-19	10 September	12 September	35.0	37.8	513549.17	7146320.35	444.9

Table 4-2: Clinton Creek sCPT Summary

Borehole	Start Date	Completion Date	Proposed Depth (m)	Drilled Depth (m)	Easting (m)	Northing (m)	Elevation (m)
sCPT18-11	02 September	03 September	55.0	36.6	513398.20	7148076.22	609.8
sCPT18-12	26 August	26 August	30.0	21.0	513949.16	7148074.60	420.9
sCPT18-14	28 August	29 August	18.0	18.1	513872.41	7148333.92	428.6
sCPT18-17	30 August	30 August	40.0	30.3	513517.34	7148026.54	549.2

Note(s): Separate coordinates were not picked up for the sCPTs completed at BH18-11 and BH18-17, but the holes were offset by approximately 2-3 m.

4.1.2.1 Geotechnical Sampling

Geotechnical grab samples were collected from the sonic core. Samples were generally taken at a 1.5 m spacing or where the lithology changed. When frozen soils were encountered, samples were taken at 0.3 m intervals. Wherever possible, samples were weighed in the field, double bagged, and placed into 5 gallon buckets or rubber containers. Samples were transported from the drill rig to the on-site laboratory at least once a day.

One Shelby tube sample of the tailings material was successfully collected. The Shelby tube sample was sealed with wax in the field and stored upright.

Five gallon samples of tailings, waste and intact bedrock (argillite) were collected and stored for any supplementary testing requirements that might be identified.

4.1.3 Geotechnical Instrumentation

Geotechnical instrumentation was procured from RST Instruments in Maple Ridge, BC. All thermistors and vibrating wire piezometers (VWPs) were ordered with dataloggers to allow for ongoing data acquisition. Details of the instruments are presented on the borehole logs included in Appendix B. Calibration forms and documents for the thermistors, VWPs and dataloggers are included in Appendix D.

4.1.3.1 Slope Inclinometers

Slope Inclinometers (SIs) were installed in a total of 11 boreholes, 8 locations in the Clinton Creek Waste dump and three locations in the Tailings dump. A summary of the installed SIs in presented in Table 4-3, and installation details are included in the borehole logs in Appendix B.

Table 4-3: Slope Inclinometer Summary

Area	Borehole	Ground Elevation (m)	Stick-up (m)	Depth (m)	Azimuth
Clinton Creek Waste Dump	BH18-01A	433.5	0.5	62.5	340
	BH18-02	443.2	1.0	71.0	001
	BH18-03	419.4	0.9	85.5	260
	BH18-04	429.9	1.2	51.5	071
	BH18-06	442.4	1.1	76.5	009
	BH18-07	428.3	1.0	57.0	330
	BH18-09	436.1	1.2	80.0	339
	BH18-10	406.6	0.8	51.0	032
Tailings Dump	BH18-11	610.6	0.8	91.0	091
	BH18-13	550.1	1.0	59.5	037
	BH18-17	549.6	0.4	53.0	052

The SIs were installed in the boreholes with a 0.3 m long anchor at the base, and grout was tremied into the borehole from the bottom up for all of the SIs.

Wood attempted to initialize all of the SIs prior to leaving site; however, the SI probe on site malfunctioned and only some of the SI initializations were completed. A separate instrument reading trip was completed in October 2018 to read any SIs that were already initialized and to initialize any remaining SIs. Insufficient data were available from the field program to complete plots of the instrument data. All inclinometer readings are presented as a part of the site characterization report under separate cover (Wood 2019).

4.1.3.2 Thermistors

Thermistors were ordered from and custom built by RST Instruments, based on information available before the drilling program. Thermistors were designed as one of four types, depending on the desired thermal information at that location. The total number of nodes per string was limited to no more than 20, due to manufacturing and fabrication issues. Sketches of the four types of thermistors are included with instrument calibration forms and design sheets in Appendix D. Ten thermistors were installed in total, seven in the Clinton Creek Waste Dump and four within the Tailings Dump. A summary of the installed thermistors is presented in Table 4-4.

Type 1 thermistors were designed with 0.5 m node spacing in the middle of the instrumented section and 1.0 m node spacing above and below. The intent of this thermistor was to gather data and better understand gradients at the native/fill (either waste material or tailings) boundary. Where possible the closer spaced nodes were placed right at the boundary. Type 2 thermistors were designed with 0.5 m node spacing at the top, 1 m node spacing below and 2 m node spacing at the bottom of the instrumented zone. These thermistors were designed for installation in the two boreholes drilled outside the area of surface disturbance (i.e., outside of the tailings and waste deposit footprint) in order to gather additional near-surface thermal data in undisturbed areas. Type 3 thermistors were designed with 1 m node spacing over the entire instrumented zone, which was intended to be installed near the native/fill boundary. The intention of these thermistors, versus the Type 1 thermistors, was to acquire thermal data near the boundary over a greater depth interval. Type 4 thermistors were designed with 2 m node spacing intended to extend over the full depth of the borehole.

In boreholes where thermistors were installed with SIs in the same hole, the thermistors were attached to the outside of the SI casing using electrical tape and were grouted in place. In boreholes where thermistors and VWPs were installed with no SIs, the boreholes were backfilled with sandpacks and bentonite seals around the VWP tips; above the top bentonite seal the borehole was either backfilled with bentonite or grout. Details of the installation are presented on the borehole logs in Appendix B.

Table 4-4: Thermistor Summary

Area	Borehole	Type	Serial #	Node Depth (m)																		
Clinton Creek Waste Dump	BH18-01	1	4756	45.0	46.0	47.0	48.0	49.0	50.0	50.5	51.0	51.5	52.0	52.5	53.0	53.5	54.0	55.0	56.0	57.0	58.0	59.0	
	BH18-05	1	4753	54.9	55.9	56.9	57.9	58.9	59.9	60.9	61.9	62.9	63.9	64.9	65.9	66.9	67.9	68.9	69.9				
	BH18-06	4	4747	3.0	5.0	7.0	9.0	11.0	13.0	15.0	17.0	19.0	21.0	23.	25.0	27.0	29.0	31.0					
			4748	33.0	35.0	37.0	39.0	41.0	43.0	45.0	47.0	49.0	51.0	53.0	55.0	57.0	59.0	61.0					
	BH18-07	3	4752	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0	45.0				
	BH18-08	2	4749	0.0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	5.0	6.0	7.0	8.0	10.0	12.0	14.0				
	BH18-09	1	4757	54.0	55.5	56.0	57.0	58.0	59.0	59.5	60.0	60.5	61.0	61.5	62.0	62.5	63.0	64.0	65.0	66.0	67.0	68.0	
	BH18-10	3	4751	20.0	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0				
Tailings Dump	BH18-11	4	4758	-0.2	1.8	3.8	5.8	7.8	9.8	11.8	13.8	15.8	17.8	19.8	21.8	23.8	25.8	27.8	29.8	31.8	33.8	35.8	37.8
	BH18-14	1	4754	6.0	7.0	8.0	9.0	10.0	11.0	11.5	12.0	12.5	13.0	13.5	14.0	14.5	15.0	16.0	17.0	18.0	19.0	20.0	
	BH18-15	2	4750	0.0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	5.0	6.0	7.0	8.0	10.0	12.0	14.0				
	BH18-17	1	4755	21.7	22.7	23.7	24.7	25.7	26.7	27.2	27.7	28.2	28.7	29.2	29.7	30.2	30.7	31.7	32.7	33.7	34.7	35.7	

4.1.3.3 Vibrating Wire Piezometers

VWPs were ordered from RST Instruments, based on information available before the drilling program. All of the VWPs had a pressure capacity of 2 MPa, to allow for fully grouted piezometer installations without damaging the membrane. Twenty-four VWPs were ordered for installation in 12 boreholes: seven boreholes in the Clinton Creek Waste Dump, three locations within the Tailings Dump area and in both boreholes in the Porcupine Creek Waste dump. Two VWPs were to be installed at each borehole location selected, with one VWP to be installed in the fill and one in the native material below the fill material. A summary of the installed VWPs is presented in Table 4-5.

Table 4-5: Vibrating Wire Piezometer Summary

Area	Borehole	Serial #	Depth (m)	Serial #	Depth (m)
Clinton Creek Waste Dump	BH18-01	52035	57.0	52036	61.4
	BH18-02	52032	57.3	52039	64.0
	BH18-05	52031	49.8	52038	64.3
	BH18-06	52034	57.0	52040	67.0
	BH18-07	52020	36.5	52028	49.0
	BH18-09	25033	55.5	25037	63.5
	BH18-10	51967	25.5	52025	33.5
Tailings Dump	BH18-14	25024	10.5	25030	16.5
	BH18-16[1]	51965	8.2		
	BH18-17	22023	2403	52026	46.7
Porcupine Creek Waste Dump	BH18-18[2]	52021	30.5	52029	36.2
	BH18-19[2]	52022	15.0	52027	30.0
Hudgeon Lake		51966			

Note(s)

1. Only one VWP was installed in this borehole as the other VWP was placed in the lake deeper than the existing lake VWP.
2. The shallower VWP was installed in frozen material in order to gather data on the temperature of the soils.

Once all of the VWPs arrived at site, all of the tips were placed into a bucket of water to soak for at least 48 hours. Prior to installation, all of the tips were inverted (i.e., so that the porous stone was facing up), and placed into a sock filled with sand in order to create a mini sand pack for each tip. The tips, in the sand packs, were placed back into the bucket of water until time of installation.

In boreholes where VWPs were installed with SIs in the same hole, the thermistors were attached to the outside of the SI casing using electrical tape and were grouted in place. In boreholes where thermistors and VWPs were installed with no SIs, the boreholes were backfilled with sandpacks and bentonite seals around the VWP tips; above the top bentonite seal the borehole was either backfilled with bentonite or grout. One VWP, the upper VWP in BH18-18 at 15.0 m depth was not installed with a sandpack; however, the location of this tip was selected to monitor temperatures not pore pressures. Details of the installation at each location are presented on the borehole logs in Appendix B.

One VWP, Serial # 51966, was installed in Hudgeon Lake to obtain more information on the depth and the fluctuations of the lake level over the winter months. The existing piezometer installed in the lake by others was installed approximately 0.5 m below the baseline lake level and froze into the ice during the winter of 2017-2018. The new VWP was installed at the same general location as the existing piezometer, but was thrown about 6 m into the lake and allowed to settle on the bottom at approximately 5 m below the lake surface. The VWP lead was placed in insulating sleeves in the upper 0.5 m, to minimize heave due to freezing of the surface during the winter. The insulating sleeve was attached to the steel tube installed around the existing piezometer, and the datalogger for the new VWP was placed on the datalogger for the existing piezometer.

4.1.4 Geotechnical Laboratory Testing

Wood had an on-site geotechnical laboratory to complete moisture content testing and selected grain size testing on site. The on-site geotechnical laboratory was supplied by Wood's Calgary Materials division, and Wood supplied laboratory technicians for the project. The on-site laboratory testing was limited to moisture content testing for all samples and gradation testing for materials that did not contain visual asbestos.

As the laboratory technician had to demobilize from site on 18 September 2018, moisture content samples from the bottom half of BH-04 and all of BH18-05 were sent to Wood's Dorval, QC laboratory for testing. The laboratory in Dorval, QC was selected as the lab has safety protocols for working with asbestos, and the Dorval office has asbestos specialists to support the testing of asbestos containing materials.

4.1.4.1 Moisture Contents

Moisture content testing was completed for all collected soil samples. Additional soil samples were collected through zones that were described in the field as frozen, in order to determine the insitu ice contents. All moisture content testing, with the exception of samples from the bottom half of BH18-04 and all samples in BH18-05, was completed in the on-site laboratory. Samples from the bottom of BH18-04 and BH18-05 were weighed in the field and then shipped to Wood's geotechnical laboratory in Dorval, QC. Moisture content results are included in Appendix E.

4.1.4.2 Gradation Testing

Gradation testing was completed on selected samples of waste material, tailings and native soils. Where possible, if the material did not contain visible asbestos, the samples were tested in the on-site laboratory. Any samples that contained visible asbestos (i.e., tailings or samples from within the waste material with visible asbestos) were sent to Wood's laboratory in Dorval, QC. Sieve results for samples that were tested are presented in Appendix E.

4.2 Environmental Investigation Program

4.2.1 Scope Overview

As noted in Sections 2.2 and 2.4, the detailed scope for the environmental program was presented and rationalized in the Investigation Execution Program (IEP; Wood 2018a) and Wood's proposal for investigative services (Wood 2018c). The following is an overview of the scope and its development.

Wood's early 2018 review of environmental characterization data for the property (Amec Foster Wheeler 2018c) provided the following summary comments and observations relating to conditions on the property:

- From a contaminants perspective, the predominant issues were the elevated metals and asbestos materials at, or near grade on waste dumps and tailings piles or accumulations.
- The waste and tailings sources were not acid generating, and this limited the areal and vertical reach of downstream influences.
- The physical redistribution of fine-grained materials from the rock and tails had influenced the quality of downstream creek sediments, but over limited distances.
- Generally, downstream creek water qualities exhibited influences from the rock and tails, but these influences did not appear to be significant enough, or sustained enough to produce clearly intolerable water qualities immediately downstream of the site.
- Lake and ponded water qualities, and the ecosystems that they can support, had clearly been influenced by, or were a direct consequence of, the presence of waste dumps and tailings piles. However, for the most part, these influences were limited to the waterbodies themselves, and the physical constraints that were a consequence of their presence (e.g., barriers to fish passage).
- Similarly, while various studies had identified changes in local downstream ecologies (e.g., benthic communities) that could be attributed to the rock and tailings sources, it seemed unlikely that these changes would rise above consequence thresholds that would drive dedicated and incrementally significant remedial efforts on the property.

These observations and conclusions were considered by the Project Partners and the project's Independent Peer Review Panel (IPRP) during an April 2018 workshop and it was concluded that consideration should be given to the following issues as the investigation program and 10% design scopes were finalized:

- The 2017 HHERA utilized some dose-response relationships and hazard quotients that required revision or updating;
- The dataset for surficial contaminants and asbestos in air should be expanded to support an updated HHERA that would better define the key risk issues influencing concept selection; and
- More definition and resolution to the reclamation criteria that will influence concept selection should be provided.

In addition, the workshop participants discussed the merits of small mammals testing as HHERA input and the associated benefits of providing local community members with more meaningful information on the risks posed by the site both before and after execution of a closure plan.

Responding to these conclusions resulted in the following environmental scope for the 2018 investigation program:

- Completion of two test holes to 10 m in the former mill area;
- Collection of surficial material samples from geotechnical test hole locations and testing for asbestos and metal contents;
- Collection of material samples from the mid completion depth (approximately) for each geotechnical test hole location and testing for asbestos and metal contents;
- Collection of the following additional surficial material samples for asbestos and metal analyses:
  - Clinton Creek Waste Dump – five samples

  - Porcupine Creek Waste Dump – five samples
  - Tailings Pile – five samples
  - Former Mill Area and Access Road – 10 samples
- Conduct of a small mammals sampling and assessment program to assess the potential contamination and histological effects of asbestos and metals in small mammals on and in the vicinity of the tailings area.

4.2.2 Material Sampling

4.2.2.1 Metals

Samples of soil, waste and tailings were collected as follows:

- surface samples were collected with a trowel at grade; samples at test hole sites were taken immediately adjacent to drilling locations;
- samples at depth were collected from the cores produced by the drilling operation;
- samples requiring organic analyses (hydrocarbons and PCBs) were collected in glass containers supplied by the analytical testing laboratory (ALS Environmental out of Edmonton, Alberta); and
- samples requiring inorganic analyses (asbestos and metals) were collected in plastic bags.

The locations of all material samples from the 2016 and 2018 field investigations are shown on Figures 4.1 and 4.2. Locations of samples collected prior to 2016 are shown on Figure 4.3.

4.2.2.2 Sampling Handling and Transport

Samples requiring organic analyses (hydrocarbons and PCB) from test holes BH18-20 and BH18-21 were collected early in the program and stored on-site in coolers partially submerged in Hudgeon Lake to keep them cool. These samples were transported via truck to Dawson City on 30 August 2018 and then directed to the ALS Laboratory in Edmonton via air freight.

Samples requiring inorganic analyses (asbestos and metals) were stored in bins on-site and sent to the laboratory in two shipments leaving site on 06 September 2018 and 21 September 2018. Both of these shipments were via truck to Dawson City and via air freight to Edmonton thereafter.

4.2.3 Environmental Investigation Results

4.2.3.1 Material Testing Data Tables

Environmental analytical data for soils, tails and waste generated by all Clinton site investigations (2018 and prior) are presented in the following tables (note that the 2018 boreholes are referenced in these tables as 18BHxx-xx; these locations align with those referenced as BH18xx-xx in the figures):

- Table 4-6 – asbestos and metals data for waste dump;
- Table 4-7 – asbestos and metals data for tailings;
- Table 4-8 – asbestos and metals data for soils and sediments in the Porcupine Creek area;
- Table 4-9 – asbestos and metals data for soils in the mill area;
- Table 4-10 – hydrocarbons and PCB data for soils in the mill area; and
- Table 4-11 – background soil conditions.

Tables 4-6 through 4-9 combine the 2018 investigation results with the data compiled during the previous programs described in the 2017 HHERA (Amec Foster Wheeler 2017). The 2018 ALS Laboratory reports from which the above tables were developed are provided in Appendix F.

4.2.3.2 Data Assessment

The combined environmental dataset for the Clinton Creek property has been considered in an update to the 2018 site characterization report (Wood 2019a). Wood (2019a) should be referenced for the current descriptions and interpretations of environmental conditions on the Clinton Creek property.

4.2.4 Air Quality and Occupational Exposure Monitoring

4.2.4.1 Objectives

The air monitoring program conducted during the 2018 investigation program at the Clinton Creek property addressed three central project requirements:

- to confirm that on-site occupational exposures to asbestos were below prescribed limits;
- to expand the dataset on asbestos in air concentrations that will be used to update the project Human Health and Environmental Risk Assessment (HHERA); and
- to identify potential changes to the asbestos Safe Work Practice that may be indicated or supported by the monitoring data.

A stand-alone report describing the conduct and findings of the Air Quality and Occupational Exposure Monitoring Program is provided in Appendix G. The following sections are a summary of key scope elements and outcomes.

4.2.4.2 Monitoring Scope and Execution

The original scope of work, outlined in Section 7.4 of the project HASP, consisted of three monitoring events run in five-day blocks to assess occupational asbestos exposures through the collection of personal and area air samples. Also specified was a five-day monitoring event on, or near the tailings that will be designed to evaluate the influence of activities that can be correlated to potential transient post closure land uses. While the actual monitoring activities were not stratified timewise in such a manner, the results of the air monitoring program can be interpreted to have captured such events. This is due to the diversity of on-site activities that were sampled through personal and area sampling, such as area sampling in both restricted and non-restricted areas, and personal sampling of several different site personnel performing a variety of tasks.

Additional area air samples were collected in locations of the Site were no drilling or other activities were being conducted. These samples were referred to as passive and were collected for evaluating exposure risk in areas where soils and tailings materials were not being actively disturbed.

Area air sampling for asbestos was completed by installing sampling pumps in areas where airborne asbestos fibre exposures were anticipated to be a risk. This consisted of areas where disturbance activities were occurring and areas where build-up of ground materials might occur due to cross contamination by personnel. Sampling media was set an approximate height of 1.5 meters (m) above ground (approximate average human height). Sample pumps were set to operate in a downward facing manner for collection times generally representing full shifts (approximately 8 to 12 hours).

Personal air samples were collected from personnel directly involved in drilling and sample preparation, as well as personnel performing ancillary functions. Personal samples were collected from general labourers, the on-site medic, heavy equipment operators, driller operators/helpers, environmental samplers,

geotechnical personnel, lab technicians and office staff. Sample pumps were positioned in a downward facing manner in the worker's breathing zone (attached to collar) for collection times ranging from approximately 5 to 10 hours.

Area and personal air sampling pumps were set to operate at a flow rate of approximately 2 to 3 L/min and calibrated using a Bios DryCal Primary Flow Meter Calibrator. Pumps were calibrated prior to and following each sampling event. Approximately one (1) field blank was collected for every thirteen (13) samples collected for quality control purposes in accordance with the applicable NIOSH method of analysis. The field blank sample cassettes were handled the same way as the actual samples, with the exception that no air was drawn through the field blank filters.

Asbestos fibre counting was completed by EMSL Analytical, Inc. of Burnaby, BC. EMSL is certified under the Canadian Analytical Laboratory Association (CALA) Proficiency Testing Program for asbestos and other fibres. Samples were analyzed as per NIOSH Method 7400 and results were field blank corrected. Samples were transported from the Site to Dawson City and shipped via courier to the Burnaby EMSL lab. Personnel shipping and receiving samples followed appropriate chain of custody protocols. Once received by EMSL, samples were analyzed at a turnaround time of six hours, allowing on-site personnel to be made aware of the results the same day they were received by the analysis lab.

In the event that the analysis results of a sample exceeded the site-specific assessment criterion of 0.015 f/cc, EMSL was instructed by Wood to perform an additional analysis under NIOSH Method 7402: Transmission Electron Microscopy (TEM). While NIOSH 7400 includes all fibres of a certain size and width in the analysis, TEM is specific to asbestos fibres and provides greater accuracy with regards to the assessment of airborne asbestos fibres.

4.2.4.3 Air Quality and Occupational Exposure Monitoring Results

Based on the results of the air monitoring, elevated concentrations of asbestos fibres, when compared to the conservative assessment criterion, were found in several locations, within and outside of restricted areas. Elevated asbestos fibre concentrations were also associated with several personnel performing tasks within the restricted areas of the site. While none of the elevated concentrations reached the site specific Action Level of 0.05 f/cc or the applicable Yukon OEL, the results indicate that intrusive site activities have the potential to generate airborne asbestos fibres in the waste dumps and tailings areas of site. Furthermore, elevated concentrations of asbestos fibres present in non-restricted areas indicated that asbestos contamination may be transported from restricted areas either through wind transport or through cross-contamination.

It is important to note that the air monitoring results indicate that the intrusive activities did not generate asbestos fibre concentrations above the Action Level or the applicable Yukon OEL. Nevertheless, the assessment criterion was put in place as a benchmark to determine if improvement measures with regards to safe work practices are potential required. Based on the air samples and observation s made at the end of the field program, it was evident that adherence to the HASP, in addition to effective training and program oversight, are effective in managing potential asbestos occupational exposures at the site during the drilling program.

4.2.5 Small Mammals Survey

As noted in Section 4.2.1, the 2018 field investigation included the conduct of a small mammals sampling and assessment program to assess the potential contamination and histological effects of asbestos and metals in small mammals on and near the tailings area. Th resulting data was used to support the update of the project HHERA that is described in Wood (2019b). A complete report on the conduct and findings of the survey are provided in Appendix H. A summary of key outcomes is provided in the following sections.

4.2.5.1 Capture

Two species of small mammals were captured in the Clinton Creek Asbestos Mine area: red-backed vole (n = 32) and meadow vole (n = 4), both herbivores. Similar numbers of red-backed voles were captured in the Mill and Control areas (n = 13 and 19, respectively).

The deer mouse, a target species because of its omnivorous diet which would better reflect movements of trace metals through the food chain (Rainbow 2018; Smith and Rongstad 1982), was not captured. Although Sherman traps are effective in catching deer mice (Anthony et al. 2005), the reason no deer mice were captured is unknown. Because the trapping area is at the edge of deer mouse range in the Yukon (Government of Yukon 2018), it is probable none were present.

No voles were captured adjacent to the tailings area during 281 trap nights. Habitat in the Tailings trapping area was mostly grassland and shrubs. There were no obvious habitat characteristics or features, other than proximity to the tailings, that would make the area an unsuitable for small mammals. It is unknown if the absence of small mammals in that area is related to the tailings themselves.

4.2.5.2 Metal Analyses

Barbeau et al. (1985) identified chromium and nickel as major contaminants in milled chrysolite asbestos in Quebec, and chromium and nickel are the two primary metals of concern at Clinton (see Table 4-7). Our sampling at the Clinton Creek asbestos mine did not indicate increased levels of those metals in any of the voles sampled. However, there were elevated levels of other metals in the samples, discussed below. Note that of these metals, the available data for the Clinton tailings indicate that cobalt and magnesium are elevated above background (see Tables 4-7 and 4-11).

4.2.5.2.1 Selenium

Selenium is an important micronutrient in mammalian physiology (see Kneteman 2016). Acute selenium toxicity can have severe effects in animals, and chronic toxicity, evidenced by liver cirrhosis, hair loss and emaciation, can be caused by levels of 4-5 ppm (National Research Council (US) Subcommittee on Selenium 1983). Selenium levels observed in voles in the Clinton Creek study area (0.63-1.95 ppm; Table 2) did not reach levels cited to cause clinical effects. However, effects of toxic selenium bioavailability are believed to be largely subclinical (Hebert and McTaggart-Cowan 1971, Flueck et al. 2012). Effects manifest in mammals as poor population performance, principally reduced reproductive success and recruitment.

Mountain environments (such as the Clinton Creek area) typically have reduced selenium levels (Hebert and McTaggart-Cowan 1971). Therefore, selenium levels in mammal tissues in our study area would be expected to be low. However, sites disturbed by mining, particularly coal mining, may have elevated selenium levels (e.g., Sasmaz 2009). No data corresponding to asbestos mining could be found in the literature. Surficial and subsurface disturbance levels at the Clinton Creek mine could be expected to be similar to coal mining, and it is possible that the levels observed in voles from the study area are a result of disturbance from asbestos mining. The potential effects of elevated selenium levels in voles cannot be determined from the data collected during this study.

4.2.5.2.2 Magnesium

No adverse effects of elevated magnesium levels in mammalian tissues were found in the literature and, therefore, there are no recognizable concerns of levels measured in voles in the Clinton Creek mine. area.

4.2.5.2.3 Cobalt

"In the terrestrial environment, adverse effect of cobalt on birds and wild mammals would appear unlikely, with cobalt deficiency in ruminants more likely than cobalt toxicosis" (Kim 2006). The same principle likely applies to other herbivores, including voles, and no clinical effects of high-normal cobalt levels in voles are anticipated. In Quebec, cobalt was present only in minute quantities in chrysolite ore (Barbeau et al. 1985). The source of elevated levels in the Mill trapping area is unknown.

4.2.5.2.4 Copper

Copper levels in vole liver tissues were higher in the Control trapping area (n = six individuals) than in the Mill area (n = two individuals) (Table 2). High levels of copper in mammalian tissues is uncommon, and mammals have efficient mechanisms to regulate copper stores such that they are generally protected from excess dietary copper levels.

4.2.5.2.5 Molybdenum

Molybdenum is an essential element associated with a variety of metalloenzymes and corresponding metabolic functions. Only three of 20 voles (0.15%) exhibited high-normal levels of molybdenum. Excessive dietary intake of molybdenum may induce a secondary copper deficiency (Blakley 2018). That effect was not observed in Clinton Creek voles as no animals were observed to have abnormally low levels of copper. Acute molybdenum toxicity is rare (Blakley 2018).

4.2.5.2.6 Iron

One vole captured in the Mill area had an elevated level of iron. Iron can be a toxic element; however, given that only a single individual had a high-normal level of iron, there is no indication of population-wide concern.

4.2.5.3 Histology

The only substantive histological difference between voles captured in the Mill and Control areas was the presence of erythrocytes (indicating blood) in lung tissue of voles captured in the Mill area. That condition may be an artifact of euthanasia; however, because animals were handled similarly in both areas, there may be environmental factors involved. There were no other indications that the animals were affected by exposure to contaminants.

4.2.6 Physical Hazards Survey

A photographic log of physical hazards on the Clinton Creek property was assembled from photos taken on 19 September 2018. This log, with descriptive captions, is provided in Appendix I.

5.0 Closure

This report has been prepared for the exclusive use of Government of Yukon for specific application to the area within this report. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibility of such third parties. Wood accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. It has been prepared in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made.

Yours truly,

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

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8 July 2019

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SIGNATURE
Date 8 July 2019
PERMIT NUMBER PP130
Association of Professional Engineers of Yukon

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Figures

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DWN BY:	TH
CHK'D BY:	KH
DATUM:	NAD 83
PROJECTION:	UTM Zone 7
SCALE:	AS SHOWN

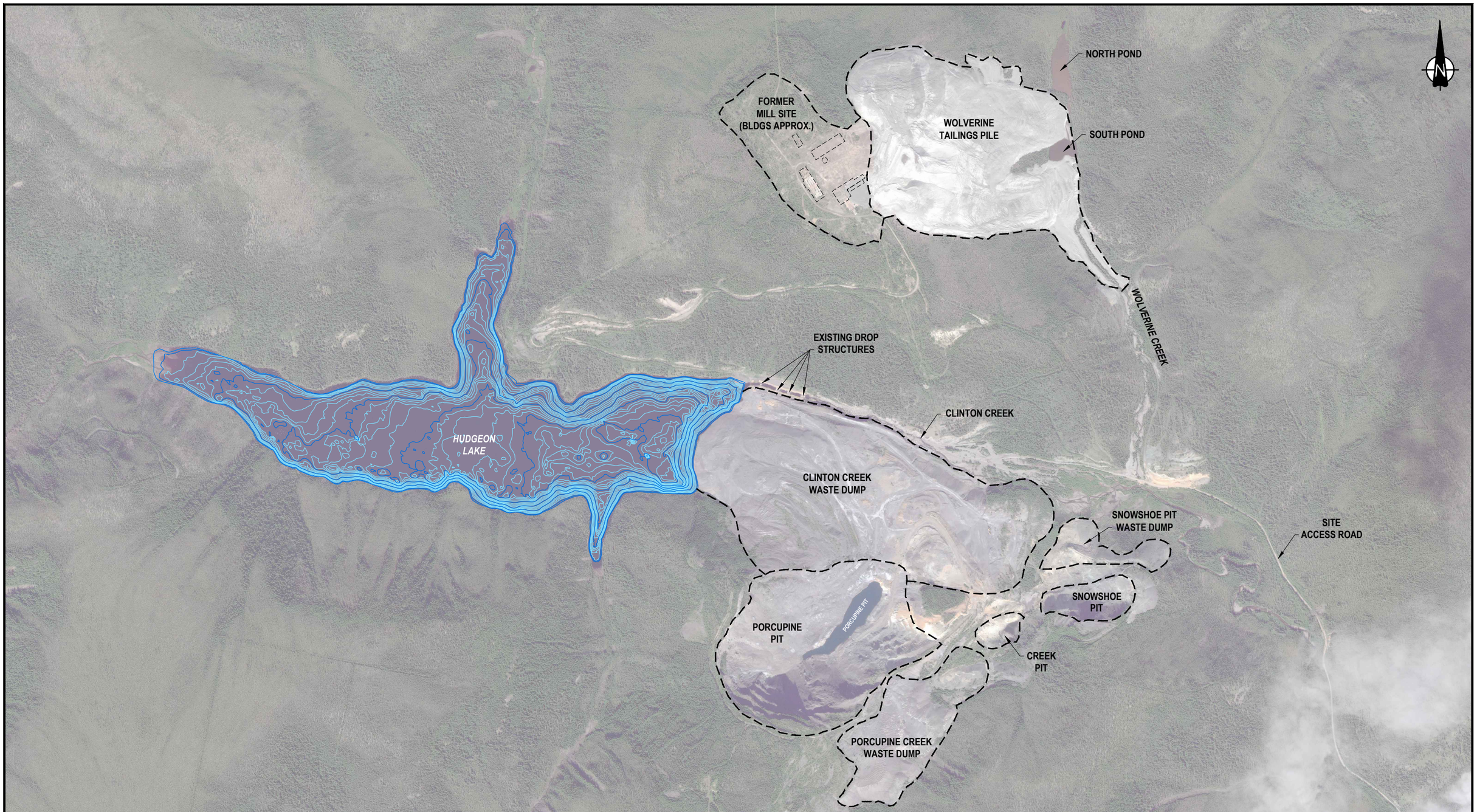
CLIENT / PROJECT:

2018 SITE INVESTIGATION

TITLE:

SITE LOCATION PLAN

DATE:	JULY 2019
PROJECT NO:	VE52705
REV. NO:	A
FIGURE NO:	1.1



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1 : 12500

wood.
Environment & Infrastructure Solutions
a Division of Wood Canada Limited
#600 - 4445 Lougheed Highway
Burnaby, BC V5C 0E4
Tel. 604-294-3811 Fax 604-294-4664

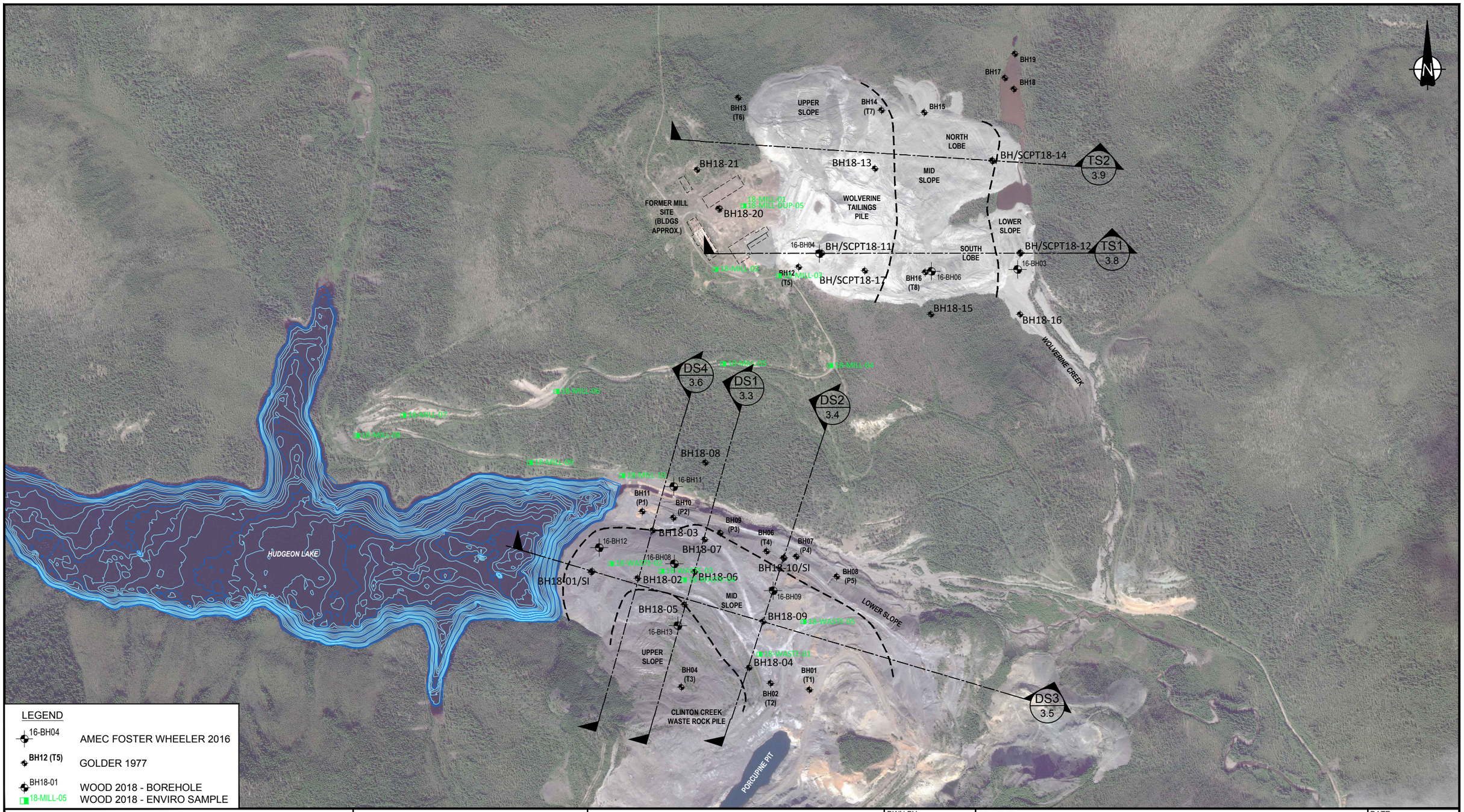
CLIENT: Yukon

DWN BY:	TH
CHK'D BY:	KH
DATUM:	NAD 83
PROJECTION:	UTM Zone 7
SCALE:	AS SHOWN

PROJECT: 2018 SITE INVESTIGATION

TITLE: SITE LAYOUT

DATE:	JULY 2019
PROJECT NO:	VE52705C.100.2
REV. NO:	A
FIGURE NO:	1.2



LEGEND

16-BH04	AMEC FOSTER WHEELER 2016
BH12 (T5)	GOLDER 1977
BH18-01	WOOD 2018 - BOREHOLE
18-MILL-05	WOOD 2018 - ENVIRO SAMPLE

0m 100 200 300 400

1 : 10000

wood.

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Tel. 604-294-3811 Fax 604-294-4664

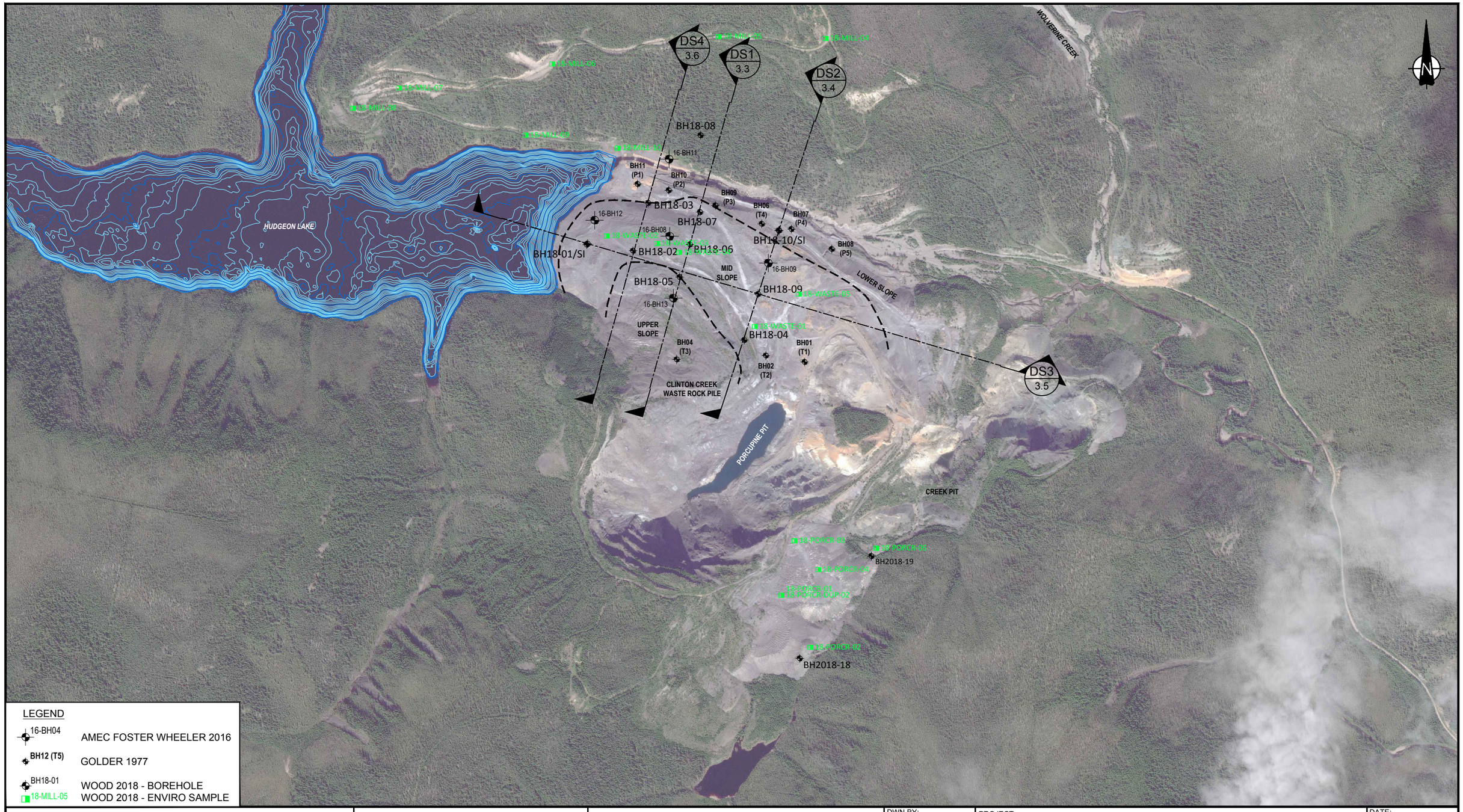
CLIENT: Yukon

DWN BY:	TH
CHK'D BY:	BG
DATUM:	NAD 83
PROJECTION:	UTM Zone 7
SCALE:	AS SHOWN

PROJECT: 2018 SITE INVESTIGATION

TITLE: SITE LOCATION PLAN NORTH

DATE:	JULY 2019
PROJECT NO:	VE52705C.100.2
REV. NO:	A
FIGURE NO:	4.1



LEGEND

16-BH04	AMEC FOSTER WHEELER 2016
BH12 (T5)	GOLDER 1977
BH18-01	WOOD 2018 - BOREHOLE
18-MILL-05	WOOD 2018 - ENVIRO SAMPLE

0m 100 200 300 400

1 : 10000

wood.
Environment & Infrastructure Solutions
a Division of Wood Canada Limited
#600 - 4445 Lougheed Highway
Burnaby, BC V5C 0E4
Tel. 604-294-3811 Fax 604-294-4664

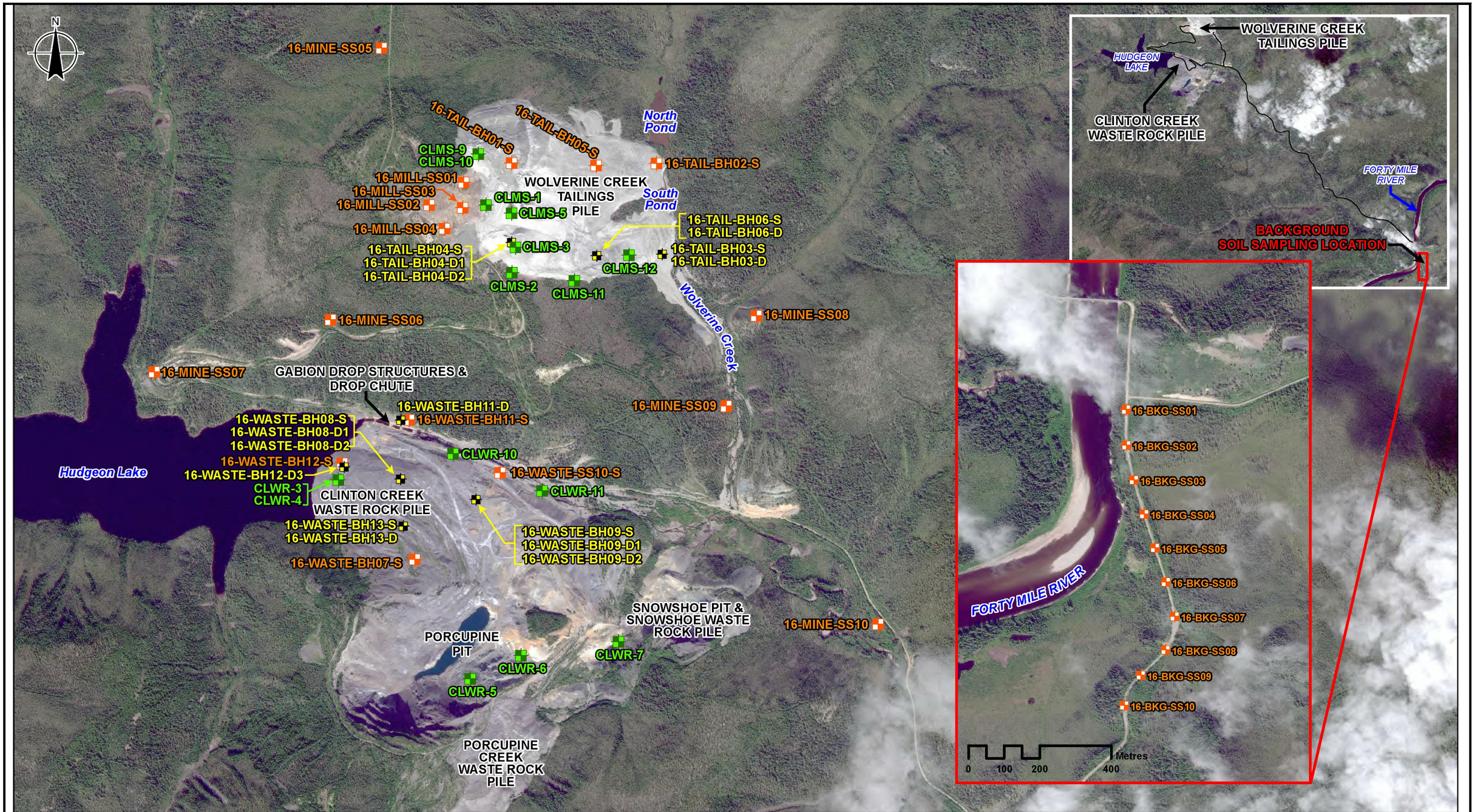
CLIENT: Yukon

DWN BY:	TH
CHK'D BY:	BG
DATUM:	NAD 83
PROJECTION:	UTM Zone 7
SCALE:	AS SHOWN

PROJECT: 2018 SITE INVESTIGATION

TITLE: SITE LOCATION PLAN SOUTH

DATE:	JULY 2019
PROJECT NO:	VE52705C.100.2
REV. NO:	A
FIGURE NO:	4.2



0m 100 200 300 400 500

1 : 12500 (Approx.)

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CLIENT: Yukon

DWN BY:	TH
CHK'D BY:	BG
DATUM:	NAD 83
PROJECTION:	UTM Zone 7
SCALE:	AS SHOWN

PROJECT: 2018 SITE INVESTIGATION

TITLE: PRE 2018 ENVIRONMENTAL SAMPLING LOCATIONS

DATE:	JULY 2019
PROJECT NO:	VE52705C.100.2
REV. NO:	A
FIGURE NO:	4.3

Tables
(Environmental Analytics)

Table 4-6 - Waste Dump - Asbestos & Metals

Legend

Result exceeds agricultural guideline:

Result exceeds residential/parkland guideline:

Surface sample:

Sampled at depth:

Sample ID	Date	Year	Depth (m)	Depth Category	Area	Parameter																																					Asbestos						
						Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulpher (S)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)	Asbestos By Point Count	Other Fibres: Cellulose	Asbestos: Chrysotile	Mica	Other Fibres	Other Fibres: Synthetic
						Environmental Health Guidelines (Agricultural)																																											
						---	20 [3]	25 [1]	390 [3]	4 [3]	---	120 [3]	9 [1]	---	50 [1]	180 [3]	150 [1]	---	350 [1]	---	---	---	0.6 [2]	6.9 [3]	45 [2]	---	---	1 [2]	20 [3]	---	---		1 [2]	---	---		33 [2]	130 [2]	200 [1]	---							
						Human Health Guidelines (Residential/Parkland)																																											
						15600 [o]	7.5 [3]	100 [1]	6800 [2]	38 [1]	---	4300 [3]	3 [1]	---	100 [1]	22 [3]	15000 [1]	11000 [o]	500 [1]	32 [o]	---	380 [o]	6.6 [2]	110 [3]	200 [2]	---	---	80 [2]	77 [3]	---	9400 [o]		1 [2]	9400 [o]	---		23 [2]	39 [3]	5600 [3]	1.3 [o]	%	%	%	%		
						Reported Detection Limit																																											
						50	**0.1**	**0.1**	**0.5**	**0.1**	**0.2**	**5**	**0.02**	**50**	**0.5**	**0.1**	**0.5**	**50**	**0.5**	**2**	**100**	**1**	**0.05**	**0.1**	**2.5**	**50**	**100**	**0.2**	**0.1**	**50**	**0.5**		**0.05**	**2**	**1.0**		**0**	**0**	**2**	**1**	**0.1**	**1**	**0.1**	**1**		
16-WASTE-BH07-S	2-Sep-16	2016	0 - 0.15	Surface	Waste Rock	17123	2.3	13.4	36	0.6	0.4	3	2.63	12261	30	20	66	43337	22.2	27	10285	552	0.21	15.5	65	720	455	5.7	0.4	96	96.1		0.178	1	4		1.25	29	174	5.6	-	Trace <1	0.6	Trace <1		
16-WASTE-BH08-S	2-Sep-16	2016	0 - 0.15	Surface	Waste Rock	21271	2.2	19.7	95	0.7	0.4	3	2.74	5620	30	23	73	51822	34.2	31	11261	580	0.23	22.5	79	727	396	4.3	0.4	66	40.9		0.181	1	3		1.66	33	261	4.1	-	Trace <1	0.3	Trace <1		
16-DUP-4 (DUPLICATE OF 16-WASTE-SS08-S)	2-Sep-16	2016	0 - 0.15	Surface	Waste Rock	20972	2.1	16.8	125	0.7	0.4	3	1.82	6852	31	20	61	47446	28.8	40	11420	510	0.24	15.3	64	642	363	4.1	0.4	75	63.5		0.175	1	3		1.40	31	173	4.6	-	-	0.1	Trace <1		
16-WASTE-SS08-D1 (SHOWN AS"16-WASTE-BH08-D1" ON SAMPLE)	27-Sep-16	2016	10.4 - 11.0	Depth	Waste Rock	6941	3.1	15.7	131	0.4	0.3	3	0.61	34595	56	15	23	28607	13.6	14	13306	860	0.19	6.0	171	412	266	2.2	0.2	95	184.1		0.298	1	3		1.01	15	80	5.8	-	-	0.2	Trace <1		
16-WASTE-SS08-D2 (SHOWN AS"16-WASTE-BH08-D2" ON SAMPLE)	30-Sep-16	2016	50.0 - 50.6	Depth	Waste Rock	3830	1.0	6.8	50	0.2	0.1	3	2.83	77236	10	6	22	16260	7.0	7	7884	310	0.22	5.1	29	950	321	4.2	0.4	25	269.6		0.058	1	3		1.06	10	82	4.4	-	-	1-5	Trace <1		
16-WASTE-BH09-5	3-Sep-16	2016	0 - 0.15	Surface	Waste Rock	3691	6.2	47	57	0.2	0.1	75	0.46	12973	745	65	20	48833	6.8	1	140275	672	0.10	3.8	2647	308	200	1.5	0.1	25	62.2		0.062	1	21		0.67	24	51	1.3	-	-	50-75	-		
16-WASTE-BH10-5	4-Sep-16	2016	0 - 0.15	Surface	Waste Rock	3463	4.6	14.4	77	0.2	0.1	99	0.30	10463	1133	105	17	66372	4.0	3	135737	788	0.08	2.0	1924	167	171	0.7	0.1	25	48.8		0.090	1	33		0.53	22	42	0.5	-	-	50-75	-		
16-WASTE-BH11-5	2-Sep-16	2016	0 - 0.15	Surface	Waste Rock	11162	1.0	10.1	353	0.4	0.1	3	0.53	9574	27	10	28	23753	10.5	9	5647	401	0.03	1.9	33	711	1054	1.2	0.2	227	50.7		0.084	1	502		1.02	45	76	2.5	-	5-10	0.3	Trace <1		
16-WASTE-SS11-D(SHOWN AS "16-WASTE-BH11-D" ON SAMPLE LABEL	4-Oct-16	2016	15.8	Depth	Waste Rock	1819	1.6	9.2	112	0.3	0.3	3	2.45	35462	10	11	51	27912	13.7	1	7470	478	0.34	8.0	44	1167	378	9.4	0.8	25	128.1		0.176	1	2		1.96	16	121	5.7	-	Trace <1	0.1	Trace <1		
16-WASTE-BH12-5	0-Jan-00	2016	0	Unknown	Waste Rock	7430	2.4	14.1	65	0.5	0.3	3	2.28	19800	21	17	61	41600	16.9	10	9280	442	0.20	12.0	66	794	530	5.7	0.5	25	99.5		0.162	1	3		1.61	25	181	5.5	-	Trace <1	0.4	Trace <1		
16-WASTE-SS12-D3(SHOWN AS "16-WASTE-BH12-D3" ON SAMPLE	19-Sep-16	2016	34.7 - 35.4	Depth	Waste Rock	15177	2.2	13.0	57	0.7	0.4	3	0.97	1108	27	11	59	51369	21.8	24	5872	198	0.20	9.2	57	713	432	5.5	0.4	113	20.1		0.146	1	8		2.09	30	186	4.6	-	-	0.1	Trace <1		
16-WASTE-BH13-5	25-Sep-16	2016	0 - 0.15	Surface	Waste Rock	4082	3.0	15.5	111	0.4	0.3	3	1.43	11507	29	18	59	36368	19.4	4	9933	597	0.26	14.1	74	740	727	5.0	0.5	73	88.5		0.249	1	8		1.43	23	145	4.1	-	1-5	0.3	Trace <1		
16-WASTE-SS13-D(SHOWN AS "16-WASTE-BH13-D" ON SAMPLE LABEL	19-Sep-16	2016	19.5 - 20.1	Depth	Waste Rock	3141	1.6	8.8	68	0.4	0.3	3	2.12	50777	8	11	37	28823	14.0	3	9660	329	0.32	8.8	42	763	743	8.8	0.6	25	222.9		0.105	1	3		1.51	15	136	6.3	-	-	0.1	Trace <1		
16-DUP 5 (DUPLICATE SAMPLE OF 16-WASTE-SS13-D)	19-Sep-16	2016	19.5 - 20.1	Depth	Waste Rock	2189	1.8	8.3	65	0.4	0.2	3	2.15	85690	7	11	32	31900	13.1	1	12760	640	0.26	7.2	40	724	495	9.7	0.5	25	359.7		0.130	1	3		1.56	13	125	9.2	0.05	-		Trace <1		
18BH01-01	28-Aug-18	2018	0.0-0.15	Surface	Waste Rock	1798	2.8	25	91	0.4	0.3	3	5.67	46583	19	14	62	36172	16.3	1	15773	634	0.72	24.9	76	993	473	8.2	0.9	25	222.9	13775	0.298	1	4	0.25	3.87	34	366	17.1			5-10	Trace <1		
18BH01-02	28-Aug-18	2018	30	Depth	Waste Rock	16059	3.5	49	154	0.3	0.1	29	0.20	8531	623	46	32	31435	6.3	23	72437	476	0.03	1.8	726	284	364	0.6	0.1	25	30.1	1139	0.025	1	322	0.25	0.59	29	42	2.5			10-25	Trace <1		
18-BH02-01	3-Sep-18	2018	0.0-0.15	Surface	Waste Rock	7262	3.1	12.9	50	0.6	0.3	3	2.42	34607	21	15	49	34607	23.0	16	8822	385	0.26	20.7	70	556	362	7.0	0.8	25	177.7	7851	0.247	1	3	0.25	1.95	23	205	12.2			0.6	1-5		
18-BH02-DUP-07 (BH02-01)	3-Sep-18	2018	0.0-0.15	Surface	Waste Rock	9721	2.7	15.1	61	0.5	0.3	3	3.93	27273	23	17	52	38740	21.0	16	9959	431	0.03	21.3	78	683	465	6.4	0.7	25	157.0	7231	0.277	1	3	0.25	2.41	27	251	8.8			0.2	Trace <1		
BH2018-02-02/156'	17-Sep-18	2018	48	Depth	Waste Rock	8940	3.2	17.8	52	0.5	0.3	3	0.85	18300	18	14	57	33300	42.3	14	2960	244	0.32	23.1	38	651	930	7.5	0.8	304	99.1	16000	0.207	1	35	0.25	1.37	22	109	16.6	0.05		Trace <1				
18-BH03-01	3-Sep-18	2018	0.0-0.15	Surface	Waste Rock	6161	9.0	38	238	0.3	0.4	37	1.01	16989	732	58	34	41398	7.6	14	92043	565	0.23	4.0	1086	642	312	2.2	0.4	25	110.8	500	0.280	1	36	0.25	1.58	27	81	4.2			25-50	Trace <1		
18-BH03-02/82' (25M)	6-Sep-18	2018	25	Depth	Waste Rock	2970	2.0	11.0	93	0.2	0.1	3	5.29	92900	14	8	34	20900	8.9	1	4870	363	0.42	5.9	42	2040	1120	17.6	1.0	25	317.0	11100	0.120	1	22	0.57	2.83	18	153	1.7	0.05		Trace <1				
18-BH04-01	3-Sep-18	2018	0.0-0.15	Surface	Waste Rock	11398	2.5	15.2	61	0.5	0.4	3	2.03	18925	24	17	59	38387	23.5	22	8634	410	0.22	17.1	71	654	387	6.5	0.6	25	103.7	1828	0.229	1	3	0.25	1.72	26	187	8.6			0.7	1-5		
18-BH04/38'	13-Sep-18	2018	11.5	Depth	Waste Rock	3972	3.7	14.1	71	0.2	0.1	31	2.92	58235	595	42	47	28848	8.1	6	82777	456	0.26	5.0	740	868	592	5.6	0.4	25	232.5	3875	0.056	1	25	0.25	1.58	20	87	6.1			5-10	Trace <1		
18-BH05-01	3-Sep-18	2018	0.0-0.15	Surface	Waste Rock	14400	4.0	21.3	57	0.7	0.4	3	3.24	47100	25	19	68	48100	29.4	24	12700	574	0.25	29.1	88	999	590	8.9	0.8	78	204.0	10700	0.275	1	5	0.25	2.51	40	283	16.5	0.05			1-5		
BH2018-05-02/151'	17-Sep-18	2018	46	Depth	Waste Rock	19700	1.4	7.7	79	0.6	0.3	3	0.74	18100	25	15	42	36600	17.3	38	9980	558	0.15	6.2	44	603	1010	2.8	0.4	208	111.0	4700	0.106	1	57	0.25	1.06	25	117	12.0	0.05		Trace <1				
18-BH06-01	3-Sep-18	2018	0.0-0.15	Surface	Waste Rock	15269	1.2	8.8	48	0.5	0.3	3	0.70	7269	38	14	36	31935	18.5	27	10301	333	0.11	7.0	57	519	312	1.8	0.3	60	39.0	2366	0.100	1	6	0.25	1.09	19	112	7.0			1-5	1-5	N.R	
18-BH06-02	31-Aug-18	2018	35	Depth	Waste Rock	3154	1.6	10.7	173	0.3	0.1	3	3.10	93319	9	9	33	20811	11.3	2	8434	370	0.03	8.2	41	1078	832	8.2	0.6	64	339.5	10077	0.118	1	5	0.25	2.07	15	125	10.7	0.05	Trace <1		1-5		
18-BH07-01	3-Sep-18	2018	0.0-0.15	Surface	Waste Rock	6805	2.1	13.0	52	0.2	0.1	25	3.29	14857	380	25	26	27948	7.3	8	68571	417	0.07	3.0	415	423	249	0.9	0.1	25	59.0	500	0.025	1	24	0.25	0.89	28	47	4.7			25-50	1-5		
18-BH07-02	3-Sep-18	2018	25	Depth	Waste Rock	4130	1.6	10.2	77	0.7	0.4	3	1.05	18800	12	19	56	52200	16.9	1	8800	516	0.22	7.2	61	749	750	3.7	0.4	62	85.6	9100	0.144	1	4	0.25	2.05	22	181	11.8	0.05			1-5		
18-BH08-01	3-Sep-18	2018	0.0-0.15	Surface	Waste Rock	10100	2.6	16.4	467	0.6	0.5	3	2.23	10900	20	23	62	51700	34.6	11	5350	610	0.23	15.3	72	755	770	4.7	0.5	135	70.0	500	0.308	1	15	0.25	1.40	34	211	7.9	0.05			1-5		
18-BH08-DUP-08 (BH08-01)	3-Sep-18	2018	0.0-0.15	Surface	Waste Rock	8860	2.6	16.2	147	0.6	0.4	3	2.47	11900	18	20	58	47500	33.3	9	4910	550	0.23	14.0	67	778	680	4.5	0.5	116	64.8	500	0.267	1	10	0.25	1.48	30	211	7.1	0.05			Trace <1		
18BH09-01	28-Aug-18	2018	0.0-0.15	Surface	Waste Rock	8611	1.8	11.3	58	0.4	0.4	3	0.95	12019	22	17	46	39090	20.0	21	8320	422	0.07	8.9	63	734	420	1.6	0.2	25	67.7	6184	0.095	1	12	0.25	1.58	16	109	11.1			50-75	Trace <1		
18BH09-02	28-Aug-18	2018	48.8	Depth	Waste Rock	9562	2.8	61	204	0.3	0.1	36	0.31	21124	1074	80	119	36292	2.6	25	117978	485	0.03	1.8	924	340	135	0.7	0.3	25	84.0	500	0.025	1	519	0.25	0.44	30	36	2.7			10-25	Trace <1		
18-BH10-01	28-Aug-18	2018	0.0-0.15	Surface	Waste Rock	5357	6.5	23.6	189	0.3	0.1	50	0.80	21734	524	53	26	47420	10.8	8	77387	551	0.14	5.0	955	531	417	2.0	0.2	25	91.3	1317	0.190	1	38	0.25	1.20	25	85	5.6			10-25	Trace <1		
18-BH10-02	27-Aug-18	2018	19.8	Depth	Waste Rock	4363	1.5	9.9	115	0.5	0.4	3	1.19	36044	16	16	40	35714	16.3	4	10549	526	0.20	5.1	55	792	813	4.3	0.4	80	167.0	4615	0.109	1	13	0.25	1.87	18	108	11.3			0.2	Trace <1		

Table 4-6 - Waste Dump - Asbestos & Metals

Legend

Result exceeds agricultural guideline:

Result exceeds residential/parkland guideline:

Surface sample:

Sampled at depth:

Sample ID	Date	Year	Depth (m)	Depth Category	Area	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulpher (S)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)	Asbestos By Point Count	Other Fibres: Cellulose	Asbestos: Chrysotile	Mica	Other Fibres	Other Fibres: Synthetic
Parameter																																								**Asbestos**						
Environmental Health Guidelines (Agricultural)																																													
						---	20 [3]	25 [1]	390 [3]	4 [3]	---	120 [3]	9 [1]	---	50 [1]	180 [3]	150 [1]	---	350 [1]	---	---	---	0.6 [2]	6.9 [3]	45 [2]	---	---	1 [2]	20 [3]	---	---		1 [2]	---	---		33 [2]	130 [2]	200 [1]	---						
Human Health Guidelines (Residential/Parkland)																																													
						15600 [o]	7.5 [3]	100 [1]	6800 [2]	38 [1]	---	4300 [3]	3 [1]	---	100 [1]	22 [3]	15000 [1]	11000 [o]	500 [1]	32 [o]	---	380 [o]	6.6 [2]	110 [3]	200 [2]	---	---	80 [2]	77 [3]	---	9400 [o]		1 [2]	9400 [o]	---		23 [2]	39 [3]	5600 [3]	1.3 [o]	%	%	%	%		
Reported Detection Limit																																													
						50	**0.1**	**0.1**	**0.5**	**0.1**	**0.2**	**5**	**0.02**	**50**	**0.5**	**0.1**	**0.5**	**50**	**0.5**	**2**	**100**	**1**	**0.05**	**0.1**	**2.5**	**50**	**100**	**0.2**	**0.1**	**50**	**0.5**		**0.05**	**2**	**1.0**		**0**	**0**	**2**	**1**	**0.1**	**1**	**0.1**	**1**		
18-WASTE-01	28-Aug-18	2018	0.0-0.15	Surface	Waste Rock	1713	2.3	12.4	51	0.4	0.2	3	2.02	30819	14	14	45	39224	14.7	1	10884	483	0.22	14.7	68	845	345	4.8	0.4	25	142.2	4095	0.116	1	2	0.25	1.57	23	179	11.5			0.1	Trace <1		
18-WASTE-02	28-Aug-18	2018	0.0-0.15	Surface	Waste Rock	14978	2.1	11.0	34	0.5	0.3	3	2.74	6563	23	21	46	41703	22.3	23	9278	869	0.15	11.7	73	678	323	4.1	0.4	25	53.2	500	0.134	1	4	0.25	1.44	24	208	8.1			0.1	Trace <1		
18-WASTE-03	28-Aug-18	2018	0.0-0.15	Surface	Waste Rock	7274	2.6	12.2	61	0.6	0.3	3	2.56	29095	20	18	48	34375	17.9	12	11315	406	0.24	15.3	141	746	356	6.3	0.6	25	153.0	5819	0.260	1	3	0.25	1.77	27	211	13.4			1-5	Trace <1		
18-WASTE-04	28-Aug-18	2018	0.0-0.15	Surface	Waste Rock	7963	3.3	15.6	32	0.6	0.2	3	2.72	16703	26	18	53	39763	21.9	14	8405	458	0.25	18.8	78	1074	377	5.1	0.6	25	77.3	3017	0.220	1	3	0.25	2.05	27	218	11.6			1-5	Trace <1		
18-WASTE-05	28-Aug-18	2018	0.0-0.15	Surface	Waste Rock	2823	6.6	108	137	0.4	0.1	55	0.67	16487	554	54	41	40086	6.3	3	101293	633	0.23	5.6	1034	398	280	2.2	0.3	25	83.9	500	0.136	1	16	0.56	1.03	21	74	4.6			10-25	Trace <1		
CLWR-3	August 1998	1998	0 - 0.10	Surface	Waste Rock		10.0	13.0	84	0.5			2.30		19	15	58		25.0				0.30	14.0	65			8.0	1.0					5				30	248				3 5			
CLWR-4	August 1998	1998	0 - 0.10	Surface	Waste Rock		10.0	14.0	103	0.7			2.50		22	15	62		25.0				0.34	16.0	64			8.0	1.0					5				36	238							
CLWR-5	August 1998	1998	0 - 0.10	Surface	Waste Rock		40	28	65	1.0			0.20		1110	55	25		100				0.05	10	1230			0.3	4					20				23	29							
CLWR-6	August 1998	1998	0 - 0.10	Surface	Waste Rock		50	13	397	1.5			0.05		1810	105	10		150				0.14	10	852			0.1	5					25				66	27				<1			
CLWR-7	August 1998	1998	0 - 0.10	Surface	Waste Rock		50	17	1060	1.5			0.50		625	46	21		150				0.17	10	867			1.2	5					25				47	71							
CLWR-10	August 1998	1998	0 - 0.10	Surface	Waste Rock		40	15	10	1.0			0.05		1180	76	14		100				0.20	10	1710			0.1	4					20				4	8							
CLWR-11	August 1998	1998	0 - 0.10	Surface	Waste Rock		10	18	296	0.8			1.60		486	49	48		25				0.30	12	834			4.4	1					5				38	143				7			

Minimum, Median, and Maximum for all Samples

Parameter (mg/kg)	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulpher (S)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)
Minimum	1713	0.97	6.8	10	0.2	0.1	3	0.05	1108	7	6	10.0	16260	2.6	1	2960	198	0.025	1.8	29	167	135	0.1	0.1	25	20	500	0.025	1	2	0.25	0.438	4	8	0.5
Median	7268	2.6	14.1	77	0.5	0.3	3	2.0	18550	25	18	46	37494	18	10	10132	484	0.2	10	72	722	419	4	0.5	25	98	3985	0.1	1	6	0.25	1.5	25	125	6
Maximum	21271	50	108	1060	1.5	0.5	99	6	93319	1810	105	119	66372	150	40	140275	869	1	29	2647	2040	1120	18	5	304	360	16000	0.3	25	519	0.57	3.87	66	366	17

Minimum, Median, and Maximum for all Surface Samples

Parameter (mg/kg)	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulpher (S)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)
Minimum	0	1	9	10	0	0	0	0	0	14	10	10	0	4	0	0	0	0	2	33	0	0	0	0	0	0	0	0	1	0	0	0	4	8	0
Median	6805	3	15	77	0.5	0.3	2.5	2.0	11900	29	20	48	38740	22	9	9933	458	0.22	14	78	642	356	4	0.45	25	65	500	0.14	1	4	0.25	1.40	27	173	5
Maximum	21271	50	108	1060	1.5	0.5	99	6	47100	1810	105	73	66372	150	40	140275	869	1	29	2647	1074	1054	9	5.00	227	223	13775	0.31	25	502	0.56	3.87	66	366	17

Minimum, Median, and Maximum for Deep Samples

Parameter (mg/kg)	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulpher (S)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)
Minimum	1819	0.97	6.8	50.4	0.2	0.1	2.5	0.2	1108	7	6	21.9	16260	2.6	1.0	2960	198	0.03	1.8	29	284	135	0.56	0.05	25	20	0.0	0.03	1.00	2	0.00	0.44	10	36	2
Median	4130	2	11	79	0.4	0.3	2.5	1.2	35462	16	14	40	31435	14	6	9660	476	0.2	6	44	749	592	5	0.41	25	167	1139	0.12	1.00	8	0.25	1.56	18	117	6
Maximum	19700	4	61	204	0.7	0.4	35.6	5	93319	1074	80	119	52200	42	38	117978	860	0	23	924	2040	1120	18	1.02	304	360	16000	0.30	1.00	519	0.57	2.83	30	186	17

Table 4-7 - Tailings - Asbestos & Metals

Legend

Result exceeds agricultural guideline:
Result exceeds residential/parkland guideline:
Surface sample:
Sampled at depth:

Sample ID	Date	Year	Depth (m)	Depth Category	Area	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulpher (S)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)	Asbestos By Point Count	Other Fibres: Cellulose	Asbestos: Chrysotile	Mica	Other Fibres	Other Fibres: Synthetic
Parameter																																								**Asbestos**					
Environmental Health Guidelines (Agricultural)						---	20 [3]	25 [1]	390 [3]	4 [3]	---	120 [3]	9 [1]	---	50 [1]	180 [3]	150 [1]	---	350 [1]	---	---	---	0.6 [2]	6.9 [3]	45 [2]	---	---	1 [2]	20 [3]	---	---		1 [2]	---	---		33 [2]	130 [2]	200 [1]	---						
Human Health Guidelines (Residential/Parkland)						15600 ◦	7.5 [3]	100 [1]	6800 [2]	38 [1]	---	4300 [3]	3 [1]	---	100 [1]	22 [3]	15000 [1]	11000 ◦	500 [1]	32 ◦	---	380 ◦	6.6 [2]	110 [3]	200 [2]	---	---	80 [2]	77 [3]	---	9400 ◦		1 [2]	9400 ◦	---		23 [2]	39 [3]	5600 [3]	1.3 ◦	%	%	%	%		
Reported Detection Limit						50	0.1	0.1	0.5	0.1	0.2	5	0.02	50	0.5	0.1	0.5	50	0.5	2	100	1	0.05	0.1	2.5	50	100	0.2	0.1	50	0.5		0.05	2	1.0		0	0	2	1	0.1	1	0.1	1		
Sample ID	**Date**	**Year**	**Depth (m)**	**Depth Category**	**Area**	**Results (mg/kg)**																																		**Results (%)**					
16-TAIL-BH01-S	31-Aug-16	2016	0 - 0.15	Surface	Tailings Pile	5136	7.5	60	688	0.1	0.1	92	0.01	5084	1263	87	7	53678	0.3	13	189451	533	0.03	0.1	1821	25	50	0.1	0.1	25	92.5		0.025	1	63		0.13	32	11	0.5	-	-	50-75	-		
16-TAIL-BH02-S	31-Aug-16	2016	0 - 0.15	Surface	Tailings Pile	3825	2.4	12.1	68	0.1	0.1	153	0.01	3268	1240	87	2	47188	0.3	2	196530	504	0.03	0.1	1965	25	50	0.1	0.1	25	32.5		0.025	1	36		0.03	24	9	0.5	-	-	50-75	-		
16-TAIL-BH03-S	31-Aug-16	2016	0 - 0.15	Surface	Tailings Pile	3037	6.1	18.6	284	0.1	0.1	120	0.01	10059	1598	94	7	50080	1.1	4	181141	547	0.03	0.2	2110	25	50	0.1	0.1	25	61.6		0.025	1	23		0.60	22	14	0.5	-	-	50-75	-		
16-TAIL-SS03-D (SHOWN AS "16-TAIL-BH03-D" ON SAMPLE LABEL)	8-Sep-16	2016	10.4 - 11.3	Depth	Tailings Pile	3550	2.3	3.0	1	0.1	0.1	233	0.01	223	1305	82	1	45257	0.3	1	205715	481	0.03	0.1	2081	25	50	0.1	0.1	25	0.6		0.025	1	30		0.03	25	7	0.5	-	-	50-75	-		
16-TAIL-BH04-S	31-Aug-16	2016	0 - 0.15	Surface	Tailings Pile	4392	2.9	3.1	100	0.1	0.1	197	0.01	2727	1487	99	3	58120	0.8	1	223537	581	0.03	0.2	2068	25	50	0.1	0.1	25	21.7		0.025	1	66		0.06	30	12	0.5	-	-	50-75	-		
16-DUP-1 (DUPLICATE SAMPLE OF 16-TAIL-SS04-S)	31-Aug-16	2016	0 - 0.15	Surface	Tailings Pile	4573	1.1	3.4	89	0.1	0.1	241	0.03	2688	1405	99	3	56772	0.6	1	220843	579	0.03	0.2	2063	25	50	0.1	0.1	25	19.0		0.025	1	65		0.03	31	12	0.5	-	-	50-75	-		
16-TAIL-SS04-D1 (SHOWN AS "16-TAIL-BH04-D1" ON SAMPLE)	12-Sep-16	2016	4.3 - 4.9	Depth	Tailings Pile	3074	1.2	1.6	36	0.1	0.1	132	0.01	2296	1175	69	1	36568	0.3	1	177371	420	0.03	0.2	1604	25	50	0.1	0.1	25	13.8		0.025	1	19		0.03	22	10	0.5	-	-	50-75	-		
16-TAIL-SS04-D2 (SHOWN AS "16-TAIL-BH04-D2" ON SAMPLE)	12-Sep-16	2016	13.4 - 14.0	Depth	Tailings Pile	2756	1.5	5.0	8	0.1	0.1	150	0.01	897	1145	66	2	36574	0.3	1	181352	446	0.03	0.1	1793	25	50	0.1	0.1	25	6.6		0.025	1	15		0.03	19	6	0.5	-	-	50-75	-		
16-TAIL-BH05-S	29-Aug-16	2016	0 - 0.15	Surface	Tailings Pile	5480	7.7	53	174	0.1	0.1	122	0.03	4856	1352	94	5	56362	0.6	8	201739	530	0.03	0.2	1903	25	50	0.1	0.1	25	51.6		0.025	1	88		0.13	32	14	0.5	-	-	50-75	-		
16-TAIL-BH06-S	29-Aug-16	2016	0 - 0.15	Surface	Tailings Pile	4537	1.8	2.1	18	0.1	0.1	135	0.05	2248	1083	79	3	44647	0.3	1	187660	476	0.03	0.1	1753	25	50	0.1	0.1	25	25.4		0.025	1	51		0.03	28	10	0.5	-	-	50-75	-		
16-TAIL-BH06-D	2-Oct-16	2016	10.4 - 11.0	Depth	Tailings Pile	4807	1.6	9.5	299	0.4	0.3	14	1.03	3989	124	18	34	33952	14.7	4	16472	380	0.10	9.2	177	599	493	2.6	0.2	76	33.1		0.105	1	31		1.02	23	125	3.4	-	-	1-5	Trace <1		
18BH11-01	18-Aug-18	2018	0.0-0.15	Surface	Tailings Pile	4617	11.2	23.8	274	0.1	0.1	190	0.04	6645	1499	104	6	59008	1.3	5	207120	627	0.03	0.2	2114	70	50	0.1	0.1	25	59.2	500	0.025	1	87	0.78	0.18	30	14	0.5			50-75		<1	
18-BH11-02	4-Sep-18	2018	34.8	Depth	Tailings Pile	4413	1.1	0.9	7	0.1	0.1	174	0.01	555	2541	145	1	79930	0.3	1	297295	841	0.03	0.1	3199	25	50	0.1	0.1	25	4.3	500	0.025	1	31	0.25	0.03	36	14	0.5			50-75	Trace <1		
18BH12-01	18-Aug-18	2018	0.0-0.15	Surface	Tailings Pile	3315	6.0	6.3	86	0.1	0.1	184	0.01	2080	1300	70	2	44745	0.3	3	193933	563	0.22	0.1	1831	25	50	0.1	0.1	25	37.6	500	0.025	1	27	0.61	0.03	23	8	0.5			10-25		<1	
18-BH12-02	2-Sep-18	2018	19.8	Depth	Tailings Pile	9266	1.1	7.2	290	0.3	0.1	6	0.61	4867	24	8	21	16146	9.2	10	3288	439	0.06	2.5	27	405	608	1.5	0.2	138	37.7	500	0.103	1	247	0.25	1.10	31	62	2.0			0.1	Trace <1		
18-BH12-DUP-06 (BH12-02)	2-Sep-18	2018	19.8	Depth	Tailings Pile	10694	1.0	7.3	266	0.4	0.1	3	0.44	3803	22	8	22	19890	10.8	12	3674	300	0.03	2.3	25	405	585	1.8	0.1	116	31.2	500	0.103	1	221	0.25	1.06	32	64	3.0			0.2	Trace <1		
18BH13-01	18-Aug-18	2018	0.0-0.15	Surface	Tailings Pile	4735	5.2	19.7	148	0.1	0.1	156	0.06	5114	1170	89	4	52546	1.4	5	191766	521	0.03	0.4	1777	25	50	0.1	0.1	25	47.6	500	0.025	1	46	0.63	0.18	29	16	0.5			25-50		<1	
18-BH13-02/85'	9-Sep-18	2018	25.9	Depth	Tailings Pile	2177	0.8	1.1	3	0.1	0.1	135	0.01	234	1514	52	1	23028	0.3	1	161935	344	0.03	0.1	1283	25	50	0.1	0.1	25	1.1	500	0.025	1	19	0.25	0.03	13	7	0.5			10-25	<1		
18-BH13-DUP-04/50'	9-Sep-18	2018	15.2	Depth	Tailings Pile	2591	1.2	3.4	8	0.1	0.1	186	0.01	628	2097	84	4	26022	0.3	1	222581	502	0.03	0.1	1935	25	50	0.1	0.1	25	3.1	3978	0.025	1	32	0.25	0.03	17	10	0.5			10-25	<1		
18BH14-01	18-Aug-18	2018	0.0-0.15	Surface	Tailings Pile	4097	4.3	12.0	88	0.1	0.1	186	0.01	3131	1582	96	4	57912	0.3	3	225589	629	0.09	0.1	2144	25	50	0.1	0.1	25	24.6	500	0.025	1	49	0.25	0.12	29	11	0.5			25-50		<1	
18-BH14-02	29-Aug-18	2018	10.6	Depth	Tailings Pile	2243	3.4	2.8	10	0.1	0.1	218	0.01	466	1256	78	3	41018	0.3	1	201454	396	0.03	0.1	1610	25	50	0.1	0.1	25	5.2	500	0.025	1	15	0.25	0.03	18	7	0.5			10-25		<1	
18BH15-01	18-Aug-18	2018	0.0-0.15	Surface	Tailings Pile	4811	0.9	3.2	72	0.2	0.1	3	0.14	530	29	3	8	6377	6.8	5	3657	63	0.03	0.6	32	85	389	0.1	0.1	25	7.3	500	0.025	1	120	0.25	0.46	13	20	0.5		Trace <1	1-5	Trace <1		
18BH16-01	18-Aug-18	2018	0.0-0.15	Surface	Tailings Pile	3768	4.6	3.2	87	0.1	0.1	160	0.01	3171	1503	87	3	46409	0.6	2	195580	562	0.03	0.2	1845	25	50	0.1	0.1	25	18.0	500	0.025	1	48	0.25	0.08	25	12	0.5			50-75		<1	
BH2018-16-20'	12-Sep-18	2018	6.1	Depth	Tailings Pile	2345	2.3	4.6	8	0.1	0.1	119	0.01	396	1467	66	0.25	34475	0.3	1	169165	404	0.03	0.1	1456	25	50	0.1	0.1	25	2.3	500	0.025	1	18	0.25	0.03	16	7	0.5			25-50	<1		
18BH17-01	18-Aug-18	2018	0.0-0.15	Surface	Tailings Pile	5585	18.5	55	283	0.1	0.1	164	0.04	5164	1370	98	7	62178	0.8	6	214286	597	0.03	0.3	2073	90	117	0.1	0.1	25	55.5	500	0.025	1	124	0.84	0.11	36	13	0.5		Trace <1	75-100			
18-B17-02	31-Aug-18	2018	15.3	Depth	Tailings Pile	4037	2.8	1.3	47	0.1	0.1	183	0.01	2166	1740	109	2	63348	0.3	1	224289	671	0.03	0.1	2188	25	50	0.1	0.1	25	12.0	500	0.025	1	47	0.25	0.03	30	13	0.5			50-75	Trace <1		
18-TAIL-01	18-Aug-18	2018	0.0-0.15	Surface	Tailings Pile	2567	3.2	2.1	56	0.1	0.1	137	0.01	1289	1478	76	1	38667	0.3	2	191111	1009	0.03	0.1	1700	25	50	0.1	0.1	25	11.1	500	0.025	1	32	0.25	0.03	19	9	0.5			10-25		<1	
18-TAIL-02	18-Aug-18	2018	0.0-0.15	Surface	Tailings Pile	3878	5.6	9.2	63	0.1	0.1	202	0.03	1800	1289	85	3	49667	0.6	1	201111	522	0.03	0.2	1633	25	50	0.1	0.1	25	15.6	500	0.025	1	58	0.64	0.03	27	10	0.5			25-50		<1	
18-TAIL-03	18-Aug-18	2018	0.0-0.15	Surface	Tailings Pile	5411	17.0	43	462	0.1	0.1	201	0.04	7544	1356	108	5	58222	1.0	9	212222	613	0.03	0.3	2156	64	50	0.1	0.1	25	82.7	500	0.028	1	116	0.93	0.15	34	15	0.5			75-100		<1	
18-TAIL-04	18-Aug-18	2018	0.0-0.15	Surface	Tailings Pile	3811	11.7	47	163	0.1	0.1	124	0.03	7189	1122	76	4	42444	0.6	5	171111	534	0.03	0.2	1556	25	50	0.1	0.1	25	79.0	500	0.025	1	59	0.79	0.09	25	10	0.5			50-75		<1	
18-TAIL-05	18-Aug-18	2018	0.0-0.15	Surface	Tailings Pile	5167	12.8	39	291	0.1	0.1	172	0.08	5922	1333	103	5	56222	0.8	6	200000	610	0.03	0.3	1967	25	50	0.2	0.1	25	92.6	500	0.025	1	80	0.74	0.10	33	14	0.5			50-75		<1	

Table 4-7 - Tailings - Asbestos & Metals

Legend

Result exceeds agricultural guideline:
Result exceeds residential/parkland guideline:
Surface sample:
Sampled at depth:

Sample ID	Date	Year	Depth (m)	Depth Category	Area	Parameter	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulpher (S)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)	Asbestos By Point Count	Other Fibres: Cellulose	Asbestos: Chrysotile	Mica	Other Fibres	Other Fibres: Synthetic
						Environmental Health Guidelines (Agricultural)	---	20 [3]	25 [1]	390 [3]	4 [3]	---	120 [3]	9 [1]	---	50 [1]	180 [3]	150 [1]	---	350 [1]	---	---	---	0.6 [2]	6.9 [3]	45 [2]	---	---	1 [2]	20 [3]	---	---		1 [2]	---	---		33 [2]	130 [2]	200 [1]	---						
						Human Health Guidelines (Residential/Parkland)	15600 [4]	7.5 [3]	100 [1]	6800 [2]	38 [1]	---	4300 [3]	3 [1]	---	100 [1]	22 [3]	15000 [1]	11000 [4]	500 [1]	32 [4]	---	380 [4]	6.6 [2]	110 [3]	200 [2]	---	---	80 [2]	77 [3]	---	9400 [4]		1 [2]	9400 [4]	---		23 [2]	39 [3]	5600 [3]	1.3 [4]	%	%	%	%		
						Reported Detection Limit	50	0.1	0.1	0.5	0.1	0.2	5	0.02	50	0.5	0.1	0.5	50	0.5	2	100	1	0.05	0.1	2.5	50	100	0.2	0.1	50	0.5		0.05	2	1.0		0	0	2	1	0.1	1	0.1	1		
CLMS-1	August 1998	1998	0 - 0.10	Surface	Tailings		50	74		1.5			0.05		1410	103	7		150				0.11	10	2210			0.1	5				25				26	30				40				
CLMS-2	August 1998	1998	0 - 0.10	Surface	Tailings		50	14		1.5			0.05		1380	81	3		150				0.02	10	2030			0.1	5				25				21	13				15				
CLMS-3	August 1998	1998	0 - 0.10	Surface	Tailings		50	3		1.5			0.05		1650	87	3		150				0.02	10	2140			0.1	5				25				11	14								
CLMS-5	August 1998	1998	0 - 0.10	Surface	Tailings		20	160		0.5			2.00		771	60	30		50				0.17	4	1150			3.5	2				10				34	133				40				
CLMS-10	August 1998	1998	0 - 0.10	Surface	Tailings		30	321		1.0			0.05		1430	99	3		100				0.44	10	2200			0.1	3				15				19	12								
CLMS-11	August 1998	1998	0 - 0.10	Surface	Tailings		20	2		0.5			0.05		1530	65	1		50				0.00	4	1640			0.1	2				10				8	9								
CLMS-12	August 1998	1998	0 - 0.10	Surface	Tailings		50	2		1.5			0.05		1470	111	3		150				0.03	10	2300			0.1	5				25				20	14								

1. CCME SQG, direct soil contact
2. AENV Tier 1 soil standards, direct soil contact
3. OMOE soil standards - soil contact
4. USEPA Composite Worker Regional Screening Level (May 2016)

Minimum, Median, and Maximum for all Samples

	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulpher (S)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)
	Parameter (mg/kg)																																												
Minimum	2177	0.77	0.9	1	0.1	0.1	3	0.01	223	22	3	0.3	6377	0.3	1	3288	63	0.003	0.1	25	25	50	0.1	0.1	25	1	500	0.025	1	15	0.25	0.025	8	6	0.5
Median	4097	4.5	6.7	87	0.1	0.1	156	0.0	2727	1363	86	3	46409	1	2	195580	530	0.0	0	1874	25	50	0.1	0.1	25	25	500	0.0	1	48	0.25	0.1	25	12	1
Maximum	10694	50	321	688	1.5	0.3	241	2	10059	2541	145	34	79930	150	13	297295	1009	0	10	3199	599	608	4	5	138	93	3978	0.1	25	247	0.93	1.10	35.83	133	3

Minimum, Median, and Maximum for all Surface Samples

	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulpher (S)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)
	Parameter (mg/kg)																																												
Minimum	0	1	2	0	0	0	0	0	0	29	3	1	0	0	0	0	0	0	0	32	0	0	0	0	0	0	0	0	1	0	0	0	8	8	0
Median	3852	8	13	87	0.1	0.1	135.9	0.0	2708	1375	88	4	46798	1	2	191439	531	0.03	0	1966	25	50	0.10	0.05	25	23	0	0.03	1	48	0.00	0.04	27	13	1
Maximum	5585	50	321	688	1.5	0.1	241	2.0	10059	1650	111	30	62178	150	13	225589	1009	0.4	10	2300	90	389	4	5.00	25	93	500	0.03	25	124	0.93	0.60	36	133	1

Minimum, Median, and Maximum for Deep Samples

	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulpher (S)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)
	Parameter (mg/kg)																																												
Minimum	2177	0.77	0.9	0.9	0.1	0.1	2.5	0.0	223	22	8	0.3	16146	0.3	1.0	3288	300	0.03	0.1	25	25	50	0.10	0.05	25	1	0.0	0.03	1.00	15	0.00	0.03	13	6	1
Median	3312	1	3	9	0.1	0.1	142	0.0	762	1281	67	2	35521	0	1	179361	430	0.0	0	1607	25	50	0.10	0.05	25	6	500	0.03	1.00	30	0.25	0.03	22	10	1
Maximum	10694	3	10	299	0.4	0.3	233	1.0	4867	2541	145	34	79930	15	12	297295	841	0	9	3199	599	608	3	0.21	138	38	3978	0.11	1.00	247	0.25	1.10	36	125	3

Table 4-8 - Porcupine Creek Area

wood.

Legend

- Result exceeds agricultural guideline:
- Result exceeds residential/parkland guideline:
- Surface sample:
- Sampled at depth:

Sample ID	Date	Year	Depth (m)	Depth Category	Area	Parameter / Results (mg/kg)																																		Asbestos / Results (%)					
						Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulpher (S)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)	Asbestos By Point Count	Other Fibres: Cellulose	Asbestos: Chrysotile	Mica	Other Fibres	Other Fibres: Synthetic
Environmental Health Guidelines (Agricultural)						---	20 [3]	25 [1]	390 [3]	4 [3]	---	120 [3]	9 [1]	---	50 [1]	180 [3]	150 [1]	---	350 [1]	---	---	---	0.6 [2]	6.9 [3]	45 [2]	---	---	1 [2]	20 [3]	---	---		1 [2]	---	---		33 [2]	130 [2]	200 [1]	---						
Human Health Guidelines (Residential/Parkland)						15600 [o]	7.5 [3]	100 [1]	6800 [2]	38 [1]	---	4300 [3]	3 [1]	---	100 [1]	22 [3]	15000 [1]	11000 [o]	500 [1]	32 [o]	---	380 [o]	6.6 [2]	110 [3]	200 [2]	---	---	80 [2]	77 [3]	---	9400 [o]		1 [2]	9400 [o]	---		23 [2]	39 [3]	5600 [3]	1.3 [o]	%	%	%	%		
Reported Detection Limit						50	0.1	0.1	0.5	0.1	0.2	5	0.02	50	0.5	0.1	0.5	50	0.5	2	100	1	0.05	0.1	2.5	50	100	0.2	0.1	50	0.5		0.05	2	1.0		0	0	2	1	0.1	1	0.1	1		
18-BH18-01	31-Aug-18	2018	0.0-0.15	Surface	Porcupine Creek	5109	8.0	30	273	0.1	0.1	49	0.06	15359	1176	107	37	41394	2.4	16	192810	672	0.08	0.6	1645	25	50	0.1	0.2	25	144.9	500	0.025	1	50	1.29	0.91	30	18	0.5			50-75	Trace <1		
18-BH18-DUP-03 (BH18-01)	31-Aug-18	2018	0.0-0.15	Surface	Porcupine Creek	5065	7.1	24.0	168	0.2	0.1	63	0.08	13072	1111	64	54	33007	3.1	14	150327	465	0.11	1.0	1133	58	109	0.1	0.1	25	79.4	500	0.025	1	67	0.25	0.63	24	20	0.5			25-50				
BH2018-18-02/80'	13-Sep-18	2018	24.3	Depth	Porcupine Creek	10314	2.7	13.5	123	0.4	0.4	3	0.76	6074	68	24	43	43322	23.8	24	14170	618	0.14	4.9	131	672	732	1.4	0.2	74	35.1	500	0.069	1	40	0.25	1.28	19	102	10.7			1-5	Trace <1			
18-BH19-01	31-Aug-18	2018	0.0-0.15	Surface	Porcupine Creek	3920	14.4	41	224	0.2	0.1	47	0.88	18400	411	44	36	39100	12.1	9	74800	480	0.14	8.1	857	479	410	4.3	0.3	25	259.0	500	0.095	1	24	1.35	1.01	20	111	3.2			25-50	Trace <1			
BH2018-19-02/65'	10-Sep-18	2018	19.8	Depth	Porcupine Creek	3890	0.7	5.9	60	0.5	0.4	3	0.30	8120	13	16	28	36200	7.3	3	3790	529	0.33	1.6	42	607	780	0.7	0.2	99	43.8	1700	0.110	1	42	0.25	1.50	16	145	9.2	0.05		Trace <1				
18-PORCR-01	31-Aug-18	2018	0.0-0.15	Surface	Porcupine Creek	7200	3.7	17.5	86	0.5	0.3	3	4.23	12527	20	18	76	33987	17.5	12	6503	356	0.03	21.6	87	784	534	8.3	0.8	25	74.0	2288	0.242	1	4	0.25	1.44	36	377	9.0			0.6	Trace <1			
18-PORCR-DUP-02 (PORCP-01)	31-Aug-18	2018	0.0-0.15	Surface	Porcupine Creek	6285	4.6	21.6	83	0.5	0.3	3	5.75	14488	25	20	75	39107	19.7	10	6460	461	0.03	28.8	105	699	512	10.5	0.9	25	82.1	1525	0.260	1	4	0.25	1.50	42	403	10.0			0.2	Trace <1			
18-PORCR-02	31-Aug-18	2018	0	Surface	Porcupine Creek	2622	3.6	17.6	36	0.3	0.3	3	1.38	20111	10	6	26	27667	24.7	1	1967	148	0.59	19.0	39	452	500	9.2	0.5	25	50.8	13778	0.757	1	4	0.25	1.59	33	169	9.3			0.7	Trace <1			
18-PORCR-03	31-Aug-18	2018	0	Surface	Porcupine Creek	4544	3.6	15.9	137	0.3	0.1	12	1.44	19111	218	24	36	32333	13.9	6	33111	446	0.23	8.6	334	621	600	4.0	0.4	66	106.8	500	0.180	1	18	0.25	1.43	23	122	7.8			25-50	Trace <1			
18-PORCR-04	31-Aug-18	2018	0	Surface	Porcupine Creek	3056	2.2	37	97	0.6	0.3	3	1.11	22778	90	22	54	42667	14.8	1	17111	534	0.21	10.6	161	770	578	3.8	0.5	25	141.1	1333	0.177	1	5	0.25	1.79	23	159	10.8			0.7	Trace <1			
18-PORCR-05	31-Aug-18	2018	0	Surface	Porcupine Creek	4544	24.2	105	133	0.1	0.1	99	0.05	5433	1322	96	6	47667	0.6	5	218889	626	0.03	0.4	2022	25	50	0.1	0.1	25	39.4	500	0.025	1	53	0.60	0.03	29	11	0.5			25-50			<1	

Minimum, Median, and Maximum for all Samples

Parameter (mg/kg)	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulpher (S)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)
Minimum	2622	0.66	5.9	36	0.1	0.1	3	0.05	5433	10	6	6.4	27667	0.6	1	1967	148	0.025	0.4	39	25	50	0.1	0.1	25	35	500	0.025	1	4	0.25	0.025	16	11	0.5
Median	4544	3.7	21.6	123	0.3	0.3	3	0.9	14488	90	24	37	39100	14	9	17111	480	0.1	8	161	607	512	4	0.3	25	79	500	0.1	1	24	0.25	1.4	24	122	9
Maximum	10314	24	105	273	0.6	0.4	99	6	22778	1322	107	76	47667	25	24	218889	672	1	29	2022	784	780	10	1	99	259	13778	0.8	1	67	1.35	1.79	42	403	11

Minimum, Median, and Maximum for all Surface Samples

Parameter (mg/kg)	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulpher (S)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)
Minimum	2622	2	16	36	0	0	3	0	5433	10	6	6	27667	1	1	1967	148	0	0	39	25	50	0	0	25	39	500	0	1	4	0	0	20	11	1
Median	4544	5	24	133	0.3	0.1	12.0	1.1	15359	218	24	37	39100	14	9	33111	465	0.11	9	334	479	500	4	0.40	25	82	500	0.18	1	18	0.25	1.43	29	122	8
Maximum	7200	24	105	273	0.6	0.3	99	6	22778	1322	107	76	47667	25	16	218889	672	0.6	29	2022	784	600	10	0.92	66	259	13778	0.76	1	67	1.35	1.79	42	403	11

Minimum, Median, and Maximum for Deep Samples

Parameter (mg/kg)	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulpher (S)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)
Minimum	3890	0.66	5.9	60.0	0.4	0.4	2.5	0.3	6074	13	16	27.9	36200	7.3	3.3	3790	529	0.14	1.6	42	607	732	0.68	0.16	74	35	500.0	0.07	1.00	40	0.25	1.28	16	102	9
Median	7102	2	10	92	0.4	0.4	2.5	0.5	7097	40	20	35	39761	16	14	8980	573	0.2	3	87	640	756	1	0.18	87	39	1100	0.09	1.00	41	0.25	1.39	17	123	10
Maximum	10314	3	13	123	0.5	0.4	2.5	0.8	8120	68	24	43	43322	24	24	14170	618	0	5	131	672	780	1	0.21	99	44	1700	0.11	1.00	42	0.25	1.50	19	145	11

Table 4-9 - Mill & Common Areas - Asbestos & Metals

Legend

Result exceeds agricultural guideline:

Result exceeds residential/parkland guideline:

Surface sample:

Sampled at depth:

Sample ID	Date	Year	Depth (m)	Depth Category	Area	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulpher (S)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)	Asbestos By Point Count	Other Fibres: Cellulose	Asbestos: Chrysotile	Mica	Other Fibres	Other Fibres: Synthetic
Parameter																																								**Asbestos**					
Environmental Health Guidelines (Agricultural)						---	20 [3]	25 [1]	390 [3]	4 [3]	---	120 [3]	9 [1]	---	50 [1]	180 [3]	150 [1]	---	350 [1]	---	---	---	0.6 [2]	6.9 [3]	45 [2]	---	---	1 [2]	20 [3]	---	---		1 [2]	---	---		33 [2]	130 [2]	200 [1]	---						
Human Health Guidelines (Residential/Parkland)						15600 [o]	7.5 [3]	100 [1]	6800 [2]	38 [1]	---	4300 [3]	3 [1]	---	100 [1]	22 [3]	15000 [1]	11000 [o]	500 [1]	32 [o]	---	380 [o]	6.6 [2]	110 [3]	200 [2]	---	---	80 [2]	77 [3]	---	9400 [o]		1 [2]	9400 [o]	---		23 [2]	39 [3]	5600 [3]	1.3 [o]	%	%	%	%		
Reported Detection Limit						50	0.1	0.1	0.5	0.1	0.2	5	0.02	50	0.5	0.1	0.5	50	0.5	2	100	1	0.05	0.1	2.5	50	100	0.2	0.1	50	0.5		0.05	2	1.0		0	0	2	1	0.1	1	0.1	1		
16-MILL-SS01	31-Aug-16	2016	0 - 0.15	Surface	Mill Mine	8821	3.2	14.8	156	0.4	0.1	18	0.37	2051	174	18	21	24738	13.6	6	29947	346	0.07	2.0	271	404	651	0.6	0.1	65	22.7		0.098	1	302		0.88	32	65	3.3	-	1-5	1-5	-		
16-MILL-SS02	31-Aug-16	2016	0 - 0.15	Surface	Mill Mine	8361	7.5	27	239	0.2	0.1	52	0.26	5593	546	74	19	64483	10.8	8	85640	517	0.25	1.2	1148	529	551	0.4	0.1	79	49.7		0.070	1	259		0.71	36	51	1.4	-	1-5	5-10	Trace <1		
16-MILL-SS03	31-Aug-16	2016	0 - 0.15	Surface	Mill Mine	7885	1.0	9.6	135	0.4	0.1	3	0.22	1350	22	11	18	17534	9.2	5	3156	492	0.03	2.0	24	295	436	0.5	0.1	63	14.8		0.025	1	323		0.68	30	48	3.0	-	1-5	1-5	Trace <1		
16-DUP-2 (16-MILL-SS03)	31-Aug-16	2016	0 - 0.15	Surface	Mill Mine	7859	0.7	8.2	138	0.3	0.1	3	0.20	1498	24	11	18	17616	13.9	6	3587	514	0.03	1.2	26	372	411	0.4	0.1	53	19.1		0.025	1	303		0.71	29	49	3.0	-	Trace <1	0.8	Trace <1		
16-MILL-SS04	31-Aug-16	2016	0 - 0.15	Surface	Mill Mine	9288	1.4	9.8	143	0.4	0.1	6	0.28	2206	89	11	21	20868	13.0	6	11894	279	0.06	1.5	111	359	649	0.4	0.1	84	18.6		0.063	1	349		0.82	32	58	2.1	-	1-5	1-5	Trace <1		
16-MINE-SS05	29-Aug-16	2016	0 - 0.15	Surface	Mill Mine	14491	1.0	11.5	334	0.5	0.1	3	0.22	8219	32	10	29	25328	9.3	15	6308	427	0.03	1.4	31	697	1023	0.4	0.2	331	41.0		0.086	1	605		0.59	60	72	1.9	-	1-5	0.3	Trace <1		
16-MINE-SS06	29-Aug-16	2016	0 - 0.15	Surface	Mill Mine	14783	1.2	6.4	594	0.5	0.1	3	0.92	5447	75	11	27	18276	11.3	8	9805	1026	0.16	2.0	99	669	1409	0.9	2.6	143	47.1		0.128	1	255		0.84	44	72	0.5	-	50-75	1-5	Trace <1		
16-MINE-SS07	29-Aug-16	2016	0 - 0.15	Surface	Mill Mine	6510	2.4	9.9	114	0.4	0.3	3	0.88	14407	21	14	62	32977	22.5	14	9285	683	0.38	8.3	65	444	630	2.4	0.8	25	101.3		0.101	1	8		0.85	16	122	4.3	-	1-5	0.6	Trace <1		
16-MINE-SS08	30-Aug-16	2016	0 - 0.15	Surface	Mill Mine	6470	15.5	49	1659	0.1	0.1	73	0.36	3197	1148	57	8	34241	2.8	10	104994	651	0.03	0.3	1122	426	473	0.1	0.1	148	44.6		0.025	1	191		0.60	30	30	0.5	-	75-100	1-5	Trace <1		
16-MINE-SS09	31-Aug-16	2016	0 - 0.15	Surface	Mill Mine	8026	5.0	13.7	1099	0.3	0.1	22	0.30	8814	350	35	19	21062	3.9	6	50335	485	0.03	0.6	619	582	487	0.1	0.1	232	74.2		0.025	1	246		0.46	25	34	0.5	-	75-100	1-5	Trace <1		
16-MINE-SS10	31-Aug-16	2016	0 - 0.15	Surface	Mill Mine	5943	2.1	8.4	207	0.2	0.1	12	0.88	19811	109	12	20	17275	8.0	6	15331	376	0.03	3.6	159	683	667	1.8	0.2	96	87.8		0.025	1	122		1.19	21	66	2.4	-	75-100	1-5	Trace <1		
18-MILL-01	2-Sep-18	2018	0.0-0.15	Surface	Mill Mine	17744	1.0	12.9	392	0.5	0.1	3	0.14	4550	41	10	36	27123	10.8	13	5754	392	0.07	1.2	35	630	875	0.5	0.2	234	37.4	500	0.120	1	797	0.25	1.33	65	76	5.4			0.3	Trace <1		
18-MILL-DUP-05 (18-MILL-01)	2-Sep-18	2018	0.0-0.15	Surface	Mill Mine	18000	1.1	11.4	334	0.5	0.1	3	0.13	4400	39	10	32	26400	10.1	12	6380	391	0.05	1.1	38	628	880	0.4	0.1	238	34.0	500	0.123	1	753	0.25	1.39	60	67	5.8	0.05			Trace <1		
18-MILL-02	2-Sep-18	2018	0.0-0.15	Surface	Mill Mine	3574	2.4	8.0	110	0.2	0.1	11	0.31	2307	99	12	16	13942	12.5	1	12548	276	0.03	1.5	152	279	583	0.4	0.1	25	16.3	500	0.025	1	106	0.25	0.62	14	41	0.5			10-25	Trace <1		
18-MILL-03	2-Sep-18	2018	0.0-0.15	Surface	Mill Mine	14702	1.4	12.5	236	0.4	0.1	3	0.14	2370	51	11	24	22307	14.2	9	6502	255	0.03	1.4	55	256	672	0.4	0.1	112	20.8	500	0.096	1	513	0.25	0.71	52	61	0.5			5-10	Trace <1		
18-MILL-04	2-Sep-18	2018	0.0-0.15	Surface	Mill Mine	4385	3.3	8.9	73	0.1	0.1	9	0.20	5475	128	13	11	17871	10.1	4	15082	302	0.03	1.0	193	234	456	0.4	0.1	25	24.8	500	0.025	1	107	0.25	0.39	15	34	2.0			1-5	Trace <1		
18-MILL-05	2-Sep-18	2018	0.0-0.15	Surface	Mill Mine	3232	1.4	5.9	72	0.1	0.1	3	0.21	1356	85	8	12	9810	14.4	1	8695	152	0.03	1.1	106	143	482	0.4	0.2	25	9.8	500	0.025	1	93	0.25	0.52	11	33	1.9			1-5	Trace <1		
18-MILL-06	2-Sep-18	2018	0.0-0.15	Surface	Mill Mine	2319	1.1	4.8	87	0.2	0.1	3	0.28	11229	30	9	52	17997	11.8	1	7452	521	0.08	1.0	77	366	710	3.2	0.7	25	49.9	500	0.025	1	28	0.25	0.55	10	90	1.9			0.7	Trace <1		
18-MILL-07	2-Sep-18	2018	0.0-0.15	Surface	Mill Mine	1939	1.6	5.9	103	0.2	0.1	3	0.90	14068	14	12	83	23447	12.6	1	6185	420	0.21	3.4	76	335	824	7.1	1.8	25	71.7	500	0.079	1	9	0.25	0.75	10	151	5.8			0.8	Trace <1		
18-MILL-08	2-Sep-18	2018	0.0-0.15	Surface	Mill Mine	5779	1.0	4.6	64	0.3	0.1	3	0.35	5171	47	9	24	17364	12.9	13	7617	364	0.03	1.5	67	274	469	0.7	0.2	76	33.8	500	0.025	1	32	0.25	0.62	10	55	1.8			1-5	Trace <1		
18-MILL-09	2-Sep-18	2018	0.0-0.15	Surface	Mill Mine	5095	1.7	8.3	134	0.2	0.1	3	0.97	6743	50	12	36	25475	11.9	8	7795	847	0.08	4.0	85	455	583	2.6	0.5	25	41.4	500	0.089	1	48	0.25	0.99	15	105	1.4			1-5	Trace <1		
18-MILL-10	2-Sep-18	2018	0.0-0.15	Surface	Mill Mine	11014	4.6	11.6	189	0.4	0.1	18	1.24	19518	203	25	47	35995	13.6	17	37389	630	0.22	5.7	322	535	621	2.5	0.3	150	99.4	1521	0.165	1	98	0.25	1.05	29	121	6.1			10-25	Trace <1		
18BH20-01	13-Aug-18	2018	0.0-0.15	Surface	Mill Mine	5313	4.3	12.6	134	0.3	0.1	29	0.22	1754	257	37	16	33383	7.5	4	42607	417	0.06	1.6	609	216	291	0.5	0.1	25	13.8	500	0.025	1	192	0.25	0.54	25	52	1.7		1-5	10-25	Trace <1		
18BH20-02	13-Aug-18	2018	2.5	Depth	Mill Mine	6040	1.4	10.7	148	0.4	0.1	3	0.47	1290	21	8	25	23200	13.1	4	2550	379	0.10	2.1	27	508	720	0.9	0.2	53	13.5	500	0.061	1	129	0.25	1.44	24	70	9.7	0.05	Trace <1		Trace <1		
18BH20-03	13-Aug-18	2018	5	Depth	Mill Mine	6667	1.5	7.8	52	0.3	0.1	3	0.41	1103	20	10	31	16040	14.2	6	3930	152	0.10	1.9	27	317	431	2.2	0.2	25	8.7	500	0.062	1	167	0.25	0.80	22	74	8.0		Trace <1	0.1	Trace <1		
18BH20-04	13-Aug-18	2018	7.5	Depth	Mill Mine	13300	1.3	13.3	184	0.5	0.1	3	0.98	3590	35	18	28	28100	16.0	10	4780	954	0.13	2.7	43	575	730	1.6	0.3	95	26.1	500	0.118	1	387	0.25	2.34	38	107	15.1	0.05	Trace <1		Trace <1		
18BH20-05	13-Aug-18	2018	10	Depth	Mill Mine	9050	2.0	12.0	130	0.4	0.1	3	0.42	1820	30	12	26	21700	16.2	6	4220	241	0.23	3.6	32	385	770	2.2	0.3	75	19.8	500	0.079	1	354	0.25	1.81	31	97	12.4	0.05	Trace <1		Trace <1		
18BH20-06	13-Aug-18	2018	12	Depth	Mill Mine	5343	2.1	8.5	73	0.4	0.1	3	0.60	1233	16	9	26	21554	14.9	5	3038	322	0.06	1.8	27	483	381	1.5	0.5	25	13.2	500	0.250	1	248	0.25	2.04	22	90	8.4		Trace <1	0.1	1-5		

Table 4-9 - Mill & Common Areas - Asbestos & Metals

Legend

Result exceeds agricultural guideline:

Result exceeds residential/parkland guideline:

Surface sample:

Sampled at depth:

Sample ID	Date	Year	Depth (m)	Depth Category	Area	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulpher (S)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)	Asbestos By Point Count	Other Fibres: Cellulose	Asbestos: Chrysotile	Mica	Other Fibres	Other Fibres: Synthetic
Parameter																																									**Asbestos**					
Environmental Health Guidelines (Agricultural)																																													
						---	20 [3]	25 [1]	390 [3]	4 [3]	---	120 [3]	9 [1]	---	50 [1]	180 [3]	150 [1]	---	350 [1]	---	---	---	0.6 [2]	6.9 [3]	45 [2]	---	---	1 [2]	20 [3]	---	---		1 [2]	---	---		33 [2]	130 [2]	200 [1]	---						
Human Health Guidelines (Residential/Parkland)																																													
						15600 [o]	7.5 [3]	100 [1]	6800 [2]	38 [1]	---	4300 [3]	3 [1]	---	100 [1]	22 [3]	15000 [1]	11000 [o]	500 [1]	32 [o]	---	380 [o]	6.6 [2]	110 [3]	200 [2]	---	---	80 [2]	77 [3]	---	9400 [o]		1 [2]	9400 [o]	---		23 [2]	39 [3]	5600 [3]	1.3 [o]	%	%	%	%		
Reported Detection Limit																																													
						50	0.1	0.1	0.5	0.1	0.2	5	0.02	50	0.5	0.1	0.5	50	0.5	2	100	1	0.05	0.1	2.5	50	100	0.2	0.1	50	0.5		0.05	2	1.0		0	0	2	1	0.1	1	0.1	1		
Results (mg/kg)																																								**Results (%)**					
18BH21-01	13-Aug-18	2018	0.0-0.15	Surface	Mill Mine	11200	1.2	10.1	199	0.4	0.1	3	0.30	2390	26	9	27	21700	12.4	7	3750	303	0.08	1.8	28	431	750	0.5	0.2	108	20.1	500	0.077	1	414	0.25	0.96	38	61	5.0	0.05	1-5		Trace <1		
18BH21-02	13-Aug-18	2018	2.5	Depth	Mill Mine	4920	1.5	8.3	75	0.3	0.1	3	0.64	810	18	9	23	21900	11.6	3	2640	208	0.08	1.8	26	367	570	0.7	0.2	25	8.4	500	0.058	1	92	0.25	0.81	21	69	7.4	0.05	Trace <1		1-5		
18BH21-03	13-Aug-18	2018	5	Depth	Mill Mine	11000	1.5	16.5	247	0.4	0.2	3	0.49	2650	31	13	36	32400	18.0	8	4280	395	0.06	3.4	35	795	920	1.3	0.2	117	22.1	500	0.094	1	412	0.25	1.39	40	94	12.9	0.05	Trace <1		Trace <1		
18BH21-04	13-Aug-18	2018	7.5	Depth	Mill Mine	11400	1.0	12.6	211	0.4	0.1	3	0.39	2440	29	12	24	25600	16.4	8	3440	432	0.08	3.2	29	405	660	0.7	0.1	75	19.2	500	0.074	1	209	0.25	1.63	30	70	10.2	0.05	Trace <1		Trace <1		
18BH21-DUP-01	13-Aug-18	2018	7.5	Depth	Mill Mine	19300	0.8	12.1	382	0.7	0.2	3	0.51	4340	41	25	30	32400	19.2	14	4600	906	0.11	2.6	40	360	870	0.6	0.2	128	28.6	500	0.114	1	240	0.25	2.41	41	103	9.1	0.05	Trace <1		Trace <1		
18BH21-05	13-Aug-18	2018	10	Depth	Mill Mine	6420	1.7	13.5	125	0.3	0.1	3	0.59	1600	27	12	20	25100	13.6	4	3790	436	0.07	2.5	30	414	530	1.4	0.1	25	13.2	500	0.052	1	198	0.25	0.94	28	76	8.2	0.05	Trace <1		Trace <1		
18BH21-06	13-Aug-18	2018	12	Depth	Mill Mine	6720	1.4	9.5	139	0.3	0.1	3	0.43	1210	22	7	22	20100	16.7	4	3410	131	0.06	1.8	23	629	720	0.8	0.1	25	13.3	500	0.025	1	135	0.62	1.16	21	99	7.3	0.05	Trace <1		Trace <1		

Minimum, Median, and Maximum for all Samples

Parameter (mg/kg)	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulpher (S)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)
Minimum	1939	0.74	4.6	52	0.1	0.1	3	0.13	810	14	7	7.8	9810	2.8	1	2550	131	0.025	0.3	23	143	291	0.1	0.1	25	8	500	0.025	1	8	0.25	0.387	10	30	0.5
Median	7859	1.5	10.1	143	0.4	0.1	3	0.4	2650	39	12	24	22307	13	6	6380	395	0.1	2	55	414	649	0.7	0.2	75	23	500	0.1	1	209	0.25	0.8	29	70	3
Maximum	19300	15	49	1659	0.7	0.3	73.2	1.2	19811	1148	74	83	64483	23	16.6	104994	1026	0.4	8	1148	795	1409	7	3	331	101	1521	0.3	1	797	0.62	2.41	65	150.8	15

Minimum, Median, and Maximum for all Surface Samples

Parameter (mg/kg)	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulpher (S)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)
Minimum	1939	1	5	64	0	0	3	0	1350	14	8	8	9810	3	1	3156	152	0	0	24	143	291	0	0	25	10	0	0	1	8	0	0	10	30	1
Median	7872	1	10	149	0.3	0.1	2.5	0.3	4861	63	11	23	22003	12	7	8990	418	0.05	2	92	415	625	0.47	0.15	77	36	500	0.07	1	219	0.25	0.71	29	61	2
Maximum	18000	15	49	1659	0.5	0.3	73	1.2	19811	1148	74	83	64483	23	17	104994	1026	0.4	8	1148	697	1409	7	2.61	331	101	1521	0.16	1	797	0.25	1.39	65	151	6

Minimum, Median, and Maximum for Deep Samples

Parameter (mg/kg)	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulpher (S)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)
Minimum	4920	0.75	7.8	52.2	0.3	0.1	2.5	0.4	810	16	7	20.2	16040	11.6	3.0	2550	131	0.06	1.8	23	317	381	0.56	0.10	25	8	500.0	0.03	1.00	92	0.25	0.80	21	69	7
Median	6720	1	12	139	0.4	0.1	2.5	0.5	1600	27	12	26	23200	16	6	3790	379	0.1	3	29	414	720	1	0.18	53	14	500	0.07	1.00	209	0.25	1.44	28	90	9
Maximum	19300	2	17	382	0.7	0.2	2.5	1.0	4340	41	25	36	32400	19	14	4780	954	0	4	43	795	920	2	0.53	128	29	500	0.25	1.00	412	0.62	2.41	41	107	15

Table 4-10 - Mill Area Hydrocarbons and PCB Data

Sample ID	Lowest Detection Limit	Units	CCME PHC & PCB Criteria (Coarse Grained Subsoil/ Residential, Parkland)	18BH20-01	18BH20-02	18BH20-03	18BH20-04	18BH20-05	18BH20-06	18BH21-01	18BH21-02	18BH21-03	18BH21-04	18BH21-DUP-01	18BH21-05	18BH21-06
Parameter			Depth Increment	0.0-0.15	2.5	5.00	7.50	10.00	12.00	0.0-0.15	2.5	5	7.5	7.5	10	12
			Sample Matrix	Waste	Soil	Waste	Soil	Soil	Waste	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Volatile Organic Compounds (Soil)																
Benzene	0.0050	mg/kg	0.03	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzene	0.0050	mg/kg wwt							<0.0050							
Ethylbenzene	0.010	mg/kg	0.082	<0.010	<0.010	<0.010	<0.010	<0.010		<0.010	0.532	0.017	0.025	0.063	<0.010	<0.010
Ethylbenzene	0.010	mg/kg wwt							<0.010							
Toluene	0.050	mg/kg	0.37	<0.050	<0.050	<0.050	<0.050	<0.050		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Toluene	0.050	mg/kg wwt							<0.050							
o-Xylene	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050		<0.050	3.06	<0.050	<0.050	<0.050	<0.050	<0.050
o-Xylene	0.050	mg/kg wwt							<0.050							
m+p-Xylene	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050		<0.050	1.02	<0.050	<0.050	<0.050	<0.050	<0.050
m+p-Xylene	0.050	mg/kg wwt							<0.050							
Xylenes	0.10	mg/kg	11	<0.10	<0.10	<0.10	<0.10	<0.10		<0.10	4.08	<0.10	<0.10	<0.10	<0.10	<0.10
Xylenes	0.10	mg/kg wwt							<0.10							
4-Bromofluorobenzene (SS)		%		94.3	123.9	124.9	113	119.1	126.6	101.1	SMI	105.7	124	127.8	115.1	126.8
3,4-Dichlorotoluene (SS)		%		97.9	107.2	108.4	96.1	127.1	106.4	116.4	SMI	91.4	88.8	103.8	114.7	103.7
1,4-Difluorobenzene (SS)		%		83	83.5	101.2	92.7	87.9	106.7	83.3	97.8	81.3	95	99.5	95.7	84.1
Hydrocarbons (Soil)																
F1 (C6-C10)	10	mg/kg	30	<10	<10	<10	<10	<10	<10	<10	354	11	<10	<10	<10	<10
F1-BTEX	10	mg/kg		<10	<10	<10	<10	<10	<10	<10	349	11	<10	<10	<10	<10
F2 (C10-C16)	20	mg/kg	150	<20	<20	<20	<20	76	<20	<20	1770	<20	<20	<20	<20	<20
F3 (C16-C34)	20	mg/kg	300	57	<20	<20	33	<20	<20	<20	177	<20	<20	<20	<20	<20
F4 (C34-C50)	20	mg/kg	2800	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Total Hydrocarbons (C6-C	20	mg/kg		57	<20	<20	33	76	<20	<20	2300	<20	<20	<20	<20	<20
Chrom. to baseline at nC50		-		YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
2-Bromobenzotrifluoride		%		81.3	90	89.2	91.4	70.7	80.5	77.6	108.9	87.1	88	86.1	87.7	71.5
Polychlorinated Biphenyls (Soil)																
Aroclor 1016	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Aroclor 1221	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Aroclor 1232	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Aroclor 1242	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Aroclor 1248	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Aroclor 1254	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Aroclor 1260	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Aroclor 1262	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Aroclor 1268	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Decachlorobiphenyl		%		91.3	86.9	92.7	SMI	80.4	83.2	89.9	96	SMI	109.7	83.9		
Total PCBs	0.050	mg/kg	1.3	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050

Qualifier Legend

SMI	Surrogate recovery could not be measured due to sample matrix interference.
SOL:MI	Surrogate recovery outside acceptable limits due to matrix interference
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

Legend

Parameter detected

Result exceeds residential/parkland guideline:

Table 4-11 - Background - Asbestos & Metals

Legend

Result exceeds agricultural guideline:

Result exceeds residential/parkland guideline:

Surface sample:

Sampled at depth:

| | | |

Appendix A
Daily Field Reports

Clinton Creek Remediation Project
Daily Field Program Report
Date: __09 august 2018___

Weather Conditions: Sunny	**Wood Field Coordinator:** Karen Hincks
Temperatures: Low: 2ºC High: 11ºC	**On-Site Shift:** 7:00 am – 7:00 pm

Safety Metrics	Day	Daily Status	Contractor	Week To Date	Weekly Status
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	0	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

1. Safety Health and Environment

- Completed site orientation for Challenger Geomatics surveyor
- Completed tailgate safety meeting and FLRA

2. Key Activities

- Completed survey of borehole locations

3. Air Monitoring Data

- Not yet started

4. Visitors

- None

5. Observations

- Surveyor had initially planned to complete the site work on their own. Wood staff on site did not agree, and one of the Wood staff was with the surveyor during the entire day.
- An off road vehicle such as a side-by-side should have been used for the work, as many of the borehole locations were difficult to access and required long walks away from vehicles. Safety

Clinton Creek Remediation Project
Daily Field Program Report
Date: __09 august 2018___

protocols such as carrying bear spray and sat phones and working in teams was used to lower the hazards.

6. Issues/Concerns

- Identification/discussion of any issues that generate realized or potential risks to program outcomes, schedule and/or cost.
- No comment necessary if no such issues currently in play.

7. Drilling Progress

- See attached spreadsheet.

8. Driller Daily Report

- See attached spreadsheet.

9. Staff Summary

Wood		Subcontractors						Totals	
		Driller		Surveyors		Others			
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks	12								
Chris Jeffrey	12								
				Curtis Blackwood	12				

10. Attachments

- Borehole Tracking - NA
- Driller Daily Report - NA

11. Photographs

Clinton Creek Remediation Project
Daily Field Program Report
Date: __09 august 2018___

Weather Conditions: Sunny	**Wood Field Coordinator:** Karen Hincks
Temperatures: Low: 5ºC High: 15ºC	**On-Site Shift:** NA

Safety Metrics	Day	Daily Status	Contractor	Week To Date	Weekly Status
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	0	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

1. Safety Health and Environment

- No on site work. Midnight Sun were moving equipment from Whitehorse to Dawson City

2. Key Activities

- Various tasks in Dawson city, including fuelling vehicles, picking up additional supplies, working out logistics for instrument transport, people moving planning.

3. Air Monitoring Data

- NA

4. Visitors

- NA

5. Observations

- NA

6. Issues/Concerns

- NA

7. Drilling Progress

Clinton Creek Remediation Project
Daily Field Program Report
Date: __09 august 2018___

- NA

8. Driller Daily Report

- NA

9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks	10						
Chris Jeffrey	10						
`Totals	20	-		-		-	

10. Attachments

- Borehole Tracking - NA
- Driller Daily Report - NA

11. Photographs

- NA

Clinton Creek Remediation Project
Daily Field Program Report
Date: __11 august 2018___

Weather Conditions: Sunny	**Wood Field Coordinator:** Karen Hincks
Temperatures: Low: 6ºC High: 19ºC	**On-Site Shift:** 10 am – 6 pm

Safety Metrics	Day	Daily Status	Contractor	Week To Date	Weekly Status
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	0	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

1. Safety Health and Environment

- Completed tailgate meeting for the drive to camp.

2. Key Activities

- Mobilize to camp with supplies
- Return to Dawson City to pick up air monitoring equipment.
- Work with camp operators on schedule and logistics for people staying in camp.
- Unload supplies into site office once it arrived on site and was set up.
- Dozer arrived at camp – no work done on site.

3. Air Monitoring Data

- Picked up air monitoring gear from town. Still missing one piece.

4. Visitors

- Total North on site to set up internet connection.
- EDI surface water quality people are on site, but did not interact with them.

5. Observations

Clinton Creek Remediation Project
Daily Field Program Report
Date: __11 august 2018___

- NA

6. Issues/Concerns

- NA

7. Drilling Progress

- NA

8. Driller Daily Report

- NA

9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks	12	Glenn Thiessen	12			Andrew (total north)	-
Chris Jeffrey	12	Carl McKenzie	12			Devon (total north)	-
Katrina Nokelby	12	Galen Clarke	12				
Yun Lu	12	Ricardo	12				
Sam Fuller	6						
`Totals	20	-		-		-	

10. Attachments

- Borehole Tracking - NA
- Driller Daily Report - NA

11. Photographs

- NA

Clinton Creek Remediation Project
Daily Field Program Report
Date: 12 August 2018

Weather Conditions: Sunny	**Wood Field Coordinator:** Karen Hincks
Temperatures: Low: 8ºC High: 18ºC	**On-Site Shift:** 7 am – 7 pm

Safety Metrics	Day	Daily Status	Contractor	Week To Date	Weekly Status
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	0	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

1. Safety Health and Environment

- Completed site orientation for Carl, Ricardo and Galen with Midnight Sun
- Completed a Wood tailgate meeting and FLRA for daily activities
- Wood employees implemented a communications protocol for check-ins during transit

2. Key Activities

- Wood:
  - Karen and Chris went in side-by-side and truck with Carl (MS) to borehole locations to discuss access requirements and pad building requirements. Plan for 13 August 2018 is to start with the drilling of 2018-BH20 and 2018-BH21, the environmental holes. These holes were selected as the instruments have not yet been shipped and will not be on site on 13 August 2018.
  - Karen and Chris prepared sample jars and bags for 2018-BH20 and 2018-BH21, as well as cleaned up the site office and set up the site office in preparation of full program kick-off of 13 August 2018.
  - Katrina and Yun mobilized from Whitehorse to Clinton Creek Camp Site. Left Whitehorse around 10 am.

Clinton Creek Remediation Project
Daily Field Program Report
Date: __12 August 2018___

- Sam mobilized from Whitehorse to Dawson City; will pick up lab trailer and lab technician in am on 13 August 2018 and mobilize to site.

- Midnight Sun:
  - Carl (dozer operator) went to borehole locations with Wood to discuss pad building, borehole locations, access requirements, etc.
  - Carl began opening up the access to the former plant area and prepping pads for the environmental boreholes (2018-BH20 and 2018-BH21).
  - Total North completed installation of internet at site office location
  - Ricardo and Galen were working on improving access road between the camp and site, trimming back tree branches and clearing the road for the arrival of more equipment.
  - 50k L fuel tank was delivered to near camp site, where it will be set up to be operated.
  - Jake, Justin, Mike, Peter and Terrance mobilized from Whitehorse to camp, with the drill rig and support vehicles, including the generator for the office trailer.
  - Sharon (EMT) mobilized from Whitehorse to site with the ambulance.

3. Air Monitoring Data

- Still one package missing from the sampling equipment; package is marked in transit.

4. Visitors

- Total North on site to set up internet connection.
- EDI surface water quality people are on site; they checked in with the Wood crew in the morning before heading to site. EDI will join in the tailgate safety meeting at 07:00 on 13 August 2018, to discuss any potential interactions between the crews and ensure that all teams whereabouts are known.

5. Observations

- In order to access the Porcupine Creek boreholes, we need access to the road to the location. The dozer built a road around the chain.

6. Issues/Concerns

- Instruments did not ship from Maple Ridge on 10 August; RST has assured us that they will ship air freight on 13 August 2018. Need to follow up to ensure that the instruments are shipped ASAP and, if necessary, are hot shotted from Whitehorse or Dawson City to site.

7. Drilling Progress

Clinton Creek Remediation Project
Daily Field Program Report
Date: __12 August 2018___

- Building drill pads. No drilling completed.

8. Driller Daily Report

- NA

9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks	12	Glenn Thiessen	?			Andrew (total north)	-
Chris Jeffrey	12	Carl McKenzie	12			Devon (total north)	-
Katrina Nokelby	12	Galen Clarke	?			Sharon (EMT)	Mob
Yun Lu	12	Ricardo	?				
Sam Fuller	12	Jake	Mob				
		Justin	Mob				
		Mike	Mob				
		Peter	Mob				
		Terrance	Mob				
`Totals	60	-		-		-	

10. Attachments

- Borehole Tracking - NA
- Driller Daily Report - NA

11. Photographs

- NA

Clinton Creek Remediation Project
Daily Field Program Report
Date: 14 August 2018

Weather Conditions: Sunny & Cloudy	**Wood Field Coordinator:** Sam Fuller / Karen Hincks
Temperatures: Low: 9ºC High: 18ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date	Weekly Status
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	1	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

1. Safety Health and Environment

- Completed a morning safety meeting with Wood and Midnight Sun employees.

2. Key Activities

- No Drilling today – Driller left site last night for a family funeral
- MSD improved the decontamination station for the lab work at the office (Figure 1).
- MSD improved the decontamination station at BH18-01, and new material purchased in Dawson, which arrived late in the day will be used to improve it further.
- The dozer continued to clear access in porcupine creek.
- KM marker were created for the access road.
- Bentonite, sand, grout, and other materials were moved to a midway point in the site.
- Toilet and shower trailer arrived at camp late in the evening.
- Part of the expected RST instruments were delivered late in the evening to camp. No SI casing arrived
  - Received the following:
    - 5 Priority 1 thermistors
    - All of the VWPs
    - 4 multi-channel data loggers
  - Not received:

Clinton Creek Remediation Project
Daily Field Program Report
Date: 14 August 2018

- 7 thermistors
- 11 data loggers
- 12 SI anchors and all of the SI casing.

3. Air Monitoring Data

- Equipment was not in Dawson City as expected. Will try again tomorrow. No air testing was performed today.

4. Visitors

- 2 persons from The Yukon Government arrived to inspect the work

5. Observations

- The decontamination area at BH1 need more improvement but is moved back further from the Drill site.
- Noted that the 2nd BH in the "BH Pair" will not be logged as per the SoW, except where there are data gaps in the first BH.

6. Issues/Concerns

- All RST instruments have still not arrived, the BH drilling will be impacted because we will have to drill all the BHs with instruments only first (priority 1) and then move the rig back to each location to drill the BH for the SI

7. Drilling Progress

- Completed BH20 and 21.
- BH18-01 at 21.35 m.

8. Driller Daily Report

- Attached

Clinton Creek Remediation Project
Daily Field Program Report
Date: 14 August 2018

9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks	12	Glenn Thiessen	?			Sharon Mondor (EMT)	?
Chris Jeffrey	12	Carl McKenzie	?				
Katrina Nokelby	12	Galen Clarke	?				
Yun Lu	12	Ricardo Pantlitz	?				
Sam Fuller	12	Jake Jacobs	?				
Sang Bang	12	Justin Jamieson	?				
		Mike Salisberg	?				
		Peter Jakestar	?				
		Terrance Ball	?				
`Totals	72	-		-		-	

Hrs for Contractor above will be finalised once comms are received from Karen regards the agreement for payment on the 14th as Jake the driller left for family reasons.

10. Attachments

- Borehole Tracking
- MSD LEMs
- Driller Daily Report - NA

Clinton Creek Remediation Project
Daily Field Program Report
Date: 14 August 2018

11. Photographs

Figure 1

Figure 2

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 15 August 2018

Weather Conditions: Sunny & Cloudy	**Wood Field Coordinator:** Sam Fuller / Karen Hincks
Temperatures: Low: 9ºC, High: 18ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date	Weekly Status
Lost Time Incidents	0	H	-	0	H
Restricted Work	0	H	-	0	H
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	1	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

1. Safety Health and Environment

- 2 employee informed Lead (SF) they were stopping work (See Section 6).
- Moose x 2 sighted at lake edge just NNE of BH1 (water extraction point, Fig 3).

2. Key Activities

- Driller Jake returned.
- Drilled BH1 from 21.35 m to 57.95 m
- Karl (Dozer) cleared BH18 & started to clear BH19.
- SF & Glenn Checked location for BH11 (see fig1 & 2).

3. Air Monitoring Data

- Equipment was not in Dawson City as expected. Will try again tomorrow. No air testing was performed today.

4. Visitors

- Trent Jamieson (MSD Manager)

5. Observations

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 15 August 2018

- Decon improved at BH1 but still not correct. A demonstration is required.

6. Issues/Concerns

- All RST instruments have still not arrived, the BH drilling will be impacted because we will have to drill all the BHs with instruments only first (priority 1) and then move the rig back to each location to drill the BH for the SI
- At 2230 SF was informed by Katrin Nokleby and Yun Lu, that they were unwilling to continue working at the site. Site lead informed PM and arranged telecon for 0615 Aug 16th.

7. Drilling Progress

- Completed BH20 and 21.
- BH18-01 drilled from 21.35 m to 57.95 m.

8. Driller Daily Report

To Follow

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 15 August 2018

9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks	12	Glenn Thiessen	12	Joshua Ojierenem	12	Sharon Mondor (EMT)	12
Chris Jeffrey	12	Carl McKenzie	12	Alex Machica	12		
Katrina Nokelby	12	Galen Clarke	12				
Yun Lu	12	Ricardo Pantlitz	12				
Sam Fuller	12	Jake Jacobs	12				
Sang Bang	12	Justin Jamieson	12				
		Mike Salisberg	12				
		Peter Jakestar	12				
		Terrance Ball	12				
	72	Trent Jamieson	12	-		-	
`Totals	**72**		**120**		**24**		**12**

*Cross-checked against the morning tailgate signings.

10. Attachments

- Borehole Tracking
- MSD LEMs
- FLHRAs

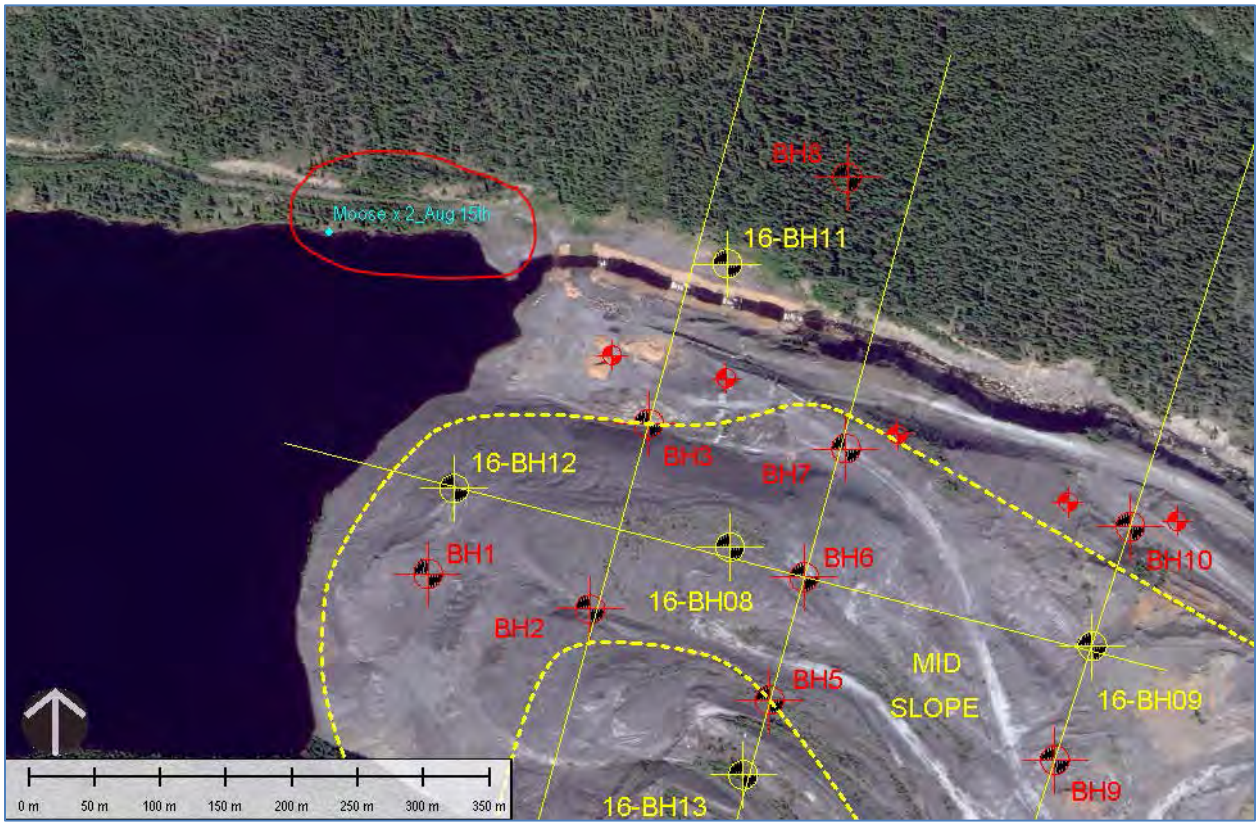
Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 15 August 2018

Figure 1

Figure 2

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 15 August 2018

Figure 3



Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 16 August 2018

Weather Conditions: Sunny & Cloudy	**Wood Field Coordinator:** Sam Fuller / Karen Hincks
Temperatures: Low: 9ºC, High: 18ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date	Weekly Status
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	1	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

1. Safety Health and Environment

- Shutdown at 1000 due to staff stopping work. Only essential tasks performed.
- Discussions throughout the day with Client regards shutdown.
- Meeting with Wood staff to fully understand the issues of concern.
- PM working to find replacement staff.

2. Key Activities

- None

3. Air Monitoring Data

- Air monitoring commenced

4. Visitors

- None

5. Observations

- none

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 16 August 2018

6. Issues/Concerns

- Three staff (Katrina Nokleby, Yun Lu & sang Bang) stopped work and will leave sites. Which means drilling cannot continue until replacement staff are arranged.
    - Yun Lu & sang Bang drove Katrina Nokleby to Dawson City for a flight early Aug 17, then returned for the eveing.
- All RST instruments have still not arrived, the BH drilling may be impacted because we will have to drill all the BHs with instruments only first (priority 1) and then move the rig back to each location to drill the BH for the SI

7. Drilling Progress

- Completed BH20 and 21.
- BH18-01 is at 57.95 m.

8. Driller Daily Report

To Follow

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: __16 August 2018___

9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	**Hours**	**Individual**	**Hours**	**Individual**	**Hours**	**Individual**	**Hours**
Karen Hincks	0	Glenn Thiessen	12	Joshua Ojierenem	12	Sharon Mondor (EMT)	12
Chris Jeffrey	12	Carl McKenzie	12	Alex Machica	12		
Katrina Nokelby	?	Galen Clarke	0				
Yun Lu	?	Ricardo Pantlitz	12				
Sam Fuller	12	Jake Jacobs	12				
Sang Bang	?	Justin Jamieson	0				
		Mike Salisberg	12				
		Peter Jakestar	0				
		Terrance Ball	12				
	72	Trent Jamieson	0	-		-	
`Totals	**72**		**120**		**24**		**12**

*Cross-checked against the morning tailgate signings.

10. Attachments

- Borehole Tracking, MSD LEMs, FLHRAs, 20180816_114700.Site Layout

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 16 August 2018

Figure 1

Figure 2

Figure 3

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 17 August 2018

Weather Conditions: Sunny & Cloudy	**Wood Field Coordinator:** Sam Fuller
Temperatures: Low: 9ºC, High: 18ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date*	Weekly Status*
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	1	L	-	2	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

*Friday is considered the end of the week.

1. Safety Health and Environment

- Near miss – SF nearly hit 2 moose when driving back to camp in the evening (See attached NMR).
- Set-up decon equipment for Carl when he leaves the tailings.
- created schematic for demonstration.
- Re-organised items on site (See section 2)

2. Key Activities

- No drilling, however various items were re-arranged and improved on site as follows (See Figure 2 for current locations of materials and facilities –
    - Re-organized the decon stations
    - Moved lab away from office area (Figure 1 & 2).
    - Moved 1 toilet to Laydown area (Figure 6)
    - Setup decon station at new lab location (Figure 1).
    - Moved logged core boxes away from office area (Figure 2 & 4).

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 17 August 2018

- Stabilized the wobbly office.

- Dozer clearing pads in lower tailings (completed BH12 & BH16) working towards BH14. Operator suggests he will need to create access to BH13 from the top due to steep terrain on approach to BH from below. He said there was no permafrost at BH15 which was a concern.
    - Set-up decon equipment for Carl when he leaves the tailings.
- Meeting with Wood staff to fully understand the issues of concern.
- PM working to find replacement staff.

3. Air Monitoring Data – data will be appended to the DR as they become available.

- Personal meters today – Medic, laborers x 2 & Dozer driver in Lower tailings.
- Area meters today – inside Dozer cab.
- Passive meters ongoing (See Figure 2 & 3)
    - Passive Meter_18-PAS-01 at Gate (start Aug 14th, Figure 7)
    - Passive Meter_18-PAS-02 at waste rock (start Aug 16th, Figure 5).
    - Passive Meter_18-PAS-03 Lower-tailings near pond (start Aug 16th)

4. New Visitors

- Client Reps did not come to site in the morning – they drove to Dawson.

5. Observations

- Two moose were nearly impacted on the drive back to camp ~1845

6. Issues/Concerns

- Shutdown due to staff leaving site – Efforts underway to arrange replacements.
- It is unclear if the RS instruments have arrived in Whitehorse. SF received conflicting information from Pacific Northwest couriers at 1700. The courier and the receiving warehouse are both closed until Tuesday Aug 28th.

7. Drilling Progress

- Completed BH20 and 21.
- BH18-01 is at 57.95 m.

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 17 August 2018

8. Driller Daily Report

To Follow

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 17 August 2018

9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks	0	Glenn Thiessen	12	Joshua Ojierenem	0	Sharon Mondor (EMT)	12
Chris Jeffrey	12	Carl McKenzie	12	Alex Machica	0		
Katrina Nokelby	0	Galen Clarke	0				
Yun Lu	1	Ricardo Pantlitz	12				
Sam Fuller	12	Jake Jacobs	12				
Sang Bang	1	Justin Jamieson	0				
		Mike Salisberg	12				
		Peter Jakestar	0				
		Terrance Ball	12				
		Trent Jamieson	0	-		-	
`Totals	**26**		**72**		**0**		**12**

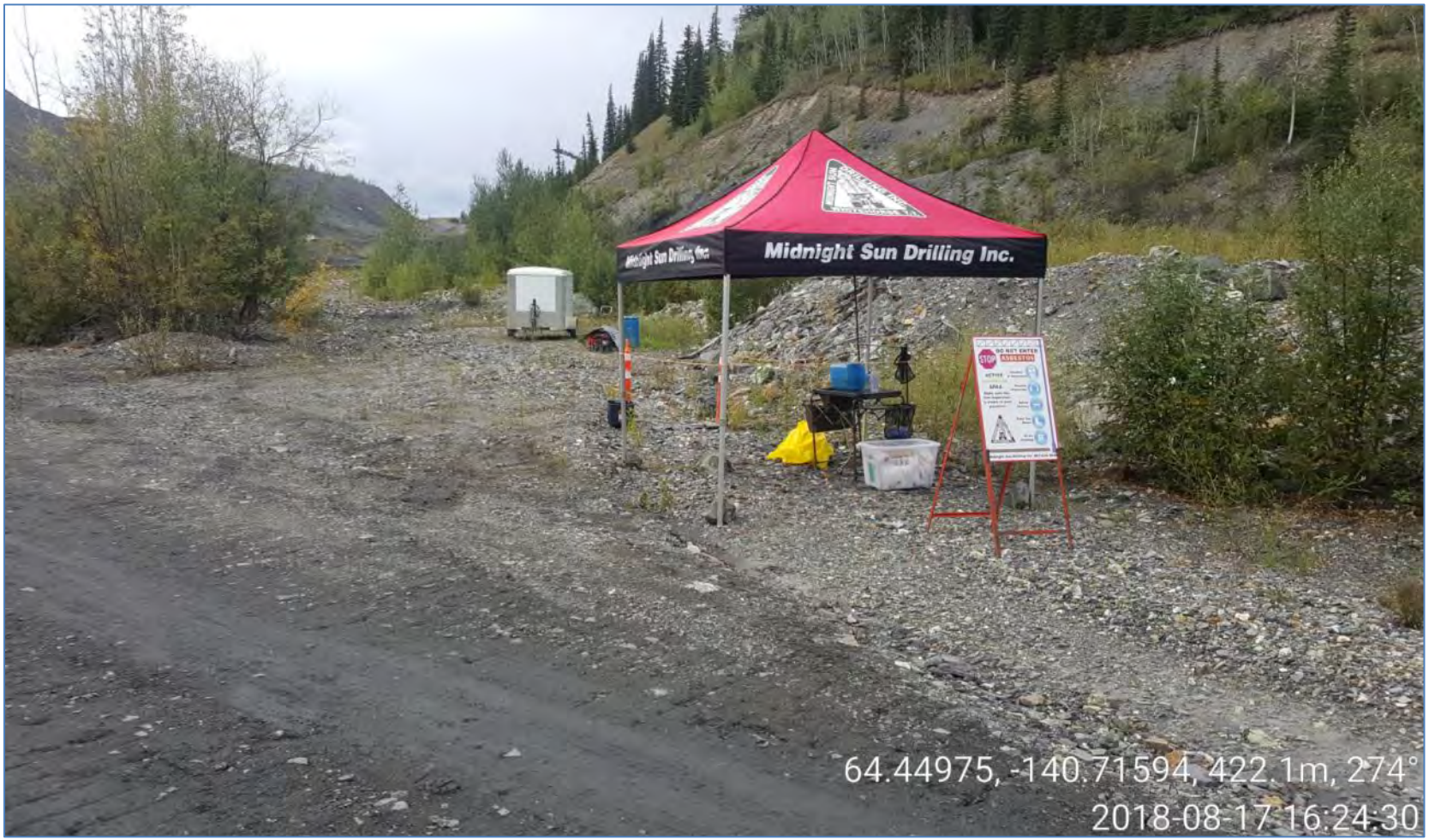
*Cross-checked against the morning tailgate signings.

10. Attachments

- Borehole Tracking, MSD LEMs, FLHRAs,

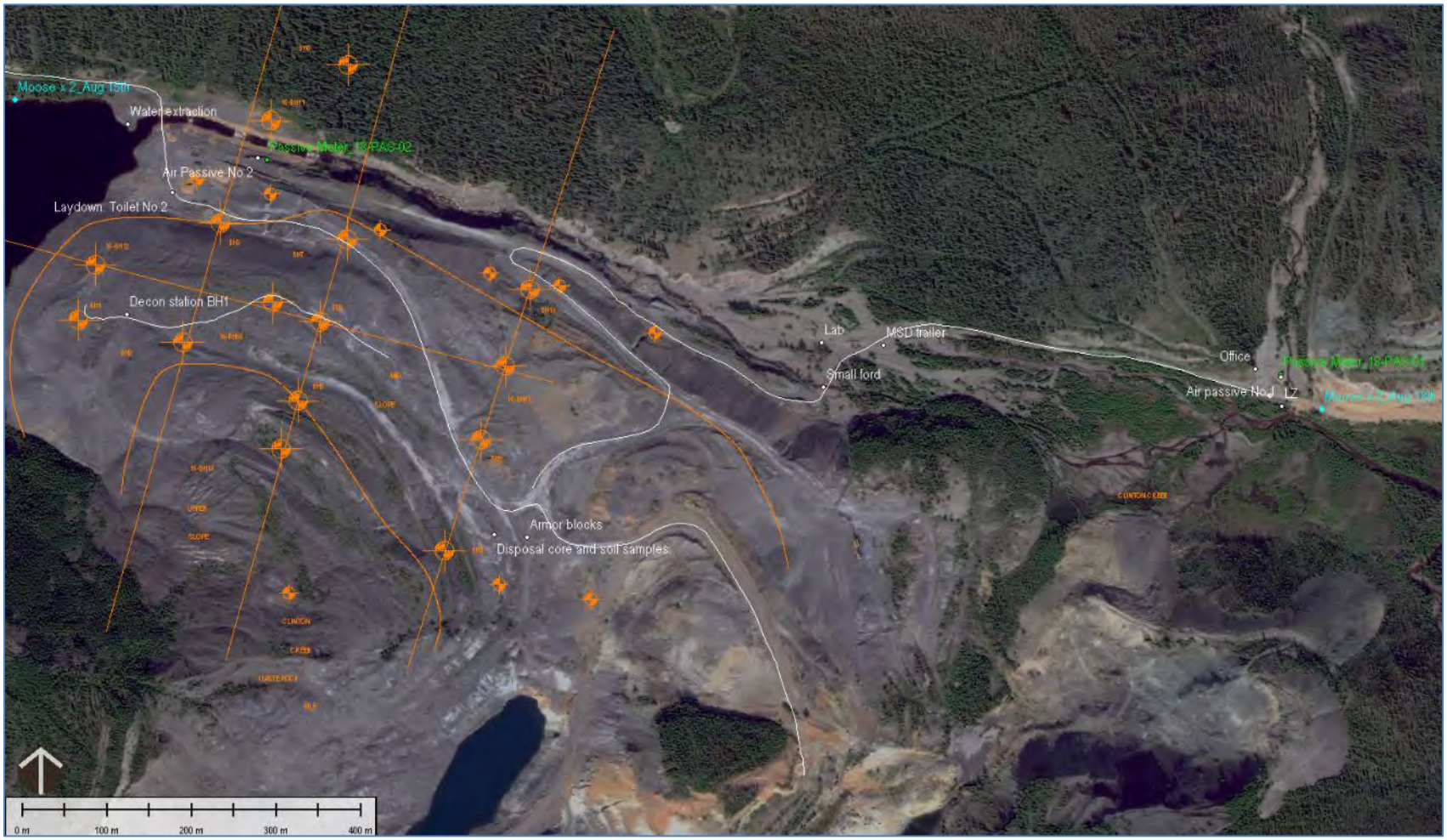
Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 17 August 2018

Figure 1



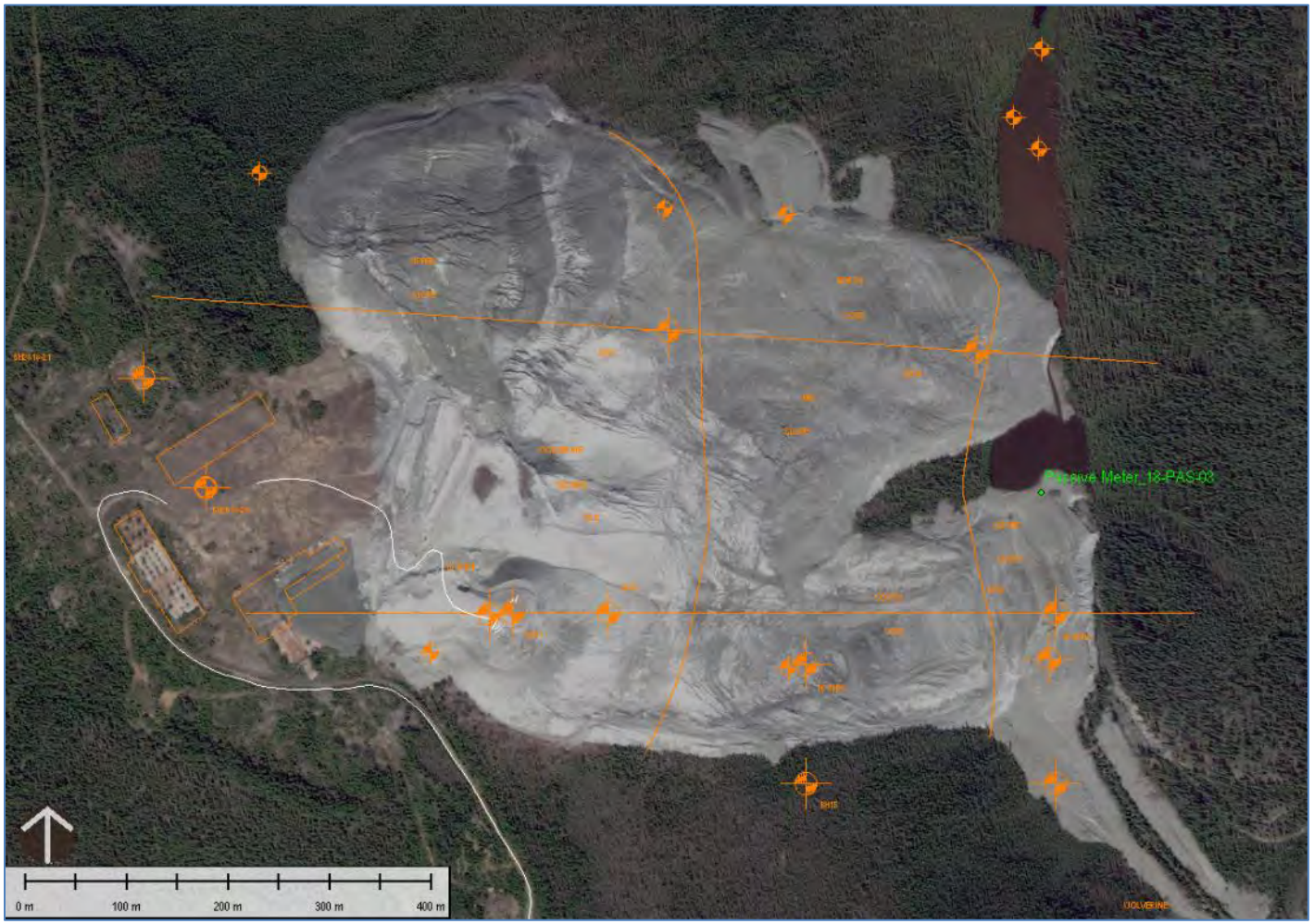
Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 17 August 2018

Figure 2



Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 17 August 2018

Figure 3



Government of Yukon

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 17 August 2018

Figure 4

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 17 August 2018

Figure 5

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 17 August 2018

Figure 6

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 17 August 2018

Figure 7

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 18 August 2018

Weather Conditions: Sunny & Cloudy	**Wood Field Coordinator:** Sam Fuller
Temperatures: Low: -1ºC, High: 18ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date*	Weekly Status*
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	0	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

*Friday is considered the end of the week.

1. Safety Health and Environment

- Air monitoring continues.

2. Key Activities

- No drilling.
- Dozer clearing pads in lower tailings (completed BH14 and part-way to BH17. Operator suggests he will complete BH17 tomorrow
    - Pad cleared at stream ford on way to lower-tailings for decon station.
- Prep for re-start and logistics for replacement staff.

3. Air Monitoring Data – data will be appended to the DR as they become available.

- Personal meters today – Medic, laborers x 2 & Dozer driver in Lower tailings.
- Area meters today – inside Dozer cab.
- Passive meters (18-PAS-01, 02 & 03) ongoing (See Figure 1)

4. New Visitors

- None

5. Observations

- Two moose just outside the main gate (Figure 2).

6. Issues/Concerns

- Shutdown due to staff leaving site – Replacements arranged. Travel underway.
- It is unclear if the RS instruments have arrived in Whitehorse. SF received conflicting information from Pacific Northwest couriers at 1700. The courier and the receiving warehouse are both closed until Tuesday Aug 28th.

7. Drilling Progress

- Completed BH20 and 21.
- BH18-01 is at 57.95 m.

8. Driller Daily Report

To Follow

9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks	0	Glenn Thiessen	12	Joshua Ojierenem	0	Sharon Mondor (EMT)	12
Chris Jeffrey	12	Carl McKenzie	11	Alex Machica	0		
Sam Fuller	12	Galen Clarke	0				
		Ricardo Pantlitz	12				
		Jake Jacobs	12				
		Justin Jamieson	0				
		Mike Salisberg	12				
		Peter Jakestar	0				
		Terrance Ball	12				
		Trent Jamieson	0	-		-	
`Totals	24		71		0		12

*Cross-checked against the morning tailgate signings. Only staff highlighted yellow. The rest were on stand-by in Camp.

10. Attachments

- Borehole Tracking (No drilling), FLHRAs (Available) & All BH Logs to-date

Figure 1

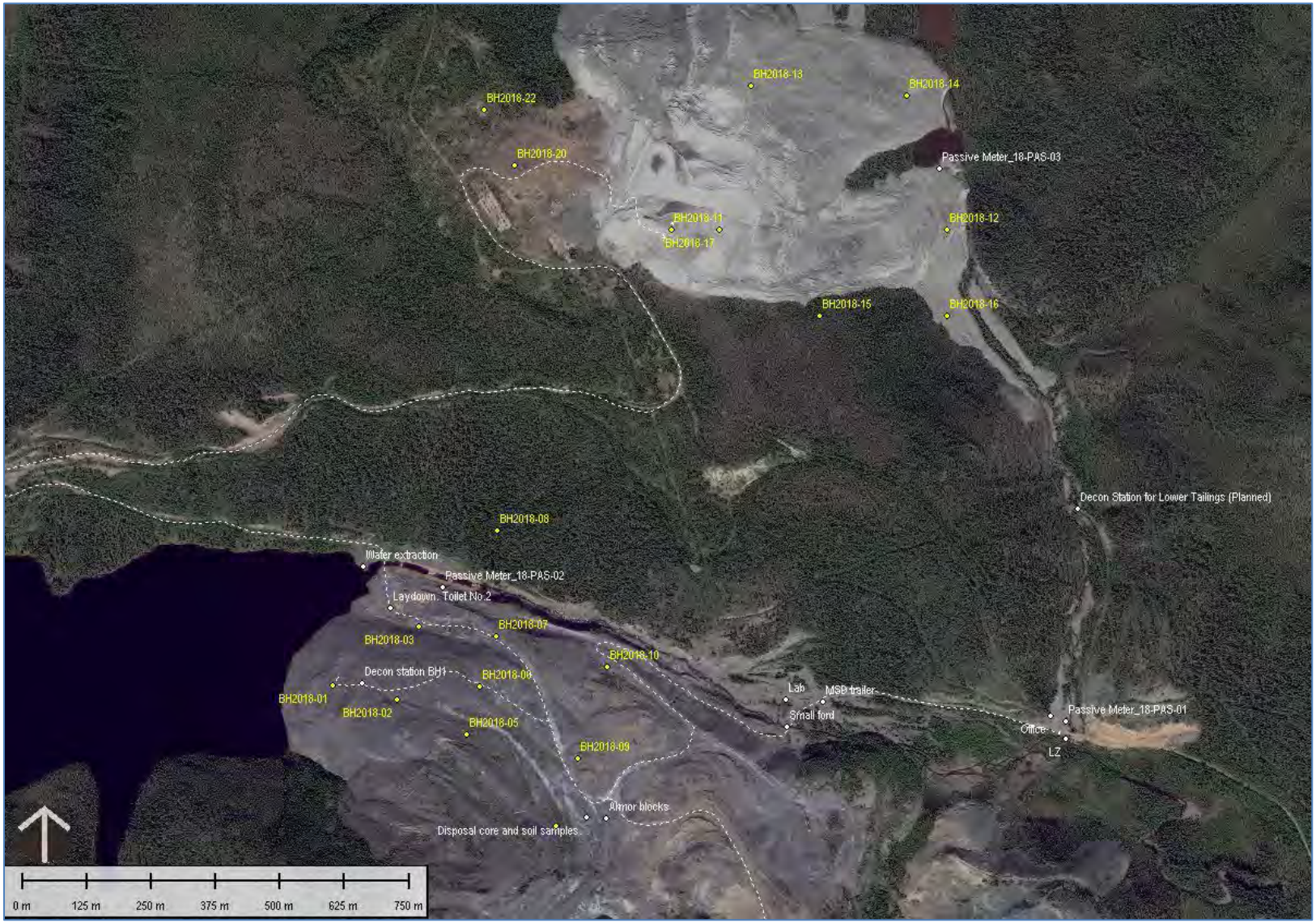

BH2018-13
BH2018-14
BH2018-22
BH2018-20
Passive Meter_18-PAS-03
BH2018-11
BH2018-12
BH2018-17
BH2018-15
BH2018-16
Decon Station for Lower Tailings (Planned)
BH2018-08
Water extraction
Passive Meter_18-PAS-02
Laydown, Toilet No.2
BH2018-07
BH2018-03
BH2018-10
Decon station BH1
BH2018-04
BH2018-01
BH2018-02
Lab
MSB trailer
Small ford
Passive Meter_18-PAS-01
Office
LZ
BH2018-05
BH2018-09
Armor blocks
Disposal core and soil samples
0 m
125 m
250 m
375 m
500 m
625 m
750 m

Figure 2

20180818_100938.jpg
Type: JPEG Image
Size: 3.74 MB
Dimension: 5312 x 2988 pixels
64.44934, -140.7059, 383.9m, 106°
2018-08-18 10:09:38

Figure 3

Figure 4

Figure 5

Figure 6

Figure 7

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 19 August 2018

Weather Conditions: Sunny & Cloudy	**Wood Field Coordinator:** Sam Fuller
Temperatures: Low: -1ºC, High: 18ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date*	Weekly Status*
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	0	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

*Friday is considered the end of the week.

1. Safety Health and Environment

- Air monitoring continues.

2. Key Activities

- No drilling.
- Mud-bay rig arrived at site ~0830 – parked near gate (Figure 2). However Glenn (MSD) informs that a hydraulic hose was damaged in transport, and will need repair (long weekend…..). Jake (MSD) may be able to expedite.
    - Other mud bay gear rolled in during the day.
- Dozer clearing pads in lower tailings for BH17. Operator indicated the he will struggle to get near proposed location for BH17. SF indicated that due to the very steep slope anywhere within 20m is ok. If it will be further, let the Lead know so we can inspect, and call for a check before moving off completed BH17. See Figure 3 for BH15 pad.
- Prep for re-orientation.

3. Air Monitoring Data – data will be appended to the DR as they become available.

- Personal meters today – None
- Area meters today – None.
- Passive meters (18-PAS-01, 02 & 03) ongoing (See Figure 1)

4. New Visitors

- Truck driver dropping MudBay rig (Signed on FLHRA) – Tom Fenton (Poor printing).

5. Observations

- None

6. Issues/Concerns

- Shutdown due to staff leaving site – Replacements arranged. Travel underway. Re-orientation/restart Monday am.
- Glenn (MSD) informs that a hydraulic hose was damaged on MudBay Rig in transport, and will need repair (long weekend…..). Jake (MSD) may be able to expedite.
- Conetec informs (via Glenn) that ~half of gear still in Whitehorse? Unclear why. They are chasing it.
- It is unclear if the RS instruments have arrived in Whitehorse. SF received conflicting information from Pacific Northwest couriers at 1700. The courier and the receiving warehouse are both closed until Tuesday Aug 28th.

7. Drilling Progress

- Completed BH20 and 21.
- BH18-01 is at 57.95 m.

8. Driller Daily Report

To Follow

9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks	0	Glenn Thiessen	12	Joshua Ojierenem	0	Sharon Mondor (EMT)	12
Chris Jeffrey	12	Carl McKenzie	12	Alex Machica	0		
Sam Fuller	12	Galen Clarke	0				
		Ricardo Pantlitz	12				
		Jake Jacobs	12				
		Justin Jamieson	0				
		Mike Salisberg	12				
		Peter Jakestar	0				
		Terrance Ball	12				
		Trent Jamieson	0	-		-	
`Totals	**24**		**71**		**0**		**12**

*Cross-checked against the morning tailgate signings. Only staff highlighted yellow. The rest were on stand-by in Camp.

10. Attachments

- Borehole Tracking (No drilling), FLHRAs (Available)

Figure 1

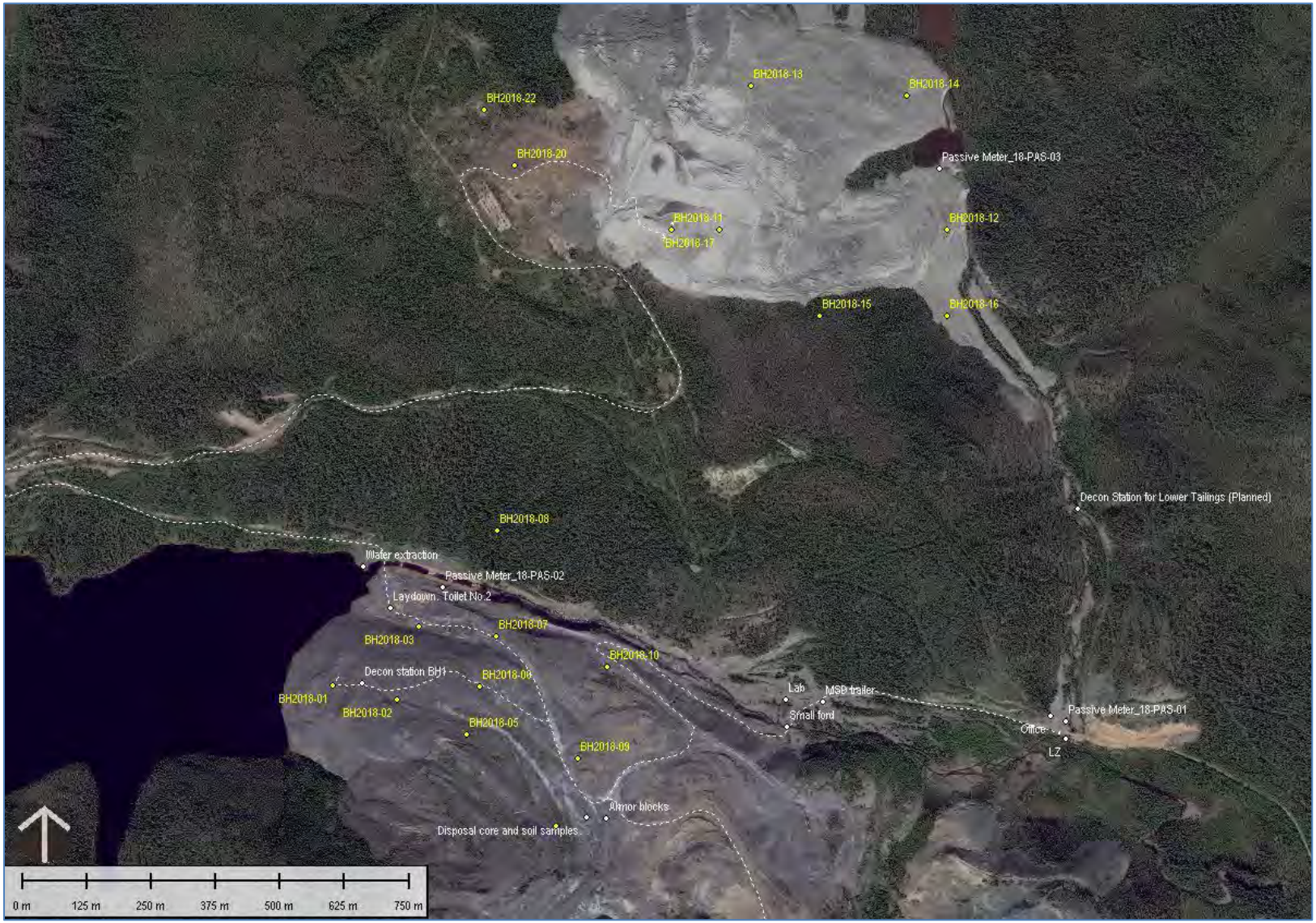

BH2018-13
BH2018-14
BH2018-22
BH2018-20
Passive Meter_18-PAS-03
BH2018-11
BH2018-12
BH2018-17
BH2018-15
BH2018-16
Decon Station for Lower Tailings (Planned)
BH2018-08
Water extraction
Passive Meter_18-PAS-02
Laydown, Toilet No.2
BH2018-07
BH2018-03
BH2018-10
Decon station BH1
BH2018-04
BH2018-01
BH2018-02
Lab
MSB trailer
Small ford
Passive Meter_18-PAS-01
Office
LZ
BH2018-05
BH2018-09
Armor blocks
Disposal core and soil samples
0 m
125 m
250 m
375 m
500 m
625 m
750 m

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

Figure 7

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 20 August 2018

Weather Conditions: Sunny & Cloudy	**Wood Field Coordinator:** Sam Fuller
Temperatures: Low: -1ºC, High: 18ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date*	Weekly Status*
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	0	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

*Friday is considered the end of the week.

1. Safety Health and Environment

- Air monitoring continues.

2. Key Activities

- Re-orientation at 0730 in Kitchen at camp (Figure 2).
- Decontamination demonstration at lab at 0900 (Figure 3)
- Carl arrives at ~1200 with Kent & Jessica.
- Cone-Tec gear arrived last night. Jennifer from Cone-tec confirms all is present.
- Complete final details of Decon station at MSD Rig/BH1 – restart drilling from 57.95m.
    - Finish BH1 at 67.1 in bedrock – prep for install on 21st.
- Wet down roads and drill-pads (Figure 4, BH9) and MudBay set-up on BH9 (Figure 5) – NO SCPTs.
- Mudbay will test SCPT hose (slightly kinked during transport) on skid-steer. The hose held,but is not perfect. Will search for replacements.
- Glenn caught the fact that the coring head cannot be fitted to the Mudbay rig and some steel plates need to be welded – we have ~ 2days to get this done before we are likely to hit BR.
- Kent & Jessica oriented by Chris and setup with mudbay to start drilling.
- Informed by Johnathon that part of the RST shipment got diverted to AirNorth Whitehorse – informed Glenn – will collect it and skids at Kluane once we call tomorrow.
- Decon station improved at BH1 (Figure 6). Switched to coring in BH1 @ 61.3 m – drilled to

- Victoria restarted the lab and tested the samples left from BH1. Also testing new samples received form BH1.

3. Air Monitoring Data – data will be appended to the DR as they become available.

- Personal meters today – No info – Air monitor in transit from Dawson at time of writing this report.
- Area meters today – No info – Air monitor in transit from Dawson at time of writing this report.
- Passive meters (18-PAS-01, 02 & 03) ongoing (See Figure 1)

4. New Visitors

- MudBay crew (Dustin Loewen, Aaron Defort, Justin Holtkamp & Jennifer Goodale), Kent Muderewich (Wood Safety) & Jessica Pitman (Wood Geotech for Mudbay Rig)

5. Observations

- Decon stations are improving, and a rhythm is developing with the crews. Improved attitude to the decon procedure, but some significant discontent regards the long sleeves requirement is developing.

6. Issues/Concerns

- Even with 3
- Danged cone-tec hydraulic hose was tested and held, but is not perfect. Sourcing backups. Unlikely to affect schedule, as other BHs available to drill.
- It is unclear if the RS instruments have arrived in Whitehorse. SF received conflicting information from Pacific Northwest couriers at 1700. The courier and the receiving warehouse are both closed until Tuesday Aug 28th.

7. Drilling Progress

- Completed BH20 and 21.
- BH18-01 is at 67.1 m.
- BH18-09 is at 7.9 m

8. Driller Daily Reports

All received to-date are attached

9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks		Glenn Thiessen	12	Joshua Ojierenem		Sharon Mondor (EMT)	12
Chris Jeffrey	12	Carl McKenzie	12	Alex Machica			
Sam Fuller	12	Ricardo Pantlitz	12				
Victoria Brewer	12	Jake Jacobs	12				
Bradley Jackman	12	Mike Salzisberg	12				
Jessica Pitman	6	Terrance Ball	12				
Kent Muderewich	6						
		Dustin Loewen	12				
		Aaron Defort	12				
		Justin Holtkamp	12	-		-	
		Jennifer Goodale	12				
		Trent Jamieson					
		Peter Jakestar					
		Galen Clarke					
		Justin Jamieson					
`Totals	**24**		**71**		**0**		**12**

*Cross-checked against the morning tailgate signings. Only staff highlighted yellow. The rest were on stand-by in Camp.

10. Attachments

- Borehole Tracking, FLHRAs (Available), Re-orientation sign-in, all Driller logs to-date, Aug 15 NMR.

Figure 1

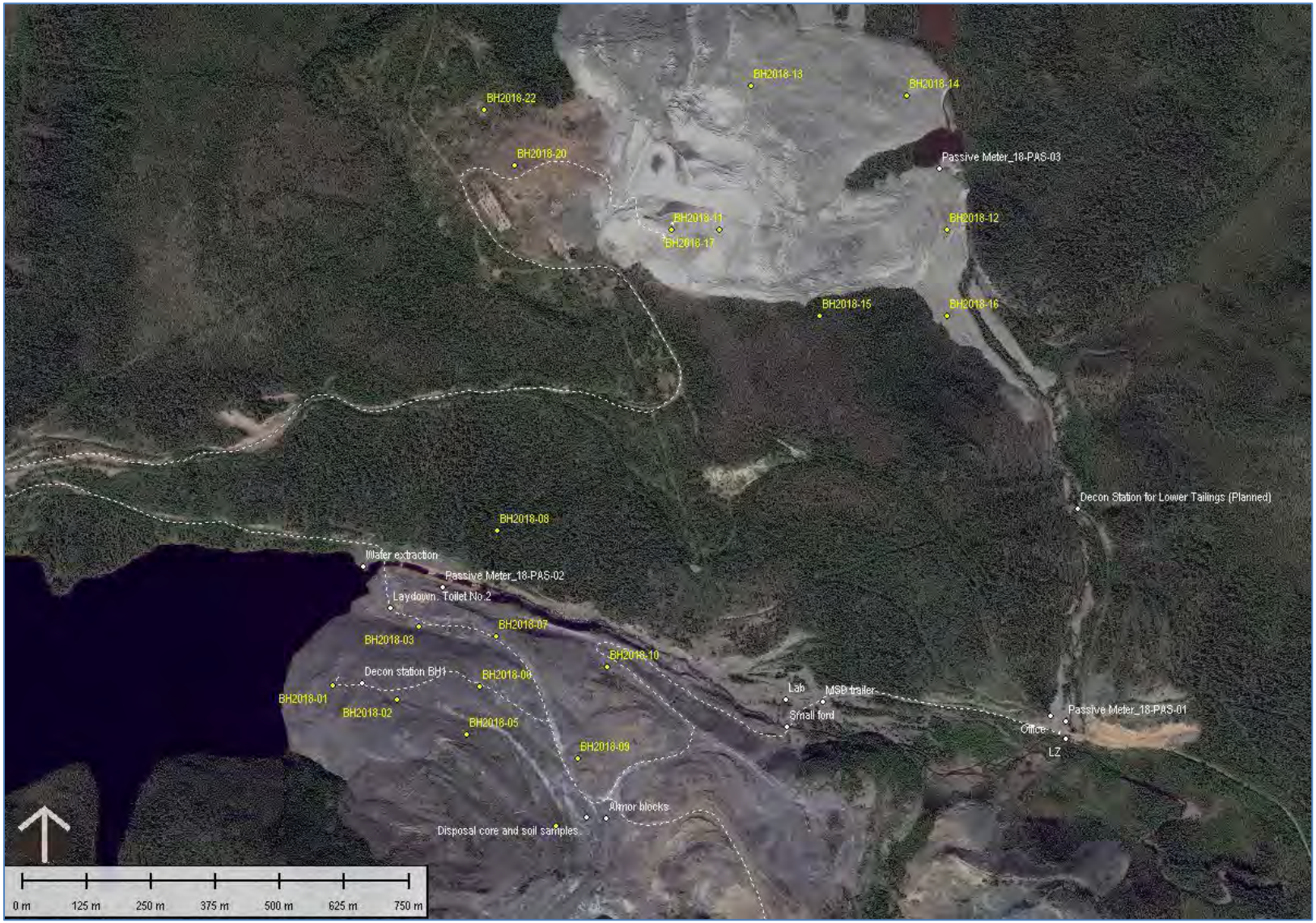

BH2018-13
BH2018-14
BH2018-22
BH2018-20
Passive Meter_18-PAS-03
BH2018-11
BH2018-12
BH2018-17
BH2018-15
BH2018-16
Decon Station for Lower Tailings (Planned)
BH2018-08
Water extraction
Passive Meter_18-PAS-02
Laydown, Toilet No.2
BH2018-07
BH2018-03
BH2018-10
Decon station BH1
BH2018-04
BH2018-01
BH2018-02
Lab
MSB trailer
Small ford
Passive Meter_18-PAS-01
Office
LZ
BH2018-05
BH2018-09
Armor blocks
Disposal core and soil samples
0 m
125 m
250 m
375 m
500 m
625 m
750 m

Figure 2

20180820_064201.jpg
Type: JPEG Image
Size: 6.62 MB
Dimension: 5312 x 2988 pixels
64.40534, -140.60037, 275.7m, 62°
2018-08-20 06:42:01

Figure 3

Figure 4

20180820_110529.jpg
Type: JPEG Image
Size: 8.70 MB
Dimension: 5312 x 2988 pixels
64.44879, -140.72513, 440.1m, 140°
2018-08-20 11:05:29

Figure 5

20180820_155739.jpg
Type: JPEG Image
Size: 7.45 MB
Dimension: 5312 x 2988 pixels
64.06077, -139.43318, 64°
2018-08-20 15:57:39

Figure 6

Figure 7

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 21 August 2018

Weather Conditions: Heavy rain.	**Wood Field Coordinator:** Sam Fuller
Temperatures: Low: -1ºC, High: 18ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date*	Weekly Status*
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	0	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

*Friday is considered the end of the week.

1. Safety Health and Environment

- Air monitoring continues.

2. Key Activities

- Michael McIsaac from CINAC arrived last night. Oriented by Chris, then the took tours of various areas as per MM's SoW.
- Light rain from ~1100, got heavier through the day, became heavy ~1730. Roads very slick.
- MudBay continued drilling at BH9. 38m at 1330, in waste rock.
- MSD finished the installation of VWPs and Thermistor in BH1 (Figure 2). Used available 1" PVC to attach wires (As there is no SI and the casing has to be lifted around it). 405m more 1"PVC on truck from WH to site tonight.
- Confirmed all RST instruments (Including SI casing) is on MSD truck to Site. Driver will overnight in Dawson and will arrive to site tomorrow.
- MSD bumped over to drill BH1 SI hole.
- Lab testing continues.
- Carl continues working on access to BH17 in lower tailings.
- Air monitoring continues. Kent swapping batteries and Chris drives to Dawson to collect Lukas (Chris Cross-shift).

3. Air Monitoring Data – data will be appended to the DR as they become available.

- Personal meters today – Jake Jacob (Driller BH1), Jessica Pitman (Geotech BH9) & Victoria Brewer (Lab Tech).
- Area meters today – None today.
- Passive meters (18-PAS-01, 02 & 03) ongoing (See Figure 1)

4. New Visitors

- None today.

5. Observations

- Light rain all day, which increased significantly ~1630 and continued most of the night.
- Office was quite dirty, planned cleaning tomorrow.

6. Issues/Concerns

- Backup hydraulic hoses are not yet tested for the CPT ram set.

7. Drilling Progress

- Completed BH20 and 21.
- BH18-01 is at 67.1 m and VWPs & Thermistor is installed. Bumped over to BH18-01 SI hole.
- BH18-09 is at 47.5 m

8. Driller Daily Reports

Not received due to Flooding shutdown.

9. Staff Summary

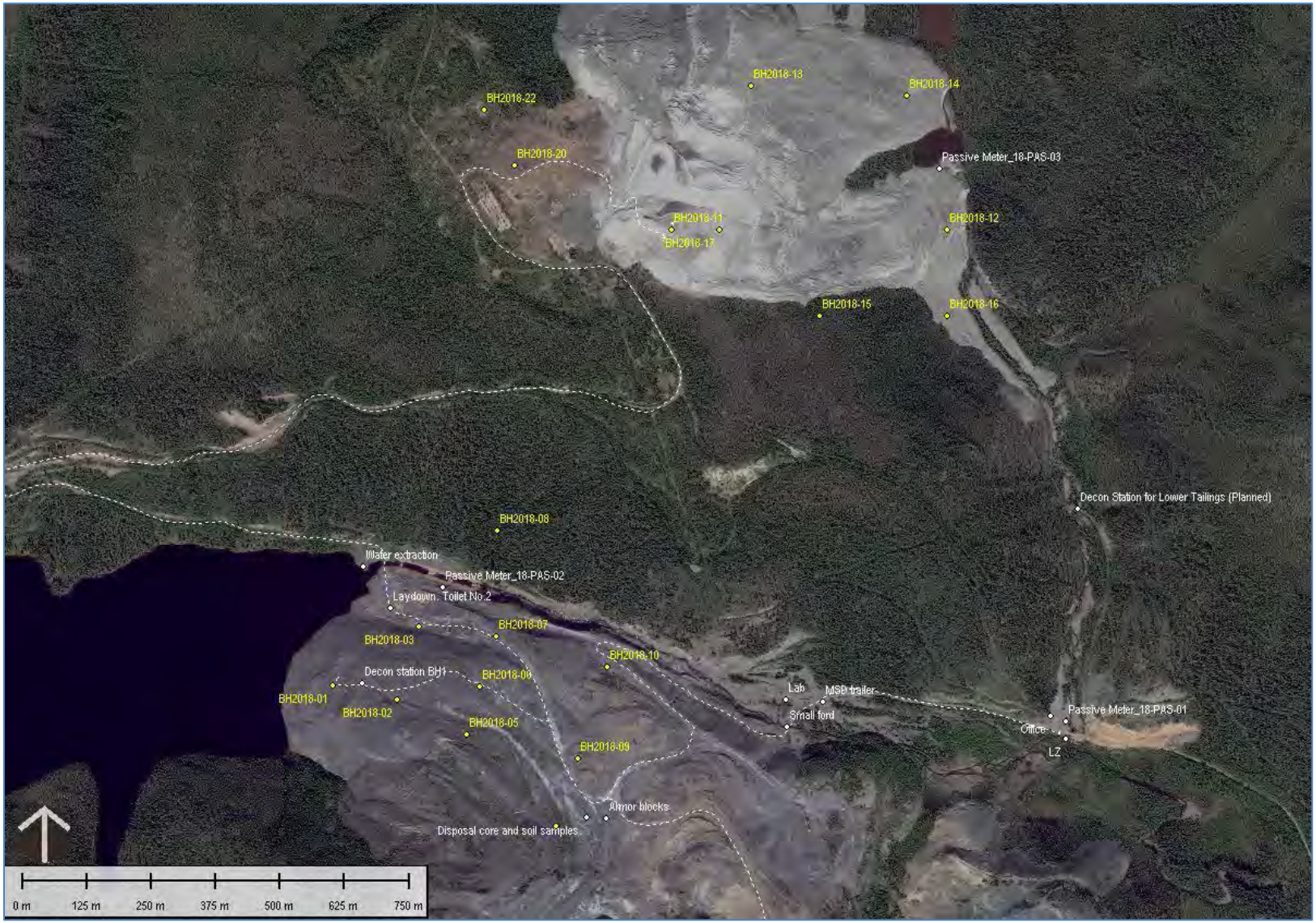
Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks	12	Glenn Thiessen	12	Joshua Ojierenem		Sharon Mondor (EMT)	12
Chris Jeffrey	12	Carl McKenzie	12	Alex Machica			
Sam Fuller	12	Ricardo Pantlitz	12				
Victoria Brewer	12	Jake Jacobs	12				
Bradley Jackman	12	Mike Salzisberg	12				
Jessica Pitman	6	Terrance Ball	12				
Kent Muderewich	6						
		Dustin Loewen	12				
		Aaron Defort	12				
		Justin Holtkamp	12	-		-	
		Jennifer Goodale	12				
		Trent Jamieson					
		Peter Jakestar					
		Galen Clarke					
		Justin Jamieson					
`Totals	**24**		**71**		**0**		**12**

*Cross-checked against the morning tailgate signings. Only staff highlighted yellow. The rest were on stand-by in Camp.

10. Attachments

- Borehole Tracking

Figure 1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BH2018-14
BH2018-22
BH2018-20
Passive Meter_18-PAS-03
BH2018-11
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BH2018-17
BH2018-15
BH2018-16
Decon Station for Lower Tailings (Planned)
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Water extraction
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Laydown, Toilet No.2
BH2018-07
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Decon station BH1
BH2018-04
BH2018-01
BH2018-02
Lab
MSB trailer
Small ford
Passive Meter_18-PAS-01
Office
LZ
BH2018-05
BH2018-09
Armor blocks
Disposal core and soil samples
0 m
125 m
250 m
375 m
500 m
625 m
750 m

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

Figure 7

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 22 August 2018

Weather Conditions: Sunny & Cloudy	**Wood Field Coordinator:** Karen Hincks
Temperatures: Low: 2ºC, High: 10ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date*	Weekly Status*
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	0	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

*Friday is considered the end of the week.

1. Safety Health and Environment

- Air monitoring continues.
- At 08:00, Sam Fuller went to the first ford of Clinton Creek to check on conditions, as the first people leaving the office area reported that the creek was very high. An assessment was made that the creek was still safe to cross, but that the levels would be assessed on a regular basis.
- At around 13:00, once some staff had returned to the office area for lunch, it was reported that the creek level had increased. Sam Fuller, Karen Hincks and Kent Muderewich went to the creek with Midnight Sun to assess the conditions. It was decided that the creek was too high and flowing too strongly to continue to cross. The last vehicle and people were removed from the waste rock pile to the office area.
- During the assessment, it was determined that the laboratory trailer and the box trailer should also be moved, in case the creek jumped the banks. The decontamination station was moved to higher ground, the lab was shut down and secured, and the lab was cleaned and moved to an area near the office (no additional testing was completed).
- MB and MS were off site around 14:00; Wood staff remained on site to do various tasks.

2. Key Activities

- Safety meeting on site at 07:00.
- Assessed the creek at 08:00. Once it was determined that it was safe to cross, crews returned to their rigs.
- Drilling on BH18-01A (SI installation) started to a depth of 36.6 m; re-logged a few key zones.

- Continued drilling on BH18-09 to a depth of 47.5 m (still in waste rock).

3. Air Monitoring Data – data will be appended to the DR as they become available.

- Personal meters today – No info – Air monitor in transit from Dawson at time of writing this report.
- Area meters today – No info – Air monitor in transit from Dawson at time of writing this report.
- Passive meters (18-PAS-01, 02 & 03) ongoing (See Figure 1)

4. New Visitors

- Michael McIssac (CINAC) was on site for the day.

5. Observations

- Work as a team to assess the situation with the creek. Great team work to get the site secured and prepared for any potential flooding. Lab was cleaned and moved closer to the office area as it was located in an area of potential flood concern (in a possible avulsion channel).

6. Issues/Concerns

- Uncertainly about the peak of flooding and with crossing the creek. Water was very turbid at the end of the day with very high flow.

7. Drilling Progress

- Completed BH20 and 21.
- BH18-01A is completed and BH18-01B is at 36.6 m.
- BH18-09 is at 45.7 m

8. Driller Daily Reports

MSD daily not yet received.

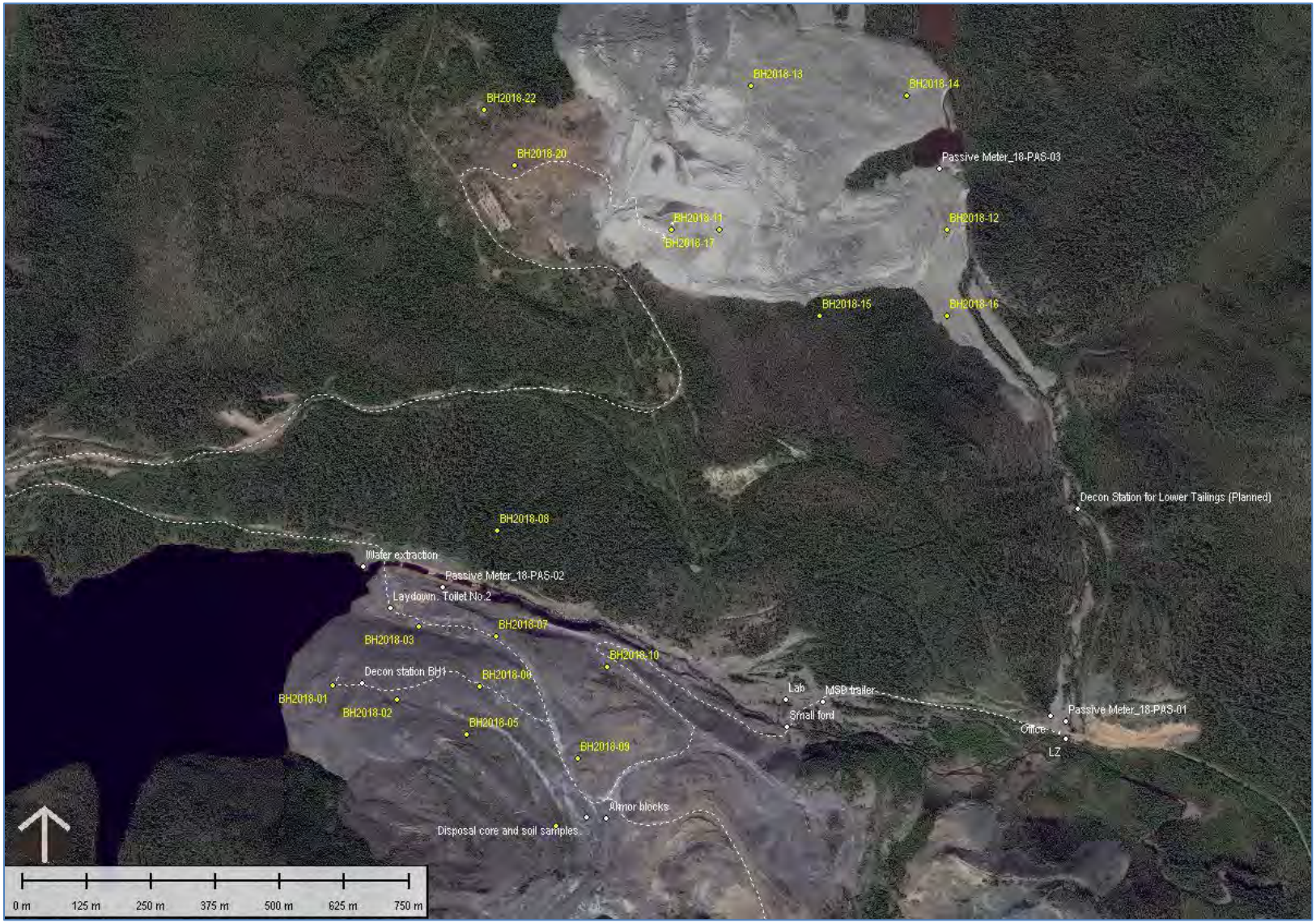
9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks		Glenn Thiessen	12	Joshua Ojierenem		Sharon Mondor (EMT)	12
Chris Jeffrey	12	Carl McKenzie	12	Alex Machica		Michael McIssac	8
Sam Fuller	12	Ricardo Pantlitz	12				
Victoria Brewer	12	Jake Jacobs	12				
Bradley Jackman	12	Mike Salzisberg	12				
Jessica Pitman	12	Terrance Ball	12				
Kent Muderewich	12						
		Dustin Loewen	12				
		Aaron Defort	12				
		Justin Holtkamp	12	-		-	
		Jennifer Goodale	12				
		Trent Jamieson					
		Peter Jakestar					
		Galen Clarke					
		Justin Jamieson					
`Totals	**72**		**120**		**0**		**20**

10. Attachments

- Borehole Tracking, FLHRAs (Available),
-

Figure 1


BH2018-13
BH2018-14
BH2018-22
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Passive Meter_18-PAS-03
BH2018-11
BH2018-12
BH2018-17
BH2018-15
BH2018-16
Decon Station for Lower Tailings (Planned)
BH2018-08
Water extraction
Passive Meter_18-PAS-02
Laydown, Toilet No.2
BH2018-07
BH2018-03
BH2018-10
Decon station BH1
BH2018-04
BH2018-01
BH2018-02
Lab
MSB trailer
Small ford
Passive Meter_18-PAS-01
Office
LZ
BH2018-05
BH2018-09
Armor blocks
Disposal core and soil samples
0 m
125 m
250 m
375 m
500 m
625 m
750 m

Figure 2 Dozer scraping the road to improve traction.

Figure 3 Water at the "small ford" in the afternoon. Due to flow and turbidity it was determined to no longer cross the creek.

Figure 4 Photo of water level against measurement tool in the creek.

Figure 5 Closed "small ford" around 1:30 pm

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 23 August 2018

Weather Conditions: Overcast to Sunny	**Wood Field Coordinator:** Karen Hincks
Temperatures: Low: 0ºC, High: 17ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date*	Weekly Status*
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	0	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

*Friday is considered the end of the week.

1. Safety Health and Environment

- Air monitoring continues (with the stations only)
- At 06:30, Sam Fuller, Kent Muderewich, Lukas Brezina and Karen Hincks went to the small ford to assess the creek crossing. Glenn Thiessen and Jake Jacobs also came to the crossing to take a look. It was determined the it was not safe to cross the creek.
- MSD and MB went back to office to clean out trucks, wash floor mats, etc. and do various cleaning tasks.
- KH had a call with Wood office. It was decided that since the status of Drop Structure 4 could not be assessed that it was not safe to be at the site office, and all personnel were removed from the site to the camp.
- KH, SF and Michael McIssac (CINAC) went in a helicopter to take a look at the drop structures, in particular DS4. The gabion baskets appeared to be holding fine, and no cracking of concern was noted along the banks downstream.
- Wood looking at the possibility of getting a bailey bridge to prevent this issue from occurring again.

2. Key Activities

- Safety meeting on site at 07:00.
- Completed an assessment of DS4 using a helicopter. Gabion baskets were holding and no concerning erosion was noted along the banks of the creek.

3. Air Monitoring Data – data will be appended to the DR as they become available.

- Personal meters today – No monitoring completed as no one on site.
- Area meters today – No info – Pumps that could be checked were done.
- Passive meters (18-PAS-01, 02 & 03) ongoing (See Figure 1)

4. New Visitors

- Michael McIssac (CINAC) was on site for the day.

5. Observations

- Work as a team to assess the situation with the creek. Great team work to get the site secured and prepared for any potential flooding.

6. Issues/Concerns

- Uncertainty about the status of DS4 and the safety of the crossing. Look at options to de-risk the program using a bailey bridge or other option.

7. Drilling Progress

- Completed BH20 and 21.
- BH18-01A is completed and BH18-01B is at 36.6 m.
- BH18-09 is at 45.7 m

8. Driller Daily Reports

MSD daily not yet received.

9. Staff Summary

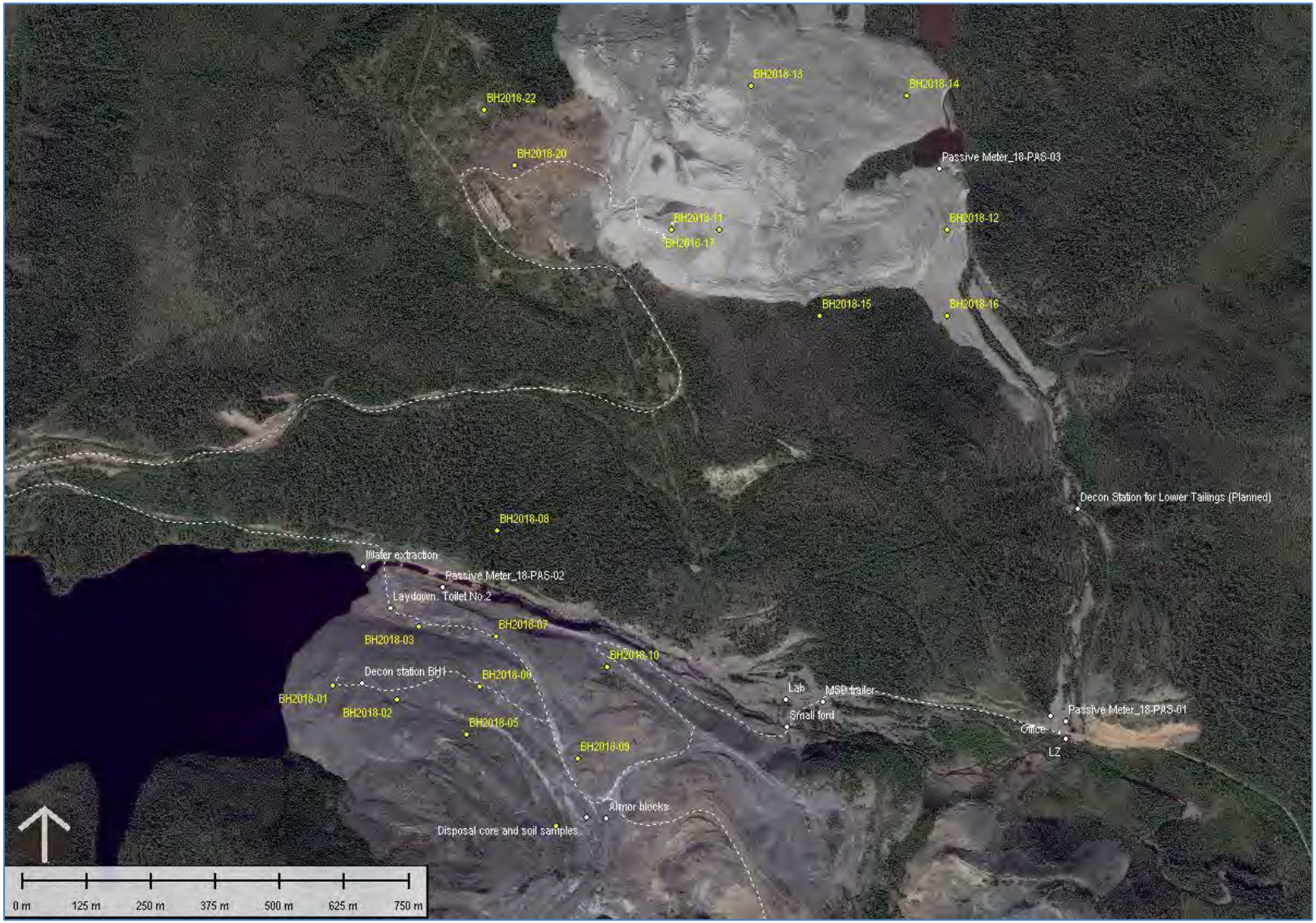
Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks		Glenn Thiessen	12	Joshua Ojierenem		Sharon Mondor (EMT)	12
Chris Jeffrey	12	Carl McKenzie	12	Alex Machica		Michael McIssac	8
Sam Fuller	12	Ricardo Pantlitz	12				
Victoria Brewer	12	Jake Jacobs	12				
Bradley Jackman	12	Mike Salzisberg	12				
Jessica Pitman	12	Terrance Ball	12				
Kent Muderewich	12						
		Dustin Loewen	12				
		Aaron Defort	12				
		Justin Holtkamp	12	-		-	
		Jennifer Goodale	12				
		Trent Jamieson					
		Peter Jakestar					
		Galen Clarke					
		Justin Jamieson					
`Totals	**72**		**120**		**0**		**20**

*Most hours were standby as no drilling was occurring.

10. Attachments

- Borehole Tracking, FLHRAs (Available),
-

Figure 1


BH2018-13
BH2018-14
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Passive Meter_18-PAS-03
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Water extraction
Passive Meter_18-PAS-02
Laydown, Toilet No.2
BH2018-07
BH2018-03
BH2018-10
Decon station BH1
BH2018-04
BH2018-01
BH2018-02
Lab
MSB trailer
Small ford
Passive Meter_18-PAS-01
Office
LZ
BH2018-05
BH2018-09
Armor blocks
Disposal core and soil samples
0 m
125 m
250 m
375 m
500 m
625 m
750 m

Figure 2 "Small ford" at about 06:30. Water was turbid and fast moving.

Figure 3 Small area of bank undercutting along the road upstream of the "small ford". Based on the helicopter assessment, the road is far enough back from the bank that there is currently no safety concern.

Figure 4 Photo of DS4 from the helicopter. The matting appears in poor shape but the gabion baskets are holding.

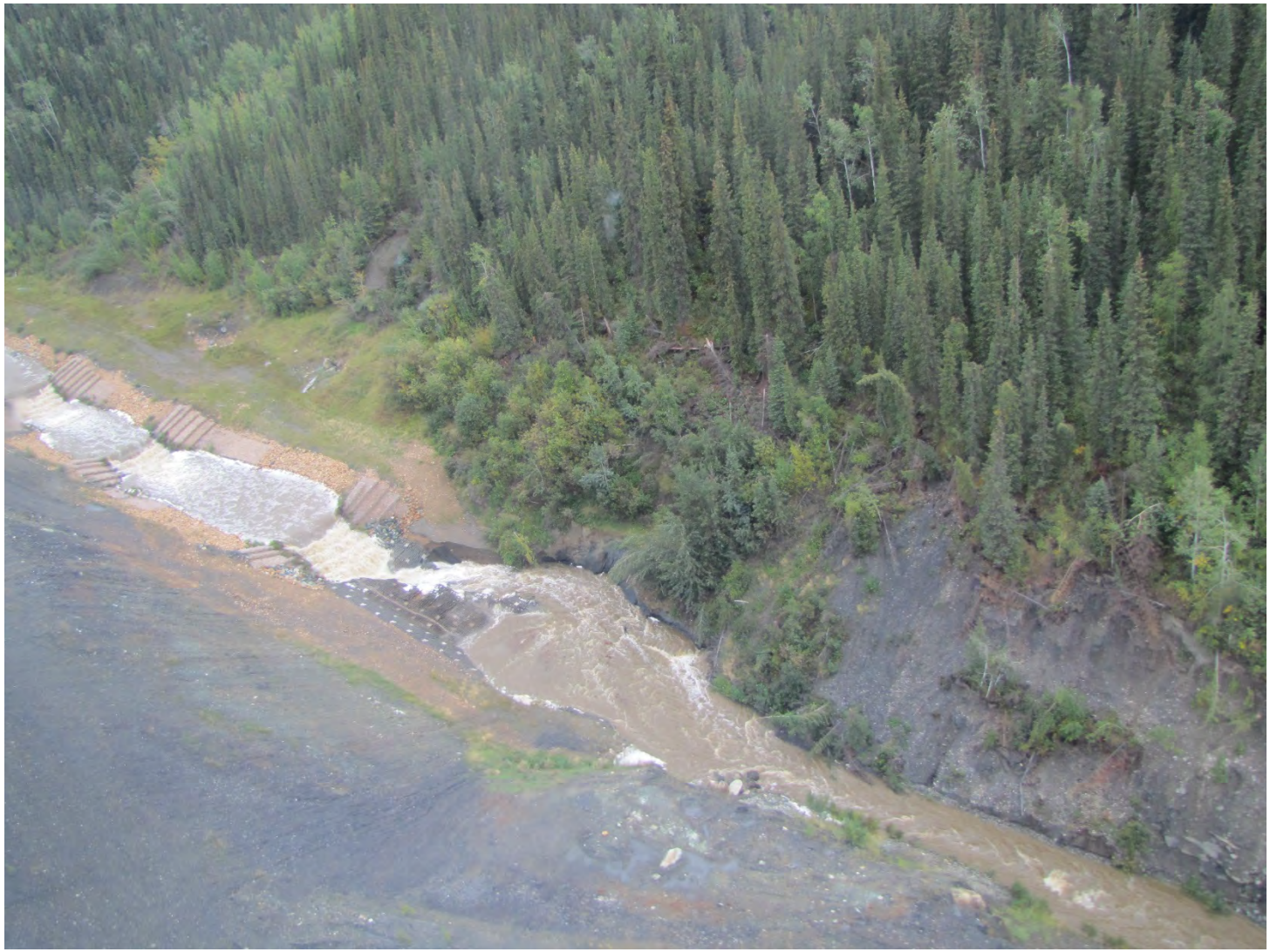


Figure 5 View of the undermined bank from the helicopter from the upstream side. Note the setback of the road from the edge of the bank.

Figure 6 Photograph of the concrete matting on the downstream side of DS4

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 24 August 2018

Weather Conditions: Overcast with light rain through the day	**Wood Field Coordinator:** Karen Hincks
Temperatures: Low: 9ºC, High: 17ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date*	Weekly Status*
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	0	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

*Friday is considered the end of the week.

1. Safety Health and Environment

- Air monitoring continues (with the stations only)
- At 06:45, Karen Hincks and Lukas Brezina went to look at the creek. The creek level was down more than 0.5 m from yesterday morning. Went back to the creek with Rickardo to check the levels and flow rate. Ricardo felt that the creek was safe to cross.
- Carl was on site at 08:00 and went to check the creek with Karen Hincks. Carl agreed with the path forward to clear the crossing and create a berm along the road. Carl cleared the creek crossing and created a berm along the road. Work was completed by 09:00.
- Glenn, MSD driller and MB driller did not return to site until later. MSD and MB staff who remained behind in camp were on site for 07:00 safety meeting; however, work could not progress due to the lack of drillers.
- Moved the lab trailer into the clearing on the north side of the office and set up a new decontamination area. This area was selected so that the lab technician would be closer to the site office, but still within an easily restricted area. As sieves are no longer being completed on site, the water truck will not be required to deliver water to this location. If some water is required, the creek is immediately adjacent to the location.

2. Key Activities

- Safety meeting on site at 10:00 (once all parties arrived)

- Cleared a path through the creek to provide access to the waste rock pile and created berms along the creek side of the road.
- Continued drilling at BH18-01; reached target depth and put SI casing into the borehole. Borehole has not yet been grouted.
- Continued drilling at BH18-09; encountered organics at a depth of 61.3 m (201'); material above that was noted to be mixed waste rock with native sands and gravels (likely due to mixing of material as waste rock was dumped onto the valley floor.

3. Air Monitoring Data – data will be appended to the DR as they become available.

- Personal meters today – No monitoring completed as no asbestos person was on site.
- Area meters today – No info.
- Passive meters (18-PAS-01, 02 & 03) ongoing (See Figure 1)

4. New Visitors

- Michael McIssac (CINAC) was on site in the morning and departed for Whitehorse around 11 am.
- CINAC (Justin, Chris, Catherine and ?) arrived at site around 13:30. KH met with them, outlined the work that was currently going on, discussed the situation at the Primary Ford Crossing as well as the lake water levels. Discussed the locations of the drill rigs and provided a radio for use around the site. They left site around 16:30.

5. Observations

- The lake level was down about 40 cm from the peak (based on the high water level along the lake shore). DS4 gabion baskets appeared secure, although additional damage was done to the concrete matting.
- Saw a small black bear just behind the office at approximately noon. Only KH and LB were in the office at the time, and LB scared the bear off. The bear was spotted again walking along the road and was announced over the radio. The team on site discussed garbage management and needing to improve the garbage management on site.

6. Issues/Concerns

- Need better management of food wastes, as we know that a bear is in the area.
- Need to monitor the lake and creek levels throughout the day, as well as

7. Drilling Progress

- Completed BH20 and 21.
- BH18-01A is completed and BH18-01B is at 62.8 m (target depth); SI install will be grouted and completed on 25 August.

- BH18-09 is at 68.9 m

8. Driller Daily Reports

MSD daily for overall services (excluding drilling time) attached

9. Staff Summary

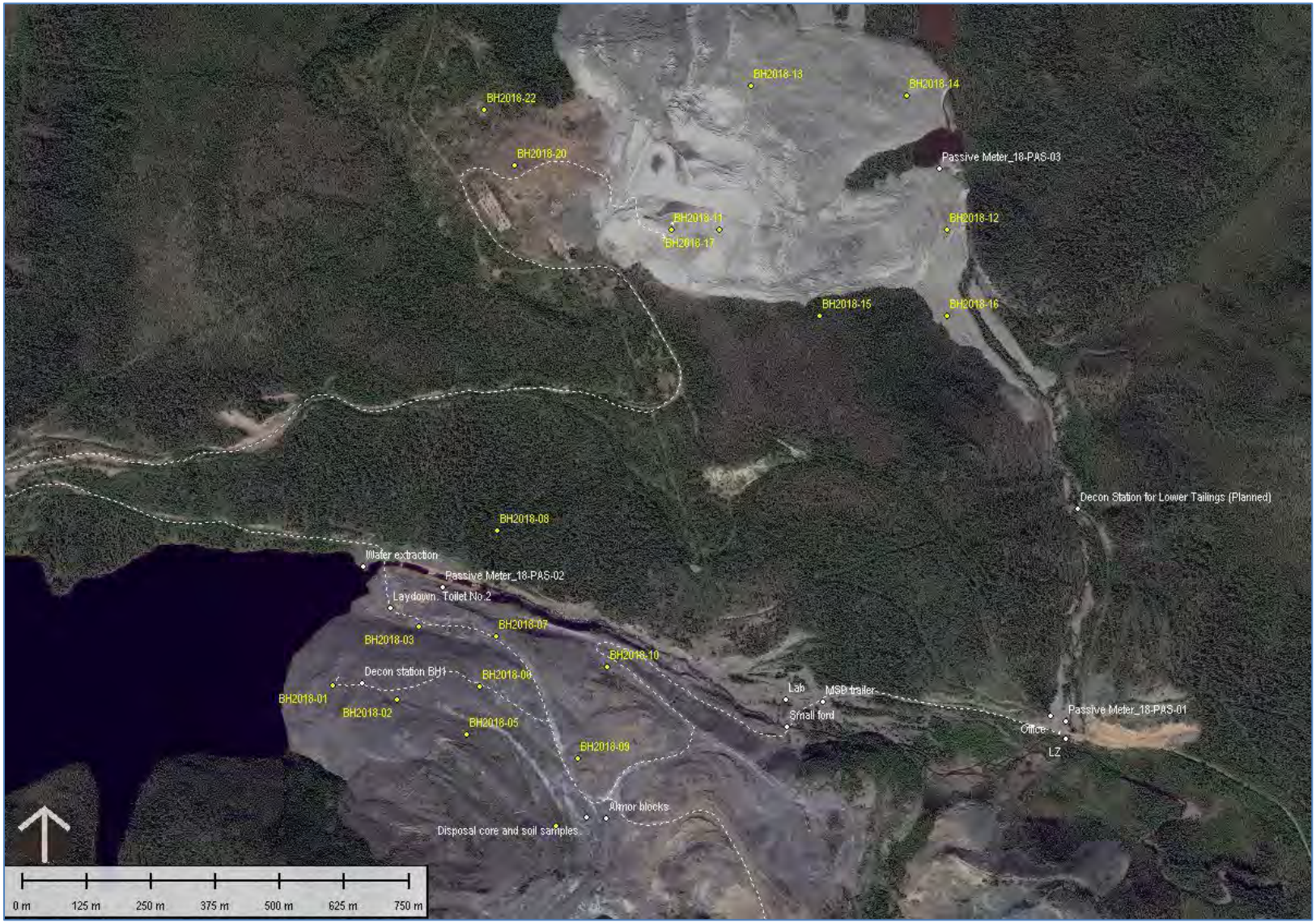
Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks	12	Glenn Thiessen	9			Sharon Mondor (EMT)	12
Victoria Brewer	12	Carl McKenzie	12			Michael McIssac	4
Bradley Jackman	12	Ricardo Pantlitz	12			Alex Machica	
Jessica Pitman	12	Jake Jacobs	9			Joshua Ojierenem	
Lukas Brezina	12	Mike Salzisberg	12				
Jeremy Rayski	6	Terrance Ball	12				
		Dustin Loewen	9				
		Aaron Defort	12				
		Justin Holtkamp	9	-		-	
		Jennifer Goodale	9				
		Trent Jamieson					
Chris Jeffrey		Peter Jakestar					
Sam Fuller		Galen Clarke					
Kent Muderewich		Justin Jamieson					
`Totals	**66**		**105**		**0**		**14**

*Delayed start in the morning as the drillers were stuck in Dawson City and did not arrive at site until around 10 am

10. Attachments

- Borehole Tracking, FLHRAs (Available),
-

Figure 1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BH2018-03
BH2018-10
Decon station BH1
BH2018-04
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Office
LZ
BH2018-09
Armor blocks
Disposal core and soil samples
0 m
125 m
250 m
375 m
500 m
625 m
750 m

Figure 2 Drop structure 4 at approximately 10:30 am. Water was high, but lower than 23 August 2018.

Figure 3 New lab setup. The area is separated from the office area by a narrow break in the trees, where the decontamination station has been set up.

Figure 4 Installing SI casing in BH2018-04.

Figure 5 56.7 m to 60.95 m in BH16-09 – mixed waste rock with native materials

Figure 6 Organic encountered at BH18-09 at a depth of 61.3 m (200').

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 25 August 2018

Weather Conditions: Overcast to partly sunny, some light rain	**Wood Field Coordinator:** Karen Hincks
Temperatures: Low: 7ºC, High: 14ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date*	Weekly Status*
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	0	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

*Friday is considered the end of the week.

1. Safety Health and Environment

- Ambient air quality testing is ongoing at 3 stations.
- At 06:45, Karen Hincks, Lukas Brezina and Jeremy Rayski went to look at the creek. The creek level was up from yesterday morning, yet remained below the bend in the staff gauge in the creek.
- 07:00 safety meeting with project staff. Reiterated about the bear on site on 24 August and the need for garbage management. Also discussed that the road to the gate is a public road (there was a group camping in a tent between camp and the gate in the morning.
- Jeremy Rayski went with the Midnight Sun crew to set up the decontamination area for the tailings boreholes.
- Assessment of the creek crossing was done throughout the day. Although the water does not appear to have risen, the crossing is apparently deeper, indicating that there has been some scour and erosion at the crossing location. The dozer was doing some minor work to make the crossing safer.

2. Key Activities

- Safety meeting on site at 07:00
- Completed the SI installation at BH18-01.
- Continued drilling at BH18-09. Switched to the coring head between about 13:00 and 15:00 (a piece needed to be welded on; however, a few pieces were missing and parts need to be

obtained from Dawson. Continued wet coring with the sonic head to confirm bedrock. Borehole was at 75 m depth.

- Worked on mobbing rig and ConeTec equipment to the tailings pond; issues were encountered with crossing the creek as the bottom of the creek appears to have been worn down with the vehicle traffic and high flows in the creek. Rig and decontamination set up were moved to the tailings area.

3. Air Monitoring Data – data will be appended to the DR as they become available.

- Personal meters today – Personal monitors were placed on 3 staff; 1 geotech (Bradley), 1 driller (Dustin)and 1 in the on-site lab (Victoria).
- Passive meters (18-PAS-01, 02 & 03) ongoing (See Figure 1)

4. New Visitors

- No visitors on site today.
- Jim McDonald arrived at site to relieve Bradley Jackman from Wood.

5. Observations

- DS4 gabion baskets were checked at approximately 07:30 and 18:30 and appeared secure, although additional damage to the concrete matting from 24 August was apparent.
- Based on the data from the logger in the lake, the lake peaked at 0.6 m above "background" (0.5 m above data logger) on 22 August around 14:15, and dropped to 0.3 m above "background" on 24 August around 12:15, then increased again to 0.4 m above background on 25 August at 10:00 (the most recent data available).
- Checked the lake level at the end of the day (18:30), and the water level had come down about 5 cm from a secondary high water mark.

6. Issues/Concerns

- Need better management of food wastes, as we know that a bear is in the area. Discussed at the tailgate again in the morning.
- Need to monitor the lake and creek levels throughout the day, as well as the depth of the bottom of the creek (the water level did not appear to come up, but the bottom of the creek appears to be eroding, making the crossing deeper).
- Reminder that the road to the gate is a public road, as there were people camped on the side of the road on the way in in the morning.

7. Drilling Progress

- Completed BH20 and 21.
- BH18-01A and BH18-01B are completed.

- BH18-09 is at 78.0 m (likely one run and instrument install remaining)
- MSD rig has been moved toward the tailings area in order to start CPTs. Could not get pipe racks and the skid steer across the creek due to the creek levels.

8. Driller Daily Reports

- MSD daily for overall services (excluding drilling time) attached

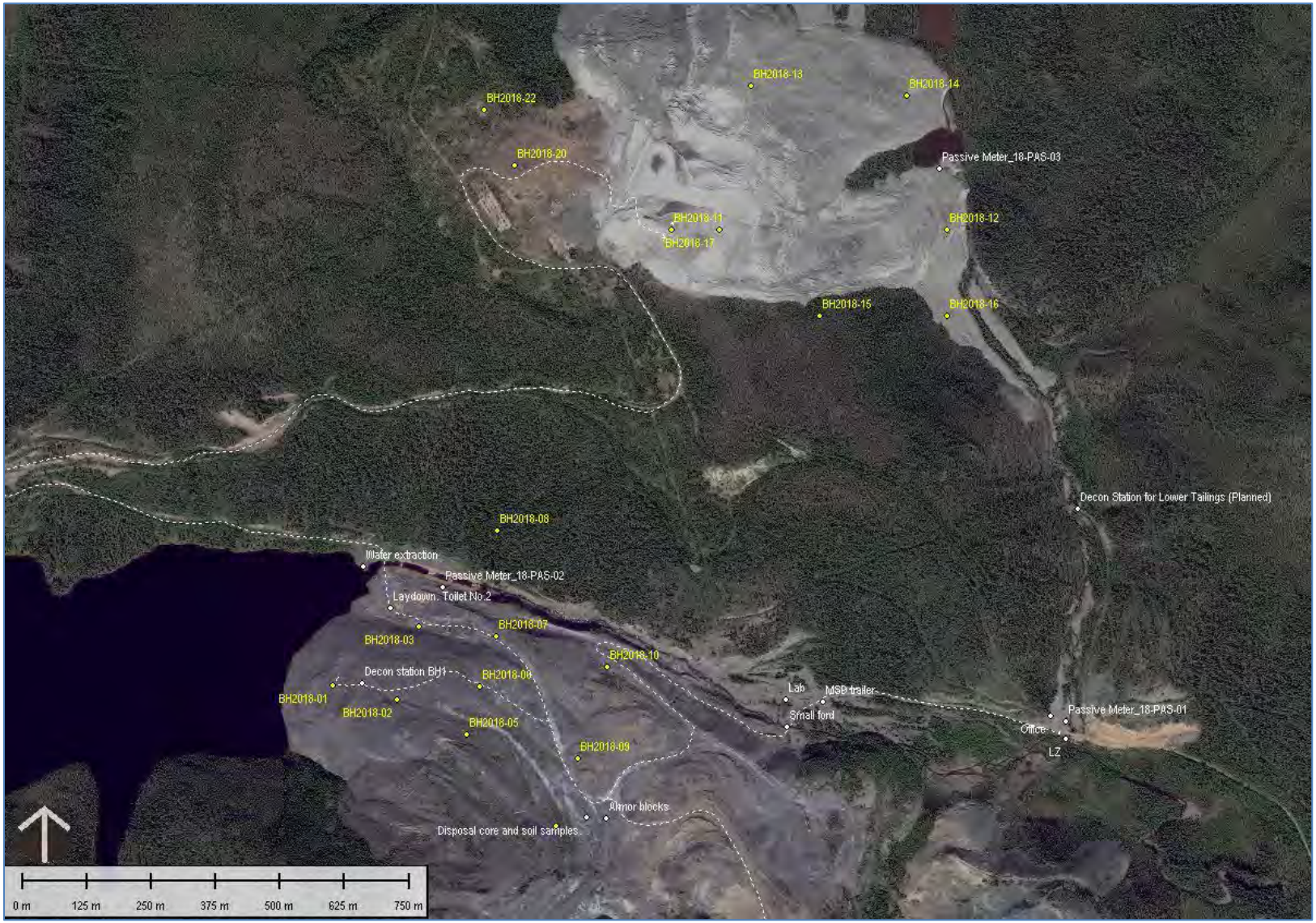
9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks	12	Glenn Thiessen	12			Sharon Mondor (EMT)	12
Victoria Brewer	12	Carl McKenzie	12			Michael McIssac	
Bradley Jackman	12	Ricardo Pantlitz	12			Alex Machica	
Jessica Pitman	12	Jake Jacobs	12			Joshua Ojierenem	
Lukas Brezina	12	Mike Salzisberg	12				
Jeremy Rayski	12	Terrance Ball	12				
Jim McDonald	6						
		Dustin Loewen	12				
		Aaron Defort	12				
		Justin Holtkamp	12	-		-	
		Jennifer Goodale	12				
		Trent Jamieson					
Chris Jeffrey		Peter Jakestar					
Sam Fuller		Galen Clarke					
Kent Muderewich		Justin Jamieson					
`Totals	**78**		**120**		**0**		**112**

10. Attachments

- Borehole Tracking, FLHRAs (Available),
-

Figure 1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BH2018-14
BH2018-22
BH2018-20
Passive Meter_18-PAS-03
BH2018-11
BH2018-17
BH2018-12
BH2018-15
BH2018-16
Decon Station for Lower Tailings (Planned)
BH2018-08
Water extraction
Passive Meter_18-PAS-02
Laydown, Toilet No.2
BH2018-07
BH2018-03
BH2018-10
Decon station BH1
BH2018-04
BH2018-01
BH2018-02
Lab
MSB trailer
Small ford
Passive Meter_18-PAS-01
Office
LZ
BH2018-05
BH2018-09
Armor blocks
Disposal core and soil samples
0 m
125 m
250 m
375 m
500 m
625 m
750 m

Figure 2 Drop structure 4 at approximately 07:30. Water was high, but lower than 23 August 2018.

Figure 3 Downstream of drop structure at approximately 07:30..

Figure 4 Suspected bedrock in BH18-09 at 71.9 m depth.

Figure 5 56.7 m to 60.95 m in BH16-09 – mixed waste rock with native materials

Figure 6 Area of undercutting on the road right after the primary creek ford ("little ford" on Figure 1). The dozer has created a berm at the top to prevent vehicles from getting close to the edge.

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 26 August 2018

Weather Conditions: Foggy and overcast	**Wood Field Coordinator:** Karen Hincks
Temperatures: Low: 4ºC, High: 18ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date*	Weekly Status*
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	0	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

*Friday is considered the end of the week.

1. Safety Health and Environment

- Ambient air quality testing is ongoing at 3 stations.
- At 06:45, Karen Hincks and Jeremy Rayski went to look at the creek. The creek level the same as when checked at 18:30 on 25 August.
- 07:00 safety meeting with project staff. Reiterated need for garbage management. Also reiterated that the road to the gate is a public road. Talked about not becoming complacent on the asbestos PPE. Mike Salisberg volunteered to run the safety meeting.
-

2. Key Activities

- Safety meeting on site at 07:00
- Moved MSD rig and support equipment over to the tailings area (used a trailer to transport equipment across the creek). Set up on CPT18-12 and
- Confirmed bedrock at BH18-09 and completed installation of SI, thermistor and VWPs.

3. Air Monitoring Data – data will be appended to the DR as they become available.

- Personal meters today – none.
- Passive meters (18-PAS-01, 02 & 03) ongoing (See Figure 1)

4. New Visitors

- No visitors on site today.
- Nisar Khan arrived at camp at the end of the day to replace Jessica. Bradley left site (replaced by Jim McDonald).

5. Observations

- DS4 gabion baskets were checked at approximately 07:30 and 18:30 and appeared secure, although additional damage to the concrete matting from 24 August was apparent.
- Based on the data from the logger in the lake, the lake peaked at 0.6 m above "background" (0.5 m above data logger) on 22 August around 14:15, and dropped to 0.3 m above "background" on 24 August around 12:15, then increased again to 0.4 m above background on 25 August at 10:00 (the most recent data available). Data from the logger did not download today.
- Checked the lake level at the end of the day (18:30), and the water level was about the same as 07:30.

6. Issues/Concerns

- Need to monitor the lake and creek levels throughout the day, as well as the depth of the bottom of the creek (the water level did not appear to come up, but the bottom of the creek appears to be eroding, making the crossing deeper).
- Reminder that the road to the gate is a public road, as there were people camped on the side of the road on the way in in the morning.

7. Drilling Progress

- The following boreholes are completed: BH18-01, BH18-20 and BH18-21.
- BH18-09 install was completed.
- CPT18-12 was completed to a depth of 21 m. BH18-12 was drilled to a depth of 9.1 m and encountered frozen tailings.

8. Driller Daily Reports

- MSD daily for overall services (excluding drilling time) attached

9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks	12	Glenn Thiessen	12			Sharon Mondor (EMT)	12
Victoria Brewer	12	Carl McKenzie	12			Michael McIssac	
Bradley Jackman	5	Ricardo Pantlitz	12			Alex Machica	
Jessica Pitman	12	Jake Jacobs	12			Joshua Ojierenem	
Lukas Brezina	12	Mike Salzisberg	12				
Jeremy Rayski	12	Terrance Ball	12				
Jim McDonald	12						
Nisar Khan		Dustin Loewen	12				
		Aaron Defort	12				
		Justin Holtkamp	12	-		-	
		Jennifer Goodale	12				
		Trent Jamieson					
Chris Jeffrey		Peter Jakestar					
Sam Fuller		Galen Clarke					
Kent Muderewich		Justin Jamieson					
`Totals	**77**		**120**		**0**		**112**

10. Attachments

- Borehole Tracking, FLHRAs (Available),
-

Figure 1

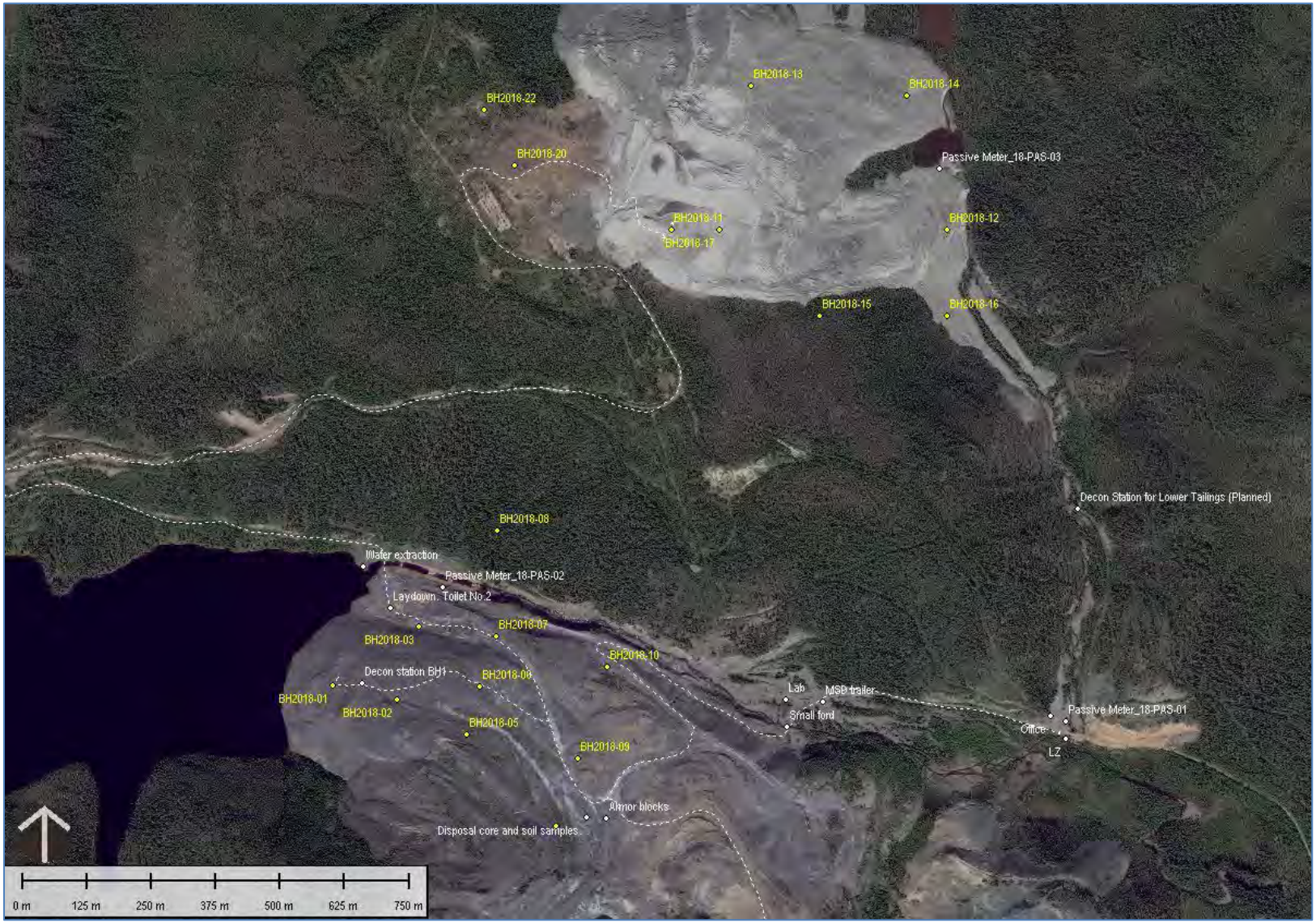

BH2018-13
BH2018-14
BH2018-22
BH2018-20
Passive Meter_18-PAS-03
BH2018-11
BH2018-12
BH2018-17
BH2018-15
BH2018-16
Decon Station for Lower Tailings (Planned)
BH2018-08
Water extraction
Passive Meter_18-PAS-02
Laydown, Toilet No.2
BH2018-07
BH2018-03
BH2018-10
Decon station BH1
BH2018-04
BH2018-01
BH2018-02
Lab
MSB trailer
Small ford
Passive Meter_18-PAS-01
Office
LZ
BH2018-05
BH2018-09
Armor blocks
Disposal core and soil samples
0 m
125 m
250 m
375 m
500 m
625 m
750 m

Figure 2 Creek crossing at Primary Ford ('little ford') at approximately 06:45. Water level similar to18:30 on 25 August 2018.

Figure 3 Bottom portion of Drop Structure 4 at approximately 07:30.

Figure 4 Fresh slope movements along the north slope of Clinton Creek within the past week during the flood event. None of the movements have blocked the full width of the creek, and they are being observed daily for any changes.

Figure 5 View MSD drill rig set up at SCPT18-12, from BH18-13.

Figure 6 Last run in BH18-09 – confirmed bedrock using the sonic drill rig.

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 27 August 2018

Weather Conditions: Foggy and overcast to partly sunny	**Wood Field Coordinator:** Karen Hincks
Temperatures: Low: 8ºC, High: 15ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date*	Weekly Status*
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	0	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

*Friday is considered the end of the week.

1. Safety Health and Environment

- Ambient air quality testing is ongoing at 3 stations and personal monitoring was completed on 2 people today
- At 06:45, Karen Hincks, Lukas Brezina and Jeremy Rayski went to look at the creek. The creek level the same as when checked at 18:30 on 26 August, even though there was heavy rain through the night.
- 07:00 safety meeting with project staff. Discussed management of change now that there is a group working in the tailings and procedures have changed. Discussed how check-in and check-out is to proceed with the site medic, and how changes need to be properly communicated.
- The decontamination station on the tailings pile was reconfigured to be more conducive to the work going on.

2. Key Activities

- Safety meeting on site at 07:00
- MSD completed drilling on BH18-12 and moved over to CPT18-14.
- MB finished pulling the casing and moved from BH18-09 to BH18-10 and drilled to a depth of 38.1 m.

3. Air Monitoring Data – data will be appended to the DR as they become available.

- Personal meters today – Justin (driller for MG), Mike (MSD helper).

- Passive meters (18-PAS-01, 02 & 03) ongoing (See Figure 1)

4. New Visitors

- No visitors on site today.

5. Observations

- DS4 gabion baskets were checked at approximately 07:30 and 18:30 and appeared secure, although additional damage to the concrete matting was apparent.
- Based on the data from the logger in the lake, the lake peaked at 0.6 m above "background" (0.5 m above data logger) on 22 August around 14:15, and dropped to 0.3 m above "background" on 24 August around 12:15, then increased again to 0.4 m above background on 25 August at 10:00 (the most recent data available). Data up until 10:00 on 27 August indicated that the water level continues to come down from the second peak on 25 August, and remains about 0.3 m above the level measured at the start of the program.
- Checked the lake level at the end of the day (18:30), and the water level was about the same as 07:30. The discharge through the drop structures appears to have reduced.

6. Issues/Concerns

- Need to monitor the lake and creek levels throughout the day, as well as the depth of the bottom of the creek (the water level did not appear to come up, but the bottom of the creek appears to be eroding, making the crossing deeper).
- With the movement of the rig to tailings area, there was a breakdown in communications when the MSD guys were leaving site. They called out down the road, but the medic was unsure if they were done for the day or not. At the safety meeting it was reiterated that leaving of the site needed to be clearly communicated with the medic, as she is keeping track of all of the people on and off site. Reminder to manage any changes and communicate clearly when situations change.
- Need to reiterate good radio communications on the roads, as they are generally not wide enough to pass on. Reminder that heavy equipment always gets the right of way.
- At the end of the day, the MB drillers left the drill location and the Wood employee was left alone on site. The MB driller was asked to please never allow this to happen again.

7. Drilling Progress

The following was completed today:

- BH18-10 is at a depth of 38.4 m.
- BH18-12 was completed at a depth of 31.5 m.
- MSD rig is set up on CPT18-14 and ready to start pushing cone in the morning.

The following holes are complete:

- Boreholes: BH18-01, BH18-09, BH18-12, BH18-20 and BH18-21.
- SCPTs: CPT18-12.

8. Driller Daily Reports

- MSD daily for overall services (excluding drilling time) attached

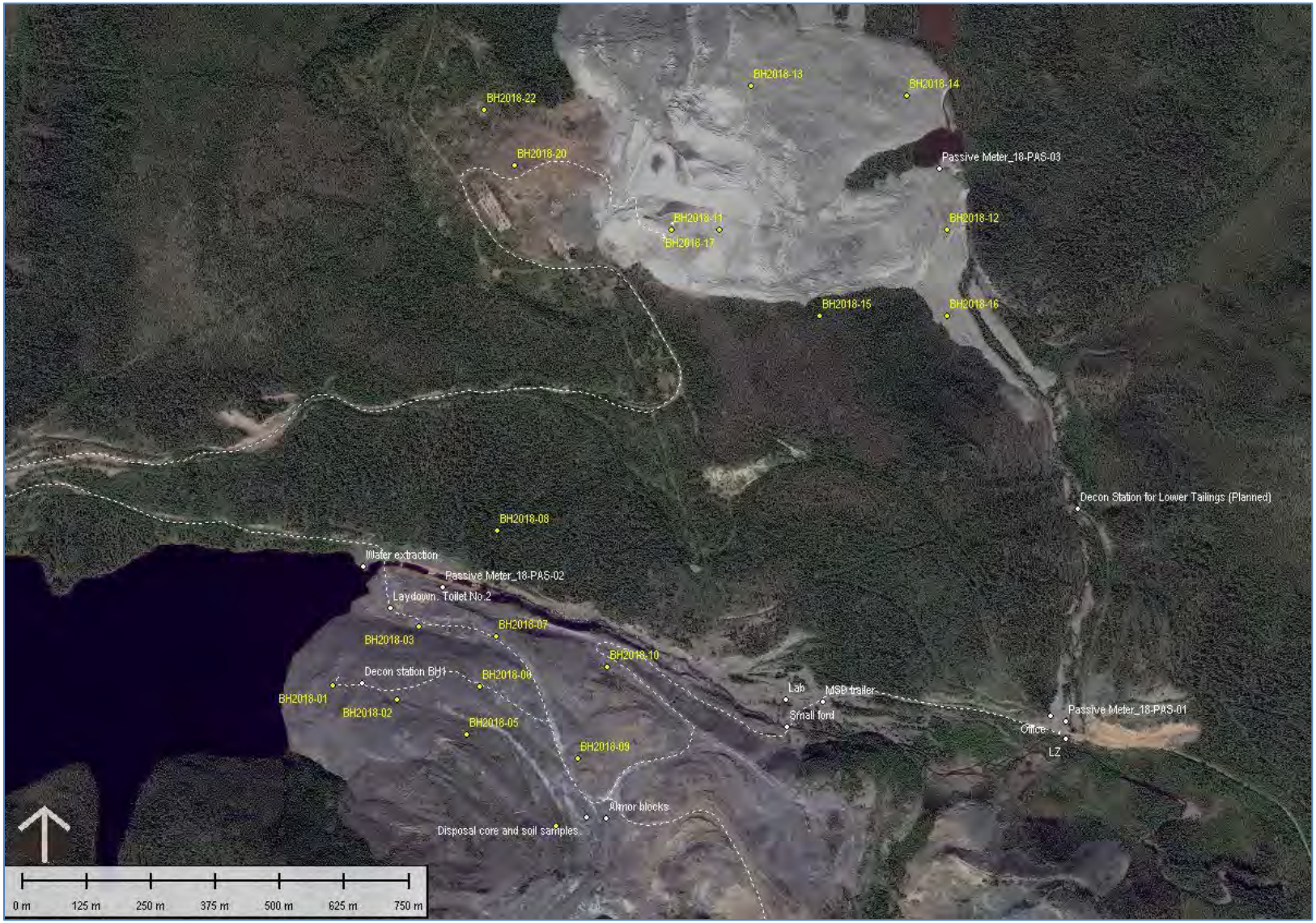
9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks	12	Glenn Thiessen	12			Sharon Mondor (EMT)	12
Victoria Brewer	6	Ricardo Pantlitz	12				
Jessica Pitman	6	Jake Jacobs	12			Alex Machica	
Lukas Brezina	12	Mike Salzisberg	12			Joshua Ojierenem	
Jeremy Rayski	12	Terrance Ball	12			Michael McIssac	
Jim McDonald	12						
Nisar Khan	12						
Vincent Chase		Dustin Loewen	12				
		Aaron Defort	12				
		Justin Holtkamp	12	-		-	
		Jennifer Goodale	12				
		Carl McKenzie					
Bradley Jackman		Trent Jamieson					
Chris Jeffrey		Peter Jakestar					
Sam Fuller		Galen Clarke					
Kent Muderewich		Justin Jamieson					
`Totals	**72**		**108**		**0**		**12**

10. Attachments

- Borehole Tracking, FLHRAs (Available)
-

Figure 1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BH2018-14
BH2018-22
BH2018-20
Passive Meter_18-PAS-03
BH2018-11
BH2018-12
BH2018-17
BH2018-15
BH2018-16
Decon Station for Lower Tailings (Planned)
BH2018-08
Water extraction
Passive Meter_18-PAS-02
Laydown, Toilet No.2
BH2018-07
BH2018-03
BH2018-10
Decon station BH1
BH2018-04
BH2018-01
BH2018-02
Lab
MSB trailer
Small ford
Passive Meter_18-PAS-01
Office
LZ
BH2018-05
BH2018-09
Armor blocks
Disposal core and soil samples
0 m
125 m
250 m
375 m
500 m
625 m
750 m

Figure 2 Creek crossing at Primary Ford ('little ford') at approximately 06:45. Water level similar to18:30 on 26 August 2018.

Figure 3 Ongoing erosion along the road up from the Primary ford ("little ford" in Figure 1). Staff have been advised to keep left, and the berm is still located on the upstream side of this.

Figure 4 Intermittent frozen tailings between 0 and 6.1 m in BH18-12.

Figure 5 Frozen tailings between 9.1 to 11.3 m in BH18-12.

Figure 6 BH18-10 between 4.9 and 7.9 m depth – waste rock.

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 28 August 2018

Weather Conditions: Overcast to partly sunny	**Wood Field Coordinator:** Karen Hincks
Temperatures: Low: 8ºC, High: 15ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date*	Weekly Status*
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	0	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

*Friday is considered the end of the week.

1. Safety Health and Environment

- Ambient air quality testing is ongoing at 3 stations and personal monitoring was completed on 3 people today
- At 06:45, Karen Hincks and Jeremy Rayski went to look at the creek. The creek level was about the same as when checked at 18:30 on 27 August.
- 07:00 safety meeting with project staff. Discussed that working alone is not acceptable, unless in equipment or something similar (ie working in the dozer with a check-in procedure, or running to the laydown in a truck to grab supplies with a known expected return time). But that no one is left behind at the end of the day.
- The decontamination station on the tailings pile was reconfigured to be more conducive to the work going on.

2. Key Activities

- Safety meeting on site at 07:00
- MSD set up and pushed 18 m in CPT18-14 and had to drill out due to refusal of the cone; were on standby the remainder of the day waiting for the coring head.
- MB finished installing the SI at BH18-10; SI still needs to be grouted.

3. Air Monitoring Data – data will be appended to the DR as they become available.

- Personal meters today – Jake (driller for MSD), Justin and Aaron (MSD driller and helper).

- Passive meters (18-PAS-01, 02 & 03) ongoing (See Figure 1)

4. New Visitors

- No visitors on site today.

5. Observations

- DS4 gabion baskets were checked at approximately 08:50 and appeared secure, although additional damage to the concrete matting was apparent.
- Based on the data from the logger in the lake, the lake peaked at 0.6 m above "background" (0.5 m above data logger) on 22 August around 14:15, and dropped to 0.3 m above "background" on 24 August around 12:15, then increased again to 0.4 m above background on 25 August at 10:00 (the most recent data available). Data up until 10:00 on 28 August indicated that the water level continues to come down remains about 0.25 m above the level measured at the start of the program.
- Checked the lake level at the start of the day and the lake appeared to be down about 10 cm from the previous morning.

6. Issues/Concerns

- Need to monitor the lake and creek levels throughout the day, as well as the depth of the bottom of the creek (the water level did not appear to come up, but the bottom of the creek appears to be eroding, making the crossing deeper).
- There is a bit of undercutting of the road from the Primary ford ("small ford" in Figure 1) up to BH18-10. The berm is still in place at the top of the road at approximately the location of the undercutting, but this has the potential to become a bigger issue. The lower lake level and creek level are a positive for this, but this condition needs to be monitored for any changes.

7. Drilling Progress

The following was completed today:

- BH18-10 has been drilled to target depth of 42 m; SI casing was installed. The borehole still needs to be grouted, and borehole BH18-10A will be drilled to install VWPs and thermistors.
- MSD rig pushed to a depth of 18 m, and was on standby for the remainder of the day as they were waiting on the coring head to drill out.

The following holes are complete:

- Boreholes: BH18-01, BH18-09, BH18-12, BH18-20 and BH18-21.
- SCPTs: CPT18-12.

8. Driller Daily Reports

MSD daily for overall services (excluding drilling time) attached

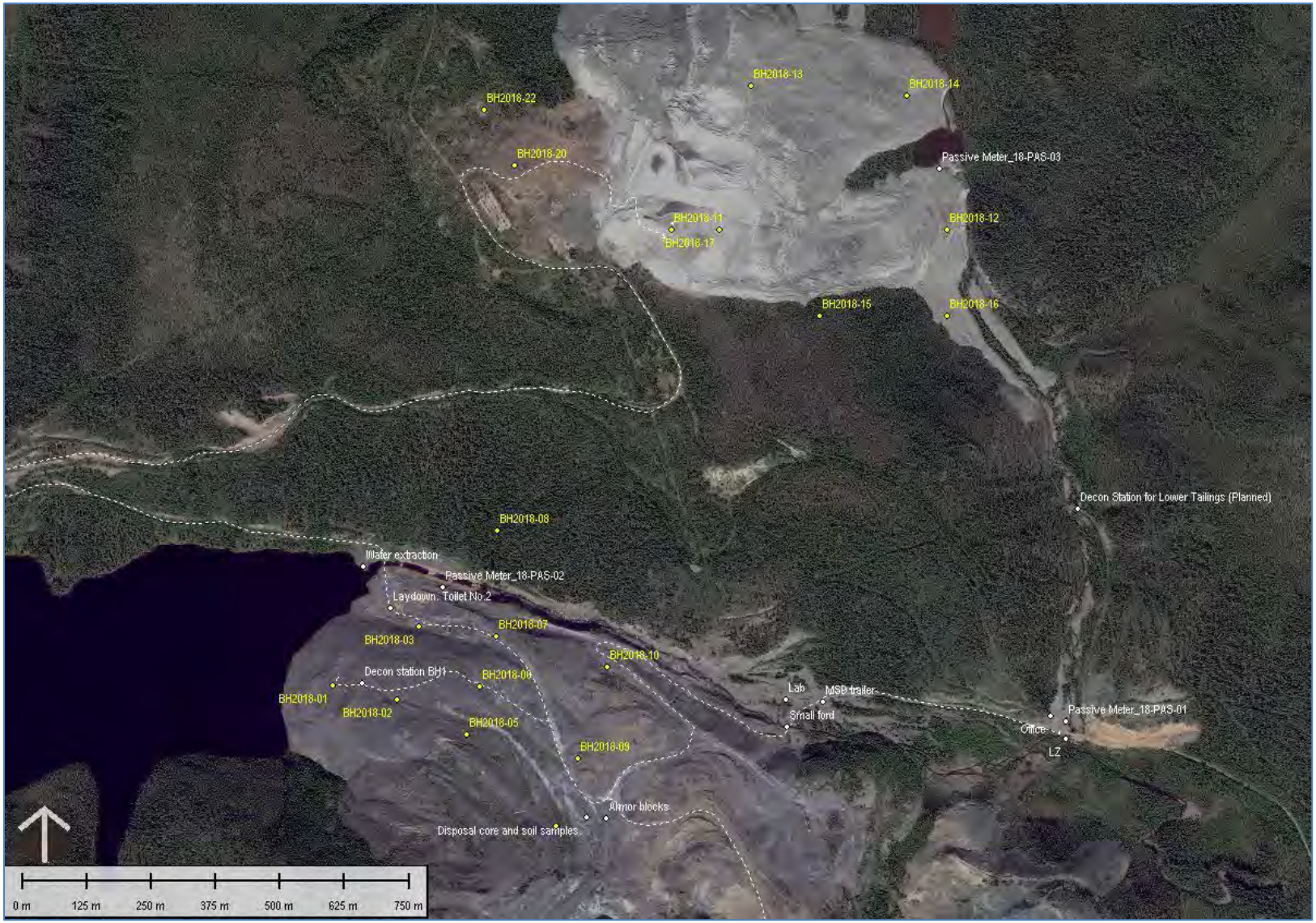
9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks	12	Glenn Thiessen	6			Sharon Mondor (EMT)	6
Lukas Brezina	12	Ricardo Pantlitz	12			Tammy Bell (EMT)	6
Jeremy Rayski	12	Jake Jacobs	12				
Jim McDonald	12	Mike Salzisberg	12				
Nisar Khan	12	Terrance Ball	12				
Vincent Chase		Ryan Babala	6				
Sam Fuller							
		Dustin Loewen	12				
		Aaron Defort	12				
		Justin Holtkamp	12	-		-	
		Jennifer Goodale	12				
Victoria Brewer		Carl McKenzie					
Bradley Jackman		Trent Jamieson					
Chris Jeffrey		Peter Jakestar				Alex Machica	
Jessica Pitman		Galen Clarke				Joshua Ojierenem	
Kent Muderewich		Justin Jamieson				Michael McIssac	
`Totals	**60**		**108**		**0**		**12**

10. Attachments

- Borehole Tracking, FLHRAs (Available)
-

Figure 1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BH2018-14
BH2018-22
BH2018-20
Passive Meter_18-PAS-03
BH2018-11
BH2018-12
BH2018-17
BH2018-15
BH2018-16
Decon Station for Lower Tailings (Planned)
BH2018-08
Water extraction
Passive Meter_18-PAS-02
Laydown, Toilet No.2
BH2018-07
BH2018-03
BH2018-10
Decon station BH1
BH2018-04
BH2018-01
BH2018-02
BH2018-05
Lab
MSB trailer
Small ford
Passive Meter_18-PAS-01
Office
LZ
BH2018-09
Armor blocks
Disposal core and soil samples
0 m
125 m
250 m
375 m
500 m
625 m
750 m

Figure 2 Area of undercutting along the creek, just upstream from the Primary ford. A berm has been constructed on the road above this to keep traffic away from this area.

Figure 3 Drop Structure 4 at approximately 09:00. The discharge through the drop structures appears to be decreasing.

Figure 4 Bedrock at 38.4 m depth in BH18-10.

Figure 5 Slickensided and sheared surfaces in the bedrock in BH18-10.

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 29 August 2018

Weather Conditions: Overcast to partly sunny, scattered showers	**Wood Field Coordinator:** Karen Hincks / Sam Fuller
Temperatures: Low: 3ºC, High: 12ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date*	Weekly Status*
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	0	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

*Friday is considered the end of the week.

1. Safety Health and Environment

- Ambient air quality testing is ongoing at 3 stations and personal monitoring was completed on 3 people today: Justin and Jake (1 driller at each rig)
- At 06:45, Karen Hincks and Sam Fuller went to look at the creek level at the primary ford ("little ford" in figure 1). The creek level was about the same as when checked at 18:30 on 28 August.
- 07:00 safety meeting with project staff. Discussed driving on site, using the radio to call locations and be aware of others locations, being sure to always wear eye protection, setting up decontamination stations before starting work at a site, proper disposal of asbestos waste, cleaning vehicles before leaving site and helping new employees with decontamination procedures.
- A bear was sited by the water truck driver at the E edge of the lower tailings near the trees (Figure 1). The bears location was announced on the radio so that all on site staff were aware of its location.

2. Key Activities

- Safety meeting on site at 07:00 (Stressed driving re muddy roads, housekeeping re tripping hazards and testing).
- MSD completed the drill out to the depth of the refusal of the cone; the material was bedrock, so the CPT is complete. Moved over to start installing at BH18-14 (VWPs and thermistor)

- MB finished grouting the SI at BH18-10; moved over and drilled to 35 m in BH18-10A and completed the installation of the VWP and thermistors.

3. Air Monitoring Data – data will be appended to the DR as they become available.

- Personal meters today – Jake (driller for MSD), Justin and Aaron (MSD driller and helper).
- Passive meters (18-PAS-01, 02 & 03) ongoing (See Figure 1)

4. New Visitors

- No visitors on site today.

5. Observations

- DS4 gabion baskets (Figure 2) were checked at approximately 08:50 and appeared secure, although additional damage to the concrete matting was apparent.
- Based on the data from the logger in the lake, the lake peaked at 0.6 m above "background" (0.5 m above data logger) on 22 August around 14:15, and dropped to 0.3 m above "background" on 24 August around 12:15, then increased again to 0.4 m above background on 25 August at 10:00 (the most recent data available). Data up until 10:00 on 29 August indicated that the water level continues to come down remains about 0.25 m above the level measured at the start of the program.
- Checked the lake level at the start of the day and the lake appeared to be down about 5 cm from the previous morning.
- A small black bear was spotted on the road between the gate and the tailings area along Wolverine Creek in the morning.

6. Issues/Concerns

- Access to BH17 & 13 is compromised by the continual wet conditions. Dozer driver is called in for Aug 30th to improve further in consultation with driller.
- Access to across the Clinton creek ford is not possible for the MSD skid steer (access to BH8 & 11). Dozer will work on placing rip-rap asap on Aug 30th if improving access to BH11 & 17 needs to wait for drier weather.
- Need to monitor the lake and creek levels throughout the day, as well as the depth of the bottom of the creek (the water level did not appear to come up, but the bottom of the creek appears to be eroding, making the crossing deeper).
- There is a bit of undercutting of the road from the Primary ford ("small ford" in Figure 1) up to BH18-10. The berm is still in place at the top of the road at approximately the location of the undercutting, but this has the potential to become a bigger issue (pilons were placed to reduce this area to 1 lane traffic, Figure 8). The lower lake level and creek level are a positive for this, but this condition needs to be monitored for any changes. The dozer operator will come into site tomorrow morning to do some work in improving the ford crossing.

7. Drilling Progress

The following was completed today:

- BH18-10 SI (Figure 3 & 6) was grouted. MB drill rig moved over, drilled BH18-10A and installed the thermistor and VWPs. MB will move to BH6 in the morning.
- MSD rig drilled out the CPT hole using the HQ core barrel and encountered bedrock at the depth of refusal (18.05 m). Moved the rig over and drilled BH18-14 to 22.3 m (bedrock at 19.56 m). The thermistor and VWPs will be installed in the morning.

The following holes are complete:

- Boreholes: BH18-01, BH18-09, BH18-10, BH18-12, BH18-20 and BH18-21.
- SCPTs: CPT18-12, CPT18-14

8. Driller Daily Reports

MSD daily for overall services (excluding drilling time) attached

9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks	12	Glenn Thiessen	-			Sharon Mondor (EMT)	-
Lukas Brezina	12	Ricardo Pantlitz	12			Tammy Bell (EMT)	12
Jeremy Rayski	12	Jake Jacobs	12				
Jim McDonald	12	Mike Salzisberg	12				
Nisar Khan	12	Terrance Ball	12				
Vincent Chase	12	Ryan Babala	12				
Sam Fuller	12						
		Dustin Loewen	12				
		Aaron Defort	12				
		Justin Holtkamp	12	-		-	
		Jennifer Goodale	12				
Victoria Brewer		Carl McKenzie					
Bradley Jackman		Trent Jamieson					
Chris Jeffrey		Peter Jakestar				Alex Machica	
Jessica Pitman		Galen Clarke				Joshua Ojierenem	
Kent Muderewich		Justin Jamieson				Michael McIssac	
`Totals	**84**		**108**		**0**		**12**

10. Attachments

- Borehole Tracking, FLHRAs (Available)
-

Figure 1

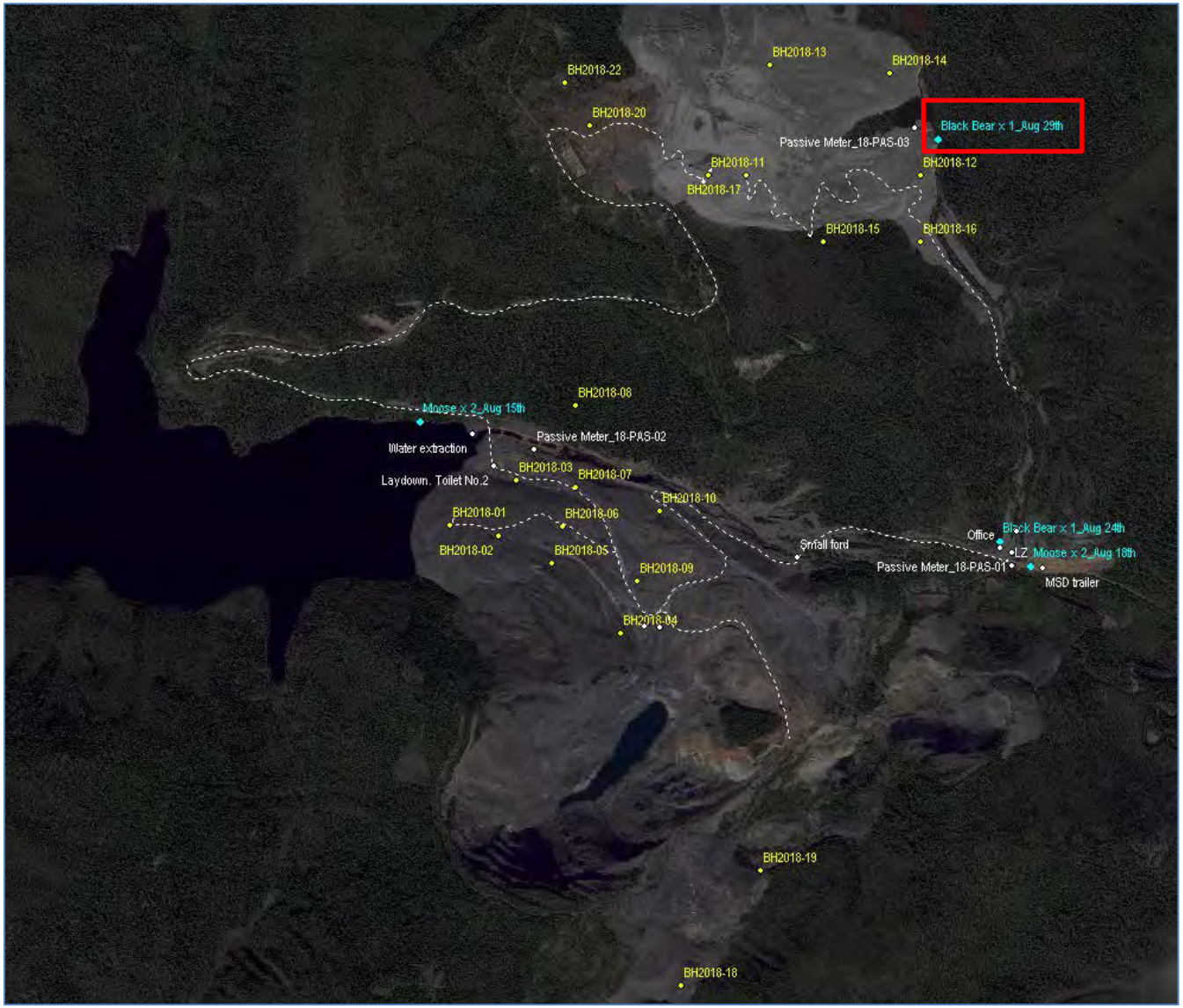

BH2018-13
BH2018-14
BH2018-22
BH2018-20
Black Bear x 1_Aug 29th
Passive Meter_18-PAS-03
BH2018-11
BH2018-12
BH2018-17
BH2018-15
BH2018-16
BH2018-08
Moose x 2_Aug 15th
Water extraction
Passive Meter_18-PAS-02
BH2018-03
BH2018-07
Laydown. Toilet No.2
BH2018-10
BH2018-01
BH2018-06
Office
Black Bear x 1_Aug 24th
Small ford
LZ
Moose x 2_Aug 18th
BH2018-02
BH2018-05
Passive Meter_18-PAS-01
BH2018-09
MSD trailer
BH2018-04
BH2018-19
BH2018-18

Figure 2 Drop Structure 4 at approximately 08:15.

Figure 3 Drill rig set up on BH18-10 and drillers getting prepared to grout the SI.

Figure 4 Completed SI, VWP and thermistor installation at BH18-09.

Figure 5 Drop Structure 3 showing a zone of more flow through the middle with eddies on both sides of the channel.

Figure 6 Decontamination station set up at BH18-10

Figure 7 Rig set up and drilling at BH18-14

Figure 8 Pilons to reduce access to 1 lane.

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 30 August 2018

Weather Conditions: Overcast to light rain from 0930 to 1200	**Wood Field Coordinator:** Sam Fuller
Temperatures: Low: 3ºC, High: 12ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date*	Weekly Status*
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	0	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

*Friday is considered the end of the week.

1. Safety Health and Environment

- 0700 - tailgate
- Instructed staff to test SAT phones.
- Stressed the following – housekeeping, radio comms, single lane on waster rock road where pilons were.
- Two Hazard observation cards were received from MB rig – Safety will review them today.
    - Aug 29th – Uneven walkway was noticed and fixed.
    - Aug 30th – Winch cable rubbing on a hose – Hose was secured out of the way.

2. Key Activities

- MB Rig move from BH10 to BH6 (Figure 6) – drill to 26.3 m (Good cleanup at BH10 (Figure 5).
- MSD complete install at BH14, move to CPT17, setup hoses for drilling BH17 & BH13.
- Dozer fixed access to lower tailings, access to BH14 at the pond, access to BH17, towed skid steer with casing up to BH17, remained as support to MSD until move completed, then tracked to small ford and built up large rocks DS of crossing in preparation for rip-rap to be lain. Crossing became slightly deeper, but the crossing was better as it was tracked by the dozer before end of day.

- A load of supplies were delivered to the sites (MSD, figure 4), and all waste taken off-site – Asbestos waste will be stock-piled at MSD in WH until confirmed the disposal steps (Comms with Ryan Babala).
- Toilets were cleaned out – chains installed due to muddy conditions – guest who Jeremy was with at all times.
- Cleaned the office (Figure 3).

3. Air Monitoring Data – data will be appended to the DR as they become available.

- Personal meters today – None
- Passive meters (18-PAS-01, 02 & 03) ongoing (See Figure 1)

4. New Visitors

- Peter Jakestar – delivery for MSD
- Vac truck driver – No name recorded

5. Observations

- DS4 gabion baskets (Figure 2) were checked at approximately 08:50 and appeared secure, although additional damage to the concrete matting was apparent.
- Water level in the small ford seems unchanged from yesterday.
- Light rain from 0930 to 1230.

6. Issues/Concerns

- We still do not have a second coring head. One may become available from a different job in Fort Saint John around Sept 2.
- Access to across the Clinton creek ford is not possible for the MSD skid steer (access to BH8 & 11). Dozer has created a dam of large rocks (Figure 8) and on Aug 31st rip rap will be placed here to raise the level. The bucket will also fit the MB John Deer Skid steer, which can be used to place rip-rap on the upper ford (Figure 7).
- Road conditions are very muddy and more maintenance is required by the dozer first thing tomorrow am.

7. Drilling Progress

The following was completed today:

- MB Rig - BH18-06 drilled to 26.3 m.
- MSD rig installed instruments in BH14, moved to BH17 and setup water supplies from top of tailings.

The following holes are complete:

- Boreholes: BH18-01, BH18-09, BH18-10, BH18-12, BH18-14, BH18-20 and BH18-21.
- SCPTs: CPT18-12, CPT18-14

8. Driller Daily Reports

MSD daily for overall services (excluding drilling time) attached

9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks	0	Glenn Thiessen	-			Sharon Mondor (EMT)	-
Lukas Brezina	12	Ricardo Pantlitz	12			Tammy Bell (EMT)	12
Jeremy Rayski	12	Jake Jacobs	12				
Jim McDonald	12	Mike Salzisberg	12				
Nisar Khan	12	Terrance Ball	12				
Vincent Chase	12	Ryan Babala	12				
Sam Fuller	12	Carl McKenzie	12				
		Dustin Loewen	12				
		Aaron Defort	12	-		-	
		Justin Holtkamp	12				
		Jennifer Goodale	12				
Victoria Brewer							
Bradley Jackman		Trent Jamieson					
Chris Jeffrey		Peter Jakestar				Alex Machica	
Jessica Pitman		Galen Clarke				Joshua Ojierenem	
Kent Muderewich		Justin Jamieson				Michael McIssac	
`Totals	**84**		**108**		**0**		**12**

10. Attachments

- Borehole Tracking, FLHRAs (Available)

Figure 1

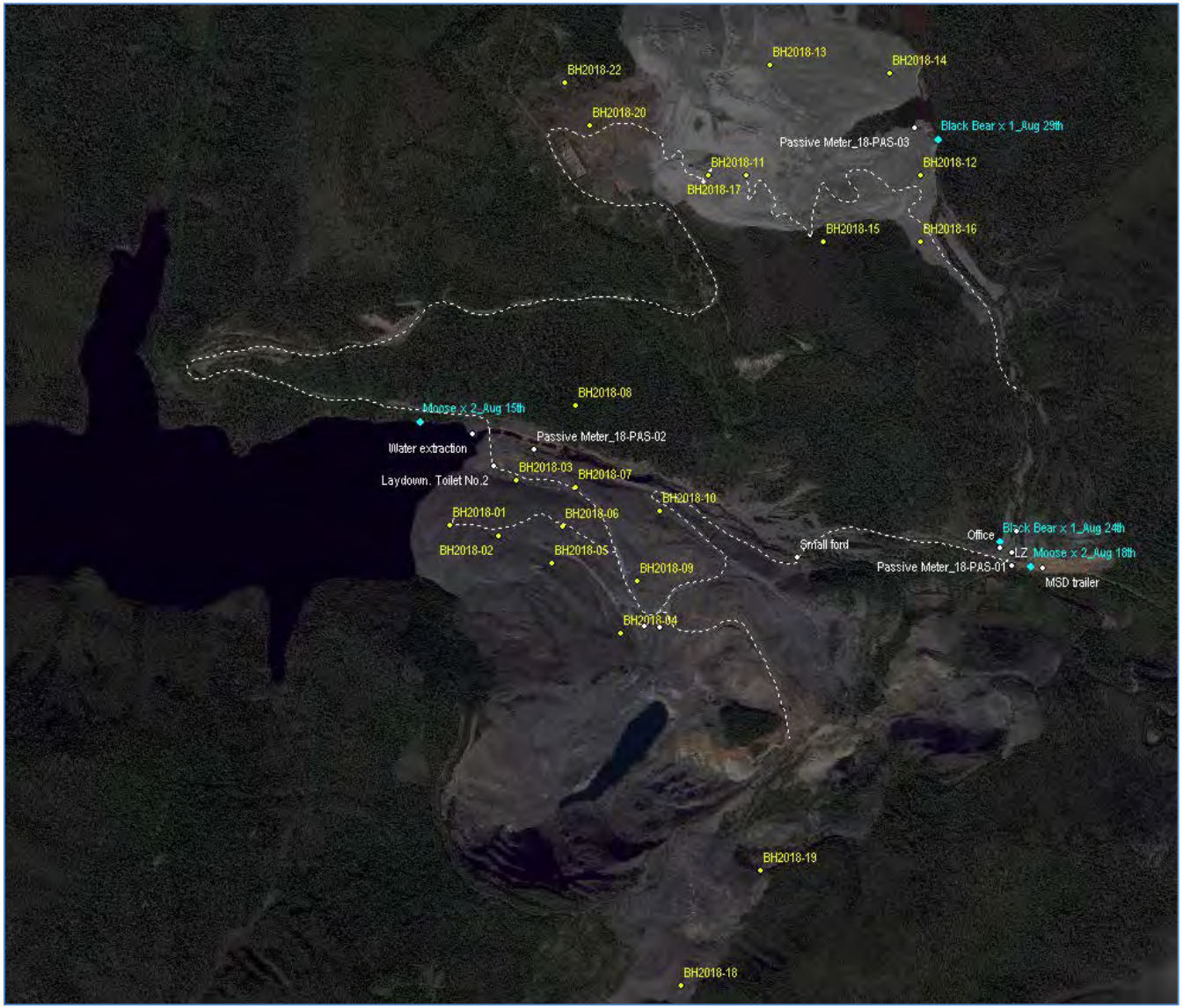
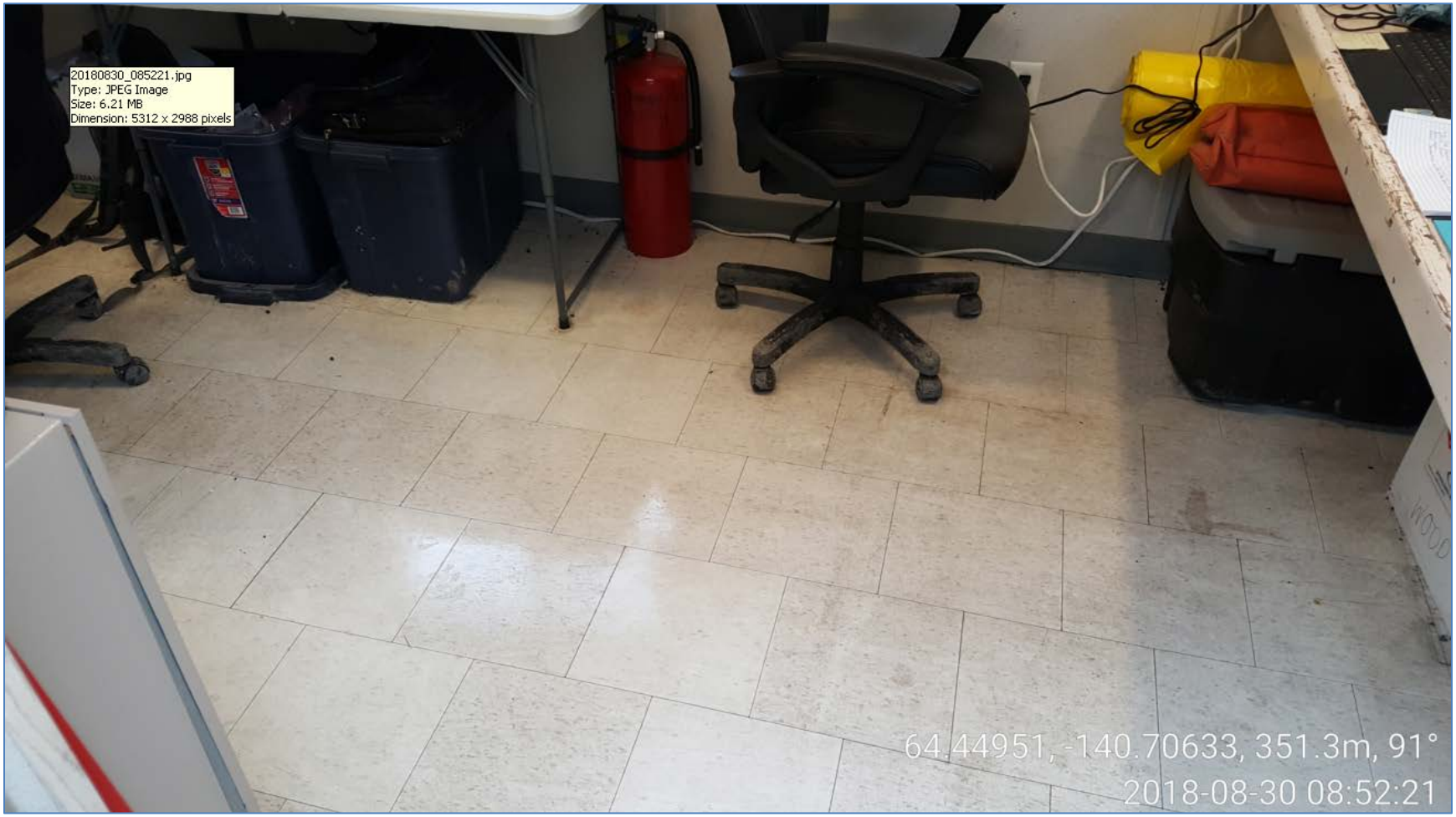

BH2018-13
BH2018-14
BH2018-22
BH2018-20
Black Bear x 1_Aug 29th
Passive Meter_18-PAS-03
BH2018-11
BH2018-12
BH2018-17
BH2018-15
BH2018-16
BH2018-08
Moose x 2_Aug 15th
Passive Meter_18-PAS-02
Water extraction
BH2018-03
BH2018-07
Laydown, Toilet No.2
BH2018-10
BH2018-01
BH2018-06
Office
Black Bear x 1_Aug 24th
Small ford
LZ
Moose x 2_Aug 18th
BH2018-02
BH2018-05
Passive Meter_18-PAS-01
BH2018-09
MSD trailer
BH2018-04
BH2018-19
BH2018-18

Figure 2 Drop Structure 4

Figure 3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2018-08-30 08:52:21

Figure 4

Figure 5

20180830_150320.jpg
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2018-08-30 15:03:20
20180830_150354.jpg
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Dimension: 5312 x 2988 pixels

Figure 6

20180830_151417.jpg
Type: JPEG Image
Size: 8.62 MB
Dimension: 5312 x 2988 pixels
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2018-08-30 15:14:17

Figure 7

Figure 8

20180830_171803.jpg
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2018-08-30 17:18:03

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 31 August 2018

Weather Conditions: Overcast in morning, clear in afternoon.	**Wood Field Coordinator:** Sam Fuller
Temperatures: Low: 3ºC, High: 12ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date*	Weekly Status*
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	1	L	-	1	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

*Friday is considered the end of the week.

1. Safety Health and Environment

- 0700 – tailgate
- A number of hazard observations were recorded in the last 2 days and received today. These were relating to housekeeping and road conditions.
    - All road hazards were addressed today (muddy, Figures 4 & 5), apart from the fords which are improved and manageable for the trucks (Figure 3) but not the skid steer. Housekeeping was addressed by safety inspection during the day.
    - One hazard observation involved a person entering the restricted area without the correct PPE. It appears they were not in the line-of-fire, but further investigations by Safety will be made to determine if this should be classified as a near-miss.
- Drop structures were inspected (Figure 2) and appear unchanged from yesterday.

2. Key Activities

- Safety meeting on site at 07:00
- MSD continued drilling at BH17
- MB continued drilling at BH6
- Dozer cleared roads and other access.
- Skid steer moved rip-rap to small ford.
- Air-monitoring and Environmental sampling is ongoing.

3. Air Monitoring Data – data will be appended to the DR as they become available.

- Personal meters today – Terrence, Jake, Carl
- Area Monitor – Dozer & MB support truck
- Passive meters (18-PAS-01, 02 & 03) ongoing (See Figure 1)

4. New Visitors

- No visitors on site today.

5. Observations

- DS4 gabion baskets (Figure 2) were checked and appeared secure.
- Water level in the small ford seems unchanged from yesterday.

6. Issues/Concerns

- We still do not have a second coring head. One may become available from a different job in Fort Saint John around Sept 2.
- Access to across the Clinton creek ford (Figure 3) is still not possible for the MSD skid steer (access to BH8 & 11). Dozer has created a dam of large rocks (Figure 8) and some rip rap was placed there to raise the level. This is a slow process with a skid-steer as it has to travel from the main gate where the rip-rap is stockpiled, and the skid-steer is periodically needed for rig drilling support.
- Fuel is running low in some of the Wood site trucks. We will make a trip to collect the Hepa-vac today and return with more fuel.

7. Drilling Progress

The following was completed today:

- MB drilled to 59.7 m in BH6.
- MSD drilled to 39.6 m in BH17.

The following holes are complete:

- Boreholes: BH18-01, BH18-09, BH18-10, BH18-12, BH18-20 and BH18-21.
- SCPTs: CPT18-12, CPT18-14 and CPT17

8. Driller Daily Reports

MSD daily for overall services (excluding drilling time) attached

9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks	12	Glenn Thiessen	-			Sharon Mondor (EMT)	-
Lukas Brezina	12	Ricardo Pantlitz	12			Tammy Bell (EMT)	12
Jeremy Rayski	12	Jake Jacobs	12				
Jim McDonald	12	Mike Salzisberg	12				
Nisar Khan	12	Terrance Ball	12				
Vincent Chase	12	Ryan Babala	12				
Sam Fuller	12						
		Dustin Loewen	12				
		Aaron Defort	12				
		Justin Holtkamp	12	-		-	
		Jennifer Goodale	12				
Victoria Brewer		Carl McKenzie					
Bradley Jackman		Trent Jamieson					
Chris Jeffrey		Peter Jakestar	2			Alex Machica	
Jessica Pitman		Galen Clarke				Joshua Ojierenem	
Kent Muderewich		Justin Jamieson				Michael McIssac	
`Totals	**84**		**108**		**0**		**12**

10. Attachments

- Borehole Tracking, FLHRAs (Available)
-

Figure 1 – Site layout

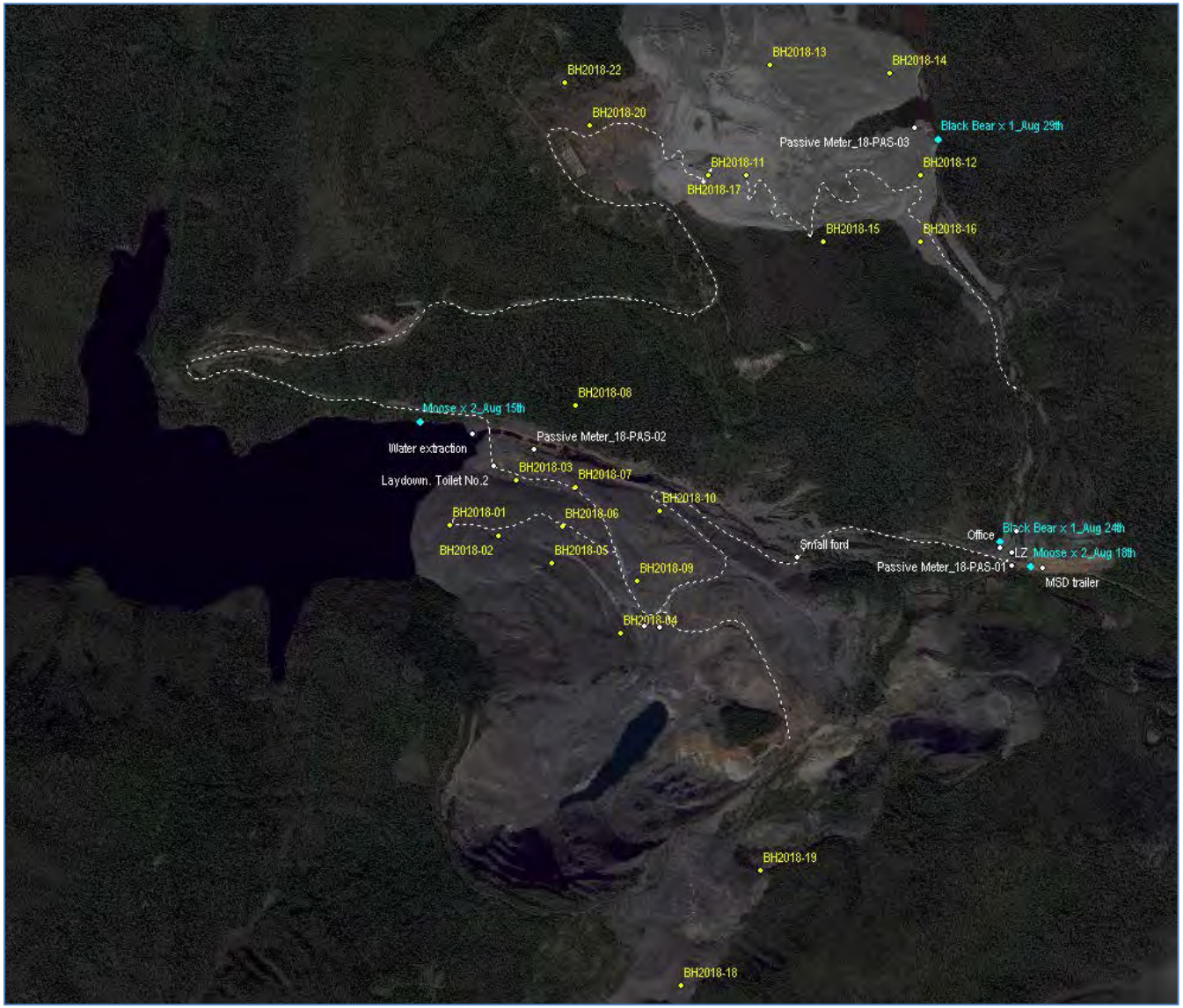


Figure 2 Drop Structures

Figure 3 Small ford

Figure 4 Cleaned road up to waste rock

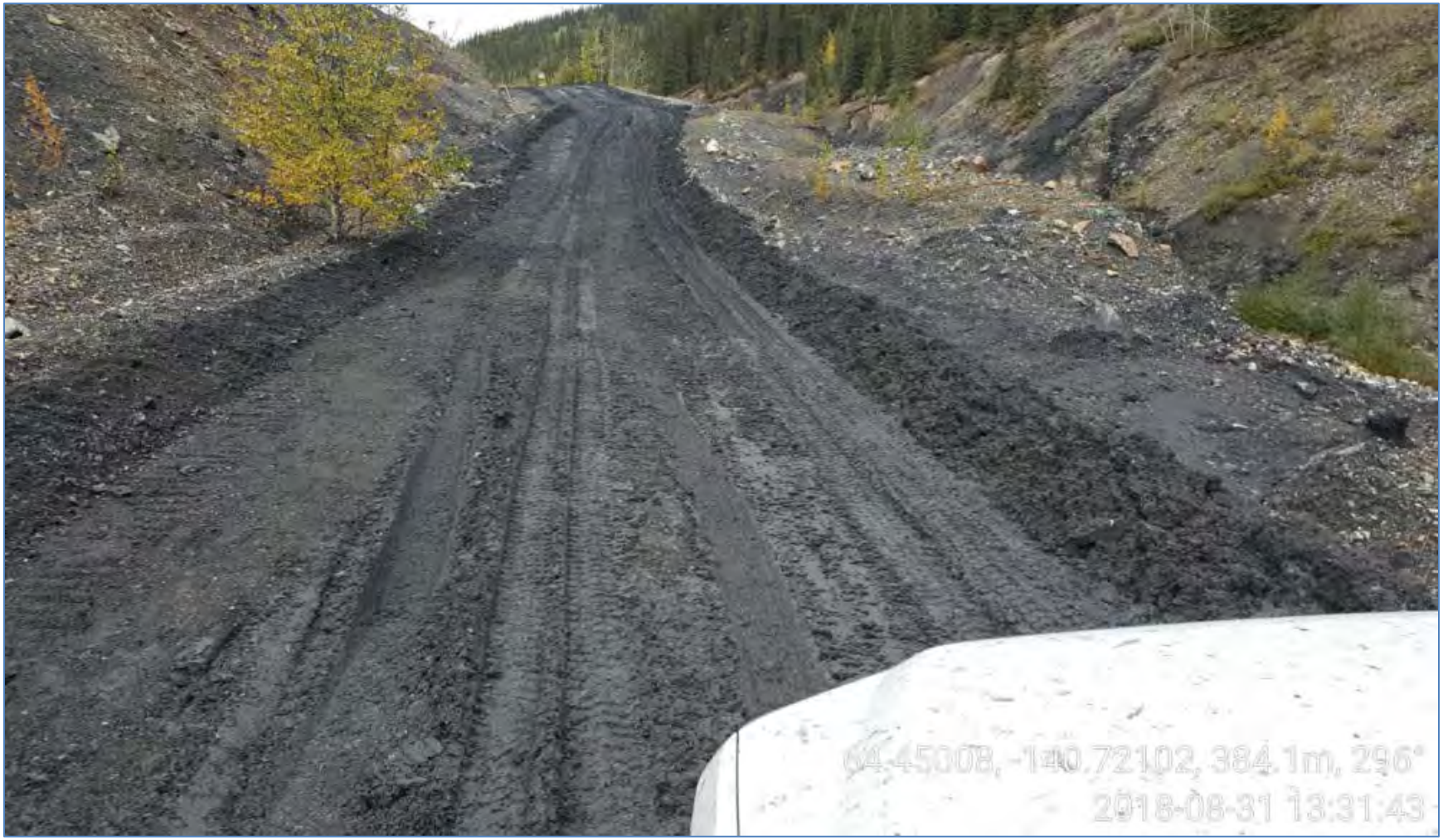


Figure 5

Figure 6

Figure 7

Figure 8

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 31 August 2018

Weather Conditions: Overcast in morning, clear in afternoon.	**Wood Field Coordinator:** Sam Fuller
Temperatures: Low: 3ºC, High: 12ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date*	Weekly Status*
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	1	L	-	2	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

*Friday is considered the end of the week.

1. Safety Health and Environment

- 0700 – tailgate
- One HoC was received regards a truck parked on a steep slope without wheel chocks – chocks were installed immediately.
- Drop structures were inspected (Figure 2) and appear unchanged from yesterday.

2. Key Activities

- Safety meeting on site at 07:00
- MSD completed drilling at BH17 (Figure 5) and will perform DH seismic and install tomorrow.
- MB continued drilling at BH6. They had 1 run remaining and will install tomorrow morning.
- Dozer spent all day working on an access from BH17 to BH11, improving pads at BH13, and enlarging the parking spaces near BH17 and the turning point towards BH13.
- Air-monitoring and Environmental sampling is ongoing.

3. Air Monitoring Data

- Personal meters today – Terrence (MSD helper) & Aaron (MB helper)
- Area Monitor – Water truck cab & Office
- Passive meters (18-PAS-01, 02 & 03) ongoing (See Figure 1)

4. New Visitors

- No visitors on site today.

5. Observations

- DS4 gabion baskets (Figure 2) were checked and appeared secure.
- Water level in the small ford seems unchanged from yesterday (Figure 3).

6. Issues/Concerns

- We still do not have a second coring head. MSD informs that it will arrive on Sept 3rd.
- Access to across the Clinton creek ford (Figure 3) is still not possible for the MSD skid steer (access to BH8 & 11). Dozer has created a dam of large rocks (Figure 8) and some rip rap was placed there to raise the level. This is a slow process with a skid-steer as it has to travel from the main gate where the rip-rap is stockpiled, and the skid-steer is periodically needed for rig drilling support.
    - The dozer has been occupied maintain access on the lower tailings and trying to create an access from BH17 to BH11 – this may negate the need to build up the fords as detailed above. This will become clearer tomorrow after further work.

7. Drilling Progress

The following was completed today:

- MB drilled to 75 m in BH6.
- MSD drilled to 54.9 m in BH17.

The following holes are complete:

- Boreholes: BH18-01, BH18-09, BH18-10, BH18-12, BH18-20 and BH18-21.
- SCPTs: CPT18-12, CPT18-14 and CPT17

8. Driller Daily Reports

MSD daily for overall services (excluding drilling time) attached

9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks	12	Glenn Thiessen	-			Sharon Mondor (EMT)	-
Lukas Brezina	12	Ricardo Pantlitz	12			Tammy Bell (EMT)	12
Jeremy Rayski	12	Jake Jacobs	12				
Jim McDonald	12	Mike Salzisberg	12				
Nisar Khan	12	Terrance Ball	12				
Vincent Chase	12	Ryan Babala	12				
Sam Fuller	12						
		Dustin Loewen	12				
		Aaron Defort	12				
		Justin Holtkamp	12	-		-	
		Jennifer Goodale	12				
Victoria Brewer		Carl McKenzie					
Bradley Jackman		Trent Jamieson					
Chris Jeffrey		Peter Jakestar	2			Alex Machica	
Jessica Pitman		Galen Clarke				Joshua Ojierenem	
Kent Muderewich		Justin Jamieson				Michael McIssac	
`Totals	**84**		**108**		**0**		**12**

10. Attachments

- Borehole Tracking, FLHRAs (Available)
-

Figure 1 – Site layout

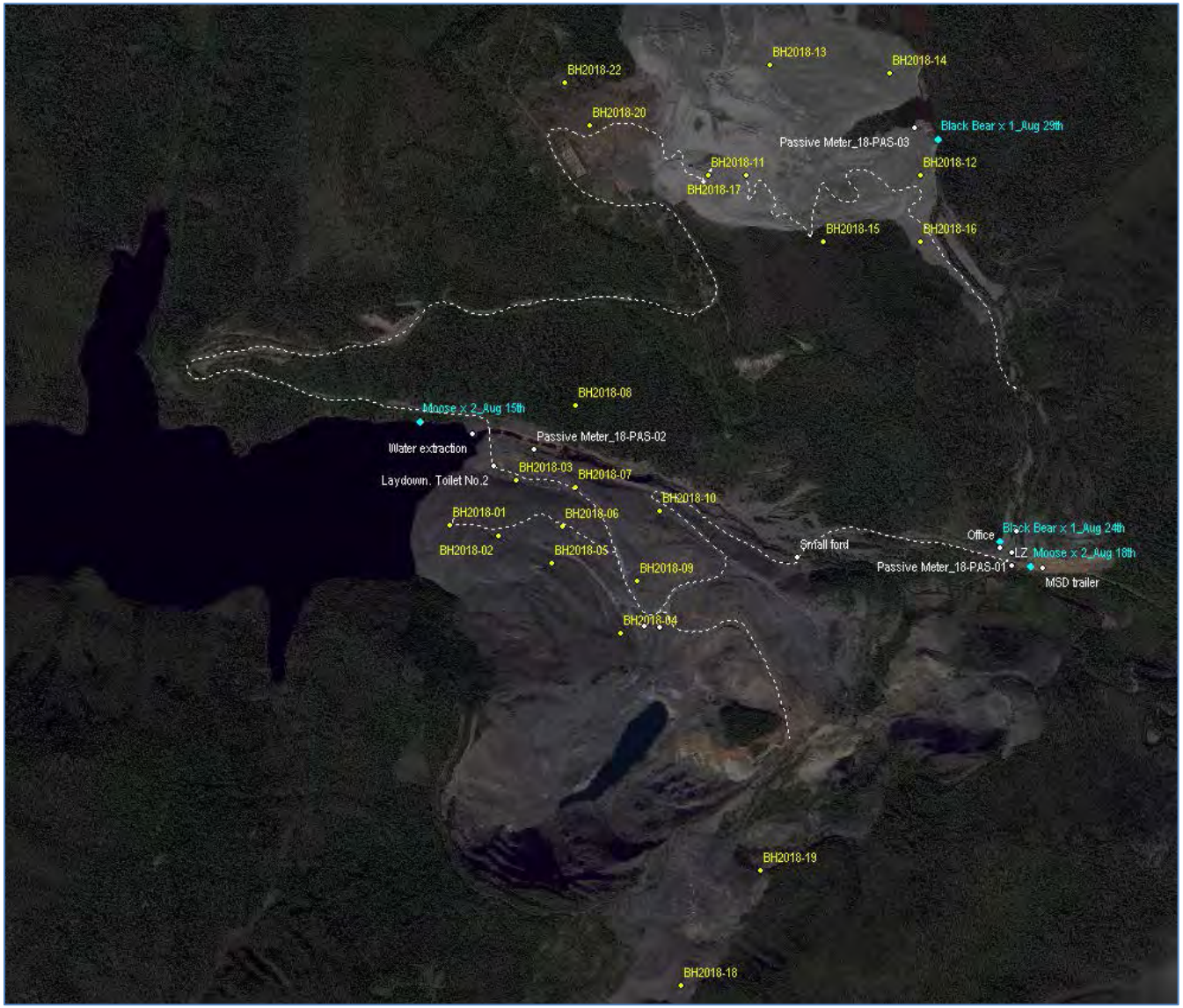


Figure 2 Drop Structure 4.

Figure 3 Small ford

Figure 4 Undercutting of road access to waste rock is unchanged from rain event.

Figure 5 View down along water line from near BH11 to BH17

Figure 6

Figure 7

Figure 8

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 02 September 2018

Weather Conditions: Overcast with scattered shower.	**Wood Field Coordinator:** Sam Fuller
Temperatures: Low: 3ºC, High: 12ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date*	Weekly Status*
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	1	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

*Friday is considered the end of the week.

1. Safety Health and Environment

- 0700 – tailgate
- The HoC received on Set 01 regarding the vehicle driving over the MB casing was investigated. Pipe was placed in and area where vehicles were turning with no barricades, and it did not contrast strongly with the ground. The driver noted a bump at the time, but thought this to be a rock as is typical of the terrain. However, a more thorough walk-around of the vehicle and available turning space should have been performed. A pilon was delivered to the area to demark where pipe was being stored (Figure 7). See attached near miss report.
- Drop structures were inspected (Figure 2) and appear unchanged from yesterday.

2. Key Activities

- Safety meeting on site at 07:00
- MSD completed installing instruments at BH17 (Figure 6), and partly moved to BH11. CPT11 will commence tomorrow morning
- MB completed installing instruments at BH6, and partly moved to BH07. BH07 will commence tomorrow morning to install the SI. BH07a will follow to install VWP & thermistors.
- Dozer spent the morning preparing access from BH17 to BH11 directly, to avoid the rig tracking all around through the waste rock. Then the dozer moved to the waste rock, improved the small ford (Figure 5), improved the upper ford, and widened the access to BH19 at porcupine creek. It was confirmed with the MSD driller that the dozer will not be needed on Sept 3rd, and maybe not

until BH8 is drilled. Lead to re-inspect BH8 to see if improvements are needed or just drier conditions.

- Air-monitoring and Environmental sampling is ongoing.

3. Air Monitoring Data

- Personal meters today – Terrence (MSD helper), Nizar (MB Geotech), & Sam (Lead).
- Area Monitor – Medic van & Lab.
- Passive meters (18-PAS-01, 02 & 03) ongoing (See Figure 1)

4. New Visitors

- No visitors on site today.

5. Observations

- DS4 gabion baskets (Figure 2) were checked and appeared secure.
- Water level in the small ford seems unchanged from yesterday (Figure 3).
- The undercutting of the access road to the waste rock (Figure 4).

6. Issues/Concerns

- We still do not have a second coring head. MSD informs that it will arrive on Sept 3rd.
- MSD foreman Ryan left site in the late afternoon yesterday and delegated the role to Jake Jacobs the MSD driller. Trent Jamieson is due to arrive on Thursday. This is not ideal, as Jake is occupied all day drilling. However, this is manageable by Wood.
- Both fords have been improved and are now passable by the skid-steers (Figure 5).
- Arrangements need to be made to rotate the medic.
- Terrence Ball (MSD) will swap out for Peter Jakestar tomorrow evening. Josh Holtkamp will swap out for Ryan Berg on Sept 5th. For Wood, the lab tech, MB geotech, Safety and Enviro staff will rotate on Sept5/6th, and Karen Hinks will return.

7. Drilling Progress

- MSD completed installing instruments at BH17 (Figure 6), and partly moved to BH11. CPT11 will commence tomorrow morning
- MB completed installing instruments at BH6, and partly moved to BH07. BH07 will commence tomorrow morning to install the SI. BH07a will follow to install VWP & thermistors.

The following holes are complete:

- Boreholes: BH18-01, BH18-06, BH18-09, BH18-10, BH18-12, BH18-17, BH18-20 & BH18-21.
- SCPTs: CPT18-12, CPT18-14 & CPT18-17.

8. Driller Daily Reports

MSD daily for overall services (excluding drilling time) attached

9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks	12	Glenn Thiessen	-			Sharon Mondor (EMT)	-
Lukas Brezina	12	Ricardo Pantlitz	12			Tammy Bell (EMT)	12
Jeremy Rayski	12	Jake Jacobs	12				
Jim McDonald	12	Mike Salzisberg	12				
Nisar Khan	12	Terrance Ball	12				
Vincent Chase	12	Ryan Babala	6				
Sam Fuller	12						
		Dustin Loewen	12				
		Aaron Defort	12				
		Justin Holtkamp	12	-		-	
		Jennifer Goodale	12				
Victoria Brewer		Carl McKenzie					
Bradley Jackman		Trent Jamieson					
Chris Jeffrey		Peter Jakestar	2			Alex Machica	
Jessica Pitman		Galen Clarke				Joshua Ojierenem	
Kent Muderewich		Justin Jamieson				Michael McIssac	
`Totals	**84**		**108**		**0**		**12**

10. Attachments

- Borehole Tracking, FLHRAs (Available)
-

Figure 1 – Site layout

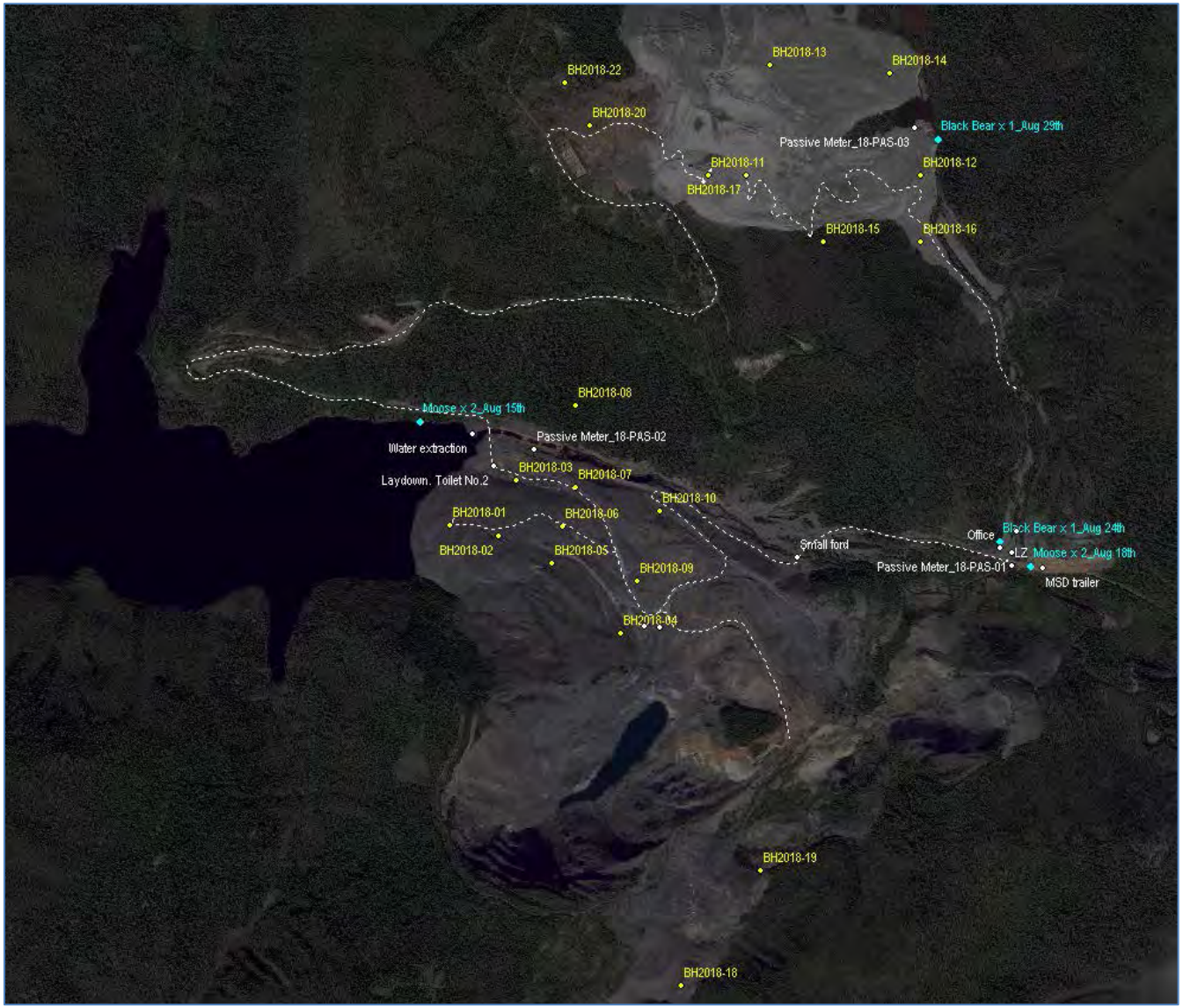


Figure 2 Drop Structure 4.

Figure 3 Small ford in the morning before improvements.

Figure 4 Undercutting of road access to waste rock is unchanged from rain event.

Figure 5 Improvements to the small ford in the afternoon

Figure 6 View N at BH 17 from new access created to BH11

Figure 7 Pilon placed in front of pipe (not the pipe impacted) in the area where the near miss occurred on Sept 01, 2018.

Figure 8

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 03 September 2018

Weather Conditions: Overcast with scattered shower.	**Wood Field Coordinator:** Sam Fuller
Temperatures: Low: 3ºC, High: 12ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date*	Weekly Status*
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	1	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

*Friday is considered the end of the week.

1. Safety Health and Environment

- 0700 – tailgate
- Drop structures were inspected (Figure 2) and appear unchanged from yesterday.

2. Key Activities

- Safety meeting on site at 07:00
- MSD – SCPT and drilling at BH11 (Figure 5).
- MB drilling at BH7 (Figure 6).
- No Dozer work today.
- Air-monitoring and Environmental sampling is ongoing.
- Supplies and 2nd coring head arrived late at night.

3. Air Monitoring Data

- Personal meters today – Michael (MSD helper), Dustin (MB Geotech), & Sam (Lead).
- Area Monitor – Near BH7 11 & BH11 (Figures 7 & 11).
- Passive meters (18-PAS-01, 02 & 03) ongoing (See Figure 1)

4. New Visitors

- Peter Jakestar arrived with supplies in the evening and swaps out with Terrence Ball in the morning.

5. Observations

- DS4 gabion baskets (Figure 2) were checked and appeared secure.
- Water level in the small ford seems unchanged from yesterday (Figure 3).
- The undercutting of the access road to the waste rock (Figure 4).

6. Issues/Concerns

- The second coring head. has arrived.
- No separate MSD foreman. The role has been delegated to Jake Jacobs the MSD driller. Trent Jamieson is due to arrive on Thursday. This is not ideal, as Jake is occupied all day drilling. However, this is manageable by Wood.
- Both fords have been improved and are now passable by the skid-steers (Figure 5).
- Arrangements have been made to rotate the medic. Tammy will leave this evening and Sharon returns this evening.
- Terrence Ball (MSD) will swap out for Peter Jakestar tomorrow morning.
- Josh Holtkamp will leave on the 6th for Ryan Berg who arrives on the 5th.
- Jennifer Goodale will leave on the 6th for TBC to arrive on the 5th.
- For Wood, the lab tech, MB geotech, Safety and Enviro staff will rotate on Sept5/6th, and Karen Hinks will return.

7. Drilling Progress

- MSD completed CPT11 to 36.6 m and drilled BH11 to 33.5 m.
- MB drilled BH7 to 47.5 m

The following holes are complete:

- **Boreholes:** BH18-01, BH18-06, BH18-09, BH18-10, BH18-12, BH18-17, BH18-20 & BH18-21.
- **SCPTs:** CPT18-11, CPT18-12, CPT18-14 & CPT18-17.

8. Driller Daily Reports

MSD daily for overall services (excluding drilling time) attached

9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks	12	Glenn Thiessen	-			Sharon Mondor (EMT)	-
Lukas Brezina	12	Ricardo Pantlitz	12			Tammy Bell (EMT)	12
Jeremy Rayski	12	Jake Jacobs	12				
Jim McDonald	12	Mike Salzisberg	12				
Nisar Khan	12	Terrance Ball	12				
Vincent Chase	12	Ryan Babala	-				
Sam Fuller	12						
		Dustin Loewen	12				
		Aaron Defort	12				
		Justin Holtkamp	12	-		-	
		Jennifer Goodale	12				
Victoria Brewer		Carl McKenzie					
Bradley Jackman		Trent Jamieson					
Chris Jeffrey		Peter Jakestar				Alex Machica	
Jessica Pitman		Galen Clarke				Joshua Ojierenem	
Kent Muderewich		Justin Jamieson				Michael McIssac	
`Totals	**84**		**108**		**0**		**12**

10. Attachments

- Borehole Tracking, FLHRAs (Available)
-

Figure 1 – Site layout

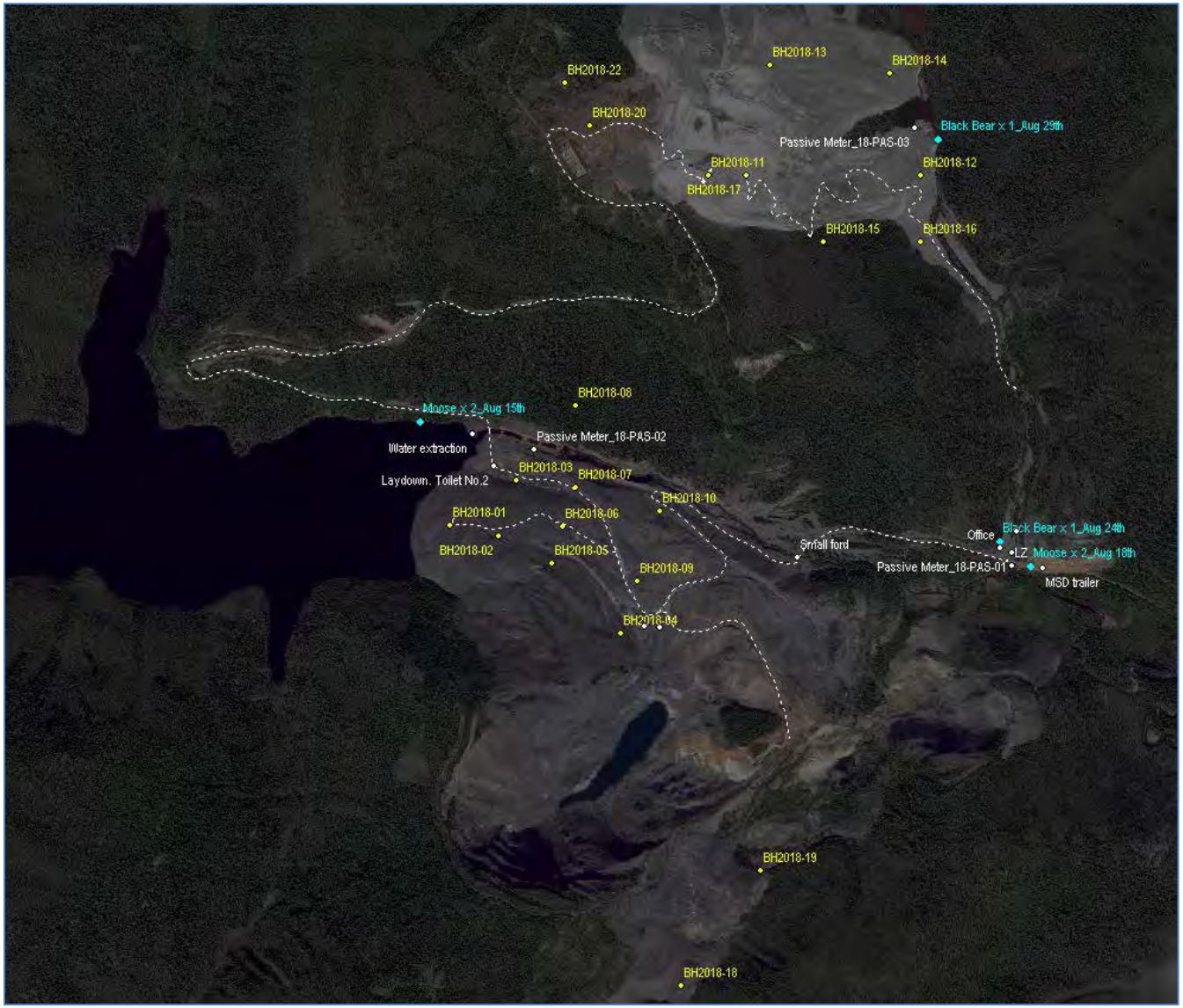


Figure 2 Drop Structure 4.

Figure 3 Small ford in the morning.

Figure 4 Undercutting of road access to waste rock is unchanged from rain event.

Figure 5 MSD Rig at BH11

Figure 6 MB Rig at BH7

Figure 7 Area Air Monitor situated ~50 NNW of BH11

Figure 8 Air monitor ~50 m ESE of BH7

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 04 September 2018

Weather Conditions: Overcast with scattered shower.	**Wood Field Coordinator:** Sam Fuller
Temperatures: Low: 3ºC, High: 12ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date*	Weekly Status*
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	1	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

*Friday is considered the end of the week.

1. Safety Health and Environment

- 0700 – tailgate
- A bear was spotted outside the lab on Sept 2nd and 2 moose were seen on Sept 4th (Figure 1)

2. Key Activities

- Safety meeting on site at 07:00
- Drop structures were inspected (Figure 2).
- MSD drilling at BH11 (Figure 7).
- MB drilling at BH7 (Figure 8).
- No Dozer work today.
- Air-monitoring and Environmental sampling is ongoing.
- 1300 - Samples were dropped at the Airport to go to the lab, and 12 Jerry cans were filled to fuel the gas trucks on site (Lukas Brezina) – returned to camp at 1930.
- Instructed Cone-Tec to demob after meeting with Technical Lead Ed McRoberts, and adjusted scope.

3. Air Monitoring Data

- Personal meters today – Michael Salvisburg (MSD helper), Justin Holtcamp (MB Helper)
- Area Monitor – Near BH7 11 & BH11 (Figures 7 & 8) same as the previous day.

- Passive meters (18-PAS-01, 02 & 03) ongoing (See Figure 1)

4. New Visitors

- Alex Machica from Department of Energy, Mines and Resources was on site all day. He arrived late Set 03 (error in Sept 03 report).

5. Observations

- DS4 gabion baskets (Figure 2) were checked and appeared secure.
- Water level in the small ford seems unchanged from yesterday although some material may need top be added to the south side of the temp rock dam created downstream to hold the rip-rap.
- The undercutting of the access road to the waste rock was unchanged.
- The access from BH11 to BH17 (Figure 1) is stable but may need some touching up with skid-steer and bucket.

6. Issues/Concerns

- May need Carl back to repair access to BH8 and the approach to the water filling area at the lak, which has become very muddy (Figures 1 & 6).
- No separate MSD foreman. The role has been delegated to Jake Jacobs the MSD driller. Trent Jamieson is due to arrive on Thursday. This is not ideal, as Jake is occupied all day drilling. However, this is manageable by Wood, and has not affected production in the last 2 days. In fact, communications are improved.
- Water level in the small ford seems unchanged from yesterday although some material may need top be added to the south side of the temp rock dam created downstream to hold the rip-rap.
- Staff rotations –
    - Medic was rotated in the late afternoon, and Sharon Mondor is now on site.
    - Terrence Ball (MSD) left site for Whitehorse in the morning and Peter Jakestar replaced him.
    - Josh Holtkamp will leave on the 6th for Ryan Berg who arrives on the 5th.
    - Jennifer Goodale will leave on the 5th or 6th TBC.
    - For Wood, the lab tech, MB geotech, Safety and Enviro staff will rotate on Sept5/6th, and Karen Hinks will return.

7. Drilling Progress

- MSD drilled BH11 to 64 m [still in native ground]. It is expected they will encounter rock on the 5th, switch to coring, and *hopefully* install instruments before the end of the 5th.
- MB drilled BH7 3.7 m into bedrock and EoH was called at 57.3 m – Instruments will be installed in the morning of the 5th, then move to BH3.

The following holes are complete:

- **Boreholes:** BH18-01, BH18-06, BH18-09, BH18-10, BH18-12, BH18-17, BH18-20 & BH18-21.
- **SCPTs:** CPT18-11, CPT18-12, CPT18-14 & CPT18-17.

Current planned drilling order is as follows –

MSD Rig – BH11, BH13, BH18, BH19……. subject to change.

MB Rig – BH7, BH3, BH2, BH4, BH5……subject to change.

8. Driller Daily Reports

MSD daily for overall services to follow

9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks		Ricardo Pantlitz	12			Sharon Mondor (EMT)	-
Lukas Brezina	12	Jake Jacobs	12			Tammy Bell (EMT)	12
Jeremy Rayski	12	Mike Salzisberg	12				
Jim McDonald	12	Terrance Ball	2			Alex Machica	12
Nisar Khan	12	Peter Jakestar	12				
Vincent Chase	12						
Sam Fuller	12	Dustin Loewen	12				
		Aaron Defort	12				
		Justin Holtkamp	12				
		Jennifer Goodale	12	-		-	
Victoria Brewer		Carl McKenzie					
Jessica Pitman		Trent Jamieson					
		Galen Clarke				Joshua Ojierenem	
		Justin Jamieson				Michael McIssac	
		Ryan Babala					
		Glenn Thiessen					
`Totals	**72**	98	**108**		**0**		**12**

10. Attachments

- Borehole Tracking, FLHRAs (Available)

Figure 1 – Site layout

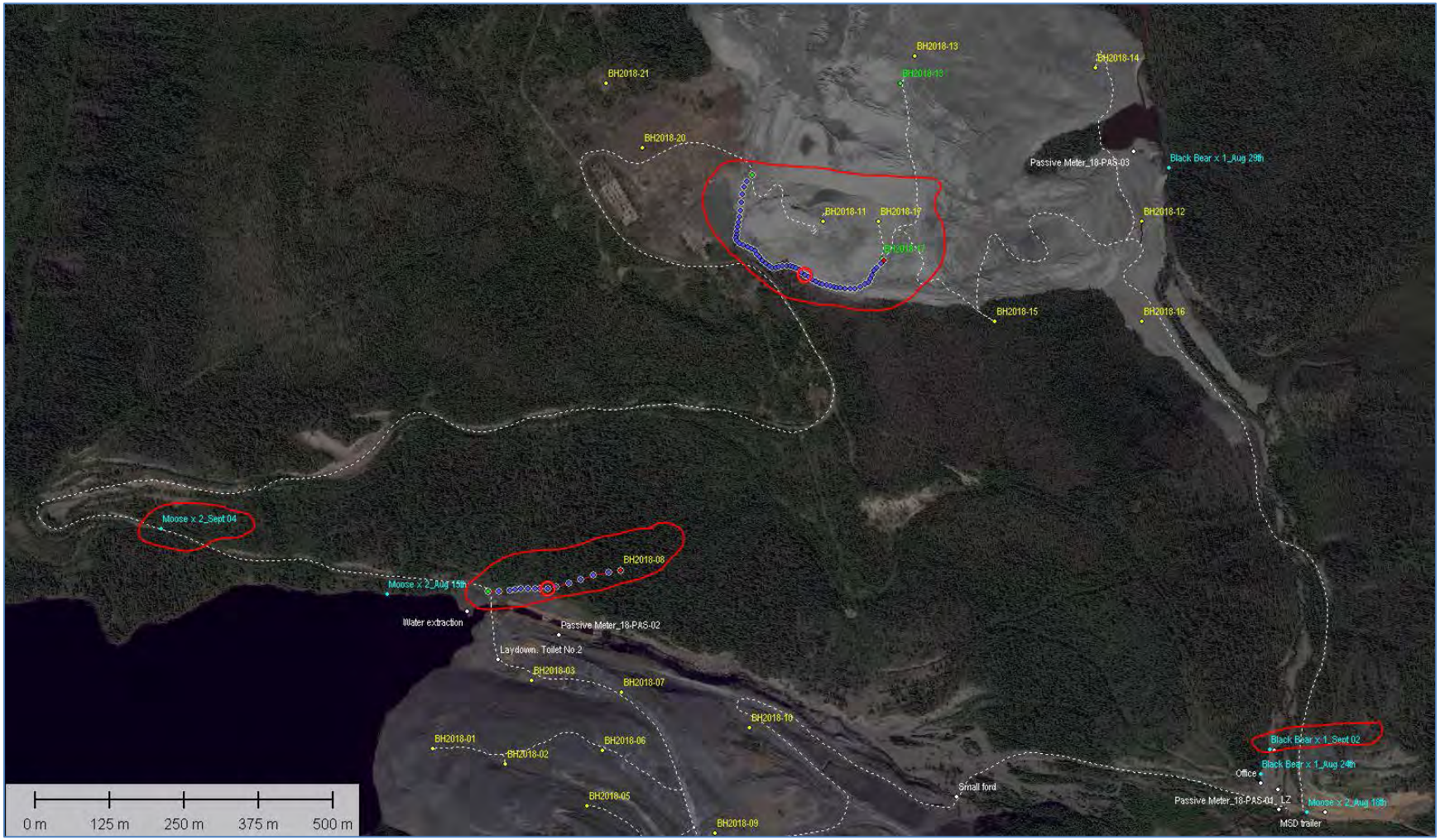


Figure 2 Drop Structure 4.

Figure 3 BH8 access – Very narrow – needs work.

Figure 4 MB Decon station at at BH7.

Figure 5 MSD Decon station at BH11

Figure 6 MSD driller checking water intake after sand got into the pump at BH11.

Figure 7 Area Air Monitor situated ~100 NNW of BH11

Figure 8 Air monitor ~50 m ESE of BH7

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 05 September 2018

Weather Conditions: Overcast with scattered shower.	**Wood Field Coordinator:** Sam Fuller
Temperatures: Low: 3ºC, High: 12ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date*	Weekly Status*
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	1	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

*Friday is considered the end of the week.

1. Safety Health and Environment

- 0700 – tailgate

2. Key Activities

- Safety meeting on site at 07:00
- Drop structures were inspected (Figure 2).
- MSD continued drilling at BH11. Sonic progress slowed and 7" casing was reamed down, then coring head was installed near the end of the day to begin coring.
- MB finished installations at BH7. and moved to BH3.
- No Dozer work today.
- Air-monitoring and Environmental sampling is ongoing.
- Cone-Tec packed all gear from BHs to demob from site tomorrow morning.
- 1830 – Lukas Brezina drove to Dawson.
- 1915 – Karen Hincks, Victoria Brewer and Jessica Pitman returned with SuV.
- 1930 – Ryan Berg arrived to replace Josh Holtcamp (who will leave on the 6th with Jen nifer Goodall).
- 2000 – Vincent Chase & Jeremy Rayski drove SuV to Dawson

3. Air Monitoring Data

- Personal meters today – Dustin (Driller)
- Area Monitor – Near BH7 11 & BH11 - same as the previous day.
- Passive meters (18-PAS-01, 02 & 03) ongoing (See Figure 1)

4. New Visitors

- Two surveyors from Underhill Geomatics arrived, were oriented, and commenced their regular work (John Tom Tom & Robert Vance). They will arrive each day at ~1000 from Dawson.

5. Observations

- DS4 gabion baskets (Figure 2) were checked and appeared secure.
- Water level in the small ford seems unchanged from yesterday.
- The undercutting of the access road to the waste rock was unchanged.
- The access from BH11 to BH13 is stable.

6. Issues/Concerns

- May need Carl back to repair access to BH8 and the approach to the water filling area at the lake, which has become very muddy (Figures 1 & 6).
- No separate MSD foreman. The role has been delegated to Jake Jacobs the MSD driller. Trent Jamieson is due to arrive on Thursday. This is not ideal, as Jake is occupied all day drilling. However, this is manageable by Wood, and has not affected production in the last 3 days. In fact, communications are improved.
- Water level in the small ford seems unchanged from yesterday although some material may need top be added to the south side of the temp rock dam created downstream to hold the rip-rap. This will be monitored.

7. Drilling Progress

- MSD drilled BH11 to 71.6 m [still in native ground], then the coring head was installed to begin coring.
- MB installed instruments in BH7 3.7 m then moved to BH3.

The following holes are complete:

- **Boreholes:** BH18-01, BH18-01a, BH18-06, BH18-07, ~~BH18-07a~~, BH18-09, BH18-10, BH18-10a, BH18-12, BH18-17, BH18-20 & BH18-21.
- **SCPTs:** CPT18-11, CPT18-12, CPT18-14 & CPT18-17.

Current planned drilling order is as follows –

MSD Rig – BH11, BH13, BH18, BH19……. subject to change.

MB Rig – BH7, BH3, BH2, BH4, BH5.....subject to change.

8. Driller Daily Reports

MSD daily for overall services to follow

9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks		Ricardo Pantlitz	12			Sharon Mondor (EMT)	12
Lukas Brezina	12	Jake Jacobs	12				
Jeremy Rayski	12	Mike Salzisberg	12				
Jim McDonald	12	Peter Jakestar	12			Alex Machica	12
Nisar Khan	12						
Vincent Chase	12						
Sam Fuller	12	Dustin Loewen	12				
		Aaron Defort	12				
		Justin Holtkamp	12				
		Jennifer Goodale	12	-		-	
Victoria Brewer		Carl McKenzie					
Jessica Pitman		Trent Jamieson					
						Tammy Bell (EMT)	
		Galen Clarke				Joshua Ojierenem	
		Justin Jamieson				Michael McIssac	
		Ryan Babala					
		Glenn Thiessen					
		Terrance Ball					
`Totals	**72**	98	**96**		**0**		**24**

10. Attachments

- Borehole Tracking, FLHRAs (Available)

Figure 1 – Site layout

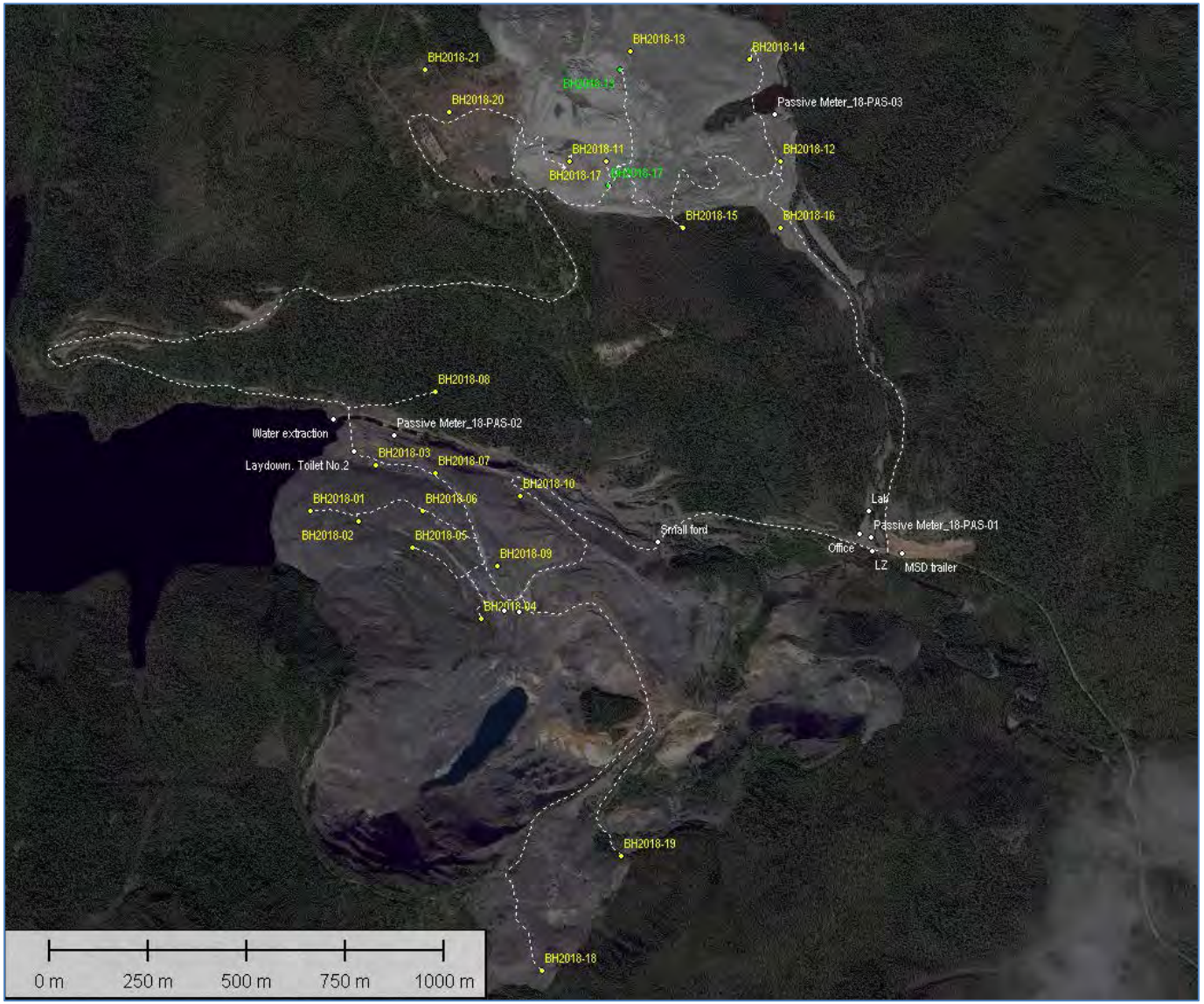


Figure 2 Drop Structure 4.

Figure 3

Figure 4

Figure 5

Figure 6

Figure 7

Figure 8

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 06 September 2018

Weather Conditions: Overcast with scattered shower.	**Wood Field Coordinator:** Sam Fuller/Karen Hincks
Temperatures: Low: 3ºC, High: 12ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date*	Weekly Status*
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	1	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

*Friday is considered the end of the week.

1. Safety Health and Environment

- 0700 – tailgate

2. Key Activities

- Safety meeting on site at 07:00
- Drop structures were inspected
- MSD continued drilling at BH11. Switched over to the coring head; however, the borehole was not in bedrock yet, and the coring washed material out. Switched back to sonic and drilled to 77.7 m depth and still did not encounter bedrock.
- MB moved to BH3 and drilled to a depth of 38.4 m. Encountered ice rich clay material at 29.9 m.
- No Dozer work today.
- Environmental sampling is ongoing.
- Cone-Tec demobbed from site.
- 2000 – Wei Chye (asbestos lead) arrived at site in the evening

3. Air Monitoring Data

- No air monitoring done today

4. New Visitors

- Two surveyors from Underhill Geomatics arrived at ~1000 from Dawson.

5. Observations

- DS4 gabion baskets (Figure 2) were checked and appeared secure.
- Water level in the small ford seems unchanged from yesterday.
- The undercutting of the access road to the waste rock was unchanged.
- The access from BH11 to BH13 is stable.

6. Issues/Concerns

- May need Carl back to repair access to BH8 and the approach to the water filling area at the lake, which has become very muddy (Figures 1).
- No separate MSD foreman. The role has been delegated to Jake Jacobs the MSD driller. Glenn Thiesen is due to arrive on Saturday night. This is not ideal, as Jake is occupied all day drilling. However, this is manageable by Wood, and has not affected production in the last 3 days. In fact, communications are improved.
- Water level in the small ford seems unchanged from yesterday although some material may need top be added to the south side of the temp rock dam created downstream to hold the rip-rap. This will be monitored.

7. Drilling Progress

- MSD drilled BH11 to 77.7 m ; they tried to switch over to coring, but were not in bedrock and the sonic casing sunk, so switched back to sonic drilling.
- MB drill BH3 to a depth of 38.4 m; encountered ice rich permafrost in the native materials.

The following holes are complete:

- **Boreholes:** BH18-01, BH18-01a, BH18-06, BH18-07, BH18-09, BH18-10, BH18-10a, BH18-12, BH18-14, BH18-17, BH18-20 & BH18-21.
- **SCPTs:** CPT18-11, CPT18-12, CPT18-14 & CPT18-17.

Current planned drilling order is as follows –

MSD Rig – BH11, BH13, BH2, BH4 ……. subject to change.

MB Rig –BH3, BH 18, BH19, BH5……subject to change.

8. Driller Daily Reports

MSD daily for overall services to follow

9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks	12	Ricardo Pantlitz	12			Sharon Mondor (EMT)	12
Jim McDonald	12	Jake Jacobs	12				
Nisar Khan	12	Mike Salzisberg	12				
Sam Fuller	12	Peter Jakestar	12			Alex Machica	12
Victoria Brewer	12						
Jessica Pitman	12						
Wei Chye	-	Dustin Loewen	12				
		Aaron Defort	12				
		Justin Holtkamp	12				
				-		-	
		Carl McKenzie					
		Trent Jamieson					
		Jennifer Goodale				Tammy Bell (EMT)	
		Galen Clarke				Joshua Ojierenem	
		Justin Jamieson				Michael McIssac	
		Ryan Babala					
Vincent Chase		Glenn Thiessen					
Jeremy Rayski		Terrance Ball					
Lukas Brezina							
`Totals	**72**	98	**84**		**0**		**24**

10. Attachments

- Borehole Tracking, FLHRAs (Available)

Figure 1 – Site layout

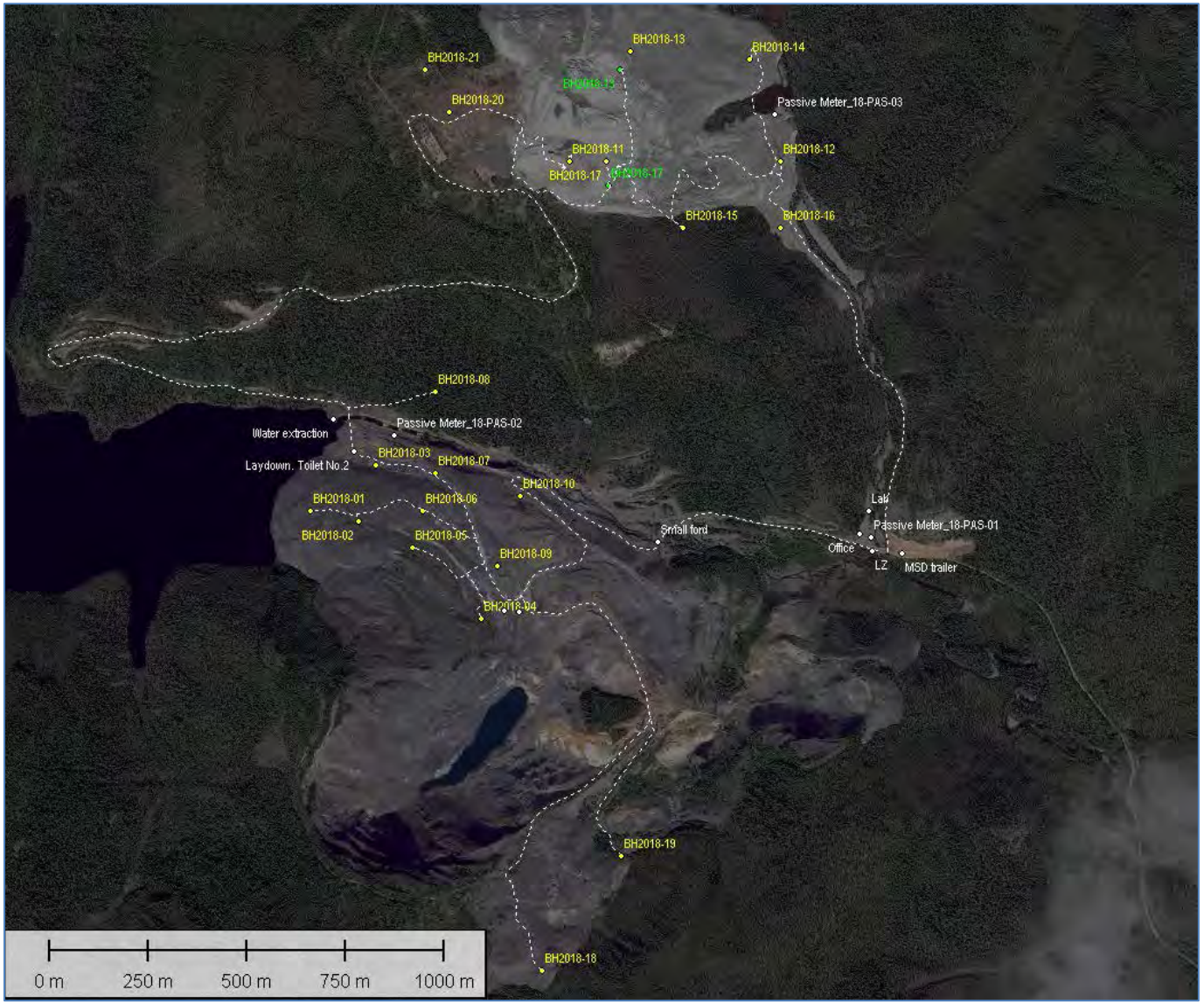


Figure 2 Primary ford crossing on 06 September 2018.

Figure 3 Initializing SI at BH10.

Figure 4 North slope of Clinton Creek.

Figure 5 Drop structure 4

Figure 6

Figure 7 Frozen soils encountered in BH18-03, 35.4 – 38.4 m depth.

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 07 September 2018

Weather Conditions: Clear with wind picking up in the afternoon.	**Wood Field Coordinator:** Sam Fuller/Karen Hincks
Temperatures: Low: 3ºC, High: 12ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date*	Weekly Status*
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	1	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

*Friday is considered the end of the week.

1. Safety Health and Environment

- 0700 – tailgate.
- Resumed personal air monitoring today.

2. Key Activities

- Safety meeting on site at 07:00
- Drop structures were inspected
- MSD continued drilling at BH11; bedrock was expected at approximately 50 m depth (based on 16-BH04); however, drilling was completed to 91.4 m without encountering bedrock. It was decided to stop drilling and start installing the SI, as it would be sufficiently anchored into native materials to detect any movements in the tailings. Drilling was stopped, and SI casing was installed to the full depth. This borehole will be grouted on 08 Sept 2018.
- MB drilled BH3 to a depth of 50 m; have not yet encountered bedrock.
- No Dozer work today.
- Environmental sampling is ongoing in the boreholes.
- Wei Chye (asbestos lead) was onsite and resumed the personal monitoring.

3. Air Monitoring Data

- Personal air monitors were worn by Sam Fuller (Wood) and Ryan Berg (Mud Bay)

4. New Visitors

- Two surveyors from Underhill Geomatics arrived at ~1000 from Dawson.

5. Observations

- DS4 gabion baskets were visually checked and appeared secure.
- Water level in the small ford seems unchanged from yesterday.
- The undercutting of the access road to the waste rock was unchanged.
- The access from BH11 to BH13 remains stable.
- A moose cow and calf were observed near the secondary ford crossing, near the lake on the road up to the plant site.

6. Issues/Concerns

- Some of the roads, including the access to BH11, the lake access for the water truck, the access to BH8 and the pad at BH18 (Figures 1) require repairs. Carl is scheduled to return on 08 August to complete the repairs.
- No separate MSD foreman. The role has been delegated to Jake Jacobs the MSD driller. Glenn Thiessen is due to arrive on Saturday night. This is not ideal, as Jake is occupied all day drilling. However, this is manageable by Wood, and has not affected production in the last 3 days. In fact, communications are improved.
- Water level in the small ford seems unchanged from yesterday although some material may need top be added to the south side of the temp rock dam created downstream to hold the rip-rap. This is being monitored.

7. Drilling Progress

- MSD drilled BH11 to 91.4 m; bedrock was not encountered. It was decided that the borehole was sufficiently deep to anchor the SI in order to pick up any movements through the tailings (the boundary between the native and the tailings was at approximately 42 m). SI casing was installed in the borehole but needs to be grouted still.
- MB drilled BH3 to a depth of 50.6 m. Bedrock has not yet been encountered. Through the frozen material an into unfrozen native material. Had to run down with the 7" casing.

The following holes are complete:

- **Boreholes:** BH18-01, BH18-01a, BH18-06, BH18-07, BH18-09, BH18-10, BH18-10a, BH18-12, BH18-14, BH18-17, BH18-20 & BH18-21.
- **SCPTs:** CPT18-11, CPT18-12, CPT18-14 & CPT18-17.

Current planned drilling order is as follows –

MSD Rig – BH11, BH13, BH15, BH16, BH8, BH2……. subject to change.

MB Rig –BH3, BH 18, BH19, BH4, BH5.....subject to change.

8. Driller Daily Reports

MSD daily for overall services to follow

9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks	12	Ricardo Pantlitz	12			Sharon Mondor (EMT)	12
Sam Fuller	12	Jake Jacobs	12				
Jim McDonald	12	Mike Salzisberg	12				
Jessica Pitman	12	Peter Jakestar	12				
Victoria Brewer	12						
Wei Chye	12						
		Dustin Loewen	12				
		Aaron Defort	12				
		Ryan Berg	12				
				-		-	
		Justin Holtkamp					
		Carl McKenzie					
		Trent Jamieson				Alex Machica	
		Jennifer Goodale				Tammy Bell (EMT)	
		Galen Clarke				Joshua Ojierenem	
		Justin Jamieson				Michael McIssac	
Nisar Khan		Ryan Babala					
Vincent Chase		Glenn Thiessen					
Jeremy Rayski		Terrance Ball					
Lukas Brezina							
`Totals	**72**	98	**84**		**0**		**12**

10. Attachments

- Borehole Tracking, FLHRAs (Available)

Figure 1 – Site layout

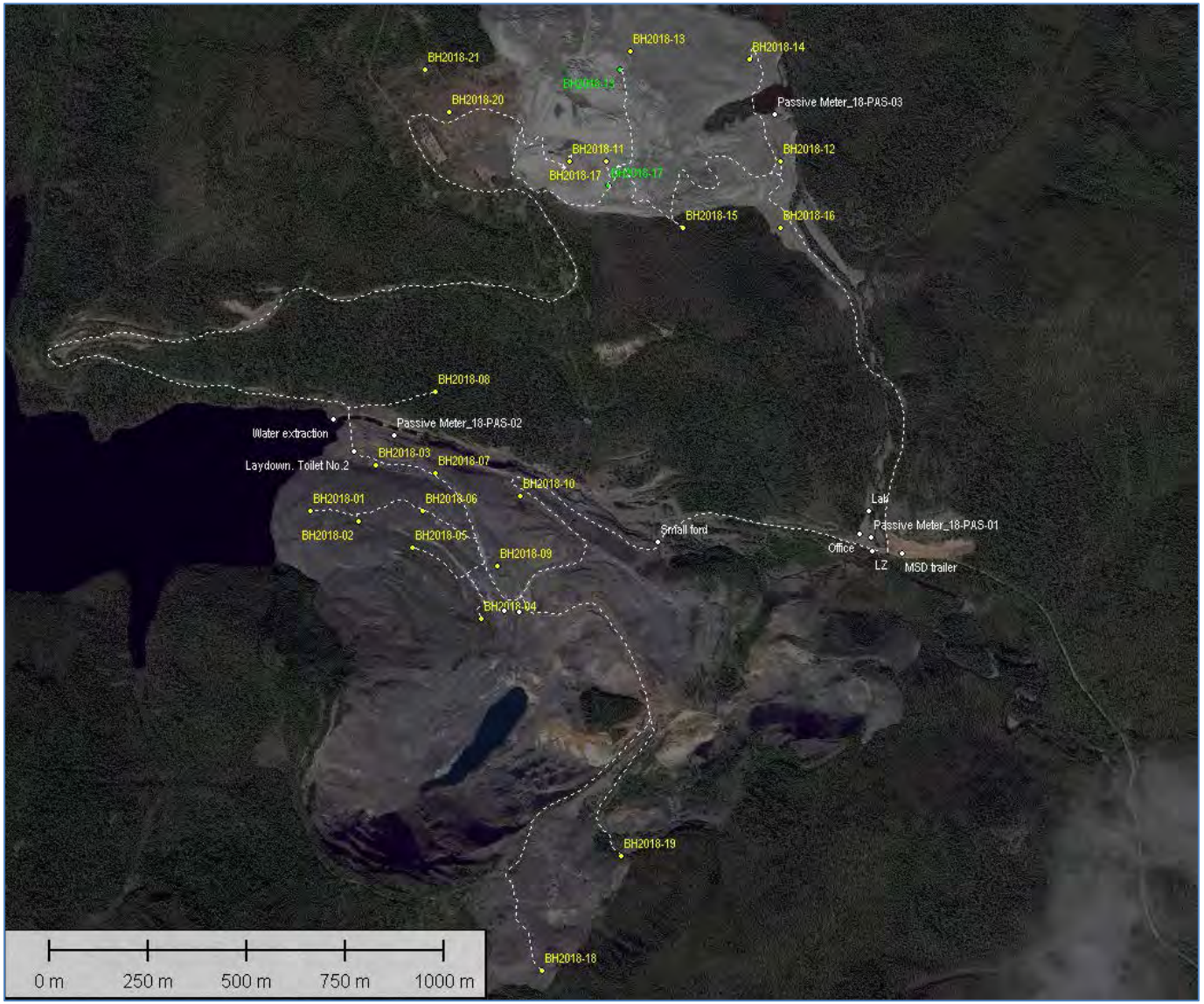


Figure 2 Drilling BH18-11 on top of the tailings pile.

Figure 3 Last run in BH18-11 at 91.4 m depth ; bedrock was not encountered.

Figure 4 Installation of SI casing with thermistor string at BH18-11.

Figure 5 Soil from BH18-03 at a depth of 44.5 m; bedrock has not yet been encountered.

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 08 September 2018

Weather Conditions: Clear with wind picking up in the afternoon.	**Wood Field Coordinator:** Sam Fuller/Karen Hincks
Temperatures: Low: -5ºC, High: 12ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date*	Weekly Status*
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	1	L	-	2	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

*Friday is considered the end of the week.

1. Safety Health and Environment

- 0700 – tailgate.
- Personal, passive and area air monitoring has resumed.
- One near miss was reported for 07 August 2018 but was missed on the daily report for 07 August so has been included here. On 07 August 2018, the wind picked up in the afternoon. The decontamination tent at BH18-03 was not secured and the wind blew the tent into a staff members hardhat. At the morning tailgate it was discussed that we need to manage changing conditions, including wind, frost, ice, etc. All tents are to be checked and ensure that they are secured.
- Temperature was below freezing in the morning. Crews need to adapt to the changing weather conditions and prepare accordingly.

2. Key Activities

- Safety meeting on site at 07:00
- Drop structures were inspected and appear to be holding fine. The lowest gabion on Drop Structure 4 has had some erosion below it, and the bottom of the gabion mesh is hanging in air. The large rip rap below this gabion is holding, although all the material around the large rip rap has been eroded.
- MSD grouted the SI at BH18-11 and moved to BH18-13.
- MB drilled BH3 to a depth of 59.7 m and installed the SI casing; the SI still needs to be grouted

- The dozer repaired the road up to the old mill site, improved the access to BH8, did some road clean up and made improvements to the pad at BH18-19.
- Environmental sampling is ongoing in the boreholes.
- All asbestos air monitoring, including the passive, area and personal monitoring, was resumed today.
- Installed the casing protector and the data logger at BH18-01.

3. Air Monitoring Data

- Personal air monitors were worn by Dustin (MB driller) and Jake (MSD driller)
- Area monitors were placed in the emergency transport vehicle, a dirty truck and the office.
- Passive air monitors at the gate, waste rock and tailings were all operational.

4. New Visitors

- Two surveyors from Underhill Geomatics arrived at ~1000 from Dawson.
- Two staff from Chief Issac arrived on site ~1100 from Dawson; overall site briefing and orientation was completed, and they were accompanied to the lake and the drop structures for visual examination.

5. Observations

- DS4 gabion baskets were visually checked and appeared secure, although the bottom gabion at Drop Structure 4 appears to have been partially undercut.
- Water level in the small ford seems unchanged from yesterday.
- The undercutting of the access road to the waste rock was unchanged.
- The access from BH11 to BH13 remains stable.
- A moose cow was observed near the secondary ford crossing, near the lake on the road up to the plant site.

6. Issues/Concerns

- Repairs were made to the roads and borehole accesses as required.
- No separate MSD foreman. The role has been delegated to Jake Jacobs the MSD driller. Glenn Thiessen is due to arrive on Saturday night. This is not ideal, as Jake is occupied all day drilling. However, this is manageable by Wood, and has not affected production in the last 6 days. In fact, communications are improved.
- Water level in the small ford seems unchanged from yesterday although some material may need top be added to the south side of the temp rock dam created downstream to hold the rip-rap. This is being monitored.

7. Drilling Progress

- MSD grouted the SI in BH18-11.
- MB drilled BH3 to a depth of 59.7 and installed SI casing in the borehole. The borehole still needs to be grouted on 09 September 2018.

The following holes are complete:

- **Boreholes:** BH18-01, BH18-01a, BH18-06, BH18-07, BH18-09, BH18-10, BH18-11, BH18-10a, BH18-12, BH18-14, BH18-17, BH18-20 & BH18-21.
- **SCPTs:** CPT18-11, CPT18-12, CPT18-14 & CPT18-17.

Current planned drilling order is as follows –

MSD Rig – BH13, BH15, BH16, BH8, BH4……. subject to change.

MB Rig –BH 18, BH19, BH2, BH5…….subject to change.

8. Driller Daily Reports

MSD daily for overall services attached

9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks	12	Ricardo Pantlitz	12			Sharon Mondor (EMT)	12
Sam Fuller	12	Jake Jacobs	12				
Jim McDonald	12	Mike Salzisberg	12				
Jessica Pitman	12	Peter Jakestar	12				
Victoria Brewer	12						
Wei Chye	12						
		Dustin Loewen	12				
		Aaron Defort	12				
		Ryan Berg	12				
				-		-	
		Carl McKenzie	12				
		Trent Jamieson				Alex Machica	
		Jennifer Goodale				Tammy Bell (EMT)	
		Galen Clarke				Joshua Ojierenem	
		Justin Jamieson				Michael McIssac	
Nisar Khan		Ryan Babala					
Vincent Chase		Glenn Thiessen					
Jeremy Rayski		Terrance Ball					
Lukas Brezina		Justin Holtkamp					
`Totals	**72**	98	**96**		**0**		**12**

10. Attachments

- Borehole Tracking, FLHRAs (Available)

Figure 1 – Site layout

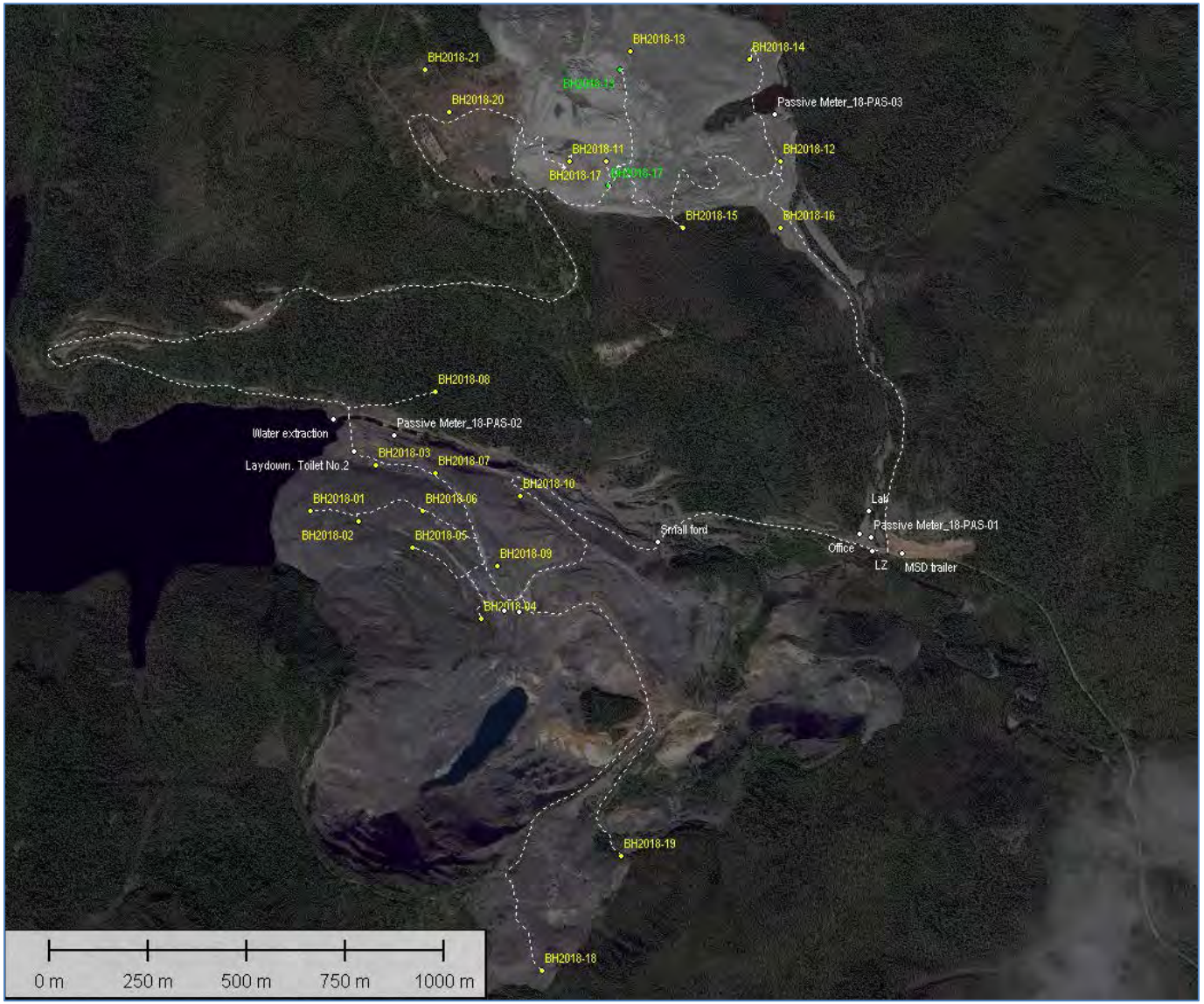


Figure 2 Area air monitoring pump in the Wood "dirty" site truck.

Figure 3 Cleaning the cab of the water/vac truck using a HEPA filter vacuum.

Figure 4 Bedrock encountered in BH18-03 between 53.6 and 56.7 m depth.

Figure 5 Improved access to BH18-08..

Figure 6 Drilling on BH18-03

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 09 September 2018

Weather Conditions: Clear.	**Wood Field Coordinator:** Sam Fuller/Karen Hincks
Temperatures: Low: -3ºC, High: 15ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date*	Weekly Status*
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	2	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

*Friday is considered the end of the week.

1. Safety Health and Environment

- 0700 – tailgate.
- Personal, passive and area air monitoring has resumed.
- Temperature was below freezing in the morning. Crews need to adapt to the changing weather conditions and prepare accordingly. It is also getting warmer in the afternoons and drying out. Wet down sites if required.

2. Key Activities

- Safety meeting on site at 07:00
- Drop structures were inspected and appear to be holding fine. The lowest gabion on Drop Structure 4 has had some erosion below it, and the bottom of the gabion mesh is hanging in air. The large rip rap below this gabion is holding, although all the material around the large rip rap has been eroded.
- MSD started drilling at BH18-13 and drilled to a depth of 39.6 m. Two Shelby tubes were collected in the tailings. Encountered native material (topsoil) at a depth of 39.5 m.
- MB grouted the SI in BH18-03 and moved to BH18-19 starting around 2 pm. No drilling was started at BH18-19 today.
- No dozer on site today.
- Environmental sampling is ongoing in the boreholes.

- All asbestos air monitoring, including the passive, area and personal monitoring, was ongoing today.
- Installed the casing protector and the data logger at BH18-01 and BH18-09.

3. Air Monitoring Data

- Personal air monitors were worn by Dustin (MB driller), Jim (Wood Geotech) and Jake (MSD driller)
- Area monitors were placed in the materials lab and in a MSD truck.
- Passive air monitors at the gate, waste rock and tailings were all operational.

4. New Visitors

- Two surveyors from Underhill Geomatics arrived at ~1000 from Dawson.

5. Observations

- DS4 gabion baskets were visually checked and appeared secure, although the bottom gabion at Drop Structure 4 appears to have been partially undercut (see Figure 3).
- Water level in the small ford seems unchanged from yesterday.
- The undercutting of the access road to the waste rock was unchanged.
- The access from BH11 to BH13 remains stable.

6. Issues/Concerns

- MSD foreman returned to site.
- Water level in the small ford seems unchanged from yesterday although some material may need top be added to the south side of the temp rock dam created downstream to hold the rip-rap. This is being monitored.
- The new helper that was brought in by MSD to allow for the helpers to go out on rotation was determined to not be suitable for the job, so MSD have removed him from site. Glenn Thiessen is planning on helping out on the MSD rig until a replacement can be found.

7. Drilling Progress

- MSD drilled to a depth of 39.6 m in BH18-13.
- MB grouted the SI in BH18-03 and moved to BH18-19.

The following holes are complete:

- **Boreholes:** BH18-01, BH18-01a, BH18-03, BH18-06, BH18-07, BH18-09, BH18-10, BH18-10a, BH18-11, BH18-12, BH18-14, BH18-17, BH18-20 & BH18-21.
- **SCPTs:** CPT18-11, CPT18-12, CPT18-14 & CPT18-17.

Current planned drilling order is as follows –

MSD Rig – BH13, BH15, BH16, BH8, BH4, BH5……. subject to change.

MB Rig –BH19, BH18, BH2……subject to change.

8. Driller Daily Reports

MSD daily for overall services attached

9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks	12	Ricardo Pantlitz	12			Sharon Mondor (EMT)	12
Sam Fuller	12	Jake Jacobs	12				
Jim McDonald	12	Delany Alfred	4				
Jessica Pitman	12	Peter Jakestar	12				
Victoria Brewer	12	Glenn Thiessen	12				
Wei Chye	12						
		Dustin Loewen	12				
		Aaron Defort	12				
		Ryan Berg	12				
				-		-	
		Carl McKenzie					
		Trent Jamieson				Alex Machica	
		Jennifer Goodale				Tammy Bell (EMT)	
		Galen Clarke				Joshua Ojierenem	
		Justin Jamieson				Michael McIssac	
Nisar Khan		Ryan Babala					
Vincent Chase		Mike Salzisberg					
Jeremy Rayski		Terrance Ball					
Lukas Brezina		Justin Holtkamp					
Totals	**72**	98	**100**		**0**		**12**

10. Attachments

- Borehole Tracking, FLHRAs (Available)

Figure 1 – Site layout

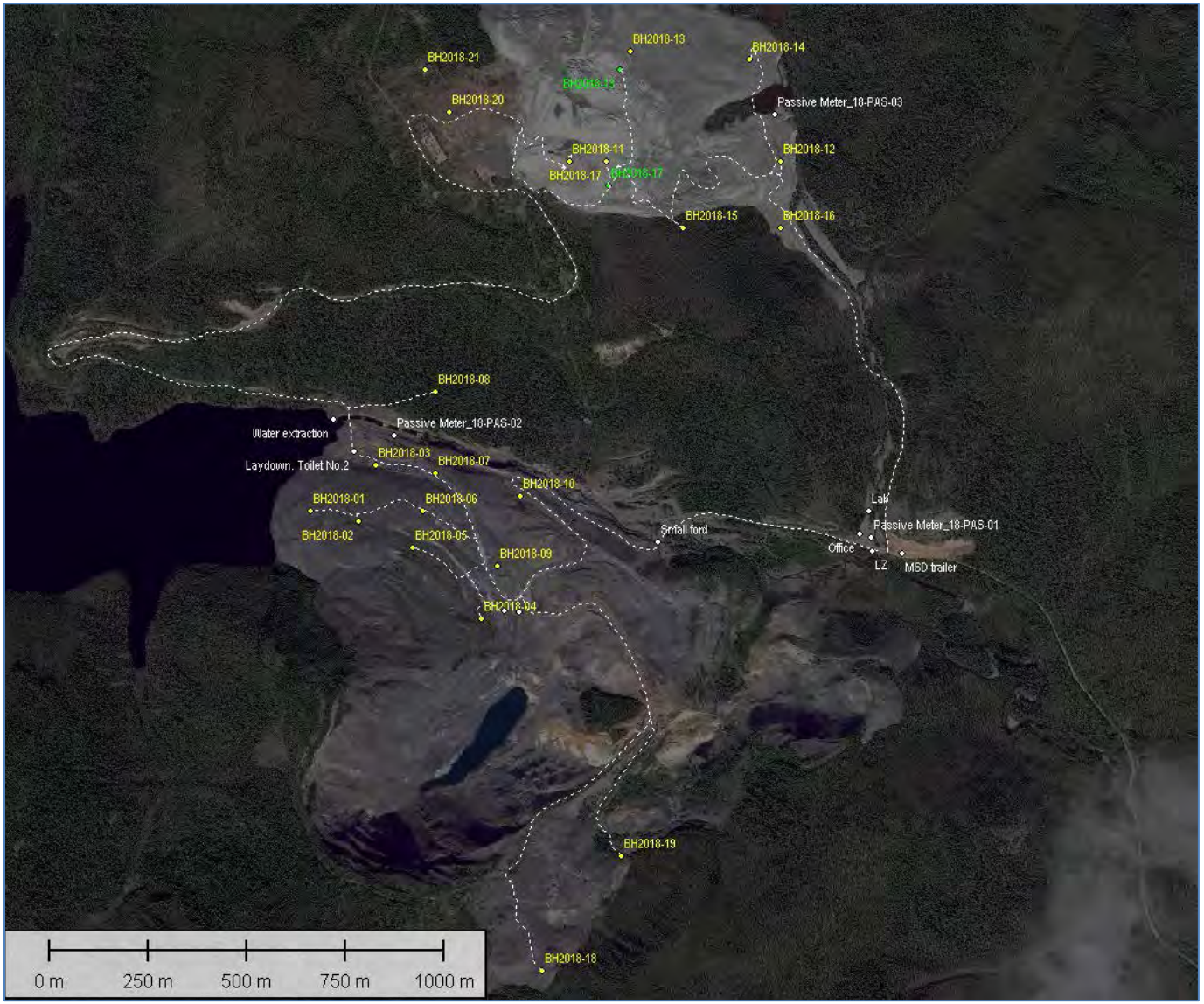


Figure 2 Recent slope movements along the north slope of Clinton Creek just upstream of the Primary Ford.

Figure 3 Bottom gabion basket at Drop Structure 4, with the bottom of the mesh hanging in space and geotextile hanging out..

Figure 4 Wiring up thermistors into the dataloggers.

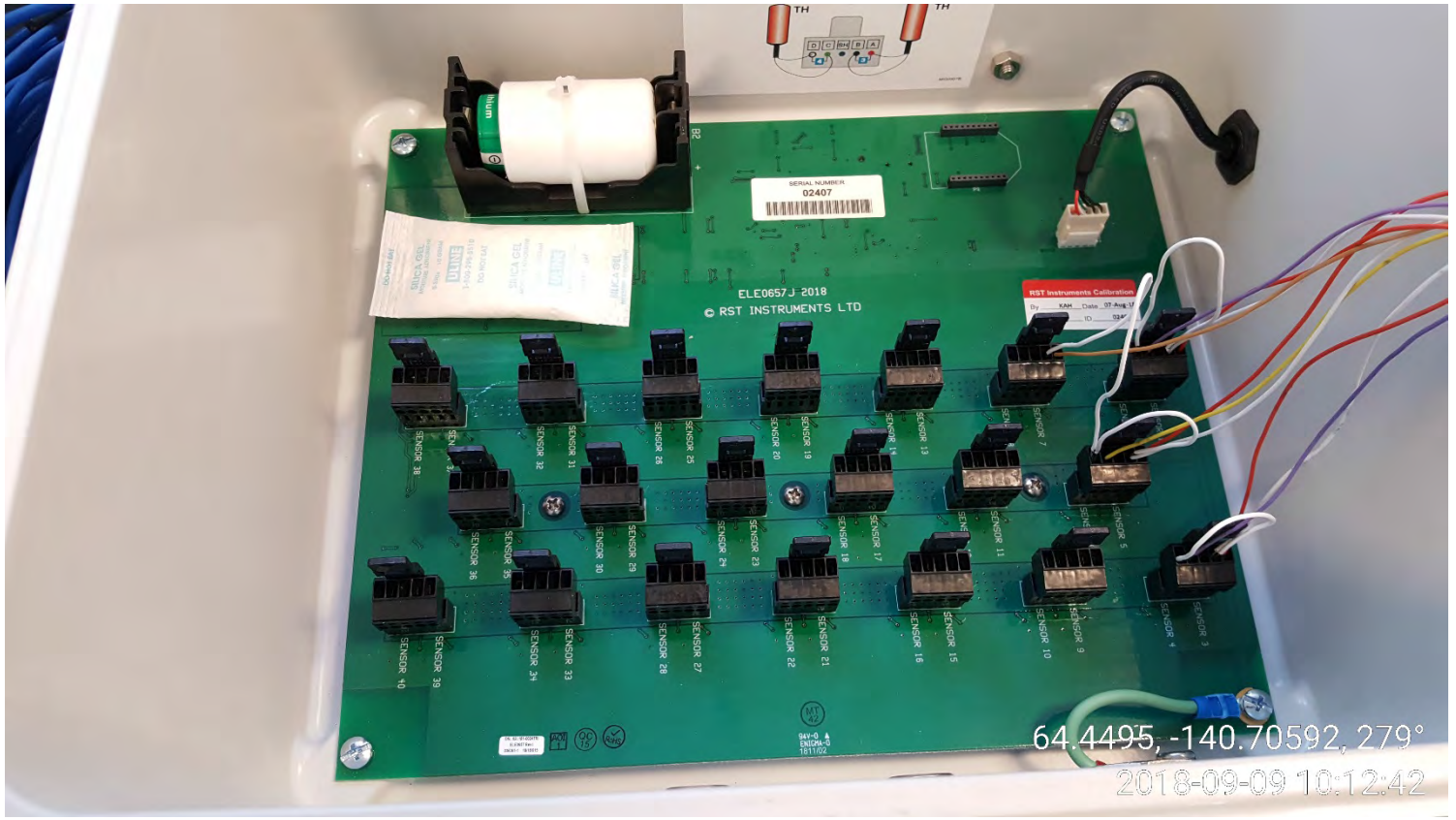


Figure 5 Tailings samples at 21.3 to 25.3 m in BH18-13.

Figure 6 Topsoil encountered in BH18-13 at a depth of 39.5 m

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 10 September 2018

Weather Conditions: Clear.	**Wood Field Coordinator:** Sam Fuller/Karen Hincks
Temperatures: Low: -1ºC, High: 15ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date*	Weekly Status*
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	2	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

*Friday is considered the end of the week.

1. Safety Health and Environment

- 0700 – tailgate.
- Personal, passive and area air monitoring continues.
- Temperature was below freezing in the morning. Crews need to adapt to the changing weather conditions and prepare accordingly. It is also getting warmer in the afternoons and drying out. Roads were wet down throughout the day to keep dust down.
- Different people are handling different tasks, so do a proper risk assessment, use the correct tool for the job, keep an eye on each other. Fatigue was also mentioned as a potential risk. We want to finish safely and have everyone go home in good condition to enjoy time off.

2. Key Activities

- Safety meeting on site at 07:00
- Drop structures were inspected and appear to be holding fine. The lowest gabion on Drop Structure 4 has had some erosion below it, and the bottom of the gabion mesh is hanging in air. The large rip rap below this gabion is holding, although all the material around the large rip rap has been eroded.
- MSD continued drilling at BH18-13 and drilled to a depth of 61.0 m. SI will be installed and grouted on 11 September
- MB started drilling at BH18-19 today and drilled to a depth of 29.3 m. Will switch to coring bedrock on 11 September.

- No dozer on site today.
- Environmental sampling is ongoing in the boreholes.
- All asbestos air monitoring, including the passive, area and personal monitoring, was ongoing today.

3. Air Monitoring Data

- Personal air monitors were worn by Dustin (MB driller) and Jake (MSD driller).
- Area monitors were placed in a Wood dirty truck, one at BH18-13 decontamination area and one at BH18-19 in the area where the geotech was working.
- Passive air monitors at the gate, waste rock and tailings were all operational.

4. New Visitors

- EDI were on site completing water sampling in Woverine Creek and Porcupine Creek.

5. Observations

- DS4 gabion baskets were visually checked and appeared secure, although the bottom gabion at Drop Structure 4 appears to have been partially undercut.
- Water level in the small ford seems unchanged from yesterday.
- The undercutting of the access road to the waste rock was unchanged.
- The access from BH11 to BH13 remains stable.
- MB rig blew a hose and were down for 2 hours in the afternoon.

6. Issues/Concerns

- Water level in the small ford seems unchanged from yesterday although some material may need top be added to the south side of the temp rock dam created downstream to hold the rip-rap. This is being monitored.
- The nice weather is resulting in the roads starting to dry out. The water truck driver was very proactive and started wetting the roads.

7. Drilling Progress

- MSD drilled to a depth of 61.0 m in BH18-13. Borehole reached TD; SI will be installed and grouted in the morning.
- MB drilled to a depth of 29.3 m in BH18-19; bedrock has not yet been encountered in this borehole.

The following holes are complete:

- **Boreholes:** BH18-01, BH18-01a, BH18-03, BH18-06, BH18-07, BH18-09, BH18-10, BH18-10a, BH18-11, BH18-12, BH18-14, BH18-17, BH18-20 & BH18-21.

- **SCPTs:** CPT18-11, CPT18-12, CPT18-14 & CPT18-17.

Current planned drilling order is as follows –

MSD Rig – BH13, BH15, BH16, BH4, BH5……. subject to change.

MB Rig –BH19, BH18, BH2, BH8……subject to change.

8. Driller Daily Reports

MSD daily for overall services to follow

9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks	12	Ricardo Pantlitz	12			Sharon Mondor (EMT)	12
Sam Fuller	12	Jake Jacobs	12				
Jim McDonald	12	Peter Jakestar	12				
Jessica Pitman	12	Glenn Thiessen	12				
Victoria Brewer	12						
Wei Chye	12						
		Dustin Loewen	12				
		Aaron Defort	12				
		Ryan Berg	12				
				-		-	
		Carl McKenzie					
		Delany Alfred					
		Trent Jamieson				Alex Machica	
		Jennifer Goodale				Tammy Bell (EMT)	
		Galen Clarke				Joshua Ojierenem	
		Justin Jamieson				Michael McIssac	
Nisar Khan		Ryan Babala					
Vincent Chase		Mike Salzisberg					
Jeremy Rayski		Terrance Ball					
Lukas Brezina		Justin Holtkamp					
Totals	**72**	98	**84**		**0**		**12**

10. Attachments

- Borehole Tracking, FLHRAs (Available)

Figure 1 – Site layout

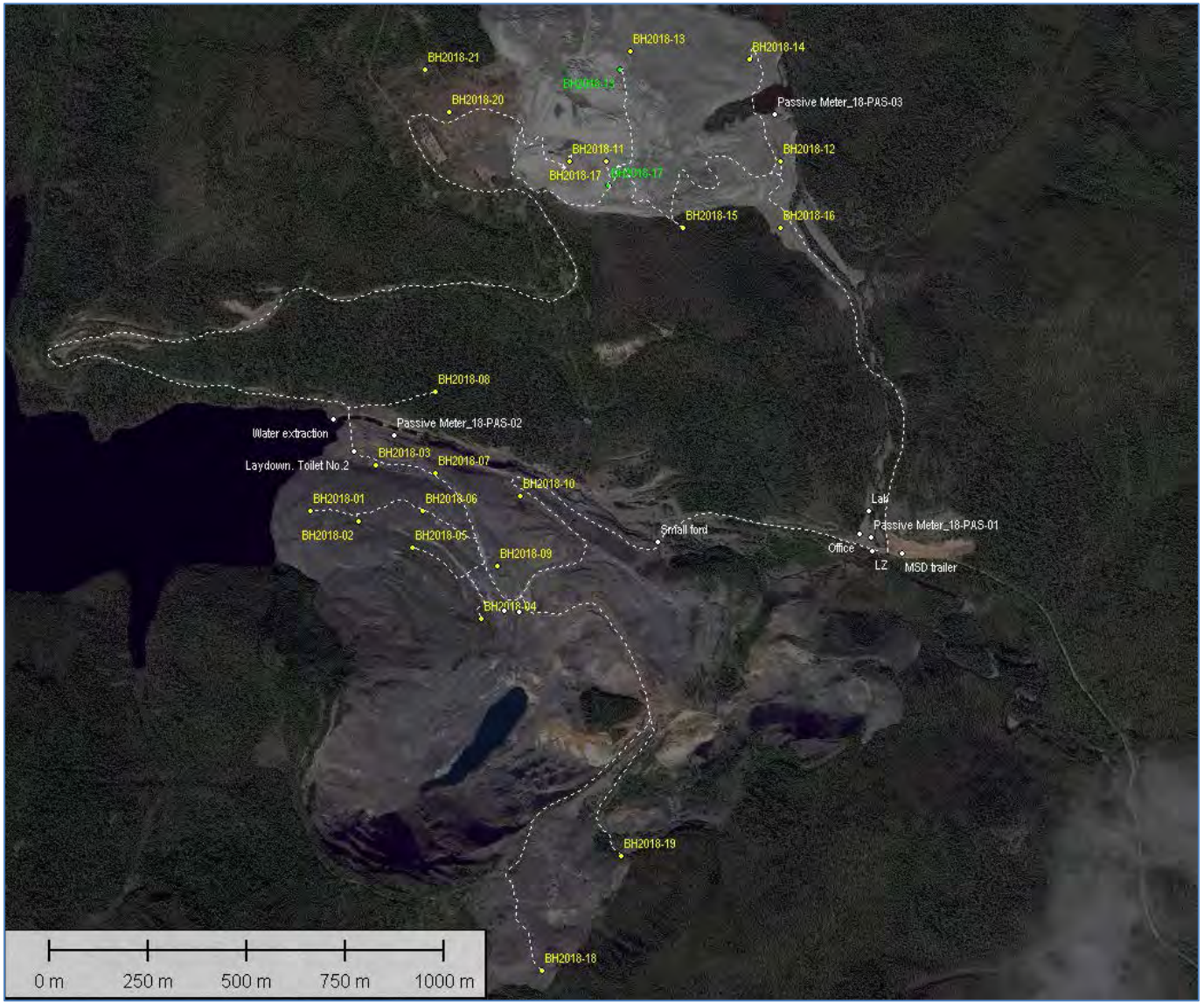


Figure 2 Permafrost thaw slope movements on the north side of the drop structures.

Figure 3 Decontamination station at BH18-13.

Figure 4 Drilling at BH18-13, with personal air monitoring.

Figure 5 BH18-13 location and setup.

Figure 6 Frozen soils encountered in BH18-19 between 17.1 and 18.0 m (56-59').

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 11 September 2018

Weather Conditions: Overcast	**Wood Field Coordinator:** Sam Fuller/Karen Hincks
Temperatures: Low: 3ºC, High: 12ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date*	Weekly Status*
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	2	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

*Friday is considered the end of the week.

1. Safety Health and Environment

- 0700 – tailgate.
- Personal, passive and area air monitoring continues.

2. Key Activities

- Safety meeting on site at 07:00
- Drop structures were inspected and appear to be holding fine. The lowest gabion on Drop Structure 4 has had some erosion below it, and the bottom of the gabion mesh is hanging in air. The large rip rap below this gabion is holding, although all the material around the large rip rap has been eroded.
- MSD completed the installation of the SI in BH18-13 and moved to BH18-15 and drilled to a depth of 9.1 m.
- MB completed drilling at BH18-19 and installed the vibrating wire piezometers; just needed to top of the hole with a few bags of bentonite.
- No dozer on site today.
- Environmental sampling is ongoing in the boreholes.
- All asbestos air monitoring, including the passive, area and personal monitoring, was ongoing today.

3. Air Monitoring Data

- Personal air monitors were worn by Wei (Wood safety), Dustin (MB driller) and Jake (MSD driller).

- Area monitors were placed in the emergency transport vehicle and in the geotechnical laboratory.
- Passive air monitors at the gate, waste rock and tailings were all operational.

4. New Visitors

- EDI were on site completing water sampling in Porcupine Creek and around the lake.
- A group with TH came to visit site for about an hour in the afternoon (9 people total)
- Two Yukon Environment employees showed up on site around 12 pm; they were looking to confirm the location of some test pits on the north side of the road between camp and the site gate.

5. Observations

- DS4 gabion baskets were visually checked and appeared secure, although the bottom gabion at Drop Structure 4 appears to have been partially undercut.
- Water level in the small ford seems unchanged from yesterday.
- The undercutting of the access road to the waste rock was unchanged.
- The access from BH11 to BH13 remains stable.

6. Issues/Concerns

- Water level in the small ford seems unchanged from yesterday although some material may need top be added to the south side of the temp rock dam created downstream to hold the rip-rap. This is being monitored.
- The nice weather is resulting in the roads starting to dry out. The water truck driver was very proactive and started wetting the roads.

7. Drilling Progress

- MSD completed the installation of the SI in BH18-13 and moved to BH18-15. BH18-15 was drilled to a depth of 9.1 m. Shallow bedrock was encountered at a depth of 1.2 m. The coring supplies were in use by the MB rig, so the borehole was advanced to a depth of 9.1 m using sonic before switching over to coring. It took approximately 2 hours to switch over to coring; no coring was completed today.
- MB completed the drilling of BH18-19 at a depth of 37.8 m and completed the installation of the vibrating wire piezometers.

The following holes are complete:

- **Boreholes:** BH18-01, BH18-01a, BH18-03, BH18-06, BH18-07, BH18-09, BH18-10, BH18-10a, BH18-11, BH18-12, BH18-13, BH18-14, BH18-17, BH18-19, BH18-20 & BH18-21.
- **SCPTs:** CPT18-11, CPT18-12, CPT18-14 & CPT18-17.

Current planned drilling order is as follows –

MSD Rig –BH15, BH16, BH4, BH5……. subject to change.

MB Rig –BH18, BH2, BH8…….subject to change.

8. Driller Daily Reports

MSD daily for overall services attached.

9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks	12	Ricardo Pantlitz	12			Sharon Mondor (EMT)	12
Sam Fuller	12	Jake Jacobs	12				
Jim McDonald	12	Peter Jakestar	12				
Jessica Pitman	12	Glenn Thiessen	12				
Victoria Brewer	12						
Wei Chye	12						
		Dustin Loewen	12				
		Aaron Defort	12				
		Ryan Berg	12				
				-		-	
		Carl McKenzie					
		Delany Alfred					
		Trent Jamieson				Alex Machica	
		Jennifer Goodale				Tammy Bell (EMT)	
		Galen Clarke				Joshua Ojierenem	
		Justin Jamieson				Michael McIssac	
Nisar Khan		Ryan Babala					
Vincent Chase		Mike Salzisberg					
Jeremy Rayski		Terrance Ball					
Lukas Brezina		Justin Holtkamp					
Totals	**72**	98	**84**		**0**		**12**

10. Attachments

- Borehole Tracking, FLHRAs (Available)

Figure 1 – Site layout

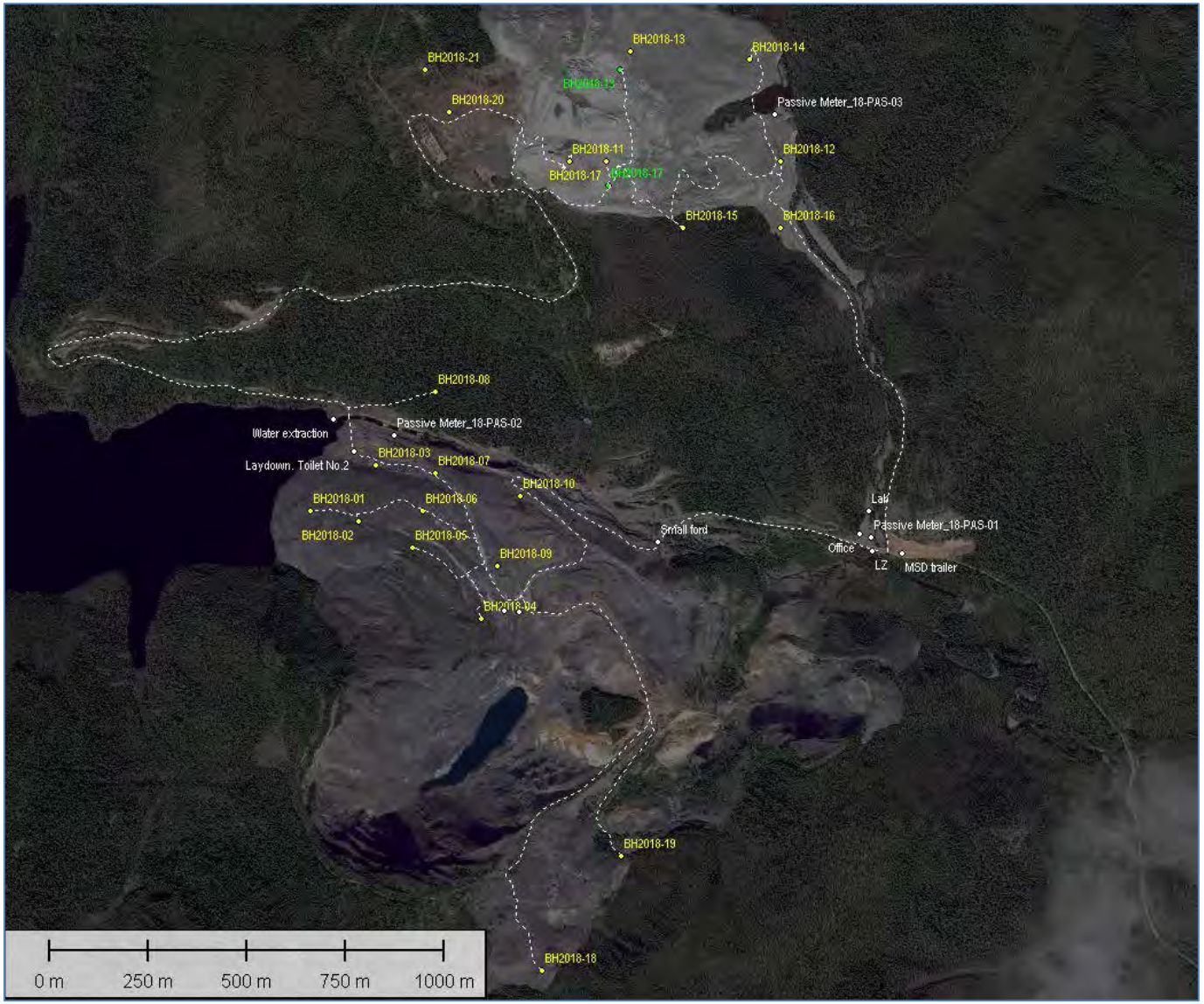


Figure 2 Drop structure 4.

Figure 3 Decontamination station at BH18-19.

Figure 4 Drilling at BH18-19 in Porcupine Creek.

Figure 5 BH18-19 area air monitoring.

Figure 6 Colluvium over bedrock in BH18-15; bedrock was encountered at a depth of 1.2 m.

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 12 September 2018

Weather Conditions: Overcast with light rain	**Wood Field Coordinator:** Sam Fuller/Karen Hincks
Temperatures: Low: 7ºC, High: 13ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date*	Weekly Status*
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	2	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

*Friday is considered the end of the week.

1. Safety Health and Environment

- 0700 – tailgate.
- Personal, passive and area air monitoring continues.

2. Key Activities

- Safety meeting on site at 07:00
- Drop structures were inspected and appear to be holding fine. The lowest gabion on Drop Structure 4 has had some erosion below it, and the bottom of the gabion mesh is hanging in air. The large rip rap below this gabion is holding, although all the material around the large rip rap has been eroded.
- MSD completed the installation of the thermistor in BH18-15 and moved to BH18-16. BH18-16 was drilled to a depth of 21.3 m and the VWP was installed.
- Completed the install at BH18-19 and moved to BH18-18. BH18-18 was drilled to a depth of 44.5 m at the end of the day.
- No dozer on site today.
- Environmental sampling is ongoing in the boreholes.
- All asbestos air monitoring, including the passive, area and personal monitoring, was ongoing today.

3. Air Monitoring Data

- Personal air monitors were worn by Dustin (MB driller) and Jake (MSD driller).
- Area monitors were placed in the site office, in the Mud Bay flat deck truck and in the Midnight Sun flat deck truck.
- Passive air monitors at the gate, waste rock and tailings were all operational.

4. New Visitors

- EDI were on site completing water sampling around the lake in the morning; their work was completed around mid-day and they left site.
- Chute Creek (sub to Chief Isaac) arrived on site at approximately 4 pm to install the log boom; however, they did not have any heavy equipment (they had assumed that the dozer would be available to them). They left site around 5 pm and plan to arrive in the morning. Midnight Sun have indicated that they are willing to help put the log booms into the lake using the skid steer.

5. Observations

- DS4 gabion baskets were visually checked and appeared secure, although the bottom gabion at Drop Structure 4 appears to have been partially undercut.
- Water level in the small ford seems unchanged from yesterday.
- The undercutting of the access road to the waste rock was unchanged.

6. Issues/Concerns

- Rain overnight resulted in the roads being a bit more slippery. This condition was discussed at the morning safety meeting.

7. Drilling Progress

- MSD completed the installation of the thermistor in BH18-15 at around 11 am and moved to BH18-16. BH18-16 was drilled to a depth of 21.3 m and the VWP was installed. Both boreholes were completed at the end of the day.
- MB completed the installation of BH18-19 in the morning and moved to BH18-18. BH18-18 was drilled to a depth of 44.5 m. Bedrock was tagged in the last run of the day, so the borehole and installation should be completed early on 13 September.

The following holes are complete:

- **Boreholes:** BH18-01, BH18-01a, BH18-03, BH18-06, BH18-07, BH18-09, BH18-10, BH18-10a, BH18-11, BH18-12, BH18-13, BH18-14, BH18-15, BH18-16, BH18-17, BH18-19, BH18-20 & BH18-21.
- **SCPTs:** CPT18-11, CPT18-12, CPT18-14 & CPT18-17.

Current planned drilling order is as follows –

MSD Rig –BH4, BH5……. subject to change.

MB Rig –BH18, BH2, BH8…….subject to change.

8. Driller Daily Reports

MSD daily for overall services attached.

9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks	12	Ricardo Pantlitz	12			Sharon Mondor (EMT)	12
Sam Fuller	12	Jake Jacobs	12				
Jim McDonald	12	Peter Jakestar	12				
Jessica Pitman	12	Columbus MacKinnon	12				
Victoria Brewer	12	Glenn Thiessen	12				
Wei Chye	12						
		Dustin Loewen	12				
		Aaron Defort	12				
		Ryan Berg	12				
				-		-	
		Carl McKenzie					
		Delany Alfred					
		Trent Jamieson				Alex Machica	
		Jennifer Goodale				Tammy Bell (EMT)	
		Galen Clarke				Joshua Ojierenem	
		Justin Jamieson				Michael McIssac	
Nisar Khan		Ryan Babala					
Vincent Chase		Mike Salzisberg					
Jeremy Rayski		Terrance Ball					
Lukas Brezina		Justin Holtkamp					
Totals	**72**	98	**84**		**0**		**12**

10. Attachments

- Borehole Tracking, FLHRAs (Available)

Figure 1 – Site layout

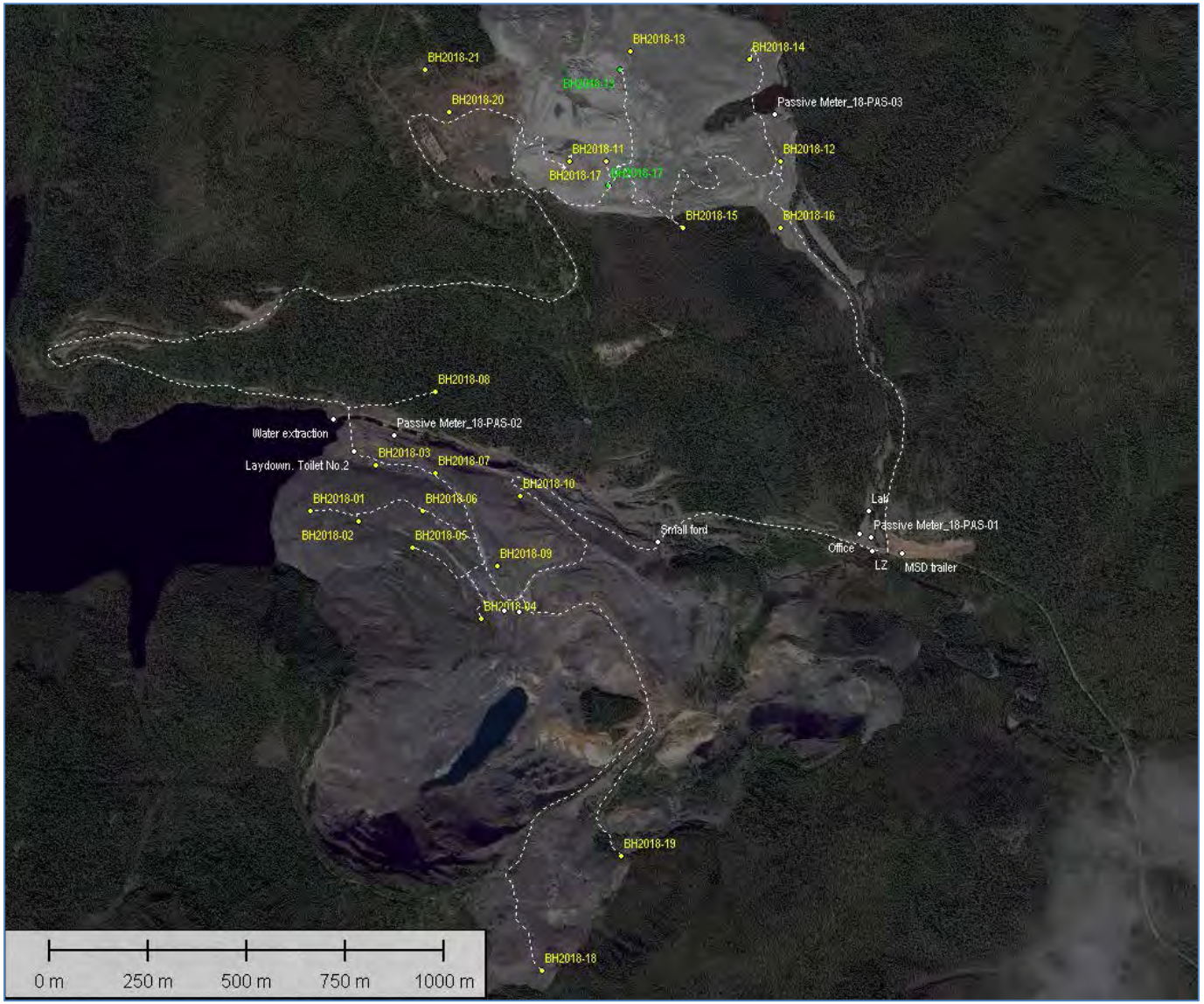


Figure 2 Installation of data logger at BH18-09.

Figure 3 Borehole drilling at BH18-15.

Figure 4 Logging bedrock core at BH18-15.

Figure 5 Native material encountered below tailings in BH18-16 between 13.1 and 18.3 m.

Figure 6 BH18-18 29.25 to 32.3 m; ground was frozen 31.4 to 32.3 m depth.

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 13 September 2018

Weather Conditions: Overcast with rain in the morning, clear afternoon	**Wood Field Coordinator:** Sam Fuller/Karen Hincks
Temperatures: Low: 8ºC, High: 13ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date*	Weekly Status*
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	2	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

*Friday is considered the end of the week.

1. Safety Health and Environment

- 0700 – tailgate.
- Personal, passive and area air monitoring continues.

2. Key Activities

- Safety meeting on site at 07:00
- Drop structures were inspected and appear to be holding fine. The lowest gabion on Drop Structure 4 has had some erosion below it, and the bottom of the gabion mesh is hanging in air. The large rip rap below this gabion is holding, although all the material around the large rip rap has been eroded.
- MSD cleaned up various items off of the tailings and moved to BH18-04. BH18-04 was at a depth of 29.0 m at the end of the day.
- Completed the install at BH18-18 and moved to BH18-02. BH18-02 was drilled to a depth of 23.2 m at the end of the day.
- Installed dataloggers at BH18-15 and BH18-19.
- The dozer was demobbed from site today, along with the trailer.
- Environmental sampling is ongoing in the boreholes.
- All asbestos air monitoring, including the passive, area and personal monitoring, was ongoing today.

3. Air Monitoring Data

- Personal air monitors were worn by Dustin (MB driller) and Jake (MSD driller).
- Area monitors were placed in the drillers trucks (Mud Bay and Midnight Sun) and the emergency transport vehicle.
- Passive air monitors at the gate, waste rock and tailings were all operational.

4. New Visitors

- Chute Creek (sub to Chief Isaac) arrived on site approximately mid-day install the log boom.

5. Observations

- DS4 gabion baskets were visually checked and appeared secure, although the bottom gabion at Drop Structure 4 appears to have been partially undercut.
- Water level in the small ford seems unchanged from yesterday.
- The undercutting of the access road to the waste rock was unchanged.

6. Issues/Concerns

- Rain overnight resulted in the roads being a bit more slippery and very muddy.

7. Drilling Progress

- MSD cleaned up various things off of the tailings area and moved to BH18-04. They drilled to a depth of 29.0 m in BH18-04 by the end of the day.
- MB completed drilling BH18-18 and installed the vibrating wire piezometers in the morning and moved to BH18-02. BH18-02 was drilled to a depth of 23.2 m.

The following holes are complete:

- **Boreholes:** BH18-01, BH18-01a, BH18-03, BH18-06, BH18-07, BH18-09, BH18-10, BH18-10a, BH18-11, BH18-12, BH18-13, BH18-14, BH18-15, BH18-16, BH18-17, BH18-18, BH18-19, BH18-20 & BH18-21.
- **SCPTs:** CPT18-11, CPT18-12, CPT18-14 & CPT18-17.

Current planned drilling order is as follows –

MSD Rig –BH4, BH5……. subject to change.

MB Rig –BH2, BH8…….subject to change.

8. Driller Daily Reports

MSD daily for overall services attached.

9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks	12	Ricardo Pantlitz	12			Sharon Mondor (EMT)	12
Sam Fuller	12	Jake Jacobs	12				
Jim McDonald	12	Peter Jakestar	12				
Jessica Pitman	12	Columbus MacKinnon	12				
Victoria Brewer	12	Glenn Thiessen	12				
Wei Chye	12						
Michael Anderson		Dustin Loewen	12				
Nick Proulx		Aaron Defort	12				
Norm Berndtsson		Ryan Berg	12				
				-		-	
		Carl McKenzie					
		Delany Alfred					
		Trent Jamieson				Alex Machica	
		Jennifer Goodale				Tammy Bell (EMT)	
		Galen Clarke				Joshua Ojierenem	
		Justin Jamieson				Michael McIssac	
Nisar Khan		Ryan Babala					
Vincent Chase		Mike Salzisberg					
Jeremy Rayski		Terrance Ball					
Lukas Brezina		Justin Holtkamp					
Totals	**72**		**96**		**0**		**12**

10. Attachments

- Borehole Tracking, FLHRAs (Available)

Figure 1 – Site layout

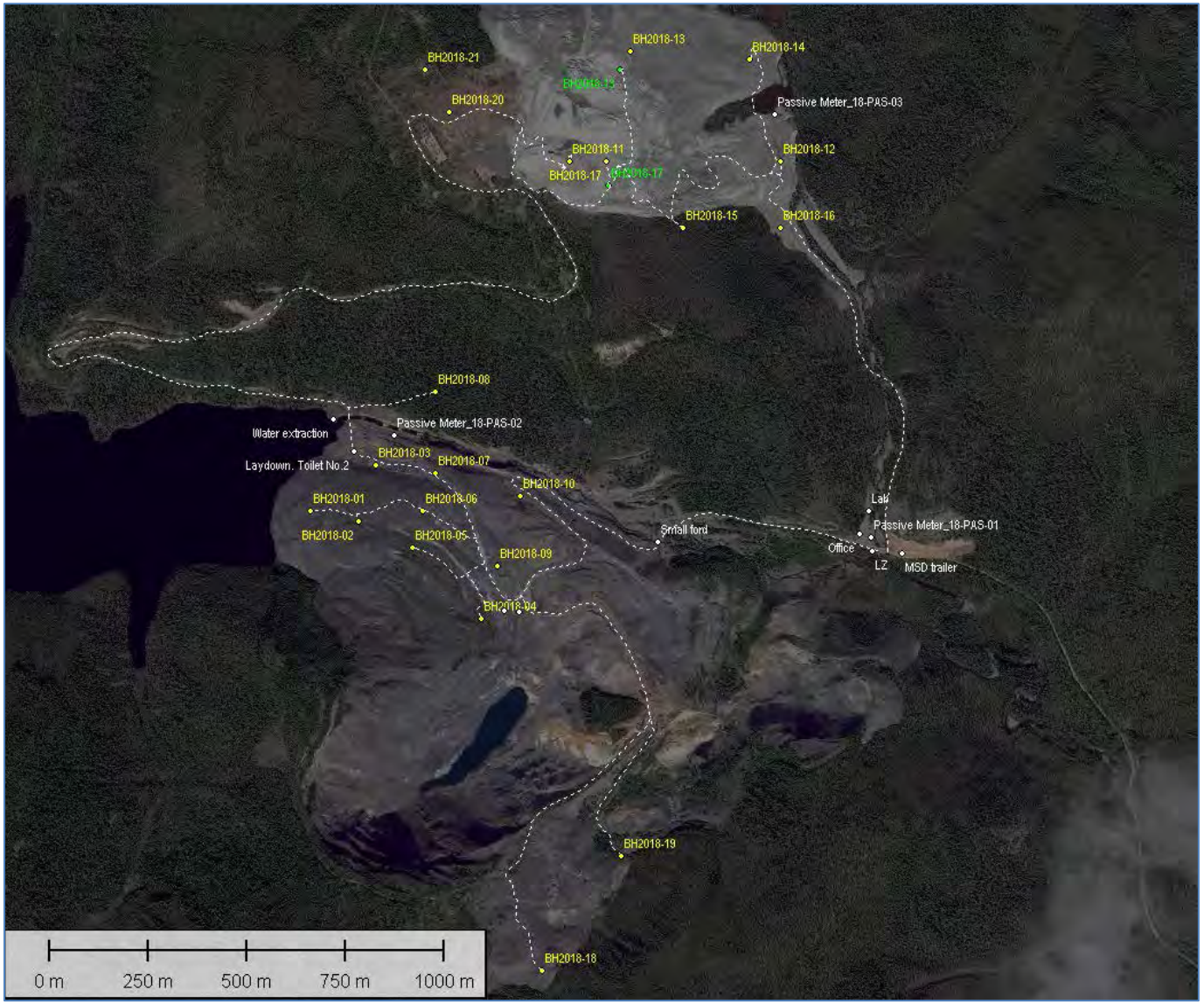


Figure 2 Drilling BH18-18 in the Porcupine Creek valley.

Figure 3 Protective casing installed over the datalogger at BH18-16.

Figure 4 Drop structure 4.

Figure 5 Native material encountered in BH18+04 between 21.3 and 24.4 m depth. Sample was not frozen.

Figure 6 Weathered bedrock in BH18-04, encountered at a depth of 25.6 m.

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 14 September 2018

Weather Conditions: Clear	**Wood Field Coordinator:** Sam Fuller/Karen Hincks
Temperatures: Low: -5ºC, High: 13ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date*	Weekly Status*
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	2	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

*Friday is considered the end of the week.

1. Safety Health and Environment

- 0700 – tailgate.
- No air monitoring today as there was no asabestos person on site

2. Key Activities

- Safety meeting on site at 07:00
- Drop structures were inspected and appear to be holding fine. The lowest gabion on Drop Structure 4 has had some erosion below it, and the bottom of the gabion mesh is hanging in air. The large rip rap below this gabion is holding, although all the material around the large rip rap has been eroded.
- BH18-02 was drilled to a depth of 62.8 m at the end of the day. Permafrost (NF) encountered at about 38.4 m
- BH18-04 was drilled to a depth of 43 m at the end of the day. Ice rich permafrost was encountered at about 30 m depth.
- Installed dataloggers at BH18-15 and BH18-11.
- The SI at BH18-11 was initialized.
- Environmental sampling is ongoing in the boreholes.

3. Air Monitoring Data

- No personal air monitoring was completed today.

- Area monitors were not operated today.
- Passive air monitors at the gate, waste rock and tailings were not operated today.

4. New Visitors

- No visitors on site today.

5. Observations

- DS4 gabion baskets were visually checked and appeared secure, although the bottom gabion at Drop Structure 4 appears to have been partially undercut.
- Water level in the small ford seems unchanged from yesterday.
- The undercutting of the access road to the waste rock was unchanged.

6. Issues/Concerns

- None mentioned. The frost overnight resulted in some freezing in the morning

7. Drilling Progress

- MSD drilled to a depth of 42.7 m in BH18-04 by the end of the day. They attempted to switch to coring at around 30 m depth;' however, they were not in bedrock and had to go back down with the sonic casing. Frozen native material was encountered below this depth.
- MB drilled to a depth of 62.8 m in BH18-02. Some permafrost was encountered between 38.4 and 55.5 m depth.

The following holes are complete:

- **Boreholes:** BH18-01, BH18-01a, BH18-03, BH18-06, BH18-07, BH18-09, BH18-10, BH18-10a, BH18-11, BH18-12, BH18-13, BH18-14, BH18-15, BH18-16, BH18-17, BH18-18, BH18-19, BH18-20 & BH18-21.
- **SCPTs:** CPT18-11, CPT18-12, CPT18-14 & CPT18-17.

Current planned drilling order is as follows –

MSD Rig –BH4, BH5……. subject to change.

MB Rig –BH2, BH8……subject to change.

8. Driller Daily Reports

MSD daily for overall services attached.

9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks	12	Ricardo Pantlitz	12			Sharon Mondor (EMT)	12
Sam Fuller	12	Jake Jacobs	12				
Jessica Pitman	12	Peter Jakestar	12				
Victoria Brewer	12	Columbus MacKinnon	12				
Michael Anderson	12	Glenn Thiessen	12				
Nick Proulx		Mike Salzisberg	12				
Norm Berndtsson							
		Dustin Loewen	12				
		Aaron Defort	12				
		Ryan Berg	12	-		-	
		Delany Alfred					
		Trent Jamieson				Alex Machica	
		Jennifer Goodale				Tammy Bell (EMT)	
Wei Chye		Galen Clarke				Joshua Ojierenem	
Jim McDonald		Justin Jamieson				Michael McIssac	
Nisar Khan		Ryan Babala					
Vincent Chase		Carl McKenzie					
Jeremy Rayski		Terrance Ball					
Lukas Brezina		Justin Holtkamp					
Totals	**60**		**108**		**0**		**12**

10. Attachments

- Borehole Tracking, FLHRAs (Available)

Figure 1 – Site layout

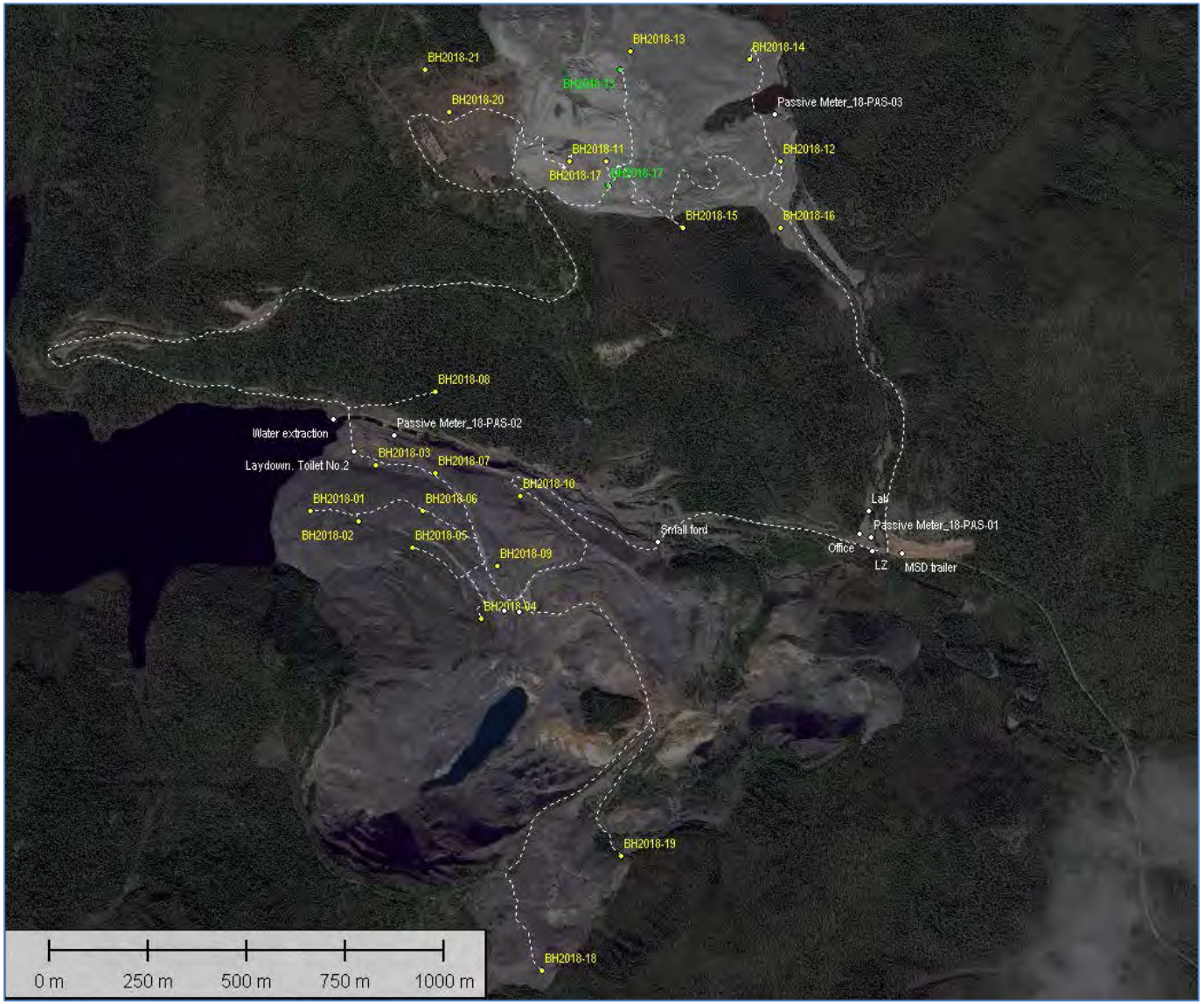


Figure 2 Waste rock in BH18-02; some of the waste rock at the end of the run was frozen but not bonded.

Figure 3 Protective casing installed over the datalogger at BH18-16.

Figure 4 Drop structure 4.

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 14 September 2018

Figure 5 Casing protector installed at BH18-13 (SI only at this location)

Figure 6 Looking down Porcupine Creek from BH18-18.

Figure 7 Drilling at BH18-04.

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 15 September 2018

Weather Conditions: Clear	**Wood Field Coordinator:** Karen Hincks
Temperatures: Low: -5ºC, High: 16ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date*	Weekly Status*
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	2	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

*Friday is considered the end of the week.

1. Safety Health and Environment

- 0700 – tailgate.
- Air monitoring activities were resumed today.

2. Key Activities

- Safety meeting on site at 07:00
- Drop structures were inspected and appear to be holding fine. The lowest gabion on Drop Structure 4 has had some erosion below it, and the bottom of the gabion mesh is hanging in air. The large rip rap below this gabion is holding, although all the material around the large rip rap has been eroded.
- BH18-02 was drilled to a depth of 71.9 m at the end of the day. Borehole was completed at 71.9 m and the SI was installed.
- BH18-04 was drilled to a depth of 52 m and the SI was installed. This borehole was deeper than initially thought as shallow bedrock on the slope was not encountered; instead, ice rich permafrost was encountered. Borehole was drilled until bedrock was encountered in order to anchor the SI in the bedrock. The rig was moved to BH18-08.
- Installed a VWP in the lake and hooked it up to a datalogger. Piezometer was installed adjacent to the existing water level piezometer, and the datalogger was placed on top of the bo for the existing instrument..
- Environmental sampling is ongoing in the boreholes.
- Wood biology crew arrived on site and began to set traps around the former plant site location.

3. Air Monitoring Data

- Personal air monitoring was completed for Jake (MSD driller) and Dustin (MB driller).
- Area monitors were placed in the decontamination areas at each of the rigs and in the medic vehicle.
- Passive air monitors at the gate, waste rock and tailings were operational today.

4. New Visitors

- No visitors on site today.

5. Observations

- DS4 gabion baskets were visually checked and appeared secure, although the bottom gabion at Drop Structure 4 appears to have been partially undercut.
- Water level in the small ford seems unchanged from yesterday.
- The undercutting of the access road to the waste rock was unchanged.
- A large bull moose was seen near the old plant site, along the road to the air strip.

6. Issues/Concerns

- None mentioned. The frost overnight resulted in some freezing in the morning
- Fatigue has been mentioned as we are approaching the end of the program. We have asked everyone to keep an eye on each other and help out where necessary.

7. Drilling Progress

- MSD drilled to a depth of 52 m in BH18-04 and installed the SI to the full depth. The rig has been moved to BH18-08 and is set up to drill.
- MB drilled to a depth of 71.9 m in BH18-02 and completed the SI installation.

The following holes are complete:

- **Boreholes:** BH18-01, BH18-01a, BH18-02, BH18-03, BH18-04, BH18-06, BH18-07, BH18-09, BH18-10, BH18-10a, BH18-11, BH18-12, BH18-13, BH18-14, BH18-15, BH18-16, BH18-17, BH18-18, BH18-19, BH18-20 & BH18-21.
- **SCPTs:** CPT18-11, CPT18-12, CPT18-14 & CPT18-17.

Current planned drilling order is as follows –

MSD Rig –BH8

MB Rig –BH5

8. Driller Daily Reports

MSD daily for overall services to follow.

9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks	12	Ricardo Pantlitz	12			Sharon Mondor (EMT)	12
Norm Berndtsson	6	Jake Jacobs	12				
Jessica Pitman	12	Peter Jakestar	12				
Victoria Brewer	12	Columbus MacKinnon	12				
Michael Anderson	12	Glenn Thiessen	12				
Nick Proulx	12	Mike Salzisberg	12				
Sam Fuller	6	Justin Jamieson					
Kent Brown	12						
Christine Gursky	12	Dustin Loewen	12				
Luke Visser	12	Aaron Defort	12	-		-	
		Ryan Berg	12				
						Alex Machica	
		Trent Jamieson				Joshua Ojierenem	
		Galen Clarke				Michael McIssac	
		Carl McKenzie					
		Terrance Ball					
		Justin Holtkamp					
Totals	**60**		**108**		**0**		**12**

10. Attachments

- Borehole Tracking, FLHRAs (Available)

Figure 1 – Site layout

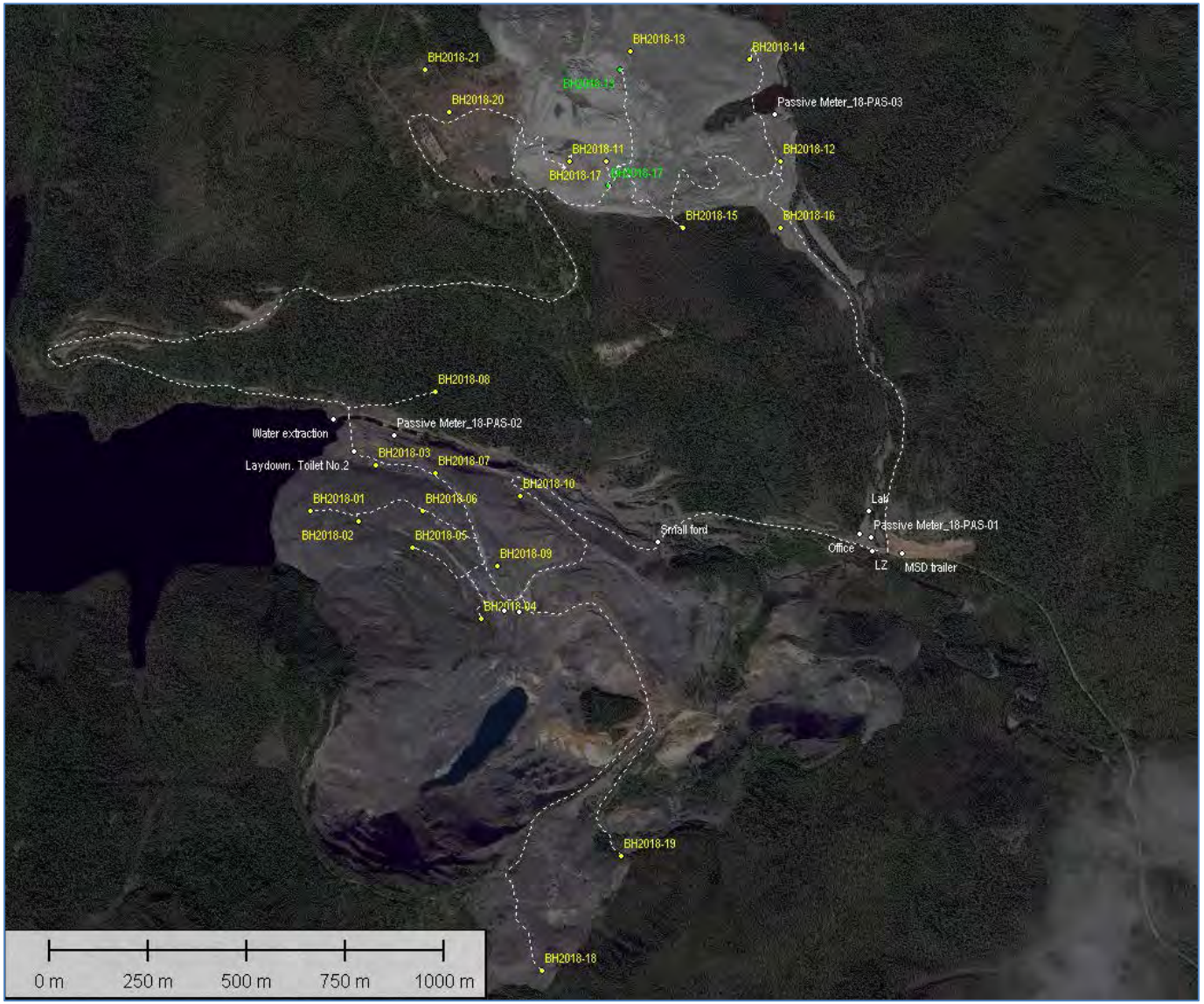


Figure 2 Frozen soils in BH18-04 between 39.6 and 41.15 m.

Figure 3 Bedrock in BH18-04 at a depth of 49.1 m.

Figure 4 VWP installed in the lake, adjacent to the existing datalogger. The tip was thrown out about 6 m further out from the existing instrument.

Figure 5 Drop structure 4

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 16 September 2018

Weather Conditions: Clear	**Wood Field Coordinator:** Karen Hincks
Temperatures: Low: -1C, High: 15ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date*	Weekly Status*
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	2	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

*Friday is considered the end of the week.

1. Safety Health and Environment

- 0700 – tailgate.
- Air monitoring activities were all underway today.

2. Key Activities

- Safety meeting on site at 07:00
- BH18-08 was drilled to a depth of 15 m and the thermistor was installed.
- BH18-05 was drilled to a depth of 44.5 m.
- Dataloggers were installed or hooked up at BH18-10, BH18-17 and BH18-14
- The SI in BH18-17 was initialized.
- Environmental sampling is ongoing in the boreholes.
- Wood biology crew trapped animals.

3. Air Monitoring Data

- Personal air monitoring was completed for Jake (MSD driller) and Dustin (MB driller).
- Area monitors were placed in the water truck, the BH18-08 decontamination area and lab trailer decontamination area.
- Passive air monitors at the gate, waste rock and tailings were operational today.

4. New Visitors

- No visitors on site today.

5. Observations

- Water level in the small ford seems unchanged from yesterday.
- The undercutting of the access road to the waste rock was unchanged.
- A cow moose was seen near the lake on the way to the old plant site.

6. Issues/Concerns

- None mentioned. The frost overnight resulted in some freezing in the morning
- Fatigue has been mentioned as we are approaching the end of the program. We have asked everyone to keep an eye on each other and help out where necessary.

7. Drilling Progress

- MSD drilled to a depth of 15 m in BH18-08 and installed the thermistor. The MSD rig has now completed their boreholes
- MB drilled to a depth of 44.5 m in BH18-05.

The following holes are complete:

- **Boreholes:** BH18-01, BH18-01a, BH18-02, BH18-03, BH18-04, BH18-06, BH18-07, BH18-08, BH18-09, BH18-10, BH18-10a, BH18-11, BH18-12, BH18-13, BH18-14, BH18-15, BH18-16, BH18-17, BH18-18, BH18-19, BH18-20 & BH18-21.
- **SCPTs:** CPT18-11, CPT18-12, CPT18-14 & CPT18-17.

Current planned drilling order is as follows –

MSD Rig –complete

MB Rig –BH5

8. Driller Daily Reports

MSD daily for overall services to follow.

9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks	12	Justin Jamieson	12			Sharon Mondor (EMT)	12
Norm Berndtsson	12	Jake Jacobs	12				
Jessica Pitman	12	Peter Jakestar	12				
Victoria Brewer	12	Columbus MacKinnon	12				
Michael Anderson	12	Glenn Thiessen	12				
Nick Proulx	12	Mike Salzisberg	12				
Kent Brown	12						
Christine Gursky	12	Dustin Loewen	12				
Luke Visser	12	Aaron Defort	12	-		-	
		Ryan Berg	12				
		Ricardo Pantlitz				Alex Machica	
		Trent Jamieson				Joshua Ojierenem	
		Galen Clarke				Michael McIssac	
		Carl McKenzie					
		Terrance Ball					
Sam Fuller		Justin Holtkamp					
Totals	**108**		**108**		**0**		**12**

10. Attachments

- Borehole Tracking, FLHRAs (Available)

Figure 1 – Site layout

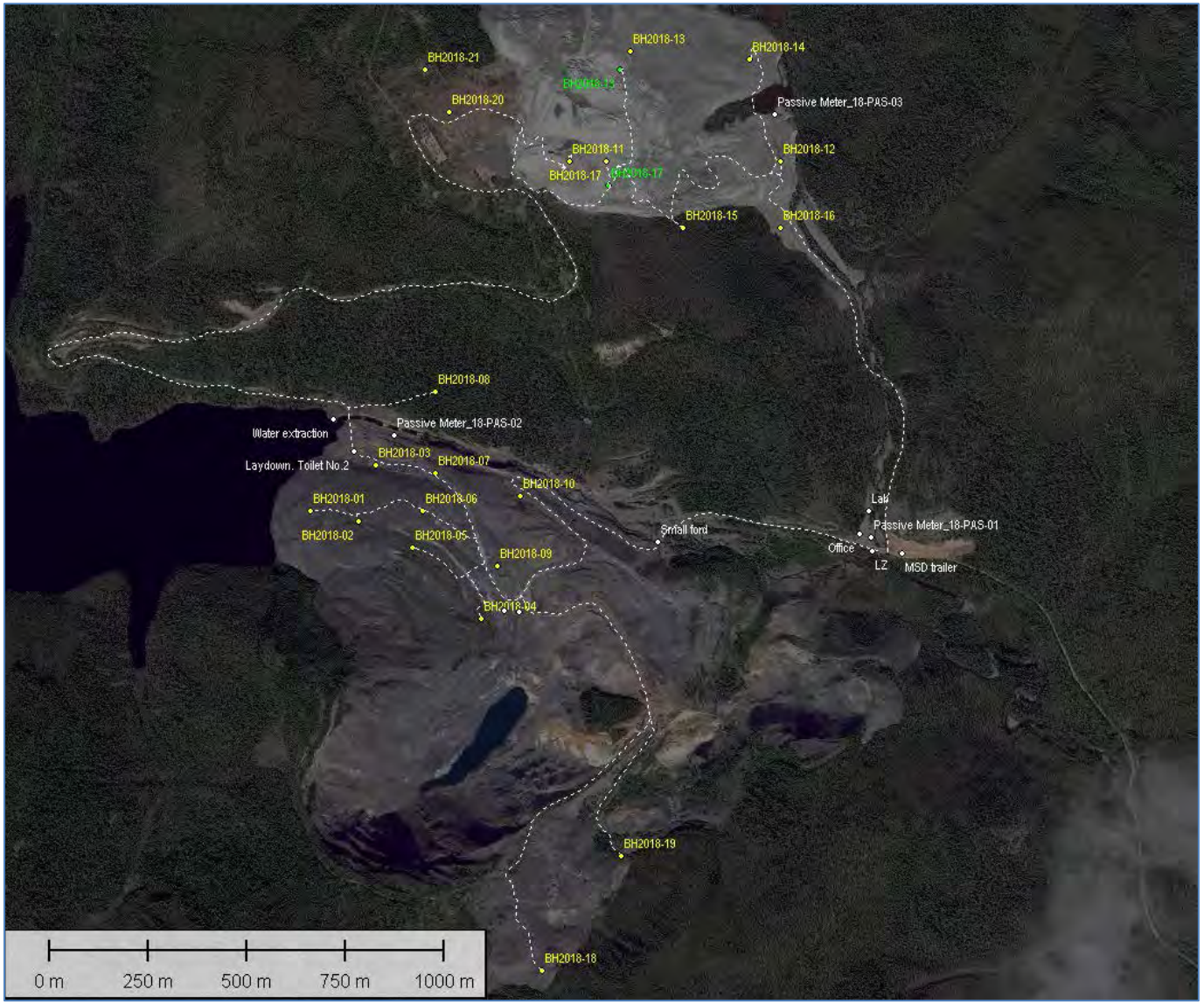


Figure 2 Frozen soils in BH18-04 between 39.6 and 41.15 m.

Figure 3 Small mammal traps placed on the tailings adjacent to the old plant site

Figure 4 Decontamination area at BH18-05.

Figure 5 Very poor recovery of fractured and weathered bedrock in BH18-08

Figure 6 Wasterock in BH18-05

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 17 September 2018

Weather Conditions: Clear	**Wood Field Coordinator:** Karen Hincks
Temperatures: Low: -1C, High: 15ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date*	Weekly Status*
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	1	L	-	0	L
Near Hits	0	L	-	2	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

*Friday is considered the end of the week.

1. Safety Health and Environment

- 0700 – tailgate.
- Air monitoring activities were all underway today.
- Jessica Pitman was bitten by a bug and had some swelling. She met with the medic, who administered an allergy pill.

2. Key Activities

- Safety meeting on site at 07:00
- BH18-05 was drilled to a depth of 44.5 m.
- The dataloggers for all of the instruments except BH18-05 (still in progress) were installed and set to start logging.
- All SIs were checked for the Ao direction, and insulation was added to the SIs in an attempt to prevent cold surface air from impacting thermistor readings.
- Environmental sampling is ongoing in the boreholes.
- Wood biology crew trapped animals.

3. Air Monitoring Data

- Personal air monitoring was completed for Jake (MSD driller) and Dustin (MB driller).
- Area monitors were placed in the water truck, the BH18-08 decontamination area and lab trailer decontamination area.

- Passive air monitors at the gate, waste rock and tailings were operational today.

4. New Visitors

- No visitors on site today.

5. Observations

- Water level in the small ford seems unchanged from yesterday.
- The undercutting of the access road to the waste rock was unchanged.

6. Issues/Concerns

- None mentioned. The frost overnight resulted in some freezing in the morning and slippery surfaces.
- Fatigue has been mentioned as we are approaching the end of the program. We have asked everyone to keep an eye on each other and help out where necessary.

7. Drilling Progress

- MSD demobbed the rig from the site in the morning, and were cleaning up supplies from around the site in the afternoon.
- MB drilled to a depth of 69.8 m in BH18-05.

The following holes are complete:

- **Boreholes:** BH18-01, BH18-01a, BH18-02, BH18-03, BH18-04, BH18-06, BH18-07, BH18-08, BH18-09, BH18-10, BH18-10a, BH18-11, BH18-12, BH18-13, BH18-14, BH18-15, BH18-16, BH18-17, BH18-18, BH18-19, BH18-20 & BH18-21.
- **SCPTs:** CPT18-11, CPT18-12, CPT18-14 & CPT18-17.

Current planned drilling order is as follows –

MSD Rig – removed from site.

MB Rig –BH5 installation and demobilization

8. Driller Daily Reports

MSD daily for overall services to follow.

9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks	12	Justin Jamieson	12			Sharon Mondor (EMT)	12
Norm Berndtsson	12	Jake Jacobs	6				
Jessica Pitman	12	Peter Jakestar	6				
Victoria Brewer	12	Columbus MacKinnon	6				
Michael Anderson	12	Glenn Thiessen	6				
Nick Proulx	12	Mike Salzisberg	6				
Kent Brown	12						
Christine Gursky	12	Dustin Loewen	12				
Luke Visser	12	Aaron Defort	12	-		-	
		Ryan Berg	12				
		Ricardo Pantlitz				Alex Machica	
		Trent Jamieson				Joshua Ojierenem	
		Galen Clarke				Michael McIssac	
		Carl McKenzie					
		Terrance Ball					
Sam Fuller		Justin Holtkamp					
Totals	**108**		**78**		**0**		**12**

10. Attachments

- Borehole Tracking, FLHRAs (Available)

Figure 1 – Site layout

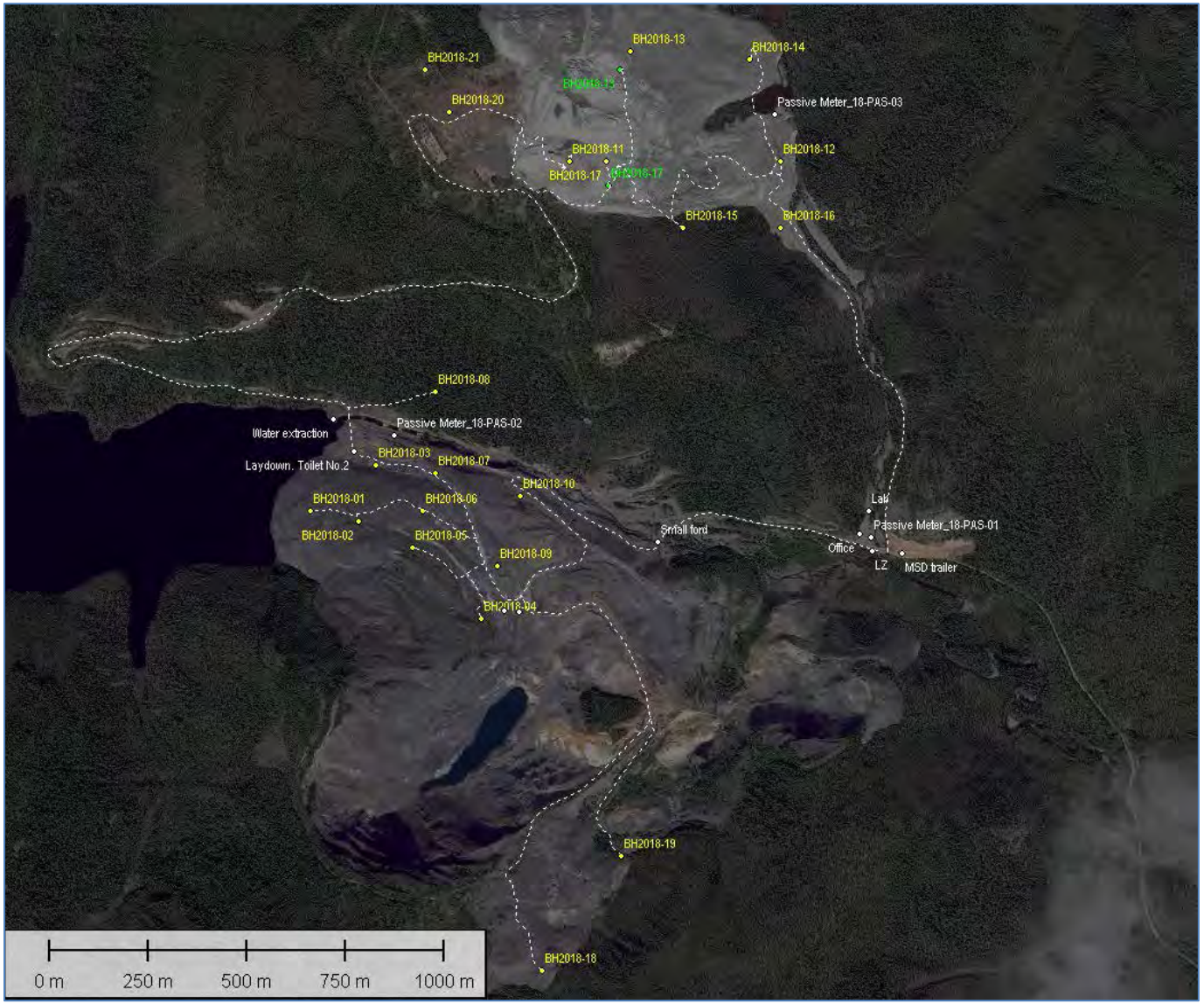


Figure 2 Installing insulation in BH18-07. Pool noodles were installed at the top with ¾" pipe insulation hanging below to disrupt any air flow.

Figure 3 Looking downstream from Drop Structure 4.

Figure 4 Waste rock between 56.7 and 59.7 m in BH18-05.

Clinton Creek Remediation Project (VE52705B)
Daily Field Program Report
Date: 18 September 2018

Weather Conditions: Clear	**Wood Field Coordinator:** Karen Hincks
Temperatures: Low: -3C, High: 15ºC	**On-Site Shift:** 0630 – 1830

Safety Metrics	Day	Daily Status	Contractor	Week To Date*	Weekly Status*
Lost Time Incidents	0	L	-	0	L
Restricted Work	0	L	-	0	L
Medical Aids	0	L	-	0	L
First Aids	0	L	-	0	L
Near Hits	0	L	-	2	L
Property Damage	0	L	-	0	L
Motor Vehicle Incidents	0	L	-	0	L
Environmental Spills	0	L	-	0	L
Environmental Damage	0	L	-	0	L
Status Indicators	Low	No alarming situation or negative events. All is normal.			
	Moderate	A minor negative event of moderate impact or alarming situation.			
	High	Severe problem has occurred or is about to occur.			

*Friday is considered the end of the week.

1. Safety Health and Environment

- 0700 – tailgate.
- Air monitoring activities were all underway today.

2. Key Activities

- Safety meeting on site at 07:00
- Thermistor and two vibrating wire piezometers were installed at BH18-05. All instruments have now been installed at site.
- Dataloggers were installed or hooked up at the remaining thermistor locations, with the exception of BH18-05.
- Wood biology crew were on site to trap small mammals.
- The laboratory trailer has been cleaned and packed for transport. Victoria Brewer (laboratory technician) demobbed from site with one truck.
- The road to the lower tailings was blocked off to traffic survey will need to access from the top of the tailings on 20 September).
- General site clean up and loading of supplies was done, with one load of material taken to Dawson City from site.

3. Air Monitoring Data

- Personal air monitoring was completed for Dustin (MB driller).

- Area monitors were placed outside of the office and at the BH18-05 decontamination area.
- Passive air monitors at the gate, waste rock and tailings were operational today.

4. New Visitors

- No visitors on site today.

5. Observations

- Water level in the small ford seems unchanged from yesterday.
- The undercutting of the access road to the waste rock was unchanged.

6. Issues/Concerns

- The frost overnight resulted in some freezing in the morning and slippery surfaces.
- Fatigue is the main concern at this point in the program.

7. Drilling Progress

- Installed the thermistor and VWPs in BH18-05.

The following holes are complete:

- **Boreholes:** BH18-01, BH18-01a, BH18-02, BH18-03, BH18-04, BH18-05, BH18-06, BH18-07, BH18-08, BH18-09, BH18-10, BH18-10a, BH18-11, BH18-12, BH18-13, BH18-14, BH18-15, BH18-16, BH18-17, BH18-18, BH18-19, BH18-20 & BH18-21.
- **SCPTs:** CPT18-11, CPT18-12, CPT18-14 & CPT18-17.

All drilling is now completed.

MB Rig – planning to pack up, clean and demob the rig by end of day on 19 September.

8. Driller Daily Reports

MSD daily for overall services attached.

9. Staff Summary

Wood		Subcontractors					
		Driller		Surveyors		Others	
Individual	Hours	Individual	Hours	Individual	Hours	Individual	Hours
Karen Hincks	12	Justin Jamieson	6			Sharon Mondor (EMT)	12
Norm Berndtsson	12	Mike Salzisberg	12				
Jessica Pitman	12						
Michael Anderson	12	Glenn Thiessen	12				
Nick Proulx	12						
Kent Brown	12						
Christine Gursky	12	Dustin Loewen	12				
Luke Visser	12	Aaron Defort	12	-		-	
		Ryan Berg	12				
Totals	**96**		**72**		**0**		**12**

10. Attachments

- Borehole Tracking, FLHRAs (Available)

Figure 1 – Site layout

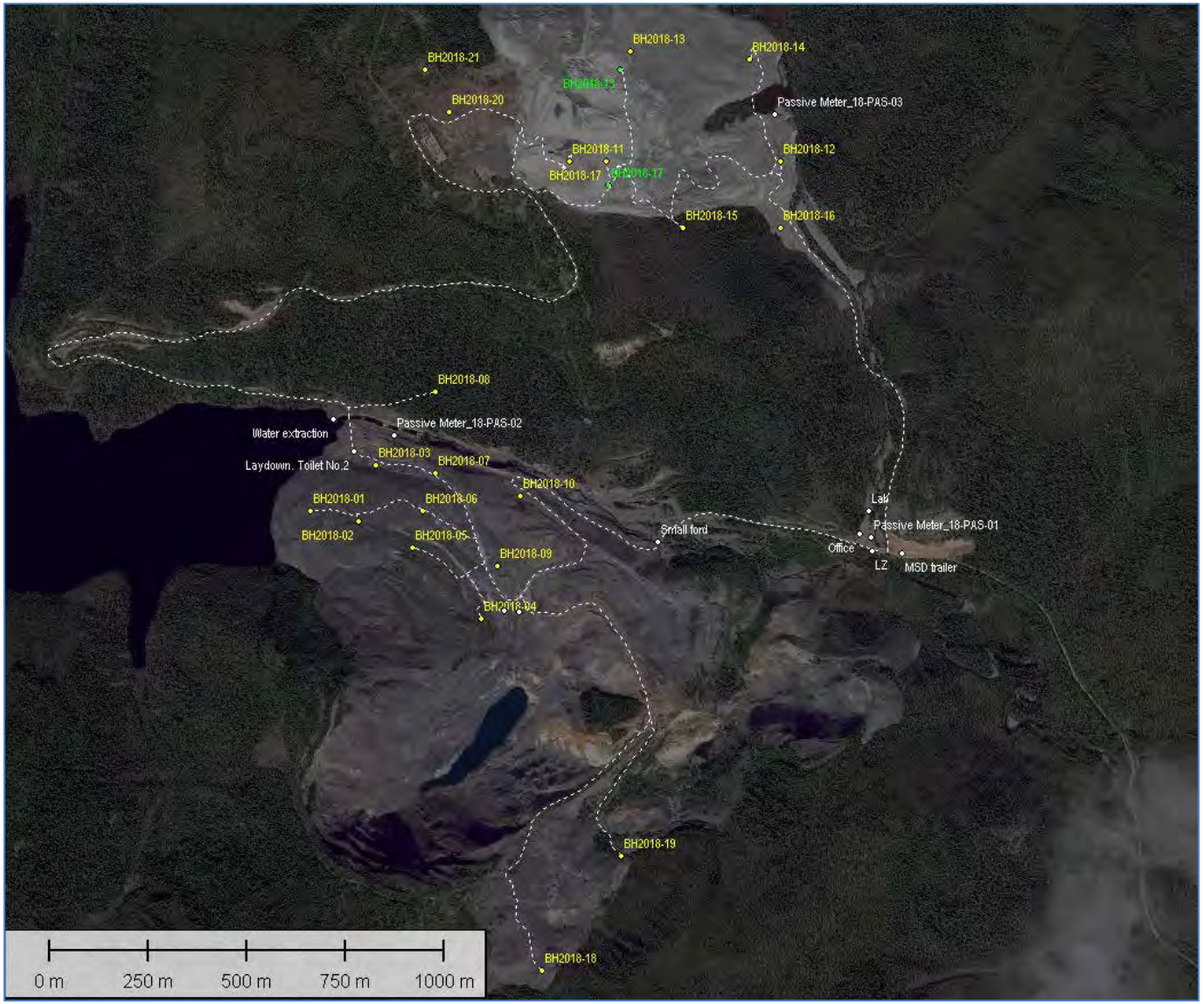


Figure 2 Mud bay rig.

Figure 3 Decontamination station at BH18-05

Figure 4 BH18-01 and BH18-01A with monuments and dataloggers installed.

Figure 5 BH18-02 with monument and datalogger installed.

Figure 6 BH18-16 with monument and datalogger installed.

Appendix B
Borehole Logs

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-01**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7147190.9 EASTING: 512758.92	ELEVATION: 433.0 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
0		**GRAVEL and SAND and SILT(GM)** , dark grey to black, moist [Waste Rock]			Not Frozen to 28.1 m	
1						432
2						431
3				G1A G1B		430
		3.1m **SAND and GRAVEL(SM)** , some silt, sub-angular to angular gravel, dark grey, damp to wet [Waste Rock]				
4						429
				G2A G2B	Gravel: 28.7%, Sand: 51.5%, Silt/Clay: 19.8%	
5						428
6						427
7						426
8						425
				G3A G3B		
9						424
10						

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

Environment & Infrastructure Solutions
600 - 4445 Lougheed Highway
Burnaby, BC V5C 0E4

LOGGED BY: KN/YL/BJ
ENTERED BY: GF
COMPLETION DEPTH: 67.1 m
COMPLETION DATE: 8/20/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-01**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7147190.9 EASTING: 512758.92	ELEVATION: 433.0 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ☰ GRAB ▥ MUD RETURN ◧ CORE RETURN

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400 / PLASTIC M.C. LIQUID 20 40 60 80	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
10					G4A G4B		
11							422
12							421
13							420
14							419
15							418
			...at 15.5 m layer of green gravel, 10 cm thick		G5A G5B		
16							417
17							416
18					G6A G6B		415
19							414
20							

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

Environment & Infrastructure Solutions
600 - 4445 Lougheed Highway
Burnaby, BC V5C 0E4

LOGGED BY: KN/YL/BJ
ENTERED BY: GF

COMPLETION DEPTH: 67.1 m
COMPLETION DATE: 8/20/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-01**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7147190.9 EASTING: 512758.92	ELEVATION: 433.0 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
20						
21				G7A G7B		412
		...at 21.35 m transition to trace silt				
22						411
				G8		
23						410
		...at 23.7 m 10 cm dia. cobble				
24						409
25				G9	Gravel: 70.6%, Sand: 22.0%, Silt/Clay: 7.4%	408
26		...from 25.9 m to 28.1 m asbestos fibres, greenish grey, moist to wet				407
27				G10		406
28		...below 28.1 m frozen, Nbn				405
				G11	Gravel: 33.0%, Sand: 63.1%, Silt/Clay: 3.9%	
29						404
30				G12		

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

Environment & Infrastructure Solutions
600 - 4445 Lougheed Highway
Burnaby, BC V5C 0E4

LOGGED BY: KN/YL/BJ
ENTERED BY: GF
COMPLETION DEPTH: 67.1 m
COMPLETION DATE: 8/20/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-01**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7147190.9 EASTING: 512758.92	ELEVATION: 433.0 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
30		...below 30.0 m more asbestos				
		...below 30.5 m soil not frozen				
31						402
32						401
33						400
		33.2m				
		SAND(SM), gravelly, some silt to silty, fine to medium grained sand, sub-angular gravel, brown, damp, not frozen [Waste Rock]		G13	Gravel: 26.7%, Sand: 51.4%, Silt/Clay: 21.9%	
		33.5m				
		GRAVEL(GM), some silt to silty, some sand, green asbestos rock fibers, grey, wet, not frozen [Waste Rock]				
34						399
35						398
36				G14		397
		36.6m				
		GRAVEL(GM), silty, sandy, some cobbles, no asbestos, sub-angular gravel, grey, damp to moist, not frozen [Waste Rock]		G15	Gravel: 42.0%, Sand: 28.9%, Silt/Clay: 29.1%	
37						396
38						395
		38.3m				
		SAND(SM) , gravelly, silty, trace clay, fine to medium grained sand, grey, damp, not frozen [Waste Rock]				
39				G16		394
40						

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

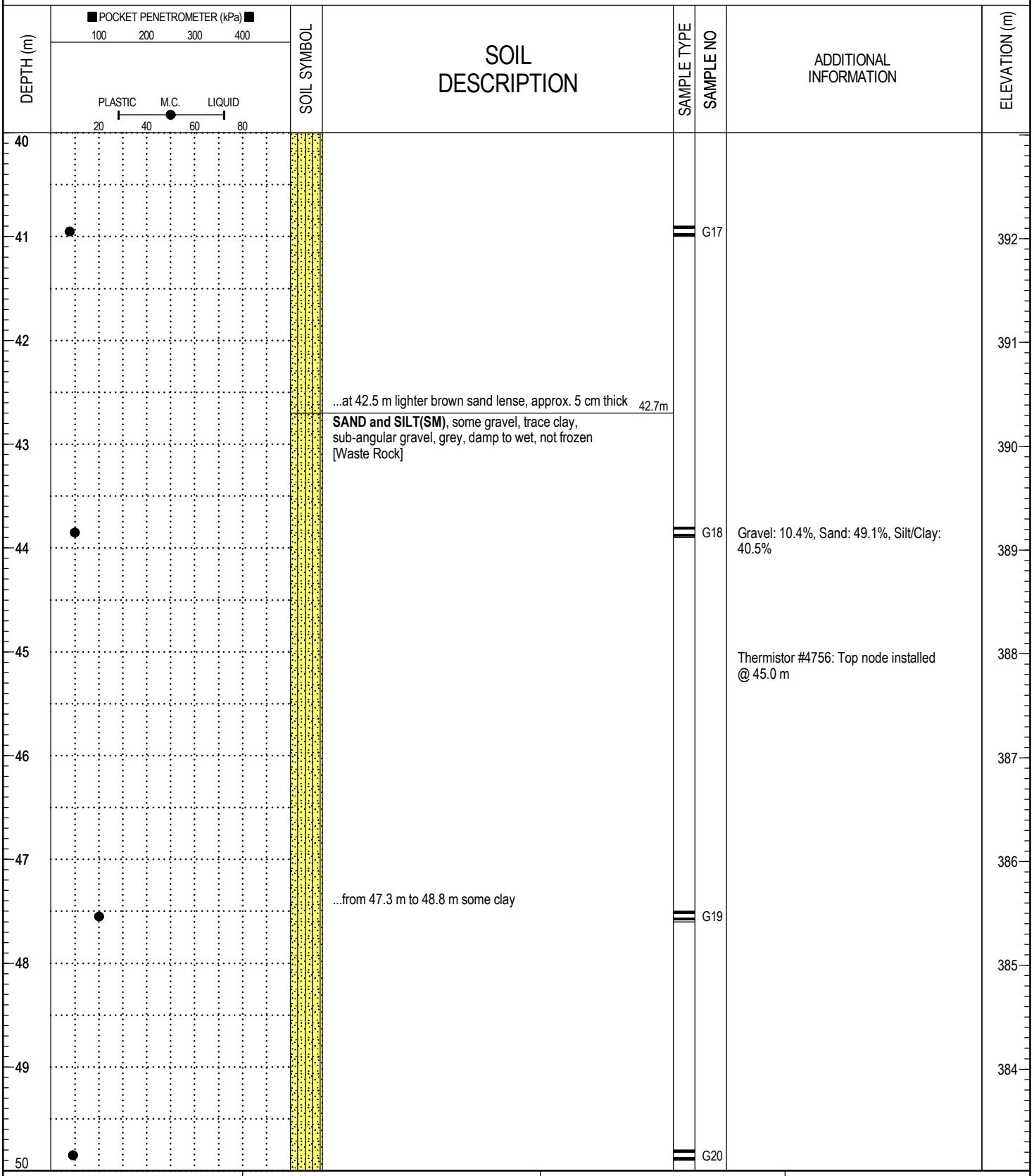
wood.

Environment & Infrastructure Solutions
600 - 4445 Lougheed Highway
Burnaby, BC V5C 0E4

LOGGED BY: KN/YL/BJ
ENTERED BY: GF
COMPLETION DEPTH: 67.1 m
COMPLETION DATE: 8/20/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-01**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7147190.9 EASTING: 512758.92	ELEVATION: 433.0 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN



wood.	**Environment & Infrastructure Solutions** **600 - 4445 Lougheed Highway** **Burnaby, BC V5C 0E4**	LOGGED BY: KN/YL/BJ	COMPLETION DEPTH: 67.1 m
		ENTERED BY: GF	COMPLETION DATE: 8/20/2018
			Page 5 of 7

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-01**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7147190.9 EASTING: 512758.92	ELEVATION: 433.0 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
50						
51						382
		51.9m				
52		**SAND(SM)**, silty, gravelly, trace clay, sub-angular gravel, grey, damp, not frozen [Waste Rock]				381
53						380
54				G21	Gravel: 22.9%, Sand: 46.4%, Silt/Clay: 30.7%	379
		54.9m				
55		**SILT and CLAY(ML)**, some sand, some gravel (sub-rounded gravel), low to medium plastic, brown to grey, not frozen [Alluvium]				378
56				G22		377
		57.0m				
57		**SAND(SP-SM)**, gravelly, trace silt, fine to medium grained sand, sub-angular gravel, grey, not frozen [Alluvium]		G23	VWP #52035: Installed @ 57.0 m Thermistor #4756: Bottom node installed @ 59.0 m	376
		...below 57.6 m brown in color				
		58.0m				
58		**SAND and SILT(SM)**, trace to some gravel, trace clay, sub-angular gravel, stiff to very stiff/dense to very dense, non plastic, dark grey, moist to wet, not frozen [Alluvium]		G24	Gravel: 11.5%, Sand: 50.7%, Silt/Clay: 37.9%	375
59						374
60		...from 59.8 m to 60.1 m increase in moisture				

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

Environment & Infrastructure Solutions
600 - 4445 Lougheed Highway
Burnaby, BC V5C 0E4

LOGGED BY: KN/YL/BJ | COMPLETION DEPTH: 67.1 m

ENTERED BY: GF | COMPLETION DATE: 8/20/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-01**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7147190.9 EASTING: 512758.92	ELEVATION: 433.0 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
60						
		...from 60.6 m to 60.7 m increase in moisture		G25		
61						372
				G26	VWP #52036: Installed @ 61.4 m	
				G27		
62						371
63						370
				G28		
64		64.1m				369
		BEDROCK , black with some white seams, non crystalline, fresh, medium strong, some slickensides, est. 30° dip [Argillite]		Core1	Switch to HQ3 Coring @ 64.1 m Core Run #1: (64.1 m - 65.6 m) TCR: 100% RQD = 63% AF = 13 NF = 8 - some slickenside/smear	
65						368
		BEDROCK , black with some white lenses and trace quartz veins, non crystalline, fresh, medium strong [Argillite] ...at 66.1 m and 66.87 m quartz veins		Core2	Core Run #2: (65.6 m - 67.1 m) TCR: 95% RQD = 38% AF = 20 NF = 9	
66						367
67		67.1m				366
		END OF BOREHOLE @ 67.1 m - Water level @ 7.97 m at time of completion. - 2 VWP's and 1 Thermistor were installed in borehole. VWP's and Thermistor were taped to a 2.5 cm dia. PVC pipe. The VWP's & Thermistor were backfilled with bentonite to 55.85 m and the VWP's were placed in sand packs with 35 cm of filter sand above & below VWP's. The remainder of the hole was backfilled to the top with grout.				
68						365
69						364
70						

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

Environment & Infrastructure Solutions
600 - 4445 Lougheed Highway
Burnaby, BC V5C 0E4

LOGGED BY: KN/YL/BJ	COMPLETION DEPTH: 67.1 m
ENTERED BY: GF	COMPLETION DATE: 8/20/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-01SI**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147187.91 EASTING: 512756.2	ELEVATION: 433.0 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ☰ GRAB ▥ MUD RETURN ◧ CORE RETURN

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400 / PLASTIC M.C. LIQUID 20 40 60 80	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
0			**NO LOGGING to 22.9 m**				
1							432
2							431
3							430
4							429
5							428
6							427
7							426
8							425
9							424
10							

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

Environment & Infrastructure Solutions
600 - 4445 Lougheed Highway
Burnaby, BC V5C 0E4

LOGGED BY: BJ
ENTERED BY: AB
COMPLETION DEPTH: 63.4 m
COMPLETION DATE: 8/24/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-01SI**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147187.91 EASTING: 512756.2	ELEVATION: 433.0 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ☰ GRAB ▥ MUD RETURN ◧ CORE RETURN

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400 / PLASTIC M.C. LIQUID 20 40 60 80	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
10							
11							422
12							421
13							420
14							419
15							418
16							417
17							416
18							415
19							414
20							

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.
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LOGGED BY: BJ
ENTERED BY: AB
COMPLETION DEPTH: 63.4 m
COMPLETION DATE: 8/24/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-01SI**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147187.91 EASTING: 512756.2	ELEVATION: 433.0 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa) 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
20						
21						412
22						411
23		22.9m **GRAVEL(GM)** , silty, loose to compact, black, saturated (10°C) [Waste Rock]		G1	No frozen soils encountered from 22.9 m to 30.6 m	410
24		24.1m **GRAVEL(GM)** , silty, trace of some green asbestos, trace clay, black, moist [Waste Rock]		G2		409
25		25.1m **GRAVEL(GM)** , silty, dense, light grey/grey, dry to moist [Waste Rock]		G3		408
26		...at 26.0 m moisture increases to damp to moist ...at 26.2 m some asbestos, compact, greenish grey, moist (12°C)		G4		407
27		27.1m **GRAVEL and SILT(GM)** , trace clay, non-plastic, compact/firm, black, moist (15°C) [Waste Rock]		G5		406
28						405
29		...at 28.7 m soil becoming compact to dense/firm to stiff, low to non-plastic, moist				404
30		...at 29.6 m some red/brown gravel 29.9m				

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COMPLETION DEPTH: 63.4 m
COMPLETION DATE: 8/24/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-01SI**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147187.91 EASTING: 512756.2	ELEVATION: 433.0 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ☰ GRAB ▥ MUD RETURN ◧ CORE RETURN

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400 / PLASTIC M.C. LIQUID 20 40 60 80	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
30			**GRAVEL(GM)** , silty, some sand, compact, greenish grey, moist [Waste Rock]		G6		
			30.6m				
			STOPPED LOGGING Borehole straight drilled to insert SI @ 62.5 m				
31							402
32							401
33							400
34							399
35							398
36							397
37							396
38							395
39							394
40							

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LOGGED BY: BJ	COMPLETION DEPTH: 63.4 m
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CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-01SI**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147187.91 EASTING: 512756.2	ELEVATION: 433.0 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ☰ GRAB ▥ MUD RETURN ◧ CORE RETURN

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400 / PLASTIC M.C. LIQUID 20 40 60 80	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
40							
41							392
42							391
43							390
44							389
45							388
46							387
47							386
48							385
49							384
50							

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LOGGED BY: BJ	COMPLETION DEPTH: 63.4 m
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CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-01SI**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147187.91 EASTING: 512756.2	ELEVATION: 433.0 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ☰ GRAB ▥ MUD RETURN ◧ CORE RETURN

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400 / PLASTIC M.C. LIQUID 20 40 60 80	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
50							
51							382
52							381
53							380
54							379
55							378
56							377
57							376
58							375
59							374
60							

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LOGGED BY: BJ
ENTERED BY: AB

COMPLETION DEPTH: 63.4 m
COMPLETION DATE: 8/24/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-01SI**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147187.91 EASTING: 512756.2	ELEVATION: 433.0 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ☰ GRAB ▥ MUD RETURN ◧ CORE RETURN

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400 / PLASTIC M.C. LIQUID 20 40 60 80	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
60			...at +/- 60.0 m bedrock was encountered				
61							372
62							371
63			...at 62.5 m SI installed (SI 62.8 m long) with 0.50 m stickup				370
			63.4m **END OF BOREHOLE @ 63.4 m** SI installed in borehole using a tremie and grouted from bottom of hole.				
64							369
65							368
66							367
67							366
68							365
69							364
70							

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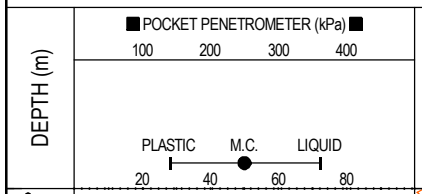
LOGGED BY: BJ	COMPLETION DEPTH: 63.4 m
ENTERED BY: AB	COMPLETION DATE: 8/24/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-02**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7147170.95 EASTING: 512885.27	ELEVATION: 442.2 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN



DEPTH (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
0	**GRAVEL and SAND(GW-GM)** , trace silt, trace cobbles, well-graded, max size 50 mm dia., flat, angular to sub-angular gravel, dark grey, dry, not frozen [Waste Rock]			Not Frozen to 38.4 m	442
1			G1		441
2					440
3			G2		439
4					438
5					437
6			G3		436
7			G4		435
8	...at 8.2 m boulder - rock dust and disks, 60cm thick				434
9			G5		433
10					

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

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LOGGED BY: JP
ENTERED BY: AB
COMPLETION DEPTH: 71.9 m
COMPLETION DATE: 9/15/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-02**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7147170.95 EASTING: 512885.27	ELEVATION: 442.2 m

SAMPLE TYPE ■ TUBE ▨ NO RECOVERY ▩ SPLIT SPOON ▤ GRAB ▥ MUD RETURN ▦ CORE RETURN

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400 / PLASTIC M.C. LIQUID 20 40 60 80	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
10							432
11			11.0m **GRAVEL and SILT(GM)** , some sand, trace to some clay, trace cobbles, well-graded, max size 50 mm dia., equi-dimensional, sub-angular to sub-rounded gravel, dark grey, moist [Waste Rock]		G6		431
12							430
13					G7	Gravel: 38.1%, Sand: 19.3%, Silt/Clay: 42.6%	429
14			14.6m **GRAVEL and SAND(GW-GM)** , trace silt, trace cobbles, well-graded, max size 50 mm dia., equi-dimensional, sub-angular to sub-rounded gravel, dark grey, moist [Waste Rock]		G8		428
15							427
16					G9		426
17							425
18					G10		424
19					G11		423
20							

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

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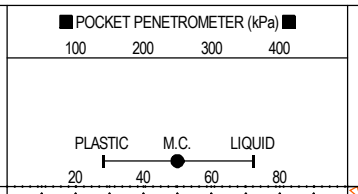
LOGGED BY: JP	COMPLETION DEPTH: 71.9 m
ENTERED BY: AB	COMPLETION DATE: 9/15/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-02**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7147170.95 EASTING: 512885.27	ELEVATION: 442.2 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN



DEPTH (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
20	20.1m **GRAVEL and SAND(GW-GM)** , trace silt, trace cobbles, well-graded, max size 50 mm dia., sub-angular to sub-rounded gravel, grey, moist [Waste Rock]				422
21			G12		421
22			G13		420
23	23.2m **GRAVEL and SAND(GW-GM)** , some silt, well-graded, max size 50 mm dia., sub-angular to sub-rounded gravel, grey, moist [Waste Rock]				419
24			G14		418
25	24.7m **GRAVEL and SAND(GW-GM)** , trace silt, well-graded, max size 50 mm dia., sub-angular to sub-rounded gravel, grey, moist [Waste Rock]		G15		417
26	26.2m **GRAVEL and SAND(GW-GM)** , some silt, trace cobbles, well-graded, max size 50 mm dia., sub-angular to sub-rounded gravel, grey, moist [Waste Rock]				416
27			G16		415
28			G17		414
29					413
30			G18		

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

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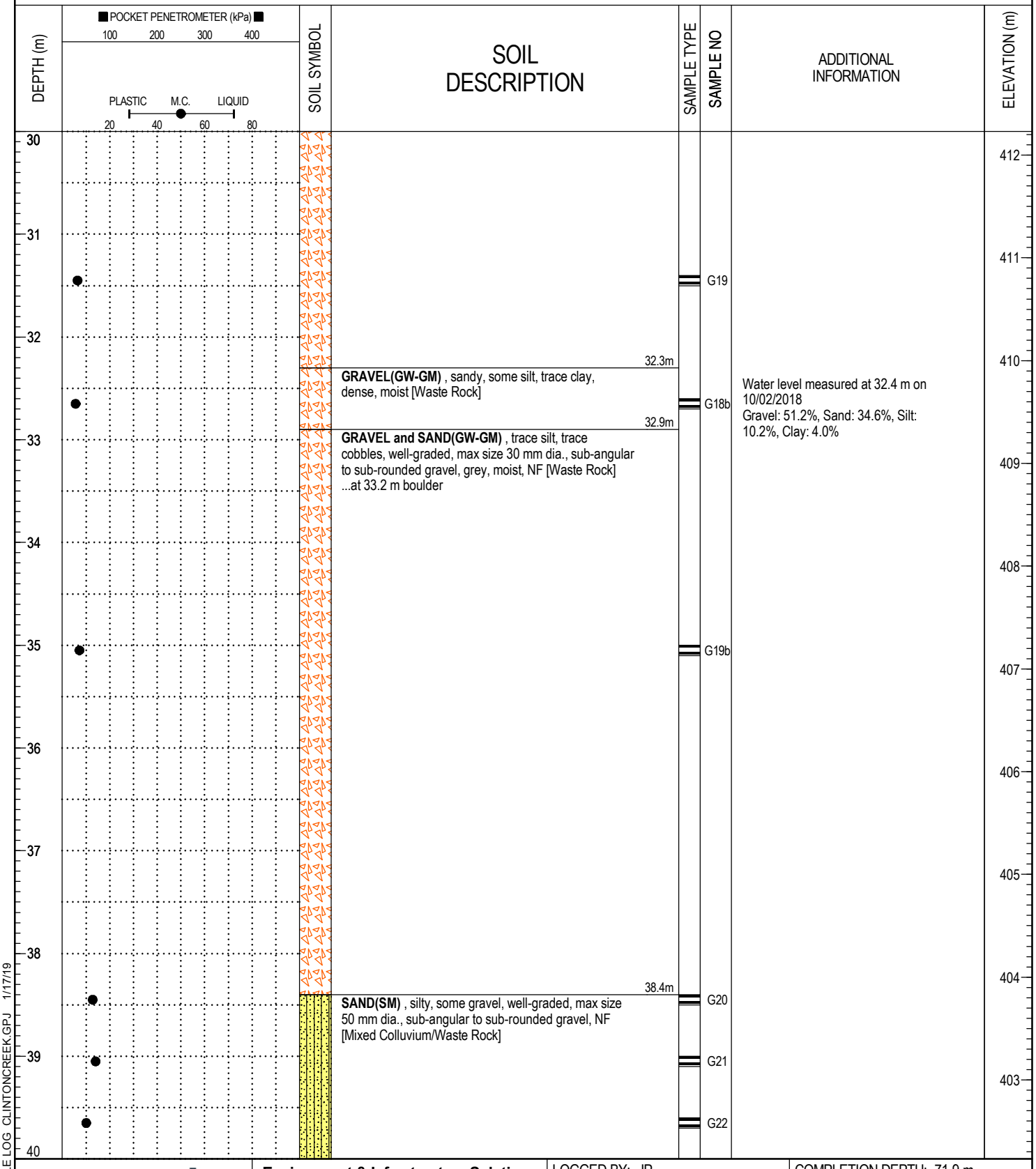
LOGGED BY: JP	COMPLETION DEPTH: 71.9 m
ENTERED BY: AB	COMPLETION DATE: 9/15/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-02**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7147170.95 EASTING: 512885.27	ELEVATION: 442.2 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN



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LOGGED BY: JP	COMPLETION DEPTH: 71.9 m
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CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-02**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7147170.95 EASTING: 512885.27	ELEVATION: 442.2 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
40				G23	Gravel: 17.2%, Sand: 50.0%, Silt/Clay: 32.8%	402
				G24		
41						401
				G25		
42				G26		400
				G27		
43		...not frozen below 43.3 m		G28		399
				G29	Gravel: 16.0%, Sand: 49.7%, Silt/Clay: 34.2%	
44						398
		44.5m		G30		
45		**GRAVEL(GM)** , sandy, some silt, trace clay, gap-graded, max size 50 mm dia., sub-angular to sub-rounded gravel, NF [Mixed Colluvium/Waste Rock]		G31		397
				G32		
46						396
				G33	Gravel: 36.7%, Sand: 34.9%, Silt: 19.4%, Clay: 9.0%	
47				G34		395
		...not frozen below 47.6 m		G35		
48						394
				G36		
49				G37		393
				G38		
50						

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LOGGED BY: JP	COMPLETION DEPTH: 71.9 m
ENTERED BY: AB	COMPLETION DATE: 9/15/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-02**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7147170.95 EASTING: 512885.27	ELEVATION: 442.2 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
50				G39		392
		50.6m				
		SILT(ML) , some gravel, trace sand, max size 50 mm dia., sub-angular to sub-rounded gravel, weathered, grey, NF [Mixed Colluvium/Waste Rock]		G40		
51				G41		391
52				G42		390
				G43		
		52.9m				
53		**SILT(ML)** , some sand, some gravel, max size 50 mm dia., flat, angular gravel, black, not frozen [Mixed Colluvium/Waste Rock] 53.2m		G44		389
		SILT(ML) , some gravel, trace sand, max size 50 mm dia., sub-angular to sub-rounded gravel, weathered, grey, NF [Mixed Colluvium/Waste Rock]		G45		
54		54.3m				388
		SAND(SM-SC) , silty/clayey, gravelly, well-graded, max size 50 mm dia., sub-angular to sub-rounded gravel, NF [Mixed Colluvium/Waste Rock]		G46		
55				G47		387
		55.5m				
		SAND(SM-SC) , silty/clayey, gravelly, trace cobbles, well-graded, max size 50 mm dia., sub-angular to sub-rounded gravel, black, moist, not frozen [Mixed Colluvium/Waste Rock]		G48	Gravel: 26.6%, Sand: 45.4%, Silt/Clay: 28.0%	
56				G49		386
		56.7m				
		SILT(ML) , trace sand, trace gravel, firm, low plasticity, non-dilatancy, max size 20 mm dia., sub-angular to sub-rounded gravel, not frozen [Mixed Colluvium/Waste Rock]		G50		
57				G51	VWP #52032: Installed @ 57.3 m	385
58						384
		58.8m				
59		**GRAVEL and SAND(GM)** , silty, trace cobbles, trace organics, well-graded, max size 60 mm dia., angular gravel, moist, not frozen [Alluvium]		G52		383
60						

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

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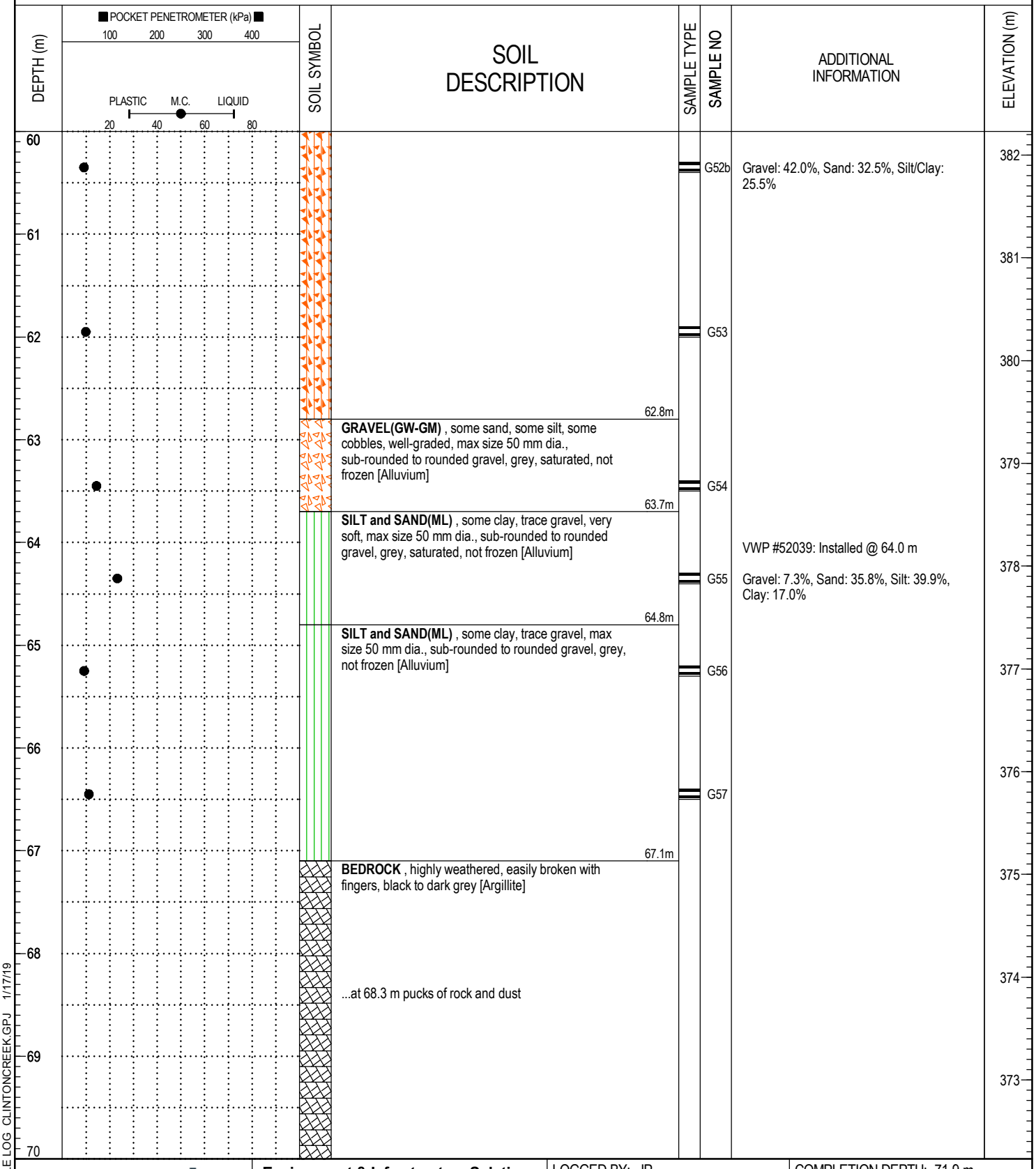
LOGGED BY: JP | COMPLETION DEPTH: 71.9 m
ENTERED BY: AB | COMPLETION DATE: 9/15/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-02**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7147170.95 EASTING: 512885.27	ELEVATION: 442.2 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN



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CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-02**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7147170.95 EASTING: 512885.27	ELEVATION: 442.2 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400 / PLASTIC M.C. LIQUID 20 40 60 80	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
70							372
71							371
72			71.9m **END OF BOREHOLE @ 71.9 m** - Water level @ 33.0 m at time of completion. - 2 VWP's installed in borehole. VWP's were taped to outside of a 2.5 cm dia. PVC pipe and borehole was backfilled with bentonite. VWP's were placed in sand packs with at least 30 cm of filter sand above & below VWP.				370
73							369
74							368
75							367
76							366
77							365
78							364
79							363
80							

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

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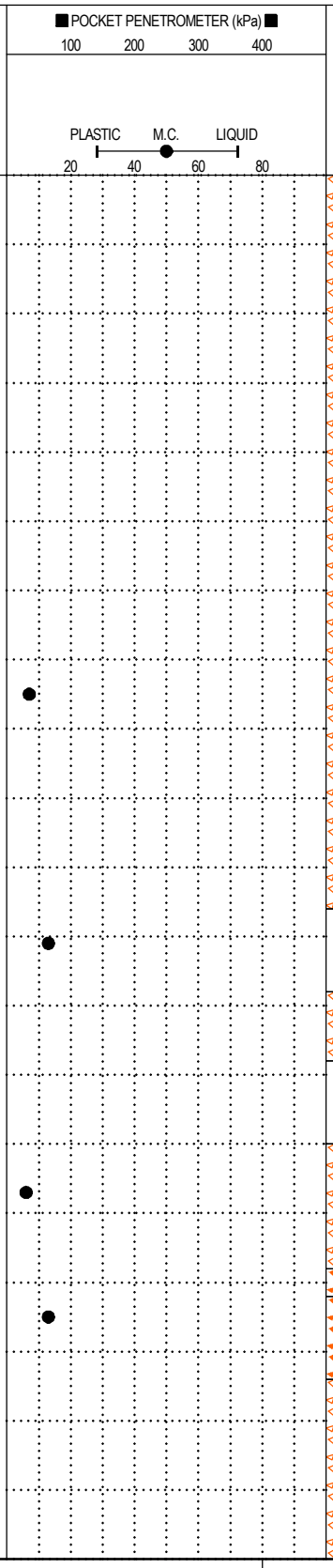
LOGGED BY: JP	COMPLETION DEPTH: 71.9 m
ENTERED BY: AB	COMPLETION DATE: 9/15/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-03**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147304.22 EASTING: 512927.26	ELEVATION: 418.4 m

SAMPLE TYPE ■ TUBE ▨ NO RECOVERY ▩ SPLIT SPOON ▤ GRAB ▥ MUD RETURN ▦ CORE RETURN



SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
	GRAVEL(GW-GM) , some sand, trace silt, well-graded, max size 30 mm dia., angular to sub-angular gravel, dark grey, dry, approx. 8°C [Waste Rock]			Not Frozen to 29.9 m	418
			G1		417
	...at 4.9 m temprature approx. 15°C				416
	5.3m **SILT(ML)** , some sand, some gravel, well-graded, max size 30 mm dia., angular to sub-angular gravel, dark grey [Waste Rock]		G2		415
	5.9m **GRAVEL(GW-GM)** , some sand, trace silt, well-graded, max size 30 mm dia., angular to sub-angular gravel, dark grey, dry [Waste Rock]				414
	6.4m **SILT(ML)** , some sand, some gravel, well-graded, max size 30 mm dia., angular to sub-angular gravel, dark grey [Waste Rock]				413
	7.0m **GRAVEL(GW-GM)** , sandy, some silt, well-graded, max size 30 mm dia., angular to sub-angular gravel, dark grey, dry, approx. 23°C [Waste Rock]		G3	Gravel: 52.8%, Sand: 31.3%, Silt/Clay: 15.8%	412
	7.9m **GRAVEL(GP)** , poorly-graded, max size 100 mm dia., angular gravel [Waste Rock]				411
	8.1m **GRAVEL and SILT(GM)** , some sand, gap-graded, max size 50 mm dia., angular to sub-angular gravel, dark grey [Waste Rock]		G4		410
	8.7m **GRAVEL(GW-GM)** , some sand, some silt, well-graded, max size 50 mm dia., angular to sub-angular gravel, dark grey, approx. 9°C [Waste Rock]				409

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LOGGED BY: JP	COMPLETION DEPTH: 59.7 m
ENTERED BY: AB	COMPLETION DATE: 9/8/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-03**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147304.22 EASTING: 512927.26	ELEVATION: 418.4 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ☰ GRAB ▥ MUD RETURN ◧ CORE RETURN

POCKET PENETROMETER (kPa) 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
10			G5	Water level measured at approx. 10.5 m on 9/08/2018	408
11	...at 10.7 gravel is wet, 30 cm thick		G6		
	11.3m				
	SAND(SM) , gravelly, silty, gap-graded, max size 30 mm dia., angular to sub-angular gravel, dark grey [Waste Rock]		G7	Gravel: 28.3%, Sand: 44.8%, Silt/Clay: 27.0%	407
12	11.9m **GRAVEL and SAND(GW-GM)** , some silt, well-graded, max size 30 mm dia., angular to sub-angular gravel, dry [Waste Rock]				406
13			G8		
	13.7m				405
14	**SAND(SC)** , silty, some gravel, gap-graded, max size 30 mm dia., angular to sub-angular gravel, dark grey, approx. 19°C [Waste Rock]				
			G9	Gravel: 15.3%, Sand: 51.4%, Silt/Clay: 33.3%	404
15					403
16					
			G10		402
17	17.1m				
	GRAVEL(GW-GM) , some silt, trace sand, well-graded, max size 30 mm dia., angular to sub-angular gravel, dark grey [Waste Rock]				401
			G11		
18					400
19	19.1m				
	GRAVEL(GW-GM) , some sand, trace silt, well-graded, max size 30 mm dia., angular to sub-angular gravel, dark grey, dry [Waste Rock]		G12		
	19.4m				
	SAND(SM) silty, gravelly, gap-graded, max size 30 mm dia., angular to sub-angular gravel, grey [Waste Rock]		G13	Gravel: 26.8%, Sand: 43.1%, Silt/Clay: 30.1%	399
20	20.0m				

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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LOGGED BY: JP
ENTERED BY: AB
COMPLETION DEPTH: 59.7 m
COMPLETION DATE: 9/8/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-03**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147304.22 EASTING: 512927.26	ELEVATION: 418.4 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ≡ GRAB ▥ MUD RETURN ◧ CORE RETURN

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400 / PLASTIC M.C. LIQUID 20 40 60 80	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
20			**GRAVEL(GW-GM)** , some silt, trace sand, well-graded, max size 30 mm dia., angular to sub-angular gravel, grey [Waste Rock]				398
21			...at 20.1 m temperature approx. 11°C		G14		397
22			22.3m				396
			SILT and GRAVEL(ML) , gap-graded, max size 30 mm dia., angular to sub-angular gravel, grey [Waste Rock]		G15		
23			22.9m **GRAVEL and SAND(GW-GM)** , some silt, well-graded, max size 30 mm dia., angular to sub-angular gravel, grey, approx. 9°C [Waste Rock] 23.2m		G16		395
24			**GRAVEL(GW-GM)** , sandy, some silt/clay, well-graded, max size 50 mm dia., angular to sub-angular gravel, grey, moist, approx. 7°C [Waste Rock]				394
25					G17	Gravel: 53.2%, Sand: 30.8%, Silt/Clay: 16.0%	393
26			...at 26.2 m soil is moist to wet, approx. 16°C				392
27							391
28					G18		390
29			...at 29.0 m fibrous material, cobble at end of run ...at 29.3 fibrous material, approx. 2°C		G19		389
30			29.9m		G20		

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

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LOGGED BY: JP
ENTERED BY: AB
COMPLETION DEPTH: 59.7 m
COMPLETION DATE: 9/8/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-03**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147304.22 EASTING: 512927.26	ELEVATION: 418.4 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ☰ GRAB ▥ MUD RETURN ◧ CORE RETURN

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400 / PLASTIC M.C. LIQUID 20 40 60 80	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
30			**SILT(ML)** , sandy, trace organics, Vx [Colluvium]		G21	Gravel: 0.0%, Sand: 25.4%, Silt/Clay: 74.6%	388
	288				G22		
	143				G23		
31	102				G24		
	128.4				G25		387
	199.9				G26		
32	252				G27		
	136		32.3m **SILT(ML)** , some sand, trace gravel, Vx [Colluvium]		G28		386
33					G29		
					G30		385
34					G31		
	193				G32		384
35					G33		383
					G34		
36					G35		
					G36		382
					G37		
37	214.5				G38		
					G39		
	113				G40		381
					G41	Gravel: 1.0%, Sand: 10.1%, Silt/Clay: 88.9%	
38	142				G42		
			38.6m **SILT(ML)** , some gravel, saturated, NF [Alluvium]		G43 G44		380
39					G45		
			39.5m **SAND and SILT(SM)** , some gravel, moist, NF [Alluvium]				379
40					G46		

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LOGGED BY: JP	COMPLETION DEPTH: 59.7 m
ENTERED BY: AB	COMPLETION DATE: 9/8/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-03**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147304.22 EASTING: 512927.26	ELEVATION: 418.4 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
40					Gravel: 13.1%, Sand: 48.3%, Silt/Clay: 38.6%	
		40.5m				378
		GRAVEL and SAND(GW-GM) , trace silt, well-graded, max size 30 mm dia., angular to sub-angular gravel, damp, not frozen [Alluvium]				
41				G47		
		41.5m				377
		GRAVEL(GC) , silty, sandy, gap-graded, max size 30 mm dia., angular to sub-angular gravel, not frozen [Alluvium]				
42				G48		
		...at 42.4 m large boulder, 2 m thick				376
43						
						375
44						
						374
45						
				G51		373
					Gravel: 43.8%, Sand: 21.4%, Silt/Clay: 34.8%	
46				G50		
				G49		
		46.6m				372
		SILT and SAND(ML) , gravelly, trace cobbles, well-graded, max size 30 mm dia., angular to sub-angular gravel, not frozen [Alluvium]			Gravel: 24.0%, Sand: 36.5%, Silt/Clay: 39.5%	
47						
		47.6m				371
		SILT(ML) , trace gravel, trace cobbles, sub-angular to sub-rounded cobbles, soft, medium plasticity, grey, not frozen [Alluvium]				
48						
		48.5m				370
		SILT(ML) , sandy, some gravel, well-graded, max size 50 mm dia., angular to sub-angular gravel, grey, not frozen [Alluvium]				
49				G52	Gravel: 19.0%, Sand: 32.1%, Silt/Clay: 48.9%	
		...at 49.1 m boulder, 30 cm thick				
		49.4m				369
		GRAVEL and CLAY(GC) , trace cobbles, gap-graded, max size 40 mm dia., angular to sub-angular gravel, grey, not frozen [Alluvium]				
50						

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

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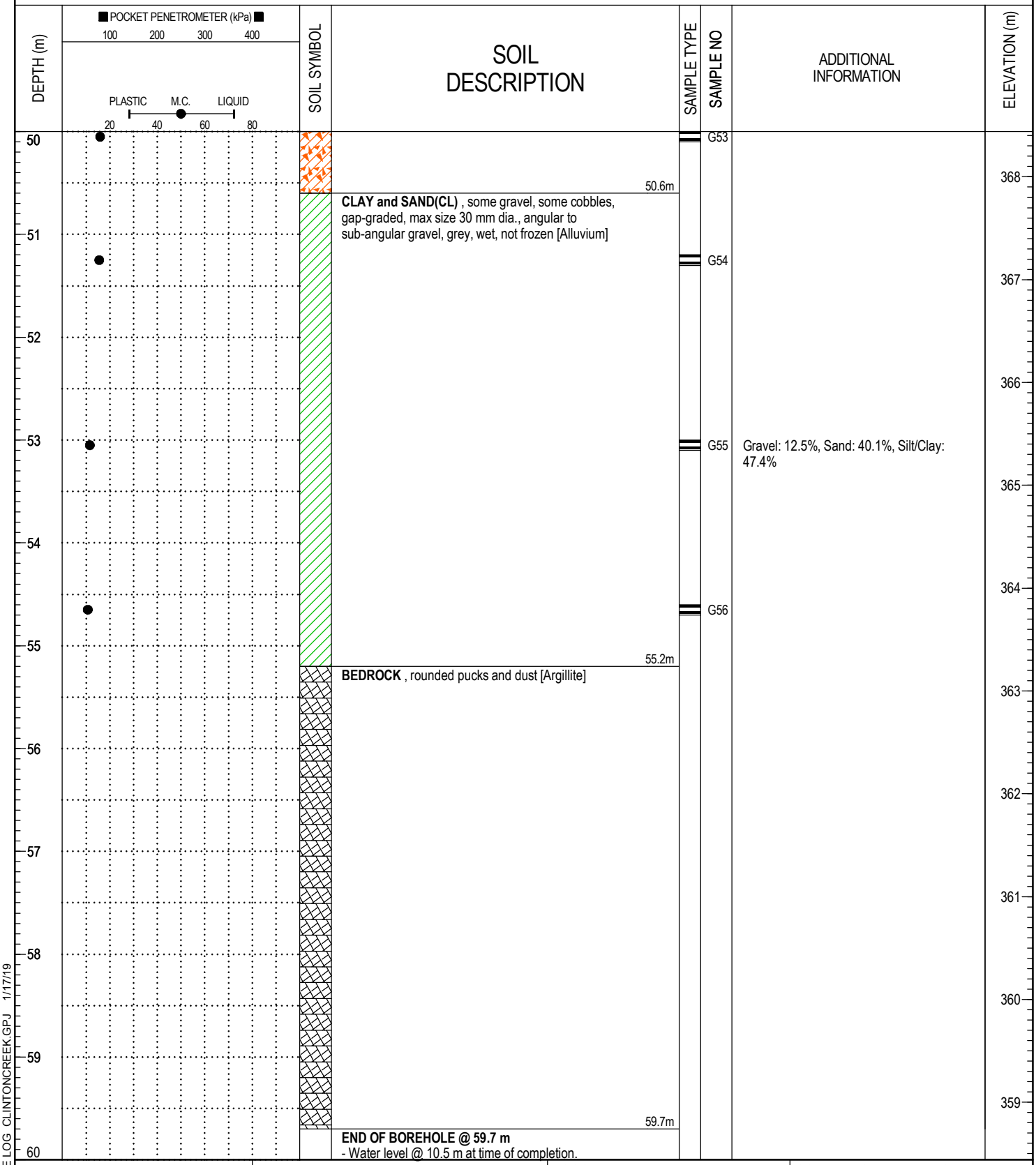
LOGGED BY: JP | COMPLETION DEPTH: 59.7 m
ENTERED BY: AB | COMPLETION DATE: 9/8/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-03**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147304.22 EASTING: 512927.26	ELEVATION: 418.4 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN



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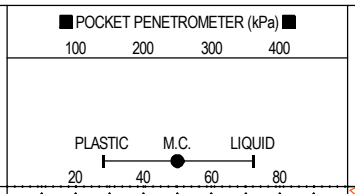
LOGGED BY: JP	COMPLETION DEPTH: 59.7 m
ENTERED BY: AB	COMPLETION DATE: 9/8/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-04**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7146922.16 EASTING: 513195.27	ELEVATION: 428.7 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN



DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
0		**GRAVEL and SAND(GW-GM)** , trace silt/clay, trace cobbles, well-graded, max size 60 mm dia., angular gravel, compact, black to dark grey, yellow oxidation, damp to moist, not frozen, gravel and cobbles comprised of weak argillite [Waste Rock]			Not Frozen to 33.5 m	428
1				G1		
2				G2		427
3						426
4				G3	Gravel: 48.8%, Sand: 40.3%, Silt/Clay: 10.9%	425
5						424
6		...from 6.1 m to 9.1 m material is loose to compact		G4		423
7				G5		422
8						421
9		...from 9.1 m to 12.1 m material is compact		G6		420
10				G7	Gravel: 45.5%, Sand: 39.3%, Silt/Clay: 15.2%	419

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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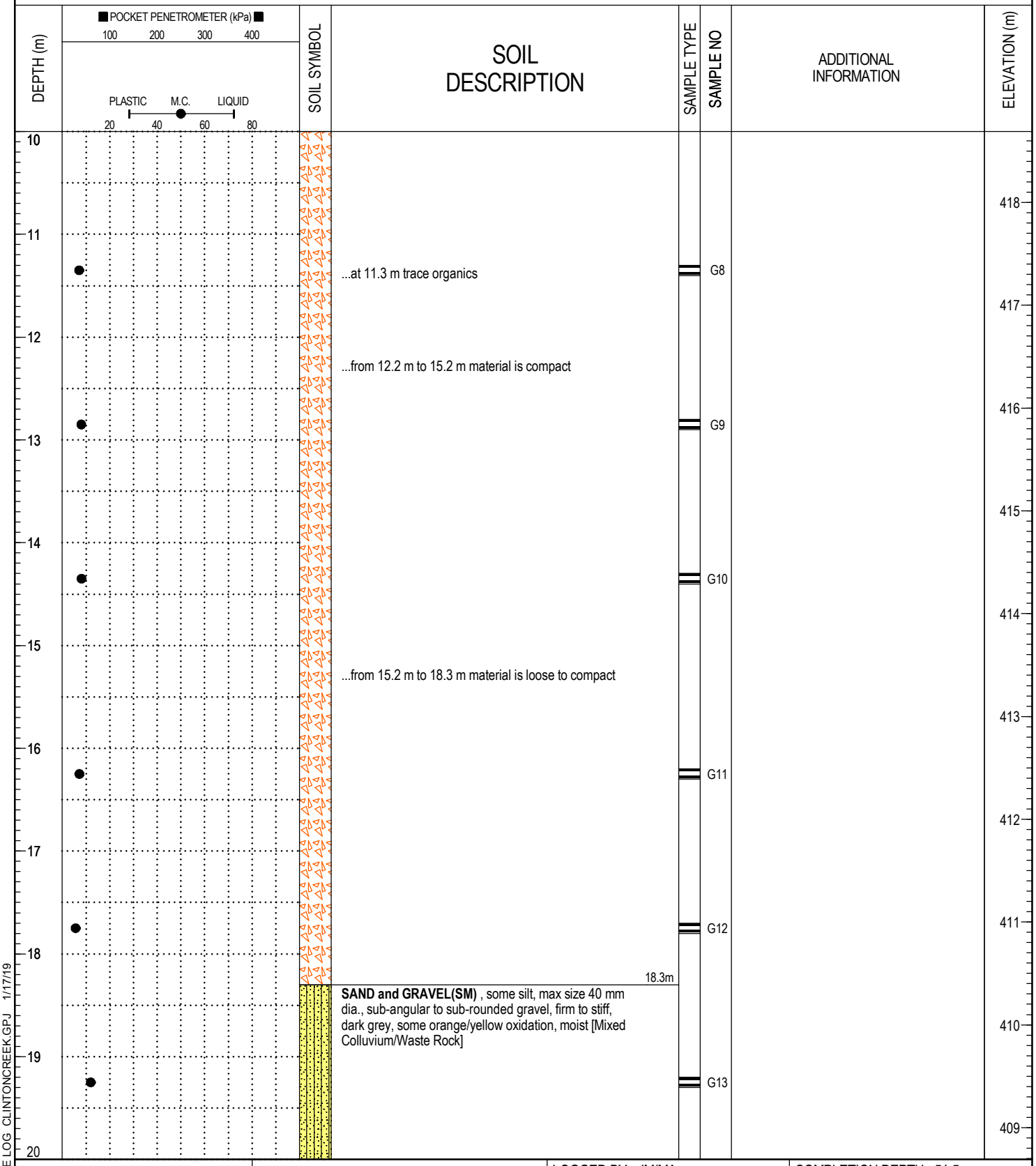
LOGGED BY: JM/MA	COMPLETION DEPTH: 51.5 m
ENTERED BY: AB	COMPLETION DATE: 9/15/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-04**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7146922.16 EASTING: 513195.27	ELEVATION: 428.7 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN



BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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600 - 4445 Lougheed Highway
Burnaby, BC V5C 0E4

LOGGED BY: JM/MA	COMPLETION DEPTH: 51.5 m
ENTERED BY: AB	COMPLETION DATE: 9/15/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-04**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7146922.16 EASTING: 513195.27	ELEVATION: 428.7 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa) 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
20						408
21				G14		407
22				G15	Gravel: 36.8%, Sand: 44.3%, Silt/Clay: 18.9%	406
23						405
24				G16		404
25				G17		403
26		25.6m **GRAVEL and SAND(GP)** ,cobbley, trace silt, argillite and asbestos cobbles and boulders, yellowish green to dark grey, some orange staining, some sections pulverized at 25.9 m, 26.8 m, 28.4 m, dense, damp [Mixed Colluvium/Waste Rock]		G18		402
27				G19		401
28				G20	Gravel: 62.9%, Sand: 32.5%, Silt/Clay: 4.6%	400
29		29.0m **GRAVEL and COBBLES(GP)** , recovered 20 cm [Mixed Colluvium/Waste Rock]		G21	Switched to HQ3 Coring @ 29.0 m	399
30						

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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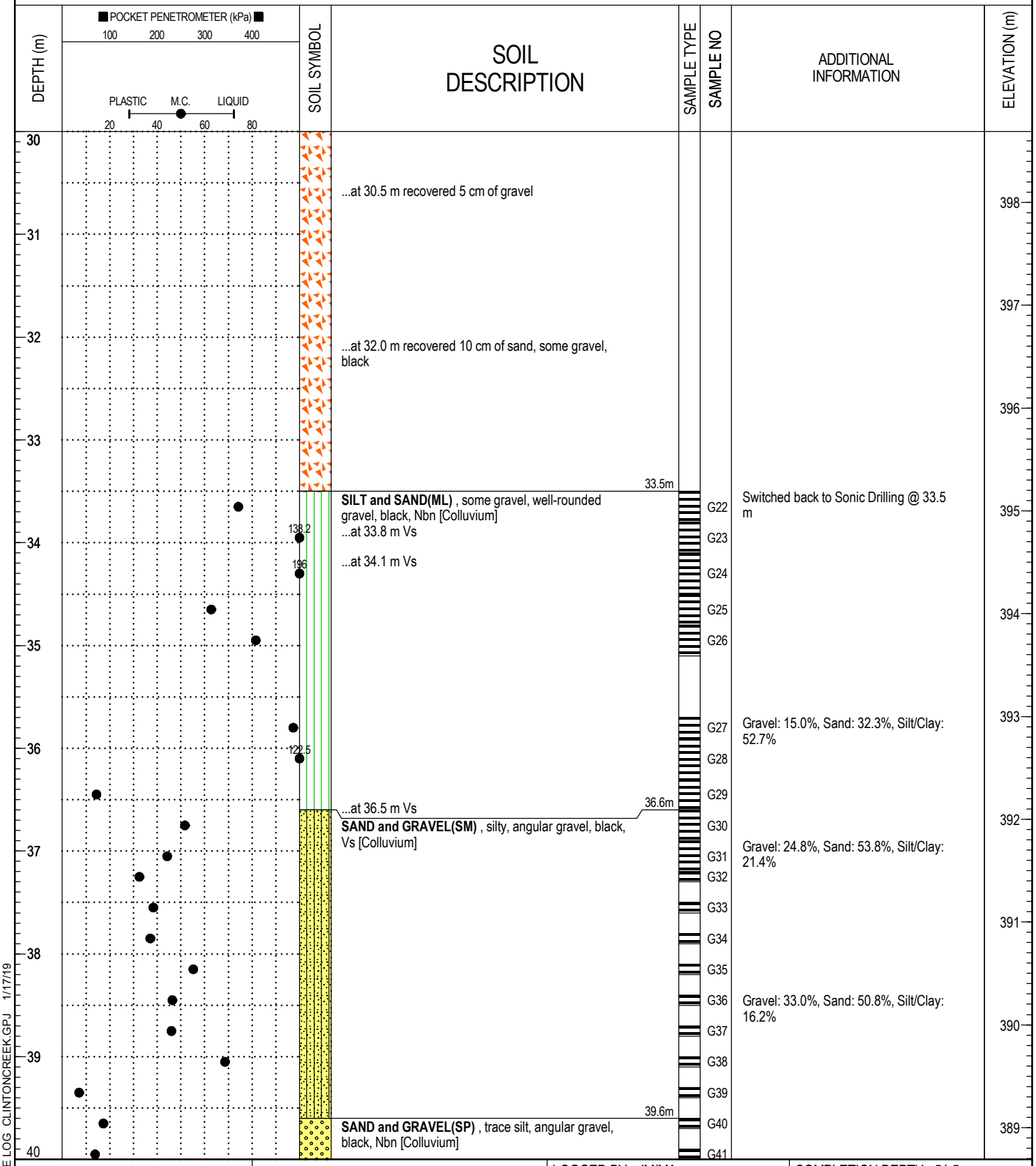
LOGGED BY: JM/MA	COMPLETION DEPTH: 51.5 m
ENTERED BY: AB	COMPLETION DATE: 9/15/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-04**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7146922.16 EASTING: 513195.27	ELEVATION: 428.7 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN



BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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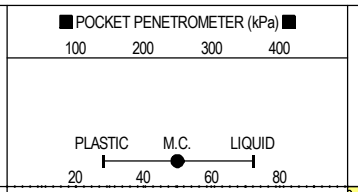
LOGGED BY: JM/MA
ENTERED BY: AB
COMPLETION DEPTH: 51.5 m
COMPLETION DATE: 9/15/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-04**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7146922.16 EASTING: 513195.27	ELEVATION: 428.7 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN



DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
40				G42		
				G43		388
41				G44		
				G45		
				G46		387
42				G47		
				G48		
		42.7m				386
43		**SAND(SW)** , some gravel, trace silt, fine to coarse grained sand, angular gravel, dark grey, loose, wet, not frozen [Colluvium]		G49		
				G50		
				G51		
				G52		385
44				G53		
				G54		
						384
45						
		45.7m				383
		SILT(ML) , sandy, some gravel, compact, dark grey (pink coloured gravel), moist, not frozen [Colluvium]		G55		
46				G56		
				G57		
				G58		
				G59		382
47				G60		
		47.3m				
		SILT(ML) , sandy, trace gravel, coarse grained sand and gravel, compact, dark grey, moist, not frozen [Colluvium]		G61		
				G62		
				G63		381
48		...at 48.2 m pieces of friable black schist				
		48.8m		G64		380
		BEDROCK , weathered, friable, black [Argillite]				
49						
						379
50						

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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600 - 4445 Lougheed Highway
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LOGGED BY: JM/MA
ENTERED BY: AB
COMPLETION DEPTH: 51.5 m
COMPLETION DATE: 9/15/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-04**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7146922.16 EASTING: 513195.27	ELEVATION: 428.7 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ☰ GRAB ▥ MUD RETURN ◧ CORE RETURN

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400 / PLASTIC M.C. LIQUID 20 40 60 80	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
50							378
51			51.5m **END OF BOREHOLE @ 51.5 m** - No ground water encountered. - SI installed in borehole using a tremie and grouted from bottom of hole.				377
52							376
53							375
54							374
55							373
56							372
57							371
58							370
59							369
60							

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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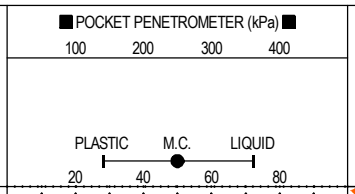
LOGGED BY: JM/MA	COMPLETION DEPTH: 51.5 m
ENTERED BY: AB	COMPLETION DATE: 9/15/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-05**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147097.72 EASTING: 513015.01	ELEVATION: 446.9 m

SAMPLE TYPE ■ TUBE ▨ NO RECOVERY ▩ SPLIT SPOON ▤ GRAB ▥ MUD RETURN ▧ CORE RETURN



DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
0		**GRAVEL and SAND(GM)** , some silt, well-graded, max size 50 mm dia., sub-angular to sub-rounded gravel, dark grey, dry to moist [Waste Rock]			Not Frozen to 33.5 m	
1				G1		446
2				G2		445
3						444
4				G3	Gravel: 46.6%, Sand: 39.1%, Silt/Clay: 14.3%	443
5						442
6				G4		441
7						440
8				G5		439
9						438
10				G6		437

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

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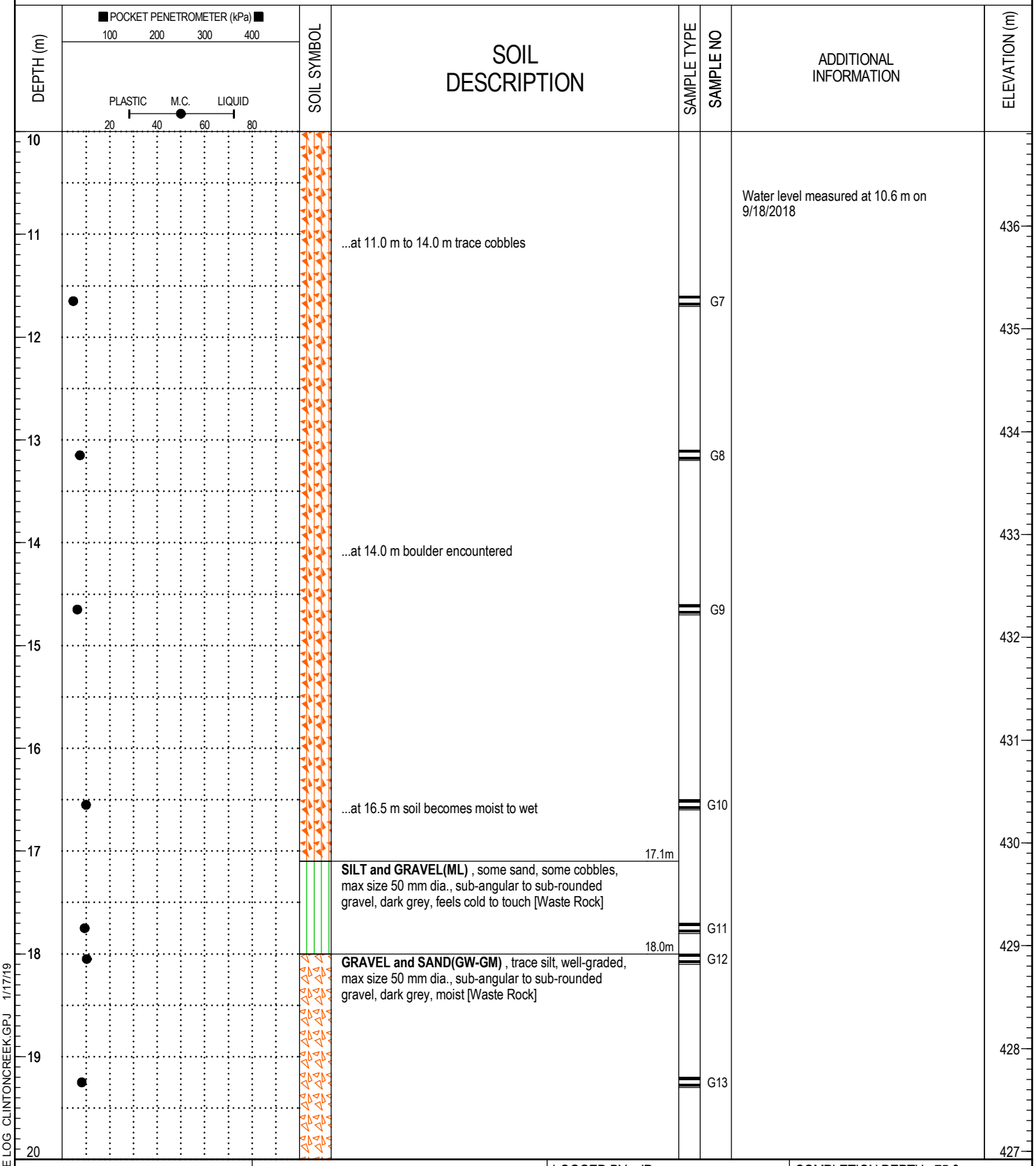
LOGGED BY: JP	COMPLETION DEPTH: 75.0 m
ENTERED BY: AB	COMPLETION DATE: 9/18/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-05**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147097.72 EASTING: 513015.01	ELEVATION: 446.9 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN



BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

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LOGGED BY: JP	COMPLETION DEPTH: 75.0 m
ENTERED BY: AB	COMPLETION DATE: 9/18/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-05**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147097.72 EASTING: 513015.01	ELEVATION: 446.9 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
20					
	SAND and SILT(SM) , some gravel, well-graded, max size 20 mm dia., sub-angular to sub-rounded gravel, grey, dry [Waste Rock]		G14	Gravel: 17.4%, Sand: 41.7%, Silt/Clay: 40.9%	
	20.1m				
	20.7m				
21	**GRAVEL and SAND(GW-GM)** , trace silt, trace cobbles, well-graded, max size 50 mm dia., sub-angular to sub-rounded gravel, dark grey, dry to moist [Waste Rock]		G15		426
	21.3m				
	GRAVEL and SILT(GM) , some sand, max size 50 mm dia., sub-angular to sub-rounded gravel, dark grey [Waste Rock]		G16		
	21.6m				
22	**GRAVEL and SAND(GW-GM)** , trace silt, trace cobbles, well-graded, max size 50 mm dia., sub-angular to sub-rounded gravel, dark grey, dry to moist [Waste Rock]				425
23					424
	23.2m				
	SAND(SW-SM) , some gravel, trace silt, well-graded, max size 30 mm dia., sub-angualr to sub-rounded gravel, grey, dry to moist [Waste Rock]		G17		
24					423
25					422
			G18		
26					421
	26.2m				
	SAND(SM) , gravelly, silty, trace clay, max size 50 mm dia., sub-angular to sub-rounded gravel, dark grey [Waste Rock]		G19	Gravel: 33.7%, Sand: 34.2%, Silt: 22.1%, Clay: 10.0%	
27					420
	27.4m				
	GRAVEL and SAND(GW-GM) , trace silt, well-graded, max size 50 mm dia., sub-angular to sub-rounded gravel, dark grey, dry to moist [Waste Rock]		G20		
	27.7m				
28	**SILT(ML)** , gravelly, some sand, max size 50 mm dia., sub-angular to sub-rounded gravel, dark grey, saturated [Waste Rock]		G21		419
			G22		
			G23	Gravel: 27.7%, Sand: 11.9%, Silt: 50.4%, Clay: 10.0%	
29			G24		418
			G25		
			G26		
	29.9m				
30					417

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-05**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147097.72 EASTING: 513015.01	ELEVATION: 446.9 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
30		**GRAVEL and SAND(GW-GM)** , trace silt, trace cobbles, well-graded, max size 50 mm dia., sub-angular to sub-rounded gravel, grey, moist [Waste Rock]				
31						416
				G27		
32						415
		32.3m				
		SAND(SM) , silty, gravelly, trace cobbles, well-graded, max size 50 mm dia., sub-angular to sub-rounded gravel, grey, moist [Waste Rock]				
33				G28		414
		...from 33.5 m to 35.3 m Nbn				
				G29		
34				G30	Gravel: 23.3%, Sand: 45.4%, Silt/Clay: 31.3%	413
				G31		
				G32		
35				G33		412
		...at 35.3 m material not frozen		G34		
				G35		
36				G36	Gravel: 21.1%, Sand: 47.1%, Silt/Clay: 31.8%	411
				G37		
				G38		
		36.9m				
37		**SILT(ML)** , some gravel, trace sand, loose, grey, saturated, not frozen [Waste Rock]		G39		410
		37.5m				
		GRAVEL and SILT(GM) , some sand, max size 60 mm dia., angular to sub-angular gravel, dark grey, not frozen [Waste Rock]				
38				G40		409
39				G41		408
40						407

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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LOGGED BY: JP	COMPLETION DEPTH: 75.0 m
ENTERED BY: AB	COMPLETION DATE: 9/18/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-05**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147097.72 EASTING: 513015.01	ELEVATION: 446.9 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
40						
41				G42		406
		41.5m **GRAVEL(GW-GM)** , some silt, some sand, max size 70 mm dia., angular to sub-angular gravel, disks of rock due to sonic drill, not frozen [Waste Rock]				
42				G43		405
		...at 42.4 m quartz (possible boulder or vein), 1.5 m thick		G44		
43						404
44						403
		44.5m **SILT(ML)** , some gravel, trace sand, gap-graded, max size 50 mm dia., angular to sub-angular gravel, grey, some orange coloured weathering, not frozen [Waste Rock]				
45				G45		402
		46.0m **GRAVEL and SAND(GW-GM)** , trace silt, trace cobbles, well-graded, max size 70 mm dia., angular to sub-angular gravel, grey, moist, not frozen [Mixed Colluvium/Waste Rock]				
46				G46		401
47						400
48				G47		399
49						398
50				G48	VWP #52031: Installed @ 49.8 m	397

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

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ENTERED BY: AB	COMPLETION DATE: 9/18/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-05**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147097.72 EASTING: 513015.01	ELEVATION: 446.9 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa) 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
50						
51						396
52						395
53				G49		394
54						393
55					Thermistor #4753: Top node installed @ 54.9 m	392
56				G50		391
		56.7m				
57		**GRAVEL and SAND(GM)** , silty, trace cobbles, well-graded, max size 70 mm dia., angular to sub-angular gravel, dark grey, moist, not frozen [Mixed Colluvium/Waste Rock]		G51		390
58						389
59				G52	Gravel: 38.4%, Sand: 37.8%, Silt/Clay: 23.8%	388
		59.7m				
60		**SAND and SILT(SM)** , gravelly, well-graded, max size 50 mm dia., angular to sub-angular gravel, dark grey,				387

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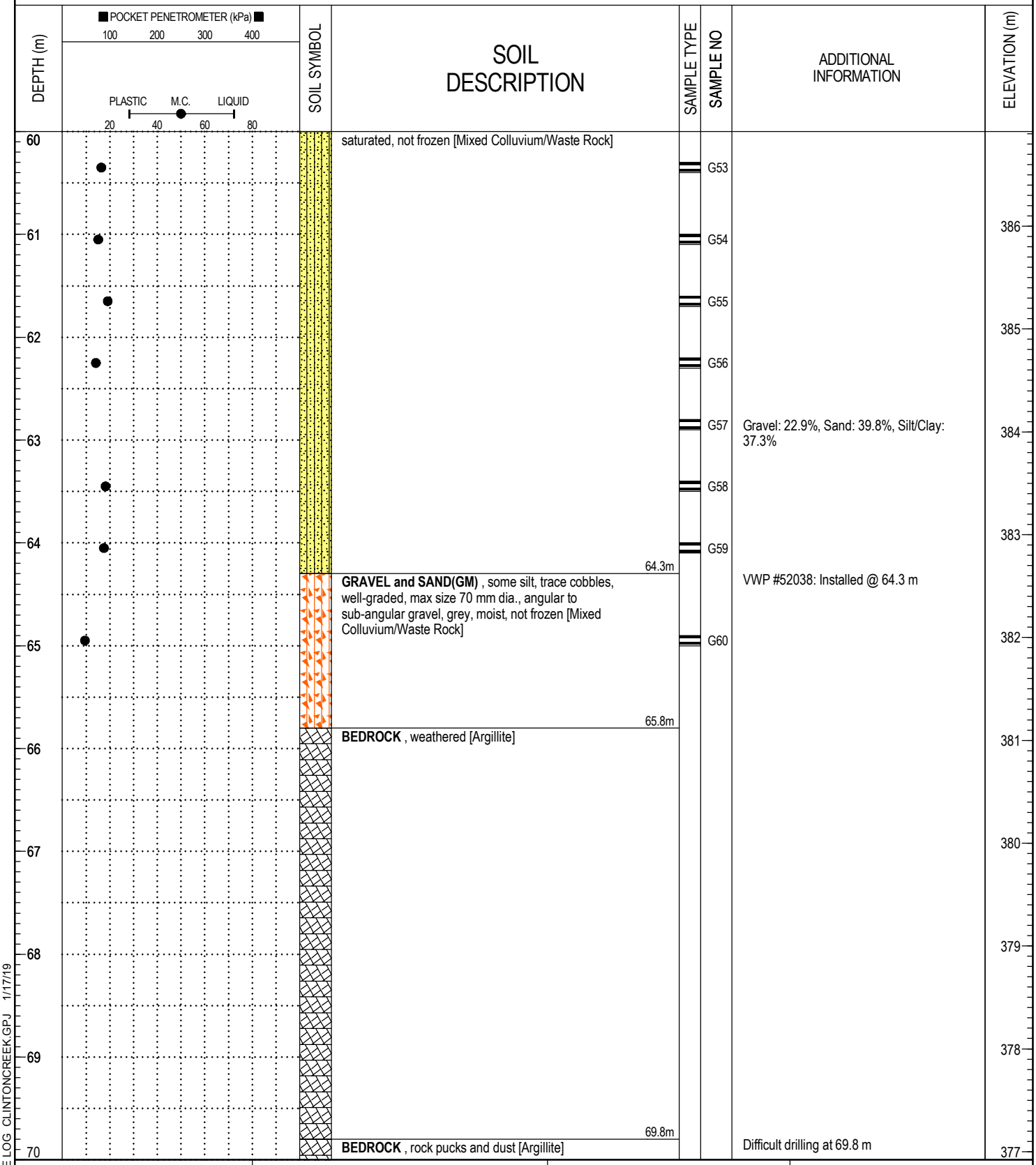
LOGGED BY: JP
ENTERED BY: AB
COMPLETION DEPTH: 75.0 m
COMPLETION DATE: 9/18/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-05**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147097.72 EASTING: 513015.01	ELEVATION: 446.9 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN



wood.	**Environment & Infrastructure Solutions** **600 - 4445 Lougheed Highway** **Burnaby, BC V5C 0E4**	LOGGED BY: JP ENTERED BY: AB	COMPLETION DEPTH: 75.0 m COMPLETION DATE: 9/18/2018

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-05**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147097.72 EASTING: 513015.01	ELEVATION: 446.9 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ☰ GRAB ▥ MUD RETURN ◧ CORE RETURN

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400 / PLASTIC M.C. LIQUID 20 40 60 80	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
70						Thermistor #4753: Bottom node installed @ 69.9 m	
71							376
72							375
73							374
74							373
75			75.0m **END OF BOREHOLE @ 75.0 m** - Water level @ 34.5 m at time of completion. - 2 VWP's and 1 Thermistor installed in borehole. VWP's and Thermistor were taped to outside of a 2.5 cm dia. PVC pipe and borehole was backfilled with bentonite. VWP's were placed in sand packs with at least 30 cm of filter sand above & below VWP's.				372
76							371
77							370
78							369
79							368
80							367

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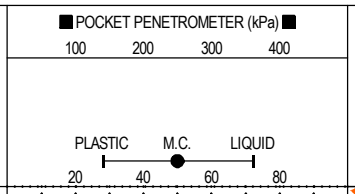
LOGGED BY: JP	COMPLETION DEPTH: 75.0 m
ENTERED BY: AB	COMPLETION DATE: 9/18/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-06**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147188.84 EASTING: 513044	ELEVATION: 441.3 m

SAMPLE TYPE ■ TUBE ▨ NO RECOVERY ▩ SPLIT SPOON ▤ GRAB ▥ MUD RETURN ▦ CORE RETURN



DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
0		**GRAVEL and SAND(GM)** , some silt, trace cobbles, fine to coarse grained sand, well-graded, angular to sub-rounded gravel, no structure, black, moist [Waste Rock]			No frozen soils encountered.	441
1				G1		440
2						439
3				G2	Thermistor #4747: Top node installed @ 3.0 m	438
4				G3		437
5						436
6		...at 5.9 m yellowish-orange for 10 cm, greenish grey below to 7.4 m ...at 6.0 m asbestos rich rock below, fibrous, greenish grey ...at 6.3 m clay rich, soft, dark grey, greenish grey asbestos fibres, 20 cm thick ...at 6.5 m asbestos rich, fibrous, greenish grey		G4		435
7		...at 7.4 m black gravel as above		G5		434
				G6	Gravel: 48.3%, Sand: 37.8%, Silt/Clay: 13.9%	
8						433
9				G7		432
10						

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LOGGED BY: NK	COMPLETION DEPTH: 78.0 m
ENTERED BY: AB	COMPLETION DATE: 9/1/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-06**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147188.84 EASTING: 513044	ELEVATION: 441.3 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
10				G8		431
11						430
12				G9		
		12.2m				429
		SILT(ML) , sandy, gravelly, trace clay, sub-rounded gravel, grey, moist [Waste Rock]		G10	Gravel: 28.9%, Sand: 33.8%, Silt/Clay: 37.2%	
		12.7m				
13		**GRAVEL(GM)** , sandy, silty, trace cobbles, fine to coarse grained sand, well-graded, most clasts are flat to elongated with some equi-dimensional, very angular to sub-rounded gravel, black, moist [Waste Rock]		G11		428
14						427
15				G12		
						426
16						
						425
				G13	Gravel: 43.6%, Sand: 34.2%, Silt/Clay: 22.2%	
17						424
18				G14		
		18.8m				423
19		**GRAVEL and SAND(GP)** , trace silt, fine to coarse grained sand, equi-dimensional, sub-angular to sub-rounded gravel, no structure, greenish orangish tan, damp to dry [Waste Rock]				
						422
				G15	Gravel: 58.4%, Sand: 41.0%, Silt/Clay: 0.6%	
20						

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

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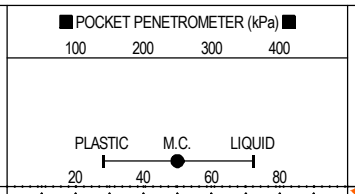
LOGGED BY: NK	COMPLETION DEPTH: 78.0 m
ENTERED BY: AB	COMPLETION DATE: 9/1/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-06**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147188.84 EASTING: 513044	ELEVATION: 441.3 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN



DEPTH (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
20					421
	20.1m **GRAVEL(GW-GM)** , some sand to sandy, some silt, trace clay, trace cobbles, fine to coarse grained sand, well-graded, equi-dimensional, angular gravel, mostly serpentine with abundant asbestos fibres, greyish orangish green, damp [Waste Rock]		G16		
21					420
22					419
	22.4m **SAND(SM)** , silty, gravelly, trace cobbles, fine to coarse grained gravel, well-graded, elongated clasts, angular to sub-rounded gravel, black, moist [Waste Rock]		G17		
23	...at 23.2 m some clay				418
24			G17b		417
25					416
			G18		
26	...at 26.2 m material cohesive and bound together, material friable, temperature 10°C to 12°C		G19	Gravel: 24.2%, Sand: 50.8%, Silt/Clay: 25.0%	415
27			G20		414
28					413
	...at 28.65 m material becomes loose		G21		
29					412
	...at 29.3 m some silt, some clay, sub-angular to sub-rounded gravel, moist, material bound together, easily friable, 10°C				
30					

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-06**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147188.84 EASTING: 513044	ELEVATION: 441.3 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ☰ GRAB ▥ MUD RETURN ◧ CORE RETURN

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400 / PLASTIC M.C. LIQUID 20 40 60 80	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
30					G22		411
31			...at 31.2 m some silt, some clay, angular to sub-rounded gravel (majority sub-angular), loose gravel, damp		G23	Thermistor #4747: Bottom node installed @ 31.0 m	410
32			...at 32.3 m material bound together and moist to wet (most likely from drilling water)				409
33					G24	Thermistor #4748: Top node installed @ 33.0 m	408
34			...at 33.8 m loose, dry to damp				407
35					G25	Gravel: 13.1%, Sand: 49.7%, Silt/Clay: 37.3%	406
36			...at 35.4 m material bound together and moist to wet (most likely from drilling water)		G26		405
37			...at 37.0 m material becomes loose, dry to damp		G27		404
38							403
39			...at 38.4 m material bonded together and moist to wet		G28		402
40							

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

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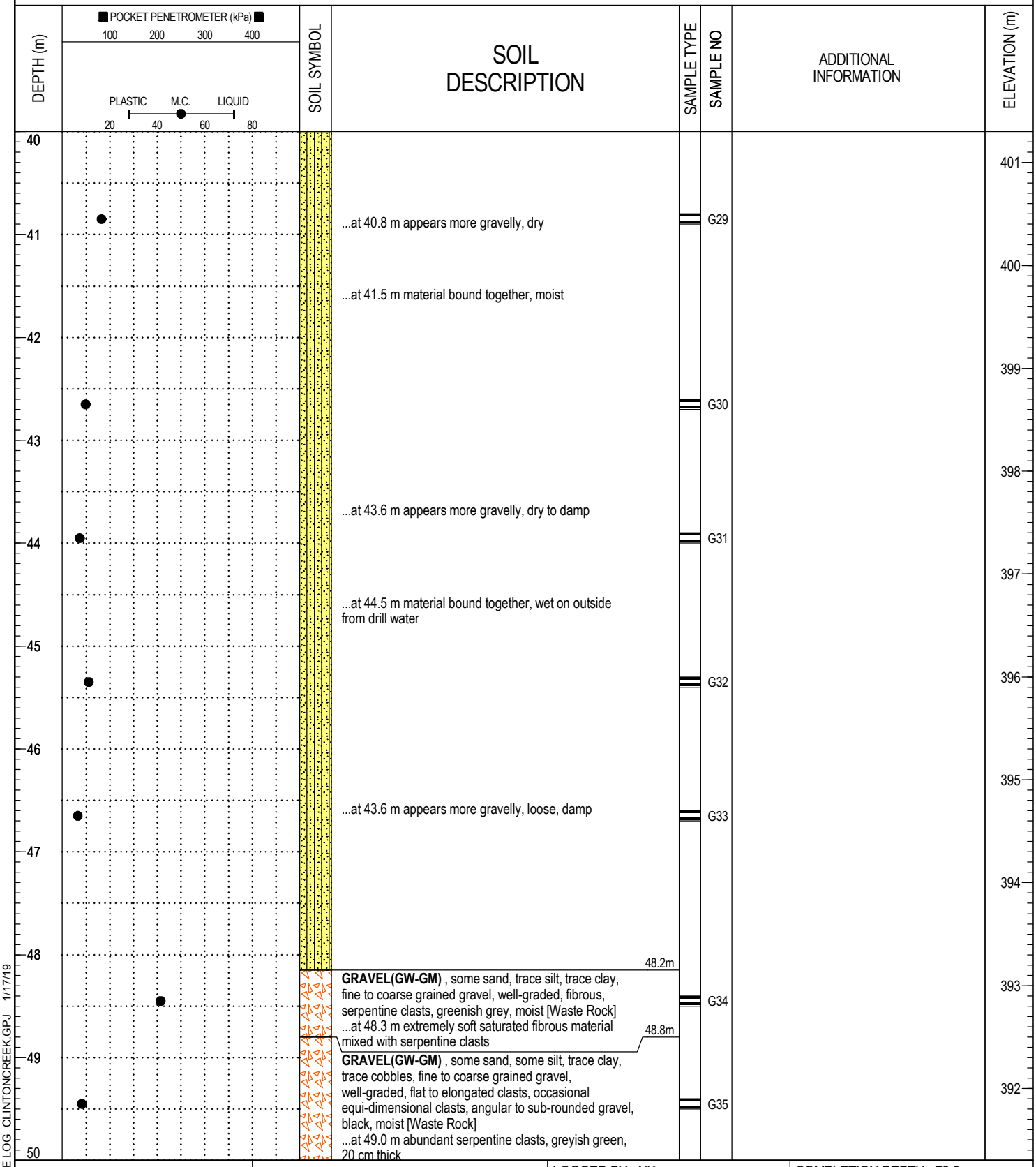
LOGGED BY: NK
ENTERED BY: AB
COMPLETION DEPTH: 78.0 m
COMPLETION DATE: 9/1/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-06**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147188.84 EASTING: 513044	ELEVATION: 441.3 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN



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LOGGED BY: NK	COMPLETION DEPTH: 78.0 m
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CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-06**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147188.84 EASTING: 513044	ELEVATION: 441.3 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
50		...at 49.6 m abundant asbestos fibres, mostly equi-dimensional, yellowish orangish green, 30 cm thick				391
51		...at 50.6 m , abundant chunks (conglomerates) of orangish green gravel (equi-dimensional) with silt and clay, angular gravel, very dense, mixed with black platy gravel		G36		390
52		...at 51.8 m sandy to and sand		G37		389
53		52.8m **SAND and SILT(SM)** , some cobbles, mostly equi-dimensional, angular cobbles, very soft saturated fibrous material mixed with cobbles [Waste Rock] ...at 53.3 m abundant asbestos fibres, damp 53.6m		G38	Gravel: 0.0%, Sand: 51.2%, Silt/Clay: 48.8%	388
54		**SAND(SM)** , gravelly, silty, trace cobbles, fine to coarse grained gravel, flat to elongated gravel, angular gravel, black, wet [Waste Rock]		G39		387
55		...at 54.9 m material dry to damp				386
56				G40		385
57		...at 56.7 m some sand, some clay, trace silt, trace cobbles, moist			VWP #52034: Installed @ 57.0 m	384
58		...at 57.8 m sandy, trace silt, trace clay, equi-dimensional, grey to dark grey, dry to damp ...at 58.1 m orange spots, 40 cm thick		G41		383
59		...at 59.0 m greenish grey, 60 cm thick		G42		382
60		...at 59.7 m sandy, some silt and clay, moist to wet				

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

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LOGGED BY: NK	COMPLETION DEPTH: 78.0 m
ENTERED BY: AB	COMPLETION DATE: 9/1/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-06**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147188.84 EASTING: 513044	ELEVATION: 441.3 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
60						381
				G43	Gravel: 29.4%, Sand: 43.1%, Silt/Clay: 27.5%	
61					Thermistor #4748: Bottom node installed @ 61.0 m	380
		...at 61.3 m silty, some sand and clay, very soft, moist to wet, fibrous material, 40 cm thick		G44		
62		...at 62.0 m dry to damp		G45		379
		...at 62.3 m clay rich layer, mostly clay and silt, trace sand and gravel, soft, grey				
63		...at 62.8 moist to wet, 40 cm thick				378
		...at 63.2 m clayey, some silt, angular to sub-rounded gravel, dry to damp		G46		
64		64.2m				377
		SAND and SILT(SM) , gravelly, trace clay, sub-rounded gravel, stiff, low plasticity, no structure, diamictin, organics mixed in for first 20 cm, dark brown to dark grey, moist [Alluvium]		G47	Gravel: 22.0%, Sand: 35.7%, Silt/Clay: 42.4%	
65		...at 65.1 m silty and gravelly, sub-angular to sub-rounded gravel, brown to grey, trace oxidation spots, dry		G48	Gravel: 22.7%, Sand: 43.0%, Silt/Clay: 34.2%	376
		...at 65.5 m mostly silt, fine grained gravel, soft, dry, 10 cm thick				
66		65.8m ...at 65.6 m black, organic spots, moist **BEDROCK** , extremely weak, weathered, undulated laminae/folding in laminae, non-crystaline mostly with some visible quartz [Argillite]				375
67					VWP #52040: Installed @ 67.0 m	374
68						373
69		...at 68.9 m some undulating laminae visible in large pieces, material bound together in larger chunks, moist				372
		...at 69.6 m grey laminae, material bound together in larger pieces				
70						

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

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LOGGED BY: NK | COMPLETION DEPTH: 78.0 m
ENTERED BY: AB | COMPLETION DATE: 9/1/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-06**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147188.84 EASTING: 513044	ELEVATION: 441.3 m

SAMPLE TYPE ■ TUBE ▨ NO RECOVERY ▩ SPLIT SPOON ▤ GRAB ▥ MUD RETURN ▧ CORE RETURN

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400 / PLASTIC M.C. LIQUID 20 40 60 80	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
70							371
71							370
72							369
73							368
			...at 73.5 m bound together, easily friable				
74			...at 74.1 m pucks easily broken				367
75							366
			...at 75.4 m black, light grey mottled (light grey laminae, undulated and folded laminae)				
76							365
			...at 76.2 m rock powder				
77							364
			78.0m				
78			**END OF BOREHOLE @ 78.0 m** - Water level @ 40.2 m at time of completion. - No frozen soils encountered. - 2 VWP's, 2 Thermistors, and an SI were installed in borehole. VWP's and Thermistors were taped to outside of SI and borehole was grouted using a tremie from bottom of hole. VWP's were placed in sand packs.				363
79							362
80							

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

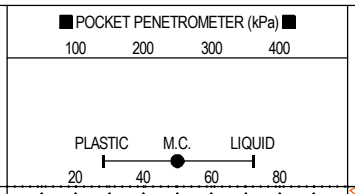
wood.

Environment & Infrastructure Solutions
600 - 4445 Lougheed Highway
Burnaby, BC V5C 0E4

LOGGED BY: NK	COMPLETION DEPTH: 78.0 m
ENTERED BY: AB	COMPLETION DATE: 9/1/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-07**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7147278.84 EASTING: 513071.69	ELEVATION: 427.2 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN



DEPTH (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
0	**GRAVEL and SAND(GW-SW)** , trace silt, trace cobbles, fine to coarse grained sand, well-graded, elongated, angular gravel, black, wet (from drilling water) [Waste Rock]			Not Frozen to 41.1 m	427
1	...below 0.3 m greenish grey, dry to damp, abundant asbestos fibres		G1		426
2	...below 1.37 m waste rock powder with gravel and cobbles (boulder), approx. 50 cm thick		G2	Gravel: 72.8%, Sand: 23.8%, Silt/Clay: 3.4%	425
3	...below 3.35 m some sand and silt and clay, platy to elongated, black, moist			Water level measured at 3.1 m on 9/05/2018	424
4			G3		423
5					422
6	...below 5.64 m moist		G4		421
7	...below 6.4 m clayey, cohesive, material bound together, more sub-rounded gravel		G5		420
8	...below 7.32 m some clay				419
9	...below 7.92 m some clay to clayey, wet on outside from drilling water		G6		418
10	...below 9.45 m some clay to clayey, moist				

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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LOGGED BY: NK	COMPLETION DEPTH: 57.3 m
ENTERED BY: AB	COMPLETION DATE: 9/4/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-07**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7147278.84 EASTING: 513071.69	ELEVATION: 427.2 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100, 200, 300, 400

PLASTIC | M.C. | LIQUID: 20, 40, 60, 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
10				G7	Gravel: 37.7%, Sand: 39.7%, Silt/Clay: 22.5%	417
11						416
12				G8		415
13						414
14						413
15				G9		412
16		...below 15.4 m moist ...from 16.0 m to 16.15 m wet		G10		411
17						410
18						409
19		...below 18.59 m dry to damp ...below 18.9 m damp to moist ...below 19.28 m loose, dry		G11 G12	Gravel: 18.4%, Sand: 41.5%, Silt/Clay: 40.0%	408
20						

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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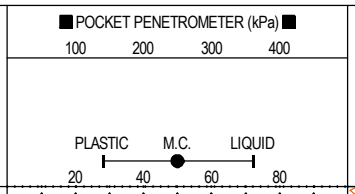
LOGGED BY: NK	COMPLETION DEPTH: 57.3 m
ENTERED BY: AB	COMPLETION DATE: 9/4/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-07**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7147278.84 EASTING: 513071.69	ELEVATION: 427.2 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN



DEPTH (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
20	...below 20.12 m moist				407
	...below 20.73 m damp				
21			G13		406
	...from 21.49 m to 21.79 m dry, dark grey				
22			G14		405
23	...below 22.86 m dry, grey				
	...below 23.16 m moist				404
24			G15		
					403
25					
					402
			G16	Gravel: 23.7%, Sand: 40.5%, Silt/Clay: 35.8%	
26					
					401
27			G17		
	...below 27.74 m material bound together, moist				400
28					
	...below 28.19 m loose, black, mottled reddish brown, moist		G18		399
29					
					398
30	...below 29.87 m black				

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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LOGGED BY: NK	COMPLETION DEPTH: 57.3 m
ENTERED BY: AB	COMPLETION DATE: 9/4/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-07**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7147278.84 EASTING: 513071.69	ELEVATION: 427.2 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
30		...below 30.18 m material bound together, hard to break apart, very dense		G19	Thermistor #4752: Top node installed @ 30.0 m	397
		...below 30.63 m saturated				
31				G20		396
		...below 31.39 m wet				
		...below 31.7 m moist				
32						395
		...below 32.92 m damp				
33				G21		394
		33.7m				
		GRAVEL(GM) , some sand, some silt, trace cobbles, fine to coarse grained gravel, clay is firm, high plasticity, equi-dimensional, angular to sub-rounded gravel, orangish brown, abundant asbestos fibres, moist [Waste Rock]				
34						393
				G22	Gravel: 63.3%, Sand: 20.0%, Silt/Clay: 16.7%	
35						392
		35.7m				
		GRAVEL and SAND(GM) , some silt, fine to coarse grained gravel, equi-dimensional, angular to sub-rounded gravel (mostly sub-angular), mottled greenish grey and orange, abundant asbestos fibres, indulated/folded laminae visible in larger clasts, many serpentine clasts, moist [Waste Rock]				
36				G23		391
		...below 36.73 m more brownish, greyish brown to orangish brown, mottled light grey and green			VWP #52020: Installed @ 36.5 m	
37						390
		...below 37.64 m greenish grey, mottled orange				
38				G24	Gravel: 46.5%, Sand: 39.2%, Silt/Clay: 14.3%	389
39		...from 38.94 m to 39.32 m orangish brown				388
				G25		
40						

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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600 - 4445 Lougheed Highway
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LOGGED BY: NK	COMPLETION DEPTH: 57.3 m
ENTERED BY: AB	COMPLETION DATE: 9/4/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-07**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7147278.84 EASTING: 513071.69	ELEVATION: 427.2 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
40					387
	...below 40.54 m brownish orange ...at 40.61 m soft saturated material, 5 cm thick		G26		
41	41.1m **TOPSOIL** , organics, sand, silt, some gravel, Vx [Mixed Colluvium/Waste Rock]		G27	Gravel: 15.0%, Sand: 46.7%, Silt/Clay: 38.3%	386
	41.5m **SILT(ML)** , sandy, grey, Nbn [Mixed Colluvium/Waste Rock]		G28	Gravel: 0.0%, Sand: 21.3%, Silt/Clay: 78.7%	
42	...below 41.55 m saturated silt with some sand and gravel, black 41.9m				385
	GRAVEL and SAND(GM) , some silt, trace cobbles, fine to coarse grained sand, trace elongated to mostly equi-dimensional, sub-angular to sub-rounded gravel, brown, occasional asbestos fibres, wet, not frozen [Mixed Colluvium/Waste Rock]		G29		
43					384
	...below 43.28 m black, mottled greenish white, abundant asbestos fibres, moist ...from 43.59 m to 43.89 m mottled orangish brown and black, damp		G30	Gravel: 50.9%, Sand: 35.6%, Silt/Clay: 13.5%	
44	...below 44.27 m soft, orangish brown, saturated 44.5m				383
	GRAVEL(GM) , sandy, silty, trace clay, platy to elongated, angular gravel, dark brown, saturated, not frozen [Mixed Colluvium/Waste Rock]				
45	...below 45.11 m moist		G31	Thermistor #4752: Bottom node installed @ 45.0 m Gravel: 40.9%, Sand: 34.4%, Silt/Clay: 24.8%	382
	...at 45.49 m grey layer, dry (rock powder), 10 cm thick				
46	46.2m **SILT(ML)** , trace sand, trace gravel, trace clay, some fine grained sand, stiff to very stiff, non-plastic, slow dilatancy, no visible structure, dark grey, wet to saturated [Alluvium]				381
47			G32		
	...at 47.55 m trace amount of organics through silt, mild organics odor				380
48					
			G33	Gravel: 0.1%, Sand: 7.9%, Silt/Clay: 92.0%	379
49				VWP #52028: Installed @ 49.0 m	
					378
	...at 49.53 m mottled dark grey and brownish grey, appears to be mixed with minor amounts of topsoil (organics) 49.9m		G34		
50					

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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LOGGED BY: NK | COMPLETION DEPTH: 57.3 m
ENTERED BY: AB | COMPLETION DATE: 9/4/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-07**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7147278.84 EASTING: 513071.69	ELEVATION: 427.2 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
50		**GRAVEL(GM)** , sandy, silty, trace clay, fine to coarse grained gravel, trace clay, equi-dimensional, sub-angular to sub-rounded gravel (mostly sub-rounded), dense, black, trace oxidation, mottled yellow and grey [Alluvium] 50.6m **BEDROCK** , weathered, black, pulverized due to sonic [Argillite]				377
51						376
52						375
53						374
54		Siltstone, dark grey, mottled white (quartz crystals/veins), mostly non-crystalline with quartz crystals, thinly bedded to laminated, bedding/laminae 20° from horizontal, highly fractured, most fractures along bedding planes		Core1	Switch to HQ3 Coring @ 53.6 m Core Run #1: (53.6 m - 54.25 m) TCR: 66% RQD = 0%	373
55				Core2	Core Run #2: (54.25 m - 55.8 m) TCR: 39% RQD = 0%	372
56					Core Run #3: (55.8 m to 57.3 m) TCR: 77% RQD = 0%	371
57		...from 56.5 m to 56.8 m appears more crystalline, laminae at 45° 57.3m		Core3		370
58		**END OF BOREHOLE @57.3 m** - Water level @ 3.1 m at time of completion. - 2 VWP's, a Thermistor, and an SI were installed in borehole. VWP's and Thermistor were taped to outside of SI and borehole was grouted using a tremie from bottom of hole. VWP's were placed in sand packs.				369
59						368
60						

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

Environment & Infrastructure Solutions
600 - 4445 Lougheed Highway
Burnaby, BC V5C 0E4

LOGGED BY: NK	COMPLETION DEPTH: 57.3 m
ENTERED BY: AB	COMPLETION DATE: 9/4/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-08**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: HQ3	NORTHING: 7147492.78 EASTING: 513073.57	ELEVATION: 440.8 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ☰ GRAB ▥ MUD RETURN ◧ CORE RETURN

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
0			**NO RECOVERY from 0 m to 3.1 m**			No frozen soils encountered. Thermistor #4750: Top node @ 0.0 m	
1							440
2							439
3			3.1m **BEDROCK** 14 cm of black gravel, some sand, two pieces of quartz gravel 9 cm of dark grey, fine grained 7cm black gravel with quartz, pink granite [Argillite]	◧	Core1	Core Run #1: (3.1 m - 4.6 m) RQD = 0%	438
4							437
5			36 cm of highly weathered, highly fractured, dark grey to black, fine grained, quartz veins	◧	Core2	Core Run #2: (4.6 m - 6.1 m) RQD = 0%	436
6			6.1m 55 cm of highly weathered, highly fractured, dark grey to black, trace quartz - has appearance of gravelly sandy silt	◧	Core3	Core Run #3: (6.1 m - 7.6 m) RQD = 0%	435
7							434
8			7.6m 22 cm of highly weathered, highly fractured, dark grey to black, trace quartz - has appearance of gravelly sandy silt	◧	Core4	Core Run #4: (7.6 m - 9.1 m) RQD = 0%	433
9			9.1m 9.1m **NO RECOVERY from 9.1 m to 10.7 m**				432
10							431

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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LOGGED BY: MA	COMPLETION DEPTH: 15.1 m
ENTERED BY: AB	COMPLETION DATE: 9/16/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-08**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: HQ3	NORTHING: 7147492.78 EASTING: 513073.57	ELEVATION: 440.8 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
10							
			10.7m				
			BEDROCK 12 cm of highly weathered, highly fractured, dark grey to black, trace quartz - has appearance of gravelly sandy silt [Argillite]		Core5	Core Run #5: (10.7 m - 12.2 m) RQD = 0%	430
11							
							429
12			45 cm of rock - fractured pieces up to 25 cm thick		Core6	Core Run #6: (12.2 m - 13.7 m) RQD = 0%	
							428
13							
			13.7m				
			25 cm of rock - top 10 cm gravel, bottom 15 cm more competent pieces up to 7 cm thick. Quartz vein at bottom		Core7	Core Run #7: (13.7 m - 15.1 m) RQD = 0% Thermistor #4750: Bottom node @ 14.0 m	427
14							
							426
15			15.1m				
			END OF BOREHOLE @ 15.1 m - No groundwater seepage encountered. - No frozen soils encountered. - 1 Thermistor installed by taping to outside of tremie and backfilled from bottom with bentonite.				425
16							
							424
17							
							423
18							
							422
19							
							421
20							

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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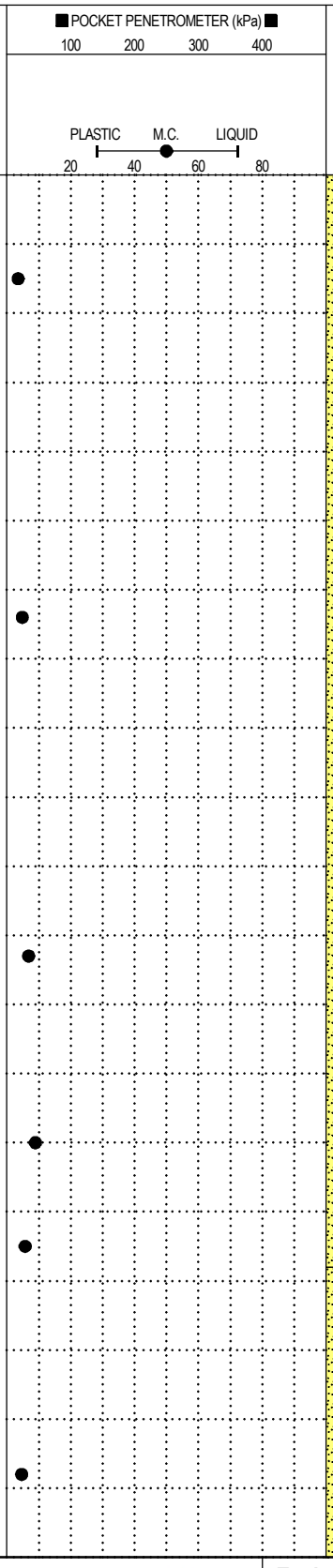
600 - 4445 Lougheed Highway
Burnaby, BC V5C 0E4

LOGGED BY: MA	COMPLETION DEPTH: 15.1 m
ENTERED BY: AB	COMPLETION DATE: 9/16/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-09**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147050.61 EASTING: 513234.04	ELEVATION: 434.9 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ☰ GRAB ▥ MUD RETURN ◧ CORE RETURN



DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
0		**SAND and GRAVEL(SM)**, silty, well-graded, maximum particle size 50 mm dia., flat, angular to sub-angular gravel, dark grey to green, dry to damp [Waste Rock]			Not Frozen to 53.2 m	
				G1		
1						434
		...below 1.8 m trace cobbles, <150 mm dia.				
2						433
3				G2		432
4						431
5						430
6				G3		429
					Gravel: 35.1%, Sand: 43.4%, Silt/Clay: 21.5%	
7				G4		428
		7.9m		G5		
8		**SAND(SM)**, silty, gravelly, trace cobbles, well-graded, max size 75 mm dia., equi-dimensional, sub-angular to sub-rounded gravel, dark grey, dry [Waste Rock]			Gravel: 22.5%, Sand: 51.0%, Silt/Clay: 26.5%	427
9						426
				G6		
10						425

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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600 - 4445 Lougheed Highway
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LOGGED BY: JP/JM	COMPLETION DEPTH: 81.1 m
ENTERED BY: GF	COMPLETION DATE: 8/25/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-09**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147050.61 EASTING: 513234.04	ELEVATION: 434.9 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
10					
11					424
12					423
13			G7		422
14					421
	14.6m				
	SILT(ML), sandy, gravelly, stiff to very stiff, dark grey [Waste Rock]		G8	Gravel: 27.9%, Sand: 33.8%, Silt/Clay: 38.3%	
15	15.0m				420
	GRAVEL(GW-GM), some sand, trace silt/clay, trace cobbles, well-graded, max size 50 mm dia., equi-dimensional, sub-angular to sub-rounded gravel, dark grey, dry to damp [Waste Rock]		G9		
16					419
	16.8m				
	SAND(SW-SM), some gravel, trace silt/clay, well-graded, maximum particle size 50 mm dia., light grey, dry [Waste Rock]		G10		
17	17.1m				418
	SAND(SM), silty, gravelly, max size 50 mm dia., equi-dimensional, sub-angular to sub-rounded gravel, dry [Waste Rock]				
18					417
			G11		
19					416
20					415

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

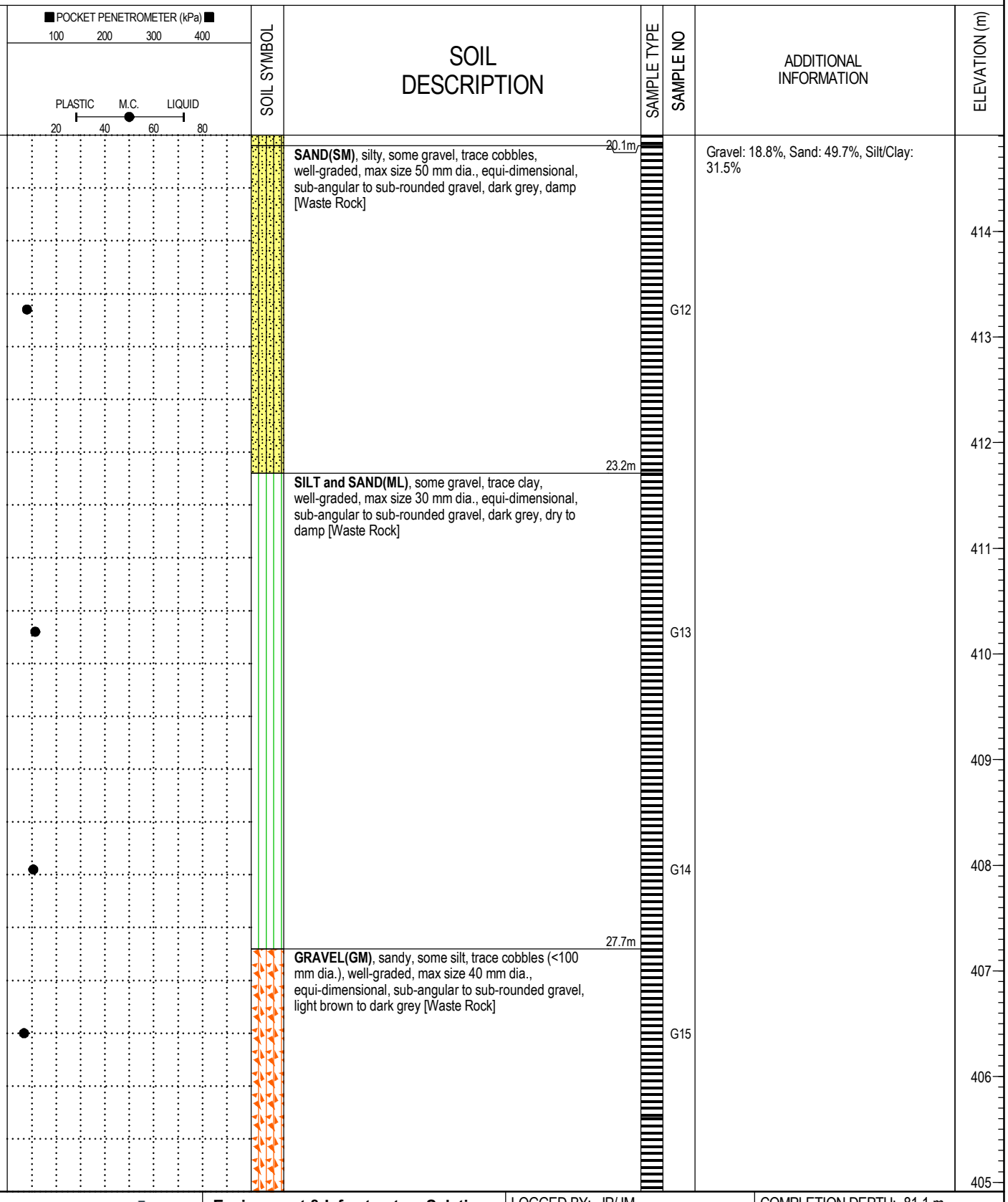
wood.

Environment & Infrastructure Solutions
600 - 4445 Lougheed Highway
Burnaby, BC V5C 0E4

LOGGED BY: JP/JM
ENTERED BY: GF
COMPLETION DEPTH: 81.1 m
COMPLETION DATE: 8/25/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-09**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147050.61 EASTING: 513234.04	ELEVATION: 434.9 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ▤ GRAB ▥ MUD RETURN ◧ CORE RETURN



wood.	**Environment & Infrastructure Solutions** **600 - 4445 Lougheed Highway** **Burnaby, BC V5C 0E4**	LOGGED BY: JP/JM ENTERED BY: GF	COMPLETION DEPTH: 81.1 m COMPLETION DATE: 8/25/2018

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-09**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147050.61 EASTING: 513234.04	ELEVATION: 434.9 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
30						
31				G16		404
32		...from 32.3 m to 33.5 m light brown layer				403
33				G17		402
		...from 33.5 m to 35.4 m dark grey layer				
34				G18		401
35					Gravel: 57.4%, Sand: 27.0%, Silt/Clay: 15.6%	400
36						399
37				G19	Water level measured at 37.0 m on 8/25/2018	398
38		...from 38.4 m to 39.6 m dark grey color				397
39				G20		396
40		...at 39.6 m green color, approx. 23 cm thick				395

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

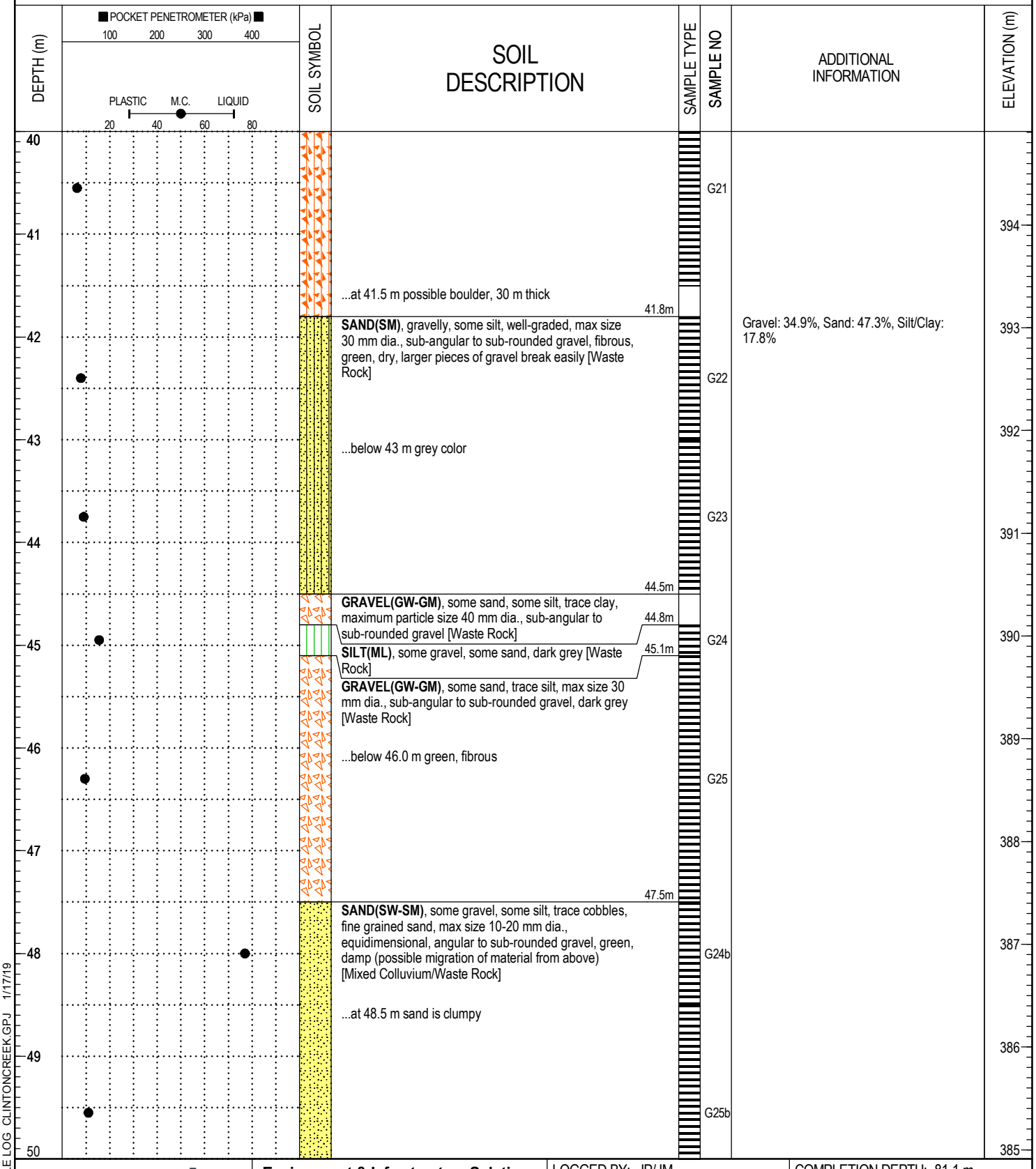
wood.

Environment & Infrastructure Solutions
600 - 4445 Lougheed Highway
Burnaby, BC V5C 0E4

LOGGED BY: JP/JM
ENTERED BY: GF
COMPLETION DEPTH: 81.1 m
COMPLETION DATE: 8/25/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-09**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147050.61 EASTING: 513234.04	ELEVATION: 434.9 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN



BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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Burnaby, BC V5C 0E4

LOGGED BY: JP/JM	COMPLETION DEPTH: 81.1 m
ENTERED BY: GF	COMPLETION DATE: 8/25/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-09**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147050.61 EASTING: 513234.04	ELEVATION: 434.9 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
50		50.6m				
51		**GRAVEL(GW-GM)**, some sand, some silt/clay, trace cobbles, well-graded, max size 300 mm dia., equidimensional, sub-angular to sub-rounded gravel, dark grey [Mixed Colluvium/Waste Rock]		G26		384
52		52.4m				383
53		**SAND and SILT(SM)**, gravelly, trace cobbles, max size 20 mm dia., equidimensional, sub-angular to sub-rounded gravel, dark grey, dry [Mixed Colluvium/Waste Rock] ...at 53.2 m Nbn		G27	Gravel: 26.3%, Sand: 36.3%, Silt/Clay: 37.5% Gravel: 20.8%, Sand: 44.7%, Silt/Clay: 34.5%	382
54		53.6m **GRAVEL and SILT(GM)**, some sand, trace cobbles, maximum particle size 50 mm dia., equidimensional, angular to sub-angular gravel, dark grey to brown, moist to wet, Nbn [Mixed Colluvium/Waste Rock]			Thermistor #4757: Top node installed @ 54.0 m	381
55				G28		380
56					VWP #52033: Installed @ 55.5 m	379
57		...at 56.7 m some sand, some silt, some clay, max size 300 mm dia., dark grey, not frozen				378
58						377
59		59.1m **SAND(SW-SM)**, some gravel, trace silt/clay, fine grained, well-graded, max size 15 mm dia., equidimensional, sub-rounded to rounded gravel, black, moist. Nbn [Mixed Colluvium/Waste Rock]		G29 G30A G30B		376
60		59.7m **PEAT(PT)**, organics and root material, some sand,				375

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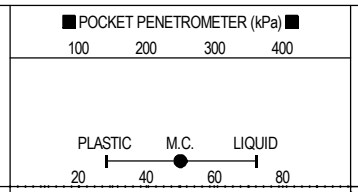
COMPLETION DEPTH: 81.1 m
COMPLETION DATE: 8/25/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-09**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147050.61 EASTING: 513234.04	ELEVATION: 434.9 m

SAMPLE TYPE ■ TUBE ▨ NO RECOVERY ▩ SPLIT SPOON ▤ GRAB ▥ MUD RETURN ▦ CORE RETURN



DEPTH (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
60	some gravel, clumpy and cold, black, Vx				
61	61.3m				374
	SAND(SM), gravelly, silty, some cobbles, max size 30 mm dia., equidimensional, sub-angular to sub-rounded gravel, clumpy, grey-brown, moist, Nbn [Alluvium] ...from 61.3 m to 61.4 m layer of silt and sand, trace gravel, poorly graded, grey, moist		G31	Gravel: 0.4%, Sand: 44.5%, Silt/Clay: 55.1%	
62			G32	Gravel: 33.5%, Sand: 40.8%, Silt/Clay: 25.7%	373
	62.8m				
63	**GRAVEL(GW-GM)**, some sand, trace silt/clay, well-graded, max 75 mm dia., flat to equi-dimensional, grey, not frozen [Alluvium] ...at 63.1 m fines content increases, material is clumpy; hammer is needed to break apart, Nbn		G33		372
			G34	VWP #52037: Installed @ 63.5 m	
64	64.5m				371
	SILT(ML), sandy, gravelly, trace cobbles (<150 mm dia.), max size 75 mm dia., flat, angular to sub-angular gravel, light grey, dry, not frozen [Alluvium]				
65			G35	Gravel: 31.0%, Sand: 30.9%, Silt/Clay: 38.1%	370
	65.8m				
66	**GRAVEL(GW-GM)**, some sand, some silt/clay, max size 75 mm dia., flat to equi-dimensional, angular to sub-angular gravel, dark grey, not frozen [Alluvium]				369
			G36		
67	67.1m				368
	BEDROCK , weathered, pucks and fines due to sonic, grey [Argillite]				
68				Thermistor #4757: Bottom node installed @ 68.0 m	367
69					366
70					365

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LOGGED BY: JP/JM	COMPLETION DEPTH: 81.1 m
ENTERED BY: GF	COMPLETION DATE: 8/25/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-09**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147050.61 EASTING: 513234.04	ELEVATION: 434.9 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ☰ GRAB ▥ MUD RETURN ◧ CORE RETURN

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400 / PLASTIC M.C. LIQUID 20 40 60 80	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
70							
71							364
72			72.2m **BEDROCK** , weathered [Argillite]			Switch to HQ3 Coring @ 72.2 m	363
73							362
74							361
75							360
76							359
77							358
78			78.0m **BEDROCK**, shows some schistosity, scattered quartz veins, dark grey (cut into 1-4 cm thick discs) [Argillite]				357
79							356
80							355

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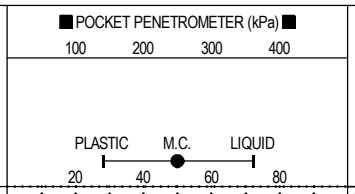
CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-09**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147050.61 EASTING: 513234.04	ELEVATION: 434.9 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ☰ GRAB ▥ MUD RETURN ◧ CORE RETURN



DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
80						
81		81.1m **END OF BOREHOLE @ 81.1 m** - Water level @ 37.0 m at time of completion. - 2 VWP's, a Thermistor, and an SI were installed in borehole. VWP's and Thermistor were taped to outside of SI and borehole was grouted using a tremie from bottom of hole. VWP's were placed in sand packs.				354
82						353
83						352
84						351
85						350
86						349
87						348
88						347
89						346
90						345

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LOGGED BY: JP/JM	COMPLETION DEPTH: 81.1 m
ENTERED BY: GF	COMPLETION DATE: 8/25/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-10**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147226.94 EASTING: 513290.96	ELEVATION: 405.8 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ☰ GRAB ▥ MUD RETURN ◧ CORE RETURN

DEPTH (m)	■ POCKET PENETROMETER (kPa) ■ 100 200 300 400	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
0			**NOT LOGGED** Straight drilled for VWP's and Thermistor installation to 35.7 m				405
1							404
2							403
3							402
4							401
5							400
6							399
7							398
8							397
9							396
10							

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

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LOGGED BY: NK	COMPLETION DEPTH: 35.7 m
ENTERED BY: AB	COMPLETION DATE: 8/29/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-10**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147226.94 EASTING: 513290.96	ELEVATION: 405.8 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ☰ GRAB ▥ MUD RETURN ◧ CORE RETURN

DEPTH (m)	■ POCKET PENETROMETER (kPa) ■ 100 200 300 400	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
10							395
11							394
12							393
13							392
14							391
15							390
16							389
17							388
18							387
19							386
20							

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LOGGED BY: NK	COMPLETION DEPTH: 35.7 m
ENTERED BY: AB	COMPLETION DATE: 8/29/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-10**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147226.94 EASTING: 513290.96	ELEVATION: 405.8 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ☰ GRAB ▥ MUD RETURN ◧ CORE RETURN

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
20						Thermistor #4751: Top node installed @ 20.0 m	385
21							384
22							383
23						Water level measured at 23.24 m on 8/28/2018	382
24							381
25						VWP #51967: Installed @ 25.5 m	380
26							379
27							378
28							377
29							376
30							

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LOGGED BY: NK
ENTERED BY: AB
COMPLETION DEPTH: 35.7 m
COMPLETION DATE: 8/29/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-10**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7147226.94 EASTING: 513290.96	ELEVATION: 405.8 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ☰ GRAB ▥ MUD RETURN ◧ CORE RETURN

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
30							375
31							
32							374
33							373
34						VWP #52025: Installed @ 33.5 m	372
35						Thermistor #4751: Bottom node installed @ 35.0 m	371
36			35.7m **END OF BOREHOLE @ 35.7 m** - Water level @ 6.92 m at time of completion. - 2 VWP's and 1 Thermistor installed in borehole. VWP's and Thermistor were taped to a 2.5 cm dia. PVC pipe and borehole was backfilled with bentonite. VWP's were placed in sand packs with 50 cm of filter sand above & below VWP's.				370
37							369
38							368
39							367
40							366

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

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LOGGED BY: NK	COMPLETION DEPTH: 35.7 m
ENTERED BY: AB	COMPLETION DATE: 8/29/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-10SI**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7147227.89 EASTING: 513292.63	ELEVATION: 405.8 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
0		**SAND and GRAVEL(SM)**, some silt, some cobbles, fine to coarse grained sand, no visible structure, black, some asbestos fibers (white, crystalized), damp [Waste Rock]			No frozen soils encountered.	405
1				G1		
2		...at 1.8 m wet ...below 2.1 m dry to damp, mostly gravel with some sand and some cobbles				404
3						403
4				G2	Gravel: 40.5%, Sand: 40.8%, Silt/Clay: 18.7%	402
				G3		
		...below 4.4 m fibrous dry gravel, greyish green				401
5		4.9m **GRAVEL(GW-GM)**, some sand, trace silt, fine to coarse grained sand, well-graded, angular gravel, greyish green [Waste Rock] ...at 5.3 m light green, fibrous (crystalline) 5.5m		G4		
6		**SILT(ML)** , some gravel, trace sand, trace clay, stiff, low plasticity, brown, damp [Waste Rock] ...from 5.8 m to 6.9 m crushed boulders				400
7		6.9m **TOPSOIL** , organics, some silt, trace gravel, trace sand, soft, black [Waste Rock] ...from 7.2 m to 7.6 m crushed boulders		G5	Water level measured at approx. 6.92 m on 8/29/2018	399
		7.6m **GRAVEL(GW)**, some sand, fine to coarse grained sand, well-graded, angular gravel, black [Waste Rock] 7.9m				398
8		**GRAVEL(GW)**, some sand, some silt/clay, fine to coarse grained sand, well-graded, elongated, sub-angular to sub-rounded gravel, no visible structure, black, damp [Waste Rock]				397
9		9.1m **GRAVEL and SAND(GW-GM)** , some silt, trace cobbles, well-graded, elongated, angular to sub-rounded gravel, black, damp [Waste Rock]		G6		
10						396

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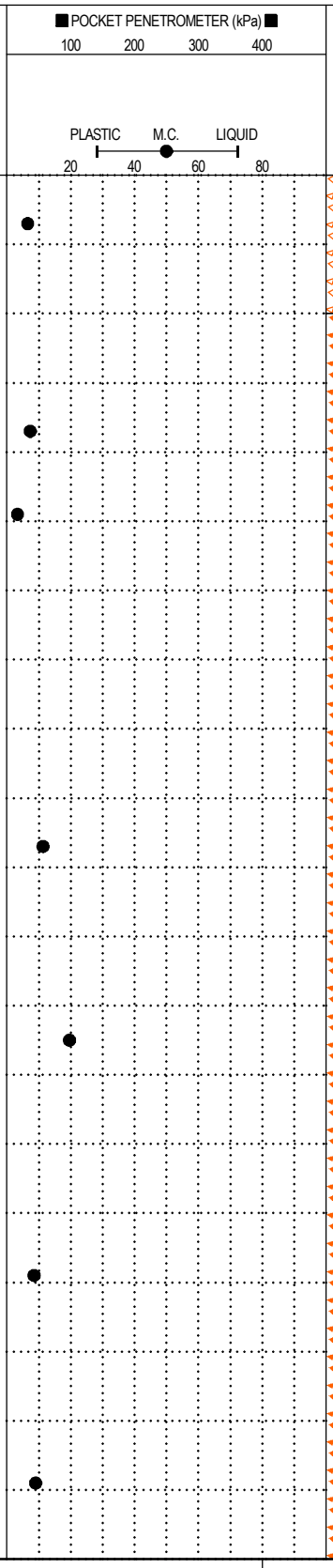
LOGGED BY: NK	COMPLETION DEPTH: 42.1 m
ENTERED BY: AB	COMPLETION DATE: 8/28/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-10SI**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7147227.89 EASTING: 513292.63	ELEVATION: 405.8 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ☰ GRAB ▥ MUD RETURN ◧ CORE RETURN



DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
		...at 10.5 m fibrous (serpentine and crystalline)		G7	Gravel: 44.8%, Sand: 39.3%, Silt/Clay: 15.9%	
		11.0m **SAND and GRAVEL(GM)**, silty, trace cobbles, fine to coarse grained sand, well-graded, no visible structure, black, asbestos isolated throughout [Waste Rock]				395
				G8		394
				G9		
		...below 13.4 m grey				393
		...below 14.0 m black, isolated fibres throughout, moist				392
				G10		391
						390
		...below 16.3 m wet		G11		
						389
		...below 17.1 m some sand, trace to some silt/clay, trace cobbles				
				G12		388
						387
				G13		
						386

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

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LOGGED BY: NK	COMPLETION DEPTH: 42.1 m
ENTERED BY: AB	COMPLETION DATE: 8/28/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-10SI**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7147227.89 EASTING: 513292.63	ELEVATION: 405.8 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa) 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
20						385
21				G14		
22						384
23				G15	Gravel: 36.0%, Sand: 38.0%, Silt/Clay: 26.0%	383
24		...below 23.2 m some silt and clay		G16		382
25						381
26				G17		380
27				G18		379
28						378
29		...below 28.6 m green and brown with grey clasts, fibrous 28.8m **SILT and GRAVEL(ML)** , some cobbles, trace sand, stiff, low plasticity, no visible structure (massive), mottled brown and dark grey, oxidized, moist [Waste Rock] 29.3m **GRAVEL(GM)** ,silty, some sand, trace clay, fine to coarse grained sand, well-graded, angular to sub-rounded gravel, no visible structure, moist [Waste		G19		377
30						376

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

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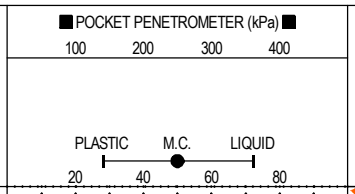
CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-10SI**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7147227.89 EASTING: 513292.63	ELEVATION: 405.8 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN



DEPTH (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
30	Rock]		G20		
31	31.1m **SILT(ML)** , trace gravel, trace clay, trace cobbles, fine grained gravel, firm, low plasticity, no visible structure, dark grey, moist [Waste Rock]		G21		375
	31.5m **TOPSOIL** , organics, some silt, trace gravel, trace sand, non-plastic silt, dark grey to black		G22		374
32	32.3m **BEDROCK** , dark grey to black, flat to elongated particles (oriented horizontally, possible bedding) [Argillite]				373
33					
34					372
35					371
36					370
37	37.3m ...at 37.3 m rock powder due to sonic drilling [NO RECOVERY]				369
38					368
	BEDROCK , dark grey, non-crystalline, foliated, quartz vein at 38.8 m, foliations at 20° from horizontal, slightly weathered, weak to very weak 2 natural fractures at 38.5 m and 38.6 m, possible slickensides at 38.5 m ...many fractures throughout, slickensides found ...at 39.3 m (3 fractures with slickensides at approx. 39.3 m (+/- 3cm), slickensides along bedding plane, surface staining (slightly) undulating, parts are shiny		Core1	Switch to HQ3 Coring @ 38.4 m Core Run #1: (38.4 m - 39.0 m) TCR: 67% RQD = 18%	
39			Core2	Core Run #2: (39.0 m - 40.5 m) TCR: 100% RQD = 16%	367
40					366

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CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-10SI**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7147227.89 EASTING: 513292.63	ELEVATION: 405.8 m

SAMPLE TYPE ■ TUBE ▨ NO RECOVERY ⊠ SPLIT SPOON ▤ GRAB ▥ MUD RETURN ◧ CORE RETURN

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400 / PLASTIC M.C. LIQUID 20 40 60 80	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
40							
41			...at 40.3 m possible slickensides, some shine in fracture, fracture along bedding plane ...many fractures throughout run, fractures along bedding planes (laminated)		Core3	Core Run #3: (40.5 m to 42.1 m) TCR: 76% RQD = 7%	365
42			42.1m **END OF BOREHOLE @ 42.1 m** - Water level @ 6.92 m at time of completion. - No frozen soils encountered. - SI installed in borehole using a tremie and grouted from bottom of hole.				364
43							363
44							362
45							361
46							360
47							359
48							358
49							357
50							356

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LOGGED BY: NK	COMPLETION DEPTH: 42.1 m
ENTERED BY: AB	COMPLETION DATE: 8/28/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-11**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7148076.22 EASTING: 513398.2	ELEVATION: 609.8 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ☰ GRAB ▥ MUD RETURN ◧ CORE RETURN

POCKET PENETROMETER (kPa) 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
0		**SAND(SM)** , some silt to silty, some gravel to gravelly (fine grained, <3 cm dia., angular gravel), fine to medium grained sand, very loose, grey, some asbestos fibres, moist [Tailings]			No frozen soils encountered. Thermistor #4758: Top node installed @ 0 m	609
1						
2				G1		608
3						607
				G2		
4		...at 3.7 m same as above with grey to green colour				606
5				G3		605
6						604
				G4		
7						603
8				G5		602
9						601
		9.8m				
10		**SAND and GRAVEL(SW-SM)** , trace silt, some fibrous		G6	Gravel: 44.0%, Sand: 49.3%, Silt/Clay:	600

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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LOGGED BY: JM	COMPLETION DEPTH: 91.5 m
ENTERED BY: AB	COMPLETION DATE: 9/7/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-11**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7148076.22 EASTING: 513398.2	ELEVATION: 609.8 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
10		asbestos, fine grained sand, very loose, light grey, dry [Tailings]		G8	6.7%	
		11.0m				599
11		**SAND(SM)** , some silt to silty, some gravel to gravelly (fine grained, <3 cm dia., angular gravel), fine to medium grained sand, very loose, medium grey, damp to moist [Tailings]		G7		
12						598
13		13.1m				597
		SAND and ASBESTOS(SW-SM) , some silt, trace to some gravel (fine grained, <3 cm dia., angular gravel), fine grained sand, very loose, light grey, fibrous asbestos, dry [Tailings]		G9		
14						596
15		15.2m		G10		595
		SAND and GRAVEL(SW-SM) , some silt, some fibrous asbestos, fine grained sand, angular gravel, <2 cm, very loose, light grey, dry [Tailings]				
16				G11		594
17						593
18		18.5m		G12		592
		SAND(SW-SM) , gravelly, some fibrous asbestos, trace silt, fine grained sand, <2 cm dia., angular gravel, very loose, light grey to green, damp to dry [Tailings]				
19				G13		591
20						590

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LOGGED BY: JM	COMPLETION DEPTH: 91.5 m
ENTERED BY: AB	COMPLETION DATE: 9/7/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-11**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7148076.22 EASTING: 513398.2	ELEVATION: 609.8 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
20						
21				G14	Gravel: 32.7%, Sand: 61.1%, Silt/Clay: 6.2%	589
22				G15		588
23				G16		587
24						586
25				G17		585
26						584
27				G18		583
28						582
29				G19		581
30		29.9m				580

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LOGGED BY: JM	COMPLETION DEPTH: 91.5 m
ENTERED BY: AB	COMPLETION DATE: 9/7/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-11**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7148076.22 EASTING: 513398.2	ELEVATION: 609.8 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ☰ GRAB ▥ MUD RETURN ◧ CORE RETURN

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400 / PLASTIC M.C. LIQUID 20 40 60 80	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
30	●		**SAND(SW-SM)** , some gravel, some fibrous asbestos, trace silt, fine grained sand, <3 cm dia., angular gravel, very loose, green to medium grey, moist [Tailings]	☰	G20	Gravel: 19.1%, Sand: 72.8%, Silt/Clay: 8.1%	
31			31.1m **SAND(SW-SM)** , some gravel, some fibrous asbestos, trace silt, fine grained gravel, <2 cm dia., angular gravel, very loose, light grey, dry [Tailings]				579
	●			☰	G21		
32							578
33	●			☰	G22		577
			33.5m **SAND(SW-SM)** , some gravel, some fibrous asbestos, trace silt, fine grained sand, fine grained gravel, <3 cm dia., angular gravel, very loose to loose, medium grey, some fibrous asbestos, dry [Tailings]				
34	●		...at 34.1 m <2 cm dia, very loose, light grey	☰	G23		576
35			... at 35.4 m < 3cm dia., very loose to loose, green to medium grey, some fibrous asbestos, moist				575
36	●			☰	G24		574
			...at 36.6 m <4 cm dia., very loose, light grey, dry				
37							573
	●			☰	G25		
38						Thermistor #4758: Bottom node installed @ 37.8 m	572
39	●			☰	G26		571
40							570

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LOGGED BY: JM	COMPLETION DEPTH: 91.5 m
ENTERED BY: AB	COMPLETION DATE: 9/7/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-11**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7148076.22 EASTING: 513398.2	ELEVATION: 609.8 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
40				G27		569
41						
42				G28		568
				G29		
		42.4m				
43		**SAND(SM)** , silty, gravelly, fine to medium grained sand, <2 cm dia., sub-rounded gravel, compact, medium brown, moist [Colluvium] ...from 42.7 m to 43.3 m trace roots				567
				G30		
44		...below 43.6 m becomes gravelly with depth				566
45						565
		45.7m				
46		**GRAVEL and SAND(GM)** , some silt, fine to coarse grained sand, fine grained gravel, <4 cm dia., sub-angular to sub-rounded gravel, compact, medium brown, moist to wet [Colluvium]		G31		564
47						563
48		...at 48.2 m layer of fine sand and silt, 15 cm thick		G32 PP1 G33	Gravel: 43.7%, Sand: 38.2%, Silt/Clay: 18.1% Pocket Pen 1 (PP1) at 48.2 m: 0.5 kg/cm2	562
		48.8m				
49		**SAND and GRAVEL(SM)** , silty, trace clay, medium to coarse grained sand, fine to coarse grained gravel, <3 cm dia., sub-angular gravel, compact, grey, moist to wet [Colluvium]				561
				G34		
50						560

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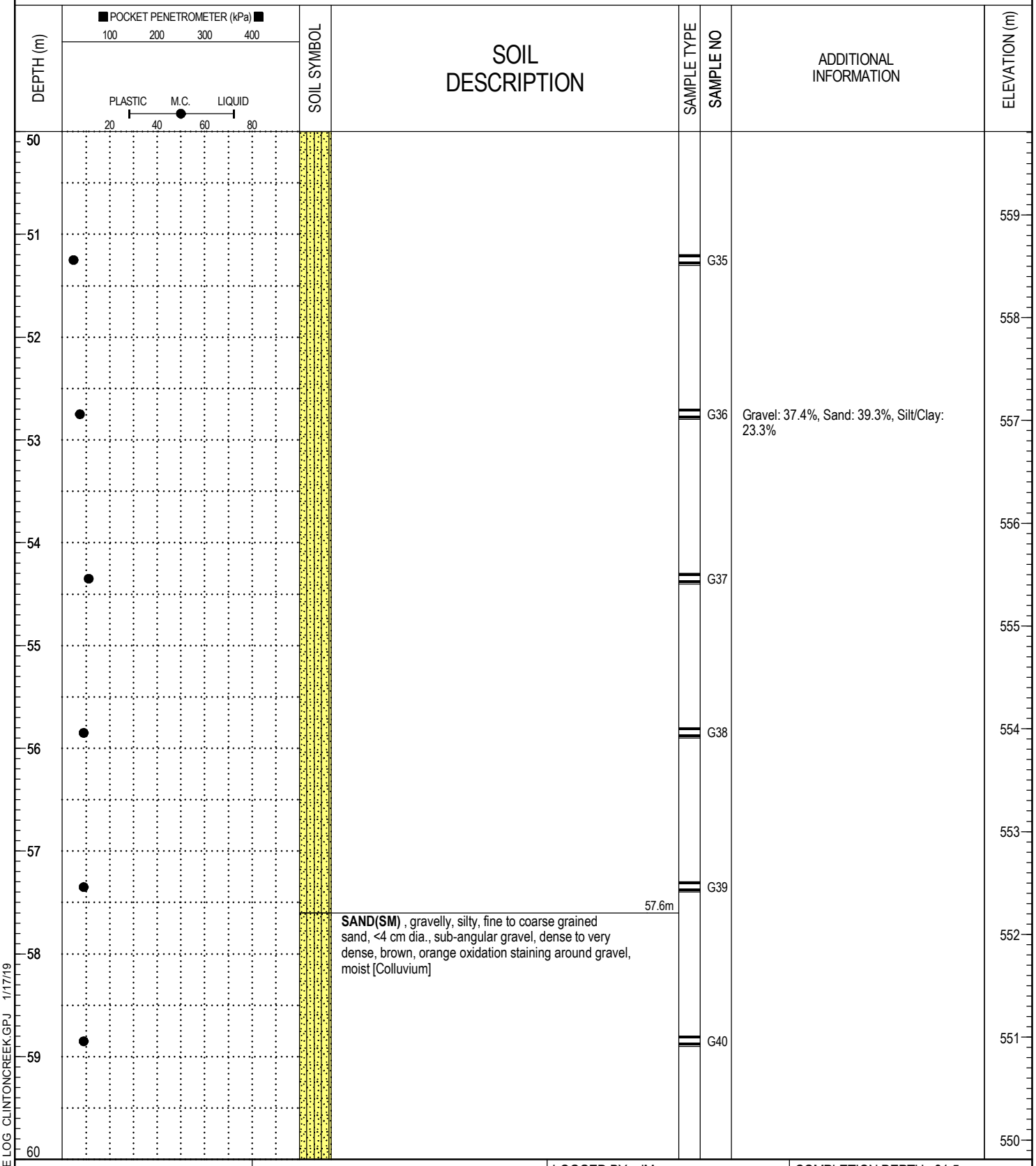
LOGGED BY: JM
ENTERED BY: AB
COMPLETION DEPTH: 91.5 m
COMPLETION DATE: 9/7/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-11**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7148076.22 EASTING: 513398.2	ELEVATION: 609.8 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ☰ GRAB ▥ MUD RETURN ◧ CORE RETURN



BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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LOGGED BY: JM	COMPLETION DEPTH: 91.5 m
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CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-11**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7148076.22 EASTING: 513398.2	ELEVATION: 609.8 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
60						
				G41	Gravel: 31.1%, Sand: 41.5%, Silt/Clay: 27.5%	549
61		...at 61.0 m gravel <6 cm dia., possible cobbles				
				G42		548
62						
				G43		547
63						
				G44		546
64		64.0m **SILT and SAND(ML)** , trace gravel, trace clay, fine to medium grained sand, fine to coarse grained gravel, <4 cm dia., sub-angular gravel, very stiff, grey, moist [Colluvium]				
				G45		545
65						
						544
66						
				G46	Gravel: 8.8%, Sand: 35.5%, Silt/Clay: 55.8%	
67		67.1m **SILT(ML)** , sandy, some gravel, trace clay, fine grained sand, fine grained gravel, <1 cm dia., sub-angular gravel, stiff to very stiff, low plasticity, medium grey, moist [Colluvium]				543
						542
68				G47 PP2	PP2 at 68.0 m: 4.0 kg/cm2	
						541
69						
				G48 PP3	PP3 at 69.5 m: 4.0 kg/cm2	
		69.8m				
70		**SAND(SM)** , silty, gravelly, trace clay, trace cobbles,				540

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LOGGED BY: JM	COMPLETION DEPTH: 91.5 m
ENTERED BY: AB	COMPLETION DATE: 9/7/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-11**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7148076.22 EASTING: 513398.2	ELEVATION: 609.8 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
70		fine to coarse grained sand, <5 cm dia., sub-angular gravel, fractured quartz due to sonic, very dense, light grey, moist [Colluvium]				
		...from 70.1 m to 71.6 m pulvurized trace cobbles		G49		539
71		71.6m				
		SAND and GRAVEL(SM) , silty, trace clay, fine to coarse grained sand, <4 cm dia., sub-angular to sub-rounded gravel, dense to very dense, light grey, quartz gravel with schist/shale, moist [Colluvium]			Switch to HQ3 Coring @ 71.6 m Core Run #1: (71.6 m - 73.2 m) TCR = 66%	538
72						
						537
73				G50	Core Run #2: (73.2 m - 74.7 m) TCR = 6.6%	
						536
74						
		...at 74.7 m some gravel		G51	Switch to Sonic Drilling @ 74.7 m	535
75				G52		
						534
76						
				G53		533
77						
		77.7m				
		SAND(SM) , gravelly, silty, trace clay, fine to coarse grained sand, well-graded, <3 cm dia., sub-angular to sub-rounded gravel, compact to dense, light grey, moist [Colluvium]				532
78				G54		
						531
79						
						530
80				G55		

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

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LOGGED BY: JM	COMPLETION DEPTH: 91.5 m
ENTERED BY: AB	COMPLETION DATE: 9/7/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-11**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7148076.22 EASTING: 513398.2	ELEVATION: 609.8 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
80						
		80.8m				
81		**SAND and SILT(SM)** , trace gravel, trace clay, fine to coarse grained sand, <3m dia., sub-angular to sub-rounded gravel, well-graded, compact to dense, light grey, moist [Colluvium]				529
				G56		
82						528
						527
83				G57	Gravel: 3.5%, Sand: 51.5%, Silt/Clay: 45.0%	
						526
84						
				G58		525
85		...between 85.1 m and 85.4 m trace cobbles, pulverized				
		85.4m				
		SAND(SM) , some silt to silty, some gravel, fine to coarse grained sand, <3 cm dia., sub-angular to sub-rounded gravel, compact to dense, medium to light grey, moist [Colluvium]				524
86				G59		
						523
87						
				G60		522
88		...between 87.7 m and 88.1 m some cobbles, pulverized				
		88.4m				
		SAND(SM) , silty, some gravel to gravelly, trace clay, fine to coarse grained sand, <3 cm dia., sub-angular to sub-rounded gravel, dense to very dense, medium grey, moist [Colluvium]				521
89				G61		
						520
90						

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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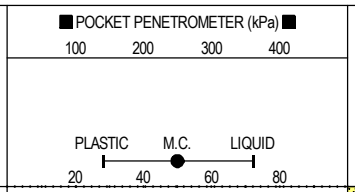
LOGGED BY: JM
ENTERED BY: AB
COMPLETION DEPTH: 91.5 m
COMPLETION DATE: 9/7/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-11**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7148076.22 EASTING: 513398.2	ELEVATION: 609.8 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN



DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
90					Water level measured at 90.3 m on 9/08/2018	
				G62		
91		...between 90.9 m and 91.5 m trace to some cobbles, pulverized				519
		91.5m		G63		
		END OF BOREHOLE @ 91.5 m - Water level @ 90.32 m at time of completion. - No frozen soils encountered. - 1 Thermistor and SI installed in borehole. Thermistor was taped to SI and borehole was grouted using a tremie from bottom of hole.				518
92						
						517
93						
						516
94						
						515
95						
						514
96						
						513
97						
						512
98						
						511
99						
100						510

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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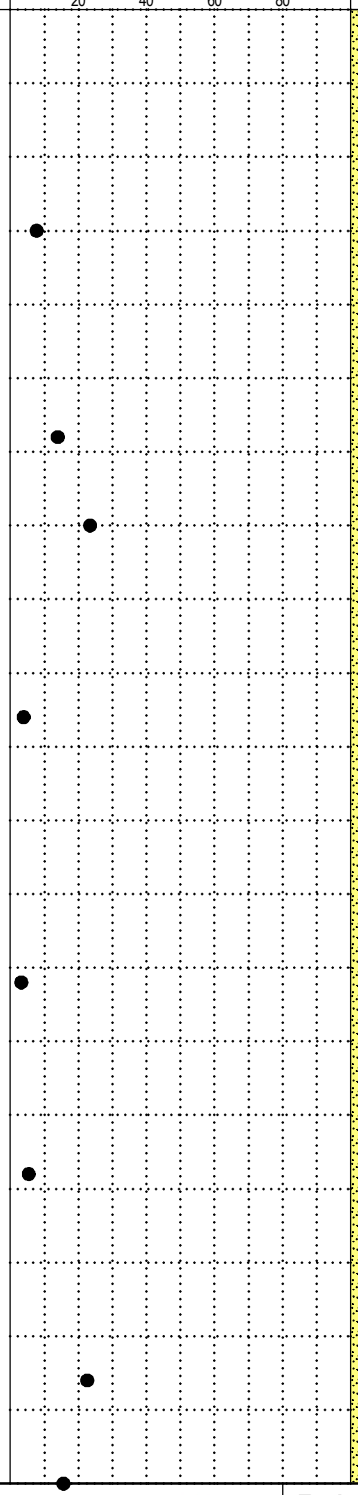
LOGGED BY: JM	COMPLETION DEPTH: 91.5 m
ENTERED BY: AB	COMPLETION DATE: 9/7/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-12**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7148077.08 EASTING: 513950.58	ELEVATION: 420.9 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ☰ GRAB ▥ MUD RETURN ◧ CORE RETURN



SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
	SAND(SW-SM), trace gravel to gravelly, some fibrous asbestos, trace silt, fine to medium grained sand, well-graded, <4 cm dia., angular gravel, green to grey, moist [Tailings]			Not Frozen to 2.0 m	420
			G1		
	...from 2.0 m to 13.7 m Nbn, intermittent layers <10 to 30 cm thick not frozen.				419
			G2		418
			G3	Gravel: 33.9%, Sand: 58.7%, Silt/Clay: 7.4%	
					417
			G4		416
			G5	Gravel: 4.6%, Sand: 87.4%, Silt/Clay: 8.0%	415
					414
	...from 7.5 m to 7.6 m intermittent sand lenses with some asbestos fibers, 20 cm thick		G6		413
					412
			G7		
					411

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

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LOGGED BY: JM	COMPLETION DEPTH: 39.6 m
ENTERED BY: GF	COMPLETION DATE: 8/27/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-12**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7148077.08 EASTING: 513950.58	ELEVATION: 420.9 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100, 200, 300, 400

PLASTIC | M.C. | LIQUID: 20, 40, 60, 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
10				G8		
11				G9		410
12				G10	Gravel: 9.8%, Sand: 77.0%, Silt/Clay: 13.2%	409
13				G11		408
				G12		
14		...from 13.7 m to 14.9 m not frozen				407
				G13	Gravel: 28.0%, Sand: 66.5%, Silt/Clay: 5.5%	
15		...from 14.9 m to 15.2 m Nbn ...below 15.2 m not frozen		G14		406
				G16		
16						405
				G17	Gravel: 18.4%, Sand: 69.8%, Silt/Clay: 11.8%	
17						404
		17.7m				
18		**GRAVEL(GM)**, silty, sandy, fine to medium grained sand, < 2 cm dia., angular gravel, compact to dense, brown, moist, possible old road fill, not frozen [Fill] ...from 18.2 m to 19.4 m Nbn		G18	Gravel: 48.3%, Sand: 23.2%, Silt/Clay: 28.5%	403
19						402
		19.4m				
20		**SAND(SW-SM)**, gravelly, some fibrous asbestos, trace silt, fine to medium grained sand, well-graded, <4 cm dia., angular gravel, green to grey, moist, not frozen [Tailings]		G19		401

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

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LOGGED BY: JM
ENTERED BY: GF
COMPLETION DEPTH: 39.6 m
COMPLETION DATE: 8/27/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-12**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7148077.08 EASTING: 513950.58	ELEVATION: 420.9 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ☰ GRAB ▥ MUD RETURN ◧ CORE RETURN

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400 / PLASTIC M.C. LIQUID 20 40 60 80	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
20	●		...from 19.8 m to 21.0 m Nbn		G20		
					G21	Gravel: 22.1%, Sand: 69.4%, Silt/Clay: 8.5%	400
21			21.3m				
			SAND and GRAVEL(SM), some silt to silty, fine to medium grained sand, <2 cm dia., angular gravel, compact to dense, brown, moist, not frozen, possible old road fill [Fill]				
22	●				G15		399
			22.9m				
23			**SAND(SW-SM)**, some gravel, some fibrous asbestos, trace silt, fine to medium grained sand, well-graded, <4 cm dia., angular gravel, green to grey, moist, not frozen [Tailings]				398
	●				G22		
24							397
25	●				G23		396
			...from 25.6 m to 25.9 m Nbn				
26	●				G24	Gravel: 20.0%, Sand: 72.7%, Silt/Clay: 7.3%	395
27							394
	●				G25		
28							393
29	●				G26		392
30							391

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

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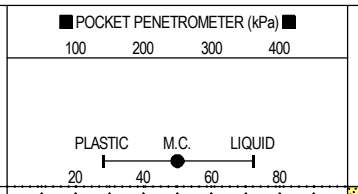
Burnaby, BC V5C 0E4

LOGGED BY: JM	COMPLETION DEPTH: 39.6 m
ENTERED BY: GF	COMPLETION DATE: 8/27/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-12**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7148077.08 EASTING: 513950.58	ELEVATION: 420.9 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN



DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
30				G27		
		30.5m			Water level measured at 30.5 m on 8/27/2018	
		SILT(ML), sandy, some gravel, trace to some organics, fine to medium grained sand, fine grained gravel, angular gravel, firm to stiff/compact to dense, brown, wet to saturated, not frozen [Alluvium]		G28		
31						390
32				G29	Gravel: 18.5%, Sand: 27.6%, Silt/Clay: 53.9%	389
		32.6m				
		SAND and GRAVEL(SM), silty, trace clay, trace organics, fine to medium grained sand, fine grained gravel, sub-angular to sub-rounded gravel, compact to dense, wet, dark grey, not frozen [Alluvium]		G30		
33						388
34						387
				G31		
35		35.1m				386
		BEDROCK, weathered, pulverized into gravel and sand/silt size particles, gravel/pucks show schistosity, some mica evident [Quartz Muscovite Schist]				
36						385
37						384
38						383
39						382
		39.6m				
		END OF BOREHOLE @ 39.6 m - Water level @ 30.5 m at time of completion.				
40						381

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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LOGGED BY: JM	COMPLETION DEPTH: 39.6 m
ENTERED BY: GF	COMPLETION DATE: 8/27/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-13**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7148310.71 EASTING: 513545.39	ELEVATION: 549.1 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ☰ GRAB ▥ MUD RETURN ◧ CORE RETURN

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400 / PLASTIC M.C. LIQUID 20 40 60 80	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
0			**NOT LOGGED** Sonic straight down to 12.2 m			No frozen soils encountered.	549
1							548
2							547
3							546
4							545
5							544
6							543
7							542
8							541
9							540
10							

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

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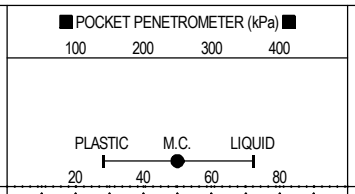
LOGGED BY: JM
ENTERED BY: AB
COMPLETION DEPTH: 61.0 m
COMPLETION DATE: 9/10/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-13**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7148310.71 EASTING: 513545.39	ELEVATION: 549.1 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN



DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
10						539
11						538
12						537
		12.2m **SAND and GRAVEL(SW-SM)** , some silt, some fibrous asbestos, medium to coarse grained sand, fine grained gravel, well-graded, <2 cm dia., angular gravel, very loose to loose, green, moist [Tailings]				
13				G1		536
14						535
				G2		
15						534
				SB1	Pushed Shelby Tube (SB1) 0.45 m @ 15.2 m	
16						533
		...from 16.2 m to 16.5 m layer of fine grained sand, silty, some fibrous asbestos, trace gravel, fine grained gravel, angular gravel, loose, green, moist		G3	Gravel: 6.3%, Sand: 58.9%, Silt/Clay: 34.8%	
17						532
				G4		
18						531
		18.4m **SAND(SW)** , gravelly, some fibrous asbestos, trace silt, medium to coarse grained sand, fine grained gravel, <3 cm dia., angular gravel, very loose, green, moist [Tailings]		SB2	Pushed Shelby Tube (SB2) 0.1 m @ 18.3 m	
19				G5		530
20						

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

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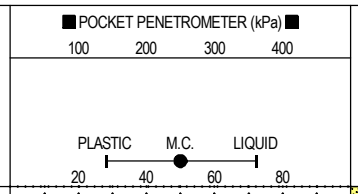
LOGGED BY: JM	COMPLETION DEPTH: 61.0 m
ENTERED BY: AB	COMPLETION DATE: 9/10/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-13**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7148310.71 EASTING: 513545.39	ELEVATION: 549.1 m

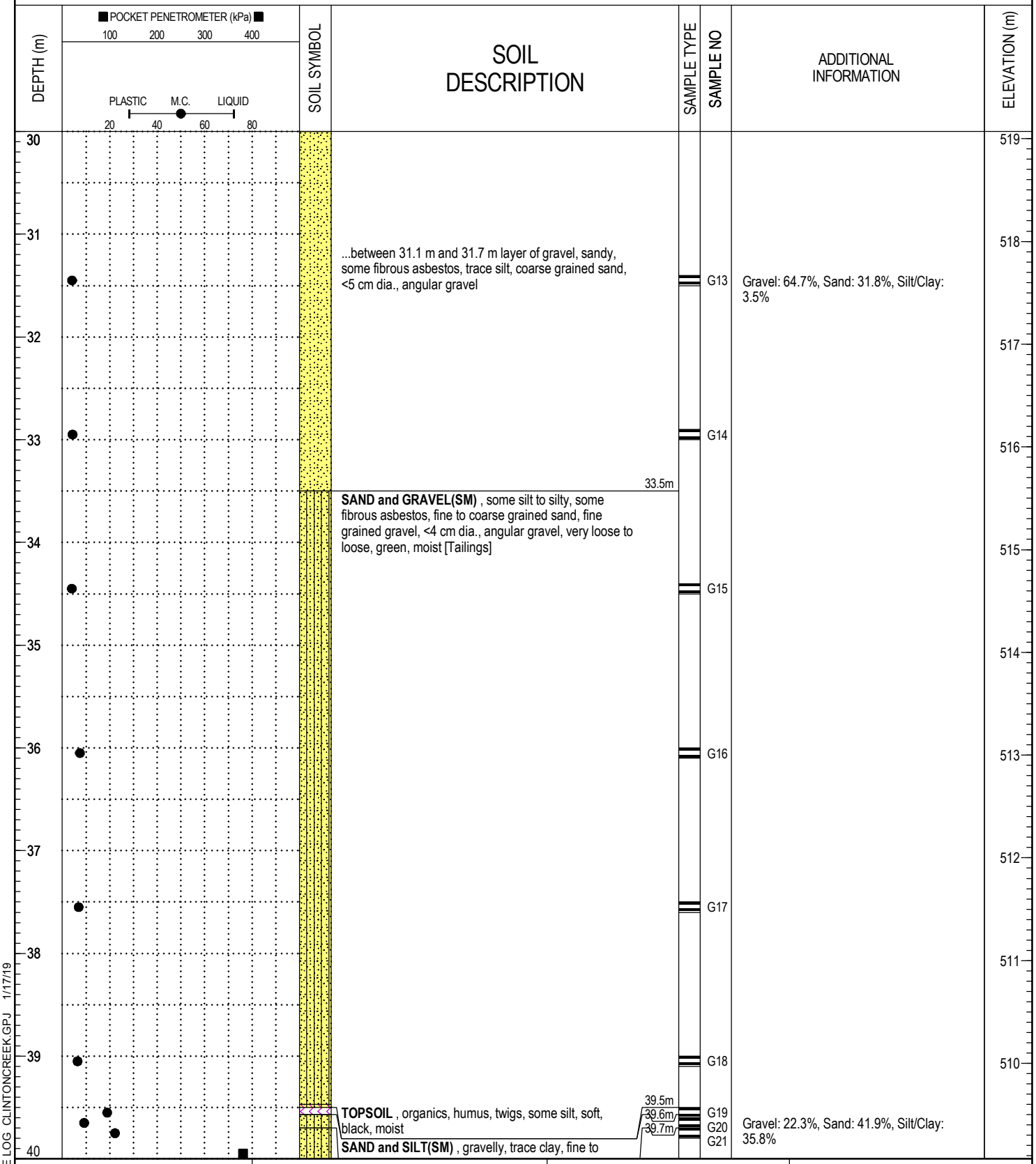
SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ☰ GRAB ▥ MUD RETURN ◧ CORE RETURN



DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
20				G6		529
21						528
22				G7		527
23						526
24				G8		525
25				G9	Gravel: 23.3%, Sand: 71.4%, Silt/Clay: 5.3%	524
26						523
27				G10		522
28				G11		521
29						520
30				G12		

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-13**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7148310.71 EASTING: 513545.39	ELEVATION: 549.1 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN



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LOGGED BY: JM	COMPLETION DEPTH: 61.0 m
ENTERED BY: AB	COMPLETION DATE: 9/10/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-13**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7148310.71 EASTING: 513545.39	ELEVATION: 549.1 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100, 200, 300, 400

PLASTIC | M.C. | LIQUID: 20, 40, 60, 80

DEPTH (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
40	medium grained sand, fine to coarse grained gravel, <3 cm dia., sub-rounded gravel, compact to dense/firm to stiff, light grey, moist [Colluvium]		PP1	Pocket Pen 1 (PP1) at 39.9 m: 3.75 kg/cm2	509
			G22		
	40.5m		PP2	PP2 at 40.2 m: 3.75 kg/cm2	
	SAND and SILT(SM) , trace gravel, fine grained sand, fine grained gravel, <1 cm dia., sub-rounded to sub-angular gravel, dense/stiff, orange brown to grey, moist [Colluvium]		PP3	PP3 at 40.5 m: 3.5 kg/cm2	
41					508
	SAND and GRAVEL(GW-GM) , silty, trace clay, fine to coarse grained sand, well-graded, <4 cm dia., sub-angular gravel, compact to dense, orange brown, moist [Colluvium]		G23		
	41.8m				
42	**SAND(SM)** , silty, some gravel, fine grained sand, <3 cm dia., sub-angular gravel, compact/firm, orange brown, moist [Colluvium]		G24	Gravel: 17.9%, Sand: 55.1%, Silt/Clay: 27.0%	507
	42.1m				
	SAND and GRAVEL(SM) , silty, trace clay, fine to coarse grained sand, well-graded, <4 cm dia., sub-angular gravel, compact to dense, orange brown to grey, oxidation staining, moist [Colluvium]		G25		
	42.7m				
43	**SAND and GRAVEL(SM)** , silty, trace clay, fine to coarse grained sand, well-graded, <3 cm dia., sub-rounded to sub-angular gravel, dense, grey to reddish brown, oxidation staining, moist [Colluvium]				506
44			G26		505
	44.8m				
45	**SILT(ML)**, sandy, trace gravel, trace clay, fine grained sand, <1 cm dia., sub-rounded gravel, stiff, low plasticity, reddish brown, moist [Colluvium]		G27	Gravel: 0.4%, Sand: 20.9%, Silt/Clay: 78.8%	504
	45.1m		PP4	PP4 at 45.0 m: 3.0 kg/cm2	
	SAND and GRAVEL(SM) , silty, trace clay, fine to coarse grained sand, well-graded, <4 cm dia., sub-rounded to sub-angular gravel, dense, low plasticity, grey to reddish brown, oxidation staining, moist [Colluvium]				
46					503
			G28		
47					502
	47.6m				
48	**SILT(ML)**, trace to some clay, trace sand, fine grained sand, very stiff, low plasticity, reddish brown, moist [Colluvium]		PP5	PP5 at 47.9 m: >4 kg/cm2	501
			G29	PP6 at 48.2 m: >4 kg/cm2	
			PP6		
			PP7	PP7 at 48.5 m: >4 kg/cm2	
	48.8m				
49	**SAND(SM)** , silty, some gravel, trace clay, fine grained gravel, <1 cm dia., sub-angular gravel, stiff, brown, moist [Colluvium]		G30	Gravel: 19.4%, Sand: 47.0%, Silt/Clay: 33.6%	500
	49.4m				
	SILT(ML), trace clay, trace sand, fine grained sand, stiff, low plasticity, grey, moist [Colluvium]		PP8	PP8 at 49.5 m: 4 kg/cm2	
			G31		
50	50.0m		PP9		

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-13**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7148310.71 EASTING: 513545.39	ELEVATION: 549.1 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ≡ GRAB ||| MUD RETURN ◧ CORE RETURN

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400 / PLASTIC M.C. LIQUID 20 40 60 80	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
50			**SAND and GRAVEL(SM)** , silty, trace cobbles (pulverized), fine to coarse grained sand, <8 cm dia., sub-rounded gravel, dense, grey, moist [Colluvium]		G32	PP9 at 49.9 m: >4.5 kg/cm2	499
			50.9m				
51			**SILT(ML)**, trace clay, stiff, low plasticity, grey, moist [Colluvium]		G33		498
			51.2m				
52			**BEDROCK** , most decomposed to silt, very stiff to hard, highly weathered, evidence of foliations/schistosity, reddish brown, some oxidation staining, damp [Quartz Muscovite Schist]				497
53							496
			53.3m				
			BEDROCK , highly weathered, foliated, highly fractured, very weak, black schist, wet [Quartz Muscovite Schist]				
54						Water level measured at 54.1 m on 9/11/2018	495
55							494
56							493
57							492
			57.9m				
58			**NO RECOVERY from 50.9 m to 51.2 m**			Switch to HQ3 Coring @ 57.9 m	491
			...from 58.5 m to 58.9 m pulverized to sand and silt (mud)				
			58.9m				
59			**BEDROCK** , dark grey to black with oxidation staining in most fractures, non-crystalline, isotropic, thinly foliated (schistosity), moderately to highly weathered, weak to medium-strong, highly fractured (rough surfaces), no slickensides/shear [Quartz Muscovite Schist]		Core1	Core Run #1: (58.9 m - 59.5 m) TCR: 53% RQD = 0%	490
			59.5m				
60			Spacing: <1 cm (abundant), Continuity: through, 60.0m				

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

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LOGGED BY: JM	COMPLETION DEPTH: 61.0 m
ENTERED BY: AB	COMPLETION DATE: 9/10/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-13**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7148310.71 EASTING: 513545.39	ELEVATION: 549.1 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
60		Geometry: curved, Orientation: horizonal to vertical, Core Breakage: hand force, Roughness: pock marked ...at 59.3 m possible gouge ...at 59.4 m quartz vein **NO RECOVERY from 58.9 m to 59.5 m**		Core2	Core Run #2: (60.0 m - 61.0 m) TCR: 66% RQD = 0%	489
61		**BEDROCK**, dark grey to black with oxidation staining in most fractures, non-crystalline, isotropic, thinly foliated (schistosity), moderately weathered, medium-strong, highly fractured, pock marks throughout due to dissolved quartz/calcite veins [Quartz Muscovite Schist] Spacing: 1 cm - 3 cm (numerous), Continuity: through, Geometry: curved, Orientation: horizonal to 45°, Core Breakage: mechanical to hand force, Roughness: slightly to pock marked, Sheen: dull 61.0m **END OF BOREHOLE @ 61.0 m** - Water level @ 54.1 m at time of completion. - No frozen soils encountered. - SI installed in borehole using a tremie and grouted from bottom of hole.				488
62						487
63						486
64						485
65						484
66						483
67						482
68						481
69						480
70						

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

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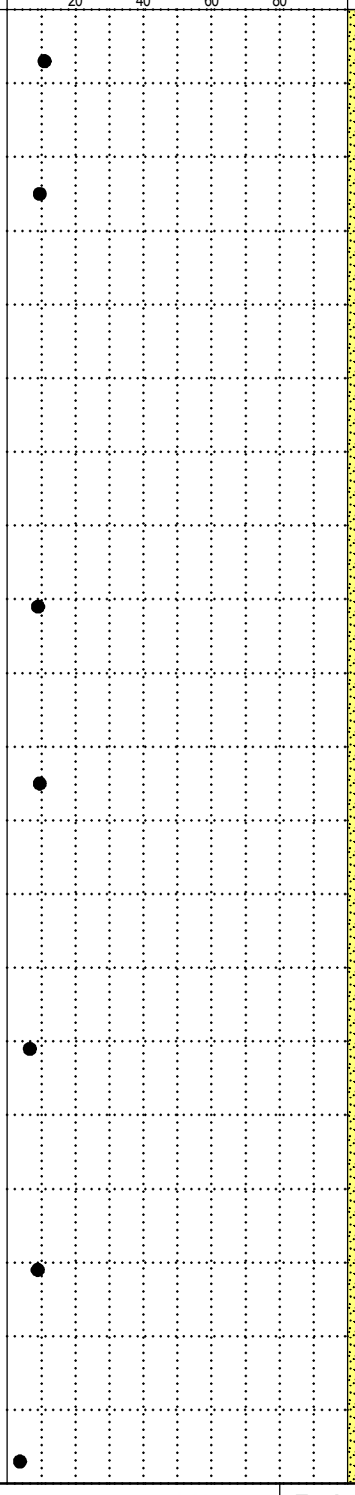
LOGGED BY: JM	COMPLETION DEPTH: 61.0 m
ENTERED BY: AB	COMPLETION DATE: 9/10/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-14**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7148331.14 EASTING: 513872.03	ELEVATION: 428.7 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ☰ GRAB ▥ MUD RETURN ◧ CORE RETURN



SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
	SAND(SM) , some silt to silty, some gravel, some fibrous asbestos, fine to medium grained sand, fine grained gravel, <2 cm dia., angular gravel, very loose, grey to green, moist [Tailings]		G1	Not Frozen to 4.9 m	428
			G2		427
					426
			G3		425
	...from 4.9 m to 5.5 m Nbn		G4		424
				Thermistor #4754: Top node installed @ 6.0 m	423
			G5		422
					421
			G6		420
					419
	10.0m		G7		

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

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LOGGED BY: JM	COMPLETION DEPTH: 22.3 m
ENTERED BY: AB	COMPLETION DATE: 8/29/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-14**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7148331.14 EASTING: 513872.03	ELEVATION: 428.7 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
10		**GRAVEL(GW-GM)** , some sand, some silt, some fibrous asbestos, <3 cm dia., angular gravel, not frozen [Tailings]			VWP #52024: Installed @ 10.5 m	418
11				G8		
		11.6m				
12		**SAND(SM)** , some gravel, some silt to silty, some fibrous asbestos, fine to medium grained sand, fine grained gravel, <2 cm dia., angular gravel, very loose, green, moist, not frozen [Tailings]				417
				G9		416
13						
14		...from 14.0 m to 15.2 m Nbn		G10		415
				G11		414
15						
		15.2m				
		SAND(SM) , silty, some gravel, some fibrous asbestos, <2 cm dia., angular gravel, loose to very loose, grey to green, wet to saturated, not frozen [Tailings]		G12		
16				G13		413
		16.3m				
		SILT(ML) , sandy, trace gravel, <2 cm dia., angular gravel, very stiff, yellow/orange brown, moist, not frozen [Alluvium]		G14 PP1	Gravel: 2.8%, Sand: 24.2%, Silt/Clay: 73.0% Pocket Pen 1 (PP1) at 16.5 m: 2.5 kg/cm2	412
17				PP2 G15	VWP #52030: Installed @ 16.5 m PP2 at 16.9 m: 3.0 kg/cm2	
				PP3 G16	PP3 at 17.4 m: 3.5 kg/cm2 Gravel: 0.0%, Sand: 16.1%, Silt/Clay: 83.9%	
		17.7m				411
18		**SAND and GRAVEL(GM)** , silty, trace clay, fine to medium grained sand, <3 cm dia., angular gravel, dark grey to black, wet, Nbn [Alluvium]		G17	Gravel: 27.0%, Sand: 42.5%, Silt/Clay: 30.5%	
		...below 18.3 m Vc		G18	Gravel: 49.1%, Sand: 32.0%, Silt/Clay: 18.9%	
19				G19		410
		19.5m				
		BEDROCK , highly weathered, schistosity, black, Vc [Quartz Muscovite Schist]		G20		409
20		...below 19.6 m not frozen				

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

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LOGGED BY: JM | COMPLETION DEPTH: 22.3 m
ENTERED BY: AB | COMPLETION DATE: 8/29/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-14**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7148331.14 EASTING: 513872.03	ELEVATION: 428.7 m

SAMPLE TYPE ■ TUBE ▨ NO RECOVERY ▩ SPLIT SPOON ▤ GRAB ▥ MUD RETURN ◧ CORE RETURN

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400 / PLASTIC M.C. LIQUID 20 40 60 80	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
20						Thermistor #4754: Bottom node installed @ 20.0 m	408
21			...at 20.3 m sample too broken to describe				407
22			22.3m **END OF BOREHOLE @ 22.3 m** - Water level @ 16.3 m at time of completion. - 2 VWP's and 1 Thermistor taped to outside of a 2.5 cm dia. PVC pipe. VWP's and Thermistor were backfilled with bentonite. VWP's were placed in sand packs with 50 cm of filter sand above & below VWP's.				406
23							405
24							404
25							403
26							402
27							401
28							400
29							399
30							

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

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LOGGED BY: JM	COMPLETION DEPTH: 22.3 m
ENTERED BY: AB	COMPLETION DATE: 8/29/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-15**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7147905.3 EASTING: 513701.36	ELEVATION: 493.8 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
0		**SAND and GRAVEL(SM)** , silty, trace clay, fine to coarse grained sand, <8 cm dia., sub-rounded gravel, compact, light brown [Colluvium] NOTE: soil recently disturbed due to access trail construction			No frozen soils encountered. Thermistor #4750: Top node installed @ 0.0 m	
1		1.2m **BEDROCK** , highly weathered, highly fractured, black, schist (evidence of schistosity and some quartz), pulverized by sonic [Quartz Muscovite Schist]		G1	Groundwater seepage encountered at 1.2 m during drillig on 9/11/2018	493
2						492
3						491
4						490
5						489
6						488
7						487
8						486
9		9.1m **NO RECOVERY from 9.1 m to 9.7 m** , small pucks from sonic 9.7m			Switch to HQ3 Coring @ 9.1 m	485
10		**BEDROCK** , black with white veins (quartz/calcite), some oxidation staining in veins, non-crystalline,			Core Run #1: (9.7 m - 10.7) TCR: 79%	484

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

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LOGGED BY: JM	COMPLETION DEPTH: 15.2 m
ENTERED BY: AB	COMPLETION DATE: 9/12/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-15**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7147905.3 EASTING: 513701.36	ELEVATION: 493.8 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ☰ GRAB ▥ MUD RETURN ◧ CORE RETURN

POCKET PENETROMETER (kPa) 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
10		non-isotropic, medium folliation, evidence of schistosity/foliations, slightly to medium weathered, weak to medium strong [Quartz Muscovite Schist] All fractures are joints, planar to semi-curved, mod. narrow, not healed, clean, dull. Joints are horizontal except between 10.21 m to 10.52 m which are dipping at 10° - 15°. No slickensides evident		Core1	NF = 17 RQD = 0%	
		10.7m				
11		**NO RECOVERY from 10.7 m to 11.2 m** , pulverized rock from HQ3				483
		11.2m				
		BEDROCK , black with white veins (quartz/calcite), some oxidation staining in veins, non-crystalline, non-isotropic, medium folliation, evidence of schistosity/foliations, slightly to medium weathered, weak to medium strong [Quartz Muscovite Schist] All fractures are joints, planar to semi-curved, mod. narrow, not healed, clean, dull. Joints are horizontal except between 11.92 m to 12.04 m which are dipping at approx. 10°. Gouge 2 cm wide obsered at 11.97 m		Core2	Core Run #2: (11.2 m - 12.2 m) TCR: 68% NF = 13 RQD = 0%	
12						482
		12.2m				
				Core3	Core Run #3: (12.2 m - 13.7 m) TCR: 105% NF = 21 RQD = 0%	
13		**BEDROCK** All fractures are joints, planar to semi-curved, mod. narrow, clean, dull. Joints are horizontal except at 12.3 m (70°), 12.65 m (15°), 13.31 m (45°), 13.41 m (20°). Possible gouge 2 cm wide at 13.59 m				481
		13.7m				
		MINIMAL RECOVERY , pulverized to sand				480
14					Thermistor #4750: Bottom node installed @ 14.0 m	
		14.7m				
		BEDROCK All fractures are joints, planar to semi-curved, mod. narrow, clean, dull. Joints are horizontal. Gouge 2 cm thick at 14.9 m		Core4	Core Run #4: (14.7 m - 15.2 m) TCR: 37% NF = 9 RQD = 0%	479
15		15.2m				
		END OF BOREHOLE @ 15.2 m - Water level @ 1.2 m at time of completion. - No frozen soils encountered. - 1 Thermistor installed in borehole. Thermistor taped to tremie pipe and backfilled with bentonite.				478
16						
17						477
18						476
19						475
20						474

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

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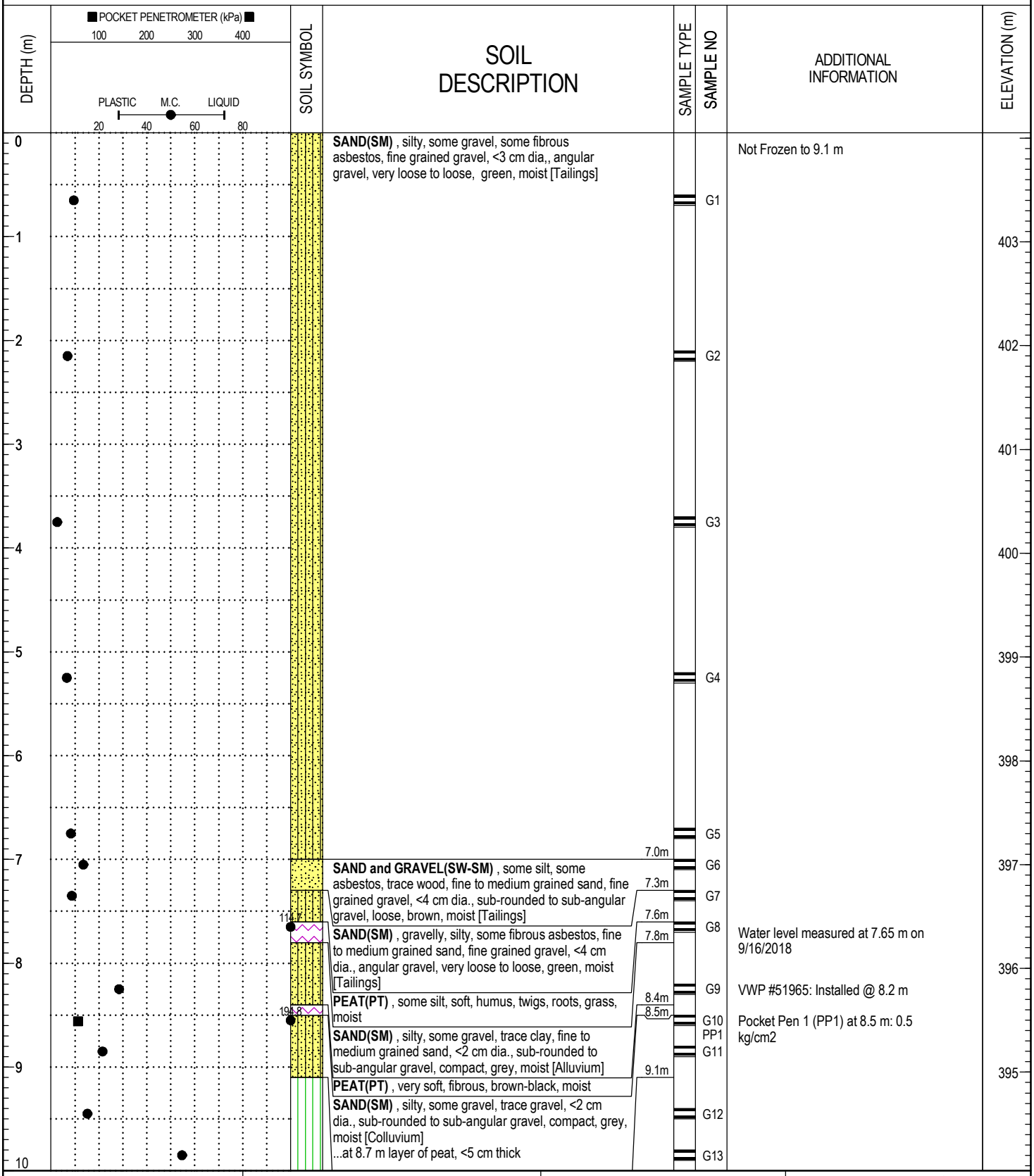
LOGGED BY: JM	COMPLETION DEPTH: 15.2 m
ENTERED BY: AB	COMPLETION DATE: 9/12/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-16**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7147905.14 EASTING: 513949.18	ELEVATION: 404.1 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN



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LOGGED BY: JM	COMPLETION DEPTH: 21.3 m
ENTERED BY: AB	COMPLETION DATE: 9/12/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-16**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7147905.14 EASTING: 513949.18	ELEVATION: 404.1 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa) 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
10		...at 9.1 m layer of peat, <5 cm thick		G14		
		SILT and SAND(ML) , some gravel, trace clay, trace organics, fine to medium grained sand, fine grained gravel, well-graded, <4 cm dia., sub-angular to angular gravel, compact, grey, wet, Nbn from 9.1 m to 15.0 m [Colluvium]		G15		
				G16		
11		...from 9.1 m to 12.2 m inter-layered peat from 5 cm - 20 cm thick		G17		393
		...from 9.8 m to 10.1 m peat layer is soft, fibrous, black to dark brown, wet		G18	Gravel: 16.7%, Sand: 37.5%, Silt/Clay: 45.8%	
				G19		
12				G20		392
		...from 12.2 m to 15.2 m inter-bedded fine sand, some silt, trace organics up to 10 cm thick throughout		G21		
		179.3		G22		
				G23		
13				G24		391
				G25		
				G26		
14				G27		390
				G28		
				G29		
15				G30		389
		...not frozen below 15.0 m		15.2m		
		SILT(ML) , sandy, gravelly, some peat, trace clay, fine to coarse grained gravel, <8 cm dia., angular gravel, compact, fibrous peat, dark brown, wet, not frozen [Colluvium]		G31	Gravel: 27.6%, Sand: 31.9%, Silt/Clay: 40.5%	
16				16.3m		388
		SAND and GRAVEL(SM) , silty, trace clay, trace cobbles, trace organics, fine to coarse grained gravel, well-graded, <10 cm dia., angular gravel, angular to sub-angular cobbles, dense, medium grey, moist, not frozen [Colluvium]		G32		
17				G33		387
18				G34		386
19				G35		385
20						

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LOGGED BY: JM | COMPLETION DEPTH: 21.3 m
ENTERED BY: AB | COMPLETION DATE: 9/12/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-16**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7147905.14 EASTING: 513949.18	ELEVATION: 404.1 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
20		20.1m **BEDROCK** , weathered, grey to white, quartzite, difficult to sonic, pulverized [Quartz Muscovite Schist]		G36		
21		21.3m **END OF BOREHOLE @ 21.3 m** - Water level @ 7.6 m at time of completion. - 1 VWP installed by taping to outside of a 2.5 cm dia. PVC pipe. VWP was backfilled with bentonite. VWP was placed in a sand pack with 40 cm of filter sand above & below VWP.				383
22						382
23						381
24						380
25						379
26						378
27						377
28						376
29						375
30						

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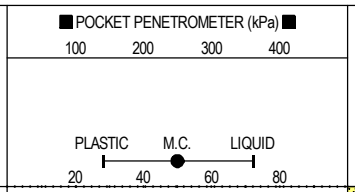
LOGGED BY: JM	COMPLETION DEPTH: 21.3 m
ENTERED BY: AB	COMPLETION DATE: 9/12/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-17**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7148026.54 EASTING: 513517.34	ELEVATION: 549.2 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN



DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
0		**SAND and GRAVEL(SM)** , some silt to silty, fine to medium grained sand, <4 cm dia., angular gravel, very loose to loose, green to grey, some fibrous asbestos, moist [Tailings]		G1	No frozen soils encountered.	549
1						548
2				G2		547
3				G3		546
4						545
5				G4		544
6				G5		543
7				G6		542
8				G7		541
9						540
10				G8		

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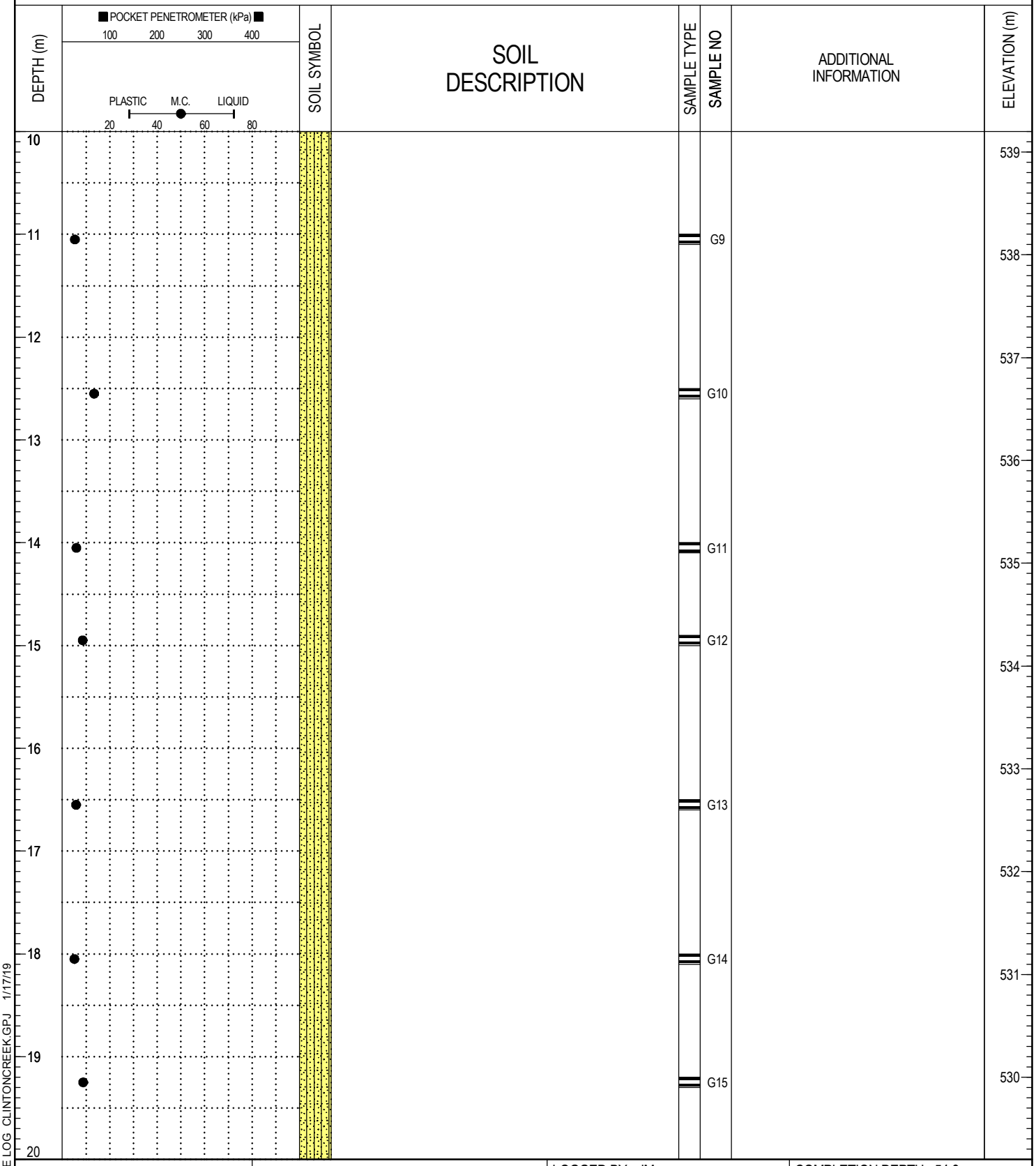
LOGGED BY: JM | COMPLETION DEPTH: 54.9 m
ENTERED BY: AB | COMPLETION DATE: 9/1/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-17**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7148026.54 EASTING: 513517.34	ELEVATION: 549.2 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ☰ GRAB ▥ MUD RETURN ◧ CORE RETURN



BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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LOGGED BY: JM	COMPLETION DEPTH: 54.9 m
ENTERED BY: AB	COMPLETION DATE: 9/1/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-17**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7148026.54 EASTING: 513517.34	ELEVATION: 549.2 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
20						529
21				G16		528
					Thermistor #4755: Top node installed @ 21.4 m	
22				G17		527
23						526
				G18	Water level measured @ 23.5 m on 9/17/2018 VWP # 52023: Installed @ 23.8 m	
24						525
25				G19		524
26				G20		523
27						522
28				G21		521
29				G22		520
30		29.8m **SAND (SM)** , silty, gravelly, fine to medium grained, <3				

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

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LOGGED BY: JM	COMPLETION DEPTH: 54.9 m
ENTERED BY: AB	COMPLETION DATE: 9/1/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-17**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7148026.54 EASTING: 513517.34	ELEVATION: 549.2 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100, 200, 300, 400

PLASTIC M.C. LIQUID: 20, 40, 60, 80

DEPTH (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
30	cm dia., sub-rounded gravel, dense/stiff, yellowish brown, moist to wet [Colluvium]		G23	Gravel: 28.5%, Sand: 42.5%, Silt/Clay: 29.0%	
			PP1	Pocket Pen 1 (PP1) at 30.0 m: 3.0 kg/cm2	519
	30.5m				
	SAND and SILT(SM) to silty, some gravel, fine grained, <2 cm dia., sub-rounded to rounded gravel, dense/stiff, light grey to dirty white, wet [Colluvium]		G24		
31			G25		
					518
			PP2	PP2 at 31.7 m: 3.5 kg/cm2	
32					
					517
			G26		
	32.6m				
	SAND and SILT(SM) to silty, trace gravel, fine grained, <2 cm dia., sub-rounded gravel, very dense/stiff, orange brown, moist [Colluvium]		PP3	PP3 at 32.6 m: 3.5 kg/cm2	
33			G27	PP4 at 32.9 m: 3.5 kg/cm2	
			PP4		516
	33.5m				
	SILT(ML) , some sand, trace gravel, stiff, non-plastic, weathered [Colluvium]				
34	34.1m		G28		
	SILT(ML), trace clay, trace sand, fine to medium grained sand, dense/stiff, grey, moist [Colluvium]				515
			PP5	PP5 at 34.3 m: 3.0 kg/cm2	
			G29		
			PP6	PP6 at 34.7 m: 2.5 kg/cm2	
35			G30	Gravel: 0.0%, Sand: 9.3%, Silt/Clay: 90.7%	
			PP7	PP7 at 35.0 m: 4.5 kg/cm2	514
				Thermistor #4755: Bottom node installed @ 35.4 m	
	35.7m				
	SAND and GRAVEL(SM) , some silt, trace clay, medium to coarse grained sand, well-graded, <2 cm dia., sub-angular to sub-rounded gravel, compact to dense, grey, moist [Colluvium]				
36	36.1m		G31		
	SAND and SILT(SM) , trace gravel, medium to coarse grained sand, fine grained gravel, <0.5 cm dia., sub-rounded gravel, compact, yellowish brown, moist [Colluvium]		G32	Gravel: 0.5%, Sand: 56.3%, Silt/Clay: 43.2%	513
37			G33		
					512
	37.5m				
	SAND and SILT(SM) , trace gravel, fine to medium grained sand, <1 cm dia., sub-angular gravel, light to dark grey, moist [Colluvium]		G34	PP8 at 37.8 m: 2.5 kg/cm2	
38			PP8		
			PP9	PP9 at 38.1 m: 3.0 kg/cm2	511
	38.4m				
	SAND(SM) , some silt, trace gravel to gravelly, fine to coarse grained sand, <2 cm dia., sub-rounded to sub-angular gravel, dense to very dense, light grey, moist [Colluvium]		G35		
39					
			G36		510
40			G37		

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

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LOGGED BY: JM	COMPLETION DEPTH: 54.9 m
ENTERED BY: AB	COMPLETION DATE: 9/1/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-17**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7148026.54 EASTING: 513517.34	ELEVATION: 549.2 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
40		40.2m			Difficult drilling at 40.2 m for 4.0 m	509
		SAND and SILT(SM) , some gravel to gravelly, fine to coarse grained, <4 cm dia., sub-rounded to sub-angular gravel, dense to very dense, no visible structure , orange brown to light brown, moist [Colluvium]				
41				G38	Gravel: 13.1%, Sand: 47.0%, Silt/Clay: 39.9%	508
42						507
		...below 42.4 m trace cobbles, quartzite, >200 mm dia., sub-rounded to sub-angular gravel		G39		
43		...at 42.7 m trace cobbles throughout (75 mm - 100 mm dia.), well-graded, striations on sub-angular gravel, some red oxidation cementing of soil particles		G40	Gravel: 14.6%, Sand: 45.8%, Silt/Clay: 39.7%	506
44				G41		505
45				G42		504
		...below 45.7 m quartzite gravel and cobbles (75 mm - 200 mm dia.), most gravel is sub-angular		G43		
46						503
					VWP # 52026: Installed @ 46.7 m	
47				G44	Gravel: 23.4%, Sand: 40.9%, Silt/Clay: 35.7%	502
		47.9m				
48		**BEDROCK** , highly weathered, black, shows schistosity [Quartz Muscovite Schist]		G45		501
49		...at 48.8 m dark grey to black, anisotropic, some schistosity, highly weathered and highly fractured Spacing: 3 cm - 6 cm (occasional) , Geometry: planar , Orientation: unidirectional (parallel) , Core Breakage: hand force , Roughness: smooth , Sheen : dull ...from 48.8 m to 49.0 m highly fractured ...at 49.0 m planar at 15° angle, JRC = 5		Core1	Switch to HQ3 Coring @ 48.8 m Core Run #1: (48.8 m - 50.3 m) TCR: 63% NF = >10 RQD = 39%	500
50						

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LOGGED BY: JM | COMPLETION DEPTH: 54.9 m
ENTERED BY: AB | COMPLETION DATE: 9/1/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-17**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7148026.54 EASTING: 513517.34	ELEVATION: 549.2 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ☰ GRAB ▥ MUD RETURN ◧ CORE RETURN

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400 / PLASTIC M.C. LIQUID 20 40 60 80	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
50			...at 49.4 m planar at 0-5° angle, JRC = 10 ...at 49.6 m planar at 25° angle, JRC = 5 ...from 49.8 m to 50.3 m possibly gouge, rock strength 2 - very weak, yellow (suphide veins) and white(quartz veins) evident, aperture - tight			Core Run #2: (50.3 m - 51.8 m) TCR: 47% NF = >20 RQD = 0%	499
51			50.3m ...at 50.3 m clay gouge, medium grey, highly weathered Spacing: < 1 cm (abundant), Geometry: planar to semi-curved, Orientation: unidirectional (parallel), Core Breakage: hand force to falls apart, Roughness: pock marked, Sheen : dull		Core2		498
52			...from 51.0 m to 51.8 m highly fractured, completely to highly weathered All natural fractures - at 60° angle, rock strength <1, antisotropic, very weak, aperature - extremely narrow 51.8m			Core Run #3: (51.8 m - 53.4 m) TCR: 53% NF = >20 RQD = 0%	497
53			...at 51.8 m highly fractured, highly weathered and altered, brown to grey, fractures at 60° to 20° angle, fractures in-filled with oxidation staining, planar fractures, rock strength <1 - very weak Spacing: < 5 cm (occasional), Geometry: planar to semi-curved, Orientation: unidirectional (parallel), Core Breakage: falls apart, Roughness: pock marked, Sheen : dull		Core3		496
54			53.4m ...at 51.8 m highly anisotropic, altered and weathered, brown to dark grey, schistosity and folding evident, fractures at 70° angle, oxidation staining, rock strength <1 - very weak Spacing: < 5 cm (occasional), Geometry: planar to undulating natural fractures, Orientation: unidirectional (parallel), Core Breakage: hand force to falls apart, Roughness: pitted, Sheen : dull 54.9m		Core4	Core Run #4: (53.4 m - 54.9 m) TCR: 74% NF = >20 RQD = 0%	495
55			**END OF BOREHOLE @ 54.9 m** - Water level @ 16.25 m at time of completion. - No Frozen Soils encountered. - 2 VWP's, 1 Thermistor, and 1 SI were installed in the borehole. VWP's and Thermistor were taped to outside of SI and borehole was grouted using a tremie from bottom of hole. The VWP's were placed in sand packs.				494
56							493
57							492
58							491
59							490
60							

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

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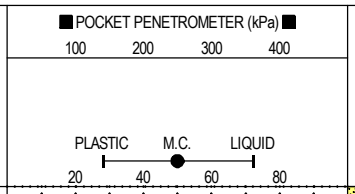
LOGGED BY: JM	COMPLETION DEPTH: 54.9 m
ENTERED BY: AB	COMPLETION DATE: 9/1/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-18**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7146035.27 EASTING: 513349.92	ELEVATION: 495.8 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN



DEPTH (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
0	**GRAVEL(GW-GM)** , sandy, trace silt, well-graded, <5 cm dia., flat, angular to sub-angular gravel, dark grey/green, dry [Waste Rock]			Not Frozen to 26.2 m	495
1			G1		
2	...below 1.8 m flat to equi-dimensional, trace cobbles, dark grey				494
3			G2	Gravel: 58.1%, Sand: 30.1%, Silt/Clay: 11.8%	493
4					492
5					491
6	...form 5.8 m to 6.1 m boulder		G3		490
7			G4		489
8					488
9					487
10			G5	Gravel: 62.6%, Sand: 29.3%, Silt/Clay: 8.1%	486

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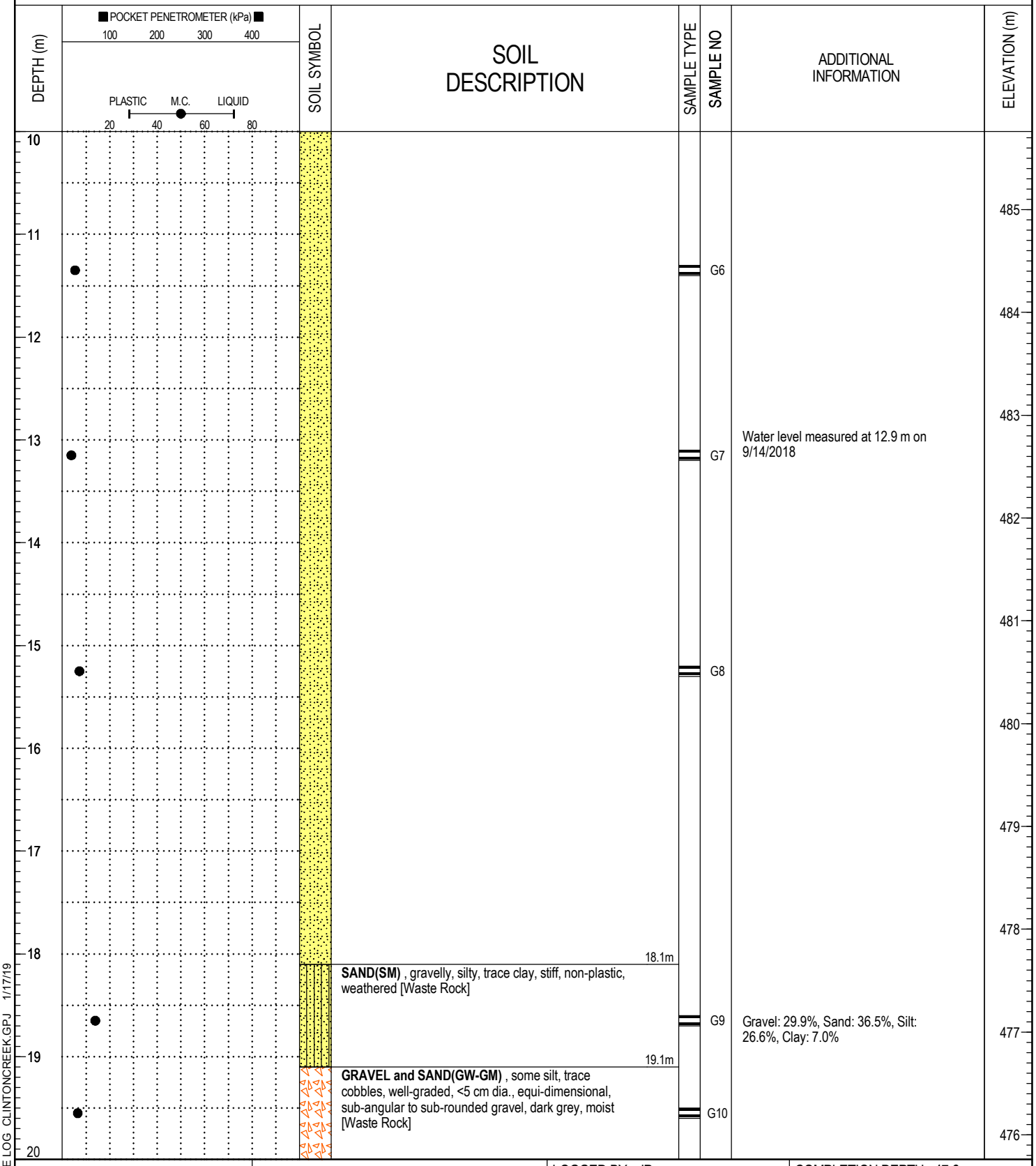
LOGGED BY: JP	COMPLETION DEPTH: 47.6 m
ENTERED BY: AB	COMPLETION DATE: 9/12/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-18**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7146035.27 EASTING: 513349.92	ELEVATION: 495.8 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ☰ GRAB ▥ MUD RETURN ◧ CORE RETURN



BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

Environment & Infrastructure Solutions
600 - 4445 Lougheed Highway
Burnaby, BC V5C 0E4

LOGGED BY: JP	COMPLETION DEPTH: 47.6 m
ENTERED BY: AB	COMPLETION DATE: 9/12/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-18**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7146035.27 EASTING: 513349.92	ELEVATION: 495.8 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
20		20.1m **SILT(ML)** , some gravel, gap-graded, <3 cm dia., sub-angular to sub-rounded gravel, grey [Colluvium]				
21		21.3m **GRAVEL and SAND(GW-GM)** , some silt, well-graded, <3 cm dia., sub-angular to sub-rounded gravel, grey, moist [Colluvium]		G11		475
22				G12		474
23						473
24				G13		472
25						471
26		26.2m **SAND(SM)** , gravelly, some silt, trace clay, well-graded, <3 cm dia., sub-angular to sub-rounded gravel, grey, NF [Colluvium]		G14	Gravel: 28.3%, Sand: 46.8%, Silt: 19.9%, Clay: 5.0%	470
				G15		
				G16		469
27				G17	Gravel: 29.1%, Sand: 45.1%, Silt: 17.8%, Clay: 8.0%	
				G18		
				G19		468
28				G20		
				G21	Gravel: 24.2%, Sand: 45.5%, Silt: 22.3%, Clay: 8.0%	
				G22		467
29		...from 28.7 m to 29.3 m trace organics, moist, not frozen		G23		
		...below 29.3 m NF		G24		
				G25		466
30				G26		

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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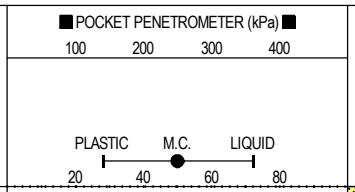
LOGGED BY: JP	COMPLETION DEPTH: 47.6 m
ENTERED BY: AB	COMPLETION DATE: 9/12/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-18**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7146035.27 EASTING: 513349.92	ELEVATION: 495.8 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN



DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
30				G27		
				G28	VWP #52021: Installed @ 30.5 m	
				G29		465
31				G30		
		...from 31.4 m to 33.8 m Vx		G31	Gravel: 3.4%, Sand: 21.2%, Silt: 63.4%, Clay:12.0%	
				G32		464
32				G33		
				G34		
				G35		463
33				G38		
				G39		
				G40	Gravel: 16.3%, Sand: 64.6%, Silt: 14.1%, Clay: 5.0%	
		33.8m				462
34		**SILT(ML)** , some gravel, poorly-graded, <3 cm dia., sub-angular to sub-rounded gravel, grey, NF [Colluvium]		G41		
				G42		
				G43		
		34.7m				
		GRAVEL(GM) , sandy, silty, well-graded, <3 cm dia., flat, sub-angular to sub-rounded gravel, grey, not frozen [Colluvium]		G44		461
35				G45	Gravel: 49.2%, Sand: 27.6%, Silt/Clay: 23.2%	
		35.4m				
		SAND and SILT(SM) , gravelly, soft/loose, non-plastic, grey, not frozen [Colluvium]				460
36				G46		
		...below 36.3 m some gravel, firm, low-plasticity, dark grey			VWP #52029: Installed @ 36.6 m	
						459
37				G47	Gravel: 27.4%, Sand: 36.7%, Silt/Clay: 35.9%	
		37.2m				
		SAND and GRAVEL(SW-SM) , trace silt, well-graded, <5 cm dia., flat, sub-angular to sub-rounded gravel, dark grey, seams of black, dry, not frozen [Colluvium]				458
				G48		
38						
		38.4m				
		SILT(ML) , some gravel, firm, low-plasticity, dark grey, not frozen [Colluvium]				457
39				G49		
		39.6m				
		BEDROCK , dark grey/orange, pieces fall apart in hands [Argillite]				456
40						

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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LOGGED BY: JP
ENTERED BY: AB
COMPLETION DEPTH: 47.6 m
COMPLETION DATE: 9/12/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-18**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7146035.27 EASTING: 513349.92	ELEVATION: 495.8 m

SAMPLE TYPE ■ TUBE ⊘ NO RECOVERY ⊠ SPLIT SPOON ☰ GRAB ▥ MUD RETURN ◧ CORE RETURN

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400 / PLASTIC M.C. LIQUID 20 40 60 80	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
40			...between 39.6 m to 42.4 feels cold to the touch - not frozen				455
41							
42							454
43							453
44							452
45							451
46							450
47			47.6m				449
48			**END OF BOREHOLE @ 47.6 m** - Water level @ 14.91 m at time of completion. - 2 VWP's installed by taping to outside of a 2.5 cm dia. PVC pipe. VWP #52029 was placed in a sand pack with 30 cm above and 60 cm below VWP. VWP #52021 was placed in sand pack. Borehole was backfilled with grout using a tremie from the bottom.				448
49							447
50							446

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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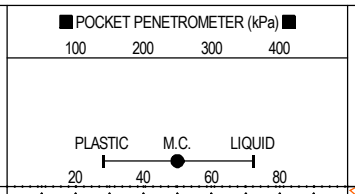
LOGGED BY: JP	COMPLETION DEPTH: 47.6 m
ENTERED BY: AB	COMPLETION DATE: 9/12/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-19**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7146320.35 EASTING: 513549.17	ELEVATION: 444.9 m

SAMPLE TYPE ■ TUBE ▨ NO RECOVERY ▩ SPLIT SPOON ▤ GRAB ▥ MUD RETURN ◧ CORE RETURN



DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
0		**SAND(SM)** , gravelly, some silt, trace cobbles, well-graded, <5 cm dia., angular to sub-angular gravel, grey, dry [Waste Rock]			Not Frozen to 10.2 m	
1						444
				G1		
2		...below 1.8 m grey to green, fibrous				443
3				G2	Gravel: 24.3%, Sand: 63.2%, Silt/Clay: 12.5%	442
4						441
		4.6m				
		TOPSOIL , some sand, some gravel, some organics (wood), black, moist		G3		
		4.9m				
5		**SAND and ORGANICS(SW-SM)** , some silt, some gravel, <3 cm dia., angular to sub-angular gravel, black, moist [Colluvium]				440
6						439
7				G4		438
		7.9m				
8		**GRAVEL and SILT(GM)** , sandy, gap-graded, <3 cm dia., angular to sub-angular gravel, grey, moist [Colluvium]				437
9				G5	Gravel: 41.9%, Sand: 22.6%, Silt/Clay: 35.5%	436
10						435

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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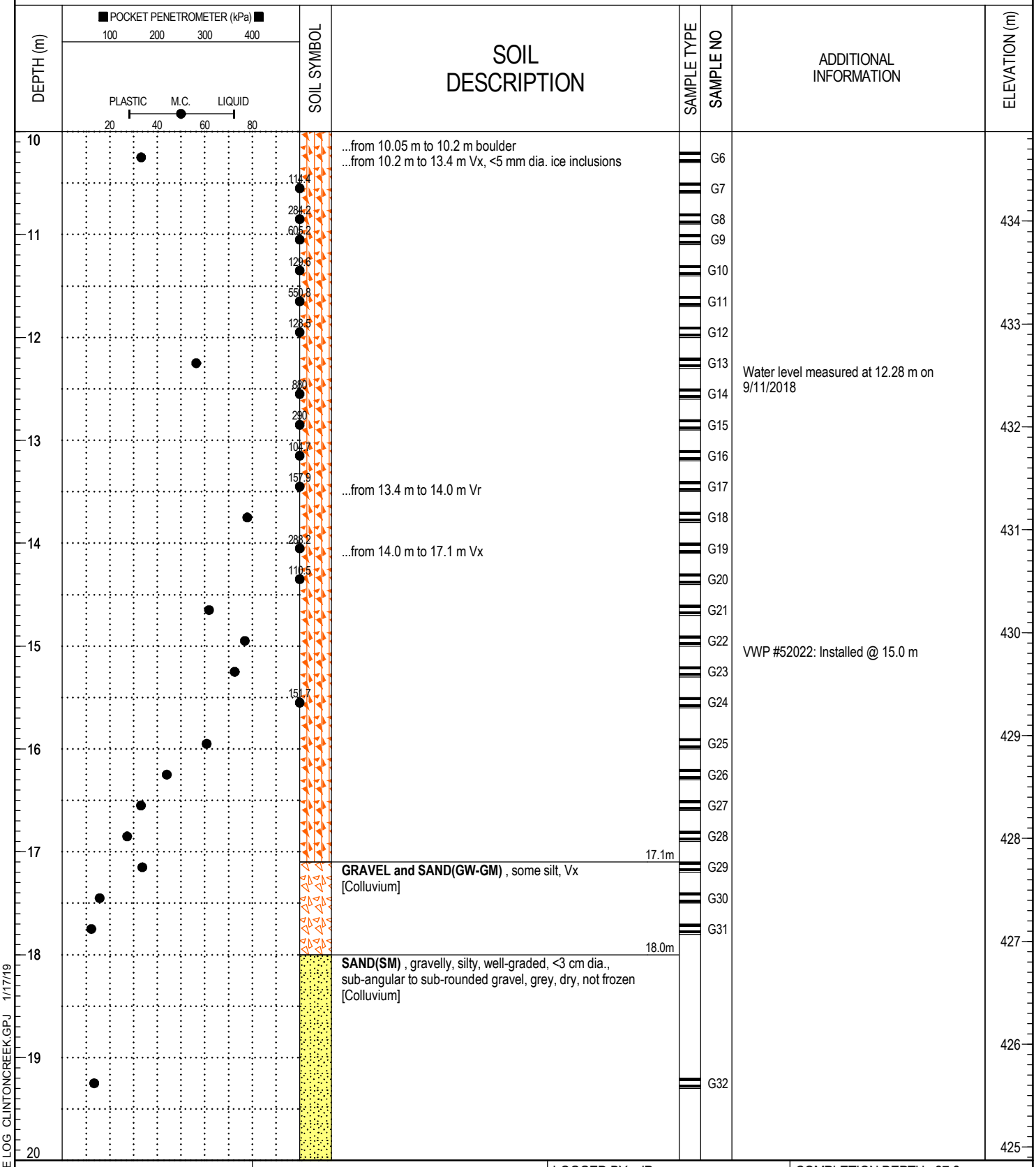
LOGGED BY: JP	COMPLETION DEPTH: 37.8 m
ENTERED BY: AB	COMPLETION DATE: 9/11/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-19**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7146320.35 EASTING: 513549.17	ELEVATION: 444.9 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN



BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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600 - 4445 Lougheed Highway
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LOGGED BY: JP	COMPLETION DEPTH: 37.8 m
ENTERED BY: AB	COMPLETION DATE: 9/11/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-19**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7146320.35 EASTING: 513549.17	ELEVATION: 444.9 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
20	...below 20.1 m gravel, <4 cm dia., trace cobbles				
			G33	Gravel: 27.0%, Sand: 48.4%, Silt/Clay: 24.6%	424
21					
22			G34		423
23	...below 23.15 m gravel, <3 cm dia., trace disks of rock - possibly weather bedrock, no cobbles				422
24					421
			G35		420
25	...below 25.6 m color changes to beige				
26	...below 26.2 m some to trace gravel, varying brown to black				419
			G36		418
27					
28					417
			G37		
29					416
	...below 29.3 m some gravel, brown				
			G38		415
30	30.0m				

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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LOGGED BY: JP | COMPLETION DEPTH: 37.8 m
ENTERED BY: AB | COMPLETION DATE: 9/11/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-19**
DRILLER: Mud Bay Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic/HQ3	NORTHING: 7146320.35 EASTING: 513549.17	ELEVATION: 444.9 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
30		**BEDROCK** , weathered, pucks of rock due to sonic, not frozen [Argillite]			VWP #52027: Installed @ 30.0 m	
31						414
32		32.3m				413
		BEDROCK [Argillite]				
33						412
34						411
35						410
36				Core1	Switch to HQ3 Coring @ 35.3 m Core Run #1: (35.3 m - 36.3 m) TCR = 70% AF = 4	409
37				Core2	Core Run #2: (36.3 m - 37.8 m) TCR = 70%	408
		37.8m				
38		**END OF BOREHOLE @ 37.8 m** - Water level @ 12.28 m at time of completion. - 2 VWP's installed by taping to outside of a 2.5 cm dia. PVC pipe. VWP's were placed in sand packs with 60 cm of filter sand above and 30 cm below VWP's. Borehole was backfilled with bentonite.				407
39						406
40						405

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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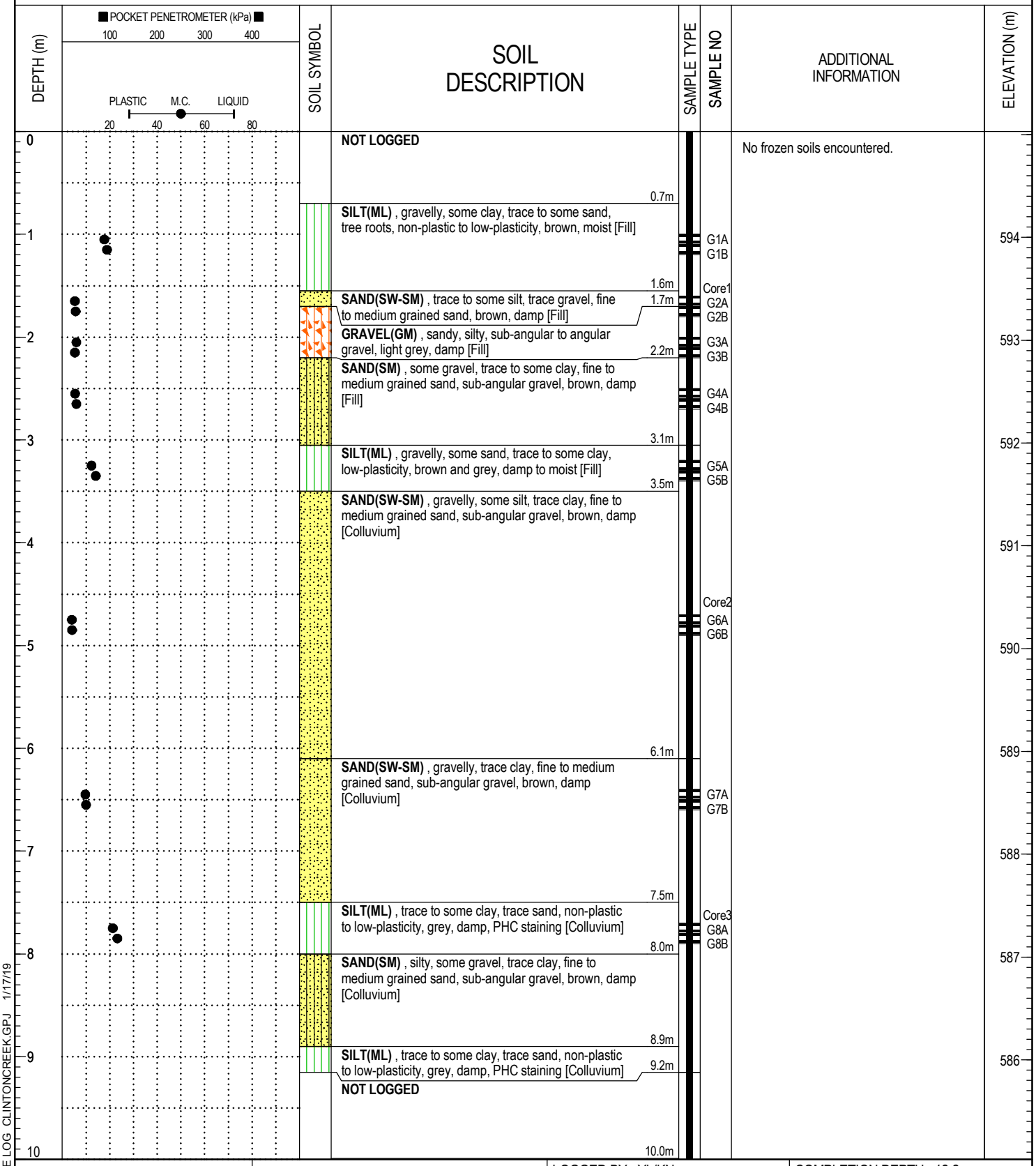
LOGGED BY: JP	COMPLETION DEPTH: 37.8 m
ENTERED BY: AB	COMPLETION DATE: 9/11/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-20**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7148199.03 EASTING: 513112.05	ELEVATION: 595.0 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN



BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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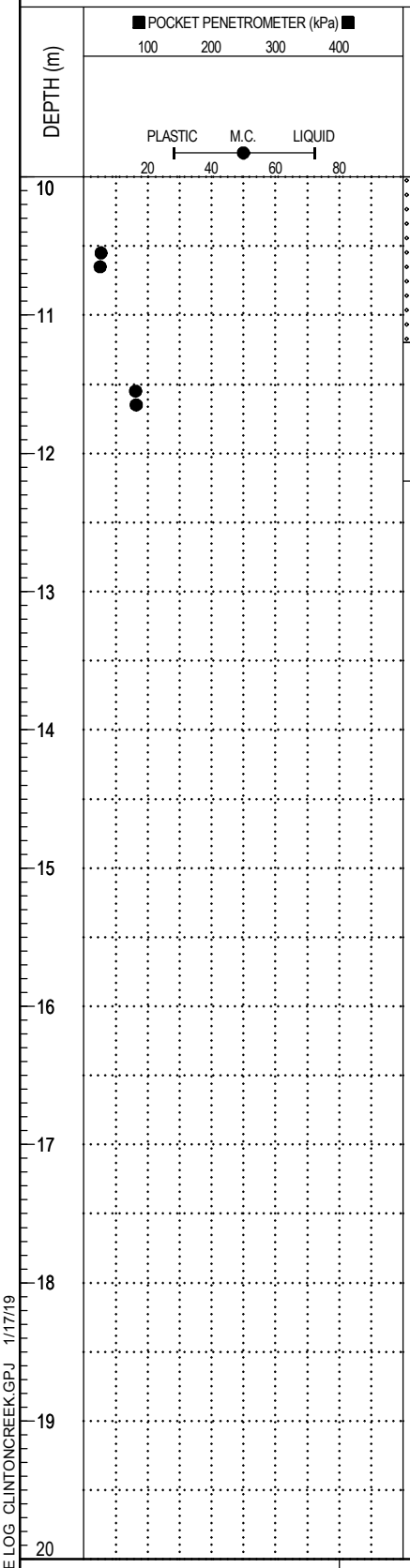
Burnaby, BC V5C 0E4

LOGGED BY: YL/KN	COMPLETION DEPTH: 12.2 m
ENTERED BY: AB	COMPLETION DATE: 8/13/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-20**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7148199.03 EASTING: 513112.05	ELEVATION: 595.0 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN



DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
10		**SAND(SM)** , gravelly, silty, fine to medium grained sand, brown, moist [Colluvium]		G9A G9B Core4		
11		11.2m **SILT(ML)** , some gravel, trace clay, trace sand, non-plastic to low-plasticity, grey, damp, PHC staining [Colluvium]		G10A G10B		584
12		12.2m **END OF BOREHOLE @ 12.2 m** - No groundwater seepage encountered. - No frozen soils encountered.				583
13						582
14						581
15						580
16						579
17						578
18						577
19						576
20						

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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LOGGED BY: YL/KN	COMPLETION DEPTH: 12.2 m
ENTERED BY: AB	COMPLETION DATE: 8/13/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-21**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7148307.25 EASTING: 513050.73	ELEVATION: 594.9 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

POCKET PENETROMETER (kPa): 100 200 300 400

PLASTIC M.C. LIQUID: 20 40 60 80

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
0		**GRAVEL(GM)** , silty, some sand, trace to some clay, sub-angular gravel, grey [Fill]		G1A G1B	No frozen soils encountered.	
1		1.5m				594
2		**SAND(SM)** , silty, some gravel, trace clay, fine to medium grained sand, sub-angular to sub-rounded gravel, brown [Fill]		G2A G2B		593
3		3.1m				592
		SAND(SW-SM) , gravelly, trace silt, fine to medium grained sand, sub-angular to sub-rounded gravel, brown [Fill]				
		3.7m				
		SILT(ML) , trace clay, grey [Fill]		G3A G3B		
4		4.0m				591
		SAND(SW-SM) , gravelly, trace silt, fine to medium grained sand, sub-angular to sub-rounded gravel, brown [Colluvium]				
5				G4A G4B		590
6		6.1m				589
		GRAVEL(GW-GM) , sandy, some silt, sub-angular to sub-rounded gravel, brown [Colluvium]				
7		7.2m		G5A G5B		588
		SILT(ML) , trace clay, grey [Colluvium]				
8				G6A G6B		587
		8.5m				
		SAND(SW-SM) , gravelly, trace silt, fine to medium grained sand, sub-angular to sub-rounded gravel, brown [Colluvium]				
9		9.2m				586
		SAND(SM) , gravelly, some silt to silty, fine to medium grained sand, sub-angular to sub-rounded gravel, brown to grey [Colluvium]		G7A G7B		
10						585

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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600 - 4445 Lougheed Highway
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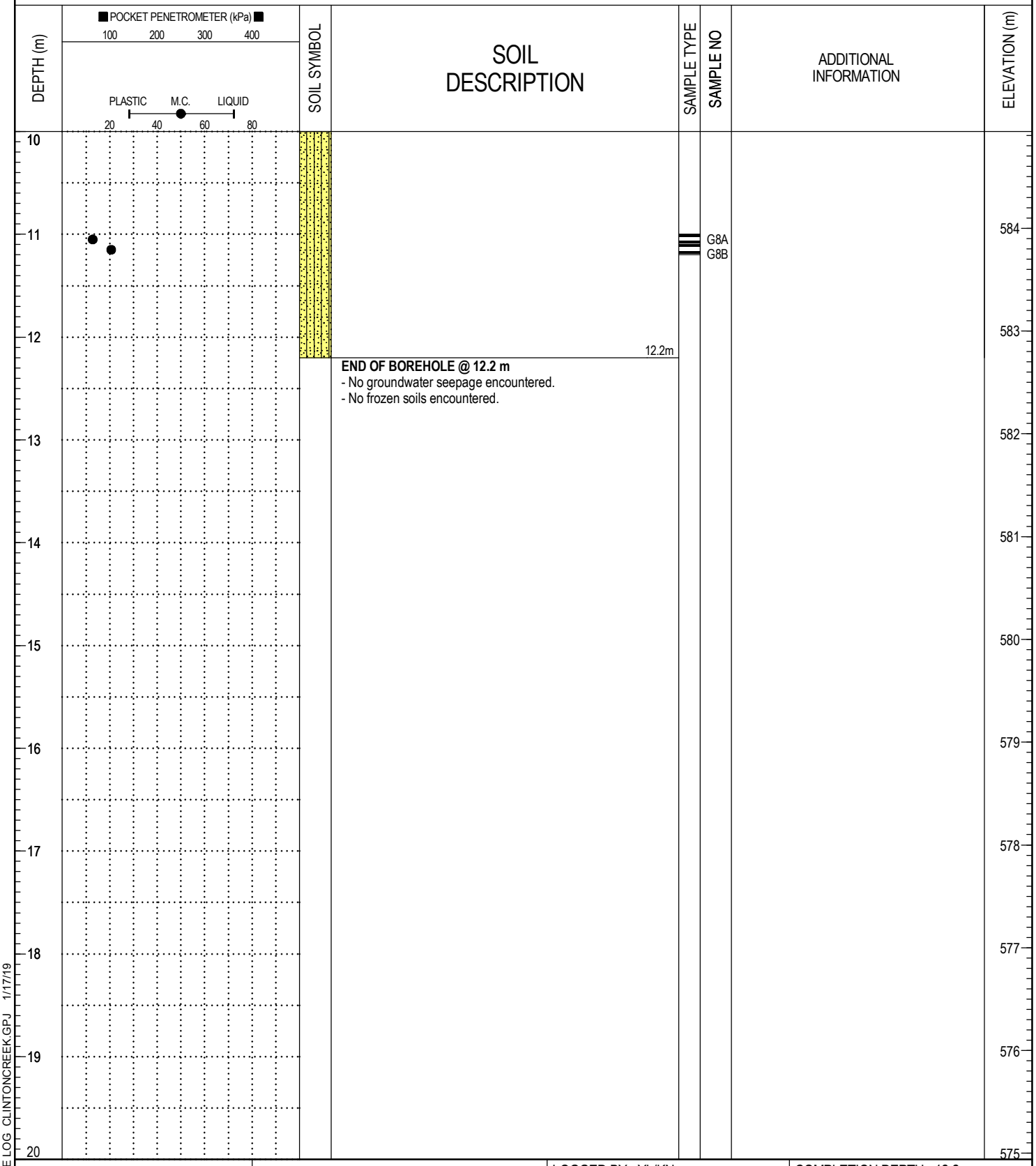
LOGGED BY: YL/KN
ENTERED BY: AB
COMPLETION DEPTH: 12.2 m
COMPLETION DATE: 8/1/2018

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	BOREHOLE NO: **BH18-21**
DRILLER: Midnight Sun Drilling	Clinton Creek, Yukon	PROJECT NO: VE52705B
DRILL TYPE/METHOD: Sonic	NORTHING: 7148307.25 EASTING: 513050.73	ELEVATION: 594.9 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN

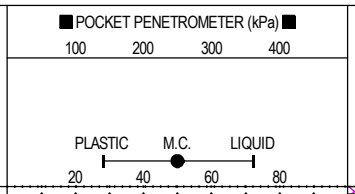


wood.	**Environment & Infrastructure Solutions** **600 - 4445 Lougheed Highway** **Burnaby, BC V5C 0E4**	LOGGED BY: YL/KN	COMPLETION DEPTH: 12.2 m
		ENTERED BY: AB	COMPLETION DATE: 8/1/2018
			Page 2 of 2

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

CLIENT: Government of Yukon - Energy, Mines, & Resources	PROJECT: Clinton Creek Remediation Project	TEST PIT NO: **TP18-08**
CONTRACTOR: Wood	Clinton Creek, Yukon	PROJECT NO: VE52705B
EXCAVATION METHOD: Hand Dug Test Pit in Cut Bank	NORTHING: 7147492.78 EASTING: 513073.57	ELEVATION: 442.3 m

SAMPLE TYPE: TUBE | NO RECOVERY | SPLIT SPOON | GRAB | MUD RETURN | CORE RETURN



DEPTH (m)	SOIL DESCRIPTION		SAMPLE TYPE	SAMPLE NO	ADDITIONAL INFORMATION	ELEVATION (m)
0	**TOPSOIL** , forest litter, roots, soft, brown to black, moist	0.1m		G1	No frozen soils encountered.	442
		0.2m		G2		
	SAND(SW-SM) , some silt, trace to some gravel, medium to coarse grained sand, <1 cm dia., angular to sub-angular gravel, loose, light brown, moist [Colluvium]	0.3m		G3		
		0.6m				
1	**TOPSOIL** , wood, roots, old topsoil, some sand, some silt, soft, black to brown, damp	0.6m				
	SAND(SW-SM) , some silt, fine to medium grained sand, angular to sub-angular gravel (<8 cm dia., oblong in shape, flat and long), compact, medium brown, damp, quartzite gravel [Colluvium]			G4		441
				G5		
2	**SAND(SW-SM)** , some silt, fine grained, compact, interbedded organic rich layers (dark brown), light brown, damp [Colluvium]	1.5m				440
	GRAVEL(GW-GM) , some sand to sandy, trace silt, max size 10 cm dia., flat, angular gravel, compact, dark grey, damp. Possible old landslide deposit with interbedded fine sand, some silt, trace organics up to approx. 10 cm thick, compact, med. to dark brown, damp [Colluvium]	1.6m				439
3	**GRAVEL(GW)** , trace cobbles, angular gravel, dense at bottom of test pit					438
4	**END OF HOLE @ 1.6 m** - No groundwater seepage encountered. - No frozen soild encountered.					437
5						436
6						435
7						434
8						433
9						
10						

BOREHOLE LOG CLINTONCREEK.GPJ 1/17/19

wood.

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LOGGED BY: JM	COMPLETION DEPTH: 1.6 m
ENTERED BY: AB	COMPLETION DATE: 9/8/2018
	Page 1 of 1

Appendix C
ConeTec CPT Report

PRESENTATION OF SITE INVESTIGATION RESULTS

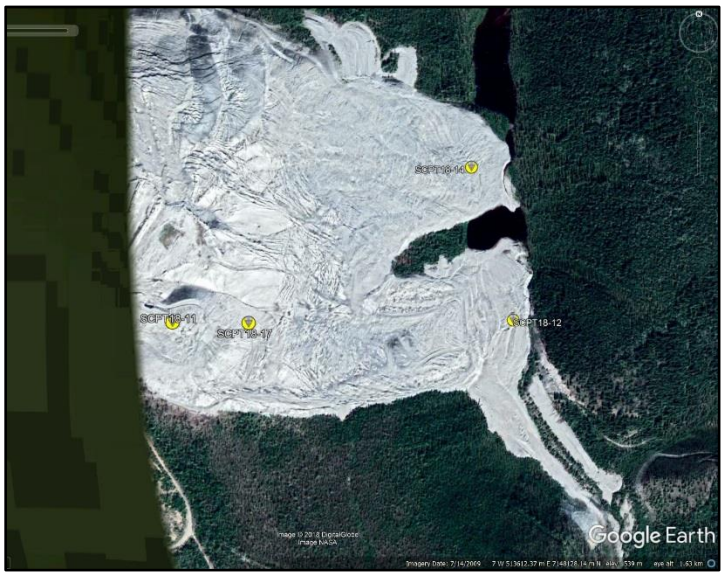
Clinton Creek

Prepared for:

Wood plc

ConeTec Job No: 18-02069

Project Start Date: 26-Aug-2018
Project End Date: 03-Sep-2018
Report Date: 13-Sep-2018



Prepared by:

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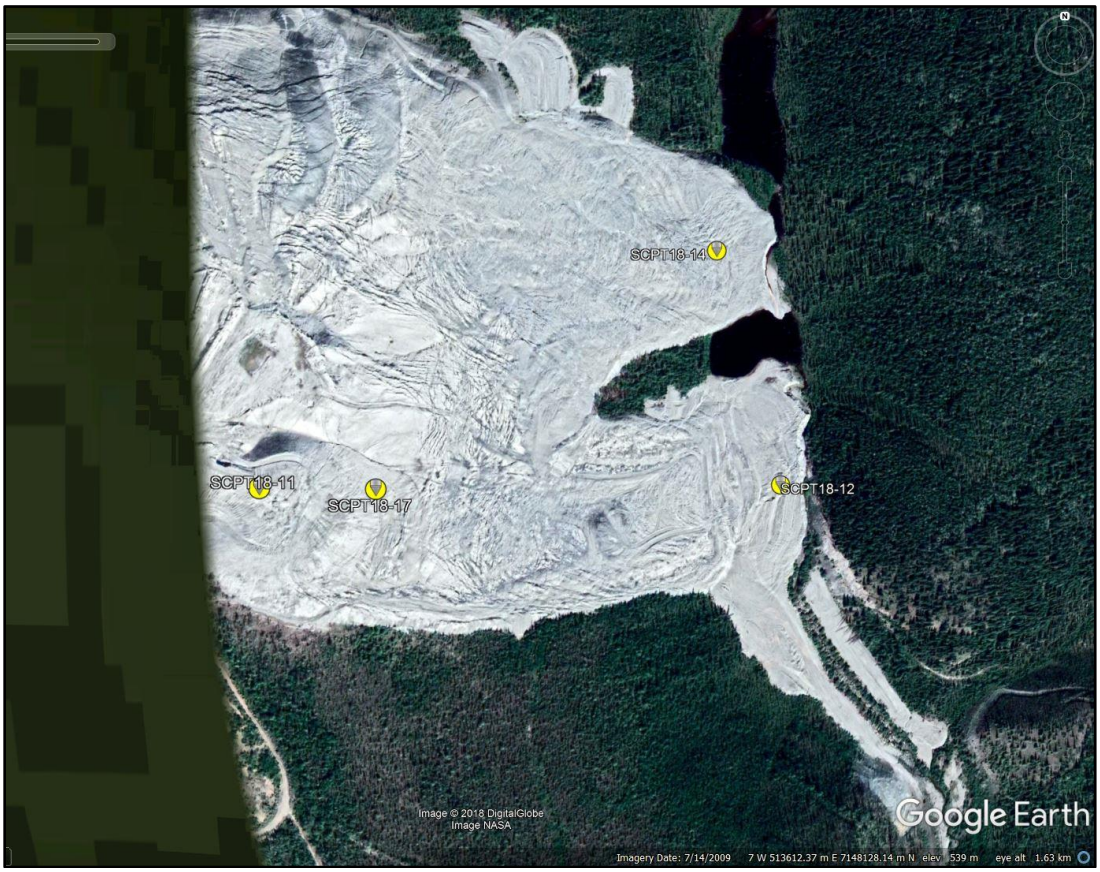
Introduction

The enclosed report presents the results of the site investigation program conducted by ConeTec Investigations Ltd. for Wood plc at Clinton Creek, YT. The program consisted of four seismic cone penetration tests (SCPT) and one downhole seismic test (DST).

Project Information

Project	
Client	Wood plc
Project	Clinton Creek
ConeTec project number	18-02069

An overview map displaying the CPT test locations is presented below.



Rig Description	Deployment System	Test Type
Portable	Drill rig	SCPT, DST

Coordinates		
Test Type	Collection Method	EPSG Number
SCPT, DST	Consumer grade GPS	32607

Cone Penetration Test (CPT)	
Depth reference	Depths are referenced to the existing ground surface at the time of each test.
Tip and sleeve data offset	0.1 meter This has been accounted for in the CPT data files.
Additional plots	Soil behaviour type (SBT) scatter plots, seismic CPT plots, temperature dissipation plots, and advanced plots are provided in the data release package.

Cone Penetrometers Used for this Project						
Cone Description	Cone Number	Cross Sectional Area (cm^2)	Sleeve Area (cm^2)	Tip Capacity (bar)	Sleeve Capacity (bar)	Pore Pressure Capacity (psi)
511:T1500F15U1K	511	15	225	1500	15	1000
Cone 511 was used for all the soundings.						

Calculated Geotechnical Parameter Tables	
Additional information	The Normalized Soil Behaviour Type Chart based on Q_{tn} (SBT Q_{tn}) (Robertson, 2009) was used to classify the soil for this project. A detailed set of calculated CPT parameters have been generated and are provided in Excel format files in the release folder. The CPT parameter calculations are based on values of corrected tip resistance (q_t) sleeve friction (f_s) and pore pressure (u_2). Soils were classified as either drained or undrained based on the Normalized Soil Behaviour Type Chart (SBT Q_{tn}) (Robertson, 2009). Calculations for both drained and undrained parameters were included for materials that classified as silt mixtures – clayey silt to silty clay (zone 4).

Downhole Seismic Test (DST)	
Depth reference	Depths are referenced to the existing ground surface at the time of each test
Recorded depth interval	Tests were performed at 1 meter intervals
Sampling frequency and length	16kHz for 0.5s
Seismic Source	Beam

Additional comments	Compression wave velocity data was not reported due to insufficient data quality.

Limitations

This report has been prepared for the exclusive use of Wood plc (Client) for the project titled “Clinton Creek”. The report’s contents may not be relied upon by any other party without the express written permission of ConeTec Investigations Ltd. (ConeTec). ConeTec has provided site investigation services, prepared the factual data reporting and provided geotechnical parameter calculations consistent with current best practices. No other warranty, expressed or implied, is made.

The information presented in the report document and the accompanying data set pertain to the specific project, site conditions and objectives described to ConeTec by the Client. In order to properly understand the factual data, assumptions and calculations, reference must be made to the documents provided and their accompanying data sets, in their entirety.

The cone penetration tests (CPTu) are conducted using an integrated electronic piezocone penetrometer and data acquisition system manufactured by Adara Systems Ltd. of Richmond, British Columbia, Canada.

ConeTec's piezocone penetrometers are compression type designs in which the tip and friction sleeve load cells are independent and have separate load capacities. The piezocones use strain gauged load cells for tip and sleeve friction and a strain gauged diaphragm type transducer for recording pore pressure. The piezocones also have a platinum resistive temperature device (RTD) for monitoring the temperature of the sensors, an accelerometer type dual axis inclinometer and a geophone sensor for recording seismic signals. All signals are amplified down hole within the cone body and the analog signals are sent to the surface through a shielded cable.

ConeTec penetrometers are manufactured with various tip, friction and pore pressure capacities in both 10 cm^2 and 15 cm^2 tip base area configurations in order to maximize signal resolution for various soil conditions. The specific piezocone used for each test is described in the CPT summary table presented in the first Appendix. The 15 cm^2 penetrometers do not require friction reducers as they have a diameter larger than the deployment rods. The 10 cm^2 piezocones use a friction reducer consisting of a rod adapter extension behind the main cone body with an enlarged cross sectional area (typically 44 mm diameter over a length of 32 mm with tapered leading and trailing edges) located at a distance of 585 mm above the cone tip.

The penetrometers are designed with equal end area friction sleeves, a net end area ratio of 0.8 and cone tips with a 60 degree apex angle.

All ConeTec piezocones can record pore pressure at various locations. Unless otherwise noted, the pore pressure filter is located directly behind the cone tip in the "u_2" position (ASTM Type 2). The filter is 6 mm thick, made of porous plastic (polyethylene) having an average pore size of 125 microns (90-160 microns). The function of the filter is to allow rapid movements of extremely small volumes of water needed to activate the pressure transducer while preventing soil ingress or blockage.

The piezocone penetrometers are manufactured with dimensions, tolerances and sensor characteristics that are in general accordance with the current ASTM D5778 standard. ConeTec's calibration criteria also meets or exceeds those of the current ASTM D5778 standard. An illustration of the piezocone penetrometer is presented in Figure CPTu.

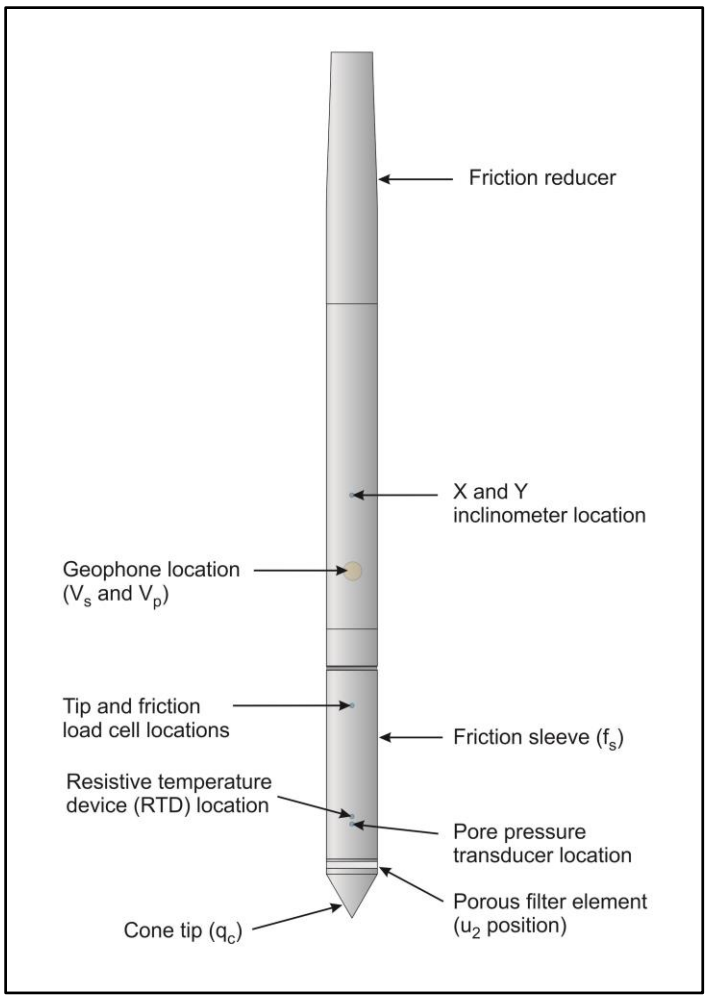


Figure CPTu. Piezocone Penetrometer (15 cm^2)

The ConeTec data acquisition systems consist of a Windows based computer and a signal conditioner and power supply interface box with a 16 bit (or greater) analog to digital (A/D) converter. The data is recorded at fixed depth increments using a depth wheel attached to the push cylinders or by using a spring loaded rubber depth wheel that is held against the cone rods. The typical recording intervals are either 2.5 cm or 5.0 cm depending on project requirements; custom recording intervals are possible. The system displays the CPTu data in real time and records the following parameters to a storage media during penetration:

- Depth
- Uncorrected tip resistance (q_c)
- Sleeve friction (f_s)
- Dynamic pore pressure (u)
- Additional sensors such as resistivity, passive gamma, ultra violet induced fluorescence, if applicable

All testing is performed in accordance to ConeTec's CPT operating procedures which are in general accordance with the current ASTM D5778 standard.

Prior to the start of a CPTu sounding a suitable cone is selected, the cone and data acquisition system are powered on, the pore pressure system is saturated with either glycerine or silicone oil and the baseline readings are recorded with the cone hanging freely in a vertical position.

The CPTu is conducted at a steady rate of 2 cm/s, within acceptable tolerances. Typically one meter length rods with an outer diameter of 1.5 inches are added to advance the cone to the sounding termination depth. After cone retraction final baselines are recorded.

Additional information pertaining to ConeTec's cone penetration testing procedures:

- Each filter is saturated in silicone oil or glycerine under vacuum pressure prior to use
- Recorded baselines are checked with an independent multi-meter
- Baseline readings are compared to previous readings
- Soundings are terminated at the client's target depth or at a depth where an obstruction is encountered, excessive rod flex occurs, excessive inclination occurs, equipment damage is likely to take place, or a dangerous working environment arises
- Differences between initial and final baselines are calculated to ensure zero load offsets have not occurred and to ensure compliance with ASTM standards

The interpretation of piezocone data for this report is based on the corrected tip resistance (q_t), sleeve friction (f_s) and pore water pressure (u). The interpretation of soil type is based on the correlations developed by Robertson (1990) and Robertson (2009). It should be noted that it is not always possible to accurately identify a soil type based on these parameters. In these situations, experience, judgment and an assessment of other parameters may be used to infer soil behaviour type.

The recorded tip resistance (q_c) is the total force acting on the piezocone tip divided by its base area. The tip resistance is corrected for pore pressure effects and termed corrected tip resistance (q_t) according to the following expression presented in Robertson et al, 1986:

$$q_t = q_c + (1\text{-}a) \bullet u_2$$

where: q_t is the corrected tip resistance
q_c is the recorded tip resistance
u_2 is the recorded dynamic pore pressure behind the tip (u_2 position)
a is the Net Area Ratio for the piezocone (0.8 for ConeTec probes)

The sleeve friction (f_s) is the frictional force on the sleeve divided by its surface area. As all ConeTec piezocones have equal end area friction sleeves, pore pressure corrections to the sleeve data are not required.

The dynamic pore pressure (u) is a measure of the pore pressures generated during cone penetration. To record equilibrium pore pressure, the penetration must be stopped to allow the dynamic pore pressures to stabilize. The rate at which this occurs is predominantly a function of the permeability of the soil and the diameter of the cone.

The friction ratio (Rf) is a calculated parameter. It is defined as the ratio of sleeve friction to the tip resistance expressed as a percentage. Generally, saturated cohesive soils have low tip resistance, high

friction ratios and generate large excess pore water pressures. Cohesionless soils have higher tip resistances, lower friction ratios and do not generate significant excess pore water pressure.

A summary of the CPTu soundings along with test details and individual plots are provided in the appendices. A set of interpretation files were generated for each sounding based on published correlations and are provided in Excel format in the data release folder. Information regarding the interpretation methods used is also included in the data release folder.

For additional information on CPTu interpretations, refer to Robertson et al. (1986), Lunne et al. (1997), Robertson (2009), Mayne (2013, 2014) and Mayne and Peuchen (2012).

Shear wave velocity testing is performed in conjunction with the piezocone penetration test (SCPTu) in order to collect interval velocities. For some projects seismic compression wave (Vp) velocity is also determined.

ConeTec's piezocone penetrometers are manufactured with a horizontally active geophone (28 hertz) that is rigidly mounted in the body of the cone penetrometer, 0.2 meters behind the cone tip.

Shear waves are typically generated by using an impact hammer horizontally striking a beam that is held in place by a normal load. In some instances an auger source or an imbedded impulsive source maybe used for both shear waves and compression waves. The hammer and beam act as a contact trigger that triggers the recording of the seismic wave traces. For impulsive devices an accelerometer trigger may be used. The traces are recorded using an up-hole integrated digital oscilloscope which is part of the SCPTu data acquisition system. An illustration of the shear wave testing configuration is presented in Figure SCPTu-1.

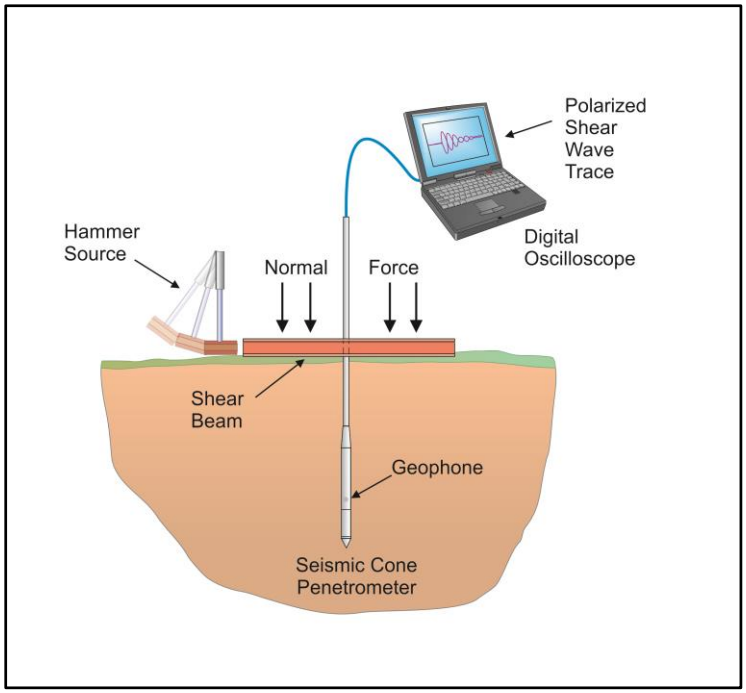


Figure SCPTu-1. Illustration of the SCPTu system

All testing is performed in accordance to ConeTec's SCPTu operating procedures.

Prior to the start of a SCPTu sounding, the procedures described in the Cone Penetration Test section are followed. In addition, the active axis of the geophone is aligned parallel to the beam (or source) and the horizontal offset between the cone and the source is measured and recorded.

Prior to recording seismic waves at each test depth, cone penetration is stopped and the rods are decoupled from the rig to avoid transmission of rig energy down the rods. Multiple wave traces are recorded for quality control purposes. After reviewing wave traces for consistency the cone is pushed to the next test depth (typically one meter intervals or as requested by the client). Figure SCPTu-2 presents an illustration of a SCPTu test.

For additional information on seismic cone penetration testing refer to Robertson et.al. (1986).

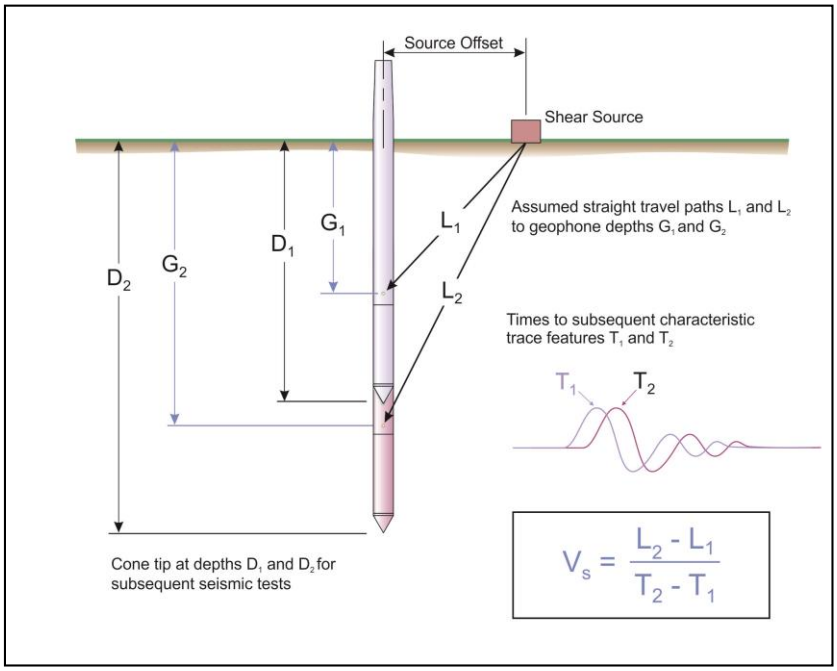


Figure SCPTu-2. Illustration of a seismic cone penetration test

Calculation of the interval velocities are performed by visually picking a common feature (e.g. the first characteristic peak, trough, or crossover) on all of the recorded wave sets and taking the difference in ray path divided by the time difference between subsequent features. Ray path is defined as the straight line distance from the seismic source to the geophone, accounting for beam offset, source depth and geophone offset from the cone tip.

The average shear wave velocity to a depth of 30 meters (V_{s30}) has been calculated and provided for all applicable soundings using an equation presented in Crow et al., 2012.

$$V_{s30} = \frac{total\ thickness\ of\ all\ layers\ (30m)}{\sum(layer\ traveltimes)}$$

The layer travel times refers to the travel times propagating in the vertical direction, not the measured travel times from an offset source.

Tabular results and SCPTu plots are presented in the relevant appendix.

The cone penetration test is halted at specific depths to carry out pore pressure dissipation (PPD) tests, shown in Figure PPD-1. For each dissipation test the cone and rods are decoupled from the rig and the data acquisition system measures and records the variation of the pore pressure (u) with time (t).

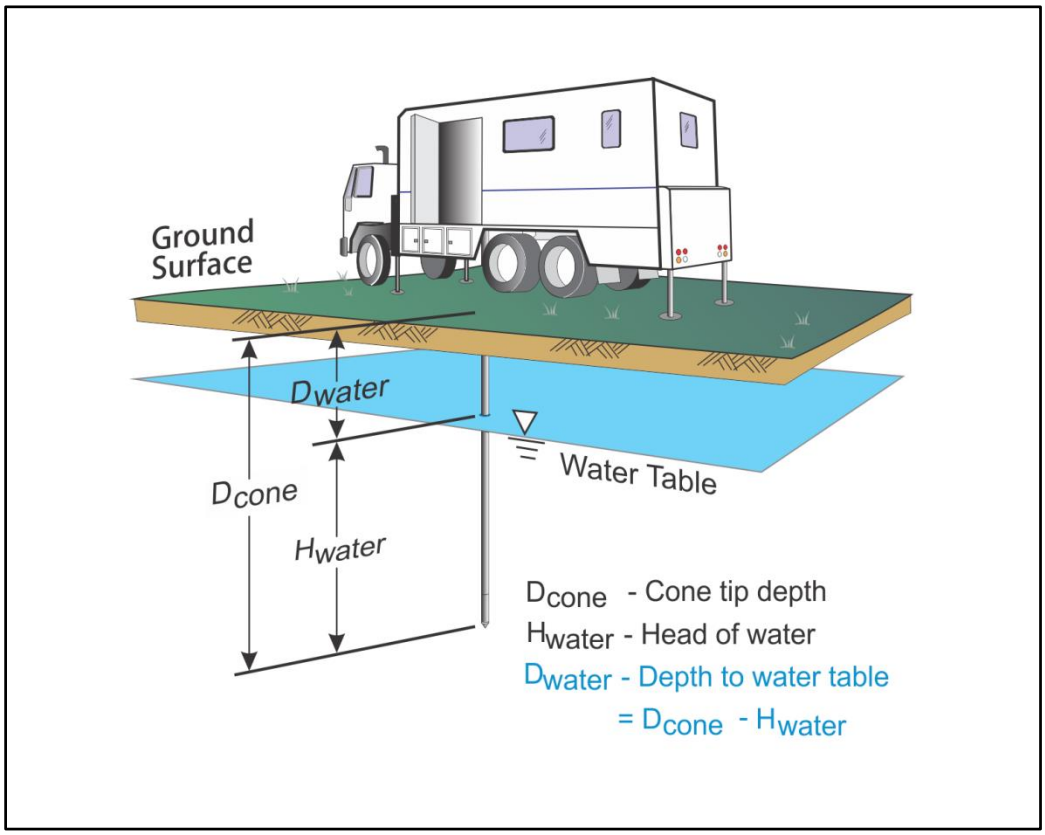


Figure PPD-1. Pore pressure dissipation test setup

Pore pressure dissipation data can be interpreted to provide estimates of ground water conditions, permeability, consolidation characteristics and soil behaviour.

The typical shapes of dissipation curves shown in Figure PPD-2 are very useful in assessing soil type, drainage, in situ pore pressure and soil properties. A flat curve that stabilizes quickly is typical of a freely draining sand. Undrained soils such as clays will typically show positive excess pore pressure and have long dissipation times. Dilative soils will often exhibit dynamic pore pressures below equilibrium that then rise over time. Overconsolidated fine-grained soils will often exhibit an initial dilatory response where there is an initial rise in pore pressure before reaching a peak and dissipating.

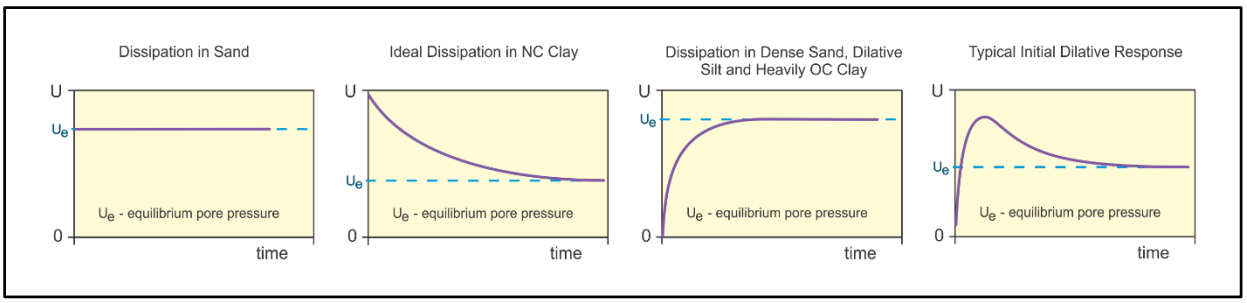


Figure PPD-2. Pore pressure dissipation curve examples

In order to interpret the equilibrium pore pressure (u_{eq}) and the apparent phreatic surface, the pore pressure should be monitored until such time as there is no variation in pore pressure with time as shown for each curve of Figure PPD-2.

In fine grained deposits the point at which 100% of the excess pore pressure has dissipated is known as t_{100}. In some cases this can take an excessive amount of time and it may be impractical to take the dissipation to t_{100}. A theoretical analysis of pore pressure dissipations by Teh and Houlsby (1991) showed that a single curve relating degree of dissipation versus theoretical time factor (T*) may be used to calculate the coefficient of consolidation (c_h) at various degrees of dissipation resulting in the expression for c_h shown below.

$$c_h = \frac{T^* \cdot a^2 \cdot \sqrt{I_r}}{t}$$

Where:

T* is the dimensionless time factor (Table Time Factor)
a is the radius of the cone
I_r is the rigidity index
t is the time at the degree of consolidation

Table Time Factor. T* versus degree of dissipation (Teh and Houlsby, 1991)

Degree of Dissipation (%)	20	30	40	50	60	70	80
T* (u_2)	0.038	0.078	0.142	0.245	0.439	0.804	1.60

The coefficient of consolidation is typically analyzed using the time (t_{50}) corresponding to a degree of dissipation of 50% (u_{50}). In order to determine t_{50}, dissipation tests must be taken to a pressure less than u_{50}. The u_{50} value is half way between the initial maximum pore pressure and the equilibrium pore pressure value, known as u_{100}. To estimate u_{50}, both the initial maximum pore pressure and u_{100} must be known or estimated. Other degrees of dissipations may be considered, particularly for extremely long dissipations.

At any specific degree of dissipation the equilibrium pore pressure (u at t_{100}) must be estimated at the depth of interest. The equilibrium value may be determined from one or more sources such as measuring the value directly (u_{100}), estimating it from other dissipations in the same profile, estimating the phreatic surface and assuming hydrostatic conditions, from nearby soundings, from client provided information, from site observations and/or past experience, or from other site instrumentation.

For calculations of c_h (Teh and Houlsby, 1991), t_{50} values are estimated from the corresponding pore pressure dissipation curve and a rigidity index (I_r) is assumed. For curves having an initial dilatory response in which an initial rise in pore pressure occurs before reaching a peak, the relative time from the peak value is used in determining t_{50}. In cases where the time to peak is excessive, t_{50} values are not calculated.

Due to possible inherent uncertainties in estimating I_r, the equilibrium pore pressure and the effect of an initial dilatory response on calculating t_{50}, other methods should be applied to confirm the results for c_h.

Additional published methods for estimating the coefficient of consolidation from a piezocone test are described in Burns and Mayne (1998, 2002), Jones and Van Zyl (1981), Robertson et al. (1992) and Sully et al. (1999).

A summary of the pore pressure dissipation tests and dissipation plots are presented in the relevant appendix.

ASTM D5778-12, 2012, "Standard Test Method for Performing Electronic Friction Cone and Piezocone Penetration Testing of Soils", ASTM, West Conshohocken, US.

Burns, S.E. and Mayne, P.W., 1998, "Monotonic and dilatory pore pressure decay during piezocone tests", Canadian Geotechnical Journal 26 (4): 1063-1073.

Burns, S.E. and Mayne, P.W., 2002, "Analytical cavity expansion-critical state model cone dissipation in fine-grained soils", Soils & Foundations, Vol. 42(2): 131-137.

Crow, H.L., Hunter, J.A., Bobrowsky, P.T., 2012, "National shear wave measurement guidelines for Canadian seismic site assessment", GeoManitoba 2012, Sept 30 to Oct 2, Winnipeg, Manitoba.

Jones, G.A. and Van Zyl, D.J.A., 1981, "The piezometer probe: a useful investigation tool", Proceedings, 10th International Conference on Soil Mechanics and Foundation Engineering, Vol. 3, Stockholm: 489-495.

Lunne, T., Robertson, P.K. and Powell, J. J. M., 1997, "Cone Penetration Testing in Geotechnical Practice", Blackie Academic and Professional.

Mayne, P.W., 2013, "Evaluating yield stress of soils from laboratory consolidation and in-situ cone penetration tests", Sound Geotechnical Research to Practice (Holtz Volume) GSP 230, ASCE, Reston/VA: 406-420.

Mayne, P.W., 2014, "Interpretation of geotechnical parameters from seismic piezocone tests", CPT'14 Keynote Address, Las Vegas, NV, May 2014.

Mayne, P.W. and Peuchen, J., 2012, "Unit weight trends with cone resistance in soft to firm clays", Geotechnical and Geophysical Site Characterization *4,* Vol. 1 (Proc. ISC-4, Pernambuco), CRC Press, London: 903-910.

Robertson, P.K., 1990, "Soil Classification Using the Cone Penetration Test", Canadian Geotechnical Journal, Volume 27: 151-158.

Robertson, P.K., 2009, "Interpretation of cone penetration tests – a unified approach", Canadian Geotechnical Journal, Volume 46: 1337-1355.

Robertson, P.K., Campanella, R.G., Gillespie, D. and Greig, J., 1986, "Use of Piezometer Cone Data", Proceedings of InSitu 86, ASCE Specialty Conference, Blacksburg, Virginia.

Robertson, P.K., Campanella, R.G., Gillespie D and Rice, A., 1986, "Seismic CPT to Measure In-Situ Shear Wave Velocity", Journal of Geotechnical Engineering ASCE, Vol. 112, No. 8: 791-803.

Robertson, P.K., Sully, J.P., Woeller, D.J., Lunne, T., Powell, J.J.M. and Gillespie, D.G., 1992, "Estimating coefficient of consolidation from piezocone tests", Canadian Geotechnical Journal, 29(4): 551-557.

Sully, J.P., Robertson, P.K., Campanella, R.G. and Woeller, D.J., 1999, "An approach to evaluation of field CPTU dissipation data in overconsolidated fine-grained soils", Canadian Geotechnical Journal, 36(2): 369-381.

Teh, C.I., and Houlsby, G.T., 1991, “An analytical study of the cone penetration test in clay”, Geotechnique, 41(1): 17-34.

Downhole seismic testing (DST) is conducted using a system comprising of a surface source, a downhole tool equipped with a triaxial geophone package, and a data acquisition system.

The downhole tool has a triaxial geophone package mounted on an internal block such that the orientation of the geophones can be maintained within the borehole through the use of the built in fluxgate compass and servo motor system. A motor driven bow spring clamp is used to couple the downhole tool with the borehole wall. The downhole seismic test equipment is in general accordance with the current ASTM D7400 standard.

Shear waves (Vs) are typically generated by using an impact hammer horizontally striking a beam that is held in place by a normal load while compression waves (Vp) are typically generated by using an impact hammer vertically striking a steel plate. The hammer and beam (or plate) act as a contract trigger that initiates the recording of the seismic wave traces. The beam is generally struck on each end to generate horizontally polarized shear waves. The traces are recorded using an up-hole data acquisition system. An illustration of the downhole seismic testing configuration is presented in Figure DHS-1.

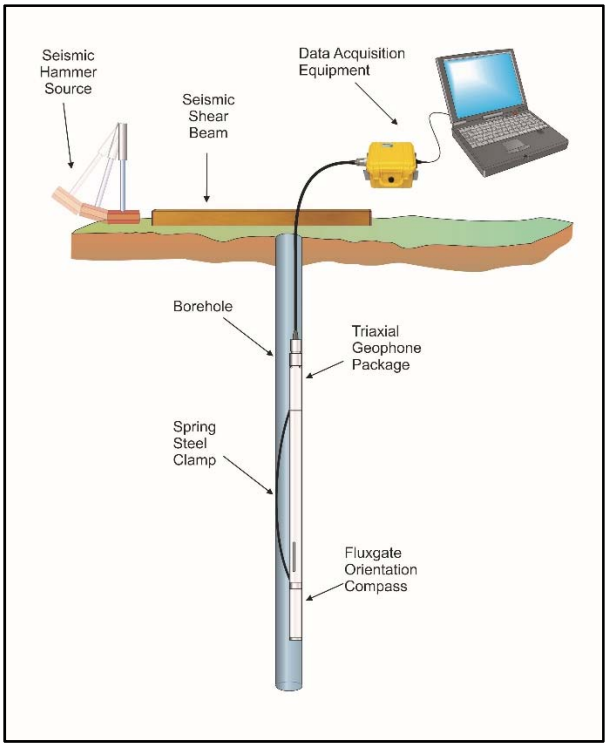


Figure DHS-1. Typical downhole seismic testing equipment

Prior to conducting downhole seismic testing, the horizontal offset between the borehole and seismic source is measured and recorded.

Testing is performed by lowering the tool into a cased borehole to the initial start depth where it is coupled to the side of the casing using the spring clamp. The two horizontal geophones are aligned parallel and perpendicular to the shear wave source. Doing so maintains the same orientation of the geophones throughout the test, which eliminates any apparent phase changes due to rotation of the tool.

Multiple wave traces are recorded and reviewed on the data acquisition computer. Once sufficient data has been recorded, the tool is lowered to the next depth by a set increment (typically one meter) and the procedures are repeated. Test procedures are in general accordance with the current ASTM D7400 standard.

Determination of interval travel times are performed by visually picking a common feature (e.g. the first characteristic peak, trough, or crossover) on all of the recorded wave sets. The velocity can then be determined by taking the difference in ray path divided by the interval travel time. The ray path is defined as the straight line distance from the seismic source to the geophone; accounting for the source offset and source depth. Alternatively, the velocity can be determined by calculating the slope of the accumulated travel time – ray path data. This is normally done on a 3 or 5 point basis using linear least squares regression (Arsenault et al, 2012). Doing so also allows for the calculation of the standard error which provides a qualitative indication of the velocity uncertainty determined from linear least squares regression.

A summary of the testing performed and the seismic wave velocity data, presented in tabular and graphical format is provided in the relevant appendix. Images of the time domain traces used for the shear wave and compression wave picks are presented for reference in an additional appendix. The traces provide a visual representation of the seismic data and an indication of the data quality.

References

ASTM D7400-08, 2008, "Standard Test Methods for Downhole Seismic Testing", ASTM International, West Conshohocken, PA, US.

Arsenault, J.-L., Hunter, J.A. and Crow, H.L., 2012. Shear Wave Velocity Logs From Vertical Seismic Profiles; *in* Shear Wave Velocity Measurement Guidelines for Canadian Seismic Site Characterization in Soil and Rock, (ed.) J.A. Hunter and H.L. Crow; Geological Survey of Canada, Open File 7078, p.123-138.

The appendices listed below are included in the report:

- Cone Penetration Test Summary and Standard Cone Penetration Test Plots
- Advanced Cone Penetration Test Plots
- Soil Behaviour Type (SBT) Scatter Plots
- Seismic Cone Penetration Test Plots
- Seismic Cone Penetration Test Tabular Results
- Seismic Cone Penetration Test Wave Traces
- Pore Pressure Dissipation Summary and Pore Pressure Dissipation Plots
- Temperature Dissipation Plots
- Downhole Seismic Test Summary and Shear Wave Profiles
- Downhole Seismic Test Tabular Results
- Downhole Seismic Test Wave Traces

Cone Penetration Test Summary and Standard Cone Penetration Test Plots

CONETEC

Job No:	18-02069
Client:	Wood plc
Project:	Clinton Creek
Start Date:	26-Aug-2018
End Date:	03-Sep-2018

CONE PENETRATION TEST SUMMARY

Sounding ID	File Name	Date	Cone	Assumed Phreatic Surface[1] (m)	Final Depth (m)	Northing[2] (m)	Easting (m)	Refer to Notation Number
SCPT18-11	18-02069_SP11	03-Sep-2018	511:T1500F15U1K		36.600	7148077	513398	3
SCPT18-12	18-02069_SP12	26-Aug-2018	511:T1500F15U1K		21.050	7148075	513949	3
SCPT18-14	18-02069_SP14	28-Aug-2018	511:T1500F15U1K	13.5	18.050	7148333	513871	
SCPT18-17	18-02069_SP17	31-Aug-2018	511:T1500F15U1K		30.350	7148075	513508	3

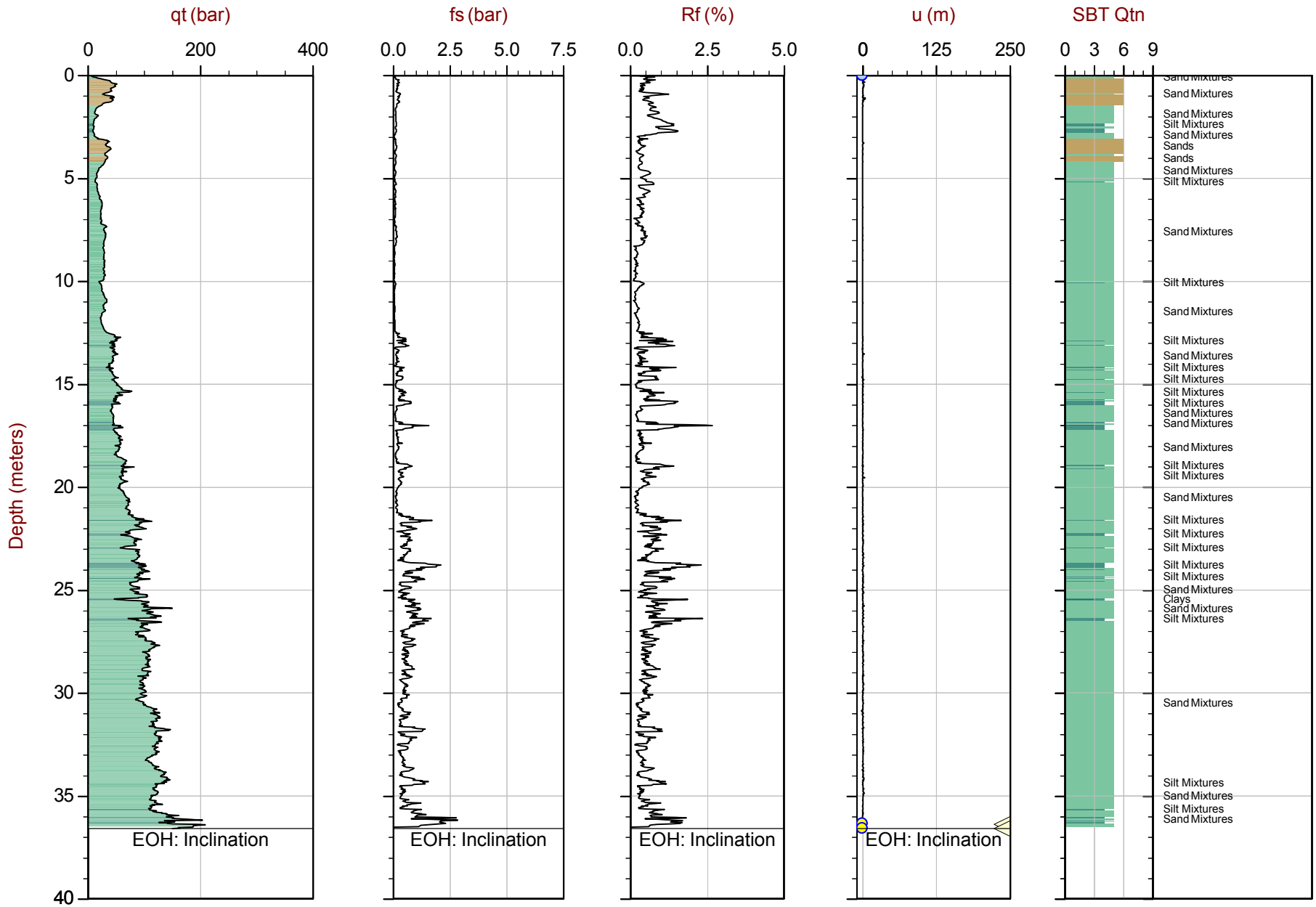
1. The assumed phreatic surface was based on pore pressure dissipation tests, unless otherwise noted.
2. Coordinates were collected with a consumer grade GPS device in datum WGS84/UTM Zone 7 North.
3. No clear phreatic surface detected.

CONETEC

Wood plc

Job No: 18-02069
Date: 2018-09-03 09:35
Site: Clinton Creek

Sounding: SCPT18-11
Cone: 511:T1500F15U1K



Max Depth: 36.600 m / 120.08 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 18-02069_SP11.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 7N N: 7148077m E: 513398m
Sheet No: 1 of 1

Equilibrium Pore Pressure (Ueq) Assumed Ueq Dissipation, Ueq achieved Dissipation, Ueq not achieved Hydrostatic Line

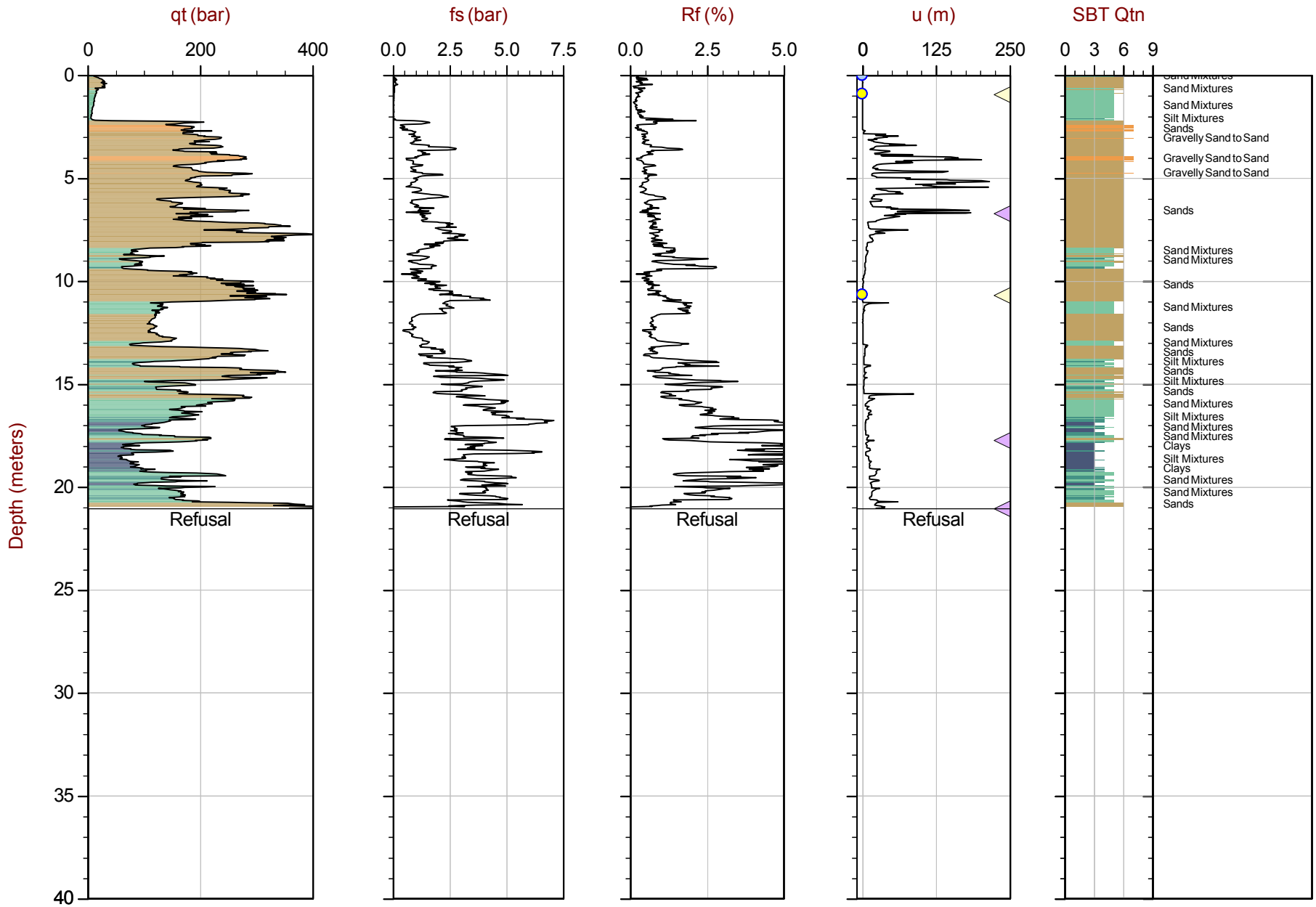
The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Wood plc

Job No: 18-02069
Date: 2018-08-26 14:46
Site: Clinton Creek

Sounding: SCPT18-12
Cone: 511:T1500F15U1K



Max Depth: 21.050 m / 69.06 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 18-02069_SP12.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 7N N: 7148075m E: 513949m
Sheet No: 1 of 1

Equilibrium Pore Pressure (Ueq) Assumed Ueq Dissipation, Ueq achieved Dissipation, Ueq not achieved Hydrostatic Line

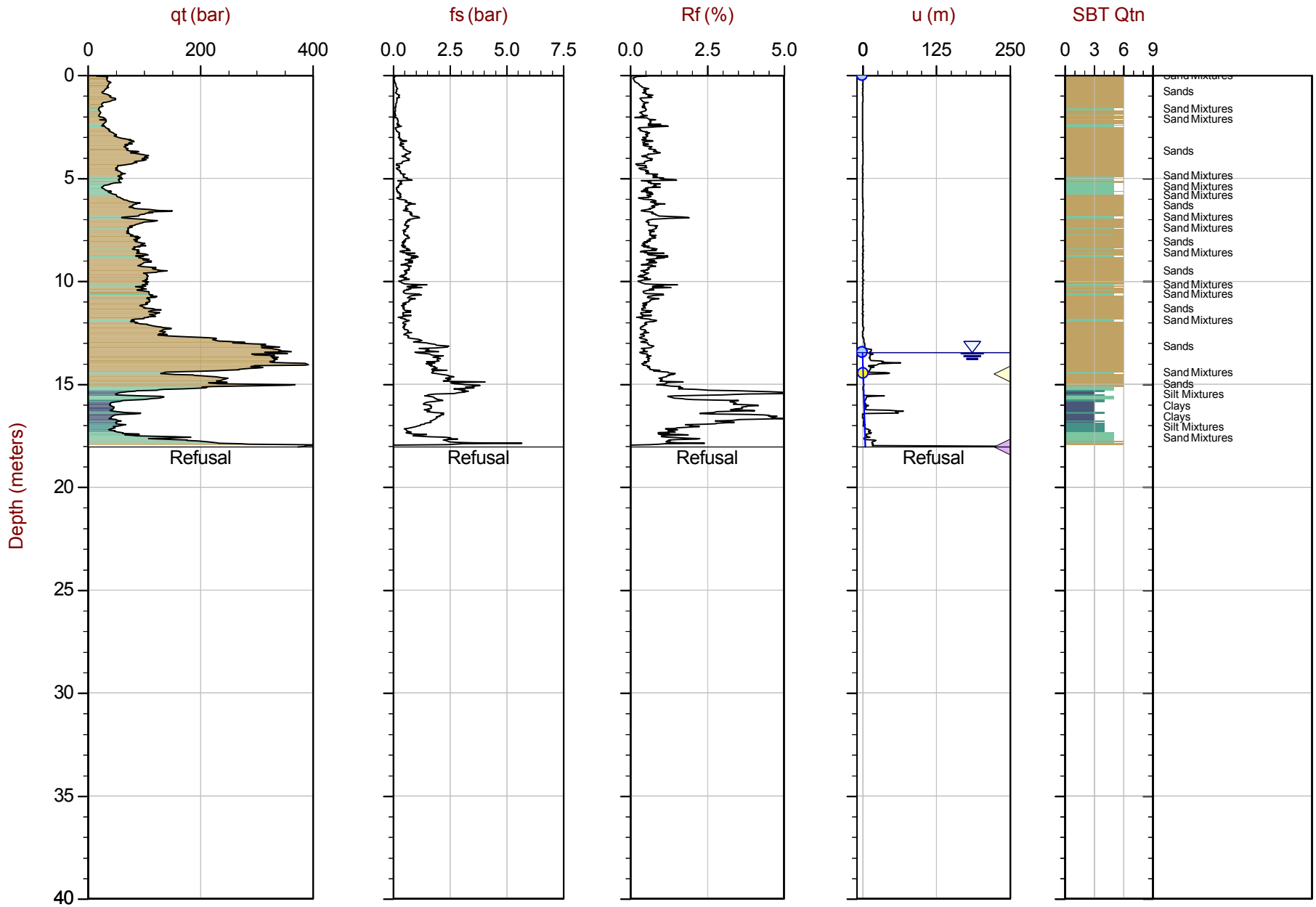
The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Wood plc

Job No: 18-02069
Date: 2018-08-28 09:21
Site: Clinton Creek

Sounding: SCPT18-14
Cone: 511:T1500F15U1K



Max Depth: 18.050 m / 59.22 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 18-02069_SP14.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 7N N: 7148333m E: 513871m
Sheet No: 1 of 1

Equilibrium Pore Pressure (Ueq) | Assumed Ueq | Dissipation, Ueq achieved | Dissipation, Ueq not achieved | Hydrostatic Line

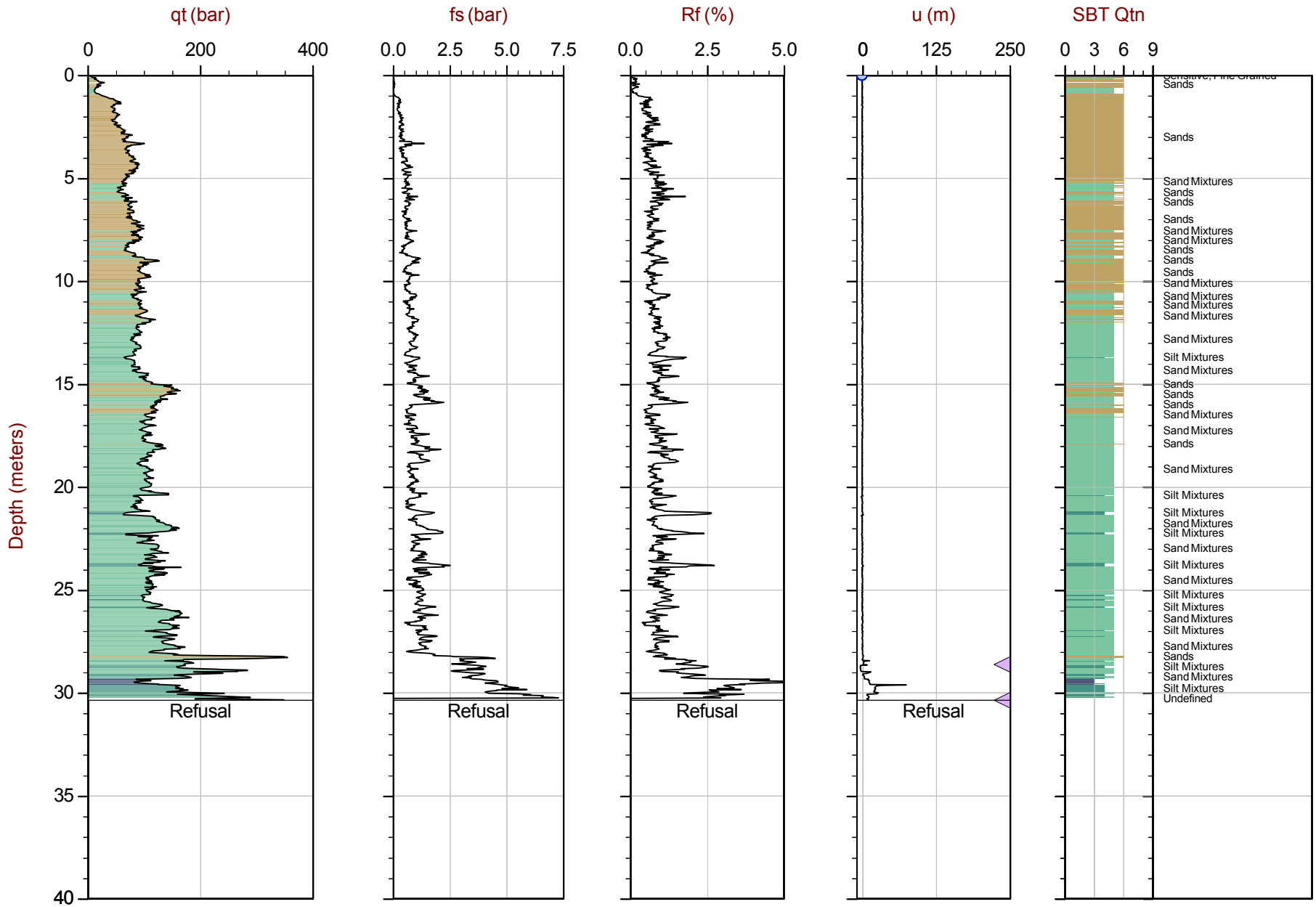
The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Wood plc

Job No: 18-02069
Date: 2018-08-31 09:10
Site: Clinton Creek

Sounding: SCPT18-17
Cone: 511:T1500F15U1K



Max Depth: 30.350 m / 99.57 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 18-02069_SP17.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 7N N: 7148075m E: 513508m
Sheet No: 1 of 1

Equilibrium Pore Pressure (Ueq) Assumed Ueq Dissipation, Ueq achieved Dissipation, Ueq not achieved Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

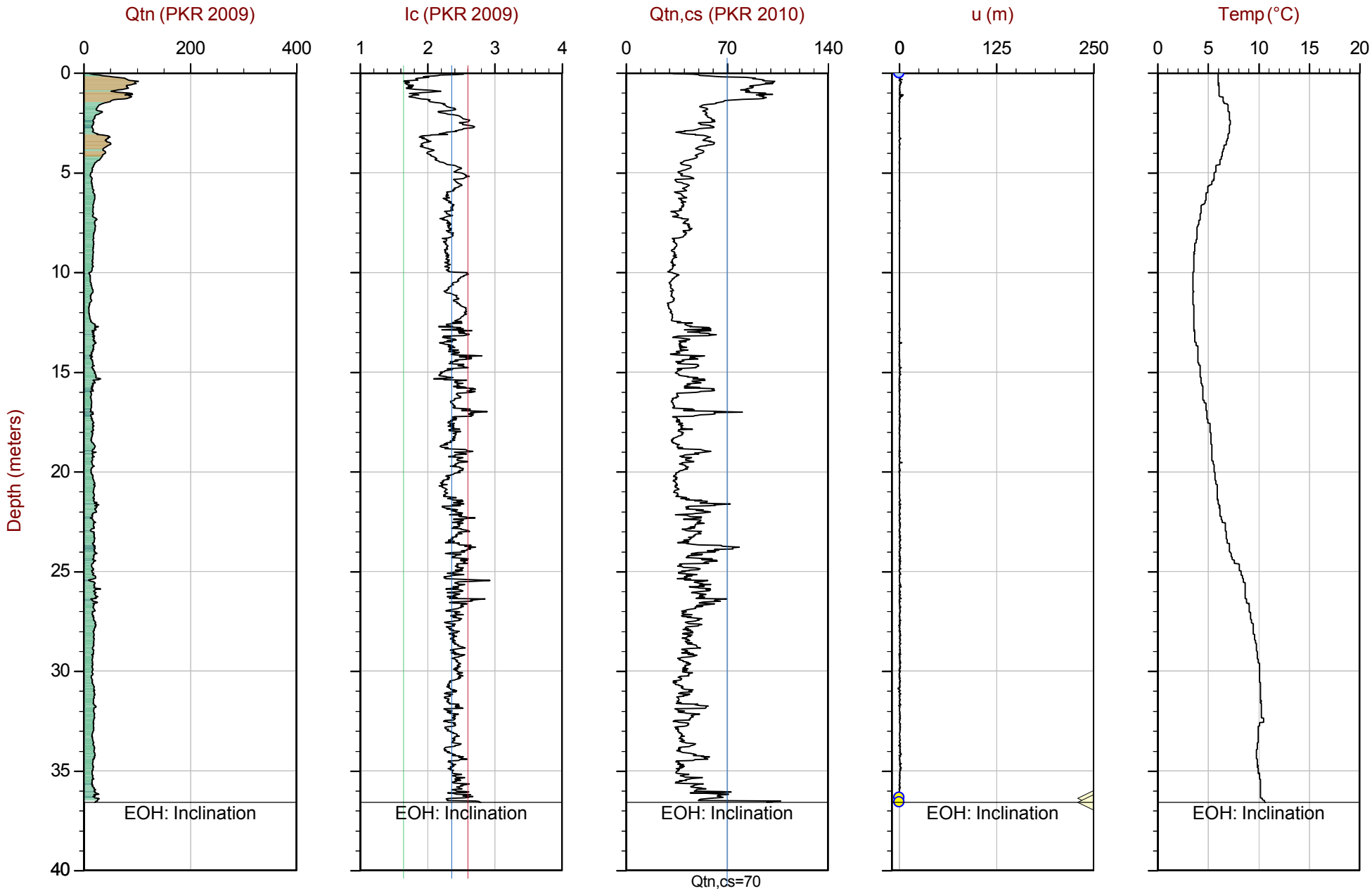
Cone Penetration Test Advanced Plots

CONETEC

Wood plc

Job No: 18-02069
Date: 2018-09-03 09:35
Site: Clinton Creek

Sounding: SCPT18-11
Cone: 511:T1500F15U1K



Max Depth: 36.600 m / 120.08 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 18-02069_SP11.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 7N N: 7148077m E: 513398m
Sheet No: 1 of 1

Equilibrium Pore Pressure (Ueq) Assumed Ueq Dissipation, Ueq achieved Dissipation, Ueq not achieved Hydrostatic Line

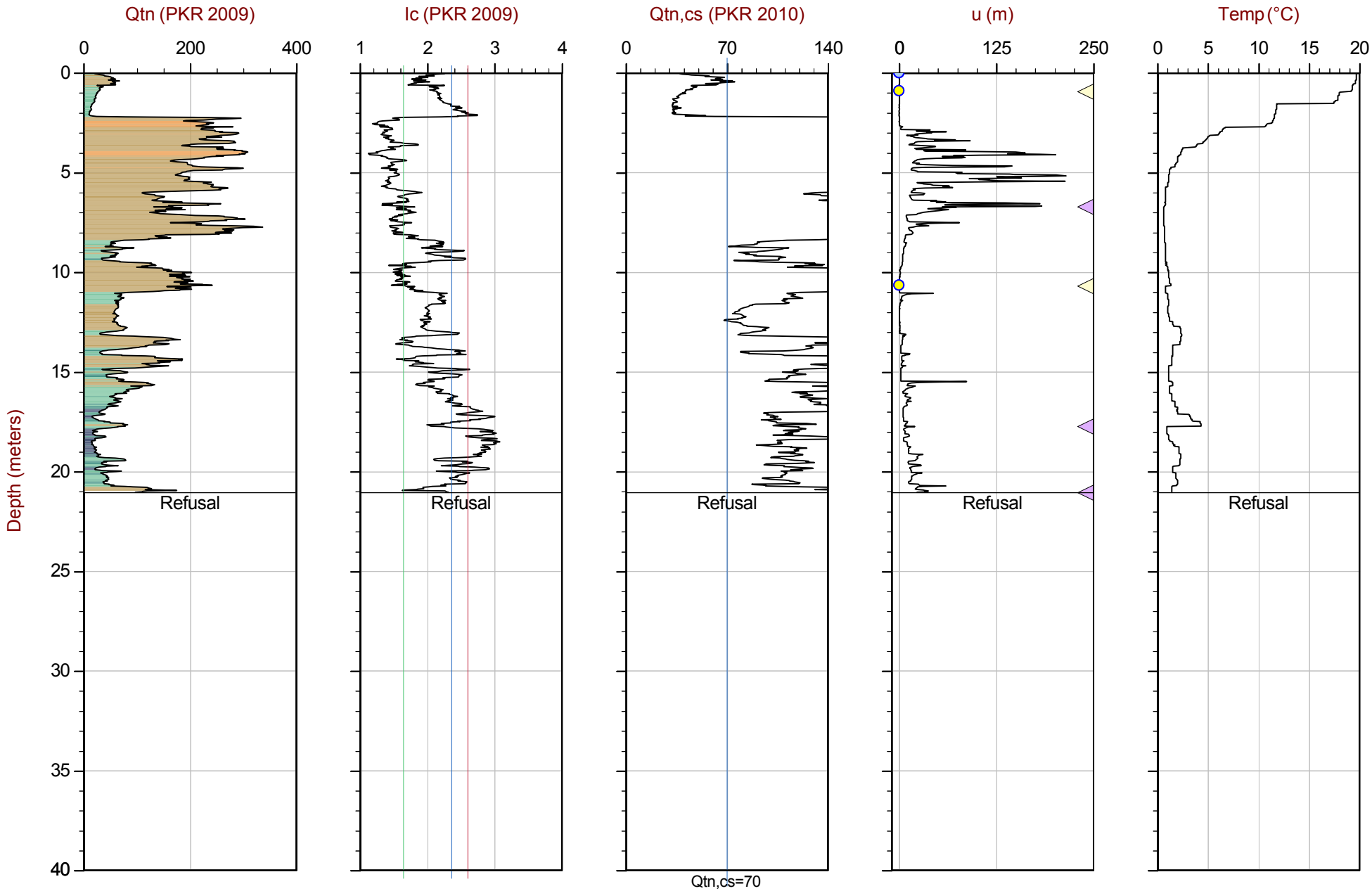
The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Wood plc

Job No: 18-02069
Date: 2018-08-26 14:46
Site: Clinton Creek

Sounding: SCPT18-12
Cone: 511:T1500F15U1K



Max Depth: 21.050 m / 69.06 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 18-02069_SP12.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 7N N: 7148075m E: 513949m
Sheet No: 1 of 1

Equilibrium Pore Pressure (Ueq) Assumed Ueq Dissipation, Ueq achieved Dissipation, Ueq not achieved Hydrostatic Line

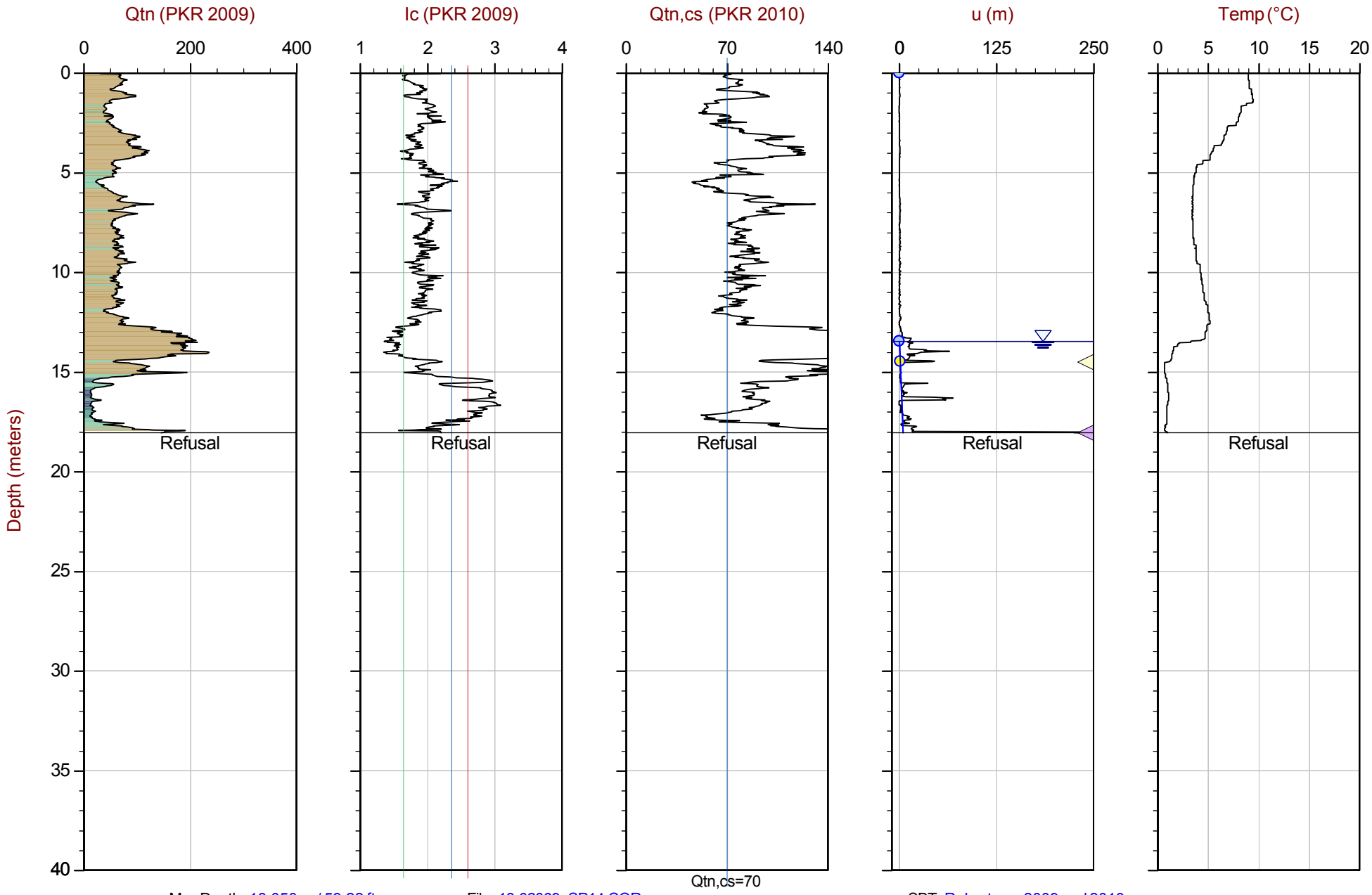
The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Wood plc

Job No: 18-02069
Date: 2018-08-28 09:21
Site: Clinton Creek

Sounding: SCPT18-14
Cone: 511:T1500F15U1K



Max Depth: 18.050 m / 59.22 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 18-02069_SP14.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 7N N: 7148333m E: 513871m
Sheet No: 1 of 1

Equilibrium Pore Pressure (Ueq) Assumed Ueq Dissipation, Ueq achieved Dissipation, Ueq not achieved Hydrostatic Line

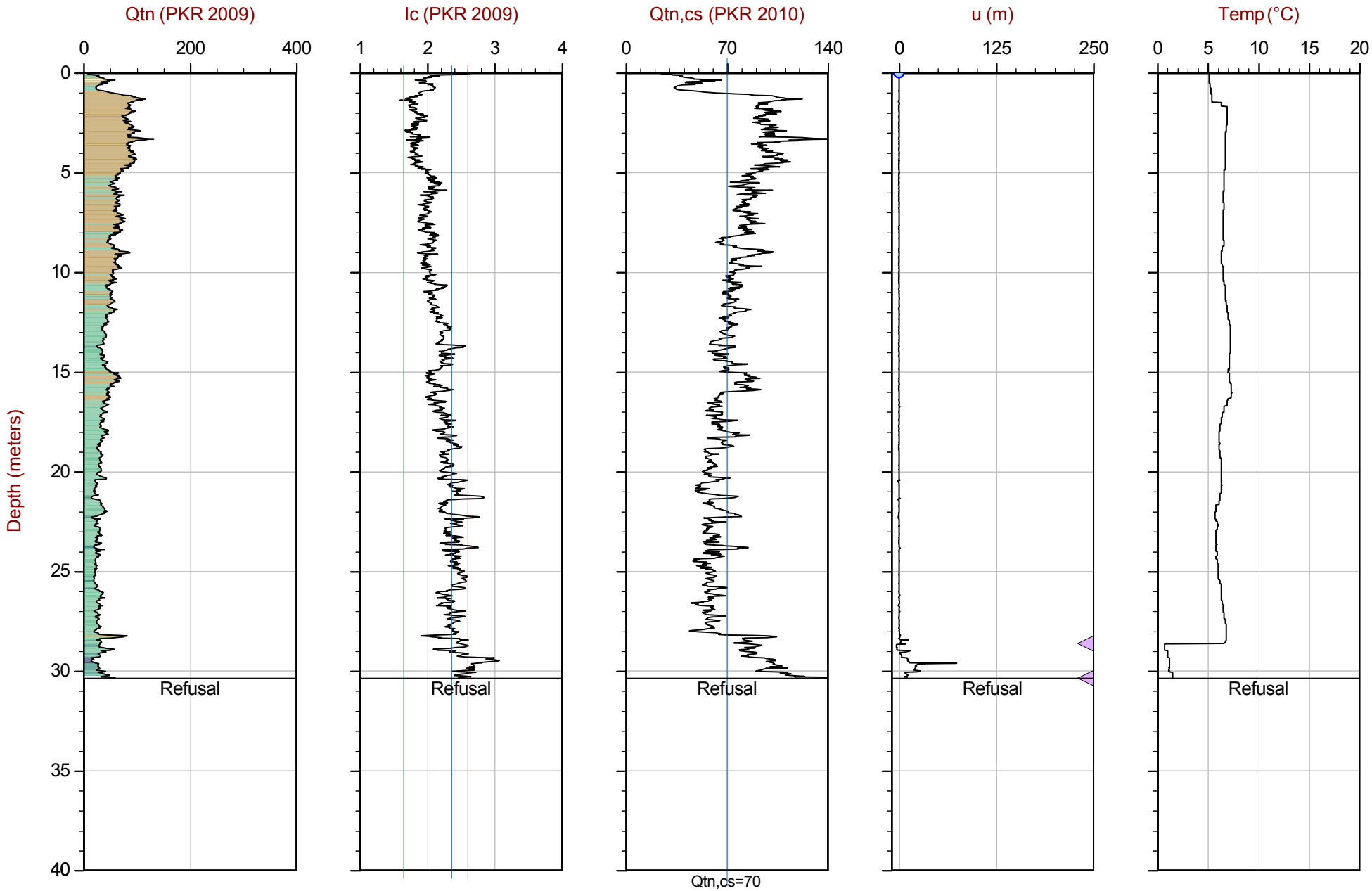
The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Wood plc

Job No: 18-02069
Date: 2018-08-31 09:10
Site: Clinton Creek

Sounding: SCPT18-17
Cone: 511:T1500F15U1K



Max Depth: 30.350 m / 99.57 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 18-02069_SP17.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 7N N: 7148075m E: 513508m
Sheet No: 1 of 1

Equilibrium Pore Pressure (Ueq) Assumed Ueq Dissipation, Ueq achieved Dissipation, Ueq not achieved Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Soil Behaviour Type (SBT) Scatter Plots

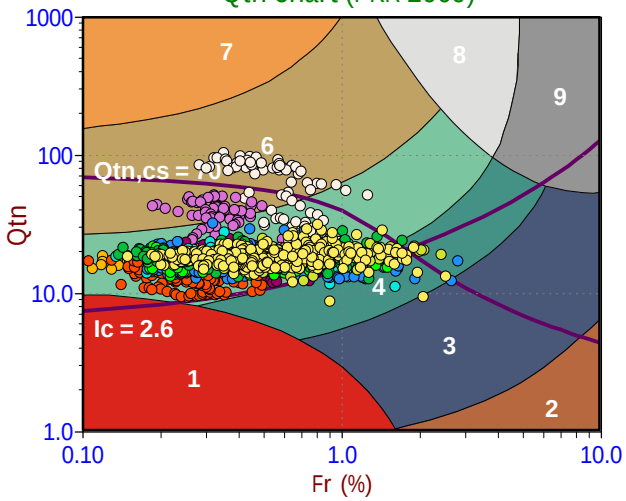
CONETEC

Wood plc

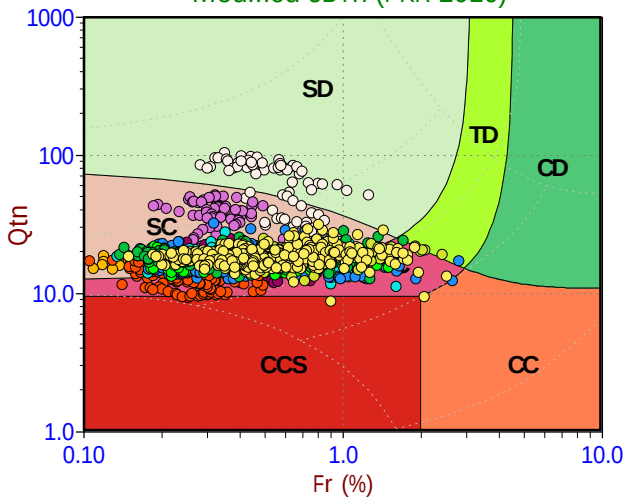
Job No: 18-02069
Date: 2018-09-03 09:35
Site: Clinton Creek

Sounding: SCPT18-11
Cone: 511:T1500F15U1K

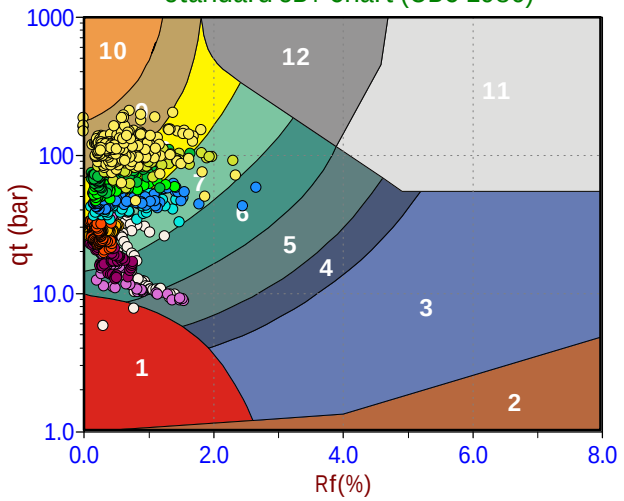
Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)



Depth Ranges

- >0.0 to 2.5 m
- >2.5 to 5.0 m
- >5.0 to 7.5 m
- >7.5 to 10.0 m
- >10.0 to 12.5 m
- >12.5 to 15.0 m
- >15.0 to 17.5 m
- >17.5 to 20.0 m
- >20.0 to 22.5 m
- >22.5 to 25.0 m
- >25.0 m

Legend

- Sensitive, Fine Grained
- Organic Soils
- Clays
- Silt Mixtures
- Sand Mixtures
- Sands
- Gravelly Sand to Sand
- Stiff Sand to Clayey Sand
- Very Stiff Fine Grained

Legend

- CCS (Cont. sensitive clay like)
- CC (Cont. clay like)
- TC (Cont. transitional)
- SC (Cont. sand like)
- CD (Dil. clay like)
- TD (Dil. transitional)
- SD (Dil. sand like)

Legend

- Sensitive Fines
- Organic Soil
- Clay
- Silty Clay
- Clayey Silt
- Silt
- Sandy Silt
- Silty Sand/Sand
- Sand
- Gravelly Sand
- Stiff Fine Grained
- Cemented Sand

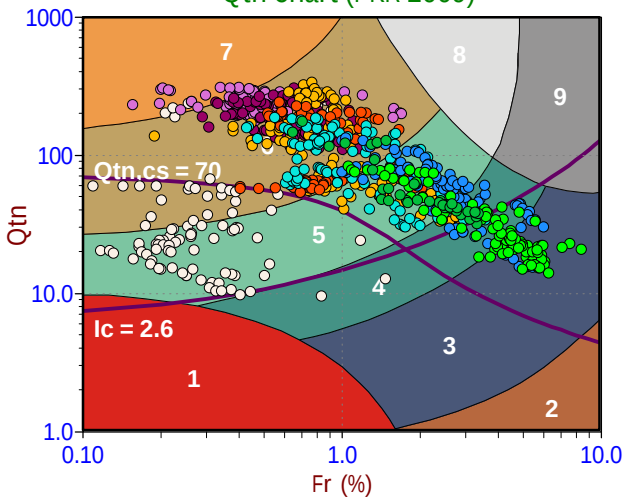
CONETEC

Wood plc

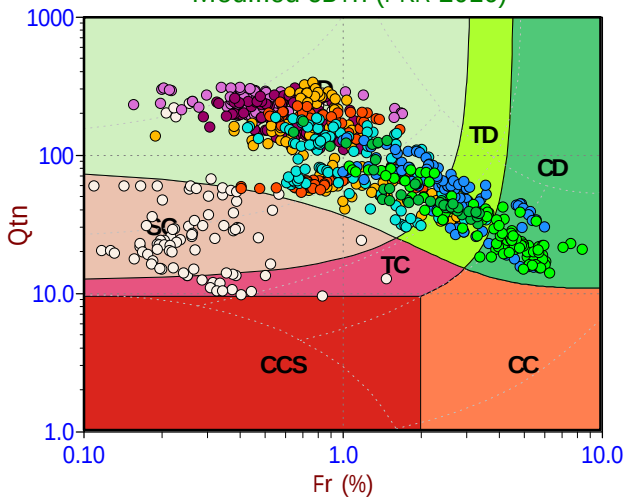
Job No: 18-02069
Date: 2018-08-26 14:46
Site: Clinton Creek

Sounding: SCPT18-12
Cone: 511:T1500F15U1K

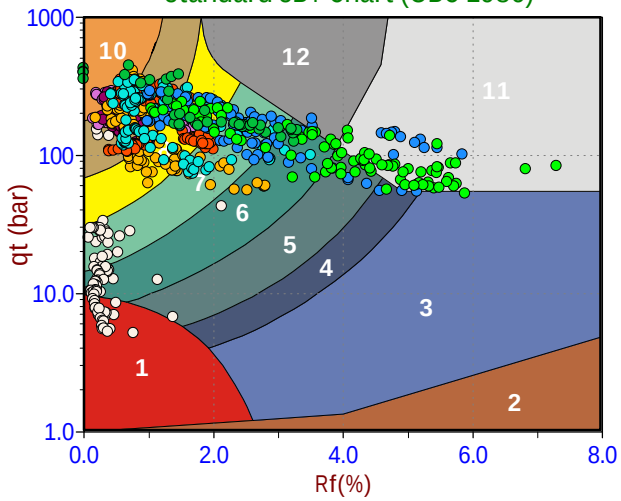
Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)



Depth Ranges

- >0.0 to 2.5 m
- >2.5 to 5.0 m
- >5.0 to 7.5 m
- >7.5 to 10.0 m
- >10.0 to 12.5 m
- >12.5 to 15.0 m
- >15.0 to 17.5 m
- >17.5 to 20.0 m
- >20.0 to 22.5 m
- >22.5 to 25.0 m
- >25.0 m

Legend

- Sensitive, Fine Grained
- Organic Soils
- Clays
- Silt Mixtures
- Sand Mixtures
- Sands
- Gravelly Sand to Sand
- Stiff Sand to Clayey Sand
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Legend

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- CC (Cont. clay like)
- TC (Cont. transitional)
- SC (Cont. sand like)
- CD (Dil. clay like)
- TD (Dil. transitional)
- SD (Dil. sand like)

Legend

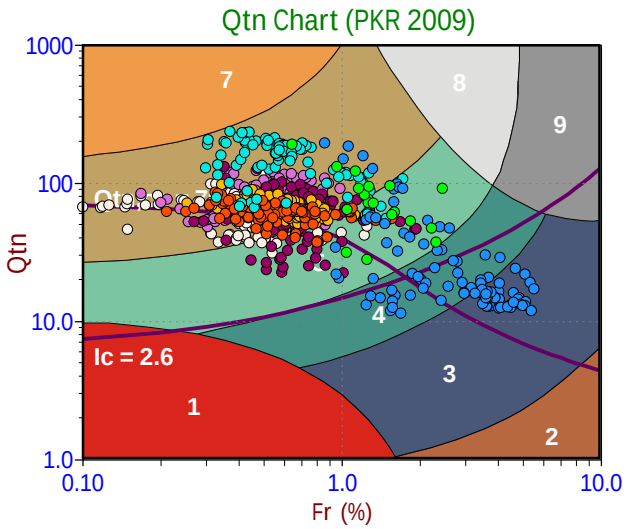
- Sensitive Fines
- Organic Soil
- Clay
- Silty Clay
- Clayey Silt
- Silt
- Sandy Silt
- Silty Sand/Sand
- Sand
- Gravelly Sand
- Stiff Fine Grained
- Cemented Sand

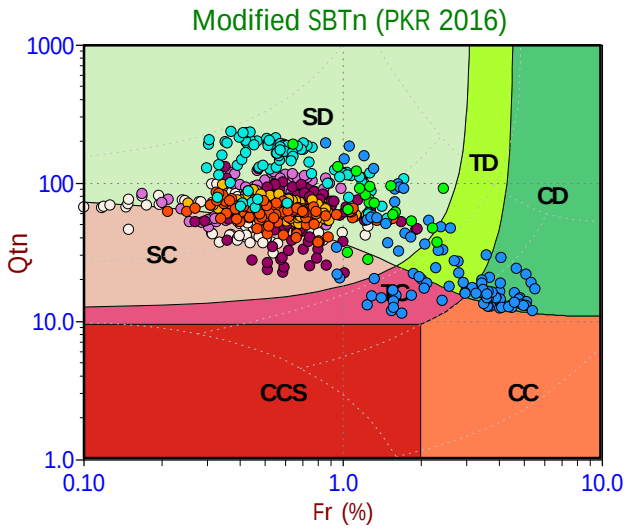
CONETEC

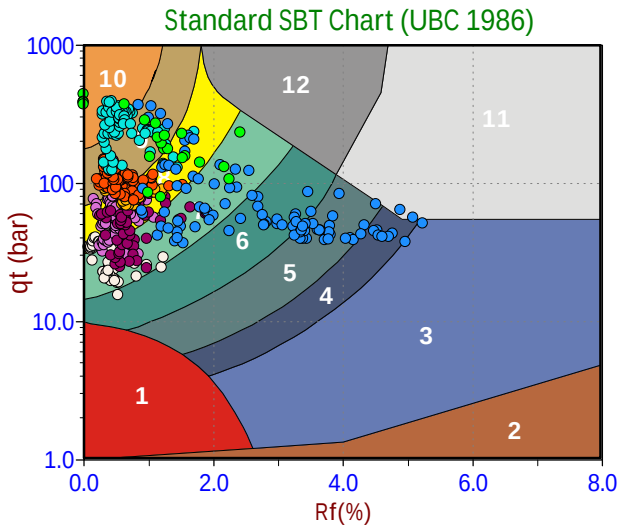
Wood plc

Job No: 18-02069
Date: 2018-08-28 09:21
Site: Clinton Creek

Sounding: SCPT18-14
Cone: 511:T1500F15U1K







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- >7.5 to 10.0 m
- >10.0 to 12.5 m
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- >17.5 to 20.0 m
- >20.0 to 22.5 m
- >22.5 to 25.0 m
- >25.0 m

Legend

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- Clayey Silt
- Silt
- Sandy Silt
- Silty Sand/Sand
- Sand
- Gravelly Sand
- Stiff Fine Grained
- Cemented Sand

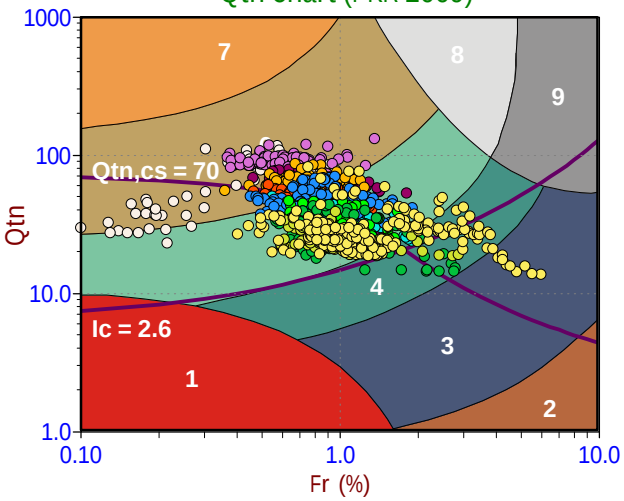
CONETEC

Wood plc

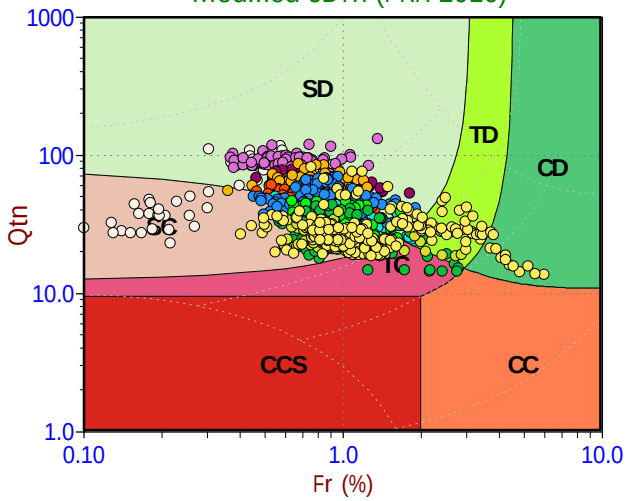
Job No: 18-02069
Date: 2018-08-31 09:10
Site: Clinton Creek

Sounding: SCPT18-17
Cone: 511:T1500F15U1K

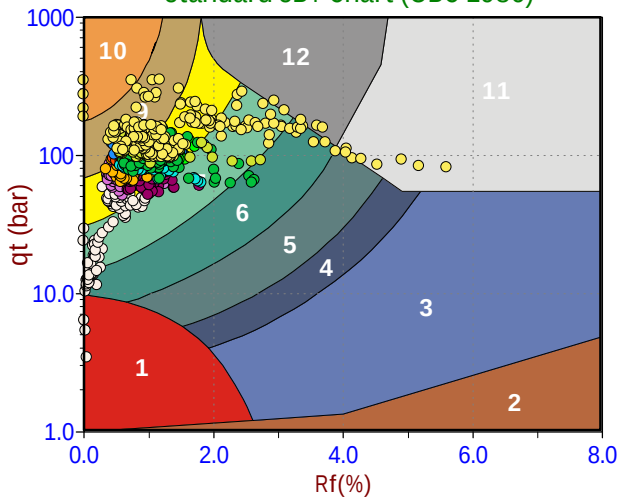
Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)



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- >7.5 to 10.0 m
- >10.0 to 12.5 m
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- >17.5 to 20.0 m
- >20.0 to 22.5 m
- >22.5 to 25.0 m
- >25.0 m

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- Silt
- Sandy Silt
- Silty Sand/Sand
- Sand
- Gravelly Sand
- Stiff Fine Grained
- Cemented Sand

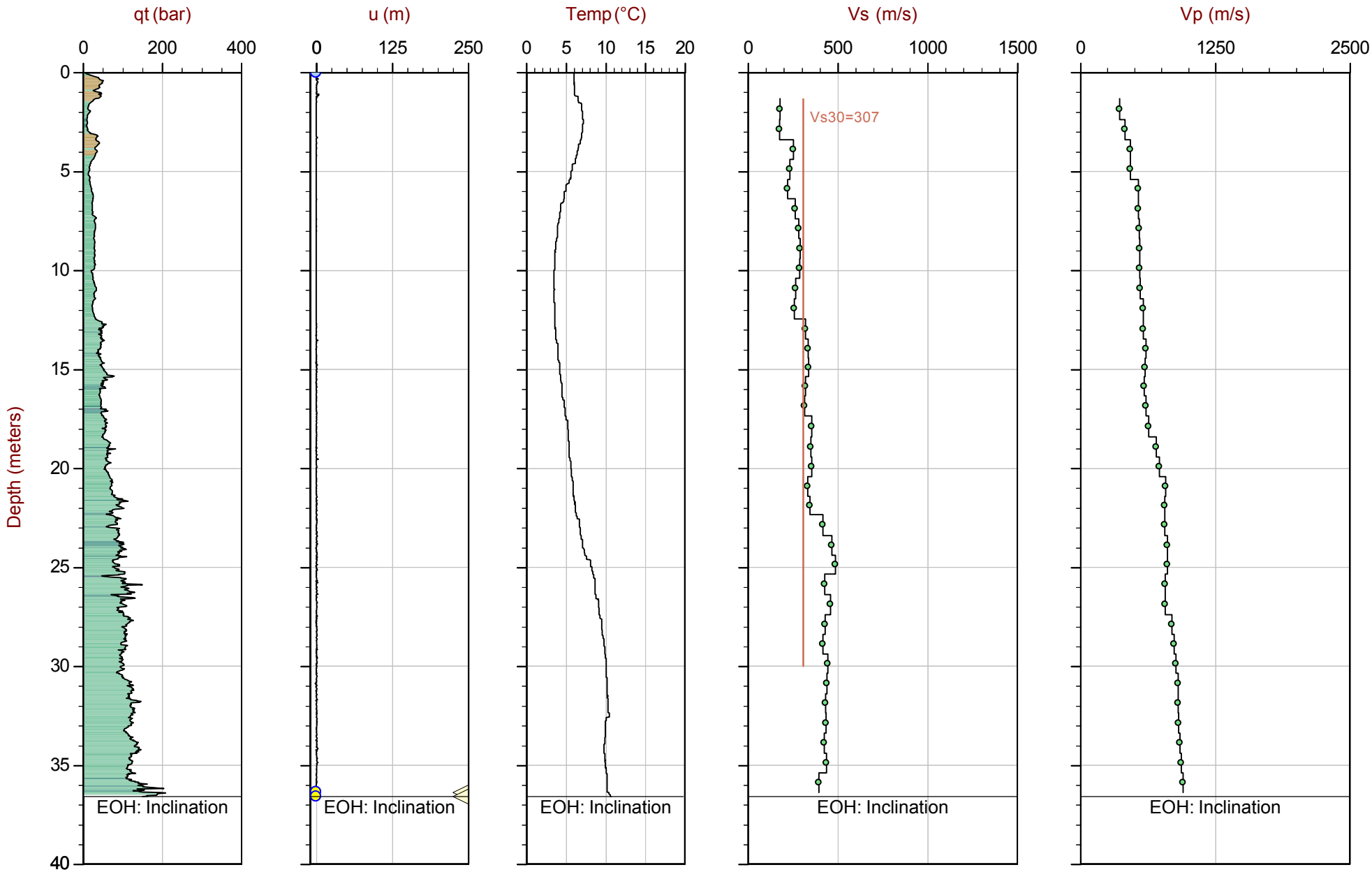
Seismic Cone Penetration Test Plots

CONETEC

Wood plc

Job No: 18-02069
Date: 2018-09-03 09:35
Site: Clinton Creek

Sounding: SCPT18-11
Cone: 511:T1500F15U1K



Max Depth: 36.600 m / 120.08 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 18-02069_SP11.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 7N N: 7148077m E: 513398m
Sheet No: 1 of 1

Equilibrium Pore Pressure (Ueq) Assumed Ueq Dissipation, Ueq achieved Dissipation, Ueq not achieved Hydrostatic Line

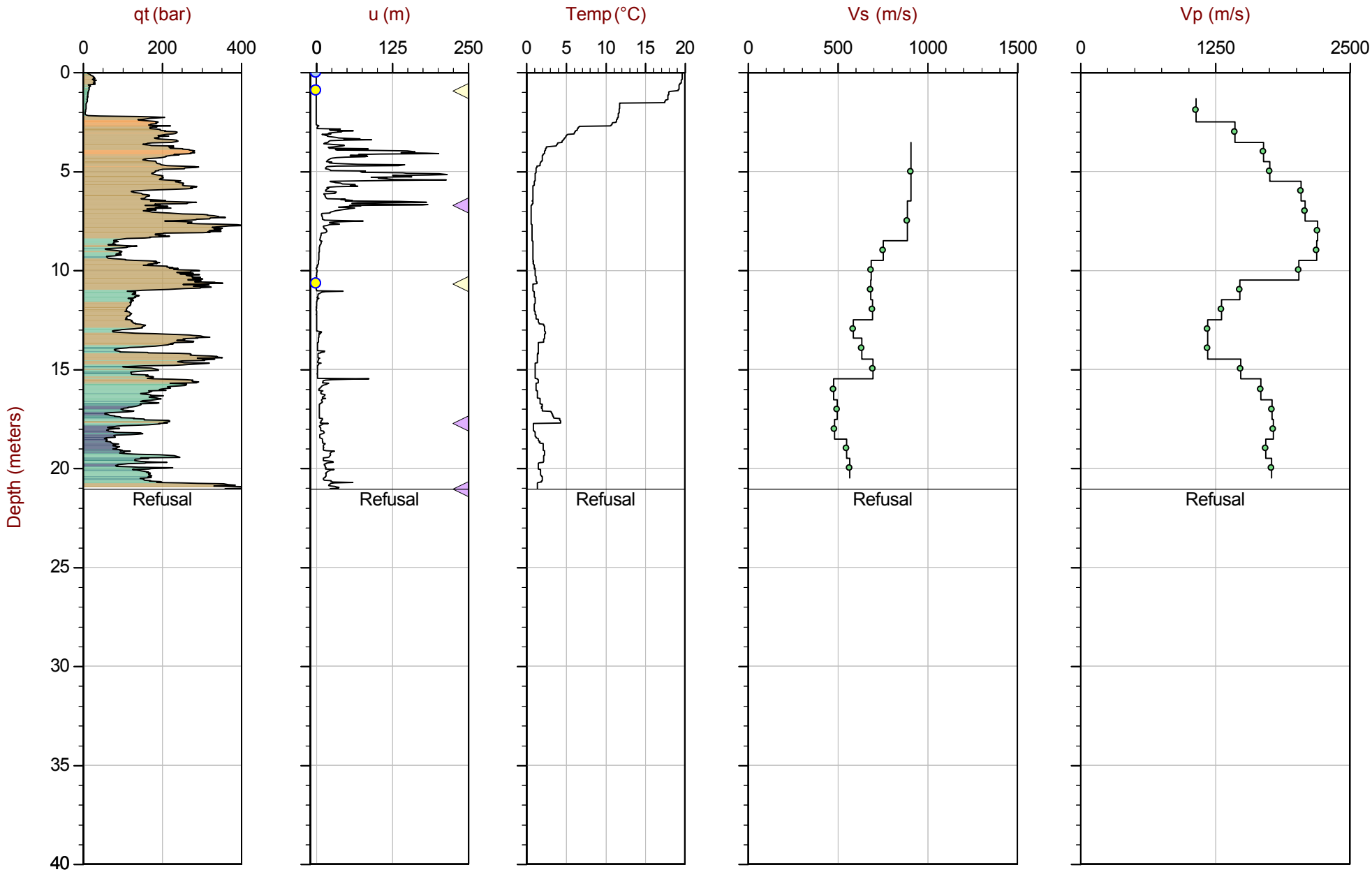
The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Wood plc

Job No: 18-02069
Date: 2018-08-26 14:46
Site: Clinton Creek

Sounding: SCPT18-12
Cone: 511:T1500F15U1K



Max Depth: 21.050 m / 69.06 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 18-02069_SP12.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 7N N: 7148075m E: 513949m
Sheet No: 1 of 1

Equilibrium Pore Pressure (Ueq) | Assumed Ueq | Dissipation, Ueq achieved | Dissipation, Ueq not achieved | Hydrostatic Line

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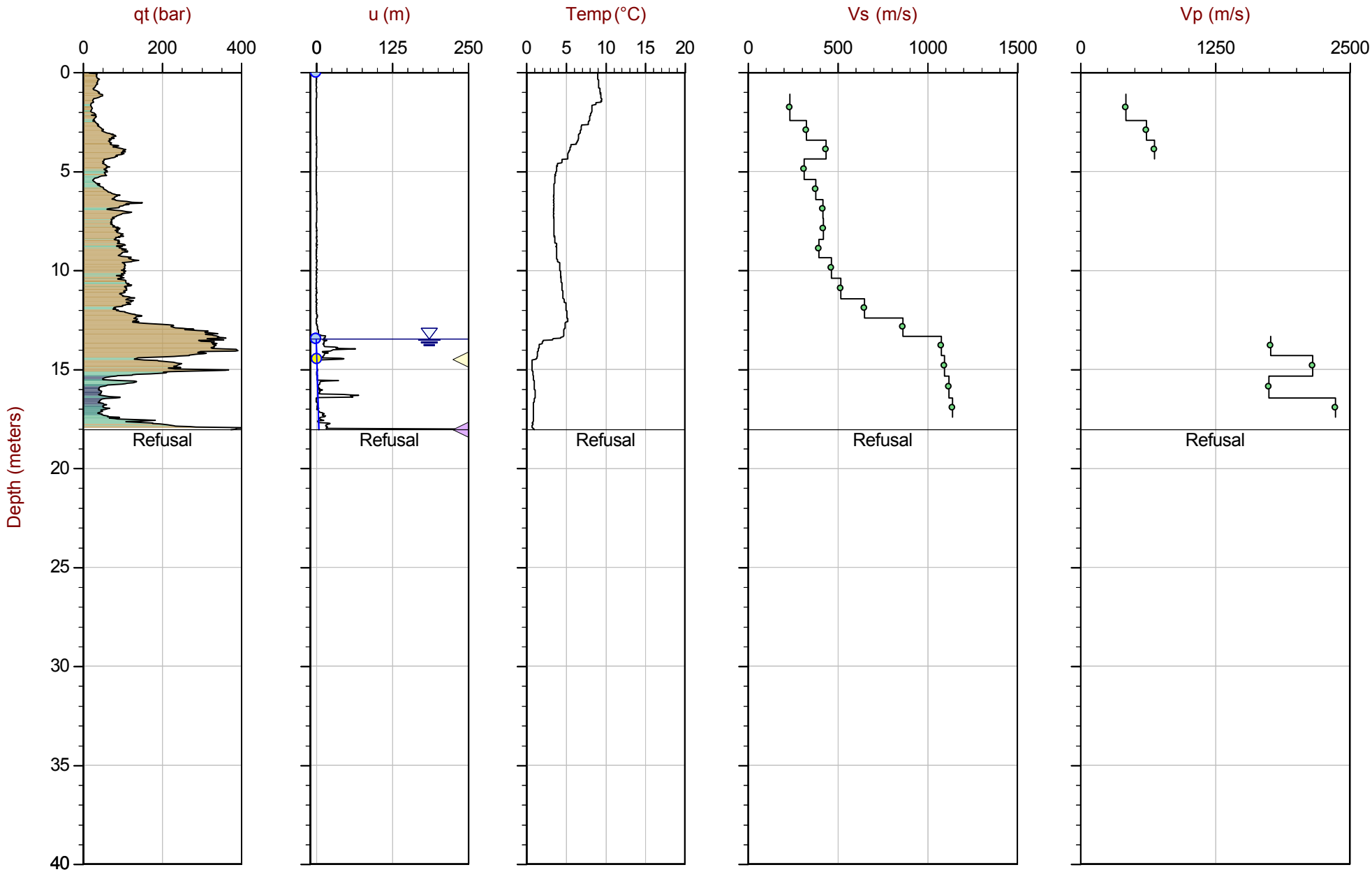
CONETEC

Wood plc

Job No: 18-02069
Date: 2018-08-28 09:21
Site: Clinton Creek

Sounding: SCPT18-14
Cone: 511:T1500F15U1K



Max Depth: 18.050 m / 59.22 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 18-02069_SP14.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 7N N: 7148333m E: 513871m
Sheet No: 1 of 1

Equilibrium Pore Pressure (Ueq) Assumed Ueq Dissipation, Ueq achieved Dissipation, Ueq not achieved Hydrostatic Line

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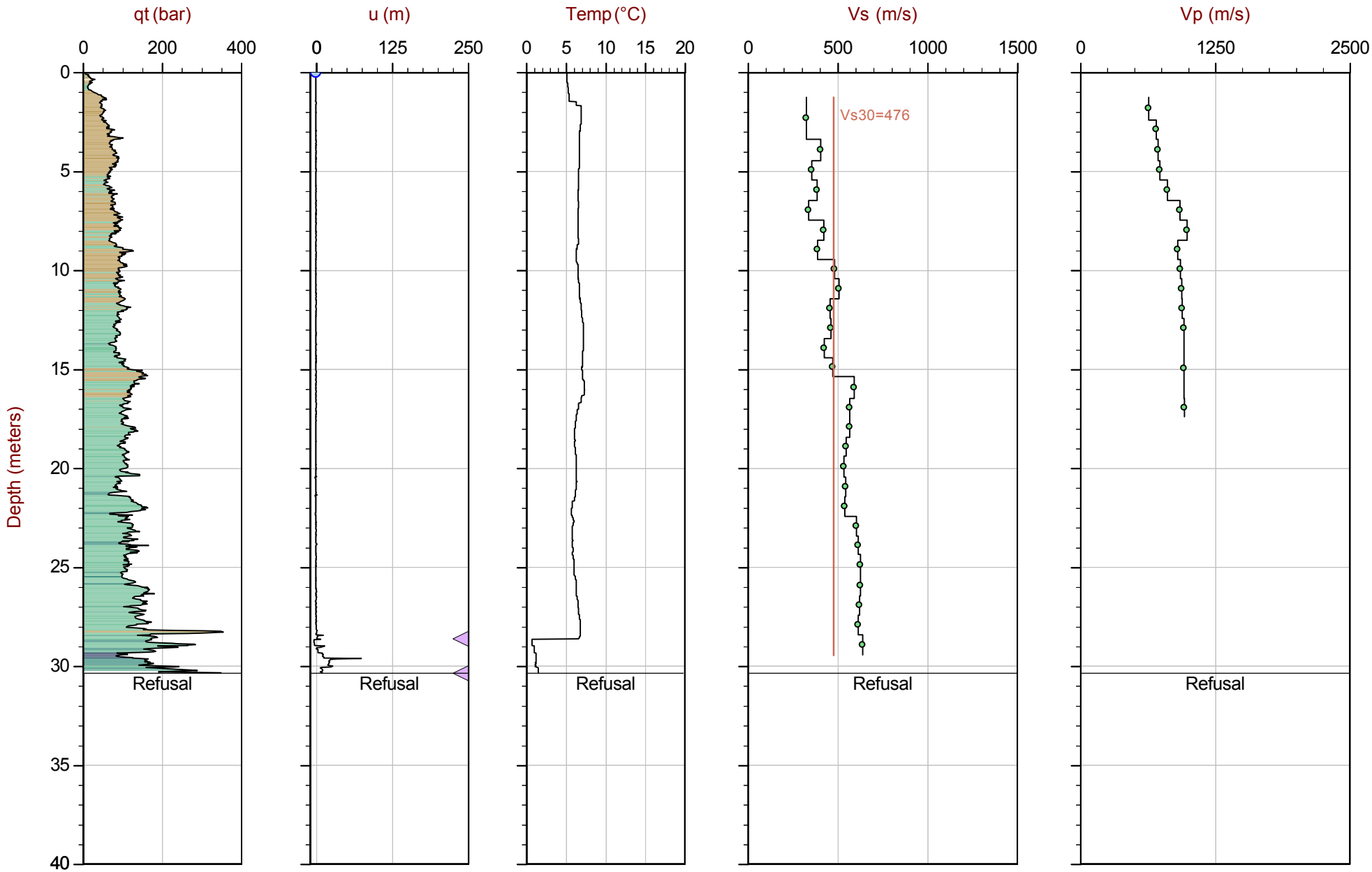
CONETEC

Wood plc

Job No: 18-02069
Date: 2018-08-31 09:10
Site: Clinton Creek

Sounding: SCPT18-17
Cone: 511:T1500F15U1K



Max Depth: 30.350 m / 99.57 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 18-02069_SP17.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 7N N: 7148075m E: 513508m
Sheet No: 1 of 1

Equilibrium Pore Pressure (Ueq) Assumed Ueq Dissipation, Ueq achieved Dissipation, Ueq not achieved Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Seismic Cone Penetration Test Tabular Results

CONETEC

Job No:	18-02069
Client:	Wood plc
Project:	Clinton Creek
Sounding ID:	SCPT18-11
Date:	03-Sep-2018

Seismic Source:	Plate
Source Offset (m):	1.60
Source Depth (m):	0.00
Geophone Offset (m):	0.20

SCPTu COMPRESSION WAVE VELOCITY TEST RESULTS - Vp

Tip Depth (m)	Geophone Depth (m)	Ray Path (m)	Ray Path Difference (m)	Travel Time Interval (ms)	Interval Velocity (m/s)
1.53	1.33	2.08			
2.58	2.38	2.87	0.79	2.16	364
3.60	3.40	3.76	0.89	2.16	413
4.60	4.40	4.68	0.92	1.99	465
5.60	5.40	5.63	0.95	2.06	462
6.58	6.38	6.58	0.95	1.76	536
7.60	7.40	7.57	0.99	1.85	538
8.60	8.40	8.55	0.98	1.79	547
9.60	9.40	9.54	0.98	1.79	551
10.60	10.40	10.52	0.99	1.79	551
11.63	11.43	11.54	1.02	1.84	553
12.65	12.45	12.55	1.01	1.74	582
13.68	13.48	13.57	1.02	1.75	583
14.65	14.45	14.54	0.96	1.58	610
15.57	15.37	15.45	0.91	1.53	599
16.55	16.35	16.43	0.98	1.65	592
17.55	17.35	17.42	1.00	1.63	609
18.63	18.43	18.50	1.08	1.70	634
19.63	19.43	19.50	1.00	1.41	704
20.63	20.43	20.49	1.00	1.36	731
21.63	21.43	21.49	1.00	1.26	791
22.55	22.35	22.41	0.92	1.17	783
23.60	23.40	23.45	1.05	1.34	784
24.60	24.40	24.45	1.00	1.24	807
25.55	25.35	25.40	0.95	1.18	806
26.60	26.40	26.45	1.05	1.33	787
27.60	27.40	27.45	1.00	1.27	785
28.60	28.40	28.45	1.00	1.18	849
29.60	29.40	29.44	1.00	1.15	868
30.57	30.37	30.41	0.97	1.09	887

Job No:	18-02069
Client:	Wood plc
Project:	Clinton Creek
Sounding ID:	SCPT18-11
Date:	03-Sep-2018

Seismic Source:	Plate
Source Offset (m):	1.60
Source Depth (m):	0.00
Geophone Offset (m):	0.20

SCPTu COMPRESSION WAVE VELOCITY TEST RESULTS - Vp

Tip Depth (m)	Geophone Depth (m)	Ray Path (m)	Ray Path Difference (m)	Travel Time Interval (ms)	Interval Velocity (m/s)
31.60	31.40	31.44	1.03	1.13	907
32.58	32.38	32.42	0.98	1.08	906
33.60	33.40	33.44	1.02	1.12	911
34.60	34.40	34.44	1.00	1.08	925
35.60	35.40	35.44	1.00	1.07	937
36.60	36.40	36.44	1.00	1.05	955

Job No:	18-02069
Client:	Wood plc
Project:	Clinton Creek
Sounding ID:	SCPT18-11
Date:	03-Sep-2018

Seismic Source:	Beam
Source Offset (m):	0.65
Source Depth (m):	0.00
Geophone Offset (m):	0.20

SCPTu SHEAR WAVE VELOCITY TEST RESULTS - Vs

Tip Depth (m)	Geophone Depth (m)	Ray Path (m)	Ray Path Difference (m)	Travel Time Interval (ms)	Interval Velocity (m/s)
1.53	1.33	1.48			
2.58	2.38	2.47	0.99	5.51	179
3.60	3.40	3.46	0.99	5.70	175
4.60	4.40	4.45	0.99	3.91	252
5.60	5.40	5.44	0.99	4.24	234
6.58	6.38	6.41	0.97	4.41	221
7.60	7.40	7.43	1.02	3.85	264
8.60	8.40	8.43	1.00	3.51	284
9.60	9.40	9.42	1.00	3.44	290
10.60	10.40	10.42	1.00	3.47	288
11.63	11.43	11.45	1.03	3.86	266
12.65	12.45	12.47	1.02	3.95	258
13.68	13.48	13.50	1.03	3.22	320
14.65	14.45	14.46	0.97	2.89	335
15.57	15.37	15.38	0.92	2.73	337
16.55	16.35	16.36	0.98	3.06	320
17.55	17.35	17.36	1.00	3.18	314
18.63	18.43	18.44	1.08	3.04	355
19.63	19.43	19.44	1.00	2.86	349
20.63	20.43	20.44	1.00	2.82	355
21.63	21.43	21.44	1.00	3.00	333
22.55	22.35	22.36	0.92	2.66	345
23.60	23.40	23.41	1.05	2.52	417
24.60	24.40	24.41	1.00	2.13	468
25.55	25.35	25.36	0.95	1.95	486
26.60	26.40	26.41	1.05	2.45	428
27.60	27.40	27.41	1.00	2.17	460
28.60	28.40	28.41	1.00	2.32	430
29.60	29.40	29.41	1.00	2.39	418

Job No:	18-02069
Client:	Wood plc
Project:	Clinton Creek
Sounding ID:	SCPT18-11
Date:	03-Sep-2018

Seismic Source:	Beam
Source Offset (m):	0.65
Source Depth (m):	0.00
Geophone Offset (m):	0.20

SCPTu SHEAR WAVE VELOCITY TEST RESULTS - Vs

Tip Depth (m)	Geophone Depth (m)	Ray Path (m)	Ray Path Difference (m)	Travel Time Interval (ms)	Interval Velocity (m/s)
30.57	30.37	30.38	0.97	2.18	446
31.60	31.40	31.41	1.03	2.35	439
32.58	32.38	32.39	0.98	2.26	433
33.60	33.40	33.41	1.02	2.35	435
34.60	34.40	34.41	1.00	2.36	424
35.60	35.40	35.41	1.00	2.29	437
36.60	36.40	36.41	1.00	2.53	396

Job No:	18-02069
Client:	Wood plc
Project:	Clinton Creek
Sounding ID:	SCPT18-12
Date:	26-Aug-2018

Seismic Source:	Plate
Source Offset (m):	1.60
Source Depth (m):	0.00
Geophone Offset (m):	0.20

SCPTu COMPRESSION WAVE VELOCITY TEST RESULTS - Vp

Tip Depth (m)	Geophone Depth (m)	Ray Path (m)	Ray Path Difference (m)	Travel Time Interval (ms)	Interval Velocity (m/s)
1.52	1.32	2.07			
2.70	2.50	2.97	0.89	0.83	1075
3.73	3.53	3.88	0.91	0.63	1436
4.70	4.50	4.78	0.90	0.53	1702
5.70	5.50	5.73	0.95	0.54	1758
6.70	6.50	6.69	0.97	0.47	2048
7.72	7.52	7.69	0.99	0.48	2086
8.70	8.50	8.65	0.96	0.44	2201
9.70	9.50	9.63	0.98	0.45	2193
10.68	10.48	10.60	0.97	0.48	2030
11.68	11.48	11.59	0.99	0.67	1479
12.70	12.50	12.60	1.01	0.77	1311
13.63	13.43	13.52	0.92	0.78	1181
14.68	14.48	14.57	1.04	0.88	1182
15.68	15.48	15.56	0.99	0.67	1487
16.75	16.55	16.63	1.06	0.64	1675
17.73	17.53	17.60	0.98	0.55	1779
18.73	18.53	18.60	1.00	0.56	1794
19.70	19.50	19.57	0.97	0.56	1722
20.70	20.50	20.56	1.00	0.56	1774

Job No:	18-02069
Client:	Wood plc
Project:	Clinton Creek
Sounding ID:	SCPT18-12
Date:	26-Aug-2018

Seismic Source:	Beam
Source Offset (m):	0.60
Source Depth (m):	0.00
Geophone Offset (m):	0.20

SCPTu SHEAR WAVE VELOCITY TEST RESULTS - Vs

Tip Depth (m)	Geophone Depth (m)	Ray Path (m)	Ray Path Difference (m)	Travel Time Interval (ms)	Interval Velocity (m/s)
3.73	3.53	3.58			
6.70	6.50	6.53	2.95	3.25	908
8.70	8.50	8.52	1.99	2.24	889
9.70	9.50	9.52	1.00	1.32	754
10.68	10.48	10.50	0.98	1.43	686
11.68	11.48	11.50	1.00	1.46	685
12.70	12.50	12.51	1.02	1.47	693
13.63	13.43	13.44	0.93	1.59	586
14.68	14.48	14.49	1.05	1.43	732
15.68	15.48	15.49	1.00	1.65	605
16.75	16.55	16.56	1.07	2.24	477
17.73	17.53	17.54	0.98	1.97	497
18.73	18.53	18.54	1.00	2.07	483
19.70	19.50	19.51	0.97	1.77	549
20.70	20.50	20.51	1.00	1.77	566

Job No:	18-02069
Client:	Wood plc
Project:	Clinton Creek
Sounding ID:	SCPT18-14
Date:	28-Aug-2018

Seismic Source:	Plate
Source Offset (m):	1.60
Source Depth (m):	0.00
Geophone Offset (m):	0.20

SCPTu COMPRESSION WAVE VELOCITY TEST RESULTS - Vp

Tip Depth (m)	Geophone Depth (m)	Ray Path (m)	Ray Path Difference (m)	Travel Time Interval (ms)	Interval Velocity (m/s)
1.30	1.10	1.94			
2.63	2.43	2.91	0.97	2.30	421
3.63	3.43	3.78	0.88	1.43	613
4.58	4.38	4.66	0.88	1.28	686
13.53	13.33	13.43			
14.50	14.30	14.39	0.96	0.54	1769
15.55	15.35	15.43	1.04	0.48	2156
16.65	16.45	16.53	1.09	0.63	1750
17.63	17.43	17.50	0.98	0.41	2371

Job No:	18-02069
Client:	Wood plc
Project:	Clinton Creek
Sounding ID:	SCPT18-14
Date:	28-Aug-2018

Seismic Source:	Beam
Source Offset (m):	0.60
Source Depth (m):	0.00
Geophone Offset (m):	0.20

SCPTu SHEAR WAVE VELOCITY TEST RESULTS - Vs

Tip Depth (m)	Geophone Depth (m)	Ray Path (m)	Ray Path Difference (m)	Travel Time Interval (ms)	Interval Velocity (m/s)
1.30	1.10	1.25			
2.63	2.43	2.50	1.25	5.35	233
3.63	3.43	3.48	0.98	3.01	325
4.58	4.38	4.42	0.94	2.16	435
5.60	5.40	5.43	1.01	3.24	312
6.63	6.43	6.46	1.02	2.71	378
7.58	7.38	7.40	0.95	2.26	418
8.63	8.43	8.45	1.05	2.50	419
9.57	9.37	9.39	0.94	2.38	395
10.60	10.40	10.42	1.03	2.21	464
11.63	11.43	11.45	1.03	1.99	517
12.60	12.40	12.41	0.97	1.50	648
13.53	13.33	13.34	0.93	1.08	863
14.50	14.30	14.31	0.97	0.90	1077
15.55	15.35	15.36	1.05	0.96	1094
16.65	16.45	16.46	1.10	0.98	1121
17.63	17.43	17.44	0.98	0.86	1140

Job No:	18-02069
Client:	Wood plc
Project:	Clinton Creek
Sounding ID:	SCPT18-17
Date:	31-Aug-2018

Seismic Source:	Plate
Source Offset (m):	1.60
Source Depth (m):	0.00
Geophone Offset (m):	0.20

SCPTu COMPRESSION WAVE VELOCITY TEST RESULTS - Vp

Tip Depth (m)	Geophone Depth (m)	Ray Path (m)	Ray Path Difference (m)	Travel Time Interval (ms)	Interval Velocity (m/s)
1.45	1.25	2.03			
2.60	2.40	2.88	0.85	1.35	633
3.58	3.38	3.74	0.86	1.21	705
4.65	4.45	4.73	0.99	1.37	720
5.63	5.43	5.66	0.93	1.26	738
6.67	6.47	6.66	1.00	1.24	808
7.67	7.47	7.64	0.97	1.05	925
8.68	8.48	8.63	0.99	1.00	991
9.65	9.45	9.58	0.95	1.06	903
10.63	10.43	10.55	0.97	1.04	927
11.65	11.45	11.56	1.01	1.07	939
12.63	12.43	12.53	0.97	1.03	945
13.65	13.45	13.54	1.01	1.05	960
16.68	16.48	16.56	3.01	3.14	961
17.60	17.40	17.47	0.92	0.95	966

Job No:	18-02069
Client:	Wood plc
Project:	Clinton Creek
Sounding ID:	SCPT18-17
Date:	31-Aug-2018

Seismic Source:	Beam
Source Offset (m):	0.65
Source Depth (m):	0.00
Geophone Offset (m):	0.20

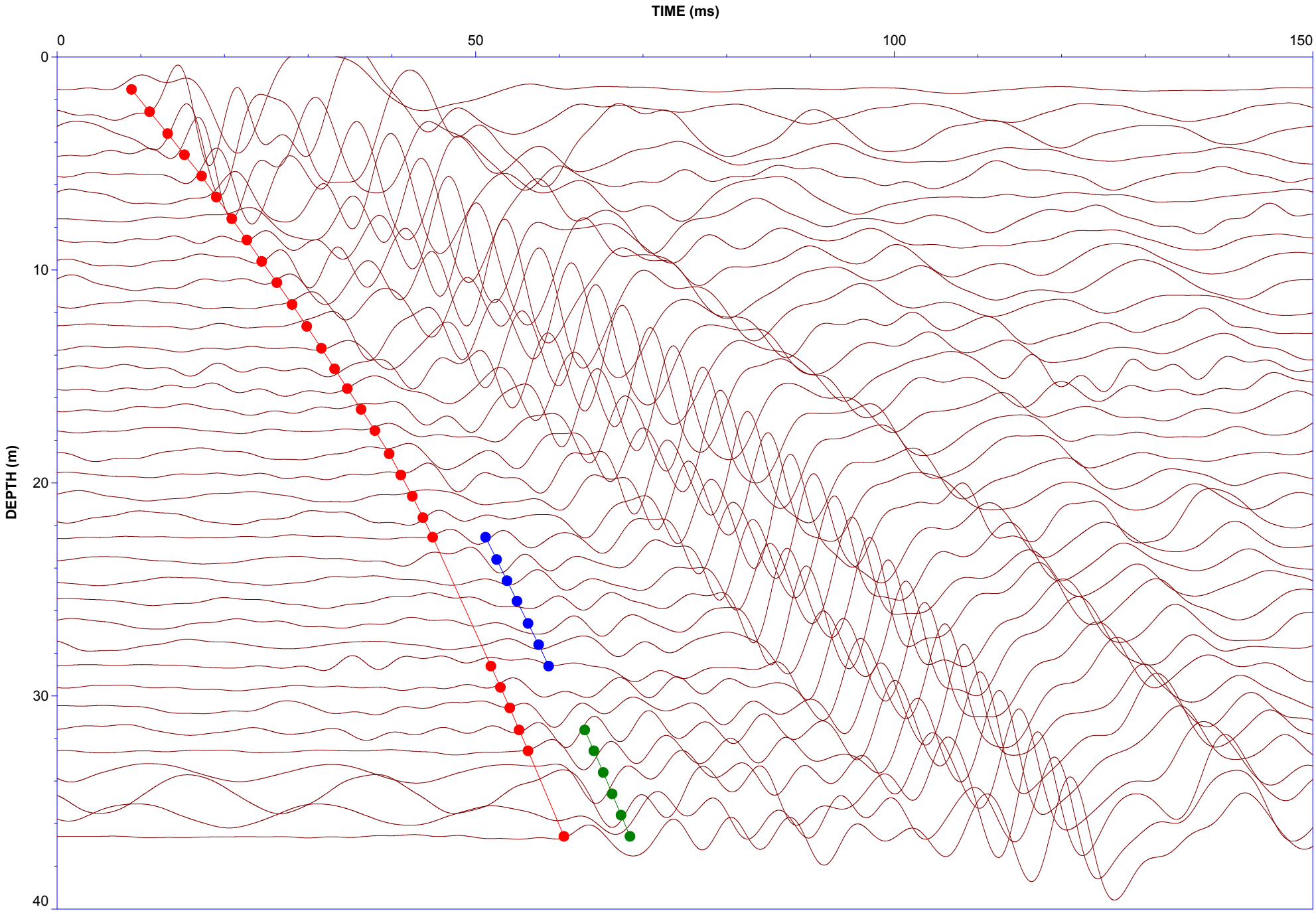
SCPTu SHEAR WAVE VELOCITY TEST RESULTS - Vs

Tip Depth (m)	Geophone Depth (m)	Ray Path (m)	Ray Path Difference (m)	Travel Time Interval (ms)	Interval Velocity (m/s)
1.45	1.25	1.41			
3.58	3.38	3.44	2.03	6.26	325
4.65	4.45	4.50	1.06	2.60	405
5.63	5.43	5.47	0.97	2.73	355
6.67	6.47	6.50	1.03	2.69	384
7.67	7.47	7.50	1.00	2.94	338
8.68	8.48	8.50	1.01	2.38	422
9.65	9.45	9.47	0.97	2.49	388
10.63	10.43	10.45	0.98	2.03	483
11.65	11.45	11.47	1.02	2.00	508
12.63	12.43	12.45	0.98	2.14	457
13.65	13.45	13.47	1.02	2.21	461
14.63	14.43	14.44	0.98	2.30	426
15.57	15.37	15.38	0.94	1.99	472
16.68	16.48	16.49	1.11	1.87	592
17.60	17.40	17.41	0.92	1.62	567
18.65	18.45	18.46	1.05	1.85	566
19.60	19.40	19.41	0.95	1.73	548
20.65	20.45	20.46	1.05	1.96	535
21.65	21.45	21.46	1.00	1.83	545
22.63	22.43	22.44	0.98	1.81	540
23.63	23.43	23.44	1.00	1.65	605
24.57	24.37	24.38	0.94	1.53	615
25.63	25.43	25.44	1.06	1.69	626
26.65	26.45	26.46	1.02	1.63	626
27.63	27.43	27.44	0.98	1.58	622
28.63	28.43	28.44	1.00	1.63	614
29.65	29.45	29.46	1.02	1.60	638

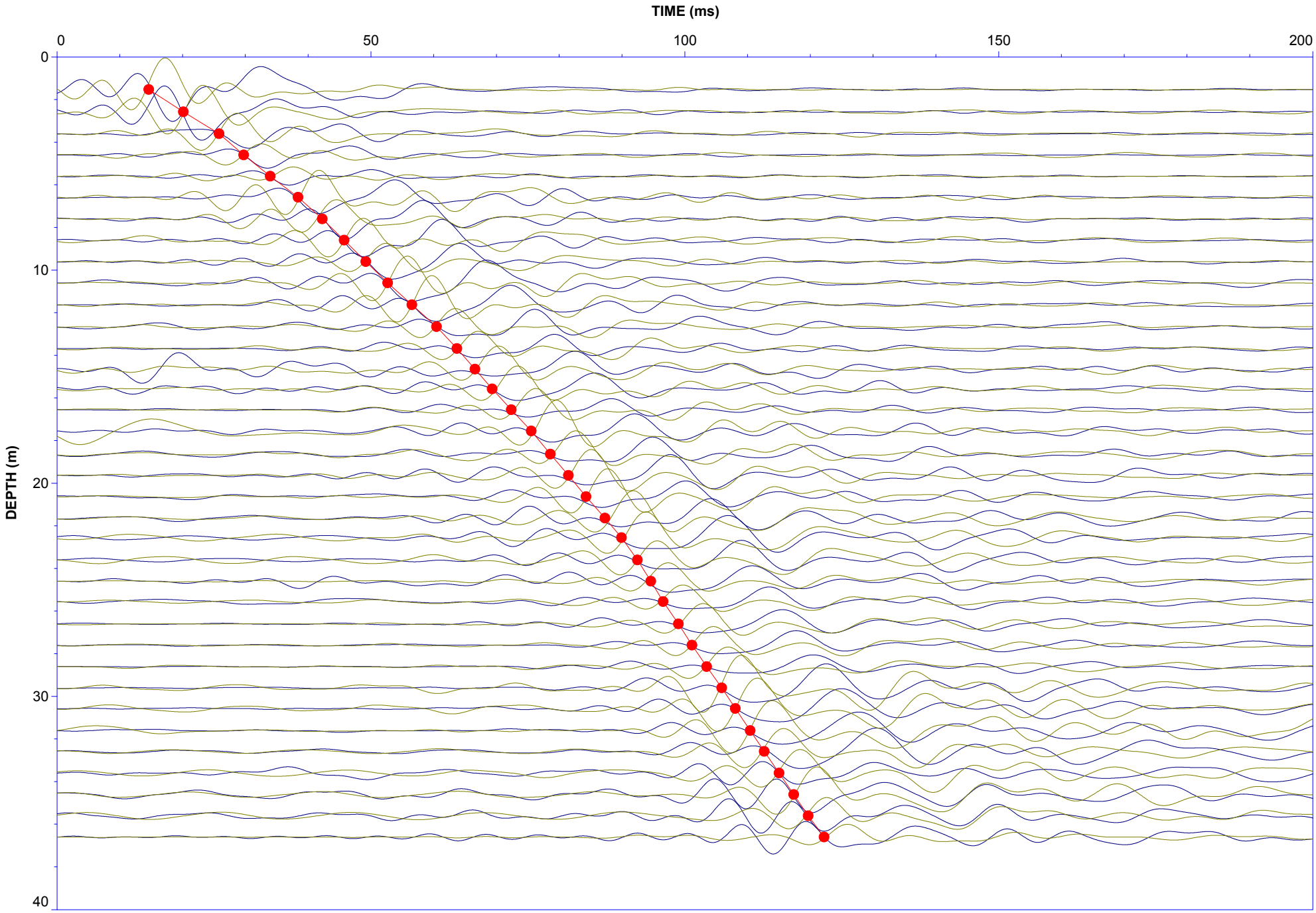
Seismic Cone Penetration Wave Traces

CONETEC

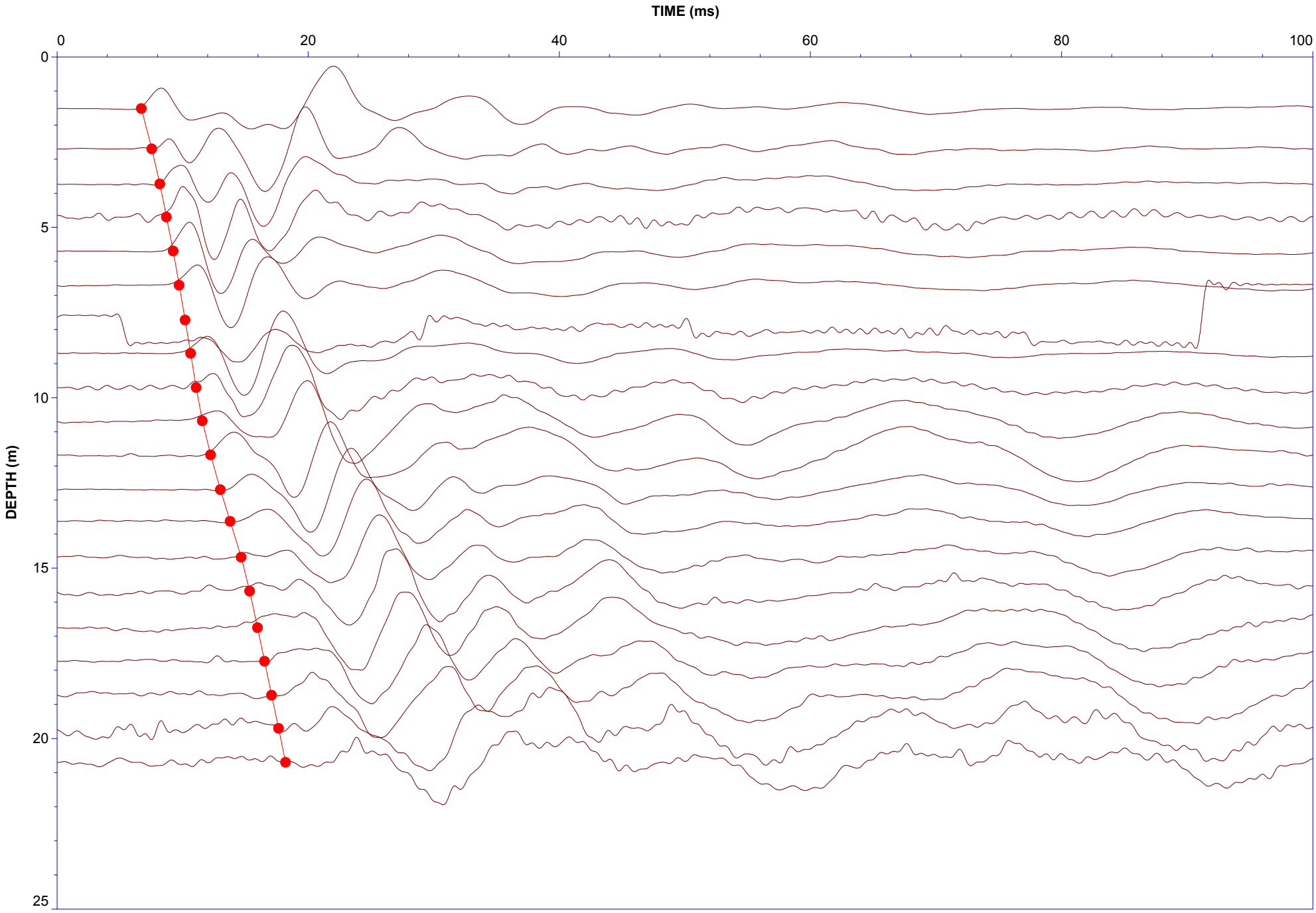
Job No: 18-02069 Client: Wood plc Project Title: Clinton Creek Filter: 0-200Hz BP Hole: SCPT18-11



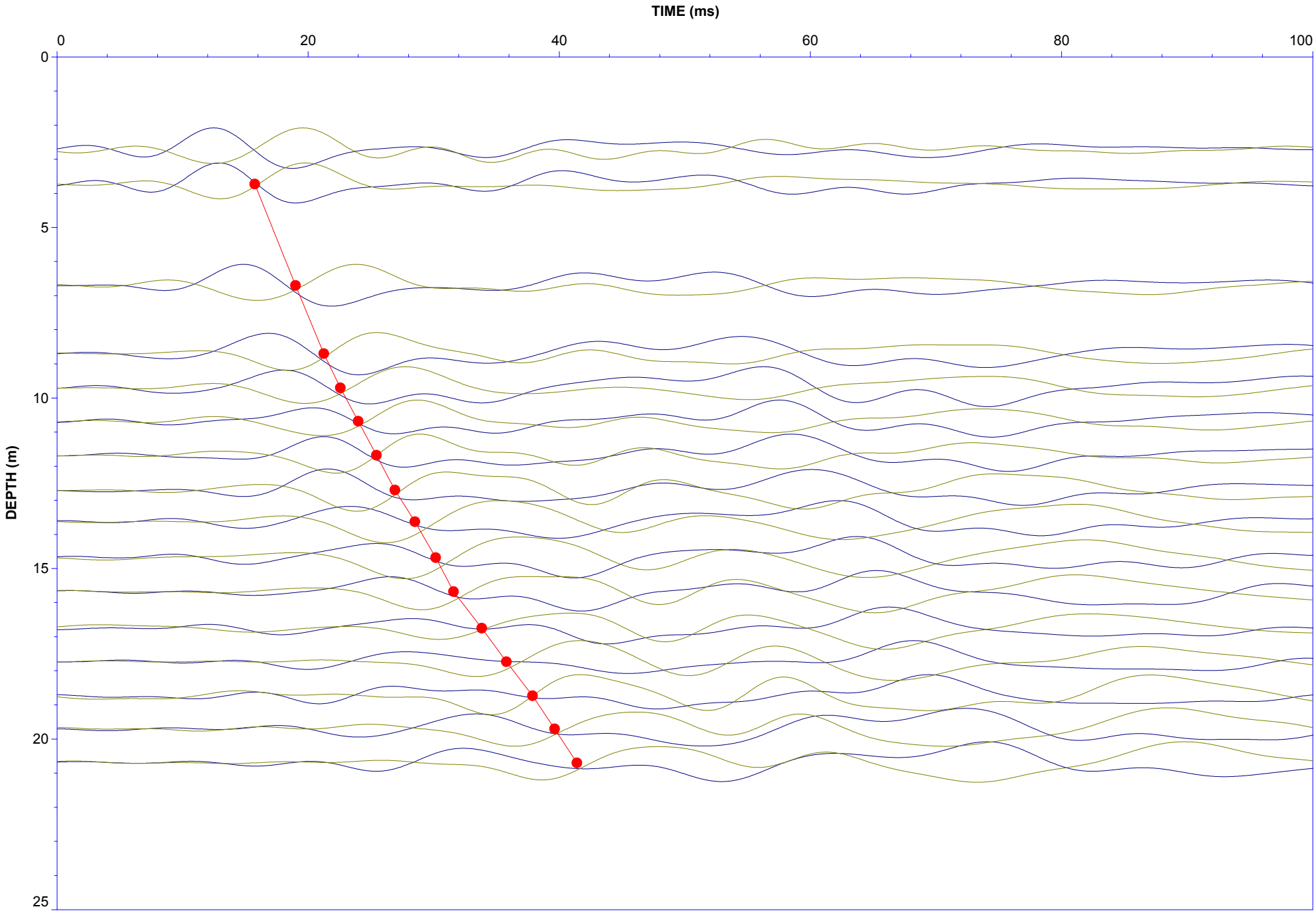
Job No: 18-02069 Client: Wood plc Project Title: Clinton Creek Filter: 0-125Hz BP Hole: SCPT18-11



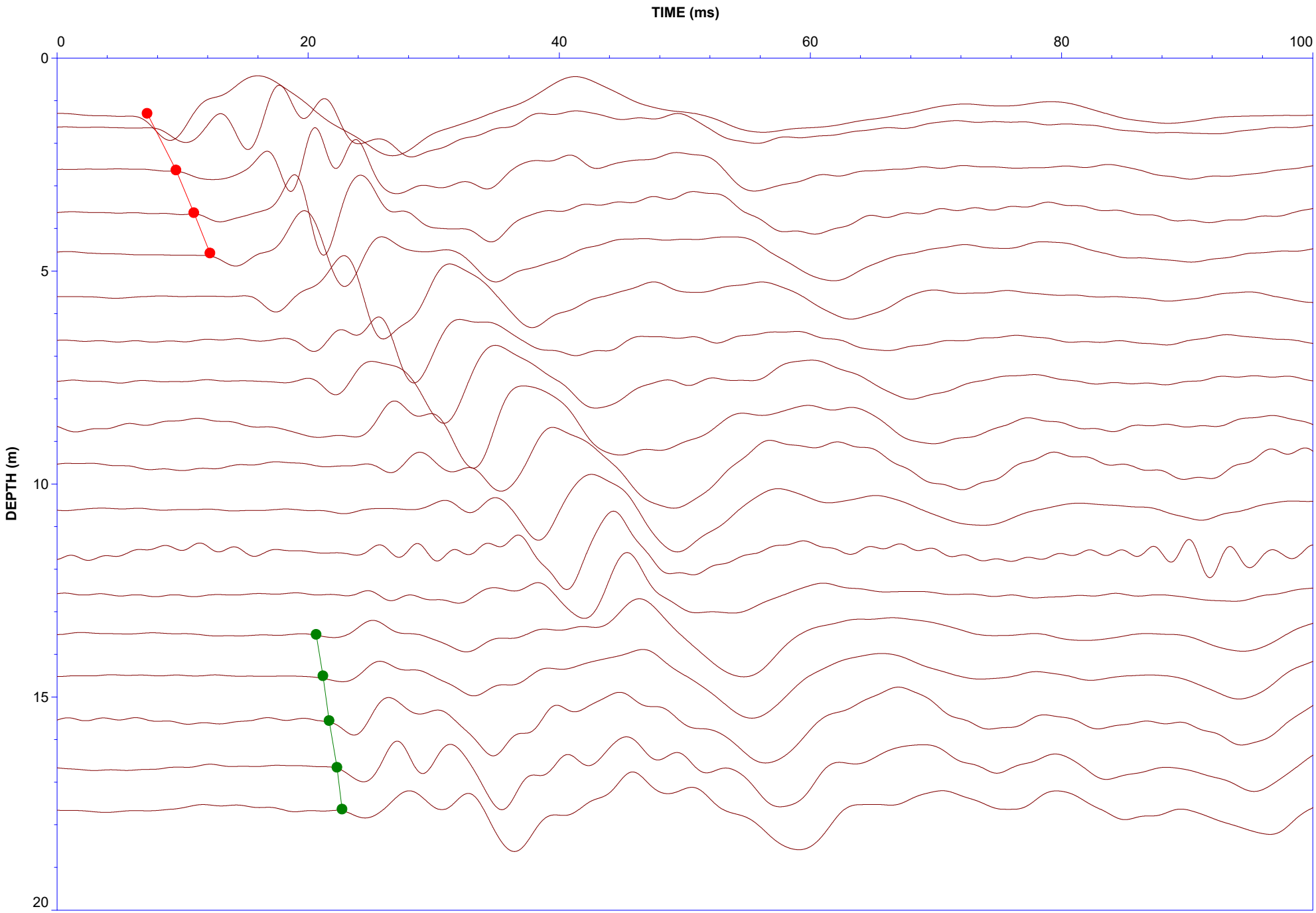
Job No: 18-02069 Client: Wood plc Project Title: Clinton Creek Filter: 0-1000Hz BP Hole: SCPT18-12



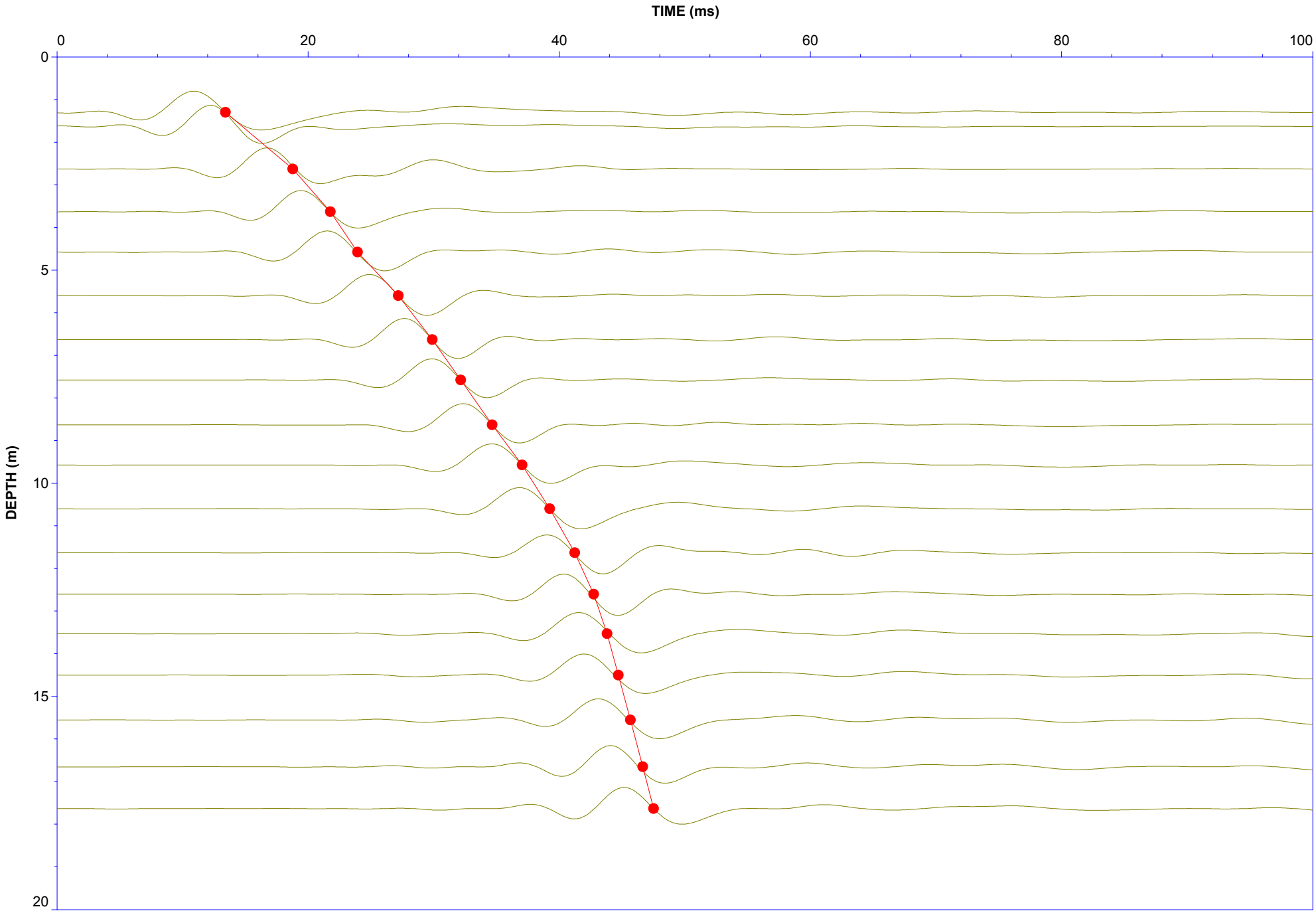
Job No: 18-02069 Client: Wood plc Project Title: Clinton Creek Filter: 0-125Hz BP Hole: SCPT18-12



Job No: 18-02069 Client: Wood plc Project Title: Clinton Creek Filter: 0-400 Hz BP Hole: SCPT18-14

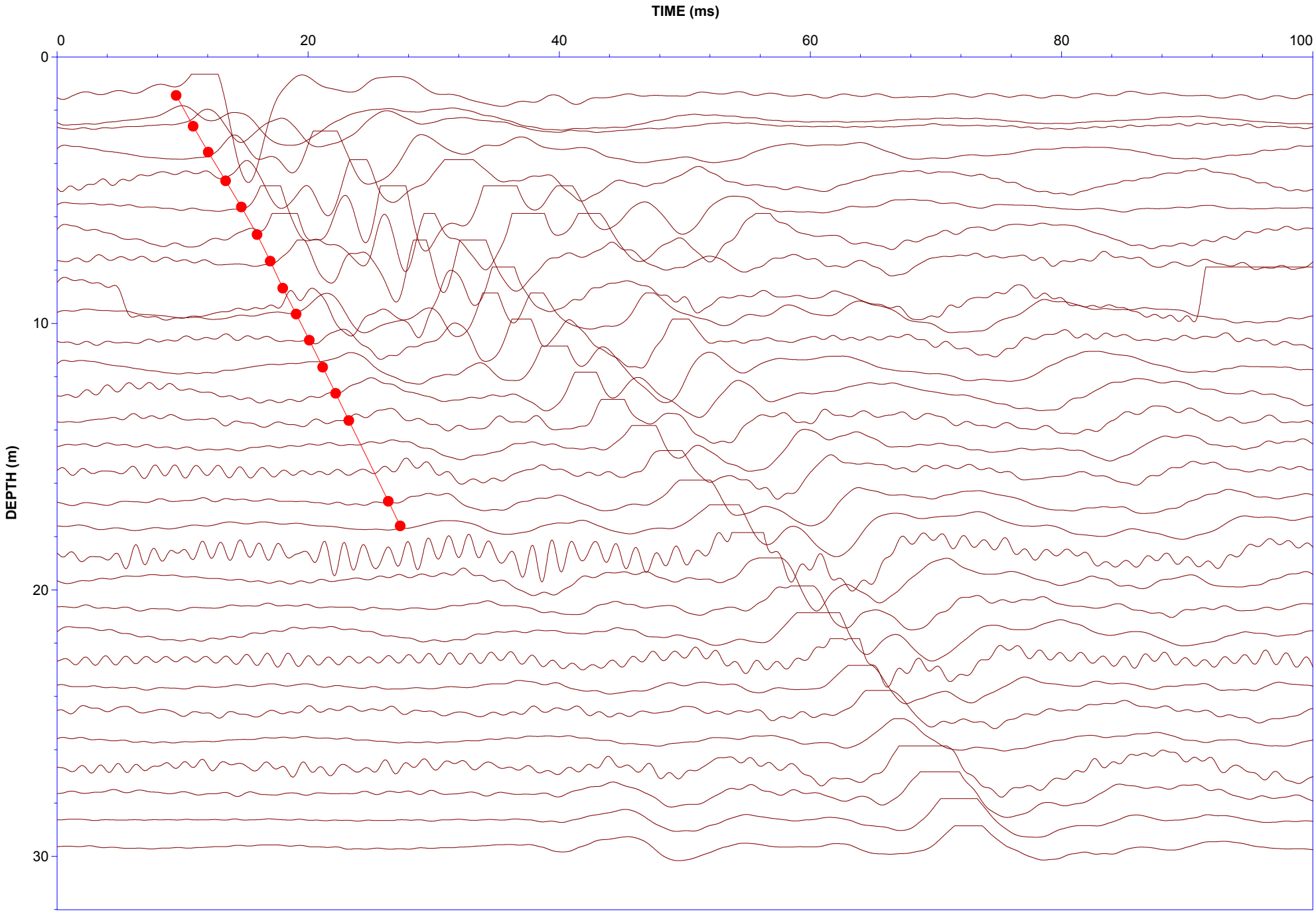


Job No: 18-02069 Client: Wood plc Project Title: Clinton Creek Filter: 0-1000 Hz BP Hole: SCPT18-12

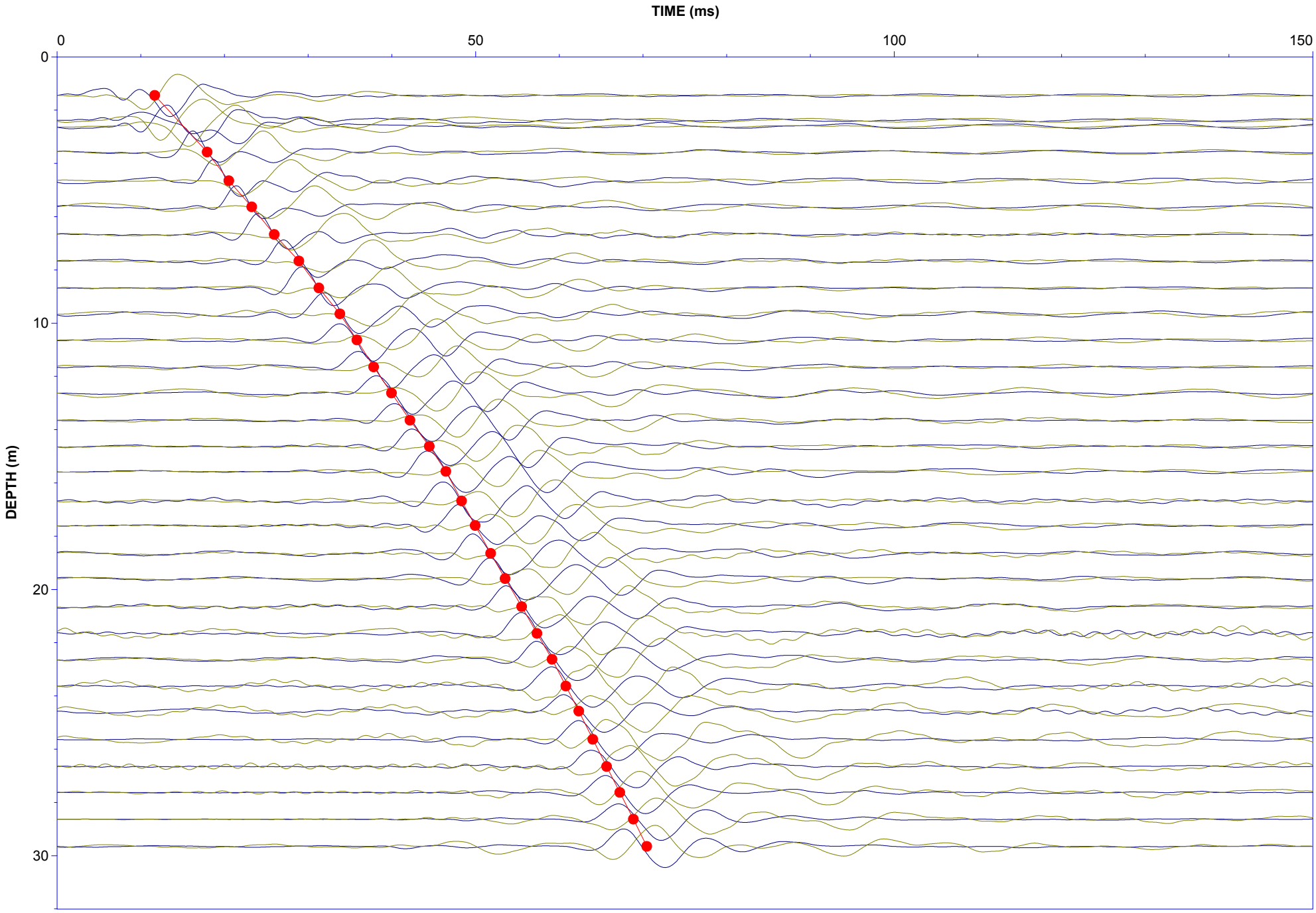


CONETEC

Job No: 18-02069 Client: Wood plc Project Title: Clinton Creek Filter: 0-1000Hz BP Hole: SCPT18-17



Job No: 18-02069 Client: Wood plc Project Title: Clinton Creek Filter: 0-200Hz BP Hole: SCPT18-17



Pore Pressure Dissipation Summary and
Pore Pressure Dissipation Plots

Job No:	18-02069
Client:	Wood plc
Project:	Clinton Creek
Start Date:	26-Aug-2018
End Date:	03-Sep-2018

CPTu PORE PRESSURE DISSIPATION SUMMARY

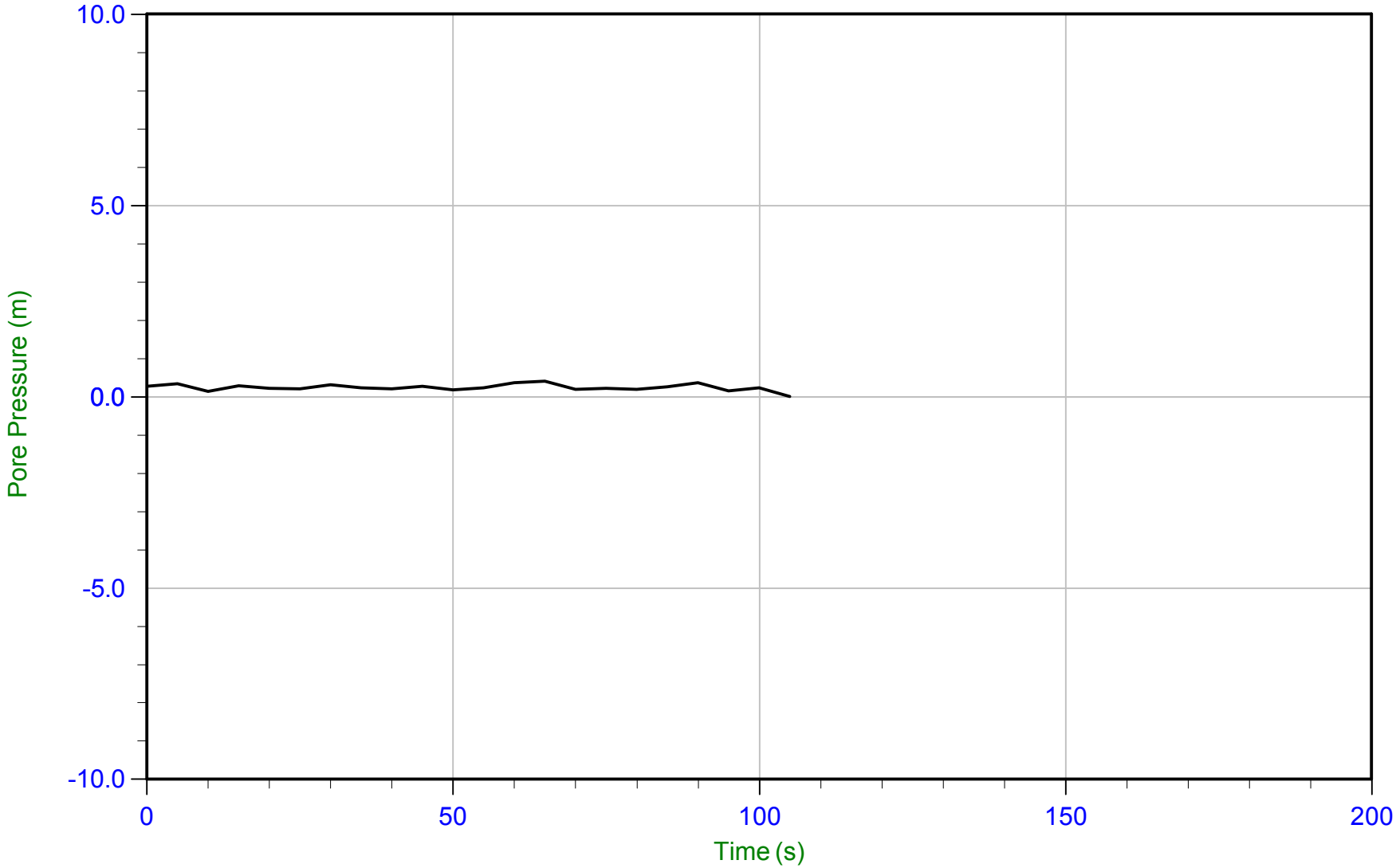
Sounding ID	File Name	Cone Area (cm^2)	Duration (s)	Test Depth (m)	Estimated Equilibrium Pore Pressure U_{eq} (m)	Calculated Phreatic Surface (m)
SCPT18-11	18-02069_SP11	15	105	36.38	0.00	
SCPT18-11	18-02069_SP11	15	600	36.60	0.00	
SCPT18-12	18-02069_SP12	15	110	0.93	0.00	
SCPT18-12	18-02069_SP12	15	300	6.70	Not Achieved	
SCPT18-12	18-02069_SP12	15	200	10.68	0.00	
SCPT18-12	18-02069_SP12	15	360	17.73	Not Achieved	
SCPT18-12	18-02069_SP12	15	335	21.05	Not Achieved	
SCPT18-14	18-02069_SP14	15	500	14.50	1.03	13.5
SCPT18-14	18-02069_SP14	15	910	18.05	Not Achieved	
SCPT18-17	18-02069_SP17	15	1500	28.63	Not Achieved	
SCPT18-17	18-02069_SP17	15	430	30.35	Not Achieved	

CONETEC

Wood plc

Job No: 18-02069
Date: 09/03/2018 09:35
Site: Clinton Creek

Sounding: SCPT18-11
Cone: 511:T1500F15U1K Area=15 cm²



Trace Summary:

Filename: 18-02069_SP11.PPF
Depth: 36.375 m / 119.339 ft
Duration: 105.0 s

U Min: 0.0 m
U Max: 0.4 m

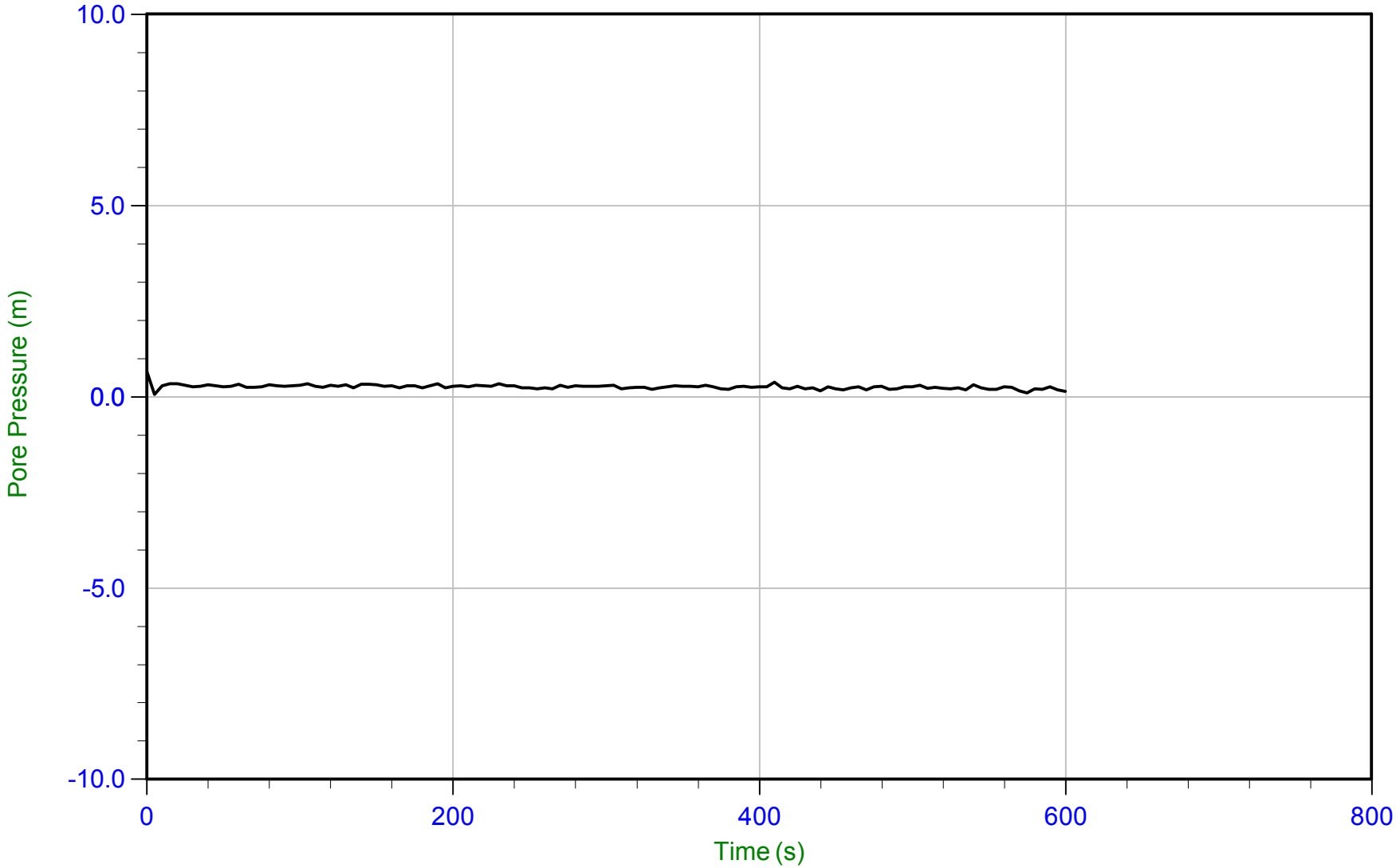
WT: 36.375 m / 119.339 ft
Ueq: 0.0 m

CONETEC

Wood plc

Job No: 18-02069
Date: 09/03/2018 09:35
Site: Clinton Creek

Sounding: SCPT18-11
Cone: 511:T1500F15U1K Area=15 cm²



Trace Summary:

Filename: 18-02069_SP11.PPF
Depth: 36.600 m / 120.077 ft
Duration: 600.0 s

U Min: 0.1 m
U Max: 0.7 m

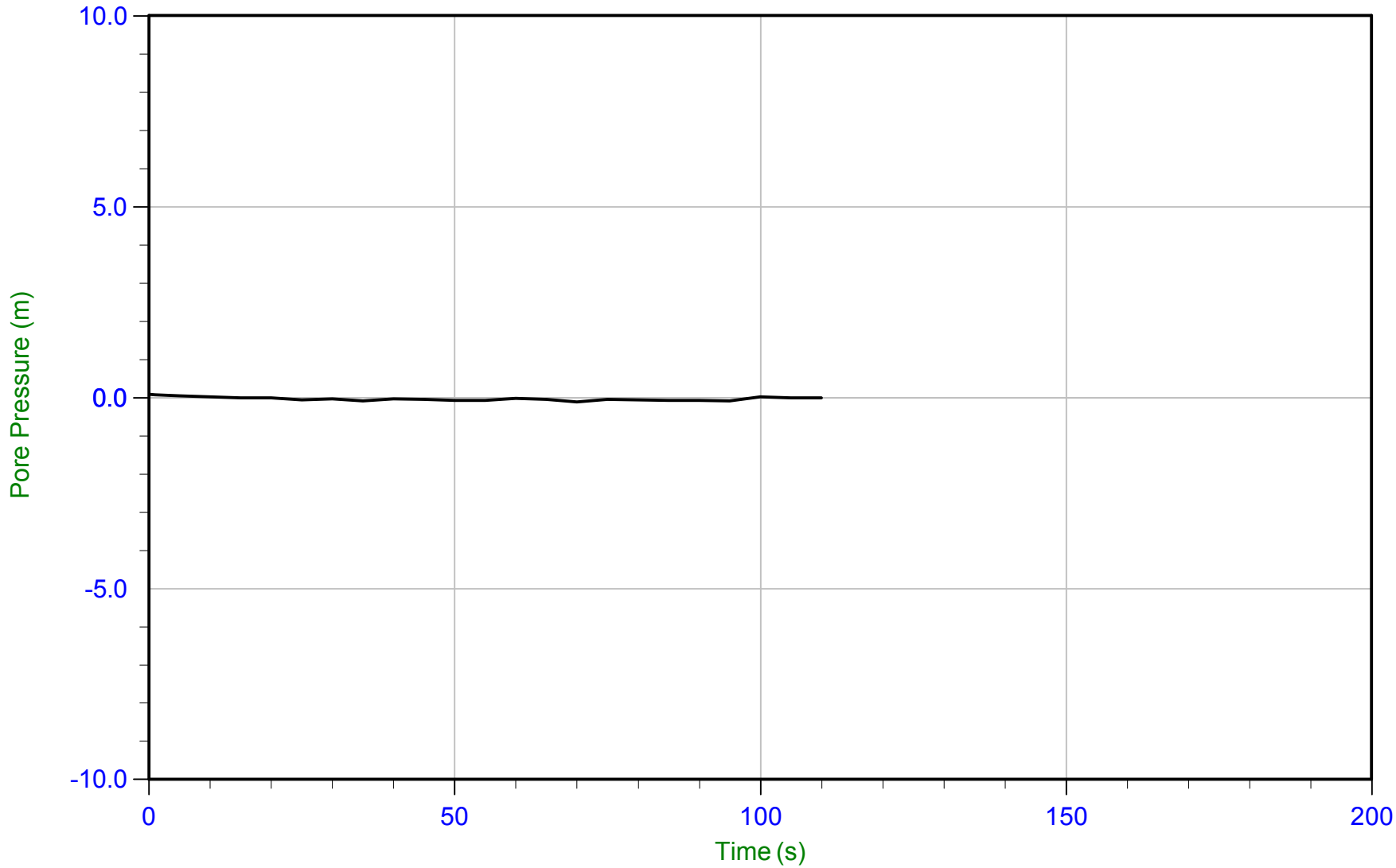
WT: 36.600 m / 120.077 ft
Ueq: 0.0 m

CONETEC

Wood plc

Job No: 18-02069
Date: 08/26/2018 14:46
Site: Clinton Creek

Sounding: SCPT18-12
Cone: 511:T1500F15U1K Area=15 cm²



Trace Summary:

Filename: 18-02069_SP12.PPF
Depth: 0.925 m / 3.035 ft
Duration: 110.0 s

U Min: -0.1 m
U Max: 0.1 m

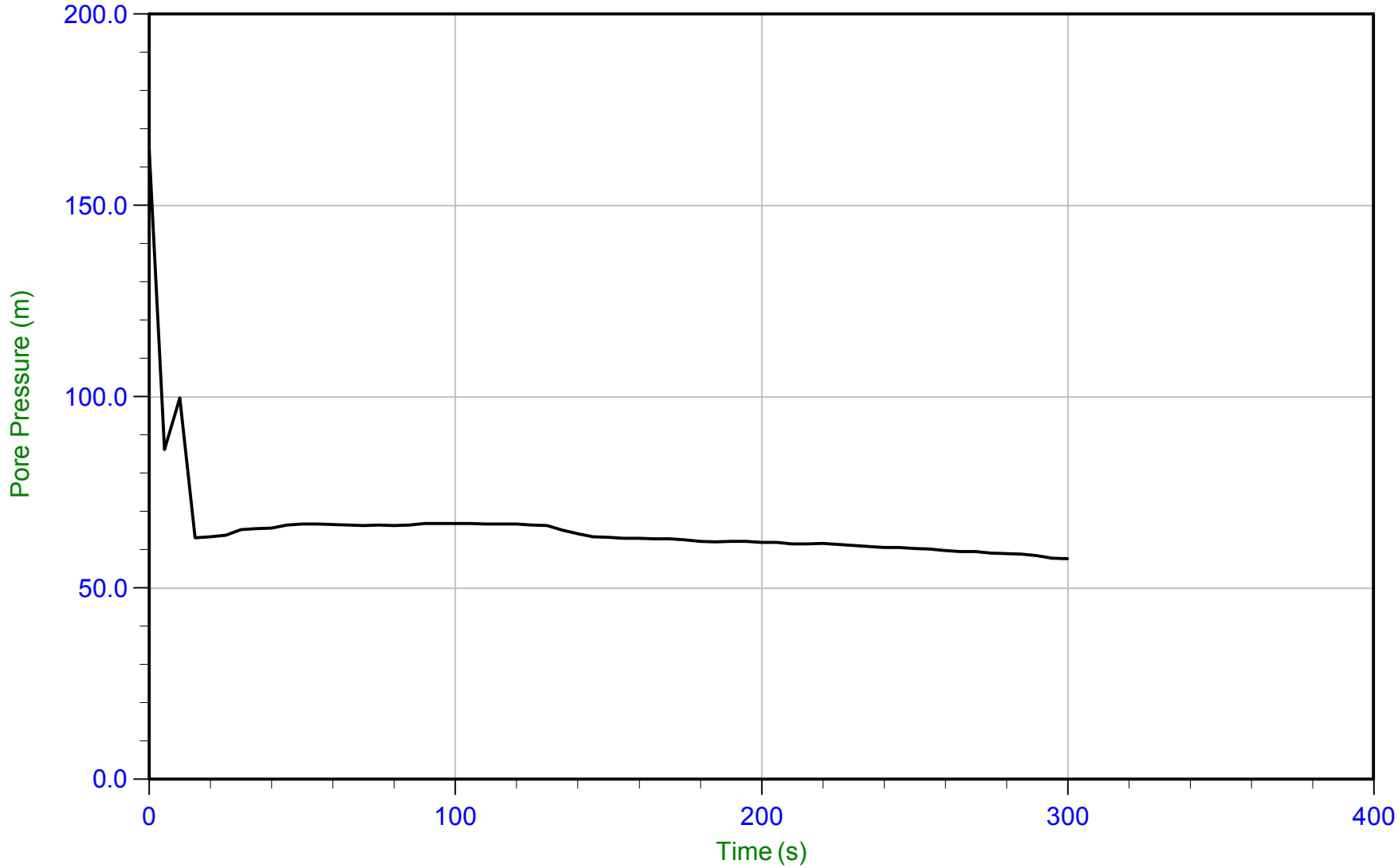
WT: 0.925 m / 3.035 ft
Ueq: 0.0 m

CONETEC

Wood plc

Job No: 18-02069
Date: 08/26/2018 14:46
Site: Clinton Creek

Sounding: SCPT18-12
Cone: 511:T1500F15U1K Area=15 cm²



Trace Summary:

Filename: 18-02069_SP12.PPF
Depth: 6.700 m / 21.981 ft
Duration: 300.0 s

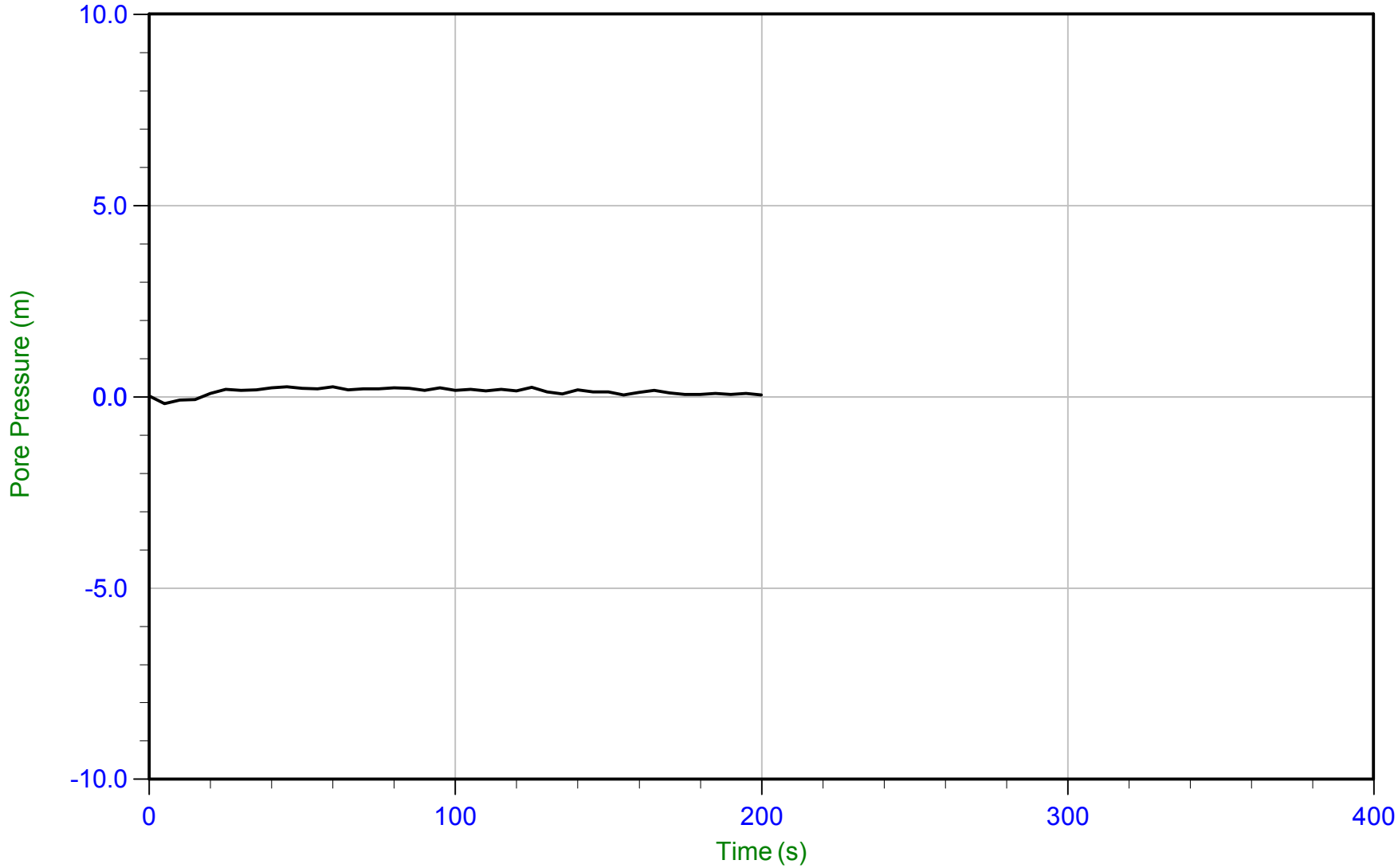
U Min: 57.6 m
U Max: 164.6 m

CONETEC

Wood plc

Job No: 18-02069
Date: 08/26/2018 14:46
Site: Clinton Creek

Sounding: SCPT18-12
Cone: 511:T1500F15U1K Area=15 cm²



Trace Summary:

Filename: 18-02069_SP12.PPF
Depth: 10.675 m / 35.023 ft
Duration: 200.0 s

U Min: -0.2 m
U Max: 0.3 m

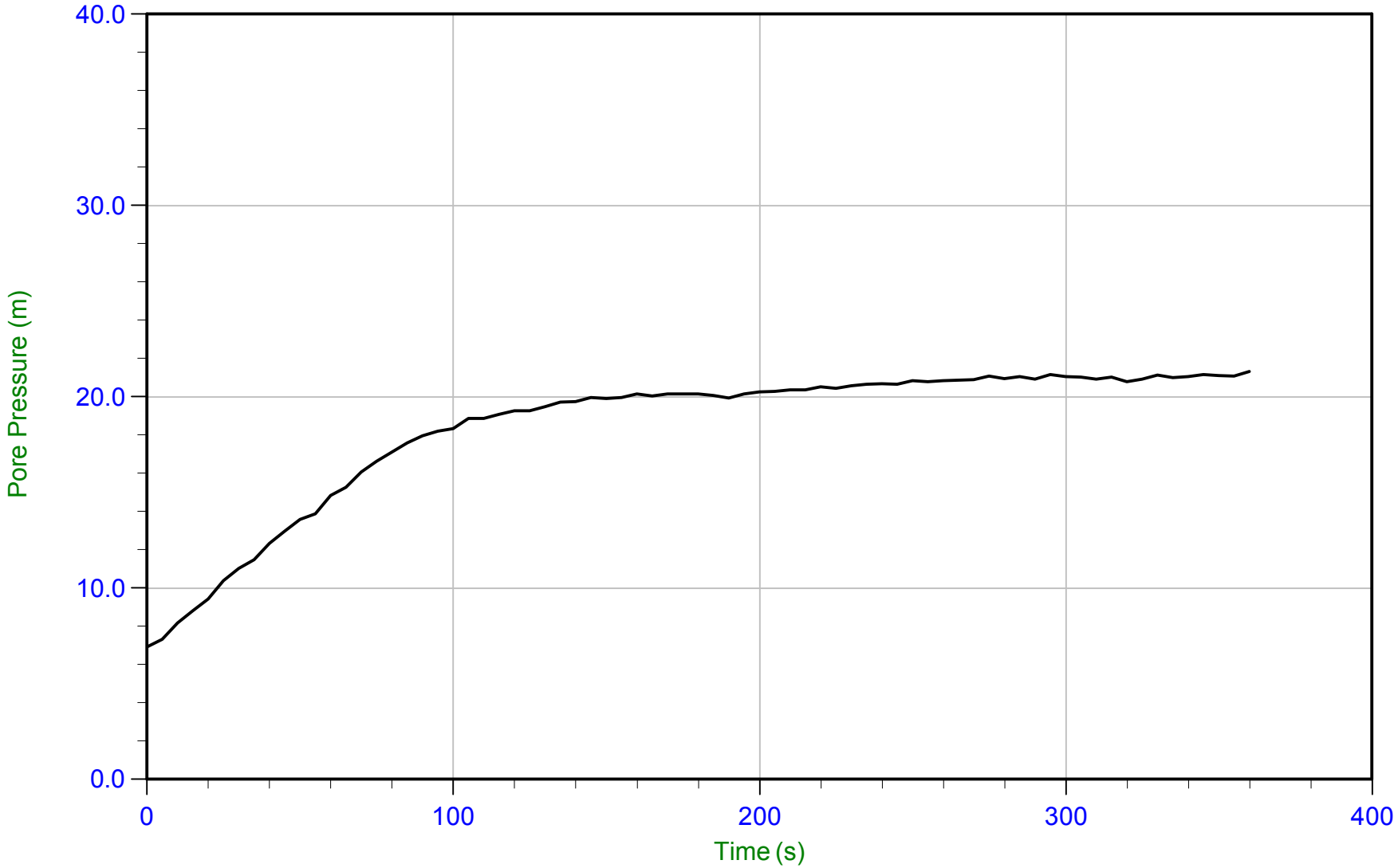
WT: 10.675 m / 35.023 ft
Ueq: 0.0 m

CONETEC

Wood plc

Job No: 18-02069
Date: 08/26/2018 14:46
Site: Clinton Creek

Sounding: SCPT18-12
Cone: 511:T1500F15U1K Area=15 cm²



Trace Summary:

Filename: 18-02069_SP12.PPF
Depth: 17.725 m / 58.152 ft
Duration: 360.0 s

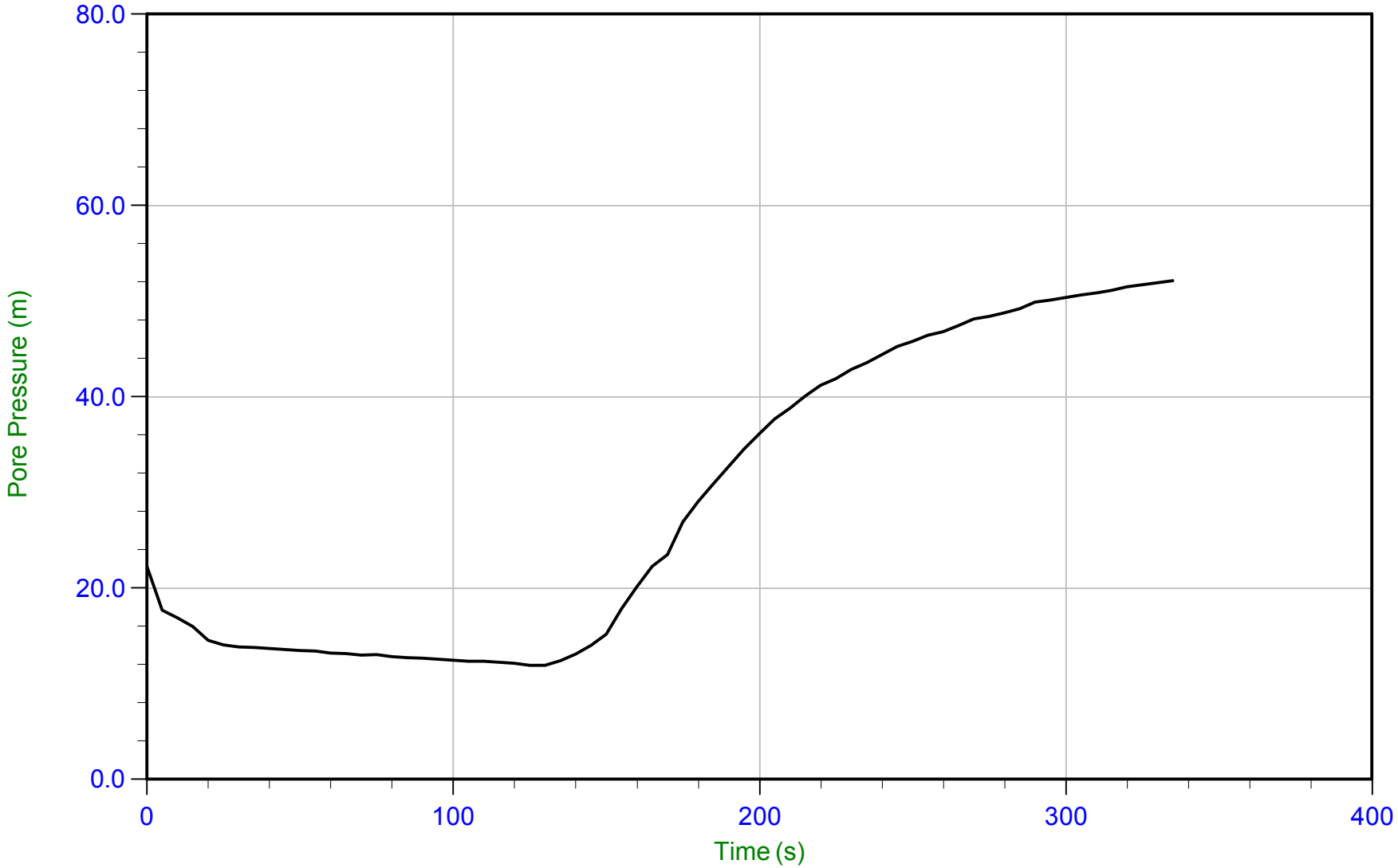
U Min: 6.9 m
U Max: 21.3 m

CONETEC

Wood plc

Job No: 18-02069
Date: 08/26/2018 14:46
Site: Clinton Creek

Sounding: SCPT18-12
Cone: 511:T1500F15U1K Area=15 cm²



Trace Summary:

Filename: 18-02069_SP12.PPF
Depth: 21.050 m / 69.061 ft
Duration: 335.0 s

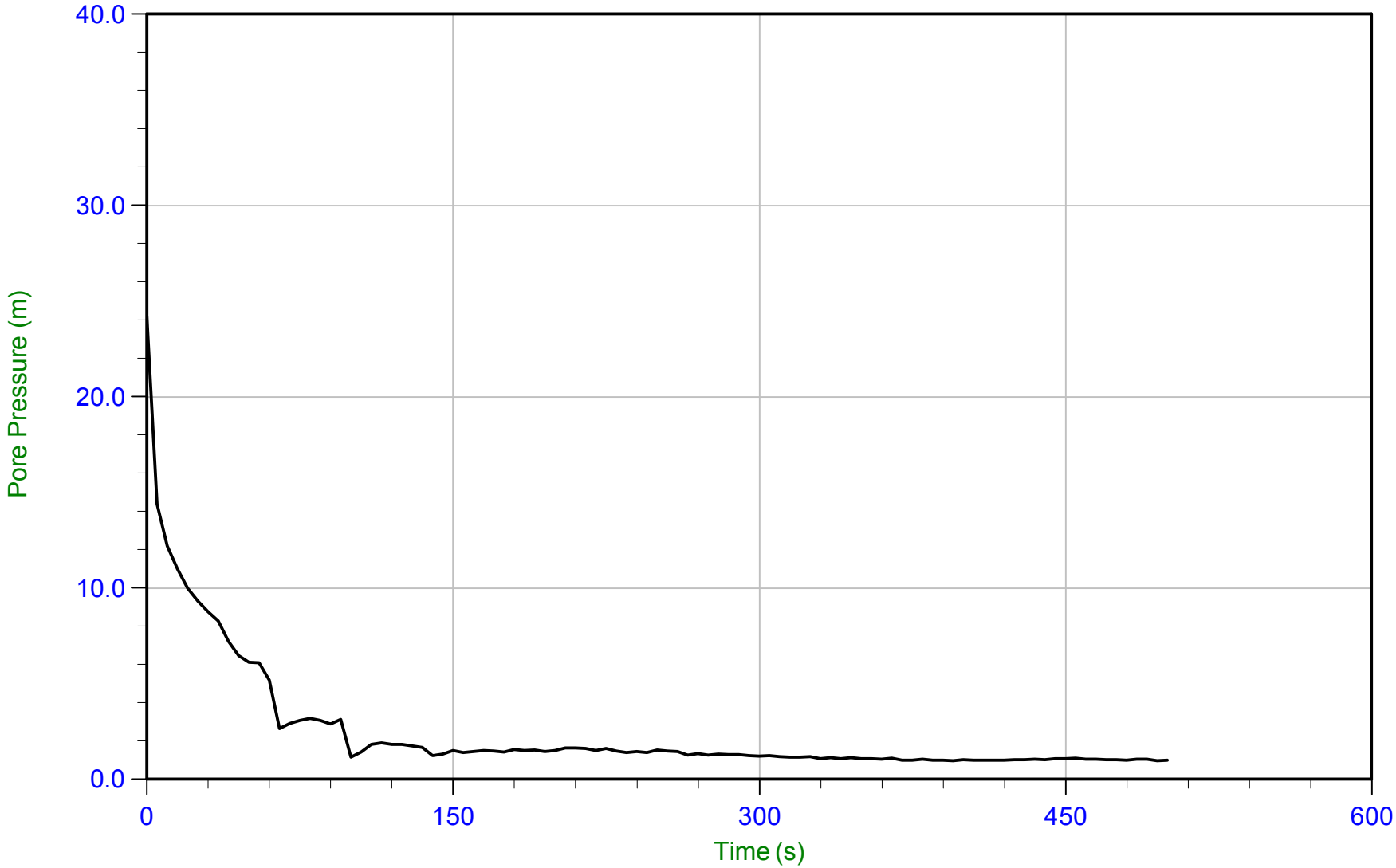
U Min: 11.9 m
U Max: 52.1 m

CONETEC

Wood plc

Job No: 18-02069
Date: 08/28/2018 09:21
Site: Clinton Creek

Sounding: SCPT18-14
Cone: 511:T1500F15U1K Area=15 cm²



Trace Summary:

Filename: 18-02069_SP14.PPF
Depth: 14.500 m / 47.572 ft
Duration: 500.0 s

U Min: 1.0 m
U Max: 24.2 m

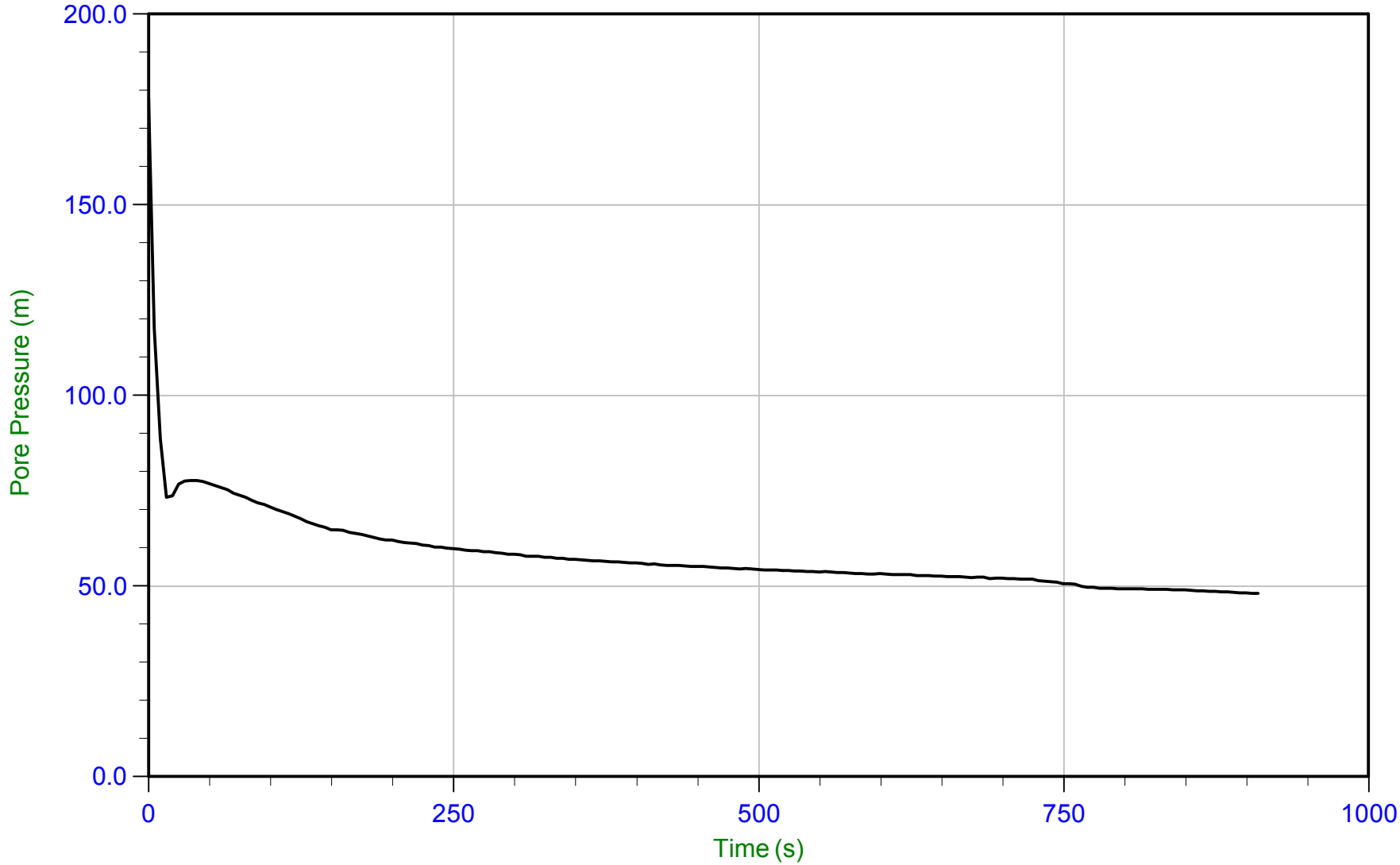
WT: 13.467 m / 44.183 ft
Ueq: 1.0 m

CONETEC

Wood plc

Job No: 18-02069
Date: 08/28/2018 09:21
Site: Clinton Creek

Sounding: SCPT18-14
Cone: 511:T1500F15U1K Area=15 cm²



Trace Summary:

Filename: 18-02069_SP14.PPF
Depth: 18.050 m / 59.218 ft
Duration: 910.0 s

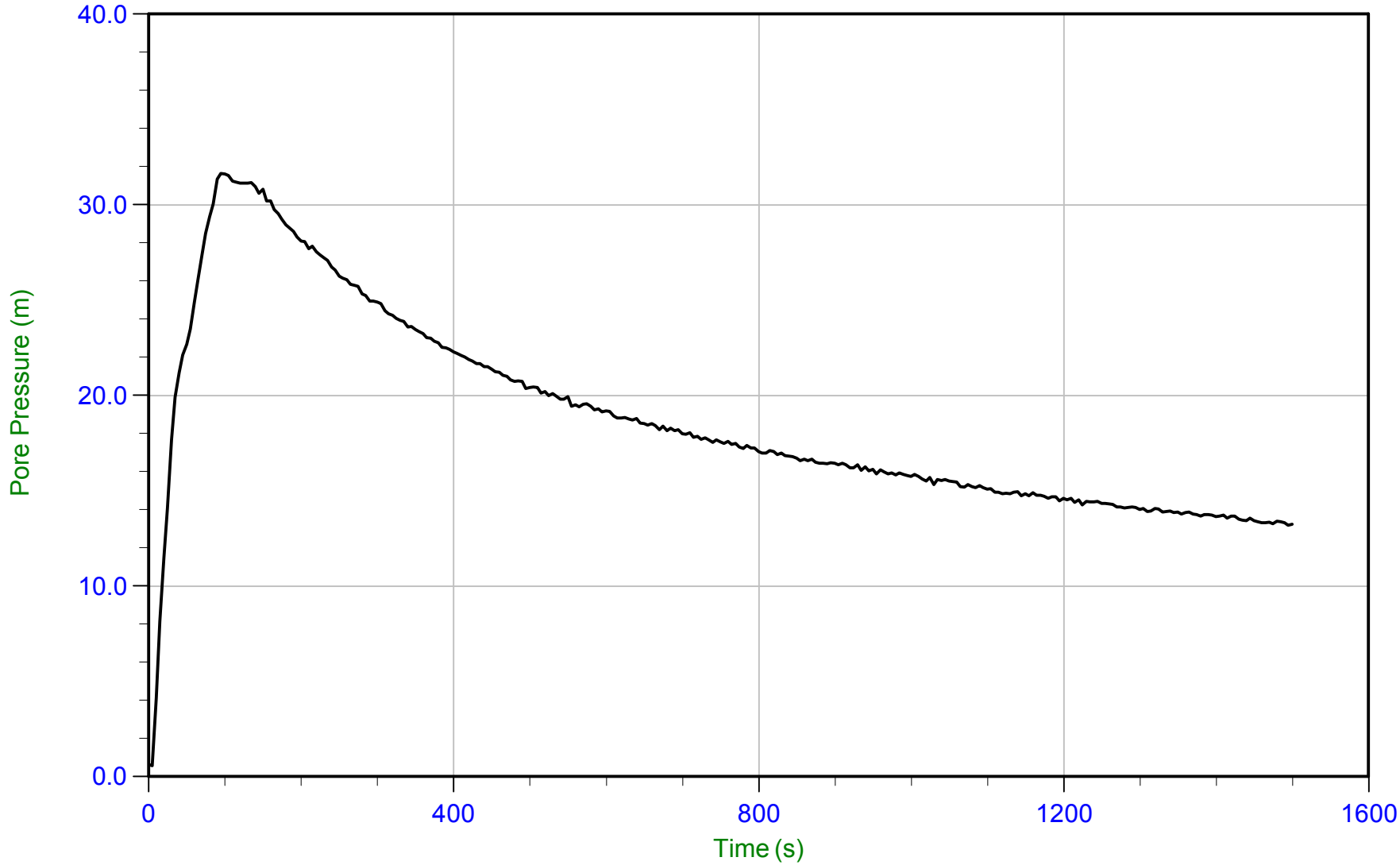
U Min: 48.1 m
U Max: 178.1 m

CONETEC

Wood plc

Job No: 18-02069
Date: 08/31/2018 09:10
Site: Clinton Creek

Sounding: SCPT18-17
Cone: 511:T1500F15U1K Area=15 cm²



Trace Summary:

Filename: 18-02069_SP17.PPF
Depth: 28.625 m / 93.913 ft
Duration: 1500.0 s

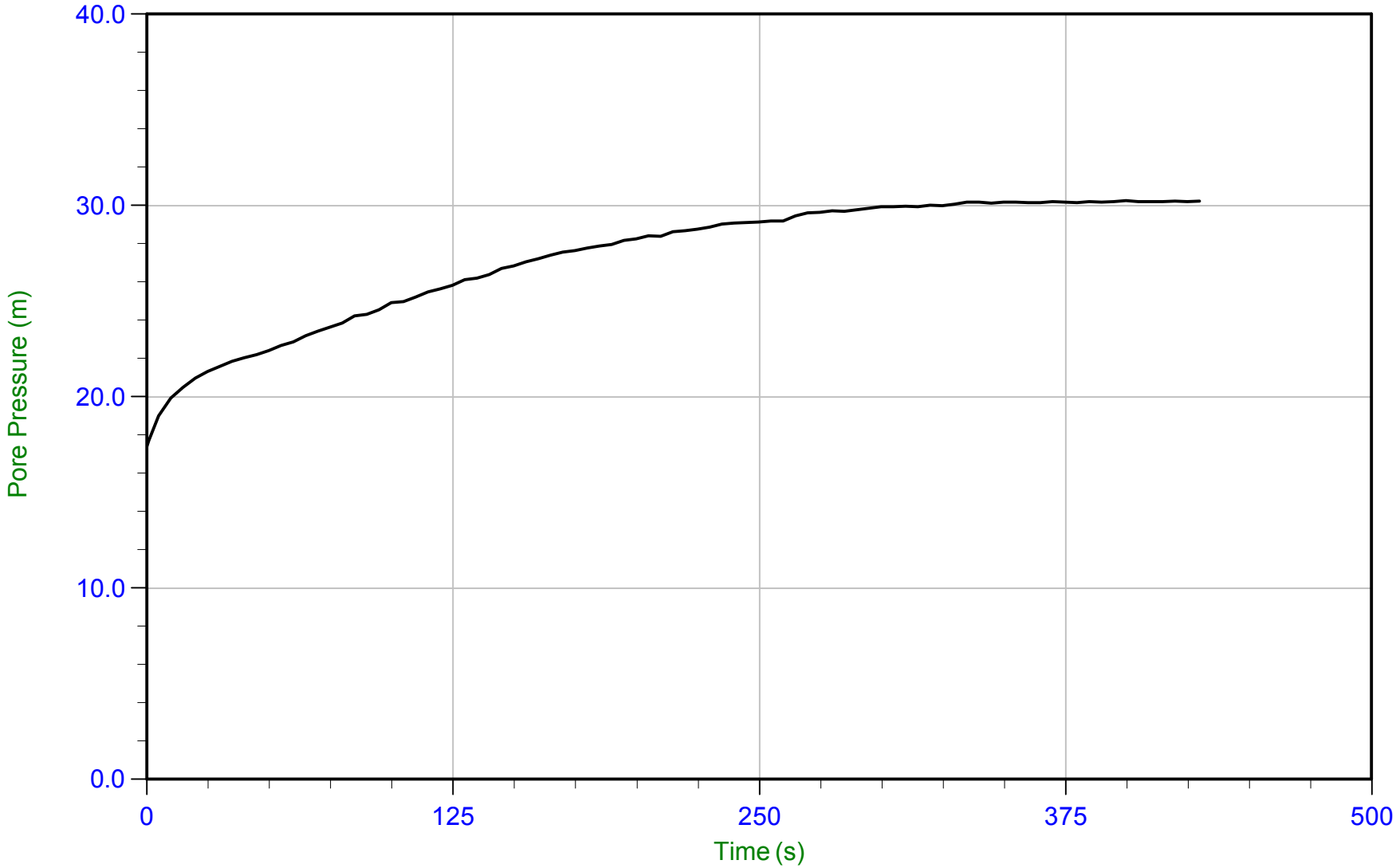
U Min: 0.6 m
U Max: 31.7 m

CONETEC

Wood plc

Job No: 18-02069
Date: 08/31/2018 09:10
Site: Clinton Creek

Sounding: SCPT18-17
Cone: 511:T1500F15U1K Area=15 cm²



Trace Summary:

Filename: 18-02069_SP17.PPF
Depth: 30.350 m / 99.572 ft
Duration: 430.0 s

U Min: 17.4 m
U Max: 30.2 m

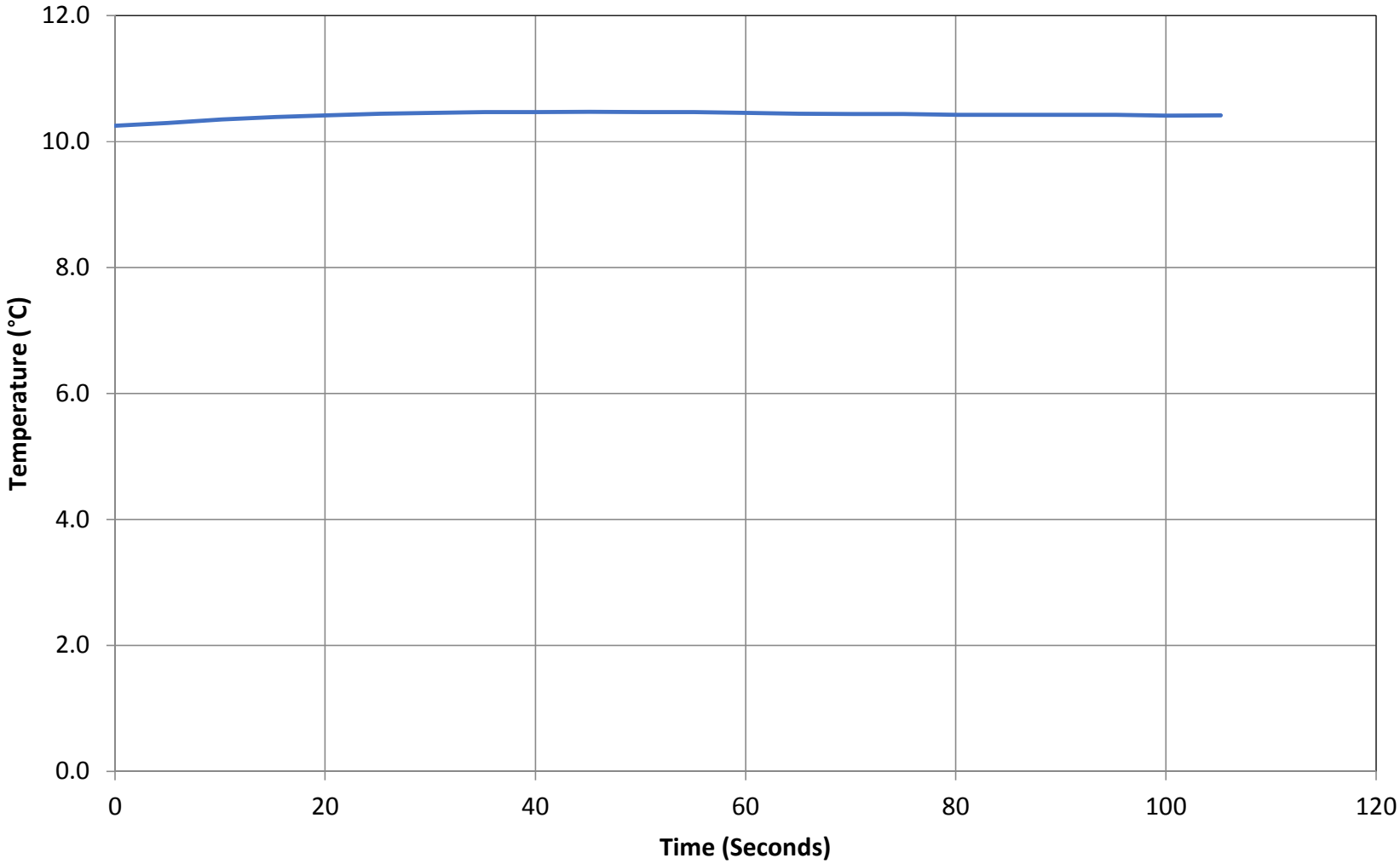
Temperature Dissipation Plots

Job Number: 18-02069
Client: Wood plc
Project: Clinton Creek

Sounding ID: SCPT18-11
Sounding Date: 03-Sep-2018

Test Depth (m): 36.375
Cone: 511:T1500F15U1K

Temperature Dissipation Test

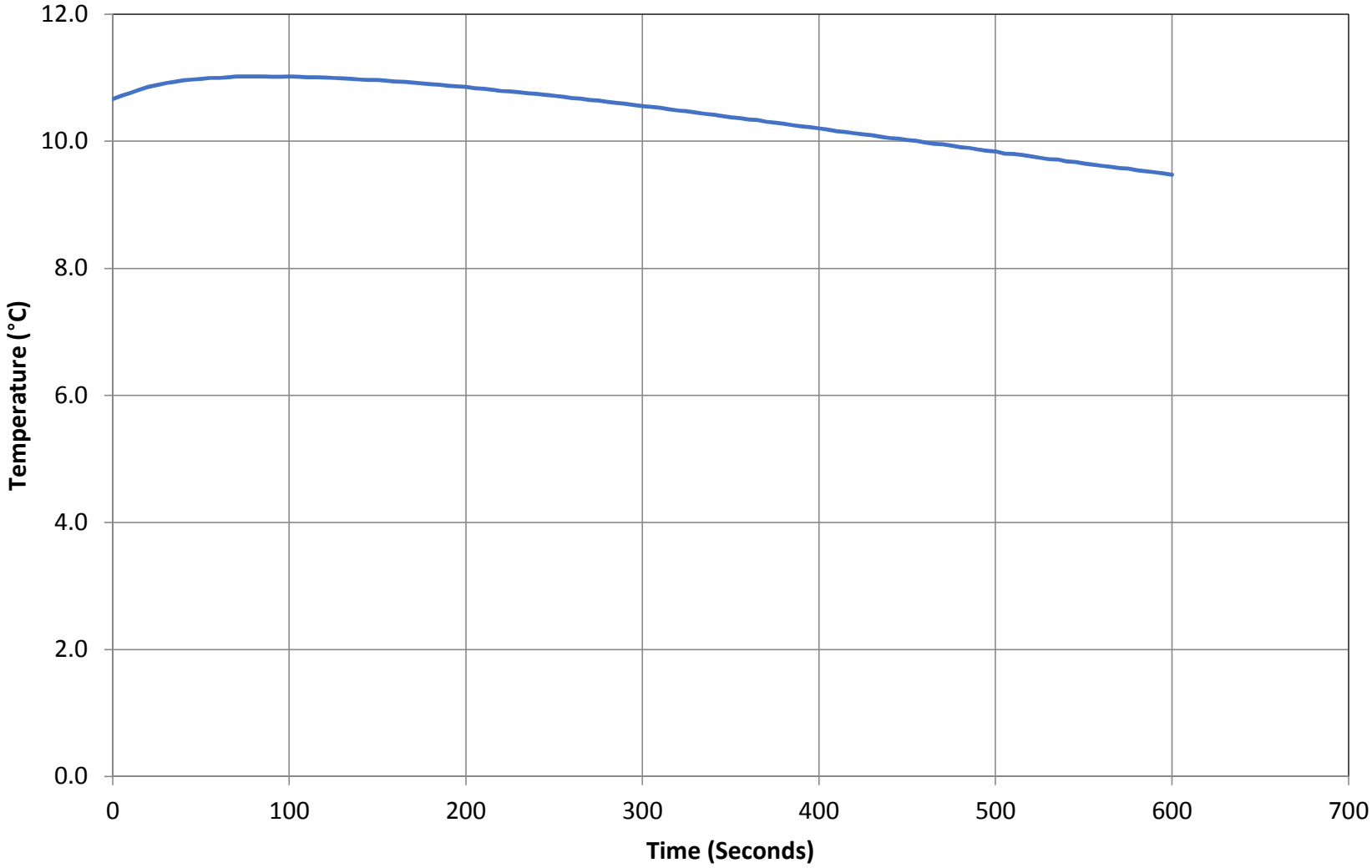


Job Number: 18-02069
Client: Wood plc
Project: Clinton Creek

Sounding ID: SCPT18-11
Sounding Date: 03-Sep-2018

Test Depth (m): 36.600
Cone: 511:T1500F15U1K

Temperature Dissipation Test

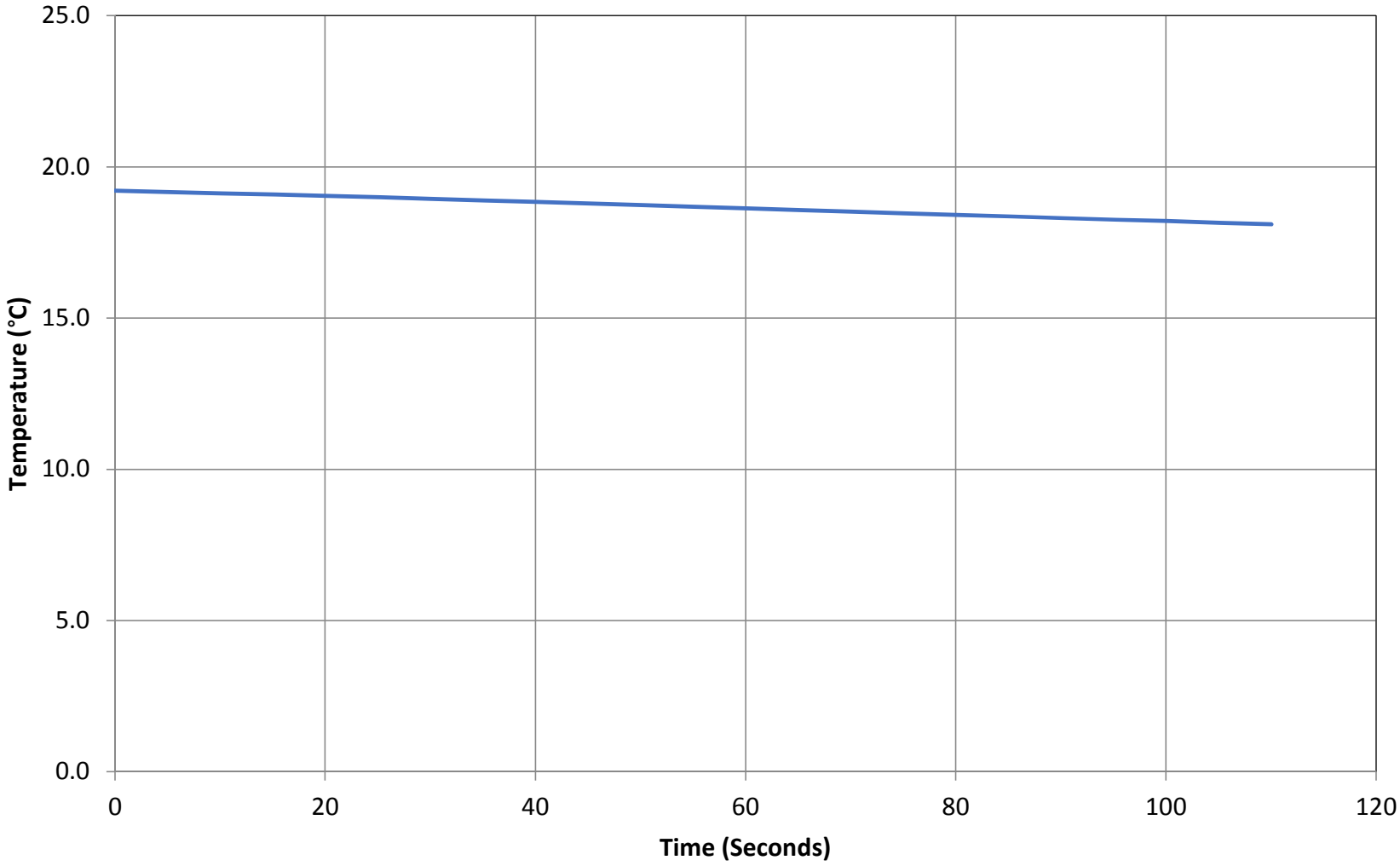


Job Number: 18-02069
Client: Wood plc
Project: Clinton Creek

Sounding ID: SCPT18-12
Sounding Date: 26-Aug-2018

Test Depth (m): 0.925
Cone: 511:T1500F15U1K

Temperature Dissipation Test

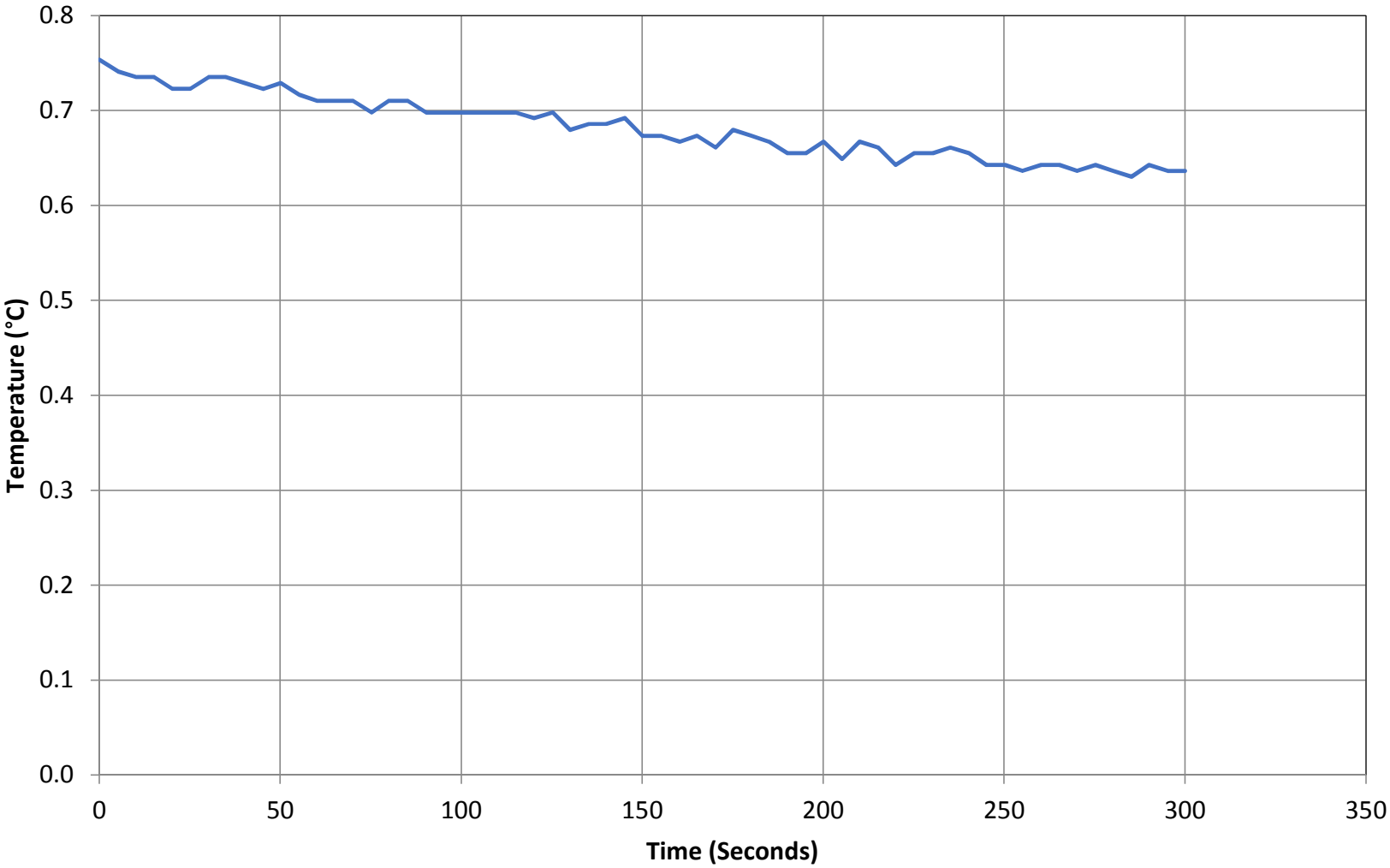


Job Number: 18-02069
Client: Wood plc
Project: Clinton Creek

Sounding ID: SCPT18-12
Sounding Date: 26-Aug-2018

Test Depth (m): 6.700
Cone: 511:T1500F15U1K

Temperature Dissipation Test

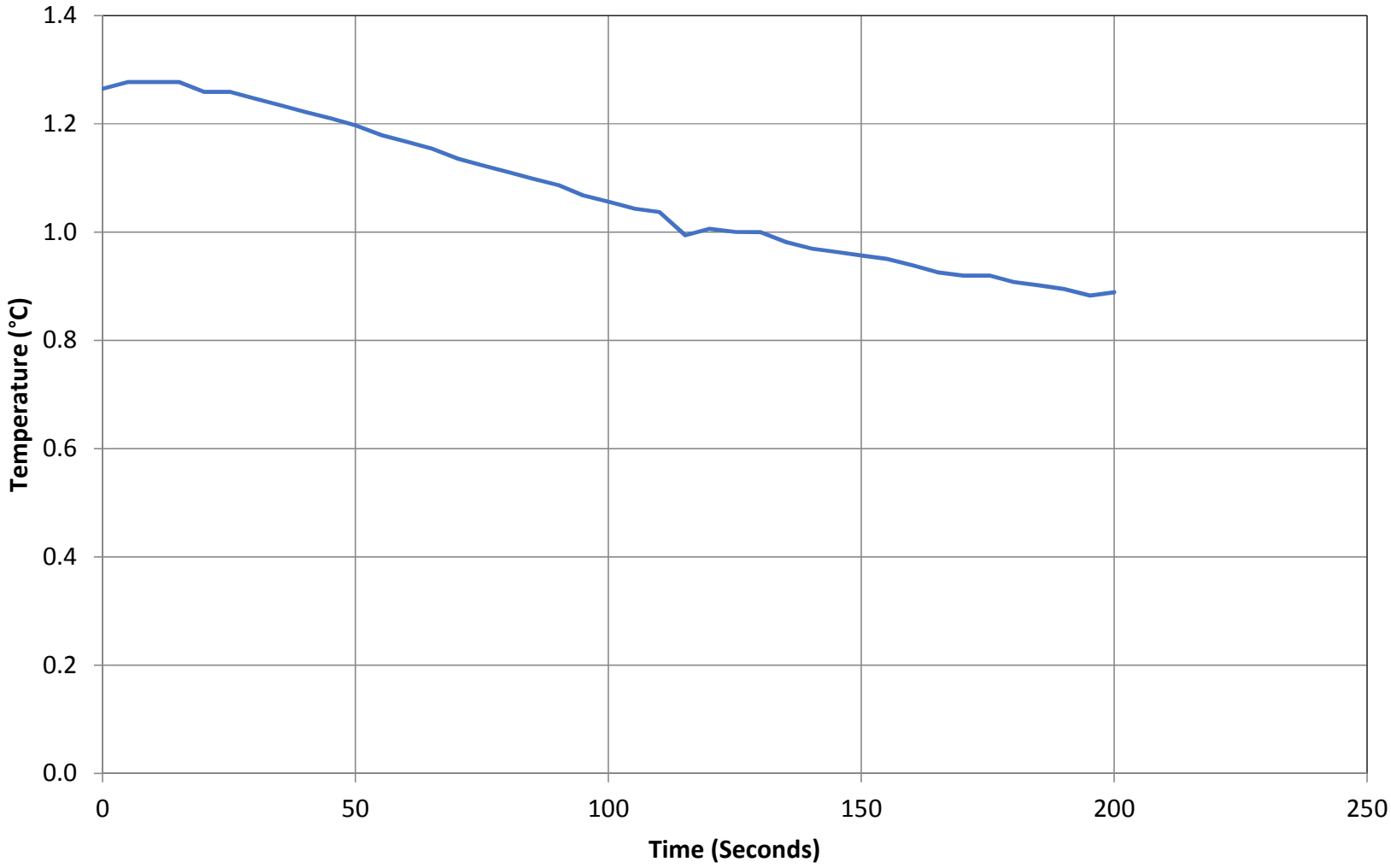


Job Number: 18-02069
Client: Wood plc
Project: Clinton Creek

Sounding ID: SCPT18-12
Sounding Date: 26-Aug-2018

Test Depth (m): 10.675
Cone: 511:T1500F15U1K

Temperature Dissipation Test

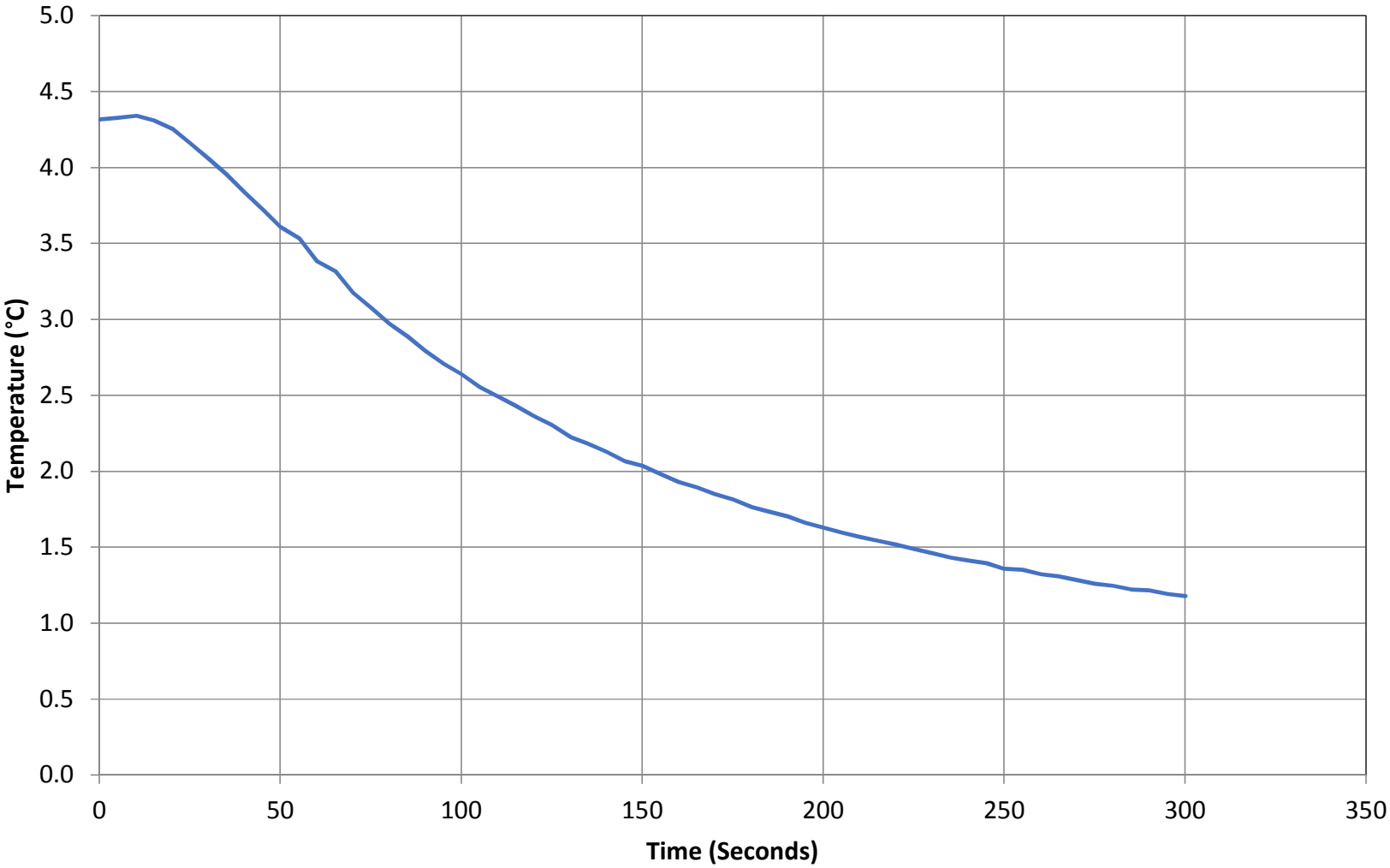


Job Number: 18-02069
Client: Wood plc
Project: Clinton Creek

Sounding ID: SCPT18-12
Sounding Date: 26-Aug-2018

Test Depth (m): 17.725
Cone: 511:T1500F15U1K

Temperature Dissipation Test

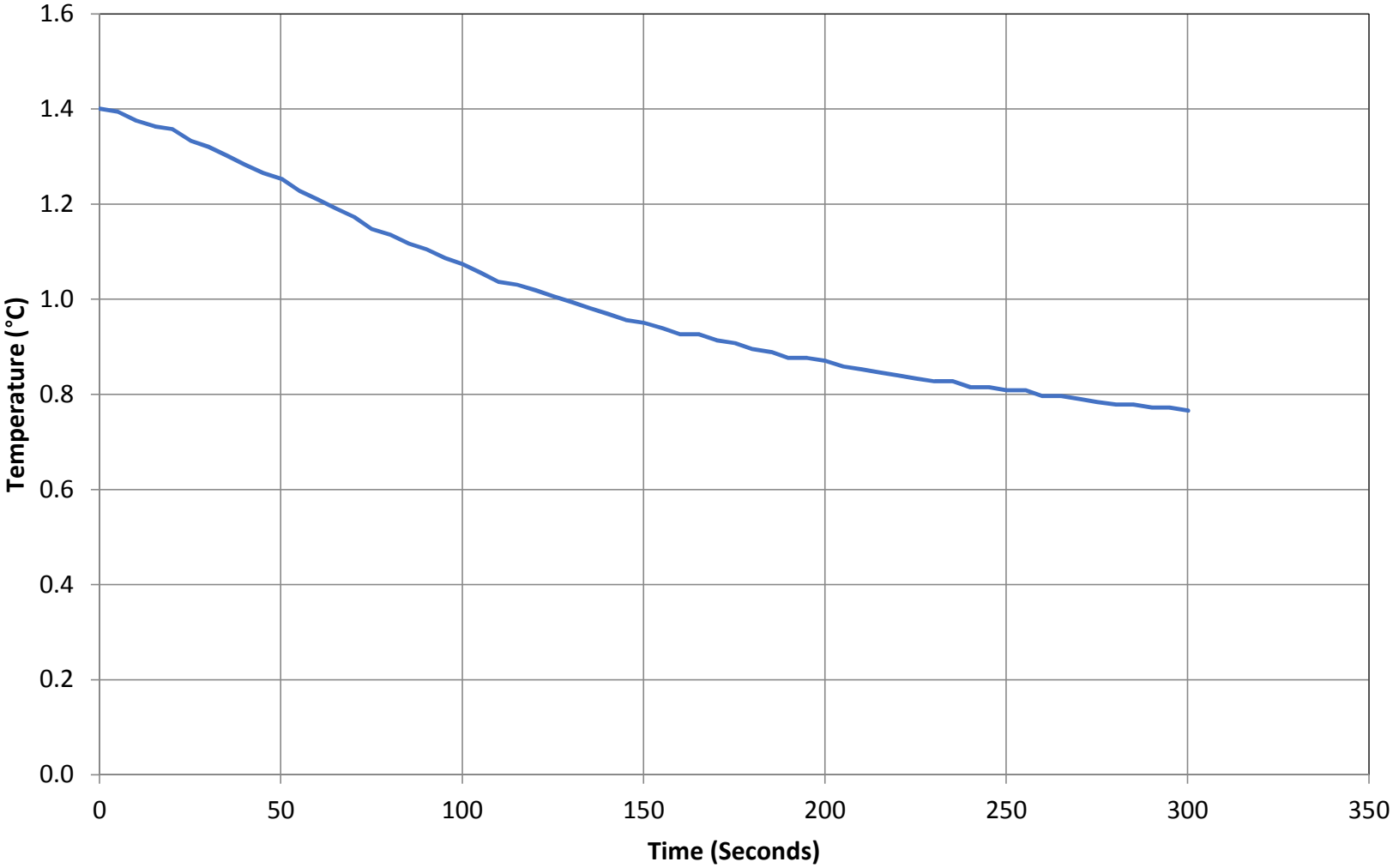


Job Number: 18-02069
Client: Wood plc
Project: Clinton Creek

Sounding ID: SCPT18-12
Sounding Date: 26-Aug-2018

Test Depth (m): 21.050
Cone: 511:T1500F15U1K

Temperature Dissipation Test

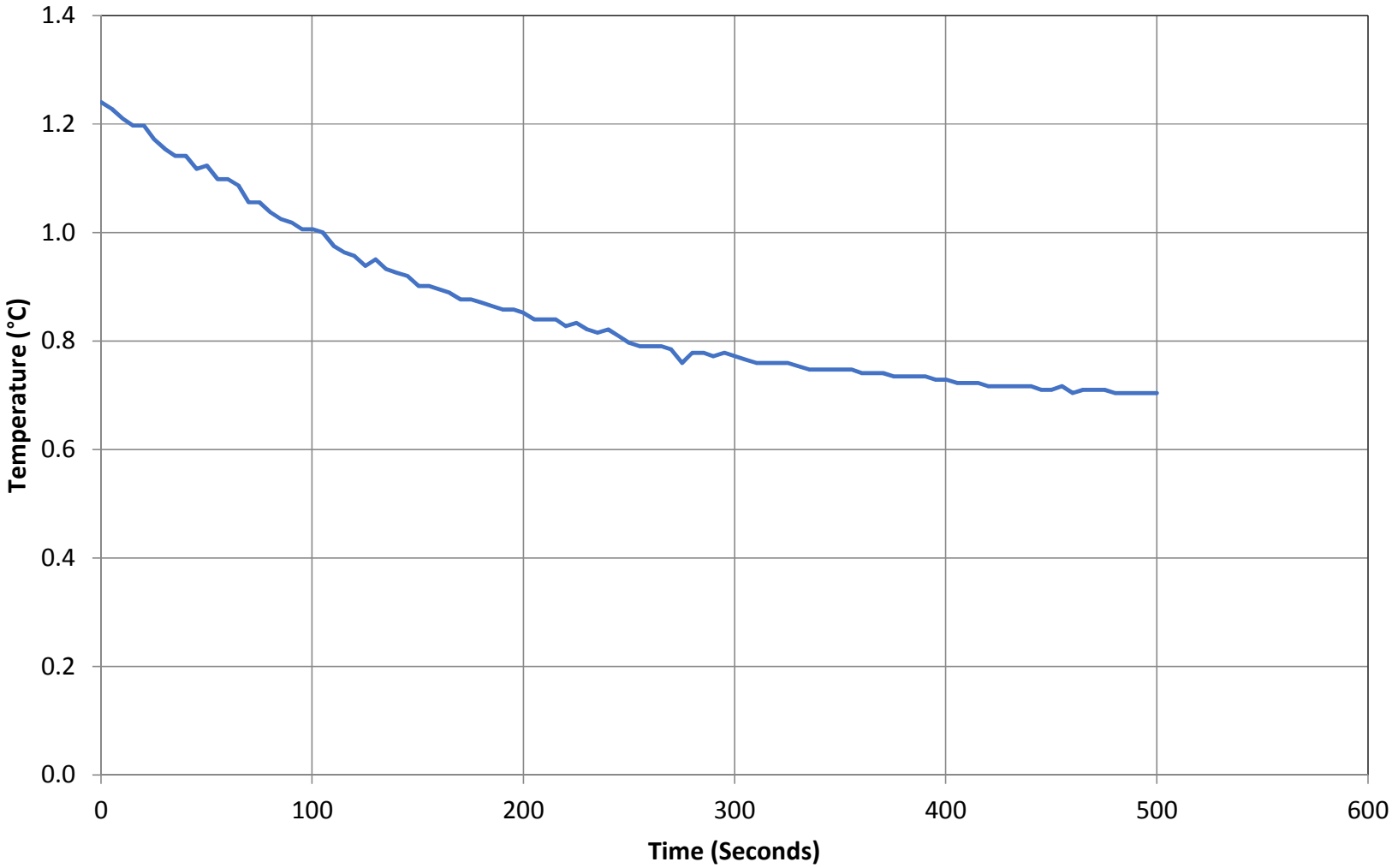


Job Number: 18-02069
Client: Wood plc
Project: Clinton Creek

Sounding ID: SCPT18-14
Sounding Date: 28-Aug-2018

Test Depth (m): 14.500
Cone: 511:T1500F15U1K

Temperature Dissipation Test

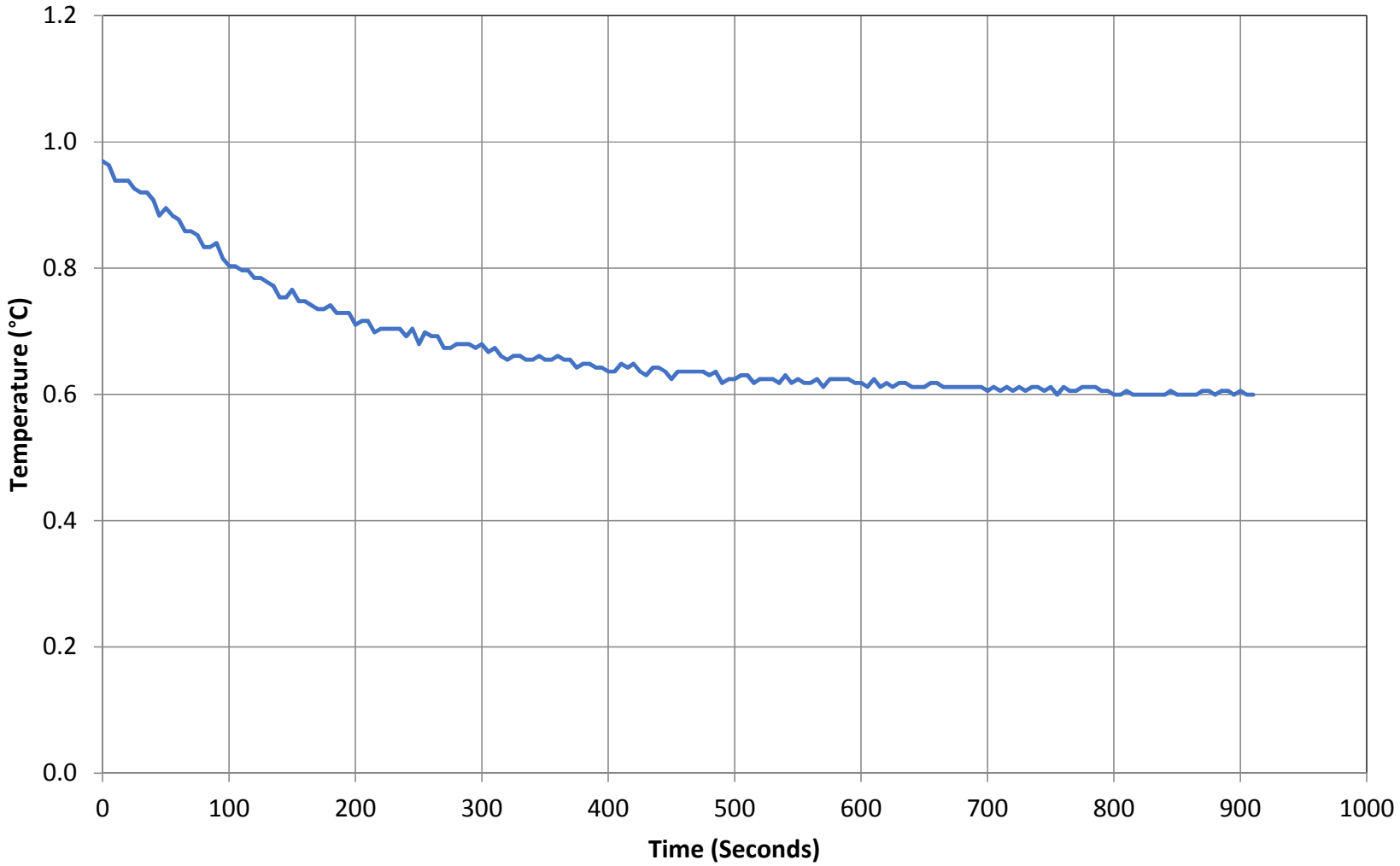


Job Number: 18-02069
Client: Wood plc
Project: Clinton Creek

Sounding ID: SCPT18-14
Sounding Date: 28-Aug-2018

Test Depth (m): 18.050
Cone: 511:T1500F15U1K

Temperature Dissipation Test

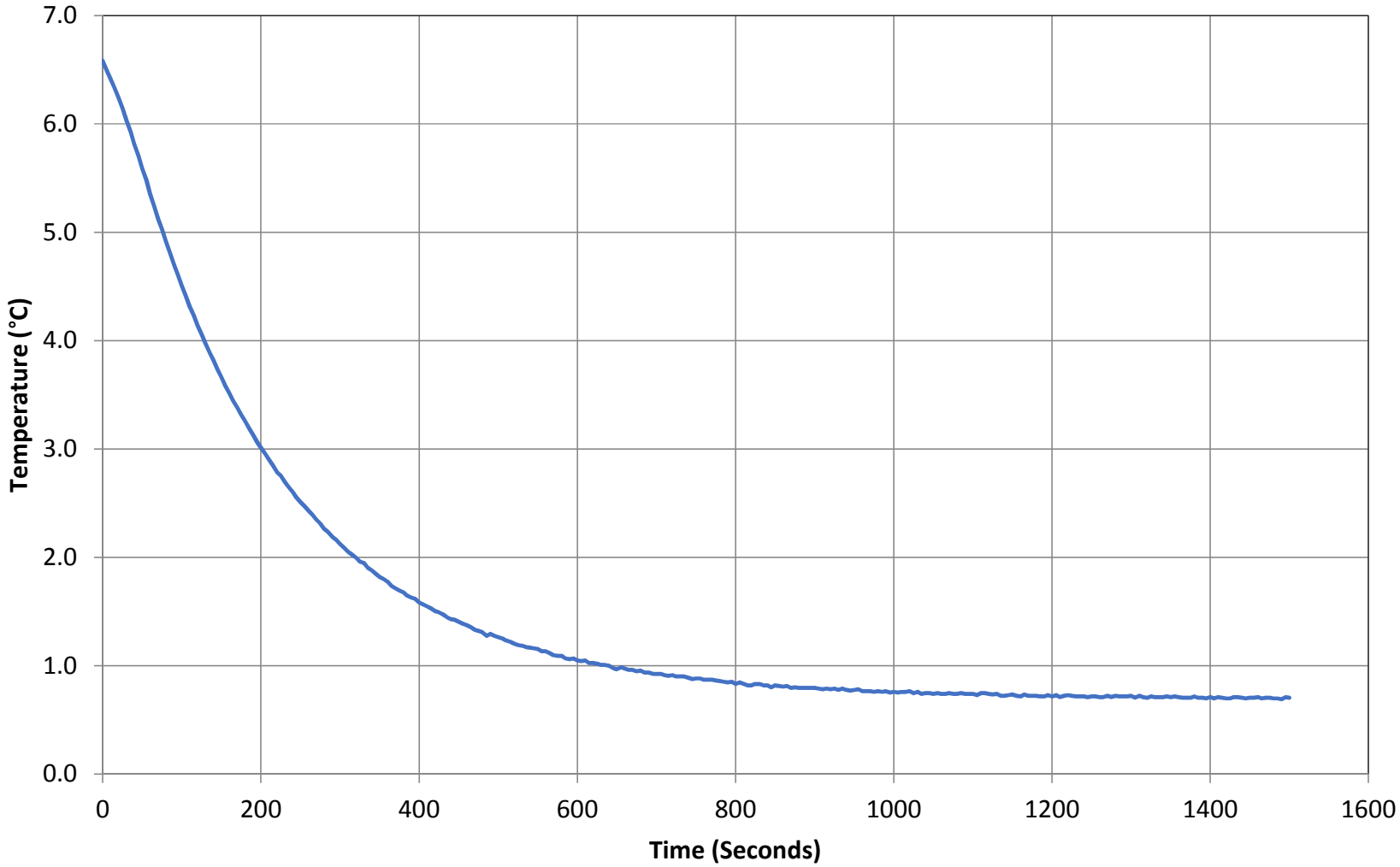


Job Number: 18-02069
Client: Wood plc
Project: Clinton Creek

Sounding ID: SCPT18-17
Sounding Date: 31-Aug-2018

Test Depth (m): 28.625
Cone: 511:T1500F15U1K

Temperature Dissipation Test

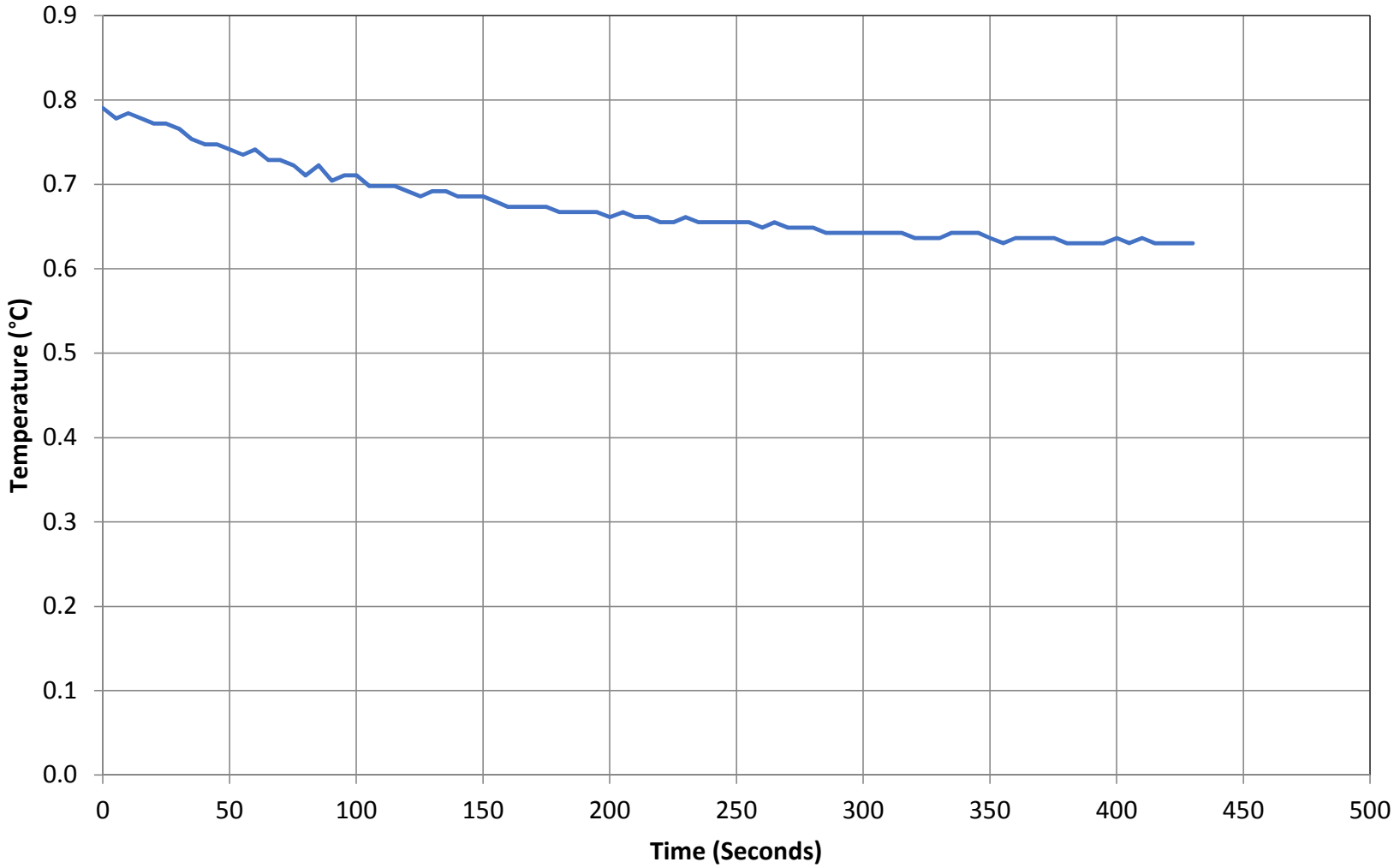


Job Number: 18-02069
Client: Wood plc
Project: Clinton Creek

Sounding ID: SCPT18-17
Sounding Date: 31-Aug-2018

Test Depth (m): 30.350
Cone: 511:T1500F15U1K

Temperature Dissipation Test



Downhole Seismic Test Summary and Shear Wave Profiles

CONETEC

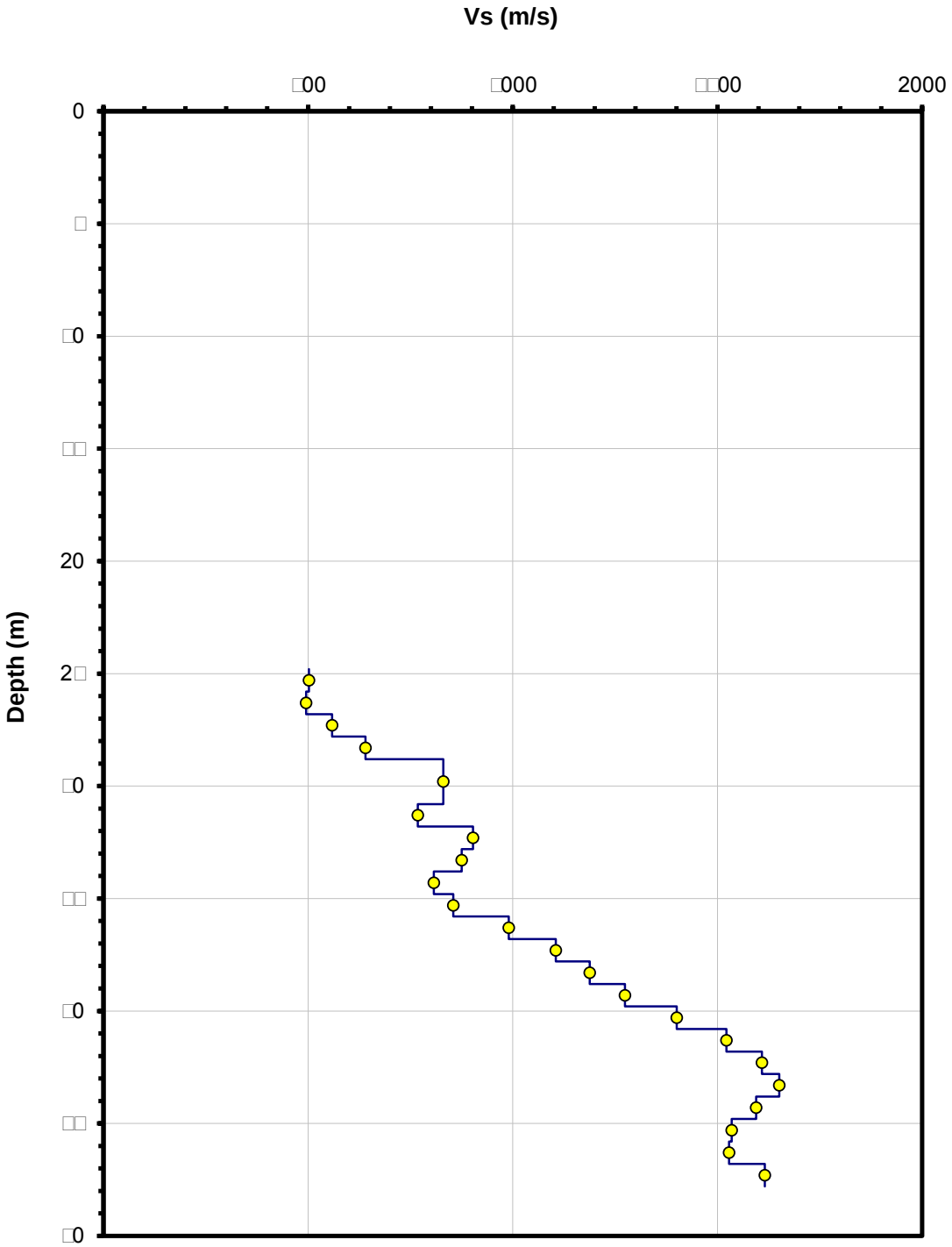
Job No:	18-02069
Client:	Wood plc
Project:	Clinton Creek
Start Date:	02-Sep-2018
End Date:	02-Sep-2018

DOWNHOLE SEISMIC SUMMARY

Sounding ID	Location	Date	Final Depth (m)	Northing[1] (m)	Easting (m)
DST18-17	BH2018-17	02-Sep-2018	48.00	7148075	513508

1. Coordinates were collected with a consumer grade GPS device in datum WGS84/UTM Zone 7 North.

Job No: 18-02069
Client: Wood plc
Project: Clinton Creek
Sounding ID: DST18-17
Date: 02-Sep-2018



Downhole Seismic Test Tabular Results

CONETEC

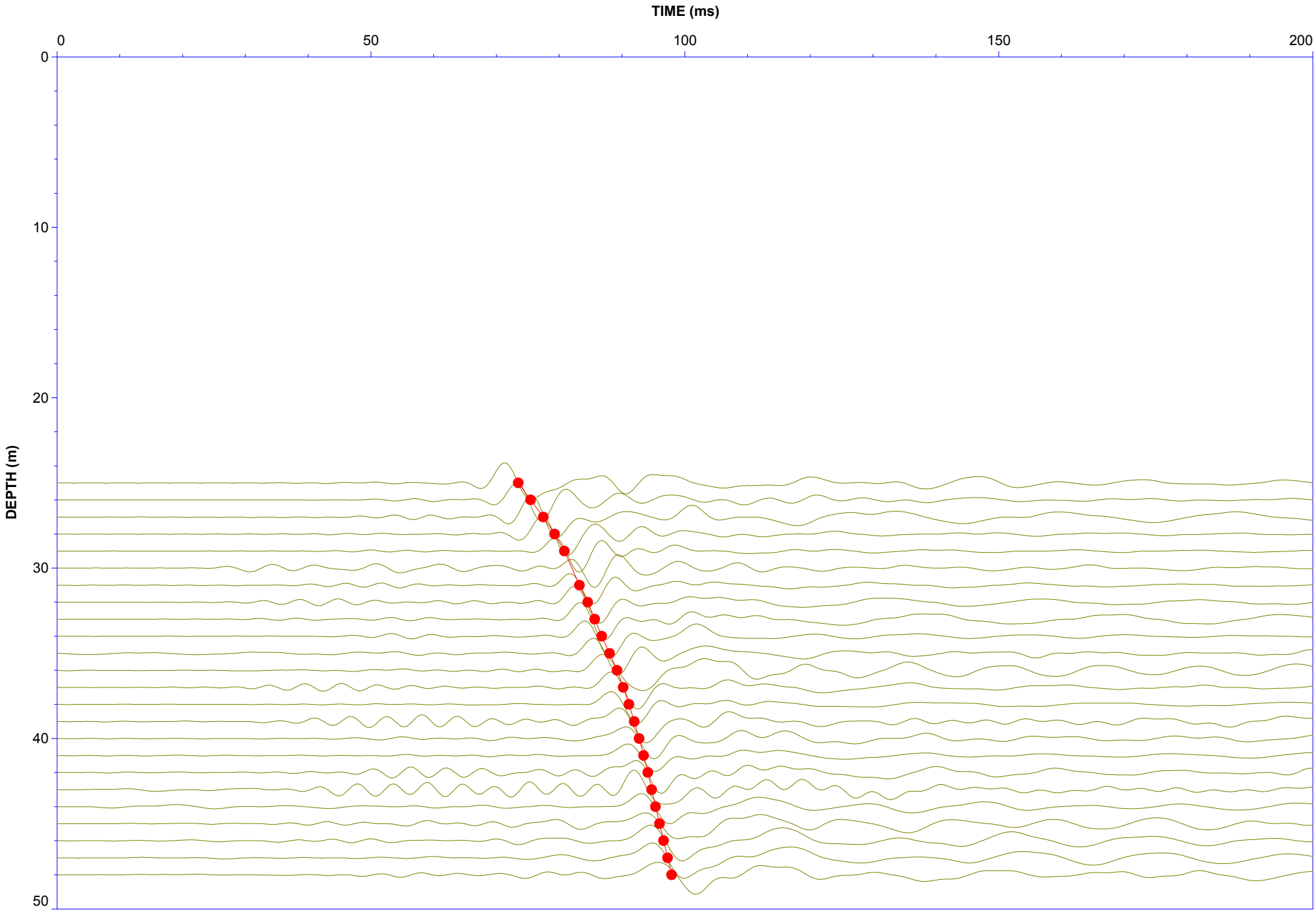
Job No:	18-02069
Client:	Wood plc
Project:	Clinton Creek
Sounding ID:	SCPT18-17
Date:	02-Sep-2018
Receivers:	Geostuff BHG-3 - Triaxial 15 Hz geophones
Seismograph:	Geometrics Geode
Seismic Source:	Beam
Source Offset (m):	0.65
Source Depth (m):	0.00
Geophone Offset (m):	0.00

DOWNHOLE SEISMIC - Vs

Geophone Depth (m)	Ray Path (m)	Ray Path Difference (m)	Travel Time Interval (ms)	Interval Velocity (m/s)	Average Interval Depth (m)
24.80	24.81				
25.80	25.81	1.00	1.99	502	25.3
26.80	26.81	1.00	2.02	495	26.3
27.80	27.81	1.00	1.79	559	27.3
28.80	28.81	1.00	1.56	640	28.3
30.80	30.81	2.00	2.41	830	29.8
31.80	31.81	1.00	1.30	768	31.3
32.80	32.81	1.00	1.11	903	32.3
33.80	33.81	1.00	1.14	875	33.3
34.80	34.81	1.00	1.24	807	34.3
35.80	35.81	1.00	1.17	855	35.3
36.80	36.81	1.00	1.01	990	36.3
37.80	37.81	1.00	0.90	1105	37.3
38.80	38.81	1.00	0.84	1188	38.3
39.80	39.81	1.00	0.78	1274	39.3
40.80	40.81	1.00	0.71	1400	40.3
41.80	41.81	1.00	0.66	1522	41.3
42.80	42.80	1.00	0.62	1608	42.3
43.80	43.80	1.00	0.61	1651	43.3
44.80	44.80	1.00	0.63	1594	44.3
45.80	45.80	1.00	0.65	1535	45.3
46.80	46.80	1.00	0.65	1528	46.3
47.80	47.80	1.00	0.62	1616	47.3

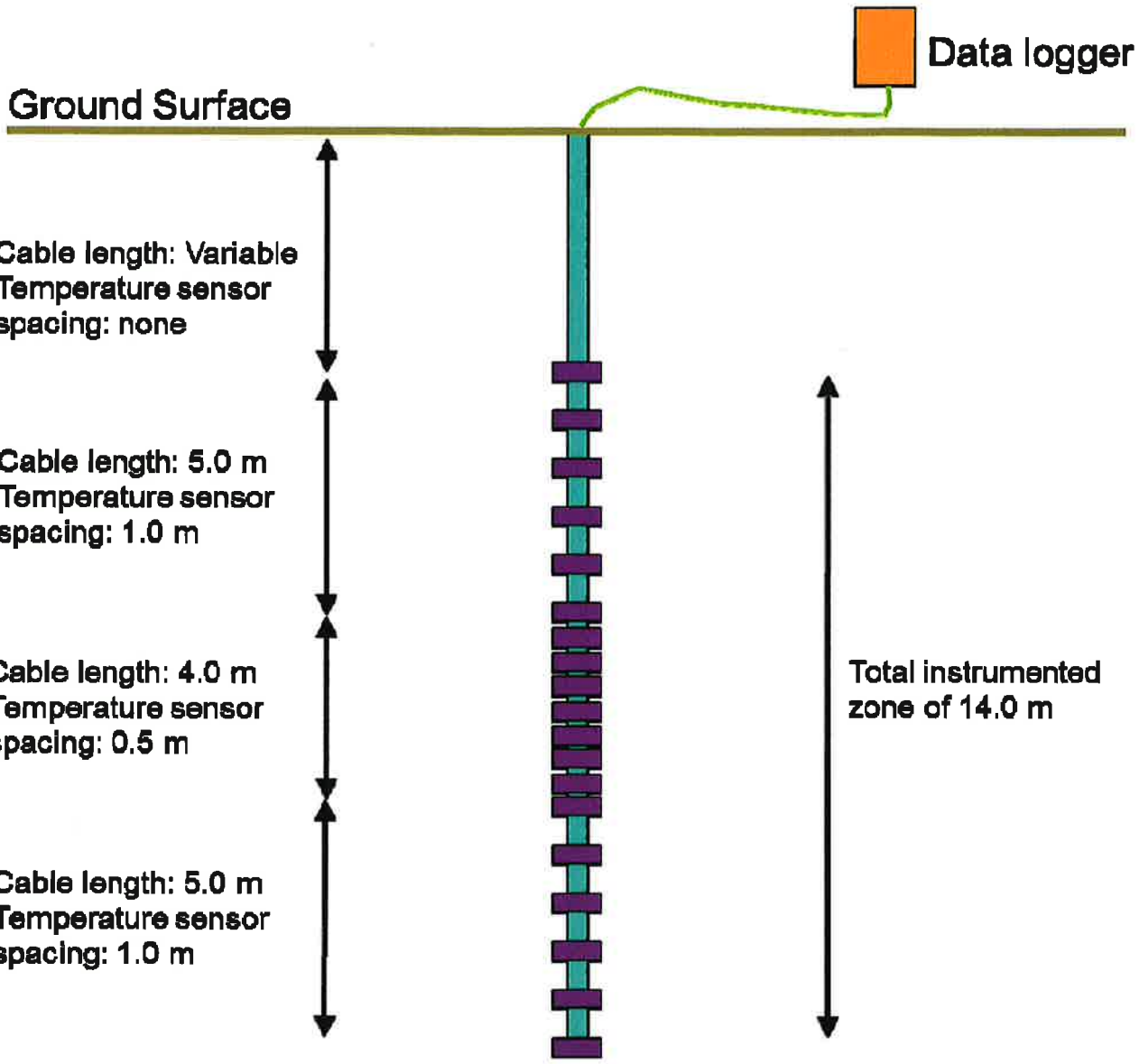
Downhole Seismic Test Wave Traces

Job No: 18-02069 Client: Wood plc Project Title: Clinton Creek Filter: 0-200Hz BP Hole: BH2018-17



Appendix D
Instrumentation Calibration Forms and Documents

Printed: 08/09/18 03:03 PM

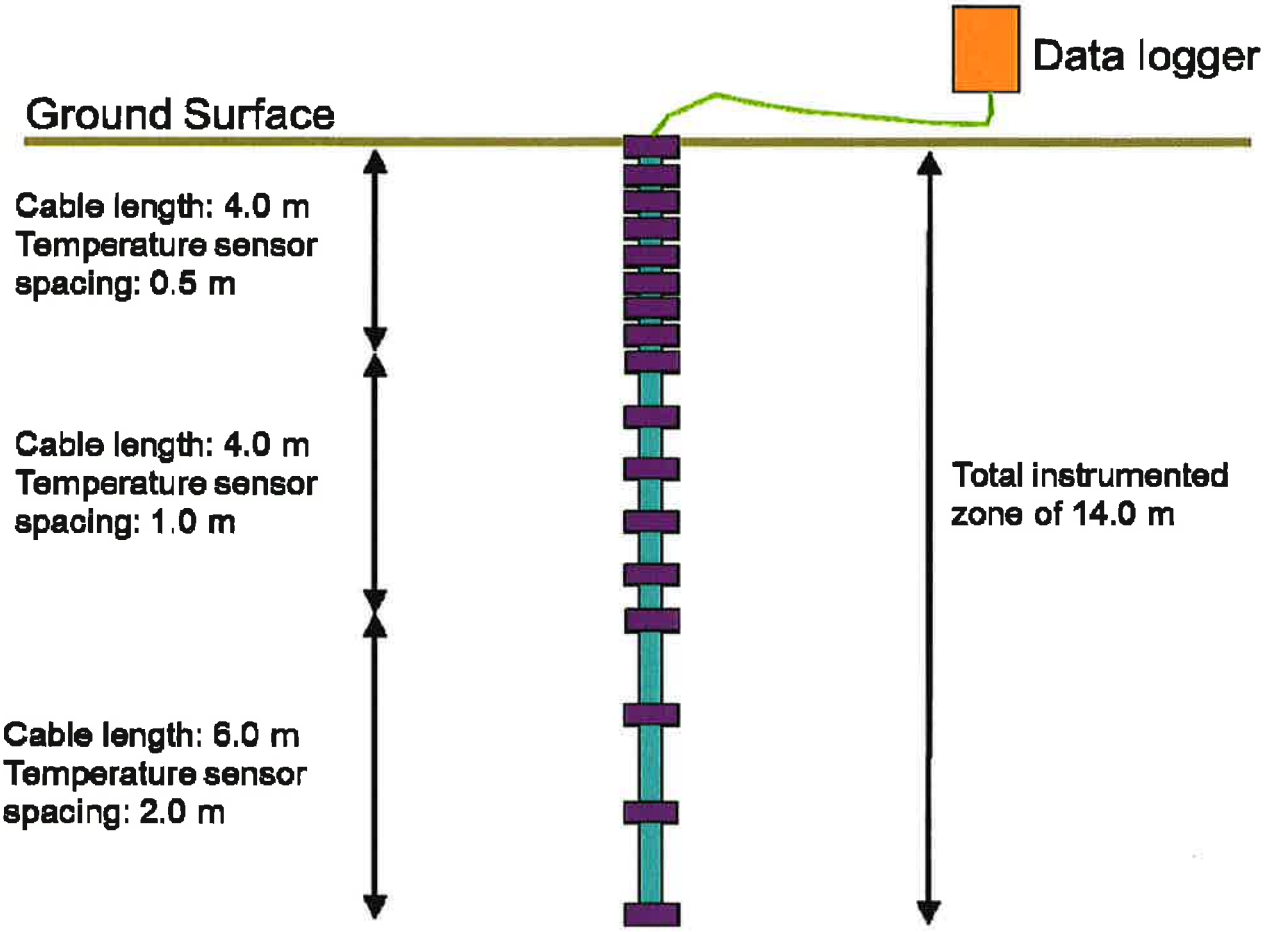


Thermistor Type 1

wood.	PROJECT: Clinton Creek Remediation Project				
CLIENT: Government of Yukon	TITLE: 2018 Investigation Program Scope - Thermistor Type 1				
	DATE: July 2018	JOB No.: VE52705	FILE: 20180718_Thermistor Types.xlsx	FIGURE No.: C-1	REV.: A

T:\Geddes\Appendix C - Thermistors\[20180718_Thermistor Types.xlsx]1

Printed: 08/09/18 03:03 PM



Thermistor Type 2

wood.	PROJECT: Clinton Creek Remediation Project				
CLIENT: Government of Yukon	TITLE: 2018 Investigation Program Scope - Thermistor Type 2				
	DATE: July 2018	JOB No.: VE52705	FILE: 20180718_Thermistor Types.xlsx	FIGURE No.: C-2	REV.: A

T:\Geddes\Appendix C - Thermistors\[20180718_Thermistor Types.xlsx]2

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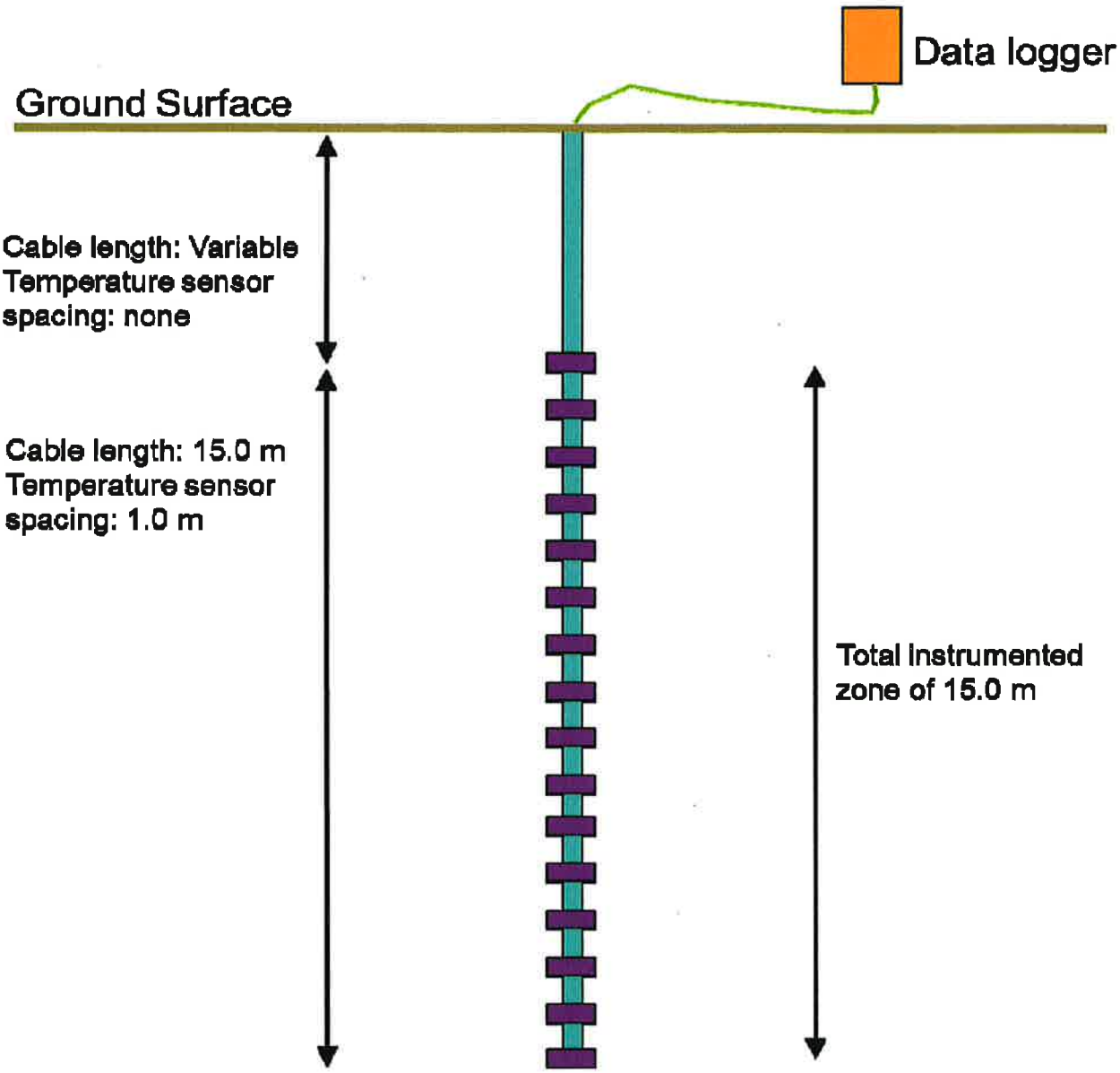
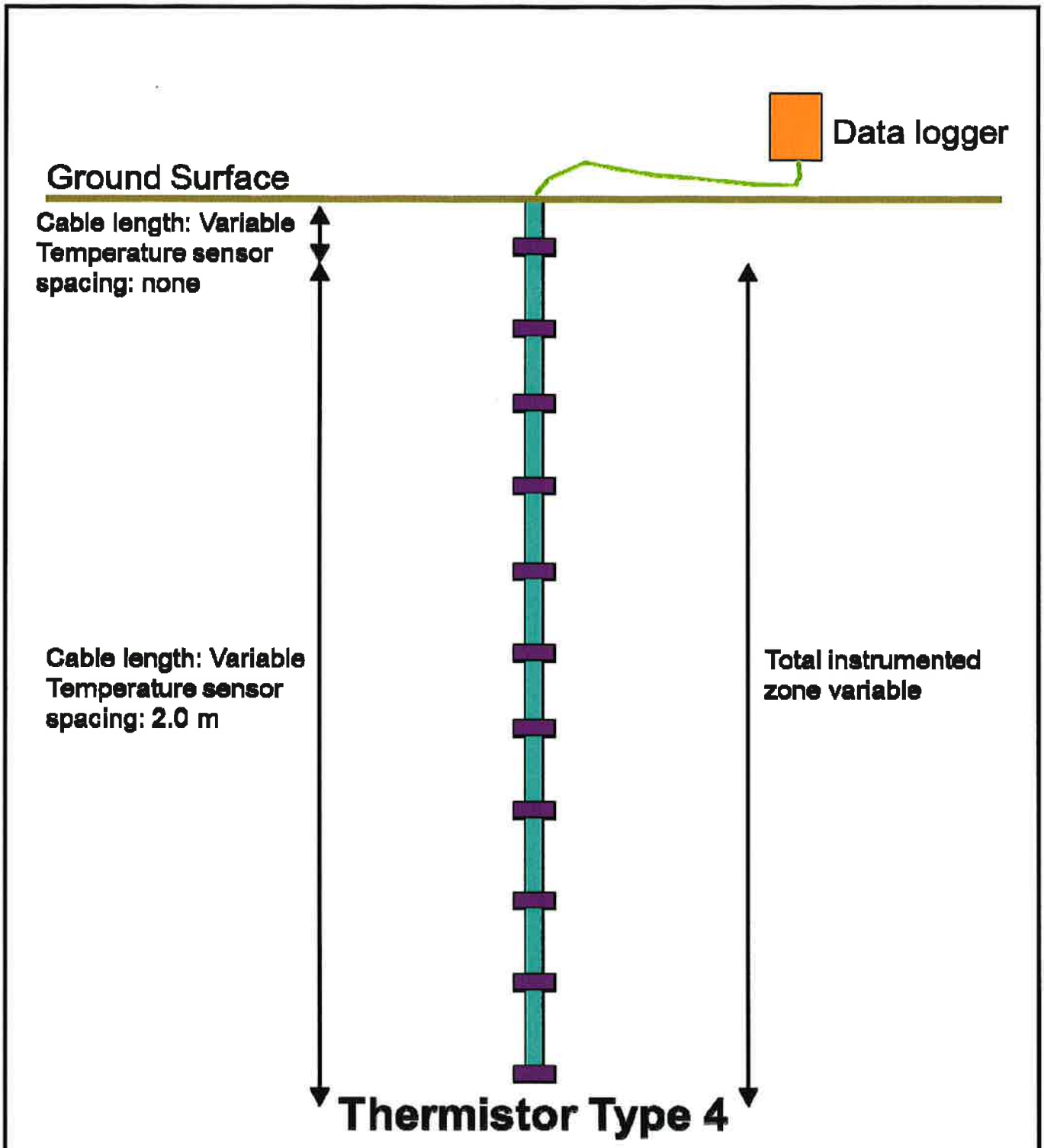


Thermistor Type 3

wood.	PROJECT: Clinton Creek Remediation Project				
	TITLE: 2018 Investigation Program Scope - Thermistor Type 3				
CLIENT: Government of Yukon	DATE: July 2018	JOB No.: VE52705	FILE: 20180718_Thermistor Types.xlsx	FIGURE No.: C-3	REV. A

T:\Geddes\Appendix C - Thermistors\[20180718_Thermistor Types.xlsx]3

Printed: 08/09/18 03:03 PM



wood.

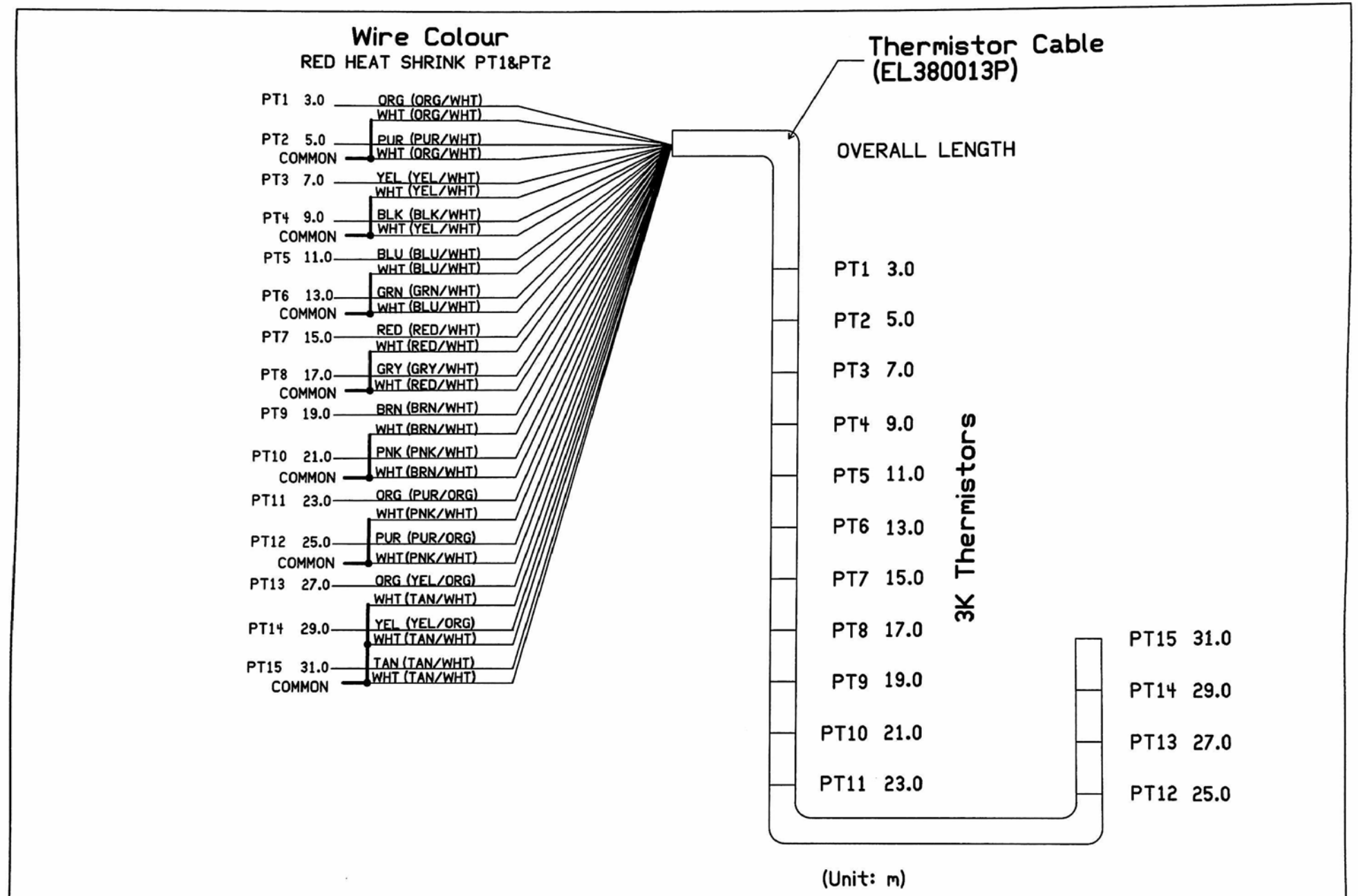
CLIENT: Government of Yukon

PROJECT: Clinton Creek Remediation Project

TITLE: 2018 Investigation Program Scope - Thermistor Type 4

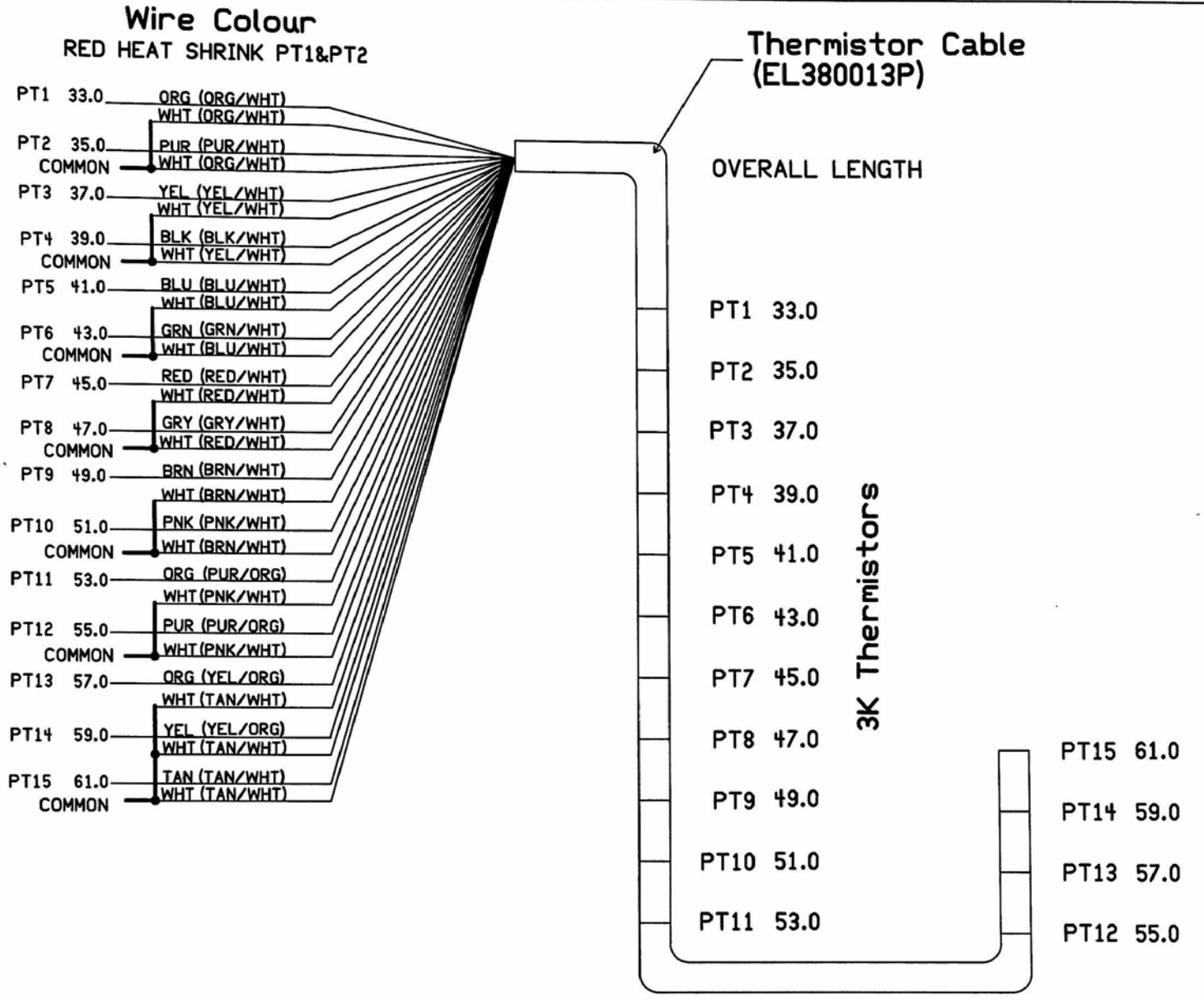
DATE:	JOB No.:	FILE:	FIGURE No.:	REV.
July 2018	VE52705	20180718_Thermistor Types.xlsx	C-4	A

T:\Geddes\Appendix C - Thermistors\[20180718_Thermistor Types.xlsx]4



S/N: TS4747

Co:	RST INSTRUMENTS LTD
Title:	THERMISTOR CABLE - 15PT/31M
J/N:	THW0315/WO217948 Revision: A
Author:	JT Size: A
Date:	25-JUL-2018 Sheet 1 of 1

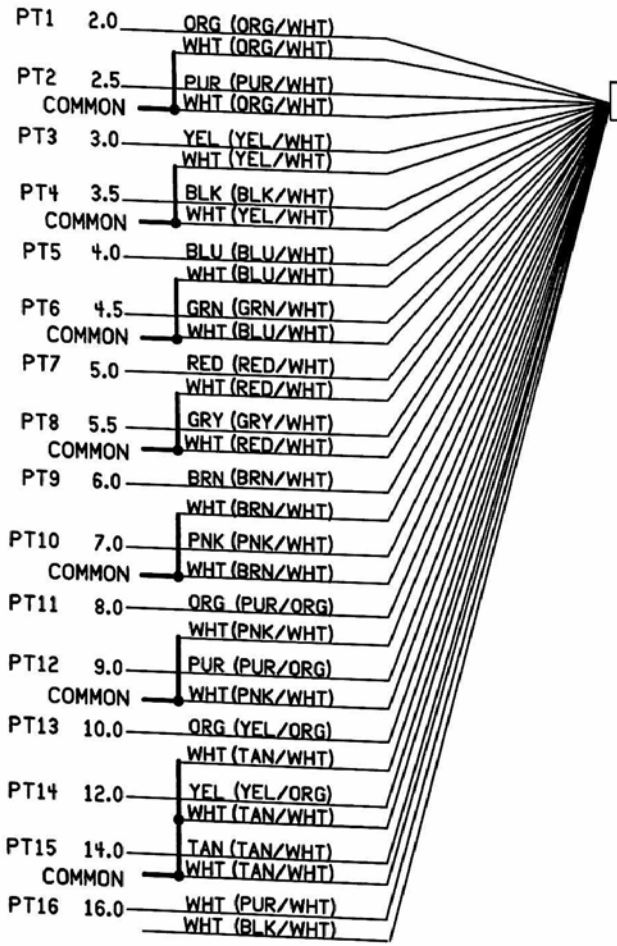


Co:	RST INSTRUMENTS LTD
Title:	THERMISTOR CABLE - 15PT/61M
J/N:	THW0315/WO217948 Revision: A
Author:	JT Size: A
Date:	25-JUL-2018 Sheet 1 of 1

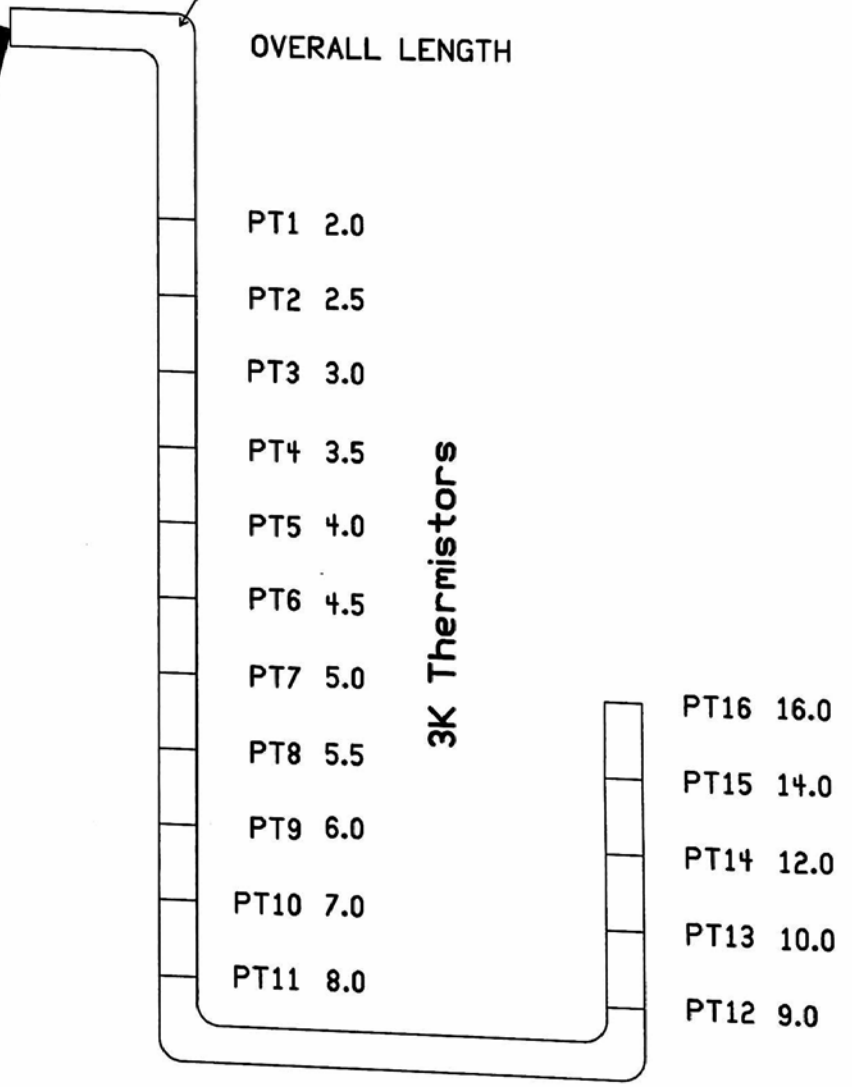
S/N: TS4748

Wire Colour

RED HEAT SHRINK PT1&PT2



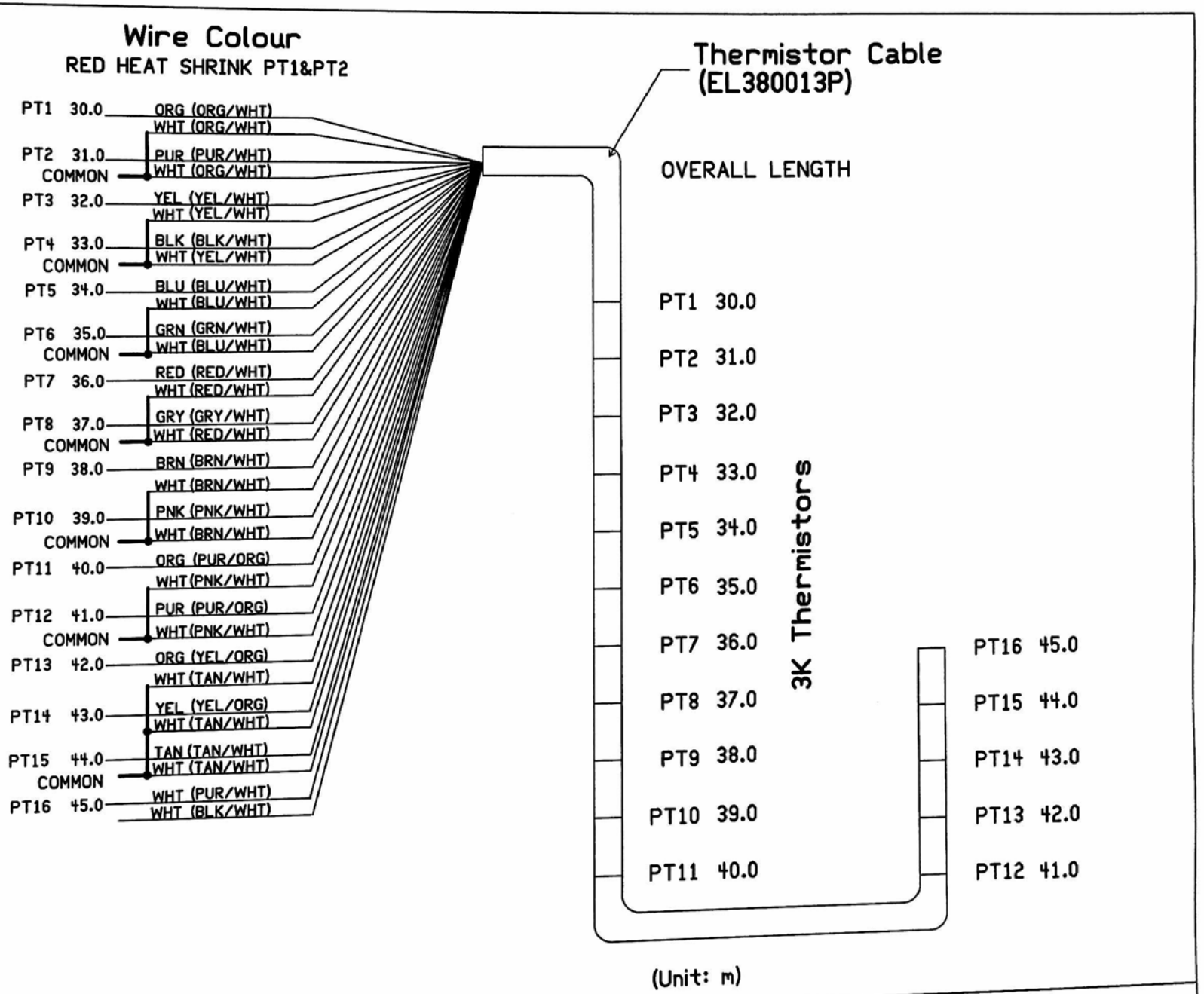
Thermistor Cable (EL380013P)



(Unit: m)

S/N: TS4749 - TS4750

Co:	RST INSTRUMENTS LTD
Title:	THERMISTOR CABLE - 16PT/16M
J/N:	THW0315/WO217948 Revision: A
Author:	CB Size: A



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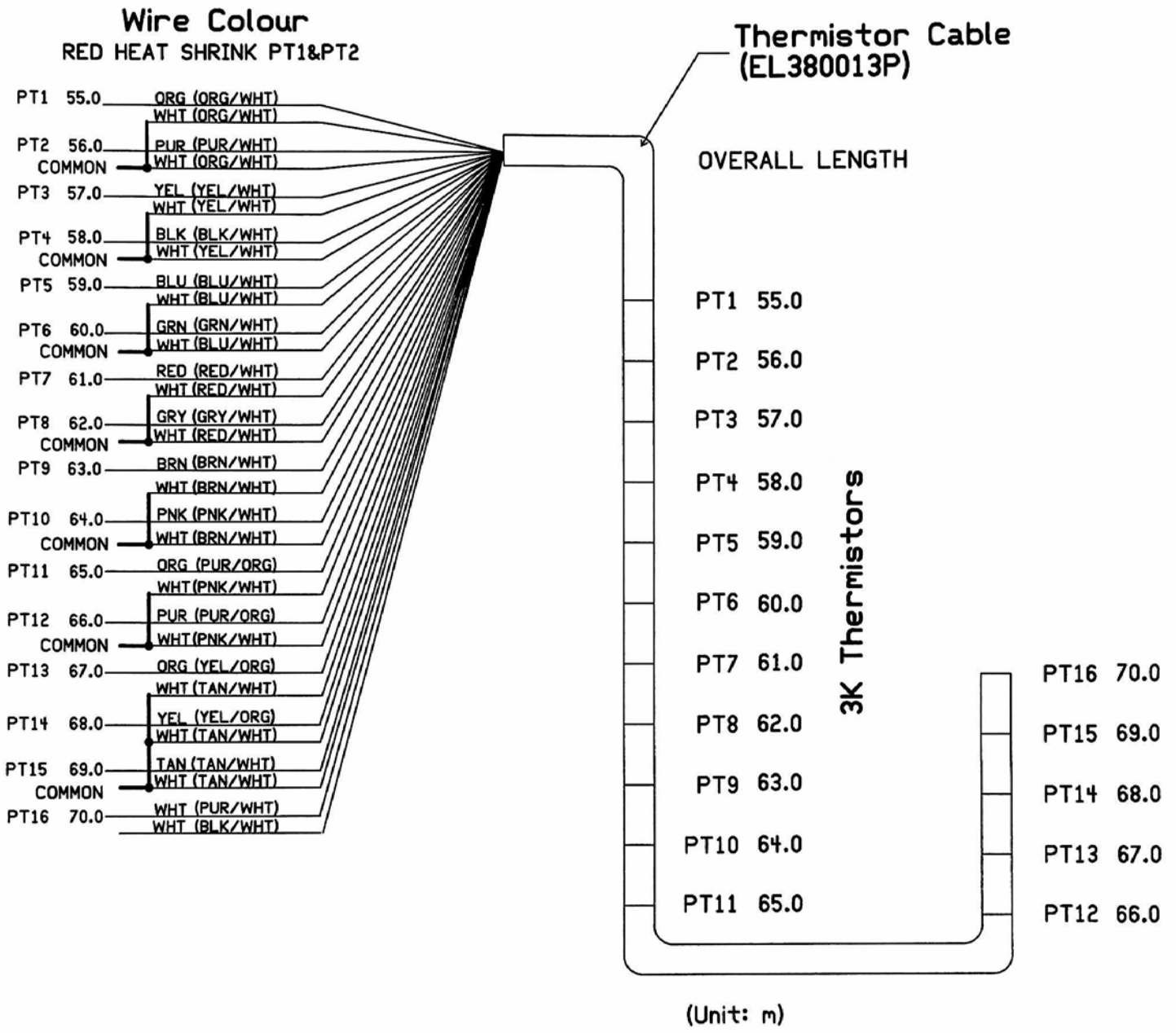
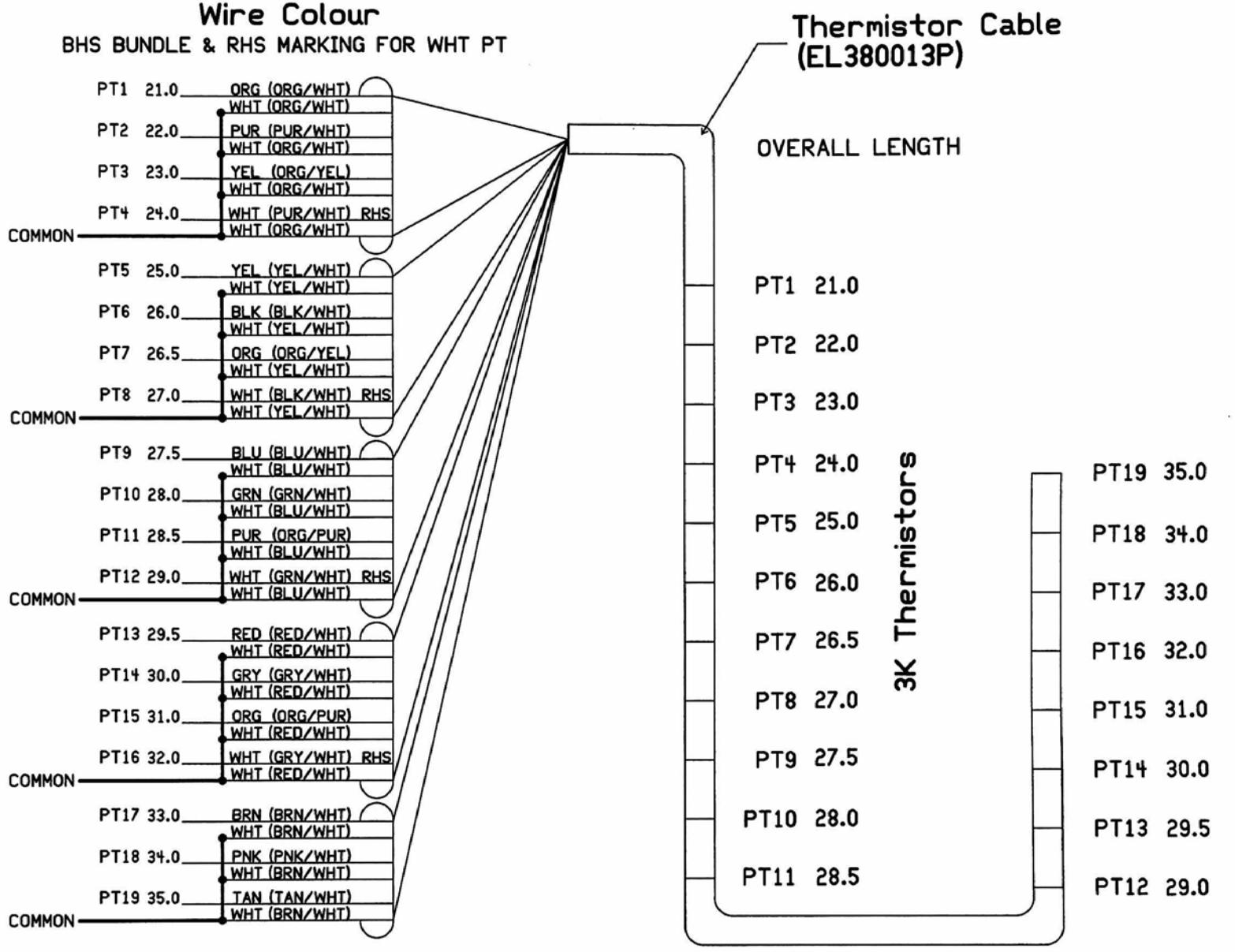
Title:	THERMISTOR CABLE - 16PT/45M
J/N:	THW0315/WO217948
Revision:	A
Author:	CB
Size:	A
Date:	25-JUL-2018
Sheet	1 of 1



(Unit: m)

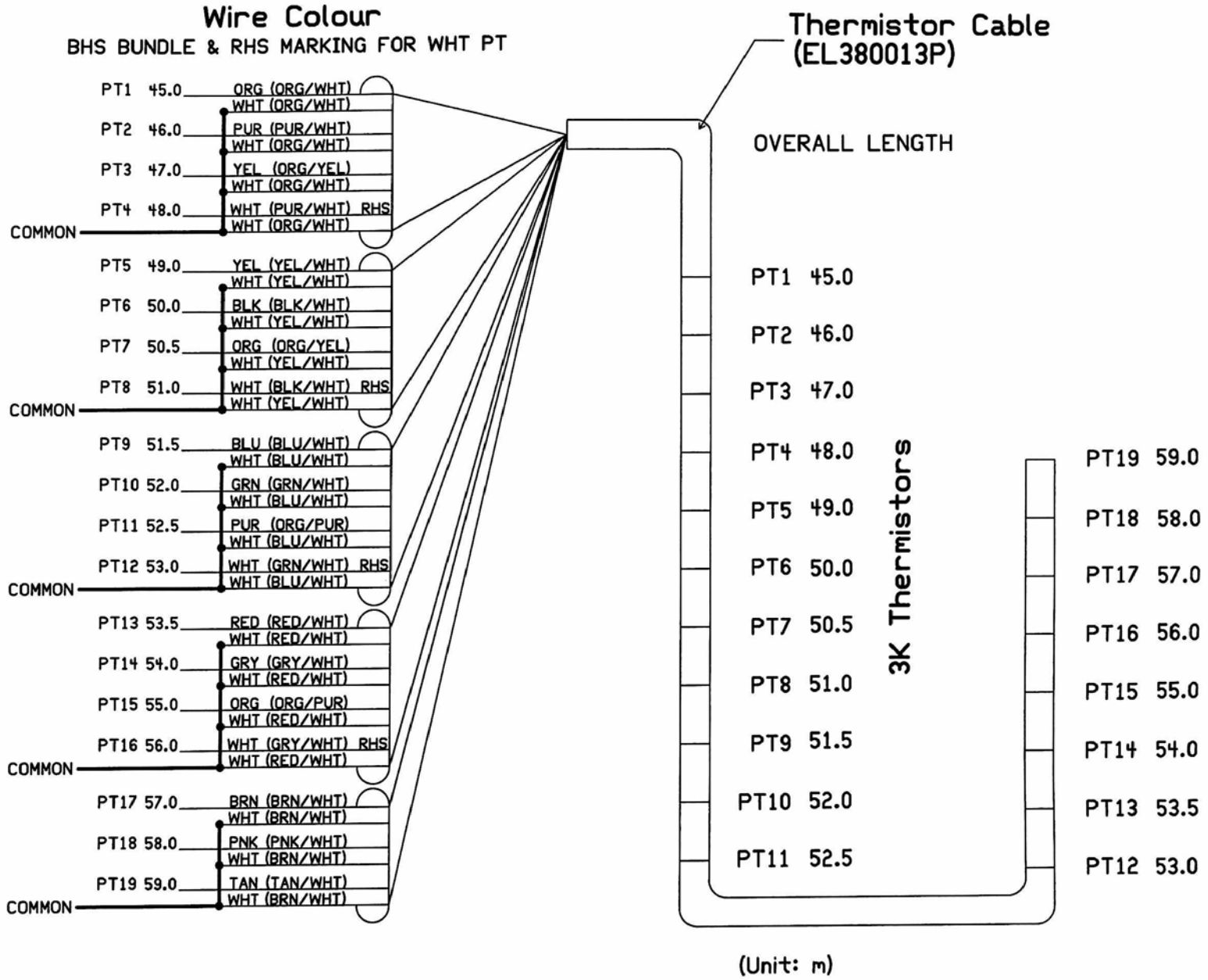
S/N: TS4753

Co:	RST INSTRUMENTS LTD
Title:	THERMISTOR CABLE - 16PT/70M
J/N:	THW0315/WO217948 Revision: A
Author:	CB Size: A
Date:	25-JUL-2018 Sheet 1 of 1



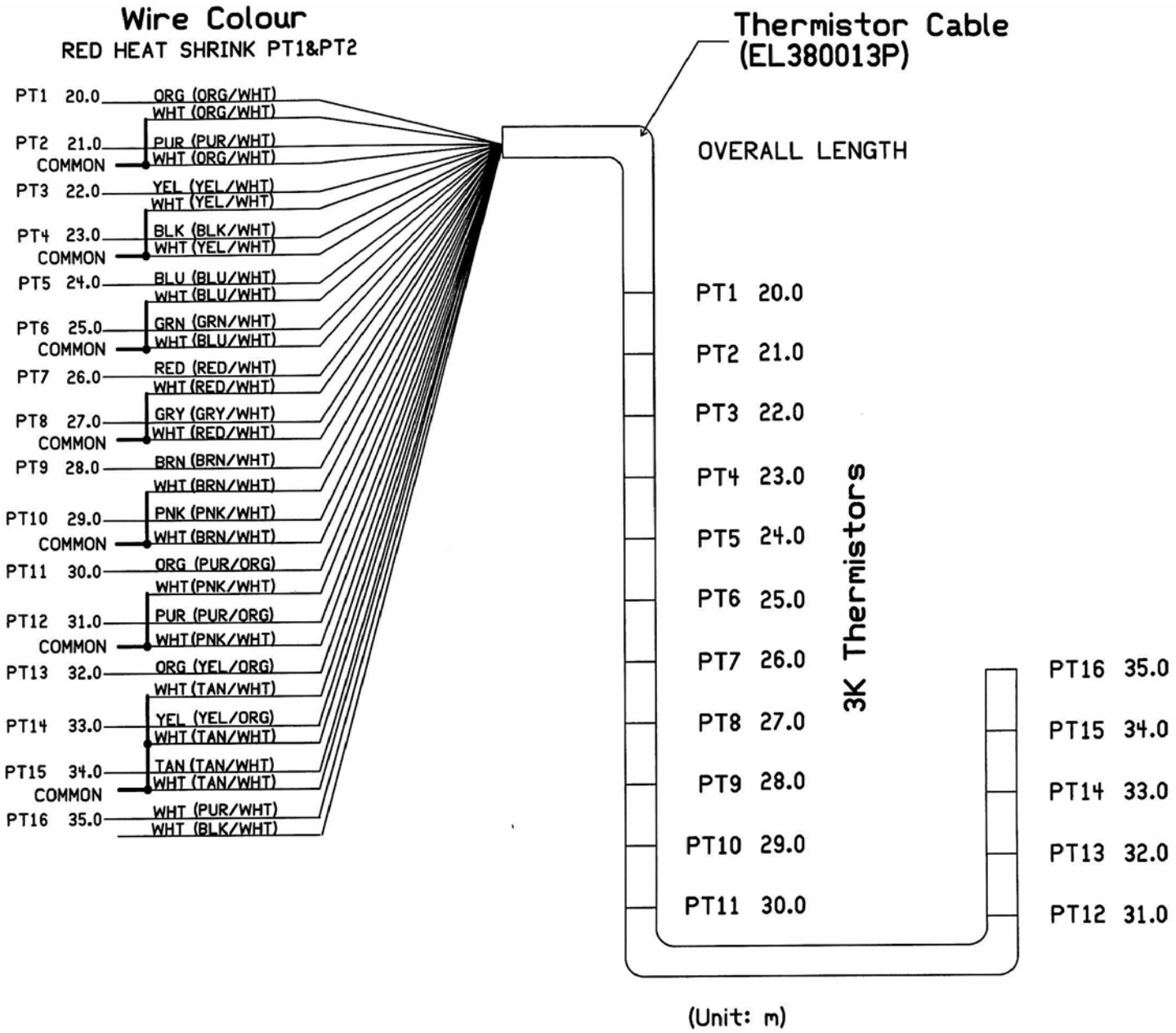
Co:	RST INSTRUMENTS LTD
Title:	THERMISTOR CABLE - 19PT/35M
J/N:	THW0315/WO217948 Revision: A
Author:	JT Size: A
Date:	25-JUL-2018 Sheet 1 of 1

S/N: TS4755



Co:	RST INSTRUMENTS LTD
Title:	THERMISTOR CABLE - 19PT/59M
J/N:	THW0315/WO217948 Revision: A
Author:	JT Size: A
Date:	25-JUL-2018 Sheet 1 of 1

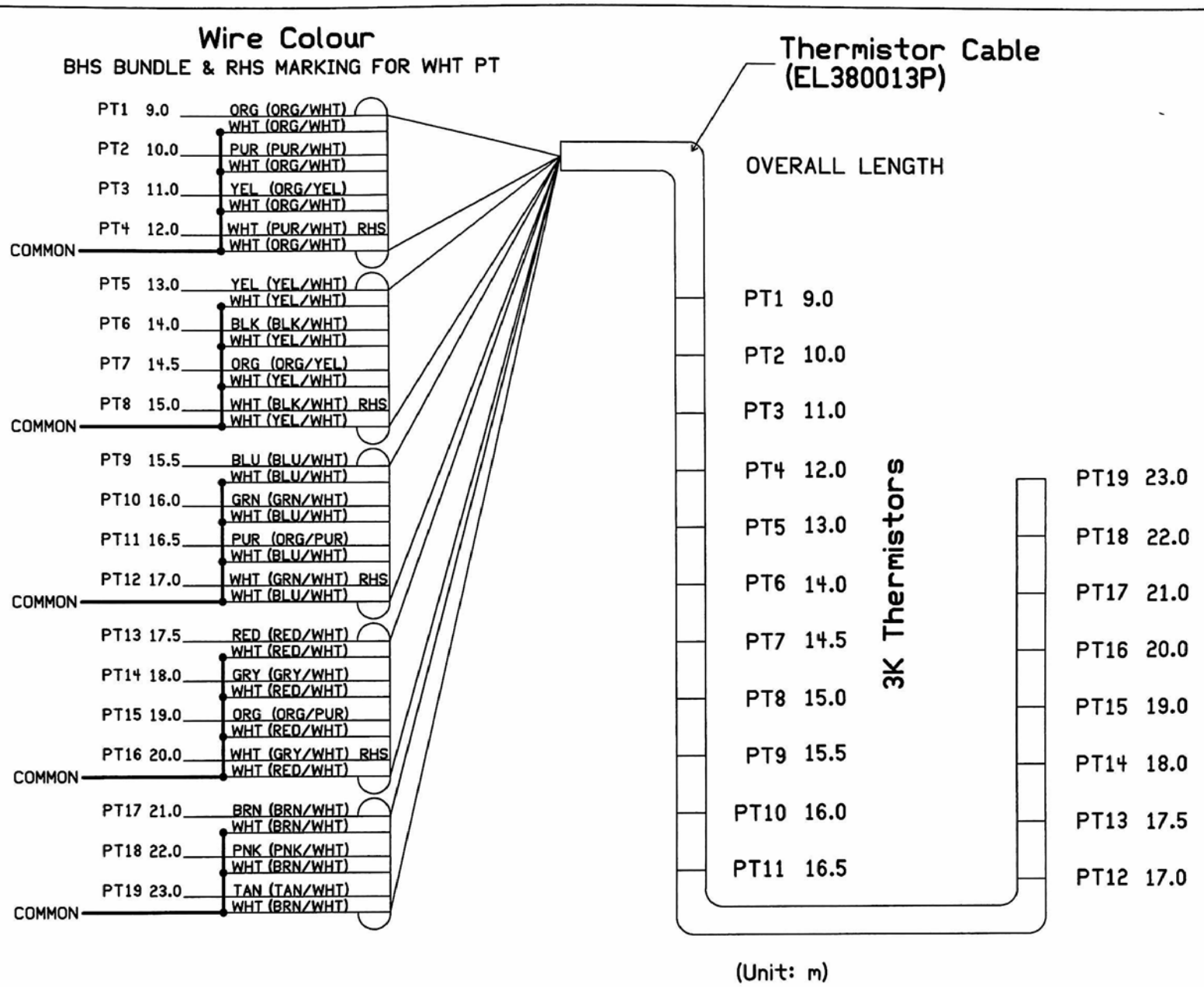
S/N: TS4756



(Unit: m)

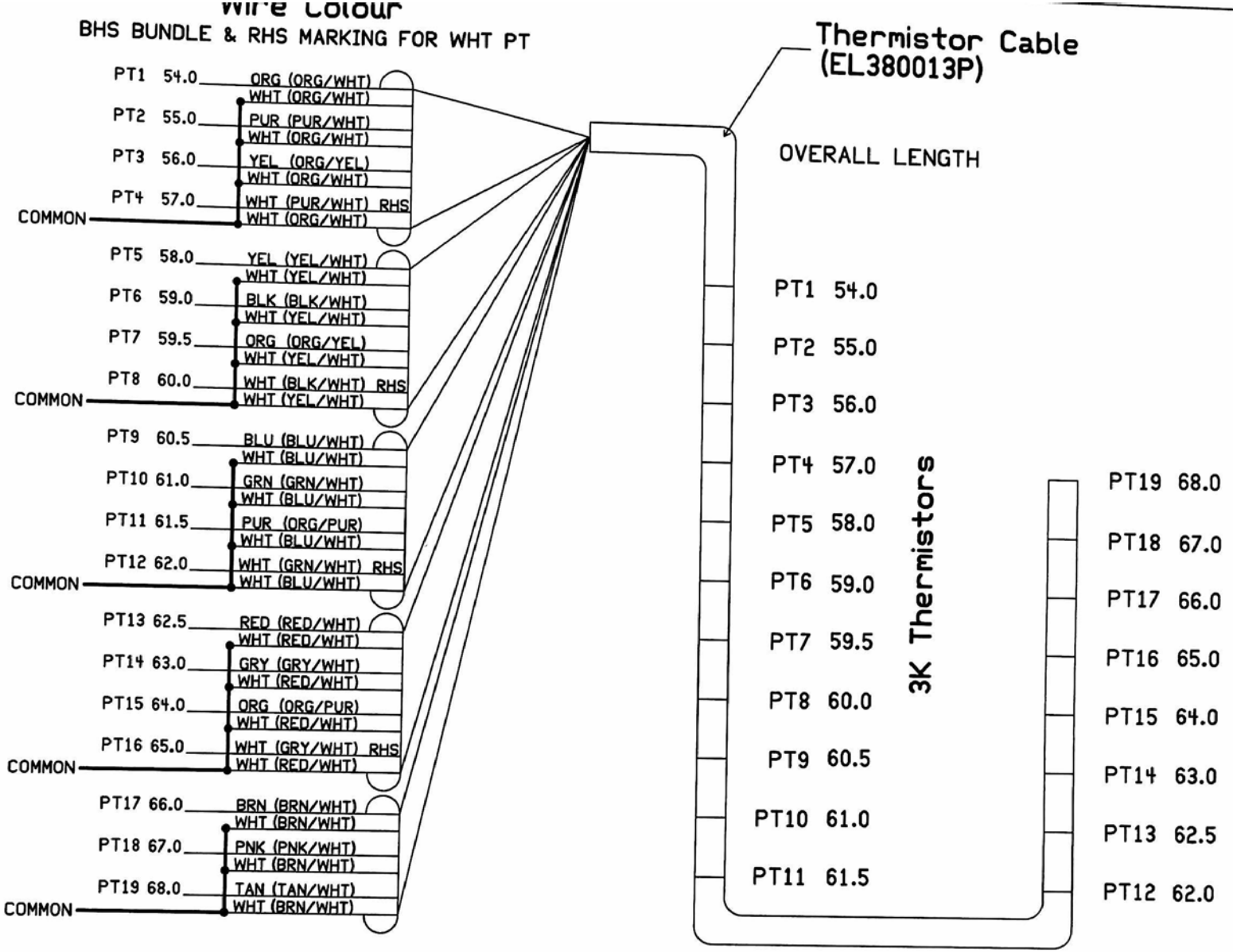
Co:	RST INSTRUMENTS LTD
Title:	THERMISTOR CABLE - 16PT/35M
J/N:	THW0315/WO217948 Revision: A
Author:	CB Size: A
Date:	25-JUL-2018 Sheet 1 of 1

S/N: TS4751



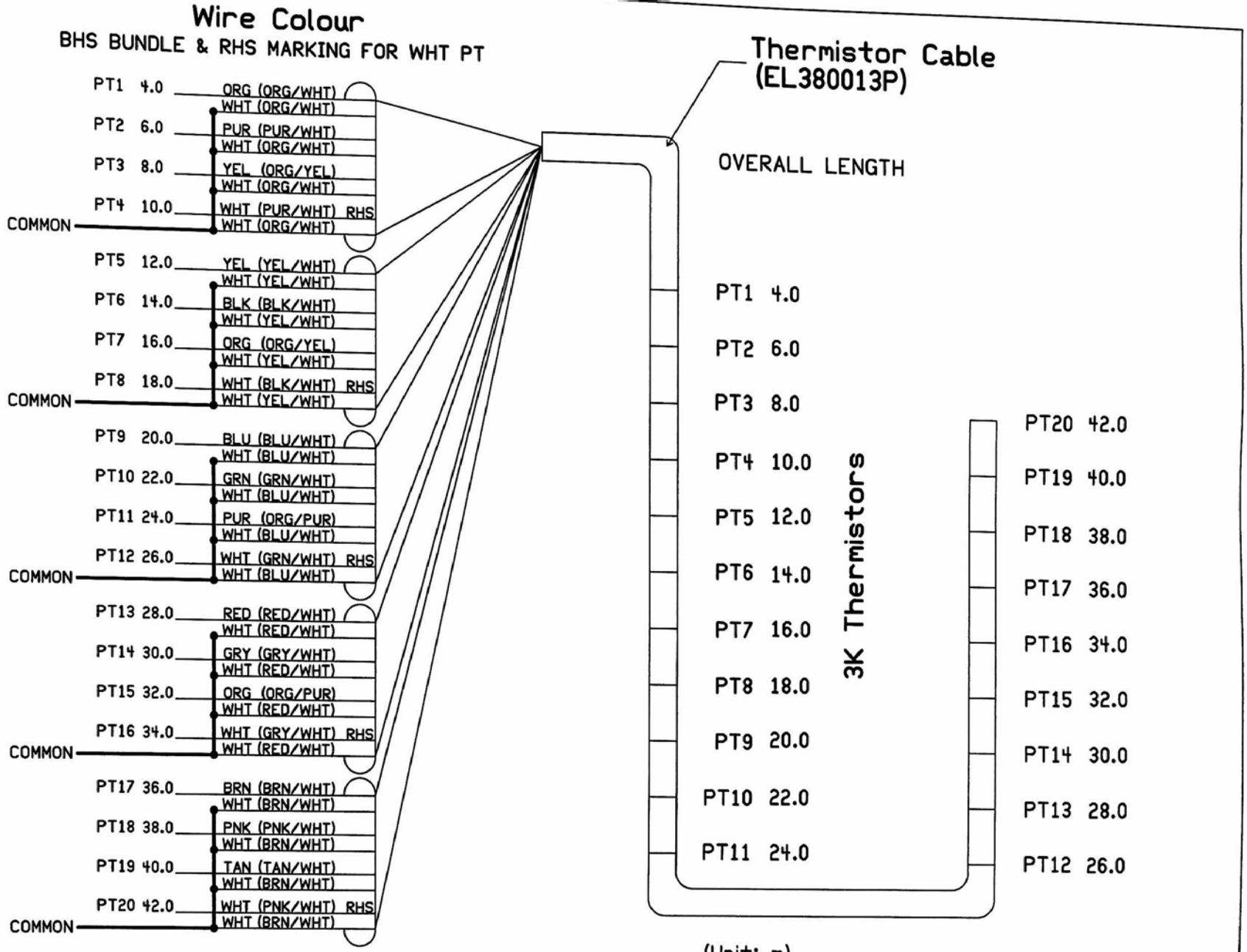
Co:	RST INSTRUMENTS LTD
Title:	THERMISTOR CABLE - 19PT/23M
J/N:	THW0315/WO217948 Revision: A
Author:	JT Size: A
Date:	25-JUL-2018 Sheet 1 of 1

S/N: TS4754



Co:	RST INSTRUMENTS LTD
Title:	THERMISTOR CABLE - 19PT/68M
J/N:	THW0315/WO217948
Revision:	A
Author:	JT
Size:	A
Date:	25-JUL-2018
Sheet	1 of 1

S/N: TS4757



S/N: TS4758

Co:	RST INSTRUMENTS LTD
Title:	THERMISTOR CABLE - 20PT/42M
J/N:	THW0315/WO217948 Revision: A
Author:	JT Size: A
Date:	25-JUL-2018 Sheet 1 of 1

Resistance versus Temperature Relationship 3000 Ohm NTC Thermistors

Ohms	Temp	Ohms	Temp	Ohms	Temp	Ohms	Temp	Ohms	Temp
201.1K	-50	16.60K	-10	2417	30	525.4	70	153.2	110
187.3K	-49	15.72K	-9	2317	31	507.8	71	149.0	111
174.5K	-48	14.90K	-8	2221	32	490.9	72	145.0	112
162.7K	-47	14.12K	-7	2130	33	474.7	73	141.1	113
151.7K	-46	13.39K	-6	2042	34	459.0	74	137.2	114
141.6K	-45	12.70K	-5	1959	35	444.0	75	133.6	115
132.2K	-44	12.05K	-4	1880	36	429.5	76	130.0	116
123.5K	-43	11.44K	-3	1805	37	415.6	77	126.5	117
115.4K	-42	10.86K	-2	1733	38	402.2	78	123.2	118
107.9K	-41	10.31K	-1	1664	39	389.3	79	119.9	119
101.0K	-40	9796	0	1598	40	376.9	80	116.8	120
94.48K	-39	9310	1	1535	41	364.9	81	113.8	121
88.46K	-38	8851	2	1475	42	353.4	82	110.8	122
82.87K	-37	8417	3	1418	43	342..2	83	107.9	123
77.99K	-36	8006	4	1363	44	331.5	84	105.2	124
72.81K	-35	7618	5	1310	45	321.2	85	102.5	125
68.30K	-35	7252	6	1260	46	311.3	86	99.9	126
64.09K	-33	6905	7	1212	47	301.7	87	97.3	127
60.17K	-32	6576	8	1167	48	282.4	88	94.9	128
56.51K	-31	6265	9	1123	49	283.5	89	92.5	129
53.10K	-30	5971	10	1081	50	274.9	90	90.2	130
49.91K	-29	56.92	11	1040	51	266.6	91	87.9	131
46.94K	-28	5427	12	1002	52	258.6	92	85.7	132
44.16K	-27	5177	13	965	53	250.9	93	83.6	134
39.13K	-25	4714	15	895.8	55	236.2	95	79.6	135
36.86K	-24	4500	16	863.3	56	229.3	96	77.6	136
34.73K	-23	4297	17	832.2	57	222.6	97	75.8	137
32.74K	-22	4105	18	802.3	58	216.1	98	73.9	138
30.87K	-21	3922	19	773.7	59	209.8	99	72.2	139
29.13K	-20	3748	20	746.3	60	203.8	100	70.4	140
27.49K	-19	3583	21	719.9	61	197.9	101	68.8	141
25.95K	-18	3426	22	694.7	62	192.2	102	67.1	142
24.51K	-17	3277	23	670.4	63	186.8	103	65.5	143
23.16K	-16	3135	24	647.1	64	181.5	104	64.0	144
21.89K	-15	3000	25	624.7	65	176.4	105	62.5	145
20.70K	-14	2872	26	603.3	66	171.4	106	61.1	146
19.58K	-13	2750	27	582.6	67	166.7	107	59.6	147
18.52K	-12	2633	28	562.8	68	162.0	108	58.3	148
17.53K	-11	2523	29	543.7	69	157.6	109	56.8	149
								55.6	150

Temperature calculated using:

Steinhart-Hart Linearization

$$T_C = \frac{1}{C_0 + C_1(\ln R) + C_3(\ln R)^3} - 273.15$$

3000 Ohm @ 25C NTC Thermistor

C_0= 0.0014051
C_1= 0.0002369
C_3= 0.0000001019
lnR= Natural Log of Resistance
T_c= Temperature in °C

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e-mail: info@rstinstruments.com • Website: www.rstinstruments.com

Thermistor Strings

Customer: Wood Environment and Infrastructure Solutions
Work Order: 217948
Thermistor Type: 3 kΩ

Number of Points: 15
Length: 31 m

This is to certify that Thermistor String S/N: TS4747 meets the RST Instruments specifications for the product.

Technician: G. Veresov

Date: 16 August 2018

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Thermistor Strings

Customer: Wood Environment and Infrastructure Solutions
Work Order: 217948
Thermistor Type: 3 kΩ

Number of Points: 15
Length: 61 m

This is to certify that Thermistor String S/N: TS4748 meets the RST Instruments specifications for the product.

Technician: C. Luong

Date: 16 August 2018

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Thermistor Strings

Customer: Wood Environment and Infrastructure Solutions
Work Order: 217948
Thermistor Type: 3 kΩ

Number of Points: 16
Length: 16 m

This is to certify that Thermistor Strings S/N: TS4749 - TS4750 meet the RST Instruments specifications for the product.

Technician: J. Berg

Date: 16 August 2018

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Thermistor Strings

Customer: Wood Environment and Infrastructure Solutions
Work Order: 217948
Thermistor Type: 3 kΩ

Number of Points: 16
Length: 45 m

This is to certify that Thermistor String S/N: TS4752 meets the RST Instruments specifications for the product.

Technician: C. Luong

Date: 16 August 2018

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Thermistor Strings

Customer: Wood Environment and Infrastructure Solutions
Work Order: 217948
Thermistor Type: 3 kΩ

Number of Points: 16
Length: 70 m

This is to certify that Thermistor String S/N: TS4753 meets the RST Instruments specifications for the product.

Technician: C. Luong C. L Date: 16 August 2018

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Thermistor Strings

Customer: Wood Environment and Infrastructure Solutions
Work Order: 217948
Thermistor Type: 3 kΩ

Number of Points: 19
Length: 35 m

This is to certify that Thermistor String S/N: TS4755 meets the RST Instruments specifications for the product.

Technician: C. Luong C. L Date: 16 August 2018

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Thermistor Strings

Customer: Wood Environment and Infrastructure Solutions
Work Order: 217948
Thermistor Type: 3 kΩ

Number of Points: 16
Length: 35 m

This is to certify that Thermistor String S/N: TS4751 meets the RST Instruments specifications for the product.

Technician: J. Berg

Date: 13 August 2018

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Thermistor Strings

Customer: Wood Environment and Infrastructure Solutions
Work Order: 217948
Thermistor Type: 3 kΩ

Number of Points: 19
Length: 23 m

This is to certify that Thermistor String S/N: TS4754 meets the RST Instruments specifications for the product.

Technician: G. Veresov

Date: 13 August 2018

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Thermistor Strings

Customer: Wood Environment and Infrastructure Solutions
Work Order: 217948
Thermistor Type: 3 kΩ

Number of Points: 19
Length: 59 m

This is to certify that Thermistor String S/N: TS4756 meets the RST Instruments specifications for the product.

Technician: J. Berg

Date: 13 August 2018

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Thermistor Strings

Customer: Wood Environment and Infrastructure Solutions
Work Order: 217948
Thermistor Type: 3 kΩ

Number of Points: 19
Length: 68 m

This is to certify that Thermistor String S/N: TS4757 meets the RST Instruments specifications for the product.

Technician: B. Amos

Date: 13 August 2018

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Thermistor Strings

Customer: Wood Environment and Infrastructure Solutions
Work Order: 217948
Thermistor Type: 3 kΩ

Number of Points: 20
Length: 42 m

This is to certify that Thermistor String S/N: TS4758 meets the RST Instruments specifications for the product.

Technician: G. Veresov

Date: 13 August 2018

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Calibration Record

Vibrating Wire Piezometer

Customer:	Wood Environment and Infrastructure Solutions		
Model:		VW2100-2.0	
Serial Number:		**VW51965**	
Mfg Number:		P103713	
Range:		2.0	MPa
Temperature:		23.0	°C
Barometric Pressure:		1018.8	millibars
Work Order Number:		218121	
Cable Length:		25	meters
Cable Markings:		420331 m - 420355 m	
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	8971	8972	8971	0.005	0.23	0.000	0.00
0.400	8204	8204	8204	0.399	-0.05	0.400	0.00
0.800	7432	7432	7432	0.796	-0.19	0.800	-0.01
1.200	6654	6654	6654	1.196	-0.18	1.200	0.00
1.600	5871	5871	5871	1.599	-0.04	1.600	0.01
2.000	5083	5083	5083	2.004	0.22	2.000	-0.01
			Max. Error (%):		0.23		0.01

Linear Calibration Factor: **CF = 5.1433E-04 MPa/B unit**
Temperature Correction Factor: **Tk = -9.0007E-06 MPa/°C rise**

Polynomial Gage Factors:

A = -2.2262E-09 **MPa/(B unit)²** **B =** -4.8304E-04 **MPa/B unit** **C =** _____ **MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_o - L) - Tk(T_o - T) + (S_o - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_o - T) + (S_o - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_o^2) + B(L_o)]$

L_o, L = initial (installation) and current readings, in B units
T_o, T = initial (installation) and current temperature, in °C
S_o, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	9-Aug-18	8980	23.6	1015.0

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: J. Monsalvez J.M Date: 9-Aug-18

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Document Number.: ELL0130K

MIG0106B

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Calibration Record

Vibrating Wire Piezometer

Customer:	Wood Environment and Infrastructure Solutions		
Model:		VW2100-2.0	
Serial Number:		**VW51966**	
Mfg Number:		P103879	
Range:		2.0	MPa
Temperature:		23.0	°C
Barometric Pressure:		1014.4	millibars
Work Order Number:		218121	
Cable Length:		30	meters
Cable Markings:		420387 m - 420416 m	
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	8994	8995	8994	0.004	0.20	0.000	0.01
0.400	8244	8244	8244	0.399	-0.05	0.400	-0.01
0.800	7489	7488	7488	0.797	-0.17	0.800	-0.01
1.200	6728	6728	6728	1.197	-0.16	1.200	0.00
1.600	5963	5963	5963	1.600	-0.02	1.601	0.03
2.000	5195	5196	5195	2.004	0.18	2.000	-0.01
			Max. Error (%):		0.20		0.03

Linear Calibration Factor: **CF = 5.2633E-04 MPa/B unit**
Temperature Correction Factor: **Tk = 2.5790E-04 MPa/°C rise**

Polynomial Gage Factors:

A = -2.0156E-09 MPa/(B unit)² **B = -4.9773E-04 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_o - L) - Tk(T_o - T) + (S_o - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_o - T) + (S_o - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_o^2) + B(L_o)]$

L_o, L = initial (installation) and current readings, in B units
T_o, T = initial (installation) and current temperature, in °C
S_o, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	10-Aug-18	8992	22.9	1012.4

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: M. Miftode MM Date: 10-Aug-18

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Document Number.: ELL0130K

MIG0106B

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Calibration Record

Vibrating Wire Piezometer

Customer:	Wood Environment and Infrastructure Solutions		
Model:		VW2100-2.0	
Serial Number:		**VW51967**	
Mfg Number:		P103856	
Range:		2.0	MPa
Temperature:		23.0	°C
Barometric Pressure:		1014.4	millibars
Work Order Number:		218121	
Cable Length:		30	meters
Cable Markings:		420356 m - 420386 m	
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3 kΩ	

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	8894	8894	8894	0.003	0.16	0.000	0.01
0.400	8131	8132	8132	0.399	-0.03	0.400	0.00
0.800	7366	7366	7366	0.797	-0.14	0.800	-0.02
1.200	6597	6597	6597	1.197	-0.14	1.200	-0.01
1.600	5822	5822	5822	1.600	0.01	1.601	0.04
2.000	5047	5048	5048	2.003	0.13	2.000	-0.02
			Max. Error (%):		0.16		0.04

Linear Calibration Factor: **CF = 5.1985E-04 MPa/B unit**
Temperature Correction Factor: **Tk = 2.5993E-05 MPa/°C rise**

Polynomial Gage Factors:

A = -1.5464E-09 MPa/(B unit)² **B = -4.9830E-04 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_o - L) - Tk(T_o - T) + (S_o - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_o - T) + (S_o - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_o^2) + B(L_o)]$

L_o, L = initial (installation) and current readings, in B units
T_o, T = initial (installation) and current temperature, in °C
S_o, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	9-Aug-18	8885	23.5	1015.0

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: J. Monsalvez J.M Date: 9-Aug-18

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Calibration Record

Vibrating Wire Piezometer

Customer:	Wood Environment and Infrastructure Solutions		
Model:		VW2100-2.0	
Serial Number:		**VW52020**	
Mfg Number:		P103857	
Range:		2.0	MPa
Temperature:		23.0	°C
Barometric Pressure:		1014.4	millibars
Work Order Number:		218121	
Cable Length:		40	meters
Cable Markings:		443902 m - 443941 m	
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	8486	8486	8486	0.001	0.06	0.001	0.03
0.400	7732	7732	7732	0.399	-0.06	0.399	-0.06
0.800	6971	6972	6972	0.800	-0.02	0.800	0.01
1.200	6213	6214	6213	1.199	-0.03	1.200	0.00
1.600	5452	5452	5452	1.601	0.04	1.601	0.05
2.000	4695	4695	4695	2.000	0.00	1.999	-0.03
			Max. Error (%):		0.06		0.06

Linear Calibration Factor: **CF = 5.2722E-04 MPa/B unit**
Temperature Correction Factor: **Tk = 1.6344E-04 MPa/°C rise**

Polynomial Gage Factors:

A = -3.3835E-10 MPa/(B unit)² **B = -5.2276E-04 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	9-Aug-18	8482	23.6	1015.0

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This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: J. Monsalvez J.M Date: 9-Aug-18

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e-mail: info@rstinstruments.com • Website: www.rstinstruments.com

Calibration Record

Vibrating Wire Piezometer

Customer:	Wood Environment and Infrastructure Solutions		
Model:		VW2100-2.0	
Serial Number:		**VW52021**	
Mfg Number:		P103858	
Range:		2.0	MPa
Temperature:		23.0	°C
Barometric Pressure:		1014.4	millibars
Work Order Number:		218121	
Cable Length:		40	meters
Cable Markings:		443861 m - 443900 m	
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	9153	9153	9153	0.001	0.06	0.000	0.02
0.400	8438	8439	8438	0.400	-0.02	0.400	-0.01
0.800	7723	7723	7723	0.799	-0.07	0.799	-0.03
1.200	7003	7003	7003	1.200	-0.02	1.200	0.02
1.600	6284	6284	6284	1.601	0.03	1.601	0.04
2.000	5567	5568	5567	2.000	0.01	1.999	-0.03
			Max. Error (%):		0.07		0.04

Linear Calibration Factor: **CF = 5.5754E-04 MPa/B unit**
Temperature Correction Factor: **Tk = 3.5962E-04 MPa/°C rise**

Polynomial Gage Factors:

A = -4.6649E-10 MPa/(B unit)² **B = -5.5068E-04 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	9-Aug-18	9147	23.5	1015.0

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This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: J. Monsalvez J.M Date: 9-Aug-18

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Calibration Record

Vibrating Wire Piezometer

Customer:	Wood Environment and Infrastructure Solutions		
Model:		VW2100-2.0	
Serial Number:		**VW52022**	
Mfg Number:		P103859	
Range:		2.0	MPa
Temperature:		23.0	°C
Barometric Pressure:		1014.4	millibars
Work Order Number:		218121	
Cable Length:		40	meters
Cable Markings:		443942 m - 443982 m	
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	8401	8402	8402	0.002	0.10	0.000	0.02
0.400	7636	7636	7636	0.399	-0.04	0.400	-0.02
0.800	6866	6866	6866	0.798	-0.09	0.800	-0.02
1.200	6094	6094	6094	1.199	-0.05	1.200	0.02
1.600	5321	5320	5320	1.600	0.01	1.601	0.03
2.000	4547	4547	4547	2.001	0.06	2.000	-0.02
			Max. Error (%):		0.10		0.03

Linear Calibration Factor: **CF = 5.1871E-04 MPa/B unit**
Temperature Correction Factor: **Tk = 1.1412E-04 MPa/°C rise**

Polynomial Gage Factors:

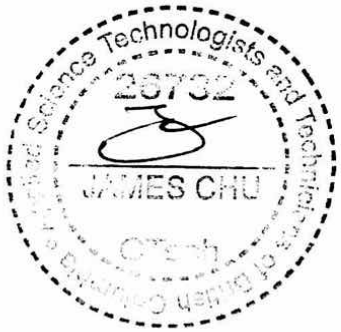
A = -8.2951E-10 MPa/(B unit)² **B = -5.0797E-04 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_o - L) - Tk(T_o - T) + (S_o - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_o - T) + (S_o - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_o^2) + B(L_o)]$

L_o, L = initial (installation) and current readings, in B units
T_o, T = initial (installation) and current temperature, in °C
S_o, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = Hz²/1000 ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	9-Aug-18	8399	23.5	1015.0



This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: J. Monsalvez J.M Date: 9-Aug-18

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Calibration Record

Vibrating Wire Piezometer

Customer:	Wood Environment and Infrastructure Solutions		
Model:	VW2100-2.0		
Serial Number:	**VW52023**		
Mfg Number:	P103863		
Range:	2.0 MPa		
Temperature:	23.0 °C		
Barometric Pressure:	1014.4 millibars		
Work Order Number:	218121		
Cable Length:	40 meters		
Cable Markings:	420499 m - 420538 m		
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:	EL380004		
Thermistor Type:	3 kΩ		

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	9265	9265	9265	0.002	0.11	0.000	0.01
0.400	8510	8510	8510	0.399	-0.03	0.400	-0.01
0.800	7752	7752	7752	0.798	-0.09	0.800	-0.01
1.200	6991	6992	6992	1.198	-0.08	1.200	0.00
1.600	6228	6228	6228	1.600	0.01	1.601	0.03
2.000	5464	5465	5464	2.002	0.09	2.000	-0.02
			Max. Error (%):		0.11		0.03

Linear Calibration Factor: **CF = 5.2610E-04 MPa/B unit**
Temperature Correction Factor: **Tk = 2.9462E-04 MPa/°C rise**

Polynomial Gage Factors:

A = -1.0833E-09 MPa/(B unit)² **B = -5.1015E-04 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	9-Aug-18	9260	23.5	1015.0

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: J. Monsalvez J.M Date: 9-Aug-18

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Document Number.: ELL0130K

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Calibration Record

Vibrating Wire Piezometer

Customer:	Wood Environment and Infrastructure Solutions		
Model:	VW2100-2.0		
Serial Number:	**VW52024**		
Mfg Number:	P103867		
Range:	2.0	MPa	
Temperature:	23.0	°C	
Barometric Pressure:	1014.4	millibars	
Work Order Number:	218121		
Cable Length:	40	meters	
Cable Markings:	420418 m - 420457 m		
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:	EL380004		
Thermistor Type:	3	kΩ	

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	8434	8434	8434	0.001	0.04	0.001	0.03
0.400	7715	7715	7715	0.399	-0.04	0.399	-0.04
0.800	6993	6993	6993	0.799	-0.03	0.799	-0.03
1.200	6269	6269	6269	1.200	0.00	1.200	0.01
1.600	5545	5545	5545	1.601	0.06	1.601	0.06
2.000	4826	4826	4826	1.999	-0.03	1.999	-0.04
			Max. Error (%):		0.06		0.06

Linear Calibration Factor: **CF = 5.5388E-04 MPa/B unit**
Temperature Correction Factor: **Tk = 1.8832E-04 MPa/°C rise**

Polynomial Gage Factors:

A = -1.3029E-10 MPa/(B unit)² **B = -5.5215E-04 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_o - L) - Tk(T_o - T) + (S_o - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_o - T) + (S_o - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_o^2) + B(L_o)]$

L_o, L = initial (installation) and current readings, in B units
T_o, T = initial (installation) and current temperature, in °C
S_o, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	9-Aug-18	8429	23.5	1015.0

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: J. Monsalvez J.M Date: 9-Aug-18

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Calibration Record

Vibrating Wire Piezometer

Customer:	Wood Environment and Infrastructure Solutions		
Model:		VW2100-2.0	
Serial Number:		**VW52025**	
Mfg Number:		P103869	
Range:		2.0	MPa
Temperature:		23.0	°C
Barometric Pressure:		1014.4	millibars
Work Order Number:		218121	
Cable Length:		40	meters
Cable Markings:		420458 m - 420498 m	
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	9290	9290	9290	0.003	0.13	0.000	0.01
0.400	8518	8518	8518	0.399	-0.03	0.400	-0.01
0.800	7742	7742	7742	0.798	-0.12	0.800	-0.01
1.200	6963	6963	6963	1.198	-0.10	1.200	0.00
1.600	6180	6180	6180	1.600	0.00	1.600	0.02
2.000	5397	5398	5397	2.002	0.11	2.000	-0.01
				Max. Error (%):	0.13		0.02

Linear Calibration Factor: **CF = 5.1370E-04 MPa/B unit**
Temperature Correction Factor: **Tk = 2.9923E-04 MPa/°C rise**

Polynomial Gage Factors:

A = -1.2460E-09 MPa/(B unit)² **B = -4.9540E-04 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_o - L) - Tk(T_o - T) + (S_o - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_o - T) + (S_o - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_o^2) + B(L_o)]$

L_o, L = initial (installation) and current readings, in B units
T_o, T = initial (installation) and current temperature, in °C
S_o, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	9-Aug-18	9286	23.4	1015.0

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: J. Monsalvez J.M Date: 9-Aug-18

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Calibration Record

Vibrating Wire Piezometer

Customer:	Wood Environment and Infrastructure Solutions		
Model:		VW2100-2.0	
Serial Number:		**VW52026**	
Mfg Number:		P103855	
Range:		2.0	MPa
Temperature:		23.0	°C
Barometric Pressure:		1014.4	millibars
Work Order Number:		218121	
Cable Length:		50	meters
Cable Markings:		444034 m - 444083 m	
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	9184	9184	9184	0.001	0.05	0.000	0.01
0.400	8441	8442	8441	0.400	-0.01	0.400	0.00
0.800	7698	7698	7698	0.799	-0.05	0.800	-0.02
1.200	6952	6952	6952	1.199	-0.03	1.200	0.00
1.600	6205	6205	6205	1.600	0.02	1.601	0.03
2.000	5460	5460	5460	2.001	0.03	2.000	-0.01
			Max. Error (%):		0.05		0.03

Linear Calibration Factor: **CF = 5.3687E-04 MPa/B unit**
Temperature Correction Factor: **Tk = 2.3488E-04 MPa/°C rise**

Polynomial Gage Factors:

A = -4.4138E-10 MPa/(B unit)² **B = -5.3040E-04 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	9-Aug-18	9183	23.0	1015.5

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: M. Miftode MM Date: 9-Aug-18

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Document Number.: ELL0130K

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Calibration Record

Vibrating Wire Piezometer

Customer:	Wood Environment and Infrastructure Solutions		
Model:		VW2100-2.0	
Serial Number:		**VW52027**	
Mfg Number:		P103860	
Range:		2.0	MPa
Temperature:		23.0	°C
Barometric Pressure:		1014.4	millibars
Work Order Number:		218121	
Cable Length:		50	meters
Cable Markings:		444135 m - 444184 m	
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	8227	8228	8228	0.002	0.08	0.001	0.03
0.400	7476	7476	7476	0.399	-0.05	0.399	-0.04
0.800	6720	6720	6720	0.799	-0.07	0.800	-0.02
1.200	5962	5962	5962	1.199	-0.03	1.200	0.01
1.600	5203	5203	5203	1.601	0.05	1.601	0.06
2.000	4447	4448	4447	2.000	0.02	1.999	-0.03
			Max. Error (%):		0.08		0.06

Linear Calibration Factor: **CF = 5.2873E-04 MPa/B unit**
Temperature Correction Factor: **Tk = 1.2557E-04 MPa/°C rise**

Polynomial Gage Factors:

A = -5.6122E-10 MPa/(B unit)² **B = -5.2161E-04 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	9-Aug-18	8224	22.9	1015.5

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: M. Miftode MM Date: 9-Aug-18

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MIG0106B

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Calibration Record

Vibrating Wire Piezometer

Customer:	Wood Environment and Infrastructure Solutions		
Model:		VW2100-2.0	
Serial Number:		**VW52028**	
Mfg Number:		P103861	
Range:		2.0	MPa
Temperature:		23.0	°C
Barometric Pressure:		1014.4	millibars
Work Order Number:		218121	
Cable Length:		50	meters
Cable Markings:		399950 m - 399999 m	
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	8997	8998	8997	0.003	0.15	0.000	0.02
0.400	8249	8250	8250	0.399	-0.06	0.399	-0.03
0.800	7496	7497	7497	0.798	-0.12	0.800	-0.02
1.200	6740	6740	6740	1.198	-0.09	1.200	0.01
1.600	5980	5981	5981	1.600	0.01	1.601	0.03
2.000	5221	5221	5221	2.002	0.11	2.000	-0.02
			Max. Error (%):		0.15		0.03

Linear Calibration Factor: **CF = 5.2943E-04 MPa/B unit**
Temperature Correction Factor: **Tk = 3.0575E-04 MPa/°C rise**

Polynomial Gage Factors:

A = -1.3764E-09 MPa/(B unit)² **B = -5.0986E-04 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_o - L) - Tk(T_o - T) + (S_o - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_o - T) + (S_o - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_o^2) + B(L_o)]$

L_o, L = initial (installation) and current readings, in B units
T_o, T = initial (installation) and current temperature, in °C
S_o, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	9-Aug-18	8996	22.9	1015.5

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: M. Miftode MM Date: 9-Aug-18

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Calibration Record

Vibrating Wire Piezometer

Customer:	Wood Environment and Infrastructure Solutions		
Model:		VW2100-2.0	
Serial Number:		**VW52029**	
Mfg Number:		P103864	
Range:		2.0	MPa
Temperature:		23.0	°C
Barometric Pressure:		1014.4	millibars
Work Order Number:		218121	
Cable Length:		50	meters
Cable Markings:		444084 m - 444134 m	
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	9090	9090	9090	0.003	0.17	0.000	0.01
0.400	8340	8341	8340	0.399	-0.04	0.400	0.00
0.800	7587	7587	7587	0.797	-0.14	0.800	-0.01
1.200	6830	6830	6830	1.197	-0.13	1.200	0.00
1.600	6068	6068	6068	1.600	-0.02	1.600	0.02
2.000	5304	5305	5304	2.003	0.15	2.000	-0.01
			Max. Error (%):		0.17		0.02

Linear Calibration Factor: **CF = 5.2822E-04 MPa/B unit**
Temperature Correction Factor: **Tk = 3.2222E-04 MPa/°C rise**

Polynomial Gage Factors:

A = -1.7166E-09 MPa/(B unit)² **B = -5.0351E-04 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_o - L) - Tk(T_o - T) + (S_o - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_o - T) + (S_o - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_o^2) + B(L_o)]$

L_o, L = initial (installation) and current readings, in B units
T_o, T = initial (installation) and current temperature, in °C
S_o, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	9-Aug-18	9079	23.0	1015.5

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: M. Miftode MM Date: 9-Aug-18

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Calibration Record

Vibrating Wire Piezometer

Customer:	Wood Environment and Infrastructure Solutions		
Model:		VW2100-2.0	
Serial Number:		**VW52030**	
Mfg Number:		P103865	
Range:		2.0	MPa
Temperature:		23.0	°C
Barometric Pressure:		1014.4	millibars
Work Order Number:		218121	
Cable Length:		50	meters
Cable Markings:		443983 m - 444032 m	
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	9120	9120	9120	0.004	0.18	0.000	0.02
0.400	8374	8374	8374	0.399	-0.05	0.400	-0.02
0.800	7623	7623	7623	0.797	-0.14	0.800	-0.01
1.200	6868	6868	6868	1.198	-0.11	1.200	0.02
1.600	6110	6110	6110	1.600	-0.01	1.600	0.02
2.000	5349	5350	5350	2.003	0.14	2.000	-0.02
			Max. Error (%):		0.18		0.02

Linear Calibration Factor: **CF = 5.3030E-04 MPa/B unit**
Temperature Correction Factor: **Tk = 1.5114E-04 MPa/°C rise**

Polynomial Gage Factors:

A = -1.6794E-09 MPa/(B unit)² **B = -5.0600E-04 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = Hz²/1000 ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	9-Aug-18	9112	23.0	1015.5

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: M. Miftode MM Date: 9-Aug-18

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Calibration Record

Vibrating Wire Piezometer

Customer:	Wood Environment and Infrastructure Solutions		
Model:		VW2100-2.0	
Serial Number:		**VW52031**	
Mfg Number:		P103866	
Range:		2.0	MPa
Temperature:		23.0	°C
Barometric Pressure:		1014.4	millibars
Work Order Number:		218121	
Cable Length:		60	meters
Cable Markings:		444246 m - 444306 m	
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	8632	8632	8632	0.001	0.06	0.001	0.03
0.400	7893	7893	7893	0.399	-0.04	0.399	-0.04
0.800	7150	7151	7150	0.799	-0.06	0.799	-0.03
1.200	6406	6406	6406	1.200	-0.01	1.200	0.01
1.600	5661	5661	5661	1.601	0.05	1.601	0.06
2.000	4920	4920	4920	2.000	-0.01	1.999	-0.04
			Max. Error (%):		0.06		0.06

Linear Calibration Factor: **CF = 5.3850E-04 MPa/B unit**
Temperature Correction Factor: **Tk = 3.0829E-04 MPa/°C rise**

Polynomial Gage Factors:

A = -3.5074E-10 MPa/(B unit)² **B = -5.3375E-04 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_o - L) - Tk(T_o - T) + (S_o - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_o - T) + (S_o - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_o^2) + B(L_o)]$

L_o, L = initial (installation) and current readings, in B units
T_o, T = initial (installation) and current temperature, in °C
S_o, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = Hz²/1000 ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	9-Aug-18	8631	22.9	1015.5

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: M. Miftode MM Date: 9-Aug-18

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Calibration Record

Vibrating Wire Piezometer

Customer:	Wood Environment and Infrastructure Solutions		
Model:		VW2100-2.0	
Serial Number:		**VW52032**	
Mfg Number:		P103868	
Range:		2.0	MPa
Temperature:		23.0	°C
Barometric Pressure:		1014.4	millibars
Work Order Number:		218121	
Cable Length:		60	meters
Cable Markings:		444368 m - 444427 m	
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	8940	8940	8940	0.003	0.13	0.000	0.01
0.400	8191	8191	8191	0.399	-0.04	0.400	-0.02
0.800	7438	7438	7438	0.798	-0.11	0.800	-0.01
1.200	6682	6683	6682	1.198	-0.09	1.200	0.00
1.600	5923	5923	5923	1.600	0.01	1.601	0.04
2.000	5164	5164	5164	2.002	0.10	2.000	-0.02
			Max. Error (%):		0.13		0.04

Linear Calibration Factor: **CF = 5.2949E-04 MPa/B unit**
Temperature Correction Factor: **Tk = 2.4754E-04 MPa/°C rise**

Polynomial Gage Factors:

A = -1.2436E-09 MPa/(B unit)² **B = -5.1195E-04 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	9-Aug-18	8938	22.9	1015.5

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: M. Miftode MM Date: 9-Aug-18

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Calibration Record

Vibrating Wire Piezometer

Customer:	Wood Environment and Infrastructure Solutions		
Model:		VW2100-2.0	
Serial Number:		**VW52033**	
Mfg Number:		P103871	
Range:		2.0	MPa
Temperature:		23.0	°C
Barometric Pressure:		1014.4	millibars
Work Order Number:		218121	
Cable Length:		60	meters
Cable Markings:		444428 m - 444488 m	
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	9230	9231	9230	0.002	0.08	0.001	0.03
0.400	8492	8493	8492	0.399	-0.05	0.399	-0.04
0.800	7750	7751	7750	0.799	-0.06	0.800	-0.02
1.200	7006	7006	7006	1.200	-0.02	1.200	0.02
1.600	6262	6262	6262	1.600	0.02	1.601	0.03
2.000	5519	5519	5519	2.001	0.03	2.000	-0.02
			Max. Error (%):		0.08		0.04

Linear Calibration Factor: **CF = 5.3865E-04 MPa/B unit**
Temperature Correction Factor: **Tk = 3.6763E-04 MPa/°C rise**

Polynomial Gage Factors:

A = -5.7726E-10 MPa/(B unit)² **B = -5.3014E-04 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	9-Aug-18	9232	22.9	1015.5

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: M. Miftode MM Date: 9-Aug-18

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Calibration Record

Vibrating Wire Piezometer

Customer:	Wood Environment and Infrastructure Solutions		
Model:		VW2100-2.0	
Serial Number:		**VW52034**	
Mfg Number:		P103872	
Range:		2.0	MPa
Temperature:		23.0	°C
Barometric Pressure:		1014.4	millibars
Work Order Number:		218121	
Cable Length:		60	meters
Cable Markings:		444186 m - 444245 m	
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	9106	9107	9107	0.003	0.14	0.000	0.02
0.400	8340	8340	8340	0.399	-0.04	0.400	-0.02
0.800	7569	7569	7569	0.797	-0.13	0.799	-0.03
1.200	6794	6794	6794	1.198	-0.08	1.200	0.02
1.600	6016	6016	6016	1.600	0.01	1.601	0.03
2.000	5239	5239	5239	2.002	0.10	2.000	-0.02
			Max. Error (%):		0.14		0.03

Linear Calibration Factor: **CF = 5.1690E-04 MPa/B unit**
Temperature Correction Factor: **Tk = 2.1710E-04 MPa/°C rise**

Polynomial Gage Factors:

A = -1.2187E-09 MPa/(B unit)² **B = -4.9942E-04 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_o - L) - Tk(T_o - T) + (S_o - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_o - T) + (S_o - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_o^2) + B(L_o)]$

L_o, L = initial (installation) and current readings, in B units
T_o, T = initial (installation) and current temperature, in °C
S_o, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	9-Aug-18	9099	22.9	1015.5

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: M. Miftode MM Date: 9-Aug-18

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Calibration Record

Vibrating Wire Piezometer

Customer:	Wood Environment and Infrastructure Solutions		
Model:		VW2100-2.0	
Serial Number:		**VW52035**	
Mfg Number:		P103873	
Range:		2.0	MPa
Temperature:		23.0	°C
Barometric Pressure:		1014.4	millibars
Work Order Number:		218121	
Cable Length:		60	meters
Cable Markings:		444307 m - 444366 m	
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	9428	9429	9428	0.003	0.17	0.000	0.01
0.400	8729	8729	8729	0.399	-0.04	0.400	-0.01
0.800	8026	8026	8026	0.797	-0.14	0.800	0.00
1.200	7319	7319	7319	1.197	-0.13	1.200	0.00
1.600	6608	6609	6608	1.600	-0.02	1.600	0.01
2.000	5895	5895	5895	2.003	0.16	2.000	-0.01
			Max. Error (%):		0.17		0.01

Linear Calibration Factor: **CF = 5.6600E-04 MPa/B unit**
Temperature Correction Factor: **Tk = 5.1506E-04 MPa/°C rise**

Polynomial Gage Factors:

A = -1.9822E-09 MPa/(B unit)² **B = -5.3562E-04 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_o - L) - Tk(T_o - T) + (S_o - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_o - T) + (S_o - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_o^2) + B(L_o)]$

L_o, L = initial (installation) and current readings, in B units
T_o, T = initial (installation) and current temperature, in °C
S_o, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	9-Aug-18	9424	22.8	1015.5

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: M. Miftode MM Date: 9-Aug-18

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Calibration Record

Vibrating Wire Piezometer

Customer:	Wood Environment and Infrastructure Solutions		
Model:		VW2100-2.0	
Serial Number:		**VW52036**	
Mfg Number:		P103870	
Range:		2.0	MPa
Temperature:		23.0	°C
Barometric Pressure:		1014.4	millibars
Work Order Number:		218121	
Cable Length:		70	meters
Cable Markings:		537170 m - 537239 m	
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	8909	8909	8909	0.002	0.10	0.000	0.02
0.400	8174	8174	8174	0.399	-0.03	0.400	-0.02
0.800	7436	7437	7436	0.798	-0.09	0.800	-0.02
1.200	6695	6695	6695	1.199	-0.06	1.200	0.01
1.600	5952	5952	5952	1.601	0.03	1.601	0.04
2.000	5212	5211	5211	2.001	0.06	2.000	-0.02
				Max. Error (%):	0.10		0.04

Linear Calibration Factor: **CF = 5.4065E-04 MPa/B unit**
Temperature Correction Factor: **Tk = 2.2707E-04 MPa/°C rise**

Polynomial Gage Factors:

A = -8.8391E-10 MPa/(B unit)² **B = -5.2816E-04 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	9-Aug-18	8907	22.7	1015.5

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: M. Miftode MM Date: 9-Aug-18

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Calibration Record

Vibrating Wire Piezometer

Customer:	Wood Environment and Infrastructure Solutions		
Model:		VW2100-2.0	
Serial Number:		**VW52037**	
Mfg Number:		P103874	
Range:		2.0	MPa
Temperature:		23.0	°C
Barometric Pressure:		1014.4	millibars
Work Order Number:		218121	
Cable Length:		70	meters
Cable Markings:		537099 m - 537168 m	
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	8866	8867	8867	0.002	0.12	0.001	0.03
0.400	8101	8101	8101	0.399	-0.05	0.399	-0.03
0.800	7331	7332	7332	0.798	-0.11	0.799	-0.04
1.200	6557	6557	6557	1.199	-0.04	1.201	0.03
1.600	5783	5783	5783	1.600	0.02	1.601	0.04
2.000	5009	5009	5009	2.001	0.07	1.999	-0.03
			Max. Error (%):		0.12		0.04

Linear Calibration Factor: **CF = 5.1816E-04 MPa/B unit**
Temperature Correction Factor: **Tk = 3.5753E-04 MPa/°C rise**

Polynomial Gage Factors:

A = -9.4410E-10 MPa/(B unit)² **B = -5.0506E-04 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_o - L) - Tk(T_o - T) + (S_o - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_o - T) + (S_o - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_o^2) + B(L_o)]$

L_o, L = initial (installation) and current readings, in B units
T_o, T = initial (installation) and current temperature, in °C
S_o, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = Hz²/1000 ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	9-Aug-18	8869	22.7	1015.5

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: M. Miftode MM Date: 9-Aug-18

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Calibration Record

Vibrating Wire Piezometer

Customer:	Wood Environment and Infrastructure Solutions		
Model:		VW2100-2.0	
Serial Number:		**VW52038**	
Mfg Number:		P103877	
Range:		2.0	MPa
Temperature:		23.0	°C
Barometric Pressure:		1014.4	millibars
Work Order Number:		218121	
Cable Length:		70	meters
Cable Markings:		536957 m - 537026 m	
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	8769	8770	8769	0.001	0.05	0.001	0.03
0.400	8014	8015	8014	0.399	-0.04	0.399	-0.04
0.800	7256	7256	7256	0.799	-0.05	0.799	-0.03
1.200	6496	6496	6496	1.200	0.00	1.200	0.02
1.600	5735	5735	5735	1.601	0.05	1.601	0.06
2.000	4979	4979	4979	2.000	-0.01	1.999	-0.04
			Max. Error (%):		0.05		0.06

Linear Calibration Factor: **CF = 5.2731E-04 MPa/B unit**
Temperature Correction Factor: **Tk = 1.5424E-04 MPa/°C rise**

Polynomial Gage Factors:

A = -2.4167E-10 MPa/(B unit)² **B = -5.2398E-04 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	9-Aug-18	8763	22.8	1015.5

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: M. Miftode MM Date: 9-Aug-18

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Calibration Record

Vibrating Wire Piezometer

Customer:	Wood Environment and Infrastructure Solutions		
Model:		VW2100-2.0	
Serial Number:		**VW52039**	
Mfg Number:		P103882	
Range:		2.0	MPa
Temperature:		23.0	°C
Barometric Pressure:		1014.4	millibars
Work Order Number:		218121	
Cable Length:		70	meters
Cable Markings:		537028 m - 537098 m	
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	9191	9192	9191	0.003	0.17	0.000	0.01
0.400	8478	8478	8478	0.399	-0.04	0.400	-0.01
0.800	7760	7760	7760	0.797	-0.14	0.800	-0.01
1.200	7040	7040	7040	1.197	-0.15	1.200	-0.02
1.600	6313	6313	6313	1.600	0.01	1.601	0.04
2.000	5587	5587	5587	2.003	0.14	2.000	-0.02
			Max. Error (%):		0.17		0.04

Linear Calibration Factor: **CF = 5.5474E-04 MPa/B unit**
Temperature Correction Factor: **Tk = 2.3576E-04 MPa/°C rise**

Polynomial Gage Factors:

A = -1.8609E-09 MPa/(B unit)² **B = -5.2723E-04 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_o - L) - Tk(T_o - T) + (S_o - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_o - T) + (S_o - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_o^2) + B(L_o)]$

L_o, L = initial (installation) and current readings, in B units
T_o, T = initial (installation) and current temperature, in °C
S_o, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	9-Aug-18	9187	22.9	1015.5

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This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: M. Miftode MM Date: 9-Aug-18

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Calibration Record

Vibrating Wire Piezometer

Customer:	Wood Environment and Infrastructure Solutions		
Model:		VW2100-2.0	
Serial Number:		**VW52040**	
Mfg Number:		P103888	
Range:		2.0	MPa
Temperature:		23.0	°C
Barometric Pressure:		1014.4	millibars
Work Order Number:		218121	
Cable Length:		70	meters
Cable Markings:		536885 m - 536955 m	
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	9566	9566	9566	0.002	0.11	0.000	0.02
0.400	8854	8854	8854	0.399	-0.05	0.399	-0.03
0.800	8138	8138	8138	0.798	-0.08	0.800	-0.01
1.200	7419	7420	7420	1.199	-0.06	1.200	0.01
1.600	6699	6700	6699	1.600	0.01	1.601	0.03
2.000	5980	5980	5980	2.001	0.07	2.000	-0.02
			Max. Error (%):		0.11		0.03

Linear Calibration Factor: **CF = 5.5757E-04 MPa/B unit**
Temperature Correction Factor: **Tk = 4.4327E-04 MPa/°C rise**

Polynomial Gage Factors:

A = -1.0273E-09 MPa/(B unit)² **B = -5.4160E-04 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = Hz²/1000 ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	9-Aug-18	9564	22.7	1015.5

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Technician: M. Miftode MM Date: 9-Aug-18

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Model DT2040 Vibrating Wire Data Logger FW Ver: 3.29

This is to certify that s/n 02411 meets RST Instruments specifications for this product.

Technician: M.R. MR

Date: August 14, 2018

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Model DT2040 Vibrating Wire Data Logger

FW Ver: 3.29

This is to certify that s/n 02410 meets RST Instruments specifications for this product.

Technician: M.R.

Date: August 14, 2018

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Model DT2040 Vibrating Wire Data Logger

FW Ver: 3.29

This is to certify that s/n 02409 meets RST Instruments specifications for this product.

Technician: M.R.

Date: August 14, 2018

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Model DT2040 Vibrating Wire Data Logger FW Ver: 3.29

This is to certify that s/n 02408 meets RST Instruments specifications for this product.

Technician: M.R. M.R. Date: August 13, 2018

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Model DT2040 Vibrating Wire Data Logger FW Ver: 3.29

This is to certify that s/n 02407 meets RST Instruments specifications for this product.

Technician: M.R. M.R.

Date: August 13, 2018

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Model DT2040 Vibrating Wire Data Logger FW Ver: 3.29

This is to certify that s/n 02406 meets RST Instruments specifications for this product.

Technician: M.R. M.R.

Date: August 13, 2018

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Model DT2040 Vibrating Wire Data Logger FW Ver: 3.29

This is to certify that s/n 02405 meets RST Instruments specifications for this product.

Technician: M.R. M.R. Date: August 13, 2018

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Model DT2040 Vibrating Wire Data Logger FW Ver: 3.29

This is to certify that s/n 02404 meets RST Instruments specifications for this product.

Technician: M.R. M.R. Date: August 13, 2018

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Model DT2040 Vibrating Wire Data Logger FW Ver: 3.29

This is to certify that s/n 02403 meets RST Instruments specifications for this product.

Technician: M.R. M.R. Date: August 13, 2018

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e-mail: info@rstinstruments.com • Website: www.rstinstruments.com

Model DT2040 Vibrating Wire Data Logger FW Ver: 3.29

This is to certify that s/n 02402 meets RST Instruments specifications for this product.

Technician: M.R. M.R.

Date: August 13, 2018

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Appendix E
Geotechnical Lab Data

Moisture Content Determination (ASTM D2216 - Method B)

Wood Environment & Infrastructure Solutions

a Division of Wood Canada Limited

Client: Yukon Government **Request Number:**

Project: VE52705 **Project Manager:**

Date: August 14, 2018 **Project Number:** VE52705

Reviewed By: RC

Test Hole Number	BH18-01	BH18-01	BH18-01	BH18-01	BH18-01	BH18-01	BH18-01	BH18-01
Depth (m)	2.7-2.8	2.7-2.8	4.5-4.5	4.4-4.5	8.5-8.6	8.5-8.6	10.0-10.1	10.0-10.1
Sample Number	G1	G1	G2	G2	G3	G3	G4	G4
Tare No:	SH1	SH2	LSJS	AC1	QP25	Cc51	WC2	CC3
Wt. Sample Wet + Tare	309.5	305.5	304.7	579.4	399.7	389.6	357.2	361.1
Wt. Sample Dry + Tare	295.8	291.5	291.0	566.7	376.1	365.7	346.0	348.9
Wt. Water	13.7	14.0	13.7	12.7	23.6	23.9	11.2	12.2
Wt. Tare	15.8	15.8	17.9	272.8	18.7	18.6	15.9	15.9
Wt. Dry Sample	280.0	275.7	273.1	294.0	357.4	347.1	330.1	332.9
Moisture Content (%)	4.9	5.1	5.0	4.3	6.6	6.9	3.4	3.7
Test Hole Number	BH18-01	BH18-01	BH18-01	BH18-01	BH18-01	BH18-01		
Depth (m)	15.5-15.6	15.5-15.6	18-18.1	18-18.1	21.21.1	21-21.1		
Sample Number	G5	G5	G6	G6	G7	G7		
Tare No:	ST71	AR	AI7	GQ2	DX98	ST9		
Wt. Sample Wet + Tare	207.4	200.0	582.7	585.5	339.9	349.5		
Wt. Sample Dry + Tare	193.5	195.27	564.9	569.2	320.0	327.9		
Wt. Water	13.9	4.8	17.8	16.3	19.9	21.6		
Wt. Tare	17.8	17.68	284.2	281.0	17.7	17.8		
Wt. Dry Sample	175.7	177.6	280.7	288.2	302.4	310.1		
Moisture Content (%)	7.9	2.7	6.3	5.7	6.6	7.0		
Test Hole Number	BH18-20	BH18-20	BH18-20	BH18-20	BH18-20	BH18-20	BH18-20	BH18-20
Depth (m)	1.0-1.1m	1.0-1.1m	1.6-1.7	1.6-1.7	2.0-2.1	2.0-2.1m	2.5-2.6	2.5-2.6
Sample Number	G1	G1	G2	G2	G3	G3	G4	G4
Tare No:	AXA9	HN29	ABC-87	X1	SB1	SB2	DHB	SH5
Wt. Sample Wet + Tare	339.0	348.6	283.0	277.7	312.8	318.3	297.0	285.1
Wt. Sample Dry + Tare	290.7	296.4	269.6	264.0	296.1	303.1	282.8	270.2
Wt. Water	48.3	52.2	13.4	13.8	16.7	15.1	14.2	14.9
Wt. Tare	18.0	17.9	17.4	18.5	15.9	15.8	18.8	16.1
Wt. Dry Sample	272.7	278.4	252.2	245.4	280.2	287.3	264.0	254.1
Moisture Content (%)	17.7	18.8	5.3	5.6	5.9	5.3	5.4	5.9
Test Hole Number	BH18-20	BH18-20	BH18-20	BH18-20	BH18-20	BH18-20	BH18-20	BH18-20
Depth (m)	3.2-3.3	3.2-3.3	4.7-4.8	4.7-4.8	6.4-6.5	6.4-6.5	7.7-7.8	7.7-7.8
Sample Number	G5	G5	G6	G6	G7	G7	G8	G8
Tare No:	CF6	ABC9	QT64	R1	SY15	X80	SH3	SH4
Wt. Sample Wet + Tare	300.9	298.0	294.7	309.3	370.2	368.4	270.1	288.7
Wt. Sample Dry + Tare	269.9	263.5	284.0	297.9	338.9	336.7	225.6	237.4
Wt. Water	31.0	34.5	10.7	11.4	31.3	31.7	44.5	51.4
Wt. Tare	17.8	18.6	18.4	18.6	17.9	18.2	16.2	16.1
Wt. Dry Sample	252.1	244.9	265.6	279.3	321.1	318.4	209.4	221.3
Moisture Content (%)	12.3	14.1	4.0	4.1	9.7	10.0	21.3	23.2

Moisture Content Determination (ASTM D2216 - Method B)

Wood Environment & Infrastructure Solutions

a Division of Wood Canada Limited

wood.

Client: Yukon Government
Project: VE52705
Date: August 14, 2018

Request Number:
Project Manager:
Project Number: VE52705
Reviewed By: RC

Test Hole Number	BH18-20	BH18-20	BH18-20	BH18-20				
Depth (m)	10.5-10.6	10.5-10.6	11.5-11.6	11.5-11.6				
Sample Number	G9	G9	G10	G10				
Tare No:	ABC-4	CC29	WC1	SH6				
Wt. Sample Wet + Tare	277.7	294.1	310.8	293.0				
Wt. Sample Dry + Tare	264.5	280.7	269.8	253.9				
Wt. Water	13.3	13.4	41.1	39.0				
Wt. Tare	17.9	17.8	15.9	15.82				
Wt. Dry Sample	246.6	262.9	253.8	238.1				
Moisture Content (%)	5.4	5.1	16.2	16.4				
Test Hole Number	BH18-21	BH18-21	BH18-21	BH18-21	BH18-21	BH18-21	BH18-21	BH18-21
Depth (m)	0.5-0.6	0.5-0.6	2.5-2.6	2.5-2.6	3.7-3.8	3.7-3.8	5.5-5.6	5.5-5.6
Sample Number	G1	G1	G2	G2	G3	G3	G4	G4
Tare No:	MBA	SK3	YT1	BMA2	YT3	AB5	AB2	YT2
Wt. Sample Wet + Tare	262.7	262.7	267.6	264.5	271.3	287.7	269.3	276.4
Wt. Sample Dry + Tare	248.7	247.6	258.6	255.6	219.9	234.1	259.7	267.5
Wt. Water	14.0	15.2	8.9	8.9	51.4	53.5	9.6	8.9
Wt. Tare	10.4	10.5	10.4	10.3	10.3	10.2	10.5	10.5
Wt. Dry Sample	238.3	237.0	248.2	245.4	209.6	223.9	249.2	257.1
Moisture Content (%)	5.9	6.4	3.6	3.6	24.5	23.9	3.8	3.5
Test Hole Number	BH18-21	BH18-21	BH18-21	BH18-21	BH18-21	BH18-21	BH18-21	BH18-21
Depth (m)	6.9-7.0	6.9-7.0	8.0-8.1	8.0-8.1	9.5-9.6	9.5-9.6	11-11.1	11-11.1
Sample Number	G5	G5	G6	G6	G7	G7		
Tare No:	SKI	AB3	SK2	AB4	SSK27	AB1	SB3	CC1
Wt. Sample Wet + Tare	291.0	297.6	263.4	266.1	308.8	296.1	341.5	350.8
Wt. Sample Dry + Tare	264.1	271.9	218.1	220.2	294.7	283.7	304.5	293.5
Wt. Water	26.9	25.7	45.2	46.0	14.2	12.4	37.1	57.3
Wt. Tare	10.5	10.4	10.5	10.4	10.6	10.4	15.9	15.7
Wt. Dry Sample	253.5	261.6	207.6	209.8	284.1	273.3	288.6	277.7
Moisture Content (%)	10.6	9.8	21.8	21.9	5.0	4.5	12.8	20.6
Test Hole Number								
Depth (m)								
Sample Number								
Tare No:								
Wt. Sample Wet + Tare								
Wt. Sample Dry + Tare								
Wt. Water								
Wt. Tare								
Wt. Dry Sample								
Moisture Content (%)								

Moisture Content Determination (ASTM D2216 - Method B)

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

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Client: YUKON GOVT
Project: CLINTON CREEK
Date: Aug 29/18

Request Number:
Project Manager: V
Project Number: VE52705
Reviewed By:

Test Hole Number	BH18-01B	BH18-01B	BH18-01B	BH18-01B	BH18-01B	BH18-01B		
Depth (m)	22.9-23.2	24.8-24.9	25.2-25.4	26.4-26.6	27.2-27.4	29.9-30.1		
Sample Number	G1 (SI)	G2 (SI)	G3 (SI)	G4 (SI)	G5 (SI)	G6 (SI)		
Tare No:	SB1	AXA 9	ST9	CC3	ABC-4	SAY		
Wt. Sample Wet + Tare	506.87	302.45	581.07	260.21	359.44	473.58		
Wt. Sample Dry + Tare	454.39	262.85	569.80	230.72	328.21	429.12		
Wt. Water	52.48	39.60	11.27	29.49	31.23	44.46		
Wt. Tare	St 16.30	18.25	18.20	16.31	18.27	16.46		
Wt. Dry Sample	438.09	244.46	551.6	214.41	309.94	412.66		
Moisture Content (%)	12.07	16.20%	2.0%	13.8%	10.1%	10.8%		
Test Hole Number								
Depth (m)								
Sample Number								
Tare No:								
Wt. Sample Wet + Tare								
Wt. Sample Dry + Tare								
Wt. Water								
Wt. Tare								
Wt. Dry Sample								
Moisture Content (%)								
Test Hole Number								
Depth (m)								
Sample Number								
Tare No:								
Wt. Sample Wet + Tare								
Wt. Sample Dry + Tare								
Wt. Water								
Wt. Tare								
Wt. Dry Sample								
Moisture Content (%)								
Test Hole Number								
Depth (m)								
Sample Number								
Tare No:								
Wt. Sample Wet + Tare								
Wt. Sample Dry + Tare								
Wt. Water								
Wt. Tare								
Wt. Dry Sample								
Moisture Content (%)								

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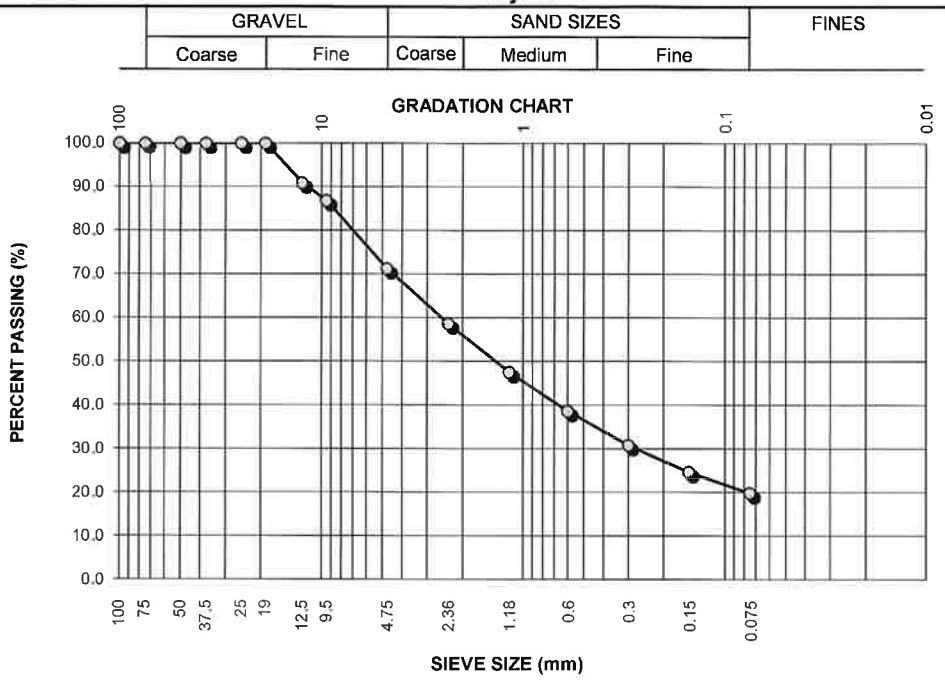
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled: 13-Aug-18
Date Received:
Date Tested: 21-Aug-18
Sampled By:
Tested By:

Sample Location: BH18-01

Source: G2

Depth (m): 4.4 - 4.5 m
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	91	-	
9.5	87	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	71	-	
2.36	59	-	
1.18	48	-	
0.6	39	-	
0.3	31	-	
0.15	25	-	
0.075	19.8	-	

Natural Moisture Content = 6%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	0.28
D_{60} =	2.62
D_{85} =	8.94

C_u=	#N/A
C_c=	#N/A

Gravel%	28.7
Sand%	51.5
Fines %	19.8

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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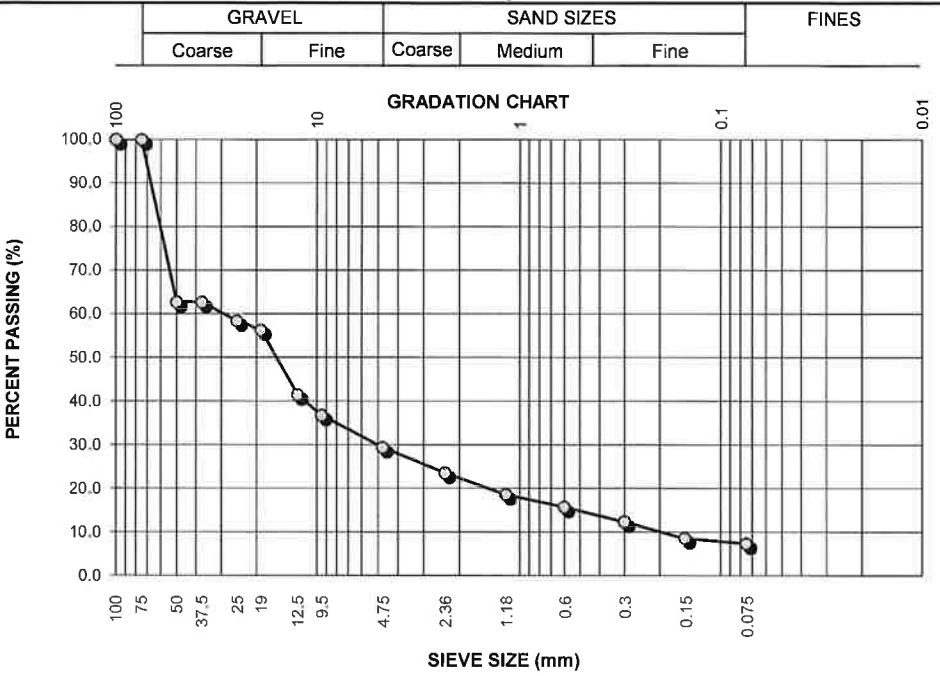
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705
Date:
Client P.O.:

ATTN:
PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 21-Aug-18
Sampled By:
Tested By:

Sample Location: BH18-01

Source: G9

Depth (m): 25 - 25.1
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	63	-	
37.5	63	-	
25	58	-	
19	56	-	
12.5	41	-	
9.5	37	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	29	-	
2.36	23	-	
1.18	19	-	
0.6	16	-	
0.3	12	-	
0.15	9	-	
0.075	7.4	-	

Natural Moisture Content = 8%

D_{10} =	0.21
D_{15} =	0.53
D_{30} =	5.16
D_{60} =	29.80
D_{85} =	64.95

C_u=	143
C_c=	4

Gravel%	70.6
Sand%	22.0
Fines %	7.4

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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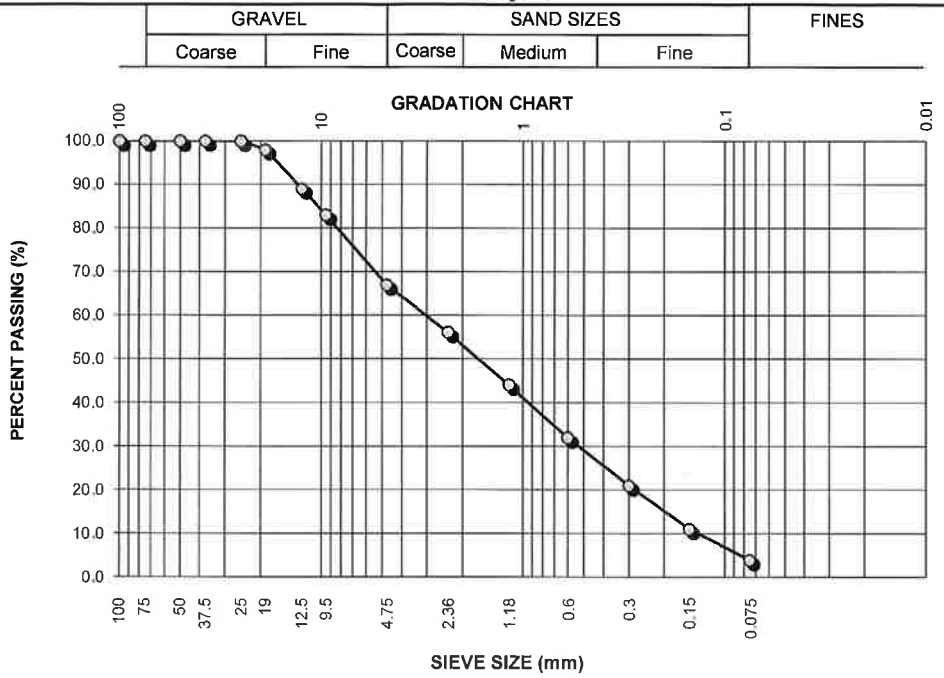
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 12-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-01

Source: G11

Depth (m): 28.7
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	98	-	
12.5	89	-	
9.5	83	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	67	-	
2.36	56	-	
1.18	44	-	
0.6	32	-	
0.3	21	-	
0.15	11	-	
0.075	3.9	-	

Natural Moisture Content = #DIV/0!

D_{10} =	0.14
D_{15} =	0.21
D_{30} =	0.55
D_{60} =	3.23
D_{85} =	10.50

C_u=	23
C_c=	1

Gravel%	33.0
Sand%	63.1
Fines %	3.9

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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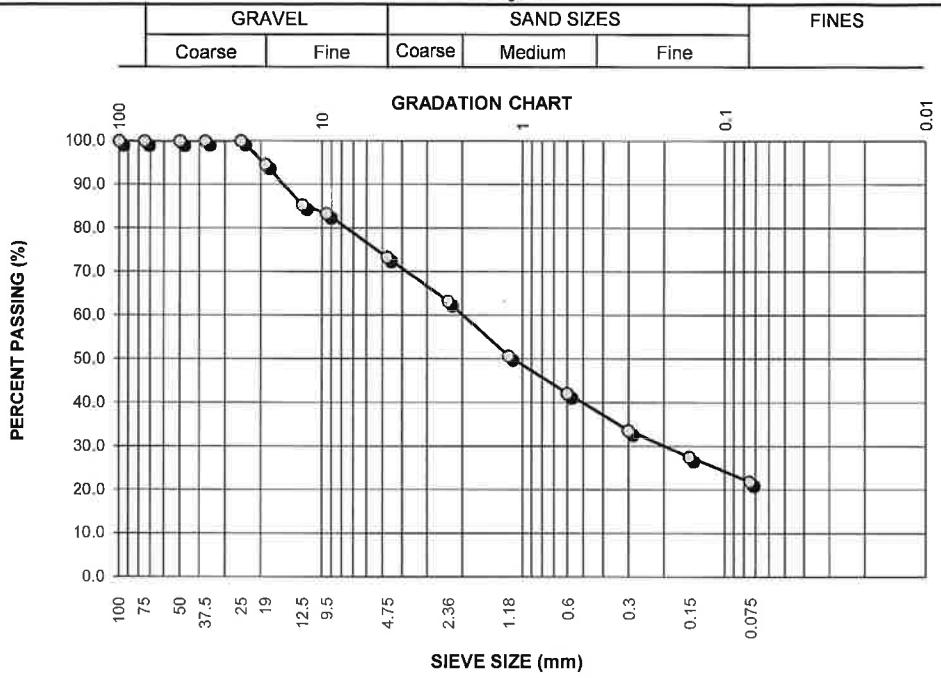
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 21-Aug-18
Sampled By:
Tested By:

Sample Location: BH18-01

Source: G13

Depth (m): 33.3 - 33.4 m
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	95	-	
12.5	85	-	
9.5	83	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	73	-	
2.36	63	-	
1.18	51	-	
0.6	42	-	
0.3	34	-	
0.15	27	-	
0.075	21.9	-	

Natural Moisture Content = 5%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	0.21
D_{60} =	2.06
D_{85} =	12.21

C_u=	#N/A
C_c=	#N/A

Gravel%	26.7
Sand%	51.4
Fines %	21.9

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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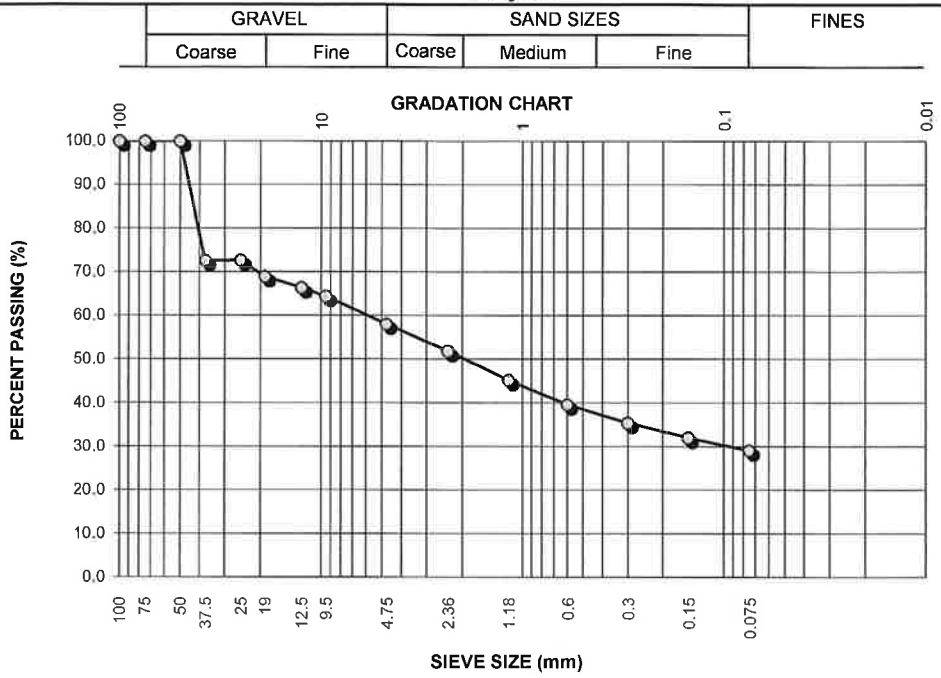
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested:
Sampled By:
Tested By:

Sample Location: BH18-01

Source: G15

Depth (m): 37.0 - 37.1 m
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	73	-	
25	73	-	
19	69	-	
12.5	66	-	
9.5	64	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	58	-	
2.36	52	-	
1.18	45	-	
0.6	40	-	
0.3	35	-	
0.15	32	-	
0.075	29.1	-	

Natural Moisture Content = 10%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	0.10
D_{60} =	6.25
D_{85} =	43.17

C_u=	#N/A
C_c=	#N/A

Gravel%	42.0
Sand%	28.9
Fines %	29.1

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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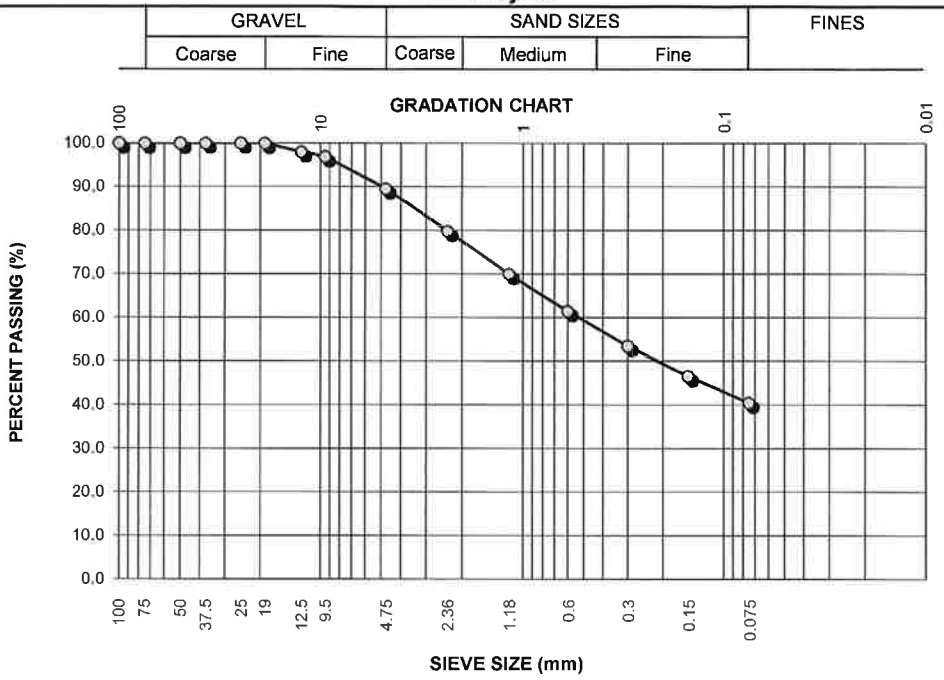
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 21-Aug-18
Sampled By:
Tested By:

Sample Location: BH18-01

Source: G18

Depth (m): 43.8 - 43.9 m
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	98	-	
9.5	97	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	90	-	
2.36	80	-	
1.18	70	-	
0.6	61	-	
0.3	54	-	
0.15	47	-	
0.075	40.5	-	

Natural Moisture Content = 10%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	0.54
D_{85} =	3.63

C_u=	#N/A
C_c=	#N/A

Gravel%	10.4
Sand%	49.1
Fines %	40.5

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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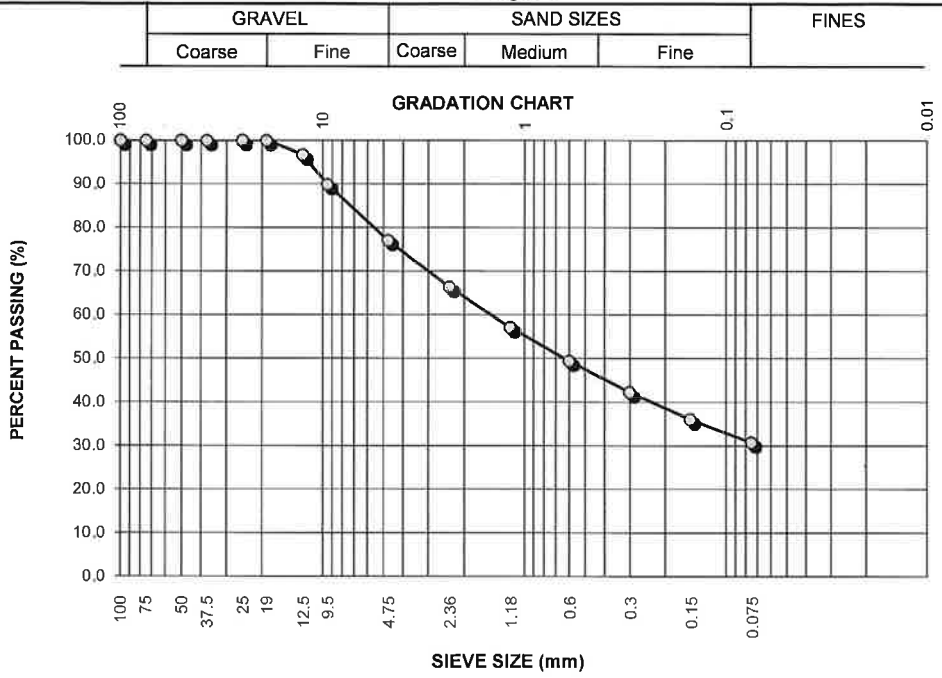
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested:
Sampled By:
Tested By:

Sample Location: BH18-01

Source: G21

Depth (m): 54.0 - 54.1 m
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	97	-	
9.5	90	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	77	-	
2.36	66	-	
1.18	57	-	
0.6	49	-	
0.3	42	-	
0.15	36	-	
0.075	30.7	-	

Natural Moisture Content = 9%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	1.55
D_{85} =	7.69

C_u=	#N/A
C_c=	#N/A

Gravel%	22.9
Sand%	46.4
Fines %	30.7

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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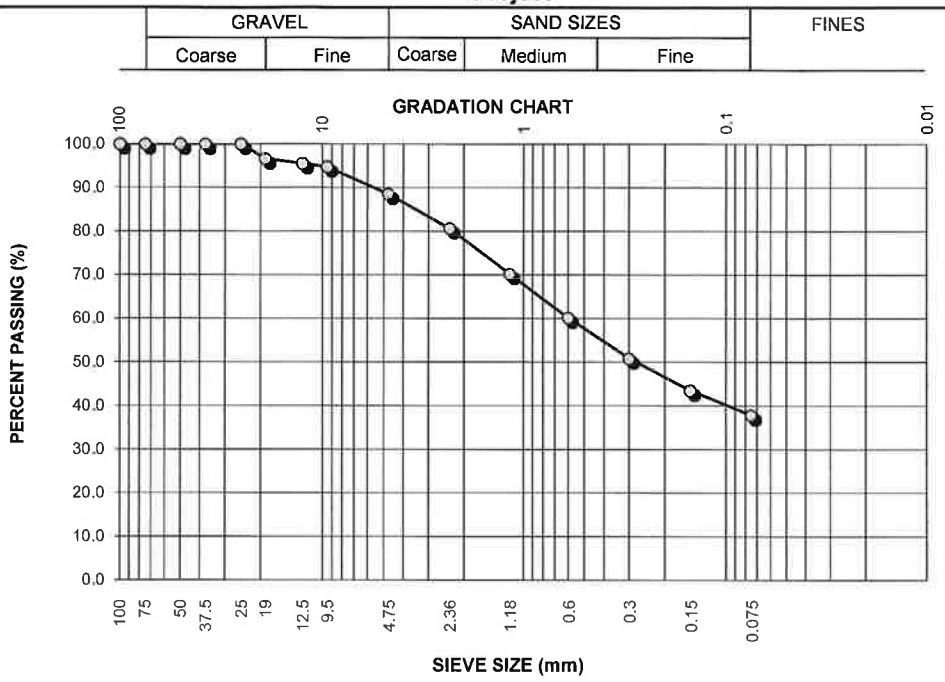
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 21-Aug-18
Sampled By:
Tested By:

Sample Location: BH18-01

Source: G24

Depth (m): 58.3 - 58.5 m
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	97	-	
12.5	96	-	
9.5	95	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	89	-	
2.36	81	-	
1.18	70	-	
0.6	60	-	
0.3	51	-	
0.15	44	-	
0.075	37.9	-	

Natural Moisture Content = 11%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	0.60
D_{85} =	3.68

C_u=	#N/A
C_c=	#N/A

Gravel%	11.5
Sand%	50.7
Fines %	37.9

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

Reporting of these test results constitutes a testing services only. Engineering interpretation or evaluation of these test results is provided only on written request.
The data presented is for the sole use of the client stipulated above.

Moisture Content Determination (ASTM D2216 - Method B)

Wood Environment & Infrastructure Solutions

a Division of Wood Canada Limited

wood.

Client: YUKON GOVT
Project: CLINTON CREEK
Date: Sept 15/18

Request Number:
Project Manager:
Project Number: VE52705B
Reviewed By:

Test Hole Number	BH18-02	BH18-02	BH18-02	BH18-02	BH18-02	BH18-02	BH18-02	BH18-02
Depth (m)	0.9	3.1	5.5	7.0	9.2	8.5	13.1	14.3
Sample Number	C1	2	3	4	5	6	7	8
Tare No:	4	8	B1	H1	J1	6	X1	A1
Wt. Sample Wet + Tare	294.16	242.20	242.21	247.28	294.68	254.81	237.58	261.87
Wt. Sample Dry + Tare	285.08	227.89	226.53	239.04	276.07	233.58	218.22	236.71
Wt. Water	9.08	14.31	15.68	8.24	18.61	21.23	19.36	25.16
Wt. Tare	4.45	4.69	3.98	4.06	3.98	3.87	3.91	3.92
Wt. Dry Sample	280.63	223.20	222.55	234.98	272.09	229.71	214.31	232.79
Moisture Content (%)	3.2 %	6.4 %	7.0 %	3.5 %	6.8 %	9.2 %	9.0 %	10.8 %

Test Hole Number	BH18-02	BH18-02	BH18-02	BH18-02	BH18-02	BH18-02	BH18-02	BH18-02
Depth (m)	16.2	17.7	19.2	20.7	22.2	24.1	25.3	26.8
Sample Number	9	10	11	12	13	14	15	16
Tare No:	P1	BG	F1	V1	T1	VIC	M1	Q1
Wt. Sample Wet + Tare	277.64	215.17	245.47	285.77	315.34	239.29	275.59	252.43
Wt. Sample Dry + Tare	259.20	198.87	235.53	262.45	297.55	212.97	265.93	231.57
Wt. Water	18.44	16.30	9.94	23.32	17.79	26.32	9.66	20.86
Wt. Tare	3.89	3.89	4.00	3.91	3.94	3.91	5.02	3.98
Wt. Dry Sample	255.31	194.98	231.53	258.54	293.61	209.06	260.91	227.67
Moisture Content (%)	7.2 %	8.4 %	4.3 %	9.0 %	6.0 %	12.6 %	3.7 %	9.2 %

Test Hole Number	BH18-02	BH18-02	BH18-02	BH18-02	BH18-02	BH18-02	BH18-02	BH18-02
Depth (m)	28.4	32.6	35.1	38.4	39.0	39.6	40.2	40.9
Sample Number	17	18A	19A	20	21	22	23	24
Tare No:	E1	41	S1	R1	7	1	W1	[illegible]
Wt. Sample Wet + Tare	270.21	230.94	289.64	306.20	324.13	312.05	319.01	225.10
Wt. Sample Dry + Tare	254.27	210.43	272.34	270.50	291.60	277.09	280.25	204.85
Wt. Water	15.94	20.51	17.30	35.70	32.53	34.96	38.76	20.25
Wt. Tare	3.97	3.85	3.91	4.03	3.94	3.90	3.94	3.93
Wt. Dry Sample	250.30	206.58	268.43	266.43	287.66	273.19	276.31	200.92
Moisture Content (%)	6.4 %	9.9 %	6.4 %	13.4 %	11.3	12.8 %	14.0 %	10.1 %

Test Hole Number	BH18-02	BH18-02	BH18-02	BH18-02	BH18-02	BH18-02	BH18-02	BH18-02
Depth (m)	41.5	42.1	42.7	43.3	43.9	44.50	45.1	45.7
Sample Number	25	26	27	28	29	30	31	32
Tare No:	GOV	Big	Bit	BOT	BOB	SPONGE	SQUID	WARD
Wt. Sample Wet + Tare	217.39	282.55	224.35	277.72	224.79	265.01	380.20	221.63
Wt. Sample Dry + Tare	198.25	250.15	200.39	248.13	207.10	230.55	333.63	195.09
Wt. Water	19.14	32.40	23.96	29.59	17.69	34.46	46.57	26.54
Wt. Tare	3.85	3.91	3.85	3.91	3.87	3.86	3.88	3.84
Wt. Dry Sample	194.40	246.24	196.54	244.22	203.23	226.69	329.75	191.25
Moisture Content (%)	9.8 %	13.2 %	12.2 %	12.1 %	8.7 %	15.2 %	14.1	13.9 %

Moisture Content Determination (ASTM D2216 - Method B)

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

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Client: YUKON GOVT
Project: CLINTON CREEK
Date: Sept 15/18

Request Number:
Project Manager:
Project Number: VES2705B
Reviewed By: 48.7

Test Hole Number	BH18-02	BH18-02	BH18-02	BH18-02	BH18-02	BH18-02	BH18-02	BH18-02
Depth (m)	29.8	31.4	46.3	46.9	47.5	~~48.7~~	49.4	50.0
Sample Number	G18B	G19B	G33	G34	35	36	37	38
Tare No:	C1	5	SuperMM	AA10	SAY	ST71	SB2	ST9
Wt. Sample Wet + Tare	259.61	258.50	298.04	313.70	351.22	356.34	237.30	294.93
Wt. Sample Dry + Tare	245.88	241.33	268.27	268.52	293.54	338.50	213.02	274.48
Wt. Water	13.73	17.17	29.77	45.18	57.68	~~321.30~~ 338.84	24.28	20.45
Wt. Tare	3.94	3.83	15.90	17.27	16.05	17.42	15.66	17.64
Wt. Dry Sample	241.94	237.50	252.37	251.25	277.49	321.08	197.36	256.84
Moisture Content (%)	5.6 %	7.2 %	11.8 %	17.9 %	20.8 %	~~100~~ %	12.3 %	7.9 %

Test Hole Number	BH18-02	BH18-02	BH18-02	BH18-02	BH18-02	BH18-02	BH18-02	BH18-02
Depth (m)	50.6	51.2	51.8	52.4	53.04	53.6	54.3	54.3
Sample Number	39	40	41	42	43	44	45	46
Tare No:	X80	CC3	HNZ9	X12	CC1	LS		DHB
Wt. Sample Wet + Tare	252.89	325.10	302.26	311.41	238.72	332.48		333.53
Wt. Sample Dry + Tare	232.38	284.96	256.44	273.84	212.07	289.42		295.56
Wt. Water	20.51	40.14	45.82	37.57	26.65	43.06	NO SAMPLE	37.97
Wt. Tare	17.94	15.70	16.26	18.07	15.68	17.47		18.13
Wt. Dry Sample	214.44	269.26	240.18	255.77	196.38	271.95		277.43
Moisture Content (%)	9.6 %	14.9 %	19.8 %	14.7 %	13.4 %	15.8 %		13.7 %

Test Hole Number	BH18-02	BH18-02	BH18-02	BH18-02	BH18-02	BH18-02	BH18-02	BH18-02
Depth (m)	54.8	55.5	56.1	56.7	48.2	57.3	60.4	59.1
Sample Number	47	48	49	50	G35A	51	52	53
Tare No:	ABC41	RH	60N70	SY15	SB3	N1	ABC-87	AR
Wt. Sample Wet + Tare	~~264.99~~ 334.63	265.01	250.06	324.62	269.45	268.94	239.30	300.86
Wt. Sample Dry + Tare	244.24	238.84	223.38	295.96	231.91	238.86	220.72	275.45
Wt. Water	40.39	26.17	26.68	28.66	37.54	30.08	18.58	25.41
Wt. Tare	17.46	18.12	15.80	17.41	16.12	3.91	17.32	17.49
Wt. Dry Sample	226.78	220.72	207.58	278.55	215.79	234.95	203.40	257.92
Moisture Content (%)	14.6 %	11.9 %	12.9 %	10.2 %	17.4 %	12.8 %	9.1 %	9.9 %

Test Hole Number	BH18-02	BH18-02	BH18-02	BH18-02	BH18-02	BH18-02	BH18-02	
Depth (m)	61.9	64.3	65.2	66.4	67.6	68.9		
Sample Number	54	G55	G56	G57	G58	G59	G60	
Tare No:	01	GUY	VIC	4	BIT	6	TIN	
Wt. Sample Wet + Tare	232.76	230.42	323.15	253.18	240.94	367.97	380.43	
Wt. Sample Dry + Tare	208.24	187.84	296.29	228.19	226.50	365.55	336.45	
Wt. Water	24.52	42.58	26.86	24.99	14.44	2.42	43.98	
Wt. Tare	3.94	3.95	3.91	4.24	3.92	3.90	15.57	
Wt. Dry Sample	204.30	183.39	292.38	223.95	222.58	361.65	320.88	
Moisture Content (%)	14.4 %	23.2 %	9.2 %	11.2 %	6.5 %	6.7 %	13.7 %	

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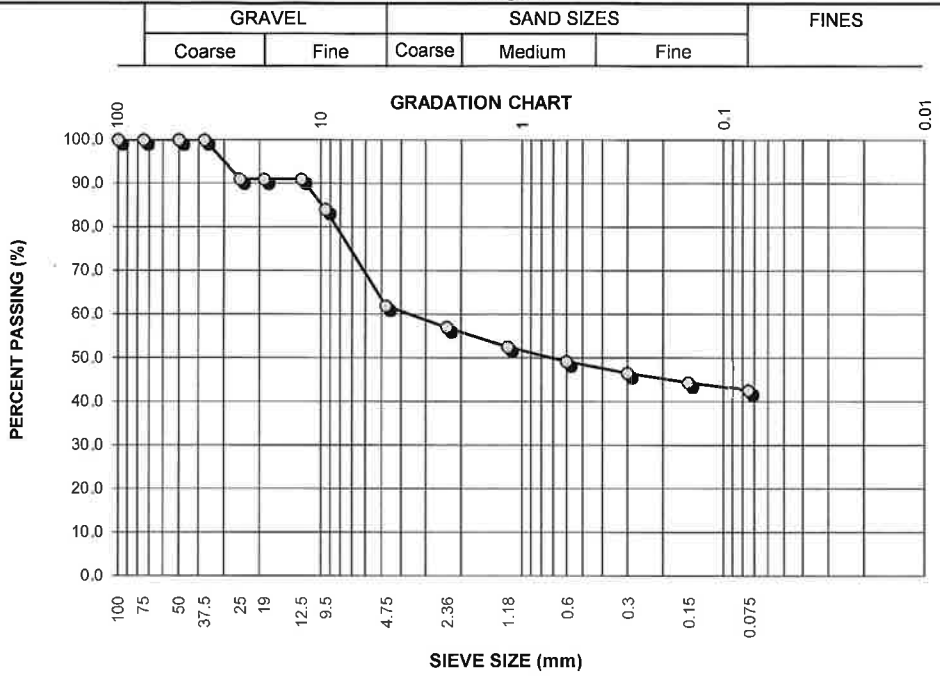
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 9-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-02

Source: G7

Depth (m): 13.1
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	91	-	
19	91	-	
12.5	91	-	
9.5	84	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	62	-	
2.36	57	-	
1.18	53	-	
0.6	49	-	
0.3	47	-	
0.15	44	-	
0.075	42.6	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	3.82
D_{85} =	9.93

C_u=	#N/A
C_c=	#N/A

Gravel%	38.1
Sand%	19.3
Fines %	42.6

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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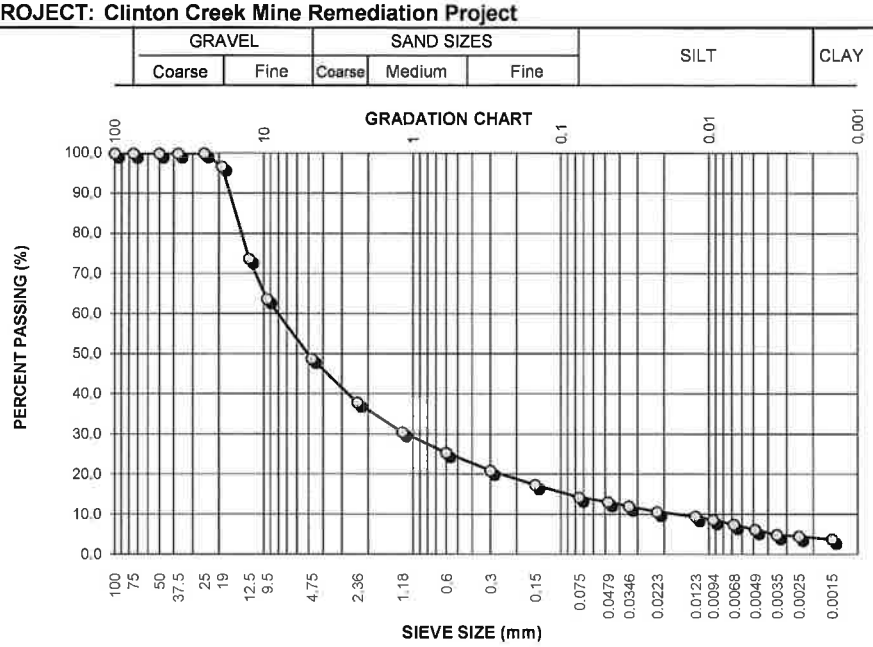
SIEVE AND HYDROMETER ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number: 2433

Date Sampled:
Date Received:
Date Tested: 16-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-02

Source: G18b

Depth (m): 32.6
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	97	-	
12.5	74	-	
9.5	64	-	
4.75	49	-	
2.36	38	-	
1.18	31	-	
0.6	25	-	
0.3	21	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
0.15	17	-	
0.075	14.2	-	
0.0479	13.1	-	
0.0346	11.9	-	
0.0223	10.6	-	
0.0123	9.4	-	
0.0094	8.6	-	
0.0068	7.4	-	
0.0049	6.1	-	
0.0035	4.9	-	
0.0025	4.5	-	
0.0015	3.7	-	

Natural Moisture Content = #DIV/0!

D_{10} =	0.017
D_{15} =	0.09
D_{30} =	1.12
D_{60} =	8.34
D_{85} =	15.71

C_u=	482
C_c=	9

Gravel%	51.2
Sand%	34.6
Silt %	10.1
Clay %	4.1

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14
Materials finer than 75 µm (No. 200) sieve were tested in accordance with ASTM C117-13

Reviewed By:

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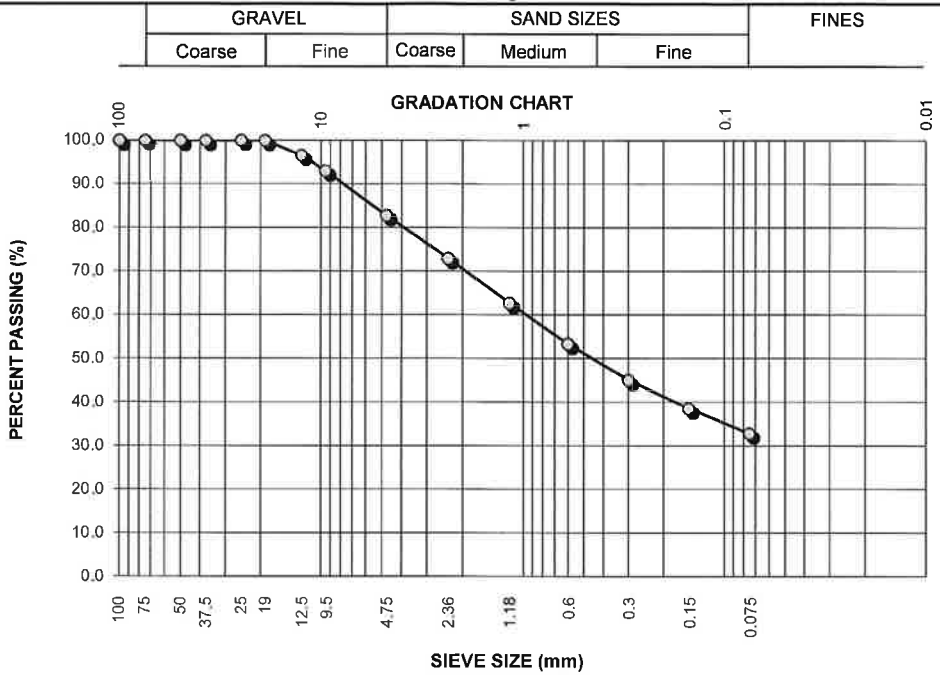
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 9-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-02

Source: G23

Depth (m): 40.2
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	97	-	
9.5	93	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	83	-	
2.36	73	-	
1.18	63	-	
0.6	53	-	
0.3	45	-	
0.15	39	-	
0.075	32.8	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	1.01
D_{85} =	5.77

C_u=	#N/A
C_c=	#N/A

Gravel%	17.2
Sand%	50.0
Fines %	32.8

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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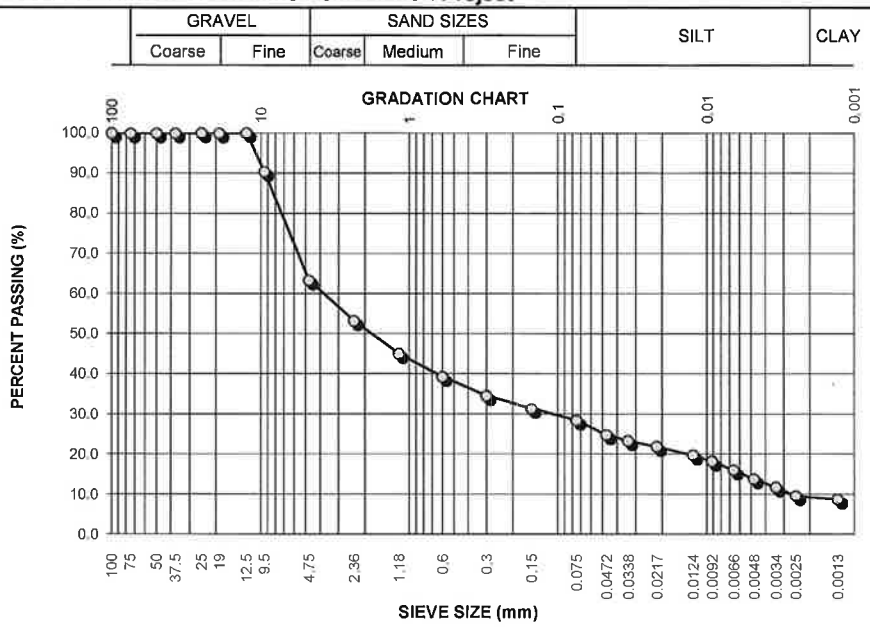
SIEVE AND HYDROMETER ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number: 2434

Date Sampled:
Date Received:
Date Tested: 15-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-02

Source: G33

Depth (m): 46.3
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	100	-	
9.5	90	-	
4.75	63	-	
2.36	53	-	
1.18	45	-	
0.6	39	-	
0.3	35	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
0.15	31	-	
0.075	28.4	-	
0.0472	24.8	-	
0.0338	23.3	-	
0.0217	21.8	-	
0.0124	19.7	-	
0.0092	18.2	-	
0.0066	16.0	-	
0.0048	13.8	-	
0.0034	11.7	-	
0.0025	9.5	-	
0.0013	8.7	-	

Natural Moisture Content = #DIV/0!

D_{10} =	0.003
D_{15} =	0.01
D_{30} =	0.12
D_{60} =	3.97
D_{85} =	8.55

C_u=	1468
C_c=	1

Gravel%	36.7
Sand%	34.9
Silt %	19.3
Clay %	9.1

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14
Materials finer than 75 µm (No. 200) sieve were tested in accordance with ASTM C117-13

Reviewed By:

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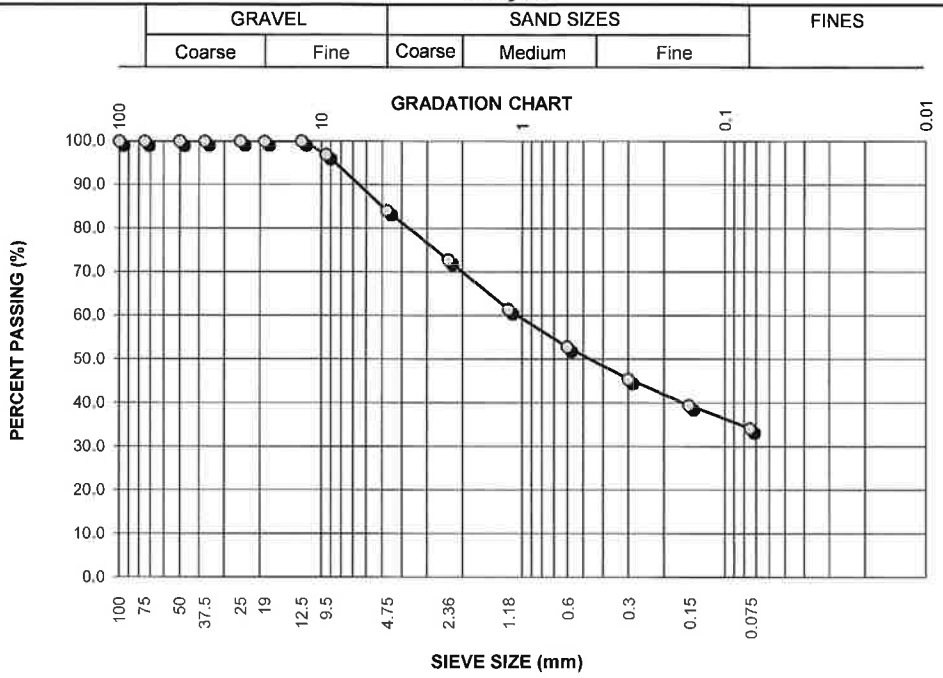
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 9-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-02

Source: G28

Depth (m): 43.7
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	100	-	
9.5	97	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	84	-	
2.36	73	-	
1.18	61	-	
0.6	53	-	
0.3	45	-	
0.15	39	-	
0.075	34.2	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	1.09
D_{85} =	5.12

C_u=	#N/A
C_c=	#N/A

Gravel%	16.0
Sand%	49.8
Fines %	34.2

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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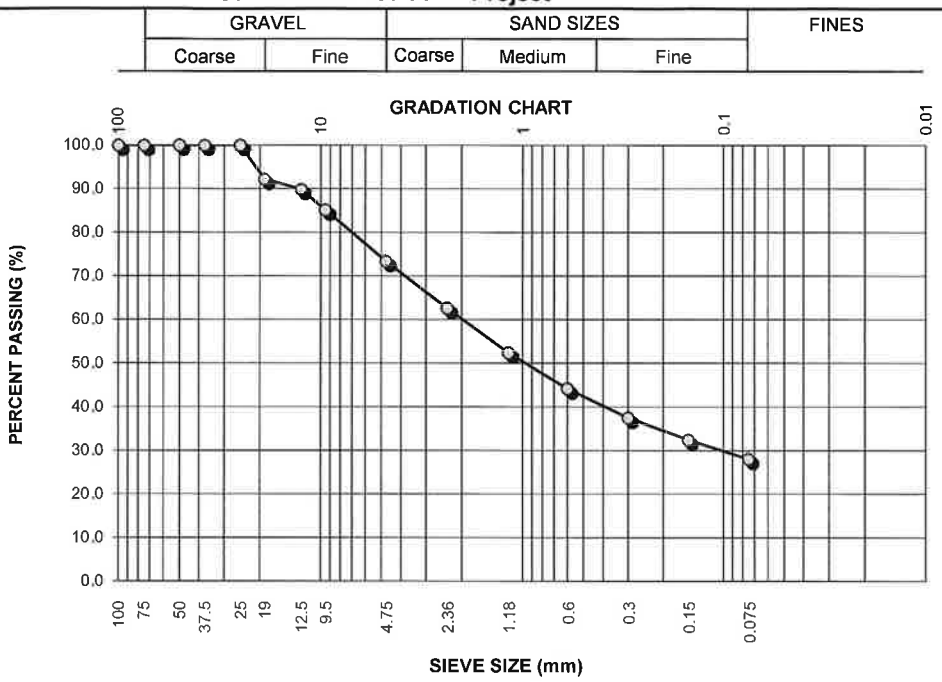
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 9-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-02

Source: G48

Depth (m): 55.5
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	92	-	
12.5	90	-	
9.5	85	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	73	-	
2.36	63	-	
1.18	52	-	
0.6	44	-	
0.3	38	-	
0.15	32	-	
0.075	28.0	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	0.11
D_{60} =	2.06
D_{85} =	9.46

C_u=	#N/A
C_c=	#N/A

Gravel%	26.6
Sand%	45.4
Fines %	28.0

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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wood.

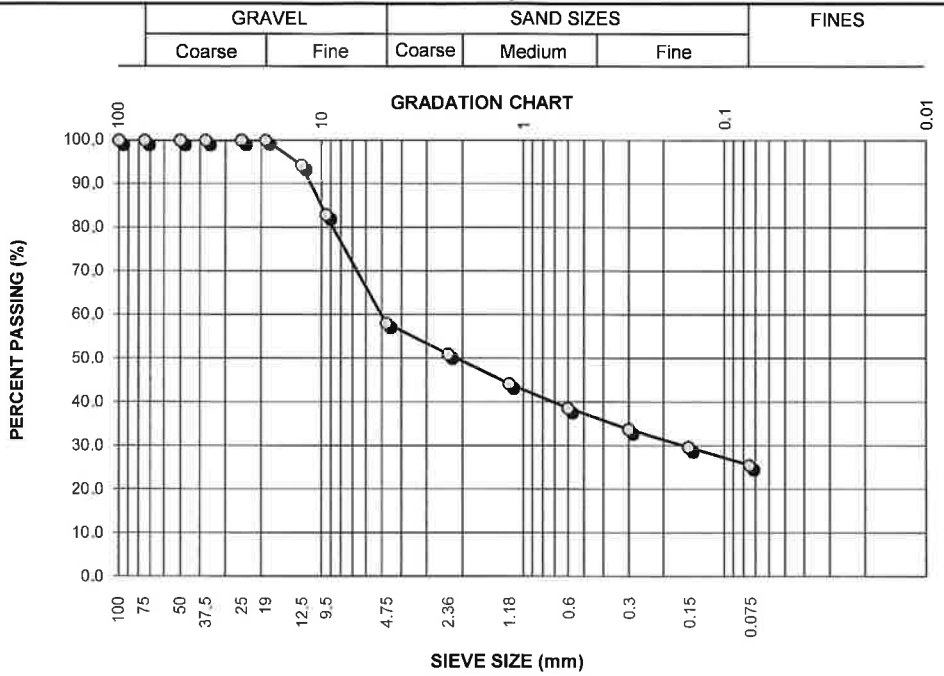
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 9-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-02

Source: G52b

Depth (m): 60.3
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	94	-	
9.5	83	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	58	-	
2.36	51	-	
1.18	44	-	
0.6	39	-	
0.3	34	-	
0.15	30	-	
0.075	25.5	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	0.16
D_{60} =	5.13
D_{85} =	10.06

C_u=	#N/A
C_c=	#N/A

Gravel%	42.0
Sand%	32.5
Fines %	25.5

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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wood.

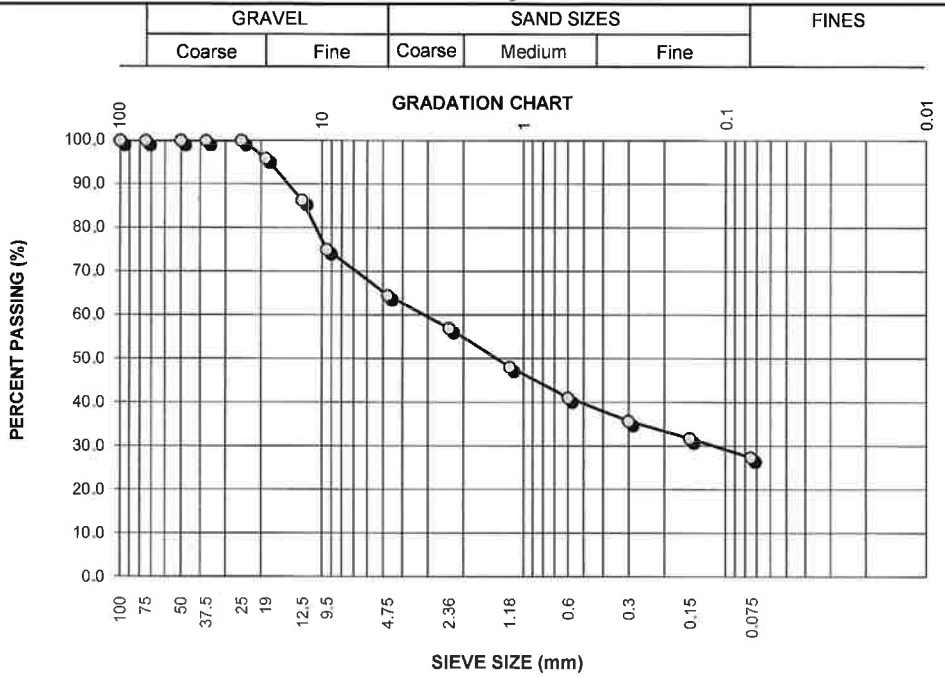
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 9-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-02

Source: G54

Depth (m): 67.4
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	96	-	
12.5	86	-	
9.5	75	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	65	-	
2.36	57	-	
1.18	48	-	
0.6	41	-	
0.3	36	-	
0.15	32	-	
0.075	27.4	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	0.12
D_{60} =	3.33
D_{85} =	12.18

C_u=	#N/A
C_c=	#N/A

Gravel%	35.5
Sand%	37.1
Fines %	27.4

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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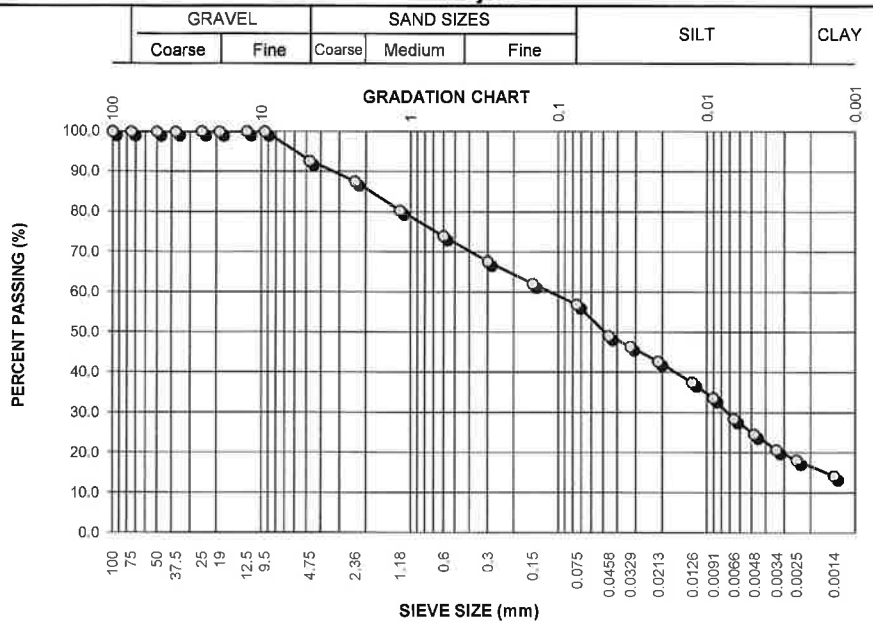
SIEVE AND HYDROMETER ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number: 2435

Date Sampled:
Date Received:
Date Tested: 15-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-02

Source: G55

Depth (m): 68.9
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	100	-	
9.5	100	-	
4.75	93	-	
2.36	88	-	
1.18	80	-	
0.6	74	-	
0.3	68	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
0.15	62	-	
0.075	56.9	-	
0.0458	49.1	-	
0.0329	46.5	-	
0.0213	42.7	-	
0.0126	37.5	-	
0.0091	33.6	-	
0.0066	28.4	-	
0.0048	24.6	-	
0.0034	20.7	-	
0.0025	18.1	-	
0.0014	14.2	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	0.00
D_{30} =	0.01
D_{60} =	0.12
D_{85} =	1.95

C_u=	#N/A
C_c=	#N/A

Gravel%	7.3
Sand%	35.8
Silt %	40.8
Clay %	16.2

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14
Materials finer than 75 µm (No. 200) sieve were tested in accordance with ASTM C117-13

Reviewed By:

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Moisture Content Determination (ASTM D2216 - Method B)

Wood Environment & Infrastructure Solutions
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Client: YUKON GOVT
Project: CLINTON CREEK
Date:
Request Number:
Project Manager:
Project Number: VE52705B
Reviewed By:

Test Hole Number	BH18-03	BH18-03	BH18-03	BH18-03	BH18-03	BH18-03	BH18-03	BH18-03
Depth (m)	3.7	5.5	7.3	8.2	10.0	11.2	11.6	13.1
Sample Number	G1	G2	G3	G4	G5	G6	G7	G8
Tare No:	TANG	Y80	WC2	ABC41	SB3	ST9	Y12	ST71
Wt. Sample Wet + Tare	279.90	390.70	304.71	294.90	299.07	395.31	386.98	293.12
Wt. Sample Dry + Tare	258.36	359.37	288.85	762.98	268.82	352.96	351.16	268.73
Wt. Water	16.54	31.33	15.86	31.92	30.25	42.35	35.82	24.39
Wt. Tare	15.91	18.05	16.05	17.88	16.53	18.14	18.12	17.68
Wt. Dry Sample	242.45	241.32	272.80	245.10	252.29	334.82	330.04	251.05
Moisture Content (%)	7.0 %	13.00	6.0 %	13 %	12 %	13 %	11.0 %	10.0 %

Test Hole Number	BH18-03	BH18-03	BH18-03	BH18-03	BH18-03	BH18-03	BH18-03	BH18-03
Depth (m)	14.6	16.5	15.2	19.2	19.5	21.0	22.6	23.0
Sample Number	G9	G10	G11	G12	G13	G14	G15	G16
Tare No:	SB2	HN29	CHEEKO	R11	ABC	CC3	SAY	LS
Wt. Sample Wet + Tare	235.74	380.76	257.44	311.05	506.42	28.57	261.43	302.88
Wt. Sample Dry + Tare	204.08	333.45	236.56	293.33	445.77	187.71	236.21	285.50
Wt. Water	31.66	47.31	20.88	17.72	60.65	20.86	25.22	17.38
Wt. Tare	15.75	17.83	19.13	18.63	17.51	15 82	15.97	17.52
Wt. Dry Sample	188.33	315.62	217.43	274.70	428.26	171.89	220.24	267.98
Moisture Content (%)	17.0 %	15.0 %	10.0 %	6.5 %	14.2 %	12.1 %	11.5 %	6.5 %

Test Hole Number	BH18-03	BH18-03	BH18-03	BH18-03	BH18-03	BH18-03	BH18-03	BH18-03
Depth (m)	26.8	27.7	29.5	29.9	30.2	30.5	30.8	31.1
Sample Number	G17	G18	G19	G20	G21	G22	G23	G24
Tare No:	SY15	CC1	AR	13	SD	14	Diablo	CC51
Wt. Sample Wet + Tare	320.16	345.09	337.69	233.50	982.43	651.87	738.82	682.92
Wt. Sample Dry + Tare	284.82	317.54	286.58	156.49	600.57	176.71	314.05	348.56
Wt. Water	35.34	27.55	51.11	77.61	381.86	475.16	424.77	334.36
Wt. Tare	17.65	17.75	17.80	11.88	212.43	11.87	15.82	17.92
Wt. Dry Sample	267.17	299.79	268.78	144.61	388.14	164.87	298.23	330.64
Moisture Content (%)	13.2 %	9.2 %	19.0	53.3 %	98.4 %	288 %	143 %	102 %

Test Hole Number	BH18-03	BH18-03	BH18-03	BH18-03	BH18-03	BH18-03	BH18-03	BH18-03
Depth (m)	31.4	31.7	32.0	32.3	32.9	33.5	34.1	34.8
Sample Number	G25	G26	G27	G28	G29	G30	G31	G32
Tare No:	SB1	CC29	TIN	SA		SE	TIN	TIN2
Wt. Sample Wet + Tare	707.72	675.57	512.79	1141.98		1477.8	1328.0	1113.9
Wt. Sample Dry + Tare	325.47	236.93	148.30	664.29		900.73	1078.52	387.8
Wt. Water	382.28	438.64	363.99	477.19		577.07	249.48	726.10
Wt. Tare	15.72	17.57	11.30	312.48		318.78	11.87	11.88
Wt. Dry Sample	309.75	219.36	144.0	351.81		581.95	1066.65	375.92
Moisture Content (%)	123.4 %	199.9 %	252 %	136 %		99.2 %	23.4 %	193 %

Moisture Content Determination (ASTM D2216 - Method B)

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

wood.

Client: YUKON GOVT
Project: CLINTON CREEK
Date:
Request Number:
Project Manager:
Project Number: VE52705B
Reviewed By:

Test Hole Number	BH18-03	BH18-03	BH18-03	BH18-03	BH18-03	BH18-03	BH18-03	BH18-03
Depth (m)	35.4	35.67	35.9	36.3	36.6	36.9	37.2	37.5
Sample Number	G33	G34	G35	G36	G37	G38	G39	G40
Tare No:	5D	14	2	J1 /N1	3	13	1	H1 / 01
Wt. Sample Wet + Tare	1413.83	593.58	744.83	750.90	997.85	619.98	619.87	621.98
Wt. Sample Dry + Tare	1075.16	404.88	521.19	431.0	625.25	203.68	3x1.37	296.21
Wt. Water	338.7	188.70	223.64	319.90	372.60	411.30	227.63	325.77
Wt. Tare	212.83	12.78	11.83	3.94/3.96	11.85	11.98	11.87	9.03+3.95
Wt. Dry Sample	862.33	392.10	509.36	423.10	613.40	191.70	292.50	288.2
Moisture Content (%)	39.3%	48.1%	43.9%	75.6%	60.7%	214.5%	77.8%	113.0%

Test Hole Number	BH18-03	BH18-03	BH18-03	BH18-03	BH18-03	BH18-03	BH18-03	BH18-03
Depth (m)	G41	G42	G43	G44	G45	G46	G47	G48
Sample Number	37.8	38.1	38.4	38.4	39.02	39.9	41.2	42.1
Tare No:	K1 / L1	5E	4	VB	6	5	LS	SB3
Wt. Sample Wet + Tare	860.08	1321.89	1403.9	743.84	10	565.32	336.09	286.30
Wt. Sample Dry + Tare	471.19	750.87	~~1064.38~~	458.07	1093.7	504.96	314.56	253.72
Wt. Water	388.89	571.02	441.12	285.77		60.36	21.53	32.58
Wt. Tare	3.94/4.19	348.89	11.88	11.84	11.92	11.90	17.47	15.91
Wt. Dry Sample	463.11	401.98	950.90	446.23	1081.78	493.06	297.09	237.81
Moisture Content (%)	83.9%	142.0%	46.4%	64.0%		12.2%	7.2%	13.7%

Test Hole Number	BH18-03	BH18-03	BH18-03	BH18-03	BH18-03	BH18-03	BH18-03	
Depth (m)	46.9	48.2	48.8	49.9	51.2	53.04	54.6	
Sample Number	G50	G51	G52	G53	G54	G55	G56	
Tare No:	5	TIN	LS	SB3	SB3	13	CC1	
Wt. Sample Wet + Tare	301.00	351.45	321.86	255.79	287.78	340.62	345.42	
Wt. Sample Dry + Tare	~~335.76~~ 263.47	304.66	303.85	222.89	251.28	306.55	313.48	
Wt. Water	37.57	46.79	18.01	32.90	36.50	34.07	3194	
Wt. Tare	11.86	11.82	16.94	15.36	16.06	12.00	15.52	
Wt. Dry Sample	251.57	292.84	286.91	207.53	235.28	294.55	297.96	
Moisture Content (%)	14.9%	16.0%	6.3%	15.9%	15.5%	11.6%	10.7%	

Test Hole Number								BH18-03
Depth (m)								45.7
Sample Number								G49
Tare No:								7
Wt. Sample Wet + Tare								337.01
Wt. Sample Dry + Tare								300.55
Wt. Water								36.46
Wt. Tare								11.87
Wt. Dry Sample								288.68
Moisture Content (%)								12.6%

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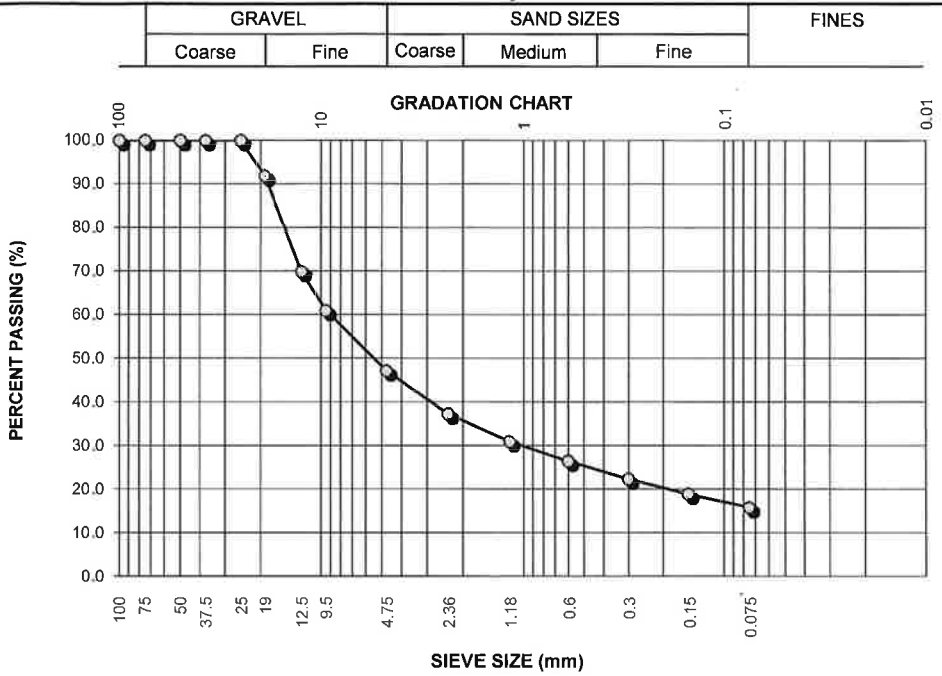
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 12-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-03

Source: G3

Depth (m): 7.3 m
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	92	-	
12.5	70	-	
9.5	61	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	47	-	
2.36	37	-	
1.18	31	-	
0.6	26	-	
0.3	22	-	
0.15	19	-	
0.075	15.8	-	

Natural Moisture Content = 6%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	1.06
D_{60} =	9.15
D_{85} =	16.98

C_u=	#N/A
C_c=	#N/A

Gravel%	52.8
Sand%	31.3
Fines %	15.8

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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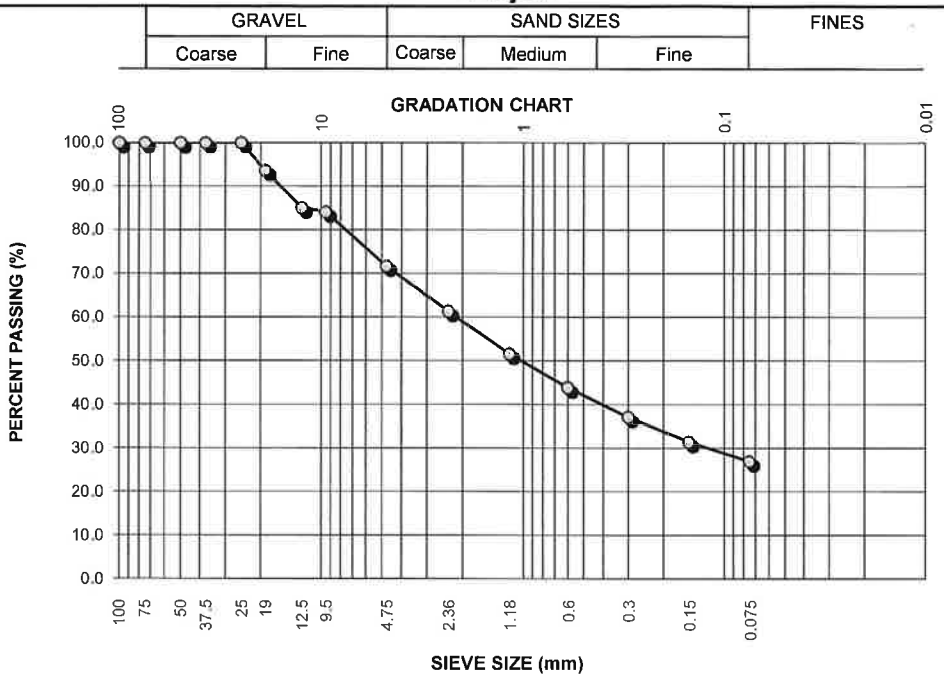
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 12-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-03

Source: G7

Depth (m): 11.6 m
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	94	-	
12.5	85	-	
9.5	84	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	72	-	
2.36	61	-	
1.18	52	-	
0.6	44	-	
0.3	37	-	
0.15	31	-	
0.075	27.0	-	

Natural Moisture Content = 11%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	0.13
D_{60} =	2.20
D_{85} =	12.53

C_u=	#N/A
C_c=	#N/A

Gravel%	28.3
Sand%	44.8
Fines %	27.0

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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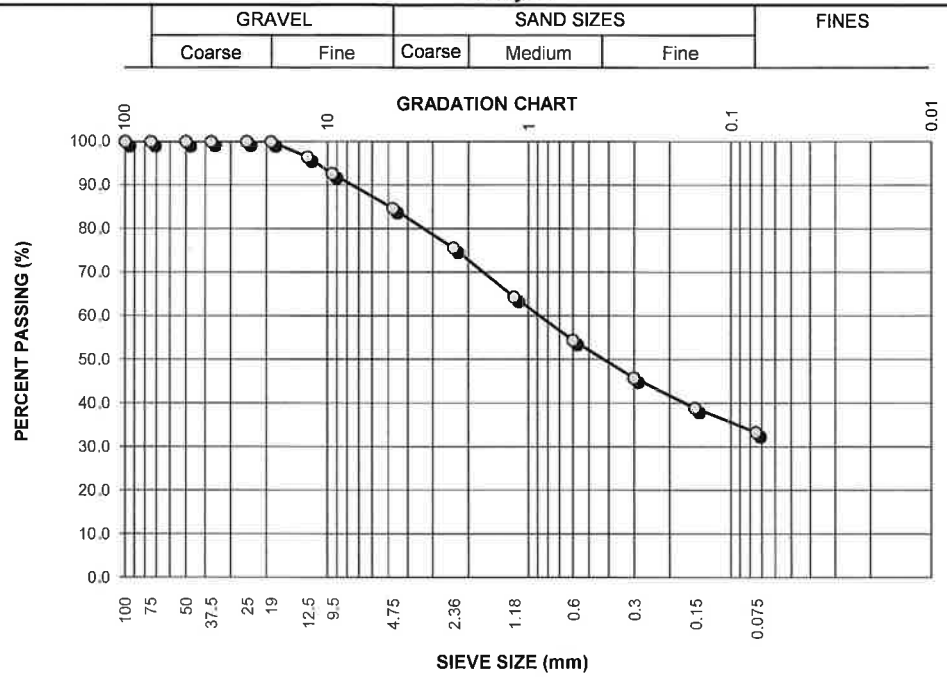
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 13-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-03

Source: G9

Depth (m): 14.6 m
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	96	-	
9.5	93	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	85	-	
2.36	75	-	
1.18	64	-	
0.6	54	-	
0.3	46	-	
0.15	39	-	
0.075	33.3	-	

Natural Moisture Content = 16%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	0.93
D_{85} =	4.92

C_u=	#N/A
C_c=	#N/A

Gravel%	15.3
Sand%	51.4
Fines %	33.3

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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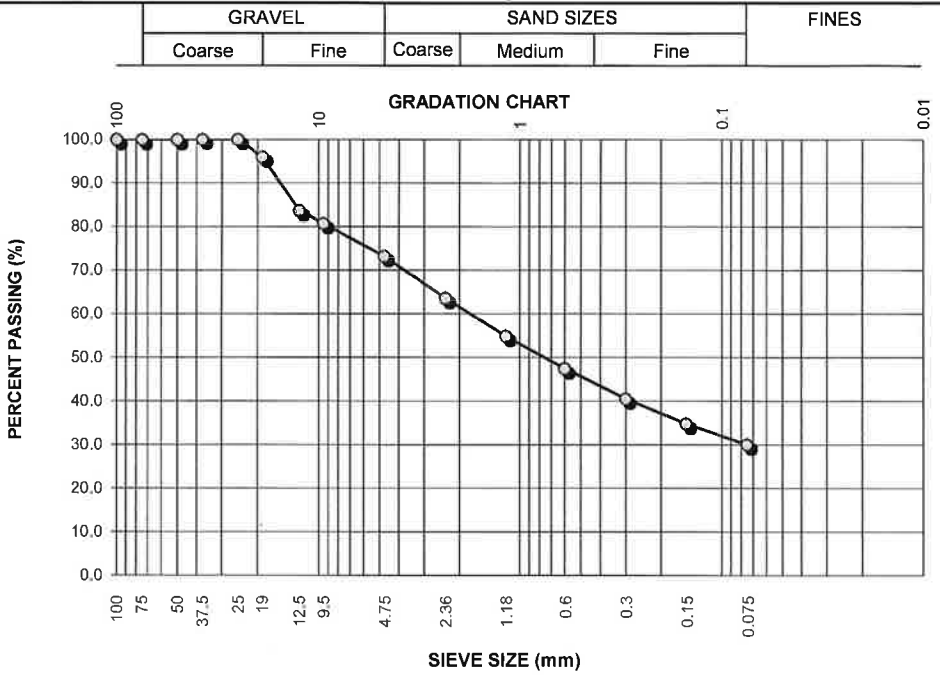
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 13-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-03

Source: G13

Depth (m): 19.5 m
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	96	-	
12.5	84	-	
9.5	81	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	73	-	
2.36	64	-	
1.18	55	-	
0.6	47	-	
0.3	41	-	
0.15	35	-	
0.075	30.1	-	

Natural Moisture Content = 13%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	1.88
D_{85} =	13.22

C_u=	#N/A
C_c=	#N/A

Gravel%	26.8
Sand%	43.1
Fines %	30.1

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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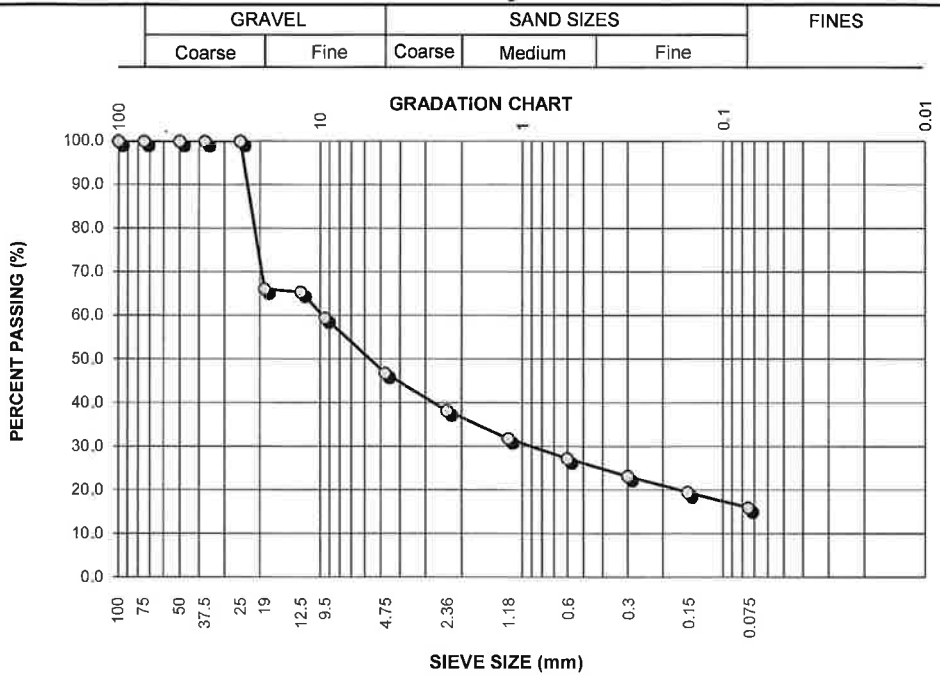
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 12-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-03

Source: G17

Depth (m): 24.7 m
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	66	-	
12.5	65	-	
9.5	59	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	47	-	
2.36	38	-	
1.18	32	-	
0.6	27	-	
0.3	23	-	
0.15	19	-	
0.075	16.0	-	

Natural Moisture Content = 12%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	0.96
D_{60} =	9.79
D_{85} =	22.34

C_u=	#N/A
C_c=	#N/A

Gravel%	53.2
Sand%	30.8
Fines %	16.0

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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wood.

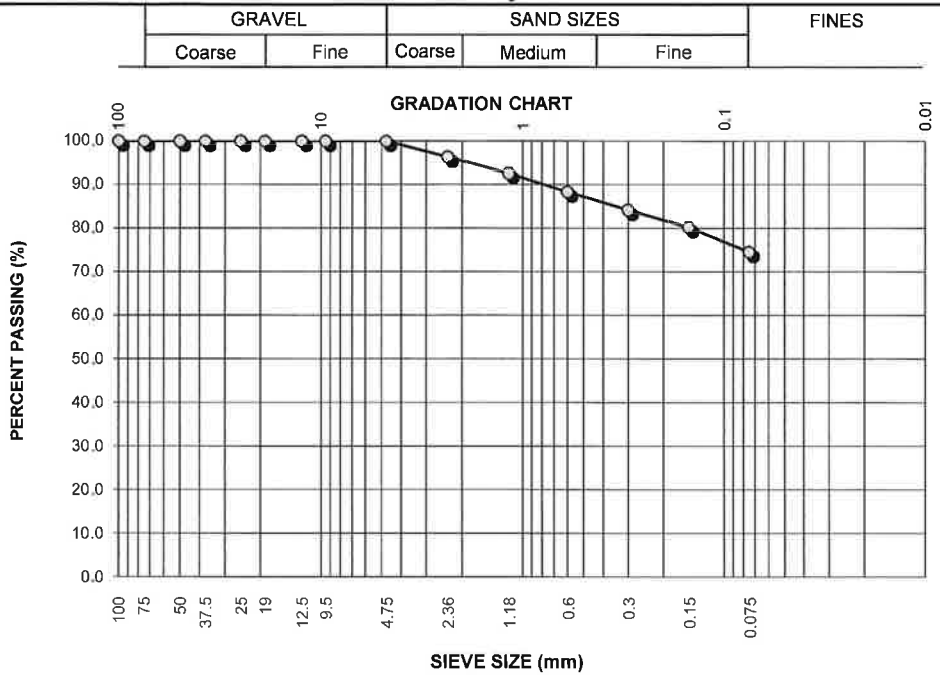
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 15-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-03

Source: G21

Depth (m): 30.2 m
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	100	-	
9.5	100	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	100	-	
2.36	96	-	
1.18	93	-	
0.6	88	-	
0.3	84	-	
0.15	80	-	
0.075	74.6	-	

Natural Moisture Content = 95%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	#N/A
D_{85} =	0.36

C_u=	#N/A
C_c=	#N/A

Gravel%	0.0
Sand%	25.4
Fines %	74.6

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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Wood Environment & Infrastructure Solutions
Suite 600, 4445 Lougheed Highway
Burnaby, BC V5C 0E4
Tell: 604-294-3811
Fax: 604-294-4664

wood.

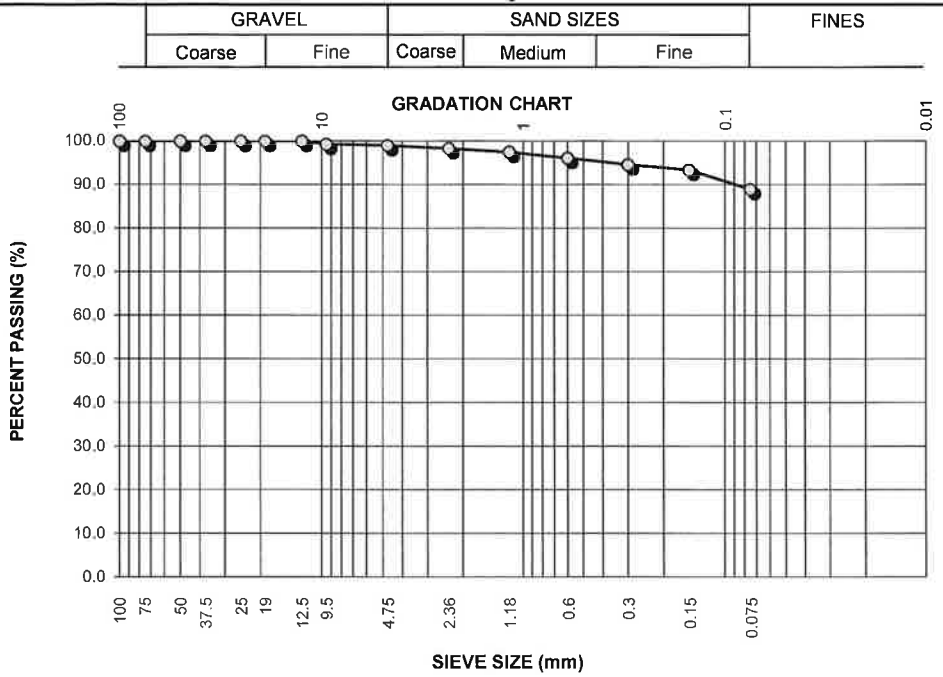
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 12-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-03

Source: G41

Depth (m): 37.8 m
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	100	-	
9.5	99	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	99	-	
2.36	98	-	
1.18	97	-	
0.6	96	-	
0.3	95	-	
0.15	93	-	
0.075	88.9	-	

Natural Moisture Content = -105%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	#N/A
D_{85} =	#N/A

C_u=	#N/A
C_c=	#N/A

Gravel%	1.0
Sand%	10.1
Fines %	88.9

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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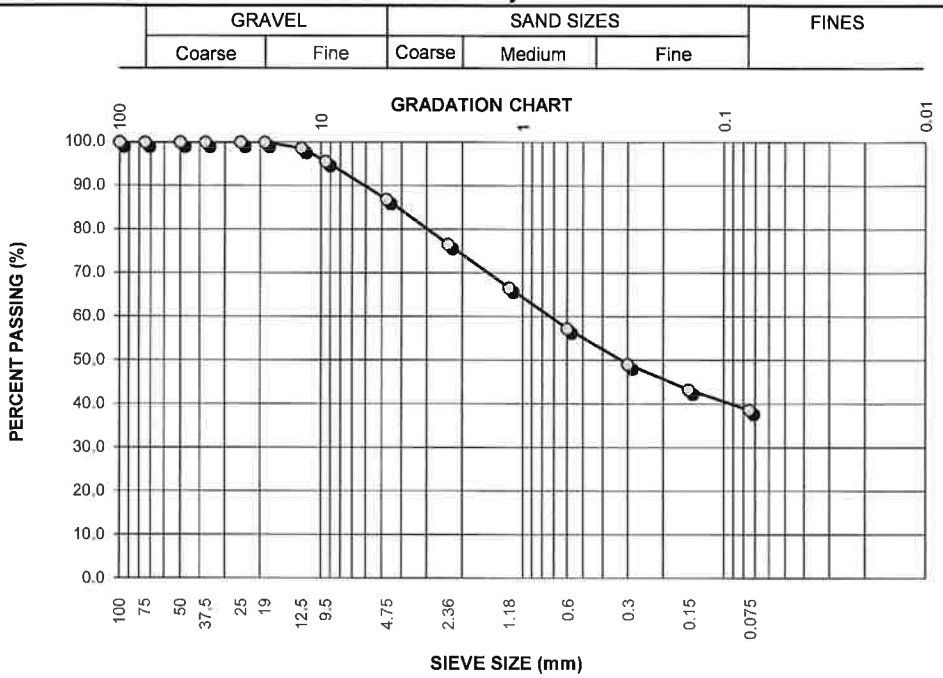
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 13-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-03

Source: G46

Depth (m): 39.9 m
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	99	-	
9.5	96	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	87	-	
2.36	77	-	
1.18	67	-	
0.6	57	-	
0.3	49	-	
0.15	43	-	
0.075	38.6	-	

Natural Moisture Content = 12%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	0.77
D_{85} =	4.31

C_u=	#N/A
C_c=	#N/A

Gravel%	13.1
Sand%	48.3
Fines %	38.6

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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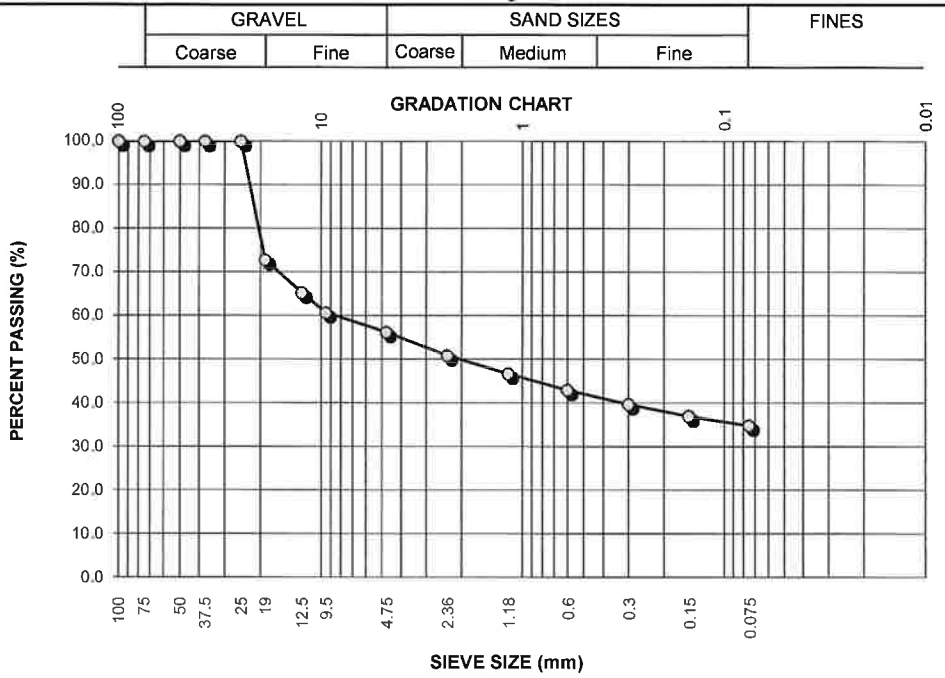
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 12-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-03

Source: G49

Depth (m): 45.7 m
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	73	-	
12.5	65	-	
9.5	61	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	56	-	
2.36	51	-	
1.18	47	-	
0.6	43	-	
0.3	40	-	
0.15	37	-	
0.075	34.8	-	

Natural Moisture Content = -104%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	8.78
D_{85} =	21.69

C_u=	#N/A
C_c=	#N/A

Gravel%	43.8
Sand%	21.4
Fines %	34.8

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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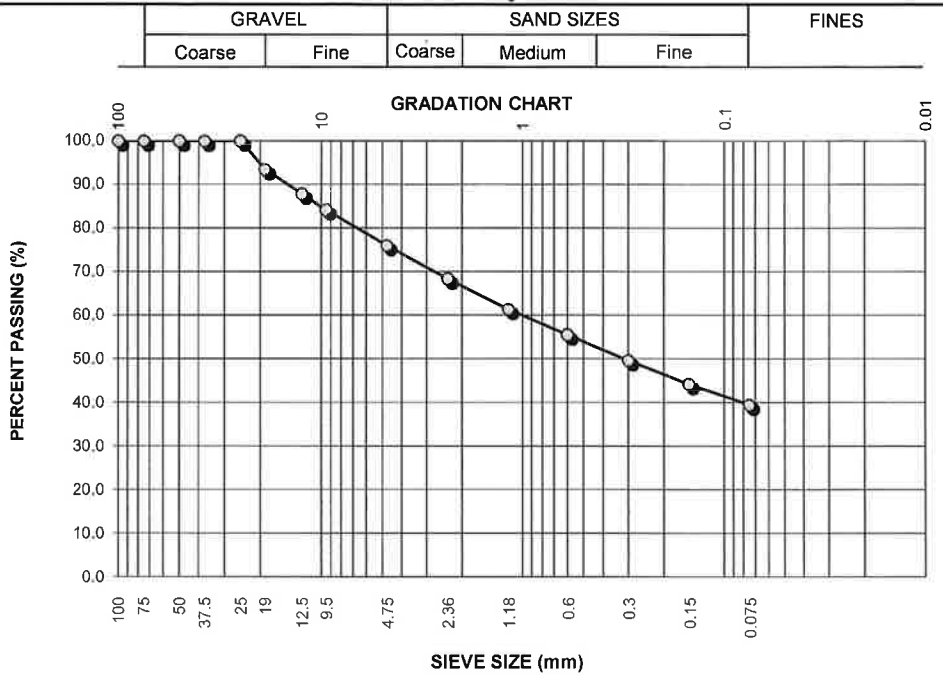
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 13-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-03

Source: G50

Depth (m): 46.9 m
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	93	-	
12.5	88	-	
9.5	84	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	76	-	
2.36	68	-	
1.18	61	-	
0.6	56	-	
0.3	50	-	
0.15	44	-	
0.075	39.5	-	

Natural Moisture Content = 7%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	1.05
D_{85} =	10.26

C_u=	#N/A
C_c=	#N/A

Gravel%	24.0
Sand%	36.5
Fines %	39.5

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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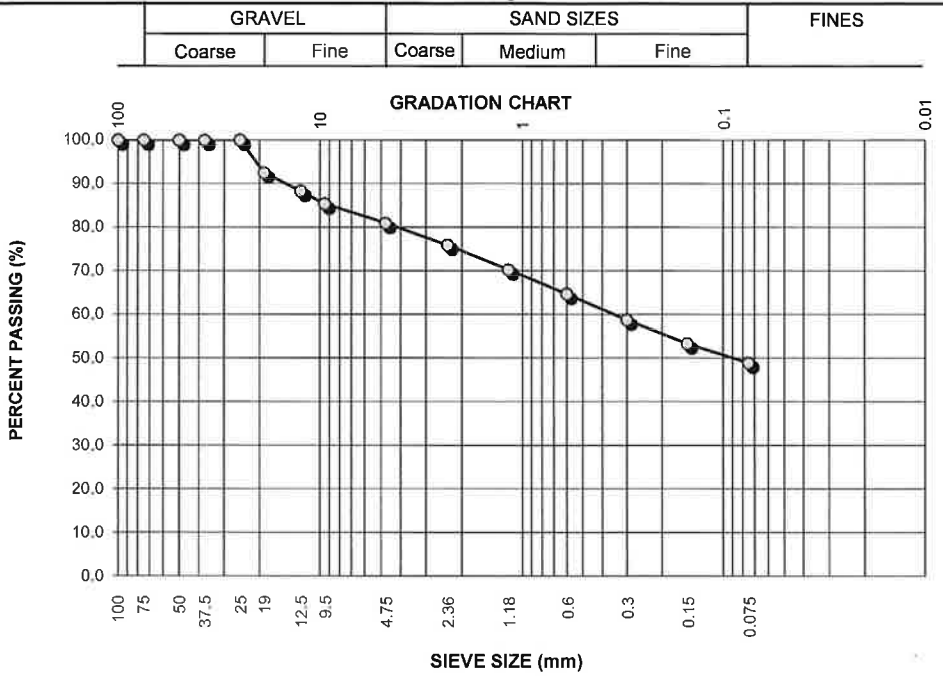
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 15-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-03

Source: G52

Depth (m): 48.8 m
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	92	-	
12.5	88	-	
9.5	85	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	81	-	
2.36	76	-	
1.18	70	-	
0.6	65	-	
0.3	59	-	
0.15	53	-	
0.075	48.9	-	

Natural Moisture Content = -104%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	0.36
D_{85} =	9.07

C_u=	#N/A
C_c=	#N/A

Gravel%	19.0
Sand%	32.1
Fines %	48.9

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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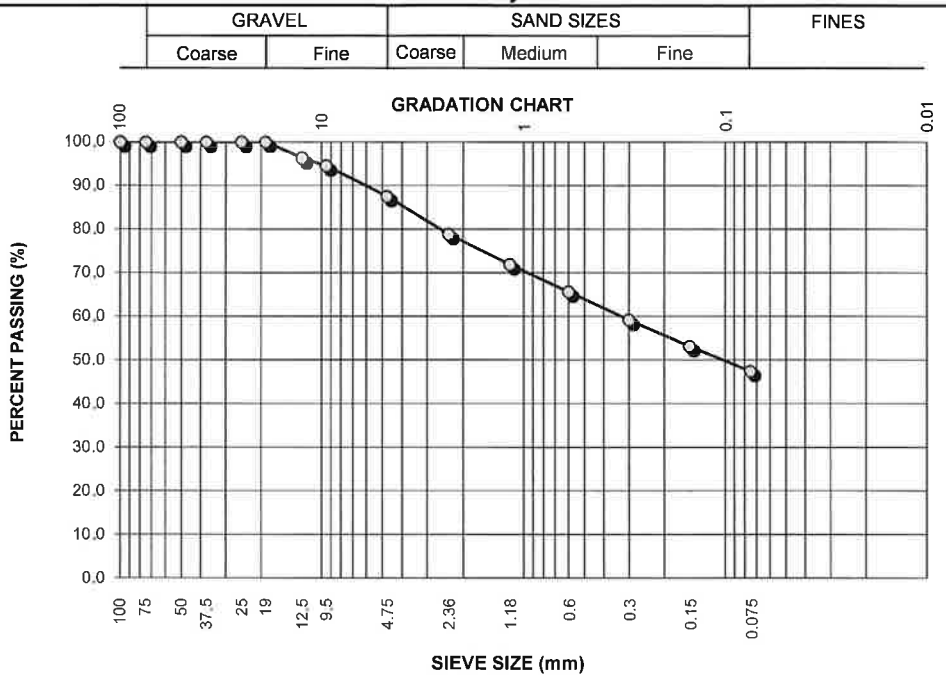
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:
PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 15-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-03

Source: G55

Depth (m): 53.0 m
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	96	-	
9.5	95	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	88	-	
2.36	79	-	
1.18	72	-	
0.6	66	-	
0.3	59	-	
0.15	53	-	
0.075	47.4	-	

Natural Moisture Content = -104%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	0.34
D_{85} =	4.05

C_u=	#N/A
C_c=	#N/A

Gravel%	12.5
Sand%	40.1
Fines %	47.4

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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Moisture Content Determination (ASTM D2216 - Method B)

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

wood.

Client: YUKON GOVT
Project: CLINTON CREEK
Date:
Request Number:
Project Manager:
Project Number: VE52705B
Reviewed By:

Test Hole Number	BH18-04	BH18-04	BH18-04	BH18-04	BH18-04	BH18-04	BH18-04	BH18-04
Depth (m)	0.4	2.4	3.8	5.5	7.0	8.5	9.8	11.3
Sample Number	B1	G2	G3	G4	G5	G6	G7	G8
Tare No:	BOB	N.	7	SQUID	5	BIG	GOY	BIE
Wt. Sample Wet + Tare	262.57	195.94	301.09	269.75	318.56	218.87	218.94	254.29
Wt. Sample Dry + Tare	245.64	185.92	283.36	252.45	300.05	207.67	194.99	~~226.50~~ 237.79
Wt. Water	16.93	10.02	17.73	17.30	18.51	11.20	23.95	16.50
Wt. Tare	3.99	3.95	3.96	4.00	3.92	3.96	3.93	4.01
Wt. Dry Sample	241.65	181.97	279.4	248.45	296.13	203.71	191.06	233.78
Moisture Content (%)	7.0%	5.5%	6.3%	6.9%	6.3%	5.5%	12.5%	7.1%

Test Hole Number	BH18-04	BH18-04	BH18-04	BH18-04	BH18-04	BH18-04	BH18-04	BH18-04
Depth (m)	12.9	14.3	16.2	17.7	19.2	20.7	22.5	23.8
Sample Number	G9	G10	G11	G12	G13	G14	G15	G16
Tare No:	C1	1	R1	X1	VIC	BOT	Cool	O1
Wt. Sample Wet + Tare	232.94	252.38	257.67	281.31	200.01	271.46	271.48	265.03
Wt. Sample Dry + Tare	215.94	233.82	240.65	266.53	179.04	258.26	255.11	246.98
Wt. Water	17.00	18.56	17.02	14.78	20.97	13.20	16.37	8.05
Wt. Tare	4.02	3.95	4.03	3.97	3.91	3.96	3.96	3.97
Wt. Dry Sample	211.92	229.87	236.62	262.56	175.13	254.3	251.15	243.01
Moisture Content (%)	8.0%	8.1%	7.2%	5.6%	12.0%	5.2%	6.5%	3.3%

Test Hole Number	BH18-04	BH18-04	BH18-04	BH18-04	BH18-04	BH18-04	BH18-04	BH18-04
Depth (m)	25.3	25.4	27.1	28.0	28.7	33.5	33.8	34.1
Sample Number	G17	G18	G19	G20	G21	G 22	G 23	G 24
Tare No:	BIT	WARD	4	SPONGE	6	24	16	IN
Wt. Sample Wet + Tare	216.29	139.73	197.65	241.90	230.92	392.40	294.10	523.88
Wt. Sample Dry + Tare	196.43	126.54	191.34	225.85	219.60	230.45	332.65	187.07
Wt. Water	19.86	13.19	6.31	16.05	11.32	161.95	161.45	336.81
Wt. Tare	3.93	3.90	4.34	3.98	3.90	12.06	15.90	15.27
Wt. Dry Sample	192.50	122.64	187.0	221.87	215.70	218.39	116.75	171.85
Moisture Content (%)	10.3%	10.8%	5.3%	7.2%	5.2%	74.2%	138.2%	196.0%

Test Hole Number	BH18-04	BH18-04	BH18-04	BH18-04	BH18-04	BH18-04	BH18-04	BH18-04
Depth (m)	34.5	34.8	35.7	35.9	36.58	36.9	37.2	37.5
Sample Number	G25	G 26	G27	G28	G29	G30	G31	G32
Tare No:	1D	1M	16	1K	1A	1L	1F	1E
Wt. Sample Wet + Tare	583.16	363.40	551.00	383.75	318.96	495.81	529.24	741.29
Wt. Sample Dry + Tare	363.88	207.02	286.97	180.90	280.75	332.13	371.85	563.49
Wt. Water	219.28	156.38	264.03	202.85	38.21	163.68	157.39	177.8
Wt. Tare	14.96	15.45	16.00	15.32	14.89	15.44	15.52	15.73
Wt. Dry Sample	348.92	191.57	270.97	165.58	265.86	316.69	356.33	547.76
Moisture Content (%)	62.8%	81.6%	97.4%	122.5%	14.4%	51.7%	44.2%	32.5%

Moisture Content Determination (ASTM D2216 - Method B)

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

wood.

Client: YUKON GOVT
Project: CLINTON CREEK
Date: SEPT 16/18

Request Number:
Project Manager:
Project Number: VE52705B
Reviewed By:

Test Hole Number	BH18-04	BH18-04	BH18-04	BH18-04	BH18-04	BH18-04	BH18-04
Depth (m)	37.80	38.10	38.4	38.7	39.0	39.3	39.6
Sample Number	G33	G34	G35	G36	G37	G38	G39
Tare No:	IC	TIN	1H	II	20	11	VB
Wt. Sample Wet + Tare	440.96	454.04	718.50	657.80	563.38	600.03	473.34
Wt. Sample Dry + Tare	322.85	335.65	468.72	457.78	389.76	360.73	442.87
Wt. Water	118.11	118.39	249.78	200.02	173.82	239.3	30.47
Wt. Tare	15.06	16.94	16.44	26.27	12.06	12.03	12.31
Wt. Dry Sample	307.79	318.71	452.28	431.51	377.7	348.7	430.53
Moisture Content (%)	38.4 %	37.1 %	55.2 %	46.4 %	46.0 %	68.6 %	7.1 %
Test Hole Number							
Depth (m)							
Sample Number							
Tare No:							
Wt. Sample Wet + Tare							
Wt. Sample Dry + Tare							
Wt. Water							
Wt. Tare							
Wt. Dry Sample							
Moisture Content (%)							
Test Hole Number							
Depth (m)							
Sample Number							
Tare No:							
Wt. Sample Wet + Tare							
Wt. Sample Dry + Tare							
Wt. Water							
Wt. Tare							
Wt. Dry Sample							
Moisture Content (%)							
Test Hole Number							
Depth (m)							
Sample Number							
Tare No:							
Wt. Sample Wet + Tare							
Wt. Sample Dry + Tare							
Wt. Water							
Wt. Tare							
Wt. Dry Sample							
Moisture Content (%)							

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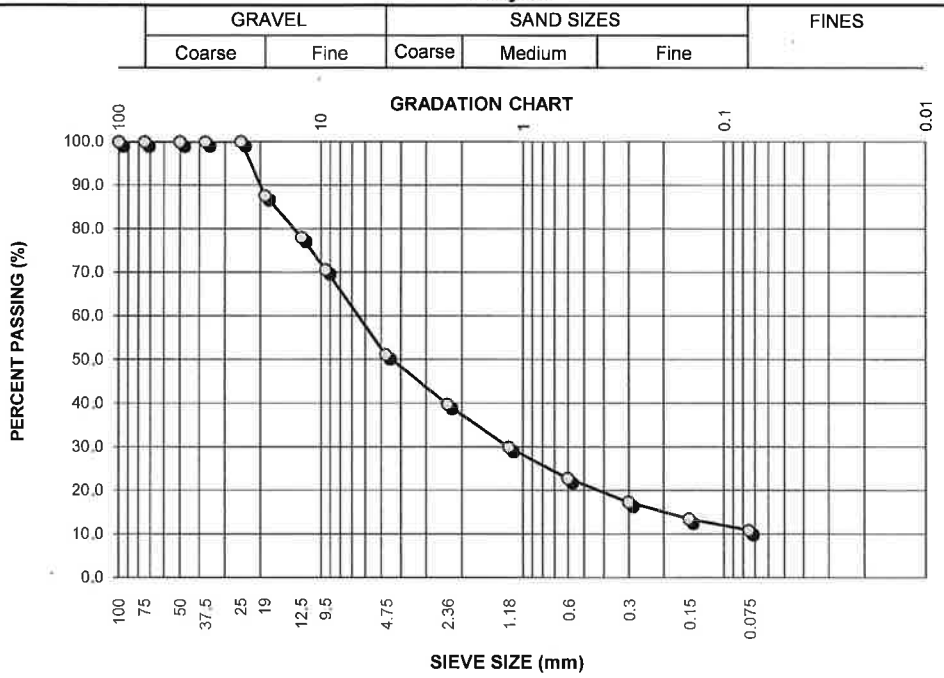
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705
Date:
Client P.O.:

ATTN:
PROJECT: Clinton Creek Mine Remediation Project



Lab Number: 2436

Date Sampled:
Date Received:
Date Tested: 9-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-04

Source: G3

Depth (m): 4
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	88	-	
12.5	78	-	
9.5	71	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	51	-	
2.36	40	-	
1.18	30	-	
0.6	23	-	
0.3	17	-	
0.15	14	-	
0.075	10.9	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	0.21
D_{30} =	1.19
D_{60} =	6.90
D_{85} =	17.24

C_u=	#N/A
C_c=	#N/A

Gravel%	48.8
Sand%	40.3
Fines %	10.9

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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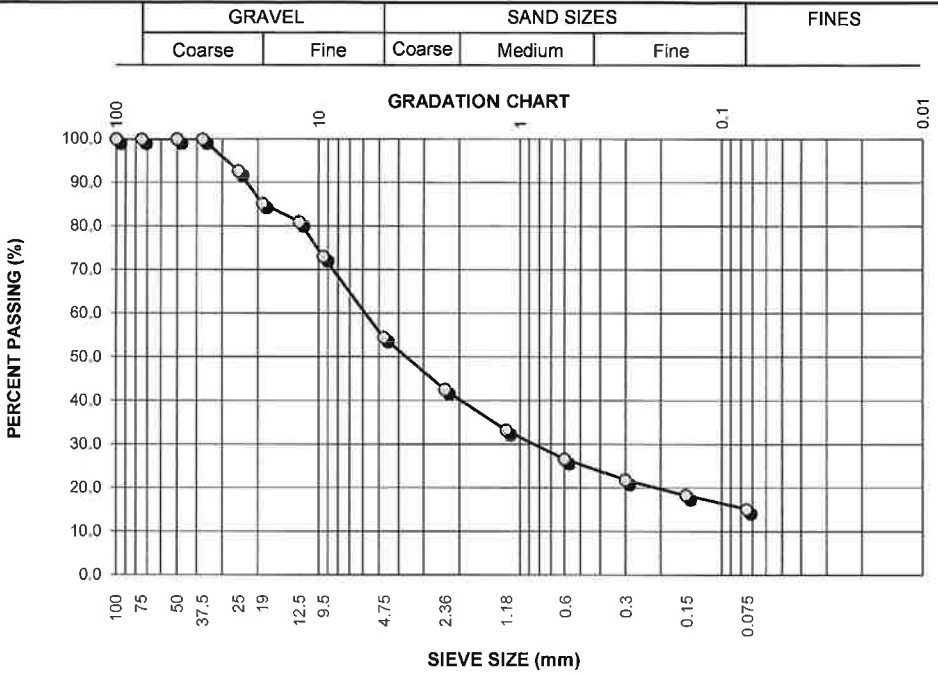
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number: 2437

Date Sampled:
Date Received:
Date Tested: 9-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-04

Source: G7

Depth (m): 9.4
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	93	-	
19	85	-	
12.5	81	-	
9.5	73	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	55	-	
2.36	43	-	
1.18	33	-	
0.6	27	-	
0.3	22	-	
0.15	18	-	
0.075	15.2	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	0.90
D_{60} =	6.16
D_{85} =	18.84

C_u=	#N/A
C_c=	#N/A

Gravel%	45.5
Sand%	39.3
Fines %	15.2

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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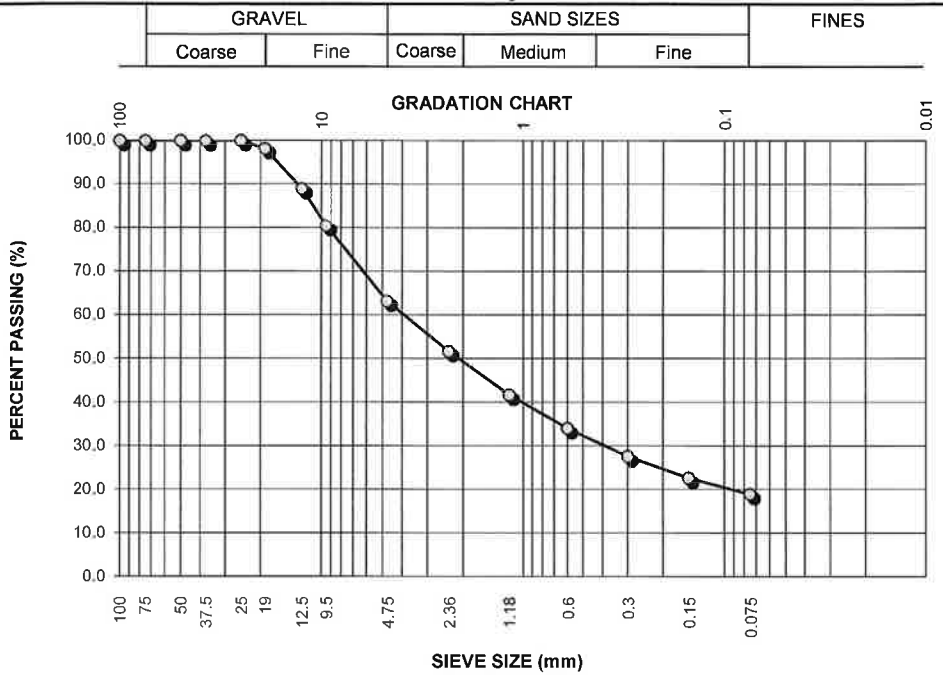
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number: 2438

Date Sampled:
Date Received:
Date Tested: 9-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-04

Source: G15

Depth (m): 22.2
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	98	-	
12.5	89	-	
9.5	81	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	63	-	
2.36	52	-	
1.18	42	-	
0.6	34	-	
0.3	28	-	
0.15	23	-	
0.075	18.9	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	0.42
D_{60} =	4.09
D_{85} =	11.11

C_u=	#N/A
C_c=	#N/A

Gravel%	36.8
Sand%	44.3
Fines %	18.9

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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wood.

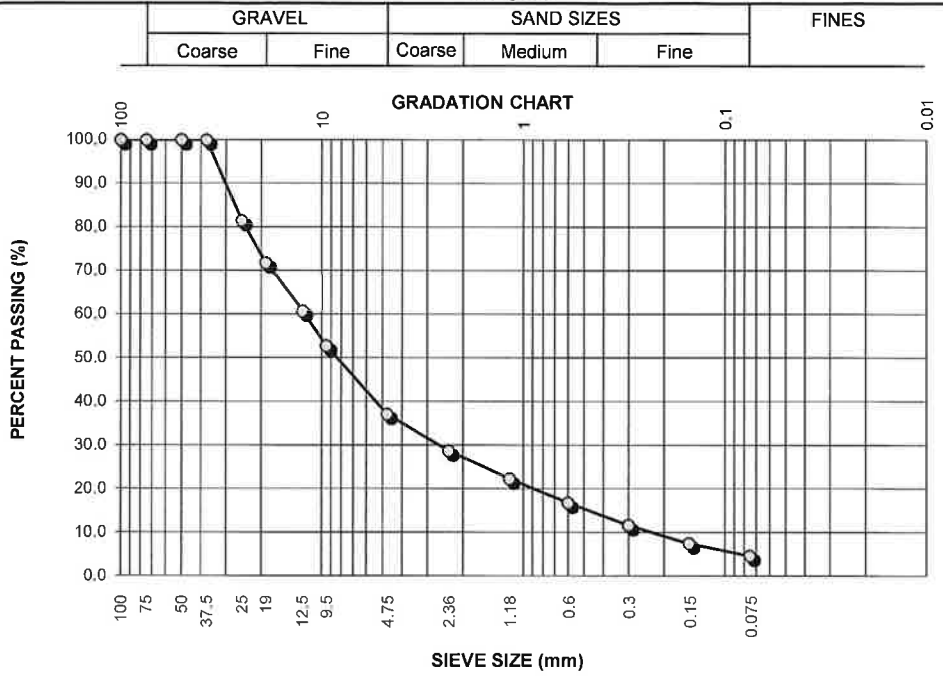
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number: 2439

Date Sampled:
Date Received:
Date Tested: 12-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-04

Source: G20

Depth (m): 28
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	82	-	
19	72	-	
12.5	61	-	
9.5	53	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	37	-	
2.36	29	-	
1.18	22	-	
0.6	17	-	
0.3	12	-	
0.15	7	-	
0.075	4.6	-	

Natural Moisture Content = #DIV/0!

D_{10} =	0.24
D_{15} =	0.50
D_{30} =	2.73
D_{60} =	12.24
D_{85} =	27.36

C_u=	50
C_c=	3

Gravel%	62.9
Sand%	32.5
Fines %	4.6

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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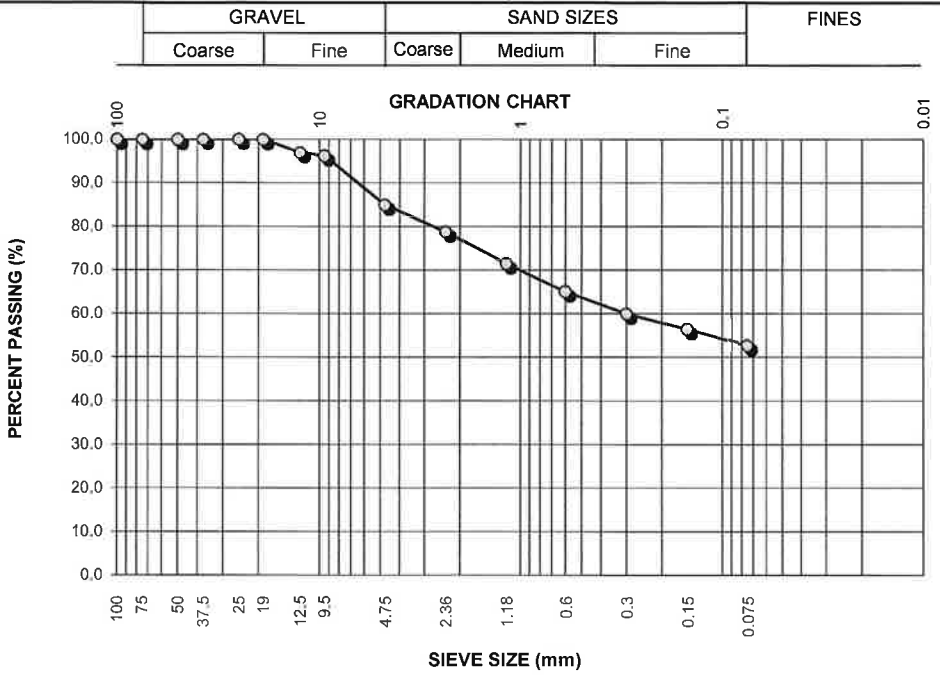
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number: 2440

Date Sampled:
Date Received:
Date Tested: 9-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-04

Source: G27

Depth (m): 35.7
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	97	-	
9.5	96	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	85	-	
2.36	79	-	
1.18	72	-	
0.6	65	-	
0.3	60	-	
0.15	56	-	
0.075	52.7	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	0.30
D_{85} =	4.75

C_u=	#N/A
C_c=	#N/A

Gravel%	15.0
Sand%	32.3
Fines %	52.7

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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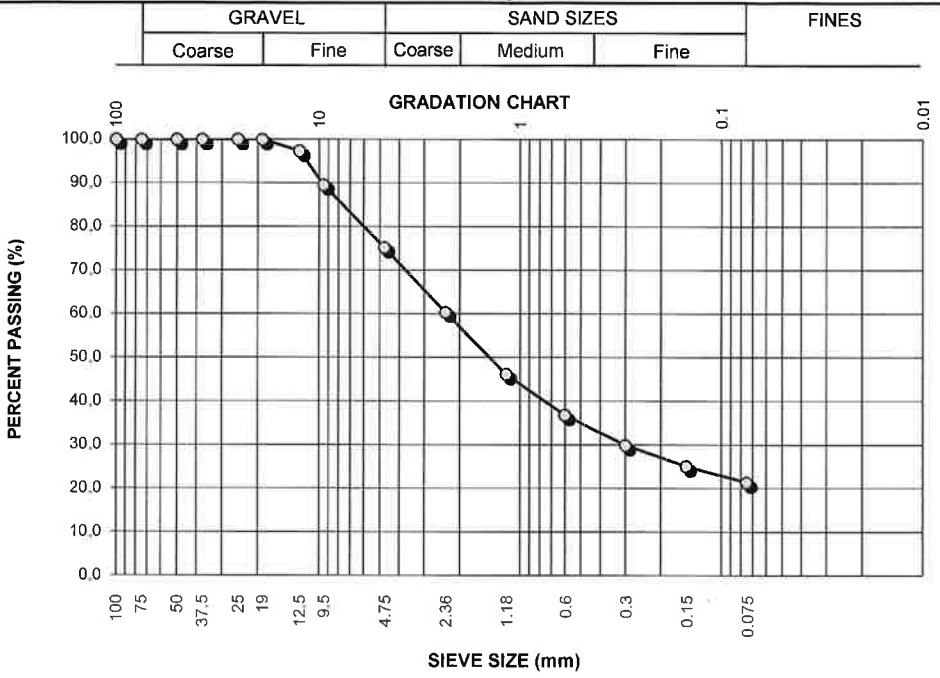
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number: 2441

Date Sampled:
Date Received:
Date Tested: 9-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-04

Source: G30

Depth (m): 36.9
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	97	-	
9.5	90	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
4.75	75	-	
2.36	60	-	
1.18	46	-	
0.6	37	-	
0.3	30	-	
0.15	25	-	
0.075	21.4	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	0.30
D_{60} =	2.33
D_{85} =	7.98

C_u=	#N/A
C_c=	#N/A

Gravel%	24.8
Sand%	53.8
Fines %	21.4

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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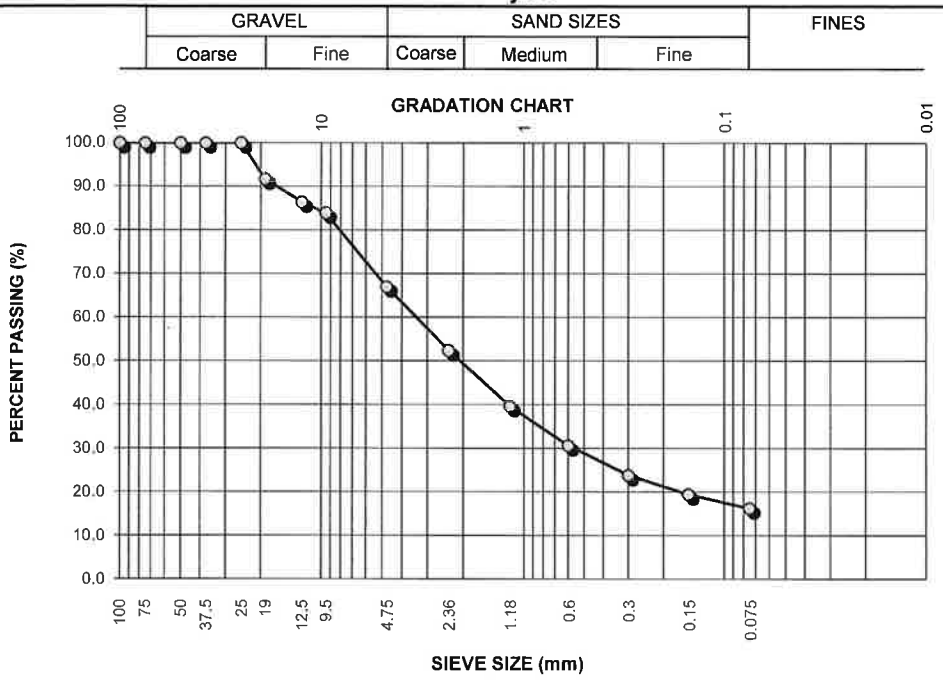
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number: 2442

Date Sampled:
Date Received:
Date Tested: 9-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-04

Source: G35

Depth (m): 38.4
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	92	-	
12.5	86	-	
9.5	84	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	67	-	
2.36	52	-	
1.18	40	-	
0.6	31	-	
0.3	24	-	
0.15	19	-	
0.075	16.2	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	0.57
D_{60} =	3.60
D_{85} =	10.82

C_u=	#N/A
C_c=	#N/A

Gravel%	33.0
Sand%	50.8
Fines %	16.2

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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Document No: FM-LAB-82	**Teneur en eau LC 21-201**	wood.
Révision No: 0		

Client: Government of the Yukon # Dossier: VE2705B

Projet: Clinton Creek 2018 Investigation # Lab:

Date:								
No Labo	2446	2447	2448	2449	2450	2451	2452	2453
Forage No:	BH18-04	BH18-04	BH18-04	BH18-04	BH18-04	BH18-04	BH18-04	BH18-04
Échantillon No:	G40	G41	G42	G43	G44	G45	G46	G47
Profondeur (m):	39,6	39,9	40,2	40,2	40,9	41,2	41,5	41,8
Teneur en eau (%)	17,3	13,8	13,5	14,8	18,2	16,2	15,5	15,0

Date:								
No Labo	2454	2455	2456	2457	2458	2459	2460	2461
Forage No:	BH18-04	BH18-04	BH18-04	BH18-04	BH18-04	BH18-04	BH18-04	BH18-04
Échantillon No:	G48	G49	G50	G51	G52	G53	G54	G55
Profondeur (m):	42,1	42,7	43,0	43,3	43,6	43,9	44,4	45,7
Teneur en eau (%)	16,7	19,2	18,0	9,7	15,6	17,6	17,5	4,4

Date:								
No Labo	2462	2463	2464	2465	2466	2467	2468	2469
Forage No:	BH18-04	BH18-04	BH18-04	BH18-04	BH18-04	BH18-04	BH18-04	BH18-04
Échantillon No:	G56	G57	G58	G59	G60	G61	G62	G63
Profondeur (m):	46,2	46,6	47,1	47,7	48,2	48,8	49,7	50,1
Teneur en eau (%)	6,94	10,9	9,5	15,7	12,0	20,6	18,6	18,5

Date:								
No Labo	2470	2471						
Forage No:	BH18-04	BH18-04						
Échantillon No:	G64	G65						
Profondeur (m):	48,7	50,3						
Teneur en eau (%)	4,2	3,7						

Date:								
No Labo								
Forage No:								
Échantillon No:								
Profondeur (m):								
Teneur en eau (%)								

Remarques:

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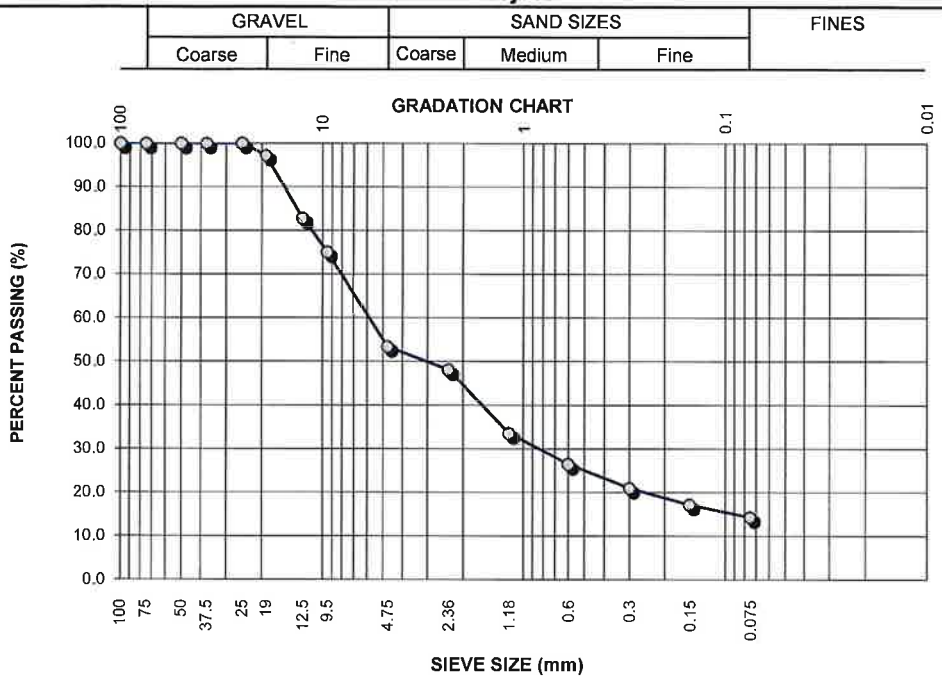
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 9-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-05

Source: G3

Depth (m): 3.9
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	97	-	
12.5	83	-	
9.5	75	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	53	-	
2.36	48	-	
1.18	34	-	
0.6	27	-	
0.3	21	-	
0.15	17	-	
0.075	14.3	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	0.09
D_{30} =	0.89
D_{60} =	6.19
D_{85} =	13.49

C_u=	#N/A
C_c=	#N/A

Gravel%	46.6
Sand%	39.1
Fines %	14.3

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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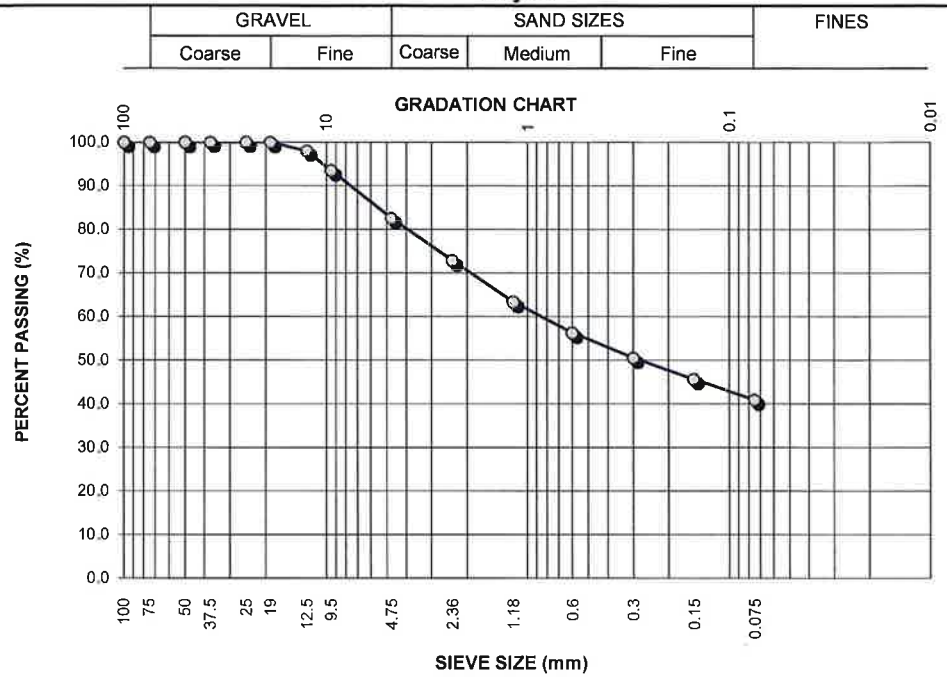
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 9-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-05

Source: G14

Depth (m): 20.3
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	98	-	
9.5	94	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	83	-	
2.36	73	-	
1.18	63	-	
0.6	56	-	
0.3	51	-	
0.15	46	-	
0.075	40.9	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	0.91
D_{85} =	5.80

C_u=	#N/A
C_c=	#N/A

Gravel%	17.4
Sand%	41.7
Fines %	40.9

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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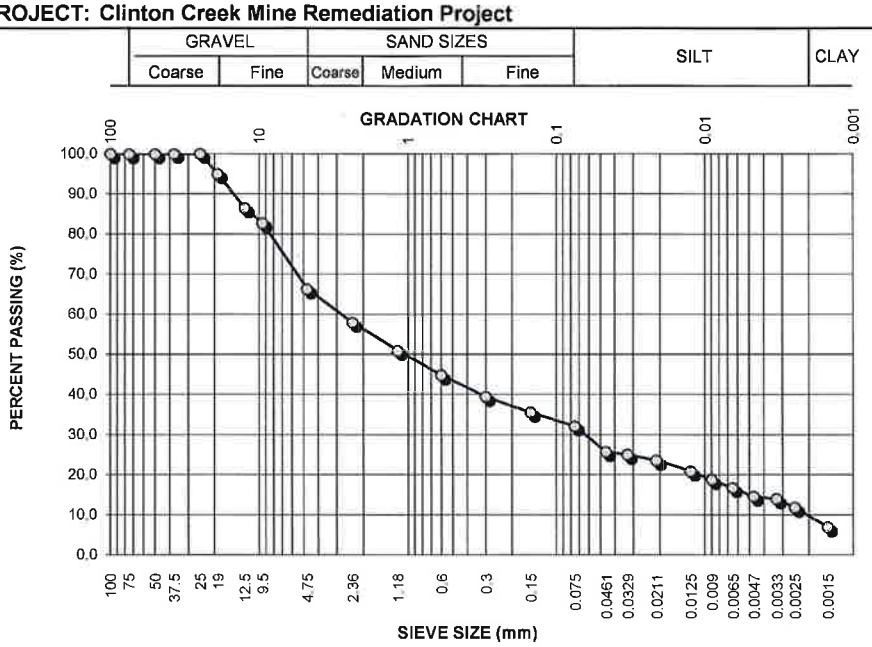
SIEVE AND HYDROMETER ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number: 2490

Date Sampled:
Date Received:
Date Tested: 9-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-05

Source: G19

Depth (m): 26.8
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	95	-	
12.5	86	-	
9.5	83	-	
4.75	66	-	
2.36	58	-	
1.18	51	-	
0.6	45	-	
0.3	39	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
0.15	35	-	
0.075	32.1	-	
0.0461	25.7	-	
0.0329	25.0	-	
0.0211	23.6	-	
0.0125	20.8	-	
0.009	18.7	-	
0.0065	16.7	-	
0.0047	14.6	-	
0.0033	13.9	-	
0.0025	11.8	-	
0.0015	6.9	-	

Natural Moisture Content = #DIV/0!

D_{10} =	0.002
D_{15} =	0.01
D_{30} =	0.07
D_{60} =	2.96
D_{85} =	11.36

C_u=	1387
C_c=	1

Gravel%	33.7
Sand%	34.2
Silt %	22.8
Clay %	9.4

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14
Materials finer than 75 µm (No. 200) sieve were tested in accordance with ASTM C117-13

Reviewed By:

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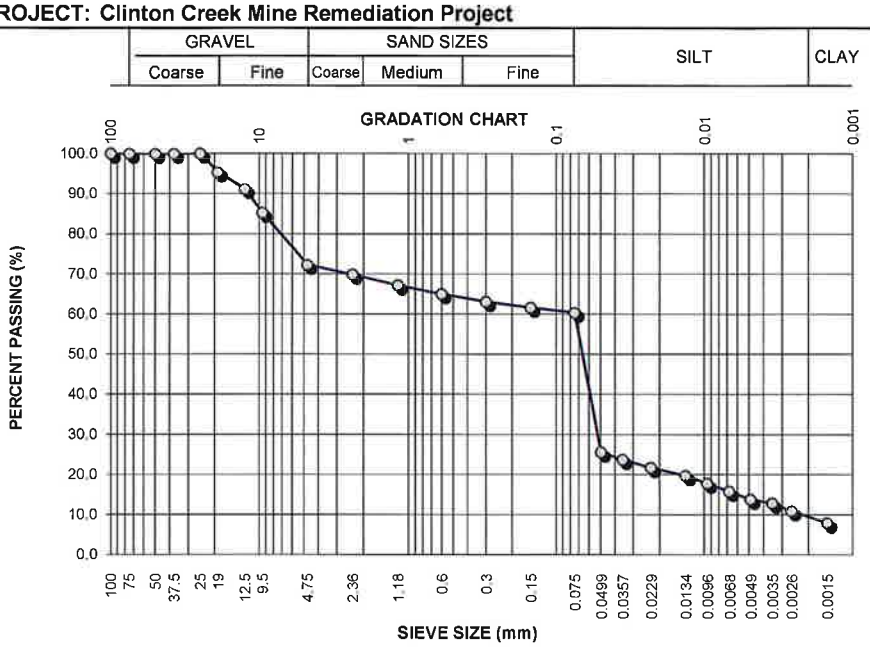
SIEVE AND HYDROMETER ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 15-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-05

Source: G23

Depth (m): 28.6
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	95	-	
12.5	91	-	
9.5	85	-	
4.75	72	-	
2.36	70	-	
1.18	67	-	
0.6	65	-	
0.3	63	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
0.15	62	-	
0.075	60.4	-	
0.0499	25.6	-	
0.0357	23.7	-	
0.0229	21.7	-	
0.0134	19.7	-	
0.0096	17.8	-	
0.0068	15.8	-	
0.0049	13.8	-	
0.0035	12.8	-	
0.0026	10.9	-	
0.0015	7.9	-	

Natural Moisture Content = #DIV/0!

D_{10} =	0.002
D_{15} =	0.01
D_{30} =	0.05
D_{60} =	0.07
D_{85} =	9.43

C_u=	33
C_c=	17

Gravel%	27.7
Sand%	11.9
Silt %	51.0
Clay %	9.4

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14
Materials finer than 75 µm (No. 200) sieve were tested in accordance with ASTM C117-13

Reviewed By:

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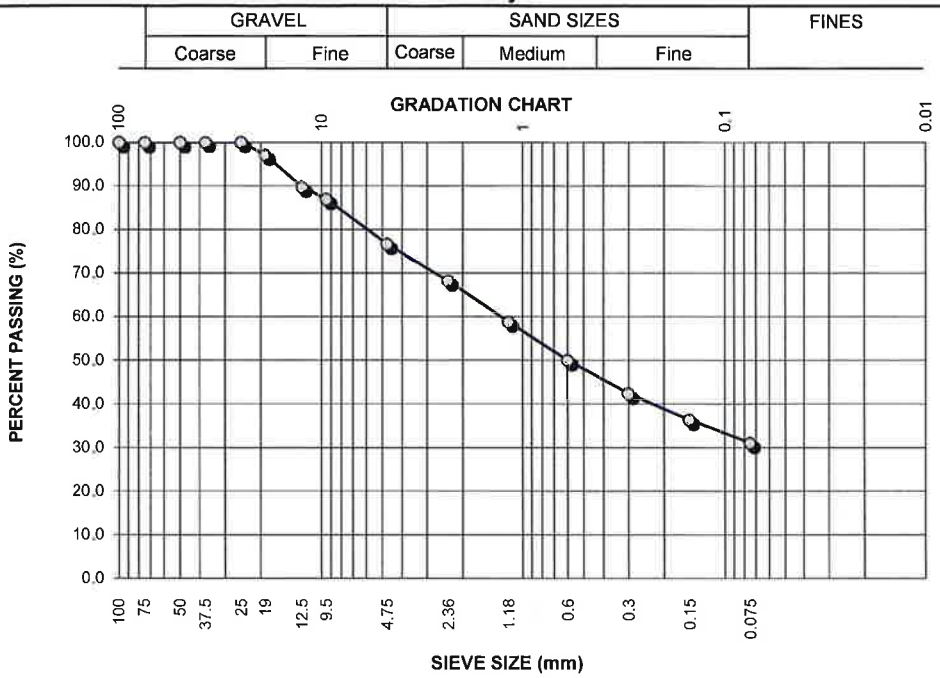
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 9-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-05

Source: G30

Depth (m): 34.1
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	97	-	
12.5	90	-	
9.5	87	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	77	-	
2.36	68	-	
1.18	59	-	
0.6	50	-	
0.3	42	-	
0.15	36	-	
0.075	31.1	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	1.33
D_{85} =	8.58

C_u=	#N/A
C_c=	#N/A

Gravel%	23.3
Sand%	45.6
Fines %	31.1

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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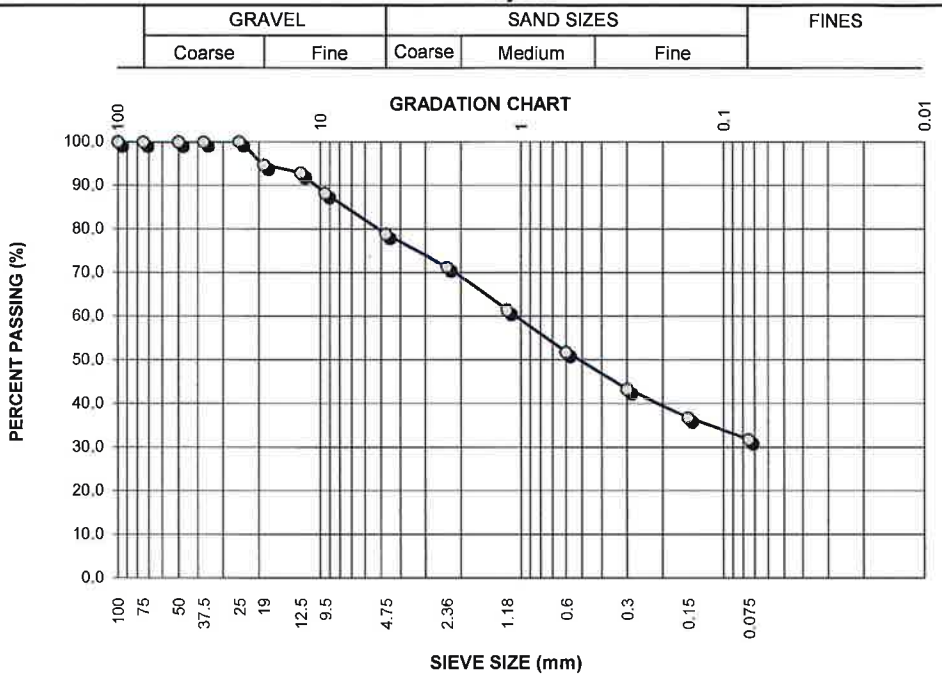
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 9-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-05

Source: G36

Depth (m): 35.9
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	95	-	
12.5	93	-	
9.5	88	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	79	-	
2.36	71	-	
1.18	61	-	
0.6	52	-	
0.3	43	-	
0.15	37	-	
0.075	31.8	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	1.10
D_{85} =	7.87

C_u=	#N/A
C_c=	#N/A

Gravel%	21.1
Sand%	47.1
Fines %	31.8

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

Reporting of these test results constitutes a testing services only. Engineering interpretation or evaluation of these test results is provided only on written request. The data presented is for the sole use of the client stipulated above.

Wood Environment & Infrastructure Solutions
Suite 600, 4445 Lougheed Highway
Burnaby, BC V5C 0E4
Tell: 604-294-3811
Fax: 604-294-4664

wood.

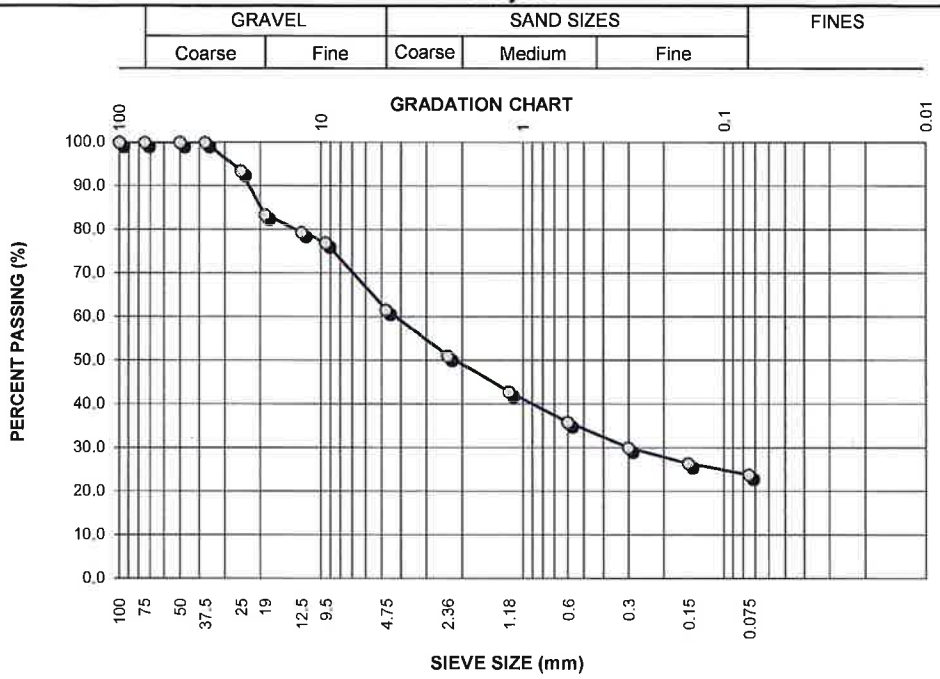
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 9-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-05

Source: G52

Depth (m): 58.8
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	93	-	
19	83	-	
12.5	79	-	
9.5	77	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	62	-	
2.36	51	-	
1.18	43	-	
0.6	36	-	
0.3	30	-	
0.15	26	-	
0.075	23.8	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	0.30
D_{60} =	4.39
D_{85} =	20.02

C_u=	#N/A
C_c=	#N/A

Gravel%	38.4
Sand%	37.8
Fines %	23.8

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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Wood Environment & Infrastructure Solutions
Suite 600, 4445 Lougheed Highway
Burnaby, BC V5C 0E4
Tell: 604-294-3811
Fax: 604-294-4664

wood.

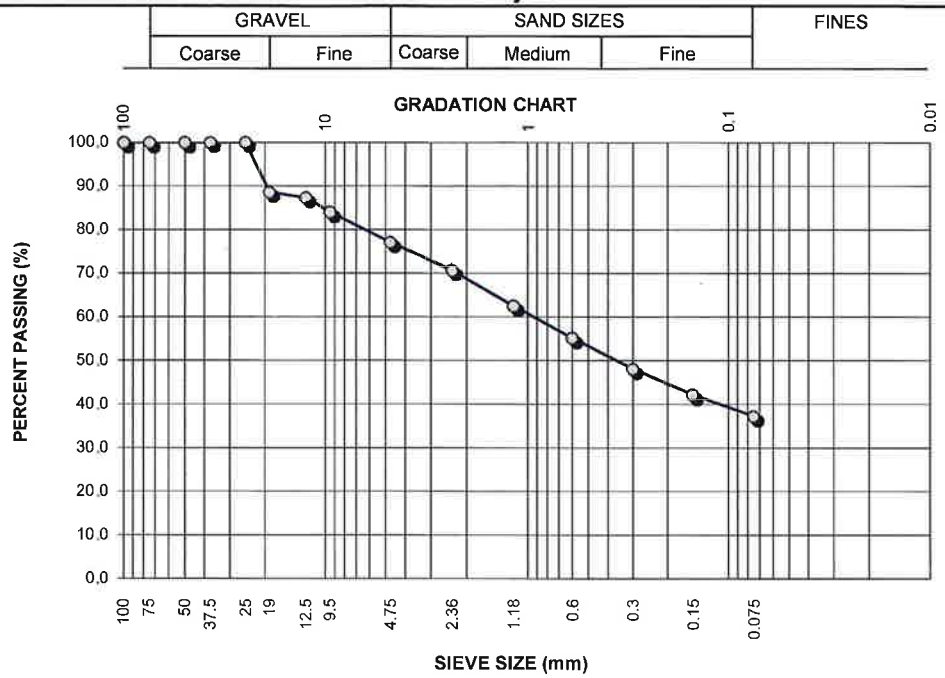
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 9-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-05

Source: G57

Depth (m): 62.8
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	89	-	
12.5	87	-	
9.5	84	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	77	-	
2.36	71	-	
1.18	63	-	
0.6	55	-	
0.3	48	-	
0.15	42	-	
0.075	37.3	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	0.98
D_{85} =	10.41

C_u=	#N/A
C_c=	#N/A

Gravel%	22.9
Sand%	39.8
Fines %	37.3

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

Reporting of these test results constitutes a testing services only. Engineering interpretation or evaluation of these test results is provided only on written request. The data presented is for the sole use of the client stipulated above.

Document No: FM-LAB-82	**Teneur en eau** **LC 21-201**	wood.
Révision No: 0		

Client: Government of the Yukon # Dossier: VE2705B

Projet: Clinton Creek 2018 Investigation # Lab:

Date:								
No Labo	2472	2473	2475	2476	2477	2478	2479	2480
Forage No:	BH18-05	BH18-05	BH18-05	BH18-05	BH18-05	BH18-05	BH18-05	BH18-05
Échantillon No:	G1	G2	G4	G5	G6	G7	G8	G9
Profondeur (m):	0,9	2,4	5,5	7,6	9,8	11,6	13,1	14,6
Teneur en eau (%)	4,4	6,1	8,0	5,0	6,8	4,6	7,4	6,3
Date:								
No Labo	2481	2482	2483	2484	2486	2487	2488	2489
Forage No:	BH18-05	BH18-05	BH18-05	BH18-05	BH18-05	BH18-05	BH18-05	BH18-05
Échantillon No:	G10	G11	G12	G13	G15	G16	G17	G18
Profondeur (m):	16,5	17,7	17,9	19,2	21,0	21,5	23,8	25,3
Teneur en eau (%)	10,0	9,4	10,3	8,2	6,3	11,8	12,4	4,2
Date:								
No Labo	2491	2492	2493	2495	2496	2497	2498	2499
Forage No:	BH18-05	BH18-05	BH18-05	BH18-05	BH18-05	BH18-05	BH18-05	BH18-05
Échantillon No:	G20	G21	G22	G24	G25	G26	G27	G28
Profondeur (m):	27,4	28	28,4	28,9	29,3	29,6	31,4	32,9
Teneur en eau (%)	9,7	21,0	15,2	14,5	14,0	16,8	4,4	7,8
Date:								
No Labo	2500	2502	2503	2504	2505	2506	2508	2509
Forage No:	BH18-05	BH18-05	BH18-05	BH18-05	BH18-05	BH18-05	BH18-05	BH18-05
Échantillon No:	G29	G31	G32	G33	G34	G35	G37	G38
Profondeur (m):	34,1	34,4	34,7	35,1	35,4	35,7	36,3	36,6
Teneur en eau (%)	16,8	17,9	16,8	11,8	10,7	11,2	5,9	12,8
Date:								
No Labo	2510	2511	2512	2513	2514	2515	2516	2517
Forage No:	BH18-05	BH18-05	BH18-05	BH18-05	BH18-05	BH18-05	BH18-05	BH18-05
Échantillon No:	G39	G40	G41	G42	G43	G44	G45	G46
Profondeur (m):	37,2	38,1	39	40,5	42,1	42,7	45,1	46,6
Teneur en eau (%)	19	10,7	11,1	8,5	8,2	6,7	11,3	6,0

Remarques:

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Document No: FM-LAB-82	**Teneur en eau** **LC 21-201**	wood.
Révision No: 0		

Client: Government of the Yukon # Dossier: VE2705B

Projet: Clinton Creek 2018 Investigation # Lab:

Date:								
No Labo	2518	2519	2520	2521	2522	2524	2525	2526
Forage No:	BH18-05	BH18-05	BH18-05	BH18-05	BH18-05	BH18-05	BH18-05	BH18-05
Échantillon No:	G47	G48	G49	G50	G51	G53	G54	G55
Profondeur (m):	48,2	49,7	52,7	55,8	57,3	60,4	61	61,6
Teneur en eau (%)	9,4	7,3	4,0	9,1	7,1	16,4	15,1	19,1
Date:								
No Labo	2527	2529	2530	2531	2532			
Forage No:	BH18-05	BH18-05	BH18-05	BH18-05	BH18-05			
Échantillon No:	G56	G58	G59	G60	G61			
Profondeur (m):	62,3	63,4	64,0	64,9	67,4			
Teneur en eau (%)	14,1	18,2	17,5	9,5	15,5			
Date:								
No Labo								
Forage No:								
Échantillon No:								
Profondeur (m):								
Teneur en eau (%)								
Date:								
No Labo								
Forage No:								
Échantillon No:								
Profondeur (m):								
Teneur en eau (%)								
Date:								
No Labo								
Forage No:								
Échantillon No:								
Profondeur (m):								
Teneur en eau (%)								

Remarques:

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BH6-32

Moisture Content Determination (ASTM D2216 - Method B)

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

wood.

Client: Yukon Govt
Project: CLINTON CREEK
Date: Aug 31, 2018
Request Number:
Project Manager:
Project Number: VE752705.100
Reviewed By:

Test Hole Number	BH18-06	BH18-06	BH18-06	BH18-06	BH18-06	BH18-06	BH18-06	BH18-06
Depth (m)	4' 1.2m	9.5' 2.8	13.5' 4.1	20.25' 6.3	24' 7.3	25' 7.6	28.5' 8.6	33.5' 10.2
Sample Number	1	2	3	4	5	6	7	8
Tare No:	A	A Bag 6	B	C	D	E	F	G
Wt. Sample Wet + Tare	441.69	548.22	328.28	401.55	365.25	371.56	357.41	351.38
Wt. Sample Dry + Tare	413.70	492.09	309.64	328.63	344.91	349.88	324.97	330.10
Wt. Water	27.99	56.13	18.64	72.92	20.34	21.68	32.44	21.28
Wt. Tare	18.30	15.88	17.89	17.66	17.68	15.61	15.64	17.01
Wt. Dry Sample	395.4	476.21	291.75	310.97	327.23	334.27	309.33	313.09
Moisture Content (%)	7.0%	11.8%	6.4%	23.4%	6.2%	6.5%	10.5%	6.8%

Test Hole Number	BH18-06	BH18-06	BH18-06	BH18-06	BH18-06	BH18-06	BH18-06	BH18-06
Depth (m)	39' 11.8	41' 12.4	43.5' 13.2	49' 14.9	54' 16.4	59' 17.9	64' 19.5	69' 21m
Sample Number	9	10	11	12	13	14	15	16
Tare No:	H	I	J	K	L	M	N	O
Wt. Sample Wet + Tare	327.25	410.30	368.58	388.16	404.01	345.98	255.19	399.74
Wt. Sample Dry + Tare	305.40	366.95	352.05	361.88	362.23	321.21	221.30	376.17
Wt. Water	21.85	43.35	16.53	26.28	41.78	24.77	33.89	23.57
Wt. Tare	15.17	17.13	17.12	14.99	17.31	15.13	17.15	17.62
Wt. Dry Sample	290.23	349.82	334.43	346.89	344.92	306.08	204.15	358.55
Moisture Content (%)	7.5%	12.4%	4.9%	7.6	12.11	8.1%	16.6%	6.6%

Test Hole Number	BH18-06	BH18-06	BH18-06	BH18-06	BH18-06	BH18-06	BH18-06	BH18-06
Depth (m)	74' 22.5	75' 22.8	84' 25.6	86.5' 26.3	89.25' 27.2	94.5' 28.8	99' 30.1	104' 31.6
Sample Number	17	18	19	20	21	22	G22A	G23
Tare No:	P	Q	R	S	T	U	A	B
Wt. Sample Wet + Tare	341.83	419.99	407.67	402.47	338.93	375.94	351.62	368.38
Wt. Sample Dry + Tare	316.43	391.10	376.09	361.72	305.18	345.27	316.74	339.80
Wt. Water	26.4	28.89	31.58	40.75	33.75	30.67	34.88	28.58
Wt. Tare	15.71	17.82	17.84	17.01	17.04	15.01	15.82	17.36
Wt. Dry Sample	300.72	373.28	358.25	344.71	288.14	330.26	300.92	322.44
Moisture Content (%)	8.4	7.7	8.8	11.8	11.7	9.3%	11.6	8.9

Test Hole Number	BH18-06	BH18-06	BH18-06	BH18-06	BH18-06	BH18-06	BH18-06	BH18-06
Depth (m)	108.5' 33	113.5' 34.5	118' 35.9	123' 37.4	128.5' 39.1	134' 40.8	140' 42.6	144' 43.8
Sample Number	G24	G25	G26	G27	G28	G29	G30	G31
Tare No:	C	D	E	F	G	H	I	J
Wt. Sample Wet + Tare	455.85	345.62	405.76	431.60	352.86	379.82	389.69	302.42
Wt. Sample Dry + Tare	409.93	319.24	365.51	395.58	318.23	345.17	356.34	282.07
Wt. Water	45.92	26.38	40.19	36.02	34.63	34.65	33.35	20.35
Wt. Tare	15.58	17.24	17.93	17.25	17.83	15.66	15.67	3.95
Wt. Dry Sample	344.35	302.0	347.64	378.33	300.4	329.51	340.67	278.12
Moisture Content (%)	11.6%	8.7%	11.6%	9.5%	11.5%	10.5%	9.8%	7.3%

Samples G22-31 late Afternoon dropoff

BH17 – 4

BH6 – 19

Moisture Content Determination (ASTM D2216 - Method B)

Wood Environment & Infrastructure Solutions

a Division of Wood Canada Limited

wood.

Client: Yukon Gov't
Project: CLINTON CREEK
Date: Sep 1, 2018

Request Number:
Project Manager:
Project Number: VE52705B
Reviewed By:

37m

Test Hole Number	BH18-17	BH18-17	BH18-17	BH18-17				
Depth (m)	121.5'	124' 37.8	126.5' 38.5	129' 39.3				
Sample Number	S-33	S-34	S 35	S-36				
Tare No:	A1	B1	C1	D1				
Wt. Sample Wet + Tare	255.68	252.18	302.01	235.98				
Wt. Sample Dry + Tare	233.32	199.89	270.16	219.08				
Wt. Water	26.56	52.29	31.85	16.90				
Wt. Tare	3.96	3.98	3.95	3.98				
Wt. Dry Sample	229.36	195.91	266.21	215.1				
Moisture Content (%)	11.6%	22.7%	11.1%	7.9%				
Test Hole Number	BH18-06	BH18-06	BH18-06	BH18-06	BH18-06	BH18-06	BH18-06	BH18-06
Depth (m)	148.5' 45.3	153' 46.6	158.25' 48.4	162' 49.4	169' 51.5	172' 52.4	174.25' 53.1	178.5' 54.4
Sample Number	G32	G33	G34	G35	G36	G37	G38	G39
Tare No:	E1	F1	G1	H1	J1	K1	L1	M1
Wt. Sample Wet + Tare	426.01	299.98	261.35	329.18	372.19	348.42	353.78	293.58
Wt. Sample Dry + Tare	382.64	282.04	186.01	304.57	306.01	322.77	269.61	278.10
Wt. Water	45.37	17.94	75.34	24.61	66.18	25.65	84.17	15.48
Wt. Tare	4.03	4.04	3.97	4.02	3.98	3.94	3.96	3.97
Wt. Dry Sample	378.61	278.0	182.04	300.55	302.09	318.83	265.65	274.13
Moisture Content (%)	11.1%	6.5%	41.4%	8.2%	21.9%	8.0%	31.7%	5.6%
Test Hole Number	BH18-06	BH18-06	BH18-06	BH18-06	BH18-06	BH18-06	BH18-06	BH18-06
Depth (m)	183.5' 55.9	189' 57.6	194' 59.1	198.75' 60.6	202.25' 61.7	203.5' 62.0	208' 63.3	212.5' 64.7
Sample Number	G40	G41	G42	G43	G44	G45	G46	G47
Tare No:	N1	O1	P1	Q1	R1	S1	T1	U1
Wt. Sample Wet + Tare	314.30	429.16	308.25	522.78	306.61	347.20	389.16	414.57
Wt. Sample Dry + Tare	288.21	405.28	283.48	463.28	248.04	322.10	364.85	360.68
Wt. Water	26.09	23.88	24.77	59.5	58.57	25.10	34.25	53.89
Wt. Tare	3.94	3.92	3.93	3.99	4.01	3.96	3.96	3.92
Wt. Dry Sample	284.27	401.36	279.55	459.29	244.03	318.14	360.99	356.76
Moisture Content (%)	9.2%	5.9%	8.8%	12.9%	24.0%	7.9%	9.5%	15.1%
Test Hole Number	BH18-06	BH18-06	BH18-06					
Depth (m)	214.25' 65.3	219' 66.8	223.5' 68.1					
Sample Number	G48	G49	G50					
Tare No:	V1	W1	X1					
Wt. Sample Wet + Tare	304.09	285.31	348.55					
Wt. Sample Dry + Tare	287.98	271.35	325.92					
Wt. Water	16.11	13.96	22.63					
Wt. Tare	3.96	3.98	3.95					
Wt. Dry Sample	284.02	267.37	321.97					
Moisture Content (%)	5.6%	5.2%	7.0%					

BH17 – 9

BH6 – 6

Moisture Content Determination (ASTM D2216 - Method B)

Wood Environment & Infrastructure Solutions

a Division of Wood Canada Limited

wood.

Client: Yukon Gov't
Project: CLINTON CREEK
Date: Sept 2, 2016

Request Number:
Project Manager:
Project Number: VE52705B
Reviewed By:

Test Hole Number	BH18-17	BH18-17	BH18-17	BH18-17	BH18-17	BH18-17	BH18-17	BH18-17
Depth (m)	131'39.9	135'41.1	139'42.4	141'42.9	145'	147'44.1	150'45.7	154'46.9
Sample Number	S-37	S-38	S-39	S-40	S-41	S-42	S-43	S-44
Tare No:	E1	F1	D1	B1	C1	GG	A1	5
Wt. Sample Wet + Tare	313.13	302.55	263.88	300.02	346.59	313.56	330.11	301.23
Wt. Sample Dry + Tare	273.29	277.93	238.51	264.72	320.26	280.89	308.31	286.79
Wt. Water	39.84	24.62	25.37	35.3	26.33	32.67	21.8	14.44
Wt. Tare	4.05	4.08	4.01	4.03	3.98	3.99	4.00	3.89
Wt. Dry Sample	269.24	273.85	234.50	260.69	316.28	276.9	304.31	282.9
Moisture Content (%)	14.8%	8.9%	10.8%	13.5%	8.3%	11.8%	7.1%	5.1%

Test Hole Number	BH18-17
Depth (m)	157'47.8
Sample Number	S-45
Tare No:	4
Wt. Sample Wet + Tare	342.17
Wt. Sample Dry + Tare	310.31
Wt. Water	31.86
Wt. Tare	3.91
Wt. Dry Sample	306.39
Moisture Content (%)	10.4%

Test Hole Number	BH18-17	BH18-06	BH18-06	BH18-06	BH18-06	BH18-06		
Depth (m)	227'69.3	234'71.3	241'73.5	244'74.3	248.75'	253.5'	75.8m	77.2m
Sample Number	G61	G52	G53	G54	G55	G56		
Tare No:	8	1	2	3	P1	R1		
Wt. Sample Wet + Tare	412.11	490.79	481.17	296.80	320.76	326.17		
Wt. Sample Dry + Tare	370.59	460.94	417.61	274.13	304.55	314.56		
Wt. Water	41.52	29.85	63.56	22.67	16.21	11.61		
Wt. Tare	3.98	3.96	3.95	3.88	3.96	4.05		
Wt. Dry Sample	366.61	456.98	413.66	270.25	300.59	310.51		
Moisture Content (%)	11.3%	6.5%	15.4%	8.4%	5.3%	3.7%		

Test Hole Number	
Depth (m)	
Sample Number	
Tare No:	No sample tested on Sept 3rd.
Wt. Sample Wet + Tare	
Wt. Sample Dry + Tare	
Wt. Water	
Wt. Tare	
Wt. Dry Sample	
Moisture Content (%)	

Wood Environment & Infrastructure Solutions
Suite 600, 4445 Lougheed Highway
Burnaby, BC V5C 0E4
Tell: 604-294-3811
Fax: 604-294-4664

wood.

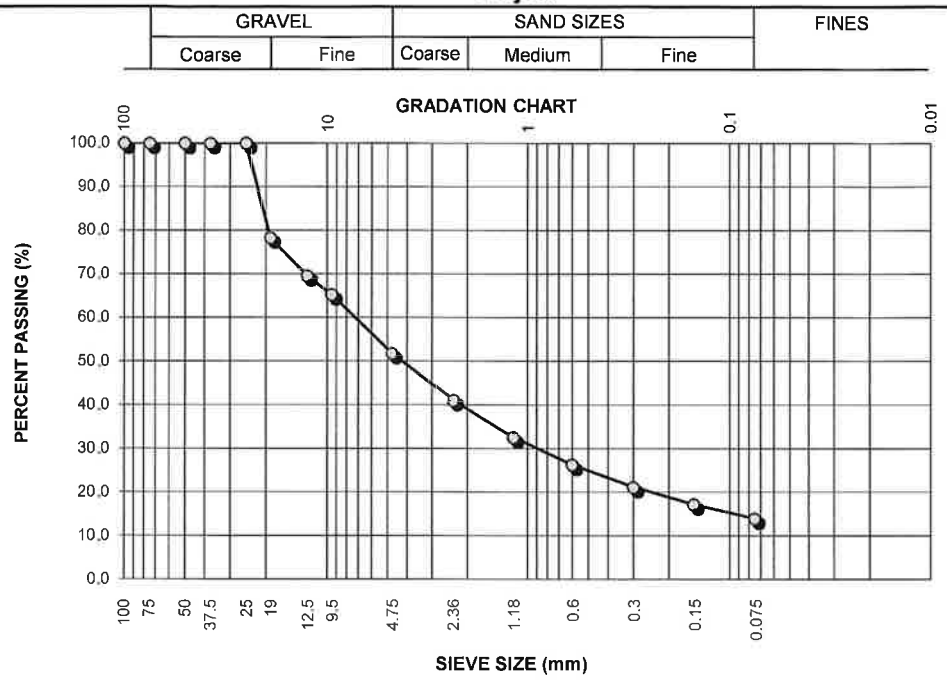
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 8-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-06

Source: G6

Depth (m): 7.6 m
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	78	-	
12.5	70	-	
9.5	65	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	52	-	
2.36	41	-	
1.18	33	-	
0.6	26	-	
0.3	21	-	
0.15	17	-	
0.075	13.9	-	

Natural Moisture Content = 5%

D_{10} =	#N/A
D_{15} =	0.10
D_{30} =	0.95
D_{60} =	7.67
D_{85} =	20.85

C_u=	#N/A
C_c=	#N/A

Gravel%	48.3
Sand%	37.8
Fines %	13.9

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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Fax: 604-294-4664

wood.

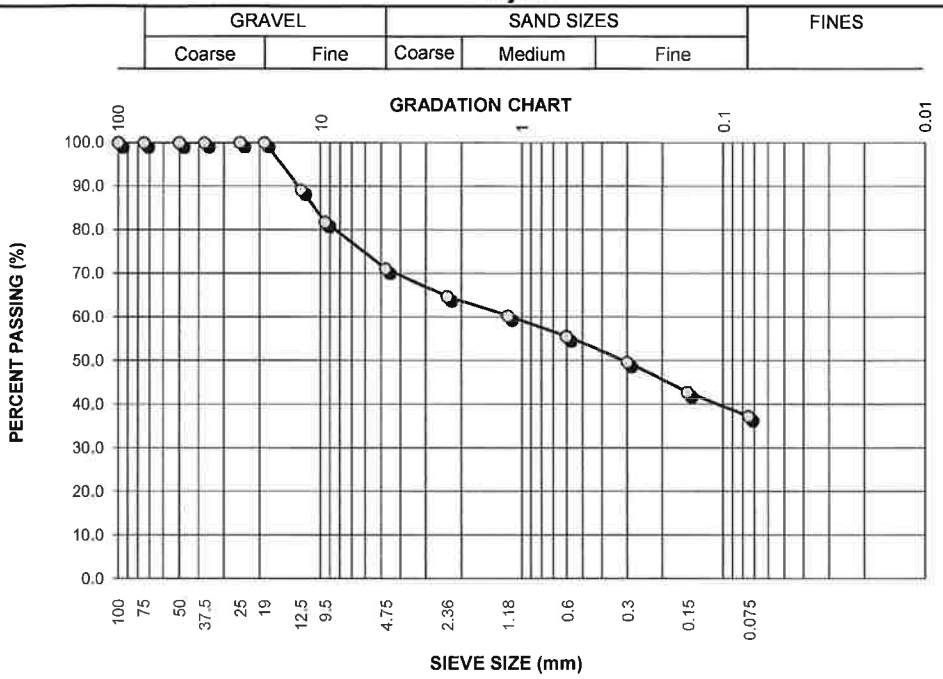
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 8-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-06

Source: G10

Depth (m): 12.4
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	89	-	
9.5	82	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	71	-	
2.36	65	-	
1.18	60	-	
0.6	56	-	
0.3	50	-	
0.15	43	-	
0.075	37.2	-	

Natural Moisture Content = 12%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	1.15
D_{85} =	10.82

C_u=	#N/A
C_c=	#N/A

Gravel%	28.9
Sand%	33.8
Fines %	37.2

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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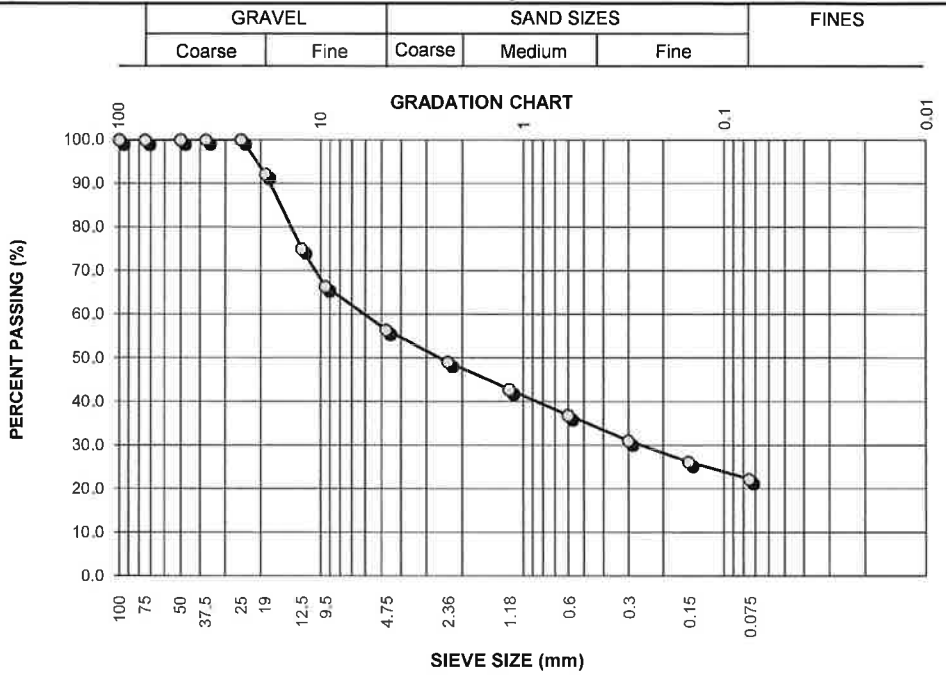
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 8-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-06

Source: G13

Depth (m): 16.4
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	92	-	
12.5	75	-	
9.5	66	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	56	-	
2.36	49	-	
1.18	43	-	
0.6	37	-	
0.3	31	-	
0.15	26	-	
0.075	22.2	-	

Natural Moisture Content = 10%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	0.27
D_{60} =	6.47
D_{85} =	16.32

C_u=	#N/A
C_c=	#N/A

Gravel%	43.6
Sand%	34.2
Fines %	22.2

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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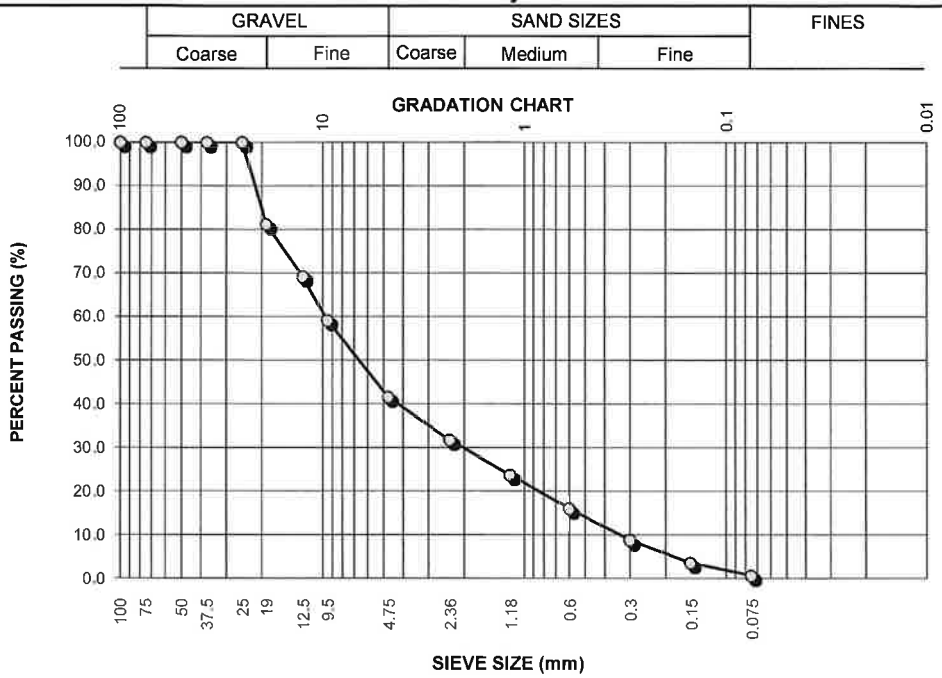
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 8-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-06

Source: G15

Depth (m): 19.5
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	81	-	
12.5	69	-	
9.5	59	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	42	-	
2.36	32	-	
1.18	24	-	
0.6	16	-	
0.3	9	-	
0.15	4	-	
0.075	0.6	-	

Natural Moisture Content = 17%

D_{10} =	0.35
D_{15} =	0.56
D_{30} =	2.11
D_{60} =	9.77
D_{85} =	20.21

C_u=	28
C_c=	1

Gravel%	58.4
Sand%	41.0
Fines %	0.6

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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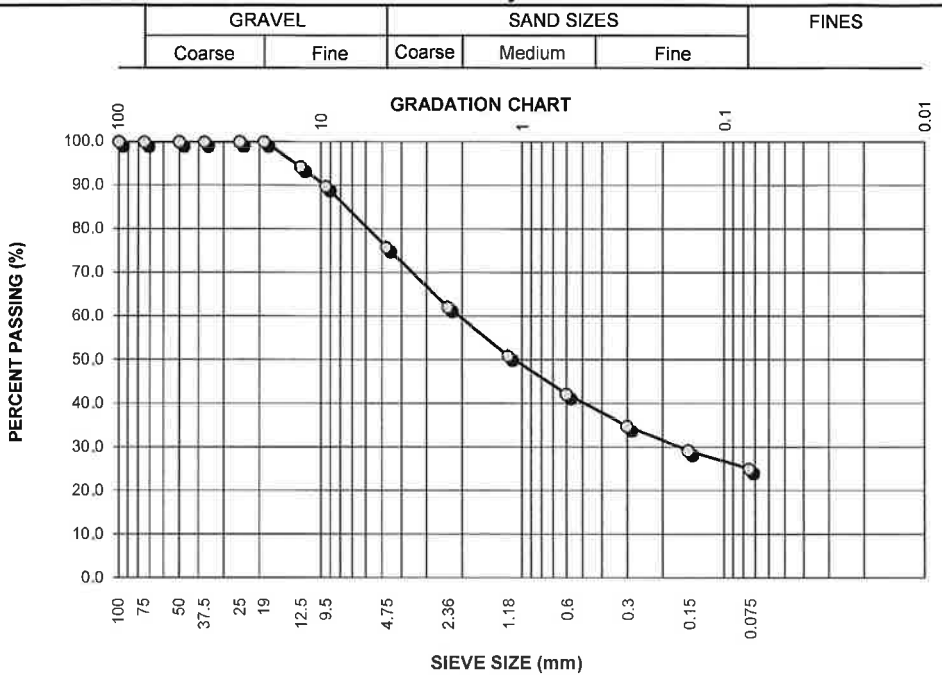
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 8-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-06

Source: G20

Depth (m): 26.3
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	94	-	
9.5	90	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	76	-	
2.36	62	-	
1.18	51	-	
0.6	42	-	
0.3	35	-	
0.15	29	-	
0.075	25.0	-	

Natural Moisture Content = 11%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	0.17
D_{60} =	2.14
D_{85} =	7.88

C_u=	#N/A
C_c=	#N/A

Gravel%	24.2
Sand%	50.8
Fines %	25.0

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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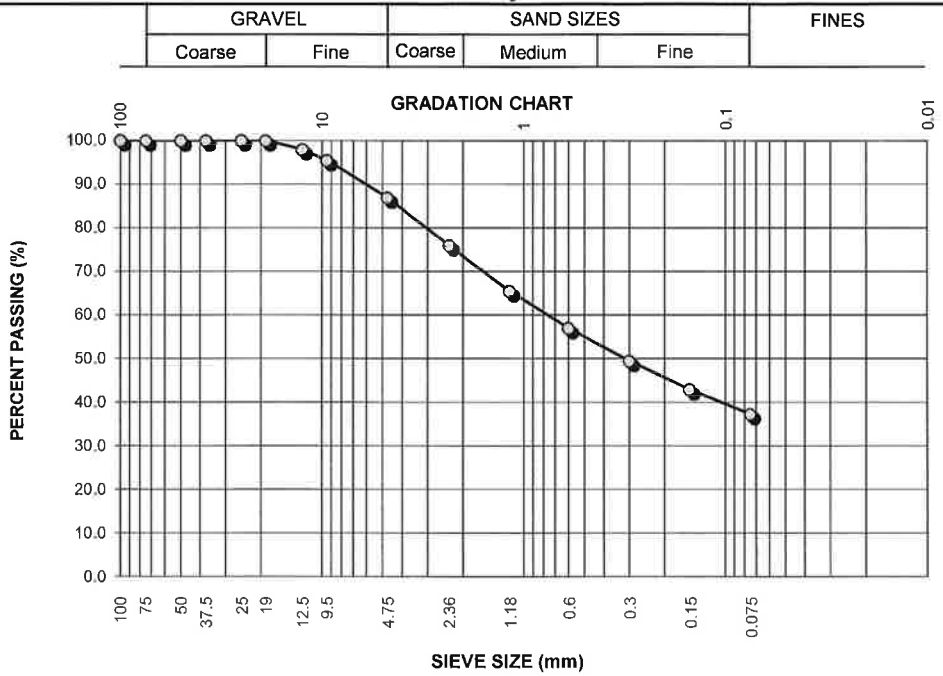
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 8-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-06

Source: G25

Depth (m): 34.5
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	98	-	
9.5	95	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	87	-	
2.36	76	-	
1.18	65	-	
0.6	57	-	
0.3	49	-	
0.15	43	-	
0.075	37.3	-	

Natural Moisture Content = 8%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	0.81
D_{85} =	4.33

C_u=	#N/A
C_c=	#N/A

Gravel%	13.1
Sand%	49.7
Fines %	37.3

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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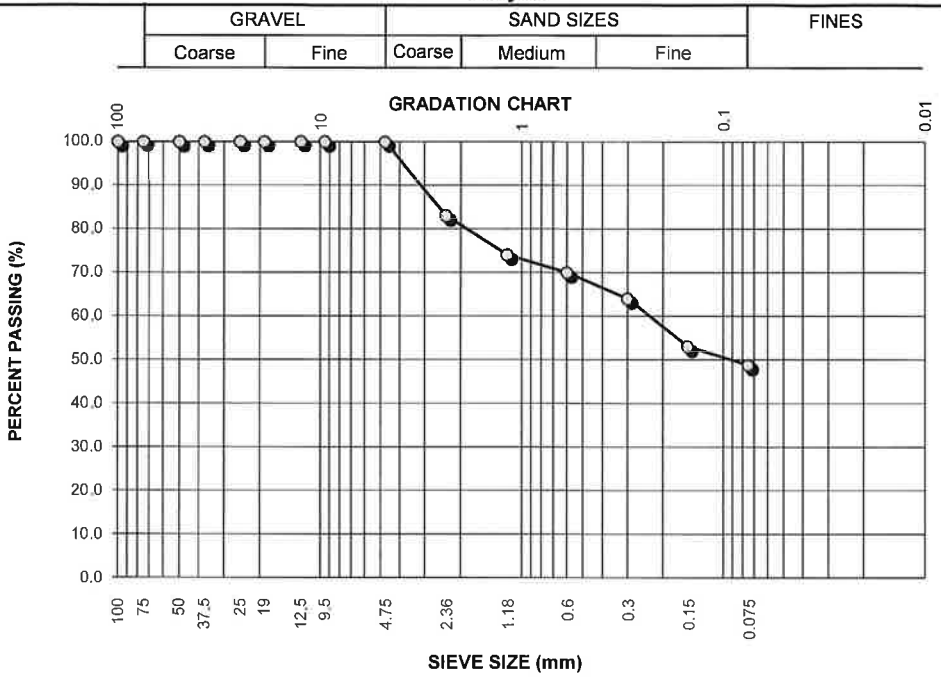
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number: 2534

Date Sampled:
Date Received:
Date Tested: 15-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-06

Source: G38

Depth (m): 53.1
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	100	-	
9.5	100	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	100	-	
2.36	83	-	
1.18	74	-	
0.6	70	-	
0.3	64	-	
0.15	53	-	
0.075	48.8	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	0.25
D_{85} =	2.64

C_u=	#N/A
C_c=	#N/A

Gravel%	0.0
Sand%	51.2
Fines %	48.8

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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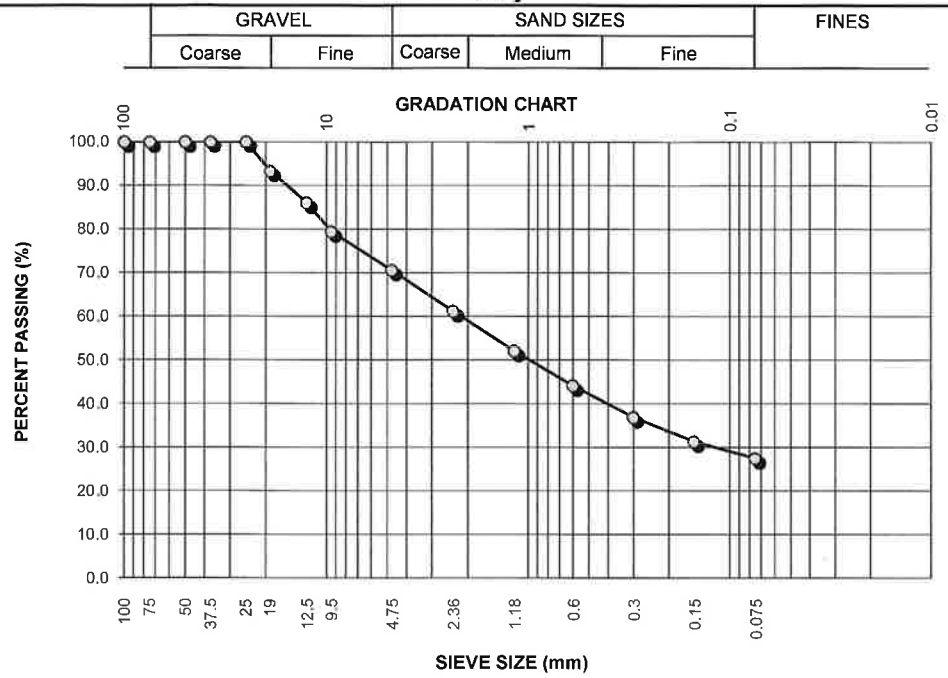
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 9-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-06

Source: G43

Depth (m): 60.6 m
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	93	-	
12.5	86	-	
9.5	79	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	71	-	
2.36	61	-	
1.18	52	-	
0.6	44	-	
0.3	37	-	
0.15	31	-	
0.075	27.5	-	

Natural Moisture Content = 11%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	0.12
D_{60} =	2.21
D_{85} =	12.07

C_u=	#N/A
C_c=	#N/A

Gravel%	29.4
Sand%	43.1
Fines %	27.5

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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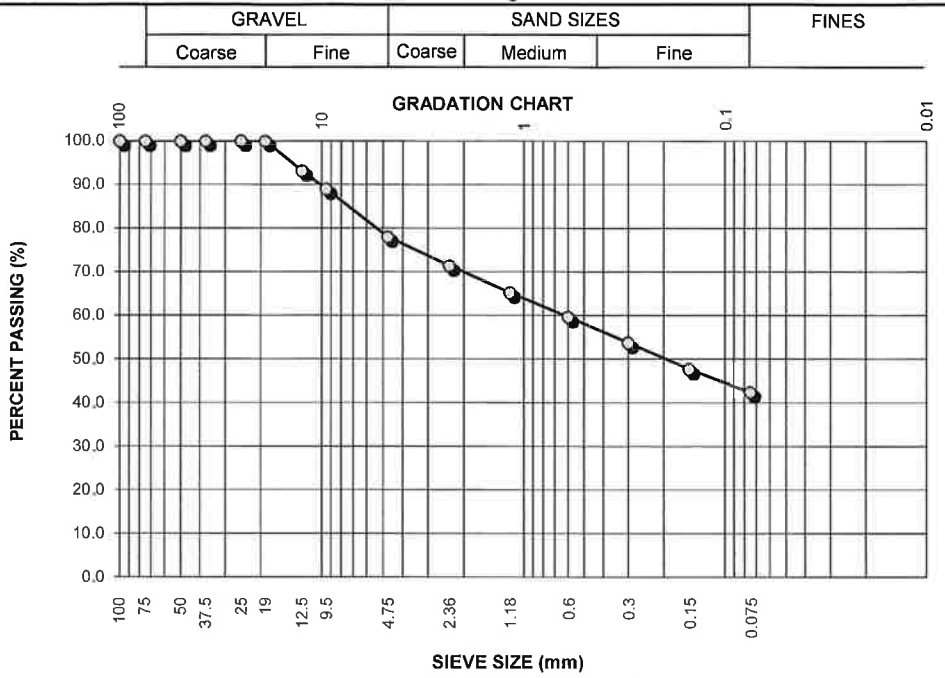
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 9-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-06

Source: G47

Depth (m): 64.8
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	93	-	
9.5	89	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	78	-	
2.36	71	-	
1.18	65	-	
0.6	60	-	
0.3	54	-	
0.15	48	-	
0.075	42.4	-	

Natural Moisture Content = 13%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	0.64
D_{85} =	7.77

C_u=	#N/A
C_c=	#N/A

Gravel%	22.0
Sand%	35.7
Fines %	42.4

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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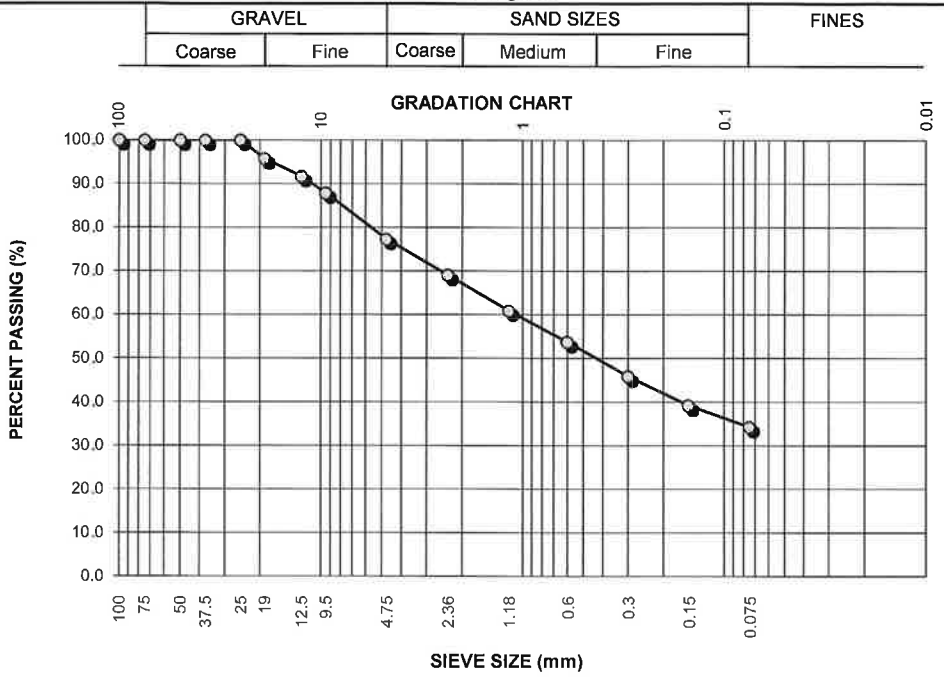
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 9-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-06

Source: G48

Depth (m): 65.3
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	96	-	
12.5	92	-	
9.5	88	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	77	-	
2.36	69	-	
1.18	61	-	
0.6	54	-	
0.3	46	-	
0.15	39	-	
0.075	34.2	-	

Natural Moisture Content = 7%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	1.11
D_{85} =	8.21

C_u=	#N/A
C_c=	#N/A

Gravel%	22.7
Sand%	43.0
Fines %	34.2

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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BH18-07 (C32)

Moisture Content Determination (ASTM D2216 - Method B)

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

wood.

Client: Vulcan Gold
Project: Clinton Creek
Date: Sep 4, 2018

Request Number:
Project Manager:
Project Number: VE52705B
Reviewed By:

Test Hole Number	BH18-07	BH18-07	BH18-07	BH18-07	BH18-07	BH18-07	BH18-07	BH18-07
Depth (m)	3' 0.9m	8.5' 2.5	14' 4.2	19' 5.7	22' 6.7	28' 8.5	33' 10m	41' 12.4
Sample Number	G1	G2	G3	G4	G5	G6	G7	G8
Tare No:	J1	G1	H1	K1	N1	L1	O1	M1
Wt. Sample Wet + Tare	393.29	219.47	258.26	276.87	434.33	389.49	324.39	417.70
Wt. Sample Dry + Tare	379.19	206.95	240.86	263.39	[illegible]	340.38	297.36	365.28
Wt. Water	14.1	12.52	17.4	13.48	36.81	49.11	27.03	52.42
Wt. Tare	3.96	4,25	4.03	3.95	3.97	3.97	3.91	3.98
Wt. Dry Sample	375.23	202.7	236.83	259.44	393.55	336.41	293.45	361.30
Moisture Content (%)	3.75%	6.1%	7.4%	5.1%	9.3%	14.5%	9.2%	14.5%

Test Hole Number	BH18-07	BH18-07	BH18-07	BH18-07	BH18-07	BH18-07	BH18-07	BH18-07
Depth (m)	48' 14.6	53' 16.1	62.5' 19	64' 19.5	69' 21	73' 22.2	78.5' 23.9	84' 25.6
Sample Number	G9	G10	G11	G12	G13	G14	G15	G16
Tare No:	1A	X12	HN29	AR	GON20	SB3	ABC-41	CC3
Wt. Sample Wet + Tare	459.72	370.29	366.25	382.44	400.36	380.83	296.58	389.62
Wt. Sample Dry + Tare	413.72	320.94	331.87	363.11	375.50	353.17	265.63	352.75
Wt. Water	46.00	49.35	34.38	19.33	24.86	27.66	30.95	36.87
Wt. Tare	17.96	18.72	17.88	17.70	16.14	16.31	17.76	15.85
Wt. Dry Sample	395.76	302.22	313.99	345.41	358.86	336.86	247.87	336.9
Moisture Content (%)	11.6%	16.3%	10.9%	5.5%	6.9%	8.2%	12.4%	10.9%

Test Hole Number	BH18-07	BH18-07	BH18-07	BH18-07	BH18-07	BH18-07	BH18-07	BH18-07
Depth (m)	86.5' 26.9	93' 28.3	99' 30.1	101.5' 30.9	109' 33.2	114' 34.7	119' 36.2	125' 38.1
Sample Number	G17	G18	G19	G20	G21	G22	G23	G24
Tare No:	R11	CC51	SB2	SAY	SV15	QT64	ST9	TANK
Wt. Sample Wet + Tare	366.67	475.99	366.65	413.45	447.96	342.69	409.84	413.48
Wt. Sample Dry + Tare	319.47	427.39	332.18	353.50	413.66	279.27	358.39	340.48
Wt. Water	47.2	48.6	34.47	59.95	34.3	63.42	51.45	73.00
Wt. Tare	18.60	18.12	15.79	15.93	17.78	18.00	18.66	18.67
Wt. Dry Sample	300.87	409.27	316.39	337.57	395.88	261.27	339.73	321.81
Moisture Content (%)	15.6%	11.8%	10.8%	17.7%	8.6%	24.2%	15.1%	22.6%

Test Hole Number	BH18-07	BH18-07	BH18-07	BH18-07	BH18-07	BH18-07	BH18-07	BH18-07
Depth (m)	129' 39.3	133.25' 40.6	135.5' 41.3	136' 41.4	140' 42.6	143.5' 43.7	148.25' 45.2	154' 46.9
Sample Number	G25	G26	G27	G28	G29	G30	G31	G32
Tare No:	15	CC2	WC1	CHEEKO	DIABLO	QP25	DHB	AH10
Wt. Sample Wet + Tare	439.79	490.85	0.678 kg	0.430	555.795	300.51	537.06	557.22
Wt. Sample Dry + Tare	376.75	408.96	0.296	0.28	491.54	276.99	494.12	471.67
Wt. Water	61.04	81.89	0.382	0.15	66.41	23.52	42.94	85.55
Wt. Tare	15.97	15.96	15.98	15.84	15.93	18.06	18.54	18.68
Wt. Dry Sample	362.78	393.00	0.28	0.264	475.61	258.93	475.58	452.99
Moisture Content (%)	16.8%	20.8%	73.3%	56.8%	13.9%	9.0%	9.0%	18.8%

Moisture Content Determination (ASTM D2216 - Method B)

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

wood.

Client: Yukon Gov't
Project: Clinton Creek Mine
Date: Sept 5, 2018

Request Number:
Project Manager:
Project Number: VE52705B
Reviewed By:

Test Hole Number	BH18-07	BH18-07	BH18-07	BH18-07				
Depth (m)	163.25'	159'	169'	174'				
Sample Number	G34	G39	G35	G36				
Tare No:	ABC	X80	DX98	CC1				
Wt. Sample Wet + Tare	465.05	381.87	592.59	496.89				
Wt. Sample Dry + Tare	420.27	302.60	534.62	487.32				
Wt. Water	44.78	79.27	57.97	9.57				
Wt. Tare	16.85	17.70	17.11	15.46				
Wt. Dry Sample	403.42	284.90	517.51	471.86				
Moisture Content (%)	11.1%	27.8%	11.2%	2.0%				
Test Hole Number								
Depth (m)								
Sample Number								
Tare No:								
Wt. Sample Wet + Tare								
Wt. Sample Dry + Tare								
Wt. Water								
Wt. Tare								
Wt. Dry Sample								
Moisture Content (%)								
Test Hole Number								
Depth (m)								
Sample Number								
Tare No:								
Wt. Sample Wet + Tare								
Wt. Sample Dry + Tare								
Wt. Water								
Wt. Tare								
Wt. Dry Sample								
Moisture Content (%)								
Test Hole Number								
Depth (m)								
Sample Number								
Tare No:								
Wt. Sample Wet + Tare								
Wt. Sample Dry + Tare								
Wt. Water								
Wt. Tare								
Wt. Dry Sample								
Moisture Content (%)								

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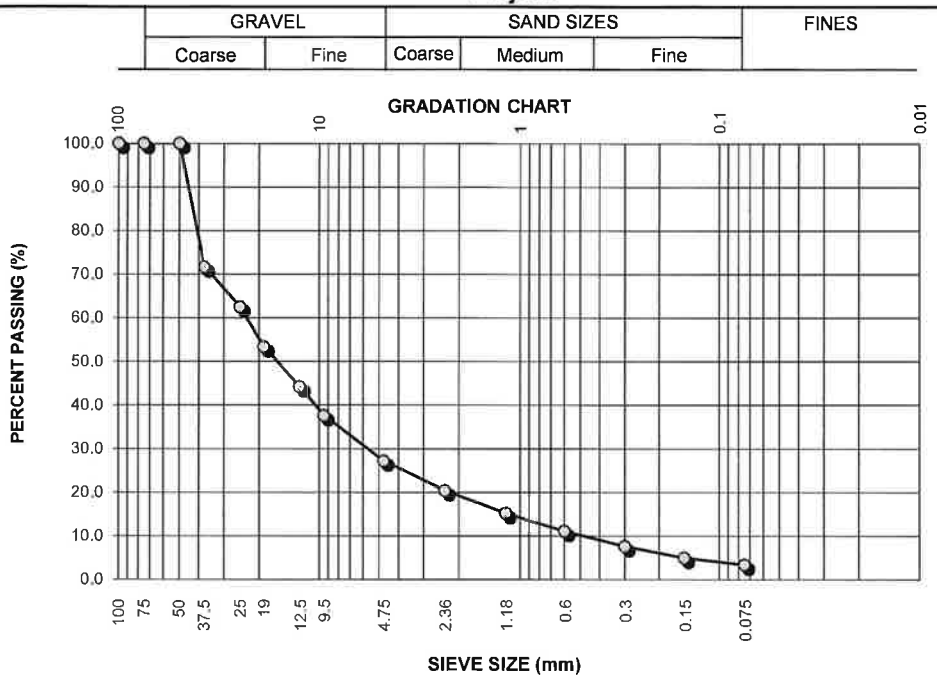
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number: 2536

Date Sampled:
Date Received:
Date Tested: 12-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-07

Source: G2

Depth (m): 2.5
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	72	-	
25	63	-	
19	53	-	
12.5	44	-	
9.5	38	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	27	-	
2.36	20	-	
1.18	15	-	
0.6	11	-	
0.3	8	-	
0.15	5	-	
0.075	3.4	-	

Natural Moisture Content = #DIV/0!

D_{10} =	0.51
D_{15} =	1.15
D_{30} =	6.03
D_{60} =	23.35
D_{85} =	43.37

C_u=	46
C_c=	3

Gravel%	72.8
Sand%	23.8
Fines %	3.4

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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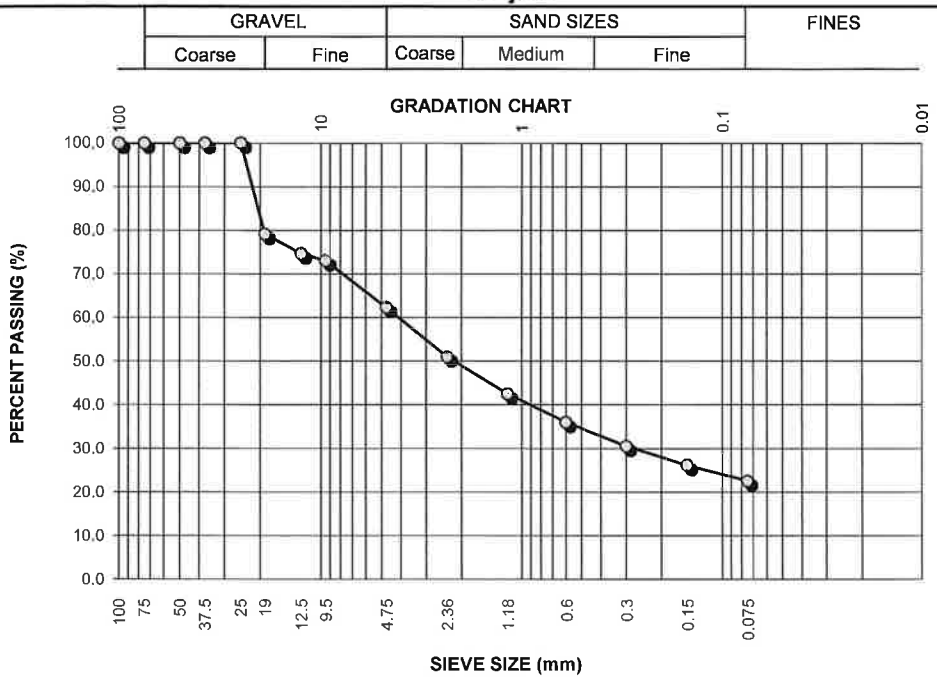
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 9-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-07

Source: G7

Depth (m): 10
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	79	-	
12.5	75	-	
9.5	73	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	62	-	
2.36	51	-	
1.18	43	-	
0.6	36	-	
0.3	31	-	
0.15	26	-	
0.075	22.5	-	

Natural Moisture Content = 8%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	0.28
D_{60} =	4.27
D_{85} =	20.68

C_u=	#N/A
C_c=	#N/A

Gravel%	37.7
Sand%	39.7
Fines %	22.5

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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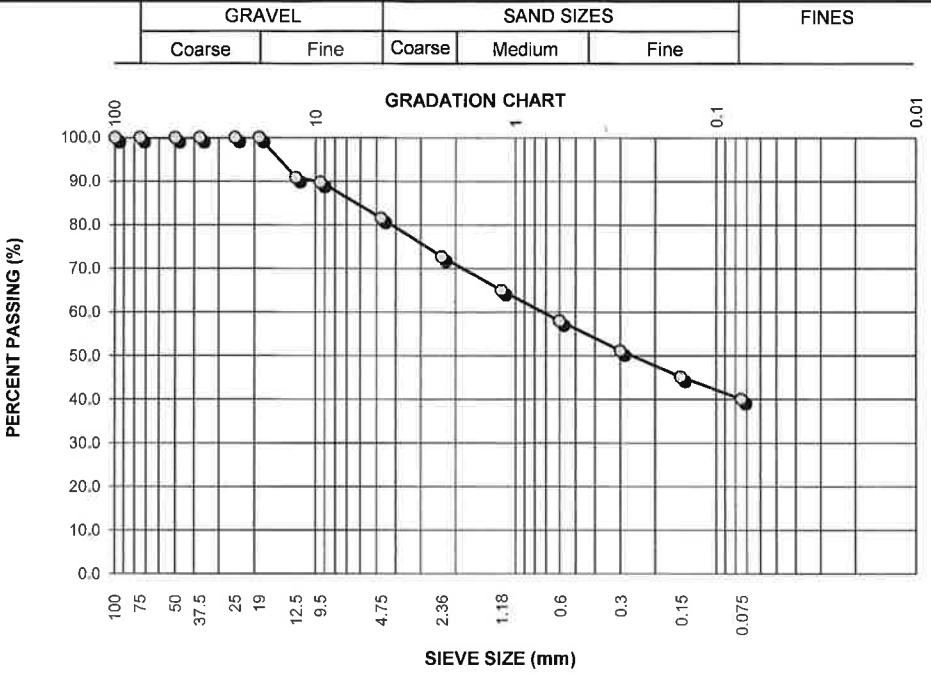
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 9-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-07

Source: G11

Depth (m): 19
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	91	-	
9.5	90	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	82	-	
2.36	73	-	
1.18	65	-	
0.6	58	-	
0.3	51	-	
0.15	45	-	
0.075	40.0	-	

Natural Moisture Content = 11%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	0.77
D_{85} =	6.73

C_u=	#N/A
C_c=	#N/A

Gravel%	18.4
Sand%	41.5
Fines %	40.0

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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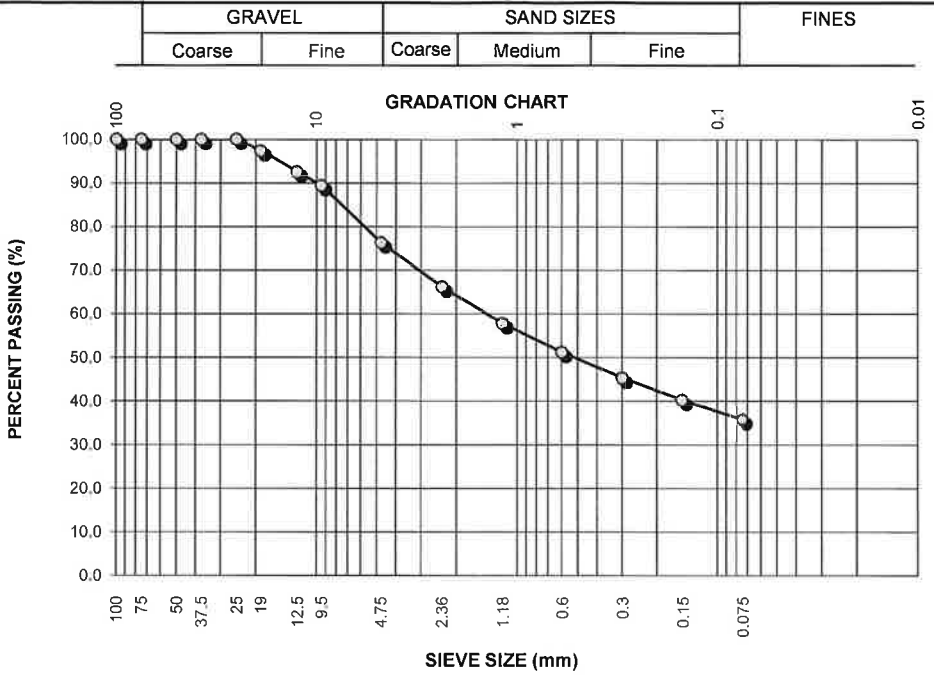
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 9-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-07

Source: G16

Depth (m): 25.6
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	97	-	
12.5	93	-	
9.5	89	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	76	-	
2.36	66	-	
1.18	58	-	
0.6	51	-	
0.3	45	-	
0.15	40	-	
0.075	35.8	-	

Natural Moisture Content = 8%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	1.50
D_{85} =	7.89

C_u=	#N/A
C_c=	#N/A

Gravel%	23.7
Sand%	40.5
Fines %	35.8

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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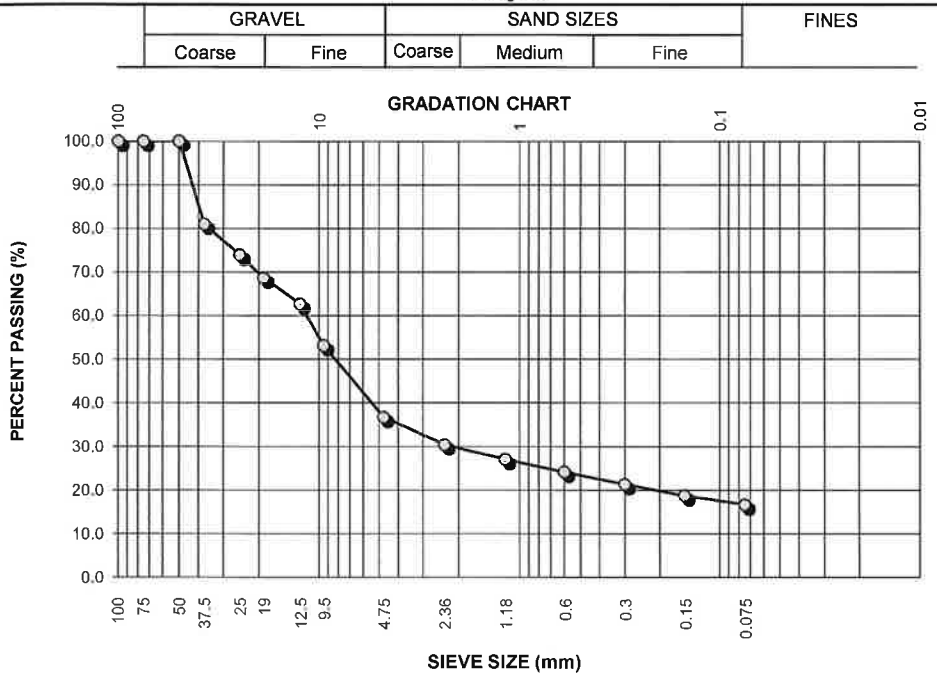
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:
PROJECT: **Clinton Creek Mine Remediation Project**



Lab Number: 2537

Date Sampled:
Date Received:
Date Tested: 12-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-07

Source: G22

Depth (m): 34.7
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	81	-	
25	74	-	
19	69	-	
12.5	63	-	
9.5	53	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	37	-	
2.36	30	-	
1.18	27	-	
0.6	24	-	
0.3	21	-	
0.15	19	-	
0.075	16.7	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	2.22
D_{60} =	11.68
D_{85} =	40.13

C_u=	#N/A
C_c=	#N/A

Gravel%	63.3
Sand%	20.0
Fines %	16.7

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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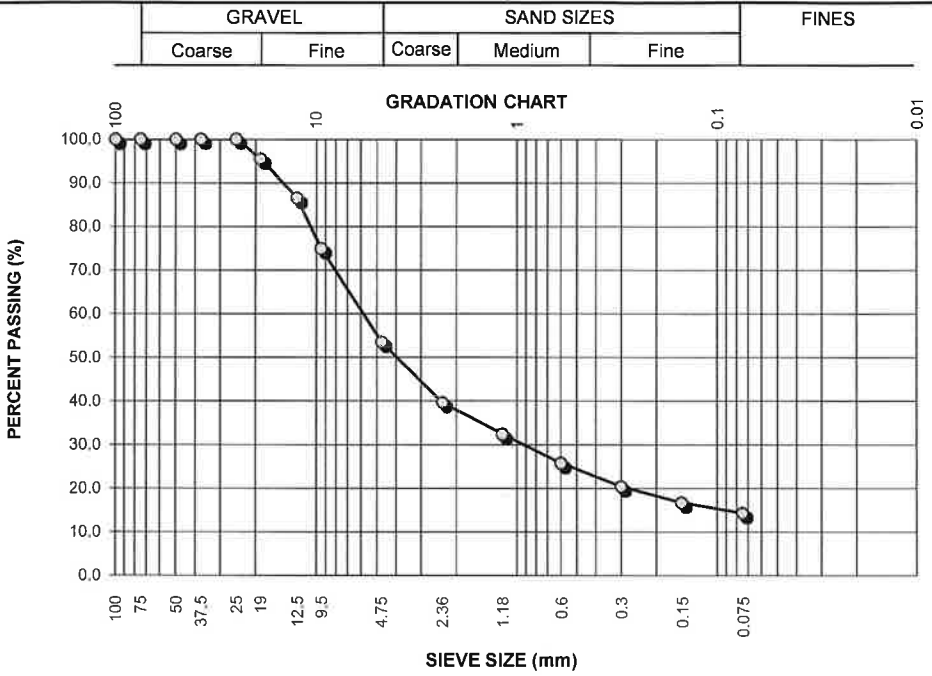
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:
PROJECT: Clinton Creek Mine Remediation Project



Lab Number: 2538

Date Sampled:
Date Received:
Date Tested: 12-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-07

Source: G24

Depth (m): 38.1
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	96	-	
12.5	87	-	
9.5	75	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	54	-	
2.36	40	-	
1.18	32	-	
0.6	26	-	
0.3	20	-	
0.15	17	-	
0.075	14.3	-	

Natural Moisture Content =

D_{10} =	#N/A
D_{15} =	0.10
D_{30} =	0.97
D_{60} =	6.19
D_{85} =	12.11

C_u=	#N/A
C_c=	#N/A

Gravel%	46.5
Sand%	39.2
Fines %	14.3

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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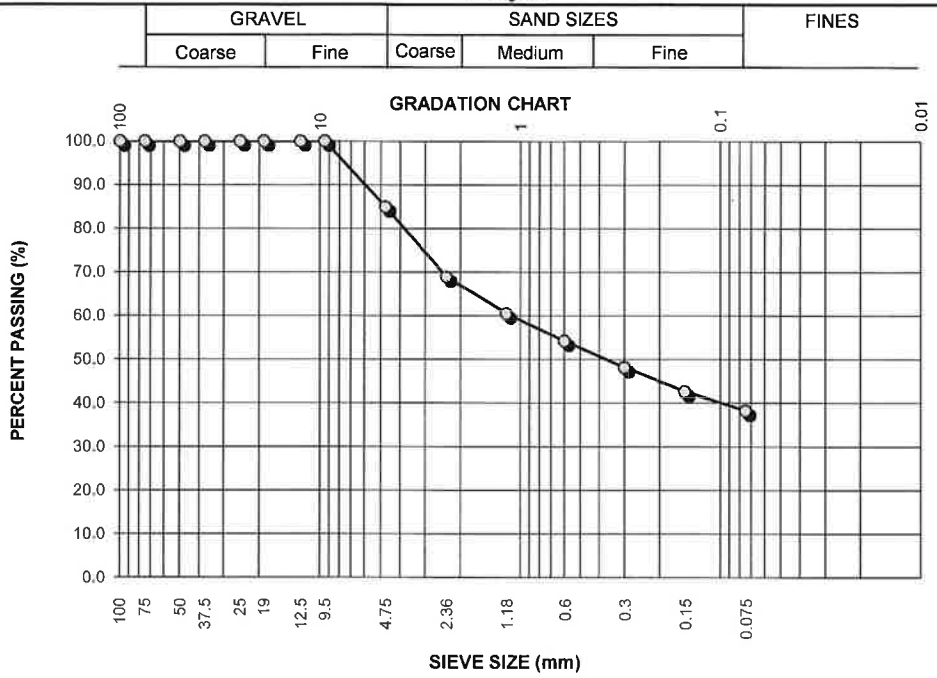
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 9-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-07

Source: G27

Depth (m): 41.3
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	100	-	
9.5	100	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	85	-	
2.36	69	-	
1.18	61	-	
0.6	54	-	
0.3	48	-	
0.15	43	-	
0.075	38.3	-	

Natural Moisture Content = 60%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	1.13
D_{85} =	4.75

C_u=	#N/A
C_c=	#N/A

Gravel%	15.0
Sand%	46.7
Fines %	38.3

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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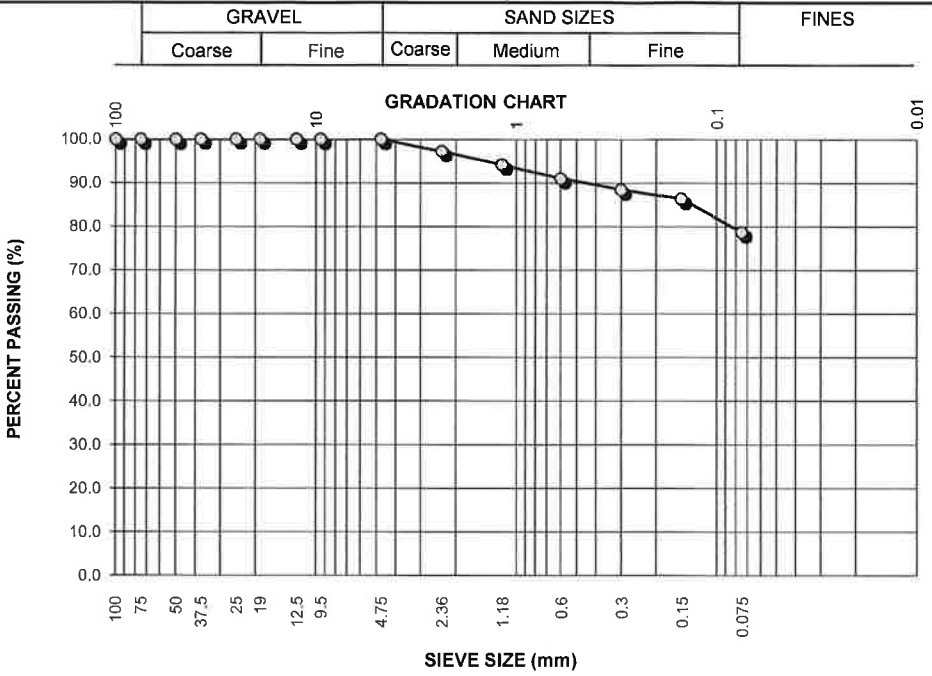
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 9-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-07

Source: G28

Depth (m): 41.4
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	100	-	
9.5	100	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	100	-	
2.36	97	-	
1.18	94	-	
0.6	91	-	
0.3	89	-	
0.15	86	-	
0.075	78.7	-	

Natural Moisture Content = 35%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	#N/A
D_{85} =	0.14

C_u=	#N/A
C_c=	#N/A

Gravel%	0.0
Sand%	21.3
Fines %	78.7

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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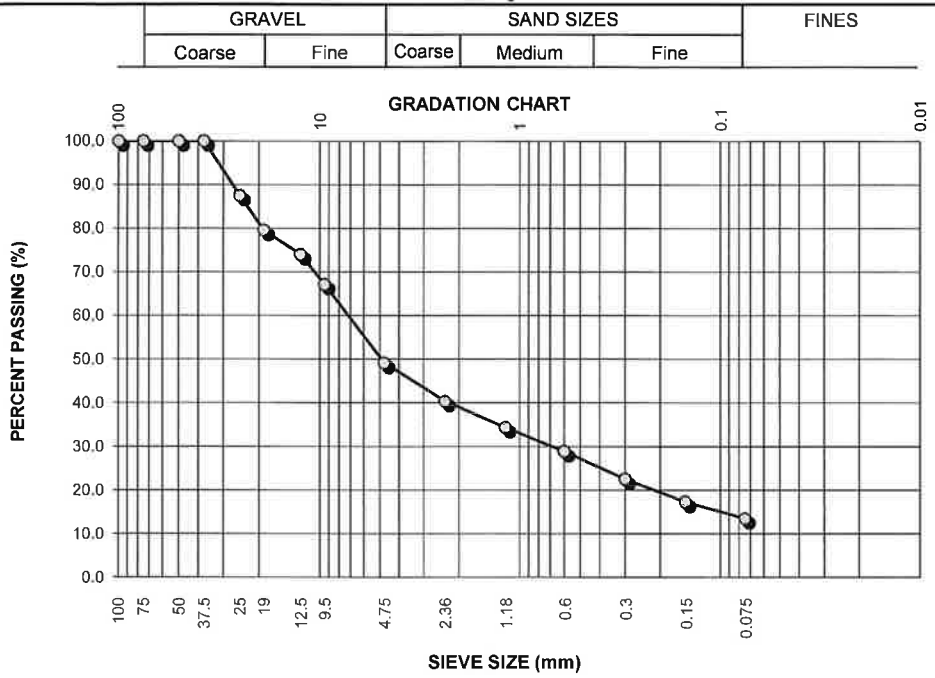
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 12-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-07

Source: G30

Depth (m): 43.7
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	88	-	
19	80	-	
12.5	74	-	
9.5	67	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	49	-	
2.36	40	-	
1.18	34	-	
0.6	29	-	
0.3	23	-	
0.15	17	-	
0.075	13.5	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	0.10
D_{30} =	0.73
D_{60} =	7.63
D_{85} =	23.10

C_u=	#N/A
C_c=	#N/A

Gravel%	50.9
Sand%	35.6
Fines %	13.5

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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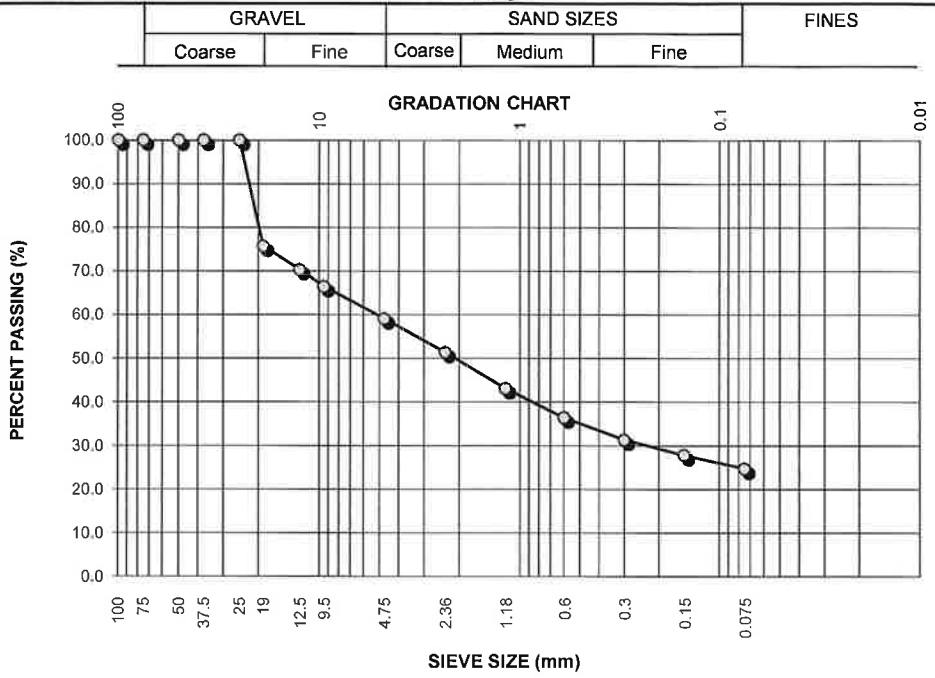
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 9-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-07

Source: G31

Depth (m): 45.1
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	76	-	
12.5	70	-	
9.5	66	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	59	-	
2.36	51	-	
1.18	43	-	
0.6	36	-	
0.3	31	-	
0.15	28	-	
0.075	24.8	-	

Natural Moisture Content = 9%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	0.24
D_{60} =	5.30
D_{85} =	21.29

C_u=	#N/A
C_c=	#N/A

Gravel%	40.9
Sand%	34.4
Fines %	24.8

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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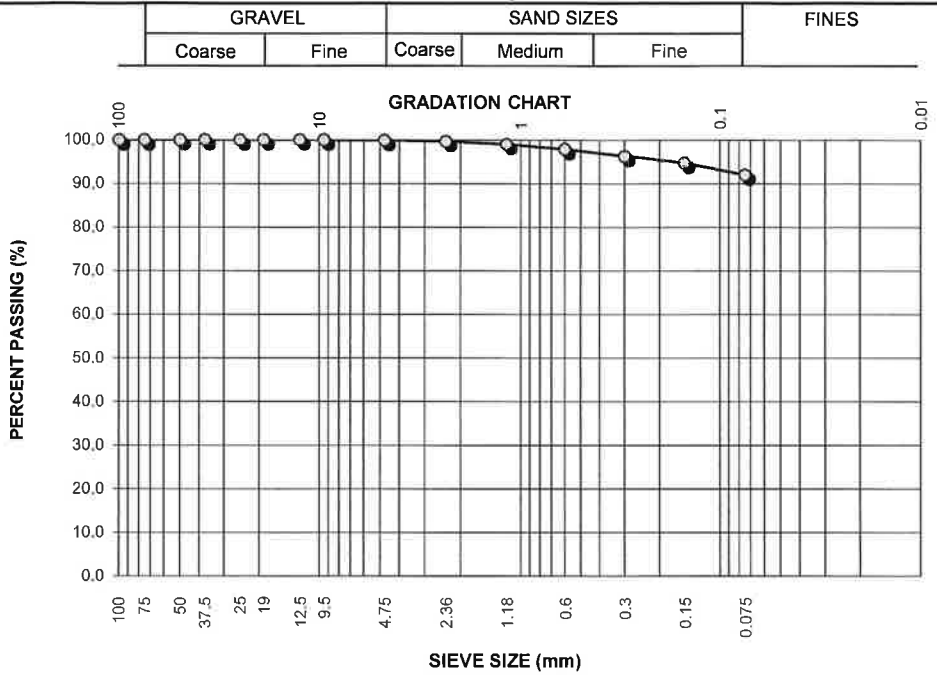
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 9-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-07

Source: G33

Depth (m): 48.5
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	100	-	
9.5	100	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	100	-	
2.36	100	-	
1.18	99	-	
0.6	98	-	
0.3	96	-	
0.15	95	-	
0.075	92.0	-	

Natural Moisture Content = 28%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	#N/A
D_{85} =	#N/A

C_u=	#N/A
C_c=	#N/A

Gravel%	0.1
Sand%	7.9
Fines %	92.0

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

Reporting of these test results constitutes a testing services only. Engineering interpretation or evaluation of these test results is provided only on written request.
The data presented is for the sole use of the client stipulated above.

Moisture Content Determination (ASTM D2216 - Method B)

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

wood.

Client: YUKON GOVT
Project: CLINTON CREEK
Date: Sept 8/18

Request Number:
Project Manager:
Project Number: VE52705B
Reviewed By:

Test Hole Number	BH18-08	BH18-08	BH18-08	BH18-08	BH18-08			
Depth (m)	0.1m	0.2m	0.4m	1.1m	1.3m			
Sample Number	TP-S1	TP-S2	TP-S3	TP-S4	TP-S5			
Tare No:	CC1	SAY	87	SY15	Super Mari			
Wt. Sample Wet + Tare	320.51	178.16	289.84	344.73	294.38			
Wt. Sample Dry + Tare	282.44	126.98	268.76	307.13	265.64			
Wt. Water	38.07	51.18	21.08	37.60	28.74			
Wt. Tare	15.82	15.87	17.35	17.73	16.02			
Wt. Dry Sample	266.62	111.11	251.41	289.40	249.62			
Moisture Content (%)	14.3%	46.0%	8.4%	13.0%	11.5%			

Test Hole Number								
Depth (m)								
Sample Number								
Tare No:								
Wt. Sample Wet + Tare								
Wt. Sample Dry + Tare								
Wt. Water								
Wt. Tare								
Wt. Dry Sample								
Moisture Content (%)								

Test Hole Number								
Depth (m)								
Sample Number								
Tare No:								
Wt. Sample Wet + Tare								
Wt. Sample Dry + Tare								
Wt. Water								
Wt. Tare								
Wt. Dry Sample								
Moisture Content (%)								

Test Hole Number								
Depth (m)								
Sample Number								
Tare No:								
Wt. Sample Wet + Tare								
Wt. Sample Dry + Tare								
Wt. Water								
Wt. Tare								
Wt. Dry Sample								
Moisture Content (%)								

Moisture Content Determination (ASTM D2216 - Method B)

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

wood.

Client: YUKON GOVT
Project: Clinton Creek
Date: Aug 21/18

Request Number:
Project Manager:
Project Number: VE 52705
Reviewed By:

Test Hole Number	BH9	BH9	BH9	BH9	BH9	BH9	BH9	BH9
Depth (m)	0-1.8m	1.8-4.9	4.9-6.4	6.4-7.6	7.6-7.9	7.9-10.9	10.9-14.0	14.0-15.1
Sample Number	G1	G2	G3	G4	G5	G6	G7	G8
Tare No:	CC29	Diablo	ST71	Dx98	x80	CF6	SB3	CC1
Wt. Sample Wet + Tare	418.93	430.03	362.45	457.03	321.14	416.90	392.20	338.63
Wt. Sample Dry + Tare	405.15	411.46	340.89	421.21	304.83	389.87	366.79	302.07
Wt. Water	13.78	18.57	21.56	35.82	16.31	27.03	25.41	36.56
Wt. Tare	17.47	15.24	17.30	17.14	17.80	17.34	15.93	15.75
Wt. Dry Sample	387.68	396.22	323.03	404.07	287.03	372.53	350.86	286.32
Moisture Content (%)	3.5%	4.8%	6.8%	8.9%	5.7%	4.6%	7.2%	12.8%

Test Hole Number	BH9	BH9	BH9	BH9	BH9	BH9	BH9	BH9
Depth (m)	15.1-16.8	16.8-19.8	19.8-20.1	20.1-23.2	23.2-26.2	26.2-27.7	27.7-29.3	29.3-32.3
Sample Number	G9	G10	G11	G12	G13	G14	G15	G16
Tare No:	GONZO	CHEEKO	ABC	QP25	SB2	CC51	X1	HN29
Wt. Sample Wet + Tare	421.84	350.60	472.42	470.80	312.68	384.83	442.40	365.58
Wt. Sample Dry + Tare	405.11	342.88	451.13	437.28	282.37	349.62	415.27	337.79
Wt. Water	16.73	7.72	21.29	33.52	30.31	35.21	27.13	27.79
Wt. Tare	15.54	15.45	17.10	17.91	15.81	18.27	18.69	17.99
Wt. Dry Sample	389.57	327.43	434.03	419.37	266.56	331.40	396.58	319.8
Moisture Content (%)	4.3%	2.4%	4.9%	8.0%	11.4%	10.6%	6.9%	8.7%

Test Hole Number	BH9	BH9	BH9	BH9	BH9	BH9	BH9	BH9
Depth (m)	32.3-33.5	33.5-35.4	35.4-38.4	38.4-39.6	39.6-41.2	41.2-43	43-44.3	44.3-45.1
Sample Number	G17	G18	G19	G20	G21	G22	G23	G24
Tare No:	QT64	WC1	X1	CC51	HN29	QT64	SB2	WC1
Wt. Sample Wet + Tare	314.01	370.45	381.75	317.95	309.80	412.53	413.50	352.10
Wt. Sample Dry + Tare	278.03	346.32	347.72	297.78	292.61	383.84	380.45	306.78
Wt. Water	35.98	24.13	34.03	20.17	17.19	28.69	33.05	45.32
Wt. Tare	18.43	16.00	17.61	17.33	16.99	17.30	14.96	15.08
Wt. Dry Sample	259.60	330.32	330.11	280.45	275.62	366.54	365.49	291.7
Moisture Content (%)	13.9%	7.3%	10.3%	7.2%	6.2%	7.8%	9.0%	15.5%

Test Hole Number	BH9	BH9	BH9					
Depth (m)	45.1-47.5							
Sample Number	G25							
Tare No:	CHEEKO							
Wt. Sample Wet + Tare	273.52							
Wt. Sample Dry + Tare	251.13							
Wt. Water	22.39							
Wt. Tare	16.14							
Wt. Dry Sample	234.99							
Moisture Content (%)	9.5%							

BH9 B- BH9 G24B-G25-B(D)

Moisture Content Determination (ASTM D2216 - Method B)

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

wood.

Client: YUKON GOVT
Project: CLINTON CREEK
Date: Aug 24/18

Request Number:
Project Manager:
Project Number: VE52705
Reviewed By:

Test Hole Number	BH9	BH9	BH9	BH9	BH9	BH9	BH9	BH9
Depth (m)	50.5-52.1	52.1-53.6	53.6-59.1	59.1-59.4	59.4-59.7	61.2-61.4	62.2-62.5	63.1-63.4
Sample Number	G26	G27	G28	G29	G30	G31	G32	G33
Tare No:	CC29	ST71	CC2	Diablo	WU. TANG	D&B	LS	AR
Wt. Sample Wet + Tare	314.31	332.49	315.56	311.38	363.07	248.94	379.71	258.56
Wt. Sample Dry + Tare	284.23	308.71	278.57	271.29	317.80	189.08	358.05	226.89
Wt. Water	30.08	23.78	36.99	40.09	45.27	59.86	21.66	31.67
Wt. Tare	18.34	18.31	16.45	16.20	16.59	DHB Aug	18.34	18.10
Wt. Dry Sample	265.89	290.4	262.12	255.09	301.21	170.07	339.71	208.79*
Moisture Content (%)	11.3%	8.2%	14.1%	15.7%	15.0%	35.2%	6.4%	15.2%

Test Hole Number	BH9	BH9	BH9	BH9	BH9			
Depth (m)	63.4-63.7	63.7-66.4	66.4-66.8	710-713	70.1-70.4			
Sample Number	G34	G35	G36	G37	G38			
Tare No:	SAY	CC3	ST9	SB1	ABC-4			
Wt. Sample Wet + Tare	344.58	317.40	462.49	264.44	356.94			
Wt. Sample Dry + Tare	321.60	293.72	409.77	237.07	333.39			
Wt. Water	22.98	23.68	52.72	27.37	23.55			
Wt. Tare	15.53	15.33	17.01	15.80	17.70			
Wt. Dry Sample	306.07	298.39	392.76	221.27	315.69			
Moisture Content (%)	7.5%	7.9%	13.4%	12.4%	7.5%			

Test Hole Number								
Depth (m)								
Sample Number								
Tare No:								
Wt. Sample Wet + Tare								
Wt. Sample Dry + Tare								
Wt. Water								
Wt. Tare								
Wt. Dry Sample								
Moisture Content (%)								

Test Hole Number	BH9	BH9						
Depth (m)	44.5-45.1	45.4-50.5						
Sample Number	G24-B	G25-B						
Tare No:	Batman	SY15						
Wt. Sample Wet + Tare	373.61	486.61						
Wt. Sample Dry + Tare	218.12	440.11						
Wt Water	155.49							
Wt Tare	16.31	18.34						
Wt. Dry Sample								
Moisture Content (%)								

Moisture Content Determination (ASTM D2216 - Method B)

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

wood.

Client: Yukon Gov't
Project: Clinton Creek
Date: Aug 28/18

Request Number:
Project Manager:
Project Number: VE75205.100
Reviewed By:

Test Hole Number	BH18-9	BH18-9	BH18-9	BH18-9	BH18-9	BH18-9		
Depth (m)	[illegible]	128'-133' 39m-40.5m	195-196' 59	104-105' 31m	138.25'	1141 34.7m		
Sample Number	G27	G28	G30	G32	G35	G31		
Tare No:	[illegible]	[illegible]	[illegible]	362.24	[illegible]	E6		
Wt. Sample Wet + Tare	364.72	482.77	386.45	367.31	386.03	388.46		
Wt. Sample Dry + Tare	280.21	382.16	293.14	279.98	298.27	315.43		
Wt. Water	34.51	50.61	43.31	67.33	27.76	23.03		
Wt. Tare	15.36	15.41	15.64	17.25	17.79	15.84		
Wt. Dry Sample	264.85	366.75	267.5	262.28	280.48	299.59		
Moisture Content (%)	13.0	13.79	16.19	25.67	9.89	7.68		
Test Hole Number	BH18-10	BH18-10	BH18-10	BH18-10	BH18-10	BH18-10	BH18-10	BH18-10
Depth (m)	99' 30.2	103' 31.3	109' 33.2	134' 41'	41' 124'	237.10	14,5' 4.4m	12,5' 3.81
Sample Number	G20	G21	G23	G24	G26	G5	G3	G2
Tare No:	[illegible]	8	9	10	[illegible]	12	13	14
Wt. Sample Wet + Tare	468.49	334.86	584.71	475.08	367.07	228.56	377.50	459.84
Wt Sample Dry + Tare	386.61	262.12	520.00	431.11	345.99	184.25	365.50	425.20
Wt. Water	81.88	72.74	64.77	43.97	21.08	44.31	12.0	34.69
Wt. Tare	17.53	17.53	15.62	15.62	17.41	15.65	17.61	17.56
Wt. Dry Sample	369.08	244.59	504.38	415.49	328.56	168.60	347.89	407.64
Moisture Content (%)	22.18	29.73	12.84	10.58	3.37	26.2	3.44	8.50
Test Hole Number	BH18-10	BH18-10	BH18-10	BH18-10	BH18-10	BH18-10	BH18-10	BH18-10
Depth (m)	5' 1.5	119' 36.3	128' 38.1	79' 24.0	95' 28.9	89' 27.1	105' 32	84' 25.6
Sample Number	G1	G25	G27	G16	G19	G18	G22	G17
Tare No:	15	16	17	18	19	20	21	22
Wt. Sample Wet + Tare	415.45	486.49	348.82	434.27	466.71	581.18	427.27	520.15
Wt. Sample Dry + Tare	382.41	465.62	325.96	394.25	399.51	523.64	383.14	437.84
Wt. Water	32.54	20.87	22.86	40.02	67.2	57.54	94.23	82.21
Wt. Tare	17.31	18.21	17.58	17.36	17.39	18.04	15.66	15.97
Wt. Dry Sample	365.10	447.41	308.38	376.89	382.12	505.6	317.36	421.97
Moisture Content (%)	8.90	4.66	7.4	10.6	17.58	11.3	29.68	19.4
Test Hole Number	BH18-10	BH18-10	BH18-10	BH18-10	BH18-10			
Depth (m)	44' 13.4	39' 11.8	53.5' 16.3	49' 14.9	69' 21.9			
Sample Number	G9	G8	G11	G10	G12			
Tare No:	23	24	25	26	27			
Wt. Sample Wet + Tare	413.07	362.55	559.54	415.21	336.68			
Wt. Sample Dry + Tare	401.55	339.00	470.96	374.73	311.60			
Wt Water	12.52	23.55	88.58	40.48	25.08			
Wt Tare	17.48	15.59	16.20	18.15	15.68			
Wt. Dry Sample	383.07	323.41	452.76	356.58	295.92			
Moisture Content (%)	3.26	7.28	19.56	11.3	8.47			

Wood Environment & Infrastructure Solutions
Suite 600, 4445 Lougheed Highway
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Tell: 604-294-3811
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wood.

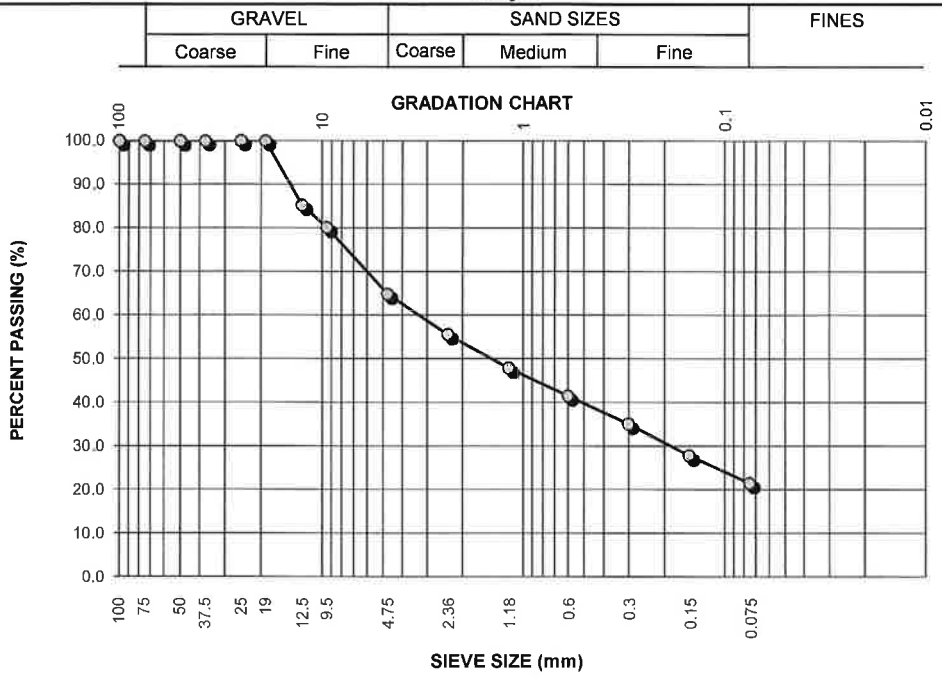
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number: 2541

Date Sampled:
Date Received:
Date Tested: 15-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-09

Source: G4

Depth (m): 6.4
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	85	-	
9.5	80	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	65	-	
2.36	56	-	
1.18	48	-	
0.6	42	-	
0.3	35	-	
0.15	28	-	
0.075	21.5	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	0.20
D_{60} =	3.50
D_{85} =	12.44

C_u=	#N/A
C_c=	#N/A

Gravel%	35.1
Sand%	43.4
Fines %	21.5

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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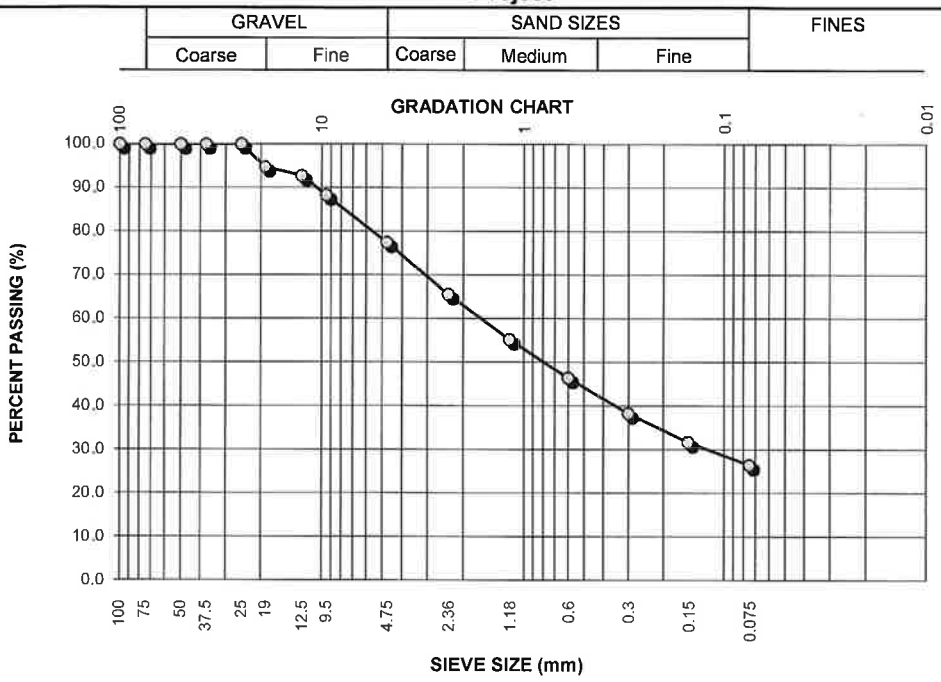
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 15-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-09

Source: G6

Depth (m): 7.9
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	95	-	
12.5	93	-	
9.5	88	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	77	-	
2.36	66	-	
1.18	55	-	
0.6	46	-	
0.3	38	-	
0.15	32	-	
0.075	26.5	-	

Natural Moisture Content = 9%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	0.13
D_{60} =	1.73
D_{85} =	8.07

C_u=	#N/A
C_c=	#N/A

Gravel%	22.5
Sand%	51.0
Fines %	26.5

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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Fax: 604-294-4664

wood.

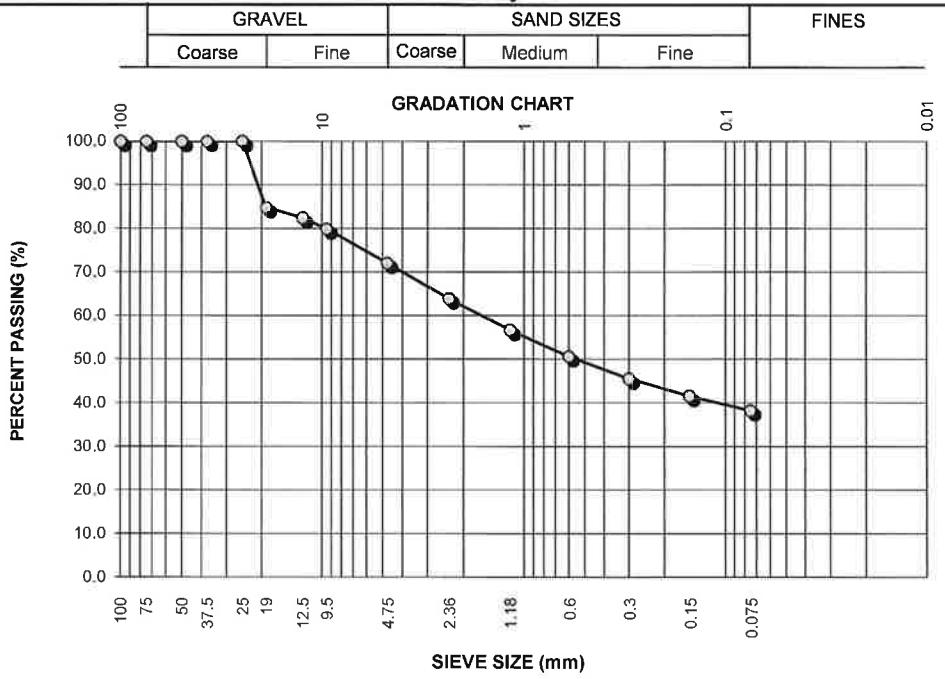
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 15-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-09

Source: G8

Depth (m): 14.6
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	85	-	
12.5	82	-	
9.5	80	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	72	-	
2.36	64	-	
1.18	57	-	
0.6	51	-	
0.3	46	-	
0.15	42	-	
0.075	38.3	-	

Natural Moisture Content = 11%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	1.72
D_{85} =	19.07

C_u=	#N/A
C_c=	#N/A

Gravel%	27.9
Sand%	33.8
Fines %	38.3

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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Fax: 604-294-4664

wood.

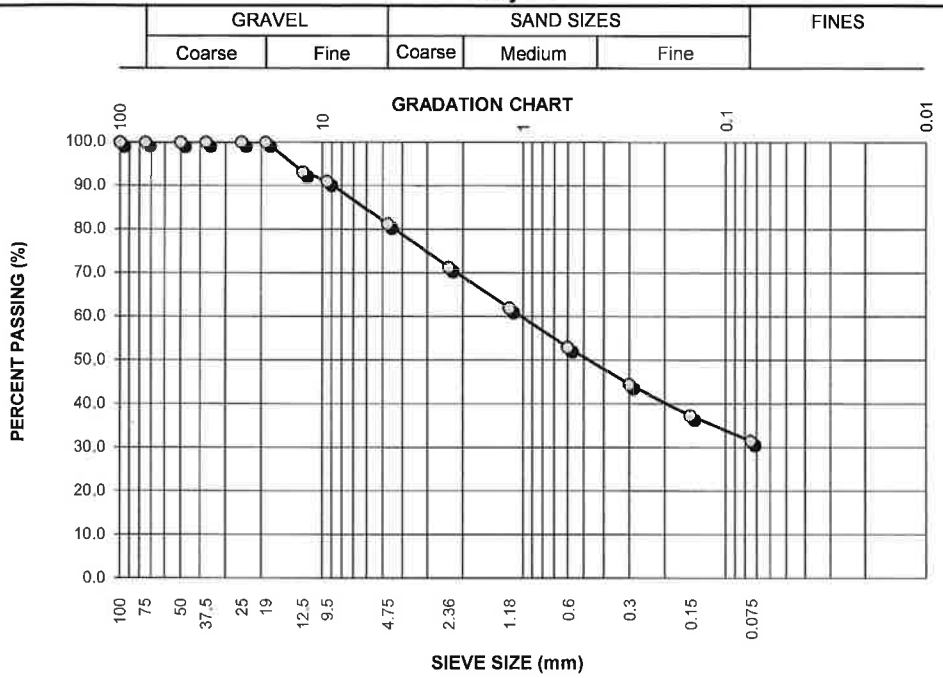
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 15-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-09

Source: G12

Depth (m): 20.1
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	93	-	
9.5	91	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	81	-	
2.36	71	-	
1.18	62	-	
0.6	53	-	
0.3	44	-	
0.15	37	-	
0.075	31.5	-	

Natural Moisture Content = 7%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	1.06
D_{85} =	6.58

C_u=	#N/A
C_c=	#N/A

Gravel%	18.8
Sand%	49.7
Fines %	31.5

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

Reporting of these test results constitutes a testing services only. Engineering interpretation or evaluation of these test results is provided only on written request.
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Burnaby, BC V5C 0E4
Tell: 604-294-3811
Fax: 604-294-4664

wood.

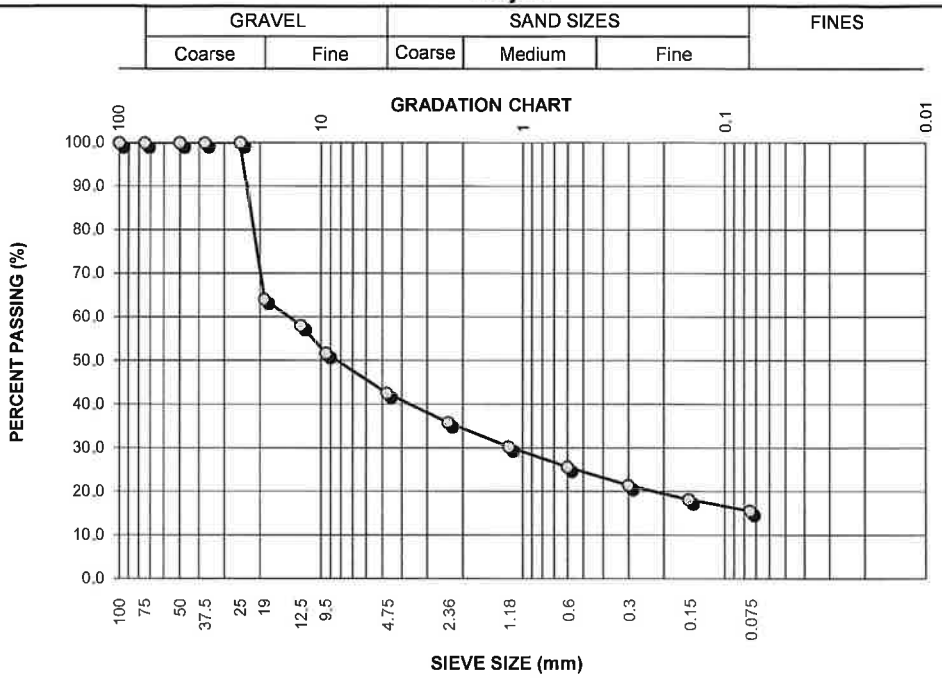
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 15-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-09

Source: G19

Depth (m): 35.4
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	64	-	
12.5	58	-	
9.5	52	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	43	-	
2.36	36	-	
1.18	30	-	
0.6	26	-	
0.3	21	-	
0.15	18	-	
0.075	15.6	-	

Natural Moisture Content = 8%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	1.14
D_{60} =	14.62
D_{85} =	22.50

C_u=	#N/A
C_c=	#N/A

Gravel%	57.4
Sand%	27.0
Fines %	15.6

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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The data presented is for the sole use of the client stipulated above.

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Suite 600, 4445 Lougheed Highway
Burnaby, BC V5C 0E4
Tell: 604-294-3811
Fax: 604-294-4664

wood.

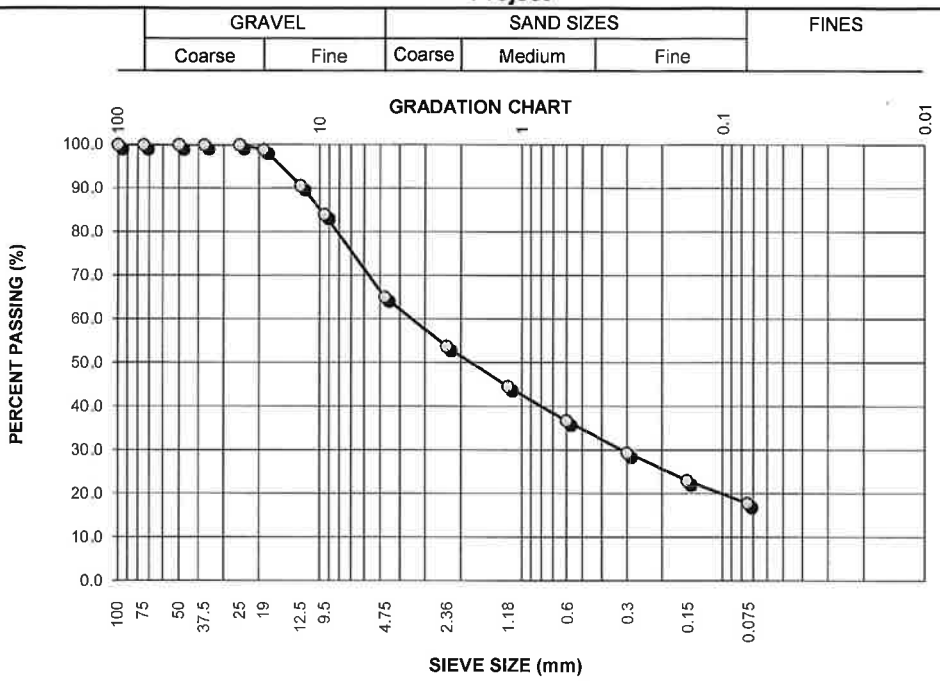
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number: 2540

Date Sampled:
Date Received:
Date Tested: 12-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-09

Source: G22

Depth (m): 41.8
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	99	-	
12.5	91	-	
9.5	84	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	65	-	
2.36	54	-	
1.18	45	-	
0.6	37	-	
0.3	29	-	
0.15	23	-	
0.075	17.8	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	0.32
D_{60} =	3.68
D_{85} =	9.95

C_u=	#N/A
C_c=	#N/A

Gravel%	34.9
Sand%	47.3
Fines %	17.8

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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b

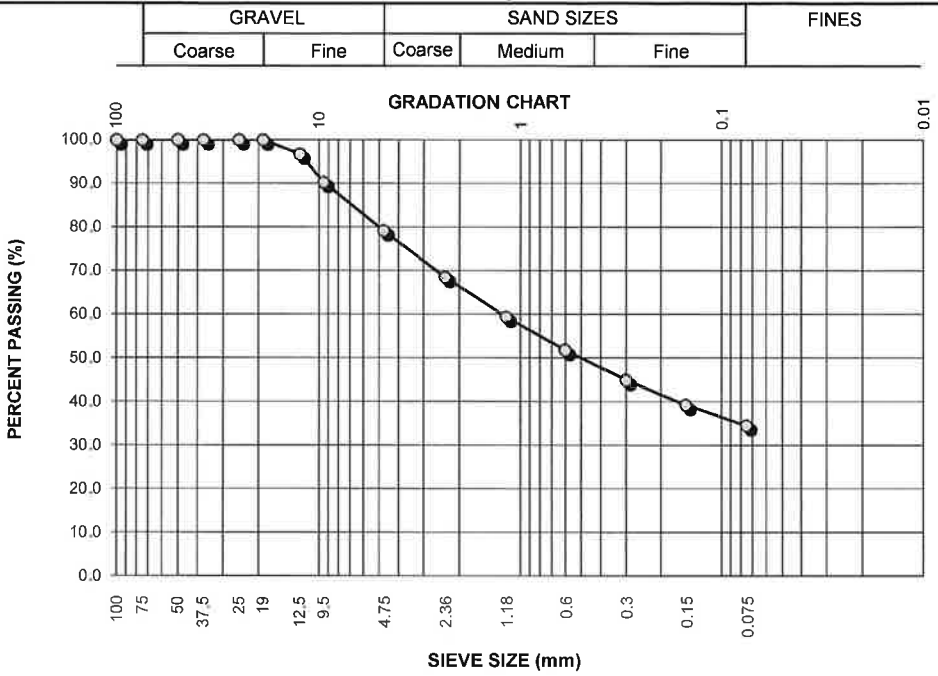
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 15-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-09

Source: G28

Depth (m): 53.2
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	97	-	
9.5	90	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	79	-	
2.36	68	-	
1.18	59	-	
0.6	52	-	
0.3	45	-	
0.15	39	-	
0.075	34.5	-	

Natural Moisture Content = 12%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	1.27
D_{85} =	7.25

C_u=	#N/A
C_c=	#N/A

Gravel%	20.8
Sand%	44.7
Fines %	34.5

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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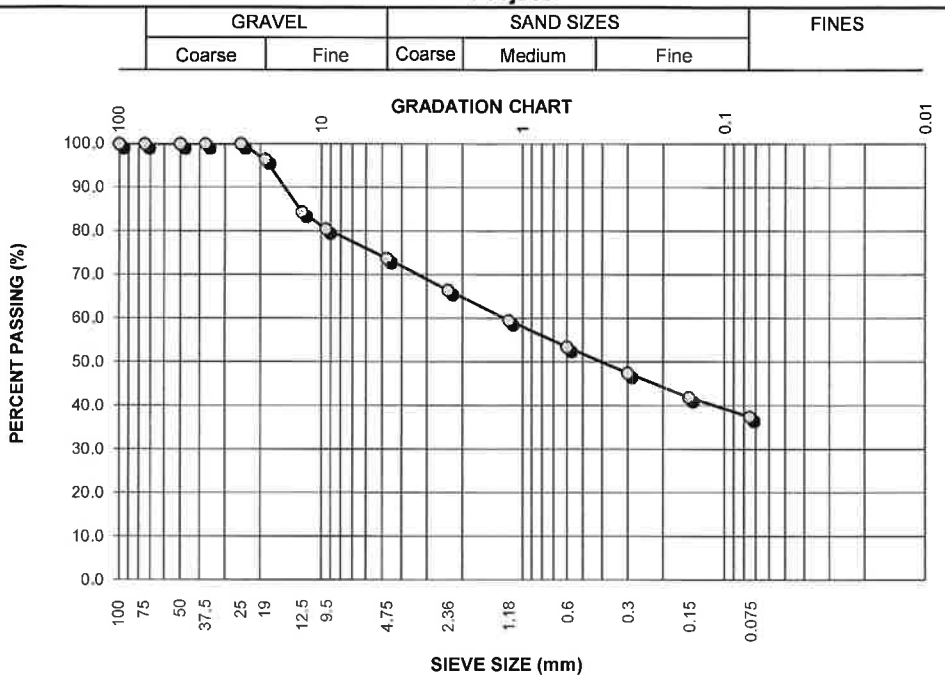
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 16-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-09

Source: G27

Depth (m): 53.2
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	96	-	
12.5	84	-	
9.5	81	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	74	-	
2.36	66	-	
1.18	60	-	
0.6	53	-	
0.3	47	-	
0.15	42	-	
0.075	37.5	-	

Natural Moisture Content = 7%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	1.26
D_{85} =	12.86

C_u=	#N/A
C_c=	#N/A

Gravel%	26.3
Sand%	36.3
Fines %	37.5

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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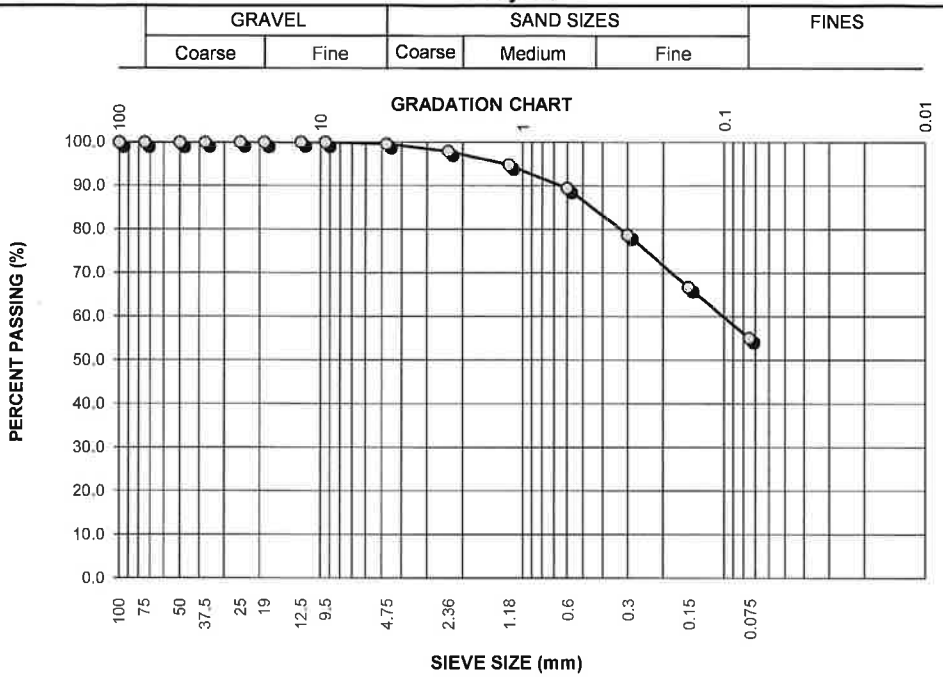
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 16-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-09

Source: G31

Depth (m): 61.3
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	100	-	
9.5	100	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	100	-	
2.36	98	-	
1.18	95	-	
0.6	89	-	
0.3	79	-	
0.15	67	-	
0.075	55.1	-	

Natural Moisture Content = 30%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	0.11
D_{85} =	0.48

C_u=	#N/A
C_c=	#N/A

Gravel%	0.4
Sand%	44.5
Fines %	55.1

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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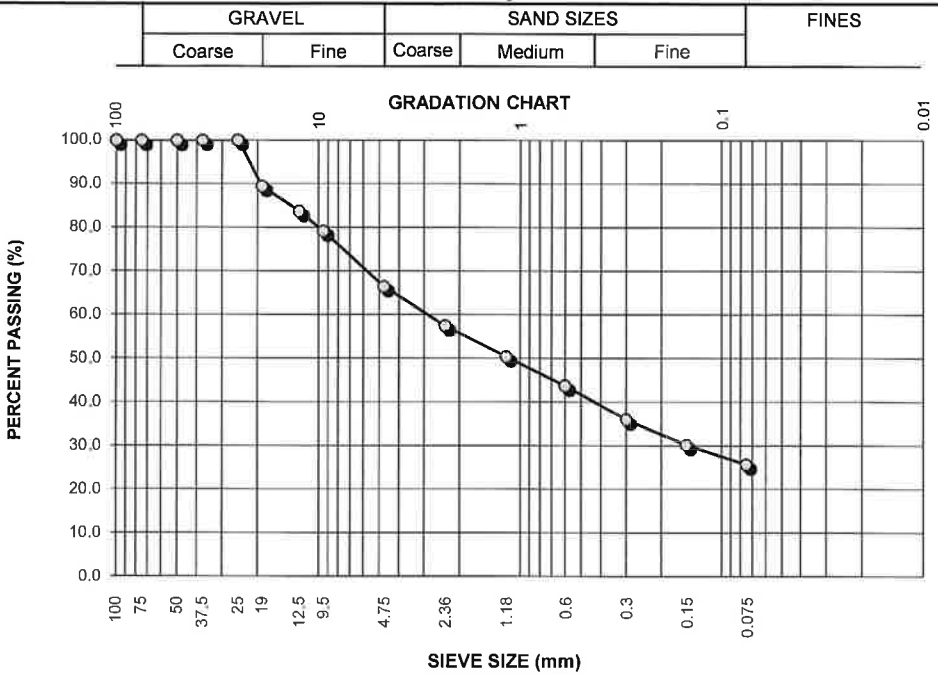
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 16-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-09

Source: G32

Depth (m): 62.2
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	89	-	
12.5	84	-	
9.5	79	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	66	-	
2.36	57	-	
1.18	50	-	
0.6	44	-	
0.3	36	-	
0.15	30	-	
0.075	25.7	-	

Natural Moisture Content = 11%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	0.15
D_{60} =	3.04
D_{85} =	13.98

C_u=	#N/A
C_c=	#N/A

Gravel%	33.5
Sand%	40.8
Fines %	25.7

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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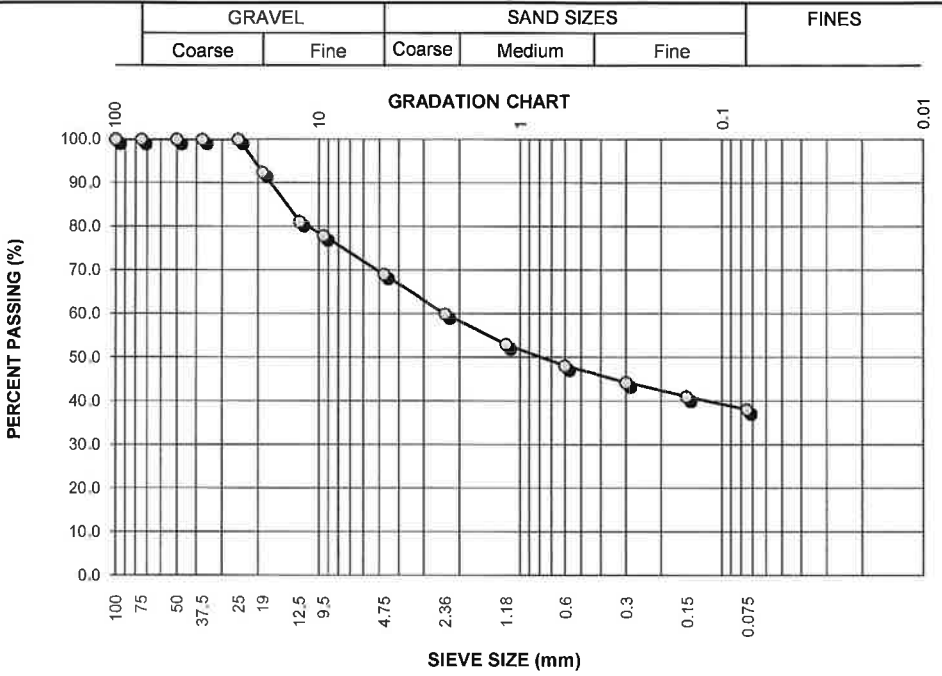
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 16-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-09

Source: G35

Depth (m): 65.2
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	92	-	
12.5	81	-	
9.5	78	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	69	-	
2.36	60	-	
1.18	53	-	
0.6	48	-	
0.3	44	-	
0.15	41	-	
0.075	38.1	-	

Natural Moisture Content = 11%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	2.38
D_{85} =	14.73

C_u=	#N/A
C_c=	#N/A

Gravel%	31.0
Sand%	30.9
Fines %	38.1

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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Moisture Content Determination (ASTM D2216 - Method B)

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

wood.

Client: Yukon Gov't
Project: Clinton Creek
Date: Aug 28/18

Request Number:
Project Manager:
Project Number: VE 75 2705.100
Reviewed By:

39m - 40.5m / 59 / 31m / 42.1m

Test Hole Number	BH18-9	BH18-9	BH18-9	BH18-9	BH18-9	BH18-9		
Depth (m)	[illegible]	128'-133'	195-196'	KB1-105'	138.25'	114' 34.7m		
Sample Number	G27	G28	G30	G32	G35	G31		
Tare No:	[illegible]	[illegible]	[illegible]	362 BH	[illegible]	6		
Wt. Sample Wet + Tare	304.72	432.77	386.45	387.31	386.03	388.46		
Wt. Sample Dry + Tare	280.21	382.16	283.14	279.98	298.27	315.43		
Wt. Water	34.51	50.61	43.31	67.33	27.76	23.03		
Wt. Tare	15.36	15.41	15.64	17.70	17.79	15.84		
Wt. Dry Sample	264.85	366.75	267.5	262.28	280.48	299.59		
Moisture Content (%)	13.0	13.79	16.19	25.67	9.89	7.68		

Test Hole Number	BH18-10	BH18-10	BH18-10	BH18-10	BH18-10	BH18-10	BH18-10	BH18-10
Depth (m)	99' 30.1	103' 31.3	109' 33.2	34' 10.4	79' 24'	23' 7.0	14.5' 4.4m	12.5' 3.81
Sample Number	G20	G21	G23	G24	G26	G5	G3	G2
Tare No:	7	8	9	10	11	12	13	14
Wt. Sample Wet + Tare	468.49	334.86	584.77	475.08	357.07	228.56	377.50	459.85
Wt Sample Dry + Tare	386.61	262.12	520.00	431.11	345.99	184.25	365.50	425.20
Wt. Water	81.88	72.74	64.77	43.97	11.08	44.31	12.0	34.69
Wt. Tare	17.53	17.53	15.62	15.62	17.41	15.65	17.61	17.56
Wt. Dry Sample	369.08	244.59	504.38	415.49	328.58	168.6	347.89	407.64
Moisture Content (%)	22.18	29.73	12.84	10.58	3.37	26.2	3.44	8.50

Test Hole Number	BH18-10	BH18-10	BH18-10	BH18-10	BH18-10	BH18-10	BH18-10	BH18-10
Depth (m)	51' 15.5	119' 36.3	128' 38.7	79' 24.0	95' 28.9	89' 27.1	105' 32	84' 25.6
Sample Number	G1	G25	G27	G16	G19	G18	G22	G17
Tare No:	15	16	17	18	19	20	21	22
Wt. Sample Wet + Tare	415.45	486.49	348.62	434.27	466.71	581.18	427.27	520.15
Wt. Sample Dry + Tare	382.91	465.62	325.96	394.25	379.51	523.64	333.04	437.84
Wt. Water	32.54	20.87	22.86	40.02	67.2	57.54	94.23	82.21
Wt. Tare	17.31	18.21	17.58	17.36	17.39	18.04	15.66	15.97
Wt. Dry Sample	365.6	447.41	308.38	376.89	382.12	505.6	317.38	421.97
Moisture Content (%)	8.90	4.66	7.4	10.6	17.58	11.3	29.68	19.4

Test Hole Number	BH18-10	BH18-10	BH18-10	BH18-10	BH18-10			
Depth (m)	44' 13.4	39' 11.8	53.5' 16.3	49' 14.9	69' 21.9			
Sample Number	G9	G8	G11	G10	G12			
Tare No:	23	24	25	26	27			
Wt. Sample Wet + Tare	413.07	362.55	559.54	415.21	336.68			
Wt. Sample Dry + Tare	401.55	338.00	470.96	374.73	311.60			
Wt. Water	12.52	23.55	88.58	40.48	25.08			
Wt. Tare	17.48	15.59	18.20	18.15	15.68			
Wt. Dry Sample	383.07	323.41	452.76	356.58	295.92			
Moisture Content (%)	3.26	7.28	19.56	11.3	8.49			

BH14 – 21 BH10 – 6

Moisture Content Determination (ASTM D2216 - Method B)

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

wood.

Client: Yukon Gov't
Project: CLINTON CREEK
Date: Aug 31, 2010

Request Number:
Project Manager:
Project Number: VE752.705.100
Reviewed By:

Test Hole Number	BH18-14	BH18-14	BH18-14	~~BH18-14~~	BH14-14	BH18-14	BH18-14	
Depth (m)	1'(0.3)	4'(1.2)	13'3.9	~~??~~	17'5.1	23'7.0	28'8.5	
Sample Number	S-1	S-2	S-3	~~S-4~~	S-4	S-5	S-6	
Tare No:	A	B	C	~~D~~	D	E	F	
Wt. Sample Wet + Tare	375.12	406.60	348.48		341.72	349.81	306.26	
Wt. Sample Dry + Tare	339.90	372.73	320.96		313.35	329.34	282.65	
Wt. Water	35.22	33.87	27.52		28.37	20.47	24.01	
Wt. Tare	15.75	15.75	17.03	~~18.875~~	15.47	17.62	15.43	
Wt. Dry Sample	324.15	356.98	303.93		297.88	311.72	267.22	
Moisture Content (%)	10.9%	9.5%	9.0%		9.5%	6.6%	8.9%	

Test Hole Number	BH18-14	BH18-14	BH18-14	BH14-14	BH18-14	BH18-14	BH18-14	BH18-14
Depth (m)	32' 9.7	37' 11.2	42' 12.8	46' 14	48' 14.6	50' 15.2	52' 15.8	54' 16.4
Sample Number	S-7	S-8	S-9	S-10	S-11	S-12	S-13	S-14
Tare No:	G	H	I	J	K	L	M	N
Wt. Sample Wet + Tare	437.91	384.77	397.89	487.67	507.04	351.65	536.68	381.63
Wt. Sample Dry + Tare	423.09	373.01	378.75	413.38	428.00	298.74	460.21	305.18
Wt. Water	14.82	11.76	19.14	74.29	79.04	52.91	76.47	76.45
Wt. Tare	17.59	15.48	15.98	17.66	16.11	16.11	17.95	17.95
Wt. Dry Sample	405.5	357.53	363.27	395.72	411.89	282.63	442.26	287.23
Moisture Content (%)	3.7%	3.3%	5.3%	18.7%	19.2%	18.7%	17.3%	26.6%

Test Hole Number	BH14-14	BH18-14	BH18-14	BH18-14	BH18-14	BH18-14	BH18-14	
Depth (m)	56' 17.1	57.5' 17.5	59' 17.9	60' 18.2	62' 18.8	64' 19.5	66' 20.1	
Sample Number	S-15	S-16	S-17	S-18	S-19	S-20	S-21	
Tare No:	O	P	Q	R	S	T	U	
Wt. Sample Wet + Tare	426.24	364.32	567.56	573.06	489.54	515.51	491.25	
Wt. Sample Dry + Tare	343.76	294.20	475.59	480.14	437.57	401.72	421.82	
Wt. Water	82.48	70.12	91.97	92.92	51.97	113.79	69.43	
Wt. Tare	17.04	15.28	15.39	17.94	15.57	15.59	17.70	
Wt. Dry Sample	326.72	278.92	460.2	462.2	422.0	386.13	404.12	
Moisture Content (%)	25.2%	25.1%	19.9%	20.1%	12.3%	29.5%	17.2%	

Test Hole Number	BH18-10	BH18-10	BH18-10	BH14-10	BH18-10	BH18-10		
Depth (m)	30' 9.1	34' 10.3	64' 19.5	18.5' 5.6	73.5' 22.4	68.5' 20.9		
Sample Number	G6	G7	G13	G4	G15	G16		
Tare No:	1	2	3	4	5	6		
Wt. Sample Wet + Tare	436.33	380.48	311.76	343.35	569.51	592.43		
Wt. Sample Dry + Tare	394.64	~~388.27~~	287.26	304.01	521.74	533.85		
Wt. Water	41.69	22.21	24.5	39.34	47.77	58.58		
Wt. Tare	17.73	15.66	15.44	15.56	18.10	18.10		
Wt. Dry Sample	376.91	342.61	271.82	288.45	503.64	515.75		
Moisture Content (%)	11.0%	6.5%	9.0%	13.6%	9.5%	11.4%		

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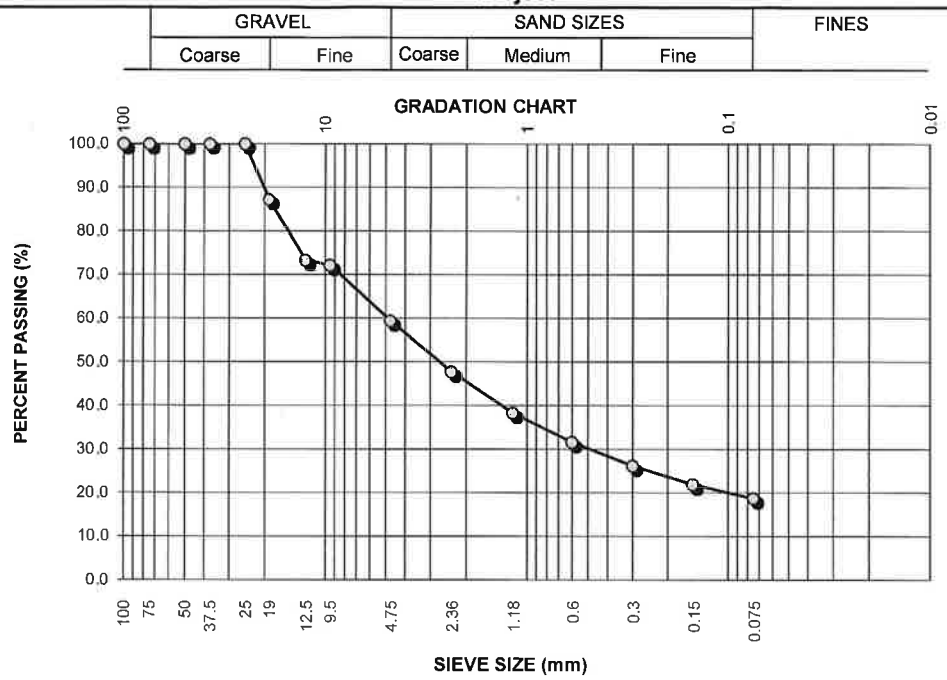
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 7-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-10

Source: G2

Depth (m): 3.7
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	87	-	
12.5	73	-	
9.5	72	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	59	-	
2.36	48	-	
1.18	38	-	
0.6	32	-	
0.3	26	-	
0.15	22	-	
0.075	18.7	-	

Natural Moisture Content = 6%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	0.51
D_{60} =	4.95
D_{85} =	17.98

C_u=	#N/A
C_c=	#N/A

Gravel%	40.5
Sand%	40.8
Fines %	18.7

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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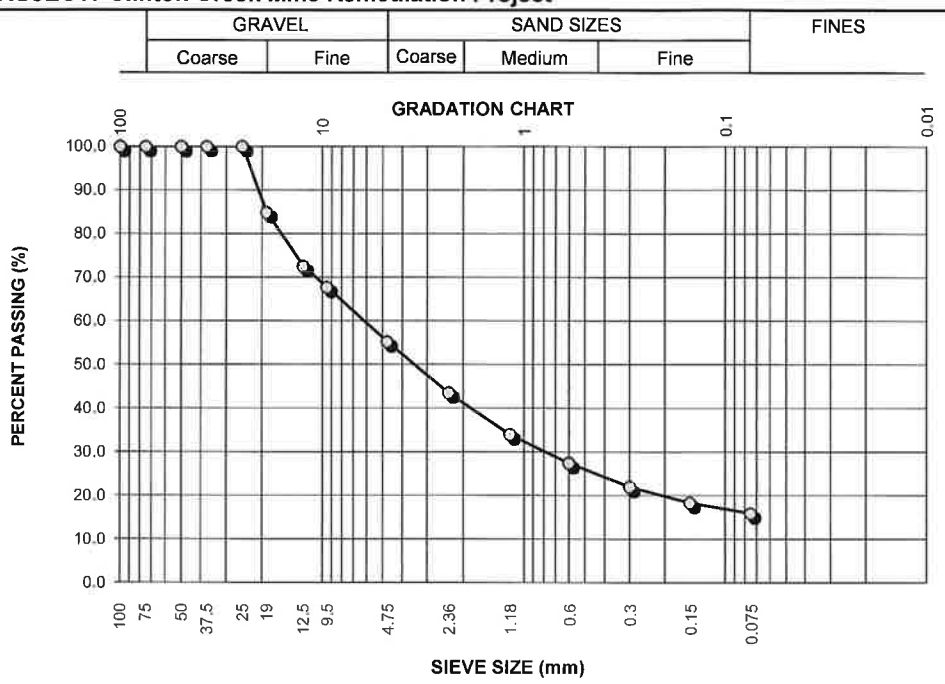
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 8-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-10

Source: G7

Depth (m): 10.3
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	85	-	
12.5	72	-	
9.5	68	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	55	-	
2.36	43	-	
1.18	34	-	
0.6	27	-	
0.3	22	-	
0.15	18	-	
0.075	15.9	-	

Natural Moisture Content = 11%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	0.83
D_{60} =	6.56
D_{85} =	19.05

C_u=	#N/A
C_c=	#N/A

Gravel%	44.8
Sand%	39.3
Fines %	15.9

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

Reporting of these test results constitutes a testing services only. Engineering interpretation or evaluation of these test results is provided only on written request. The data presented is for the sole use of the client stipulated above.

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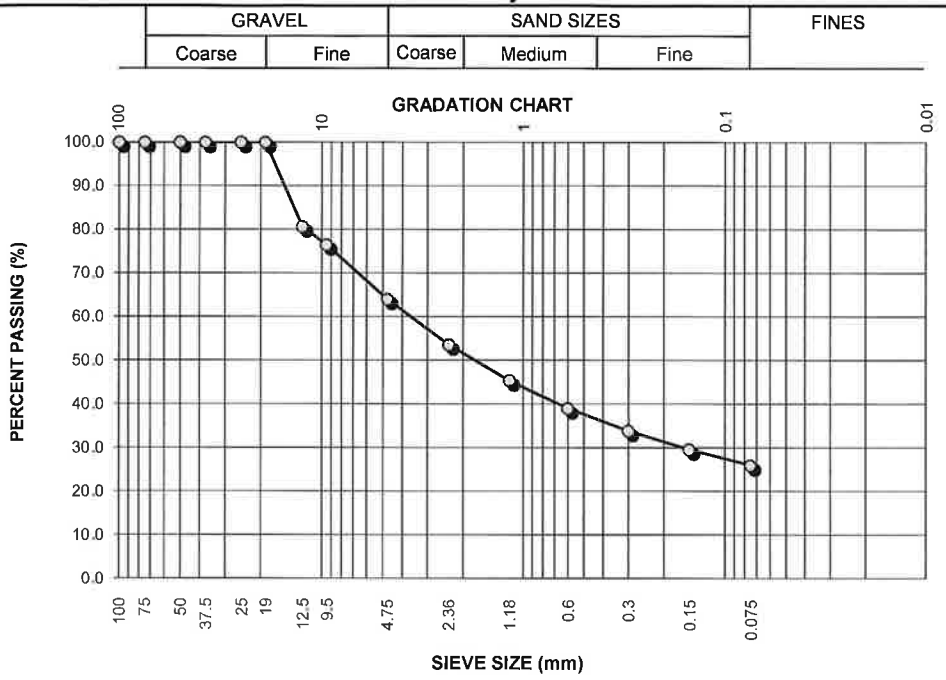
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 14-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-10

Source: G15

Depth (m): 22.3 - 22.4
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	81	-	
9.5	76	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
4.75	64	-	
2.36	54	-	
1.18	45	-	
0.6	39	-	
0.3	34	-	
0.15	30	-	
0.075	26.0	-	

Natural Moisture Content = 9%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	0.17
D_{60} =	3.84
D_{85} =	13.96

C_u=	#N/A
C_c=	#N/A

Gravel%	36.0
Sand%	38.0
Fines %	26.0

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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Moisture Content Determination (ASTM D2216 - Method B)

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

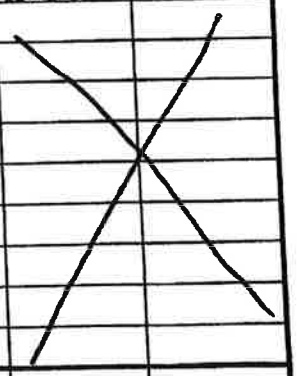
wood.

Client: Yukon Gov't
Project: Clinton Creek
Date: Sep. 4, 2018
Request Number:
Project Manager:
Project Number: VE52705B
Reviewed By:

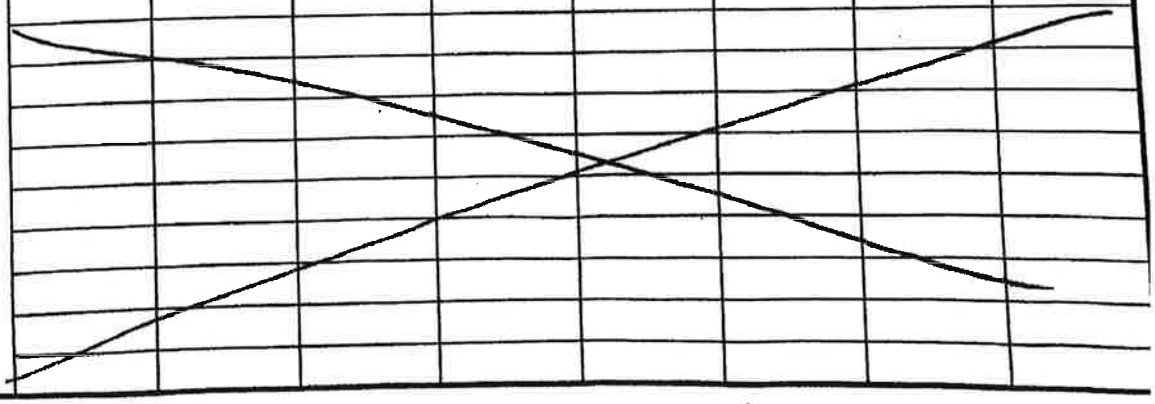
Test Hole Number	BH16-11	BH16-11	BH16-11	BH16-11	BH16-11	BH16-11	BH16-11	BH16-11
Depth (m)	8' 2.4m	12' 3.6	16' 4.8	21' 6.4	26' 7.9	32' 9.7m	38' 11.6m	34' 10.3
Sample Number	S1	S2	S3	S4	S5	S6	S7	S8
Tare No:	4	A1	5	C1	GG	D1	B1	E1
Wt. Sample Wet + Tare	386.79	253.04	296.49	379.03	257.89	425.61	326.61	242.32
Wt. Sample Dry + Tare	360.75	239.22	281.90	319.55	247.08	351.35	308.92	236.58
Wt. Water	26.04	13.82	14.59	59.48	10.81	74.26	17.69	5.72
Wt. Tare	3.91	3.99	3.92	3.97	3.96	4.01	4.02	4.03
Wt. Dry Sample	356.84	235.23	277.98	315.58	243.12	347.34	304.9	232.55
Moisture Content (%)	7.3%	5.9%	5.2%	18.85%	4.4%	21.4%	5.8%	2.6%

Test Hole Number	BH16-11	BH16-11	BH16-11	BH16-11	BH16-11	BH16-11	BH16-11	BH16-11
Depth (m)	44' 13.4	49' 14.9	54' 16.4	59' 17.9	64' 19.5	69' 21	73' 22.2	78' 23.7
Sample Number	S9	S10	S11	S12	S13	S14	S15	S16
Tare No:	F1	P1	R1	2	B	1	6	U1
Wt. Sample Wet + Tare	284.06	338.68	375.38	335.16	296.49	316.11	314.88	285.19
Wt. Sample Dry + Tare	277.09	331.68	367.73	330.53	293.36	310.36	310.31	280.32
Wt. Water	6.97	7.00	7.65	4.63	3.13	5.75	4.57	4.87
Wt. Tare	4.07	3.98	4.06	3.97	3.98	3.98	4.03	3.94
Wt. Dry Sample	273.02	327.7	363.67	326.56	289.38	306.38	306.28	276.38
Moisture Content (%)	2.5%	2.1%	2.1%	14.2%	1.4%	1.9%	1.5%	1.7%

Test Hole Number	BH16-11	BH16-11	BH16-11	BH16-11	BH16-11	BH16-11	~~BH16-11~~	~~BH16-11~~
Depth (m)	83' 25.2	88' 26.8	93' 28.3	99' 30.1	104' 31.6	109' 33.2		
Sample Number	S17	S18	S19	S20	S21	S22		
Tare No:	Q1	V1	S1	T1	W1	X1		
Wt. Sample Wet + Tare	349.37	303.32	290.26	325.66	303.91	279.95		
Wt. Sample Dry + Tare	343.44	298.39	285.85	296.77	298.89	275.03		
Wt. Water	5.93	4.93	4.41	26.89	5.02	4.92		
Wt. Tare	4.01	3.97	3.96	3.98	4.01	3.97		
Wt. Dry Sample	339.43	294.42	281.89	294.79	294.88	271.06		
Moisture Content (%)	1.7%	1.6%	1.5%	9.12%	1.7%	1.8%		



Test Hole Number								
Depth (m)								
Sample Number								
Tare No:								
Wt. Sample Wet + Tare								
Wt. Sample Dry + Tare								
Wt. Water								
Wt. Tare								
Wt. Dry Sample								
Moisture Content (%)								



Moisture Content Determination (ASTM D2216 - Method B)

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

wood.

Client: _____ **Request Number:** _____
Project: _____ **Project Manager:** _____
Date: Sep 4, 2018 **Project Number:** _____
Reviewed By: _____

Test Hole Number	BH18-11	BH18-11	BH18-11	BH18-11	BH18-11	BH18-11	BH18-11	BH18-11
Depth (m)	113' 34.4m	118' 35.9	123' 37.4	128' 39	133' 40.5	138' 42	139.5' 42.5	148' 45.3
Sample Number	S23	S24	S25	S26	S27	S28	S29	S30
Tare No:	X80	PX98	SB1	ABC	SuperMan	CC29	W5	ABL9
Wt. Sample Wet + Tare	272.91	322.59	324.06	390.77	324.88	415.68	385.61	490.61
Wt. Sample Dry + Tare	265.99	344.97	314.53	379.68	300.46	404.13	353.06	476.62
Wt. Water	6.92	27.62	9.53	11.09	24.42	11.55	32.55	13.99
Wt. Tare	18.54	17.76	16.17	17.79	16.24	18.00	16.71	18.60
Wt. Dry Sample	247.45	327.21	298.36	361.89	284.22	386.13	336.35	452.02
Moisture Content (%)	2.79%	8.4%	3.1%	3.0%	8.5%	2.9%	9.6%	4.4%

Test Hole Number	BH18-11	BH18-11						
Depth (m)	153' 46.6	158' 48.2						
Sample Number	SB1	S32						
Tare No:	Sexy	BootGirl						
Wt. Sample Wet + Tare	317.42	393.23						
Wt. Sample Dry + Tare	279.75	331.39						
Wt. Water	32.67	61.84						
Wt. Tare	3.97	3.91						
Wt. Dry Sample	275.78	327.48						
Moisture Content (%)	11.8%	18.8%						

Test Hole Number								
Depth (m)								
Sample Number								
Tare No:								
Wt. Sample Wet + Tare								
Wt. Sample Dry + Tare								
Wt. Water								
Wt. Tare								
Wt. Dry Sample								
Moisture Content (%)								

Test Hole Number								
Depth (m)								
Sample Number								
Tare No:								
Wt. Sample Wet + Tare								
Wt. Sample Dry + Tare								
Wt. Water								
Wt. Tare								
Wt. Dry Sample								
Moisture Content (%)								

1 of 2

Moisture Content Determination (ASTM D2216 - Method B)

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

wood.

Client: Yukon Govt
Project: Clinton Creek Mine
Date: Sep 5, 2018

Request Number:
Project Manager:
Project Number: ~~VE52705~~ VE52705B
Reviewed By:

Test Hole Number	BH18-11	BH18-11	BH18-11	BH18-11	BH18-11	BH18-11	BH18-11	BH18-11
Depth (m)	~~163'~~	168'	173'	178'	183'	188'	193'	198'
Sample Number	S34	S35	S36	S37	S38	S39	S40	S41
Tare No:	AA10	Gonzo	BHB	DIABLO	CHEEKO	CC51	WC2	AB19
Wt. Sample Wet + Tare	440.17	363.77	521.04	487.90	454.35	440.20	390.39	572.00
Wt. Sample Dry + Tare	396.91	343.01	486.55	440.56	418.25	405.14	359.36	536.96
Wt. Water	43.26	20.76	34.49	47.34	36.1	35.06	31.03	35.04
Wt. Tare	16.98	15.46	17.56	15.01	18.81	17.31	15.77	17.60
Wt. Dry Sample	379.93	327.55	468.99	425.55	399.44	387.83	343.59	519.36
Moisture Content (%)	11.4%	4.7%	7.4%	11.1%	9.0%	9.0%	9.0%	6.7%

Test Hole Number	BH18-11	BH18-11	BH18-11	BH18-11	BH18-11	BH18-11	BH18-11	BH18-11
Depth (m)	~~202~~	206'	209'	213'	218'	223'	228'	232'
Sample Number	S42	S43	S44	S45	S46	S47	S48	S49
Tare No:	~~SuperMan~~	CC29	SB1	ST9	SY15	TANG	QT64	AR
Wt. Sample Wet + Tare	383.43	673.78	414.31	389.38	457.15	370.74	429.51	438.10
Wt. Sample Dry + Tare	352.20	547.06	394.17	363.70	420.49	333.57	386.55	425.13
Wt. Water	31.23	26.72	20.14	25.68	36.66	37.17	42.96	12.97
Wt. Tare	15.38	17.21	15.31	18.06	17.44	15.96	17.52	17.49
Wt. Dry Sample	336.82	529.85	378.86	345.64	403.05	317.61	369.03	407.64
Moisture Content (%)	9.3%	5.0%	5.3%	7.4%	9.1%	11.7%	11.6%	3.2%

Test Hole Number	BH18-11	BH18-11	BH18-11	BH18-11	BH18-11	BH18-11	BH18-11	BH18-11
Depth (m)	72.2	74.7	75.3	76.8	78.3	79.9	81.7	83.2
Sample Number	S50	G51	G52	G53	G54	G55	G56	G57
Tare No:	7	X1	8	41	T1	S1	V1	6
Wt. Sample Wet + Tare	1188.0	258.48	233.88	313.01	392.42	211.29	244.02	274.01
Wt. Sample Dry + Tare	1044.9	228.23	210.09	287.35	355.56	197.18	217.40	246.27
Wt. Water	143.10	30.25	23.79	25.66	36.86	14.11	26.62	27.74
Wt. Tare	12.03	4.12	4.04	4.00	4.03	3.98	3.98	3.91
Wt. Dry Sample	1032.87	224.11	206.05	283.35	351.53	193.20	213.42	242.36
Moisture Content (%)	13.8%	13.5%	11.5%	9.0%	10.5%	7.3%	12.5%	11.4%

Test Hole Number	BH18-11	BH18-11	BH18-11	BH18-11	BH18-11	BH18-11		
Depth (m)	84.7	85.9	87.5	89.0	90.5	91.1		
Sample Number	G58	G59	G60	G61	G62	G63		
Tare No:	Q1	Q1	V1	8	6	S1		
Wt. Sample Wet + Tare	293.66	293.71	441.76	239.05	212.61	263.48		
Wt. Sample Dry + Tare	266.21	274.66	403.67	216.00	196.12	253.41		
Wt. Water	27.45	19.05	38.11	23.05	16.49	10.07		
Wt. Tare	4.00	4.02	3.94	3.97	3.87	3.96		
Wt. Dry Sample	262.21	270.64	399.68	212.03	192.25	249.45		
Moisture Content (%)	10.5%	7.0%	9.5%	10.9%	8.5%	4.0%		

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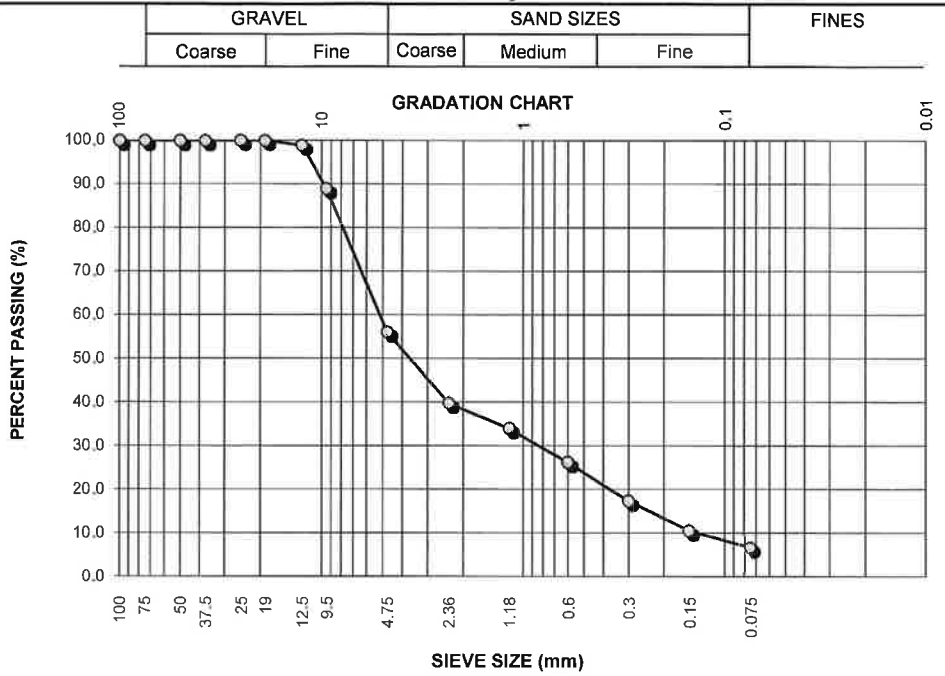
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 14-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-11

Source: G6

Depth (m): 9.8
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	99	-	
9.5	89	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	56	-	
2.36	40	-	
1.18	34	-	
0.6	26	-	
0.3	17	-	
0.15	11	-	
0.075	6.7	-	

Natural Moisture Content = #DIV/0!

D_{10} =	0.14
D_{15} =	0.25
D_{30} =	0.89
D_{60} =	5.33
D_{85} =	8.94

C_u=	38
C_c=	1

Gravel%	44.0
Sand%	49.3
Fines %	6.7

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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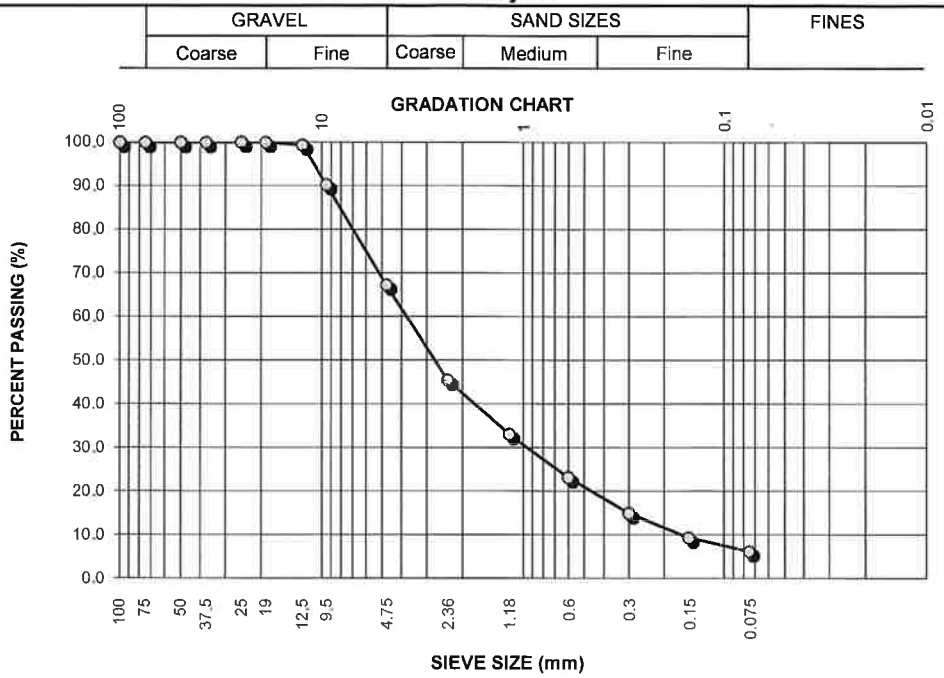
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 14-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-11

Source: G14

Depth (m): 21
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	99	-	
9.5	90	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	67	-	
2.36	45	-	
1.18	33	-	
0.6	23	-	
0.3	15	-	
0.15	9	-	
0.075	6.2	-	

Natural Moisture Content = #DIV/0!

D_{10} =	0.17
D_{15} =	0.30
D_{30} =	1.00
D_{60} =	3.95
D_{85} =	8.41

C_u=	23
C_c=	2

Gravel%	32.7
Sand%	61.1
Fines %	6.2

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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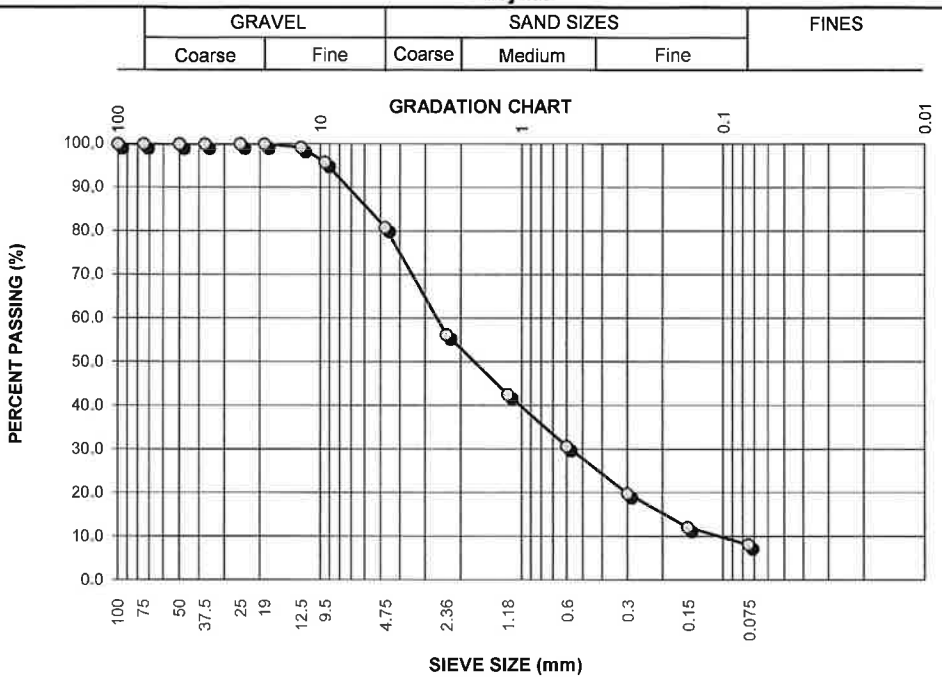
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 14-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-11

Source: G20

Depth (m): 30.1
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	99	-	
9.5	96	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	81	-	
2.36	56	-	
1.18	43	-	
0.6	31	-	
0.3	20	-	
0.15	12	-	
0.075	8.1	-	

Natural Moisture Content = #DIV/0!

D_{10} =	0.11
D_{15} =	0.21
D_{30} =	0.58
D_{60} =	2.72
D_{85} =	6.06

C_u=	25
C_c=	1

Gravel%	19.1
Sand%	72.8
Fines %	8.1

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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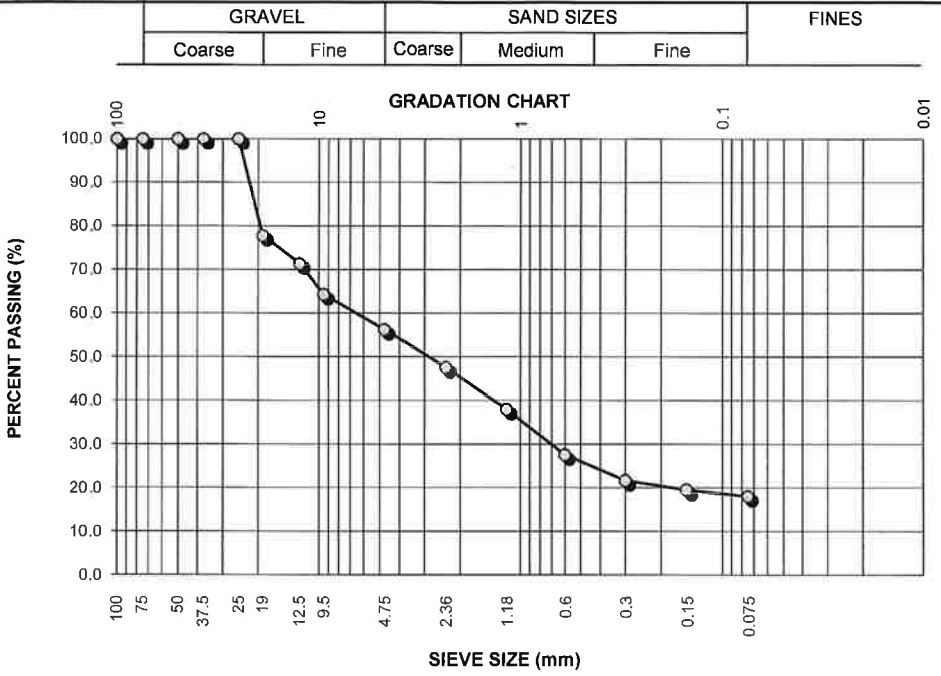
wood.

SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:
PROJECT: **Clinton Creek Mine Remediation Project**



Lab Number:

Date Sampled:
Date Received:
Date Tested: 17-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-11

Source: G32

Depth (m): 48.2
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	78	-	
12.5	71	-	
9.5	64	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	56	-	
2.36	48	-	
1.18	38	-	
0.6	28	-	
0.3	22	-	
0.15	20	-	
0.075	18.1	-	

Natural Moisture Content = -105%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	0.74
D_{60} =	6.96
D_{85} =	20.94

C_u=	#N/A
C_c=	#N/A

Gravel%	43.7
Sand%	38.2
Fines %	18.1

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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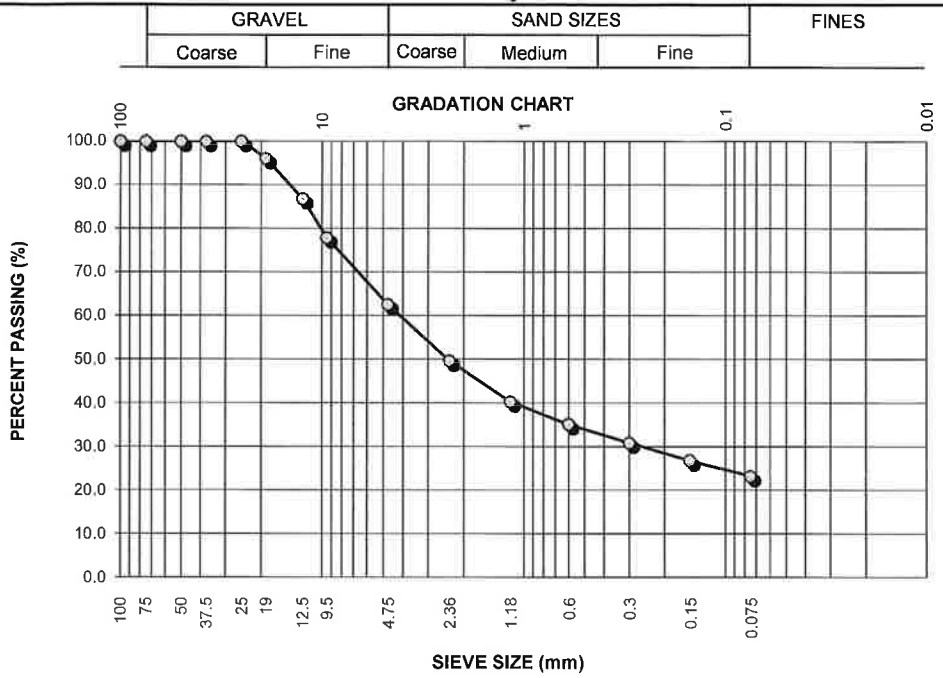
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 17-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-11

Source: G36

Depth (m): 52.7
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	96	-	
12.5	87	-	
9.5	78	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	63	-	
2.36	50	-	
1.18	40	-	
0.6	35	-	
0.3	31	-	
0.15	27	-	
0.075	23.3	-	

Natural Moisture Content = -104%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	0.27
D_{60} =	4.27
D_{85} =	11.90

C_u=	#N/A
C_c=	#N/A

Gravel%	37.4
Sand%	39.3
Fines %	23.3

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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Suite 600, 4445 Lougheed Highway
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Tell: 604-294-3811
Fax: 604-294-4664

wood.

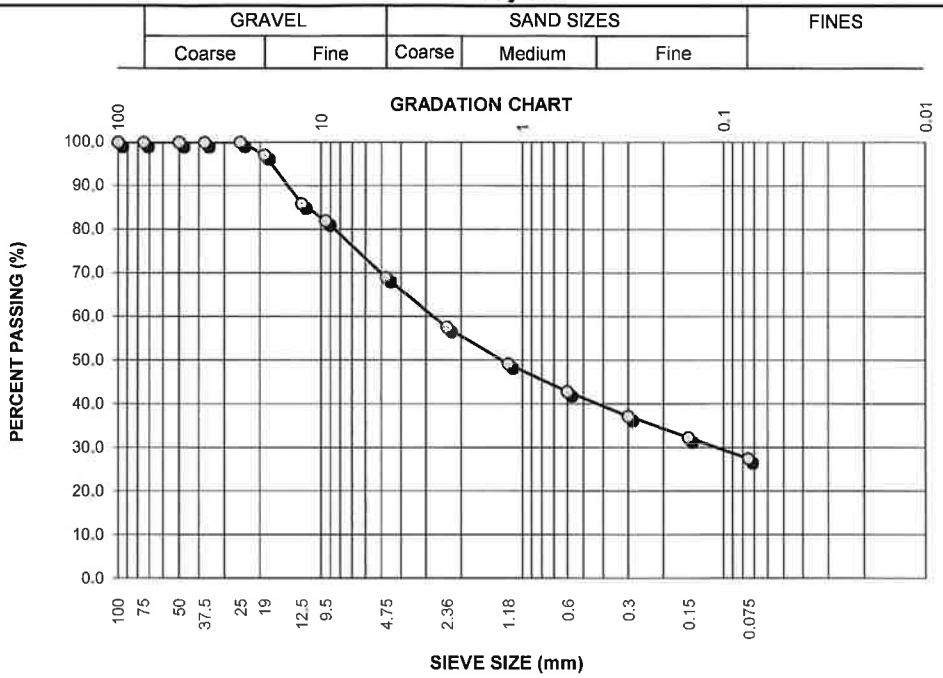
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 17-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-11

Source: G41

Depth (m): 60.4
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	97	-	
12.5	86	-	
9.5	82	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	69	-	
2.36	57	-	
1.18	49	-	
0.6	43	-	
0.3	37	-	
0.15	32	-	
0.075	27.5	-	

Natural Moisture Content = 6%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	0.11
D_{60} =	2.88
D_{85} =	11.87

C_u=	#N/A
C_c=	#N/A

Gravel%	31.1
Sand%	41.5
Fines %	27.5

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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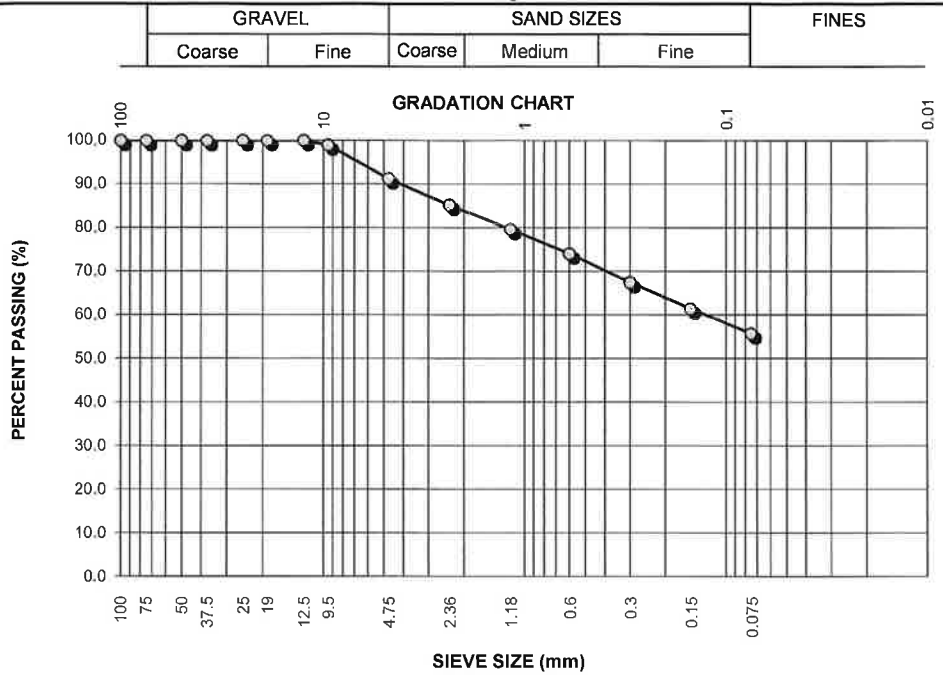
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 17-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-11

Source: G46

Depth (m): 66.5
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	100	-	
9.5	99	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	91	-	
2.36	85	-	
1.18	80	-	
0.6	74	-	
0.3	67	-	
0.15	61	-	
0.075	55.8	-	

Natural Moisture Content = -104%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	0.13
D_{85} =	2.33

C_u=	#N/A
C_c=	#N/A

Gravel%	8.8
Sand%	35.5
Fines %	55.8

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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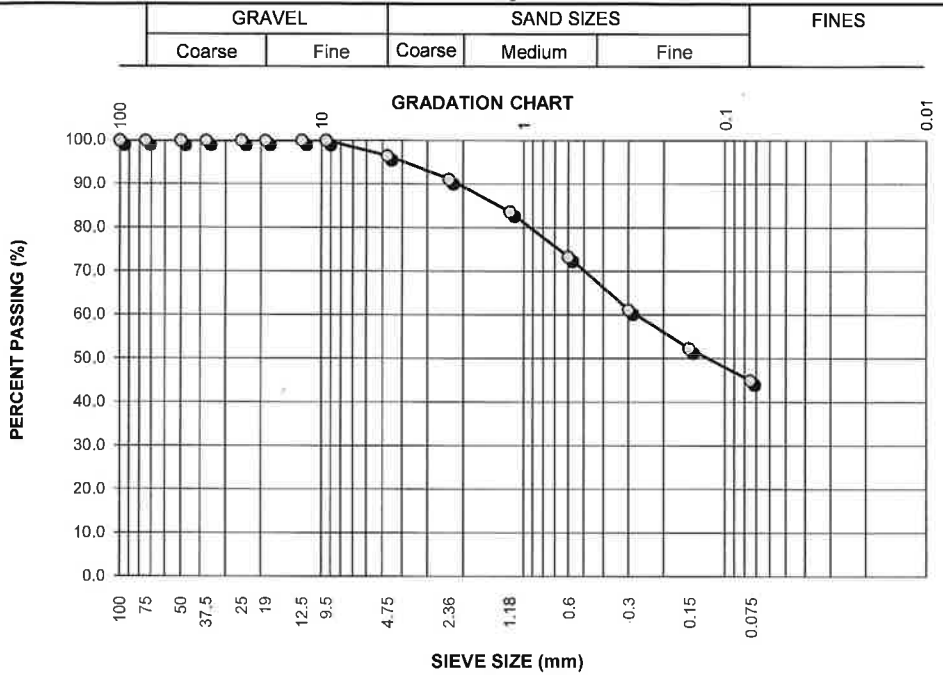
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 17-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-11

Source: G57

Depth (m): 83.2
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	100	-	
9.5	100	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	97	-	
2.36	91	-	
1.18	84	-	
0.6	73	-	
0.3	61	-	
0.15	52	-	
0.075	45.0	-	

Natural Moisture Content = 13%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	0.28
D_{85} =	1.41

C_u=	#N/A
C_c=	#N/A

Gravel%	3.5
Sand%	51.5
Fines %	45.0

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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Moisture Content Determination (ASTM D2216 - Method B)

Wood Environment & Infrastructure Solutions

a Division of Wood Canada Limited

wood.

Sam

Client: YUKON GOVT
Project: CLINTON CREEK
Date: Aug 27/18

Request Number:
Project Manager:
Project Number: VE 52705.100
Reviewed By:

Test Hole Number	BH18-12	BH18-12	BH18-12	BH18-12	BH18-12	BH18-12	BH18-12	BH18-12
Depth (m)	1.5	2.9	3.5	4.9	6.6	8.0	9.3	10.0
Sample Number	G1	G2	G3	G4	G5	G6	G7	G8
Tare No:	5	5D	5C	5F	5G	5E	Batman	ST71
Wt. Sample Wet + Tare	1985.0	1942.3	1342.9	3420.0	2715.0	2327.1	281.51	310.22
Wt. Sample Dry + Tare	1865.0	1730.97	1150.28	[illegible]	2658.0	2225.0	232.42	270.73
Wt. Water	120.0	211.33	192.62	[illegible]	57	102.1	49.09	39.49
Wt. Tare	312.50	217.32	328.89	920.0	930.0	345.62	16.02	17.72
Wt. Dry Sample	[illegible]	1518.65	821.39	[illegible]	1728	1879.38	216.4	253.01
Moisture Content (%)	7.7	13.9	23.4	3.9	3.2	5.4	22.6	15.6

Test Hole Number	BH18-12	BH18-12	BH18-12	BH18-12	BH18-12	BH18-12	BH18-12	BH18-12
Depth (m)	10.9	12.1	13.1	13.7	14.6	15.1	25.4	22.3
Sample Number	G9	G10	G11	G12	G13	G14	G15	G16
Tare No:	Diablo	DHB	LSJS	SY15	CC29	WC2	R1	HN29
Wt. Sample Wet + Tare	321.90	362.61	291.67	416.88	243.68	328.15	294.40	304.14
Wt. Sample Dry + Tare	286.33	284.73	258.40	371.71	215.68	291.86	261.00	271.28
Wt. Water	35.59	77.88	33.27	45.17	28.0	36.29	33.4	32.86
Wt. Tare	15.75	18.54	17.78	17.84	17.84	16.03	18.80	18.04
Wt. Dry Sample	270.58	266.19	240.62	353.87	197.84	275.83	242.2	253.24
Moisture Content (%)	13.15	29.2	13.82	12.76	14.15	13.15	13.79	12.97

Test Hole Number	BH18-12	BH18-12	BH18-12	BH18-12	BH18-12	BH18-12	BH18-12	BH18-12
Depth (m)	16.5	17.9	19.5	20.1	20.7	23.8	25.0	25.9
Sample Number	G17	G18	G19	G20	G21	G22	G23	G24
Tare No:	CHEEKO	QT64	WC1	X1	SB2	CC51	ABC	QP25
Wt. Sample Wet + Tare	205.14	194.70	289.78	260.37	223.37	346.77	295.98	306.70
Wt. Sample Dry + Tare	186.14	178.27	255.05	223.69	197.79	318.18	267.64	276.92
Wt. Water	19	16.43	34.73	36.68	25.58	28.59	28.34	29.78
Wt. Tare	15.96	18.31	16.10	18.70	15.99	18.40	17.65	18.44
Wt. Dry Sample	170.18	159.96	238.95	204.99	181.8	299.78	249.99	258.48
Moisture Content (%)	11.16	10.27	14.53	17.89	14.07	9.54	11.33	11.52

Test Hole Number	BH18-12	BH18-12	BH18-12	BH18-12	BH18-12	BH18-12	~~BH18-12~~	~~BH18-12~~
Depth (m)	27.7	28.9	30.2	30.8	32.2	33.2		
Sample Number	G25	G26	G27	G28	G29	G30	~~G31~~	~~G32~~
Tare No:	GONZO	SB3	CC1	DX98	X80	CF6		
Wt. Sample Wet + Tare	233.78	263.01	250.20	241.58	205.24	340.31		
Wt Sample Dry + Tare	192.78	237.68	222.10	199.02	148.51	331.95		
Wt Water	41.00	25.33	28.1	42.56	56.73	28.36		
Wt Tare	16.14	16.12	16.00	17.74	18.45	17.90		
Wt Dry Sample	176.38	221.56	206.1	181.28	130.06	314.05		
Moisture Content (%)	23.2	11.4	13.63	23.4	43.6	9.03		

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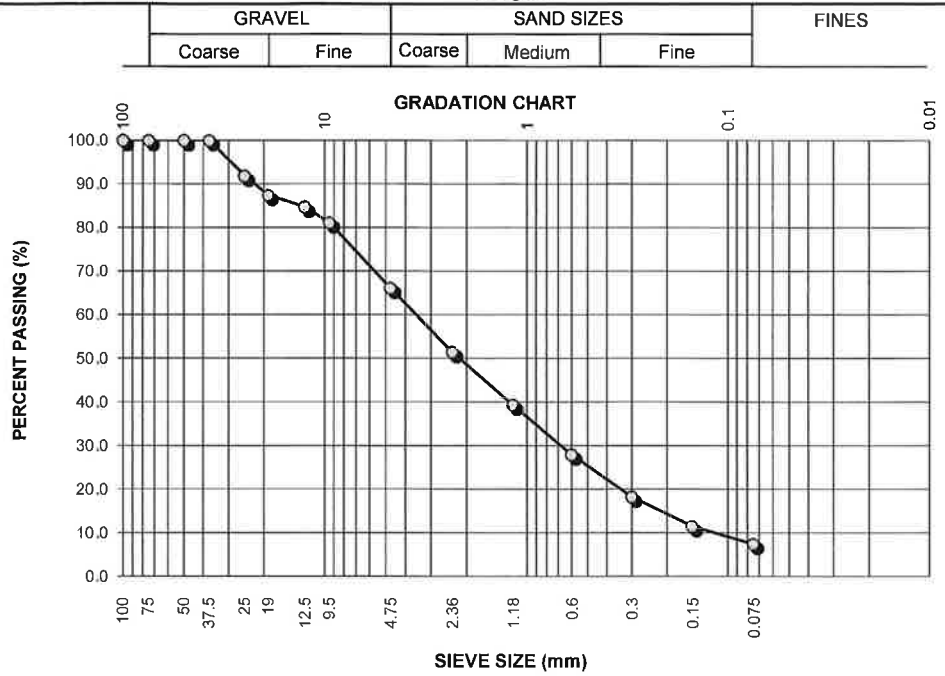
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 14-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-12

Source: G3

Depth (m): 3.6
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	92	-	
19	87	-	
12.5	85	-	
9.5	81	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	66	-	
2.36	51	-	
1.18	39	-	
0.6	28	-	
0.3	18	-	
0.15	12	-	
0.075	7.4	-	

Natural Moisture Content = #DIV/0!

D_{10} =	0.12
D_{15} =	0.23
D_{30} =	0.71
D_{60} =	3.76
D_{85} =	13.43

C_u=	31
C_c=	1

Gravel%	33.9
Sand%	58.7
Fines %	7.4

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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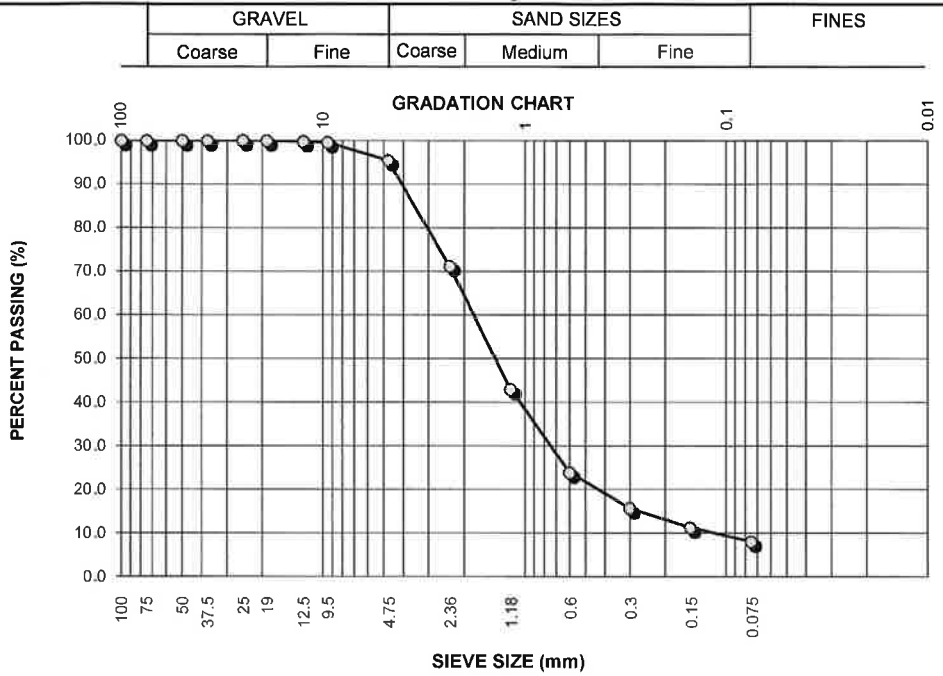
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 14-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-12

Source: G5

Depth (m): 6.7
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	100	-	
9.5	100	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	95	-	
2.36	71	-	
1.18	43	-	
0.6	24	-	
0.3	16	-	
0.15	11	-	
0.075	8.0	-	

Natural Moisture Content = #DIV/0!

D_{10} =	0.12
D_{15} =	0.28
D_{30} =	0.79
D_{60} =	1.89
D_{85} =	3.72

C_u=	16
C_c=	3

Gravel%	4.6
Sand%	87.4
Fines %	8.0

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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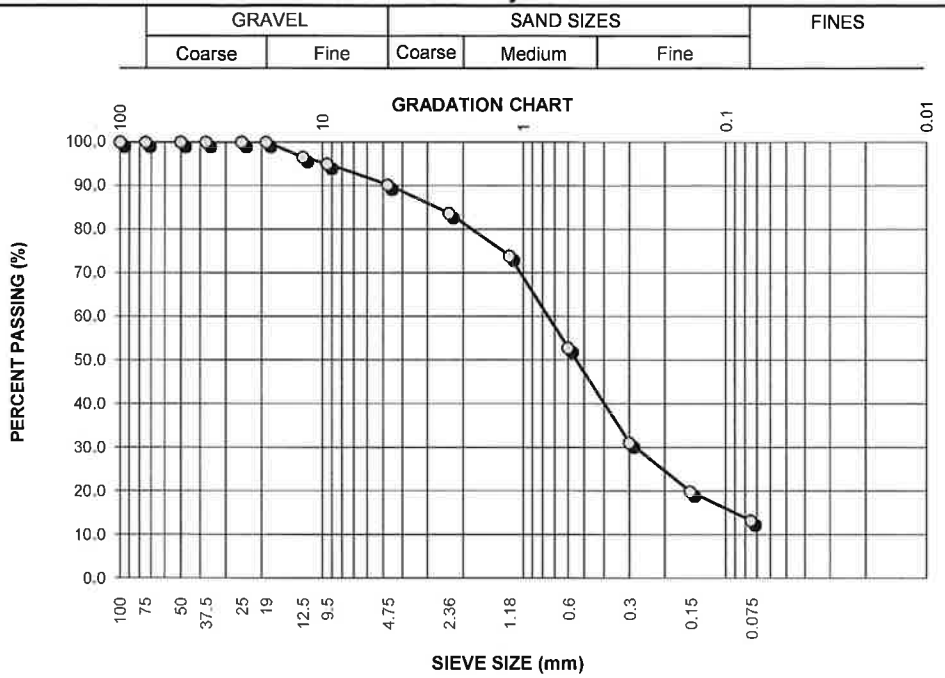
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 14-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-12

Source: G10

Depth (m): 11.9
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	97	-	
9.5	95	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	90	-	
2.36	84	-	
1.18	74	-	
0.6	53	-	
0.3	31	-	
0.15	20	-	
0.075	13.2	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	0.10
D_{30} =	0.29
D_{60} =	0.80
D_{85} =	2.84

C_u=	#N/A
C_c=	#N/A

Gravel%	9.8
Sand%	77.0
Fines %	13.2

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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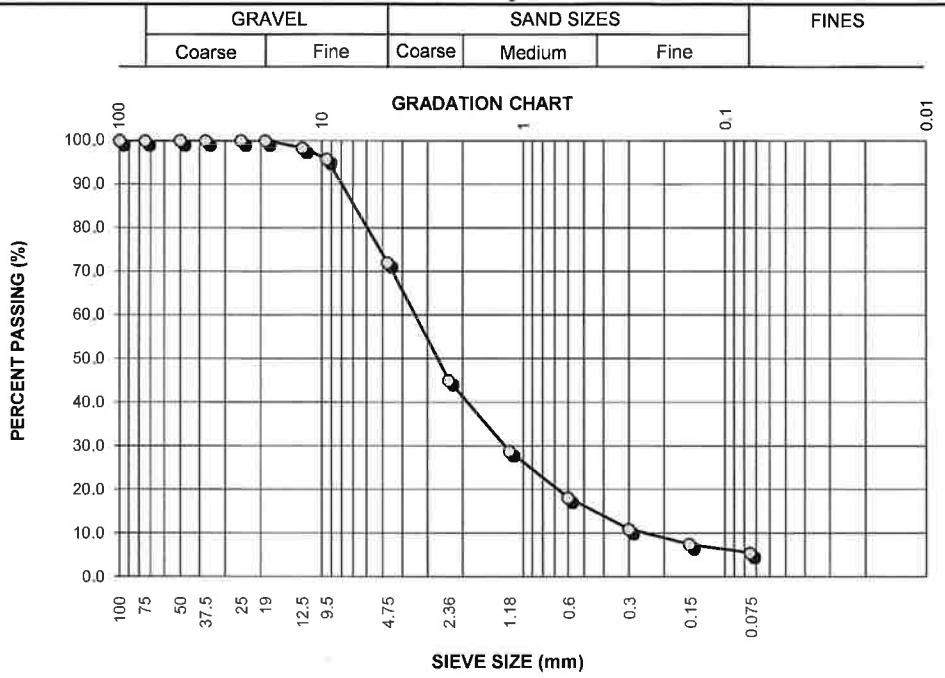
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 14-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-12

Source: G13

Depth (m): 14.5
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	98	-	
9.5	96	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	72	-	
2.36	45	-	
1.18	29	-	
0.6	18	-	
0.3	11	-	
0.15	7	-	
0.075	5.5	-	

Natural Moisture Content = #DIV/0!

D_{10} =	0.26
D_{15} =	0.47
D_{30} =	1.27
D_{60} =	3.69
D_{85} =	7.36

C_u=	14
C_c=	2

Gravel%	28.0
Sand%	66.5
Fines %	5.5

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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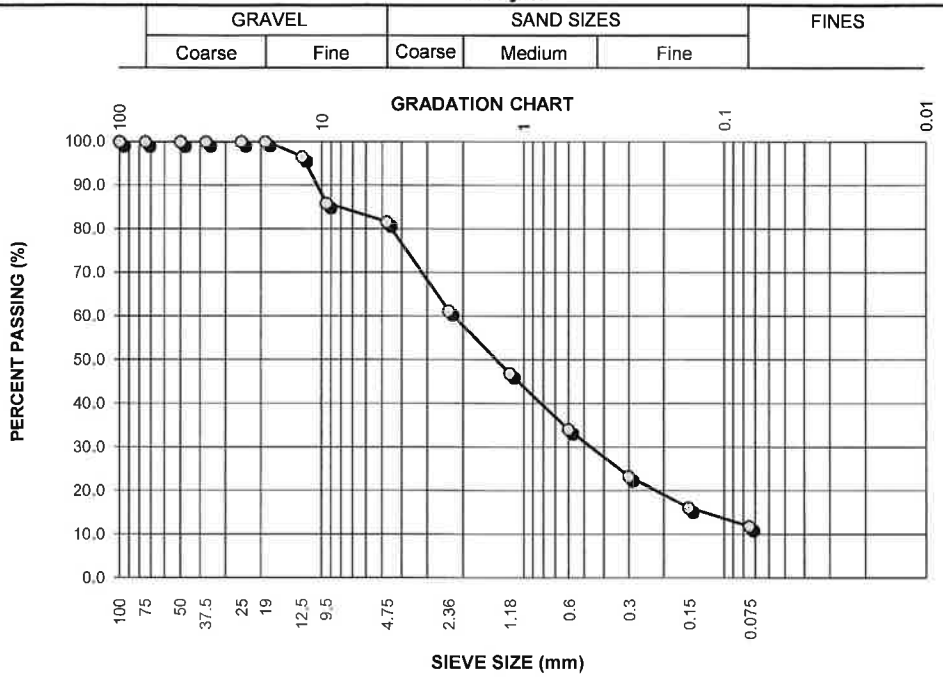
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 14-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-12

Source: G17

Depth (m): 16.4
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	96	-	
9.5	86	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	82	-	
2.36	61	-	
1.18	47	-	
0.6	34	-	
0.3	23	-	
0.15	16	-	
0.075	11.8	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	0.13
D_{30} =	0.49
D_{60} =	2.26
D_{85} =	8.51

C_u=	#N/A
C_c=	#N/A

Gravel%	18.4
Sand%	69.8
Fines %	11.8

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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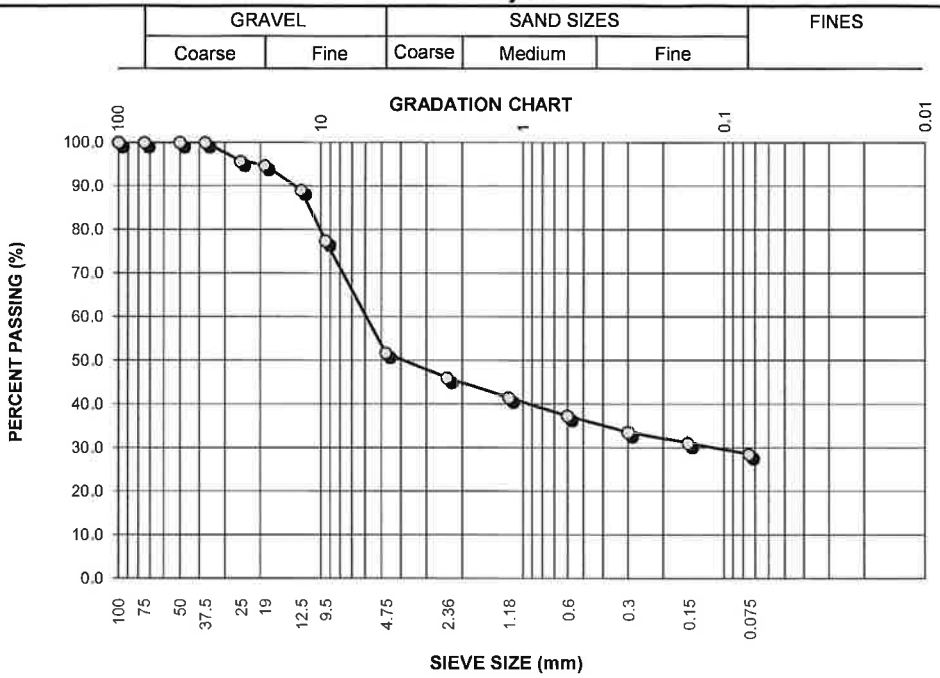
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 14-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-12

Source: G18

Depth (m): 17.9
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	96	-	
19	95	-	
12.5	89	-	
9.5	77	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	52	-	
2.36	46	-	
1.18	41	-	
0.6	37	-	
0.3	34	-	
0.15	31	-	
0.075	28.5	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	0.12
D_{60} =	6.28
D_{85} =	11.48

C_u=	#N/A
C_c=	#N/A

Gravel%	48.3
Sand%	23.2
Fines %	28.5

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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Tell: 604-294-3811
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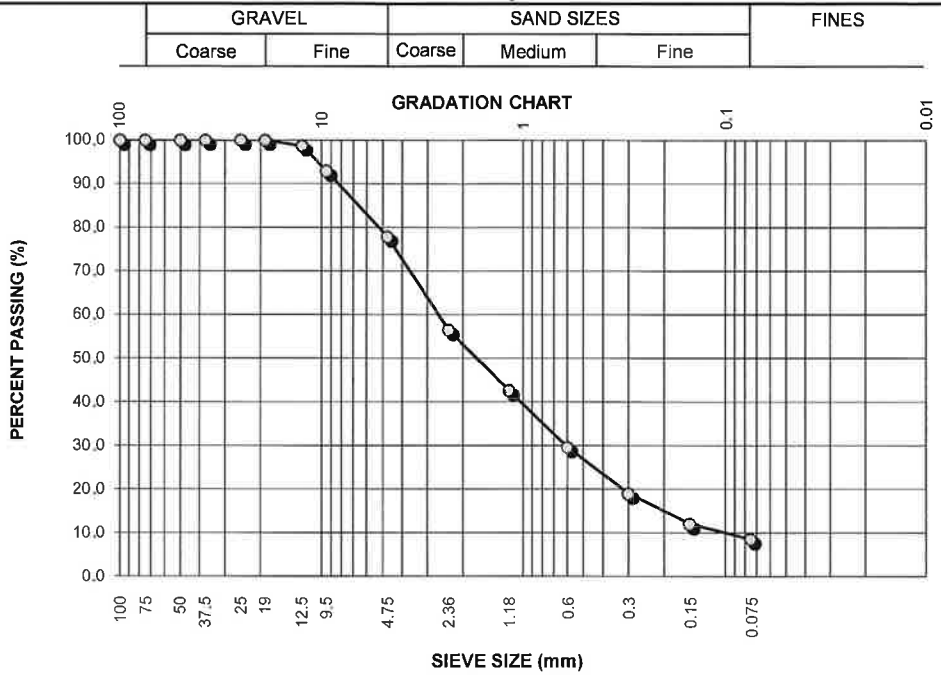
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 14-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-12

Source: G21

Depth (m): 20.6
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	99	-	
9.5	93	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	78	-	
2.36	56	-	
1.18	43	-	
0.6	30	-	
0.3	19	-	
0.15	12	-	
0.075	8.5	-	

Natural Moisture Content = #DIV/0!

D_{10} =	0.11
D_{15} =	0.22
D_{30} =	0.62
D_{60} =	2.76
D_{85} =	7.00

C_u=	26
C_c=	1

Gravel%	22.1
Sand%	69.4
Fines %	8.5

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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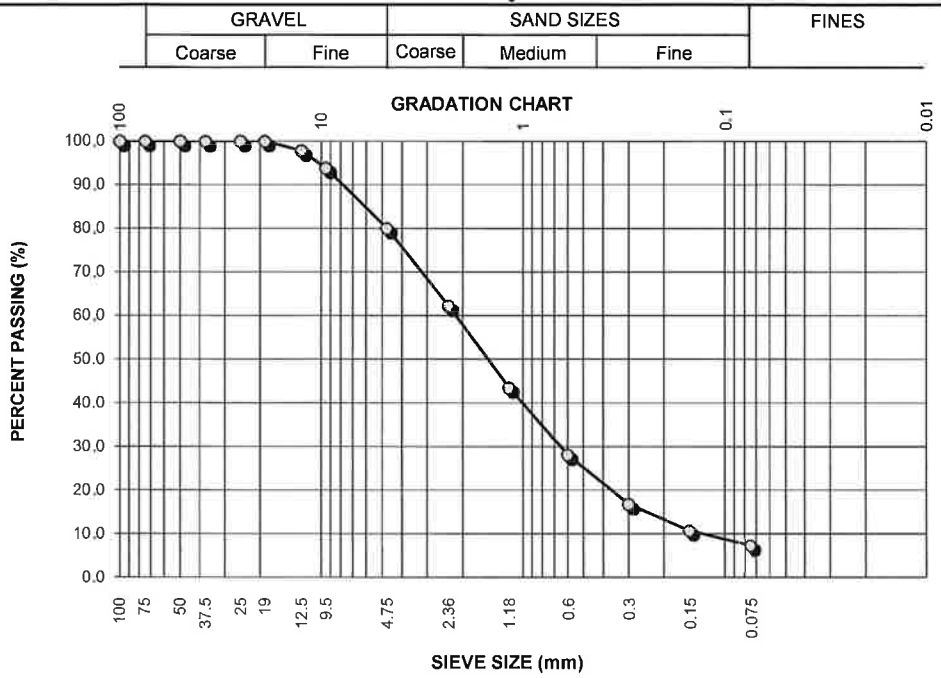
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 14-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-12

Source: G24

Depth (m): 25.8
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	98	-	
9.5	94	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	80	-	
2.36	62	-	
1.18	44	-	
0.6	28	-	
0.3	17	-	
0.15	11	-	
0.075	7.3	-	

Natural Moisture Content = #DIV/0!

D_{10} =	0.13
D_{15} =	0.26
D_{30} =	0.67
D_{60} =	2.22
D_{85} =	6.47

C_u=	17
C_c=	2

Gravel%	20.0
Sand%	72.7
Fines %	7.3

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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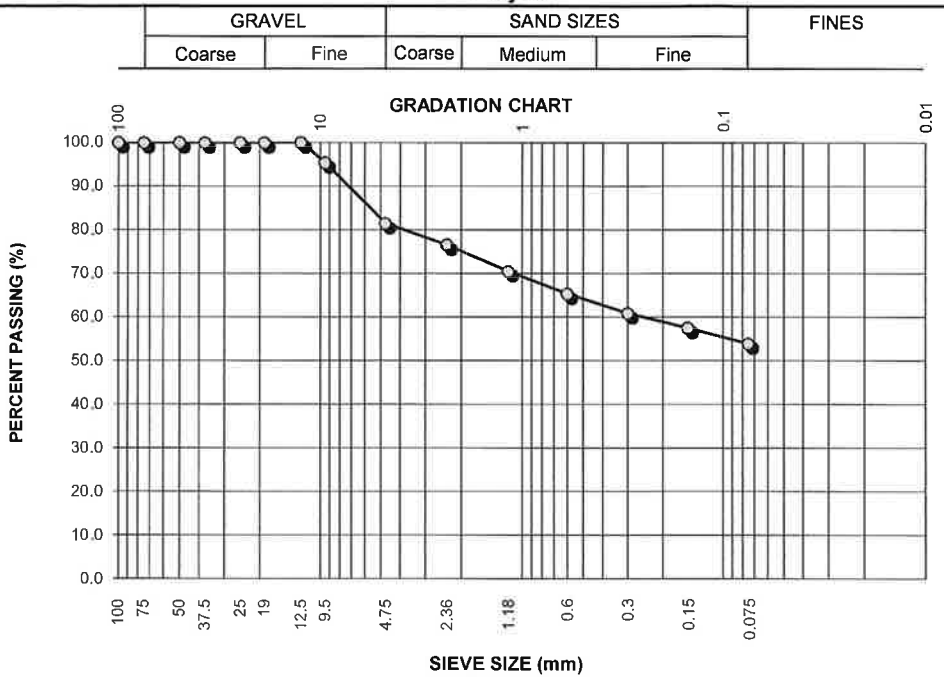
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 14-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-12

Source: G29

Depth (m): 31.9
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	100	-	
9.5	95	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	82	-	
2.36	77	-	
1.18	71	-	
0.6	65	-	
0.3	61	-	
0.15	58	-	
0.075	53.9	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	0.26
D_{85} =	5.95

C_u=	#N/A
C_c=	#N/A

Gravel%	18.5
Sand%	27.6
Fines %	53.9

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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Moisture Content Determination (ASTM D2216 - Method B)

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

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Client: YUKON GOVT
Project: CLINTON CREEK
Date:
Request Number:
Project Manager:
Project Number: VE52705B
Reviewed By:

Test Hole Number	BH18-13	BH18-13	BH18-13	BH18-13	BH18-13	BH18-13	BH18-13	BH18-13
Depth (m)	13.1	14.6	16.3	17.7	18.8	20.4	22.3	23.8
Sample Number	G1	G2	G3	G4	G5	G6	G7	G8
Tare No:	#1	O1	Q1	V1	S1	41	T1	X1
Wt. Sample Wet + Tare	224.99	213.17	217.21	288.25	298.20	287.38	228.41	263.79
Wt. Sample Dry + Tare	204.01	195.45	238.59	269.55	243.76	262.09	200.37	243.80
Wt. Water	20.98	17.72	58.62	18.70	54.44	20.29	28.04	19.99
Wt. Tare	4.05	3.96	4.02	3.94	3.95	3.92	3.99	3.96
Wt. Dry Sample	199.96	191.49	234.57	265.61	239.75	258.17	196.38	239.84
Moisture Content (%)	10.5 %	9.3 %	25.0 %	7.0 %	22.7 %	7.9 %	14.3 %	8.3 %

Test Hole Number	BH18-13	BH18-13	BH18-13	BH18-13	BH18-13	BH18-13	BH18-13	BH18-13
Depth (m)	25.3	26.8	28.4	29.8	31.40	32.9	34.5	35.9
Sample Number	G9	G10	G11	G12	G13	G14	G15	G16
Tare No:	M1	GG	C1	B1	5	4	5	41
Wt. Sample Wet + Tare	217.22	244.93	223.99	271.33	316.62	264.89	208.27	232.31
Wt. Sample Dry + Tare	207.27	233.92	195.87	258.31	304.29	254.22	200.32	216.63
Wt. Water	9.95	11.01	28.12	13.02	12.33	10.67	7.88	15.68
Wt. Tare	4.08	3.94	3.98	4.01	3.91	3.90	3.92	3.93
Wt. Dry Sample	203.19	229.98	191.89	254.30	300.38	250.32	196.40	217.70
Moisture Content (%)	4.9 %	4.8 %	14.6 %	5.1 %	4.1 %	4.3 %	4.0 %	7.4 %

Test Hole Number	BH18-13	BH18-13	BH18-13	BH18-13	BH18-13	BH18-13	BH18-13	BH18-13
Depth (m)	37.5	39.0	39.6	39.6	40.2	39.8	41.2	41.9
Sample Number	G17	G18	G19	G20	G22	G23	G23	G24
Tare No:	C1	B1	S1	V1	#1	T1	Q1	4
Wt. Sample Wet + Tare	244.46	249.6	219.63	252.18	388.69	228.91	307.02	277.35
Wt. Sample Dry + Tare	228.93	234.80	185.42	231.19	318.65	195.47	270.95	245.24
Wt. Water	15.53	14.80	34.21	20.99	70.04	33.44	36.07	32.11
Wt. Tare	3.98	4.00	3.98	3.94	4.09	4.06	4.01	3.90
Wt. Dry Sample	224.95	230.80	181.44	227.25	314.56	191.44	266.94	241.34
Moisture Content (%)	6.9 %	6.4 %	18.9 %	9.2 %	22.2 %	17.5 %	13.5 %	13.3 %

Test Hole Number	BH18-13	BH18-13	BH18-13	BH18-13	BH18-13	BH18-13	BH18-13	BH18-13
Depth (m)	42.4	43.9	44.8	46.3	48.2	49.1	49.7	50.30
Sample Number	G25	G26	G27	G28	G29	G30	31G	G32
Tare No:	X1	GG	M1	O1	J1	N1	8	6
Wt. Sample Wet + Tare	266.80	239.82	251.64	285.10	234.08	239.43	414.18	332.24
Wt. Sample Dry + Tare	245.86	210.39	206.94	254.88	201.58	212.56	348.85	310.70
Wt. Water	20.94	29.43	44.70	30.22	32.50	26.87	65.33	21.54
Wt. Tare	3.95	3.91	4.07	3.98	3.97	3.95	3.98	3.89
Wt. Dry Sample	241.91	206.48	202.87	250.90	197.61	208.61	344.87	306.81
Moisture Content (%)	8.7 %	14.3 %	22.0 %	12.0 %	16.4 %	12.9 %	18.9 %	7.0 %

Moisture Content Determination (ASTM D2216 - Method B)

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

wood.

Client: YUKON GOVT
Project: CLINTON CREEK
Date: Sept 10/18

Request Number:
Project Manager:
Project Number: VE52705B
Reviewed By:

Test Hole Number	BH18-13	BH18-13	BH18-13	BH18-13	BH18-13			
Depth (m)	51.1	51.8	53.3	54.9	56.4			
Sample Number	C33	C34	C35	C36	C37			
Tare No:	A1	E1	D1	F1	P1			
Wt. Sample Wet + Tare	316.72	273.28	254.10	243.41	260.31			
Wt. Sample Dry + Tare	270.96	246.91	218.29	211.55	235.53			
Wt. Water	45.76	26.37	35.81	31.86	24.78			
Wt. Tare	4.05	4.07	4.18	4.03	3.94			
Wt. Dry Sample	266.91	242.84	214.11	207.52	231.59			
Moisture Content (%)	17.1%	10.9%	16.7%	15.4%	10.7%			

Test Hole Number								
Depth (m)								
Sample Number								
Tare No:								
Wt. Sample Wet + Tare								
Wt. Sample Dry + Tare								
Wt. Water								
Wt. Tare								
Wt. Dry Sample								
Moisture Content (%)								

Test Hole Number								
Depth (m)								
Sample Number								
Tare No:								
Wt. Sample Wet + Tare								
Wt. Sample Dry + Tare								
Wt. Water								
Wt. Tare								
Wt. Dry Sample								
Moisture Content (%)								

Test Hole Number								
Depth (m)								
Sample Number								
Tare No:								
Wt. Sample Wet + Tare								
Wt. Sample Dry + Tare								
Wt. Water								
Wt. Tare								
Wt. Dry Sample								
Moisture Content (%)								

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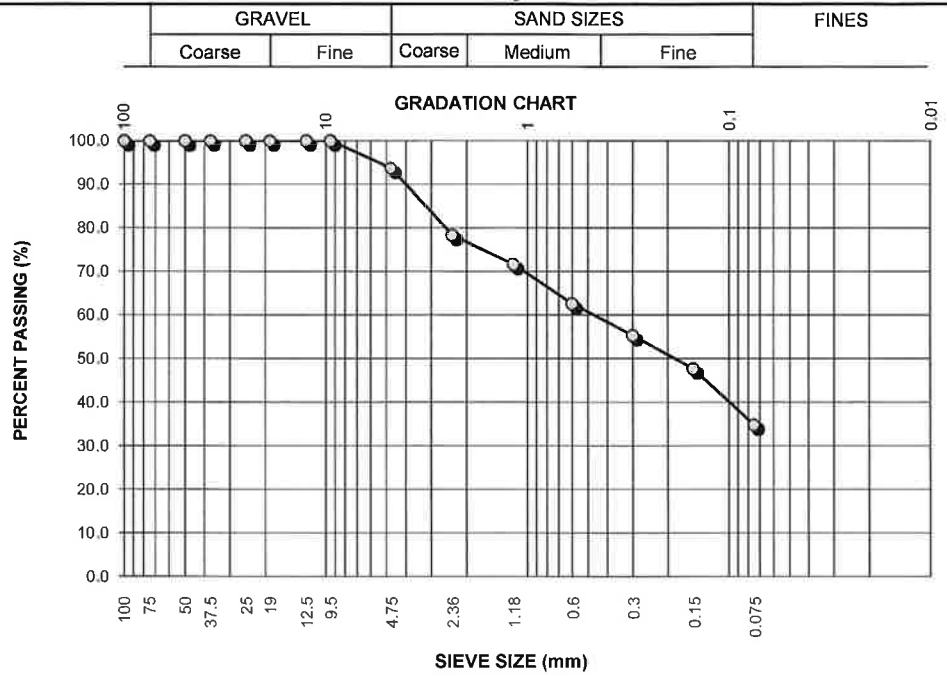
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number: 2542

Date Sampled:
Date Received:
Date Tested: 19-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-13

Source: G3

Depth (m): 16.3
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	100	-	
9.5	100	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	94	-	
2.36	78	-	
1.18	72	-	
0.6	63	-	
0.3	55	-	
0.15	48	-	
0.075	34.8	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	0.49
D_{85} =	3.40

C_u=	#N/A
C_c=	#N/A

Gravel%	6.3
Sand%	58.9
Fines %	34.8

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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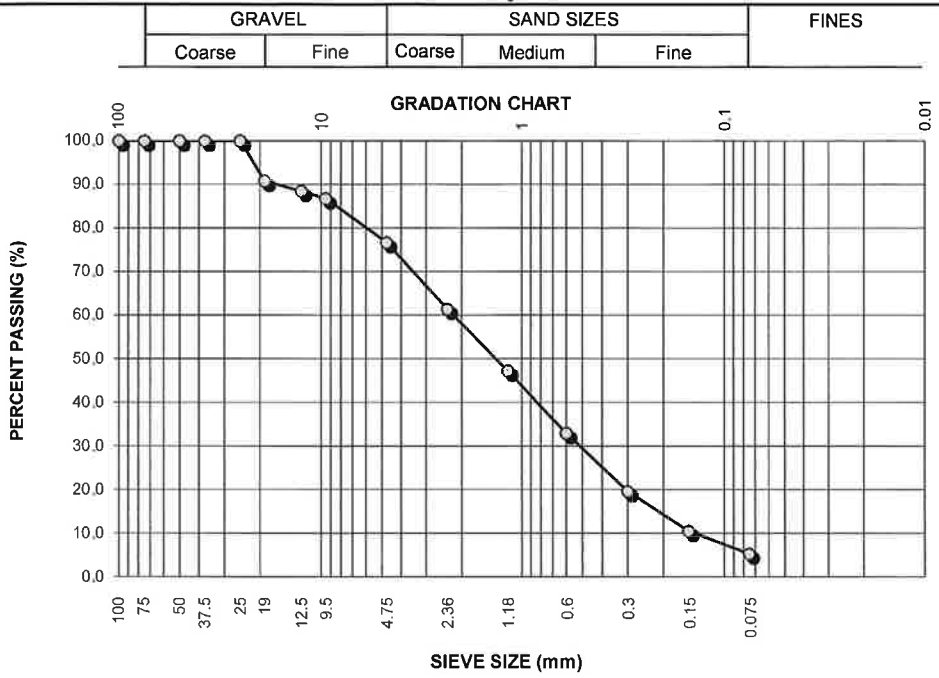
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number: 2543

Date Sampled:
Date Received:
Date Tested: 19-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-13

Source: G9

Depth (m): 25.3
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	91	-	
12.5	88	-	
9.5	87	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	77	-	
2.36	61	-	
1.18	47	-	
0.6	33	-	
0.3	20	-	
0.15	11	-	
0.075	5.3	-	

Natural Moisture Content = #DIV/0!

D_{10} =	0.14
D_{15} =	0.22
D_{30} =	0.53
D_{60} =	2.24
D_{85} =	8.69

C_u=	16
C_c=	1

Gravel%	23.3
Sand%	71.4
Fines %	5.3

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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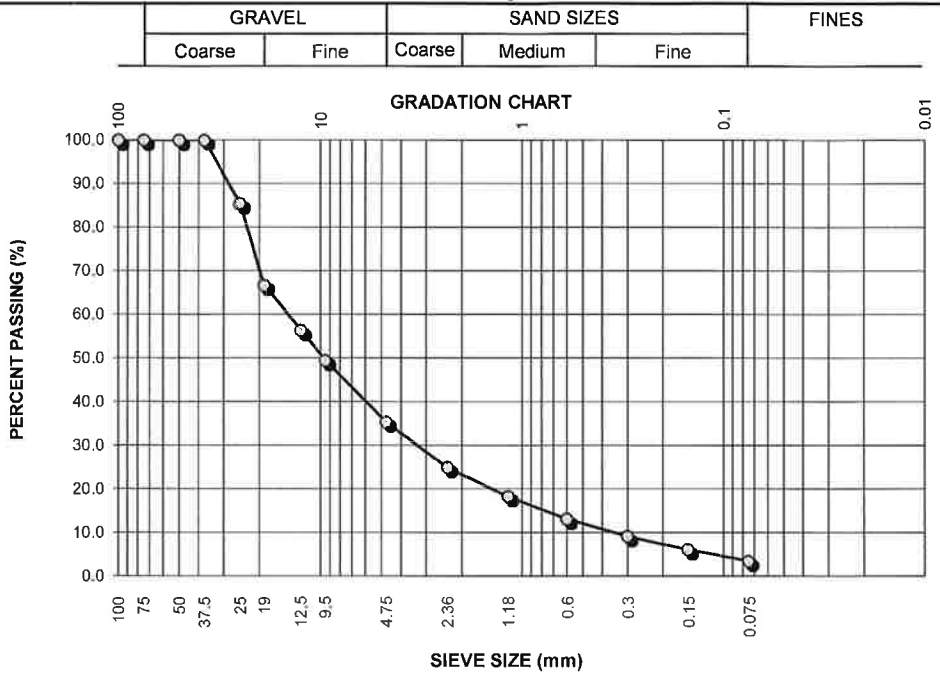
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number: 2544

Date Sampled:
Date Received:
Date Tested: 19-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-13

Source: G13

Depth (m): 31.4
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	85	-	
19	67	-	
12.5	56	-	
9.5	49	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	35	-	
2.36	25	-	
1.18	18	-	
0.6	13	-	
0.3	9	-	
0.15	6	-	
0.075	3.5	-	

Natural Moisture Content = #DIV/0!

D_{10} =	0.37
D_{15} =	0.82
D_{30} =	3.54
D_{60} =	14.88
D_{85} =	24.90

C_u=	40
C_c=	2

Gravel%	64.7
Sand%	31.8
Fines %	3.5

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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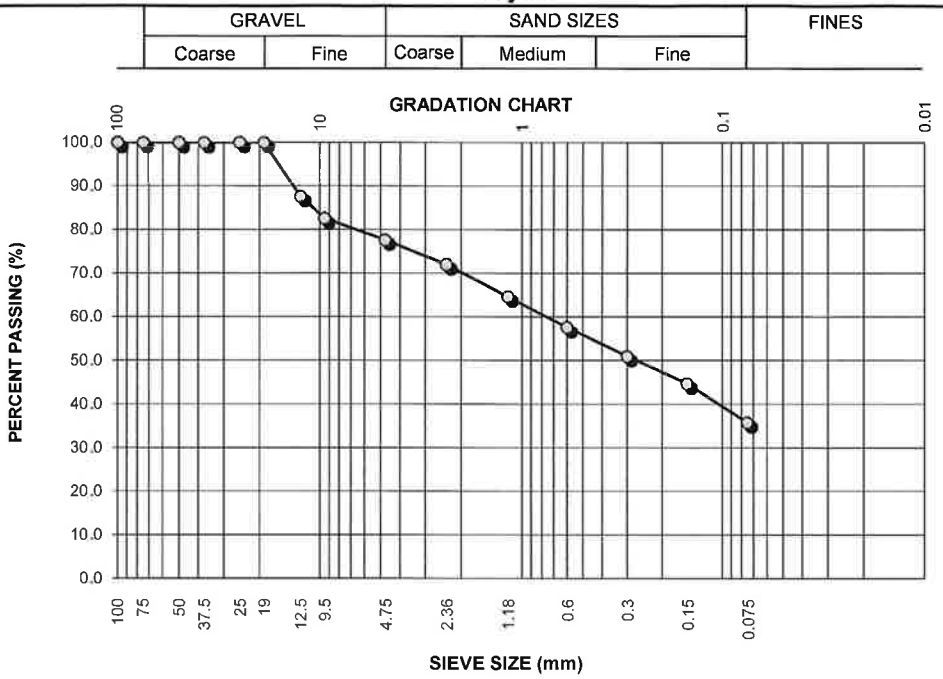
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 16-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-13

Source: G20

Depth (m): 39.6
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	88	-	
9.5	83	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	78	-	
2.36	72	-	
1.18	65	-	
0.6	58	-	
0.3	51	-	
0.15	45	-	
0.075	35.8	-	

Natural Moisture Content = -107%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	0.80
D_{85} =	10.96

C_u=	#N/A
C_c=	#N/A

Gravel%	22.3
Sand%	41.9
Fines %	35.8

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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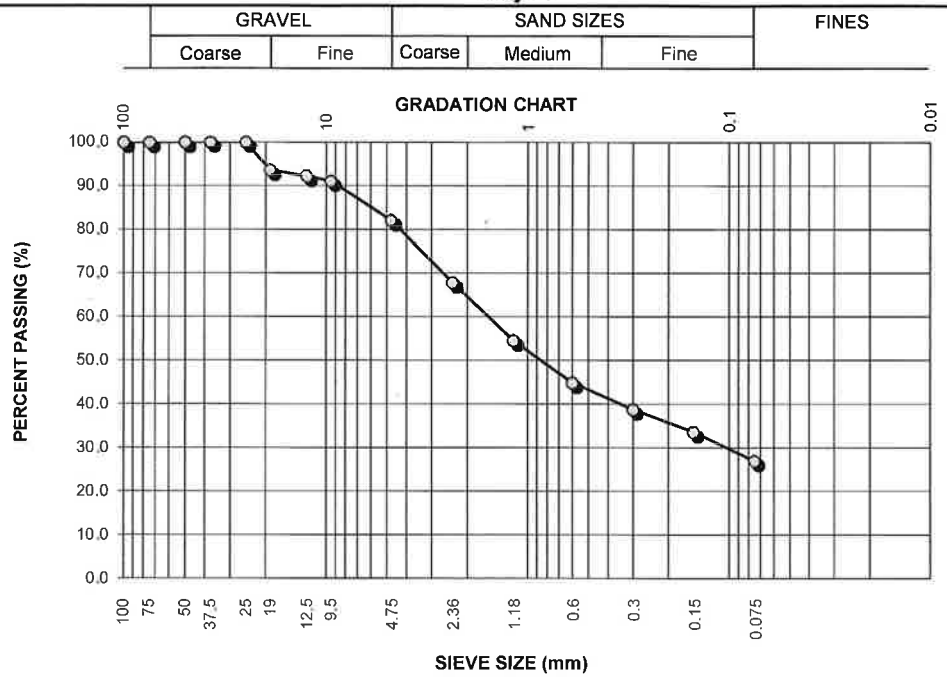
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 17-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-13

Source: G24

Depth (m): 41.9
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	94	-	
12.5	92	-	
9.5	91	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	82	-	
2.36	68	-	
1.18	54	-	
0.6	45	-	
0.3	39	-	
0.15	34	-	
0.075	27.0	-	

Natural Moisture Content = 13%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	0.11
D_{60} =	1.68
D_{85} =	6.28

C_u=	#N/A
C_c=	#N/A

Gravel%	17.9
Sand%	55.1
Fines %	27.0

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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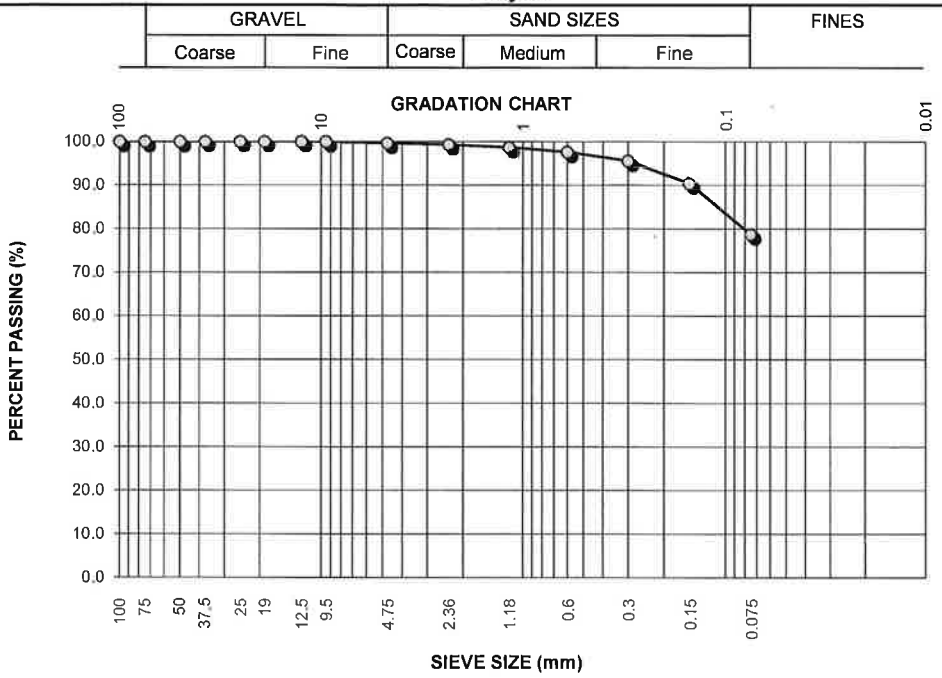
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 16-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-13

Source: G27

Depth (m): 45
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	100	-	
9.5	100	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	100	-	
2.36	99	-	
1.18	99	-	
0.6	98	-	
0.3	96	-	
0.15	90	-	
0.075	78.8	-	

Natural Moisture Content = -106%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	#N/A
D_{85} =	0.12

C_u=	#N/A
C_c=	#N/A

Gravel%	0.4
Sand%	20.9
Fines %	78.8

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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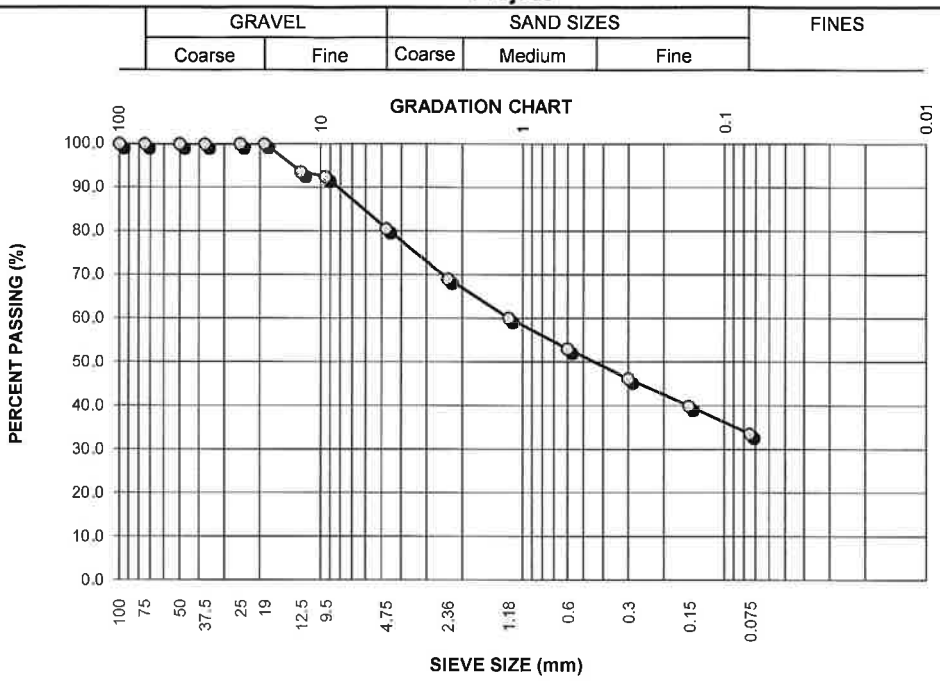
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 17-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-13

Source: G30

Depth (m): 49.1
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	93	-	
9.5	92	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	81	-	
2.36	69	-	
1.18	60	-	
0.6	53	-	
0.3	46	-	
0.15	40	-	
0.075	33.6	-	

Natural Moisture Content = 13%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	1.17
D_{85} =	6.52

C_u=	#N/A
C_c=	#N/A

Gravel%	19.4
Sand%	47.0
Fines %	33.6

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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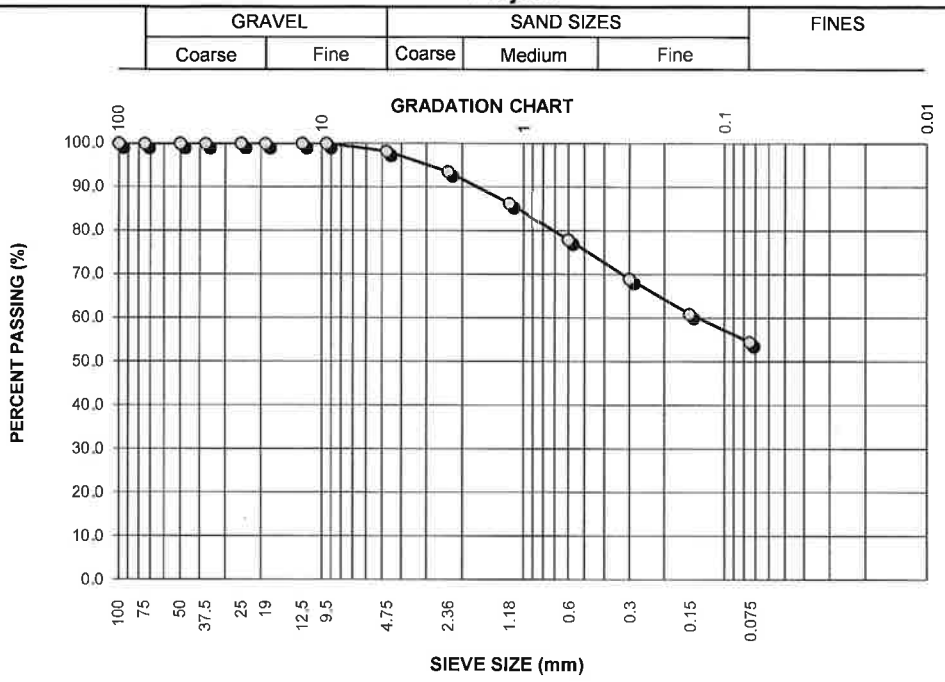
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 17-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-13

Source: G34

Depth (m): 51.8
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	100	-	
9.5	100	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	98	-	
2.36	93	-	
1.18	86	-	
0.6	78	-	
0.3	69	-	
0.15	61	-	
0.075	54.5	-	

Natural Moisture Content = 12%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	0.14
D_{85} =	1.09

C_u=	#N/A
C_c=	#N/A

Gravel%	1.7
Sand%	43.8
Fines %	54.5

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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Fish Creek Mine Reclamation

X	
373.57	354.29

BH14 – 21 BH10 – 6

Moisture Content Determination (ASTM D2216 - Method B)

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

wood.

Client: Yukon Gov't
Project: CLINTON CREEK
Date: Aug 31, 2010
Request Number:
Project Manager:
Project Number: VE752705.100
Reviewed By:

Test Hole Number	BH18-14	BH18-14	BH18-14	BH18-14	BH18-14	BH18-14	BH18-14	
Depth (m)	1'(0.3)	4'(1.2)	13'3.9	17'	17'5.1	23'7.0	28'8.5	
Sample Number	S-1	S-2	S-3	S-4	S-4	S-5	S-6	
Tare No:	A	B	C	D	D	E	F	
Wt. Sample Wet + Tare	375.12	406.60	348.48		341.72	349.81	306.26	
Wt. Sample Dry + Tare	339.90	372.73	320.96		313.35	329.34	282.65	
Wt. Water	35.22	33.87	27.52		28.37	20.47	24.01	
Wt. Tare	15.75	15.75	17.03	18.75	15.47	17.62	15.43	
Wt. Dry Sample	324.15	356.98	303.93		297.88	311.72	267.22	
Moisture Content (%)	10.9%	9.5%	9.0%		9.5%	6.6%	8.9%	

Test Hole Number	BH18-14	BH18-14	BH18-14	BH18-14	BH18-14	BH18-14	BH18-14	BH18-14
Depth (m)	32' 9.7	37' 11.2	42' 12.8	46' 14	48' 14.6	50' 15.2	52' 15.8	54' 16.4
Sample Number	S-7	S-8	S-9	S-10	S-11	S-12	S-13	S-14
Tare No:	G	H	I	J	K	L	M	N
Wt. Sample Wet + Tare	437.91	384.77	397.89	487.67	507.04	351.65	536.68	381.63
Wt. Sample Dry + Tare	423.09	373.01	378.75	413.38	428.00	298.74	460.21	305.18
Wt. Water	14.82	11.76	19.14	74.29	79.04	52.91	76.47	76.45
Wt. Tare	17.59	15.48	15.98	17.66	16.11	16.11	17.95	17.95
Wt. Dry Sample	405.5	357.53	363.27	395.72	411.89	282.63	442.26	287.23
Moisture Content (%)	3.7%	3.3%	5.3%	18.7%	19.2%	18.7%	17.3%	26.6%

Test Hole Number	BH18-14	BH18-14	BH18-14	BH18-14	BH18-14	BH18-14	BH18-14
Depth (m)	56' 17.1	57.5' 17.5	59' 17.9	60' 18.3	62' 18.8	64' 19.5	66' 20.1
Sample Number	S-15	S-16	S-17	S-18	S-19	S-20	S-21
Tare No:	O	P	Q	R	S	T	U
Wt. Sample Wet + Tare	426.24	364.32	567.56	573.06	409.54	515.51	491.25
Wt. Sample Dry + Tare	343.76	294.20	475.59	480.14	437.57	401.72	421.82
Wt. Water	82.48	70.12	91.97	92.92	51.97	113.79	69.43
Wt. Tare	17.04	15.28	15.39	17.94	15.57	15.39	17.70
Wt. Dry Sample	326.72	278.92	460.2	462.2	422.0	386.13	404.12
Moisture Content (%)	25.2%	25.1%	19.9%	20.1%	12.3%	29.5%	17.2%

Test Hole Number	BH18-10	BH18-10	BH18-10	BH18-10	BH18-10	BH18-10	BH18-10
Depth (m)	30' 9.1	34' 10.3	64' 19.5	18.5' 5.6	73.5' 22.4	68.5' 20.8	
Sample Number	G6	G7	G13	G4	G15	G16	G14
Tare No:	1	2	3	4	5	6	
Wt. Sample Wet + Tare	436.33	380.48	311.76	343.35	569.51	592.43	
Wt. Sample Dry + Tare	394.64	358.27	287.26	304.01	521.74	533.85	
Wt. Water	41.69	22.21	24.5	39.34	47.77	58.58	
Wt. Tare	17.73	15.66	15.44	15.56	18.10	18.10	
Wt. Dry Sample	376.91	342.61	271.82	288.45	503.64	515.75	
Moisture Content (%)	11.0%	6.5%	9.0%	13.6%	9.5%	11.4%	

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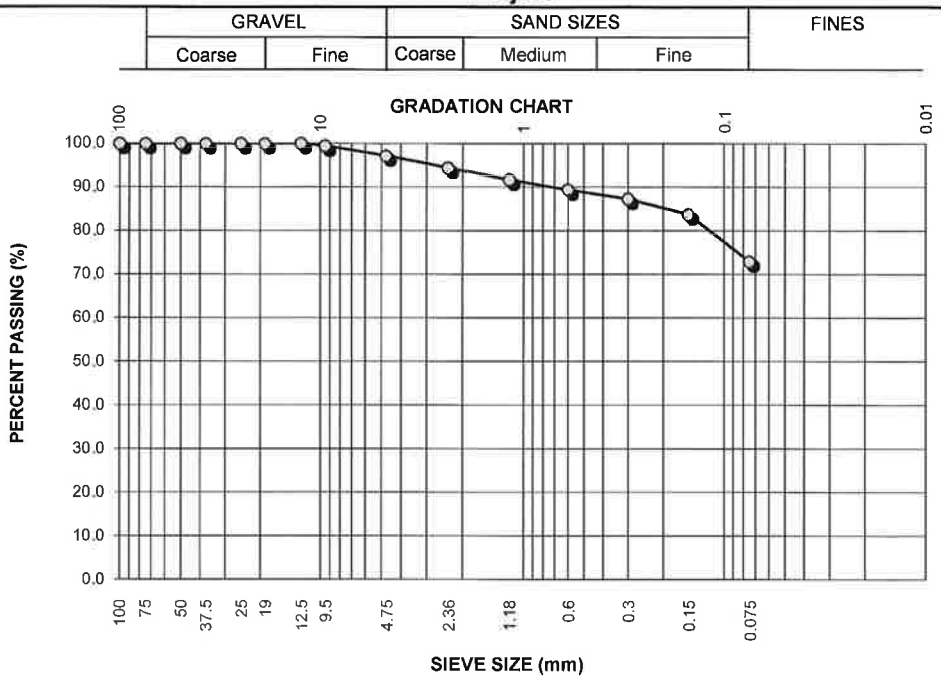
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 11-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-14

Source: G14

Depth (m): 16.5
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	100	-	
9.5	99	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	97	-	
2.36	94	-	
1.18	92	-	
0.6	89	-	
0.3	87	-	
0.15	84	-	
0.075	73.0	-	

Natural Moisture Content = 27%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	#N/A
D_{85} =	0.20

C_u=	#N/A
C_c=	#N/A

Gravel%	2.8
Sand%	24.2
Fines %	73.0

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

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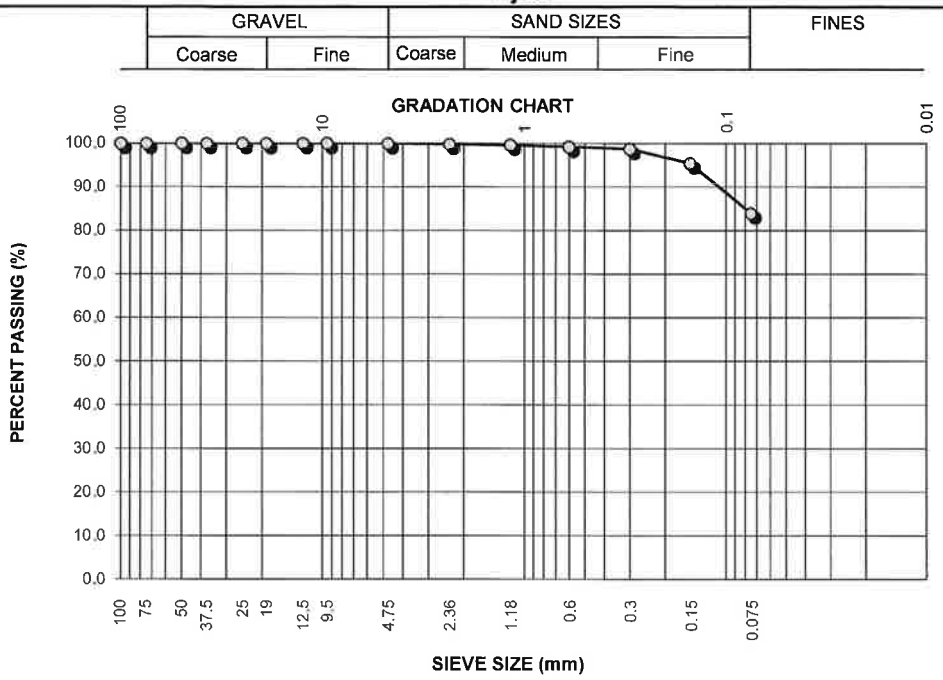
PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 11-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-14

Source: G16

Depth (m): 17.5
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	100	-	
9.5	100	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	100	-	
2.36	100	-	
1.18	100	-	
0.6	99	-	
0.3	99	-	
0.15	95	-	
0.075	83.9	-	

Natural Moisture Content = 27%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	#N/A
D_{85} =	0.08

C_u=	#N/A
C_c=	#N/A

Gravel%	0.0
Sand%	16.1
Fines %	83.9

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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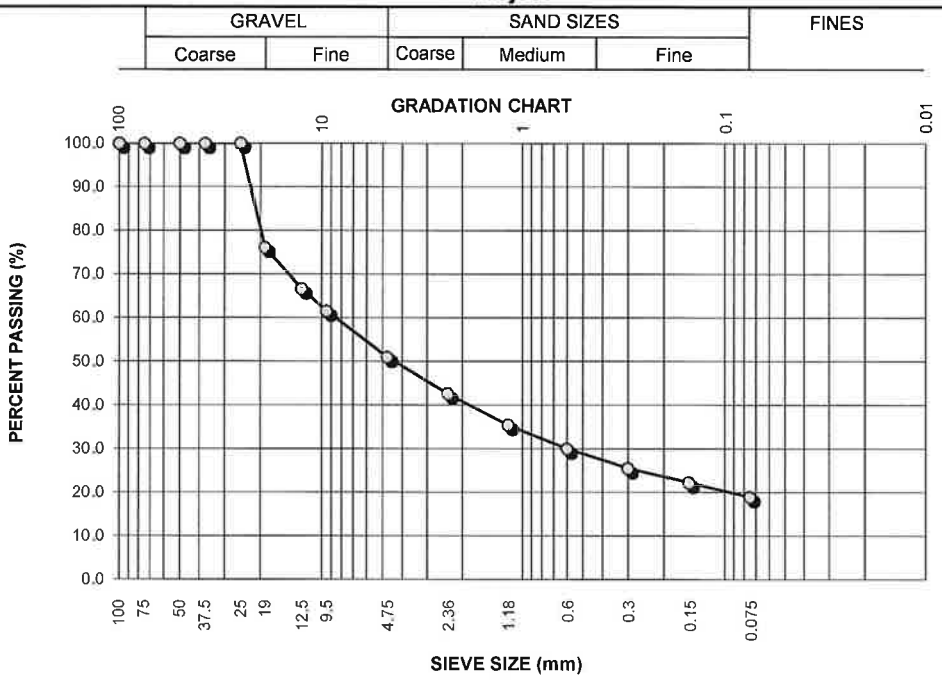
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 11-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-14

Source: G18

Depth (m): 18.3
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	76	-	
12.5	67	-	
9.5	62	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	51	-	
2.36	42	-	
1.18	35	-	
0.6	30	-	
0.3	26	-	
0.15	22	-	
0.075	18.9	-	

Natural Moisture Content = 15%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	0.60
D_{60} =	8.78
D_{85} =	21.23

C_u=	#N/A
C_c=	#N/A

Gravel%	49.1
Sand%	32.0
Fines %	18.9

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

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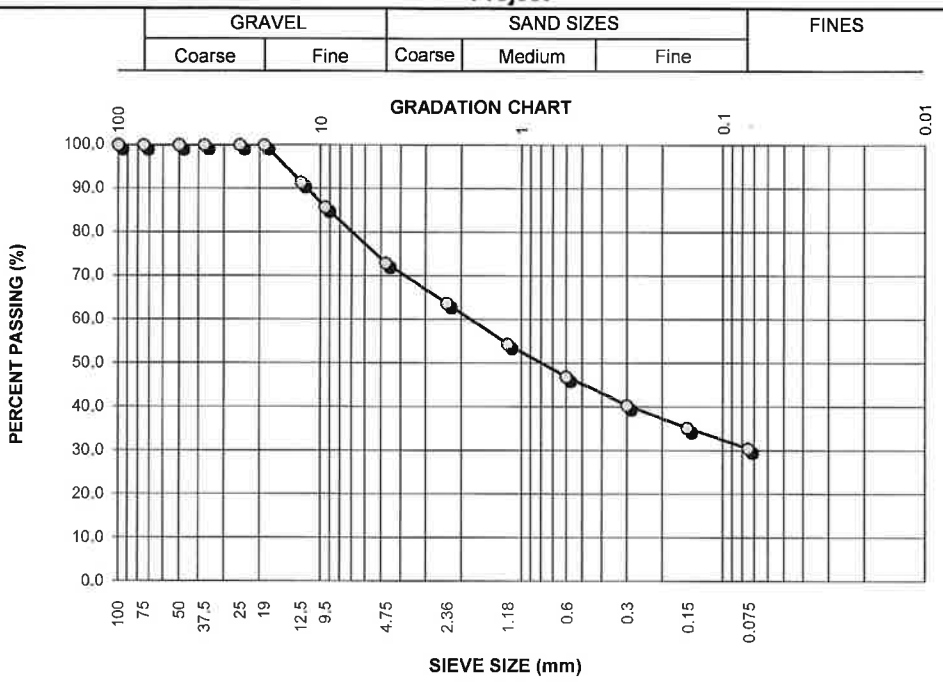
PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 11-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-14

Source: G17

Depth (m): 18
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	91	-	
9.5	86	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	73	-	
2.36	64	-	
1.18	54	-	
0.6	47	-	
0.3	40	-	
0.15	35	-	
0.075	30.5	-	

Natural Moisture Content = 18%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	1.90
D_{85} =	9.23

C_u=	#N/A
C_c=	#N/A

Gravel%	27.0
Sand%	42.5
Fines %	30.5

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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Moisture Content Determination (ASTM D2216 - Method B)

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

wood.

Client: YUKON GOVT
Project: CLINTON CREEK
Date:

Request Number:
Project Manager:
Project Number: VE52705B
Reviewed By:

Test Hole Number	BH18-15	BH18-15	BH18-15	BH18-15	BH18-15			
Depth (m)	0.6	1.4	3.6	5.8	7.6			
Sample Number	G1	G2	G3	G4	G5			
Tare No:	J1	A	D1	V1	B1			
Wt. Sample Wet + Tare	261.78	251.30	220.28	257.75	255.22			
Wt. Sample Dry + Tare	233.22	222.57	197.50	253.86	244.23			
Wt. Water	28.56	28.73	22.78	3.89	10.99			
Wt. Tare	3.98	3.99	4.03	3.94	3.99			
Wt. Dry Sample	229.24	218.58	193.47	249.92	240.24			
Moisture Content (%)	12.5 %	13.1 %	11.8 %	1.6 %	4.6 %			

Test Hole Number								
Depth (m)								
Sample Number								
Tare No:								
Wt. Sample Wet + Tare								
Wt. Sample Dry + Tare								
Wt. Water								
Wt. Tare								
Wt. Dry Sample								
Moisture Content (%)								

Test Hole Number								
Depth (m)								
Sample Number								
Tare No:								
Wt. Sample Wet + Tare								
Wt. Sample Dry + Tare								
Wt. Water								
Wt. Tare								
Wt. Dry Sample								
Moisture Content (%)								

Test Hole Number								
Depth (m)								
Sample Number								
Tare No:								
Wt. Sample Wet + Tare								
Wt. Sample Dry + Tare								
Wt. Water								
Wt. Tare								
Wt. Dry Sample								
Moisture Content (%)								

Moisture Content Determination (ASTM D2216 - Method B)

wood.

Wood Environment & Infrastructure Solutions

a Division of Wood Canada Limited

Client: YUKON GOVT
Project: CLINTON CREEK
Date: Sept 14/18

Request Number:
Project Manager:
Project Number: VE52705B
Reviewed By:

Test Hole Number	BH18-16	BH18-16	BH18-16	BH18-16	BH18-16	BH18-16	BH18-16	BH18-16
Depth (m)	0.1	2.1	3.7	12.20	6.7	7.0	7.3	7.6
Sample Number	G1	G2	G3	G21	G5	G6	G7	G8
Tare No:	F1	P1	C6	22	T1	X1	A1	N1
Wt. Sample Wet + Tare	186.11	240.78	238.03	367.03	166.91	239.58	248.78	147.17
Wt. Sample Dry + Tare	170.25	225.32	222.24	284.46	154.45	211.43	229.22	67.84
Wt. Water	15.86	15.46	5.79	82.57	12.46	28.15	19.56	73.33
Wt. Tare	4.04	3.94	3.93	12.03	3.97	4.05	3.95	3.93
Wt. Dry Sample	166.21	221.38	218.51	272.43	150.48	207.38	225.27	63.91
Moisture Content (%)	9.5%	6.9%	2.6%	30.3%	8.3%	13.5%	8.7%	114.7%

Test Hole Number	BH18-16	BH18-16	BH18-16	BH18-16	BH18-16	BH18-16	BH18-16	BH18-16
Depth (m)	8.2	8.5	8.8	9.5	9.8	10.0	10.4	10.7
Sample Number	G9	G10	G11	G12	G13	G14	G15	G16
Tare No:	D1	J1	V1	14	IN	H1 (White)	1M	28
Wt. Sample Wet + Tare	215.47	169.98	295.87	351.25	766.45	310.67	339.95	376.16
Wt. Sample Dry + Tare	167.95	26.37	244.25	306.43	500.79	211.58	212.14	214.49
Wt. Water	46.52	43.61	51.62	44.82	265.66	99.09	127.81	161.67
Wt. Tare	4.00	3.98	3.92	12.25	15.24	4.07	16.64	11.95
Wt. Dry Sample	163.95	22.39	240.33	294.18	485.55	207.51	195.5	202.54
Moisture Content (%)	28.4%	194.8%	21.5%	15.2%	54.7%	47.8%	65.4%	79.8%

Test Hole Number	BH18-16	BH18-16	BH18-16	BH18-16	BH18-16	BH18-16	BH18-16	BH18-16
Depth (m)	10.9	11.3	11.6	11.9	3.7	12.5	12.8	13.1
Sample Number	G17	G18	G19	G20	G4	G22	G23	G24
Tare No:	8	4	21	5	O1	M1	1F	15
Wt. Sample Wet + Tare	222.12	195.22	320.17	456.19	226.08	76.83	522.69	417.54
Wt. Sample Dry + Tare	119.51	125.32	226.69	311.15	212.25	30.08	358.66	345.56
Wt. Water	102.61	69.9	93.53	145.04	13.83	46.75	164.03	71.98
Wt. Tare	3.96	3.89	11.94	11.91	3.94	4.01	15.39	16.54
Wt. Dry Sample	115.55	121.43	214.7	299.24	208.31	26.07	343.27	329.02
Moisture Content (%)	88.8%	57.6%	43.6%	48.5%	6.6	179.3%	47.8	20.0%

Test Hole Number	BH18-16	BH18-16	BH18-16	BH18-16	BH18-16	BH18-16	BH18-16	BH18-16
Depth (m)	13.4	13.7	14.0	14.3	14.6	14.9	15.2	16.16
Sample Number	G25	G26	G27	G28	G29	G30	G31	G32
Tare No:	1E	1B	1	6	AA10	SuperMan	B1	1I
Wt. Sample Wet + Tare	420.50	363.46	555.69	373.51	525.76	327.16	232.42	1748.08
Wt. Sample Dry + Tare	356.63	~~261.37~~	416.82	281.26	399.56	252.34	201.37	1486.77
Wt. Water	63.87	133.5	138.87	92.25	126.2	74.82	31.05	261.31
Wt. Tare	15.50	16.46	11.96	3.85	17.38	15.37	3.97	15.90
Wt. Dry Sample	341.13	413.5	404.86	277.41	382.18	236.97	197.4	1470.87
Moisture Content (%)	18.7%	32.2%	34.3%	33.3%	33.0%	31.6%	15.7%	17.8%

429.96

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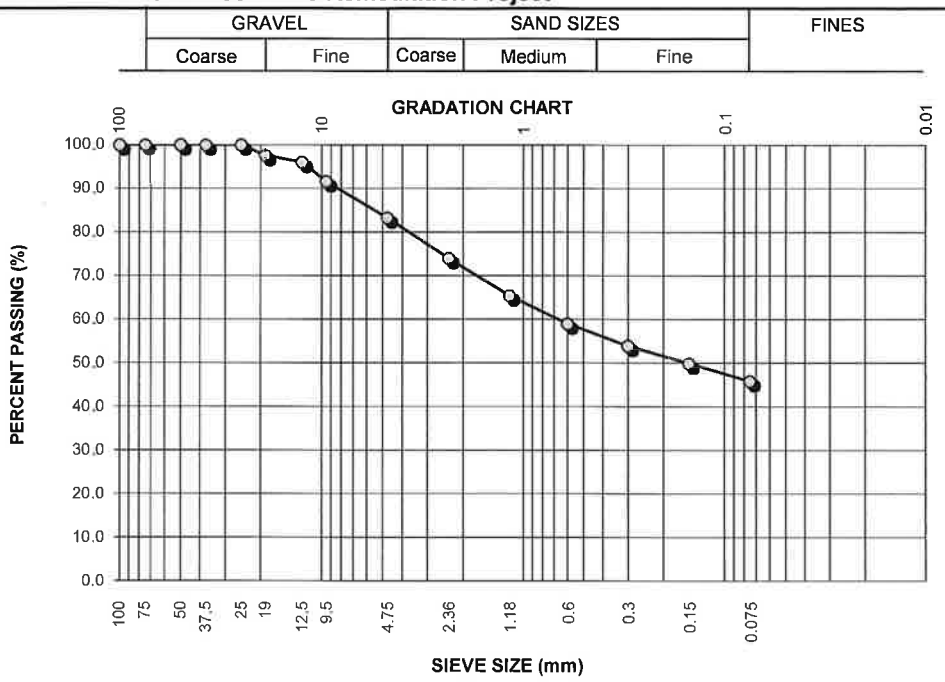
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number: 2559

Date Sampled:
Date Received:
Date Tested: 14-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-16

Source: G18

Depth (m): 11.3
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	98	-	
12.5	96	-	
9.5	92	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	83	-	
2.36	74	-	
1.18	65	-	
0.6	59	-	
0.3	54	-	
0.15	50	-	
0.075	45.8	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	0.69
D_{85} =	5.72

C_u=	#N/A
C_c=	#N/A

Gravel%	16.7
Sand%	37.5
Fines %	45.8

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14
Presence of +/- 60% of wooden

Reviewed By:

Reporting of these test results constitutes a testing services only. Engineering interpretation or evaluation of these test results is provided only on written request.
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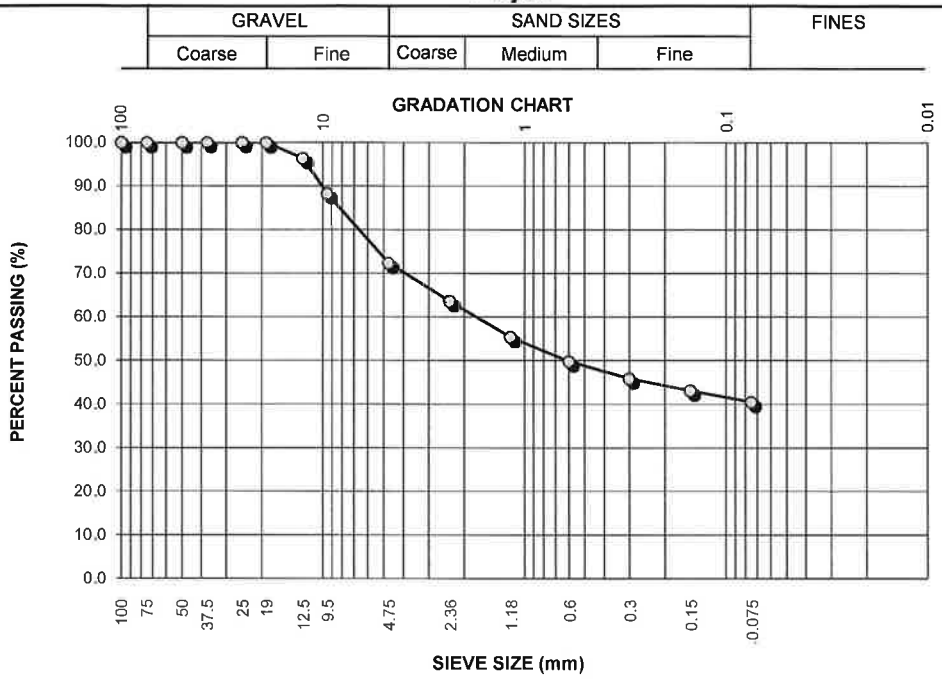
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number: 2650

Date Sampled:
Date Received:
Date Tested: 14-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-16

Source: G31

Depth (m): 15.2
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	96	-	
9.5	88	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	72	-	
2.36	64	-	
1.18	55	-	
0.6	50	-	
0.3	46	-	
0.15	43	-	
0.075	40.5	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	1.86
D_{85} =	8.54

C_u=	#N/A
C_c=	#N/A

Gravel%	27.6
Sand%	31.9
Fines %	40.5

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14
Presence of +/- 60% of wooden

Reviewed By:

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BH17 – 3B

Moisture Content Determination (ASTM D2216 - Method B)

Wood Environment & Infrastructure Solutions
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wood.

Client: Yukon Gov't
Project: CLINTON CREEK
Date: Sep 1, 2016
Request Number:
Project Manager:
Project Number: VE52705B
Reviewed By:

Test Hole Number	BH16-17	BH16-17	BH16-17	BH16-17	BH16-17	BH16-17	BH16-17	BH16-17
Depth (m)	2' 0.6m	6' 1.8	10' 3.0	15' 4.5	20' 6.0	23' 7.0	27' 8.2	31' 9.4
Sample Number	S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8
Tare No:	A	B	C	D	E	F	G	H
Wt. Sample Wet + Tare	410.71	357.49	376.09	306.03	375.31	348.60	347.33	411.75
Wt. Sample Dry + Tare	360.74	328.99	344.59	287.81	348.78	323.22	329.80	398.00
Wt. Water	49.97	28.5	31.5	18.22	26.53	25.38	17.53	13.75
Wt. Tare	17.58	16.86	17.21	14.98	15.15	17.72	16.78	14.99
Wt. Dry Sample	343.16	312.13	327.38	272.83	333.63	305.5	313.02	383.01
Moisture Content (%)	14.6%	9.1%	9.6%	6.7%	8.0%	8.3%	5.6%	3.6%
Test Hole Number	BH16-17	BH16-17	BH16-17	BH16-17	BH16-17	BH16-17	BH16-17	BH16-17
Depth (m)	36' 10.9	41' 12.4	46' 14.0	49' 14.9	54' 16.4	59' 17.9	63' 19.2	68' 20.7
Sample Number	S-9	S-10	S-11	S-12	S-13	S-14	S-15	S-16
Tare No:	I	J	K	L	M	N	O	P
Wt. Sample Wet + Tare	379.47	381.63	402.42	310.15	388.90	374.43	489.37	350.15
Wt. Sample Dry + Tare	361.18	338.46	380.92	286.71	368.54	357.06	451.16	328.58
Wt. Water	18.29	43.17	21.5	23.44	20.36	17.37	38.21	21.57
Wt. Tare	15.15	17.00	15.67	15.34	16.92	15.13	16.84	17.04
Wt. Dry Sample	346.03	321.46	365.25	271.37	351.62	341.93	434.32	311.54
Moisture Content (%)	5.3%	13.4%	5.9%	8.6%	5.8%	5.1%	8.8%	6.9
Test Hole Number	BH16-17	BH16-17	BH16-17	BH16-17	BH16-17	BH16-17	BH16-17	BH16-17
Depth (m)	72' 21.9	77' 23.4	82' 24.9	86' 26.2	91' 27.7	95.6' 29.1	98.5' 30	100' 30.4
Sample Number	S-17	S-18	S-19	S-20	S-21	S-22	S-23	S-24
Tare No:	R	S	T	U	V	W	X	Y
Wt. Sample Wet + Tare	343.13	365.08	444.68	322.96	329.25	356.65	373.57	354.29
Wt. Sample Dry + Tare	327.74	345.28	370.75	312.22	300.27	297.70	324.06	320.00
Wt. Water	15.39	19.8	73.93	10.74	28.98	58.95	49.51	34.29
Wt. Tare	15.14	15.16	16.95	16.67	16.98	15.78	17.69	17.29
Wt. Dry Sample	312.6	330.12	353.8	295.55	283.29	281.92	306.37	302.71
Moisture Content (%)	4.9	5.1%	20.9%	3.6%	10.2%	20.9%	16.2%	11.3%
Test Hole Number	BH16-17	BH16-17	BH16-17	BH16-17	BH16-17	BH16-17	BH16-17	BH16-17
Depth (m)	101' 30.7	106' 32.3	108' 32.9	111.5' 33.9	113' 34.4	115' 35	118' 35.9	119.5' 36.4
Sample Number	S-25	S-26	S-27	S-28	S-29	S-30	S-31	S-32
Tare No:	Z	AA	BB	CC	DD	EE	FF	GG
Wt. Sample Wet + Tare	322.44	365.57	331.84	399.60	329.71	336.70	331.08	3.95
Wt. Sample Dry + Tare	290.37	331.59	281.55	325.03	267.96	273.66	303.25	299.63
Wt. Water	32.57	33.98	50.29	74.57	61.75	63.04	27.83	50.72
Wt. Tare	15.24	16.93	15.31	17.61	15.18	16.86	17.90	3.95
Wt. Dry Sample	275.13	314.66	266.24	307.42	252.78	256.80	285.35	295.68
Moisture Content (%)	11.8%	10.8%	18.8%	24.3%	24.4%	24.5%	9.8%	17.2%

BH6 – 19

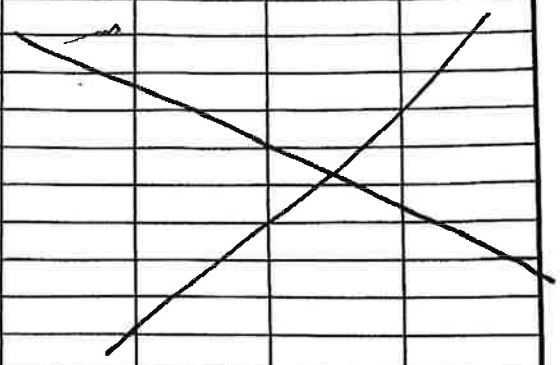
Moisture Content Determination (ASTM D2216 - Method B)
Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

wood.

Client: Yukon Gov't
Project: CLINTON CREEK
Date: Sep 1, 2016
Request Number:
Project Manager:
Project Number: VE52705B
Reviewed By:

37m

Test Hole Number	BH18-17	BH18-17	BH18-17	BH18-17				
Depth (m)	121.5'	124' 37.8	126.5' 38.5	129' 39.3				
Sample Number	S-33	S-34	S-35	S-36				
Tare No:	A1	B1	C1	D1				
Wt. Sample Wet + Tare	259.88	252.18	302.01	235.98				
Wt. Sample Dry + Tare	233.32	199.89	270.16	219.08				
Wt. Water	26.56	52.29	31.85	16.90				
Wt. Tare	3.96	3.98	3.95	3.98				
Wt. Dry Sample	229.36	195.91	266.21	215.1				
Moisture Content (%)	11.6%	22.7%	11.1%	7.9%				
Test Hole Number	BH18-06	BH18-06	BH18-06	BH18-06	BH18-06	BH18-06	BH18-06	BH18-06
Depth (m)	148.5' 45.3	153' 46.6	158.75' 48.4	162' 49.4	169' 51.5	172' 52.4	174.25' 53.1	178.5' 54.4
Sample Number	G32	G33	G34	G35	G36	G37	G38	G39
Tare No:	E1	F1	G1	H1	J1	K1	L1	M1
Wt. Sample Wet + Tare	426.01	299.98	261.35	329.18	372.19	348.42	353.78	293.58
Wt. Sample Dry + Tare	382.64	282.04	186.01	304.57	306.01	322.77	269.61	278.10
Wt. Water	45.37	17.94	75.34	24.61	66.18	25.65	84.17	15.48
Wt. Tare	4.03	4.04	3.97	4.02	3.98	3.94	3.96	3.97
Wt. Dry Sample	378.61	278.0	182.04	300.55	302.09	318.83	265.65	274.13
Moisture Content (%)	11.1%	6.5%	41.4%	8.2%	21.9%	8.0%	31.7%	5.6%
Test Hole Number	BH18-06	BH18-06	BH18-06	BH18-06	BH18-06	BH18-06	BH18-06	BH18-06
Depth (m)	183.5' 55.9	189' 57.6	194' 59.1	198.75' 60.6	202.25' 61.7	203.5' 62.0	208' 63.4	212.5' 64.7
Sample Number	G40	G41	G42	G43	G44	G45	G46	G47
Tare No:	N1	O1	P1	Q1	R1	S1	T1	U1
Wt. Sample Wet + Tare	314.30	429.16	308.25	522.78	306.61	347.20	399.16	414.57
Wt. Sample Dry + Tare	288.21	405.28	288.48	463.28	248.04	322.10	364.95	360.68
Wt. Water	26.09	23.88	24.77	59.5	58.57	25.10	34.21	53.89
Wt. Tare	3.94	3.92	3.93	3.99	4.01	3.96	3.96	3.92
Wt. Dry Sample	284.27	401.36	279.55	459.29	244.03	318.14	360.99	356.76
Moisture Content (%)	9.2%	5.9%	8.8%	12.9%	24.0%	7.9%	9.5%	15.7%
Test Hole Number	BH18-06	BH18-06	BH18-06					
Depth (m)	214.25' 65.3	219' 66.8	223.5' 68.1					
Sample Number	G48	G49	G50					
Tare No:	V1	W1	X1					
Wt. Sample Wet + Tare	304.09	285.31	348.55					
Wt. Sample Dry + Tare	287.98	271.35	325.92					
Wt. Water	16.11	13.96	22.63					
Wt. Tare	3.96	3.98	3.95					
Wt. Dry Sample	284.02	267.37	321.97					
Moisture Content (%)	5.6%	5.2%	7.0%					



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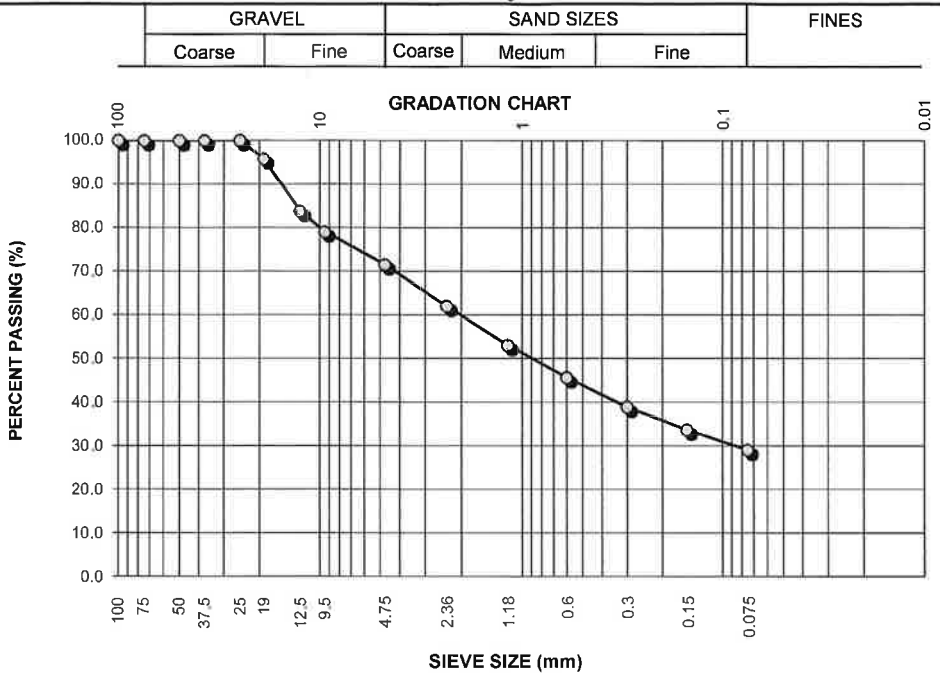
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 11-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-17

Source: G23

Depth (m): 30
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	96	-	
12.5	84	-	
9.5	79	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	72	-	
2.36	62	-	
1.18	53	-	
0.6	46	-	
0.3	39	-	
0.15	34	-	
0.075	29.0	-	

Natural Moisture Content = 13%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	0.09
D_{60} =	2.10
D_{85} =	13.19

C_u=	#N/A
C_c=	#N/A

Gravel%	28.5
Sand%	42.5
Fines %	29.0

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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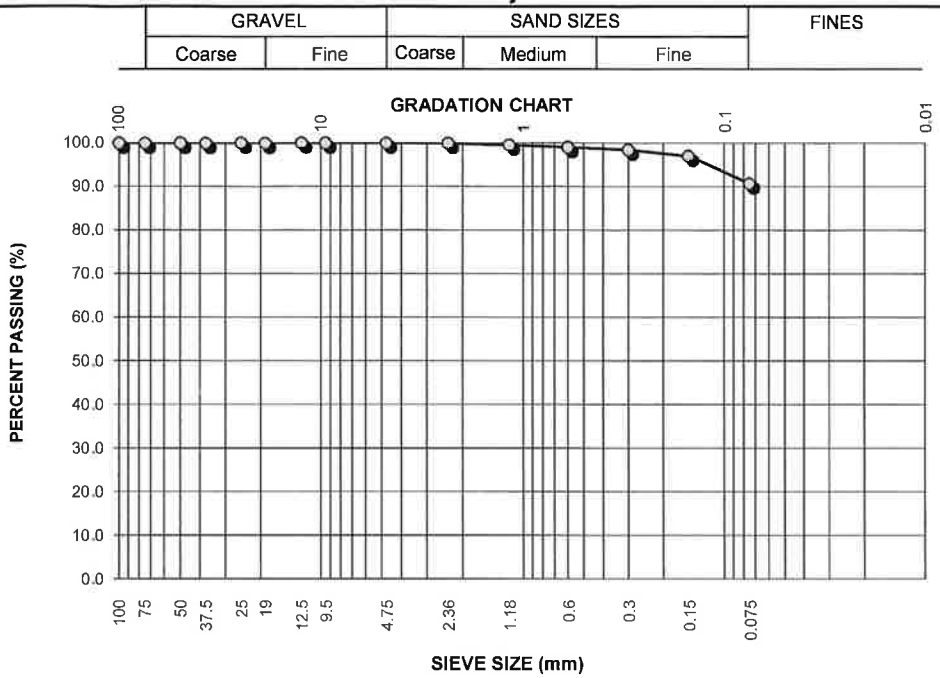
PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 11-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-17

Source: G30

Depth (m): 35
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	100	-	
9.5	100	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	100	-	
2.36	100	-	
1.18	100	-	
0.6	99	-	
0.3	98	-	
0.15	97	-	
0.075	90.7	-	

Natural Moisture Content = 25%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	#N/A
D_{85} =	#N/A

C_u=	#N/A
C_c=	#N/A

Gravel%	0.0
Sand%	9.3
Fines %	90.7

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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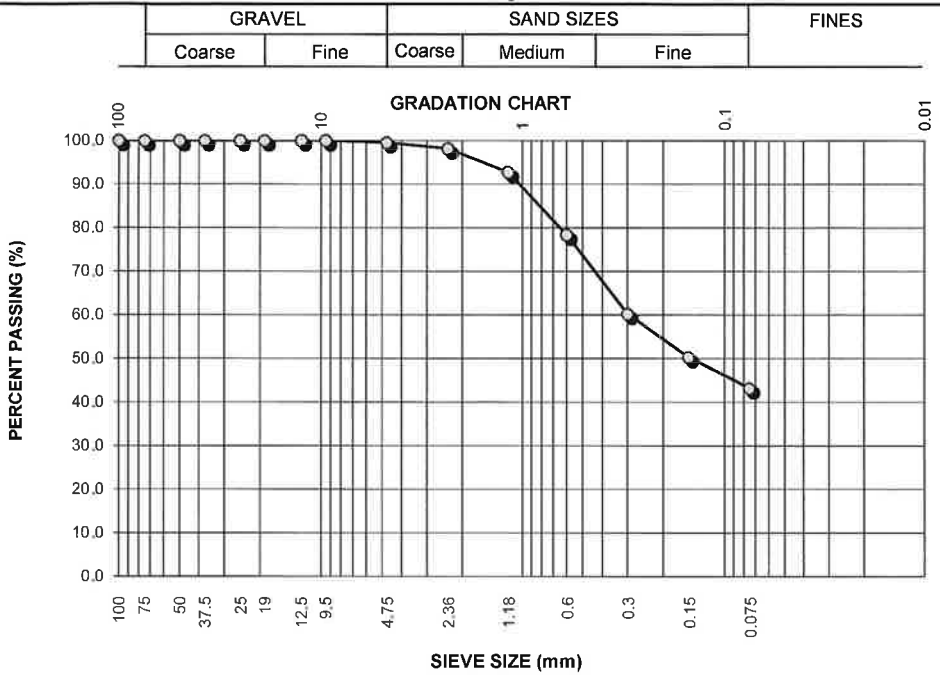
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 12-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-17

Source: G32

Depth (m): 36.3
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	100	-	
9.5	100	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	99	-	
2.36	98	-	
1.18	93	-	
0.6	78	-	
0.3	60	-	
0.15	50	-	
0.075	43.2	-	

Natural Moisture Content = 17%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	0.30
D_{85} =	0.87

C_u=	#N/A
C_c=	#N/A

Gravel%	0.5
Sand%	56.3
Fines %	43.2

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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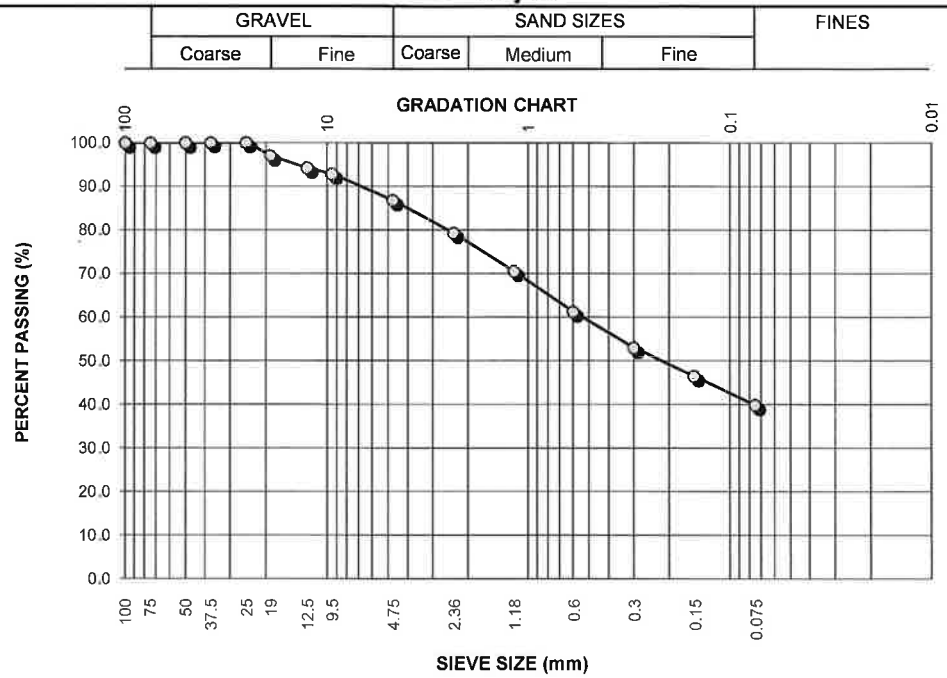
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 11-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-17

Source: G38

Depth (m): 41.2
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	97	-	
12.5	94	-	
9.5	93	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	87	-	
2.36	79	-	
1.18	70	-	
0.6	61	-	
0.3	53	-	
0.15	46	-	
0.075	39.9	-	

Natural Moisture Content = 9%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	0.56
D_{85} =	4.17

C_u=	#N/A
C_c=	#N/A

Gravel%	13.1
Sand%	47.0
Fines %	39.9

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

Reporting of these test results constitutes a testing services only. Engineering interpretation or evaluation of these test results is provided only on written request. The data presented is for the sole use of the client stipulated above.

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wood.

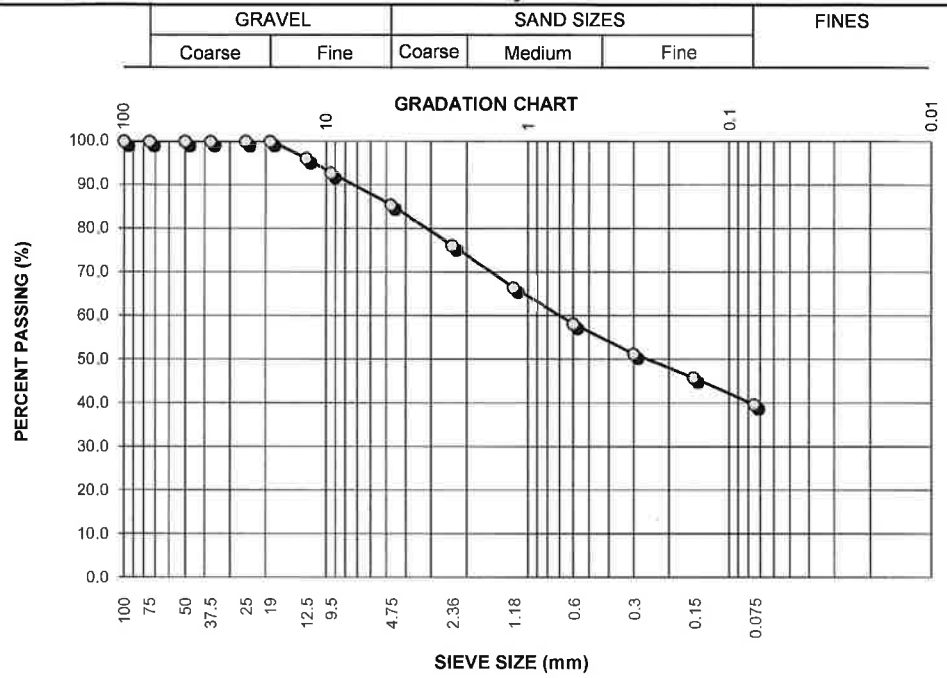
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 11-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-17

Source: G40

Depth (m): 43
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	96	-	
9.5	93	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	85	-	
2.36	76	-	
1.18	66	-	
0.6	58	-	
0.3	51	-	
0.15	46	-	
0.075	39.7	-	

Natural Moisture Content = 13%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	0.73
D_{85} =	4.64

C_u=	#N/A
C_c=	#N/A

Gravel%	14.6
Sand%	45.8
Fines %	39.7

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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wood.

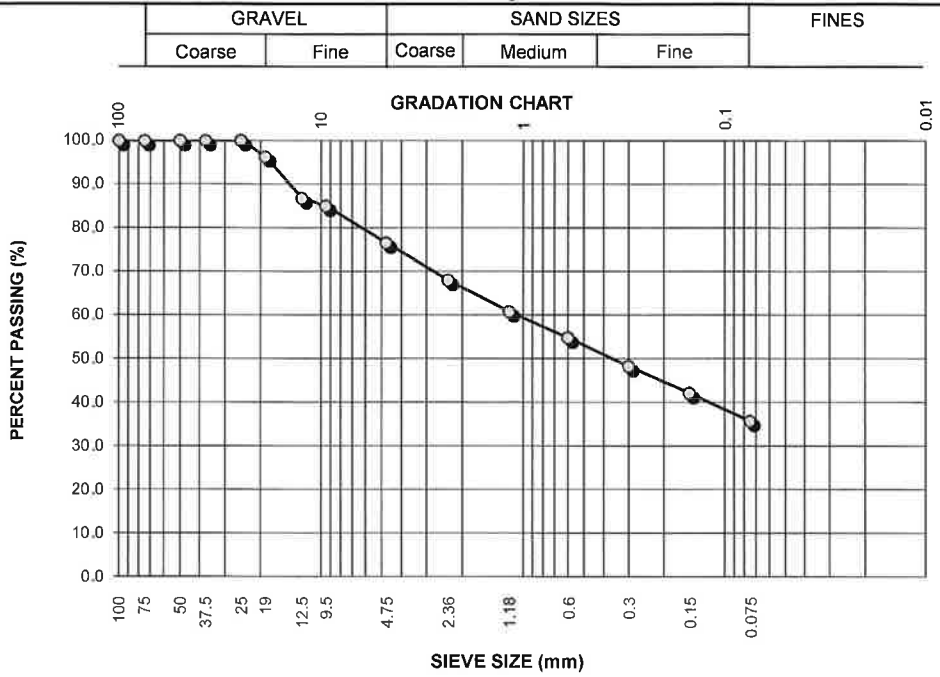
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 12-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-17

Source: G44

Depth (m): 47
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	96	-	
12.5	87	-	
9.5	85	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	77	-	
2.36	68	-	
1.18	61	-	
0.6	55	-	
0.3	48	-	
0.15	42	-	
0.075	35.7	-	

Natural Moisture Content = 6%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	1.11
D_{85} =	9.50

C_u=	#N/A
C_c=	#N/A

Gravel%	23.4
Sand%	40.9
Fines %	35.7

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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Moisture Content Determination (ASTM D2216 - Method B)
Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

wood.

Client: YUKON GOVT
Project: CLINTON CREEK
Date: Sept 12 18

Request Number:
Project Manager:
Project Number: VE52705B
Reviewed By:

Test Hole Number	BH18-18	BH18-18	BH18-18	BH18-18	BH18-18	BH18-18	BH18-18	BH18-18
Depth (m)	0.9	3.1	5.5	7.1	9.1	11.6	13.1	15.2
Sample Number	G1	G2	G3	G4	G5	G6	G7	G8
Tare No:	H1	3	F1	B	N1	GG	X1	H1
Wt. Sample Wet + Tare	234.54	298.96	282.52	281.63	297.28	257.61	263.13	362.90
Wt. Sample Dry + Tare	216.90	279.39	259.90	267.59	285.59	241.50	253.53	338.94
Wt. Water	17.64	19.57	22.62	14.04	11.69	13.07	9.60	23.96
Wt. Tare	4.15	3.92	3.96	4.03	3.98	3.99	4.00	4.06
Wt. Dry Sample	212.75	275.47	255.94	263.56	281.61	240.55	249.53	334.88
Moisture Content (%)	8.3%	7.1%	8.8%	5.3%	4.2%	5.4%	3.8%	7.2%
Test Hole Number	BH18-18	BH18-18	BH18-18	BH18-18	BH18-18	BH18-18	BH18-18	BH18-18
Depth (m)	18.6	19.5	20.7	22.3	24.4	26.2	5.6	26.8
Sample Number	G9	G10	G11	G12	G13	G14	G15	G16
Tare No:	4	P1	WC2	RH	ST71	Super Man	IF	IC
Wt. Sample Wet + Tare	273.50	264.63	360.66	277.73	309.62	330.26	607.44	808.45
Wt. Sample Dry + Tare	240.71	248.73	315.18	246.65	273.80	292.94	544.40	710.85
Wt. Water	32.79	15.90	45.48	31.08	35.76	37.32	63.04	97.60
Wt. Tare	3.96	3.98	16.24	18.62	17.60	16.06	15.53	15.38
Wt. Dry Sample	236.75	244.75	298.94	228.03	256.26	276.88	528.87	695.47
Moisture Content (%)	13.9%	6.5%	15.2%	13.6%	13.9%	13.5%	11.9%	14.0%
Test Hole Number	BH18-18	BH18-18	BH18-18	BH18-18	BH18-18	BH18-18	BH18-18	BH18-18
Depth (m)	27.1	27.4	27.7	28.1	28.4	28.7	28.9	29.3
Sample Number	G17	G18	G19	G20	G21	G22	G23	G24
Tare No:	1E	1L	HN29	SY15	AA10	1I	X80	1A
Wt. Sample Wet + Tare	822.75	788.76	316.22	290.22	304.17	645.06	327.93	683.61
Wt. Sample Dry + Tare	693.38	670.61	272.94	252.41	257.99	557.65	296.13	580.75
Wt. Water	129.37	118.15	43.28	37.81	46.18	87.41	31.80	102.86
Wt. Tare	15.75	15.76	17.76	17.87	17.81	15.06	18.33	14.61
Wt. Dry Sample	677.63	654.85	255.18	234.54	240.18	542.59	277.80	566.14
Moisture Content (%)	19.1%	18.0%	16.9%	16.1%	19.2%	16.1%	11.4%	18.2%
Test Hole Number	BH18-18	BH18-18	BH18-18	BH18-18	BH18-18	BH18-18	BH18-18	BH18-18
Depth (m)	29.6	29.9	30.2	30.5	30.8	31.4	30.9	31.7
Sample Number	G25	G26	G27	G28	G29	G30	G30	G32
Tare No:	1J	1L	1K	1A	ST9	1H	K	1N
Wt. Sample Wet + Tare	766.65	728.08	670.56	591.71	251.07	833.42	604.10	874.75
Wt. Sample Dry + Tare	655.75	609.76	582.60	496.77	190.56	713.20	447.63	591.23
Wt. Water	110.90	118.32	87.96	94.94	60.51	120.22	156.47	283.52
Wt. Tare	16.69	15.65	15.26	14.66	17.99	15.15	16.10	14.75
Wt. Dry Sample	639.06	594.11	567.34	482.11	172.57	698.05	431.53	576.48
Moisture Content (%)	17.4%	19.9%	15.5%	19.7%	35.1%	17.2%	36.3%	49.2%

Moisture Content Determination (ASTM D2216 - Method B)

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

wood.

Client: YUKON GOVT
Project: CLINTON CREEK
Date:
Request Number:
Project Manager:
Project Number: VE52705B
Reviewed By:

Test Hole Number	BH18-18	BH18-18	BH18-18			BH18-18	BH18-18	BH18-18
Depth (m)	32.0	32.3	32.6			32.9	33.2	33.5
Sample Number	G33	G 34	G 35	36	37	G 38	G 39	G 40
Tare No:	1B	1C	1K			1H	1I	14
Wt. Sample Wet + Tare	663.92	591.5	911.90			614.71	858.64	765.56
Wt. Sample Dry + Tare	509.17	449.16	630.91			419.89	567.39	622.08
Wt. Water	154.75	142.34	280.99			194.82	276.25	143.48
Wt. Tare	16.55	11.39	14.91			15.71	14.96	12.42
Wt. Dry Sample	492.62	437.77	616.00			404.18	547.43	609.66
Moisture Content (%)	31.4%	32.5%	45.6%			48.2%	50.5%	23.5%

Test Hole Number	BH18-18	BH18-18	BH18-18	BH18-18	BH18-18	BH18-18	BH18-18	BH18-18
Depth (m)	33.8	34.1	34.5	34.8	35.1	35.9	36.9	37.80
Sample Number	G 41	G 42	G 43	G 44	G 45	G 46	G 47	G 48
Tare No:	1S	X12	DHB	SB2	SAY	1G	ID	CC3
Wt. Sample Wet + Tare	313.31	286.04	273.88	295.12	272.16	830.12	365.94	219.73
Wt. Sample Dry + Tare	286.11	242.73	233.60	264.34	261.53	640.82	323.69	198.96
Wt. Water	27.20	43.31	40.28	30.78	10.63	189.30	42.25	20.77
Wt. Tare	17.77	18.51	18.61	15.83	15.01	15.34	15.07	15.88
Wt. Dry Sample	268.34	224.22	214.99	248.51	245.53	625.48	308.67	183.08
Moisture Content (%)	10.1%	19.3%	18.7%	12.4%	4.3%	30.3%	13.7%	11.3%

Test Hole Number	BH18-18	BH18-18	BH18-18	BH18-18	BH18-18	BH18-18		
Depth (m)	39.0	40.5	41.5	42.4	42.1	47.9		
Sample Number	G 49	G 50	G 51	G 52	G 53	G54		
Tare No:	ABC	ABC-41	SB3	GON20	CC1	AR		
Wt. Sample Wet + Tare	283.69	281.55	246.26	242.03	270.30	344.95		
Wt. Sample Dry + Tare	236.98	228.10	190.54	193.47	222.53	313.58		
Wt. Water	46.71	53.45	55.72	48.50	47.77	31.37		
Wt. Tare	17.48	17.77	16.28	16.20	15.98	17.60		
Wt. Dry Sample	219.50	210.33	174.26	177.27	206.35	295.98		
Moisture Content (%)	21.3%	25.4%	31.9%	27.4%	23.1%	10.6%		

Test Hole Number								
Depth (m)								
Sample Number								
Tare No:								
Wt. Sample Wet + Tare								
Wt. Sample Dry + Tare								
Wt. Water								
Wt. Tare								
Wt. Dry Sample								
Moisture Content (%)								

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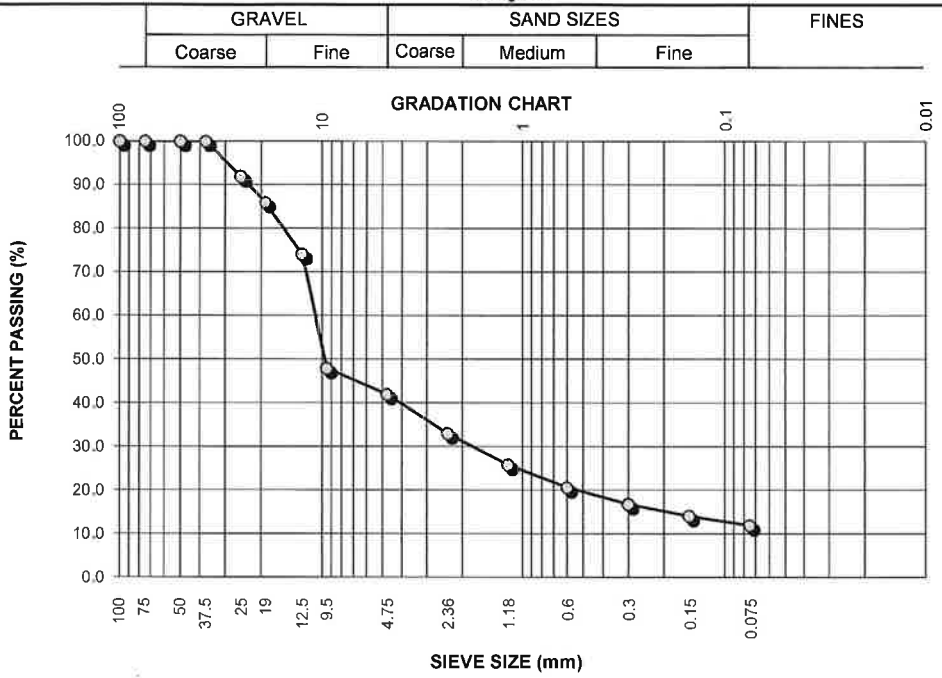
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number: 2569

Date Sampled:
Date Received:
Date Tested: 14-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-18

Source: G2

Depth (m): 3.1
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	92	-	
19	86	-	
12.5	74	-	
9.5	48	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	42	-	
2.36	33	-	
1.18	26	-	
0.6	21	-	
0.3	17	-	
0.15	14	-	
0.075	11.9	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	0.21
D_{30} =	1.88
D_{60} =	10.89
D_{85} =	18.51

C_u=	#N/A
C_c=	#N/A

Gravel%	58.1
Sand%	30.0
Fines %	11.9

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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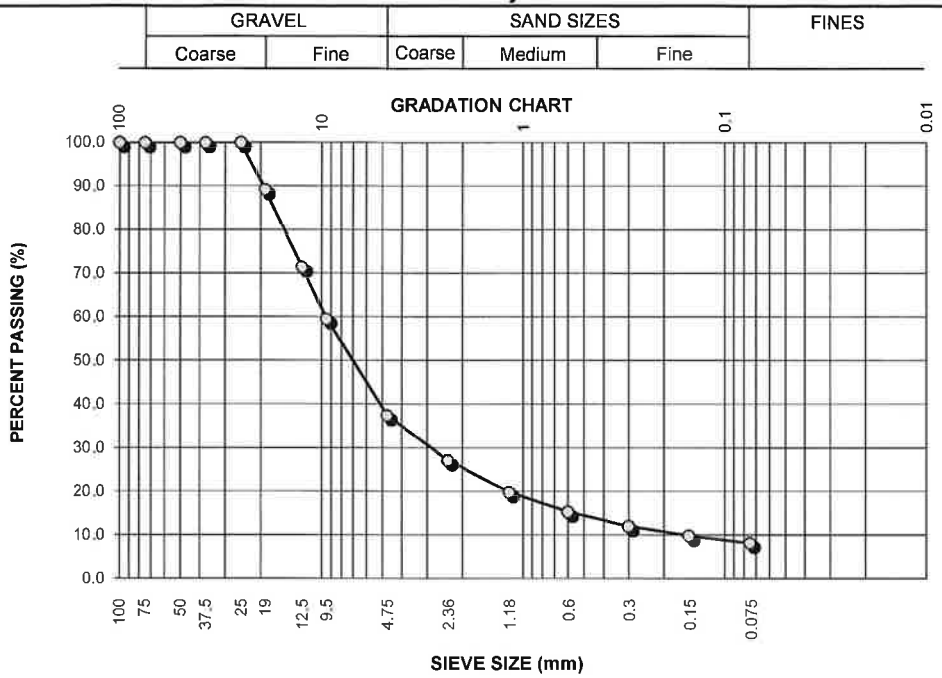
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number: 2570

Date Sampled:
Date Received:
Date Tested: 14-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-18

Source: G5

Depth (m): 9.1
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	89	-	
12.5	72	-	
9.5	60	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	37	-	
2.36	27	-	
1.18	20	-	
0.6	15	-	
0.3	12	-	
0.15	10	-	
0.075	8.1	-	

Natural Moisture Content = #DIV/0!

D_{10} =	0.16
D_{15} =	0.57
D_{30} =	3.03
D_{60} =	9.63
D_{85} =	17.46

C_u=	59
C_c=	6

Gravel%	62.6
Sand%	29.3
Fines %	8.1

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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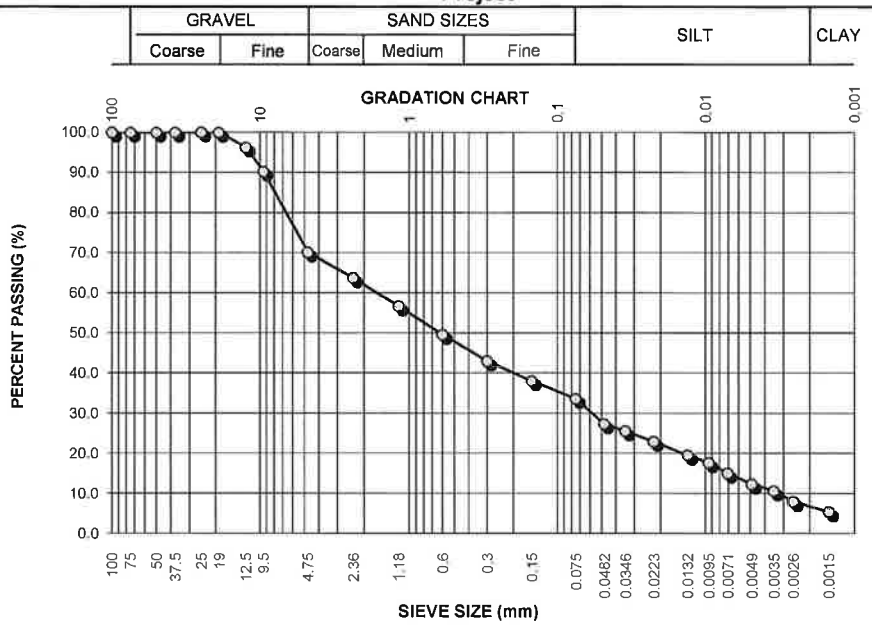
SIEVE AND HYDROMETER ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number: 2561

Date Sampled:
Date Received:
Date Tested: 15-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-18

Source: G9

Depth (m): 18.6
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	96	-	
9.5	90	-	
4.75	70	-	
2.36	64	-	
1.18	57	-	
0.6	50	-	
0.3	43	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
0.15	38	-	
0.075	33.6	-	
0.0482	27.3	-	
0.0346	25.5	-	
0.0223	22.9	-	
0.0132	19.4	-	
0.0095	17.6	-	
0.0071	15.0	-	
0.0049	12.3	-	
0.0035	10.6	-	
0.0026	7.9	-	
0.0015	5.3	-	

Natural Moisture Content = #DIV/0!

D_{10} =	0.003
D_{15} =	0.01
D_{30} =	0.06
D_{60} =	1.75
D_{85} =	8.27

C_u=	531
C_c=	1

Gravel%	29.9
Sand%	36.5
Silt %	27.0
Clay %	6.6

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14
Materials finer than 75 µm (No. 200) sieve were tested in accordance with ASTM C117-13

Reviewed By:

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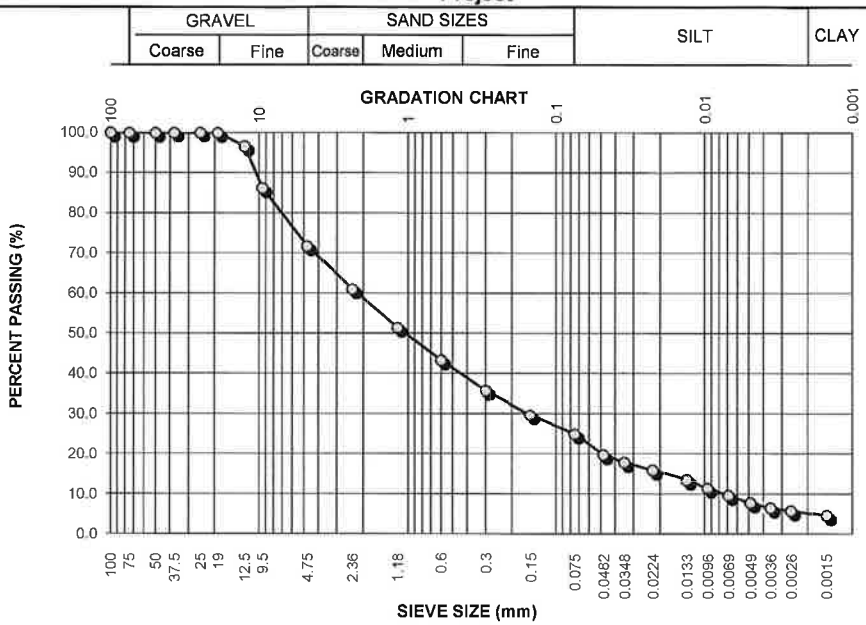
SIEVE AND HYDROMETER ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number: 2562

Date Sampled:
Date Received:
Date Tested: 15-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-18

Source: G14

Depth (m): 26.2
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	97	-	
9.5	86	-	
4.75	72	-	
2.36	61	-	
1.18	51	-	
0.6	43	-	
0.3	36	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
0.15	30	-	
0.075	24.9	-	
0.0482	19.7	-	
0.0348	17.8	-	
0.0224	15.9	-	
0.0133	13.4	-	
0.0096	11.4	-	
0.0069	9.5	-	
0.0049	7.7	-	
0.0036	6.4	-	
0.0026	5.7	-	
0.0015	4.5	-	

Natural Moisture Content = #DIV/0!

D_{10} =	0.008
D_{15} =	0.02
D_{30} =	0.16
D_{60} =	2.24
D_{85} =	9.11

C_u=	294
C_c=	2

Gravel%	28.3
Sand%	46.8
Silt %	19.8
Clay %	5.1

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14
Materials finer than 75 µm (No. 200) sieve were tested in accordance with ASTM C117-13

Reviewed By:

Reporting of these test results constitutes a testing services only. Engineering interpretation or evaluation of these test results is provided only on written request.
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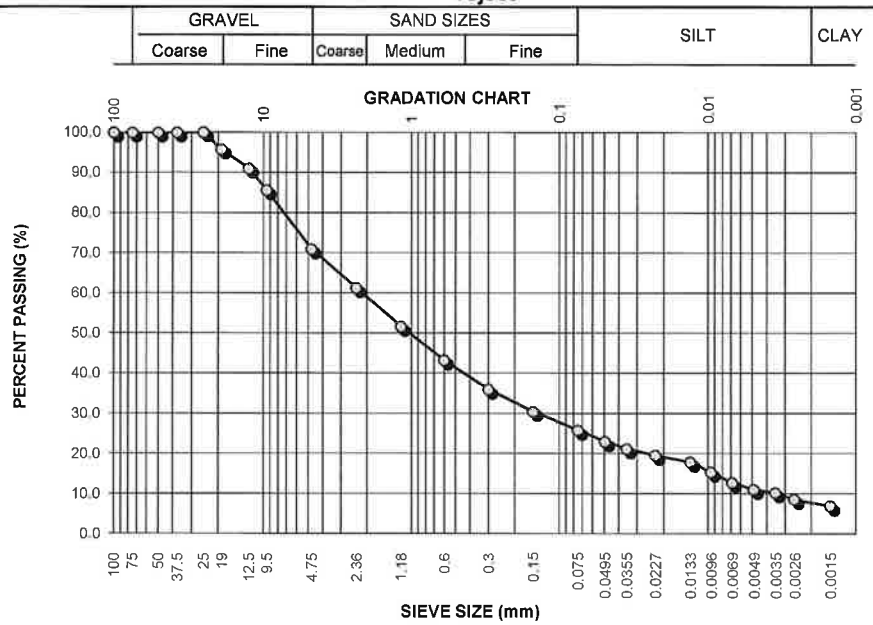
SIEVE AND HYDROMETER ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number: 2563

Date Sampled:
Date Received:
Date Tested: 15-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-18

Source: G17

Depth (m): 27.1
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	96	-	
12.5	91	-	
9.5	86	-	
4.75	71	-	
2.36	61	-	
1.18	52	-	
0.6	43	-	
0.3	36	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
0.15	30	-	
0.075	25.8	-	
0.0495	22.9	-	
0.0355	21.2	-	
0.0227	19.5	-	
0.0133	17.8	-	
0.0096	15.3	-	
0.0069	12.7	-	
0.0049	11.0	-	
0.0035	10.2	-	
0.0026	8.5	-	
0.0015	6.8	-	

Natural Moisture Content = #DIV/0!

D_{10} =	0.003
D_{15} =	0.01
D_{30} =	0.14
D_{60} =	2.21
D_{85} =	9.31

C_u=	652
C_c=	3

Gravel%	29.1
Sand%	45.1
Silt %	18.2
Clay %	7.7

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14
Materials finer than 75 µm (No. 200) sieve were tested in accordance with ASTM C117-13

Reviewed By:

Reporting of these test results constitutes a testing services only. Engineering interpretation or evaluation of these test results is provided only on written request.
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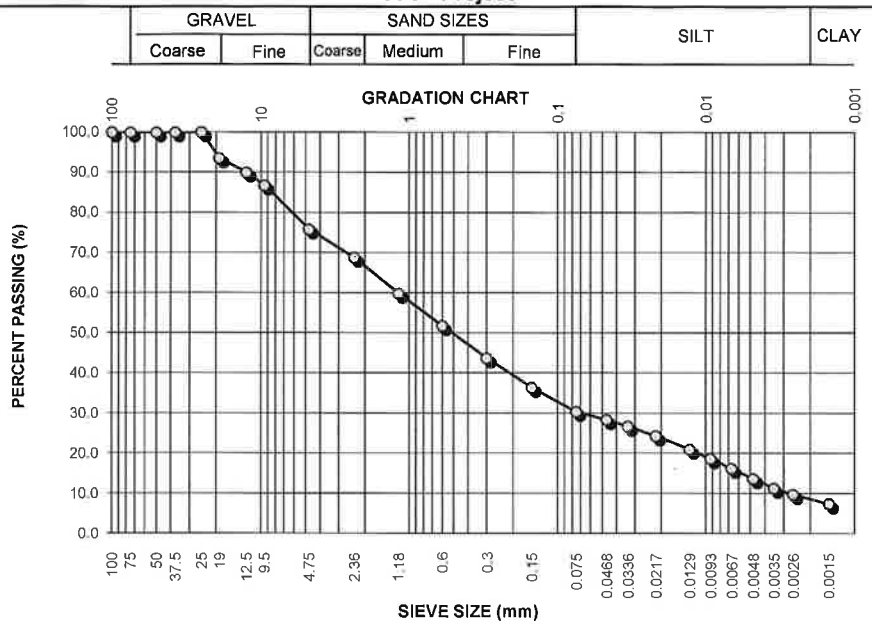
SIEVE AND HYDROMETER ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number: 2564

Date Sampled:
Date Received:
Date Tested: 15-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-18

Source: G21

Depth (m): 28.3
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	94	-	
12.5	90	-	
9.5	87	-	
4.75	76	-	
2.36	69	-	
1.18	60	-	
0.6	52	-	
0.3	44	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
0.15	36	-	
0.075	30.3	-	
0.0468	28.3	-	
0.0336	26.7	-	
0.0217	24.3	-	
0.0129	21.0	-	
0.0093	18.6	-	
0.0067	16.2	-	
0.0048	13.7	-	
0.0035	11.3	-	
0.0026	9.7	-	
0.0015	7.3	-	

Natural Moisture Content = #DIV/0!

D_{10} =	0.003
D_{15} =	0.01
D_{30} =	0.07
D_{60} =	1.21
D_{85} =	8.76

C_u=	436
C_c=	1

Gravel%	24.2
Sand%	45.5
Silt %	21.8
Clay %	8.5

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14
Materials finer than 75 µm (No. 200) sieve were tested in accordance with ASTM C117-13

Reviewed By:

Reporting of these test results constitutes a testing services only. Engineering interpretation or evaluation of these test results is provided only on written request.
The data presented is for the sole use of the client stipulated above.

Wood Environment & Infrastructure Solutions
Suite 600, 4445 Lougheed Highway
Burnaby, BC V5C 0E4
Tel: 604-294-3811
Fax: 604-294-4664

wood.

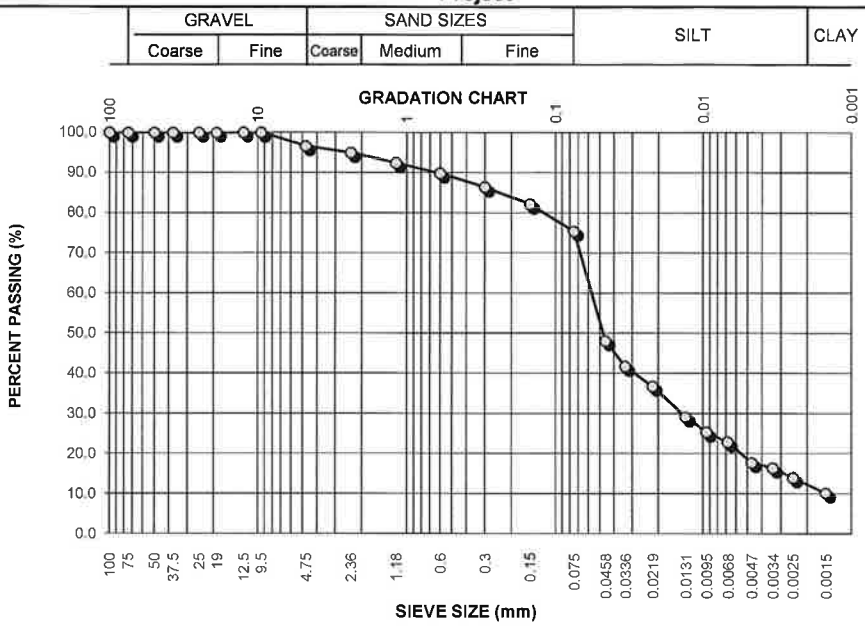
SIEVE AND HYDROMETER ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number: 2565

Date Sampled:
Date Received:
Date Tested: 15-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-18

Source: G31

Depth (m): 31.4
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	100	-	
9.5	100	-	
4.75	97	-	
2.36	95	-	
1.18	92	-	
0.6	90	-	
0.3	86	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
0.15	82	-	
0.075	75.4	-	
0.0458	48.0	-	
0.0336	41.7	-	
0.0219	36.7	-	
0.0131	29.1	-	
0.0095	25.3	-	
0.0068	22.8	-	
0.0047	17.7	-	
0.0034	16.4	-	
0.0025	13.9	-	
0.0015	10.1	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	0.003
D_{30} =	0.01
D_{60} =	0.06
D_{85} =	0.25

C_u =	#N/A
C_c =	#N/A

Gravel%	3.4
Sand%	21.2
Silt %	63.4
Clay %	12.0

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14
Materials finer than 75 µm (No. 200) sieve were tested in accordance with ASTM C117-13

Reviewed By:

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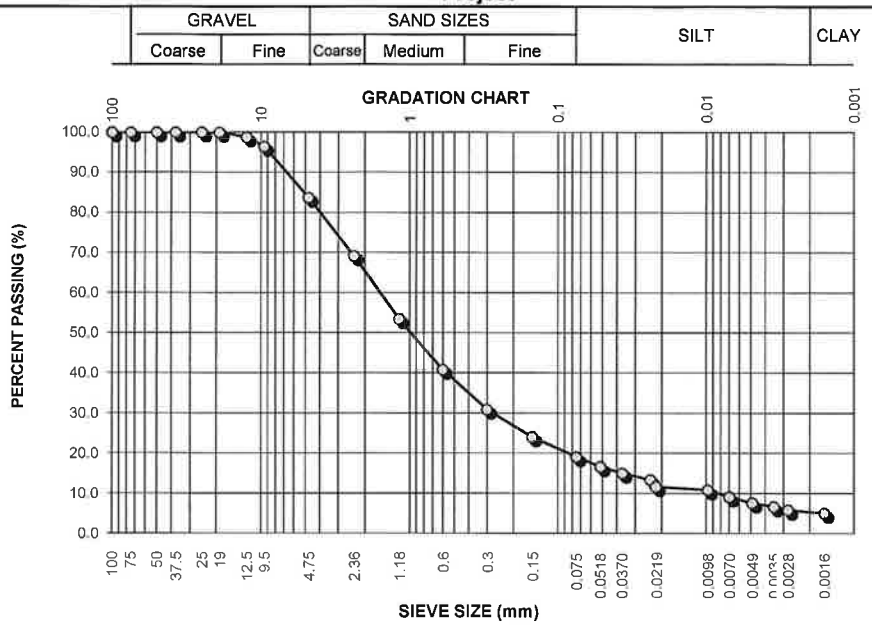
SIEVE AND HYDROMETER ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number: 2567

Date Sampled:
Date Received:
Date Tested: 15-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-18

Source: G40

Depth (m): 33.5
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	99	-	
9.5	96	-	
4.75	84	-	
2.36	69	-	
1.18	53	-	
0.6	41	-	
0.3	31	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Upper
0.15	24	-	
0.075	19.1	-	
0.0518	16.6	-	
0.0370	15.0	-	
0.0237	13.3	-	
0.0219	11.6	-	
0.0098	10.8	-	
0.0070	9.1	-	
0.0049	7.5	-	
0.0035	6.6	-	
0.0028	5.8	-	
0.0016	5.0	-	

Natural Moisture Content = #DIV/0!

D_{10} =	0.008
D_{15} =	0.04
D_{30} =	0.28
D_{60} =	1.67
D_{85} =	5.24

C_u=	197
C_c=	6

Gravel%	16.3
Sand%	64.6
Silt %	13.7
Clay %	5.4

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14
Materials finer than 75 µm (No. 200) sieve were tested in accordance with ASTM C117-13

Reviewed By:

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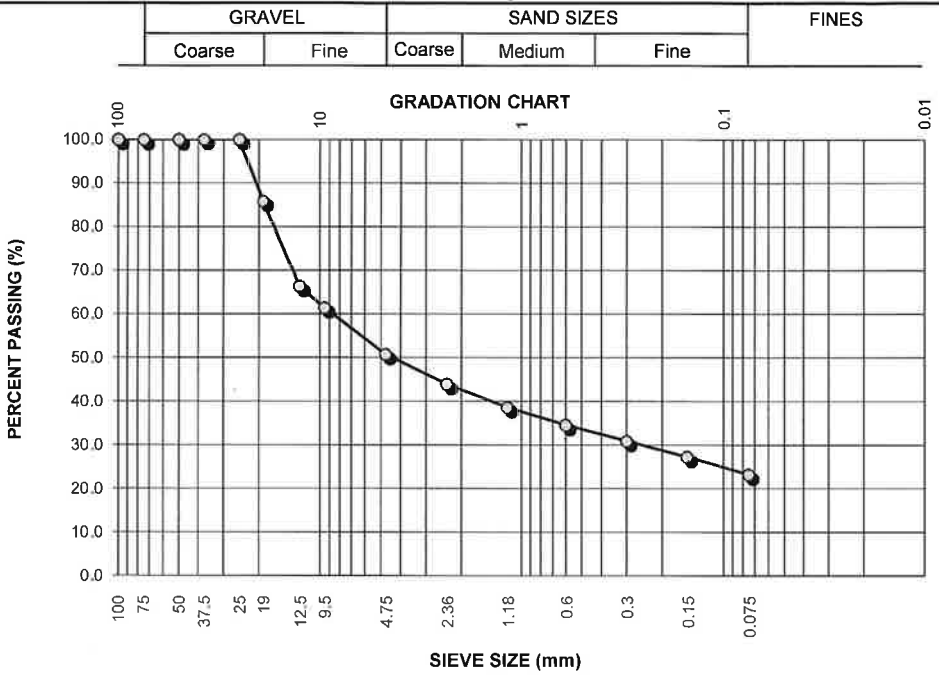
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 15-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-18

Source: G45

Depth (m): 35.1
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	86	-	
12.5	66	-	
9.5	61	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	51	-	
2.36	44	-	
1.18	39	-	
0.6	35	-	
0.3	31	-	
0.15	27	-	
0.075	23.2	-	

Natural Moisture Content = -105%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	0.27
D_{60} =	8.88
D_{85} =	18.73

C_u=	#N/A
C_c=	#N/A

Gravel%	49.2
Sand%	27.6
Fines %	23.2

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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wood.

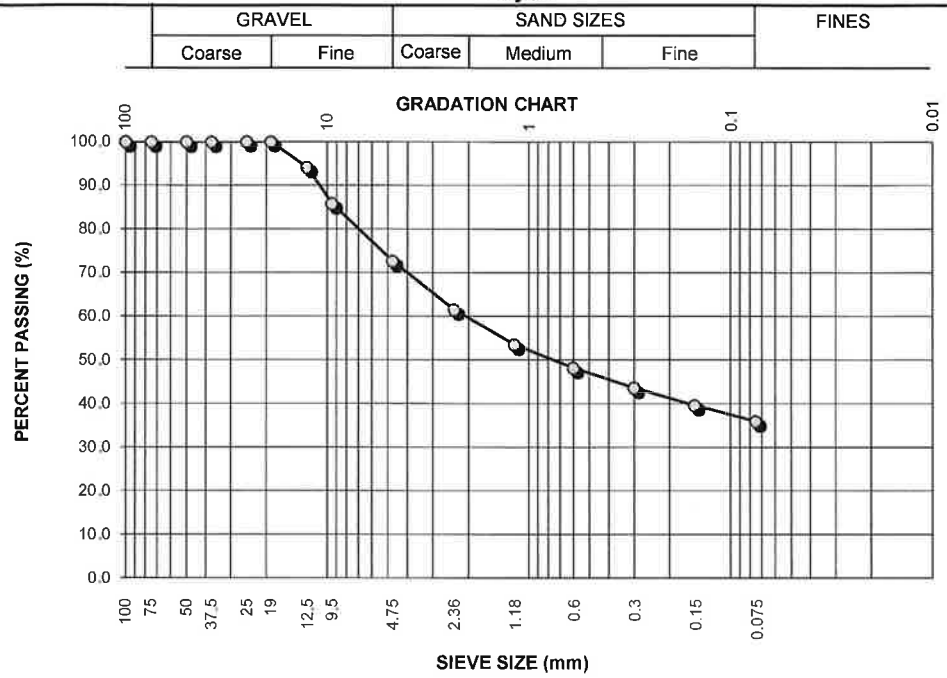
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number:

Date Sampled:
Date Received:
Date Tested: 15-Sep-18
Sampled By:
Tested By:

Sample Location: BH18-18

Source: G47

Depth (m): 36.9
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	94	-	
9.5	86	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	73	-	
2.36	61	-	
1.18	53	-	
0.6	48	-	
0.3	44	-	
0.15	40	-	
0.075	35.9	-	

Natural Moisture Content = -104%

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	2.15
D_{85} =	9.20

C_u=	#N/A
C_c=	#N/A

Gravel%	27.4
Sand%	36.7
Fines %	35.9

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

Reporting of these test results constitutes a testing services only. Engineering interpretation or evaluation of these test results is provided only on written request. The data presented is for the sole use of the client stipulated above.

Moisture Content Determination (ASTM D2216 - Method B)

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

wood.

Client: YUKON GOVT
Project: CLINTON CREEK
Date: Sept 11/18

Request Number:
Project Manager:
Project Number: VE52705B
Reviewed By:

Test Hole Number	BH18-19	BH18-19	BH18-19	BH18-19	BH18-19	BH18-19	BH18-19	BH18-19
Depth (m)	1.5	3.1	4.6	5.5	8.5	8.7	10.4	10.9
Sample Number	G1	G2	G3	G4	G5	G6	G7	G8
Tare No:	1A	T.	F	6	1N	1N	1H	1I
Wt. Sample Wet + Tare	334.06	304.43	276.40	195.00	370.29	539.67	968.62	695.65
Wt. Sample Dry + Tare	309.11	268.46	223.80	145.18	281.61	250.11	271.31	111.22
Wt. Water	24.95	35.97	52.60	49.82	88.68	289.56	637.31	584.43
Wt. Tare	14.50	4.05	4.05	3.93	14.34	14.93	14.54	14.65
Wt. Dry Sample	294.61	264.41	219.75	141.25	267.29	253.18	256.77	96.57
Moisture Content (%)	8.47.	13.67.	23.97.	35.37.	33.27.	114.47.	248.27.	605.27.

Test Hole Number	BH18-19	BH18-19	BH18-19	BH18-19	BH18-19	BH18-19	BH18-19	BH18-19
Depth (m)	10.9	11.3	11.6	11.9	12.2	12.5	13.1	13.1
Sample Number	G9	G10	G11	G12	G13	G14	G15	G16
Tare No:	1E	1D	533.97	1F	613.47	1B	1J	1E
Wt. Sample Wet + Tare	566.83	473.13	1L	607.57	1I	490.81	683.17	534.31
Wt. Sample Dry + Tare	255.20	85.29	237.65	393.68	75.59	136.86	341.56	215.96
Wt. Water	311.63	387.84	286.32	213.89	537.88	353.95	341.61	318.35
Wt. Tare	14.83	14.88	14.77	14.69	14.47	14.81	15.33	14.45
Wt. Dry Sample	240.37	70.41	222.88	378.99	61.12	122.05	326.23	201.51
Moisture Content (%)	129.67.	550.87.	128.57.	56.47.	880.07.	290.07.	104.77.	157.97.

Test Hole Number	BH18-19	BH18-19	BH18-19	BH18-19	BH18-19	BH18-19	BH18-19	BH18-19
Depth (m)	13.4	13.7	14.0	14.3	14.6	14.9	15.2	15.5
Sample Number	G17	G18	G19	G20	G21	G22	G23	G24
Tare No:	1K	1D	1H	1G	1F	613.91C	1L	1C
Wt. Sample Wet + Tare	506.27	418.57	982.67	752.23	472.54	613.9	440.57	559.50
Wt Sample Dry + Tare	290.95	118.57	474.72	470.62	274.36	361.85	184.39	353.30
Wt Water	215.32	300.00	507.95	281.61	198.18	252.05	256.18	206.20
Wt Tare	14.72	14.46	15.20	15.23	16.84	14.49	15.57	14.50
Wt. Dry Sample	276.23	104.11	459.52	455.39	257.52	347.36	168.82	338.80
Moisture Content (%)	77.97.	288.27.	110.57.	61.87.	76.97.	72.67.	151.77.	60.87.

Test Hole Number	BH18-19	BH18-19	BH18-19	BH18-19	BH18-19	BH18-19	BH18-19	BH18-19
Depth (m)	15.9	16.2	16.5	16.8	17.1	17.4	17.7	19.2
Sample Number	G25	G26	G27	G28	G29	G30	G31	G32
Tare No:	1G	1J	1M	1B	1A	1K	X.	N.
Wt. Sample Wet + Tare	867.14	1377.2	991.62	782.53	404.74	483.31	245.12	208.78
Wt. Sample Dry + Tare	606.47	1038.05	782.37	592.51	351.93	422.0.	218.80	184.48
Wt. Water	260.67	339.15	209.75	195.02	52.81	61.31	26.32	24.30
Wt. Tare	14.65	14.71	14.62	14.53	14.62	15.61	3.96	3.95
Wt. Dry Sample	591.82	1023.34	767.75	577.98	337.31	406.99	214.84	180.53
Moisture Content (%)	44.07.	33.17.	27.37.	33.77.	15.77.	15.17.	12.27.	13.47.

IF - 139.17
-88.14
G10
-49.75
G9
-160

Moisture Content Determination (ASTM D2216 - Method B)

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

wood.

Client: YUKON GOVT
Project: CLINTON CREEK
Date:

Request Number:
Project Manager:
Project Number: VE52705B
Reviewed By:

Test Hole Number	BH18-19	BH18-19	BH18-19	BH18-19	BH18-19	BH18-19		BH18-19
Depth (m)	20.7	22.3	24.7	27.1	28.4	29.6		5.80
Sample Number	G33	G34	G35	G36	G37	G38		34 G5 ?
Tare No:	G" H1	M1 (LITHIC)	G6	8	4	P1		14
Wt. Sample Wet + Tare	257.42	269.72	231.14	245.88	206.00	233.17		349.56
Wt. Sample Dry + Tare	242.60	258.54	218.89	239.81	193.09	213.99		236.54
Wt. Water	14.82	11.18	12.25	11.07	12.91	19.18		113.02
Wt. Tare	4.07	4.06	3.93	4.00	3.93	3.95		11.95
Wt. Dry Sample	238.53	254.48	214.96	230.81	189.16	210.04		224.59
Moisture Content (%)	6.2%	4.4%	5.7%	4.8%	6.8%	9.1%		50.3%
Test Hole Number								
Depth (m)								
Sample Number								
Tare No:								
Wt. Sample Wet + Tare								
Wt. Sample Dry + Tare								
Wt. Water								
Wt. Tare								
Wt. Dry Sample								
Moisture Content (%)								
Test Hole Number								
Depth (m)								
Sample Number								
Tare No:								
Wt. Sample Wet + Tare								
Wt. Sample Dry + Tare								
Wt. Water								
Wt. Tare								
Wt. Dry Sample								
Moisture Content (%)								
Test Hole Number								
Depth (m)								
Sample Number								
Tare No:								
Wt. Sample Wet + Tare								
Wt. Sample Dry + Tare								
Wt. Water								
Wt. Tare								
Wt. Dry Sample								
Moisture Content (%)								

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wood.

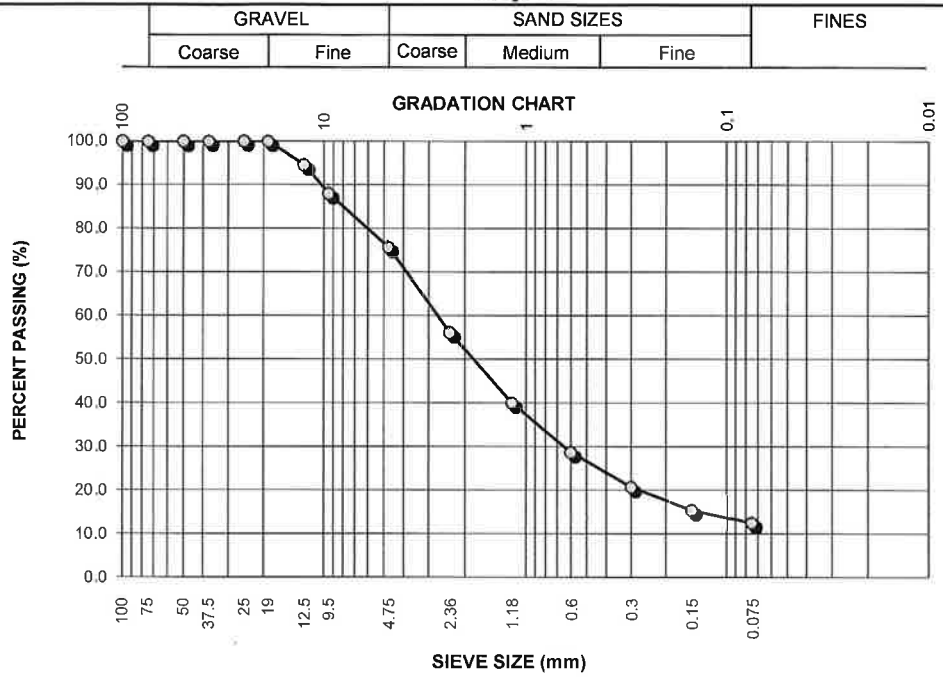
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number: 2571

Date Sampled:
Date Received:
Date Tested: 14-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-19

Source: G2

Depth (m): 3.1
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	100	-	
12.5	95	-	
9.5	88	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	76	-	
2.36	56	-	
1.18	40	-	
0.6	29	-	
0.3	21	-	
0.15	16	-	
0.075	12.5	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	0.14
D_{30} =	0.67
D_{60} =	2.85
D_{85} =	8.34

C_u=	#N/A
C_c=	#N/A

Gravel%	24.3
Sand%	63.2
Fines %	12.5

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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wood.

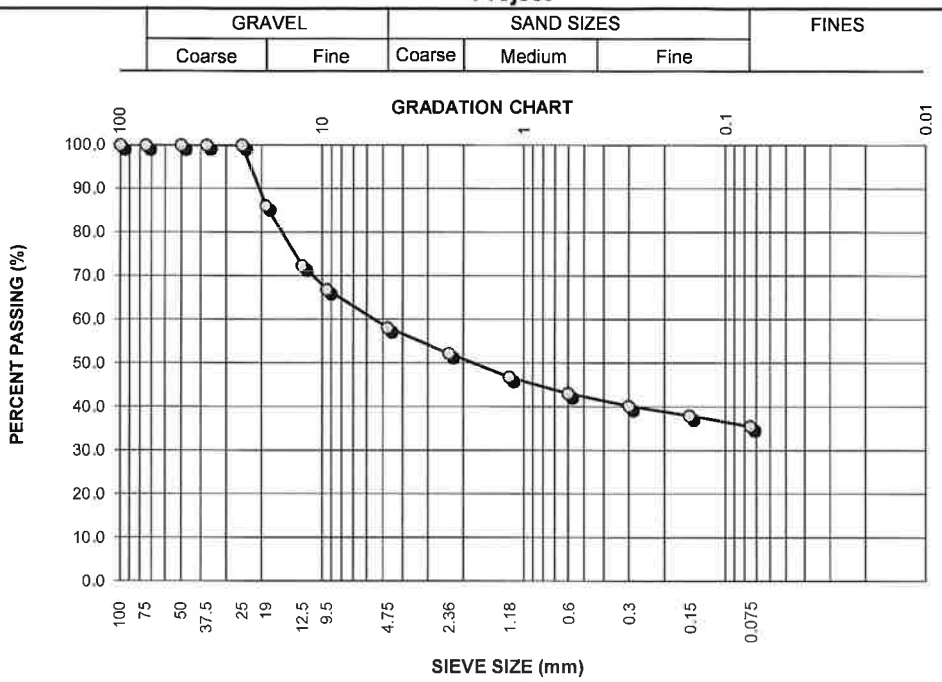
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number: 2572

Date Sampled:
Date Received:
Date Tested: 14-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-19

Source: G5

Depth (m): 9.1
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	86	-	
12.5	72	-	
9.5	67	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	58	-	
2.36	52	-	
1.18	47	-	
0.6	43	-	
0.3	40	-	
0.15	38	-	
0.075	35.5	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	#N/A
D_{60} =	5.78
D_{85} =	18.53

C_u=	#N/A
C_c=	#N/A

Gravel%	41.9
Sand%	22.6
Fines %	35.5

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

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wood.

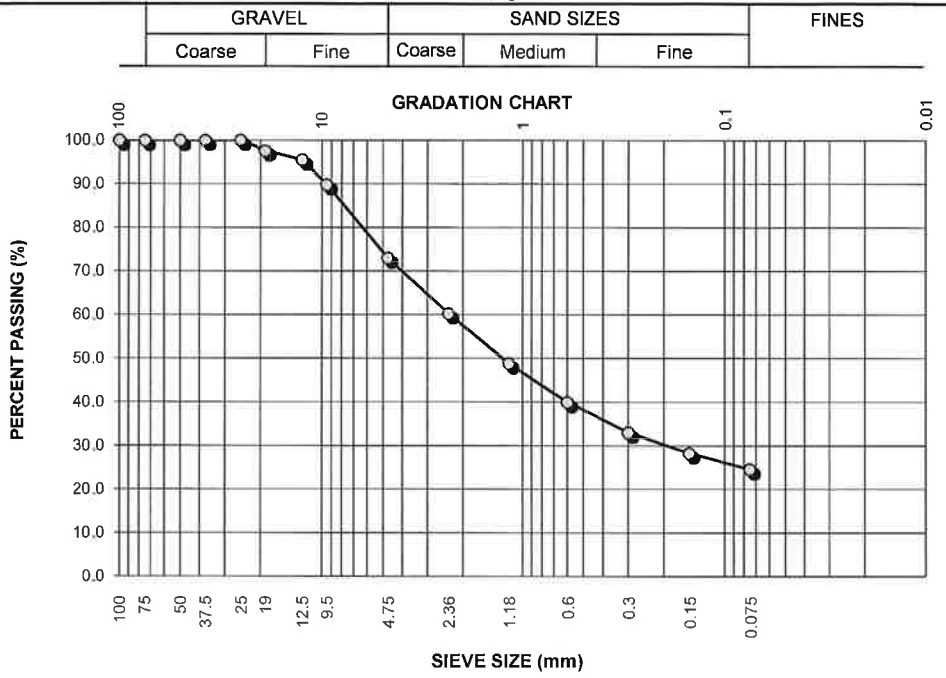
SIEVE ANALYSIS REPORT

CLIENT: Yukon Government

Project Number: VE52705B
Date:
Client P.O.:

ATTN:

PROJECT: Clinton Creek Mine Remediation Project



Lab Number: 2573

Date Sampled:
Date Received:
Date Tested: 14-Nov-18
Sampled By:
Tested By:

Sample Location: BH18-19

Source: G33

Depth (m): 20.7
Soil Classification:

Gravel Sizes (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
100	100	-	
75	100	-	
50	100	-	
37.5	100	-	
25	100	-	
19	98	-	
12.5	95	-	
9.5	90	-	

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits Lower	Gradation Limits Upper
4.75	73	-	
2.36	60	-	
1.18	49	-	
0.6	40	-	
0.3	33	-	
0.15	28	-	
0.075	24.6	-	

Natural Moisture Content = #DIV/0!

D_{10} =	#N/A
D_{15} =	#N/A
D_{30} =	0.21
D_{60} =	2.34
D_{85} =	8.14

C_u=	#N/A
C_c=	#N/A

Gravel%	27.0
Sand%	48.4
Fines %	24.6

Comments Sieve Analysis test was conducted in accordance with ASTM C136-14

Reviewed By:

Reporting of these test results constitutes a testing services only. Engineering interpretation or evaluation of these test results is provided only on written request.
The data presented is for the sole use of the client stipulated above.

Appendix F
ALS Analytical Reports

Wood E&IS, a Division of Wood Canada Limited
ATTN: Brian Geddes
#401, 1925 - 18 Ave NE
CALGARY AB T2E 7T8

Date Received: 05-SEP-18
Report Date: 26-OCT-18 16:47 (MT)
Version: FINAL REV. 3

Client Phone: 403-387-1639

Certificate of Analysis

Lab Work Order #: L2158112

Project P.O. #: NOT SUBMITTED
Job Reference: VE52705B
C of C Numbers:
Legal Site Desc:

Comments: ADDITIONAL 22-OCT-18 10:13
ADDITIONAL 14-SEP-18 10:18

Suzette Chin
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-1 18BH20-01							
Sampled By: CJ/LB on 13-AUG-18							
Matrix: SOIL							
CCME BTEX, F1 TO F4							
BTEX and F1							
Benzene	<0.0050		0.0050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Toluene	<0.050		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Ethylbenzene	<0.010		0.010	mg/kg	13-AUG-18	20-SEP-18	R4219247
m+p-Xylene	<0.050		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
o-Xylene	<0.050		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Xylenes	<0.10		0.10	mg/kg	13-AUG-18	20-SEP-18	R4219247
Surrogate: 1,4-Difluorobenzene (SS)	83.0		70-130	%	13-AUG-18	20-SEP-18	R4219247
Surrogate: 4-Bromofluorobenzene (SS)	94.3		70-130	%	13-AUG-18	20-SEP-18	R4219247
Surrogate: 3,4-Dichlorotoluene (SS)	97.9		70-130	%	13-AUG-18	20-SEP-18	R4219247
CCME Total Extractable Hydrocarbons							
Surrogate: 2-Bromobenzotrifluoride	81.3		70-130	%	18-SEP-18	18-SEP-18	R4223769
Chrom. to baseline at nC50	YES				18-SEP-18	18-SEP-18	R4223769
Prep/Analysis Dates					18-SEP-18	18-SEP-18	R4223769
CCME Total Hydrocarbons							
F1 (C6-C10)	<10		10	mg/kg		20-SEP-18	
F1-BTEX	<10		10	mg/kg		20-SEP-18	
F2 (C10-C16)	<20		20	mg/kg		20-SEP-18	
F3 (C16-C34)	57		20	mg/kg		20-SEP-18	
F4 (C34-C50)	<20		20	mg/kg		20-SEP-18	
Total Hydrocarbons (C6-C50)	57		20	mg/kg		20-SEP-18	
Miscellaneous Parameters							
% Moisture	<0.25		0.25	%		20-SEP-18	R4228147
Mercury (Hg)	0.063		0.050	mg/kg wwt	20-SEP-18	21-SEP-18	R4231547
Bulk Asbestos Content							
Asbestos: Chrysotile	10-25		1	%		10-SEP-18	R4207690
Other Fibres: Cellulose	1-5		1	%		10-SEP-18	R4207690
Mica	Trace <1		1	%		10-SEP-18	R4207690
Metals in Waste by CRC ICPMS							
Aluminum (Al)	5300		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Antimony (Sb)	4.26		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Arsenic (As)	12.6		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Barium (Ba)	134		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Beryllium (Be)	0.27		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Boron (B)	29.3		5.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cadmium (Cd)	0.221		0.020	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Calcium (Ca)	1750		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Chromium (Cr)	256		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cobalt (Co)	36.8		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Copper (Cu)	16.0		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Iron (Fe)	33300		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lead (Pb)	7.44		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lithium (Li)	3.7		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Magnesium (Mg)	42500		20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Manganese (Mn)	416		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Molybdenum (Mo)	1.58		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Nickel (Ni)	607		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Phosphorus (P)	215		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Potassium (K)	290		100	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Selenium (Se)	0.48		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-1 18BH20-01							
Sampled By: CJ/LB on 13-AUG-18							
Matrix: SOIL							
Metals in Waste by CRC ICPMS							
Silver (Ag)	<0.10		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sodium (Na)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Strontium (Sr)	13.8		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sulfur	<1000		1000	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Thallium (Tl)	<0.050		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tin (Sn)	<2.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Titanium (Ti)	192		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tungsten	<0.50		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Uranium (U)	0.542		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Vanadium (V)	24.9		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zinc (Zn)	52.2		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zirconium (Zr)	1.7		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
L2158112-2 18BH20-02							
Sampled By: CJ/LB on 13-AUG-18							
Matrix: SOIL							
CCME BTEX, F1 TO F4							
BTEX and F1							
Benzene	<0.0050		0.0050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Toluene	<0.050		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Ethylbenzene	<0.010		0.010	mg/kg	13-AUG-18	20-SEP-18	R4219247
m+p-Xylene	<0.050		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
o-Xylene	<0.050		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Xylenes	<0.10		0.10	mg/kg	13-AUG-18	20-SEP-18	R4219247
Surrogate: 1,4-Difluorobenzene (SS)	83.5		70-130	%	13-AUG-18	20-SEP-18	R4219247
Surrogate: 4-Bromofluorobenzene (SS)	123.9		70-130	%	13-AUG-18	20-SEP-18	R4219247
Surrogate: 3,4-Dichlorotoluene (SS)	107.2		70-130	%	13-AUG-18	20-SEP-18	R4219247
CCME Total Extractable Hydrocarbons							
Surrogate: 2-Bromobenzotrifluoride	90.0		70-130	%	19-SEP-18	19-SEP-18	R4228227
Chrom. to baseline at nC50	YES				19-SEP-18	19-SEP-18	R4228227
Prep/Analysis Dates					19-SEP-18	19-SEP-18	R4228227
CCME Total Hydrocarbons							
F1 (C6-C10)	<10		10	mg/kg		20-SEP-18	
F1-BTEX	<10		10	mg/kg		20-SEP-18	
F2 (C10-C16)	<20		20	mg/kg		20-SEP-18	
F3 (C16-C34)	<20		20	mg/kg		20-SEP-18	
F4 (C34-C50)	<20		20	mg/kg		20-SEP-18	
Total Hydrocarbons (C6-C50)	<20		20	mg/kg		20-SEP-18	
Miscellaneous Parameters							
% Moisture	6.25		0.25	%		20-SEP-18	R4227528
Mercury (Hg)	0.104		0.0050	mg/kg	24-SEP-18	25-SEP-18	R4239384
Quantitation of asbestos by point count							
Asbestos By Point Count	<0.10		0.10	%		18-SEP-18	R4219607
Other Fibres: Cellulose	Trace <1		1.0	%		18-SEP-18	R4219607
Mica	Trace <1		1.0	%		18-SEP-18	R4219607
Metals in Soil by CRC ICPMS							
Aluminum (Al)	6040		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Antimony (Sb)	1.43		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Arsenic (As)	10.7		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Barium (Ba)	148		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Beryllium (Be)	0.37		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Bismuth (Bi)	<0.20		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-2 18BH20-02							
Sampled By: CJ/LB on 13-AUG-18							
Matrix: SOIL							
Metals in Soil by CRC ICPMS							
Boron (B)	<5.0		5.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Cadmium (Cd)	0.467		0.020	mg/kg	24-SEP-18	25-SEP-18	R4240927
Calcium (Ca)	1290		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Chromium (Cr)	20.5		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Cobalt (Co)	8.19		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Copper (Cu)	24.6		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Iron (Fe)	23200		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Lead (Pb)	13.1		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Lithium (Li)	4.4		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Magnesium (Mg)	2550		20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Manganese (Mn)	379		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Molybdenum (Mo)	2.06		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Nickel (Ni)	27.0		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Phosphorus (P)	508		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Potassium (K)	720		100	mg/kg	24-SEP-18	25-SEP-18	R4240927
Selenium (Se)	0.91		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Silver (Ag)	0.19		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Sodium (Na)	53		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Strontium (Sr)	13.5		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Sulfur (S)	<1000		1000	mg/kg	24-SEP-18	25-SEP-18	R4240927
Thallium (Tl)	0.061		0.050	mg/kg	24-SEP-18	25-SEP-18	R4240927
Tin (Sn)	<2.0		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Titanium (Ti)	129		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Tungsten (W)	<0.50		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Uranium (U)	1.44		0.050	mg/kg	24-SEP-18	25-SEP-18	R4240927
Vanadium (V)	24.0		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Zinc (Zn)	70.1		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Zirconium (Zr)	9.7		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
PCBs							
Aroclor 1016	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1221	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1232	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1242	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1248	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1254	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1260	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1262	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1268	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Total PCBs	<0.050		0.050	mg/kg		26-SEP-18	R4246351
Surrogate: Decachlorobiphenyl	91.3		65-130	%		26-SEP-18	R4246351
L2158112-3 18BH20-03							
Sampled By: CJ/LB on 13-AUG-18							
Matrix: SOIL							
CCME BTEX, F1 TO F4							
BTEX and F1							
Benzene	<0.0050		0.0050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Toluene	<0.050		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Ethylbenzene	<0.010		0.010	mg/kg	13-AUG-18	20-SEP-18	R4219247
m+p-Xylene	<0.050		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
o-Xylene	<0.050		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Xylenes	<0.10		0.10	mg/kg	13-AUG-18	20-SEP-18	R4219247

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-3 18BH20-03							
Sampled By: CJ/LB on 13-AUG-18							
Matrix: SOIL							
BTEX and F1							
Surrogate: 1,4-Difluorobenzene (SS)	101.2		70-130	%	13-AUG-18	20-SEP-18	R4219247
Surrogate: 4-Bromofluorobenzene (SS)	124.9		70-130	%	13-AUG-18	20-SEP-18	R4219247
Surrogate: 3,4-Dichlorotoluene (SS)	108.4		70-130	%	13-AUG-18	20-SEP-18	R4219247
CCME Total Extractable Hydrocarbons							
Surrogate: 2-Bromobenzotrifluoride	89.2		70-130	%	18-SEP-18	18-SEP-18	R4223769
Chrom. to baseline at nC50	YES				18-SEP-18	18-SEP-18	R4223769
Prep/Analysis Dates					18-SEP-18	18-SEP-18	R4223769
CCME Total Hydrocarbons							
F1 (C6-C10)	<10		10	mg/kg		20-SEP-18	
F1-BTEX	<10		10	mg/kg		20-SEP-18	
F2 (C10-C16)	<20		20	mg/kg		20-SEP-18	
F3 (C16-C34)	<20		20	mg/kg		20-SEP-18	
F4 (C34-C50)	<20		20	mg/kg		20-SEP-18	
Total Hydrocarbons (C6-C50)	<20		20	mg/kg		20-SEP-18	
Miscellaneous Parameters							
% Moisture	<0.25		0.25	%		20-SEP-18	R4228147
Mercury (Hg)	0.095		0.050	mg/kg wwt	20-SEP-18	21-SEP-18	R4231547
Quantitation of asbestos by point count							
Asbestos: Chrysotile	0.10		0.10	%		18-SEP-18	R4219607
Other Fibres: Cellulose	Trace <1		1.0	%		18-SEP-18	R4219607
Mica	Trace <1		1.0	%		18-SEP-18	R4219607
Metals in Waste by CRC ICPMS							
Aluminum (Al)	6650		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Antimony (Sb)	1.48		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Arsenic (As)	7.74		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Barium (Ba)	52.1		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Beryllium (Be)	0.27		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Boron (B)	<5.0		5.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cadmium (Cd)	0.408		0.020	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Calcium (Ca)	1100		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Chromium (Cr)	19.6		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cobalt (Co)	9.50		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Copper (Cu)	31.3		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Iron (Fe)	16000		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lead (Pb)	14.2		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lithium (Li)	6.3		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Magnesium (Mg)	3920		20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Manganese (Mn)	152		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Molybdenum (Mo)	1.90		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Nickel (Ni)	26.6		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Phosphorus (P)	316		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Potassium (K)	430		100	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Selenium (Se)	2.21		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Silver (Ag)	0.15		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sodium (Na)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Strontium (Sr)	8.67		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sulfur	<1000		1000	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Thallium (Tl)	0.062		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tin (Sn)	<2.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Titanium (Ti)	167		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-3 18BH20-03							
Sampled By: CJ/LB on 13-AUG-18							
Matrix: SOIL							
Metals in Waste by CRC ICPMS							
Tungsten	<0.50		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Uranium (U)	0.799		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Vanadium (V)	21.5		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zinc (Zn)	74.3		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zirconium (Zr)	8.0		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
L2158112-4 18BH20-04							
Sampled By: CJ/LB on 13-AUG-18							
Matrix: SOIL							
CCME BTEX, F1 TO F4							
BTEX and F1							
Benzene	<0.0050		0.0050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Toluene	<0.050		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Ethylbenzene	<0.010		0.010	mg/kg	13-AUG-18	20-SEP-18	R4219247
m+p-Xylene	<0.050		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
o-Xylene	<0.050		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Xylenes	<0.10		0.10	mg/kg	13-AUG-18	20-SEP-18	R4219247
Surrogate: 1,4-Difluorobenzene (SS)	92.7		70-130	%	13-AUG-18	20-SEP-18	R4219247
Surrogate: 4-Bromofluorobenzene (SS)	113.0		70-130	%	13-AUG-18	20-SEP-18	R4219247
Surrogate: 3,4-Dichlorotoluene (SS)	96.1		70-130	%	13-AUG-18	20-SEP-18	R4219247
CCME Total Extractable Hydrocarbons							
Surrogate: 2-Bromobenzotrifluoride	91.4		70-130	%	20-SEP-18	20-SEP-18	R4228227
Chrom. to baseline at nC50	YES				20-SEP-18	20-SEP-18	R4228227
Prep/Analysis Dates					20-SEP-18	20-SEP-18	R4228227
CCME Total Hydrocarbons							
F1 (C6-C10)	<10		10	mg/kg		21-SEP-18	
F1-BTEX	<10		10	mg/kg		21-SEP-18	
F2 (C10-C16)	<20		20	mg/kg		21-SEP-18	
F3 (C16-C34)	33		20	mg/kg		21-SEP-18	
F4 (C34-C50)	<20		20	mg/kg		21-SEP-18	
Total Hydrocarbons (C6-C50)	33		20	mg/kg		21-SEP-18	
Miscellaneous Parameters							
% Moisture	19.5		0.25	%		20-SEP-18	R4227528
Mercury (Hg)	0.126		0.0050	mg/kg	24-SEP-18	25-SEP-18	R4239384
Quantitation of asbestos by point count							
Asbestos By Point Count	<0.10		0.10	%		18-SEP-18	R4219607
Other Fibres: Cellulose	Trace <1		1.0	%		18-SEP-18	R4219607
Mica	Trace <1		1.0	%		18-SEP-18	R4219607
Metals in Soil by CRC ICPMS							
Aluminum (Al)	13300		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Antimony (Sb)	1.31		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Arsenic (As)	13.3		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Barium (Ba)	184		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Beryllium (Be)	0.48		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Bismuth (Bi)	<0.20		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Boron (B)	<5.0		5.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Cadmium (Cd)	0.984		0.020	mg/kg	24-SEP-18	25-SEP-18	R4240927
Calcium (Ca)	3590		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Chromium (Cr)	34.5		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Cobalt (Co)	17.7		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Copper (Cu)	28.0		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Iron (Fe)	28100		50	mg/kg	24-SEP-18	25-SEP-18	R4240927

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-4 18BH20-04							
Sampled By: CJ/LB on 13-AUG-18							
Matrix: SOIL							
Metals in Soil by CRC ICPMS							
Lead (Pb)	16.0		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Lithium (Li)	9.8		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Magnesium (Mg)	4780		20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Manganese (Mn)	954		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Molybdenum (Mo)	2.66		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Nickel (Ni)	43.4		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Phosphorus (P)	575		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Potassium (K)	730		100	mg/kg	24-SEP-18	25-SEP-18	R4240927
Selenium (Se)	1.56		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Silver (Ag)	0.29		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Sodium (Na)	95		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Strontium (Sr)	26.1		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Sulfur (S)	<1000		1000	mg/kg	24-SEP-18	25-SEP-18	R4240927
Thallium (Tl)	0.118		0.050	mg/kg	24-SEP-18	25-SEP-18	R4240927
Tin (Sn)	<2.0		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Titanium (Ti)	387		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Tungsten (W)	<0.50		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Uranium (U)	2.34		0.050	mg/kg	24-SEP-18	25-SEP-18	R4240927
Vanadium (V)	38.4		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Zinc (Zn)	107		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Zirconium (Zr)	15.1		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
PCBs							
Aroclor 1016	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1221	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1232	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1242	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1248	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1254	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1260	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1262	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1268	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Total PCBs	<0.050		0.050	mg/kg		26-SEP-18	R4246351
Surrogate: Decachlorobiphenyl	86.9		65-130	%		26-SEP-18	R4246351
L2158112-5 18BH20-05							
Sampled By: CJ/LB on 13-AUG-18							
Matrix: SOIL							
CCME BTEX, F1 TO F4							
BTEX and F1							
Benzene	<0.0050		0.0050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Toluene	<0.050		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Ethylbenzene	<0.010		0.010	mg/kg	13-AUG-18	20-SEP-18	R4219247
m+p-Xylene	<0.050		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
o-Xylene	<0.050		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Xylenes	<0.10		0.10	mg/kg	13-AUG-18	20-SEP-18	R4219247
Surrogate: 1,4-Difluorobenzene (SS)	87.9		70-130	%	13-AUG-18	20-SEP-18	R4219247
Surrogate: 4-Bromofluorobenzene (SS)	119.1		70-130	%	13-AUG-18	20-SEP-18	R4219247
Surrogate: 3,4-Dichlorotoluene (SS)	127.1		70-130	%	13-AUG-18	20-SEP-18	R4219247
CCME Total Extractable Hydrocarbons							
Surrogate: 2-Bromobenzotrifluoride	70.7		70-130	%	19-SEP-18	19-SEP-18	R4228227
Chrom. to baseline at nC50	YES				19-SEP-18	19-SEP-18	R4228227
Prep/Analysis Dates					19-SEP-18	19-SEP-18	R4228227

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-5 18BH20-05							
Sampled By: CJ/LB on 13-AUG-18							
Matrix: SOIL							
CCME Total Hydrocarbons							
F1 (C6-C10)	<10		10	mg/kg		20-SEP-18	
F1-BTEX	<10		10	mg/kg		20-SEP-18	
F2 (C10-C16)	76		20	mg/kg		20-SEP-18	
F3 (C16-C34)	<20		20	mg/kg		20-SEP-18	
F4 (C34-C50)	<20		20	mg/kg		20-SEP-18	
Total Hydrocarbons (C6-C50)	76		20	mg/kg		20-SEP-18	
Miscellaneous Parameters							
% Moisture	12.5		0.25	%		20-SEP-18	R4227528
Mercury (Hg)	0.227		0.0050	mg/kg	24-SEP-18	25-SEP-18	R4239384
Quantitation of asbestos by point count							
Asbestos By Point Count	<0.10		0.10	%		18-SEP-18	R4219607
Other Fibres: Cellulose	Trace <1		1.0	%		18-SEP-18	R4219607
Mica	Trace <1		1.0	%		18-SEP-18	R4219607
Metals in Soil by CRC ICPMS							
Aluminum (Al)	9050		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Antimony (Sb)	1.97		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Arsenic (As)	12.0		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Barium (Ba)	130		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Beryllium (Be)	0.35		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Bismuth (Bi)	<0.20		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Boron (B)	<5.0		5.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Cadmium (Cd)	0.419		0.020	mg/kg	24-SEP-18	25-SEP-18	R4240927
Calcium (Ca)	1820		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Chromium (Cr)	30.1		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Cobalt (Co)	11.5		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Copper (Cu)	26.0		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Iron (Fe)	21700		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Lead (Pb)	16.2		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Lithium (Li)	5.9		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Magnesium (Mg)	4220		20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Manganese (Mn)	241		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Molybdenum (Mo)	3.55		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Nickel (Ni)	31.9		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Phosphorus (P)	385		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Potassium (K)	770		100	mg/kg	24-SEP-18	25-SEP-18	R4240927
Selenium (Se)	2.23		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Silver (Ag)	0.26		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Sodium (Na)	75		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Strontium (Sr)	19.8		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Sulfur (S)	<1000		1000	mg/kg	24-SEP-18	25-SEP-18	R4240927
Thallium (Tl)	0.079		0.050	mg/kg	24-SEP-18	25-SEP-18	R4240927
Tin (Sn)	<2.0		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Titanium (Ti)	354		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Tungsten (W)	<0.50		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Uranium (U)	1.81		0.050	mg/kg	24-SEP-18	25-SEP-18	R4240927
Vanadium (V)	30.7		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Zinc (Zn)	97.1		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Zirconium (Zr)	12.4		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
PCBs							
Aroclor 1016	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1221	<0.010		0.010	mg/kg		26-SEP-18	R4246351

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-5 18BH20-05							
Sampled By: CJ/LB on 13-AUG-18							
Matrix: SOIL							
PCBs							
Aroclor 1232	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1242	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1248	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1254	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1260	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1262	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1268	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Total PCBs	<0.050		0.050	mg/kg		26-SEP-18	R4246351
Surrogate: Decachlorobiphenyl	92.7		65-130	%		26-SEP-18	R4246351
L2158112-6 18BH20-06							
Sampled By: CJ/LB on 13-AUG-18							
Matrix: SOIL							
CCME BTEX, F1 TO F4							
BTEX and F1							
Benzene	<0.0050		0.0050	mg/kg wwt	13-AUG-18	20-SEP-18	R4219247
Toluene	<0.050		0.050	mg/kg wwt	13-AUG-18	20-SEP-18	R4219247
Ethylbenzene	<0.010		0.010	mg/kg wwt	13-AUG-18	20-SEP-18	R4219247
m+p-Xylene	<0.050		0.050	mg/kg wwt	13-AUG-18	20-SEP-18	R4219247
o-Xylene	<0.050		0.050	mg/kg wwt	13-AUG-18	20-SEP-18	R4219247
Xylenes	<0.10		0.10	mg/kg wwt	13-AUG-18	20-SEP-18	R4219247
Surrogate: 1,4-Difluorobenzene (SS)	106.7		70-130	%	13-AUG-18	20-SEP-18	R4219247
Surrogate: 4-Bromofluorobenzene (SS)	126.6		70-130	%	13-AUG-18	20-SEP-18	R4219247
Surrogate: 3,4-Dichlorotoluene (SS)	106.4		70-130	%	13-AUG-18	20-SEP-18	R4219247
CCME Total Extractable Hydrocarbons							
Surrogate: 2-Bromobenzotrifluoride	80.5		70-130	%	19-SEP-18	19-SEP-18	R4228227
Chrom. to baseline at nC50	YES				19-SEP-18	19-SEP-18	R4228227
Prep/Analysis Dates					19-SEP-18	19-SEP-18	R4228227
CCME Total Hydrocarbons							
F1 (C6-C10)	<10		10	mg/kg		20-SEP-18	
F1-BTEX	<10		10	mg/kg		20-SEP-18	
F2 (C10-C16)	<20		20	mg/kg		20-SEP-18	
F3 (C16-C34)	<20		20	mg/kg		20-SEP-18	
F4 (C34-C50)	<20		20	mg/kg		20-SEP-18	
Total Hydrocarbons (C6-C50)	<20		20	mg/kg		20-SEP-18	
Miscellaneous Parameters							
% Moisture	<0.25		0.25	%		20-SEP-18	R4228147
Mercury (Hg)	0.055		0.050	mg/kg wwt	20-SEP-18	21-SEP-18	R4231547
Quantitation of asbestos by point count							
Asbestos: Chrysotile	0.10		0.10	%		18-SEP-18	R4219607
Other Fibres: Cellulose	Trace <1		1.0	%		18-SEP-18	R4219607
Mica	1-5		1.0	%		18-SEP-18	R4219607
Metals in Waste by CRC ICPMS							
Aluminum (Al)	5330		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Antimony (Sb)	2.10		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Arsenic (As)	8.52		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Barium (Ba)	73.0		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Beryllium (Be)	0.35		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Boron (B)	<5.0		5.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cadmium (Cd)	0.597		0.020	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Calcium (Ca)	1230		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-6 18BH20-06							
Sampled By: CJ/LB on 13-AUG-18							
Matrix: SOIL							
Metals in Waste by CRC ICPMS							
Chromium (Cr)	15.5		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cobalt (Co)	9.16		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Copper (Cu)	25.8		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Iron (Fe)	21500		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lead (Pb)	14.9		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lithium (Li)	4.7		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Magnesium (Mg)	3030		20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Manganese (Mn)	321		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Molybdenum (Mo)	1.81		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Nickel (Ni)	27.1		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Phosphorus (P)	482		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Potassium (K)	380		100	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Selenium (Se)	1.53		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Silver (Ag)	0.53		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sodium (Na)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Strontium (Sr)	13.2		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sulfur	<1000		1000	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Thallium (Tl)	<0.050		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tin (Sn)	<2.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Titanium (Ti)	247		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tungsten	<0.50		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Uranium (U)	2.03		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Vanadium (V)	22.1		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zinc (Zn)	89.3		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zirconium (Zr)	8.4		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
PCBs							
Aroclor 1016	<0.010		0.010	mg/kg		21-SEP-18	R4224276
Aroclor 1221	<0.010		0.010	mg/kg		21-SEP-18	R4224276
Aroclor 1232	<0.010		0.010	mg/kg		21-SEP-18	R4224276
Aroclor 1242	<0.010		0.010	mg/kg		21-SEP-18	R4224276
Aroclor 1248	<0.010		0.010	mg/kg		21-SEP-18	R4224276
Aroclor 1254	<0.010		0.010	mg/kg		21-SEP-18	R4224276
Aroclor 1260	<0.010		0.010	mg/kg		21-SEP-18	R4224276
Aroclor 1262	<0.010		0.010	mg/kg		21-SEP-18	R4224276
Aroclor 1268	<0.010		0.010	mg/kg		21-SEP-18	R4224276
Total PCBs	<0.050		0.050	mg/kg		21-SEP-18	R4224276
Surrogate: Decachlorobiphenyl	N/A	SMI	-	%		21-SEP-18	R4224276
L2158112-7 18BH21-01							
Sampled By: CJ/LB on 13-AUG-18							
Matrix: SOIL							
CCME BTEX, F1 TO F4							
BTEX and F1							
Benzene	<0.0050		0.0050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Toluene	<0.050		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Ethylbenzene	<0.010		0.010	mg/kg	13-AUG-18	20-SEP-18	R4219247
m+p-Xylene	<0.050		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
o-Xylene	<0.050		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Xylenes	<0.10		0.10	mg/kg	13-AUG-18	20-SEP-18	R4219247
Surrogate: 1,4-Difluorobenzene (SS)	83.3		70-130	%	13-AUG-18	20-SEP-18	R4219247
Surrogate: 4-Bromofluorobenzene (SS)	101.1		70-130	%	13-AUG-18	20-SEP-18	R4219247
Surrogate: 3,4-Dichlorotoluene (SS)	116.4		70-130	%	13-AUG-18	20-SEP-18	R4219247

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-7 18BH21-01							
Sampled By: CJ/LB on 13-AUG-18							
Matrix: SOIL							
CCME Total Extractable Hydrocarbons							
Surrogate: 2-Bromobenzotrifluoride	77.6		70-130	%	19-SEP-18	19-SEP-18	R4228227
Chrom. to baseline at nC50	YES				19-SEP-18	19-SEP-18	R4228227
Prep/Analysis Dates					19-SEP-18	19-SEP-18	R4228227
CCME Total Hydrocarbons							
F1 (C6-C10)	<10		10	mg/kg		20-SEP-18	
F1-BTEX	<10		10	mg/kg		20-SEP-18	
F2 (C10-C16)	<20		20	mg/kg		20-SEP-18	
F3 (C16-C34)	<20		20	mg/kg		20-SEP-18	
F4 (C34-C50)	<20		20	mg/kg		20-SEP-18	
Total Hydrocarbons (C6-C50)	<20		20	mg/kg		20-SEP-18	
Miscellaneous Parameters							
% Moisture	15.4		0.25	%		20-SEP-18	R4227528
Mercury (Hg)	0.0784		0.0050	mg/kg	24-SEP-18	25-SEP-18	R4239384
Quantitation of asbestos by point count							
Asbestos By Point Count	<0.10		0.10	%		18-SEP-18	R4219607
Other Fibres: Cellulose	1-5		1.0	%		18-SEP-18	R4219607
Mica	Trace <1		1.0	%		18-SEP-18	R4219607
Metals in Soil by CRC ICPMS							
Aluminum (Al)	11200		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Antimony (Sb)	1.23		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Arsenic (As)	10.1		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Barium (Ba)	199		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Beryllium (Be)	0.40		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Bismuth (Bi)	<0.20		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Boron (B)	<5.0		5.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Cadmium (Cd)	0.304		0.020	mg/kg	24-SEP-18	25-SEP-18	R4240927
Calcium (Ca)	2390		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Chromium (Cr)	25.9		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Cobalt (Co)	9.14		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Copper (Cu)	26.8		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Iron (Fe)	21700		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Lead (Pb)	12.4		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Lithium (Li)	7.0		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Magnesium (Mg)	3750		20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Manganese (Mn)	303		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Molybdenum (Mo)	1.83		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Nickel (Ni)	27.9		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Phosphorus (P)	431		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Potassium (K)	750		100	mg/kg	24-SEP-18	25-SEP-18	R4240927
Selenium (Se)	0.52		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Silver (Ag)	0.15		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Sodium (Na)	108		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Strontium (Sr)	20.1		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Sulfur (S)	<1000		1000	mg/kg	24-SEP-18	25-SEP-18	R4240927
Thallium (Tl)	0.077		0.050	mg/kg	24-SEP-18	25-SEP-18	R4240927
Tin (Sn)	<2.0		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Titanium (Ti)	414		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Tungsten (W)	<0.50		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Uranium (U)	0.958		0.050	mg/kg	24-SEP-18	25-SEP-18	R4240927
Vanadium (V)	38.4		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Zinc (Zn)	60.9		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-7 18BH21-01							
Sampled By: CJ/LB on 13-AUG-18							
Matrix: SOIL							
Metals in Soil by CRC ICPMS							
Zirconium (Zr)	5.0		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
PCBs							
Aroclor 1016	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1221	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1232	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1242	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1248	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1254	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1260	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1262	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1268	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Total PCBs	<0.050		0.050	mg/kg		26-SEP-18	R4246351
Surrogate: Decachlorobiphenyl	80.4		65-130	%		26-SEP-18	R4246351
L2158112-8 18BH21-02							
Sampled By: CJ/LB on 13-AUG-18							
Matrix: SOIL							
CCME BTEX, F1 TO F4							
BTEX and F1							
Benzene	<0.0050		0.0050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Toluene	<0.050		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Ethylbenzene	0.532		0.010	mg/kg	13-AUG-18	20-SEP-18	R4219247
m+p-Xylene	1.02		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
o-Xylene	3.06		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Xylenes	4.08		0.10	mg/kg	13-AUG-18	20-SEP-18	R4219247
Surrogate: 1,4-Difluorobenzene (SS)	97.8		70-130	%	13-AUG-18	20-SEP-18	R4219247
Surrogate: 4-Bromofluorobenzene (SS)	N/A	SOL:MI	-	%	13-AUG-18	20-SEP-18	R4219247
Surrogate: 3,4-Dichlorotoluene (SS)	N/A	SOL:MI	-	%	13-AUG-18	20-SEP-18	R4219247
CCME Total Extractable Hydrocarbons							
Surrogate: 2-Bromobenzotrifluoride	108.9		70-130	%	19-SEP-18	19-SEP-18	R4228227
Chrom. to baseline at nC50	YES				19-SEP-18	19-SEP-18	R4228227
Prep/Analysis Dates					19-SEP-18	19-SEP-18	R4228227
CCME Total Hydrocarbons							
F1 (C6-C10)	354		10	mg/kg		20-SEP-18	
F1-BTEX	349		10	mg/kg		20-SEP-18	
F2 (C10-C16)	1770		20	mg/kg		20-SEP-18	
F3 (C16-C34)	177		20	mg/kg		20-SEP-18	
F4 (C34-C50)	<20		20	mg/kg		20-SEP-18	
Total Hydrocarbons (C6-C50)	2300		20	mg/kg		20-SEP-18	
Miscellaneous Parameters							
% Moisture	6.48		0.25	%		20-SEP-18	R4227528
Mercury (Hg)	0.0849		0.0050	mg/kg	24-SEP-18	25-SEP-18	R4239384
Quantitation of asbestos by point count							
Asbestos By Point Count	<0.10		0.10	%		18-SEP-18	R4219607
Other Fibres: Cellulose	Trace <1		1.0	%		18-SEP-18	R4219607
Mica	1-5		1.0	%		18-SEP-18	R4219607
Metals in Soil by CRC ICPMS							
Aluminum (Al)	4920		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Antimony (Sb)	1.50		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Arsenic (As)	8.27		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Barium (Ba)	74.5		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Beryllium (Be)	0.26		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-8 18BH21-02							
Sampled By: CJ/LB on 13-AUG-18							
Matrix: SOIL							
Metals in Soil by CRC ICPMS							
Bismuth (Bi)	<0.20		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Boron (B)	<5.0		5.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Cadmium (Cd)	0.637		0.020	mg/kg	24-SEP-18	25-SEP-18	R4240927
Calcium (Ca)	810		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Chromium (Cr)	17.7		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Cobalt (Co)	9.36		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Copper (Cu)	22.5		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Iron (Fe)	21900		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Lead (Pb)	11.6		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Lithium (Li)	3.0		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Magnesium (Mg)	2640		20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Manganese (Mn)	208		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Molybdenum (Mo)	1.79		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Nickel (Ni)	26.1		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Phosphorus (P)	367		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Potassium (K)	570		100	mg/kg	24-SEP-18	25-SEP-18	R4240927
Selenium (Se)	0.67		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Silver (Ag)	0.18		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Sodium (Na)	<50		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Strontium (Sr)	8.36		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Sulfur (S)	<1000		1000	mg/kg	24-SEP-18	25-SEP-18	R4240927
Thallium (Tl)	0.058		0.050	mg/kg	24-SEP-18	25-SEP-18	R4240927
Tin (Sn)	<2.0		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Titanium (Ti)	91.6		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Tungsten (W)	<0.50		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Uranium (U)	0.810		0.050	mg/kg	24-SEP-18	25-SEP-18	R4240927
Vanadium (V)	20.6		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Zinc (Zn)	69.2		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Zirconium (Zr)	7.4		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
PCBs							
Aroclor 1016	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1221	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1232	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1242	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1248	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1254	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1260	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1262	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1268	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Total PCBs	<0.050		0.050	mg/kg		26-SEP-18	R4246351
Surrogate: Decachlorobiphenyl	83.2		65-130	%		26-SEP-18	R4246351
L2158112-9 18BH21-03							
Sampled By: CJ/LB on 13-AUG-18							
Matrix: SOIL							
CCME BTEX, F1 TO F4							
BTEX and F1							
Benzene	<0.0050		0.0050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Toluene	<0.050		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Ethylbenzene	0.017		0.010	mg/kg	13-AUG-18	20-SEP-18	R4219247
m+p-Xylene	<0.050		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
o-Xylene	<0.050		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-9 18BH21-03							
Sampled By: CJ/LB on 13-AUG-18							
Matrix: SOIL							
BTEX and F1							
Xylenes	<0.10		0.10	mg/kg	13-AUG-18	20-SEP-18	R4219247
Surrogate: 1,4-Difluorobenzene (SS)	81.3		70-130	%	13-AUG-18	20-SEP-18	R4219247
Surrogate: 4-Bromofluorobenzene (SS)	105.7		70-130	%	13-AUG-18	20-SEP-18	R4219247
Surrogate: 3,4-Dichlorotoluene (SS)	91.4		70-130	%	13-AUG-18	20-SEP-18	R4219247
CCME Total Extractable Hydrocarbons							
Surrogate: 2-Bromobenzotrifluoride	87.1		70-130	%	20-SEP-18	20-SEP-18	R4228227
Chrom. to baseline at nC50	YES				20-SEP-18	20-SEP-18	R4228227
Prep/Analysis Dates					20-SEP-18	20-SEP-18	R4228227
CCME Total Hydrocarbons							
F1 (C6-C10)	11		10	mg/kg		21-SEP-18	
F1-BTEX	11		10	mg/kg		21-SEP-18	
F2 (C10-C16)	<20		20	mg/kg		21-SEP-18	
F3 (C16-C34)	<20		20	mg/kg		21-SEP-18	
F4 (C34-C50)	<20		20	mg/kg		21-SEP-18	
Total Hydrocarbons (C6-C50)	<20		20	mg/kg		21-SEP-18	
Miscellaneous Parameters							
% Moisture	14.1		0.25	%		20-SEP-18	R4227528
Mercury (Hg)	0.0622		0.0050	mg/kg	24-SEP-18	25-SEP-18	R4239384
Quantitation of asbestos by point count							
Asbestos By Point Count	<0.10		0.10	%		18-SEP-18	R4219607
Other Fibres: Cellulose	Trace <1		1.0	%		18-SEP-18	R4219607
Mica	Trace <1		1.0	%		18-SEP-18	R4219607
Metals in Soil by CRC ICPMS							
Aluminum (Al)	11000		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Antimony (Sb)	1.49		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Arsenic (As)	16.5		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Barium (Ba)	247		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Beryllium (Be)	0.43		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Bismuth (Bi)	0.21		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Boron (B)	<5.0		5.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Cadmium (Cd)	0.487		0.020	mg/kg	24-SEP-18	25-SEP-18	R4240927
Calcium (Ca)	2650		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Chromium (Cr)	30.6		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Cobalt (Co)	13.1		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Copper (Cu)	35.9		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Iron (Fe)	32400		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Lead (Pb)	18.0		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Lithium (Li)	8.4		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Magnesium (Mg)	4280		20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Manganese (Mn)	395		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Molybdenum (Mo)	3.37		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Nickel (Ni)	35.0		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Phosphorus (P)	795		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Potassium (K)	920		100	mg/kg	24-SEP-18	25-SEP-18	R4240927
Selenium (Se)	1.26		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Silver (Ag)	0.17		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Sodium (Na)	117		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Strontium (Sr)	22.1		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Sulfur (S)	<1000		1000	mg/kg	24-SEP-18	25-SEP-18	R4240927
Thallium (Tl)	0.094		0.050	mg/kg	24-SEP-18	25-SEP-18	R4240927
Tin (Sn)	<2.0		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-9 18BH21-03							
Sampled By: CJ/LB on 13-AUG-18							
Matrix: SOIL							
Metals in Soil by CRC ICPMS							
Titanium (Ti)	412		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Tungsten (W)	<0.50		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Uranium (U)	1.39		0.050	mg/kg	24-SEP-18	25-SEP-18	R4240927
Vanadium (V)	39.9		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Zinc (Zn)	93.7		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Zirconium (Zr)	12.9		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
PCBs							
Aroclor 1016	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1221	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1232	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1242	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1248	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1254	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1260	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1262	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1268	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Total PCBs	<0.050		0.050	mg/kg		26-SEP-18	R4246351
Surrogate: Decachlorobiphenyl	89.9		65-130	%		26-SEP-18	R4246351
L2158112-10 18BH21-04							
Sampled By: CJ/LB on 13-AUG-18							
Matrix: SOIL							
CCME BTEX, F1 TO F4							
BTEX and F1							
Benzene	<0.0050		0.0050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Toluene	<0.050		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Ethylbenzene	0.025		0.010	mg/kg	13-AUG-18	20-SEP-18	R4219247
m+p-Xylene	<0.050		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
o-Xylene	<0.050		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Xylenes	<0.10		0.10	mg/kg	13-AUG-18	20-SEP-18	R4219247
Surrogate: 1,4-Difluorobenzene (SS)	95.0		70-130	%	13-AUG-18	20-SEP-18	R4219247
Surrogate: 4-Bromofluorobenzene (SS)	124.0		70-130	%	13-AUG-18	20-SEP-18	R4219247
Surrogate: 3,4-Dichlorotoluene (SS)	88.8		70-130	%	13-AUG-18	20-SEP-18	R4219247
CCME Total Extractable Hydrocarbons							
Surrogate: 2-Bromobenzotrifluoride	88.0		70-130	%	20-SEP-18	20-SEP-18	R4228227
Chrom. to baseline at nC50	YES				20-SEP-18	20-SEP-18	R4228227
Prep/Analysis Dates					20-SEP-18	20-SEP-18	R4228227
CCME Total Hydrocarbons							
F1 (C6-C10)	<10		10	mg/kg		21-SEP-18	
F1-BTEX	<10		10	mg/kg		21-SEP-18	
F2 (C10-C16)	<20		20	mg/kg		21-SEP-18	
F3 (C16-C34)	<20		20	mg/kg		21-SEP-18	
F4 (C34-C50)	<20		20	mg/kg		21-SEP-18	
Total Hydrocarbons (C6-C50)	<20		20	mg/kg		21-SEP-18	
Miscellaneous Parameters							
% Moisture	16.8		0.25	%		20-SEP-18	R4227528
Mercury (Hg)	0.0788		0.0050	mg/kg	24-SEP-18	25-SEP-18	R4239384
Quantitation of asbestos by point count							
Asbestos By Point Count	<0.10		0.10	%		18-SEP-18	R4219607
Other Fibres: Cellulose	Trace <1		1.0	%		18-SEP-18	R4219607
Mica	Trace <1		1.0	%		18-SEP-18	R4219607
Metals in Soil by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-10 18BH21-04							
Sampled By: CJ/LB on 13-AUG-18							
Matrix: SOIL							
Metals in Soil by CRC ICPMS							
Aluminum (Al)	11400		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Antimony (Sb)	0.97		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Arsenic (As)	12.6		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Barium (Ba)	211		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Beryllium (Be)	0.44		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Bismuth (Bi)	<0.20		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Boron (B)	<5.0		5.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Cadmium (Cd)	0.392		0.020	mg/kg	24-SEP-18	25-SEP-18	R4240927
Calcium (Ca)	2440		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Chromium (Cr)	29.0		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Cobalt (Co)	11.7		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Copper (Cu)	24.1		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Iron (Fe)	25600		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Lead (Pb)	16.4		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Lithium (Li)	8.2		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Magnesium (Mg)	3440		20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Manganese (Mn)	432		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Molybdenum (Mo)	3.15		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Nickel (Ni)	28.6		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Phosphorus (P)	405		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Potassium (K)	660		100	mg/kg	24-SEP-18	25-SEP-18	R4240927
Selenium (Se)	0.68		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Silver (Ag)	0.14		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Sodium (Na)	75		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Strontium (Sr)	19.2		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Sulfur (S)	<1000		1000	mg/kg	24-SEP-18	25-SEP-18	R4240927
Thallium (Tl)	0.074		0.050	mg/kg	24-SEP-18	25-SEP-18	R4240927
Tin (Sn)	<2.0		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Titanium (Ti)	209		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Tungsten (W)	<0.50		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Uranium (U)	1.63		0.050	mg/kg	24-SEP-18	25-SEP-18	R4240927
Vanadium (V)	30.1		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Zinc (Zn)	69.7		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Zirconium (Zr)	10.2		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
PCBs							
Aroclor 1016	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1221	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1232	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1242	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1248	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1254	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1260	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1262	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1268	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Total PCBs	<0.050		0.050	mg/kg		26-SEP-18	R4246351
Surrogate: Decachlorobiphenyl	96.0		65-130	%		26-SEP-18	R4246351
L2158112-11 18BH21-DUP-01							
Sampled By: CJ/LB on 13-AUG-18							
Matrix: SOIL							
CCME BTEX, F1 TO F4							
BTEX and F1							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-11 18BH21-DUP-01							
Sampled By: CJ/LB on 13-AUG-18							
Matrix: SOIL							
BTEX and F1							
Benzene	<0.0050		0.0050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Toluene	<0.050		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Ethylbenzene	0.063		0.010	mg/kg	13-AUG-18	20-SEP-18	R4219247
m+p-Xylene	<0.050		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
o-Xylene	<0.050		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Xylenes	<0.10		0.10	mg/kg	13-AUG-18	20-SEP-18	R4219247
Surrogate: 1,4-Difluorobenzene (SS)	99.5		70-130	%	13-AUG-18	20-SEP-18	R4219247
Surrogate: 4-Bromofluorobenzene (SS)	127.8		70-130	%	13-AUG-18	20-SEP-18	R4219247
Surrogate: 3,4-Dichlorotoluene (SS)	103.8		70-130	%	13-AUG-18	20-SEP-18	R4219247
CCME Total Extractable Hydrocarbons							
Surrogate: 2-Bromobenzotrifluoride	86.1		70-130	%	20-SEP-18	20-SEP-18	R4228227
Chrom. to baseline at nC50	YES				20-SEP-18	20-SEP-18	R4228227
Prep/Analysis Dates					20-SEP-18	20-SEP-18	R4228227
CCME Total Hydrocarbons							
F1 (C6-C10)	<10		10	mg/kg		21-SEP-18	
F1-BTEX	<10		10	mg/kg		21-SEP-18	
F2 (C10-C16)	<20		20	mg/kg		21-SEP-18	
F3 (C16-C34)	<20		20	mg/kg		21-SEP-18	
F4 (C34-C50)	<20		20	mg/kg		21-SEP-18	
Total Hydrocarbons (C6-C50)	<20		20	mg/kg		21-SEP-18	
Miscellaneous Parameters							
% Moisture	20.8		0.25	%		20-SEP-18	R4227528
Mercury (Hg)	0.113		0.0050	mg/kg	24-SEP-18	25-SEP-18	R4239384
Quantitation of asbestos by point count							
Asbestos By Point Count	<0.10		0.10	%		18-SEP-18	R4219607
Other Fibres: Cellulose	Trace <1		1.0	%		18-SEP-18	R4219607
Mica	Trace <1		1.0	%		18-SEP-18	R4219607
Metals in Soil by CRC ICPMS							
Aluminum (Al)	19300		50	mg/kg	24-SEP-18	27-SEP-18	R4251401
Antimony (Sb)	0.75		0.10	mg/kg	24-SEP-18	27-SEP-18	R4251401
Arsenic (As)	12.1		0.10	mg/kg	24-SEP-18	27-SEP-18	R4251401
Barium (Ba)	382		0.50	mg/kg	24-SEP-18	27-SEP-18	R4251401
Beryllium (Be)	0.69		0.10	mg/kg	24-SEP-18	27-SEP-18	R4251401
Bismuth (Bi)	0.22		0.20	mg/kg	24-SEP-18	27-SEP-18	R4251401
Boron (B)	<5.0		5.0	mg/kg	24-SEP-18	27-SEP-18	R4251401
Cadmium (Cd)	0.505		0.020	mg/kg	24-SEP-18	27-SEP-18	R4251401
Calcium (Ca)	4340		50	mg/kg	24-SEP-18	27-SEP-18	R4251401
Chromium (Cr)	40.7		0.50	mg/kg	24-SEP-18	27-SEP-18	R4251401
Cobalt (Co)	24.9		0.10	mg/kg	24-SEP-18	27-SEP-18	R4251401
Copper (Cu)	30.0		0.50	mg/kg	24-SEP-18	27-SEP-18	R4251401
Iron (Fe)	32400		50	mg/kg	24-SEP-18	27-SEP-18	R4251401
Lead (Pb)	19.2		0.50	mg/kg	24-SEP-18	27-SEP-18	R4251401
Lithium (Li)	13.5		2.0	mg/kg	24-SEP-18	27-SEP-18	R4251401
Magnesium (Mg)	4600		20	mg/kg	24-SEP-18	27-SEP-18	R4251401
Manganese (Mn)	906		1.0	mg/kg	24-SEP-18	27-SEP-18	R4251401
Molybdenum (Mo)	2.58		0.10	mg/kg	24-SEP-18	27-SEP-18	R4251401
Nickel (Ni)	39.9		0.50	mg/kg	24-SEP-18	27-SEP-18	R4251401
Phosphorus (P)	360		50	mg/kg	24-SEP-18	27-SEP-18	R4251401
Potassium (K)	870		100	mg/kg	24-SEP-18	27-SEP-18	R4251401
Selenium (Se)	0.56		0.20	mg/kg	24-SEP-18	27-SEP-18	R4251401
Silver (Ag)	0.22		0.10	mg/kg	24-SEP-18	27-SEP-18	R4251401

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-11 18BH21-DUP-01							
Sampled By: CJ/LB on 13-AUG-18							
Matrix: SOIL							
Metals in Soil by CRC ICPMS							
Sodium (Na)	128		50	mg/kg	24-SEP-18	27-SEP-18	R4251401
Strontium (Sr)	28.6		0.50	mg/kg	24-SEP-18	27-SEP-18	R4251401
Sulfur (S)	<1000		1000	mg/kg	24-SEP-18	27-SEP-18	R4251401
Thallium (Tl)	0.114		0.050	mg/kg	24-SEP-18	27-SEP-18	R4251401
Tin (Sn)	<2.0		2.0	mg/kg	24-SEP-18	27-SEP-18	R4251401
Titanium (Ti)	240		1.0	mg/kg	24-SEP-18	27-SEP-18	R4251401
Tungsten (W)	<0.50		0.50	mg/kg	24-SEP-18	27-SEP-18	R4251401
Uranium (U)	2.41		0.050	mg/kg	24-SEP-18	27-SEP-18	R4251401
Vanadium (V)	41.2		0.20	mg/kg	24-SEP-18	27-SEP-18	R4251401
Zinc (Zn)	103		2.0	mg/kg	24-SEP-18	27-SEP-18	R4251401
Zirconium (Zr)	9.1		1.0	mg/kg	24-SEP-18	27-SEP-18	R4251401
PCBs							
Aroclor 1016	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1221	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1232	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1242	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1248	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1254	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1260	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1262	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1268	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Total PCBs	<0.050		0.050	mg/kg		26-SEP-18	R4246351
Surrogate: Decachlorobiphenyl	N/A	SMI	-	%		26-SEP-18	R4246351
L2158112-12 18BH21-05							
Sampled By: CJ/LB on 13-AUG-18							
Matrix: SOIL							
CCME BTEX, F1 TO F4							
BTEX and F1							
Benzene	<0.0050		0.0050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Toluene	<0.050		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Ethylbenzene	<0.010		0.010	mg/kg	13-AUG-18	20-SEP-18	R4219247
m+p-Xylene	<0.050		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
o-Xylene	<0.050		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Xylenes	<0.10		0.10	mg/kg	13-AUG-18	20-SEP-18	R4219247
Surrogate: 1,4-Difluorobenzene (SS)	95.7		70-130	%	13-AUG-18	20-SEP-18	R4219247
Surrogate: 4-Bromofluorobenzene (SS)	115.1		70-130	%	13-AUG-18	20-SEP-18	R4219247
Surrogate: 3,4-Dichlorotoluene (SS)	114.7		70-130	%	13-AUG-18	20-SEP-18	R4219247
CCME Total Extractable Hydrocarbons							
Surrogate: 2-Bromobenzotrifluoride	87.7		70-130	%	19-SEP-18	19-SEP-18	R4228227
Chrom. to baseline at nC50	YES				19-SEP-18	19-SEP-18	R4228227
Prep/Analysis Dates					19-SEP-18	19-SEP-18	R4228227
CCME Total Hydrocarbons							
F1 (C6-C10)	<10		10	mg/kg		20-SEP-18	
F1-BTEX	<10		10	mg/kg		20-SEP-18	
F2 (C10-C16)	<20		20	mg/kg		20-SEP-18	
F3 (C16-C34)	<20		20	mg/kg		20-SEP-18	
F4 (C34-C50)	<20		20	mg/kg		20-SEP-18	
Total Hydrocarbons (C6-C50)	<20		20	mg/kg		20-SEP-18	
Miscellaneous Parameters							
% Moisture	4.59		0.25	%		20-SEP-18	R4227528
Mercury (Hg)	0.0653		0.0050	mg/kg	24-SEP-18	25-SEP-18	R4239384

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-12 18BH21-05							
Sampled By: CJ/LB on 13-AUG-18							
Matrix: SOIL							
Quantitation of asbestos by point count							
Asbestos By Point Count	<0.10		0.10	%		18-SEP-18	R4219607
Other Fibres: Cellulose	Trace <1		1.0	%		18-SEP-18	R4219607
Mica	Trace <1		1.0	%		18-SEP-18	R4219607
Metals in Soil by CRC ICPMS							
Aluminum (Al)	6420		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Antimony (Sb)	1.70		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Arsenic (As)	13.5		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Barium (Ba)	125		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Beryllium (Be)	0.34		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Bismuth (Bi)	<0.20		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Boron (B)	<5.0		5.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Cadmium (Cd)	0.591		0.020	mg/kg	24-SEP-18	25-SEP-18	R4240927
Calcium (Ca)	1600		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Chromium (Cr)	26.7		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Cobalt (Co)	11.6		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Copper (Cu)	20.2		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Iron (Fe)	25100		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Lead (Pb)	13.6		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Lithium (Li)	3.5		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Magnesium (Mg)	3790		20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Manganese (Mn)	436		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Molybdenum (Mo)	2.53		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Nickel (Ni)	29.5		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Phosphorus (P)	414		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Potassium (K)	530		100	mg/kg	24-SEP-18	25-SEP-18	R4240927
Selenium (Se)	1.39		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Silver (Ag)	0.10		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Sodium (Na)	<50		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Strontium (Sr)	13.2		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Sulfur (S)	<1000		1000	mg/kg	24-SEP-18	25-SEP-18	R4240927
Thallium (Tl)	0.052		0.050	mg/kg	24-SEP-18	25-SEP-18	R4240927
Tin (Sn)	<2.0		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Titanium (Ti)	198		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Tungsten (W)	<0.50		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Uranium (U)	0.938		0.050	mg/kg	24-SEP-18	25-SEP-18	R4240927
Vanadium (V)	28.3		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Zinc (Zn)	75.8		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Zirconium (Zr)	8.2		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
PCBs							
Aroclor 1016	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1221	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1232	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1242	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1248	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1254	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1260	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1262	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1268	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Total PCBs	<0.050		0.050	mg/kg		26-SEP-18	R4246351
Surrogate: Decachlorobiphenyl	109.7		65-130	%		26-SEP-18	R4246351

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-13 18BH21-06							
Sampled By: CJ/LB on 13-AUG-18							
Matrix: SOIL							
CCME BTEX, F1 TO F4							
BTEX and F1							
Benzene	<0.0050		0.0050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Toluene	<0.050		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Ethylbenzene	<0.010		0.010	mg/kg	13-AUG-18	20-SEP-18	R4219247
m+p-Xylene	<0.050		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
o-Xylene	<0.050		0.050	mg/kg	13-AUG-18	20-SEP-18	R4219247
Xylenes	<0.10		0.10	mg/kg	13-AUG-18	20-SEP-18	R4219247
Surrogate: 1,4-Difluorobenzene (SS)	84.1		70-130	%	13-AUG-18	20-SEP-18	R4219247
Surrogate: 4-Bromofluorobenzene (SS)	126.8		70-130	%	13-AUG-18	20-SEP-18	R4219247
Surrogate: 3,4-Dichlorotoluene (SS)	103.7		70-130	%	13-AUG-18	20-SEP-18	R4219247
CCME Total Extractable Hydrocarbons							
Surrogate: 2-Bromobenzotrifluoride	71.5		70-130	%	19-SEP-18	19-SEP-18	R4228227
Chrom. to baseline at nC50	YES				19-SEP-18	19-SEP-18	R4228227
Prep/Analysis Dates					19-SEP-18	19-SEP-18	R4228227
CCME Total Hydrocarbons							
F1 (C6-C10)	<10		10	mg/kg		20-SEP-18	
F1-BTEX	<10		10	mg/kg		20-SEP-18	
F2 (C10-C16)	<20		20	mg/kg		20-SEP-18	
F3 (C16-C34)	<20		20	mg/kg		20-SEP-18	
F4 (C34-C50)	<20		20	mg/kg		20-SEP-18	
Total Hydrocarbons (C6-C50)	<20		20	mg/kg		20-SEP-18	
Miscellaneous Parameters							
% Moisture	9.83		0.25	%		20-SEP-18	R4227528
Mercury (Hg)	0.0611		0.0050	mg/kg	24-SEP-18	25-SEP-18	R4239384
Quantitation of asbestos by point count							
Asbestos By Point Count	<0.10		0.10	%		18-SEP-18	R4219607
Other Fibres: Cellulose	Trace <1		1.0	%		18-SEP-18	R4219607
Mica	Trace <1		1.0	%		18-SEP-18	R4219607
Metals in Soil by CRC ICPMS							
Aluminum (Al)	6720		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Antimony (Sb)	1.36		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Arsenic (As)	9.48		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Barium (Ba)	139		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Beryllium (Be)	0.31		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Bismuth (Bi)	<0.20		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Boron (B)	<5.0		5.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Cadmium (Cd)	0.428		0.020	mg/kg	24-SEP-18	25-SEP-18	R4240927
Calcium (Ca)	1210		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Chromium (Cr)	21.6		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Cobalt (Co)	7.05		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Copper (Cu)	21.7		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Iron (Fe)	20100		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Lead (Pb)	16.7		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Lithium (Li)	3.7		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Magnesium (Mg)	3410		20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Manganese (Mn)	131		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Molybdenum (Mo)	1.77		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Nickel (Ni)	22.9		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Phosphorus (P)	629		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Potassium (K)	720		100	mg/kg	24-SEP-18	25-SEP-18	R4240927
Selenium (Se)	0.81		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-13 18BH21-06							
Sampled By: CJ/LB on 13-AUG-18							
Matrix: SOIL							
Metals in Soil by CRC ICPMS							
Silver (Ag)	0.14		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Sodium (Na)	<50		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Strontium (Sr)	13.3		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Sulfur (S)	<1000		1000	mg/kg	24-SEP-18	25-SEP-18	R4240927
Thallium (Tl)	<0.050		0.050	mg/kg	24-SEP-18	25-SEP-18	R4240927
Tin (Sn)	<2.0		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Titanium (Ti)	135		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Tungsten (W)	0.62		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Uranium (U)	1.16		0.050	mg/kg	24-SEP-18	25-SEP-18	R4240927
Vanadium (V)	20.9		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Zinc (Zn)	98.8		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Zirconium (Zr)	7.3		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
PCBs							
Aroclor 1016	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1221	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1232	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1242	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1248	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1254	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1260	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1262	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Aroclor 1268	<0.010		0.010	mg/kg		26-SEP-18	R4246351
Total PCBs	<0.050		0.050	mg/kg		26-SEP-18	R4246351
Surrogate: Decachlorobiphenyl	83.9		65-130	%		26-SEP-18	R4246351
L2158112-14 18BH11-01							
Sampled By: CJ/LB on 18-AUG-18							
Matrix: SOIL							
Miscellaneous Parameters							
Mercury (Hg)	<0.050		0.050	mg/kg wwt	20-SEP-18	21-SEP-18	R4231547
Bulk Asbestos Content							
Asbestos: Chrysotile	50-75		1	%		10-SEP-18	R4211910
Other Fibres	<1		1	%		10-SEP-18	R4211910
Metals in Waste by CRC ICPMS							
Aluminum (Al)	4280		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Antimony (Sb)	10.4		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Arsenic (As)	22.1		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Barium (Ba)	254		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Beryllium (Be)	<0.10		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Boron (B)	176		5.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cadmium (Cd)	0.037		0.020	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Calcium (Ca)	6160		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Chromium (Cr)	1390		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cobalt (Co)	96.6		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Copper (Cu)	5.46		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Iron (Fe)	54700		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lead (Pb)	1.25		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lithium (Li)	4.5		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Magnesium (Mg)	192000		20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Manganese (Mn)	581		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Molybdenum (Mo)	0.20		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-14 18BH11-01							
Sampled By: CJ/LB on 18-AUG-18							
Matrix: SOIL							
Metals in Waste by CRC ICPMS							
Nickel (Ni)	1960		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Phosphorus (P)	65		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Potassium (K)	<100		100	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Selenium (Se)	<0.20		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Silver (Ag)	<0.10		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sodium (Na)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Strontium (Sr)	54.9		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sulfur	<1000		1000	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Thallium (Tl)	<0.050		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tin (Sn)	<2.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Titanium (Ti)	80.3		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tungsten	0.72		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Uranium (U)	0.169		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Vanadium (V)	28.0		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zinc (Zn)	12.9		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zirconium (Zr)	<1.0		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
L2158112-15 18BH12-01							
Sampled By: CJ/LB on 18-AUG-18							
Matrix: SOIL							
Miscellaneous Parameters							
Mercury (Hg)	0.206		0.050	mg/kg wwt	20-SEP-18	21-SEP-18	R4231547
Bulk Asbestos Content							
Asbestos: Chrysotile	10-25		1	%		10-SEP-18	R4211910
Other Fibres	<1		1	%		10-SEP-18	R4211910
Metals in Waste by CRC ICPMS							
Aluminum (Al)	3060		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Antimony (Sb)	5.52		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Arsenic (As)	5.79		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Barium (Ba)	79.8		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Beryllium (Be)	<0.10		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Boron (B)	170		5.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cadmium (Cd)	<0.020		0.020	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Calcium (Ca)	1920		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Chromium (Cr)	1200		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cobalt (Co)	64.9		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Copper (Cu)	2.08		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Iron (Fe)	41300		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lead (Pb)	<0.50		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lithium (Li)	3.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Magnesium (Mg)	179000		20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Manganese (Mn)	520		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Molybdenum (Mo)	<0.10		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Nickel (Ni)	1690		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Phosphorus (P)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Potassium (K)	<100		100	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Selenium (Se)	<0.20		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Silver (Ag)	<0.10		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sodium (Na)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Strontium (Sr)	34.7		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sulfur	<1000		1000	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-15 18BH12-01							
Sampled By: CJ/LB on 18-AUG-18							
Matrix: SOIL							
Metals in Waste by CRC ICPMS							
Thallium (Tl)	<0.050		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tin (Sn)	<2.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Titanium (Ti)	24.9		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tungsten	0.56		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Uranium (U)	<0.050		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Vanadium (V)	20.9		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zinc (Zn)	7.2		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zirconium (Zr)	<1.0		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
L2158112-16 18BH13-01							
Sampled By: CJ/LB on 18-AUG-18							
Matrix: SOIL							
Miscellaneous Parameters							
Mercury (Hg)	<0.050		0.050	mg/kg wwt	20-SEP-18	21-SEP-18	R4231547
Bulk Asbestos Content							
Asbestos: Chrysotile	25-50		1	%		10-SEP-18	R4211910
Other Fibres	<1		1	%		10-SEP-18	R4211910
Metals in Waste by CRC ICPMS							
Aluminum (Al)	4370		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Antimony (Sb)	4.80		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Arsenic (As)	18.2		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Barium (Ba)	137		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Beryllium (Be)	<0.10		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Boron (B)	144		5.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cadmium (Cd)	0.054		0.020	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Calcium (Ca)	4720		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Chromium (Cr)	1080		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cobalt (Co)	82.4		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Copper (Cu)	4.08		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Iron (Fe)	48500		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lead (Pb)	1.25		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lithium (Li)	4.8		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Magnesium (Mg)	177000		20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Manganese (Mn)	481		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Molybdenum (Mo)	0.41		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Nickel (Ni)	1640		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Phosphorus (P)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Potassium (K)	<100		100	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Selenium (Se)	<0.20		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Silver (Ag)	<0.10		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sodium (Na)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Strontium (Sr)	43.9		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sulfur	<1000		1000	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Thallium (Tl)	<0.050		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tin (Sn)	<2.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Titanium (Ti)	42.6		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tungsten	0.58		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Uranium (U)	0.164		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Vanadium (V)	26.4		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zinc (Zn)	14.7		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zirconium (Zr)	<1.0		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-16 18BH13-01							
Sampled By: CJ/LB on 18-AUG-18							
Matrix: SOIL							
L2158112-17 18BH14-01							
Sampled By: CJ/LB on 18-AUG-18							
Matrix: SOIL							
Miscellaneous Parameters							
Mercury (Hg)	0.078		0.050	mg/kg wwt	20-SEP-18	21-SEP-18	R4231547
Bulk Asbestos Content							
Asbestos: Chrysotile	25-50		1	%		10-SEP-18	R4211910
Other Fibres	<1		1	%		10-SEP-18	R4211910
Metals in Waste by CRC ICPMS							
Aluminum (Al)	3650		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Antimony (Sb)	3.82		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Arsenic (As)	10.7		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Barium (Ba)	78.6		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Beryllium (Be)	<0.10		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Boron (B)	166		5.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cadmium (Cd)	<0.020		0.020	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Calcium (Ca)	2790		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Chromium (Cr)	1410		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cobalt (Co)	85.6		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Copper (Cu)	3.64		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Iron (Fe)	51600		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lead (Pb)	<0.50		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lithium (Li)	2.4		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Magnesium (Mg)	201000		20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Manganese (Mn)	560		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Molybdenum (Mo)	<0.10		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Nickel (Ni)	1910		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Phosphorus (P)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Potassium (K)	<100		100	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Selenium (Se)	<0.20		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Silver (Ag)	<0.10		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sodium (Na)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Strontium (Sr)	21.9		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sulfur	<1000		1000	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Thallium (Tl)	<0.050		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tin (Sn)	<2.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Titanium (Ti)	43.3		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tungsten	<0.50		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Uranium (U)	0.111		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Vanadium (V)	26.1		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zinc (Zn)	10.1		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zirconium (Zr)	<1.0		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
L2158112-18 18BH15-01							
Sampled By: CJ/LB on 18-AUG-18							
Matrix: SOIL							
Miscellaneous Parameters							
Mercury (Hg)	<0.050		0.050	mg/kg wwt	20-SEP-18	21-SEP-18	R4231547
Bulk Asbestos Content							
Asbestos: Chrysotile	1-5		1	%		10-SEP-18	R4211910
Other Fibres: Cellulose	Trace <1		1	%		10-SEP-18	R4211910
Other Fibres: Synthetic	Trace <1		1	%		10-SEP-18	R4211910

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-18 18BH15-01							
Sampled By: CJ/LB on 18-AUG-18							
Matrix: SOIL							
Bulk Asbestos Content							
Mica	Trace <1		1	%		10-SEP-18	R4211910
Metals in Waste by CRC ICPMS							
Aluminum (Al)	4210		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Antimony (Sb)	0.82		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Arsenic (As)	2.78		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Barium (Ba)	63.4		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Beryllium (Be)	0.14		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Boron (B)	<5.0		5.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cadmium (Cd)	0.120		0.020	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Calcium (Ca)	464		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Chromium (Cr)	25.6		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cobalt (Co)	2.66		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Copper (Cu)	6.84		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Iron (Fe)	5580		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lead (Pb)	5.94		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lithium (Li)	4.3		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Magnesium (Mg)	3200		20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Manganese (Mn)	54.8		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Molybdenum (Mo)	0.50		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Nickel (Ni)	27.8		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Phosphorus (P)	74		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Potassium (K)	340		100	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Selenium (Se)	<0.20		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Silver (Ag)	<0.10		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sodium (Na)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Strontium (Sr)	6.35		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sulfur	<1000		1000	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Thallium (Tl)	<0.050		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tin (Sn)	<2.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Titanium (Ti)	105		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tungsten	<0.50		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Uranium (U)	0.403		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Vanadium (V)	11.8		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zinc (Zn)	17.9		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zirconium (Zr)	<1.0		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
L2158112-19 18BH16-01							
Sampled By: CJ/LB on 18-AUG-18							
Matrix: SOIL							
Miscellaneous Parameters							
Mercury (Hg)	<0.050		0.050	mg/kg wwt	20-SEP-18	21-SEP-18	R4231547
Bulk Asbestos Content							
Asbestos: Chrysotile	50-75		1	%		10-SEP-18	R4211910
Other Fibres	<1		1	%		10-SEP-18	R4211910
Metals in Waste by CRC ICPMS							
Aluminum (Al)	3410		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Antimony (Sb)	4.19		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Arsenic (As)	2.89		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Barium (Ba)	79.0		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Beryllium (Be)	<0.10		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-19 18BH16-01							
Sampled By: CJ/LB on 18-AUG-18							
Matrix: SOIL							
Metals in Waste by CRC ICPMS							
Boron (B)	145		5.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cadmium (Cd)	<0.020		0.020	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Calcium (Ca)	2870		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Chromium (Cr)	1360		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cobalt (Co)	78.3		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Copper (Cu)	2.54		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Iron (Fe)	42000		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lead (Pb)	0.54		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lithium (Li)	2.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Magnesium (Mg)	177000		20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Manganese (Mn)	509		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Molybdenum (Mo)	0.17		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Nickel (Ni)	1670		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Phosphorus (P)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Potassium (K)	<100		100	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Selenium (Se)	<0.20		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Silver (Ag)	<0.10		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sodium (Na)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Strontium (Sr)	16.3		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sulfur	<1000		1000	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Thallium (Tl)	<0.050		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tin (Sn)	<2.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Titanium (Ti)	43.7		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tungsten	<0.50		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Uranium (U)	0.068		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Vanadium (V)	22.8		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zinc (Zn)	10.7		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zirconium (Zr)	<1.0		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
L2158112-20 18BH17-01							
Sampled By: CJ/LB on 18-AUG-18							
Matrix: SOIL							
Miscellaneous Parameters							
Mercury (Hg)	<0.050		0.050	mg/kg wwt	20-SEP-18	21-SEP-18	R4231547
Bulk Asbestos Content							
Asbestos: Chrysotile	75-100		1	%		10-SEP-18	R4211910
Other Fibres: Cellulose	Trace <1		1	%		10-SEP-18	R4211910
Metals in Waste by CRC ICPMS							
Aluminum (Al)	4770		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Antimony (Sb)	15.8		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Arsenic (As)	47.0		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Barium (Ba)	242		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Beryllium (Be)	<0.10		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Boron (B)	140		5.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cadmium (Cd)	0.031		0.020	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Calcium (Ca)	4410		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Chromium (Cr)	1170		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cobalt (Co)	83.7		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Copper (Cu)	6.40		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Iron (Fe)	53100		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lead (Pb)	0.70		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-20 18BH17-01							
Sampled By: CJ/LB on 18-AUG-18							
Matrix: SOIL							
Metals in Waste by CRC ICPMS							
Lithium (Li)	5.4		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Magnesium (Mg)	183000		20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Manganese (Mn)	510		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Molybdenum (Mo)	0.25		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Nickel (Ni)	1770		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Phosphorus (P)	77		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Potassium (K)	100		100	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Selenium (Se)	<0.20		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Silver (Ag)	<0.10		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sodium (Na)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Strontium (Sr)	47.4		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sulfur	<1000		1000	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Thallium (Tl)	<0.050		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tin (Sn)	<2.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Titanium (Ti)	106		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tungsten	0.72		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Uranium (U)	0.091		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Vanadium (V)	30.6		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zinc (Zn)	10.8		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zirconium (Zr)	<1.0		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
L2158112-21 18-TAIL-01							
Sampled By: CJ/LB on 18-AUG-18							
Matrix: SOIL							
Miscellaneous Parameters							
Mercury (Hg)	<0.050		0.050	mg/kg wwt	20-SEP-18	21-SEP-18	R4231547
Bulk Asbestos Content							
Asbestos: Chrysotile	10-25		1	%		10-SEP-18	R4211910
Other Fibres	<1		1	%		10-SEP-18	R4211910
Metals in Waste by CRC ICPMS							
Aluminum (Al)	2310		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Antimony (Sb)	2.92		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Arsenic (As)	1.85		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Barium (Ba)	50.0		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Beryllium (Be)	<0.10		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Boron (B)	123		5.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cadmium (Cd)	<0.020		0.020	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Calcium (Ca)	1160		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Chromium (Cr)	1330		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cobalt (Co)	68.7		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Copper (Cu)	1.19		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Iron (Fe)	34800		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lead (Pb)	<0.50		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lithium (Li)	2.2		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Magnesium (Mg)	172000		20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Manganese (Mn)	908		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Molybdenum (Mo)	0.11		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Nickel (Ni)	1530		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Phosphorus (P)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Potassium (K)	<100		100	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Selenium (Se)	<0.20		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-21 18-TAIL-01							
Sampled By: CJ/LB on 18-AUG-18							
Matrix: SOIL							
Metals in Waste by CRC ICPMS							
Silver (Ag)	<0.10		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sodium (Na)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Strontium (Sr)	10.0		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sulfur	<1000		1000	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Thallium (Tl)	<0.050		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tin (Sn)	<2.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Titanium (Ti)	28.8		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tungsten	<0.50		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Uranium (U)	<0.050		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Vanadium (V)	16.9		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zinc (Zn)	8.5		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zirconium (Zr)	<1.0		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
L2158112-22 18-TAIL-02							
Sampled By: CJ/LB on 18-AUG-18							
Matrix: SOIL							
Miscellaneous Parameters							
Mercury (Hg)	<0.050		0.050	mg/kg wwt	20-SEP-18	21-SEP-18	R4231547
Bulk Asbestos Content							
Asbestos: Chrysotile	25-50		1	%		10-SEP-18	R4211910
Other Fibres	<1		1	%		10-SEP-18	R4211910
Metals in Waste by CRC ICPMS							
Aluminum (Al)	3490		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Antimony (Sb)	5.05		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Arsenic (As)	8.26		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Barium (Ba)	56.8		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Beryllium (Be)	<0.10		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Boron (B)	182		5.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cadmium (Cd)	0.025		0.020	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Calcium (Ca)	1620		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Chromium (Cr)	1160		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cobalt (Co)	76.7		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Copper (Cu)	2.53		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Iron (Fe)	44700		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lead (Pb)	0.52		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lithium (Li)	<2.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Magnesium (Mg)	181000		20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Manganese (Mn)	470		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Molybdenum (Mo)	0.21		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Nickel (Ni)	1470		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Phosphorus (P)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Potassium (K)	<100		100	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Selenium (Se)	<0.20		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Silver (Ag)	<0.10		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sodium (Na)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Strontium (Sr)	14.0		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sulfur	<1000		1000	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Thallium (Tl)	<0.050		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tin (Sn)	<2.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Titanium (Ti)	51.8		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tungsten	0.58		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-22 18-TAIL-02							
Sampled By: CJ/LB on 18-AUG-18							
Matrix: SOIL							
Metals in Waste by CRC ICPMS							
Uranium (U)	<0.050		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Vanadium (V)	24.5		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zinc (Zn)	9.3		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zirconium (Zr)	<1.0		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
L2158112-23 18-TAIL-03							
Sampled By: CJ/LB on 18-AUG-18							
Matrix: SOIL							
Miscellaneous Parameters							
Mercury (Hg)	<0.050		0.050	mg/kg wwt	20-SEP-18	21-SEP-18	R4231547
Bulk Asbestos Content							
Asbestos: Chrysotile	75-100		1	%		10-SEP-18	R4211910
Other Fibres	<1		1	%		10-SEP-18	R4211910
Metals in Waste by CRC ICPMS							
Aluminum (Al)	4870		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Antimony (Sb)	15.3		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Arsenic (As)	38.5		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Barium (Ba)	416		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Beryllium (Be)	<0.10		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Boron (B)	181		5.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cadmium (Cd)	0.036		0.020	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Calcium (Ca)	6790		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Chromium (Cr)	1220		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cobalt (Co)	97.1		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Copper (Cu)	4.57		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Iron (Fe)	52400		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lead (Pb)	0.88		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lithium (Li)	8.1		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Magnesium (Mg)	191000		20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Manganese (Mn)	552		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Molybdenum (Mo)	0.27		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Nickel (Ni)	1940		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Phosphorus (P)	58		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Potassium (K)	<100		100	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Selenium (Se)	<0.20		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Silver (Ag)	<0.10		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sodium (Na)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Strontium (Sr)	74.4		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sulfur	<1000		1000	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Thallium (Tl)	<0.050		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tin (Sn)	<2.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Titanium (Ti)	104		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tungsten	0.84		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Uranium (U)	0.139		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Vanadium (V)	30.6		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zinc (Zn)	13.4		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zirconium (Zr)	<1.0		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
L2158112-24 18-TAIL-04							
Sampled By: CJ/LB on 18-AUG-18							
Matrix: SOIL							
Miscellaneous Parameters							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-24 18-TAIL-04							
Sampled By: CJ/LB on 18-AUG-18							
Matrix: SOIL							
Mercury (Hg)	<0.050		0.050	mg/kg wwt	20-SEP-18	21-SEP-18	R4231547
Bulk Asbestos Content							
Asbestos: Chrysotile	50-75		1	%		10-SEP-18	R4211910
Other Fibres	<1		1	%		10-SEP-18	R4211910
Metals in Waste by CRC ICPMS							
Aluminum (Al)	3430		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Antimony (Sb)	10.5		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Arsenic (As)	42.0		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Barium (Ba)	147		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Beryllium (Be)	<0.10		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Boron (B)	112		5.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cadmium (Cd)	0.024		0.020	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Calcium (Ca)	6470		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Chromium (Cr)	1010		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cobalt (Co)	68.1		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Copper (Cu)	4.01		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Iron (Fe)	38200		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lead (Pb)	0.52		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lithium (Li)	4.9		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Magnesium (Mg)	154000		20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Manganese (Mn)	481		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Molybdenum (Mo)	0.15		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Nickel (Ni)	1400		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Phosphorus (P)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Potassium (K)	<100		100	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Selenium (Se)	<0.20		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Silver (Ag)	<0.10		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sodium (Na)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Strontium (Sr)	71.1		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sulfur	<1000		1000	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Thallium (Tl)	<0.050		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tin (Sn)	<2.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Titanium (Ti)	52.9		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tungsten	0.71		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Uranium (U)	0.082		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Vanadium (V)	22.9		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zinc (Zn)	8.8		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zirconium (Zr)	<1.0		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
L2158112-25 18-TAIL-05							
Sampled By: CJ/LB on 18-AUG-18							
Matrix: SOIL							
Miscellaneous Parameters							
Mercury (Hg)	<0.050		0.050	mg/kg wwt	20-SEP-18	21-SEP-18	R4231547
Bulk Asbestos Content							
Asbestos: Chrysotile	50-75		1	%		10-SEP-18	R4211910
Other Fibres	<1		1	%		10-SEP-18	R4211910
Metals in Waste by CRC ICPMS							
Aluminum (Al)	4650		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Antimony (Sb)	11.5		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Arsenic (As)	35.5		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Barium (Ba)	262		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-25 18-TAIL-05							
Sampled By: CJ/LB on 18-AUG-18							
Matrix: SOIL							
Metals in Waste by CRC ICPMS							
Beryllium (Be)	<0.10		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Boron (B)	155		5.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cadmium (Cd)	0.069		0.020	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Calcium (Ca)	5330		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Chromium (Cr)	1200		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cobalt (Co)	92.4		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Copper (Cu)	4.93		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Iron (Fe)	50600		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lead (Pb)	0.71		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lithium (Li)	5.6		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Magnesium (Mg)	180000		20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Manganese (Mn)	549		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Molybdenum (Mo)	0.31		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Nickel (Ni)	1770		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Phosphorus (P)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Potassium (K)	<100		100	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Selenium (Se)	0.20		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Silver (Ag)	<0.10		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sodium (Na)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Strontium (Sr)	83.3		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sulfur	<1000		1000	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Thallium (Tl)	<0.050		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tin (Sn)	<2.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Titanium (Ti)	71.7		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tungsten	0.67		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Uranium (U)	0.091		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Vanadium (V)	30.0		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zinc (Zn)	12.3		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zirconium (Zr)	<1.0		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
L2158112-26 18BH01-01							
Sampled By: CJ/LB on 28-AUG-18							
Matrix: SOIL							
Miscellaneous Parameters							
Mercury (Hg)	0.68	DLHC	0.50	mg/kg wwt	20-SEP-18	21-SEP-18	R4231547
Bulk Asbestos Content							
Asbestos: Chrysotile	5-10		1	%		10-SEP-18	R4211910
Mica	Trace <1		1	%		10-SEP-18	R4211910
Metals in Waste by CRC ICPMS							
Aluminum (Al)	1710		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Antimony (Sb)	2.67		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Arsenic (As)	24.0		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Barium (Ba)	86.3		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Beryllium (Be)	0.40		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Bismuth (Bi)	0.25		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Boron (B)	<5.0		5.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cadmium (Cd)	5.39		0.020	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Calcium (Ca)	44300		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Chromium (Cr)	18.4		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cobalt (Co)	13.4		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Copper (Cu)	59.2		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-26 18BH01-01							
Sampled By: CJ/LB on 28-AUG-18							
Matrix: SOIL							
Metals in Waste by CRC ICPMS							
Iron (Fe)	34400		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lead (Pb)	15.5		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lithium (Li)	<2.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Magnesium (Mg)	15000		20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Manganese (Mn)	603		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Molybdenum (Mo)	23.7		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Nickel (Ni)	71.9		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Phosphorus (P)	944		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Potassium (K)	450		100	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Selenium (Se)	7.77		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Silver (Ag)	0.81		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sodium (Na)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Strontium (Sr)	212		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sulfur	13100		1000	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Thallium (Tl)	0.283		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tin (Sn)	<2.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Titanium (Ti)	3.8		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tungsten	<0.50		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Uranium (U)	3.68		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Vanadium (V)	32.2		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zinc (Zn)	348		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zirconium (Zr)	16.3		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
L2158112-27 18BH01-02							
Sampled By: CJ/LB on 28-AUG-18							
Matrix: SOIL							
Miscellaneous Parameters							
Mercury (Hg)	<0.050		0.050	mg/kg wwt	20-SEP-18	21-SEP-18	R4231547
Bulk Asbestos Content							
Asbestos: Chrysotile	10-25		1	%		10-SEP-18	R4211910
Mica	Trace <1		1	%		10-SEP-18	R4211910
Metals in Waste by CRC ICPMS							
Aluminum (Al)	14100		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Antimony (Sb)	3.11		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Arsenic (As)	42.9		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Barium (Ba)	135		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Beryllium (Be)	0.24		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Boron (B)	25.5		5.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cadmium (Cd)	0.174		0.020	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Calcium (Ca)	7490		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Chromium (Cr)	547		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cobalt (Co)	40.8		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Copper (Cu)	28.2		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Iron (Fe)	27600		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lead (Pb)	5.51		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lithium (Li)	20.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Magnesium (Mg)	63600		20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Manganese (Mn)	418		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Molybdenum (Mo)	1.56		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Nickel (Ni)	637		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Phosphorus (P)	249		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-27 18BH01-02							
Sampled By: CJ/LB on 28-AUG-18							
Matrix: SOIL							
Metals in Waste by CRC ICPMS							
Potassium (K)	320		100	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Selenium (Se)	0.49		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Silver (Ag)	<0.10		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sodium (Na)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Strontium (Sr)	26.4		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sulfur	1000		1000	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Thallium (Tl)	<0.050		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tin (Sn)	<2.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Titanium (Ti)	283		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tungsten	<0.50		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Uranium (U)	0.518		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Vanadium (V)	25.3		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zinc (Zn)	36.8		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zirconium (Zr)	2.2		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
L2158112-28 18BH09-01							
Sampled By: CJ/LB on 28-AUG-18							
Matrix: SOIL							
Miscellaneous Parameters							
Mercury (Hg)	0.063		0.050	mg/kg wwt	20-SEP-18	21-SEP-18	R4231547
Bulk Asbestos Content							
Asbestos: Chrysotile	1-5		1	%		10-SEP-18	R4211910
Asbestos: Actinolite	Trace <1		1	%		10-SEP-18	R4211910
Mica	Trace <1		1	%		10-SEP-18	R4211910
Metals in Waste by CRC ICPMS							
Aluminum (Al)	7380		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Antimony (Sb)	1.51		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Arsenic (As)	9.67		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Barium (Ba)	49.6		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Beryllium (Be)	0.31		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Bismuth (Bi)	0.33		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Boron (B)	<5.0		5.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cadmium (Cd)	0.815		0.020	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Calcium (Ca)	10300		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Chromium (Cr)	18.9		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cobalt (Co)	14.6		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Copper (Cu)	39.7		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Iron (Fe)	33500		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lead (Pb)	17.1		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lithium (Li)	17.8		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Magnesium (Mg)	7130		20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Manganese (Mn)	362		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Molybdenum (Mo)	7.65		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Nickel (Ni)	53.7		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Phosphorus (P)	629		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Potassium (K)	360		100	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Selenium (Se)	1.35		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Silver (Ag)	0.17		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sodium (Na)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Strontium (Sr)	58.0		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sulfur	5300		1000	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Thallium (Tl)	0.081		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-28 18BH09-01							
Sampled By: CJ/LB on 28-AUG-18							
Matrix: SOIL							
Metals in Waste by CRC ICPMS							
Tin (Sn)	<2.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Titanium (Ti)	10.0		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tungsten	<0.50		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Uranium (U)	1.35		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Vanadium (V)	13.8		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zinc (Zn)	93.6		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zirconium (Zr)	9.5		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
L2158112-29 18BH09-02							
Sampled By: CJ/LB on 28-AUG-18							
Matrix: SOIL							
Miscellaneous Parameters							
Mercury (Hg)	<0.050		0.050	mg/kg wwt	20-SEP-18	21-SEP-18	R4231547
Bulk Asbestos Content							
Asbestos: Chrysotile	10-25		1	%		10-SEP-18	R4211910
Mica	Trace <1		1	%		10-SEP-18	R4211910
Metals in Waste by CRC ICPMS							
Aluminum (Al)	8510		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Antimony (Sb)	2.48		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Arsenic (As)	54.3		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Barium (Ba)	182		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Beryllium (Be)	0.29		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Boron (B)	31.7		5.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cadmium (Cd)	0.279		0.020	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Calcium (Ca)	18800		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Chromium (Cr)	956		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cobalt (Co)	70.9		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Copper (Cu)	106		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Iron (Fe)	32300		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lead (Pb)	2.27		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lithium (Li)	22.3		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Magnesium (Mg)	105000		20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Manganese (Mn)	432		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Molybdenum (Mo)	1.64		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Nickel (Ni)	822		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Phosphorus (P)	303		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Potassium (K)	120		100	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Selenium (Se)	0.64		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Silver (Ag)	0.24		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sodium (Na)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Strontium (Sr)	74.8		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sulfur	<1000		1000	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Thallium (Tl)	<0.050		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tin (Sn)	<2.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Titanium (Ti)	462		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tungsten	<0.50		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Uranium (U)	0.390		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Vanadium (V)	26.3		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zinc (Zn)	32.3		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zirconium (Zr)	2.4		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-30 18-WASTE-01							
Sampled By: CJ/LB on 28-AUG-18							
Matrix: SOIL							
Miscellaneous Parameters							
Mercury (Hg)	0.203		0.050	mg/kg wwt	20-SEP-18	21-SEP-18	R4231547
Quantitation of asbestos by point count							
Asbestos: Chrysotile	0.10		0.10	%		18-SEP-18	R4224171
Mica	Trace <1		1.0	%		18-SEP-18	R4224171
Metals in Waste by CRC ICPMS							
Aluminum (Al)	1590		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Antimony (Sb)	2.10		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Arsenic (As)	11.5		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Barium (Ba)	47.2		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Beryllium (Be)	0.40		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Bismuth (Bi)	0.22		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Boron (B)	<5.0		5.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cadmium (Cd)	1.87		0.020	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Calcium (Ca)	28600		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Chromium (Cr)	13.2		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cobalt (Co)	12.9		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Copper (Cu)	41.4		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Iron (Fe)	36400		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lead (Pb)	13.6		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lithium (Li)	<2.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Magnesium (Mg)	10100		20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Manganese (Mn)	448		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Molybdenum (Mo)	13.6		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Nickel (Ni)	63.0		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Phosphorus (P)	784		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Potassium (K)	320		100	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Selenium (Se)	4.44		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Silver (Ag)	0.40		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sodium (Na)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Strontium (Sr)	132		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sulfur	3800		1000	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Thallium (Tl)	0.108		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tin (Sn)	<2.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Titanium (Ti)	1.9		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tungsten	<0.50		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Uranium (U)	1.46		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Vanadium (V)	21.0		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zinc (Zn)	166		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zirconium (Zr)	10.7		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
L2158112-31 18-WASTE-02							
Sampled By: CJ/LB on 28-AUG-18							
Matrix: SOIL							
Miscellaneous Parameters							
Mercury (Hg)	0.136		0.050	mg/kg wwt	20-SEP-18	21-SEP-18	R4231547
Quantitation of asbestos by point count							
Asbestos: Chrysotile	0.10		0.10	%		18-SEP-18	R4224171
Mica	Trace <1		1.0	%		18-SEP-18	R4224171
Metals in Waste by CRC ICPMS							
Aluminum (Al)	13900		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Antimony (Sb)	1.99		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Arsenic (As)	10.2		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-31 18-WASTE-02							
Sampled By: CJ/LB on 28-AUG-18							
Matrix: SOIL							
Metals in Waste by CRC ICPMS							
Barium (Ba)	32.0		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Beryllium (Be)	0.45		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Bismuth (Bi)	0.28		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Boron (B)	<5.0		5.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cadmium (Cd)	2.54		0.020	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Calcium (Ca)	6090		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Chromium (Cr)	21.2		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cobalt (Co)	19.5		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Copper (Cu)	43.1		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Iron (Fe)	38700		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lead (Pb)	20.7		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lithium (Li)	21.8		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Magnesium (Mg)	8610		20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Manganese (Mn)	806		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Molybdenum (Mo)	10.9		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Nickel (Ni)	68.2		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Phosphorus (P)	629		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Potassium (K)	300		100	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Selenium (Se)	3.79		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Silver (Ag)	0.36		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sodium (Na)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Strontium (Sr)	49.4		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sulfur	<1000		1000	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Thallium (Tl)	0.124		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tin (Sn)	<2.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Titanium (Ti)	3.7		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tungsten	<0.50		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Uranium (U)	1.34		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Vanadium (V)	22.4		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zinc (Zn)	193		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zirconium (Zr)	7.5		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
L2158112-32 18-WASTE-03							
Sampled By: CJ/LB on 28-AUG-18							
Matrix: SOIL							
Miscellaneous Parameters							
Mercury (Hg)	0.222		0.050	mg/kg wwt	20-SEP-18	21-SEP-18	R4231547
Bulk Asbestos Content							
Asbestos: Chrysotile	1-5		1	%		10-SEP-18	R4211910
Mica	Trace <1		1	%		10-SEP-18	R4211910
Metals in Waste by CRC ICPMS							
Aluminum (Al)	6750		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Antimony (Sb)	2.38		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Arsenic (As)	11.3		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Barium (Ba)	56.2		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Beryllium (Be)	0.55		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Bismuth (Bi)	0.30		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Boron (B)	<5.0		5.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cadmium (Cd)	2.38		0.020	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Calcium (Ca)	27000		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Chromium (Cr)	19.0		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cobalt (Co)	17.1		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-32 18-WASTE-03							
Sampled By: CJ/LB on 28-AUG-18							
Matrix: SOIL							
Metals in Waste by CRC ICPMS							
Copper (Cu)	44.2		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Iron (Fe)	31900		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lead (Pb)	16.6		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lithium (Li)	11.1		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Magnesium (Mg)	10500		20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Manganese (Mn)	377		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Molybdenum (Mo)	14.2		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Nickel (Ni)	131		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Phosphorus (P)	692		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Potassium (K)	330		100	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Selenium (Se)	5.89		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Silver (Ag)	0.53		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sodium (Na)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Strontium (Sr)	142		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sulfur	5400		1000	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Thallium (Tl)	0.241		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tin (Sn)	<2.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Titanium (Ti)	2.4		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tungsten	<0.50		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Uranium (U)	1.64		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Vanadium (V)	25.0		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zinc (Zn)	196		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zirconium (Zr)	12.4		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
L2158112-33 18-WASTE-04							
Sampled By: CJ/LB on 28-AUG-18							
Matrix: SOIL							
Miscellaneous Parameters							
Mercury (Hg)	0.228		0.050	mg/kg wwt	20-SEP-18	21-SEP-18	R4231547
Bulk Asbestos Content							
Asbestos: Chrysotile	1-5		1	%		10-SEP-18	R4211910
Mica	Trace <1		1	%		10-SEP-18	R4211910
Metals in Waste by CRC ICPMS							
Aluminum (Al)	7390		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Antimony (Sb)	3.08		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Arsenic (As)	14.5		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Barium (Ba)	30.0		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Beryllium (Be)	0.52		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Bismuth (Bi)	0.23		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Boron (B)	<5.0		5.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cadmium (Cd)	2.52		0.020	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Calcium (Ca)	15500		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Chromium (Cr)	24.2		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cobalt (Co)	16.6		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Copper (Cu)	49.6		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Iron (Fe)	36900		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lead (Pb)	20.3		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lithium (Li)	13.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Magnesium (Mg)	7800		20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Manganese (Mn)	425		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Molybdenum (Mo)	17.4		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Nickel (Ni)	72.0		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-33 18-WASTE-04							
Sampled By: CJ/LB on 28-AUG-18							
Matrix: SOIL							
Metals in Waste by CRC ICPMS							
Phosphorus (P)	997		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Potassium (K)	350		100	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Selenium (Se)	4.77		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Silver (Ag)	0.52		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sodium (Na)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Strontium (Sr)	71.7		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sulfur	2800		1000	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Thallium (Tl)	0.204		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tin (Sn)	<2.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Titanium (Ti)	3.2		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tungsten	<0.50		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Uranium (U)	1.90		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Vanadium (V)	25.0		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zinc (Zn)	202		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zirconium (Zr)	10.8		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
L2158112-34 18-WASTE-05							
Sampled By: CJ/LB on 28-AUG-18							
Matrix: SOIL							
Miscellaneous Parameters							
Mercury (Hg)	0.218		0.050	mg/kg wwt	20-SEP-18	21-SEP-18	R4231547
Bulk Asbestos Content							
Asbestos: Chrysotile	10-25		1	%		11-SEP-18	R4214329
Mica	Trace <1		1	%		11-SEP-18	R4214329
Metals in Waste by CRC ICPMS							
Aluminum (Al)	2620		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Antimony (Sb)	6.09		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Arsenic (As)	100		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Barium (Ba)	127		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Beryllium (Be)	0.39		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Boron (B)	50.6		5.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cadmium (Cd)	0.622		0.020	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Calcium (Ca)	15300		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Chromium (Cr)	514		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cobalt (Co)	50.2		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Copper (Cu)	38.2		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Iron (Fe)	37200		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lead (Pb)	5.83		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lithium (Li)	2.8		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Magnesium (Mg)	94000		20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Manganese (Mn)	587		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Molybdenum (Mo)	5.24		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Nickel (Ni)	960		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Phosphorus (P)	369		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Potassium (K)	260		100	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Selenium (Se)	2.01		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Silver (Ag)	0.29		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sodium (Na)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Strontium (Sr)	77.9		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sulfur	<1000		1000	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Thallium (Tl)	0.126		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-34 18-WASTE-05							
Sampled By: CJ/LB on 28-AUG-18							
Matrix: SOIL							
Metals in Waste by CRC ICPMS							
Tin (Sn)	<2.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Titanium (Ti)	14.4		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tungsten	0.52		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Uranium (U)	0.957		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Vanadium (V)	19.1		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zinc (Zn)	69.1		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zirconium (Zr)	4.3		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
L2158112-35 18-BH10-01							
Sampled By: CJ/LB on 28-AUG-18							
Matrix: SOIL							
Miscellaneous Parameters							
Mercury (Hg)	0.128		0.050	mg/kg wwt	20-SEP-18	21-SEP-18	R4231547
Bulk Asbestos Content							
Asbestos: Chrysotile	10-25		1	%		11-SEP-18	R4214329
Mica	Trace <1		1	%		11-SEP-18	R4214329
Metals in Waste by CRC ICPMS							
Aluminum (Al)	4880		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Antimony (Sb)	5.94		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Arsenic (As)	21.5		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Barium (Ba)	172		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Beryllium (Be)	0.29		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Boron (B)	46.0		5.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cadmium (Cd)	0.731		0.020	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Calcium (Ca)	19800		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Chromium (Cr)	477		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cobalt (Co)	48.7		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Copper (Cu)	24.0		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Iron (Fe)	43200		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lead (Pb)	9.86		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lithium (Li)	6.9		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Magnesium (Mg)	70500		20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Manganese (Mn)	502		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Molybdenum (Mo)	4.56		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Nickel (Ni)	870		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Phosphorus (P)	484		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Potassium (K)	380		100	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Selenium (Se)	1.86		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Silver (Ag)	0.22		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sodium (Na)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Strontium (Sr)	83.2		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sulfur	1200		1000	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Thallium (Tl)	0.173		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tin (Sn)	<2.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Titanium (Ti)	34.5		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tungsten	<0.50		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Uranium (U)	1.09		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Vanadium (V)	22.4		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zinc (Zn)	77.3		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zirconium (Zr)	5.1		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-36 18-BH10-02							
Sampled By: CJ/LB on 27-AUG-18							
Matrix: SOIL							
Miscellaneous Parameters							
Mercury (Hg)	0.178		0.050	mg/kg wwt	20-SEP-18	21-SEP-18	R4231547
Quantitation of asbestos by point count							
Asbestos: Chrysotile	0.20		0.10	%		18-SEP-18	R4224171
Mica	Trace <1		1.0	%		18-SEP-18	R4224171
Metals in Waste by CRC ICPMS							
Aluminum (Al)	3970		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Antimony (Sb)	1.38		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Arsenic (As)	9.00		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Barium (Ba)	105		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Beryllium (Be)	0.47		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Bismuth (Bi)	0.32		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Boron (B)	<5.0		5.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cadmium (Cd)	1.08		0.020	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Calcium (Ca)	32800		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Chromium (Cr)	15.0		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cobalt (Co)	14.3		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Copper (Cu)	36.0		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Iron (Fe)	32500		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lead (Pb)	14.8		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lithium (Li)	3.7		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Magnesium (Mg)	9600		20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Manganese (Mn)	479		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Molybdenum (Mo)	4.64		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Nickel (Ni)	50.2		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Phosphorus (P)	721		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Potassium (K)	740		100	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Selenium (Se)	3.91		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Silver (Ag)	0.37		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sodium (Na)	73		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Strontium (Sr)	152		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sulfur	4200		1000	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Thallium (Tl)	0.099		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tin (Sn)	<2.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Titanium (Ti)	12.2		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tungsten	<0.50		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Uranium (U)	1.70		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Vanadium (V)	16.1		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zinc (Zn)	98.6		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zirconium (Zr)	10.3		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
L2158112-37 18-BH14-02							
Sampled By: CJ/LB on 29-AUG-18							
Matrix: SOIL							
Miscellaneous Parameters							
Mercury (Hg)	<0.050		0.050	mg/kg wwt	20-SEP-18	21-SEP-18	R4231547
Bulk Asbestos Content							
Asbestos: Chrysotile	10-25		1	%		11-SEP-18	R4214329
Other Fibres	<1		1	%		11-SEP-18	R4214329
Metals in Waste by CRC ICPMS							
Aluminum (Al)	2160		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Antimony (Sb)	3.26		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Arsenic (As)	2.69		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2158112-37 18-BH14-02							
Sampled By: CJ/LB on 29-AUG-18							
Matrix: SOIL							
Metals in Waste by CRC ICPMS							
Barium (Ba)	9.76		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Beryllium (Be)	<0.10		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Boron (B)	210		5.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cadmium (Cd)	<0.020		0.020	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Calcium (Ca)	449		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Chromium (Cr)	1210		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Cobalt (Co)	75.2		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Copper (Cu)	2.74		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Iron (Fe)	39500		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lead (Pb)	<0.50		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Lithium (Li)	<2.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Magnesium (Mg)	194000		20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Manganese (Mn)	381		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Molybdenum (Mo)	<0.10		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Nickel (Ni)	1550		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Phosphorus (P)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Potassium (K)	<100		100	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Selenium (Se)	<0.20		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Silver (Ag)	<0.10		0.10	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sodium (Na)	<50		50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Strontium (Sr)	5.01		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Sulfur	<1000		1000	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Thallium (Tl)	<0.050		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tin (Sn)	<2.0		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Titanium (Ti)	14.4		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Tungsten	<0.50		0.50	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Uranium (U)	<0.050		0.050	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Vanadium (V)	17.0		0.20	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zinc (Zn)	6.9		2.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706
Zirconium (Zr)	<1.0		1.0	mg/kg wwt	20-SEP-18	23-SEP-18	R4233706

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Qualifiers for Individual Samples Listed:

Sample Numbe	Client ID	Qualifier	Description
L2158112-10	18BH21-04	VOCC	BTXS,F1-MEOH-ED - Soil jar was submitted as VOC sample container. VOC results may be biased low, and do not meet federal (CCME) or provincial requirements (for BC, AB-Tier1, MB, ON, SK).
L2158112-11	18BH21-DUP-01	VOCC	BTXS,F1-MEOH-ED - Soil jar was submitted as VOC sample container. VOC results may be biased low, and do not meet federal (CCME) or provincial requirements (for BC, AB-Tier1, MB, ON, SK).
L2158112-12	18BH21-05	VOCC	BTXS,F1-MEOH-ED - Soil jar was submitted as VOC sample container. VOC results may be biased low, and do not meet federal (CCME) or provincial requirements (for BC, AB-Tier1, MB, ON, SK).
L2158112-13	18BH21-06	VOCC	BTXS,F1-MEOH-ED - Soil jar was submitted as VOC sample container. VOC results may be biased low, and do not meet federal (CCME) or provincial requirements (for BC, AB-Tier1, MB, ON, SK).
L2158112-2	18BH20-02	VOCC	BTXS,F1-MEOH-ED - Soil jar was submitted as VOC sample container. VOC results may be biased low, and do not meet federal (CCME) or provincial requirements (for BC, AB-Tier1, MB, ON, SK).
L2158112-4	18BH20-04	VOCC	BTXS,F1-MEOH-ED - Soil jar was submitted as VOC sample container. VOC results may be biased low, and do not meet federal (CCME) or provincial requirements (for BC, AB-Tier1, MB, ON, SK).
L2158112-5	18BH20-05	VOCC	BTXS,F1-MEOH-ED - Soil jar was submitted as VOC sample container. VOC results may be biased low, and do not meet federal (CCME) or provincial requirements (for BC, AB-Tier1, MB, ON, SK).
L2158112-6	18BH20-06	VOCC	BTXS,F1-MEOH-ED - Soil jar was submitted as VOC sample container. VOC results may be biased low, and do not meet federal (CCME) or provincial requirements (for BC, AB-Tier1, MB, ON, SK).
L2158112-7	18BH21-01	VOCC	BTXS,F1-MEOH-ED - Soil jar was submitted as VOC sample container. VOC results may be biased low, and do not meet federal (CCME) or provincial requirements (for BC, AB-Tier1, MB, ON, SK).
L2158112-8	18BH21-02	VOCC	BTXS,F1-MEOH-ED - Soil jar was submitted as VOC sample container. VOC results may be biased low, and do not meet federal (CCME) or provincial requirements (for BC, AB-Tier1, MB, ON, SK).
L2158112-9	18BH21-03	VOCC	BTXS,F1-MEOH-ED - Soil jar was submitted as VOC sample container. VOC results may be biased low, and do not meet federal (CCME) or provincial requirements (for BC, AB-Tier1, MB, ON, SK).

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
SMI	Surrogate recovery could not be measured due to sample matrix interference.
SOL:MI	Surrogate recovery outside acceptable limits due to matrix interference

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ASBESTOS-BULK-ED	Bulk	Bulk Asbestos Content	NIOSH 9002-Polarized Microscopy

Bulk samples are examined under a stereoscopic microscope. Individual fibers or fibre bundles are mounted in refractive index liquids and are observed under a polarized light microscope with a special dispersion staining objective. The dispersion staining colours are compared to reference samples of known asbestiforms.

Note: For non-friable organically bound asbestos (eg. floor tile) Polarized Light microscopy is not a definitive technique when negative results are obtained. Transmission electron microscopy is recommended to confirm the asbestos in these materials.

Asbestos results reported as <1% indicates that no asbestos fibers were observed.

ASBESTOS-PTCT-ED	Bulk	Quantitation of asbestos by point count	EPA/600/R-93/116

Bulk samples are examined under a stereoscopic microscope. Individual fibers or fiber bundles are mounted in refractive index liquids and are observed under a polarized light microscope, with a special dispersion staining objective. The dispersion staining colors are compared to reference samples of known asbestiforms.

Polarized microscopy is not a definitive technique for negative results for non-friable organically bound material (i.e.floor tiles). Transmission electron microscopy is recommended to confirm the asbestos in these materials.
Asbestos results reported as <0.10% indicates that no asbestos fibers were observed.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BTXS,F1-MEOH-ED	Soil	BTEX and F1	EPA 8260C/5021A and CWS PHC Tier 1

This analysis involves the extraction of a subsample of the sediment/soil with methanol added in the field at the time of subsampling. The soil methanol extract is added to water and reagents, then heated in a sealed vial to equilibrium. The headspace from the vial is transferred into a gas chromatograph. BTX Target compound concentrations are measured using mass spectrometry detection. The instrumental portion of F1 analysis is carried out in accordance with the Canada Wide Standard for Petroleum Hydrocarbons in Soil - Tier 1 Method (2001).

ETL-TVH,TEH-CCME-ED	Soil	CCME Total Hydrocarbons	CCME CWS-PHC, Pub #1310, Dec 2001

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

Hydrocarbon results are expressed on a dry weight basis.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F2-4-TMB-ED	Soil	CCME Total Extractable Hydrocarbons	CCME CWS-PHC, Pub #1310, Dec 2001

This analysis is carried out in accordance with the "Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil - Tier 1 Method, Canadian Council of Ministers of the Environment" For C10 to C50 hydrocarbons (F2, F3, F4) and gravimetric heavy hydrocarbons (F4G-sg), a subsample of the sediment/soil is extracted with 1:1 hexane:acetone using a rotary extractor. The extract undergoes a silica-gel clean-up to remove polar compounds. F2, F3 & F4 are analyzed by on-column GC/FID, and F4G-sg is analyzed gravimetrically.

Notes:
1. F2 (C10-C16): Sum of all hydrocarbons that elute between nC10 and nC16.
2. F3 (C16-C34): Sum of all hydrocarbons that elute between nC16 and nC34.
3. F4 (C34-C50): Sum of all hydrocarbons that elute between nC34 and nC50.
4. F4G: Gravimetric Heavy Hydrocarbons
5. F4G-sg: Gravimetric Heavy Hydrocarbons (F4G) after silica gel treatment.
6. Where F4 (C34-C50) and F4G-sg results are reported for a sample, the larger of the reported values is used for comparison against the relevant CCME standard for F4.
7. The gravimetric heavy hydrocarbon results (F4G-sg), cannot be added to the C6 to C50 hydrocarbon results.
8. This method is validated for use.
9. Data from analysis of quality control samples is available upon request.
10. Reported results are expressed as milligrams per dry kilogram.

HG-200.2-CVAA-ED	Soil	Mercury in Soil by CVAAS	EPA 200.2/1631E (Mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAAS.

HG-WET-200.2-CVAA-ED	Waste	Mercury (Hg) in waste	EPA 200.2/245.1

Waste samples are prepared for analysis by mixing to homogenize the as-received waste, then subsampling. The subsample is digested according to the EPA 200.2 method, using nitric and hydrochloric acids. Analysis is carried out by cold vapour atomic absorption. Results are reported on a wet basis (not corrected for any moisture content).

MET-200.2-CCMS-ED	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A (mod)

Soil/sediment is dried, disaggregated, and sieved (2 mm). Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.

Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H2S) may be excluded if lost during sampling, storage, or digestion.

MET-WET200.2-CCMS-ED	Waste	Metals in Waste by CRC ICPMS	EPA 200.2/6020A

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

This analysis is carried out using procedures from CSR Analytical Method: "Strong Acid Leachable Metals (SALM) in Soil", BC Ministry of Environment, 26 June 2009, and procedures adapted from EPA Method 200.2. The sample is manually homogenized, dried at 60 degrees Celsius, sieved through a 2 mm (10 mesh) sieve, and a representative subsample of the dry material is weighed. The sample is then digested at 95 degrees Celsius for 2 hours by block digester using concentrated nitric and hydrochloric acids. Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

PCB-ED	Soil	PCBs	EPA 3570/8082-GC-ECD

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Methods 3500, 3620, 3630, 3660, 3665 & 8082, published by the United States Environmental Protection Agency (EPA). The procedure involves a solid-liquid extraction of a subsample of the sediment/soil using a mixture of hexane and acetone. Water is added to the extract and the resulting hexane extract undergoes one or more of the following clean-up procedures (if required): florisil clean-up, silica gel clean-up, sulphur clean-up and/or sulphuric acid clean-up. The final extract is analysed by capillary column gas chromatography with electron capture detection (GC/ECD).

PREP-MOISTURE-ED	Soil	% Moisture	Oven dry 105C-Gravimetric

The weighed portion of soil is placed in a 105°C oven to dry to a constant weight; the drying time will vary based on the moisture content of the soil. The dried soil weight is then used to calculate % moisture.

Reference: ASTM D2974-00.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: Wood E&IS, a Division of Wood Canada Limited
#401, 1925 - 18 Ave NE
CALGARY AB T2E 7T8
Contact: Brian Geddes

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTXS,F1-MEOH-ED	**Soil**							
Batch R4219247								
WG2879293-2 LCS								
Benzene			89.9		%		70-130	18-SEP-18
Toluene			97.9		%		70-130	18-SEP-18
Ethylbenzene			90.3		%		70-130	18-SEP-18
m+p-Xylene			88.7		%		70-130	18-SEP-18
o-Xylene			95.2		%		70-130	18-SEP-18
WG2880802-2 LCS								
Benzene			73.2		%		70-130	20-SEP-18
Toluene			82.0		%		70-130	20-SEP-18
Ethylbenzene			79.8		%		70-130	20-SEP-18
m+p-Xylene			79.5		%		70-130	20-SEP-18
o-Xylene			82.8		%		70-130	20-SEP-18
WG2880802-7 LCS								
Benzene			78.6		%		70-130	20-SEP-18
Toluene			88.7		%		70-130	20-SEP-18
Ethylbenzene			89.2		%		70-130	20-SEP-18
m+p-Xylene			87.0		%		70-130	20-SEP-18
o-Xylene			93.2		%		70-130	20-SEP-18
WG2879293-1 MB								
Benzene			<0.0050		mg/kg		0.005	18-SEP-18
Toluene			<0.050		mg/kg		0.05	18-SEP-18
Ethylbenzene			<0.010		mg/kg		0.01	18-SEP-18
m+p-Xylene			<0.050		mg/kg		0.05	18-SEP-18
o-Xylene			<0.050		mg/kg		0.05	18-SEP-18
Surrogate: 1,4-Difluorobenzene (SS)			115.9		%		70-130	18-SEP-18
Surrogate: 4-Bromofluorobenzene (SS)			126.1		%		70-130	18-SEP-18
Surrogate: 3,4-Dichlorotoluene (SS)			112.4		%		70-130	18-SEP-18
WG2880802-1 MB								
Benzene			<0.0050		mg/kg		0.005	20-SEP-18
Toluene			<0.050		mg/kg		0.05	20-SEP-18
Ethylbenzene			<0.010		mg/kg		0.01	20-SEP-18
m+p-Xylene			<0.050		mg/kg		0.05	20-SEP-18
o-Xylene			<0.050		mg/kg		0.05	20-SEP-18
Surrogate: 1,4-Difluorobenzene (SS)			100.0		%		70-130	20-SEP-18
Surrogate: 4-Bromofluorobenzene (SS)			114.8		%		70-130	20-SEP-18
Surrogate: 3,4-Dichlorotoluene (SS)			122.8		%		70-130	20-SEP-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTXS,F1-MEOH-ED	**Soil**							
Batch R4219247								
WG2880802-6 MB								
Benzene			<0.0050		mg/kg		0.005	20-SEP-18
Toluene			<0.050		mg/kg		0.05	20-SEP-18
Ethylbenzene			<0.010		mg/kg		0.01	20-SEP-18
m+p-Xylene			<0.050		mg/kg		0.05	20-SEP-18
o-Xylene			<0.050		mg/kg		0.05	20-SEP-18
Surrogate: 1,4-Difluorobenzene (SS)			95.7		%		70-130	20-SEP-18
Surrogate: 4-Bromofluorobenzene (SS)			119.6		%		70-130	20-SEP-18
Surrogate: 3,4-Dichlorotoluene (SS)			74.6		%		70-130	20-SEP-18
F2-4-TMB-ED	**Soil**							
Batch R4223769								
WG2879541-3 IRM		**ALS PHC2 RM**						
F2 (C10-C16)			100.5		%		70-130	18-SEP-18
F3 (C16-C34)			120.4		%		70-130	18-SEP-18
F4 (C34-C50)			126.3		%		70-130	18-SEP-18
WG2879541-2 LCS		**DIESEL/MOTOR OIL**						
F2 (C10-C16)			117.1		%		70-130	18-SEP-18
F3 (C16-C34)			114.9		%		70-130	18-SEP-18
F4 (C34-C50)			117.3		%		70-130	18-SEP-18
WG2879541-1 MB								
F2 (C10-C16)			<20		mg/kg		20	18-SEP-18
F3 (C16-C34)			<20		mg/kg		20	18-SEP-18
F4 (C34-C50)			<20		mg/kg		20	18-SEP-18
Surrogate: 2-Bromobenzotrifluoride			88.2		%		70-130	18-SEP-18
Batch R4228227								
WG2880913-7 IRM		**ALS PHC2 RM**						
F2 (C10-C16)			99.1		%		70-130	19-SEP-18
F3 (C16-C34)			101.7		%		70-130	19-SEP-18
F4 (C34-C50)			111.8		%		70-130	19-SEP-18
WG2880913-6 LCS								
F2 (C10-C16)			114.0		%		70-130	19-SEP-18
F3 (C16-C34)			108.4		%		70-130	19-SEP-18
F4 (C34-C50)			113.0		%		70-130	19-SEP-18
WG2880913-5 MB								
F2 (C10-C16)			<20		mg/kg		20	19-SEP-18
F3 (C16-C34)			<20		mg/kg		20	19-SEP-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F2-4-TMB-ED	**Soil**							
Batch R4228227								
WG2880913-5 MB								
F4 (C34-C50)			<20		mg/kg		20	19-SEP-18
Surrogate: 2-Bromobenzotrifluoride			94.4		%		70-130	19-SEP-18
HG-200.2-CVAA-ED	**Soil**							
Batch R4239384								
WG2885340-3 CRM		**TILL-1_SOIL**						
Mercury (Hg)			98.1		%		70-130	25-SEP-18
WG2885340-4 DUP		**L2158112-11**						
Mercury (Hg)		0.113	0.107		mg/kg	5.4	40	25-SEP-18
WG2885340-2 LCS								
Mercury (Hg)			111.0		%		70-130	25-SEP-18
WG2885340-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	25-SEP-18
MET-200.2-CCMS-ED	**Soil**							
Batch R4240927								
WG2885340-3 CRM		**TILL-1_SOIL**						
Aluminum (Al)			103.6		%		70-130	25-SEP-18
Antimony (Sb)			92.7		%		70-130	25-SEP-18
Arsenic (As)			96.1		%		70-130	25-SEP-18
Barium (Ba)			97.6		%		70-130	25-SEP-18
Beryllium (Be)			90.1		%		70-130	25-SEP-18
Bismuth (Bi)			102.5		%		70-130	25-SEP-18
Boron (B)			2.8		mg/kg		0-8.2	25-SEP-18
Cadmium (Cd)			91.2		%		70-130	25-SEP-18
Calcium (Ca)			94.5		%		70-130	25-SEP-18
Chromium (Cr)			99.9		%		70-130	25-SEP-18
Cobalt (Co)			96.9		%		70-130	25-SEP-18
Copper (Cu)			99.4		%		70-130	25-SEP-18
Iron (Fe)			98.0		%		70-130	25-SEP-18
Lead (Pb)			98.4		%		70-130	25-SEP-18
Lithium (Li)			84.7		%		70-130	25-SEP-18
Magnesium (Mg)			101.5		%		70-130	25-SEP-18
Manganese (Mn)			95.3		%		70-130	25-SEP-18
Molybdenum (Mo)			90.9		%		70-130	25-SEP-18
Nickel (Ni)			100.2		%		70-130	25-SEP-18
Phosphorus (P)			99.4		%		70-130	25-SEP-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R4240927								
WG2885340-3 CRM		**TILL-1_SOIL**						
Potassium (K)			102.3		%		70-130	25-SEP-18
Selenium (Se)			0.26		mg/kg		0.11-0.51	25-SEP-18
Silver (Ag)			0.22		mg/kg		0.13-0.33	25-SEP-18
Sodium (Na)			107.3		%		70-130	25-SEP-18
Strontium (Sr)			96.1		%		70-130	25-SEP-18
Thallium (Tl)			0.131		mg/kg		0.077-0.18	25-SEP-18
Tin (Sn)			1.0		mg/kg		0-3.1	25-SEP-18
Titanium (Ti)			97.2		%		70-130	25-SEP-18
Tungsten (W)			0.21		mg/kg		0-0.66	25-SEP-18
Uranium (U)			108.5		%		70-130	25-SEP-18
Vanadium (V)			98.7		%		70-130	25-SEP-18
Zinc (Zn)			100.5		%		70-130	25-SEP-18
Zirconium (Zr)			0.9		mg/kg		0-1.8	25-SEP-18
WG2885340-2 LCS								
Aluminum (Al)			103.0		%		80-120	25-SEP-18
Antimony (Sb)			86.4		%		80-120	25-SEP-18
Arsenic (As)			100.8		%		80-120	25-SEP-18
Barium (Ba)			100.0		%		80-120	25-SEP-18
Beryllium (Be)			89.2		%		80-120	25-SEP-18
Bismuth (Bi)			91.2		%		80-120	25-SEP-18
Boron (B)			87.9		%		80-120	25-SEP-18
Cadmium (Cd)			101.4		%		80-120	25-SEP-18
Calcium (Ca)			98.3		%		80-120	25-SEP-18
Chromium (Cr)			99.7		%		80-120	25-SEP-18
Cobalt (Co)			95.8		%		80-120	25-SEP-18
Copper (Cu)			96.4		%		80-120	25-SEP-18
Iron (Fe)			104.2		%		80-120	25-SEP-18
Lead (Pb)			90.0		%		80-120	25-SEP-18
Lithium (Li)			84.1		%		80-120	25-SEP-18
Magnesium (Mg)			103.5		%		80-120	25-SEP-18
Manganese (Mn)			99.8		%		80-120	25-SEP-18
Molybdenum (Mo)			93.8		%		80-120	25-SEP-18
Nickel (Ni)			99.1		%		80-120	25-SEP-18
Phosphorus (P)			107.7		%		80-120	25-SEP-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R4240927								
WG2885340-2 LCS								
Potassium (K)			99.0		%		80-120	25-SEP-18
Selenium (Se)			97.2		%		80-120	25-SEP-18
Silver (Ag)			88.4		%		80-120	25-SEP-18
Sodium (Na)			100.3		%		80-120	25-SEP-18
Strontium (Sr)			99.8		%		80-120	25-SEP-18
Sulfur (S)			97.8		%		80-120	25-SEP-18
Thallium (Tl)			94.0		%		80-120	25-SEP-18
Tin (Sn)			88.4		%		80-120	25-SEP-18
Titanium (Ti)			97.9		%		80-120	25-SEP-18
Tungsten (W)			97.6		%		80-120	25-SEP-18
Uranium (U)			108.6		%		80-120	25-SEP-18
Vanadium (V)			101.3		%		80-120	25-SEP-18
Zinc (Zn)			98.0		%		80-120	25-SEP-18
Zirconium (Zr)			90.5		%		80-120	25-SEP-18
WG2885340-1 MB								
Aluminum (Al)			<50		mg/kg		50	25-SEP-18
Antimony (Sb)			<0.10		mg/kg		0.1	25-SEP-18
Arsenic (As)			<0.10		mg/kg		0.1	25-SEP-18
Barium (Ba)			<0.50		mg/kg		0.5	25-SEP-18
Beryllium (Be)			<0.10		mg/kg		0.1	25-SEP-18
Bismuth (Bi)			<0.20		mg/kg		0.2	25-SEP-18
Boron (B)			<5.0		mg/kg		5	25-SEP-18
Cadmium (Cd)			<0.020		mg/kg		0.02	25-SEP-18
Calcium (Ca)			<50		mg/kg		50	25-SEP-18
Chromium (Cr)			<0.50		mg/kg		0.5	25-SEP-18
Cobalt (Co)			<0.10		mg/kg		0.1	25-SEP-18
Copper (Cu)			<0.50		mg/kg		0.5	25-SEP-18
Iron (Fe)			<50		mg/kg		50	25-SEP-18
Lead (Pb)			<0.50		mg/kg		0.5	25-SEP-18
Lithium (Li)			<2.0		mg/kg		2	25-SEP-18
Magnesium (Mg)			<20		mg/kg		20	25-SEP-18
Manganese (Mn)			<1.0		mg/kg		1	25-SEP-18
Molybdenum (Mo)			<0.10		mg/kg		0.1	25-SEP-18
Nickel (Ni)			<0.50		mg/kg		0.5	25-SEP-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R4240927								
WG2885340-1 MB								
Phosphorus (P)			<50		mg/kg		50	25-SEP-18
Potassium (K)			<100		mg/kg		100	25-SEP-18
Selenium (Se)			<0.20		mg/kg		0.2	25-SEP-18
Silver (Ag)			<0.10		mg/kg		0.1	25-SEP-18
Sodium (Na)			<50		mg/kg		50	25-SEP-18
Strontium (Sr)			<0.50		mg/kg		0.5	25-SEP-18
Sulfur (S)			<1000		mg/kg		1000	25-SEP-18
Thallium (Tl)			<0.050		mg/kg		0.05	25-SEP-18
Tin (Sn)			<2.0		mg/kg		2	25-SEP-18
Titanium (Ti)			<1.0		mg/kg		1	25-SEP-18
Tungsten (W)			<0.50		mg/kg		0.5	25-SEP-18
Uranium (U)			<0.050		mg/kg		0.05	25-SEP-18
Vanadium (V)			<0.20		mg/kg		0.2	25-SEP-18
Zinc (Zn)			<2.0		mg/kg		2	25-SEP-18
Zirconium (Zr)			<1.0		mg/kg		1	25-SEP-18
Batch R4251401								
WG2885340-4 DUP		**L2158112-11**						
Aluminum (Al)		19300	20400		mg/kg	5.6	40	27-SEP-18
Antimony (Sb)		0.75	0.69		mg/kg	8.3	30	27-SEP-18
Arsenic (As)		12.1	12.4		mg/kg	2.4	30	27-SEP-18
Barium (Ba)		382	398		mg/kg	4.1	40	27-SEP-18
Beryllium (Be)		0.69	0.67		mg/kg	2.5	30	27-SEP-18
Bismuth (Bi)		0.22	0.23		mg/kg	1.1	30	27-SEP-18
Boron (B)		<5.0	<5.0	RPD-NA	mg/kg	N/A	30	27-SEP-18
Cadmium (Cd)		0.505	0.502		mg/kg	0.7	30	27-SEP-18
Calcium (Ca)		4340	4310		mg/kg	0.7	30	27-SEP-18
Chromium (Cr)		40.7	42.9		mg/kg	5.2	30	27-SEP-18
Cobalt (Co)		24.9	25.7		mg/kg	3.3	30	27-SEP-18
Copper (Cu)		30.0	30.6		mg/kg	1.8	30	27-SEP-18
Iron (Fe)		32400	32800		mg/kg	1.2	30	27-SEP-18
Lead (Pb)		19.2	18.9		mg/kg	1.7	40	27-SEP-18
Lithium (Li)		13.5	13.4		mg/kg	0.9	30	27-SEP-18
Magnesium (Mg)		4600	4870		mg/kg	5.7	30	27-SEP-18
Manganese (Mn)		906	952		mg/kg	4.9	30	27-SEP-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R4251401								
WG2885340-4 DUP		**L2158112-11**						
Molybdenum (Mo)		2.58	2.54		mg/kg	1.6	40	27-SEP-18
Nickel (Ni)		39.9	40.9		mg/kg	2.5	30	27-SEP-18
Phosphorus (P)		360	369		mg/kg	2.5	30	27-SEP-18
Potassium (K)		870	950		mg/kg	8.9	40	27-SEP-18
Selenium (Se)		0.56	0.55		mg/kg	1.5	30	27-SEP-18
Silver (Ag)		0.22	0.22		mg/kg	1.1	40	27-SEP-18
Sodium (Na)		128	131		mg/kg	2.7	40	27-SEP-18
Strontium (Sr)		28.6	28.8		mg/kg	0.7	40	27-SEP-18
Sulfur (S)		<1000	<1000	RPD-NA	mg/kg	N/A	30	27-SEP-18
Thallium (Tl)		0.114	0.121		mg/kg	5.9	30	27-SEP-18
Tin (Sn)		<2.0	<2.0	RPD-NA	mg/kg	N/A	40	27-SEP-18
Titanium (Ti)		240	248		mg/kg	3.4	40	27-SEP-18
Tungsten (W)		<0.50	<0.50	RPD-NA	mg/kg	N/A	30	27-SEP-18
Uranium (U)		2.41	2.33		mg/kg	3.5	30	27-SEP-18
Vanadium (V)		41.2	44.0		mg/kg	6.6	30	27-SEP-18
Zinc (Zn)		103	104		mg/kg	1.1	30	27-SEP-18
Zirconium (Zr)		9.1	9.1		mg/kg	0.5	30	27-SEP-18
PCB-ED	**Soil**							
Batch R4224276								
WG2877546-3 CRM		**WT-SQC012**						
WG2880405-4 CRM		**PCB_SOIL_CRM915-050**						
Aroclor 1260			90.7		%		65-130	19-SEP-18
WG2877546-2 LCS								
Aroclor 1260			87.1		%		50-150	19-SEP-18
WG2880405-2 LCS		**LCS_A1242**						
Aroclor 1242			107.1		%		65-130	19-SEP-18
WG2877546-1 MB								
Aroclor 1016			<0.010		mg/kg		0.01	19-SEP-18
Aroclor 1221			<0.010		mg/kg		0.01	19-SEP-18
Aroclor 1232			<0.010		mg/kg		0.01	19-SEP-18
Aroclor 1242			<0.010		mg/kg		0.01	19-SEP-18
Aroclor 1248			<0.010		mg/kg		0.01	19-SEP-18
Aroclor 1254			<0.010		mg/kg		0.01	19-SEP-18
Aroclor 1260			<0.010		mg/kg		0.01	19-SEP-18
Aroclor 1262			<0.010		mg/kg		0.01	19-SEP-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PCB-ED	**Soil**							
Batch R4224276								
WG2877546-1 MB								
Aroclor 1268			<0.010		mg/kg		0.01	19-SEP-18
Surrogate: Decachlorobiphenyl			75.8		%		65-130	19-SEP-18
WG2880405-1 MB								
Aroclor 1016			<0.010		mg/kg		0.01	19-SEP-18
Aroclor 1221			<0.010		mg/kg		0.01	19-SEP-18
Aroclor 1232			<0.010		mg/kg		0.01	19-SEP-18
Aroclor 1242			<0.010		mg/kg		0.01	19-SEP-18
Aroclor 1248			<0.010		mg/kg		0.01	19-SEP-18
Aroclor 1254			<0.010		mg/kg		0.01	19-SEP-18
Aroclor 1260			<0.010		mg/kg		0.01	19-SEP-18
Aroclor 1262			<0.010		mg/kg		0.01	19-SEP-18
Aroclor 1268			<0.010		mg/kg		0.01	19-SEP-18
Surrogate: Decachlorobiphenyl			90.6		%		65-130	19-SEP-18
Batch R4246351								
WG2885981-3 CRM		**PCB_SOIL_CRM915-050**						
Aroclor 1260			90.7		%		65-130	26-SEP-18
WG2885981-4 DUP		**L2158112-13**						
Aroclor 1016		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	26-SEP-18
Aroclor 1221		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	26-SEP-18
Aroclor 1232		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	26-SEP-18
Aroclor 1242		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	26-SEP-18
Aroclor 1248		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	26-SEP-18
Aroclor 1254		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	26-SEP-18
Aroclor 1260		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	26-SEP-18
Aroclor 1262		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	26-SEP-18
Aroclor 1268		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	26-SEP-18
WG2885981-2 LCS		**LCS_A1260**						
Aroclor 1260			91.8		%		65-130	26-SEP-18
WG2885981-1 MB								
Aroclor 1016			<0.010		mg/kg		0.01	26-SEP-18
Aroclor 1221			<0.010		mg/kg		0.01	26-SEP-18
Aroclor 1232			<0.010		mg/kg		0.01	26-SEP-18
Aroclor 1242			<0.010		mg/kg		0.01	26-SEP-18
Aroclor 1248			<0.010		mg/kg		0.01	26-SEP-18
Aroclor 1254			<0.010		mg/kg		0.01	26-SEP-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PCB-ED	**Soil**							
Batch R4246351								
WG2885981-1 MB								
Aroclor 1260			<0.010		mg/kg		0.01	26-SEP-18
Aroclor 1262			<0.010		mg/kg		0.01	26-SEP-18
Aroclor 1268			<0.010		mg/kg		0.01	26-SEP-18
Surrogate: Decachlorobiphenyl			79.5		%		65-130	26-SEP-18
PREP-MOISTURE-ED	**Soil**							
Batch R4227528								
WG2881646-6 DUP		**L2158112-13**						
% Moisture		9.83	9.05		%	8.2	20	20-SEP-18
WG2881646-2 LCS								
% Moisture			95.0		%		90-110	20-SEP-18
WG2881646-5 LCS								
% Moisture			95.8		%		90-110	20-SEP-18
WG2881646-1 MB								
% Moisture			<0.25		%		0.25	20-SEP-18
WG2881646-4 MB								
% Moisture			<0.25		%		0.25	20-SEP-18
Batch R4228147								
WG2882061-2 LCS								
% Moisture			97.5		%		90-110	20-SEP-18
WG2882061-1 MB								
% Moisture			<0.25		%		0.25	20-SEP-18
HG-WET-200.2-CVAA-ED	**Waste**							
Batch R4231547								
WG2881691-11 CRM		**TILL-1_SOIL**						
Mercury (Hg)			104.4		%		70-130	21-SEP-18
WG2881733-3 CRM		**TILL-1_SOIL**						
Mercury (Hg)			115.6		%		70-130	21-SEP-18
WG2881691-12 DUP		**L2158112-6**						
Mercury (Hg)		0.055	0.070		mg/kg wwt	24	40	21-SEP-18
WG2881733-4 DUP		**L2158112-36**						
Mercury (Hg)		0.178	0.214		mg/kg wwt	18	40	21-SEP-18
WG2881691-10 LCS								
Mercury (Hg)			114.0		%		80-120	21-SEP-18
WG2881733-2 LCS								
Mercury (Hg)			85.1		%		80-120	22-SEP-18
WG2881691-9 MB								
Mercury (Hg)			<0.050		mg/kg wwt		0.05	21-SEP-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-WET-200.2-CVAA-ED	**Waste**							
Batch R4231547								
WG2881733-1 MB								
Mercury (Hg)			<0.050		mg/kg wwt		0.05	21-SEP-18
MET-WET200.2-CCMS-ED	**Waste**							
Batch R4233706								
WG2881691-11 CRM		**TILL-1_SOIL**						
Aluminum (Al)			102.1		%		70-130	23-SEP-18
Antimony (Sb)			102.6		%		70-130	23-SEP-18
Arsenic (As)			101.3		%		70-130	23-SEP-18
Barium (Ba)			99.1		%		70-130	23-SEP-18
Beryllium (Be)			112.8		%		70-130	23-SEP-18
Bismuth (Bi)			101.3		%		70-130	23-SEP-18
Boron (B)			4.2		mg/kg wwt		0-8.2	23-SEP-18
Cadmium (Cd)			110.3		%		70-130	23-SEP-18
Calcium (Ca)			111.8		%		70-130	23-SEP-18
Chromium (Cr)			103.6		%		70-130	23-SEP-18
Cobalt (Co)			101.6		%		70-130	23-SEP-18
Copper (Cu)			103.9		%		70-130	23-SEP-18
Iron (Fe)			101.1		%		70-130	23-SEP-18
Lead (Pb)			99.5		%		70-130	23-SEP-18
Lithium (Li)			112.3		%		70-130	23-SEP-18
Magnesium (Mg)			104.5		%		70-130	23-SEP-18
Manganese (Mn)			100.0		%		70-130	23-SEP-18
Molybdenum (Mo)			108.3		%		70-130	23-SEP-18
Nickel (Ni)			103.3		%		70-130	23-SEP-18
Phosphorus (P)			101.8		%		70-130	23-SEP-18
Potassium (K)			97.3		%		70-130	23-SEP-18
Selenium (Se)			0.38		mg/kg wwt		0.11-0.51	23-SEP-18
Silver (Ag)			0.23		mg/kg wwt		0.13-0.33	23-SEP-18
Sodium (Na)			105.1		%		70-130	23-SEP-18
Strontium (Sr)			106.7		%		70-130	23-SEP-18
Thallium (Tl)			0.130		mg/kg wwt		0.077-0.18	23-SEP-18
Tin (Sn)			1.1		mg/kg wwt		0-3.1	23-SEP-18
Titanium (Ti)			103.6		%		70-130	23-SEP-18
Tungsten			0.17		mg/kg wwt		0-0.66	23-SEP-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET200.2-CCMS-ED	**Waste**							
Batch R4233706								
WG2881691-11 CRM		**TILL-1_SOIL**						
Uranium (U)			103.4		%		70-130	23-SEP-18
Vanadium (V)			102.7		%		70-130	23-SEP-18
Zinc (Zn)			106.6		%		70-130	23-SEP-18
Zirconium (Zr)			0.8		mg/kg wwt		0-1.8	23-SEP-18
WG2881733-3 CRM		**TILL-1_SOIL**						
Aluminum (Al)			101.7		%		70-130	23-SEP-18
Antimony (Sb)			109.0		%		70-130	23-SEP-18
Arsenic (As)			104.7		%		70-130	23-SEP-18
Barium (Ba)			104.9		%		70-130	23-SEP-18
Beryllium (Be)			111.3		%		70-130	23-SEP-18
Bismuth (Bi)			108.5		%		70-130	23-SEP-18
Boron (B)			3.6		mg/kg wwt		0-8.2	23-SEP-18
Cadmium (Cd)			106.8		%		70-130	23-SEP-18
Calcium (Ca)			111.6		%		70-130	23-SEP-18
Chromium (Cr)			107.0		%		70-130	23-SEP-18
Cobalt (Co)			107.4		%		70-130	23-SEP-18
Copper (Cu)			110.0		%		70-130	23-SEP-18
Iron (Fe)			103.7		%		70-130	23-SEP-18
Lead (Pb)			106.2		%		70-130	23-SEP-18
Lithium (Li)			109.5		%		70-130	23-SEP-18
Magnesium (Mg)			102.3		%		70-130	23-SEP-18
Manganese (Mn)			102.8		%		70-130	23-SEP-18
Molybdenum (Mo)			114.8		%		70-130	23-SEP-18
Nickel (Ni)			107.1		%		70-130	23-SEP-18
Phosphorus (P)			107.0		%		70-130	23-SEP-18
Potassium (K)			101.0		%		70-130	23-SEP-18
Selenium (Se)			0.38		mg/kg wwt		0.11-0.51	23-SEP-18
Silver (Ag)			0.26		mg/kg wwt		0.13-0.33	23-SEP-18
Sodium (Na)			97.6		%		70-130	23-SEP-18
Strontium (Sr)			107.5		%		70-130	23-SEP-18
Thallium (Tl)			0.134		mg/kg wwt		0.077-0.18	23-SEP-18
Tin (Sn)			1.0		mg/kg wwt		0-3.1	23-SEP-18
Titanium (Ti)			97.7		%		70-130	23-SEP-18
Tungsten			0.16		mg/kg wwt		0-0.66	23-SEP-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET200.2-CCMS-ED	**Waste**							
Batch R4233706								
WG2881733-3 CRM		**TILL-1_SOIL**						
Uranium (U)			110.3		%		70-130	23-SEP-18
Vanadium (V)			105.2		%		70-130	23-SEP-18
Zinc (Zn)			111.5		%		70-130	23-SEP-18
Zirconium (Zr)			1.0		mg/kg wwt		0-1.8	23-SEP-18
WG2881691-12 DUP		**L2158112-6**						
Aluminum (Al)		5330	5020		mg/kg wwt	6.1	50	23-SEP-18
Antimony (Sb)		2.10	1.83		mg/kg wwt	14	25	23-SEP-18
Arsenic (As)		8.52	9.14		mg/kg wwt	7.0	50	23-SEP-18
Barium (Ba)		73.0	80.8		mg/kg wwt	10	50	23-SEP-18
Beryllium (Be)		0.35	0.35		mg/kg wwt	1.4	50	23-SEP-18
Bismuth (Bi)		<0.20	<0.20	RPD-NA	mg/kg wwt	N/A	50	23-SEP-18
Boron (B)		<5.0	<5.0	RPD-NA	mg/kg wwt	N/A	50	23-SEP-18
Cadmium (Cd)		0.597	0.514		mg/kg wwt	15	50	23-SEP-18
Calcium (Ca)		1230	1030		mg/kg wwt	18	50	23-SEP-18
Chromium (Cr)		15.5	19.1		mg/kg wwt	21	50	23-SEP-18
Cobalt (Co)		9.16	7.96		mg/kg wwt	14	50	23-SEP-18
Copper (Cu)		25.8	31.6		mg/kg wwt	20	50	23-SEP-18
Iron (Fe)		21500	20100		mg/kg wwt	7.0	50	23-SEP-18
Lead (Pb)		14.9	14.1		mg/kg wwt	5.2	50	23-SEP-18
Lithium (Li)		4.7	4.3		mg/kg wwt	11	50	23-SEP-18
Magnesium (Mg)		3030	2930		mg/kg wwt	3.3	50	23-SEP-18
Manganese (Mn)		321	286		mg/kg wwt	12	50	23-SEP-18
Molybdenum (Mo)		1.81	1.87		mg/kg wwt	3.1	50	23-SEP-18
Nickel (Ni)		27.1	25.0		mg/kg wwt	8.2	50	23-SEP-18
Phosphorus (P)		482	429		mg/kg wwt	12	50	23-SEP-18
Potassium (K)		380	430		mg/kg wwt	11	50	23-SEP-18
Selenium (Se)		1.53	1.63		mg/kg wwt	6.3	25	23-SEP-18
Silver (Ag)		0.53	0.17	DUP-H	mg/kg wwt	0.37	0.2	23-SEP-18
Sodium (Na)		<50	<50	RPD-NA	mg/kg wwt	N/A	25	23-SEP-18
Strontium (Sr)		13.2	11.8		mg/kg wwt	11	50	23-SEP-18
Sulfur		<1000	<1000	RPD-NA	mg/kg wwt	N/A	25	23-SEP-18
Thallium (Tl)		<0.050	<0.050	RPD-NA	mg/kg wwt	N/A	50	23-SEP-18
Tin (Sn)		<2.0	<2.0	RPD-NA	mg/kg wwt	N/A	25	23-SEP-18
Titanium (Ti)		247	155		mg/kg wwt	46	50	23-SEP-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET200.2-CCMS-ED	**Waste**							
Batch R4233706								
WG2881691-12 DUP		**L2158112-6**						
Tungsten		<0.50	<0.50	RPD-NA	mg/kg wwt	N/A	25	23-SEP-18
Uranium (U)		2.03	2.00		mg/kg wwt	1.5	50	23-SEP-18
Vanadium (V)		22.1	20.8		mg/kg wwt	6.1	25	23-SEP-18
Zinc (Zn)		89.3	80.2		mg/kg wwt	11	50	23-SEP-18
Zirconium (Zr)		8.4	8.0		mg/kg wwt	5.1	50	23-SEP-18
WG2881733-4 DUP		**L2158112-36**						
Aluminum (Al)		3970	3240		mg/kg wwt	20	50	23-SEP-18
Antimony (Sb)		1.38	1.30		mg/kg wwt	5.5	25	23-SEP-18
Arsenic (As)		9.00	8.49		mg/kg wwt	5.9	50	23-SEP-18
Barium (Ba)		105	96.6		mg/kg wwt	8.7	50	23-SEP-18
Beryllium (Be)		0.47	0.44		mg/kg wwt	5.4	50	23-SEP-18
Bismuth (Bi)		0.32	0.31		mg/kg wwt	4.4	50	23-SEP-18
Boron (B)		<5.0	<5.0	RPD-NA	mg/kg wwt	N/A	50	23-SEP-18
Cadmium (Cd)		1.08	1.10		mg/kg wwt	1.4	50	23-SEP-18
Calcium (Ca)		32800	37600		mg/kg wwt	14	50	23-SEP-18
Chromium (Cr)		15.0	13.9		mg/kg wwt	7.6	50	23-SEP-18
Cobalt (Co)		14.3	13.2		mg/kg wwt	8.5	50	23-SEP-18
Copper (Cu)		36.0	32.4		mg/kg wwt	10	50	23-SEP-18
Iron (Fe)		32500	31600		mg/kg wwt	2.6	50	23-SEP-18
Lead (Pb)		14.8	15.1		mg/kg wwt	2.1	50	23-SEP-18
Lithium (Li)		3.7	2.9		mg/kg wwt	25	50	23-SEP-18
Magnesium (Mg)		9600	8710		mg/kg wwt	9.7	50	23-SEP-18
Manganese (Mn)		479	470		mg/kg wwt	2.1	50	23-SEP-18
Molybdenum (Mo)		4.64	4.87		mg/kg wwt	4.7	50	23-SEP-18
Nickel (Ni)		50.2	48.3		mg/kg wwt	3.9	50	23-SEP-18
Phosphorus (P)		721	751		mg/kg wwt	4.2	50	23-SEP-18
Potassium (K)		740	660		mg/kg wwt	12	50	23-SEP-18
Selenium (Se)		3.91	4.39		mg/kg wwt	12	25	23-SEP-18
Silver (Ag)		0.37	0.35		mg/kg wwt	4.5	50	23-SEP-18
Sodium (Na)		73	63		mg/kg wwt	15	25	23-SEP-18
Strontium (Sr)		152	186		mg/kg wwt	20	50	23-SEP-18
Sulfur		4200	4200		mg/kg wwt	0.1	25	23-SEP-18
Thallium (Tl)		0.099	0.095		mg/kg wwt	4.0	50	23-SEP-18
Tin (Sn)		<2.0	<2.0	RPD-NA	mg/kg wwt	N/A	25	23-SEP-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET200.2-CCMS-ED	**Waste**							
Batch R4233706								
WG2881733-4 DUP		**L2158112-36**						
Titanium (Ti)		12.2	9.5		mg/kg wwt	24	50	23-SEP-18
Tungsten		<0.50	<0.50	RPD-NA	mg/kg wwt	N/A	25	23-SEP-18
Uranium (U)		1.70	1.56		mg/kg wwt	8.7	50	23-SEP-18
Vanadium (V)		16.1	17.8		mg/kg wwt	9.9	25	23-SEP-18
Zinc (Zn)		98.6	98.2		mg/kg wwt	0.4	50	23-SEP-18
Zirconium (Zr)		10.3	9.9		mg/kg wwt	3.3	50	23-SEP-18
WG2881691-10 LCS								
Aluminum (Al)			105.1		%		80-120	23-SEP-18
Antimony (Sb)			103.9		%		80-120	23-SEP-18
Arsenic (As)			101.2		%		80-120	23-SEP-18
Barium (Ba)			103.2		%		80-120	23-SEP-18
Beryllium (Be)			96.1		%		80-120	23-SEP-18
Bismuth (Bi)			101.3		%		80-120	23-SEP-18
Boron (B)			92.0		%		80-120	23-SEP-18
Cadmium (Cd)			101.7		%		80-120	23-SEP-18
Calcium (Ca)			97.8		%		80-120	23-SEP-18
Chromium (Cr)			102.3		%		80-120	23-SEP-18
Cobalt (Co)			99.4		%		80-120	23-SEP-18
Copper (Cu)			98.9		%		80-120	23-SEP-18
Iron (Fe)			102.9		%		80-120	23-SEP-18
Lead (Pb)			103.1		%		80-120	23-SEP-18
Lithium (Li)			91.3		%		80-120	23-SEP-18
Magnesium (Mg)			105.2		%		80-120	23-SEP-18
Manganese (Mn)			101.1		%		80-120	23-SEP-18
Molybdenum (Mo)			96.1		%		80-120	23-SEP-18
Nickel (Ni)			99.8		%		80-120	23-SEP-18
Phosphorus (P)			105.2		%		80-120	23-SEP-18
Potassium (K)			104.3		%		80-120	23-SEP-18
Selenium (Se)			109.3		%		80-120	23-SEP-18
Silver (Ag)			103.3		%		80-120	23-SEP-18
Sodium (Na)			105.8		%		80-120	23-SEP-18
Strontium (Sr)			99.97		%		80-120	23-SEP-18
Sulfur			103.0		%		70-130	23-SEP-18
Thallium (Tl)			100.1		%		80-120	23-SEP-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET200.2-CCMS-ED	**Waste**							
Batch R4233706								
WG2881691-10 LCS								
Tin (Sn)			99.7		%		80-120	23-SEP-18
Titanium (Ti)			99.4		%		80-120	23-SEP-18
Tungsten			105.7		%		70-130	23-SEP-18
Uranium (U)			104.3		%		80-120	23-SEP-18
Vanadium (V)			103.6		%		80-120	23-SEP-18
Zinc (Zn)			103.8		%		80-120	23-SEP-18
Zirconium (Zr)			95.2		%		80-120	23-SEP-18
WG2881733-2 LCS								
Aluminum (Al)			103.8		%		80-120	23-SEP-18
Antimony (Sb)			105.0		%		80-120	23-SEP-18
Arsenic (As)			100.6		%		80-120	23-SEP-18
Barium (Ba)			96.6		%		80-120	23-SEP-18
Beryllium (Be)			103.5		%		80-120	23-SEP-18
Bismuth (Bi)			97.3		%		80-120	23-SEP-18
Boron (B)			95.4		%		80-120	23-SEP-18
Cadmium (Cd)			99.6		%		80-120	23-SEP-18
Calcium (Ca)			107.0		%		80-120	23-SEP-18
Chromium (Cr)			99.7		%		80-120	23-SEP-18
Cobalt (Co)			101.3		%		80-120	23-SEP-18
Copper (Cu)			98.4		%		80-120	23-SEP-18
Iron (Fe)			102.0		%		80-120	23-SEP-18
Lead (Pb)			99.0		%		80-120	23-SEP-18
Lithium (Li)			97.1		%		80-120	23-SEP-18
Magnesium (Mg)			103.1		%		80-120	23-SEP-18
Manganese (Mn)			100.5		%		80-120	23-SEP-18
Molybdenum (Mo)			105.6		%		80-120	23-SEP-18
Nickel (Ni)			98.5		%		80-120	23-SEP-18
Phosphorus (P)			103.7		%		80-120	23-SEP-18
Potassium (K)			103.0		%		80-120	23-SEP-18
Selenium (Se)			104.5		%		80-120	23-SEP-18
Silver (Ag)			102.9		%		80-120	23-SEP-18
Sodium (Na)			99.1		%		80-120	23-SEP-18
Strontium (Sr)			104.9		%		80-120	23-SEP-18
Sulfur			98.3		%		70-130	23-SEP-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET200.2-CCMS-ED	**Waste**							
Batch R4233706								
WG2881733-2 LCS								
Thallium (Tl)			100.4		%		80-120	23-SEP-18
Tin (Sn)			101.1		%		80-120	23-SEP-18
Titanium (Ti)			99.3		%		80-120	23-SEP-18
Tungsten			104.8		%		70-130	23-SEP-18
Uranium (U)			103.3		%		80-120	23-SEP-18
Vanadium (V)			103.1		%		80-120	23-SEP-18
Zinc (Zn)			100.2		%		80-120	23-SEP-18
Zirconium (Zr)			106.4		%		80-120	23-SEP-18
WG2881691-9 MB								
Aluminum (Al)			<50		mg/kg wwt		50	22-SEP-18
Antimony (Sb)			<0.10		mg/kg wwt		0.1	22-SEP-18
Arsenic (As)			<0.10		mg/kg wwt		0.1	22-SEP-18
Barium (Ba)			<0.50		mg/kg wwt		0.5	22-SEP-18
Beryllium (Be)			<0.10		mg/kg wwt		0.1	22-SEP-18
Bismuth (Bi)			<0.20		mg/kg wwt		0.2	22-SEP-18
Boron (B)			<5.0		mg/kg wwt		5	22-SEP-18
Cadmium (Cd)			<0.020		mg/kg wwt		0.02	22-SEP-18
Calcium (Ca)			<50		mg/kg wwt		50	22-SEP-18
Chromium (Cr)			<0.50		mg/kg wwt		0.5	22-SEP-18
Cobalt (Co)			<0.10		mg/kg wwt		0.1	22-SEP-18
Copper (Cu)			<0.50		mg/kg wwt		0.5	22-SEP-18
Iron (Fe)			<50		mg/kg wwt		50	22-SEP-18
Lead (Pb)			<0.50		mg/kg wwt		0.5	22-SEP-18
Lithium (Li)			<2.0		mg/kg wwt		2	22-SEP-18
Magnesium (Mg)			<20		mg/kg wwt		20	22-SEP-18
Manganese (Mn)			<1.0		mg/kg wwt		1	22-SEP-18
Molybdenum (Mo)			<0.10		mg/kg wwt		0.1	22-SEP-18
Nickel (Ni)			<0.50		mg/kg wwt		0.5	22-SEP-18
Phosphorus (P)			<50		mg/kg wwt		50	22-SEP-18
Potassium (K)			<100		mg/kg wwt		100	22-SEP-18
Selenium (Se)			<0.20		mg/kg wwt		0.2	22-SEP-18
Silver (Ag)			<0.10		mg/kg wwt		0.1	22-SEP-18
Sodium (Na)			<50		mg/kg wwt		50	22-SEP-18
Strontium (Sr)			<0.50		mg/kg wwt		0.5	22-SEP-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET200.2-CCMS-ED	**Waste**							
Batch R4233706								
WG2881691-9 MB								
Sulfur			<1000		mg/kg wwt		1000	22-SEP-18
Thallium (Tl)			<0.050		mg/kg wwt		0.05	22-SEP-18
Tin (Sn)			<2.0		mg/kg wwt		2	22-SEP-18
Titanium (Ti)			<1.0		mg/kg wwt		1	22-SEP-18
Tungsten			<0.50		mg/kg wwt		0.5	22-SEP-18
Uranium (U)			<0.050		mg/kg wwt		0.05	22-SEP-18
Vanadium (V)			<0.20		mg/kg wwt		0.2	22-SEP-18
Zinc (Zn)			<2.0		mg/kg wwt		2	22-SEP-18
Zirconium (Zr)			<1.0		mg/kg wwt		1	22-SEP-18
WG2881733-1 MB								
Aluminum (Al)			<50		mg/kg wwt		50	22-SEP-18
Antimony (Sb)			<0.10		mg/kg wwt		0.1	22-SEP-18
Arsenic (As)			<0.10		mg/kg wwt		0.1	22-SEP-18
Barium (Ba)			<0.50		mg/kg wwt		0.5	22-SEP-18
Beryllium (Be)			<0.10		mg/kg wwt		0.1	22-SEP-18
Bismuth (Bi)			<0.20		mg/kg wwt		0.2	22-SEP-18
Boron (B)			<5.0		mg/kg wwt		5	22-SEP-18
Cadmium (Cd)			<0.020		mg/kg wwt		0.02	22-SEP-18
Calcium (Ca)			<50		mg/kg wwt		50	22-SEP-18
Chromium (Cr)			<0.50		mg/kg wwt		0.5	22-SEP-18
Cobalt (Co)			<0.10		mg/kg wwt		0.1	22-SEP-18
Copper (Cu)			<0.50		mg/kg wwt		0.5	22-SEP-18
Iron (Fe)			<50		mg/kg wwt		50	22-SEP-18
Lead (Pb)			<0.50		mg/kg wwt		0.5	22-SEP-18
Lithium (Li)			<2.0		mg/kg wwt		2	22-SEP-18
Magnesium (Mg)			<20		mg/kg wwt		20	22-SEP-18
Manganese (Mn)			<1.0		mg/kg wwt		1	22-SEP-18
Molybdenum (Mo)			<0.10		mg/kg wwt		0.1	22-SEP-18
Nickel (Ni)			<0.50		mg/kg wwt		0.5	22-SEP-18
Phosphorus (P)			<50		mg/kg wwt		50	22-SEP-18
Potassium (K)			<100		mg/kg wwt		100	22-SEP-18
Selenium (Se)			<0.20		mg/kg wwt		0.2	22-SEP-18
Silver (Ag)			<0.10		mg/kg wwt		0.1	22-SEP-18
Sodium (Na)			<50		mg/kg wwt		50	22-SEP-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET200.2-CCMS-ED	**Waste**							
Batch R4233706								
WG2881733-1 MB								
Strontium (Sr)			<0.50		mg/kg wwt		0.5	22-SEP-18
Sulfur			<1000		mg/kg wwt		1000	22-SEP-18
Thallium (Tl)			<0.050		mg/kg wwt		0.05	22-SEP-18
Tin (Sn)			<2.0		mg/kg wwt		2	22-SEP-18
Titanium (Ti)			<1.0		mg/kg wwt		1	22-SEP-18
Tungsten			<0.50		mg/kg wwt		0.5	22-SEP-18
Uranium (U)			<0.050		mg/kg wwt		0.05	22-SEP-18
Vanadium (V)			<0.20		mg/kg wwt		0.2	22-SEP-18
Zinc (Zn)			<2.0		mg/kg wwt		2	22-SEP-18
Zirconium (Zr)			<1.0		mg/kg wwt		1	22-SEP-18
ASBESTOS-BULK-ED	**Bulk**							
Batch R4207690								
WG2871985-3 DUP		**L2158112-1**						
Asbestos: Chrysotile		10-25	10-25		%	10-25		10-SEP-18
Mica		Trace <1	Trace <1		%	Trace <1		10-SEP-18
Other Fibres: Cellulose		1-5	1-5		%	1-5		10-SEP-18
WG2871985-6 LCS								
Asbestos: Chrysotile			75-100		%			10-SEP-18
WG2871985-7 LCS								
Asbestos: Anthophyllite			75-100		%			10-SEP-18
WG2871985-1 MB								
Asbestos			<1		%			10-SEP-18
Other Fibres			<1		%			10-SEP-18
WG2871985-2 MB								
Asbestos			<1		%			10-SEP-18
Other Fibres			<1		%			10-SEP-18
Batch R4211910								
WG2872788-3 DUP		**L2158112-14**						
Asbestos: Chrysotile		50-75	50-75		%	50-75		10-SEP-18
Other Fibres		<1	<1		%	<1		10-SEP-18
WG2872788-4 DUP		**L2158112-33**						
Asbestos: Chrysotile		1-5	1-5		%	1-5		10-SEP-18
Mica		Trace <1	Trace <1		%	Trace <1		10-SEP-18
WG2872788-2 LCS								
Asbestos: Amosite			75-100		%			10-SEP-18
Other Fibres			<1		%			10-SEP-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ASBESTOS-BULK-ED	**Bulk**							
Batch R4211910								
WG2872788-1 MB								
Asbestos			<1		%			10-SEP-18
Other Fibres			<1		%			10-SEP-18
Batch R4214329								
WG2873894-3 DUP		**L2158112-34**						
Asbestos: Chrysotile		10-25	10-25		%	10-25		11-SEP-18
Mica		Trace <1	Trace <1		%	Trace <1		11-SEP-18
WG2873894-2 LCS								
Asbestos: Chrysotile			75-100		%			11-SEP-18
Other Fibres			<1		%			11-SEP-18
WG2873894-1 MB								
Asbestos			<1		%			11-SEP-18
Other Fibres			<1		%			11-SEP-18
ASBESTOS-PTCT-ED	**Bulk**							
Batch R4219607								
WG2879203-3 DUP		**L2158112-2**						
Asbestos By Point Count		<0.10	<0.10	RPD-NA	%	N/A	50	18-SEP-18
Other Fibres: Cellulose		Trace <1	Trace <1		%	Trace <1	50	18-SEP-18
Mica		Trace <1	Trace <1		%	Trace <1	50	18-SEP-18
WG2879203-2 LCS								
Asbestos: Anthophyllite			75-100		%			18-SEP-18
WG2879203-1 MB								
Asbestos By Point Count			<0.10		%		0.1	18-SEP-18
Other Fibres			<1		%			18-SEP-18
Batch R4224171								
WG2880091-2 LCS								
Asbestos: Chrysotile			75-100		%			18-SEP-18
Other Fibres			<1		%			18-SEP-18
WG2880091-1 MB								
Asbestos By Point Count			<0.1		%			18-SEP-18
Other Fibres			<1		%			18-SEP-18

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Metals							
Mercury in Soil by CVAAS							
	2	13-AUG-18	24-SEP-18 00:00	28	42	days	EHT
	4	13-AUG-18	24-SEP-18 00:00	28	42	days	EHT
	5	13-AUG-18	24-SEP-18 00:00	28	42	days	EHT
	7	13-AUG-18	24-SEP-18 00:00	28	42	days	EHT
	8	13-AUG-18	24-SEP-18 00:00	28	42	days	EHT
	9	13-AUG-18	24-SEP-18 00:00	28	42	days	EHT
	10	13-AUG-18	24-SEP-18 00:00	28	42	days	EHT
	11	13-AUG-18	24-SEP-18 00:00	28	42	days	EHT
	12	13-AUG-18	24-SEP-18 00:00	28	42	days	EHT
	13	13-AUG-18	24-SEP-18 00:00	28	42	days	EHT
Hydrocarbons							
CCME Total Extractable Hydrocarbons							
	1	13-AUG-18	18-SEP-18	14	36	days	EHTR
	2	13-AUG-18	19-SEP-18	14	37	days	EHTR
	3	13-AUG-18	18-SEP-18	14	36	days	EHTR
	4	13-AUG-18	20-SEP-18	14	38	days	EHTR
	5	13-AUG-18	19-SEP-18	14	37	days	EHTR
	6	13-AUG-18	19-SEP-18	14	37	days	EHTR
	7	13-AUG-18	19-SEP-18	14	37	days	EHTR
	8	13-AUG-18	19-SEP-18	14	37	days	EHTR
	9	13-AUG-18	20-SEP-18	14	38	days	EHTR
	10	13-AUG-18	20-SEP-18	14	38	days	EHTR
	11	13-AUG-18	20-SEP-18	14	38	days	EHTR
	12	13-AUG-18	19-SEP-18	14	37	days	EHTR
	13	13-AUG-18	19-SEP-18	14	37	days	EHTR

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2158112 were received on 05-SEP-18 07:12.

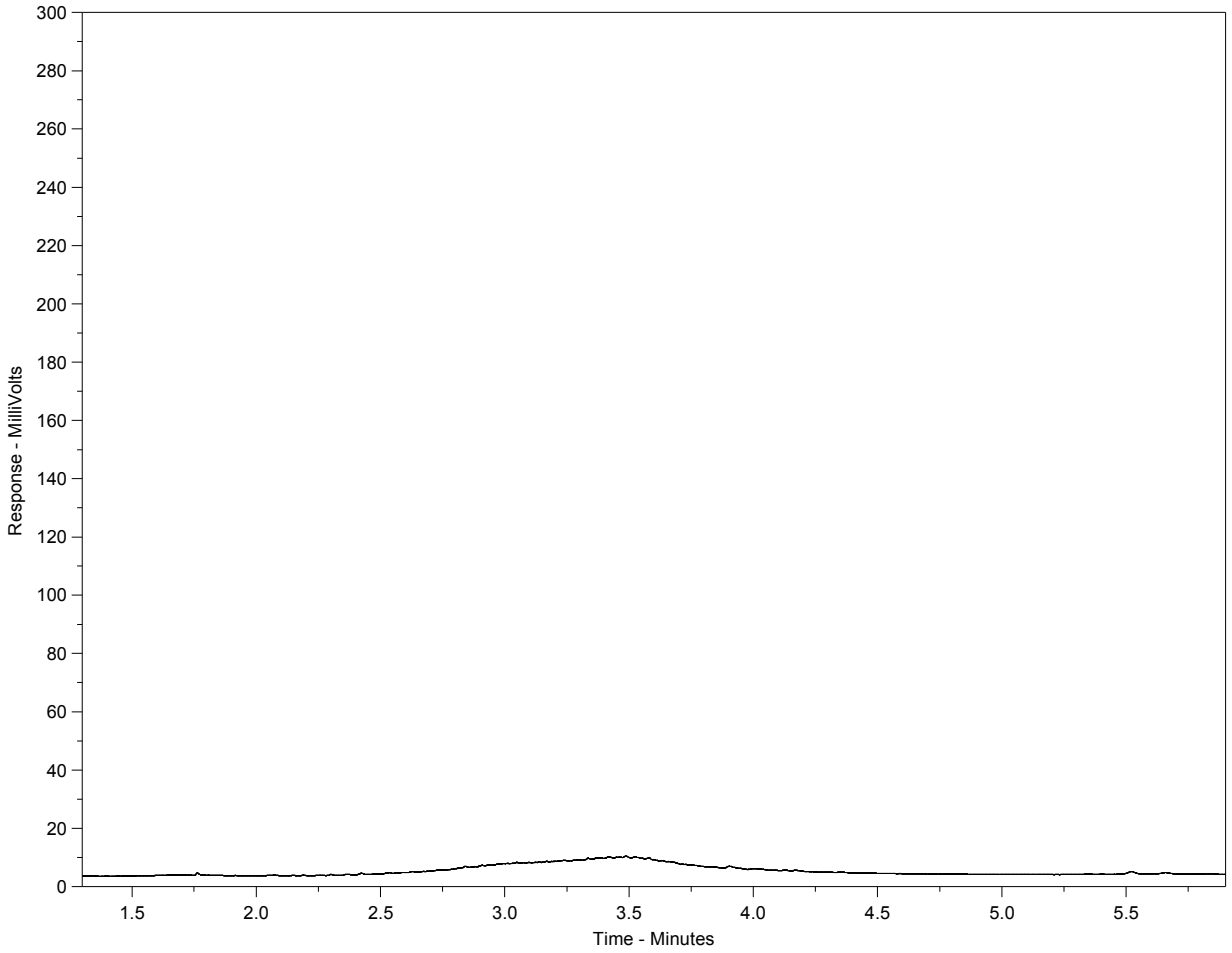
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

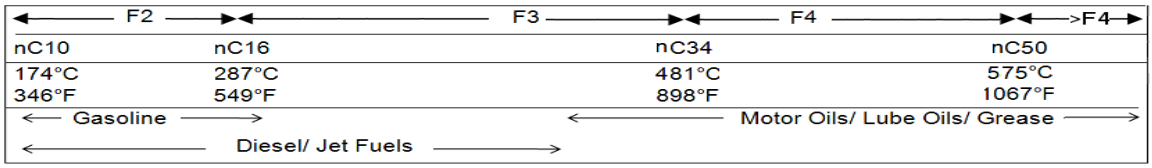
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Hydrocarbon Distribution Report

ALS Sample ID: L2158112-1
Client ID: 18BH20-01





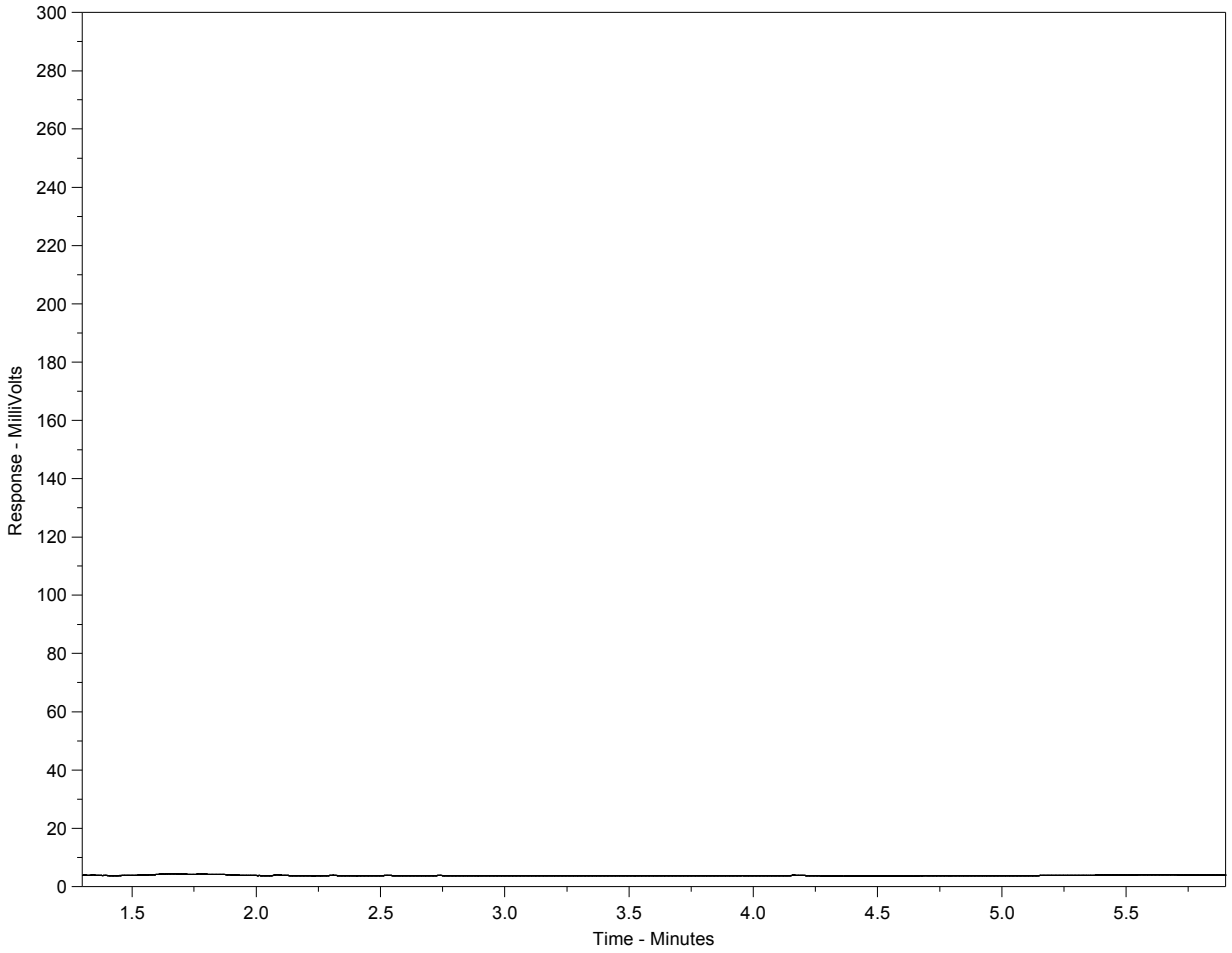
The Canada Wide Standard Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products as well as a number of specified n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note:
This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method. Note that retention times and distribution profiles from reports produced using different GC programs will differ.

Hydrocarbon Distribution Report

ALS Sample ID: L2158112-2
Client ID: 18BH20-02



F2		F3	F4	>F4
nC10	nC16	nC34	nC50	
174°C	287°C	481°C	575°C	
346°F	549°F	898°F	1067°F	
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →				

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Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note:
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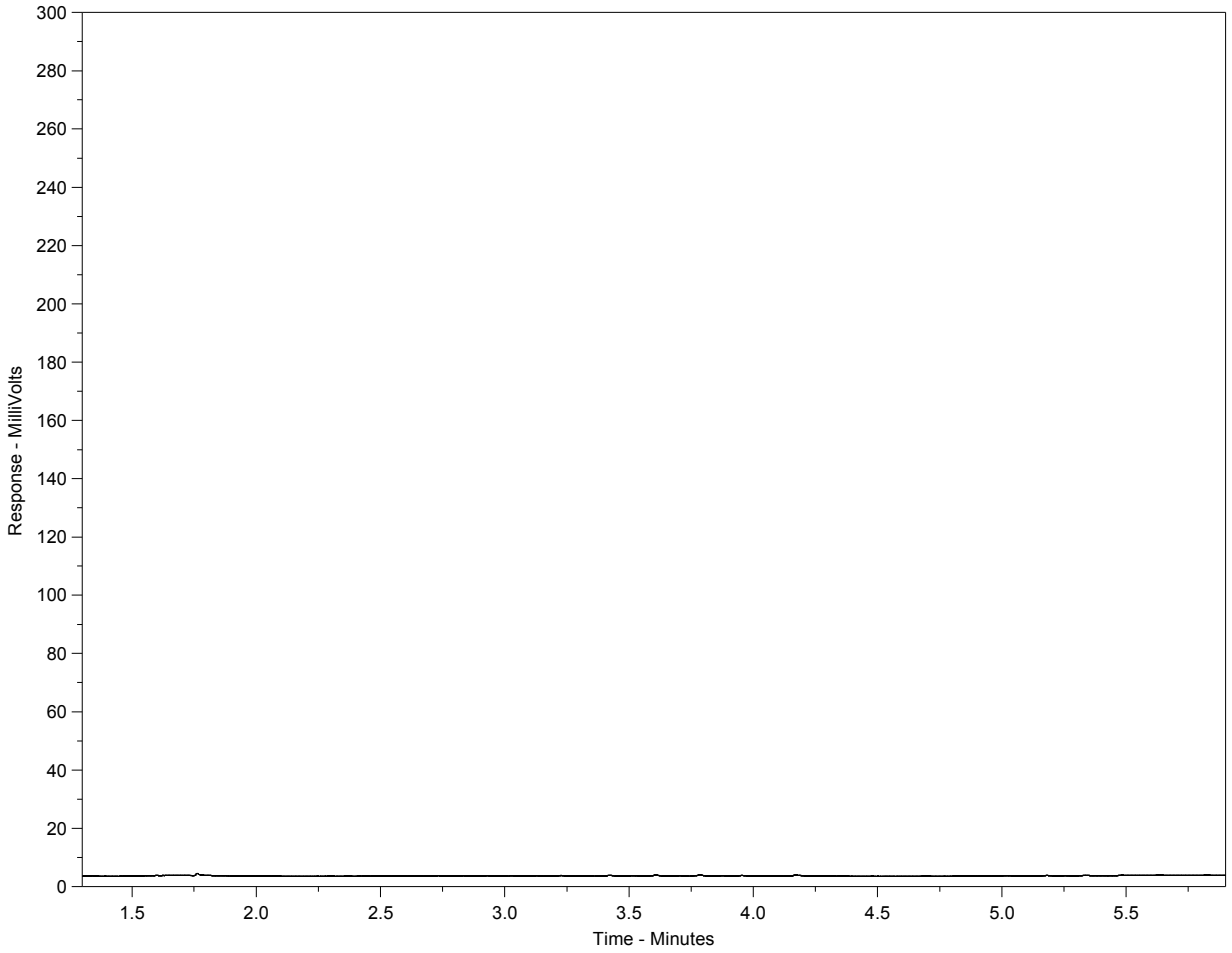
Hydrocarbon Distribution Report

ALS Sample ID: L2158112-3
Client ID: 18BH20-03



F2		F3	F4	>F4
nC10	nC16	nC34	nC50	
174°C	287°C	481°C	575°C	
346°F	549°F	898°F	1067°F	
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →				

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Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note:
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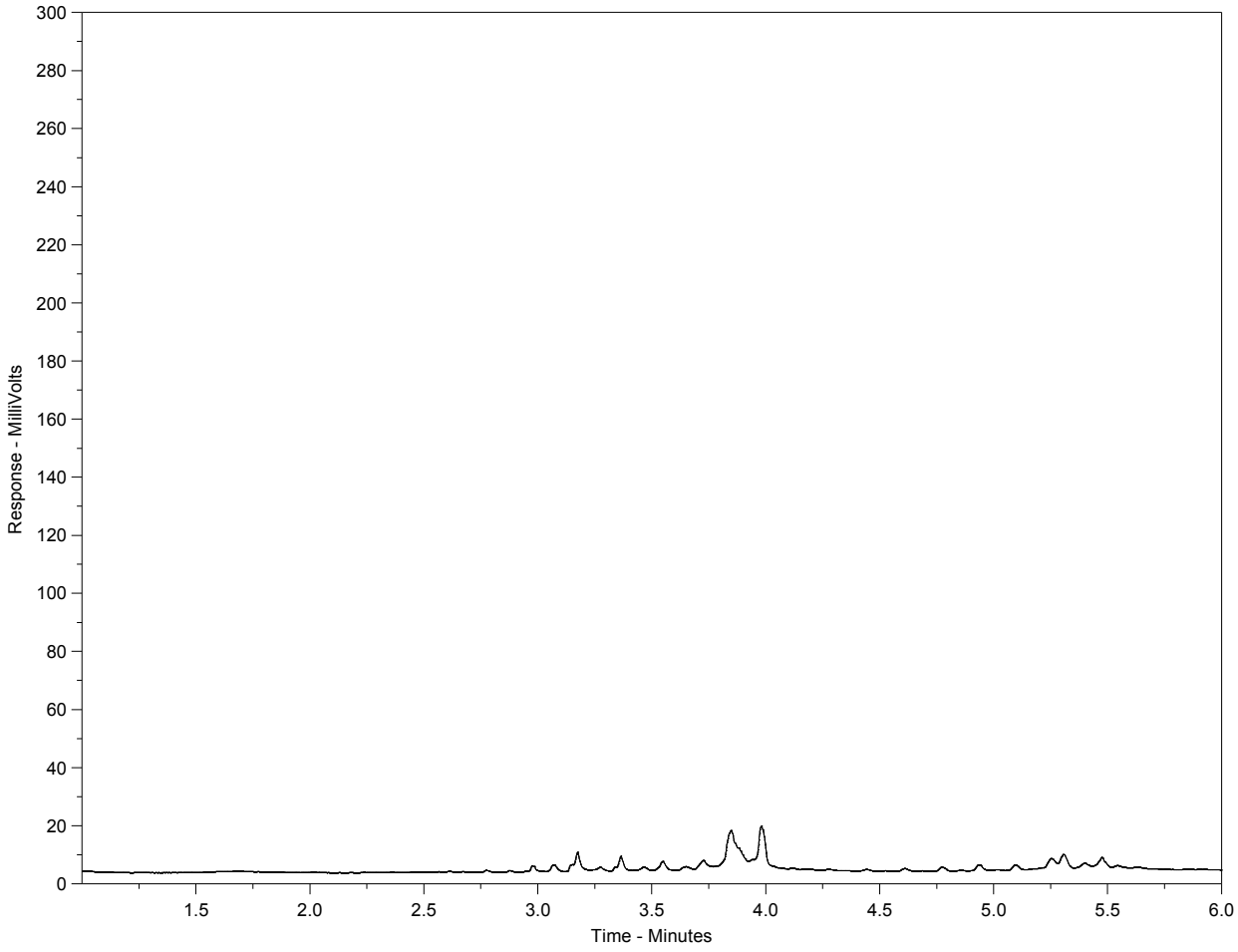
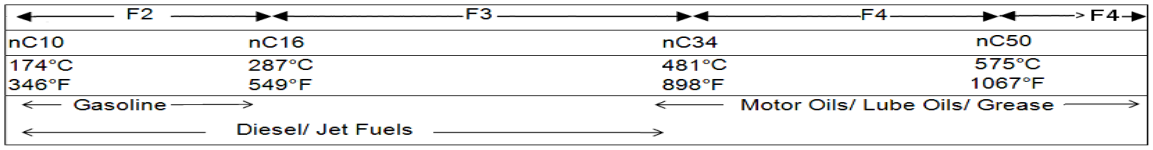
Hydrocarbon Distribution Report

ALS Sample ID: L2158112-4
Client ID: 18BH20-04





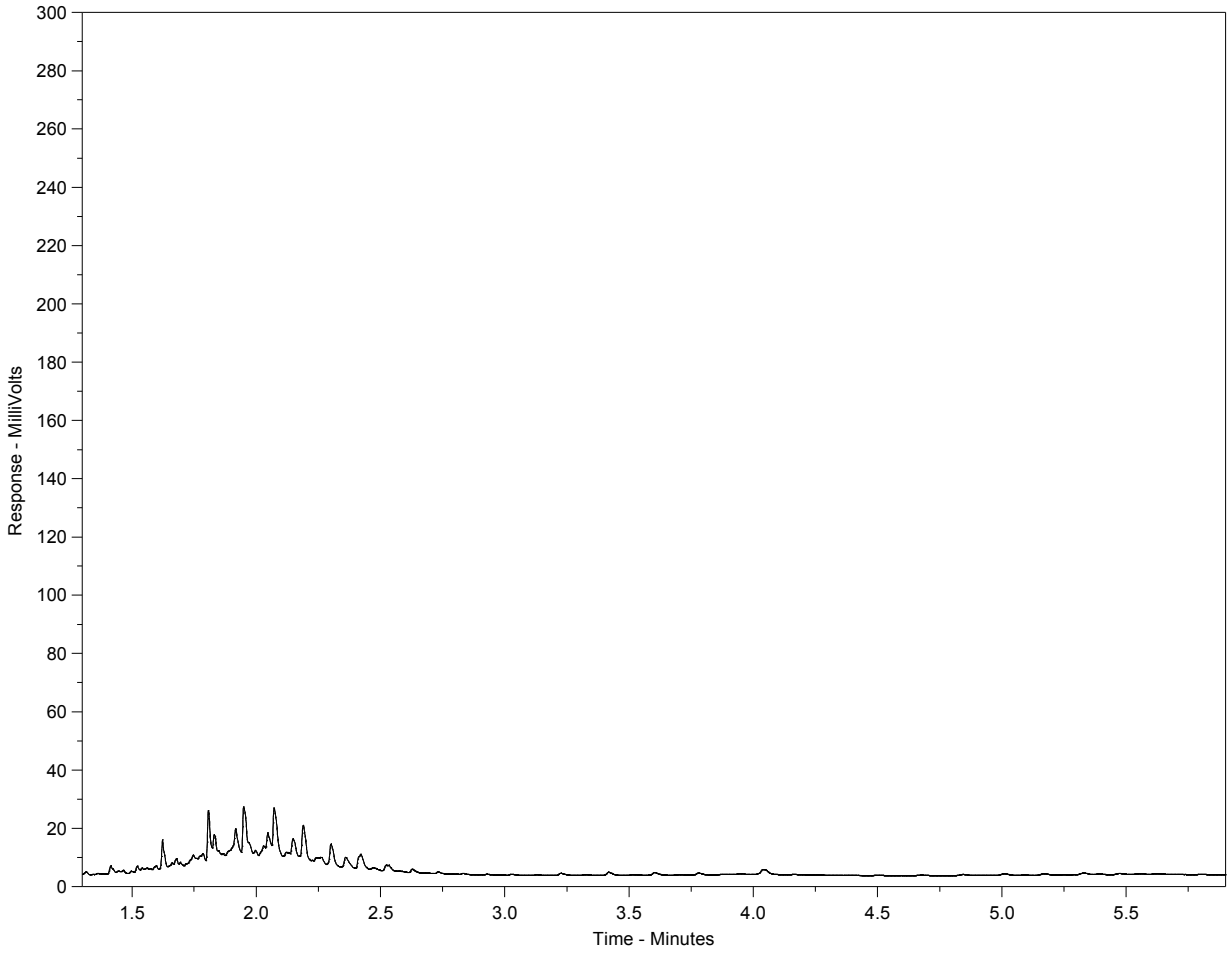
The Canada Wide Standard Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products as well as a number of specified n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note:
This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method. Note that retention times and distribution profiles from reports produced using different GC programs will differ.

Hydrocarbon Distribution Report

ALS Sample ID: L2158112-5
Client ID: 18BH20-05



F2		F3	F4	>F4
nC10	nC16	nC34	nC50	
174°C	287°C	481°C	575°C	
346°F	549°F	898°F	1067°F	
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →				

The Canada Wide Standard Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products as well as a number of specified n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note:
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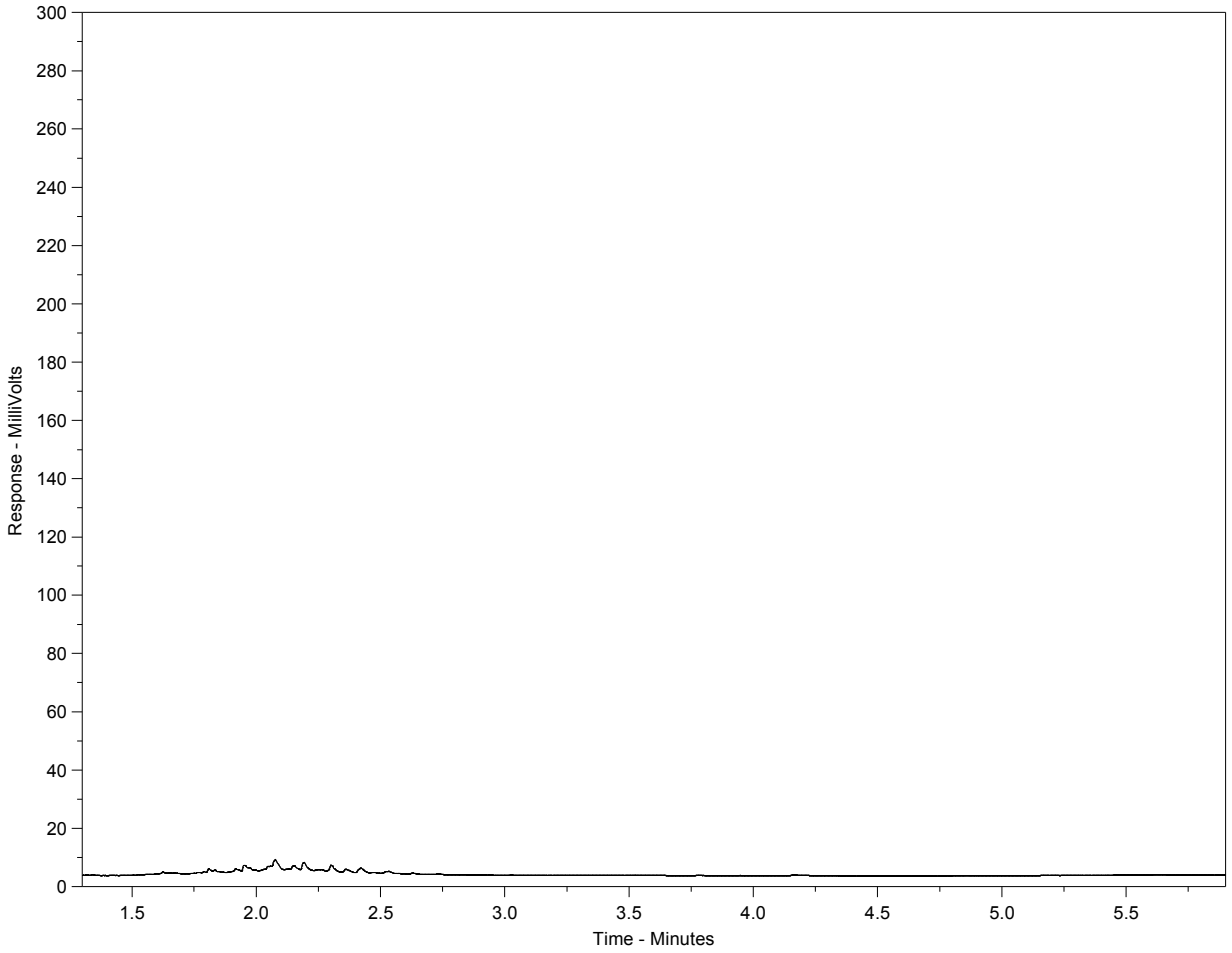
Hydrocarbon Distribution Report

ALS Sample ID: L2158112-6
Client ID: 18BH20-06



F2		F3	F4	>F4
nC10	nC16	nC34	nC50	
174°C	287°C	481°C	575°C	
346°F	549°F	898°F	1067°F	
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →				

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Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note:
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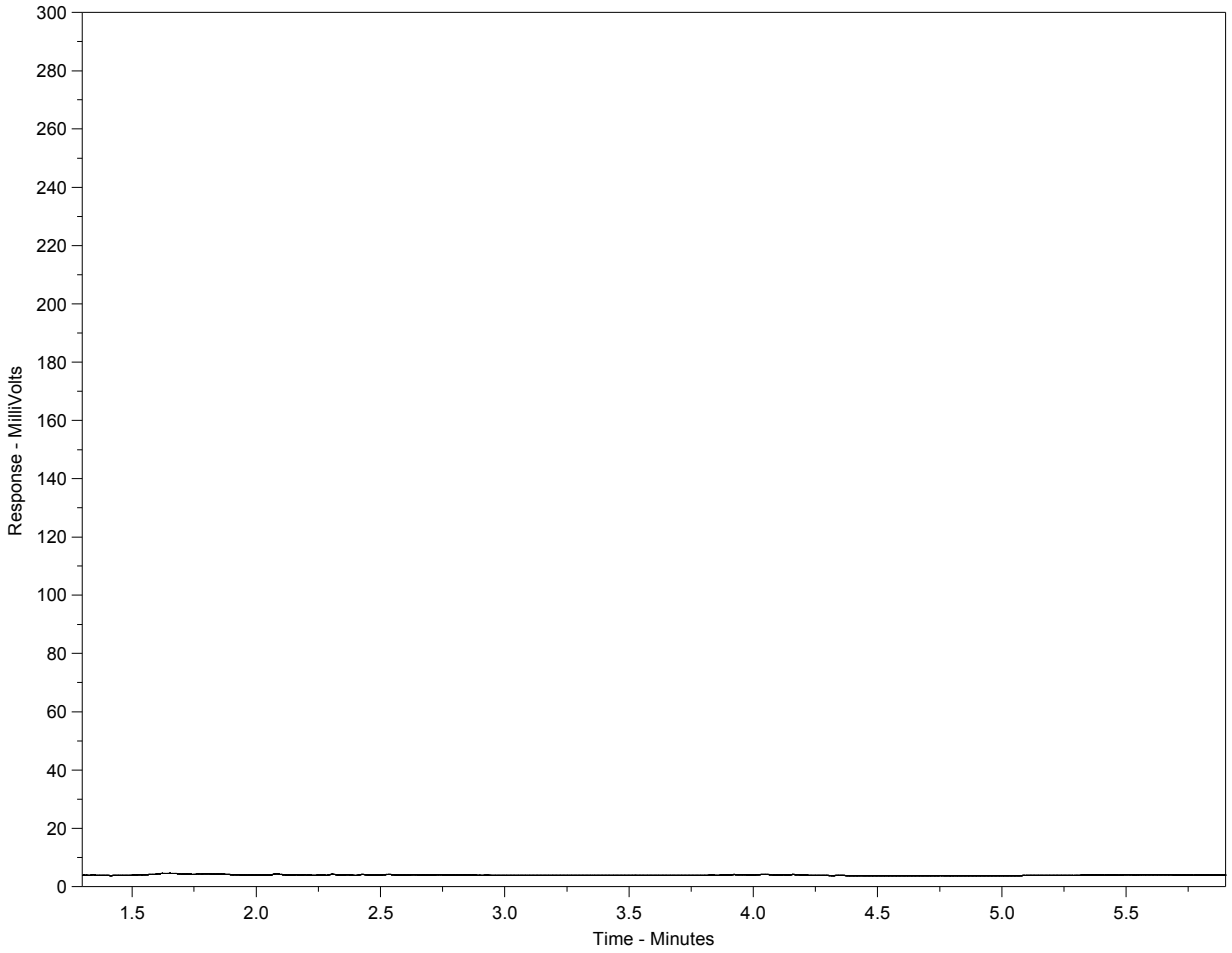
Hydrocarbon Distribution Report

ALS Sample ID: L2158112-7
Client ID: 18BH21-01



F2		F3	F4	>F4
nC10	nC16	nC34	nC50	
174°C	287°C	481°C	575°C	
346°F	549°F	898°F	1067°F	
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →				

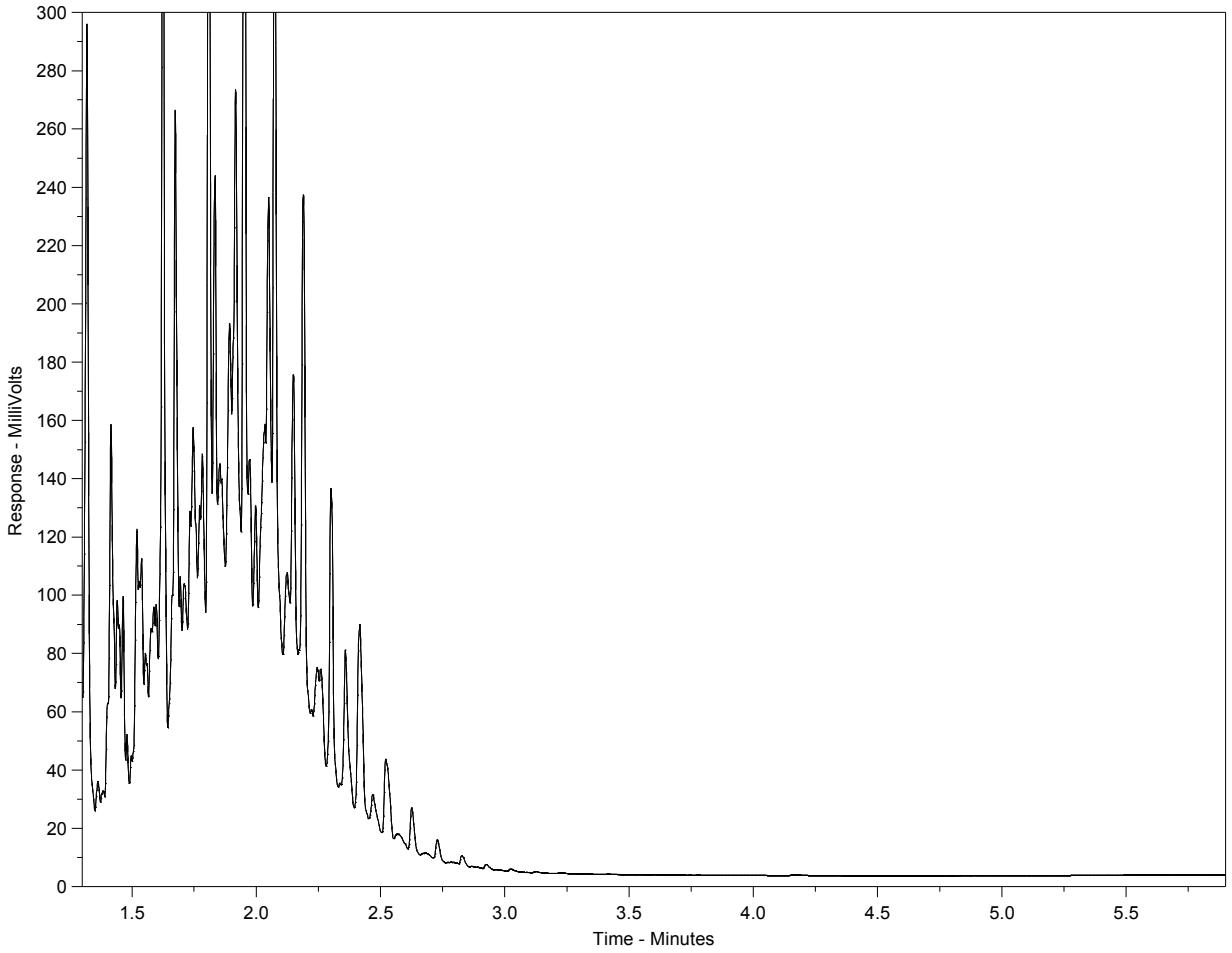
The Canada Wide Standard Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products as well as a number of specified n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note:
This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method. Note that retention times and distribution profiles from reports produced using different GC programs will differ.

Hydrocarbon Distribution Report

ALS Sample ID: L2158112-8
Client ID: 18BH21-02



F2		F3	F4	>F4
nC10	nC16	nC34	nC50	
174°C	287°C	481°C	575°C	
346°F	549°F	898°F	1067°F	
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →				

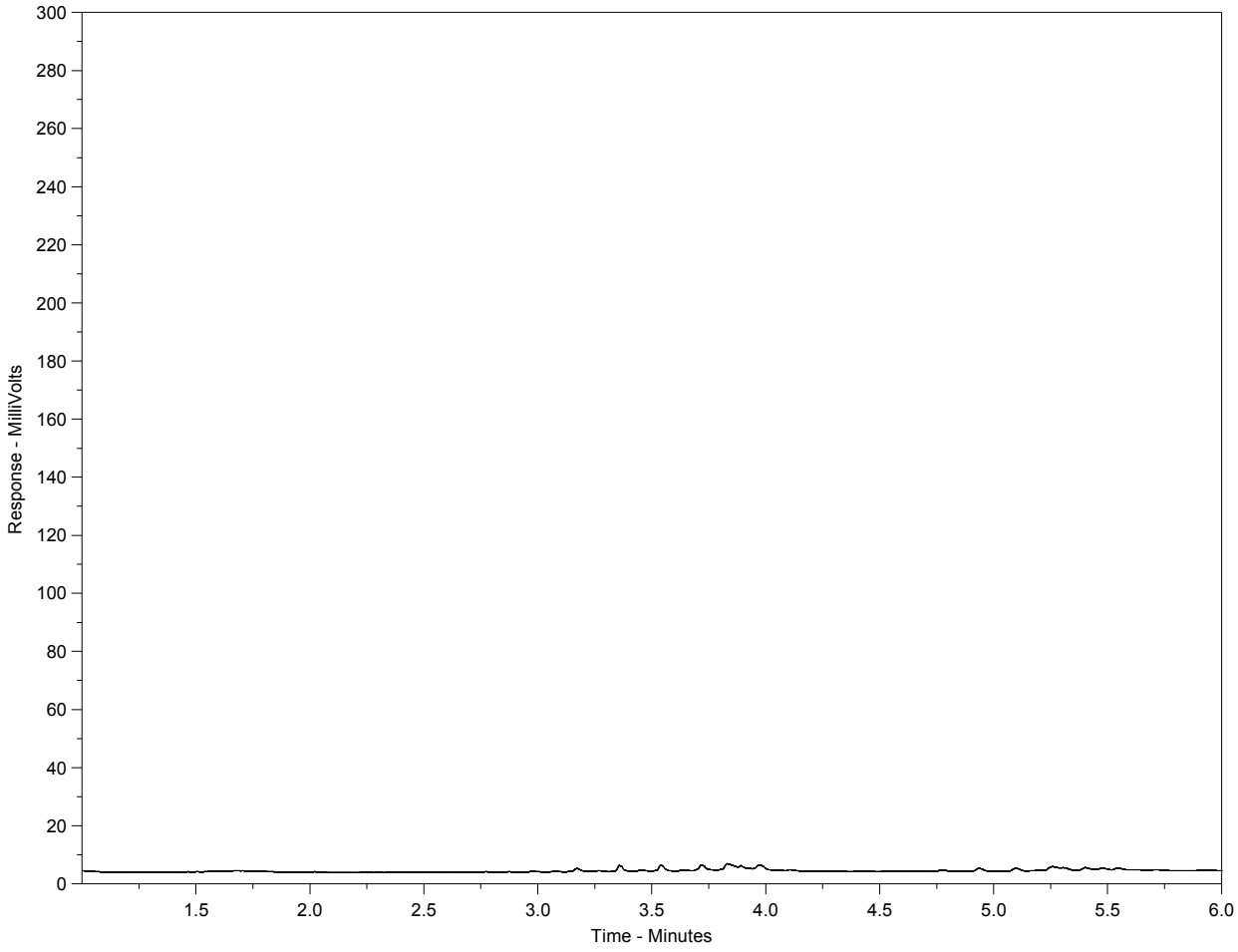
The Canada Wide Standard Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products as well as a number of specified n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

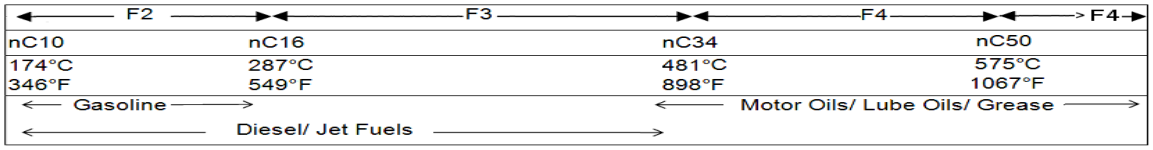
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note:
This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method. Note that retention times and distribution profiles from reports produced using different GC programs will differ.

Hydrocarbon Distribution Report

ALS Sample ID: L2158112-9
Client ID: 18BH21-03





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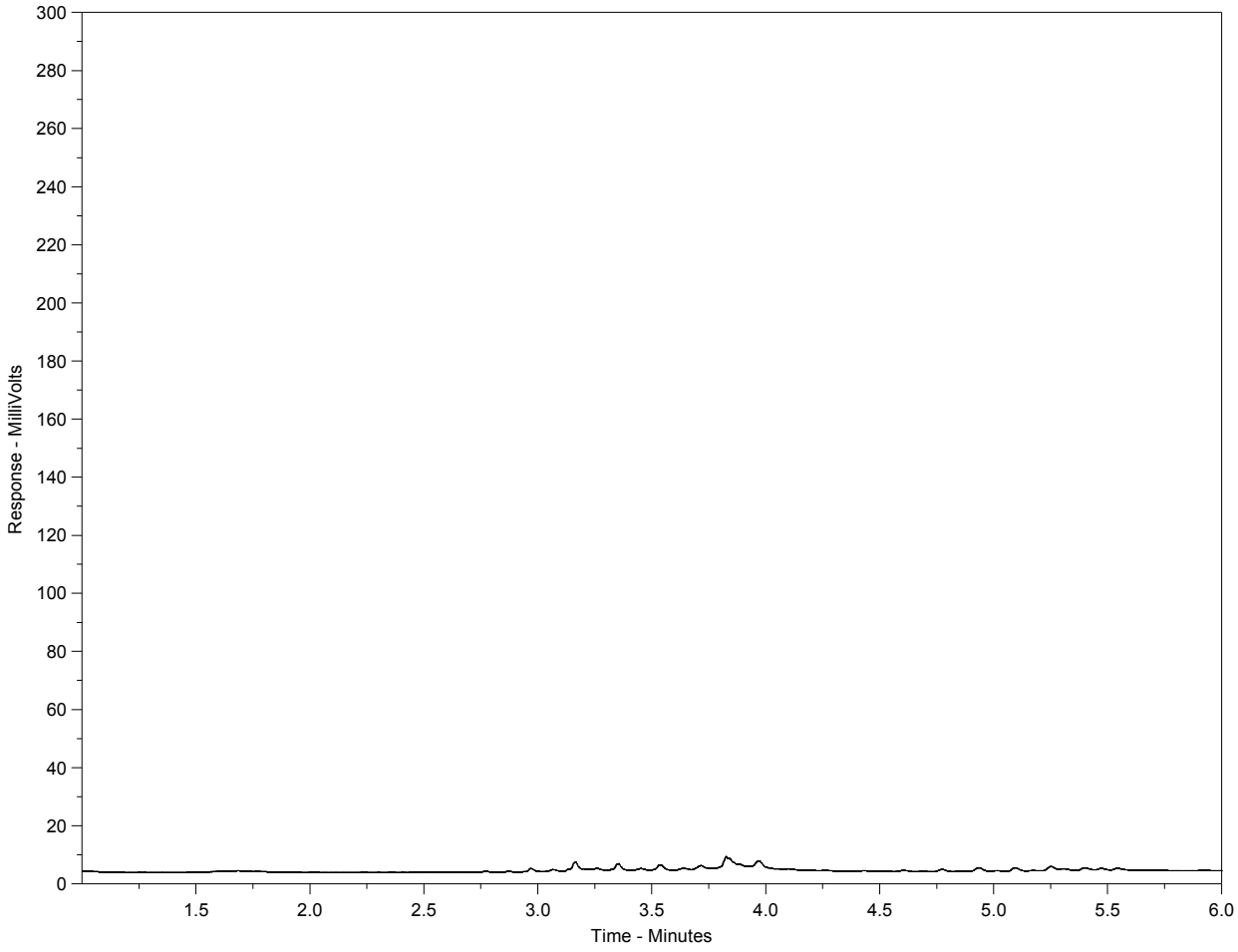
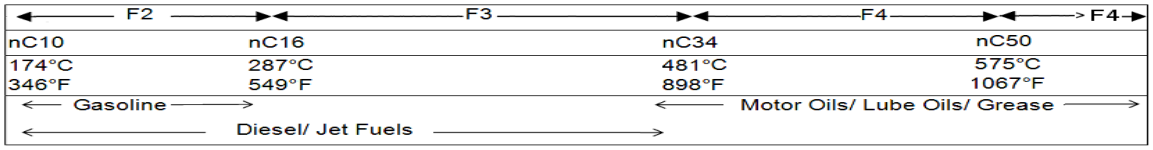
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note:
This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method. Note that retention times and distribution profiles from reports produced using different GC programs will differ.

Hydrocarbon Distribution Report

ALS Sample ID: L2158112-10
Client ID: 18BH21-04





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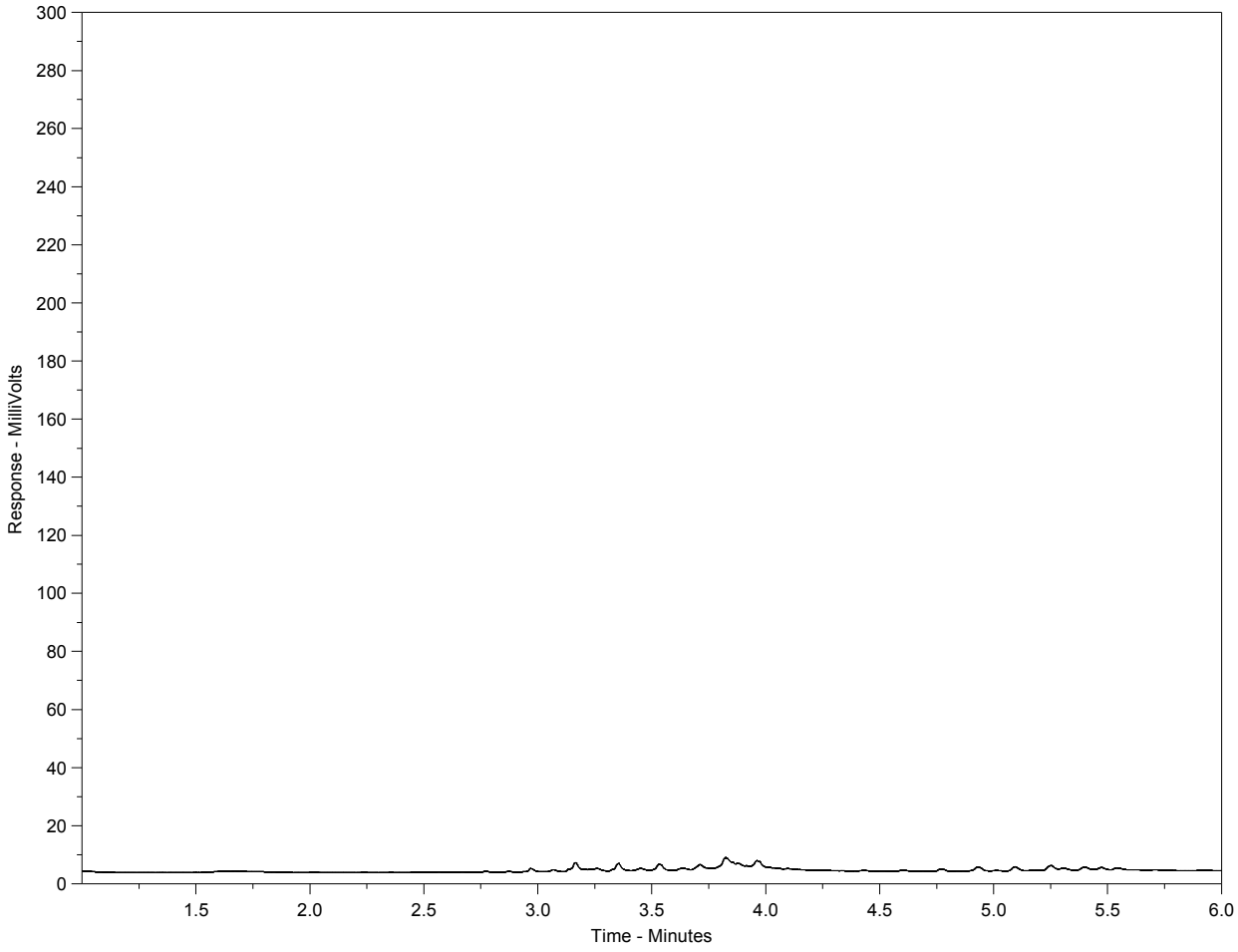
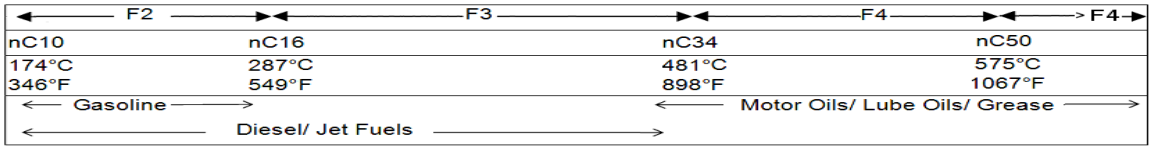
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note:
This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method. Note that retention times and distribution profiles from reports produced using different GC programs will differ.

Hydrocarbon Distribution Report

ALS Sample ID: L2158112-11
Client ID: 18BH21-DUP-01





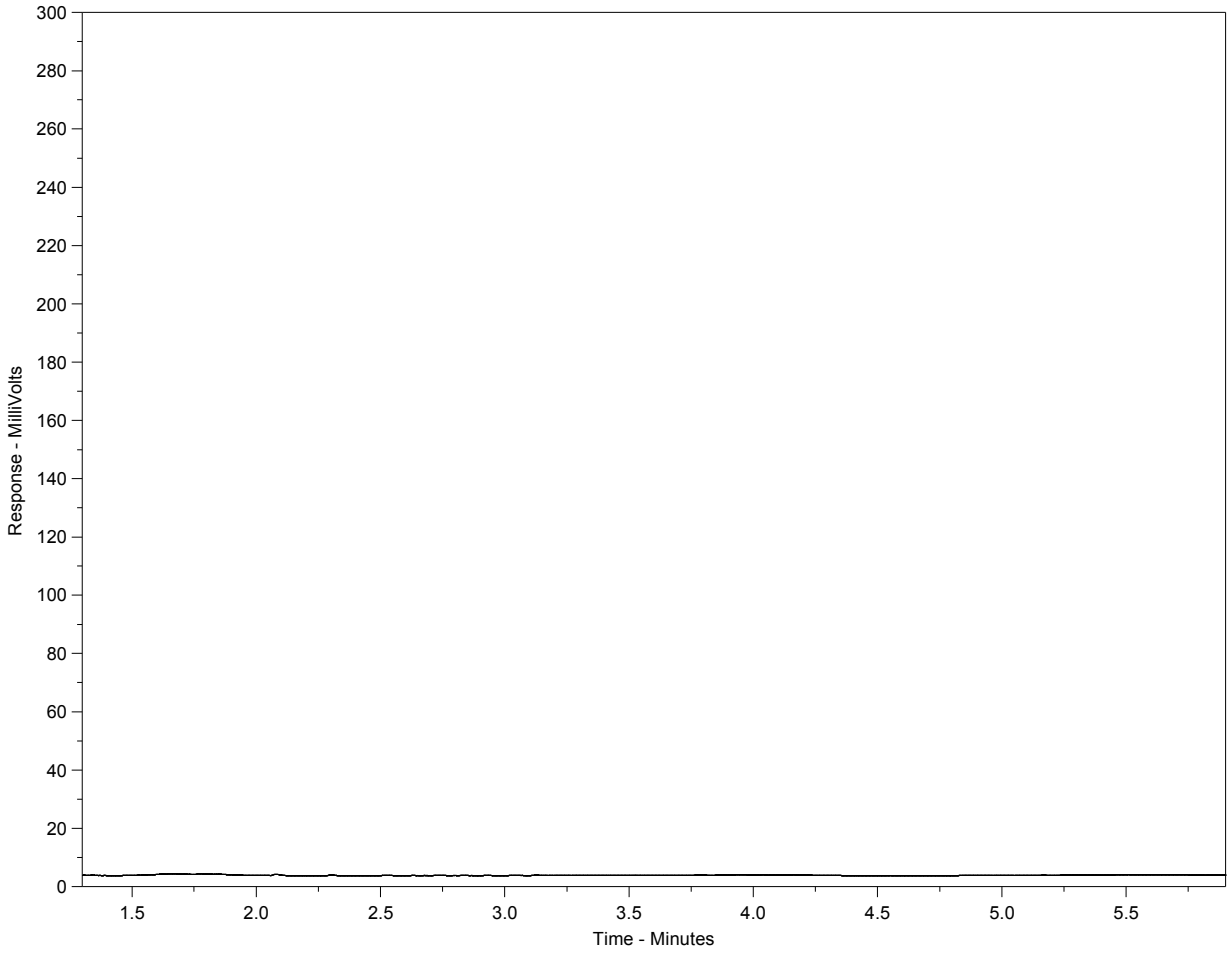
The Canada Wide Standard Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products as well as a number of specified n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note:
This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method. Note that retention times and distribution profiles from reports produced using different GC programs will differ.

Hydrocarbon Distribution Report

ALS Sample ID: L2158112-12
Client ID: 18BH21-05



F2		F3	F4	>F4
nC10	nC16	nC34	nC50	
174°C	287°C	481°C	575°C	
346°F	549°F	898°F	1067°F	
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →				

The Canada Wide Standard Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products as well as a number of specified n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

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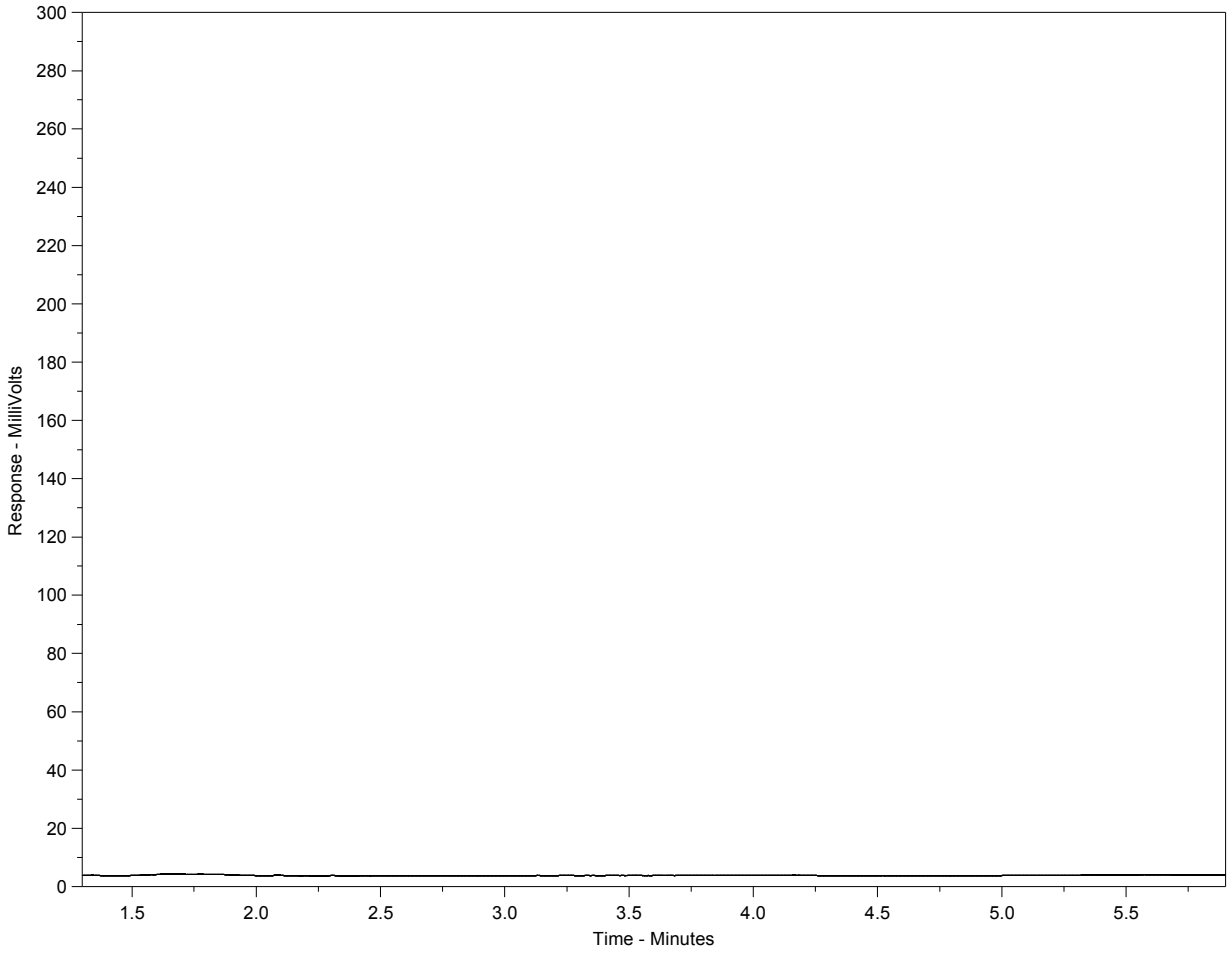
Hydrocarbon Distribution Report

ALS Sample ID: L2158112-13
Client ID: 18BH21-06



F2		F3	F4	>F4
nC10	nC16	nC34	nC50	
174°C	287°C	481°C	575°C	
346°F	549°F	898°F	1067°F	
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →				

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Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note:
This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method. Note that retention times and distribution profiles from reports produced using different GC programs will differ.

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2158112-COFC

COC Number: 14 -

Page 1 of 4

Report To		Report Format / Distribution		Turnaround Time (TAT) (Rush Turnaround Time (TAT) is not available for all tests)
Company:	Wood plc	Select Report Format:	☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)	R ☑ Regular (Standard TAT if received by 3 pm - business days)
Contact:	Brian Geddes	Quality Control (QC) Report with Report	☑ Yes ☐ No	P ☐ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
Address:	#401-1925 18th Avenue NE Calgary, AB, T2E 7T8	☐ Criteria on Report - provide details below if box checked Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX	E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge
Phone:	403-387-1639	Email 1 or Fax	brian.geddes@woodplc.com	Specify Date Required for E2,E or P:
		Email 2		

Invoice To	Same as Report To ☑ Yes ☐ No	Invoice Distribution		Analysis Request
	Copy of Invoice with Report ☑ Yes ☐ No	Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below
Company:		Email 1 or Fax	brian.geddes@woodplc.com	
Contact:		Email 2		

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:		Approver ID:	Cost Center:
Job #:	VE52705B	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	

ALS Lab Work Order # (lab use only): L2158112

ALS Contact: Suzette Chin

Sampler: CJ/LB

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Total Metals	Hydrocarbons (LEPH/HEPH)	PCB's	Asbestos	Number of Containers
	18-BH20-01	13-Aug-18		Soil	R	R	R	R	
	18-BH20-02	13-Aug-18		Soil	R	R	R	R	
	18-BH20-03	13-Aug-18		Soil	R	R	R	R	
	18-BH20-04	13-Aug-18		Soil	R	R	R	R	
	18-BH20-05	13-Aug-18		Soil	R	R	R	R	
	18-BH20-06	13-Aug-18		Soil	R	R	R	R	
	18-BH21-01	13-Aug-18		Soil	R	R	R	R	
	18-BH21-02	13-Aug-18		Soil	R	R	R	R	
	18-BH21-03	13-Aug-18		Soil	R	R	R	R	
	18-BH21-04	13-Aug-18		Soil	R	R	R	R	
	18-BH21-DUP-01	13-Aug-18		Soil	R	R	R	R	
	18-BH21-05	13-Aug-18		Soil	R	R	R	R	

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☐ No Are samples for human drinking water use? ☐ Yes ☐ No	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ | SIF Observations Yes ☐ No ☐

Ice packs Yes ☐ No ☐ | Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
8.2					

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by: R	Date: 9/5/18	Time: 7:12	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2158112-COFC

COC Number: 14 -

Report To		Report Format / Distribution	Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)
Company:	Wood plc	Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)	R ☑ Regular (Standard TAT if received by 3 pm - business days)
Contact:	Brian Geddes	Quality Control (QC) Report with Report ☑ Yes ☐ No	P ☐ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
Address:	#401-1925 18th Avenue NE Calgary, AB, T2E 7T8	☐ Criteria on Report - provide details below if box checked Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge
Phone:	403-387-1639	Email 1 or Fax brian.geddes@woodplc.com	Specify Date Required for E2,E or P:
		Email 2	Analysis Request

Invoice To	Same as Report To ☑ Yes ☐ No	Invoice Distribution	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below
	Copy of Invoice with Report ☑ Yes ☐ No	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	
Company:		Email 1 or Fax brian.geddes@woodplc.com	
Contact:		Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:		Approver ID:	Cost Center:
Job #:	VE52705B	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)		ALS Contact:	Sampler:

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Total Metals	Asbestos	Number of Containers
	18-TAIL-05	18-Aug-18		Soil	R	R	
	18-BH01-01	28-Aug-18		Soil	R	R	
	18-BH01-02	28-Aug-18		Soil	R	R	
	18-BH09-01	26-Aug-18		Soil	R	R	
	18-BH09-02	26-Aug-18		Soil	R	R	
	18-WASTE-01	28-Aug-18		Soil	R	R	
	18-WASTE-02	28-Aug-18		Soil	R	R	
	18-WASTE-03	28-Aug-18		Soil	R	R	
	18-WASTE-04	28-Aug-18		Soil	R	R	
	18-WASTE-05	28-Aug-18		Soil	R	R	
	18-BH10-01	28-Aug-18		Soil	R	R	
	18-BH10-02	27-Aug-18		Soil	R	R	

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☐ No Are samples for human drinking water use? ☐ Yes ☐ No	

SAMPLE CONDITION AS RECEIVED (lab use only)					
Frozen ☐		SIF Observations	Yes ☐	No ☐	
Ice packs	Yes ☐ No ☐	Custody seal intact	Yes ☐	No ☐	
Cooling Initiated ☐					
INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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NA-FMA-03706e v09 Front/04 January 2014

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1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2158112-COFC

COC Number: 14 -

Report To		Report Format / Distribution	Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)
Company:	Wood plc	Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)	R ☑ Regular (Standard TAT if received by 3 pm - business days)
Contact:	Brian Geddes	Quality Control (QC) Report with Report ☑ Yes ☐ No	P ☐ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
Address:	#401-1925 18th Avenue NE Calgary, AB, T2E 7T8	☐ Criteria on Report - provide details below if box checked Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge
Phone:	403-387-1639	Email 1 or Fax brian.geddes@woodplc.com	Specify Date Required for E2,E or P:
		Email 2	Analysis Request

Invoice To	Same as Report To ☑ Yes ☐ No	Invoice Distribution	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below
	Copy of Invoice with Report ☑ Yes ☐ No	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	
Company:		Email 1 or Fax brian.geddes@woodplc.com	
Contact:		Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:		Approver ID:	Cost Center:
Job #:	VE52705B	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)		ALS Contact:	Sampler:

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Total Metals	Hydrocarbons (LEPH/HEPH)	PCB's	Asbestos										Number of Containers
	18-BH21-06	13-Aug-18		Soil	R	R	R	R										
	18-BH11-01	18-Aug-18		Soil	R			R										
	18-BH12-01	18-Aug-18		Soil	R			R										
	18-BH13-01	18-Aug-18		Soil	R			R										
	18-BH14-01	18-Aug-18		Soil	R			R										
	18-BH15-01	18-Aug-18		Soil	R			R										
	18-BH16-01	18-Aug-18		Soil	R			R										
	18-BH17-01	18-Aug-18		Soil	R			R										
	18-TAIL-01	18-Aug-18		Soil	R			R										
	18-TAIL-02	18-Aug-18		Soil	R			R										
	18-TAIL-03	18-Aug-18		Soil	R			R										
	18-TAIL-04	18-Aug-18		Soil	R			R										

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☐ No	
Are samples for human drinking water use? ☐ Yes ☐ No	

SAMPLE CONDITION AS RECEIVED (lab use only)			
Frozen ☐		SIF Observations Yes ☐ No ☐	
Ice packs Yes ☐ No ☐		Custody seal intact Yes ☐ No ☐	
Cooling Initiated ☐			
INITIAL COOLER TEMPERATURES °C		FINAL COOLER TEMPERATURES °C	

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:

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NA-FM-0206e v09 Front04 January 2014

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1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2158112-COFC

COC Number: 14 -

Report To		Report Format / Distribution		Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)
Company:	Wood plc	Select Report Format:	☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)	R ☑ Regular (Standard TAT if received by 3 pm - business days)
Contact:	Brian Geddes	Quality Control (QC) Report with Report	☑ Yes ☐ No	P ☐ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
Address:	#401-1925 18th Avenue NE Calgary, AB, T2E 7T8	☐ Criteria on Report - provide details below if box checked Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX	E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge
Phone:	403-387-1639	Email 1 or Fax	brian.geddes@woodplc.com	Specify Date Required for E2,E or P:
		Email 2		

Invoice To	Same as Report To ☑ Yes ☐ No	Invoice Distribution		Analysis Request
	Copy of Invoice with Report ☑ Yes ☐ No	Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below
Company:		Email 1 or Fax	brian.geddes@woodplc.com	
Contact:		Email 2		

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:		Approver ID:	Cost Center:
Job #:	VE52705B	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)		ALS Contact:	Sampler:

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Total Metals	Asbestos	Number of Containers
	18-BH14-02	29-Aug-18		Soil	R	R	
				Soil			
				Soil			
				Soil			
				Soil			
				Soil			
				Soil			
				Soil			
				Soil			
				Soil			
				Soil			
				Soil			

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☐ No Are samples for human drinking water use? ☐ Yes ☐ No	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen	☐	SIF Observations	Yes ☐	No	☐
Ice packs	Yes ☐	No ☐	Custody seal intact	Yes ☐	No ☐
Cooling Initiated	☐				

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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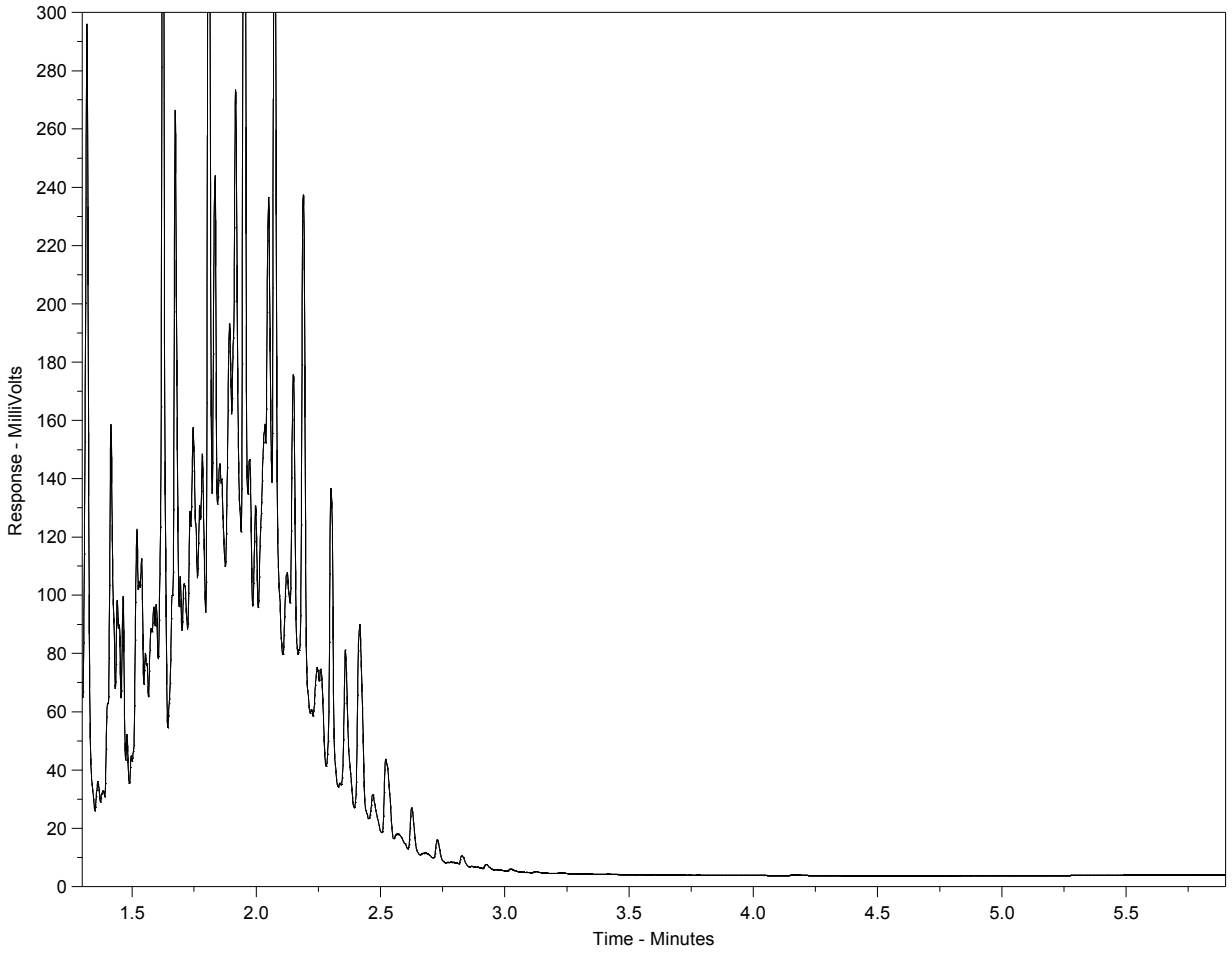
1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Hydrocarbon Distribution Report

ALS Sample ID: L2158112-8
Client ID: 18BH21-02



F2		F3	F4	>F4
nC10	nC16	nC34	nC50	
174°C	287°C	481°C	575°C	
346°F	549°F	898°F	1067°F	
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →				

The Canada Wide Standard Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products as well as a number of specified n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note:
This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method. Note that retention times and distribution profiles from reports produced using different GC programs will differ.

Wood E&IS, a Division of Wood Canada Limited
ATTN: Brian Geddes
#401, 1925 - 18 Ave NE
CALGARY AB T2E 7T8

Date Received: 08-SEP-18
Report Date: 06-MAR-19 16:43 (MT)
Version: FINAL REV. 3

Client Phone: 403-387-1639

Certificate of Analysis

Lab Work Order #: L2160851

Project P.O. #: NOT SUBMITTED
Job Reference: VE52705B
C of C Numbers:
Legal Site Desc:

Comments: ADDITIONAL 21-JAN-19 09:10
ADDITIONAL 17-SEP-18 16:59

Suzette Chin
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2160851-1 18-BH02-01							
Sampled By: CJ/LB on 03-SEP-18							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.252		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248008
Quantitation of asbestos by point count							
Asbestos: Chrysotile	0.60		0.10	%		14-SEP-18	R4216477
Other Fibres: Cellulose	Trace <1		1.0	%		14-SEP-18	R4216477
Mica	1-5		1.0	%		14-SEP-18	R4216477
Metals in Waste by CRC ICPMS							
Aluminum (Al)	7030		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Antimony (Sb)	3.00		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Arsenic (As)	12.5		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Barium (Ba)	48.1		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Beryllium (Be)	0.55		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Bismuth (Bi)	0.30		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Boron (B)	<5.0		5.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cadmium (Cd)	2.34		0.020	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Calcium (Ca)	33500		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Chromium (Cr)	20.5		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cobalt (Co)	14.2		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Copper (Cu)	47.4		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Iron (Fe)	33500		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lead (Pb)	22.3		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lithium (Li)	15.7		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Magnesium (Mg)	8540		20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Manganese (Mn)	373		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Molybdenum (Mo)	20.0		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Nickel (Ni)	67.7		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Phosphorus (P)	538		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Potassium (K)	350		100	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Selenium (Se)	6.78		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Silver (Ag)	0.75		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sodium (Na)	<50		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Strontium (Sr)	172		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sulfur	7600		1000	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Thallium (Tl)	0.239		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tin (Sn)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Titanium (Ti)	2.6		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tungsten	<0.50		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Uranium (U)	1.89		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Vanadium (V)	22.6		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zinc (Zn)	198		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zirconium (Zr)	11.8		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
L2160851-2 18-BH03-01							
Sampled By: CJ/LB on 03-SEP-18							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.210		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248008
Bulk Asbestos Content							
Asbestos: Chrysotile	25-50		1	%		14-SEP-18	R4216477
Other Fibres: Cellulose	Trace <1		1	%		14-SEP-18	R4216477
Mica	Trace <1		1	%		14-SEP-18	R4216477
Metals in Waste by CRC ICPMS							
Aluminum (Al)	5730		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2160851-2 18-BH03-01							
Sampled By: CJ/LB on 03-SEP-18							
Matrix: soil							
Metals in Waste by CRC ICPMS							
Antimony (Sb)	8.38		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Arsenic (As)	35.7		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Barium (Ba)	221		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Beryllium (Be)	0.28		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Bismuth (Bi)	0.38		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Boron (B)	34.0		5.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cadmium (Cd)	0.939		0.020	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Calcium (Ca)	15800		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Chromium (Cr)	681		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cobalt (Co)	53.8		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Copper (Cu)	31.4		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Iron (Fe)	38500		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lead (Pb)	7.05		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lithium (Li)	12.8		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Magnesium (Mg)	85600		20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Manganese (Mn)	525		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Molybdenum (Mo)	3.70		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Nickel (Ni)	1010		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Phosphorus (P)	597		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Potassium (K)	290		100	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Selenium (Se)	2.06		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Silver (Ag)	0.37		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sodium (Na)	<50		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Strontium (Sr)	103		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sulfur	<1000		1000	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Thallium (Tl)	0.260		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tin (Sn)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Titanium (Ti)	33.2		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tungsten	<0.50		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Uranium (U)	1.47		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Vanadium (V)	24.8		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zinc (Zn)	75.3		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zirconium (Zr)	3.9		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
L2160851-3 18-BH04-01							
Sampled By: CJ/LB on 03-SEP-18							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.203		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248008
Quantitation of asbestos by point count							
Asbestos: Chrysotile	0.70		0.10	%		14-SEP-18	R4216477
Other Fibres: Cellulose	1-5		1.0	%		14-SEP-18	R4216477
Mica	1-5		1.0	%		14-SEP-18	R4216477
Metals in Waste by CRC ICPMS							
Aluminum (Al)	10600		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Antimony (Sb)	2.32		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Arsenic (As)	14.1		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Barium (Ba)	56.9		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Beryllium (Be)	0.51		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Bismuth (Bi)	0.33		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Boron (B)	<5.0		5.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cadmium (Cd)	1.89		0.020	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2160851-3 18-BH04-01							
Sampled By: CJ/LB on 03-SEP-18							
Matrix: soil							
Metals in Waste by CRC ICPMS							
Calcium (Ca)	17600		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Chromium (Cr)	22.7		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cobalt (Co)	15.7		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Copper (Cu)	54.9		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Iron (Fe)	35700		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lead (Pb)	21.9		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lithium (Li)	20.1		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Magnesium (Mg)	8030		20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Manganese (Mn)	381		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Molybdenum (Mo)	15.9		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Nickel (Ni)	66.0		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Phosphorus (P)	608		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Potassium (K)	360		100	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Selenium (Se)	6.02		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Silver (Ag)	0.53		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sodium (Na)	<50		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Strontium (Sr)	96.4		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sulfur	1700		1000	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Thallium (Tl)	0.213		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tin (Sn)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Titanium (Ti)	3.2		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tungsten	<0.50		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Uranium (U)	1.60		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Vanadium (V)	23.9		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zinc (Zn)	174		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zirconium (Zr)	8.0		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
L2160851-4 18-BH05-01							
Sampled By: CJ/LB on 03-SEP-18							
Matrix: soil							
Miscellaneous Parameters							
% Moisture	10.4		0.25	%		23-JAN-19	R4462788
Hexavalent Chromium	<0.10		0.10	mg/kg	26-JAN-19	27-JAN-19	R4470779
Chromium, Trivalent	24.9		0.50	mg/kg		27-JAN-19	
Mercury (Hg)	0.252		0.050	mg/kg	24-SEP-18	24-SEP-18	R4236441
Special Request	See Attached					06-MAR-19	R3880127
Quantitation of asbestos by point count							
Asbestos By Point Count	<0.10		0.10	%		14-SEP-18	R4216477
Other Fibres: Cellulose	1-5		1.0	%		14-SEP-18	R4216477
Mica	1-5		1.0	%		14-SEP-18	R4216477
Metals in Soil by CRC ICPMS							
Aluminum (Al)	14400		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Antimony (Sb)	4.04		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Arsenic (As)	21.3		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Barium (Ba)	56.5		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Beryllium (Be)	0.65		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Bismuth (Bi)	0.43		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Boron (B)	<5.0		5.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Cadmium (Cd)	3.24		0.020	mg/kg	24-SEP-18	25-SEP-18	R4240927
Calcium (Ca)	47100		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Chromium (Cr)	24.9		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Cobalt (Co)	19.2		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2160851-4 18-BH05-01							
Sampled By: CJ/LB on 03-SEP-18							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Copper (Cu)	68.1		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Iron (Fe)	48100		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Lead (Pb)	29.4		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Lithium (Li)	23.9		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Magnesium (Mg)	12700		20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Manganese (Mn)	574		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Molybdenum (Mo)	29.1		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Nickel (Ni)	87.9		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Phosphorus (P)	999		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Potassium (K)	590		100	mg/kg	24-SEP-18	25-SEP-18	R4240927
Selenium (Se)	8.94		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Silver (Ag)	0.75		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Sodium (Na)	78		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Strontium (Sr)	204		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Sulfur (S)	10700		1000	mg/kg	24-SEP-18	25-SEP-18	R4240927
Thallium (Tl)	0.275		0.050	mg/kg	24-SEP-18	25-SEP-18	R4240927
Tin (Sn)	<2.0		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Titanium (Ti)	5.0		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Tungsten (W)	<0.50		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Uranium (U)	2.51		0.050	mg/kg	24-SEP-18	25-SEP-18	R4240927
Vanadium (V)	40.0		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Zinc (Zn)	283		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Zirconium (Zr)	16.5		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
L2160851-5 18-BH06-01							
Sampled By: CJ/LB on 03-SEP-18							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.100		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248008
Bulk Asbestos Content							
Asbestos: Chrysotile	1-5		1	%		14-SEP-18	R4216477
Other Fibres	N.R		1	%		14-SEP-18	R4216477
Other Fibres: Cellulose	Trace <1		1	%		14-SEP-18	R4216477
Mica	1-5		1	%		14-SEP-18	R4216477
Metals in Waste by CRC ICPMS							
Aluminum (Al)	14200		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Antimony (Sb)	1.10		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Arsenic (As)	8.17		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Barium (Ba)	44.3		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Beryllium (Be)	0.43		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Bismuth (Bi)	0.28		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Boron (B)	<5.0		5.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cadmium (Cd)	0.653		0.020	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Calcium (Ca)	6760		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Chromium (Cr)	35.7		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cobalt (Co)	13.3		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Copper (Cu)	33.3		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Iron (Fe)	29700		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lead (Pb)	17.2		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lithium (Li)	24.7		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Magnesium (Mg)	9580		20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Manganese (Mn)	310		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2160851-5 18-BH06-01							
Sampled By: CJ/LB on 03-SEP-18							
Matrix: soil							
Metals in Waste by CRC ICPMS							
Molybdenum (Mo)	6.52		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Nickel (Ni)	53.0		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Phosphorus (P)	483		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Potassium (K)	290		100	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Selenium (Se)	1.72		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Silver (Ag)	0.25		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sodium (Na)	56		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Strontium (Sr)	36.3		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sulfur	2200		1000	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Thallium (Tl)	0.093		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tin (Sn)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Titanium (Ti)	5.9		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tungsten	<0.50		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Uranium (U)	1.01		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Vanadium (V)	18.0		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zinc (Zn)	104		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zirconium (Zr)	6.5		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
L2160851-6 18-BH06-02							
Sampled By: CJ/LB on 31-AUG-18							
Matrix: soil							
Miscellaneous Parameters							
% Moisture	7.55		0.25	%		23-JAN-19	R4462788
Hexavalent Chromium	<0.10		0.10	mg/kg	26-JAN-19	27-JAN-19	R4470779
Mercury (Hg)	<0.50	DLHM	0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248008
Special Request	See Attached					06-MAR-19	R3880127
Bulk Asbestos Content							
Asbestos	<1		1	%		14-SEP-18	R4216477
Other Fibres: Cellulose	Trace <1		1	%		14-SEP-18	R4216477
Mica	1-5		1	%		14-SEP-18	R4216477
Quantitation of asbestos by point count							
Asbestos By Point Count	<0.10		0.10	%		19-SEP-18	R4216477
Other Fibres: Cellulose	Trace <1		1.0	%		19-SEP-18	R4216477
Mica	1-5		1.0	%		19-SEP-18	R4216477
Metals in Waste by CRC ICPMS							
Aluminum (Al)	2880		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Antimony (Sb)	1.44		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Arsenic (As)	9.73		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Barium (Ba)	158		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Beryllium (Be)	0.26		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Boron (B)	<5.0		5.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cadmium (Cd)	2.83		0.020	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Calcium (Ca)	85200		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Chromium (Cr)	8.55		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cobalt (Co)	8.51		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Copper (Cu)	30.2		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Iron (Fe)	19000		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lead (Pb)	10.3		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lithium (Li)	2.1		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Magnesium (Mg)	7700		20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Manganese (Mn)	338		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2160851-6 18-BH06-02							
Sampled By: CJ/LB on 31-AUG-18							
Matrix: soil							
Metals in Waste by CRC ICPMS							
Molybdenum (Mo)	7.53		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Nickel (Ni)	37.6		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Phosphorus (P)	984		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Potassium (K)	760		100	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Selenium (Se)	7.48		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Silver (Ag)	0.56		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sodium (Na)	58		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Strontium (Sr)	310		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sulfur	9200		1000	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Thallium (Tl)	0.108		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tin (Sn)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Titanium (Ti)	4.9		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tungsten	<0.50		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Uranium (U)	1.89		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Vanadium (V)	13.4		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zinc (Zn)	114		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zirconium (Zr)	9.8		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
L2160851-7 18-BH07-01							
Sampled By: CJ/LB on 03-SEP-18							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.063		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248008
Bulk Asbestos Content							
Asbestos: Chrysotile	25-50		1	%		14-SEP-18	R4216477
Mica	1-5		1	%		14-SEP-18	R4216477
Metals in Waste by CRC ICPMS							
Aluminum (Al)	6550		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Antimony (Sb)	2.05		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Arsenic (As)	12.5		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Barium (Ba)	50.3		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Beryllium (Be)	0.20		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Boron (B)	24.1		5.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cadmium (Cd)	3.17		0.020	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Calcium (Ca)	14300		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Chromium (Cr)	366		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cobalt (Co)	24.3		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Copper (Cu)	24.7		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Iron (Fe)	26900		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lead (Pb)	6.99		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lithium (Li)	8.1		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Magnesium (Mg)	66000		20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Manganese (Mn)	401		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Molybdenum (Mo)	2.93		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Nickel (Ni)	399		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Phosphorus (P)	407		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Potassium (K)	240		100	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Selenium (Se)	0.85		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Silver (Ag)	<0.10		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sodium (Na)	<50		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Strontium (Sr)	56.8		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2160851-7 18-BH07-01							
Sampled By: CJ/LB on 03-SEP-18							
Matrix: soil							
Metals in Waste by CRC ICPMS							
Sulfur	<1000		1000	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Thallium (Tl)	<0.050		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tin (Sn)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Titanium (Ti)	22.7		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tungsten	<0.50		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Uranium (U)	0.858		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Vanadium (V)	26.5		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zinc (Zn)	45.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zirconium (Zr)	4.5		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
L2160851-8 18-BH07-02							
Sampled By: CJ/LB on 03-SEP-18							
Matrix: soil							
Miscellaneous Parameters							
% Moisture	8.56		0.25	%		23-JAN-19	R4462788
Hexavalent Chromium	<0.10		0.10	mg/kg	26-JAN-19	27-JAN-19	R4470779
Mercury (Hg)	0.222		0.0050	mg/kg	24-SEP-18	24-SEP-18	R4236441
Special Request	See Attached					06-MAR-19	R3880127
Quantitation of asbestos by point count							
Asbestos By Point Count	<0.10		0.10	%		14-SEP-18	R4216477
Other Fibres: Cellulose	Trace <1		1.0	%		14-SEP-18	R4216477
Mica	1-5		1.0	%		14-SEP-18	R4216477
Metals in Soil by CRC ICPMS							
Aluminum (Al)	4130		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Antimony (Sb)	1.55		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Arsenic (As)	10.2		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Barium (Ba)	76.7		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Beryllium (Be)	0.67		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Bismuth (Bi)	0.38		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Boron (B)	<5.0		5.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Cadmium (Cd)	1.05		0.020	mg/kg	24-SEP-18	25-SEP-18	R4240927
Calcium (Ca)	18800		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Chromium (Cr)	12.2		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Cobalt (Co)	18.5		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Copper (Cu)	56.0		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Iron (Fe)	52200		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Lead (Pb)	16.9		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Lithium (Li)	<2.0		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Magnesium (Mg)	8800		20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Manganese (Mn)	516		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Molybdenum (Mo)	7.19		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Nickel (Ni)	61.2		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Phosphorus (P)	749		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Potassium (K)	750		100	mg/kg	24-SEP-18	25-SEP-18	R4240927
Selenium (Se)	3.67		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Silver (Ag)	0.39		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Sodium (Na)	62		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Strontium (Sr)	85.6		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Sulfur (S)	9100		1000	mg/kg	24-SEP-18	25-SEP-18	R4240927
Thallium (Tl)	0.144		0.050	mg/kg	24-SEP-18	25-SEP-18	R4240927
Tin (Sn)	<2.0		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Titanium (Ti)	3.6		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2160851-8 18-BH07-02							
Sampled By: CJ/LB on 03-SEP-18							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Tungsten (W)	<0.50		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Uranium (U)	2.05		0.050	mg/kg	24-SEP-18	25-SEP-18	R4240927
Vanadium (V)	21.7		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Zinc (Zn)	181		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Zirconium (Zr)	11.8		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
L2160851-9 18-BH08-01							
Sampled By: CJ/LB on 03-SEP-18							
Matrix: soil							
Miscellaneous Parameters							
% Moisture	13.4		0.25	%		23-JAN-19	R4462788
Hexavalent Chromium	0.14		0.10	mg/kg	26-JAN-19	27-JAN-19	R4470779
Mercury (Hg)	0.232		0.0050	mg/kg	24-SEP-18	24-SEP-18	R4236441
Special Request	See Attached					06-MAR-19	R3880127
Quantitation of asbestos by point count							
Asbestos By Point Count	<0.10		0.10	%		14-SEP-18	R4216477
Other Fibres: Cellulose	Trace <1		1.0	%		14-SEP-18	R4216477
Mica	1-5		1.0	%		14-SEP-18	R4216477
Metals in Soil by CRC ICPMS							
Aluminum (Al)	10100		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Antimony (Sb)	2.55		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Arsenic (As)	16.4		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Barium (Ba)	467		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Beryllium (Be)	0.62		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Bismuth (Bi)	0.46		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Boron (B)	<5.0		5.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Cadmium (Cd)	2.23		0.020	mg/kg	24-SEP-18	25-SEP-18	R4240927
Calcium (Ca)	10900		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Chromium (Cr)	20.1		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Cobalt (Co)	22.6		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Copper (Cu)	61.6		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Iron (Fe)	51700		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Lead (Pb)	34.6		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Lithium (Li)	10.7		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Magnesium (Mg)	5350		20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Manganese (Mn)	610		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Molybdenum (Mo)	15.3		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Nickel (Ni)	72.0		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Phosphorus (P)	755		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Potassium (K)	770		100	mg/kg	24-SEP-18	25-SEP-18	R4240927
Selenium (Se)	4.68		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Silver (Ag)	0.45		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Sodium (Na)	135		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Strontium (Sr)	70.0		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Sulfur (S)	<1000		1000	mg/kg	24-SEP-18	25-SEP-18	R4240927
Thallium (Tl)	0.308		0.050	mg/kg	24-SEP-18	25-SEP-18	R4240927
Tin (Sn)	<2.0		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Titanium (Ti)	14.9		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Tungsten (W)	<0.50		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Uranium (U)	1.40		0.050	mg/kg	24-SEP-18	25-SEP-18	R4240927
Vanadium (V)	33.5		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Zinc (Zn)	211		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2160851-9 18-BH08-01							
Sampled By: CJ/LB on 03-SEP-18							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Zirconium (Zr)	7.9		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
L2160851-10 18-BH18-01							
Sampled By: CJ/LB on 31-AUG-18							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.075		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248008
Bulk Asbestos Content							
Asbestos: Chrysotile	50-75		1	%		14-SEP-18	R4216477
Other Fibres: Cellulose	Trace <1		1	%		14-SEP-18	R4216477
Mica	Trace <1		1	%		14-SEP-18	R4216477
Metals in Waste by CRC ICPMS							
Aluminum (Al)	4690		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Antimony (Sb)	7.38		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Arsenic (As)	27.4		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Barium (Ba)	251		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Beryllium (Be)	0.11		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Boron (B)	44.7		5.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cadmium (Cd)	0.053		0.020	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Calcium (Ca)	14100		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Chromium (Cr)	1080		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cobalt (Co)	98.4		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Copper (Cu)	33.9		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Iron (Fe)	38000		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lead (Pb)	2.18		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lithium (Li)	15.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Magnesium (Mg)	177000		20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Manganese (Mn)	617		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Molybdenum (Mo)	0.56		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Nickel (Ni)	1510		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Phosphorus (P)	<50		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Potassium (K)	<100		100	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Selenium (Se)	<0.20		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Silver (Ag)	0.16		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sodium (Na)	<50		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Strontium (Sr)	133		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sulfur	<1000		1000	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Thallium (Tl)	<0.050		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tin (Sn)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Titanium (Ti)	45.5		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tungsten	1.18		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Uranium (U)	0.836		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Vanadium (V)	27.1		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zinc (Zn)	16.7		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zirconium (Zr)	<1.0		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
L2160851-11 18-BH19-01							
Sampled By: CJ/LB on 31-AUG-18							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.140		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248008
Bulk Asbestos Content							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2160851-11 18-BH19-01							
Sampled By: CJ/LB on 31-AUG-18							
Matrix: soil							
Bulk Asbestos Content							
Asbestos: Chrysotile	25-50		1	%		13-SEP-18	R4217375
Mica	Trace <1		1	%		13-SEP-18	R4217375
Metals in Waste by CRC ICPMS							
Aluminum (Al)	3920		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Antimony (Sb)	14.4		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Arsenic (As)	40.7		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Barium (Ba)	224		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Beryllium (Be)	0.22		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Boron (B)	47.4		5.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cadmium (Cd)	0.884		0.020	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Calcium (Ca)	18400		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Chromium (Cr)	411		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cobalt (Co)	44.1		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Copper (Cu)	35.8		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Iron (Fe)	39100		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lead (Pb)	12.1		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lithium (Li)	9.3		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Magnesium (Mg)	74800		20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Manganese (Mn)	480		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Molybdenum (Mo)	8.11		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Nickel (Ni)	857		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Phosphorus (P)	479		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Potassium (K)	410		100	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Selenium (Se)	4.25		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Silver (Ag)	0.33		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sodium (Na)	<50		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Strontium (Sr)	259		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sulfur	<1000		1000	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Thallium (Tl)	0.095		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tin (Sn)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Titanium (Ti)	24.4		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tungsten	1.35		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Uranium (U)	1.01		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Vanadium (V)	19.8		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zinc (Zn)	111		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zirconium (Zr)	3.2		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
L2160851-12 18-PORCR-01							
Sampled By: CJ/LB on 31-AUG-18							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	<0.50	DLHM	0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248008
Quantitation of asbestos by point count							
Asbestos: Chrysotile	0.60		0.10	%		13-SEP-18	R4217375
Mica	Trace <1		1.0	%		13-SEP-18	R4217375
Metals in Waste by CRC ICPMS							
Aluminum (Al)	6610		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Antimony (Sb)	3.43		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Arsenic (As)	16.1		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Barium (Ba)	78.7		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Beryllium (Be)	0.48		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2160851-12 18-PORCR-01							
Sampled By: CJ/LB on 31-AUG-18							
Matrix: soil							
Metals in Waste by CRC ICPMS							
Bismuth (Bi)	0.25		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Boron (B)	<5.0		5.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cadmium (Cd)	3.88		0.020	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Calcium (Ca)	11500		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Chromium (Cr)	18.4		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cobalt (Co)	16.7		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Copper (Cu)	70.1		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Iron (Fe)	31200		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lead (Pb)	16.1		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lithium (Li)	10.7		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Magnesium (Mg)	5970		20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Manganese (Mn)	327		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Molybdenum (Mo)	19.8		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Nickel (Ni)	80.3		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Phosphorus (P)	720		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Potassium (K)	490		100	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Selenium (Se)	7.60		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Silver (Ag)	0.78		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sodium (Na)	<50		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Strontium (Sr)	67.9		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sulfur	2100		1000	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Thallium (Tl)	0.222		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tin (Sn)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Titanium (Ti)	4.1		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tungsten	<0.50		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Uranium (U)	1.32		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Vanadium (V)	32.7		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zinc (Zn)	346		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zirconium (Zr)	8.3		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
L2160851-13 18-PORCR-02							
Sampled By: CJ/LB on 31-AUG-18							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.53	DLHM	0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248008
Quantitation of asbestos by point count							
Asbestos: Chrysotile	0.70		0.10	%		13-SEP-18	R4217375
Mica	Trace <1		1.0	%		13-SEP-18	R4217375
Metals in Waste by CRC ICPMS							
Aluminum (Al)	2360		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Antimony (Sb)	3.22		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Arsenic (As)	15.8		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Barium (Ba)	32.8		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Beryllium (Be)	0.26		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Bismuth (Bi)	0.27		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Boron (B)	<5.0		5.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cadmium (Cd)	1.24		0.020	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Calcium (Ca)	18100		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Chromium (Cr)	9.19		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cobalt (Co)	5.74		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Copper (Cu)	23.3		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Iron (Fe)	24900		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2160851-13 18-PORCR-02							
Sampled By: CJ/LB on 31-AUG-18							
Matrix: soil							
Metals in Waste by CRC ICPMS							
Lead (Pb)	22.2		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lithium (Li)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Magnesium (Mg)	1770		20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Manganese (Mn)	133		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Molybdenum (Mo)	17.1		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Nickel (Ni)	35.0		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Phosphorus (P)	407		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Potassium (K)	450		100	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Selenium (Se)	8.27		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Silver (Ag)	0.49		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sodium (Na)	<50		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Strontium (Sr)	45.7		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sulfur	12400		1000	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Thallium (Tl)	0.681		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tin (Sn)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Titanium (Ti)	3.2		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tungsten	<0.50		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Uranium (U)	1.43		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Vanadium (V)	29.6		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zinc (Zn)	152		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zirconium (Zr)	8.4		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
L2160851-14 18-PORCR-03							
Sampled By: CJ/LB on 31-AUG-18							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.208		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248008
Bulk Asbestos Content							
Asbestos: Chrysotile	25-50		1	%		13-SEP-18	R4217375
Mica	Trace <1		1	%		13-SEP-18	R4217375
Metals in Waste by CRC ICPMS							
Aluminum (Al)	4090		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Antimony (Sb)	3.26		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Arsenic (As)	14.3		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Barium (Ba)	123		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Beryllium (Be)	0.30		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Boron (B)	10.8		5.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cadmium (Cd)	1.30		0.020	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Calcium (Ca)	17200		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Chromium (Cr)	196		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cobalt (Co)	22.0		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Copper (Cu)	32.4		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Iron (Fe)	29100		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lead (Pb)	12.5		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lithium (Li)	5.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Magnesium (Mg)	29800		20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Manganese (Mn)	401		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Molybdenum (Mo)	7.72		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Nickel (Ni)	301		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Phosphorus (P)	559		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Potassium (K)	540		100	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2160851-14 18-PORCR-03							
Sampled By: CJ/LB on 31-AUG-18							
Matrix: soil							
Metals in Waste by CRC ICPMS							
Selenium (Se)	3.56		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Silver (Ag)	0.36		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sodium (Na)	59		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Strontium (Sr)	96.1		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sulfur	<1000		1000	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Thallium (Tl)	0.162		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tin (Sn)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Titanium (Ti)	16.0		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tungsten	<0.50		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Uranium (U)	1.29		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Vanadium (V)	20.7		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zinc (Zn)	110		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zirconium (Zr)	7.0		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
L2160851-15 18-PORCR-04							
Sampled By: CJ/LB on 31-AUG-18							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.186		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248008
Quantitation of asbestos by point count							
Asbestos: Chrysotile	0.70		0.10	%		13-SEP-18	R4217375
Mica	Trace <1		1.0	%		13-SEP-18	R4217375
Metals in Waste by CRC ICPMS							
Aluminum (Al)	2750		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Antimony (Sb)	1.95		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Arsenic (As)	33.1		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Barium (Ba)	87.0		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Beryllium (Be)	0.52		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Bismuth (Bi)	0.26		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Boron (B)	<5.0		5.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cadmium (Cd)	1.00		0.020	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Calcium (Ca)	20500		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Chromium (Cr)	81.0		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cobalt (Co)	19.5		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Copper (Cu)	49.0		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Iron (Fe)	38400		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lead (Pb)	13.3		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lithium (Li)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Magnesium (Mg)	15400		20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Manganese (Mn)	481		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Molybdenum (Mo)	9.56		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Nickel (Ni)	145		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Phosphorus (P)	693		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Potassium (K)	520		100	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Selenium (Se)	3.46		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Silver (Ag)	0.42		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sodium (Na)	<50		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Strontium (Sr)	127		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sulfur	1200		1000	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Thallium (Tl)	0.159		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tin (Sn)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Titanium (Ti)	4.5		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2160851-15 18-PORCR-04							
Sampled By: CJ/LB on 31-AUG-18							
Matrix: soil							
Metals in Waste by CRC ICPMS							
Tungsten	<0.50		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Uranium (U)	1.61		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Vanadium (V)	21.1		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zinc (Zn)	143		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zirconium (Zr)	9.7		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
L2160851-16 18-PORCR-05							
Sampled By: CJ/LB on 31-AUG-18							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	<0.050		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248008
Bulk Asbestos Content							
Asbestos: Chrysotile	25-50		1	%		13-SEP-18	R4217375
Other Fibres	<1		1	%		13-SEP-18	R4217375
Metals in Waste by CRC ICPMS							
Aluminum (Al)	4090		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Antimony (Sb)	21.8		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Arsenic (As)	94.4		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Barium (Ba)	120		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Beryllium (Be)	<0.10		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Boron (B)	88.8		5.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cadmium (Cd)	0.044		0.020	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Calcium (Ca)	4890		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Chromium (Cr)	1190		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cobalt (Co)	86.5		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Copper (Cu)	5.74		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Iron (Fe)	42900		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lead (Pb)	0.57		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lithium (Li)	4.4		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Magnesium (Mg)	197000		20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Manganese (Mn)	563		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Molybdenum (Mo)	0.34		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Nickel (Ni)	1820		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Phosphorus (P)	<50		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Potassium (K)	<100		100	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Selenium (Se)	<0.20		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Silver (Ag)	<0.10		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sodium (Na)	<50		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Strontium (Sr)	35.5		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sulfur	<1000		1000	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Thallium (Tl)	<0.050		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tin (Sn)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Titanium (Ti)	48.1		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tungsten	0.54		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Uranium (U)	<0.050		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Vanadium (V)	26.1		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zinc (Zn)	9.6		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zirconium (Zr)	<1.0		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
L2160851-17 18-MILL-01							
Sampled By: CJ/LB on 02-SEP-18							
Matrix: soil							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2160851-17 18-MILL-01							
Sampled By: CJ/LB on 02-SEP-18							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.053		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248008
Quantitation of asbestos by point count							
Asbestos: Chrysotile	0.30		0.10	%		13-SEP-18	R4217375
Mica	Trace <1		1.0	%		13-SEP-18	R4217375
Metals in Waste by CRC ICPMS							
Aluminum (Al)	14000		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Antimony (Sb)	0.78		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Arsenic (As)	10.2		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Barium (Ba)	309		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Beryllium (Be)	0.43		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Boron (B)	<5.0		5.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cadmium (Cd)	0.110		0.020	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Calcium (Ca)	3590		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Chromium (Cr)	32.0		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cobalt (Co)	8.20		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Copper (Cu)	28.2		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Iron (Fe)	21400		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lead (Pb)	8.55		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lithium (Li)	10.5		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Magnesium (Mg)	4540		20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Manganese (Mn)	309		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Molybdenum (Mo)	0.91		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Nickel (Ni)	27.3		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Phosphorus (P)	497		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Potassium (K)	690		100	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Selenium (Se)	0.37		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Silver (Ag)	0.12		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sodium (Na)	185		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Strontium (Sr)	29.5		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sulfur	<1000		1000	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Thallium (Tl)	0.095		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tin (Sn)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Titanium (Ti)	629		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tungsten	<0.50		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Uranium (U)	1.05		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Vanadium (V)	51.1		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zinc (Zn)	59.6		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zirconium (Zr)	4.3		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
L2160851-18 18-MILL-02							
Sampled By: CJ/LB on 02-SEP-18							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	<0.050		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248008
Bulk Asbestos Content							
Asbestos: Chrysotile	10-25		1	%		13-SEP-18	R4217375
Mica	Trace <1		1	%		13-SEP-18	R4217375
Metals in Waste by CRC ICPMS							
Aluminum (Al)	2820		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Antimony (Sb)	1.93		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Arsenic (As)	6.35		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2160851-18 18-MILL-02							
Sampled By: CJ/LB on 02-SEP-18							
Matrix: soil							
Metals in Waste by CRC ICPMS							
Barium (Ba)	86.4		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Beryllium (Be)	0.12		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Boron (B)	8.8		5.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cadmium (Cd)	0.242		0.020	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Calcium (Ca)	1820		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Chromium (Cr)	77.8		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cobalt (Co)	9.46		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Copper (Cu)	12.9		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Iron (Fe)	11000		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lead (Pb)	9.90		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lithium (Li)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Magnesium (Mg)	9900		20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Manganese (Mn)	218		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Molybdenum (Mo)	1.20		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Nickel (Ni)	120		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Phosphorus (P)	220		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Potassium (K)	460		100	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Selenium (Se)	0.32		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Silver (Ag)	<0.10		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sodium (Na)	<50		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Strontium (Sr)	12.9		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sulfur	<1000		1000	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Thallium (Tl)	<0.050		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tin (Sn)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Titanium (Ti)	83.9		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tungsten	<0.50		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Uranium (U)	0.490		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Vanadium (V)	11.4		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zinc (Zn)	32.6		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zirconium (Zr)	<1.0		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
L2160851-19 18-MILL-03							
Sampled By: CJ/LB on 02-SEP-18							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	<0.050		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248008
Bulk Asbestos Content							
Asbestos: Chrysotile	5-10		1	%		13-SEP-18	R4217375
Mica	Trace <1		1	%		13-SEP-18	R4217375
Metals in Waste by CRC ICPMS							
Aluminum (Al)	11600		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Antimony (Sb)	1.09		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Arsenic (As)	9.90		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Barium (Ba)	186		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Beryllium (Be)	0.34		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Boron (B)	<5.0		5.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cadmium (Cd)	0.108		0.020	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Calcium (Ca)	1870		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Chromium (Cr)	40.0		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cobalt (Co)	8.62		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2160851-19 18-MILL-03							
Sampled By: CJ/LB on 02-SEP-18							
Matrix: soil							
Metals in Waste by CRC ICPMS							
Copper (Cu)	19.3		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Iron (Fe)	17600		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lead (Pb)	11.2		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lithium (Li)	6.9		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Magnesium (Mg)	5130		20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Manganese (Mn)	201		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Molybdenum (Mo)	1.09		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Nickel (Ni)	43.6		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Phosphorus (P)	202		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Potassium (K)	530		100	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Selenium (Se)	0.30		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Silver (Ag)	<0.10		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sodium (Na)	88		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Strontium (Sr)	16.4		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sulfur	<1000		1000	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Thallium (Tl)	0.076		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tin (Sn)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Titanium (Ti)	405		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tungsten	<0.50		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Uranium (U)	0.562		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Vanadium (V)	41.0		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zinc (Zn)	48.5		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zirconium (Zr)	<1.0		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
L2160851-20 18-MILL-04							
Sampled By: CJ/LB on 02-SEP-18							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	<0.050		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248008
Bulk Asbestos Content							
Asbestos: Chrysotile	1-5		1	%		13-SEP-18	R4217375
Mica	Trace <1		1	%		13-SEP-18	R4217375
Metals in Waste by CRC ICPMS							
Aluminum (Al)	3460		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Antimony (Sb)	2.60		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Arsenic (As)	6.99		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Barium (Ba)	57.4		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Beryllium (Be)	0.11		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Boron (B)	6.9		5.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cadmium (Cd)	0.159		0.020	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Calcium (Ca)	4320		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Chromium (Cr)	101		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cobalt (Co)	10.2		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Copper (Cu)	8.67		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Iron (Fe)	14100		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lead (Pb)	7.96		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lithium (Li)	3.5		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Magnesium (Mg)	11900		20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Manganese (Mn)	238		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Molybdenum (Mo)	0.77		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Nickel (Ni)	152		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2160851-20 18-MILL-04							
Sampled By: CJ/LB on 02-SEP-18							
Matrix: soil							
Metals in Waste by CRC ICPMS							
Phosphorus (P)	185		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Potassium (K)	360		100	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Selenium (Se)	0.28		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Silver (Ag)	<0.10		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sodium (Na)	<50		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Strontium (Sr)	19.6		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sulfur	<1000		1000	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Thallium (Tl)	<0.050		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tin (Sn)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Titanium (Ti)	84.5		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tungsten	<0.50		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Uranium (U)	0.305		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Vanadium (V)	11.9		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zinc (Zn)	26.7		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zirconium (Zr)	1.6		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
L2160851-21 18-MILL-05							
Sampled By: CJ/LB on 02-SEP-18							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	<0.050		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248008
Bulk Asbestos Content							
Asbestos: Chrysotile	1-5		1	%		17-SEP-18	R4217816
Other Fibres: Cellulose	1-5		1	%		17-SEP-18	R4217816
Mica	Trace <1		1	%		17-SEP-18	R4217816
Metals in Waste by CRC ICPMS							
Aluminum (Al)	2550		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Antimony (Sb)	1.08		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Arsenic (As)	4.66		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Barium (Ba)	56.9		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Beryllium (Be)	0.11		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Boron (B)	<5.0		5.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cadmium (Cd)	0.169		0.020	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Calcium (Ca)	1070		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Chromium (Cr)	66.7		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cobalt (Co)	6.62		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Copper (Cu)	9.37		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Iron (Fe)	7740		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lead (Pb)	11.4		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lithium (Li)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Magnesium (Mg)	6860		20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Manganese (Mn)	120		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Molybdenum (Mo)	0.84		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Nickel (Ni)	83.4		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Phosphorus (P)	113		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Potassium (K)	380		100	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Selenium (Se)	0.28		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Silver (Ag)	0.15		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sodium (Na)	<50		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Strontium (Sr)	7.76		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sulfur	<1000		1000	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2160851-21 18-MILL-05							
Sampled By: CJ/LB on 02-SEP-18							
Matrix: soil							
Metals in Waste by CRC ICPMS							
Thallium (Tl)	<0.050		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tin (Sn)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Titanium (Ti)	73.5		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tungsten	<0.50		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Uranium (U)	0.409		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Vanadium (V)	8.40		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zinc (Zn)	26.4		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zirconium (Zr)	1.5		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
L2160851-22 18-MILL-06							
Sampled By: CJ/LB on 02-SEP-18							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.064		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248008
Quantitation of asbestos by point count							
Asbestos: Chrysotile	0.70		0.10	%		17-SEP-18	R4217816
Other Fibres: Cellulose	1-5		1.0	%		17-SEP-18	R4217816
Mica	Trace <1		1.0	%		17-SEP-18	R4217816
Metals in Waste by CRC ICPMS							
Aluminum (Al)	1830		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Antimony (Sb)	0.85		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Arsenic (As)	3.78		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Barium (Ba)	68.8		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Beryllium (Be)	0.15		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Boron (B)	<5.0		5.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cadmium (Cd)	0.218		0.020	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Calcium (Ca)	8860		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Chromium (Cr)	23.3		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cobalt (Co)	6.93		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Copper (Cu)	40.7		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Iron (Fe)	14200		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lead (Pb)	9.33		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lithium (Li)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Magnesium (Mg)	5880		20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Manganese (Mn)	411		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Molybdenum (Mo)	0.75		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Nickel (Ni)	61.1		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Phosphorus (P)	289		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Potassium (K)	560		100	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Selenium (Se)	2.56		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Silver (Ag)	0.55		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sodium (Na)	<50		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Strontium (Sr)	39.4		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sulfur	<1000		1000	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Thallium (Tl)	<0.050		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tin (Sn)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Titanium (Ti)	22.2		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tungsten	<0.50		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Uranium (U)	0.431		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Vanadium (V)	7.76		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zinc (Zn)	71.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2160851-22 18-MILL-06							
Sampled By: CJ/LB on 02-SEP-18							
Matrix: soil							
Metals in Waste by CRC ICPMS							
Zirconium (Zr)	1.5		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
L2160851-23 18-MILL-07							
Sampled By: CJ/LB on 02-SEP-18							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.165		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248008
Quantitation of asbestos by point count							
Asbestos: Chrysotile	0.80		0.10	%		17-SEP-18	R4217816
Other Fibres: Cellulose	1-5		1.0	%		17-SEP-18	R4217816
Mica	Trace <1		1.0	%		17-SEP-18	R4217816
Metals in Waste by CRC ICPMS							
Aluminum (Al)	1530		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Antimony (Sb)	1.24		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Arsenic (As)	4.64		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Barium (Ba)	81.5		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Beryllium (Be)	0.19		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Boron (B)	<5.0		5.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cadmium (Cd)	0.709		0.020	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Calcium (Ca)	11100		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Chromium (Cr)	11.0		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cobalt (Co)	9.16		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Copper (Cu)	65.6		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Iron (Fe)	18500		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lead (Pb)	9.95		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lithium (Li)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Magnesium (Mg)	4880		20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Manganese (Mn)	331		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Molybdenum (Mo)	2.71		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Nickel (Ni)	60.3		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Phosphorus (P)	264		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Potassium (K)	650		100	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Selenium (Se)	5.60		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Silver (Ag)	1.39		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sodium (Na)	<50		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Strontium (Sr)	56.6		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sulfur	<1000		1000	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Thallium (Tl)	0.062		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tin (Sn)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Titanium (Ti)	7.3		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tungsten	<0.50		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Uranium (U)	0.588		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Vanadium (V)	8.16		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zinc (Zn)	119		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zirconium (Zr)	4.6		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
L2160851-24 18-MILL-08							
Sampled By: CJ/LB on 02-SEP-18							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	<0.050		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248008
Bulk Asbestos Content							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2160851-24 18-MILL-08							
Sampled By: CJ/LB on 02-SEP-18							
Matrix: soil							
Bulk Asbestos Content							
Asbestos: Chrysotile	1-5		1	%		17-SEP-18	R4217816
Other Fibres: Cellulose	1-5		1	%		17-SEP-18	R4217816
Mica	Trace <1		1	%		17-SEP-18	R4217816
Metals in Waste by CRC ICPMS							
Aluminum (Al)	4560		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Antimony (Sb)	0.77		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Arsenic (As)	3.64		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Barium (Ba)	50.5		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Beryllium (Be)	0.21		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Boron (B)	<5.0		5.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cadmium (Cd)	0.278		0.020	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Calcium (Ca)	4080		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Chromium (Cr)	37.4		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cobalt (Co)	6.95		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Copper (Cu)	19.1		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Iron (Fe)	13700		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lead (Pb)	10.2		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lithium (Li)	10.6		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Magnesium (Mg)	6010		20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Manganese (Mn)	287		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Molybdenum (Mo)	1.19		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Nickel (Ni)	52.5		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Phosphorus (P)	216		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Potassium (K)	370		100	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Selenium (Se)	0.56		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Silver (Ag)	0.16		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sodium (Na)	60		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Strontium (Sr)	26.7		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sulfur	<1000		1000	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Thallium (Tl)	<0.050		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tin (Sn)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Titanium (Ti)	24.9		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tungsten	<0.50		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Uranium (U)	0.491		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Vanadium (V)	8.21		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zinc (Zn)	43.2		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zirconium (Zr)	1.4		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
L2160851-25 18-MILL-09							
Sampled By: CJ/LB on 02-SEP-18							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.067		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248008
Bulk Asbestos Content							
Asbestos: Chrysotile	1-5		1	%		17-SEP-18	R4217816
Other Fibres: Cellulose	1-5		1	%		17-SEP-18	R4217816
Mica	Trace <1		1	%		17-SEP-18	R4217816
Metals in Waste by CRC ICPMS							
Aluminum (Al)	4020		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Antimony (Sb)	1.38		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Arsenic (As)	6.52		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2160851-25 18-MILL-09							
Sampled By: CJ/LB on 02-SEP-18							
Matrix: soil							
Metals in Waste by CRC ICPMS							
Barium (Ba)	106		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Beryllium (Be)	0.17		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Boron (B)	<5.0		5.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cadmium (Cd)	0.767		0.020	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Calcium (Ca)	5320		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Chromium (Cr)	39.2		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cobalt (Co)	9.12		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Copper (Cu)	28.4		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Iron (Fe)	20100		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lead (Pb)	9.40		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lithium (Li)	6.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Magnesium (Mg)	6150		20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Manganese (Mn)	668		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Molybdenum (Mo)	3.19		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Nickel (Ni)	66.9		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Phosphorus (P)	359		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Potassium (K)	460		100	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Selenium (Se)	2.04		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Silver (Ag)	0.37		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sodium (Na)	<50		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Strontium (Sr)	32.7		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sulfur	<1000		1000	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Thallium (Tl)	0.070		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tin (Sn)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Titanium (Ti)	37.6		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tungsten	<0.50		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Uranium (U)	0.785		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Vanadium (V)	11.6		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zinc (Zn)	83.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zirconium (Zr)	1.1		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
L2160851-26 18-MILL-10							
Sampled By: CJ/LB on 02-SEP-18							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.173		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248008
Bulk Asbestos Content							
Asbestos: Chrysotile	10-25		1	%		17-SEP-18	R4217816
Other Fibres: Cellulose	1-5		1	%		17-SEP-18	R4217816
Mica	Trace <1		1	%		17-SEP-18	R4217816
Metals in Waste by CRC ICPMS							
Aluminum (Al)	8690		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Antimony (Sb)	3.64		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Arsenic (As)	9.15		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Barium (Ba)	149		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Beryllium (Be)	0.34		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Boron (B)	13.9		5.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cadmium (Cd)	0.982		0.020	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Calcium (Ca)	15400		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Chromium (Cr)	160		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2160851-26 18-MILL-10							
Sampled By: CJ/LB on 02-SEP-18							
Matrix: soil							
Metals in Waste by CRC ICPMS							
Cobalt (Co)	19.8		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Copper (Cu)	37.4		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Iron (Fe)	28400		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lead (Pb)	10.7		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lithium (Li)	13.1		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Magnesium (Mg)	29500		20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Manganese (Mn)	497		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Molybdenum (Mo)	4.46		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Nickel (Ni)	254		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Phosphorus (P)	422		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Potassium (K)	490		100	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Selenium (Se)	1.95		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Silver (Ag)	0.24		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sodium (Na)	118		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Strontium (Sr)	78.4		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sulfur	1200		1000	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Thallium (Tl)	0.130		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tin (Sn)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Titanium (Ti)	77.6		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tungsten	<0.50		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Uranium (U)	0.827		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Vanadium (V)	23.2		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zinc (Zn)	95.2		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zirconium (Zr)	4.8		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
L2160851-27 18-BH11-02							
Sampled By: CJ/LB on 04-SEP-18							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	<0.050		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248008
Bulk Asbestos Content							
Asbestos: Chrysotile	50-75		1	%		17-SEP-18	R4217816
Mica	Trace <1		1	%		17-SEP-18	R4217816
Metals in Waste by CRC ICPMS							
Aluminum (Al)	4290		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Antimony (Sb)	1.08		0.10	mg/kg wwt	02-OCT-18	02-OCT-18	R4257738
Arsenic (As)	0.83		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Barium (Ba)	6.67		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Beryllium (Be)	<0.10		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Boron (B)	169		5.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cadmium (Cd)	<0.020		0.020	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Calcium (Ca)	540		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Chromium (Cr)	2470		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cobalt (Co)	141		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Copper (Cu)	1.20		0.50	mg/kg wwt	02-OCT-18	02-OCT-18	R4257738
Iron (Fe)	77700		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lead (Pb)	<0.50		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lithium (Li)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Magnesium (Mg)	289000		20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Manganese (Mn)	818		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Molybdenum (Mo)	0.13		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2160851-27 18-BH11-02							
Sampled By: CJ/LB on 04-SEP-18							
Matrix: soil							
Metals in Waste by CRC ICPMS							
Nickel (Ni)	3110		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Phosphorus (P)	<50		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Potassium (K)	<100		100	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Selenium (Se)	<0.20		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Silver (Ag)	<0.10		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sodium (Na)	<50		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Strontium (Sr)	4.20		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sulfur	<1000		1000	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Thallium (Tl)	<0.050		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tin (Sn)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Titanium (Ti)	30.4		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tungsten	<0.50		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Uranium (U)	<0.050		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Vanadium (V)	34.7		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zinc (Zn)	13.4		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zirconium (Zr)	<1.0		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
L2160851-28 18-BH12-02							
Sampled By: CJ/LB on 02-SEP-18							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.055		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248008
Quantitation of asbestos by point count							
Asbestos: Chrysotile	0.10		0.10	%		17-SEP-18	R4217816
Other Fibres: Cellulose	1-5		1.0	%		17-SEP-18	R4217816
Mica	Trace <1		1.0	%		17-SEP-18	R4217816
Metals in Waste by CRC ICPMS							
Aluminum (Al)	7920		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Antimony (Sb)	0.94		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Arsenic (As)	6.17		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Barium (Ba)	248		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Beryllium (Be)	0.28		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Boron (B)	5.5		5.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cadmium (Cd)	0.522		0.020	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Calcium (Ca)	4160		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Chromium (Cr)	20.8		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cobalt (Co)	6.84		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Copper (Cu)	17.8		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Iron (Fe)	13800		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lead (Pb)	7.88		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lithium (Li)	8.2		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Magnesium (Mg)	2810		20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Manganese (Mn)	375		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Molybdenum (Mo)	2.16		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Nickel (Ni)	23.0		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Phosphorus (P)	346		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Potassium (K)	520		100	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Selenium (Se)	1.28		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Silver (Ag)	0.15		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sodium (Na)	118		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Strontium (Sr)	32.2		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2160851-28 18-BH12-02							
Sampled By: CJ/LB on 02-SEP-18							
Matrix: soil							
Metals in Waste by CRC ICPMS							
Sulfur	<1000		1000	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Thallium (Tl)	0.088		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tin (Sn)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Titanium (Ti)	211		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tungsten	<0.50		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Uranium (U)	0.941		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Vanadium (V)	26.6		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zinc (Zn)	52.6		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zirconium (Zr)	1.7		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
L2160851-29 18-B17-02							
Sampled By: CJ/LB on 31-AUG-18							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	<0.050		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248008
Bulk Asbestos Content							
Asbestos: Chrysotile	50-75		1	%		17-SEP-18	R4217816
Mica	Trace <1		1	%		17-SEP-18	R4217816
Metals in Waste by CRC ICPMS							
Aluminum (Al)	3690		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Antimony (Sb)	2.54		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Arsenic (As)	1.20		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Barium (Ba)	43.2		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Beryllium (Be)	<0.10		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Boron (B)	167		5.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cadmium (Cd)	<0.020		0.020	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Calcium (Ca)	1980		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Chromium (Cr)	1590		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cobalt (Co)	99.6		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Copper (Cu)	1.61		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Iron (Fe)	57900		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lead (Pb)	<0.50		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lithium (Li)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Magnesium (Mg)	205000		20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Manganese (Mn)	613		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Molybdenum (Mo)	<0.10		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Nickel (Ni)	2000		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Phosphorus (P)	<50		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Potassium (K)	<100		100	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Selenium (Se)	<0.20		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Silver (Ag)	<0.10		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sodium (Na)	<50		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Strontium (Sr)	11.0		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sulfur	<1000		1000	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Thallium (Tl)	<0.050		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tin (Sn)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Titanium (Ti)	43.3		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tungsten	<0.50		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Uranium (U)	<0.050		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Vanadium (V)	27.4		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zinc (Zn)	11.5		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2160851-29 18-B17-02							
Sampled By: CJ/LB on 31-AUG-18							
Matrix: soil							
Metals in Waste by CRC ICPMS							
Zirconium (Zr)	<1.0		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
L2160851-30 18-PORCR-DUP-02							
Sampled By: CJ/LB on 31-AUG-18							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	<0.50		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248008
Quantitation of asbestos by point count							
Asbestos: Chrysotile	0.20		0.10	%		14-SEP-18	R4217963
Mica	Trace <1		1.0	%		14-SEP-18	R4217963
Metals in Waste by CRC ICPMS							
Aluminum (Al)	5770		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Antimony (Sb)	4.19		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Arsenic (As)	19.8		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Barium (Ba)	76.0		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Beryllium (Be)	0.49		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Bismuth (Bi)	0.25		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Boron (B)	<5.0		5.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cadmium (Cd)	5.28		0.020	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Calcium (Ca)	13300		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Chromium (Cr)	23.2		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cobalt (Co)	18.4		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Copper (Cu)	68.8		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Iron (Fe)	35900		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lead (Pb)	18.1		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lithium (Li)	9.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Magnesium (Mg)	5930		20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Manganese (Mn)	423		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Molybdenum (Mo)	26.4		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Nickel (Ni)	96.4		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Phosphorus (P)	642		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Potassium (K)	470		100	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Selenium (Se)	9.63		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Silver (Ag)	0.84		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sodium (Na)	<50		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Strontium (Sr)	75.4		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sulfur	1400		1000	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Thallium (Tl)	0.239		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tin (Sn)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Titanium (Ti)	3.4		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tungsten	<0.50		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Uranium (U)	1.38		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Vanadium (V)	38.1		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zinc (Zn)	370		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zirconium (Zr)	9.2		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
L2160851-31 18-BH18-DUP-03							
Sampled By: CJ/LB on 31-AUG-18							
Matrix: soil							
Miscellaneous Parameters							
Asbestos: Chrysotile	25-50		1	%		14-SEP-18	R4217963
Mercury (Hg)	0.102		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248008

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2160851-31 18-BH18-DUP-03							
Sampled By: CJ/LB on 31-AUG-18							
Matrix: soil							
Metals in Waste by CRC ICPMS							
Aluminum (Al)	4650		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Antimony (Sb)	6.53		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Arsenic (As)	22.0		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Barium (Ba)	154		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Beryllium (Be)	0.19		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Boron (B)	57.6		5.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cadmium (Cd)	0.077		0.020	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Calcium (Ca)	12000		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Chromium (Cr)	1020		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cobalt (Co)	58.8		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Copper (Cu)	50.0		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Iron (Fe)	30300		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lead (Pb)	2.86		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lithium (Li)	12.6		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Magnesium (Mg)	138000		20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Manganese (Mn)	427		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Molybdenum (Mo)	0.92		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Nickel (Ni)	1040		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Phosphorus (P)	53		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Potassium (K)	100		100	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Selenium (Se)	<0.20		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Silver (Ag)	0.12		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sodium (Na)	<50		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Strontium (Sr)	72.9		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sulfur	<1000		1000	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Thallium (Tl)	<0.050		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tin (Sn)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Titanium (Ti)	61.7		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tungsten	<0.50		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Uranium (U)	0.577		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Vanadium (V)	22.2		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zinc (Zn)	18.8		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zirconium (Zr)	<1.0		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
L2160851-32 18-MILL-DUP-05							
Sampled By: CJ/LB on 02-SEP-18							
Matrix: soil							
Miscellaneous Parameters							
% Moisture	14.6		0.25	%		23-JAN-19	R4462788
Hexavalent Chromium	0.88		0.10	mg/kg	26-JAN-19	27-JAN-19	R4470779
Mercury (Hg)	0.0495		0.0050	mg/kg	24-SEP-18	24-SEP-18	R4236441
Special Request	See Attached					06-MAR-19	R3880127
Quantitation of asbestos by point count							
Asbestos By Point Count	<0.1		0.10	%		14-SEP-18	R4217963
Mica	Trace <1		1.0	%		14-SEP-18	R4217963
Metals in Soil by CRC ICPMS							
Aluminum (Al)	18000		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Antimony (Sb)	1.09		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Arsenic (As)	11.4		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Barium (Ba)	334		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Beryllium (Be)	0.52		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2160851-32 18-MILL-DUP-05							
Sampled By: CJ/LB on 02-SEP-18							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Bismuth (Bi)	<0.20		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Boron (B)	<5.0		5.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Cadmium (Cd)	0.126		0.020	mg/kg	24-SEP-18	25-SEP-18	R4240927
Calcium (Ca)	4400		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Chromium (Cr)	39.2		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Cobalt (Co)	9.98		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Copper (Cu)	31.8		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Iron (Fe)	26400		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Lead (Pb)	10.1		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Lithium (Li)	11.7		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Magnesium (Mg)	6380		20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Manganese (Mn)	391		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Molybdenum (Mo)	1.12		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Nickel (Ni)	37.9		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Phosphorus (P)	628		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Potassium (K)	880		100	mg/kg	24-SEP-18	25-SEP-18	R4240927
Selenium (Se)	0.44		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Silver (Ag)	0.14		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Sodium (Na)	238		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Strontium (Sr)	34.0		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Sulfur (S)	<1000		1000	mg/kg	24-SEP-18	25-SEP-18	R4240927
Thallium (Tl)	0.123		0.050	mg/kg	24-SEP-18	25-SEP-18	R4240927
Tin (Sn)	<2.0		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Titanium (Ti)	753		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Tungsten (W)	<0.50		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Uranium (U)	1.39		0.050	mg/kg	24-SEP-18	25-SEP-18	R4240927
Vanadium (V)	60.2		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Zinc (Zn)	66.5		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Zirconium (Zr)	5.8		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
L2160851-33 18-BH12-DUP-06							
Sampled By: CJ/LB on 02-SEP-18							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	<0.050		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248008
Quantitation of asbestos by point count							
Asbestos: Chrysotile	0.20		0.10	%		14-SEP-18	R4217963
Mica	Trace <1		1.0	%		14-SEP-18	R4217963
Metals in Waste by CRC ICPMS							
Aluminum (Al)	9140		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Antimony (Sb)	0.87		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Arsenic (As)	6.25		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Barium (Ba)	227		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Beryllium (Be)	0.32		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Boron (B)	<5.0		5.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cadmium (Cd)	0.372		0.020	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Calcium (Ca)	3250		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Chromium (Cr)	19.0		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cobalt (Co)	6.77		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Copper (Cu)	19.0		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Iron (Fe)	17000		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2160851-33 18-BH12-DUP-06							
Sampled By: CJ/LB on 02-SEP-18							
Matrix: soil							
Metals in Waste by CRC ICPMS							
Lead (Pb)	9.21		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lithium (Li)	10.5		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Magnesium (Mg)	3140		20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Manganese (Mn)	256		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Molybdenum (Mo)	1.93		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Nickel (Ni)	21.3		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Phosphorus (P)	346		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Potassium (K)	500		100	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Selenium (Se)	1.58		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Silver (Ag)	0.12		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sodium (Na)	99		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Strontium (Sr)	26.7		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sulfur	<1000		1000	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Thallium (Tl)	0.088		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tin (Sn)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Titanium (Ti)	189		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tungsten	<0.50		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Uranium (U)	0.905		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Vanadium (V)	27.2		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zinc (Zn)	54.6		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zirconium (Zr)	2.6		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
L2160851-34 18-BH02-DUP-07							
Sampled By: CJ/LB on 03-SEP-18							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	<0.50		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248008
Quantitation of asbestos by point count							
Asbestos: Chrysotile	0.20		0.10	%		14-SEP-18	R4217963
Mica	Trace <1		1.0	%		14-SEP-18	R4217963
Metals in Waste by CRC ICPMS							
Aluminum (Al)	9410		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Antimony (Sb)	2.60		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Arsenic (As)	14.6		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Barium (Ba)	59.2		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Beryllium (Be)	0.50		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Bismuth (Bi)	0.31		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Boron (B)	<5.0		5.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cadmium (Cd)	3.80		0.020	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Calcium (Ca)	26400		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Chromium (Cr)	22.4		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Cobalt (Co)	16.7		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Copper (Cu)	50.6		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Iron (Fe)	37500		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lead (Pb)	20.3		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Lithium (Li)	15.5		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Magnesium (Mg)	9640		20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Manganese (Mn)	417		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Molybdenum (Mo)	20.6		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Nickel (Ni)	75.8		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Phosphorus (P)	661		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Potassium (K)	450		100	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2160851-34 18-BH02-DUP-07							
Sampled By: CJ/LB on 03-SEP-18							
Matrix: soil							
Metals in Waste by CRC ICPMS							
Selenium (Se)	6.24		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Silver (Ag)	0.71		0.10	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sodium (Na)	<50		50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Strontium (Sr)	152		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Sulfur	7000		1000	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Thallium (Tl)	0.268		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tin (Sn)	<2.0		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Titanium (Ti)	2.9		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Tungsten	<0.50		0.50	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Uranium (U)	2.33		0.050	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Vanadium (V)	26.5		0.20	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zinc (Zn)	243		2.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
Zirconium (Zr)	8.5		1.0	mg/kg wwt	25-SEP-18	27-SEP-18	R4248515
L2160851-35 18-BH08-DUP-08							
Sampled By: CJ/LB on 03-SEP-18							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.233		0.0050	mg/kg	24-SEP-18	24-SEP-18	R4236441
Quantitation of asbestos by point count							
Asbestos By Point Count	<0.1		0.10	%		14-SEP-18	R4217963
Mica	Trace <1		1.0	%		14-SEP-18	R4217963
Metals in Soil by CRC ICPMS							
Aluminum (Al)	8860		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Antimony (Sb)	2.61		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Arsenic (As)	16.2		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Barium (Ba)	147		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Beryllium (Be)	0.55		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Bismuth (Bi)	0.44		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Boron (B)	<5.0		5.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Cadmium (Cd)	2.47		0.020	mg/kg	24-SEP-18	25-SEP-18	R4240927
Calcium (Ca)	11900		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Chromium (Cr)	18.2		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Cobalt (Co)	19.9		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Copper (Cu)	58.2		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Iron (Fe)	47500		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Lead (Pb)	33.3		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Lithium (Li)	9.1		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Magnesium (Mg)	4910		20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Manganese (Mn)	550		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Molybdenum (Mo)	14.0		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Nickel (Ni)	67.4		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Phosphorus (P)	778		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Potassium (K)	680		100	mg/kg	24-SEP-18	25-SEP-18	R4240927
Selenium (Se)	4.47		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Silver (Ag)	0.45		0.10	mg/kg	24-SEP-18	25-SEP-18	R4240927
Sodium (Na)	116		50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Strontium (Sr)	64.8		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Sulfur (S)	<1000		1000	mg/kg	24-SEP-18	25-SEP-18	R4240927
Thallium (Tl)	0.267		0.050	mg/kg	24-SEP-18	25-SEP-18	R4240927
Tin (Sn)	<2.0		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Titanium (Ti)	10.0		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2160851-35 18-BH08-DUP-08							
Sampled By: CJ/LB on 03-SEP-18							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Tungsten (W)	<0.50		0.50	mg/kg	24-SEP-18	25-SEP-18	R4240927
Uranium (U)	1.48		0.050	mg/kg	24-SEP-18	25-SEP-18	R4240927
Vanadium (V)	29.9		0.20	mg/kg	24-SEP-18	25-SEP-18	R4240927
Zinc (Zn)	211		2.0	mg/kg	24-SEP-18	25-SEP-18	R4240927
Zirconium (Zr)	7.1		1.0	mg/kg	24-SEP-18	25-SEP-18	R4240927

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHM	Detection Limit Adjusted: Sample has High Moisture Content

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ASBESTOS-BULK-ED	Bulk	Bulk Asbestos Content	NIOSH 9002-Polarized Microscopy

Bulk samples are examined under a stereoscopic microscope. Individual fibers or fibre bundles are mounted in refractive index liquids and are observed under a polarized light microscope with a special dispersion staining objective. The dispersion staining colours are compared to reference samples of known asbestiforms.

Note: For non-friable organically bound asbestos (eg. floor tile) Polarized Light microscopy is not a definitive technique when negative results are obtained. Transmission electron microscopy is recommended to confirm the asbestos in these materials.

Asbestos results reported as <1% indicates that no asbestos fibers were observed.

ASBESTOS-PTCT-ED	Bulk	Quantitation of asbestos by point count	EPA/600/R-93/116

Bulk samples are examined under a stereoscopic microscope. Individual fibers or fiber bundles are mounted in refractive index liquids and are observed under a polarized light microscope, with a special dispersion staining objective. The dispersion staining colors are compared to reference samples of known asbestiforms.

Polarized microscopy is not a definitive technique for negative results for non-friable organically bound material (i.e.floor tiles). Transmission electron microscopy is recommended to confirm the asbestos in these materials.
Asbestos results reported as <0.10% indicates that no asbestos fibers were observed.

CR-CR3-SOIL-CALC-ED	Soil	Chromium, Trivalent (Cr +3)	Total Cr - Cr(+6)

This analysis is carried out using the method "Trivalent Chromium in Solids", as published in the BC WLAP Laboratory Methods Manual (2003). Chromium (III) is determined by subtraction of chromium (VI) from total chromium. Chromium (VI) is determined by the alkaline leach method, and total chromium is determined using CSR Analytical Method 8 "Strong Acid Leachable Metals (SALM) in Soil", BC Ministry of Environment, Lands and Parks, 26 June 2001. All results are reported as milligrams per dry kilogram of sediment/soil. The Limit of Reporting for Chromium (III) varies as a function of the test results.

CR-CR6-3060-ED	Soil	Chromium, Hexavalent (Cr +6)	APHA 3500-CR C, EPA 3060A ALKALINE

Field moist samples are digested with a sodium hydroxide/sodium carbonate solution. After cooling and filtration, the rinsate is adjusted to pH 9, and injected on an ion chromatograph to separate the hexavalent chromium ion. A post column color reaction with diphenylcarbohydrazide and absorbance measurement at 530 nm completes the quantitation.

HG-200.2-CVAA-ED	Soil	Mercury in Soil by CVAAS	EPA 200.2/1631E (Mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAAS.

HG-WET-200.2-CVAA-ED	Waste	Mercury (Hg) in waste	EPA 200.2/245.1

Waste samples are prepared for analysis by mixing to homogenize the as-received waste, then subsampling. The subsample is digested according to the EPA 200.2 method, using nitric and hydrochloric acids. Analysis is carried out by cold vapour atomic absorption. Results are reported on a wet basis (not corrected for any moisture content).

MET-200.2-CCMS-ED	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A (mod)

Soil/sediment is dried, disaggregated, and sieved (2 mm). Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.

Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H2S) may be excluded if lost during sampling, storage, or digestion.

MET-WET200.2-CCMS-ED	Waste	Metals in Waste by CRC ICPMS	EPA 200.2/6020A

This analysis is carried out using procedures from CSR Analytical Method: "Strong Acid Leachable Metals (SALM) in Soil", BC Ministry of Environment, 26 June 2009, and procedures adapted from EPA Method 200.2. The sample is manually homogenized, dried at 60 degrees Celsius, sieved through a 2 mm (10 mesh) sieve, and a representative subsample of the dry material is weighed. The sample is then digested at 95 degrees Celsius for 2 hours by block digester using concentrated nitric and hydrochloric acids. Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

PREP-MOISTURE-ED	Soil	% Moisture	CCME PHC in Soil - Tier 1 (mod)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
The weighed portion of soil is placed in a 105°C oven to dry to a constant weight; the drying time will vary based on the moisture content of the soil. The dried soil weight is then used to calculate % moisture.			
SPECIAL REQUEST-KL	Misc.	Special Request - Kelso	SEE SUBLET LAB RESULTS

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA
KL	ALS ENVIRONMENTAL - KELSO, WASHINGTON, USA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: Wood E&IS, a Division of Wood Canada Limited
#401, 1925 - 18 Ave NE
CALGARY AB T2E 7T8
Contact: Brian Geddes

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CR-CR6-3060-ED	**Soil**							
Batch R4470779								
WG2977857-3 CRM		**CR6-3060_SOIL**						
Hexavalent Chromium			99.2		%		80-120	26-JAN-19
WG2977857-2 LCS								
Hexavalent Chromium			104.2		%		80-120	26-JAN-19
WG2977857-1 MB								
Hexavalent Chromium			<0.10		mg/kg		0.1	26-JAN-19
HG-200.2-CVAA-ED	**Soil**							
Batch R4236441								
WG2884586-4 CRM		**TILL-1_SOIL**						
Mercury (Hg)			103.0		%		70-130	24-SEP-18
WG2884586-5 DUP		**L2160851-32**						
Mercury (Hg)		0.0495	0.0503		mg/kg	1.5	40	24-SEP-18
WG2884586-3 LCS								
Mercury (Hg)			122.0		%		70-130	24-SEP-18
WG2884586-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	24-SEP-18
MET-200.2-CCMS-ED	**Soil**							
Batch R4240927								
WG2884586-4 CRM		**TILL-1_SOIL**						
Aluminum (Al)			111.0		%		70-130	25-SEP-18
Antimony (Sb)			104.7		%		70-130	25-SEP-18
Arsenic (As)			103.7		%		70-130	25-SEP-18
Barium (Ba)			96.4		%		70-130	25-SEP-18
Beryllium (Be)			105.1		%		70-130	25-SEP-18
Bismuth (Bi)			110.0		%		70-130	25-SEP-18
Boron (B)			3.5		mg/kg		0-8.2	25-SEP-18
Cadmium (Cd)			113.3		%		70-130	25-SEP-18
Calcium (Ca)			114.5		%		70-130	25-SEP-18
Chromium (Cr)			111.4		%		70-130	25-SEP-18
Cobalt (Co)			107.0		%		70-130	25-SEP-18
Copper (Cu)			105.9		%		70-130	25-SEP-18
Iron (Fe)			108.5		%		70-130	25-SEP-18
Lead (Pb)			109.3		%		70-130	25-SEP-18
Lithium (Li)			104.0		%		70-130	25-SEP-18
Magnesium (Mg)			113.5		%		70-130	25-SEP-18
Manganese (Mn)			101.6		%		70-130	25-SEP-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R4240927								
WG2884586-4 CRM		**TILL-1_SOIL**						
Molybdenum (Mo)			103.7		%		70-130	25-SEP-18
Nickel (Ni)			107.2		%		70-130	25-SEP-18
Phosphorus (P)			105.1		%		70-130	25-SEP-18
Potassium (K)			110.8		%		70-130	25-SEP-18
Selenium (Se)			0.36		mg/kg		0.11-0.51	25-SEP-18
Silver (Ag)			0.24		mg/kg		0.13-0.33	25-SEP-18
Sodium (Na)			117.4		%		70-130	25-SEP-18
Strontium (Sr)			114.1		%		70-130	25-SEP-18
Thallium (Tl)			0.144		mg/kg		0.077-0.18	25-SEP-18
Tin (Sn)			1.1		mg/kg		0-3.1	25-SEP-18
Titanium (Ti)			121.5		%		70-130	25-SEP-18
Tungsten (W)			0.17		mg/kg		0-0.66	25-SEP-18
Uranium (U)			116.5		%		70-130	25-SEP-18
Vanadium (V)			110.9		%		70-130	25-SEP-18
Zinc (Zn)			107.9		%		70-130	25-SEP-18
Zirconium (Zr)			1.0		mg/kg		0-1.8	25-SEP-18
WG2884586-5 DUP		**L2160851-32**						
Aluminum (Al)		18000	16500		mg/kg	8.5	40	25-SEP-18
Antimony (Sb)		1.09	1.00		mg/kg	8.2	30	25-SEP-18
Arsenic (As)		11.4	10.9		mg/kg	5.1	30	25-SEP-18
Barium (Ba)		334	324		mg/kg	3.1	40	25-SEP-18
Beryllium (Be)		0.52	0.49		mg/kg	5.5	30	25-SEP-18
Bismuth (Bi)		<0.20	<0.20	RPD-NA	mg/kg	N/A	30	25-SEP-18
Boron (B)		<5.0	<5.0	RPD-NA	mg/kg	N/A	30	25-SEP-18
Cadmium (Cd)		0.126	0.125		mg/kg	0.6	30	25-SEP-18
Calcium (Ca)		4400	4260		mg/kg	3.2	30	25-SEP-18
Chromium (Cr)		39.2	35.9		mg/kg	8.8	30	25-SEP-18
Cobalt (Co)		9.98	9.71		mg/kg	2.7	30	25-SEP-18
Copper (Cu)		31.8	31.5		mg/kg	1.1	30	25-SEP-18
Iron (Fe)		26400	25900		mg/kg	1.6	30	25-SEP-18
Lead (Pb)		10.1	9.48		mg/kg	6.7	40	25-SEP-18
Lithium (Li)		11.7	11.8		mg/kg	0.6	30	25-SEP-18
Magnesium (Mg)		6380	5810		mg/kg	9.2	30	25-SEP-18
Manganese (Mn)		391	379		mg/kg	3.2	30	25-SEP-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R4240927								
WG2884586-5 DUP		**L2160851-32**						
Molybdenum (Mo)		1.12	1.08		mg/kg	3.9	40	25-SEP-18
Nickel (Ni)		37.9	33.0		mg/kg	14	30	25-SEP-18
Phosphorus (P)		628	602		mg/kg	4.3	30	25-SEP-18
Potassium (K)		880	760		mg/kg	14	40	25-SEP-18
Selenium (Se)		0.44	0.41		mg/kg	5.9	30	25-SEP-18
Silver (Ag)		0.14	0.14		mg/kg	1.4	40	25-SEP-18
Sodium (Na)		238	222		mg/kg	7.1	40	25-SEP-18
Strontium (Sr)		34.0	30.8		mg/kg	9.9	40	25-SEP-18
Sulfur (S)		<1000	<1000	RPD-NA	mg/kg	N/A	30	25-SEP-18
Thallium (Tl)		0.123	0.102		mg/kg	19	30	25-SEP-18
Tin (Sn)		<2.0	<2.0	RPD-NA	mg/kg	N/A	40	25-SEP-18
Titanium (Ti)		753	635		mg/kg	17	40	25-SEP-18
Tungsten (W)		<0.50	<0.50	RPD-NA	mg/kg	N/A	30	25-SEP-18
Uranium (U)		1.39	1.30		mg/kg	6.8	30	25-SEP-18
Vanadium (V)		60.2	56.7		mg/kg	6.0	30	25-SEP-18
Zinc (Zn)		66.5	65.1		mg/kg	2.2	30	25-SEP-18
Zirconium (Zr)		5.8	5.7		mg/kg	0.3	30	25-SEP-18
WG2884586-3 LCS								
Aluminum (Al)			106.8		%		80-120	25-SEP-18
Antimony (Sb)			102.7		%		80-120	25-SEP-18
Arsenic (As)			105.1		%		80-120	25-SEP-18
Barium (Ba)			102.0		%		80-120	25-SEP-18
Beryllium (Be)			98.0		%		80-120	25-SEP-18
Bismuth (Bi)			105.7		%		80-120	25-SEP-18
Boron (B)			100.0		%		80-120	25-SEP-18
Cadmium (Cd)			101.2		%		80-120	25-SEP-18
Calcium (Ca)			100.6		%		80-120	25-SEP-18
Chromium (Cr)			104.0		%		80-120	25-SEP-18
Cobalt (Co)			101.4		%		80-120	25-SEP-18
Copper (Cu)			102.2		%		80-120	25-SEP-18
Iron (Fe)			110.0		%		80-120	25-SEP-18
Lead (Pb)			102.6		%		80-120	25-SEP-18
Lithium (Li)			98.1		%		80-120	25-SEP-18
Magnesium (Mg)			107.6		%		80-120	25-SEP-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R4240927								
WG2884586-3 LCS								
Manganese (Mn)			103.2		%		80-120	25-SEP-18
Molybdenum (Mo)			103.9		%		80-120	25-SEP-18
Nickel (Ni)			102.2		%		80-120	25-SEP-18
Phosphorus (P)			114.3		%		80-120	25-SEP-18
Potassium (K)			99.4		%		80-120	25-SEP-18
Selenium (Se)			102.2		%		80-120	25-SEP-18
Silver (Ag)			103.7		%		80-120	25-SEP-18
Sodium (Na)			103.3		%		80-120	25-SEP-18
Strontium (Sr)			106.8		%		80-120	25-SEP-18
Sulfur (S)			105.0		%		80-120	25-SEP-18
Thallium (Tl)			107.6		%		80-120	25-SEP-18
Tin (Sn)			101.5		%		80-120	25-SEP-18
Titanium (Ti)			101.6		%		80-120	25-SEP-18
Tungsten (W)			106.9		%		80-120	25-SEP-18
Uranium (U)			112.1		%		80-120	25-SEP-18
Vanadium (V)			106.9		%		80-120	25-SEP-18
Zinc (Zn)			99.3		%		80-120	25-SEP-18
Zirconium (Zr)			96.1		%		80-120	25-SEP-18
WG2884586-1 MB								
Aluminum (Al)			<50		mg/kg		50	25-SEP-18
Antimony (Sb)			<0.10		mg/kg		0.1	25-SEP-18
Arsenic (As)			<0.10		mg/kg		0.1	25-SEP-18
Barium (Ba)			<0.50		mg/kg		0.5	25-SEP-18
Beryllium (Be)			<0.10		mg/kg		0.1	25-SEP-18
Bismuth (Bi)			<0.20		mg/kg		0.2	25-SEP-18
Boron (B)			<5.0		mg/kg		5	25-SEP-18
Cadmium (Cd)			<0.020		mg/kg		0.02	25-SEP-18
Calcium (Ca)			<50		mg/kg		50	25-SEP-18
Chromium (Cr)			<0.50		mg/kg		0.5	25-SEP-18
Cobalt (Co)			<0.10		mg/kg		0.1	25-SEP-18
Copper (Cu)			<0.50		mg/kg		0.5	25-SEP-18
Iron (Fe)			<50		mg/kg		50	25-SEP-18
Lead (Pb)			<0.50		mg/kg		0.5	25-SEP-18
Lithium (Li)			<2.0		mg/kg		2	25-SEP-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R4240927								
WG2884586-1 MB								
Magnesium (Mg)			<20		mg/kg		20	25-SEP-18
Manganese (Mn)			<1.0		mg/kg		1	25-SEP-18
Molybdenum (Mo)			<0.10		mg/kg		0.1	25-SEP-18
Nickel (Ni)			<0.50		mg/kg		0.5	25-SEP-18
Phosphorus (P)			<50		mg/kg		50	25-SEP-18
Potassium (K)			<100		mg/kg		100	25-SEP-18
Selenium (Se)			<0.20		mg/kg		0.2	25-SEP-18
Silver (Ag)			<0.10		mg/kg		0.1	25-SEP-18
Sodium (Na)			<50		mg/kg		50	25-SEP-18
Strontium (Sr)			<0.50		mg/kg		0.5	25-SEP-18
Sulfur (S)			<1000		mg/kg		1000	25-SEP-18
Thallium (Tl)			<0.050		mg/kg		0.05	25-SEP-18
Tin (Sn)			<2.0		mg/kg		2	25-SEP-18
Titanium (Ti)			<1.0		mg/kg		1	25-SEP-18
Tungsten (W)			<0.50		mg/kg		0.5	25-SEP-18
Uranium (U)			<0.050		mg/kg		0.05	25-SEP-18
Vanadium (V)			<0.20		mg/kg		0.2	25-SEP-18
Zinc (Zn)			<2.0		mg/kg		2	25-SEP-18
Zirconium (Zr)			<1.0		mg/kg		1	25-SEP-18
PREP-MOISTURE-ED	**Soil**							
Batch R4462788								
WG2975228-2 LCS								
% Moisture			98.0		%		90-110	23-JAN-19
WG2975228-1 MB								
% Moisture			<0.25		%		0.25	23-JAN-19
HG-WET-200.2-CVAA-ED	**Waste**							
Batch R4248008								
WG2885893-3 CRM		**TILL-1_SOIL**						
Mercury (Hg)			92.3		%		70-130	27-SEP-18
WG2885899-3 CRM		**TILL-1_SOIL**						
Mercury (Hg)			95.6		%		70-130	27-SEP-18
WG2885893-4 DUP		**L2160851-12**						
Mercury (Hg)		<0.50	<0.50	RPD-NA	mg/kg wwt	N/A	40	27-SEP-18
WG2885899-4 DUP		**L2160851-27**						
Mercury (Hg)		<0.050	<0.050	RPD-NA	mg/kg wwt	N/A	40	27-SEP-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-WET-200.2-CVAA-ED	**Waste**							
Batch R4248008								
WG2885893-2 LCS								
Mercury (Hg)			109.0		%		80-120	27-SEP-18
WG2885899-2 LCS								
Mercury (Hg)			114.0		%		80-120	27-SEP-18
WG2885893-1 MB								
Mercury (Hg)			<0.050		mg/kg wwt		0.05	27-SEP-18
WG2885899-1 MB								
Mercury (Hg)			<0.050		mg/kg wwt		0.05	27-SEP-18
MET-WET200.2-CCMS-ED	**Waste**							
Batch R4248515								
WG2885893-3 CRM		**TILL-1_SOIL**						
Aluminum (Al)			119.8		%		70-130	27-SEP-18
Antimony (Sb)			112.3		%		70-130	27-SEP-18
Arsenic (As)			119.1		%		70-130	27-SEP-18
Barium (Ba)			116.2		%		70-130	27-SEP-18
Beryllium (Be)			114.0		%		70-130	27-SEP-18
Bismuth (Bi)			107.1		%		70-130	27-SEP-18
Boron (B)			4.5		mg/kg wwt		0-8.2	27-SEP-18
Cadmium (Cd)			121.2		%		70-130	27-SEP-18
Calcium (Ca)			115.5		%		70-130	27-SEP-18
Chromium (Cr)			122.7		%		70-130	27-SEP-18
Cobalt (Co)			119.7		%		70-130	27-SEP-18
Copper (Cu)			120.0		%		70-130	27-SEP-18
Iron (Fe)			114.8		%		70-130	27-SEP-18
Lead (Pb)			109.8		%		70-130	27-SEP-18
Lithium (Li)			116.1		%		70-130	27-SEP-18
Magnesium (Mg)			113.8		%		70-130	27-SEP-18
Manganese (Mn)			116.9		%		70-130	27-SEP-18
Molybdenum (Mo)			114.4		%		70-130	27-SEP-18
Nickel (Ni)			122.0		%		70-130	27-SEP-18
Phosphorus (P)			117.5		%		70-130	27-SEP-18
Potassium (K)			118.6		%		70-130	27-SEP-18
Selenium (Se)			0.36		mg/kg wwt		0.11-0.51	27-SEP-18
Silver (Ag)			0.27		mg/kg wwt		0.13-0.33	27-SEP-18
Sodium (Na)			121.0		%		70-130	27-SEP-18
Strontium (Sr)			119.3		%		70-130	27-SEP-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET200.2-CCMS-ED	**Waste**							
Batch R4248515								
WG2885893-3 CRM		**TILL-1_SOIL**						
Thallium (Tl)			0.147		mg/kg wwt		0.077-0.18	27-SEP-18
Tin (Sn)			1.2		mg/kg wwt		0-3.1	27-SEP-18
Tungsten			0.19		mg/kg wwt		0-0.66	27-SEP-18
Uranium (U)			108.5		%		70-130	27-SEP-18
Vanadium (V)			124.4		%		70-130	27-SEP-18
Zinc (Zn)			123.9		%		70-130	27-SEP-18
Zirconium (Zr)			0.9		mg/kg wwt		0-1.8	27-SEP-18
WG2885899-3 CRM		**TILL-1_SOIL**						
Aluminum (Al)			100.2		%		70-130	27-SEP-18
Antimony (Sb)			101.4		%		70-130	27-SEP-18
Arsenic (As)			102.1		%		70-130	27-SEP-18
Barium (Ba)			97.6		%		70-130	27-SEP-18
Beryllium (Be)			107.1		%		70-130	27-SEP-18
Bismuth (Bi)			97.3		%		70-130	27-SEP-18
Boron (B)			5.5		mg/kg wwt		0-8.2	27-SEP-18
Cadmium (Cd)			96.8		%		70-130	27-SEP-18
Calcium (Ca)			102.3		%		70-130	27-SEP-18
Chromium (Cr)			105.6		%		70-130	27-SEP-18
Cobalt (Co)			99.6		%		70-130	27-SEP-18
Copper (Cu)			101.6		%		70-130	27-SEP-18
Iron (Fe)			102.8		%		70-130	27-SEP-18
Lead (Pb)			100.2		%		70-130	27-SEP-18
Lithium (Li)			107.2		%		70-130	27-SEP-18
Magnesium (Mg)			96.5		%		70-130	27-SEP-18
Manganese (Mn)			97.9		%		70-130	27-SEP-18
Molybdenum (Mo)			102.5		%		70-130	27-SEP-18
Nickel (Ni)			102.6		%		70-130	27-SEP-18
Phosphorus (P)			97.2		%		70-130	27-SEP-18
Potassium (K)			102.8		%		70-130	27-SEP-18
Selenium (Se)			0.35		mg/kg wwt		0.11-0.51	27-SEP-18
Silver (Ag)			0.24		mg/kg wwt		0.13-0.33	27-SEP-18
Sodium (Na)			105.2		%		70-130	27-SEP-18
Strontium (Sr)			105.5		%		70-130	27-SEP-18
Thallium (Tl)			0.135		mg/kg wwt		0.077-0.18	27-SEP-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET200.2-CCMS-ED	**Waste**							
Batch R4248515								
WG2885899-3 CRM		**TILL-1_SOIL**						
Tin (Sn)			1.0		mg/kg wwt		0-3.1	27-SEP-18
Titanium (Ti)			109.1		%		70-130	27-SEP-18
Tungsten			0.15		mg/kg wwt		0-0.66	27-SEP-18
Uranium (U)			99.6		%		70-130	27-SEP-18
Vanadium (V)			104.4		%		70-130	27-SEP-18
Zinc (Zn)			106.2		%		70-130	27-SEP-18
Zirconium (Zr)			0.8		mg/kg wwt		0-1.8	27-SEP-18
WG2885893-4 DUP		**L2160851-12**						
Aluminum (Al)		6610	6110		mg/kg wwt	7.8	50	27-SEP-18
Antimony (Sb)		3.43	3.60		mg/kg wwt	5.0	25	27-SEP-18
Arsenic (As)		16.1	17.6		mg/kg wwt	8.8	50	27-SEP-18
Barium (Ba)		78.7	103		mg/kg wwt	27	50	27-SEP-18
Beryllium (Be)		0.48	0.51		mg/kg wwt	7.6	50	27-SEP-18
Bismuth (Bi)		0.25	0.26		mg/kg wwt	4.4	50	27-SEP-18
Boron (B)		<5.0	<5.0	RPD-NA	mg/kg wwt	N/A	50	27-SEP-18
Cadmium (Cd)		3.88	4.81		mg/kg wwt	21	50	27-SEP-18
Calcium (Ca)		11500	17700		mg/kg wwt	42	50	27-SEP-18
Chromium (Cr)		18.4	18.7		mg/kg wwt	1.6	50	27-SEP-18
Cobalt (Co)		16.7	18.0		mg/kg wwt	7.6	50	27-SEP-18
Copper (Cu)		70.1	83.8		mg/kg wwt	18	50	27-SEP-18
Iron (Fe)		31200	33300		mg/kg wwt	6.6	50	27-SEP-18
Lead (Pb)		16.1	18.8		mg/kg wwt	16	50	27-SEP-18
Lithium (Li)		10.7	9.4		mg/kg wwt	13	50	27-SEP-18
Magnesium (Mg)		5970	7360		mg/kg wwt	21	50	27-SEP-18
Manganese (Mn)		327	487		mg/kg wwt	39	50	27-SEP-18
Molybdenum (Mo)		19.8	21.4		mg/kg wwt	8.1	50	27-SEP-18
Nickel (Ni)		80.3	82.0		mg/kg wwt	2.0	50	27-SEP-18
Phosphorus (P)		720	644		mg/kg wwt	11	50	27-SEP-18
Potassium (K)		490	480		mg/kg wwt	1.2	50	27-SEP-18
Selenium (Se)		7.60	8.34		mg/kg wwt	9.3	25	27-SEP-18
Silver (Ag)		0.78	0.85		mg/kg wwt	8.7	50	27-SEP-18
Sodium (Na)		<50	<50	RPD-NA	mg/kg wwt	N/A	25	27-SEP-18
Strontium (Sr)		67.9	95.5		mg/kg wwt	34	50	27-SEP-18
Sulfur		2100	2800	J	mg/kg wwt	700	2000	27-SEP-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET200.2-CCMS-ED	**Waste**							
Batch R4248515								
WG2885893-4 DUP		**L2160851-12**						
Thallium (Tl)		0.222	0.224		mg/kg wwt	0.8	50	27-SEP-18
Tin (Sn)		<2.0	<2.0	RPD-NA	mg/kg wwt	N/A	25	27-SEP-18
Titanium (Ti)		4.1	3.3		mg/kg wwt	22	50	27-SEP-18
Tungsten		<0.50	<0.50	RPD-NA	mg/kg wwt	N/A	25	27-SEP-18
Uranium (U)		1.32	1.46		mg/kg wwt	9.8	50	27-SEP-18
Vanadium (V)		32.7	34.8		mg/kg wwt	6.4	25	27-SEP-18
Zinc (Zn)		346	369		mg/kg wwt	6.3	50	27-SEP-18
Zirconium (Zr)		8.3	9.2		mg/kg wwt	9.7	50	27-SEP-18
WG2885899-4 DUP		**L2160851-27**						
Aluminum (Al)		4290	3540		mg/kg wwt	19	50	27-SEP-18
Arsenic (As)		0.83	0.58		mg/kg wwt	35	50	27-SEP-18
Barium (Ba)		6.67	6.33		mg/kg wwt	5.2	50	27-SEP-18
Beryllium (Be)		<0.10	<0.10	RPD-NA	mg/kg wwt	N/A	50	27-SEP-18
Bismuth (Bi)		<0.20	<0.20	RPD-NA	mg/kg wwt	N/A	50	27-SEP-18
Boron (B)		169	149		mg/kg wwt	13	50	27-SEP-18
Cadmium (Cd)		<0.020	<0.020	RPD-NA	mg/kg wwt	N/A	50	27-SEP-18
Calcium (Ca)		540	451		mg/kg wwt	18	50	27-SEP-18
Chromium (Cr)		2470	1870		mg/kg wwt	28	50	27-SEP-18
Cobalt (Co)		141	101		mg/kg wwt	33	50	27-SEP-18
Iron (Fe)		77700	57300		mg/kg wwt	30	50	27-SEP-18
Lead (Pb)		<0.50	<0.50	RPD-NA	mg/kg wwt	N/A	50	27-SEP-18
Lithium (Li)		<2.0	<2.0	RPD-NA	mg/kg wwt	N/A	50	27-SEP-18
Magnesium (Mg)		289000	231000		mg/kg wwt	22	50	27-SEP-18
Manganese (Mn)		818	608		mg/kg wwt	29	50	27-SEP-18
Molybdenum (Mo)		0.13	<0.10	RPD-NA	mg/kg wwt	N/A	50	27-SEP-18
Nickel (Ni)		3110	2110		mg/kg wwt	38	50	27-SEP-18
Phosphorus (P)		<50	<50	RPD-NA	mg/kg wwt	N/A	50	27-SEP-18
Potassium (K)		<100	<100	RPD-NA	mg/kg wwt	N/A	50	27-SEP-18
Selenium (Se)		<0.20	<0.20	RPD-NA	mg/kg wwt	N/A	25	27-SEP-18
Silver (Ag)		<0.10	<0.10	RPD-NA	mg/kg wwt	N/A	50	27-SEP-18
Sodium (Na)		<50	<50	RPD-NA	mg/kg wwt	N/A	25	27-SEP-18
Strontium (Sr)		4.20	3.54		mg/kg wwt	17	50	27-SEP-18
Sulfur		<1000	<1000	RPD-NA	mg/kg wwt	N/A	25	27-SEP-18
Thallium (Tl)		<0.050	<0.050	RPD-NA	mg/kg wwt	N/A	50	27-SEP-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET200.2-CCMS-ED	**Waste**							
Batch R4248515								
WG2885899-4 DUP		**L2160851-27**						
Tin (Sn)		<2.0	<2.0	RPD-NA	mg/kg wwt	N/A	25	27-SEP-18
Titanium (Ti)		30.4	27.4		mg/kg wwt	10	50	27-SEP-18
Tungsten		<0.50	<0.50	RPD-NA	mg/kg wwt	N/A	25	27-SEP-18
Uranium (U)		<0.050	<0.050	RPD-NA	mg/kg wwt	N/A	50	27-SEP-18
Vanadium (V)		34.7	27.2		mg/kg wwt	24	25	27-SEP-18
Zinc (Zn)		13.4	10.6		mg/kg wwt	23	50	27-SEP-18
Zirconium (Zr)		<1.0	<1.0	RPD-NA	mg/kg wwt	N/A	50	27-SEP-18
WG2885893-2 LCS								
Aluminum (Al)			97.9		%		80-120	27-SEP-18
Antimony (Sb)			100.7		%		80-120	27-SEP-18
Arsenic (As)			103.2		%		80-120	27-SEP-18
Barium (Ba)			100.3		%		80-120	27-SEP-18
Beryllium (Be)			96.2		%		80-120	27-SEP-18
Bismuth (Bi)			101.7		%		80-120	27-SEP-18
Boron (B)			94.8		%		80-120	27-SEP-18
Cadmium (Cd)			98.5		%		80-120	27-SEP-18
Calcium (Ca)			97.3		%		80-120	27-SEP-18
Chromium (Cr)			99.97		%		80-120	27-SEP-18
Cobalt (Co)			98.1		%		80-120	27-SEP-18
Copper (Cu)			96.2		%		80-120	27-SEP-18
Iron (Fe)			97.9		%		80-120	27-SEP-18
Lead (Pb)			98.7		%		80-120	27-SEP-18
Lithium (Li)			98.3		%		80-120	27-SEP-18
Magnesium (Mg)			93.8		%		80-120	27-SEP-18
Manganese (Mn)			99.1		%		80-120	27-SEP-18
Molybdenum (Mo)			101.1		%		80-120	27-SEP-18
Nickel (Ni)			98.7		%		80-120	27-SEP-18
Phosphorus (P)			99.8		%		80-120	27-SEP-18
Potassium (K)			100.9		%		80-120	27-SEP-18
Selenium (Se)			103.8		%		80-120	27-SEP-18
Silver (Ag)			100.8		%		80-120	27-SEP-18
Sodium (Na)			100.1		%		80-120	27-SEP-18
Strontium (Sr)			100.5		%		80-120	27-SEP-18
Sulfur			94.8		%		70-130	27-SEP-18

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET200.2-CCMS-ED	**Waste**							
Batch R4248515								
WG2885893-2 LCS								
Thallium (Tl)			98.2		%		80-120	27-SEP-18
Tin (Sn)			100.4		%		80-120	27-SEP-18
Titanium (Ti)			103.4		%		80-120	27-SEP-18
Tungsten			103.4		%		70-130	27-SEP-18
Uranium (U)			100.7		%		80-120	27-SEP-18
Vanadium (V)			102.0		%		80-120	27-SEP-18
Zinc (Zn)			98.7		%		80-120	27-SEP-18
Zirconium (Zr)			93.8		%		80-120	27-SEP-18
WG2885899-2 LCS								
Aluminum (Al)			100.3		%		80-120	27-SEP-18
Antimony (Sb)			103.0		%		80-120	27-SEP-18
Arsenic (As)			104.8		%		80-120	27-SEP-18
Barium (Ba)			103.6		%		80-120	27-SEP-18
Beryllium (Be)			96.6		%		80-120	27-SEP-18
Bismuth (Bi)			101.9		%		80-120	27-SEP-18
Boron (B)			95.4		%		80-120	27-SEP-18
Cadmium (Cd)			101.9		%		80-120	27-SEP-18
Calcium (Ca)			96.9		%		80-120	27-SEP-18
Chromium (Cr)			102.6		%		80-120	27-SEP-18
Cobalt (Co)			98.9		%		80-120	27-SEP-18
Copper (Cu)			99.2		%		80-120	27-SEP-18
Iron (Fe)			99.6		%		80-120	27-SEP-18
Lead (Pb)			100.0		%		80-120	27-SEP-18
Lithium (Li)			95.2		%		80-120	27-SEP-18
Magnesium (Mg)			95.8		%		80-120	27-SEP-18
Manganese (Mn)			100.4		%		80-120	27-SEP-18
Molybdenum (Mo)			101.2		%		80-120	27-SEP-18
Nickel (Ni)			100.4		%		80-120	27-SEP-18
Phosphorus (P)			96.2		%		80-120	27-SEP-18
Potassium (K)			101.8		%		80-120	27-SEP-18
Selenium (Se)			102.7		%		80-120	27-SEP-18
Silver (Ag)			102.8		%		80-120	27-SEP-18
Sodium (Na)			99.7		%		80-120	27-SEP-18
Strontium (Sr)			99.5		%		80-120	27-SEP-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET200.2-CCMS-ED	**Waste**							
Batch R4248515								
WG2885899-2 LCS								
Sulfur			96.5		%		70-130	27-SEP-18
Thallium (Tl)			99.4		%		80-120	27-SEP-18
Tin (Sn)			103.2		%		80-120	27-SEP-18
Titanium (Ti)			103.0		%		80-120	27-SEP-18
Tungsten			105.9		%		70-130	27-SEP-18
Uranium (U)			101.3		%		80-120	27-SEP-18
Vanadium (V)			105.0		%		80-120	27-SEP-18
Zinc (Zn)			98.7		%		80-120	27-SEP-18
Zirconium (Zr)			96.8		%		80-120	27-SEP-18
WG2885893-1 MB								
Aluminum (Al)			<50		mg/kg wwt		50	27-SEP-18
Antimony (Sb)			<0.10		mg/kg wwt		0.1	27-SEP-18
Arsenic (As)			<0.10		mg/kg wwt		0.1	27-SEP-18
Barium (Ba)			<0.50		mg/kg wwt		0.5	27-SEP-18
Beryllium (Be)			<0.10		mg/kg wwt		0.1	27-SEP-18
Bismuth (Bi)			<0.20		mg/kg wwt		0.2	27-SEP-18
Boron (B)			<5.0		mg/kg wwt		5	27-SEP-18
Cadmium (Cd)			<0.020		mg/kg wwt		0.02	27-SEP-18
Calcium (Ca)			<50		mg/kg wwt		50	27-SEP-18
Chromium (Cr)			<0.50		mg/kg wwt		0.5	27-SEP-18
Cobalt (Co)			<0.10		mg/kg wwt		0.1	27-SEP-18
Copper (Cu)			<0.50		mg/kg wwt		0.5	27-SEP-18
Iron (Fe)			<50		mg/kg wwt		50	27-SEP-18
Lead (Pb)			<0.50		mg/kg wwt		0.5	27-SEP-18
Lithium (Li)			<2.0		mg/kg wwt		2	27-SEP-18
Magnesium (Mg)			<20		mg/kg wwt		20	27-SEP-18
Manganese (Mn)			<1.0		mg/kg wwt		1	27-SEP-18
Molybdenum (Mo)			<0.10		mg/kg wwt		0.1	27-SEP-18
Nickel (Ni)			<0.50		mg/kg wwt		0.5	27-SEP-18
Phosphorus (P)			<50		mg/kg wwt		50	27-SEP-18
Potassium (K)			<100		mg/kg wwt		100	27-SEP-18
Selenium (Se)			<0.20		mg/kg wwt		0.2	27-SEP-18
Silver (Ag)			<0.10		mg/kg wwt		0.1	27-SEP-18
Sodium (Na)			<50		mg/kg wwt		50	27-SEP-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET200.2-CCMS-ED	**Waste**							
Batch R4248515								
WG2885893-1 MB								
Strontium (Sr)			<0.50		mg/kg wwt		0.5	27-SEP-18
Sulfur			<1000		mg/kg wwt		1000	27-SEP-18
Thallium (Tl)			<0.050		mg/kg wwt		0.05	27-SEP-18
Tin (Sn)			<2.0		mg/kg wwt		2	27-SEP-18
Titanium (Ti)			<1.0		mg/kg wwt		1	27-SEP-18
Tungsten			<0.50		mg/kg wwt		0.5	27-SEP-18
Uranium (U)			<0.050		mg/kg wwt		0.05	27-SEP-18
Vanadium (V)			<0.20		mg/kg wwt		0.2	27-SEP-18
Zinc (Zn)			<2.0		mg/kg wwt		2	27-SEP-18
Zirconium (Zr)			<1.0		mg/kg wwt		1	27-SEP-18
WG2885899-1 MB								
Aluminum (Al)			<50		mg/kg wwt		50	27-SEP-18
Antimony (Sb)			<0.10		mg/kg wwt		0.1	27-SEP-18
Arsenic (As)			<0.10		mg/kg wwt		0.1	27-SEP-18
Barium (Ba)			<0.50		mg/kg wwt		0.5	27-SEP-18
Beryllium (Be)			<0.10		mg/kg wwt		0.1	27-SEP-18
Bismuth (Bi)			<0.20		mg/kg wwt		0.2	27-SEP-18
Boron (B)			<5.0		mg/kg wwt		5	27-SEP-18
Cadmium (Cd)			<0.020		mg/kg wwt		0.02	27-SEP-18
Calcium (Ca)			<50		mg/kg wwt		50	27-SEP-18
Chromium (Cr)			<0.50		mg/kg wwt		0.5	27-SEP-18
Cobalt (Co)			<0.10		mg/kg wwt		0.1	27-SEP-18
Copper (Cu)			<0.50		mg/kg wwt		0.5	27-SEP-18
Iron (Fe)			<50		mg/kg wwt		50	27-SEP-18
Lead (Pb)			<0.50		mg/kg wwt		0.5	27-SEP-18
Lithium (Li)			<2.0		mg/kg wwt		2	27-SEP-18
Magnesium (Mg)			<20		mg/kg wwt		20	27-SEP-18
Manganese (Mn)			<1.0		mg/kg wwt		1	27-SEP-18
Molybdenum (Mo)			<0.10		mg/kg wwt		0.1	27-SEP-18
Nickel (Ni)			<0.50		mg/kg wwt		0.5	27-SEP-18
Phosphorus (P)			<50		mg/kg wwt		50	27-SEP-18
Potassium (K)			<100		mg/kg wwt		100	27-SEP-18
Selenium (Se)			<0.20		mg/kg wwt		0.2	27-SEP-18
Silver (Ag)			<0.10		mg/kg wwt		0.1	27-SEP-18

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET200.2-CCMS-ED	**Waste**							
Batch R4248515								
WG2885899-1 MB								
Sodium (Na)			<50		mg/kg wwt		50	27-SEP-18
Strontium (Sr)			<0.50		mg/kg wwt		0.5	27-SEP-18
Sulfur			<1000		mg/kg wwt		1000	27-SEP-18
Thallium (Tl)			<0.050		mg/kg wwt		0.05	27-SEP-18
Tin (Sn)			<2.0		mg/kg wwt		2	27-SEP-18
Titanium (Ti)			<1.0		mg/kg wwt		1	27-SEP-18
Tungsten			<0.50		mg/kg wwt		0.5	27-SEP-18
Uranium (U)			<0.050		mg/kg wwt		0.05	27-SEP-18
Vanadium (V)			<0.20		mg/kg wwt		0.2	27-SEP-18
Zinc (Zn)			<2.0		mg/kg wwt		2	27-SEP-18
Zirconium (Zr)			<1.0		mg/kg wwt		1	27-SEP-18
Batch R4251434								
WG2885893-3 CRM		**TILL-1_SOIL**						
Titanium (Ti)			113.9		%		70-130	28-SEP-18
Batch R4257738								
WG2892499-3 CRM		**TILL-1_SOIL**						
Aluminum (Al)			96.8		%		70-130	02-OCT-18
Antimony (Sb)			96.1		%		70-130	02-OCT-18
Arsenic (As)			97.1		%		70-130	02-OCT-18
Barium (Ba)			91.6		%		70-130	02-OCT-18
Beryllium (Be)			90.4		%		70-130	02-OCT-18
Bismuth (Bi)			96.9		%		70-130	02-OCT-18
Boron (B)			5.5		mg/kg wwt		0-8.2	02-OCT-18
Cadmium (Cd)			98.0		%		70-130	02-OCT-18
Calcium (Ca)			92.6		%		70-130	02-OCT-18
Chromium (Cr)			95.0		%		70-130	02-OCT-18
Cobalt (Co)			98.0		%		70-130	02-OCT-18
Copper (Cu)			101.3		%		70-130	02-OCT-18
Iron (Fe)			96.8		%		70-130	02-OCT-18
Lead (Pb)			96.0		%		70-130	02-OCT-18
Lithium (Li)			96.5		%		70-130	02-OCT-18
Magnesium (Mg)			93.8		%		70-130	02-OCT-18
Manganese (Mn)			96.5		%		70-130	02-OCT-18
Molybdenum (Mo)			95.6		%		70-130	02-OCT-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET200.2-CCMS-ED	**Waste**							
Batch R4257738								
WG2892499-3 CRM		**TILL-1_SOIL**						
Nickel (Ni)			98.7		%		70-130	02-OCT-18
Phosphorus (P)			97.1		%		70-130	02-OCT-18
Potassium (K)			93.2		%		70-130	02-OCT-18
Selenium (Se)			0.30		mg/kg wwt		0.11-0.51	02-OCT-18
Silver (Ag)			0.23		mg/kg wwt		0.13-0.33	02-OCT-18
Sodium (Na)			97.9		%		70-130	02-OCT-18
Strontium (Sr)			91.3		%		70-130	02-OCT-18
Thallium (Tl)			0.122		mg/kg wwt		0.077-0.18	02-OCT-18
Tin (Sn)			0.9		mg/kg wwt		0-3.1	02-OCT-18
Titanium (Ti)			94.5		%		70-130	02-OCT-18
Tungsten			0.15		mg/kg wwt		0-0.66	02-OCT-18
Uranium (U)			97.6		%		70-130	02-OCT-18
Vanadium (V)			94.9		%		70-130	02-OCT-18
Zinc (Zn)			93.5		%		70-130	02-OCT-18
Zirconium (Zr)			1.2		mg/kg wwt		0-1.8	02-OCT-18
WG2885899-4 DUP		**L2160851-27**						
Antimony (Sb)		1.08	1.18		mg/kg wwt	8.6	25	02-OCT-18
Copper (Cu)		1.20	0.72	J	mg/kg wwt	0.48	1	02-OCT-18
WG2892499-4 DUP		**L2160851-27**						
Aluminum (Al)		4290	2680		mg/kg wwt	3.5	50	02-OCT-18
Antimony (Sb)		1.08	1.27		mg/kg wwt	16	25	02-OCT-18
Arsenic (As)		0.83	0.35		mg/kg wwt	17	50	02-OCT-18
Barium (Ba)		6.67	2.80		mg/kg wwt	36	50	02-OCT-18
Beryllium (Be)		<0.10	<0.10	RPD-NA	mg/kg wwt	N/A	50	02-OCT-18
Bismuth (Bi)		<0.20	<0.20	RPD-NA	mg/kg wwt	N/A	50	02-OCT-18
Boron (B)		169	125		mg/kg wwt	6.9	50	02-OCT-18
Cadmium (Cd)		<0.020	<0.020	RPD-NA	mg/kg wwt	N/A	50	02-OCT-18
Calcium (Ca)		540	224		mg/kg wwt	8.2	50	02-OCT-18
Chromium (Cr)		2470	1410		mg/kg wwt	11	50	02-OCT-18
Cobalt (Co)		141	77.6		mg/kg wwt	0.2	50	02-OCT-18
Copper (Cu)		1.20	0.76		mg/kg wwt	44	50	02-OCT-18
Iron (Fe)		77700	41600		mg/kg wwt	4.1	50	02-OCT-18
Lead (Pb)		<0.50	<0.50	RPD-NA	mg/kg wwt	N/A	50	02-OCT-18
Lithium (Li)		<2.0	<2.0	RPD-NA	mg/kg wwt	N/A	50	02-OCT-18
Magnesium (Mg)		289000	186000		mg/kg wwt	5.8	50	02-OCT-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET200.2-CCMS-ED	**Waste**							
Batch R4257738								
WG2892499-4 DUP		**L2160851-27**						
Manganese (Mn)		818	439		mg/kg wwt	3.6	50	02-OCT-18
Molybdenum (Mo)		0.13	<0.10	RPD-NA	mg/kg wwt	N/A	50	02-OCT-18
Nickel (Ni)		3110	1760		mg/kg wwt	5.6	50	02-OCT-18
Phosphorus (P)		<50	<50	RPD-NA	mg/kg wwt	N/A	50	02-OCT-18
Potassium (K)		<100	<100	RPD-NA	mg/kg wwt	N/A	50	02-OCT-18
Selenium (Se)		<0.20	<0.20	RPD-NA	mg/kg wwt	N/A	25	02-OCT-18
Silver (Ag)		<0.10	<0.10	RPD-NA	mg/kg wwt	N/A	50	02-OCT-18
Sodium (Na)		<50	<50	RPD-NA	mg/kg wwt	N/A	25	02-OCT-18
Strontium (Sr)		4.20	1.69		mg/kg wwt	18	50	02-OCT-18
Sulfur		<1000	<1000	RPD-NA	mg/kg wwt	N/A	25	02-OCT-18
Thallium (Tl)		<0.050	<0.050	RPD-NA	mg/kg wwt	N/A	50	02-OCT-18
Tin (Sn)		<2.0	<2.0	RPD-NA	mg/kg wwt	N/A	25	02-OCT-18
Titanium (Ti)		30.4	15.4		mg/kg wwt	8.6	50	02-OCT-18
Tungsten		<0.50	<0.50	RPD-NA	mg/kg wwt	N/A	25	02-OCT-18
Uranium (U)		<0.050	<0.050	RPD-NA	mg/kg wwt	N/A	50	02-OCT-18
Vanadium (V)		34.7	19.1		mg/kg wwt	2.2	25	02-OCT-18
Zinc (Zn)		13.4	7.3		mg/kg wwt	3.7	50	02-OCT-18
Zirconium (Zr)		<1.0	<1.0	RPD-NA	mg/kg wwt	N/A	50	02-OCT-18
WG2892499-2 LCS								
Aluminum (Al)			101.7		%		80-120	02-OCT-18
Antimony (Sb)			100.5		%		80-120	02-OCT-18
Arsenic (As)			100.9		%		80-120	02-OCT-18
Barium (Ba)			99.8		%		80-120	02-OCT-18
Beryllium (Be)			95.0		%		80-120	02-OCT-18
Bismuth (Bi)			103.7		%		80-120	02-OCT-18
Boron (B)			95.8		%		80-120	02-OCT-18
Cadmium (Cd)			96.7		%		80-120	02-OCT-18
Calcium (Ca)			95.6		%		80-120	02-OCT-18
Chromium (Cr)			96.9		%		80-120	02-OCT-18
Cobalt (Co)			100.3		%		80-120	02-OCT-18
Copper (Cu)			98.2		%		80-120	02-OCT-18
Iron (Fe)			99.7		%		80-120	02-OCT-18
Lead (Pb)			98.2		%		80-120	02-OCT-18
Lithium (Li)			92.9		%		80-120	02-OCT-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET200.2-CCMS-ED	**Waste**							
Batch R4257738								
WG2892499-2 LCS								
Magnesium (Mg)			98.0		%		80-120	02-OCT-18
Manganese (Mn)			98.7		%		80-120	02-OCT-18
Molybdenum (Mo)			95.3		%		80-120	02-OCT-18
Nickel (Ni)			98.9		%		80-120	02-OCT-18
Phosphorus (P)			99.9		%		80-120	02-OCT-18
Potassium (K)			99.4		%		80-120	02-OCT-18
Selenium (Se)			97.8		%		80-120	02-OCT-18
Silver (Ag)			100.2		%		80-120	02-OCT-18
Sodium (Na)			98.4		%		80-120	02-OCT-18
Strontium (Sr)			95.6		%		80-120	02-OCT-18
Sulfur			97.7		%		70-130	02-OCT-18
Thallium (Tl)			98.7		%		80-120	02-OCT-18
Tin (Sn)			98.9		%		80-120	02-OCT-18
Titanium (Ti)			99.9		%		80-120	02-OCT-18
Tungsten			101.0		%		70-130	02-OCT-18
Uranium (U)			103.2		%		80-120	02-OCT-18
Vanadium (V)			98.9		%		80-120	02-OCT-18
Zinc (Zn)			93.2		%		80-120	02-OCT-18
Zirconium (Zr)			92.8		%		80-120	02-OCT-18
WG2892499-1 MB								
Aluminum (Al)			<50		mg/kg wwt		50	02-OCT-18
Antimony (Sb)			<0.10		mg/kg wwt		0.1	02-OCT-18
Arsenic (As)			<0.10		mg/kg wwt		0.1	02-OCT-18
Barium (Ba)			<0.50		mg/kg wwt		0.5	02-OCT-18
Beryllium (Be)			<0.10		mg/kg wwt		0.1	02-OCT-18
Bismuth (Bi)			<0.20		mg/kg wwt		0.2	02-OCT-18
Boron (B)			<5.0		mg/kg wwt		5	02-OCT-18
Cadmium (Cd)			<0.020		mg/kg wwt		0.02	02-OCT-18
Calcium (Ca)			<50		mg/kg wwt		50	02-OCT-18
Chromium (Cr)			<0.50		mg/kg wwt		0.5	02-OCT-18
Cobalt (Co)			<0.10		mg/kg wwt		0.1	02-OCT-18
Copper (Cu)			<0.50		mg/kg wwt		0.5	02-OCT-18
Iron (Fe)			<50		mg/kg wwt		50	02-OCT-18
Lead (Pb)			<0.50		mg/kg wwt		0.5	02-OCT-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET200.2-CCMS-ED	**Waste**							
Batch R4257738								
WG2892499-1 MB								
Lithium (Li)			<2.0		mg/kg wwt		2	02-OCT-18
Magnesium (Mg)			<20		mg/kg wwt		20	02-OCT-18
Manganese (Mn)			<1.0		mg/kg wwt		1	02-OCT-18
Molybdenum (Mo)			<0.10		mg/kg wwt		0.1	02-OCT-18
Nickel (Ni)			<0.50		mg/kg wwt		0.5	02-OCT-18
Phosphorus (P)			<50		mg/kg wwt		50	02-OCT-18
Potassium (K)			<100		mg/kg wwt		100	02-OCT-18
Selenium (Se)			<0.20		mg/kg wwt		0.2	02-OCT-18
Silver (Ag)			<0.10		mg/kg wwt		0.1	02-OCT-18
Sodium (Na)			<50		mg/kg wwt		50	02-OCT-18
Strontium (Sr)			<0.50		mg/kg wwt		0.5	02-OCT-18
Sulfur			<1000		mg/kg wwt		1000	02-OCT-18
Thallium (Tl)			<0.050		mg/kg wwt		0.05	02-OCT-18
Tin (Sn)			<2.0		mg/kg wwt		2	02-OCT-18
Titanium (Ti)			<1.0		mg/kg wwt		1	02-OCT-18
Tungsten			<0.50		mg/kg wwt		0.5	02-OCT-18
Uranium (U)			<0.050		mg/kg wwt		0.05	02-OCT-18
Vanadium (V)			<0.20		mg/kg wwt		0.2	02-OCT-18
Zinc (Zn)			<2.0		mg/kg wwt		2	02-OCT-18
Zirconium (Zr)			<1.0		mg/kg wwt		1	02-OCT-18
ASBESTOS-BULK-ED	**Bulk**							
Batch R4216477								
WG2876466-2 LCS								
Asbestos: Chrysotile			75-100		%			14-SEP-18
WG2876466-1 MB								
Asbestos			<1		%			14-SEP-18
Other Fibres			<1		%			14-SEP-18
Batch R4217375								
WG2877219-3 DUP		**L2160851-11**						
Asbestos: Chrysotile		25-50	25-50		%	25-50		13-SEP-18
Mica		Trace <1	Trace <1		%	Trace <1		13-SEP-18
WG2877219-2 LCS								
Asbestos: Crocidolite			75-100		%			13-SEP-18
Other Fibres			<1		%			13-SEP-18
WG2877219-1 MB								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ASBESTOS-BULK-ED	**Bulk**							
Batch R4217375								
WG2877219-1 MB								
Asbestos			<1		%			13-SEP-18
Other Fibres			<1		%			13-SEP-18
Batch R4217816								
WG2878196-2 LCS								
Asbestos: Chrysotile			75-100		%			17-SEP-18
WG2878196-1 MB								
Asbestos			<1		%			17-SEP-18
Other Fibres			<1		%			17-SEP-18
Batch R4217963								
WG2877348-2 LCS								
Asbestos: Amosite			75-100		%			14-SEP-18
Other Fibres			<1		%			14-SEP-18
WG2877348-1 MB								
Asbestos			<1		%			14-SEP-18
Other Fibres			<1		%			14-SEP-18
ASBESTOS-PTCT-ED	**Bulk**							
Batch R4216477								
WG2876466-3 DUP		**L2160851-1**						
Asbestos: Chrysotile		0.60	0.80	J	%	0.20	0.6	14-SEP-18
Other Fibres: Cellulose		Trace <1	Trace <1		%	Trace <1	50	14-SEP-18
Mica		1-5	1-5		%	1-5	50	14-SEP-18
WG2876466-2 LCS								
Asbestos: Chrysotile			75-100		%			14-SEP-18
WG2876466-1 MB								
Asbestos By Point Count			<0.10		%		0.1	14-SEP-18
Other Fibres			<1		%			14-SEP-18
Batch R4217375								
WG2877219-2 LCS								
Asbestos: Crocidolite			75-100		%			13-SEP-18
Other Fibres			<1		%			13-SEP-18
WG2877219-1 MB								
Asbestos By Point Count			<0.1		%			13-SEP-18
Other Fibres			<1		%			13-SEP-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ASBESTOS-PTCT-ED	**Bulk**							
Batch R4217816								
WG2878196-5 DUP		**L2160851-23**						
Asbestos: Chrysotile		0.80	0.60	J	%	0.20	0.6	17-SEP-18
Other Fibres: Cellulose		1-5	1-5		%	1-5	50	17-SEP-18
Mica		Trace <1	Trace <1		%	Trace <1	50	17-SEP-18
WG2878196-2 LCS								
Asbestos: Chrysotile			75-100		%			17-SEP-18
WG2878196-1 MB								
Asbestos By Point Count			<0.10		%		0.1	17-SEP-18
Other Fibres			<1		%			17-SEP-18
Batch R4217963								
WG2877348-2 LCS								
Asbestos: Amosite			75-100		%			14-SEP-18
Other Fibres			<1		%			14-SEP-18
WG2877348-1 MB								
Asbestos By Point Count			<0.1		%			14-SEP-18
Other Fibres			<1		%			14-SEP-18

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Speciated Metals							
Chromium, Hexavalent (Cr +6)							
	4	03-SEP-18	26-JAN-19 00:00	30	145	days	EHT
	6	31-AUG-18	26-JAN-19 00:00	30	148	days	EHT
	8	03-SEP-18	26-JAN-19 00:00	30	145	days	EHT
	9	03-SEP-18	26-JAN-19 00:00	30	145	days	EHT
	32	02-SEP-18	26-JAN-19 00:00	30	146	days	EHT

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2160851 were received on 08-SEP-18 10:27.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

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February 26, 2019

Analytical Report for Service Request No: K1900611

Suzette Chin
ALS Environmental - Canada
9450-17 Ave. NW
Edmonton, AB T6N 1M9

RE: L2160851

Dear Suzette,

Enclosed are the results of the sample(s) submitted to our laboratory January 22, 2019
For your reference, these analyses have been assigned our service request number **K1900611.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Elizabeth Harris
Project Manager

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Raw Data
    Total Solids
    Metals

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: ALS Environmental - Canada
Project: L2160851
Sample Matrix: Soil

Service Request: K1900611
Date Received: 01/22/2019

CASE NARRATIVE

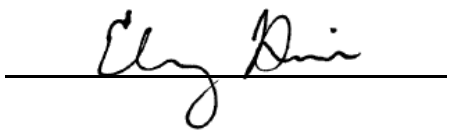
All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt:

Five soil samples were received for analysis at ALS Environmental on 01/22/2019. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4ºC upon receipt at the laboratory.

Metals:

Method 6020A, 02/15/2019: The Relative Percent Difference (RPD) for the replicate analysis of Total Chromium in sample L2160851-4 was outside the normal ALS control limits. The variability in the results was attributed to the heterogeneous character of the sample. Standard mixing techniques were used, but were not sufficient for complete homogenization of this sample.

Approved by  Date 02/26/2019

Chain of Custody

ALS Environmental—Kelso Laboratory
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ALS Environmental

Subcontract Request Form

KL900611

Subcontract To:

ALS ENVIRONMENTAL - KELSO, WASHINGTON, USA
1317 S. 13TH AVE
KELSO,WA 98626

NOTES: Please reference on final report and invoice: PO# *L2160851*
ALS requires QC data to be provided with your final results.

Please see enclosed 5 sample(s) in 0 Container(s)

SAMPLE NUMBER	ANALYTICAL REQUIRED	DATE SAMPLED / DUE DATE	Priority Flag
L2160851-4 18-BH05-01		**9/3/2018**	
	Special Request - Kelso (SPECIAL REQUEST-KL 14)	3/5/2019	
L2160851-6 18-BH06-02		**8/31/2018**	
	Special Request - Kelso (SPECIAL REQUEST-KL 14)	3/5/2019	
L2160851-8 18-BH07-02		**9/3/2018**	
	Special Request - Kelso (SPECIAL REQUEST-KL 14)	3/5/2019	
L2160851-9 18-BH08-01		**9/3/2018**	
	Special Request - Kelso (SPECIAL REQUEST-KL 14)	3/5/2019	
L2160851-32 18-MILL-DUP-05		**9/2/2018**	
	Special Request - Kelso (SPECIAL REQUEST-KL 14)	3/5/2019	

Subcontract Info Contact: Rani Mangru (780) 413-5242
Analysis and reporting info contact: Suzette Chin
9450 17 AVENUE NW
EDMONTON,AB T6N 1M9
Phone: (780) 413-5242 Email: Suzette.Chin@alsglobal.com

Please email confirmation of receipt to: Suzette.Chin@alsglobal.com

Shipped By: _____ Date Shipped: _____
Received By: _____ Date Received: 1/22/19 0945
Verified By: _____ Date Verified: _____
Temperature: _____

Sample Integrity Issues: _____

PC 01

Cooler Receipt and Preservation Form

Client ALS / Canada Service Request KTS 1900611

Received: 1/22/19 Opened: 1/22/19 By: [signature] Unloaded: 1/22/19 By: [signature]

1. Samples were received via? *USPS* (*FedEx*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y (N) If yes, how many and where? _____
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID (NA)	Tracking Number NA	Filed
6.4	6.3	—	—	-0.1	370		774271843427	

4. Packing material: *Inserts* (*Baggies*) (*Bubble Wrap*) (*Gel Packs*) *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA Y (N)
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time
All		X								

Notes, Discrepancies, & Resolutions: _____

Total Solids

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www.alsglobal.com

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900611
Project:	L2160851	**Date Collected:**	08/31/18 - 09/03/18
Sample Matrix:	Soil	**Date Received:**	01/22/19
Analysis Method:	160.3 Modified	**Units:**	Percent
Prep Method:	None	**Basis:**	As Received

Solids, Total

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
L2160851-4	K1900611-001	**91.1**	-	1	02/13/19 15:51	
L2160851-6	K1900611-002	**93.8**	-	1	02/13/19 15:51	
L2160851-8	K1900611-003	**91.3**	-	1	02/13/19 15:51	
L2160851-9	K1900611-004	**89.7**	-	1	02/13/19 15:51	
L2160851-32	K1900611-005	**88.2**	-	1	02/13/19 15:51	

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900611
Project:	L2160851	**Date Collected:**	08/31/18 - 09/03/18
Sample Matrix:	Soil	**Date Received:**	01/22/19
Analysis Method:	160.3 Modified	**Units:**	Percent
Prep Method:	None	**Basis:**	Air Dried

Solids, Total

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
L2160851-4	K1900611-001	**98.3**	-	1	02/13/19 14:54	
L2160851-6	K1900611-002	**98.8**	-	1	02/13/19 14:54	
L2160851-8	K1900611-003	**98.7**	-	1	02/13/19 14:54	
L2160851-9	K1900611-004	**96.7**	-	1	02/13/19 14:54	
L2160851-32	K1900611-005	**97.1**	-	1	02/13/19 14:54	

Metals

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900611
Project:	L2160851	**Date Collected:**	09/03/18
Sample Matrix:	Soil	**Date Received:**	01/22/19
		Date Extracted:	02/14/19
		Date Analyzed:	02/15/19

Bioaccessibility Value
Analyte: Chromium
Units: Percent (%)

Sample Name	Lab Code	Result
L2160851-4	K1900611-001	5.7
L2160851-6	K1900611-002	27.9
L2160851-8	K1900611-003	14.5
L2160851-9	K1900611-004	1.9
L2160851-32	K1900611-005	3.0

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900611
Project:	L2160851	**Date Collected:**	09/03/18
Sample Matrix:	Soil	**Date Received:**	01/22/19 09:45
Sample Name:	L2160851-4	**Basis:**	Dry
Lab Code:	K1900611-001		

Total Metals – IVBA Analysis

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Chromium	6020A	**21.1**	mg/Kg	0.20	5	02/15/19 13:11	02/14/19	

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900611
Project:	L2160851	**Date Collected:**	09/03/18
Sample Matrix:	Soil	**Date Received:**	01/22/19 09:45
Sample Name:	L2160851-4	**Basis:**	Dry
Lab Code:	K1900611-001		

IVBA Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Chromium	6020A	**1.20**	mg/Kg	0.20	5	02/15/19 13:41	02/14/19	

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900611
Project:	L2160851	**Date Collected:**	09/03/18
Sample Matrix:	Soil	**Date Received:**	01/22/19 09:45
Sample Name:	L2160851-4	**Basis:**	Dry
Lab Code:	K1900611-001		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Chromium	6020A	**16.7**	mg/Kg	0.22	5	02/15/19 14:18	02/14/19	

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900611
Project:	L2160851	**Date Collected:**	08/31/18
Sample Matrix:	Soil	**Date Received:**	01/22/19 09:45
Sample Name:	L2160851-6	**Basis:**	Dry
Lab Code:	K1900611-002		

Total Metals – IVBA Analysis

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Chromium	6020A	**7.54**	mg/Kg	0.20	5	02/15/19 13:22	02/14/19	

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900611
Project:	L2160851	**Date Collected:**	08/31/18
Sample Matrix:	Soil	**Date Received:**	01/22/19 09:45
Sample Name:	L2160851-6	**Basis:**	Dry
Lab Code:	K1900611-002		

IVBA Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Chromium	6020A	**2.10**	mg/Kg	0.20	5	02/15/19 13:50	02/14/19	

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900611
Project:	L2160851	**Date Collected:**	08/31/18
Sample Matrix:	Soil	**Date Received:**	01/22/19 09:45
Sample Name:	L2160851-6	**Basis:**	Dry
Lab Code:	K1900611-002		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Chromium	6020A	**7.05**	mg/Kg	0.21	5	02/15/19 14:29	02/14/19	

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900611
Project:	L2160851	**Date Collected:**	09/03/18
Sample Matrix:	Soil	**Date Received:**	01/22/19 09:45
Sample Name:	L2160851-8	**Basis:**	Dry
Lab Code:	K1900611-003		

Total Metals – IVBA Analysis

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Chromium	6020A	**11.5**	mg/Kg	0.20	5	02/15/19 13:28	02/14/19	

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900611
Project:	L2160851	**Date Collected:**	09/03/18
Sample Matrix:	Soil	**Date Received:**	01/22/19 09:45
Sample Name:	L2160851-8	**Basis:**	Dry
Lab Code:	K1900611-003		

IVBA Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Chromium	6020A	**1.67**	mg/Kg	0.20	5	02/15/19 13:56	02/14/19	

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900611
Project:	L2160851	**Date Collected:**	09/03/18
Sample Matrix:	Soil	**Date Received:**	01/22/19 09:45
Sample Name:	L2160851-8	**Basis:**	Dry
Lab Code:	K1900611-003		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Chromium	6020A	**8.92**	mg/Kg	0.22	5	02/15/19 14:31	02/14/19	

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900611
Project:	L2160851	**Date Collected:**	09/03/18
Sample Matrix:	Soil	**Date Received:**	01/22/19 09:45
Sample Name:	L2160851-9	**Basis:**	Dry
Lab Code:	K1900611-004		

Total Metals – IVBA Analysis

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Chromium	6020A	**18.1**	mg/Kg	0.21	5	02/15/19 13:30	02/14/19	

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900611
Project:	L2160851	**Date Collected:**	09/03/18
Sample Matrix:	Soil	**Date Received:**	01/22/19 09:45
Sample Name:	L2160851-9	**Basis:**	Dry
Lab Code:	K1900611-004		

IVBA Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Chromium	6020A	**0.35**	mg/Kg	0.21	5	02/15/19 13:58	02/14/19	

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900611
Project:	L2160851	**Date Collected:**	09/03/18
Sample Matrix:	Soil	**Date Received:**	01/22/19 09:45
Sample Name:	L2160851-9	**Basis:**	Dry
Lab Code:	K1900611-004		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Chromium	6020A	**15.9**	mg/Kg	0.18	5	02/15/19 14:34	02/14/19	

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900611
Project:	L2160851	**Date Collected:**	09/02/18
Sample Matrix:	Soil	**Date Received:**	01/22/19 09:45
Sample Name:	L2160851-32	**Basis:**	Dry
Lab Code:	K1900611-005		

Total Metals – IVBA Analysis

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Chromium	6020A	**26.3**	mg/Kg	0.21	5	02/15/19 13:32	02/14/19	

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900611
Project:	L2160851	**Date Collected:**	09/02/18
Sample Matrix:	Soil	**Date Received:**	01/22/19 09:45
Sample Name:	L2160851-32	**Basis:**	Dry
Lab Code:	K1900611-005		

IVBA Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Chromium	6020A	**0.78**	mg/Kg	0.21	5	02/15/19 14:00	02/14/19	

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900611
Project:	L2160851	**Date Collected:**	09/02/18
Sample Matrix:	Soil	**Date Received:**	01/22/19 09:45
Sample Name:	L2160851-32	**Basis:**	Dry
Lab Code:	K1900611-005		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Chromium	6020A	**26.5**	mg/Kg	0.20	5	02/15/19 14:40	02/14/19	

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900611
Project:	L2160851	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	Dry
Lab Code:	KQ1901914-01		

Total Metals – IVBA Analysis

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Chromium	6020A	ND U	mg/Kg	0.20	5	02/15/19 13:06	02/14/19	

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900611
Project:	L2160851	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	Dry
Lab Code:	KQ1901912-01		

IVBA Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Chromium	6020A	ND U	mg/Kg	0.20	5	02/15/19 13:33	02/14/19	

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900611
Project:	L2160851	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	Dry
Lab Code:	KQ1901915-01		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Chromium	6020A	ND U	mg/Kg	0.20	5	02/15/19 14:14	02/14/19	

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900611
Project	L2160851	**Date Collected:**	09/03/18
Sample Matrix:	Soil	**Date Received:**	01/22/19
		Date Analyzed:	02/15/19

Replicate Sample Summary

Total Metals – IVBA Analysis

Sample Name:	L2160851-4	**Units:**	mg/Kg
Lab Code:	K1900611-001	**Basis:**	Dry

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample KQ1901914-04 Result	Average	RPD	RPD Limit
Chromium	6020A	0.20	21.1	22.0	21.6	4	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Printed 02/26/19 1:38:00 PM Superset Reference:

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900611
Project	L2160851	**Date Collected:**	09/03/18
Sample Matrix:	Soil	**Date Received:**	01/22/19
		Date Analyzed:	02/15/19

Replicate Sample Summary
IVBA Metals

Sample Name:	L2160851-4	**Units:**	mg/Kg
Lab Code:	K1900611-001	**Basis:**	Dry

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample KQ1901912-04 Result	Average	RPD	RPD Limit
Chromium	6020A	0.20	1.20	1.18	1.19	2	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	ALS Environmental - Canada	**Service Request:**	K1900611
Project	L2160851	**Date Collected:**	09/03/18
Sample Matrix:	Soil	**Date Received:**	01/22/19
		Date Analyzed:	02/15/19

Replicate Sample Summary
Total Metals

Sample Name:	L2160851-4	**Units:**	mg/Kg
Lab Code:	K1900611-001	**Basis:**	Dry

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample KQ1901915-03 Result	Average	RPD	RPD Limit
Chromium	6020A	0.22	16.7	27.0	21.9	47 *	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900611
Project:	L2160851	**Date Collected:**	09/03/18
Sample Matrix:	Soil	**Date Received:**	01/22/19
		Date Analyzed:	02/15/19
		Date Extracted:	02/14/19

Matrix Spike Summary
Total Metals – IVBA Analysis

Sample Name:	L2160851-4	**Units:**	mg/Kg
Lab Code:	K1900611-001	**Basis:**	Dry
Analysis Method:	6020A		
Prep Method:	EPA 3050B		

Matrix Spike
KQ1901914-05

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Chromium	21.1	59.2	40.7	94	75-125

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Printed 02/26/19 1:38:00 PM Superset Reference:

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900611
Project:	L2160851	**Date Collected:**	09/03/18
Sample Matrix:	Soil	**Date Received:**	01/22/19
		Date Analyzed:	02/15/19
		Date Extracted:	02/14/19

Matrix Spike Summary
IVBA Metals

Sample Name:	L2160851-4	**Units:**	mg/Kg
Lab Code:	K1900611-001	**Basis:**	Dry
Analysis Method:	6020A		
Prep Method:	EPA 9200.2-86		

Matrix Spike
KQ1901912-05

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Chromium	1.20	38.7	40.0	94	75-125

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Printed 02/26/19 1:38:00 PM Superset Reference:

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dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900611
Project:	L2160851	**Date Collected:**	09/03/18
Sample Matrix:	Soil	**Date Received:**	01/22/19
		Date Analyzed:	02/15/19
		Date Extracted:	02/14/19

Matrix Spike Summary
Total Metals

Sample Name:	L2160851-4	**Units:**	mg/Kg
Lab Code:	K1900611-001	**Basis:**	Dry
Analysis Method:	6020A		
Prep Method:	EPA 3050B		

Matrix Spike
KQ1901915-04

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Chromium	16.7	54.9	42.3	90	75-125

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Printed 02/26/19 1:38:01 PM Superset Reference:

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - Canada
Project: L2160851
Sample Matrix: Soil

Service Request: K1900611
Date Analyzed: 02/15/19

Lab Control Sample Summary
Total Metals – IVBA Analysis

Units:mg/Kg
Basis: Dry

Lab Control Sample
KQ1901914-08

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Chromium	6020A	136	144	94	66-123

Client: ALS Environmental - Canada
Project: L2160851
Sample Matrix: Soil

Service Request: K1900611
Date Analyzed: 02/15/19

Lab Control Sample Summary
IVBA Metals

Units:mg/Kg
Basis: Dry

Lab Control Sample
KQ1901912-02

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Chromium	6020A	39.5	40.0	99	80-120

Client: ALS Environmental - Canada
Project: L2160851
Sample Matrix: Soil

Service Request: K1900611
Date Analyzed: 02/15/19

Lab Control Sample Summary
Total Metals

Units: mg/Kg
Basis: Dry

Lab Control Sample
KQ1901915-02

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Chromium	6020A	124	144	86	66-123

Client: ALS Environmental - Canada **Service Request:** K1900611
Project: L2160851
Sample Matrix: Soil

Total Metals – IVBA Analysis

Prep Method: EPA 3050B **Extraction Lot:** 331390
Analytical Method: 6020A **Extraction Date:** 02/14/19 07:20

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
L2160851-4	K1900611-001	9/3/18	1/22/19	1.0100 g	100 mL	
L2160851-6	K1900611-002	8/31/18	1/22/19	1.0000 g	100 mL	
L2160851-8	K1900611-003	9/3/18	1/22/19	1.0000 g	100 mL	
L2160851-9	K1900611-004	9/3/18	1/22/19	1.0000 g	100 mL	
L2160851-32	K1900611-005	9/2/18	1/22/19	1.0000 g	100 mL	
Method Blank	KQ1901914-01MB	NA	NA	1.0000 g	100 mL	
Duplicate	KQ1901914-04DUP	9/3/18	1/22/19	1.0000 g	100 mL	
Matrix Spike	KQ1901914-05MS	9/3/18	1/22/19	1.0000 g	100 mL	
Lab Control Sample	KQ1901914-08LCS	NA	NA	1.0100 g	100 mL	

Prep Summary Report

Client: ALS Environmental - Canada **Service Request:** K1900611
Project: L2160851
Sample Matrix: Soil

IVBA Metals

Prep Method: EPA 9200.2-86 **Extraction Lot:** 331388
Analytical Method: 6020A **Extraction Date:** 02/14/19 12:05

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
L2160851-4	K1900611-001	9/3/18	1/22/19	1.0084 g	100 mL	
L2160851-6	K1900611-002	8/31/18	1/22/19	1.0058 g	100 mL	
L2160851-8	K1900611-003	9/3/18	1/22/19	1.0023 g	100 mL	
L2160851-9	K1900611-004	9/3/18	1/22/19	1.0029 g	100 mL	
L2160851-32	K1900611-005	9/2/18	1/22/19	1.0035 g	100 mL	
Method Blank	KQ1901912-01MB	NA	NA	1.0000 g	100 mL	
Lab Control Sample	KQ1901912-02LCS	NA	NA	1.0000 g	100 mL	
Duplicate	KQ1901912-04DUP	9/3/18	1/22/19	1.0187 g	100 mL	
Matrix Spike	KQ1901912-05MS	9/3/18	1/22/19	1.0180 g	100 mL	

Prep Summary Report

Client: ALS Environmental - Canada **Service Request:** K1900611
Project: L2160851
Sample Matrix: Soil

Metals

Prep Method: EPA 3050B **Extraction Lot:** 331391
Analytical Method: 6020A **Extraction Date:** 02/14/19 07:20

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
L2160851-4	K1900611-001	9/3/18	1/22/19	1.0100 g	100 mL	
L2160851-6	K1900611-002	8/31/18	1/22/19	1.00 g	100 mL	
L2160851-8	K1900611-003	9/3/18	1/22/19	1.00 g	100 mL	
L2160851-9	K1900611-004	9/3/18	1/22/19	1.2200 g	100 mL	
L2160851-32	K1900611-005	9/2/18	1/22/19	1.1500 g	100 mL	
Method Blank	KQ1901915-01MB	NA	NA	1.00 g	100 mL	
Lab Control Sample	KQ1901915-02LCS	NA	NA	1.00 g	100 mL	
Duplicate	KQ1901915-03DUP	9/3/18	1/22/19	1.0200 g	100 mL	
Matrix Spike	KQ1901915-04MS	9/3/18	1/22/19	1.0400 g	100 mL	

Client: ALS Environmental - Canada **Service Request:** K1900611
Project: L2160851

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Concentration Units: ug/L

Sample ID / Analyte	Method	Analysis Batch:	Result	True Value	% Rec	% Rec. Limits
ICV 02/15/19 12:32						
Chromium	6020A	625393	9.79	10.0	98	90-110
CCV 02/15/19 12:34						
Chromium	6020A	625393	24.5	25.0	98	90-110
CCV 02/15/19 13:24						
Chromium	6020A	625393	24.8	25.0	99	90-110
CCV 02/15/19 13:50						
Chromium	6020A	625393	24.4	25.0	98	90-110
CCV 02/15/19 14:05						
Chromium	6020A	625393	24.9	25.0	99	90-110
CCV 02/15/19 14:36						
Chromium	6020A	625393	24.9	25.0	99	90-110
CCV 02/15/19 14:45						
Chromium	6020A	625393	25.0	25.0	100	90-110
ICV 02/15/19 13:18						
Chromium	6020A	625408	10.2	10.0	102	90-110
CCV 02/15/19 13:20						
Chromium	6020A	625408	25.4	25.0	102	90-110
CCV 02/15/19 13:52						
Chromium	6020A	625408	24.9	25.0	100	90-110
CCV 02/15/19 14:15						
Chromium	6020A	625408	24.9	25.0	100	90-110

Client: ALS Environmental - Canada **Service Request:** K1900611
Project: L2160851

INITIAL AND CONTINUING CALIBRATION BLANKS

Concentration Units: ug/L

Sample ID / Analyte	Method	Analysis Batch:	Result	C
ICB 02/15/19 12:36				
Chromium	6020A	625393	0.40	U
CCB 02/15/19 12:38				
Chromium	6020A	625393	0.40	U
CCB 02/15/19 13:26				
Chromium	6020A	625393	0.40	U
CCB 02/15/19 13:52				
Chromium	6020A	625393	0.40	U
CCB 02/15/19 14:07				
Chromium	6020A	625393	0.40	U
CCB 02/15/19 14:38				
Chromium	6020A	625393	0.40	U
CCB 02/15/19 14:47				
Chromium	6020A	625393	0.40	U
ICB 02/15/19 13:22				
Chromium	6020A	625408	0.40	U
CCB 02/15/19 13:24				
Chromium	6020A	625408	0.40	U
CCB 02/15/19 13:54				
Chromium	6020A	625408	0.40	U
CCB 02/15/19 14:17				
Chromium	6020A	625408	0.40	U

Client: ALS Environmental - Canada **Service Request:** K1900611
Project: L2160851

LOW LEVEL INITIAL AND LOW LEVEL CONTINUING CALIBRATION VERIFICATION

Concentration Units: ug/L

Sample ID / Analyte	Method	Analysis Batch:	Result	True Value	% Rec	% Rec. Limits	Analysis Date
LLICVS							
Chromium	6020A	625393	0.43	0.4	109	70-130	02/15/19 12:40
LLCCVS							
Chromium	6020A	625393	0.42	0.4	106	70-130	02/15/19 14:12
LLCCVS							
Chromium	6020A	625393	0.43	0.4	107	70-130	02/15/19 14:49
LLICVS							
Chromium	6020A	625408	0.45	0.4	112	70-130	02/15/19 13:26
LLCCVS							
Chromium	6020A	625408	0.42	0.4	105	70-130	02/15/19 14:19

Client: ALS Environmental - Canada **Service Request:** K1900611
Project: L2160851

ICP INTERFERENCE CHECK SAMPLE

Sample ID ICSA **Concentration Units:** ug/L

Analyte	Method	Analysis Batch:	Result	True Value	% Rec	% Rec. Limits	Analysis Date
Chromium	6020A	625393	1.21	-	-	-	02/15/19 12:43

Client: ALS Environmental - Canada **Service Request:** K1900611
Project: L2160851

ICP INTERFERENCE CHECK SAMPLE

Sample ID ICSAB **Concentration Units:** ug/L

Analyte	Method	Analysis Batch:	Result	True Value	% Rec	% Rec. Limits	Analysis Date
Chromium	6020A	625393	49.1	50.0	98	80-120	02/15/19 12:45

Client: ALS Environmental - Canada **Service Request:** K1900611
Project: L2160851

ICP INTERFERENCE CHECK SAMPLE

Sample ID ICSA **Concentration Units:** ug/L

Analyte	Method	Analysis Batch:	Result	True Value	% Rec	% Rec. Limits	Analysis Date
Chromium	6020A	625408	1.35	-	-	-	02/15/19 13:28

Client: ALS Environmental - Canada **Service Request:** K1900611
Project: L2160851

ICP INTERFERENCE CHECK SAMPLE

Sample ID ICSAB **Concentration Units:** ug/L

Analyte	Method	Analysis Batch:	Result	True Value	% Rec	% Rec. Limits	Analysis Date
Chromium	6020A	625408	51.6	50.0	103	80-120	02/15/19 13:29

Client: ALS Environmental - Canada **Service Request:** K1900611
Project: L2160851

POST SPIKE SAMPLE RECOVERY

Concentration Units: ug/L

Sample ID / Analyte	Method	Analysis Batch:	Initial Sample Result	Post Spike Result	True Value	% Rec	% Rec. Limits	Analysis Date
K1900611-001A								
Chromium	6020A	625393	42.0	90.7	50.0	97	80-120	02/15/19 13:17
Chromium	6020A	625393	30.8	81.1	50.0	101	80-120	02/15/19 14:25
K1900611-001A								
Chromium	6020A	625408	2.4	52.6	50.0	101	80-120	02/15/19 13:47

Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: ALS Environmental - Canada **Service Request:** K1900611
Project: L2160851

ICP SERIAL DILUTIONS

Concentration Units: ug/L

Sample ID / Analyte	Method	Analysis Batch:	Initial Sample Result	Serial Dillution Result	% Diff	% Diff. Limit	Analysis Date
K1900611-001SDL							
Chromium	6020A	625393	210	211	1	10	02/15/19 13:15
Chromium	6020A	625393	154	158	3	10	02/15/19 14:23
K1900611-001SDL							
Chromium	6020A	625408	12	12	3	10	02/15/19 13:45

Client: ALS Environmental - Canada **Service Request:** K1900611
Project: L2160851/

Detection Limits

Instrument: K-ICP-MS-04 **Matrix:** Soil

Analyte	Mass	Units	MRL	Method
Chromium	52	ug/L	0.4	6020A

Client: ALS Environmental - Canada **Service Request:** K1900611
Project: L2160851/

ICP Linear Range (Quarterly)

Instrument: K-ICP-MS-04

Analyte	Concentration (ug/L)	Method
Chromium 52	3000	6020A

Client: ALS Environmental - Canada **Service Request:** K1900611
Project: L2160851/

ICP Linear Range (Quarterly)

Instrument: K-ICP-MS-05

Analyte	Concentration (ug/L)	Method
Chromium 52	3000	6020A

Client: ALS Environmental - Canada **Service Request:** K1900611
Project: L2160851/

Analysis Run Log

Instrument ID: **K-ICP-MS-05** **Analytical BatchID:** **625393**

Sample	Dilution Factor	Date/Time	Cr
ZZZZZZ	1	02/15/19 12:27	
ZZZZZZ	1	02/15/19 12:30	
ICV	1	02/15/19 12:32	X
CCV	1	02/15/19 12:34	X
ICB	1	02/15/19 12:36	X
CCB	1	02/15/19 12:38	X
LLICVS	1	02/15/19 12:40	X
ICSA	1	02/15/19 12:43	X
ICSAB	1	02/15/19 12:45	X
KQ1901914-01MB	5	02/15/19 13:06	X
KQ1901914-08LCS1	20	02/15/19 13:08	X
K1900611-001	5	02/15/19 13:11	X
K1900611-001DUP	5	02/15/19 13:13	X
K1900611-001SDL	25	02/15/19 13:15	X
K1900611-001PS	5	02/15/19 13:17	X
K1900611-001MS	5	02/15/19 13:19	X
K1900611-002	5	02/15/19 13:22	X
CCV	1	02/15/19 13:24	X
CCB	1	02/15/19 13:26	X
K1900611-003	5	02/15/19 13:28	X
K1900611-004	5	02/15/19 13:30	X
K1900611-005	5	02/15/19 13:32	X
ZZZZZZ	5	02/15/19 13:35	
ZZZZZZ	5	02/15/19 13:37	
ZZZZZZ	5	02/15/19 13:39	
ZZZZZZ	25	02/15/19 13:41	
ZZZZZZ	5	02/15/19 13:43	
ZZZZZZ	5	02/15/19 13:46	
ZZZZZZ	5	02/15/19 13:48	
CCV	1	02/15/19 13:50	X
CCB	1	02/15/19 13:52	X
ZZZZZZ	5	02/15/19 13:54	
ZZZZZZ	5	02/15/19 13:56	
ZZZZZZ	5	02/15/19 13:59	
ZZZZZZ	5	02/15/19 14:01	
ZZZZZZ	5	02/15/19 14:03	
CCV	1	02/15/19 14:05	X

Client: ALS Environmental - Canada **Service Request:** K1900611
Project: L2160851/

Analysis Run Log

Instrument ID: **K-ICP-MS-05** **Analytical BatchID:** **625393**

Sample	Dilution Factor	Date/Time	Cr
CCB	1	02/15/19 14:07	X
ZZZZZZ	1	02/15/19 14:10	
LLCCVS	1	02/15/19 14:12	X
KQ1901915-01MB	5	02/15/19 14:14	X
KQ1901915-02LCS1	20	02/15/19 14:16	X
K1900611-001	5	02/15/19 14:18	X
K1900611-001DUP	5	02/15/19 14:20	X
K1900611-001SDL	25	02/15/19 14:23	X
K1900611-001PS	5	02/15/19 14:25	X
K1900611-001MS	5	02/15/19 14:27	X
K1900611-002	5	02/15/19 14:29	X
K1900611-003	5	02/15/19 14:31	X
K1900611-004	5	02/15/19 14:34	X
CCV	1	02/15/19 14:36	X
CCB	1	02/15/19 14:38	X
K1900611-005	5	02/15/19 14:40	X
ZZZZZZ	5	02/15/19 14:42	
CCV	1	02/15/19 14:45	X
CCB	1	02/15/19 14:47	X
LLCCVS	1	02/15/19 14:49	X

Client: ALS Environmental - Canada **Service Request:** K1900611
Project: L2160851/

Analysis Run Log

Instrument ID: **K-ICP-MS-04** **Analytical BatchID:** **625408**

Sample	Dilution Factor	Date/Time	Cr
ZZZZZZ	1	02/15/19 13:14	
ZZZZZZ	1	02/15/19 13:16	
ICV	1	02/15/19 13:18	X
CCV	1	02/15/19 13:20	X
ICB	1	02/15/19 13:22	X
CCB	1	02/15/19 13:24	X
LLICVS	1	02/15/19 13:26	X
ICSA	1	02/15/19 13:28	X
ICSAB	1	02/15/19 13:29	X
ZZZZZZ	1	02/15/19 13:31	
KQ1901912-01MB	5	02/15/19 13:33	X
KQ1901912-02LCS	20	02/15/19 13:35	X
ZZZZZZ	5	02/15/19 13:37	
ZZZZZZ	20	02/15/19 13:39	
K1900611-001	5	02/15/19 13:41	X
K1900611-001DUP	5	02/15/19 13:43	X
K1900611-001SDL	25	02/15/19 13:45	X
K1900611-001PS	5	02/15/19 13:47	X
K1900611-001MS	5	02/15/19 13:48	X
K1900611-002	5	02/15/19 13:50	X
CCV	1	02/15/19 13:52	X
CCB	1	02/15/19 13:54	X
K1900611-003	5	02/15/19 13:56	X
K1900611-004	5	02/15/19 13:58	X
K1900611-005	5	02/15/19 14:00	X
ZZZZZZ	5	02/15/19 14:02	
ZZZZZZ	5	02/15/19 14:04	
ZZZZZZ	5	02/15/19 14:05	
ZZZZZZ	25	02/15/19 14:07	
ZZZZZZ	5	02/15/19 14:09	
ZZZZZZ	5	02/15/19 14:11	
ZZZZZZ	5	02/15/19 14:13	
CCV	1	02/15/19 14:15	X
CCB	1	02/15/19 14:17	X
LLCCVS	1	02/15/19 14:19	X
ZZZZZZ	5	02/15/19 14:21	
ZZZZZZ	5	02/15/19 14:23	

Client: ALS Environmental - Canada **Service Request:** K1900611
Project: L2160851/

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Instrument ID: **K-ICP-MS-04** **Analytical BatchID:** **625408**

Sample	Date/Time	GeKED3	LuKED2
ZZZZZZ	02/15/19 13:14		
ZZZZZZ	02/15/19 13:16		
ICV	02/15/19 13:18	102	104
CCV	02/15/19 13:20	96	97
ICB	02/15/19 13:22	99	102
CCB	02/15/19 13:24	102	101
LLICVS	02/15/19 13:26	106	109
ICSA	02/15/19 13:28	87	100
ICSAB	02/15/19 13:29	90	97
ZZZZZZ	02/15/19 13:31		
KQ1901912-01MB	02/15/19 13:33	102	108
KQ1901912-02LCS	02/15/19 13:35	101	104
KQ1901912-03SRM	02/15/19 13:37		
KQ1901912-03SRM	02/15/19 13:39		
K1900611-001	02/15/19 13:41	92	101
K1900611-001DUP	02/15/19 13:43	94	106
K1900611-001SDL	02/15/19 13:45	97	108
K1900611-001PS	02/15/19 13:47	92	105
K1900611-001MS	02/15/19 13:48	92	105
K1900611-002	02/15/19 13:50	87	102
CCV	02/15/19 13:52	102	105
CCB	02/15/19 13:54	101	108
K1900611-003	02/15/19 13:56	99	101
K1900611-004	02/15/19 13:58	99	106
K1900611-005	02/15/19 14:00	104	111
ZZZZZZ	02/15/19 14:02		
ZZZZZZ	02/15/19 14:04		
ZZZZZZ	02/15/19 14:05		
ZZZZZZ	02/15/19 14:07		
ZZZZZZ	02/15/19 14:09		
ZZZZZZ	02/15/19 14:11		
ZZZZZZ	02/15/19 14:13		
CCV	02/15/19 14:15	100	106
CCB	02/15/19 14:17	108	111
LLCCVS	02/15/19 14:19	98	107
ZZZZZZ	02/15/19 14:21		
ZZZZZZ	02/15/19 14:23		

Client: ALS Environmental - Canada **Service Request:** K1900611
Project: L2160851/

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Instrument ID: **K-ICP-MS-05** **Analytical BatchID:** **625393**

Sample	Date/Time	Ge72He	Lu175He
ZZZZZZ	02/15/19 12:27		
ZZZZZZ	02/15/19 12:30		
ICV	02/15/19 12:32	100	101
CCV	02/15/19 12:34	101	102
ICB	02/15/19 12:36	102	101
CCB	02/15/19 12:38	102	102
LLICVS	02/15/19 12:40	102	102
ICSA	02/15/19 12:43	97	97
ICSAB	02/15/19 12:45	95	98
KQ1901914-01MB	02/15/19 13:06	106	107
KQ1901914-08LCS1	02/15/19 13:08	104	103
K1900611-001	02/15/19 13:11	102	102
K1900611-001DUP	02/15/19 13:13	96	96
K1900611-001SDL	02/15/19 13:15	100	101
K1900611-001PS	02/15/19 13:17	99	102
K1900611-001MS	02/15/19 13:19	97	99
K1900611-002	02/15/19 13:22	98	101
CCV	02/15/19 13:24	104	105
CCB	02/15/19 13:26	103	103
K1900611-003	02/15/19 13:28	100	101
K1900611-004	02/15/19 13:30	109	107
K1900611-005	02/15/19 13:32	111	110
ZZZZZZ	02/15/19 13:35		
ZZZZZZ	02/15/19 13:37		
ZZZZZZ	02/15/19 13:39		
ZZZZZZ	02/15/19 13:41		
ZZZZZZ	02/15/19 13:43		
ZZZZZZ	02/15/19 13:46		
ZZZZZZ	02/15/19 13:48		
CCV	02/15/19 13:50	106	105
CCB	02/15/19 13:52	108	109
ZZZZZZ	02/15/19 13:54		
ZZZZZZ	02/15/19 13:56		
ZZZZZZ	02/15/19 13:59		
ZZZZZZ	02/15/19 14:01		
ZZZZZZ	02/15/19 14:03		
CCV	02/15/19 14:05	102	103

Client: ALS Environmental - Canada **Service Request:** K1900611
Project: L2160851/

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Instrument ID: **K-ICP-MS-05** **Analytical BatchID:** **625393**

Sample	Date/Time	Ge72He	Lu175He
CCB	02/15/19 14:07	105	105
ZZZZZZ	02/15/19 14:10		
LLCCVS	02/15/19 14:12	106	106
KQ1901915-01MB	02/15/19 14:14	109	106
KQ1901915-02LCS1	02/15/19 14:16	107	105
K1900611-001	02/15/19 14:18	102	103
K1900611-001DUP	02/15/19 14:20	108	107
K1900611-001SDL	02/15/19 14:23	103	103
K1900611-001PS	02/15/19 14:25	100	103
K1900611-001MS	02/15/19 14:27	103	105
K1900611-002	02/15/19 14:29	99	102
K1900611-003	02/15/19 14:31	102	103
K1900611-004	02/15/19 14:34	109	108
CCV	02/15/19 14:36	104	104
CCB	02/15/19 14:38	102	102
K1900611-005	02/15/19 14:40	114	111
ZZZZZZ	02/15/19 14:42		
CCV	02/15/19 14:45	112	109
CCB	02/15/19 14:47	110	107
LLCCVS	02/15/19 14:49	110	107

Raw Data

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Total Solids

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Benchsheet

Service Request #:	**K1901319, KQ1901917, K1900611, K1900612**	**Run #:**	**625136**
Test:	**TS**	**Balance ID:**	**K-BALANCE-49**
Method:	**160.3 Modified**		

Matrix	Lab Code	Tare (g)	Wet Wt. (g)	Tare + Dry Wt. (g)	Dry Weight (g)	% Total Solids	RPD
Sediment	K1901319-001	1.286	24.647	16.080	14.8	60.0	
Sediment	K1901319-001DUP	1.293	22.556	14.795	13.5	59.9	<1
Sediment	K1901319-002	1.292	19.276	11.623	10.3	53.6	
Sediment	K1901319-003	1.300	13.023	9.441	8.14	62.5	
Soil	K1900611-001	1.289	19.255	18.826	17.5	91.1	
Soil	K1900611-002	1.297	15.172	15.523	14.2	93.8	
Soil	K1900611-003	1.286	17.934	17.656	16.4	91.3	
Soil	K1900611-004	1.310	32.292	30.276	29.0	89.7	
Soil	K1900611-005	1.302	26.839	24.966	23.7	88.2	
Soil	K1900612-001	1.288	24.942	24.656	23.4	93.7	

	Oven ID	Temp In	Temp Out	Date In	Time In	Date Out	Time Out	Thermometer ID
Oven1	**K-Oven-07**	**105**	**105**	**2/13/2019**	**15:51**	**2/14/2019**	**08:00**	

	Cal EQID	Cal Start Value	Cal End Value	Start Date	Start Time	End Date	End Time
Calibration1	**K-BALANCE-49**	**1.000, 99.999**	**0.999, 99.999**	**1/13/2019**	**15:03**	**2/13/2019**	**15:51**
Calibration2	**K-BALANCE-49**	**1.000, 100.000**	**1.001, 100.000**	**2/14/2019**	**08:52**	**2/14/2019**	**08:54**

Comments: TS SN: 42868 Reviewed by SC 2/14/19

Metals

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Preparation Information Benchsheet

Prep Run#: 331388
Team: Metals/KLINN
Number of Copies to make: 3

Prep WorkFlow: MetDigIVBA
Prep Method: EPA 9200.2-86

Status: Prepped
Prep Date/Time: 2/14/19 12:05 PM

#	Lab Code	Client ID	B#	Method /Test	pH	Matrix	Amt. Ext.	Final Vol	Sample Description
1	KQ1901912-01	MB		6020A/IVBA Extract		Solid	1.0000g	100.00mL	
2	KQ1901912-02	LCS		6020A/IVBA Extract		Solid	1.0000g	100.00mL	
3	KQ1901912-03	SRM		6020A/IVBA Extract		Solid	1.0164g	100.00mL	
4	K1900611-001	L2160851-4	.03	6020A/IVBA Extract		Soil	1.0084g	100.00mL	
5	KQ1901912-04	K1900611-001 DUP	.03	6020A/IVBA Extract		Solid	1.0187g	100.00mL	
6	KQ1901912-05	K1900611-001 MS	.03	6020A/IVBA Extract		Solid	1.0180g	100.00mL	
7	K1900611-002	L2160851-6	.03	6020A/IVBA Extract		Soil	1.0058g	100.00mL	
8	K1900611-003	L2160851-8	.03	6020A/IVBA Extract		Soil	1.0023g	100.00mL	
9	K1900611-004	L2160851-9	.03	6020A/IVBA Extract		Soil	1.0029g	100.00mL	
10	K1900611-005	L2160851-32	.03	6020A/IVBA Extract		Soil	1.0035g	100.00mL	
11	K1900612-001	L2168626-8	.03	6020A/IVBA Extract		Soil	1.0054g	100.00mL	
12	K1900942-001	3041-SO-325	.03	6020A/IVBA Extract		Soil	1.0120g	100.00mL	
13	KQ1901912-06	K1900942-001 DUP	.03	6020A/IVBA Extract		Solid	1.0120g	100.00mL	
14	KQ1901912-07	K1900942-001 MS	.03	6020A/IVBA Extract		Solid	1.0038g	100.00mL	
15	K1900942-002	3041-SO-326	.03	6020A/IVBA Extract		Soil	1.0038g	100.00mL	
16	K1900942-003	3041-SO-327	.03	6020A/IVBA Extract		Soil	1.0080g	100.00mL	
17	K1900942-004	3041-SO-328	.03	6020A/IVBA Extract		Soil	1.0221g	100.00mL	
18	K1900942-005	3041-SO-329	.03	6020A/IVBA Extract		Soil	1.0250g	100.00mL	
19	K1900942-006	3041-SO-330	.03	6020A/IVBA Extract		Soil	1.0164g	100.00mL	
20	K1900942-007	3041-SO-331	.03	6020A/IVBA Extract		Soil	1.0040g	100.00mL	

Spiking Solutions

Name: K-MET Montana II Soil 2711a | Inventory ID 185868 | Logbook Ref: Montana II Soil2711a | Expires On: 01/01/2019

KQ1901912-03 1.02g

Name: K-MET SS3 | Inventory ID 194429 | Logbook Ref: MET3-60-B | Expires On: 02/27/2019

KQ1901912-02 1.00mL KQ1901912-05 1.00mL KQ1901912-07 1.00mL

Name: K-MET SS4 | Inventory ID 194622 | Logbook Ref: MET3-61-F | Expires On: 02/27/2019

KQ1901912-02 1.00mL KQ1901912-05 1.00mL KQ1901912-07 1.00mL

Name: K-MET SS1 | Inventory ID 196871 | Logbook Ref: MET3-68-C | Expires On: 06/19/2019

Preparation Information Benchsheet

Prep Run#: 331388
Team: Metals/KLINN
KQ1901912-02 2.00mL KQ1901912-05 2.00mL KQ1901912-07 2.00mL

Prep WorkFlow: MetDigIVBA
Prep Method: EPA 9200.2-86

Status: Prepped
Prep Date/Time: 2/14/19 12:05 PM

Preparation Materials

K-MET 50ml Centrifuge Tube P7265113 (195433)

Preparation Steps

Step:	Weigh	Step:	Extraction
Started:	2/14/19 12:05	Started:	2/14/19 12:05
Finished:	2/14/19 13:05	Finished:	2/14/19 13:05
By:	ISTENERSEN	By:	ISTENERSEN
Comments		Comments	

Preparation Equipment

K-Balance-18 Weigh Date Checked 2/14/19 Days

Comments: _____

Reviewed By: BC Date: 2/19/19

In Vitro Extraction

Sample ID	Sample Preparation		Extraction								Filtration	
	Weight (g)	Volume (mL)	Start Time	End Time	Elapsed Time (min)	Starting pH	Ending pH	ΔpH	Starting Temp. (°C)	Ending Temp. (°C)	Time	Time Elapsed from Extraction (min)
Acceptance Range	1g	100	---	---	60	---	---	max = 0.5	35-39	35-39		max = 90
MB		100	1205	1305	60	1.53	1.54	0.01	36	37	1320	75
LCS		100					1.35	0.18				
SRM	~~1.0001~~ 1.0164	100					1.60	0.07				
K1900611-1	1.0084	100					1.64	0.11				
1DUP	1.0187	100					1.63	0.10				
1MS	1.0180	100					1.49	0.09				
2	1.0058	100					1.88	0.35				
3	1.0023	100					1.62	0.09				
4	1.0029	100					1.58	0.05				
5	1.0035	100					1.56	0.03				
K1900612-1	1.0054	100				1.64	~~1.55~~	~~0.02~~ 0.11				
K1900942-1DUP	1.0120	100					1.54	0.01	FS 2/14/19			
1MS	1.0038	100					1.36	0.17				
2	1.0038	100					1.55	0.02				
3	1.0080	~~1.00~~ 100	FS 2/14/19				1.57	0.04				
4	1.0221	100					1.58	0.05				
5	1.0250	100					1.55	0.02				
6	1.0164	100					1.56	0.03				
7	1.0040	100					1.61	0.08				
-1	1.0120	100	1205	1305	60	1.53	~~1.64~~ 1.55	~~0.11~~ 0.02	36 FS 2/14/19	37 MK 2-14-19	1320	75

ID: 185868

7mL SS4: 194622

SRM = NIST 2711a, Montana Soil Spike Solution = 2mL SS1: 196871 7mL SS3: 194429 Tumbler Rotation Speed: 29.6 RPM

Analyst: Isabel Stevens Date: 2/14/19 Prep Run: 331388

Reviewer: Date: 2/19/19 Extraction Solution: Glycine : RE1-50-B

50mL Tubes : P7265113

Preparation Information Benchsheet

Prep Run#: 331388
Team: Metals/KLINN
Number of Copies to make: 3

Prep WorkFlow: MetDigIVBA
Prep Method: EPA 9200.2-86

Status: Draft
Prep Date/Time: 2/13/19 02:12 PM

#	Lab Code	Client ID	B#	√	Method /Test	Matrix	Amt. Ext.	pH	Int. Vol	Final Vol	Surr Amt	Spike Amt
1	**KQ1901912-01**	MB		—	6020A / IVBA Extract	Solid						
2	**KQ1901912-02**	LCS		—	6020A / IVBA Extract	Solid						
3	**KQ1901912-03**	SRM		—	6020A / IVBA Extract	Solid	1.0164					
4	**K1900611-001**	L2160851-4	.03	√	6020A / IVBA Extract	Soil	1.0084					
5	**KQ1901912-04**	K1900611-001 DUP	.03	√	6020A / IVBA Extract	Solid	1.0187					
6	**KQ1901912-05**	K1900611-001 MS	.03	√	6020A / IVBA Extract	Solid	1.0180					
7	**K1900611-002**	L2160851-6	.03	√	6020A / IVBA Extract	Soil	1.0058					
8	**K1900611-003**	L2160851-8	.03	√	6020A / IVBA Extract	Soil	1.0023					
9	**K1900611-004**	L2160851-9	.03	√	6020A / IVBA Extract	Soil	1.0029					
10	**K1900611-005**	L2160851-32	.03	√	6020A / IVBA Extract	Soil	1.0035					
11	**K1900612-001**	L2168626-8	.03	√	6020A / IVBA Extract	Soil	1.0054					
12	**K1900942-001**	3041-SO-325	.03	√	6020A / IVBA Extract	Soil	1.0120					
13	**KQ1901912-06**	K1900942-001 DUP	.03	√	6020A / IVBA Extract	Solid	1.0120					
14	**KQ1901912-07**	K1900942-001 MS	.03	√	6020A / IVBA Extract	Solid	1.0038					
15	**K1900942-002**	3041-SO-326	.03	√	6020A / IVBA Extract	Soil	1.0038					
16	**K1900942-003**	3041-SO-327	.03	√	6020A / IVBA Extract	Soil	1.0080					
17	**K1900942-004**	3041-SO-328	.03	√	6020A / IVBA Extract	Soil	1.0221					
18	**K1900942-005**	3041-SO-329	.03	√	6020A / IVBA Extract	Soil	1.0250					
19	**K1900942-006**	3041-SO-330	.03	√	6020A / IVBA Extract	Soil	1.0164					
20	**K1900942-007**	3041-SO-331	.03	√	6020A / IVBA Extract	Soil	1.0040					

Comments: K-Bal. 18 ✓ 2/14/19

Surrogate ID:

Spike ID:

Witnessed By:

Analyst: Isaiah Stevensen

Assisted By:

METALS SPIKING SOLUTIONS CONCENTRATIONS FORM

Solution Name	Element	mLs of 1000ppm Solution	Final Volume	Solution Conc. mg/L	Enter mls Added
K-MET SS1 *** Add after HNO3 and before ALS-89 when making the solution	HNO3	50.0	1000ml	-	
	Al	100*	1000ml	200	
	Ag	100*	1000ml	5	
	Ba	100*	1000ml	100	
	Be	100*	1000ml	5	
	Cd	100*	1000ml	5	
	Co	100*	1000ml	50	
	Cr	100*	1000ml	20	
	Cu	100*	1000ml	25	
	Fe	100*	1000ml	100	
	Pb	100*	1000ml	50	
	Mn	100*	1000ml	50	
	Ni	100*	1000ml	50	
	Sb***	50.0	1000ml	50	
	V	100*	1000ml	50	
	Zn	100*	1000ml	50	
K-MET SS2	HNO3	25.0	500ml	-	
	As	2.00	500ml	4	
	Cd	2.00	500ml	4	
	Pb	2.00	500ml	4	
	Se	2.00	500ml	4	
	Tl	2.00	500ml	4	
	Cu	2.00	500ml	4	
K-MET SS3	HNO3	25.0	500ml	-	
	As	50.0	500ml	100	
	Se	50.0	500ml	100	
	Tl	10.0	500ml	20	
	Hg	6.00	500ml	12	
K-MET SS4	HNO3	25.0	500ml	-	
	B	25.0	500ml	50	
	Mo	50.0	500ml	100	
	U	10.0	500ml	20	
K-MET SS5	HNO3	10.0	200ml	-	
	K**	20.0	200ml	1000	
	Na**	20.0	200ml	1000	
	Mg**	20.0	200ml	1000	
	Ca**	20.0	200ml	1000	

K-MET Hydride	HNO3	1.0	100ml	-	
	As, Se	0.25	100ml	2.5	
K-MET QCP-CICV-1	Ca, Mg, Na, K	no dilution	-	2500	
	Al, Ba	no dilution	-	1000	
	Fe	no dilution	-	500	
	Co, Mn, Ni, V, Zn	no dilution	-	250	
	Cu, Ag	no dilution	-	125	
	Cr	no dilution	-	100	
	Be	no dilution	-	25	
K-MET QCP-CICV-3	As, Pb, Se, Tl	no dilution	-	500	
	Cd	no dilution	-	250	

* Denotes volume of mixed stock standard.
** Denotes 10,000 ppm individual stock standards.

Standard	mls of standard	ppm	Logbook #	Exp. Date

Preparation Information Benchsheet

Prep Run#: 331391
Team: Metals/ISTENERSEN
Number of Copies to make: 2

Prep WorkFlow: MetDigSICP
Prep Method: EPA 3050B

Status: Prepped
Prep Date/Time: 2/14/19 07:20 AM

#	Lab Code	Client ID	B#	Method /Test	pH	Matrix	Amt. Ext.	Final Vol	Sample Description
1	KQ1901915-01	MB		6020A/Metals T		Solid	1.00g	100.00mL	10%HNO3, 10%HCl
2	KQ1901915-02	LCS1		6020A/Metals T		Solid	1.00g	100.00mL	10%HNO3, 10%HCl
3	K1900611-001	L2160851-4	.01	6020A/Metals T		Soil	1.0100g	100.00mL	10%HNO3, 10%HCl
4	KQ1901915-03	K1900611-001 DUP	.01	6020A/Metals T		Solid	1.0200g	100.00mL	10%HNO3, 10%HCl
5	KQ1901915-04	K1900611-001 MS	.01	6020A/Metals T		Solid	1.0400g	100.00mL	10%HNO3, 10%HCl
6	K1900611-002	L2160851-6	.01	6020A/Metals T		Soil	1.00g	100.00mL	10%HNO3, 10%HCl
7	K1900611-003	L2160851-8	.01	6020A/Metals T		Soil	1.00g	100.00mL	10%HNO3, 10%HCl
8	K1900611-004	L2160851-9	.01	6020A/Metals T		Soil	1.2200g	100.00mL	10%HNO3, 10%HCl
9	K1900611-005	L2160851-32	.01	6020A/Metals T		Soil	1.1500g	100.00mL	10%HNO3, 10%HCl
10	K1900612-001	L2168626-8	.01	6020A/Metals T		Soil	1.00g	100.00mL	10%HNO3, 10%HCl

Spiking Solutions

Name: K-MET SOIL CRM Inventory ID 190199 Logbook Ref: D099-540 Expires On: 05/31/2020

KQ1901915-02 1.00g

Name: K-MET SS3 Inventory ID 194429 Logbook Ref: MET3-60-B Expires On: 02/27/2019

KQ1901915-04 1.00mL

Name: K-MET SS4 Inventory ID 194622 Logbook Ref: MET3-61-F Expires On: 02/27/2019

KQ1901915-04 1.00mL

Name: K-MET SS5 Inventory ID 195639 Logbook Ref: MET3-66- A Expires On: 04/30/2019

KQ1901915-04 1.00mL

Name: K-MET SS1 Inventory ID 196871 Logbook Ref: MET3-68-C Expires On: 06/19/2019

KQ1901915-04 2.00mL

Preparation Materials

K-MET 100ml Centrifuge Tube 1804377 (194725) K-MET H2O2 58040812 (193235) K-MET HNO3 0000205793 (195631)
K-METPTFE Boiling chips D1069103 (190802)

Preparation Information Benchsheet

Prep Run#: 331391
Team: Metals/ISTENERSEN

Prep WorkFlow: MetDigSICP
Prep Method: EPA 3050B

Status: Prepped
Prep Date/Time: 2/14/19 07:20 AM

Preparation Steps

Step:	Weigh	Step:	Digestion
Started:	2/14/19 07:20	Started:	2/14/19 07:20
Finished:	2/14/19 11:40	Finished:	2/14/19 11:40
By:	ISTENERSEN	By:	ISTENERSEN
Comments		Comments	

Preparation Equipment

K-BlockDigester-07	Digestion	Corrected Temperature	95 deg C	K-BlockDigester-07	Digestion	Correction Factor	0 deg C
K-BlockDigester-07	Digestion	Observed Temperature	95 deg C	K-BlockDigester-07	Digestion	Thermometer #665292	deg C
K-BlockDigester-07	Digestion	Thermometer Location	32 NONE	K-Balance-02	Weigh	Date Checked	2/14/19
K-DG 1000D	Digestion						

Comments: R1:10mins, R2:65mins, R3:15mins HCl Lot# 208923

Reviewed By: SC Date: 2/19/19

Preparation Information Benchsheet

Prep Run#: 331391
Team: Metals/KLINN
Number of Copies to make: 2

Prep WorkFlow: MetDigSICP
Prep Method: EPA 3050B As Rec'd

Status: Draft
Prep Date/Time: 2/13/19 02:33 PM

#	Lab Code	Client ID	B#	√	Method /Test	Matrix	Amt. Ext.	pH	Int. Vol	Final Vol	Surr Amt	Spike Amt
1	**KQ1901915-01**	MB		—	6020A / Metals T	Solid	1.00					
2	**KQ1901915-02**	LCS1		—	6020A / Metals T	Solid	1.00					
3	**K1900611-001**	L2160851-4	.01	✓	6020A / Metals T	Soil	~~1.00~~ 1.01	IB 2/14/19				
4	**KQ1901915-03**	K1900611-001 DUP	.01	✓	6020A / Metals T	Solid	1.02					
5	**KQ1901915-04**	K1900611-001 MS	.01	✓	6020A / Metals T	Solid	1.04					
6	**K1900611-002**	L2160851-6	.01	✓	6020A / Metals T	Soil	1.00					
7	**K1900611-003**	L2160851-8	.01	✓	6020A / Metals T	Soil	1.00					
8	**K1900611-004**	L2160851-9	.01	✓	6020A / Metals T	Soil	1.22					
9	**K1900611-005**	L2160851-32	.01	✓	6020A / Metals T	Soil	1.15					
10	**K1900612-001**	L2168626-8	.01	✓	6020A / Metals T	Soil	1.00					

R1 0720 - 0730
R2 0745 - 0850
✓ ✓ ✓
R3 1125 - 1140

Comments: Tube # 1804377 K-Bal. 02 ✓ 2/14/19 KDG 10000 BD07/95/32 10% HNO_3 205793 9mL H_2O 5804081210% HCl 208923

Surrogate ID:

Spike ID: 2mL 551:196871 1mL 553:194429 1mL 554:194622 1mL 555:195[illegible]

Witnessed By:

Analyst: Isaiah Stevens

Assisted By:

METALS SPIKING SOLUTIONS CONCENTRATIONS FORM

Solution Name	Element	mLs of 1000ppm Solution	Final Volume	Solution Conc. mg/L	Enter mls Added
K-MET SS1 *** Add after HNO3 and before ALS-89 when making the solution	HNO3	50.0	1000ml	-	
	Al	100*	1000ml	200	
	Ag	100*	1000ml	5	
	Ba	100*	1000ml	100	
	Be	100*	1000ml	5	
	Cd	100*	1000ml	5	
	Co	100*	1000ml	50	
	Cr	100*	1000ml	20	
	Cu	100*	1000ml	25	
	Fe	100*	1000ml	100	
	Pb	100*	1000ml	50	
	Mn	100*	1000ml	50	
	Ni	100*	1000ml	50	
	Sb***	50.0	1000ml	50	
	V	100*	1000ml	50	
	Zn	100*	1000ml	50	
K-MET SS2	HNO3	25.0	500ml	-	
	As	2.00	500ml	4	
	Cd	2.00	500ml	4	
	Pb	2.00	500ml	4	
	Se	2.00	500ml	4	
	Tl	2.00	500ml	4	
	Cu	2.00	500ml	4	
K-MET SS3	HNO3	25.0	500ml	-	
	As	50.0	500ml	100	
	Se	50.0	500ml	100	
	Tl	10.0	500ml	20	
	Hg	6.00	500ml	12	
K-MET SS4	HNO3	25.0	500ml	-	
	B	25.0	500ml	50	
	Mo	50.0	500ml	100	
	U	10.0	500ml	20	
K-MET SS5	HNO3	10.0	200ml	-	
	K**	20.0	200ml	1000	
	Na**	20.0	200ml	1000	
	Mg**	20.0	200ml	1000	
	Ca**	20.0	200ml	1000	

K-MET Hydride	HNO3	1.0	100ml	-	
	As, Se	0.25	100ml	2.5	
K-MET QCP-CICV-1	Ca, Mg, Na, K	no dilution	-	2500	
	Al, Ba	no dilution	-	1000	
	Fe	no dilution	-	500	
	Co, Mn, Ni, V, Zn	no dilution	-	250	
	Cu, Ag	no dilution	-	125	
	Cr	no dilution	-	100	
	Be	no dilution	-	25	
K-MET QCP-CICV-3	As, Pb, Se, Tl	no dilution	-	500	
	Cd	no dilution	-	250	

* Denotes volume of mixed stock standard.
** Denotes 10,000 ppm individual stock standards.

Standard	mls of standard	ppm	Logbook #	Exp. Date

Preparation Information Benchsheet

Prep Run#: 331390
Team: Metals/ISTENERSEN
Number of Copies to make: 3

Prep WorkFlow: MetDigSICP
Prep Method: EPA 3050B

Status: Prepped
Prep Date/Time: 2/14/19 07:20 AM

#	Lab Code	Client ID	B#	Method /Test	pH	Matrix	Amt. Ext.	Final Vol	Sample Description
1	KQ1901914-01	MB		6020A/IVBA (Sieved Total)		Solid	1.0000g	100.00mL	10%HNO3, 10%HCl
2	KQ1901914-08	LCS1		6020A/IVBA (Sieved Total)		Solid	1.0100g	100.00mL	10%HNO3, 10%HCl
3	K1900611-001	L2160851-4	.03	6020A/IVBA (Sieved Total)		Soil	1.0100g	100.00mL	10%HNO3, 10%HCl
4	KQ1901914-04	K1900611-001 DUP	.03	6020A/IVBA (Sieved Total)		Solid	1.0000g	100.00mL	10%HNO3, 10%HCl
5	KQ1901914-05	K1900611-001 MS	.03	6020A/IVBA (Sieved Total)		Solid	1.0000g	100.00mL	10%HNO3, 10%HCl
6	K1900611-002	L2160851-6	.03	6020A/IVBA (Sieved Total)		Soil	1.0000g	100.00mL	10%HNO3, 10%HCl
7	K1900611-003	L2160851-8	.03	6020A/IVBA (Sieved Total)		Soil	1.0000g	100.00mL	10%HNO3, 10%HCl
8	K1900611-004	L2160851-9	.03	6020A/IVBA (Sieved Total)		Soil	1.0000g	100.00mL	10%HNO3, 10%HCl
9	K1900611-005	L2160851-32	.03	6020A/IVBA (Sieved Total)		Soil	1.0000g	100.00mL	10%HNO3, 10%HCl
10	K1900612-001	L2168626-8	.03	6020A/IVBA (Sieved Total)		Soil	1.0000g	100.00mL	10%HNO3, 10%HCl
11	K1900942-001	3041-SO-325	.03	6020A/IVBA (Sieved Total)		Soil	1.0000g	100.00mL	10%HNO3, 10%HCl
12	KQ1901914-06	K1900942-001 DUP	.03	6020A/IVBA (Sieved Total)		Solid	1.0000g	100.00mL	10%HNO3, 10%HCl
13	KQ1901914-07	K1900942-001 MS	.03	6020A/IVBA (Sieved Total)		Solid	1.0000g	100.00mL	10%HNO3, 10%HCl
14	K1900942-002	3041-SO-326	.03	6020A/IVBA (Sieved Total)		Soil	1.0000g	100.00mL	10%HNO3, 10%HCl
15	K1900942-003	3041-SO-327	.03	6020A/IVBA (Sieved Total)		Soil	1.0000g	100.00mL	10%HNO3, 10%HCl
16	K1900942-004	3041-SO-328	.03	6020A/IVBA (Sieved Total)		Soil	1.0000g	100.00mL	10%HNO3, 10%HCl
17	K1900942-005	3041-SO-329	.03	6020A/IVBA (Sieved Total)		Soil	1.0000g	100.00mL	10%HNO3, 10%HCl
18	K1900942-006	3041-SO-330	.03	6020A/IVBA (Sieved Total)		Soil	1.0000g	100.00mL	10%HNO3, 10%HCl
19	K1900942-007	3041-SO-331	.03	6020A/IVBA (Sieved Total)		Soil	1.0000g	100.00mL	10%HNO3, 10%HCl

Spiking Solutions

Name: K-MET SOIL CRM Inventory ID 190199 Logbook Ref: D099-540 Expires On: 05/31/2020

KQ1901914-08 1.00g

Name: K-MET SS3 Inventory ID 194429 Logbook Ref: MET3-60-B Expires On: 02/27/2019

KQ1901914-05 1.00mL KQ1901914-07 1.00mL

Name: K-MET SS4 Inventory ID 194622 Logbook Ref: MET3-61-F Expires On: 02/27/2019

KQ1901914-05 1.00mL KQ1901914-07 1.00mL

Name: K-MET SS5 Inventory ID 195639 Logbook Ref: MET3-66- A Expires On: 04/30/2019

KQ1901914-05 1.00mL KQ1901914-07 1.00mL

Preparation Information Benchsheet

Prep Run#: 331390
Team: Metals/ISTENERSEN

Prep WorkFlow: MetDigSICP
Prep Method: EPA 3050B

Status: Prepped
Prep Date/Time: 2/14/19 07:20 AM

Name: K-MET SS1	Inventory ID 196871	Logbook Ref: MET3-68-C	Expires On: 06/19/2019

KQ1901914-05 2.00mL KQ1901914-07 2.00mL

Preparation Materials

K-MET 100ml Centrifuge Tube	1804377 (194725)	K-MET H2O2	58040812 (193235)	K-MET HNO3	0000205793 (195631)
K-METPTFE Boiling chips	D1069103 (190802)				

Preparation Steps

Step:	Weigh	Step:	Digestion
Started:	2/14/19 07:20	Started:	2/14/19 07:20
Finished:	2/14/19 11:40	Finished:	2/14/19 11:40
By:	ISTENERSEN	By:	ISTENERSEN
Comments		Comments	

Preparation Equipment

K-BlockDigester-07	Digestion	Corrected Temperature	95 deg C	K-BlockDigester-07	Digestion	Correction Factor	0 deg C
K-BlockDigester-07	Digestion	Observed Temperature	95 deg C	K-BlockDigester-07	Digestion	Thermometer #665292	deg C
K-BlockDigester-07	Digestion	Thermometer Location	32 NONE	K-Balance-02	Weigh	Date Checked	2/14/18
K-DG 1000D	Digestion						

Comments: R1:10mins, R2:65mins, R3:15mins HCl Lot#:208923

Reviewed By: SL Date: 2/19/19

Preparation Information Benchsheet

Prep Run#: 331390
Team: Metals/KLINN
Number of Copies to make: 3

Prep WorkFlow: MetDigSICP
Prep Method: EPA 3050B

Status: Draft
Prep Date/Time: 2/13/19 02:32 PM

#	Lab Code	Client ID	B#	√	Method /Test	Matrix	Amt. Ext.	pH	Int. Vol	Final Vol	Surr Amt	Spike Amt
1	**KQ1901914-01**	MB		—	6020A / IVBA (Sieved Total)	Solid	1.00					
2	**KQ1901914-08**	LCS1		—	6020A / IVBA (Sieved Total)	Solid	1.01					
3	**K1900611-001**	L2160851-4	.03	✓	6020A / IVBA (Sieved Total)	Soil	1.01					
4	**KQ1901914-04**	K1900611-001 DUP	.03	✓	6020A / IVBA (Sieved Total)	Solid	1.00					
5	**KQ1901914-05**	K1900611-001 MS	.03	✓	6020A / IVBA (Sieved Total)	Solid	1.00					
6	**K1900611-002**	L2160851-6	.03	✓	6020A / IVBA (Sieved Total)	Soil	1.00					
7	**K1900611-003**	L2160851-8	.03	✓	6020A / IVBA (Sieved Total)	Soil	1.00					
8	**K1900611-004**	L2160851-9	.03	✓	6020A / IVBA (Sieved Total)	Soil	1.00					
9	**K1900611-005**	L2160851-32	.03	✓	6020A / IVBA (Sieved Total)	Soil	1.00					
10	**K1900612-001**	L2168626-8	.03	✓	6020A / IVBA (Sieved Total)	Soil	1.00					
11	**K1900942-001**	3041-SO-325	.03	✓	6020A / IVBA (Sieved Total)	Soil	1.00					
12	**KQ1901914-06**	K1900942-001 DUP	.03	✓	6020A / IVBA (Sieved Total)	Solid	1.00					
13	**KQ1901914-07**	K1900942-001 MS	.03	✓	6020A / IVBA (Sieved Total)	Solid	1.00					
14	**K1900942-002**	3041-SO-326	.03	✓	6020A / IVBA (Sieved Total)	Soil	1.00					
15	**K1900942-003**	3041-SO-327	.03	✓	6020A / IVBA (Sieved Total)	Soil	1.00					
16	**K1900942-004**	3041-SO-328	.03	✓	6020A / IVBA (Sieved Total)	Soil	1.00					
17	**K1900942-005**	3041-SO-329	.03	✓	6020A / IVBA (Sieved Total)	Soil	1.00					
18	**K1900942-006**	3041-SO-330	.03	✓	6020A / IVBA (Sieved Total)	Soil	1.00					
19	**K1900942-007**	3041-SO-331	.03	✓	6020A / IVBA (Sieved Total)	Soil	1.00					

R1 0720 - 0730
R2 0745 - 0850
✓ ✓ ✓
R3 1125 - 1140

SS 2/14/19

Comments: Tube # 1804377 K-Bal.02 ✓ 2/14/19 K-DG 10000D BD07/95/32 10% ~~HNO3~~ 205793 9mL H_2O 58040812 10% HCl 208923

Surrogate ID:

Spike ID: 2mL SS1:196877 1mL SS3:194429 7mLSS4:194622 1mL SS5:195639

Witnessed By:

Analyst: Isaiah Stern

Assisted By:

METALS SPIKING SOLUTIONS CONCENTRATIONS FORM

Solution Name	Element	mLs of 1000ppm Solution	Final Volume	Solution Conc. mg/L	Enter mls Added
K-MET SS1 *** Add after HNO3 and before ALS-89 when making the solution	HNO3	50.0	1000ml	-	
	Al	100*	1000ml	200	
	Ag	100*	1000ml	5	
	Ba	100*	1000ml	100	
	Be	100*	1000ml	5	
	Cd	100*	1000ml	5	
	Co	100*	1000ml	50	
	Cr	100*	1000ml	20	
	Cu	100*	1000ml	25	
	Fe	100*	1000ml	100	
	Pb	100*	1000ml	50	
	Mn	100*	1000ml	50	
	Ni	100*	1000ml	50	
	Sb***	50.0	1000ml	50	
	V	100*	1000ml	50	
	Zn	100*	1000ml	50	
K-MET SS2	HNO3	25.0	500ml	-	
	As	2.00	500ml	4	
	Cd	2.00	500ml	4	
	Pb	2.00	500ml	4	
	Se	2.00	500ml	4	
	Tl	2.00	500ml	4	
	Cu	2.00	500ml	4	
K-MET SS3	HNO3	25.0	500ml	-	
	As	50.0	500ml	100	
	Se	50.0	500ml	100	
	Tl	10.0	500ml	20	
	Hg	6.00	500ml	12	
K-MET SS4	HNO3	25.0	500ml	-	
	B	25.0	500ml	50	
	Mo	50.0	500ml	100	
	U	10.0	500ml	20	
K-MET SS5	HNO3	10.0	200ml	-	
	K**	20.0	200ml	1000	
	Na**	20.0	200ml	1000	
	Mg**	20.0	200ml	1000	
	Ca**	20.0	200ml	1000	

K-MET Hydride	HNO3	1.0	100ml	-	
	As, Se	0.25	100ml	2.5	
K-MET QCP-CICV-1	Ca, Mg, Na, K	no dilution	-	2500	
	Al, Ba	no dilution	-	1000	
	Fe	no dilution	-	500	
	Co, Mn, Ni, V, Zn	no dilution	-	250	
	Cu, Ag	no dilution	-	125	
	Cr	no dilution	-	100	
	Be	no dilution	-	25	
K-MET QCP-CICV-3	As, Pb, Se, Tl	no dilution	-	500	
	Cd	no dilution	-	250	

* Denotes volume of mixed stock standard.
** Denotes 10,000 ppm individual stock standards.

Standard	mls of standard	ppm	Logbook #	Exp. Date

ALS, Inc.

Service Request Number(s)	K1900611, K1900612

37°C OVEN DRIED SOLIDS

Laboratory ID	Wet Weight (g)	Tare Weight (g)	Tare+Dry Weight (g)	Dry Weight (g)	% Solids
K1900611-001	203.34	302.62	488.10	185.48	91.2%
K1900611-001DUP	209.81	304.48	496.97	192.49	91.7%
K1900611-002	202.40	303.11	494.66	191.55	94.6%
K1900611-003	203.93	304.00	493.73	189.73	93.0%
K1900611-004	202.00	304.28	486.02	181.74	90.0%
K1900611-005	200.65	302.70	485.20	182.50	91.0%
K1900612-001	207.66	303.16	499.26	196.10	94.4%
				1-28-19	

Comments: In 37C oven 1-24-19 1510. Out 37°C oven 1-28-19 1330.
Balance ID: ~~45~~ 52 Date Checked: 1-24-19, 1-28-19 RPD = <1%
1-24-19

Analyst:	Date: 1-24-19
Reviewed:	Date: 1/28/19

R:\ICP\misc\digforms\Oven Dried Solids\K1900611, K1900612

ALS Inc.

Service Request Number(s):	K1900611, 0612

Sieve Data

Service Request #			<150µm			
K1900611-1			Yes			
2						
3						
4						
5						
K1900612-1						
			CCL 1/28			

All weights are in gram units.	
Balance ID:	Date Balance Checked:
Analyst: Caly Lilly	Date: 1/28/19
Reviewed:	Date: 1/31/19

Service Request: K1900611, K1900912, K1900942
Instrument ID # K-ICP-MS-05
Calibration 021519AICPMS05
STAR LIMS Run # 625393

Cal Std: MS24-38-A
ICV Std: MS24-33-B
LLICV Std: MS24-38-B
I.S. Solution: MS24-5-B
Tune Standard: MS24-18-C
ICSA: MS24-38-C
ICSAB: MS24-38-D
Pipette I.D. R40946G,CH84849,MS1000, MS500, MS250

ICP-MS Data Review Form

	Yes	No	NA
1. Appropriate standardization completed	X		
2. ICV in control (+/- 10%)	X		
3. CCV's in control (+/- 10%)	X		
4. ICB/CCB's below MRL	X		
5. LLICV standard analyzed and in control	X		
6. ICS standards within 20% of true value	X		
6. All analytes within instrument linear range	X		
7. Adequate rinse out time allowed	X		
8. Internal standards in control	X		
9. Interferences checked	X		
10. Was the run terminated? If so, why.		X	

Primary Review by RRM Date 2/15/19
Secondary Review by [signature] Date 2/20/19

Data Review Form

Instrument ID#: **K-ICP-MS-05**
DataFile Name: **R:\ICP\WIP\DATA\K-ICP-MS-05 (Agilent)\021519A.csv**
RUNNO: **625393**

K1900611

K1900611-001DUP - Metals T -
DUP RPD
6020A/Metals T - 52 Cr [He] - RPD: 47 Limit: 20 *

K1900612

K1900611-001DUP - Metals T -
DUP RPD
6020A/Metals T - 52 Cr [He] - RPD: 47 Limit: 20 *

* non-homogenous, second sample has RPD 4%

K1900942

No exceptions to report.

Primary Approver: RPM 2/20/19
Secondary Approver: JK 2/20/19

	Sample						
		Rjct	Data File	Acq. Date-Time	Type	Level	Sample Name
1			001CALB.	2019-02-15 12:14:33	CalBlk		Prime
2			002CALB.	2019-02-15 12:16:44	CalBlk		Rinse
3			003CALB.	2019-02-15 12:18:55	CalBlk		Blank
4			004CALB.	2019-02-15 12:21:07	CalBlk		Rinse
5			005CALB.	2019-02-15 12:23:18	CalBlk		Prime
6			006CALB.	2019-02-15 12:25:30	CalBlk		Rinse
7			007CALB.	2019-02-15 12:27:49	CalBlk	1	Blank
8			008CALS.	2019-02-15 12:30:00	CalStd	2	25ppb
9			009_ICV.d	2019-02-15 12:32:10	ICV		ICV
10			010_CCV.	2019-02-15 12:34:21	CCV		CCV
11			011_ICB.d	2019-02-15 12:36:33	ICB		ICB
12			012_CCB.	2019-02-15 12:38:44	CCB		CCB
13			013LICV.d	2019-02-15 12:40:55	LLICV		LLICVS
14			014ICSA.d	2019-02-15 12:43:05	ICSA		ICSA
15			015ICSB.d	2019-02-15 12:45:15	ICSB		ICSAB
16			016_PB.d	2019-02-15 13:06:42	PB		KQ1901914-01
17			017_LCS.d	2019-02-15 13:08:53	QCS		KQ1901914-08
18			018_ARF.d	2019-02-15 13:11:08	AllRef		K1900611-001
19			019SMPL.	2019-02-15 13:13:19	Sample		KQ1901914-04
20			020SMPL.	2019-02-15 13:15:30	Sample		K1900611-001L
21			021_PDS.d	2019-02-15 13:17:40	PDS		K1900611-001A
22			022_Spk.d	2019-02-15 13:19:50	Spike		KQ1901914-05
23			023SMPL.	2019-02-15 13:22:01	Sample		K1900611-002
24			024_CCV.	2019-02-15 13:24:12	CCV		CCV
25			025_CCB.	2019-02-15 13:26:24	CCB		CCB
26			026SMPL.	2019-02-15 13:28:35	Sample		K1900611-003
27			027SMPL.	2019-02-15 13:30:46	Sample		K1900611-004
28			028SMPL.	2019-02-15 13:32:57	Sample		K1900611-005
29			029SMPL.	2019-02-15 13:35:09	Sample		K1900612-001
30			030_ARF.d	2019-02-15 13:37:19	AllRef		K1900942-001
31			031SMPL.	2019-02-15 13:39:30	Sample		KQ1901914-06
32			032SMPL.	2019-02-15 13:41:41	Sample		K1900942-001L
33			033_PDS.d	2019-02-15 13:43:52	PDS		K1900942-001A
34			034_Spk.d.	2019-02-15 13:46:03	Spike		KQ1901914-07
35			035SMPL.	2019-02-15 13:48:13	Sample		K1900942-002
36			036_CCV.	2019-02-15 13:50:24	CCV		CCV
37			037_CCB.	2019-02-15 13:52:35	CCB		CCB
38			038SMPL.	2019-02-15 13:54:46	Sample		K1900942-003
39			039SMPL.	2019-02-15 13:56:57	Sample		K1900942-004
40			040SMPL.	2019-02-15 13:59:08	Sample		K1900942-005

	Sample						
		Rjct	Data File	Acq. Date-Time	Type	Level	Sample Name
41			041SMPL.	2019-02-15 14:01:20	Sample		K1900942-006
42			042SMPL.	2019-02-15 14:03:31	Sample		K1900942-007
43			043_CCV.	2019-02-15 14:05:42	CCV		CCV
44			044_CCB.	2019-02-15 14:07:53	CCB		CCB
45			045LCCV.	2019-02-15 14:10:04	LLCCV		LLCCVS
46			046LCCV.	2019-02-15 14:12:14	LLCCV		LLCCVS
47			047_PB.d	2019-02-15 14:14:26	PB		KQ1901915-01
48			048_LCS.d	2019-02-15 14:16:37	QCS		KQ1901915-02
49			049_ARF.d	2019-02-15 14:18:48	AllRef		K1900611-001
50			050SMPL.	2019-02-15 14:20:58	Sample		KQ1901915-03
51			051SMPL.	2019-02-15 14:23:09	Sample		K1900611-001L
52			052_PDS.d	2019-02-15 14:25:20	PDS		K1900611-001A
53			053_Spk.d	2019-02-15 14:27:31	Spike		KQ1901915-04
54			054SMPL.	2019-02-15 14:29:41	Sample		K1900611-002
55			055SMPL.	2019-02-15 14:31:52	Sample		K1900611-003
56			056SMPL.	2019-02-15 14:34:04	Sample		K1900611-004
57			057_CCV.	2019-02-15 14:36:15	CCV		CCV
58			058_CCB.	2019-02-15 14:38:26	CCB		CCB
59			059SMPL.	2019-02-15 14:40:37	Sample		K1900611-005
60			060SMPL.	2019-02-15 14:42:49	Sample		K1900612-001
61			061_CCV.	2019-02-15 14:45:00	CCV		CCV
62			062_CCB.	2019-02-15 14:47:11	CCB		CCB
63			063LCCV.	2019-02-15 14:49:22	LLCCV		LLCCVS

2/15/19

Analyte							
Name		Mass	ISTD	Tune Mode	Conc.	Units	Replicate
1	Cr	52	72	He	0.4276	ug/l	3
2	Cr	53	72	He	0.4584	ug/l	3
3	[Pb]	206	175	He	0.0998	ug/l	3
4	[Pb]	207	175	He	0.1104	ug/l	3
5	Pb	208	175	He	0.1015	ug/l	3
6	Ge	72		He			3
7	In	115		He			3
8	Lu	175		He			3

US EPA Tune Check Report

Operator Name	ALKLS NoUser
Acq/Data Batch	D:\Agilent\ICPMH\1\DATA\021519A.b
Acq. Date-Time	2019-02-15 10:48:14
Report Comment	ALS Tune
Instrument Name	G3281A JP13482848

[No Gas]

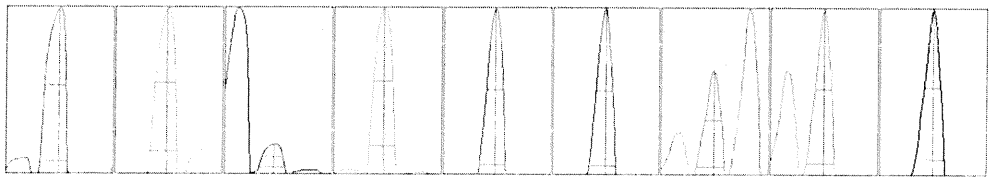
Sensitivity

Mass	CPS	RSD%	RSD% (Required)	RSD% (Flag)
7	150699.84	0.444	5.000	
9	37162.53	0.749	5.000	
24	136670.07	0.898	5.000	
59	188954.68	0.898	5.000	
115	292338.39	0.780	5.000	
140	314265.14	1.168	5.000	
208	201431.34	1.608	5.000	
209	315125.55	1.192	5.000	
238	435690.68	0.852	5.000	

Mass	Rep#1 Count	Rep#2 Count	Rep#3 Count	Rep#4 Count	Rep#5 Count
7	15042	15147	15016	15008	15136
9	3733	3711	3724	3671	3742
24	13843	13703	13689	13557	13543
59	19184	18898	18766	18843	18786
115	29575	29345	29108	29140	29001
140	32016	31529	31234	31275	31079
208	20483	20509	19944	19918	19861
209	32099	31534	31524	31321	31084
238	44156	43586	43547	43415	43141

Integration Time [sec] 0.1

Resolution/Axis



Mass	Peak Height	Axis	Axis (Required)	Axis (Flag)	W-5%	W-5% (Flag)	W-5% (Required)
7	25709.11	7.00	6.90 - 7.10		0.766		0.900
9	6543.58	8.95	8.90 - 9.10		0.754		0.900
24	23629.11	23.90	23.90 - 24.10		0.739		0.900

US EPA Tune Check Report

Mass	Peak Height	Axis	Axis (Required)	Axis (Flag)	W-5%	W-5% (Flag)	W-5% (Required)
59	34723.74	58.90	58.90 - 59.10		0.733		0.900
115	60988.41	114.95	114.90 - 115.10		0.731		0.900
140	66077.82	140.00	139.90 - 140.10		0.760		0.900
208	41789.20	208.00	207.90 - 208.10		0.781		0.900
209	66583.75	209.00	208.90 - 209.10		0.783		0.900
238	88540.21	238.00	237.90 - 238.10		0.827		0.900

Integration Time [sec]	0.1
Acquisition Time [sec]	268.4
Y Axis	Linear

Tune Parameters

Plasma Parameters

Plasma Mode	---	Nebulizer Gas	0.57 L/min	Dilution Gas	0.50 L/min
RF Power	1600 W	Option Gas	---	Auxiliary Gas	0.90 L/min
RF Matching	1.76 V	Nebulizer Pump	0.10 rps	Plasma Gas	15.0 L/min
Sample Depth	8.0 mm	S/C Temp	2 °C		

Lens Parameters

Extract 1	0.0 V	Omega Lens	7.9 V	Deflect	12.0 V
Extract 2	-160.0 V	Cell Entrance	-30 V	Plate Bias	-40 V
Omega Bias	-85 V	Cell Exit	-50 V		

Cell Parameters

Use Gas	No	3rd Gas Flow	---	Energy Discrimination	5.0 V
He Flow	0.0 mL/min	OctP Bias	-8.0 V		
H2 Flow	0.0 mL/min	OctP RF	190 V		

QP Parameters

Mass Gain	125	Axis Gain	1.0008	QP Bias	-3.0 V
Mass Offset	125	Axis Offset	-0.08		

Hardware Settings

Torch

Torch H	-0.6 mm	Torch V	0.7 mm		

EM

Discriminator	4.5 mV	Analog HV	1949 V	Pulse HV	1916 V

Calibration Blank Report

Sample Name	Blank
File Name	007CALB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\021519A2_#2.b
Acq Time	2019-02-15 12:27:49
Sample Type	CalBlk
Comment	---
ISTD Ref FileName	007CALB.d
Operator	**ALKLS** **NoUser**

QC Analyte Table

Name	Mass	ISTD	Tune Mode	CPS	CPS RSD
Cr	52	72	He	823.36	1.8
Cr	53	72	He	208.89	13.0
[Pb]	206	175	He	135.56	14.0
[Pb]	207	175	He	126.67	12.1
Pb	208	175	He	564.45	11.2

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD
Ge	72	He	174167.80	0.4
In	115	He	1744428.82	0.9
Lu	175	He	5356471.87	0.3

Calibration Standard Report

Sample Name	25ppb
File Name	008CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\021519A2_#2.b
Acq Time	2019-02-15 12:30:00
Sample Type	CalStd
Comment	---
ISTD Ref FileName	007CALB.d
Operator	**ALKLS** **NoUser**

QC Analyte Table

Name	Mass	ISTD	Tune Mode	CPS	CPS RSD
Cr	52	72	He	85740.50	0.5
Cr	53	72	He	10598.84	0.3
[Pb]	206	175	He	192318.04	1.1
[Pb]	207	175	He	171417.99	0.9
Pb	208	175	He	791273.95	0.6

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	173822.12	0.4	174167.8	99.8	
In	115	He	1770240.07	0.7	1744428.82	101.48	
Lu	175	He	5354496.60	1.1	5356471.87	99.96	

Initial Calibration Verification (ICV) Report

Sample Name	ICV
File Name	009_ICV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\021519A2_#2.b
Acq Time	2019-02-15 12:32:10
Sample Type	ICV
Comment	---
ISTD Ref FileName	007CALB.d
Operator	**ALKLS** **NoUser**

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	% Rec	QC Flag
Cr	52	72	He	9.7907	ug/l	1.1	34224.79	97.91	
Cr	53	72	He	9.8398	ug/l	3.4	4316.12	98.4	
[Pb]	206	175	He	23.7035	ug/l	4.2	183594.98	94.81	
[Pb]	207	175	He	24.6736	ug/l	3.8	170334.96	98.69	
Pb	208	175	He	24.2006	ug/l	3.5	771316.62	96.8	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	174566.20	0.4	174167.8	100.23	
In	115	He	1781068.68	1.2	1744428.82	102.1	
Lu	175	He	5395868.12	3.6	5356471.87	100.74	

Continuing Calibration Verification (CCV) Report

Sample Name CCV

File Name 010_CCV.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 12:34:21

Sample Type CCV

Comment ---

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	CPS	% Rec	QC Flag
Cr	52	72	He	24.4874	ug/l	2.1	85069.13	97.95	
Cr	53	72	He	24.9288	ug/l	5.8	10702.24	99.72	
[Pb]	206	175	He	25.0497	ug/l	1.3	195968.16	100.2	
[Pb]	207	175	He	24.6536	ug/l	1.1	171893.53	98.61	
Pb	208	175	He	24.7012	ug/l	1.1	795043.39	98.8	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	176048.87	0.7	174167.8	101.08	
In	115	He	1779310.69	0.6	1744428.82	102	
Lu	175	He	5445089.51	1.1	5356471.87	101.65	

Initial Calibration Blank (ICB) Report

Sample Name ICB

File Name 011_ICB.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 12:36:33

Sample Type ICB

Comment ---

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	0.0160	ug/l	183.0	892.25	
Cr	53	72	He	0.0342	ug/l	225.4	226.67	
[Pb]	206	175	He	0.0100	ug/l	104.1	214.45	
[Pb]	207	175	He	0.0102	ug/l	78.7	197.78	
Pb	208	175	He	0.0101	ug/l	69.0	890.02	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	176980.22	0.3	174167.8	101.61	
In	115	He	1765379.58	0.2	1744428.82	101.2	
Lu	175	He	5391980.48	1.2	5356471.87	100.66	

Continuing Calibration Blank (CCB) Report

Sample Name CCB

File Name 012_CCB.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 12:38:44

Sample Type CCB

Comment ---

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	0.0227	ug/l	108.7	923.37	
Cr	53	72	He	-0.0592	ug/l	N/A	188.89	
[Pb]	206	175	He	-0.0026	ug/l	N/A	117.78	
[Pb]	207	175	He	-0.0004	ug/l	N/A	126.67	
Pb	208	175	He	-0.0009	ug/l	N/A	547.78	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	178493.22	0.6	174167.8	102.48	
In	115	He	1796136.73	0.5	1744428.82	102.96	
Lu	175	He	5471059.64	0.8	5356471.87	102.14	

Low Level Initial Calibration Verification (LLICV) Report

Sample Name	LLICVS
File Name	013LICV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\021519A2_#2.b
Acq Time	2019-02-15 12:40:55
Sample Type	LLICV
Comment	---
ISTD Ref FileName	007CALB.d
Operator	**ALKLS**
	NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc.RSD	CPS	% Rec	QC Flag
Cr	52	72	He	0.4341	ug/l	1.9	2337.95	108.52	
Cr	53	72	He	0.3822	ug/l	61.9	374.45	95.55	
[Pb]	206	175	He	0.0999	ug/l	18.5	924.48	99.9	
[Pb]	207	175	He	0.1058	ug/l	17.1	871.70	105.8	
Pb	208	175	He	0.1009	ug/l	4.9	3845.22	100.9	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	176979.96	0.8	174167.8	101.61	
In	115	He	1791459.37	2.4	1744428.82	102.7	
Lu	175	He	5483572.15	1.7	5356471.87	102.37	

Interference Check Solution A (ICS-A) Report

Sample Name	ICSA
File Name	014ICSA.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\021519A2_#2.b
Acq Time	2019-02-15 12:43:05
Sample Type	ICSA
Comment	---
ISTD Ref FileName	007CALB.d
Operator	**ALKLS** **NoUser**

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	ExpValue	CPS	QC Flag
Cr	52	72	He	1.2147	ug/l	5.6	-1	4787.35	
Cr	53	72	He	1.1536	ug/l	3.7	-1	665.57	
[Pb]	206	175	He	0.1590	ug/l	3.4	-1	1322.29	
[Pb]	207	175	He	0.1486	ug/l	4.9	-1	1114.49	
Pb	208	175	He	0.1563	ug/l	3.0	-1	5364.86	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	168160.80	0.8	174167.8	96.55	
In	115	He	1619001.56	2.3	1744428.82	92.81	
Lu	175	He	5214086.88	1.5	5356471.87	97.34	

Interference Check Solution AB (ICS-AB) Report

Sample Name	ICSAB
File Name	015ICSB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\021519A2_#2.b
Acq Time	2019-02-15 12:45:15
Sample Type	ICSB
Comment	---
ISTD Ref FileName	007CALB.d
Operator	**ALKLS** **NoUser**

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	ExpValue	CPS	QC Flag
Cr	52	72	He	49.0867	ug/l	1.6	50	159071.29	
Cr	53	72	He	49.0723	ug/l	1.8	50	19559.99	
[Pb]	206	175	He	0.1590	ug/l	7.9	-1	1324.51	
[Pb]	207	175	He	0.1490	ug/l	7.0	-1	1120.05	
Pb	208	175	He	0.1542	ug/l	2.0	-1	5308.18	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	165041.91	1.4	174167.8	94.76	
In	115	He	1594125.11	1.3	1744428.82	91.38	
Lu	175	He	5223561.46	0.7	5356471.87	97.52	

Prep Blank (PB) Report

Sample Name KQ1901914-01

File Name 016_PB.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:06:42

Sample Type PB

Comment 5X

ISTD Ref FileName 007CALB.d

Operator ALKLS
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	0.1574	ug/l	17.6	1436.74	
Cr	53	72	He	0.0185	ug/l	215.9	228.89	
[Pb]	206	175	He	0.0033	ug/l	164.4	172.23	
[Pb]	207	175	He	0.0018	ug/l	191.1	148.89	
Pb	208	175	He	0.0033	ug/l	83.0	717.79	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	184120.07	0.4	174167.8	105.71	
In	115	He	1894526.87	1.7	1744428.82	108.6	
Lu	175	He	5748065.19	0.6	5356471.87	107.31	

Quality Control Sample (QCS) Report

Sample Name	KQ1901914-08
File Name	017_LCS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\021519A2_#2.b
Acq Time	2019-02-15 13:08:53
Sample Type	QCS
Total Dilution	1.0000
Comment	20X
ISTD Ref FileName	007CALB.d
Sample QC Pass/Fial	Pass
ISTD QC Pass/Fail	Pass
Operator	**ALKLS** **NoUser**

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	ExpValue	% Rec	QC Flag
Cr	52	72	He	68.5596	ug/l	1.6	242428.43	72	95.22	
Cr	53	72	He	68.9569	ug/l	1.8	29948.06	72	95.77	
[Pb]	206	175	He	59.0715	ug/l	1.6	468616.42	55.5	106.44	
[Pb]	207	175	He	55.7246	ug/l	1.4	393983.03	55.5	100.4	
Pb	208	175	He	57.2064	ug/l	1.1	1867153.72	55.5	103.07	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	%QC Low	%QC High	QC Flag
Ge	72	He	180334.55	1.3	174167.8	103.54	70	125	
In	115	He	1782747.85	1.5	1744428.82	102.2	70	125	
Lu	175	He	5523913.81	1.2	5356471.87	103.13	70	125	

Reference Sample Report

Sample Name	K1900611-001
File Name	018_ARF.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\021519A2_#2.b
Acq Time	2019-02-15 13:11:08
Sample Type	AllRef
Comment	5X
ISTD Ref FileName	007CALB.d
Sample QC Pass/Fial	Pass
ISTD QC Pass/Fail	Pass
Operator	**ALKLS** **NoUser**

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	41.9559	ug/l	0.6	146480.90	
Cr	53	72	He	41.9483	ug/l	3.4	18029.45	
[Pb]	206	175	He	68.5171	ug/l	2.1	537708.94	
[Pb]	207	175	He	64.1838	ug/l	1.9	448915.81	
Pb	208	175	He	66.2142	ug/l	2.0	2137862.90	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	177636.45	0.4	174167.8	101.99	
In	115	He	1775302.74	1.8	1744428.82	101.77	
Lu	175	He	5465207.14	1.5	5356471.87	102.03	

Sample Report

Sample Name KQ1901914-04

File Name 019SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:13:19

Sample Type Sample

Comment 5X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	43.1985	ug/l	2.9	142417.32	
Cr	53	72	He	43.6957	ug/l	3.5	17730.22	
[Pb]	206	175	He	70.8774	ug/l	3.4	524874.04	
[Pb]	207	175	He	66.9706	ug/l	4.5	441865.12	
Pb	208	175	He	68.6594	ug/l	3.7	2091659.50	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	167825.98	1.9	174167.8	96.36	
In	115	He	1655298.86	5.4	1744428.82	94.89	
Lu	175	He	5160722.99	3.9	5356471.87	96.35	

Sample Report

Sample Name K1900611-001L

File Name 020SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:15:30

Sample Type Sample

Comment 25X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	8.4446	ug/l	6.8	29435.05	
Cr	53	72	He	8.5710	ug/l	8.3	3759.32	
[Pb]	206	175	He	14.3867	ug/l	10.7	110960.08	
[Pb]	207	175	He	13.4776	ug/l	9.7	92707.42	
Pb	208	175	He	13.8346	ug/l	10.1	439174.86	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	173976.27	7.5	174167.8	99.89	
In	115	He	1730142.71	10.4	1744428.82	99.18	
Lu	175	He	5402697.98	9.9	5356471.87	100.86	

Post Digestion Spike Sample (PDS) Report

Sample Name K1900611-001A

File Name 021_PDS.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:17:40

Sample Type PDS

Comment 5X +50ppb

ISTD Ref FileName 007CALB.d

QC Ref File Name 018_
ARF.

Default Text ALKLS
NoUser

QC Analyte Table

Name	Mass	Tune	Conc.	Units	Conc. RSD	CPS	Spk Amt	% Rec	Flag
Cr	52	He	90.6948	ug/l	1.2	306059.56	50	97.48	
Cr	53	He	91.7896	ug/l	0.7	38008.22	50	99.68	
[Pb]	206	He	116.8464	ug/l	0.5	912459.58	50	96.66	
[Pb]	207	He	112.5690	ug/l	0.4	783421.39	50	96.77	
Pb	208	He	115.0329	ug/l	0.4	3695724.30	50	97.64	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	172237.98	1.1	174167.8	98.89	
In	115	He	1715855.80	1.9	1744428.82	98.36	
Lu	175	He	5437909.23	0.8	5356471.87	101.52	

Matrix Spike Sample (MS) Report

Sample Name KQ1901914-05

File Name 022_Spk.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:19:50

Sample Type Spike

Comment 5X

ISTD Ref FileName 007CALB.d

QC Ref File Name 018_
ARF.

Default Text ÁLKLS
NoUser

QC Analyte Table

Name	Mass	Tune	Conc.	Units	Conc. RSD	CPS	Spk Amt	% Rec	Flag
Cr	52	He	116.4312	ug/l	0.3	385568.92	80	93.09	
Cr	53	He	117.3095	ug/l	1.8	47635.21	80	94.2	
[Pb]	206	He	267.3295	ug/l	0.9	2025945.75	200	99.41	
[Pb]	207	He	260.1688	ug/l	0.4	1757160.27	200	97.99	
Pb	208	He	255.1583	ug/l	0.7	7955590.72	200	94.47	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	169109.95	1.3	174167.8	97.1	
In	115	He	1689077.51	0.8	1744428.82	96.83	
Lu	175	He	5277605.07	0.5	5356471.87	98.53	

Sample Report

Sample Name K1900611-002

File Name 023SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:22:01

Sample Type Sample

Comment 5X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	14.8982	ug/l	0.8	50549.89	
Cr	53	72	He	14.4923	ug/l	4.2	6126.67	
[Pb]	206	175	He	24.1310	ug/l	1.6	188081.99	
[Pb]	207	175	He	22.2698	ug/l	2.0	154697.36	
Pb	208	175	He	22.9191	ug/l	1.7	734966.57	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	170861.90	0.9	174167.8	98.1	
In	115	He	1700487.89	1.7	1744428.82	97.48	
Lu	175	He	5425184.23	1.6	5356471.87	101.28	

Continuing Calibration Verification (CCV) Report

Sample Name CCV

File Name 024_CCV.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:24:12

Sample Type CCV

Comment ---

ISTD Ref FileName 007CALB.d

Operator **ALKLS**

NoUser

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	CPS	% Rec	QC Flag
Cr	52	72	He	24.8337	ug/l	2.0	88877.05	99.33	
Cr	53	72	He	24.5007	ug/l	2.3	10848.99	98	
[Pb]	206	175	He	24.9052	ug/l	2.1	200920.24	99.62	
[Pb]	207	175	He	24.9558	ug/l	1.7	179434.01	99.82	
Pb	208	175	He	24.8481	ug/l	1.6	824773.63	99.39	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	181419.54	2.4	174167.8	104.16	
In	115	He	1821895.21	1.0	1744428.82	104.44	
Lu	175	He	5615611.72	1.4	5356471.87	104.84	

Continuing Calibration Blank (CCB) Report

Sample Name CCB

File Name 025_CCB.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:26:24

Sample Type CCB

Comment ---

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	0.0109	ug/l	208.2	888.92	
Cr	53	72	He	-0.1057	ug/l	N/A	170.00	
[Pb]	206	175	He	0.0123	ug/l	34.8	236.67	
[Pb]	207	175	He	0.0140	ug/l	28.2	230.00	
Pb	208	175	He	0.0129	ug/l	16.1	1002.24	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	179784.60	1.7	174167.8	103.22	
In	115	He	1810054.93	0.1	1744428.82	103.76	
Lu	175	He	5524986.59	1.7	5356471.87	103.15	

Sample Report

Sample Name	K1900611-003
File Name	026SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\021519A2_#2.b
Acq Time	2019-02-15 13:28:35
Sample Type	Sample
Comment	5X
ISTD Ref FileName	007CALB.d
Operator	**ALKLS** **NoUser**

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	22.7735	ug/l	0.1	78332.05	
Cr	53	72	He	22.5839	ug/l	0.4	9613.82	
[Pb]	206	175	He	42.0281	ug/l	1.1	327465.05	
[Pb]	207	175	He	39.5434	ug/l	1.5	274584.33	
Pb	208	175	He	40.4863	ug/l	1.1	1297834.42	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	174163.52	0.7	174167.8	100	
In	115	He	1733075.97	0.9	1744428.82	99.35	
Lu	175	He	5424546.87	1.1	5356471.87	101.27	

Sample Report

Sample Name K1900611-004

File Name 027SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:30:46

Sample Type Sample

Comment 5X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	35.0858	ug/l	0.6	131146.85	
Cr	53	72	He	35.1924	ug/l	3.1	16210.97	
[Pb]	206	175	He	50.8148	ug/l	1.0	418753.29	
[Pb]	207	175	He	48.2216	ug/l	1.7	354124.10	
Pb	208	175	He	49.2465	ug/l	1.2	1669603.57	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	189971.96	0.9	174167.8	109.07	
In	115	He	1903482.56	1.4	1744428.82	109.12	
Lu	175	He	5737857.83	1.7	5356471.87	107.12	

Sample Report

Sample Name	K1900611-005
File Name	028SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\021519A2_#2.b
Acq Time	2019-02-15 13:32:57
Sample Type	Sample
Comment	5X
ISTD Ref FileName	007CALB.d
Operator	**ALKLS**
	NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	51.0272	ug/l	1.0	193740.64	
Cr	53	72	He	51.6960	ug/l	1.1	24136.84	
[Pb]	206	175	He	15.2163	ug/l	1.0	128291.55	
[Pb]	207	175	He	14.0240	ug/l	1.5	105382.30	
Pb	208	175	He	14.4638	ug/l	1.2	501714.24	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	193382.52	0.6	174167.8	111.03	
In	115	He	1929606.66	1.7	1744428.82	110.62	
Lu	175	He	5865425.46	1.6	5356471.87	109.5	

Sample Report

Sample Name	K1900612-001
File Name	029SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\021519A2_#2.b
Acq Time	2019-02-15 13:35:09
Sample Type	Sample
Comment	5X
ISTD Ref FileName	007CALB.d
Operator	**ALKLS** **NoUser**

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	58.4246	ug/l	1.2	217644.87	
Cr	53	72	He	58.7373	ug/l	1.2	26891.97	
[Pb]	206	175	He	48.5364	ug/l	1.9	404398.43	
[Pb]	207	175	He	45.7033	ug/l	1.7	339382.02	
Pb	208	175	He	46.9139	ug/l	2.1	1608114.74	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	189851.38	0.8	174167.8	109	
In	115	He	1902466.52	2.8	1744428.82	109.06	
Lu	175	He	5801864.77	1.7	5356471.87	108.32	

Reference Sample Report

Sample Name	K1900942-001
File Name	030_ARF.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\021519A2_#2.b
Acq Time	2019-02-15 13:37:19
Sample Type	AllRef
Comment	5X
ISTD Ref FileName	007CALB.d
Sample QC Pass/Fial	Pass
ISTD QC Pass/Fail	Pass
Operator	**ALKLS** **NoUser**

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	28.2854	ug/l	0.6	106754.73	
Cr	53	72	He	28.6955	ug/l	1.8	13369.66	
[Pb]	206	175	He	439.6084	ug/l	1.0	3652899.72	
[Pb]	207	175	He	426.0628	ug/l	0.7	3155169.11	
Pb	208	175	He	418.1761	ug/l	0.6	14295935.20	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	191499.78	0.5	174167.8	109.95	
In	115	He	1903857.64	1.4	1744428.82	109.14	
Lu	175	He	5787121.58	1.2	5356471.87	108.04	

Sample Report

Sample Name KQ1901914-06

File Name 031SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:39:30

Sample Type Sample

Comment 5X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	29.1530	ug/l	0.9	108980.42	
Cr	53	72	He	29.8604	ug/l	1.6	13772.19	
[Pb]	206	175	He	438.8571	ug/l	1.3	3656044.72	
[Pb]	207	175	He	415.4765	ug/l	1.9	3084678.07	
Pb	208	175	He	412.8421	ug/l	0.8	14149786.38	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	189717.99	0.6	174167.8	108.93	
In	115	He	1864281.73	3.2	1744428.82	106.87	
Lu	175	He	5801588.52	0.6	5356471.87	108.31	

Sample Report

Sample Name K1900942-001L

File Name 032SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:41:41

Sample Type Sample

Comment 25X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	5.8160	ug/l	0.9	22246.55	
Cr	53	72	He	5.6156	ug/l	4.7	2748.02	
[Pb]	206	175	He	86.8445	ug/l	0.5	716645.84	
[Pb]	207	175	He	84.0683	ug/l	0.2	618266.87	
Pb	208	175	He	85.0444	ug/l	0.5	2887254.14	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	187931.58	1.1	174167.8	107.9	
In	115	He	1907284.58	0.8	1744428.82	109.34	
Lu	175	He	5746004.77	0.4	5356471.87	107.27	

Post Digestion Spike Sample (PDS) Report

Sample Name K1900942-001A

File Name 033_PDS.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:43:52

Sample Type PDS

Comment 5X +50ppb

ISTD Ref FileName 007CALB.d

QC Ref File Name 030_
ARF.

Default Text ÁLKLS
NoUser

QC Analyte Table

Name	Mass	Tune	Conc.	Units	Conc. RSD	CPS	Spk Amt	% Rec	Flag
Cr	52	He	76.4611	ug/l	1.9	290740.08	50	96.35	
Cr	53	He	77.0025	ug/l	3.3	35939.40	50	96.61	
[Pb]	206	He	477.0101	ug/l	2.5	4052916.78	50	74.8	Flag
[Pb]	207	He	461.6145	ug/l	1.7	3495572.57	50	71.1	Flag
Pb	208	He	455.4543	ug/l	1.7	15921782.63	50	74.56	Flag

Simple conc.
5X
N/A
2/15/19

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	194017.67	2.1	174167.8	111.4	
In	115	He	1916029.85	1.3	1744428.82	109.84	
Lu	175	He	5918406.85	1.3	5356471.87	110.49	

Matrix Spike Sample (MS) Report

Sample Name KQ1901914-07

File Name 034_Spk.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:46:03

Sample Type Spike

Comment 5X

ISTD Ref FileName 007CALB.d

QC Ref File Name 030_
ARF.

Default Text ALKLS
NoUser

QC Analyte Table

Name	Mass	Tune	Conc.	Units	Conc. RSD	CPS	Spk Amt	% Rec	Flag
Cr	52	He	103.2559	ug/l	0.8	377357.41	80	93.71	
Cr	53	He	103.1301	ug/l	1.8	46235.95	80	93.04	
[Pb]	206	He	607.3229	ug/l	2.5	5046312.16	200	83.86	
[Pb]	207	He	593.4964	ug/l	3.0	4394886.49	200	83.72	
Pb	208	He	585.3388	ug/l	1.8	20011470.46	200	83.58	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	186563.10	1.4	174167.8	107.12	
In	115	He	1882337.01	1.7	1744428.82	107.91	
Lu	175	He	5789203.52	2.8	5356471.87	108.08	

Sample Report

Sample Name K1900942-002

File Name 035SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:48:13

Sample Type Sample

Comment 5X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	30.6097	ug/l	0.5	110282.74	
Cr	53	72	He	32.1137	ug/l	1.1	14264.81	
[Pb]	206	175	He	636.4417	ug/l	1.3	5133097.57	
[Pb]	207	175	He	607.0914	ug/l	1.5	4363228.16	
Pb	208	175	He	605.9319	ug/l	1.1	20104683.64	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	182925.98	0.9	174167.8	105.03	
In	115	He	1824686.66	1.4	1744428.82	104.6	
Lu	175	He	5616588.94	0.8	5356471.87	104.86	

Continuing Calibration Verification (CCV) Report

Sample Name CCV

File Name 036_CCV.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:50:24

Sample Type CCV

Comment ---

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	CPS	% Rec	QC Flag
Cr	52	72	He	24.4090	ug/l	1.8	89246.51	97.64	
Cr	53	72	He	24.4131	ug/l	1.2	11038.01	97.65	
[Pb]	206	175	He	25.2855	ug/l	1.1	204432.91	101.14	
[Pb]	207	175	He	25.2629	ug/l	0.8	182034.73	101.05	
Pb	208	175	He	25.1718	ug/l	1.0	837290.42	100.69	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	185276.84	0.6	174167.8	106.38	
In	115	He	1894124.51	1.8	1744428.82	108.58	
Lu	175	He	5627008.80	0.4	5356471.87	105.05	

Continuing Calibration Blank (CCB) Report

Sample Name CCB

File Name 037_CCB.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:52:35

Sample Type CCB

Comment ---

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	0.0325	ug/l	75.3	1007.82	
Cr	53	72	He	-0.0319	ug/l	N/A	210.00	
[Pb]	206	175	He	0.0496	ug/l	13.6	560.01	
[Pb]	207	175	He	0.0458	ug/l	10.7	478.90	
Pb	208	175	He	0.0495	ug/l	12.9	2307.87	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	187589.81	3.3	174167.8	107.71	
In	115	He	1905846.80	3.9	1744428.82	109.25	
Lu	175	He	5817680.60	4.7	5356471.87	108.61	

Sample Report

Sample Name K1900942-003

File Name 038SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:54:46

Sample Type Sample

Comment 5X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	32.5150	ug/l	0.7	116501.96	
Cr	53	72	He	33.1542	ug/l	0.7	14647.38	
[Pb]	206	175	He	509.2128	ug/l	1.0	4150871.78	
[Pb]	207	175	He	488.5657	ug/l	0.7	3549091.11	
Pb	208	175	He	484.4178	ug/l	0.8	16244890.88	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	182005.41	1.2	174167.8	104.5	
In	115	He	1848573.95	0.4	1744428.82	105.97	
Lu	175	He	5676708.25	1.4	5356471.87	105.98	

Sample Report

Sample Name K1900942-004

File Name 039SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:56:57

Sample Type Sample

Comment 5X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	22.6688	ug/l	3.0	77146.92	
Cr	53	72	He	22.0409	ug/l	4.3	9288.08	
[Pb]	206	175	He	79.5853	ug/l	2.9	608539.23	
[Pb]	207	175	He	75.0599	ug/l	3.2	511462.53	
Pb	208	175	He	76.6424	ug/l	2.6	2411156.99	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	172355.26	1.4	174167.8	98.96	
In	115	He	1697328.27	1.5	1744428.82	97.3	
Lu	175	He	5326943.26	2.8	5356471.87	99.45	

Sample Report

Sample Name K1900942-005

File Name 040SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:59:08

Sample Type Sample

Comment 5X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	23.5991	ug/l	0.3	89188.47	
Cr	53	72	He	24.0396	ug/l	2.6	11233.70	
[Pb]	206	175	He	771.1915	ug/l	0.8	6457302.94	
[Pb]	207	175	He	743.3669	ug/l	0.5	5547151.03	
Pb	208	175	He	741.6349	ug/l	0.4	25548111.20	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	191433.35	0.2	174167.8	109.91	
In	115	He	1912691.87	0.9	1744428.82	109.65	
Lu	175	He	5831382.69	0.2	5356471.87	108.87	

Sample Report

Sample Name K1900942-006

File Name 041SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:01:20

Sample Type Sample

Comment 5X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	28.7951	ug/l	0.9	108350.78	
Cr	53	72	He	28.9891	ug/l	3.6	13464.16	
[Pb]	206	175	He	1963.4629	ug/l	1.9	16137342.14	
[Pb]	207	175	He	1890.3389	ug/l	2.6	13844494.45	
Pb	208	175	He	1894.6398	ug/l	2.4	64055437.46	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	190959.06	1.1	174167.8	109.64	
In	115	He	1914901.24	1.2	1744428.82	109.77	
Lu	175	He	5725387.83	2.4	5356471.87	106.89	

Sample Report

Sample Name K1900942-007

File Name 042SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:03:31

Sample Type Sample

Comment 5X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	21.7380	ug/l	1.7	79728.64	
Cr	53	72	He	21.7457	ug/l	2.3	9875.08	
[Pb]	206	175	He	78.2385	ug/l	0.3	635809.54	
[Pb]	207	175	He	73.8103	ug/l	0.1	534562.86	
Pb	208	175	He	75.2479	ug/l	0.2	2515754.54	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	185627.53	0.6	174167.8	106.58	
In	115	He	1836335.28	0.7	1744428.82	105.27	
Lu	175	He	5658332.41	1.1	5356471.87	105.64	

Continuing Calibration Verification (CCV) Report

Sample Name CCV

File Name 043_CCV.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:05:42

Sample Type CCV

Comment ---

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	CPS	% Rec	QC Flag
Cr	52	72	He	24.8700	ug/l	1.0	87122.68	99.48	
Cr	53	72	He	24.7946	ug/l	1.6	10737.83	99.18	
[Pb]	206	175	He	25.3772	ug/l	0.8	201462.71	101.51	
[Pb]	207	175	He	25.1643	ug/l	0.2	178047.94	100.66	
Pb	208	175	He	25.1200	ug/l	0.7	820441.84	100.48	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	177541.94	0.7	174167.8	101.94	
In	115	He	1779086.18	0.3	1744428.82	101.99	
Lu	175	He	5525252.14	1.1	5356471.87	103.15	

Continuing Calibration Blank (CCB) Report

Sample Name CCB

File Name 044_CCB.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:07:53

Sample Type CCB

Comment ---

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	0.0126	ug/l	79.0	906.69	
Cr	53	72	He	-0.1142	ug/l	N/A	168.89	
[Pb]	206	175	He	0.0567	ug/l	1.9	602.24	
[Pb]	207	175	He	0.0480	ug/l	9.5	480.01	
Pb	208	175	He	0.0542	ug/l	2.6	2402.32	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	182285.98	0.3	174167.8	104.66	
In	115	He	1862714.72	3.2	1744428.82	106.78	
Lu	175	He	5643589.36	0.3	5356471.87	105.36	

Low Level Continuing Calibration Verification (LLCCV) Report

Sample Name	LLCCVS
File Name	045LCCV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\021519A2_#2.b
Acq Time	2019-02-15 14:10:04
Sample Type	LLCCV
Comment	---
ISTD Ref FileName	007CALB.d
Sample QC Pass/Fial	Fail
ISTD QC Pass/Fail	Pass
Operator	ALKLS NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	% Rec	QC Flag
Cr	52	72	He	0.4140	ug/l	6.2	2325.73	103.5	
Cr	53	72	He	0.3412	ug/l	19.6	365.56	85.3	
[Pb]	206	175	He	0.1368	ug/l	1.9	1232.28	136.8	
[Pb]	207	175	He	0.1356	ug/l	6.8	1094.49	135.6	
Pb	208	175	He	0.1348	ug/l	1.8	5007.01	134.8	LLCCV Failed

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	181520.32	1.3	174167.8	104.22	
In	115	He	1834475.62	1.5	1744428.82	105.16	
Lu	175	He	5555247.97	1.3	5356471.87	103.71	

Rev
2/15/19

Low Level Continuing Calibration Verification (LLCCV) Report

Sample Name	LLCCVS
File Name	046LCCV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\021519A2_#2.b
Acq Time	2019-02-15 14:12:14
Sample Type	LLCCV
Comment	---
ISTD Ref FileName	007CALB.d
Sample QC Pass/Fial	Pass
ISTD QC Pass/Fail	Pass
Operator	**ALKLS** **NoUser**

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	% Rec	QC Flag
Cr	52	72	He	0.4240	ug/l	14.3	2390.18	106	
Cr	53	72	He	0.3772	ug/l	39.9	385.56	94.3	
[Pb]	206	175	He	0.1244	ug/l	5.5	1153.39	124.4	
[Pb]	207	175	He	0.1196	ug/l	4.7	1000.04	119.6	
Pb	208	175	He	0.1217	ug/l	1.5	4659.20	121.7	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	183880.59	2.1	174167.8	105.58	
In	115	He	1840756.31	2.6	1744428.82	105.52	
Lu	175	He	5655390.19	2.5	5356471.87	105.58	

Prep Blank (PB) Report

Sample Name	KQ1901915-01
File Name	047_PB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\021519A2_#2.b
Acq Time	2019-02-15 14:14:26
Sample Type	PB
Comment	5X
ISTD Ref FileName	007CALB.d
Operator	**ALKLS** **NoUser**

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	0.0946	ug/l	27.1	1243.38	
Cr	53	72	He	0.0116	ug/l	200.2	232.23	
[Pb]	206	175	He	0.0137	ug/l	76.3	255.56	
[Pb]	207	175	He	0.0240	ug/l	6.8	308.89	
Pb	208	175	He	0.0200	ug/l	18.0	1268.92	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	189303.47	2.1	174167.8	108.69	
In	115	He	1890602.43	3.0	1744428.82	108.38	
Lu	175	He	5688031.02	1.2	5356471.87	106.19	

Quality Control Sample (QCS) Report

Sample Name	KQ1901915-02
File Name	048_LCS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\021519A2_#2.b
Acq Time	2019-02-15 14:16:37
Sample Type	QCS
Total Dilution	1.0000
Comment	20X
ISTD Ref FileName	007CALB.d
Sample QC Pass/Fial	Pass
ISTD QC Pass/Fail	Pass
Operator	**ALKLS** **NoUser**

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	ExpValue	% Rec	QC Flag
Cr	52	72	He	61.9184	ug/l	0.6	227228.61	72	86	
Cr	53	72	He	64.2681	ug/l	1.4	28969.76	72	89.26	
[Pb]	206	175	He	53.3247	ug/l	1.8	432088.74	55.5	96.08	
[Pb]	207	175	He	50.2567	ug/l	1.5	362939.40	55.5	90.55	
Pb	208	175	He	51.6376	ug/l	1.3	1721529.32	55.5	93.04	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	%QC Low	%QC High	QC Flag
Ge	72	He	187060.77	0.3	174167.8	107.4	70	125	
In	115	He	1872296.25	0.8	1744428.82	107.33	70	125	
Lu	175	He	5642229.78	1.2	5356471.87	105.33	70	125	

Reference Sample Report

Sample Name	K1900611-001
File Name	049_ARF.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\021519A2_#2.b
Acq Time	2019-02-15 14:18:48
Sample Type	AllRef
Comment	5X
ISTD Ref FileName	007CALB.d
Sample QC Pass/Fial	Pass
ISTD QC Pass/Fail	Pass
Operator	**ALKLS** **NoUser**

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	30.8051	ug/l	2.2	107422.72	
Cr	53	72	He	31.1772	ug/l	1.3	13414.12	
[Pb]	206	175	He	41.3097	ug/l	1.3	327035.02	
[Pb]	207	175	He	38.7925	ug/l	1.0	273708.03	
Pb	208	175	He	39.7136	ug/l	1.2	1293507.30	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	177081.10	1.1	174167.8	101.67	
In	115	He	1762766.25	1.1	1744428.82	101.05	
Lu	175	He	5511518.12	0.8	5356471.87	102.89	

Sample Report

Sample Name KQ1901915-03

File Name 050SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:20:58

Sample Type Sample

Comment 5X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	50.1674	ug/l	0.7	184713.83	
Cr	53	72	He	51.4175	ug/l	2.1	23277.88	
[Pb]	206	175	He	35.8194	ug/l	0.8	295282.17	
[Pb]	207	175	He	33.6907	ug/l	0.8	247524.39	
Pb	208	175	He	34.5836	ug/l	0.7	1172933.67	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	187517.87	0.9	174167.8	107.67	
In	115	He	1881799.92	0.6	1744428.82	107.87	
Lu	175	He	5738675.61	1.0	5356471.87	107.14	

Sample Report

Sample Name K1900611-001L

File Name 051SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:23:09

Sample Type Sample

Comment 25X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	6.3181	ug/l	1.4	22888.45	
Cr	53	72	He	6.2798	ug/l	2.5	2894.70	
[Pb]	206	175	He	8.5390	ug/l	0.5	67733.25	
[Pb]	207	175	He	8.0876	ug/l	1.6	57186.62	
Pb	208	175	He	8.2312	ug/l	0.4	268648.59	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	178572.68	1.9	174167.8	102.53	
In	115	He	1779558.96	2.4	1744428.82	102.01	
Lu	175	He	5513037.00	0.2	5356471.87	102.92	

Post Digestion Spike Sample (PDS) Report

Sample Name K1900611-001A

File Name 052_PDS.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:25:20

Sample Type PDS

Comment 5X +50ppb

ISTD Ref FileName 007CALB.d

QC Ref File Name 049_
ARF.

Default Text ÁLKLS
NoUser

QC Analyte Table

Name	Mass	Tune	Conc.	Units	Conc. RSD	CPS	Spk Amt	% Rec	Flag
Cr	52	He	81.0625	ug/l	1.4	277788.21	50	100.51	
Cr	53	He	81.6798	ug/l	2.3	34354.04	50	101.01	
[Pb]	206	He	90.7461	ug/l	0.1	716476.00	50	98.87	
[Pb]	207	He	87.6576	ug/l	0.7	616771.61	50	97.73	
Pb	208	He	88.7597	ug/l	0.4	2883104.04	50	98.09	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	174854.58	1.1	174167.8	100.39	
In	115	He	1768390.28	1.9	1744428.82	101.37	
Lu	175	He	5497709.92	1.0	5356471.87	102.64	

Matrix Spike Sample (MS) Report

Sample Name KQ1901915-04

File Name 053_Spk.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:27:31

Sample Type Spike

Comment 5X

ISTD Ref FileName 007CALB.d

QC Ref File Name 049_
ARF.

Default Text ÁLKLS
NoUser

QC Analyte Table

Name	Mass	Tune	Conc.	Units	Conc. RSD	CPS	Spk Amt	% Rec	Flag
Cr	52	He	104.1074	ug/l	0.6	365544.03	80	91.63	
Cr	53	He	104.7260	ug/l	1.6	45101.78	80	91.94	
[Pb]	206	He	233.7037	ug/l	1.2	1895564.92	200	96.2	
[Pb]	207	He	218.8489	ug/l	1.8	1582358.76	200	90.03	
Pb	208	He	221.1305	ug/l	1.1	7380607.00	200	90.71	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	179262.03	1.1	174167.8	102.92	
In	115	He	1801933.89	1.0	1744428.82	103.3	
Lu	175	He	5649049.08	1.4	5356471.87	105.46	

Sample Report

Sample Name K1900611-002

File Name 054SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:29:41

Sample Type Sample

Comment 5X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	13.2334	ug/l	0.3	45623.11	
Cr	53	72	He	13.1499	ug/l	4.9	5655.39	
[Pb]	206	175	He	23.0625	ug/l	1.5	180750.24	
[Pb]	207	175	He	21.2181	ug/l	1.5	148213.20	
Pb	208	175	He	21.8889	ug/l	1.3	705802.63	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	173251.94	0.2	174167.8	99.47	
In	115	He	1749061.11	0.8	1744428.82	100.27	
Lu	175	He	5454372.84	0.8	5356471.87	101.83	

Sample Report

Sample Name K1900611-003

File Name 055SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:31:52

Sample Type Sample

Comment 5X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	16.2879	ug/l	2.3	57231.72	
Cr	53	72	He	16.4756	ug/l	3.1	7192.64	
[Pb]	206	175	He	30.0370	ug/l	1.5	238785.61	
[Pb]	207	175	He	28.2998	ug/l	1.2	200515.24	
Pb	208	175	He	28.8954	ug/l	1.3	945077.32	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	177174.06	0.7	174167.8	101.73	
In	115	He	1787450.63	1.3	1744428.82	102.47	
Lu	175	He	5533930.20	1.5	5356471.87	103.31	

Sample Report

Sample Name K1900611-004

File Name 056SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:34:04

Sample Type Sample

Comment 5X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	34.7113	ug/l	1.0	130024.58	
Cr	53	72	He	33.6011	ug/l	2.7	15520.33	
[Pb]	206	175	He	65.8914	ug/l	0.8	545187.55	
[Pb]	207	175	He	62.5687	ug/l	1.6	461330.36	
Pb	208	175	He	63.9484	ug/l	1.2	2176721.23	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	190372.04	1.1	174167.8	109.3	
In	115	He	1876592.15	2.9	1744428.82	107.58	
Lu	175	He	5761204.49	1.5	5356471.87	107.56	

Continuing Calibration Verification (CCV) Report

Sample Name CCV

File Name 057_CCV.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:36:15

Sample Type CCV

Comment ---

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	CPS	% Rec	QC Flag
Cr	52	72	He	24.8656	ug/l	1.1	88775.24	99.46	
Cr	53	72	He	24.9493	ug/l	1.2	11011.32	99.8	
[Pb]	206	175	He	25.2757	ug/l	1.3	202814.69	101.1	
[Pb]	207	175	He	24.8589	ug/l	1.7	177768.08	99.44	
Pb	208	175	He	24.9219	ug/l	1.4	822723.93	99.69	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	180956.71	1.7	174167.8	103.9	
In	115	He	1806679.51	0.5	1744428.82	103.57	
Lu	175	He	5584904.08	1.0	5356471.87	104.26	

Continuing Calibration Blank (CCB) Report

Sample Name CCB

File Name 058_CCB.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:38:26

Sample Type CCB

Comment ---

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	0.0130	ug/l	55.7	883.36	
Cr	53	72	He	-0.1847	ug/l	N/A	134.45	
[Pb]	206	175	He	0.0202	ug/l	15.1	296.67	
[Pb]	207	175	He	0.0147	ug/l	7.0	231.12	
Pb	208	175	He	0.0185	ug/l	3.8	1171.14	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	177301.56	1.1	174167.8	101.8	
In	115	He	1793599.30	3.3	1744428.82	102.82	
Lu	175	He	5452599.09	2.1	5356471.87	101.79	

Sample Report

Sample Name K1900611-005

File Name 059SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:40:37

Sample Type Sample

Comment 5X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	53.8476	ug/l	2.0	210435.82	
Cr	53	72	He	53.9969	ug/l	2.7	25944.97	
[Pb]	206	175	He	17.5721	ug/l	1.1	150553.21	
[Pb]	207	175	He	16.2032	ug/l	2.2	123728.25	
Pb	208	175	He	16.7620	ug/l	1.6	590857.34	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	199115.81	1.1	174167.8	114.32	
In	115	He	1965120.27	0.9	1744428.82	112.65	
Lu	175	He	5961244.62	0.7	5356471.87	111.29	

Sample Report

Sample Name K1900612-001

File Name 060SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:42:49

Sample Type Sample

Comment 5X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	36.7641	ug/l	0.8	141090.98	
Cr	53	72	He	36.6711	ug/l	2.4	17339.87	
[Pb]	206	175	He	29.5877	ug/l	0.8	248292.91	
[Pb]	207	175	He	27.9522	ug/l	0.4	209052.82	
Pb	208	175	He	28.5655	ug/l	1.1	986204.98	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	195117.92	2.1	174167.8	112.03	
In	115	He	1914215.69	0.8	1744428.82	109.73	
Lu	175	He	5841027.27	1.9	5356471.87	109.05	

Continuing Calibration Verification (CCV) Report

Sample Name CCV

File Name 061_CCV.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:45:00

Sample Type CCV

Comment ---

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	CPS	% Rec	QC Flag
Cr	52	72	He	24.9618	ug/l	0.7	95747.61	99.85	
Cr	53	72	He	25.2232	ug/l	1.7	11958.62	100.89	
[Pb]	206	175	He	24.8512	ug/l	1.5	209372.03	99.4	
[Pb]	207	175	He	24.5177	ug/l	0.6	184093.26	98.07	
Pb	208	175	He	24.5910	ug/l	0.7	852369.55	98.36	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	194405.72	0.7	174167.8	111.62	
In	115	He	1984720.41	1.8	1744428.82	113.77	
Lu	175	He	5863290.46	0.4	5356471.87	109.46	

Continuing Calibration Blank (CCB) Report

Sample Name CCB

File Name 062_CCB.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:47:11

Sample Type CCB

Comment ---

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	0.0324	ug/l	18.5	1025.59	
Cr	53	72	He	-0.0444	ug/l	N/A	208.89	
[Pb]	206	175	He	0.0212	ug/l	4.8	318.89	
[Pb]	207	175	He	0.0131	ug/l	32.0	231.11	
Pb	208	175	He	0.0165	ug/l	19.5	1157.80	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	191329.24	1.1	174167.8	109.85	
In	115	He	1923166.31	1.9	1744428.82	110.25	
Lu	175	He	5718398.80	1.5	5356471.87	106.76	

Low Level Continuing Calibration Verification (LLCCV) Report

Sample Name	LLCCVS
File Name	063LCCV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\021519A2_#2.b
Acq Time	2019-02-15 14:49:22
Sample Type	LLCCV
Comment	---
ISTD Ref FileName	007CALB.d
Sample QC Pass/Fial	Pass
ISTD QC Pass/Fail	Pass
Operator	**ALKLS** **NoUser**

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	% Rec	QC Flag
Cr	52	72	He	0.4276	ug/l	2.5	2500.19	106.9	
Cr	53	72	He	0.4584	ug/l	33.9	438.90	114.6	
[Pb]	206	175	He	0.0998	ug/l	3.4	970.04	99.8	
[Pb]	207	175	He	0.1104	ug/l	7.3	947.82	110.4	
Pb	208	175	He	0.1015	ug/l	1.5	4054.69	101.5	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	191095.94	1.7	174167.8	109.72	
In	115	He	1896654.51	2.4	1744428.82	108.73	
Lu	175	He	5752069.77	2.5	5356471.87	107.39	

Service Request # K1900611, K1900612, K1900942
Instrument ID # K-ICP-MS-04
Calibration 021519AICPMS04
ALS LIMS Run # 625408

Cal Std: MS24-36-L
ICV Std: MS24-36-M
LLICV Std: MS24-36-N
I.S. Solution: MS24-9-I
Tune Solution: MS24-21-C
Pipettes: 18010244, DH12718, 18005955
Pipette Check Due: 3/19/19

ICSA: MS24-37-A
ICSAB: MS24-37-B

ICP-MS Data Review Form

	Yes	No	NA
1. Appropriate standardization completed	X		
2. ICV in control (+/- 10%)	X		
3. CCV's in control (+/- 10%)	X		
4. ICB/CCB's below MRL	X		
5. LLICV standard analyzed and in control	X		
6. ICS standards within 20% of true value	X		
6. All analytes within instrument linear range	X		
7. Adequate rinse out time allowed	X		
8. Internal standards in control	X		
9. Interferences checked	X		
10. Was the run terminated? If so, why.		X	

See Benchsheet exception report for sample batch QC information.
Comments: IVBA Extract

Sample Batches: 331388

Primary Review by [signature] Date 2/15/19
Secondary Review by [signature] Date 2/19/19

Data Review Form

Instrument ID#: **K-ICP-MS-04**
DataFile Name: **R:\ICP\WIP\DATA\K-ICP-MS-04 (NexION)\021519a.TXT**
RUNNO: **625408**

K1900611

No exceptions to report.

K1900612

No exceptions to report.

K1900942

K1900611-001MS - IVBA Extract - report K1900942-001 BQC
MS Recovery
6020A/IVBA Metals T - Pb-KED2 - Recovery: 73 Limits: 75 - 125 post spike okay

Primary Approver: aw 2/15/19
Secondary Approver: 2/19/19

Dataset Report

User Name: ALKLS.ALKLSXP373
Computer Name: ALKLSXP373
Dataset File Path: C:\NexIONData\DataSet\021519A\
Report Date/Time: Friday, February 15, 2019 14:39:47

The Dataset

Sample ID	Date and Time	Read Type	Description	Batch ID	Samp. File Name
Prime	13:07:11 Fri 15-Feb-19	Sample			C:\NexIONData\DataSet\021519A\Prime.001
Rinse	13:09:05 Fri 15-Feb-19	Sample			C:\NexIONData\DataSet\021519A\Rinse.002
Prime	13:10:58 Fri 15-Feb-19	Sample			C:\NexIONData\DataSet\021519A\Prime.003
Rinse	13:12:52 Fri 15-Feb-19	Sample			C:\NexIONData\DataSet\021519A\Rinse.004
Blank	13:14:50 Fri 15-Feb-19	Blank			C:\NexIONData\DataSet\021519A\Blank.005
Standard 1	13:16:43 Fri 15-Feb-19	Standard #1			C:\NexIONData\DataSet\021519A\Standard 1
ICV	13:18:36 Fri 15-Feb-19	QC Std #1			C:\NexIONData\DataSet\021519A\ICV.007
CCV	13:20:30 Fri 15-Feb-19	QC Std #2			C:\NexIONData\DataSet\021519A\CCV.008
ICB	13:22:24 Fri 15-Feb-19	QC Std #3			C:\NexIONData\DataSet\021519A\ICB.009
CCB	13:24:18 Fri 15-Feb-19	QC Std #4			C:\NexIONData\DataSet\021519A\CCB.010
LLICVS	13:26:11 Fri 15-Feb-19	QC Std #5			C:\NexIONData\DataSet\021519A\LLICVS.01
ICSA	13:28:04 Fri 15-Feb-19	QC Std #8			C:\NexIONData\DataSet\021519A\ICSA.012
ICSAB	13:29:58 Fri 15-Feb-19	QC Std #9			C:\NexIONData\DataSet\021519A\ICSAB.013
MoSTD	13:31:52 Fri 15-Feb-19	QC Std #10			C:\NexIONData\DataSet\021519A\MoSTD.01
KQ1901912-01	13:33:46 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\KQ190191
KQ1901912-02	13:35:39 Fri 15-Feb-19	Sample	20X		C:\NexIONData\DataSet\021519A\KQ190191
KQ1901912-03	13:37:33 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\KQ190191
KQ1901912-03	13:39:26 Fri 15-Feb-19	Sample	20X		C:\NexIONData\DataSet\021519A\KQ190191
K1900611-001	13:41:20 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\K1900611-
KQ1901912-04	13:43:13 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\KQ190191
K1900611-001L	13:45:06 Fri 15-Feb-19	Sample	25X		C:\NexIONData\DataSet\021519A\K1900611-
K1900611-001A	13:47:00 Fri 15-Feb-19	Sample	5X +50ppb		C:\NexIONData\DataSet\021519A\K1900611-
KQ1901912-05	13:48:53 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\KQ190191
K1900611-002	13:50:47 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\K1900611-
CCV	13:52:43 Fri 15-Feb-19	QC Std #2			C:\NexIONData\DataSet\021519A\CCV.025
CCB	13:54:37 Fri 15-Feb-19	QC Std #4			C:\NexIONData\DataSet\021519A\CCB.026
K1900611-003	13:56:33 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\K1900611-
K1900611-004	13:58:26 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\K1900611-
K1900611-005	14:00:19 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\K1900611-
K1900612-001	14:02:12 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\K1900612-
K1900942-001	14:04:06 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\K1900942-
KQ1901912-06	14:05:59 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\KQ190191
K1900942-001L	14:07:52 Fri 15-Feb-19	Sample	25X		C:\NexIONData\DataSet\021519A\K1900942-
K1900942-001A	14:09:46 Fri 15-Feb-19	Sample	5X +50ppb		C:\NexIONData\DataSet\021519A\K1900942-
KQ1901912-07	14:11:39 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\KQ190191
K1900942-002	14:13:33 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\K1900942-
CCV	14:15:29 Fri 15-Feb-19	QC Std #2			C:\NexIONData\DataSet\021519A\CCV.037
CCB	14:17:22 Fri 15-Feb-19	QC Std #4			C:\NexIONData\DataSet\021519A\CCB.038
LLCCVS	14:19:16 Fri 15-Feb-19	QC Std #6			C:\NexIONData\DataSet\021519A\LLCCVS.0
K1900942-003	14:21:12 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\K1900942-
K1900942-004	14:23:05 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\K1900942-
K1900942-005	14:24:59 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\K1900942-
K1900942-006	14:26:52 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\K1900942-
K1900942-007	14:28:45 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\K1900942-
CCV	14:30:40 Fri 15-Feb-19	QC Std #2			C:\NexIONData\DataSet\021519A\CCV.045
CCB	14:32:34 Fri 15-Feb-19	QC Std #4			C:\NexIONData\DataSet\021519A\CCB.046
LLCCVS	14:34:28 Fri 15-Feb-19	QC Std #6			C:\NexIONData\DataSet\021519A\LLCCVS.0

SmartTune Wizard - Details

Optimization Details

SmartTune file: C:\NexIONData\Wizard\SmartTune\CAS SmartTune Full FAST.swz

Optimization Status

Start Time: 2/15/2019 11:50:10 AM

Mass Calibration and Resolution

Optimization Settings:

Method: C:\NexIONData\Method\CAS Tuning.mth.
MassCal File: C:\NexIONData\MassCal\Default.tun
Iterations: 6
Target accuracy (+/- amu): 0.1 for Mass Cal. and 0.1 for Resolution
Peak height (%) for Res. Opt.: 5

Optimization Results:

Initial Try

Target/Obtained mass (7.016/7.025), Target/Obtained resolution (0.7/0.670)
Target/Obtained mass (9.0122/9.025), Target/Obtained resolution (0.7/0.654)
Target/Obtained mass (23.985/24.025), Target/Obtained resolution (0.7/0.680)
Target/Obtained mass (58.9332/58.975), Target/Obtained resolution (0.7/0.688)
Target/Obtained mass (114.904/114.925), Target/Obtained resolution (0.7/0.692)
Target/Obtained mass (139.905/139.875), Target/Obtained resolution (0.7/0.715)
Target/Obtained mass (207.977/207.975), Target/Obtained resolution (0.7/0.690)
Target/Obtained mass (208.98/208.975), Target/Obtained resolution (0.7/0.691)
Target/Obtained mass (238.05/238.075), Target/Obtained resolution (0.7/0.690)

[Passed] Optimum value(s): N/A

Daily Performance Report

Sample ID: Daily Performance Check

Sample Date/Time: Friday, February 15, 2019 11:57:03
Sample Description:
Method File: C:\NexION Data\Method\CAS Daily Performance.mth
Dataset File: C:\NexION Data\DataSet\Default\Daily Performance Check.1934
MassCal File: C:\NexION Data\MassCal\Default.tun
Conditions File: C:\NexION Data\Conditions\Default.dac
Dual Detector Mode: Pulse
Acq. Dead Time (ns): 35
Current Dead Time (ns): 35
Torch Z position (mm): 0.00

Summary

	Analyte	Mass	Meas. Intens. Mean	Net Intens. Mean	Net Intens. SD	Net Intens. RSD	Mode
	Li	7.0	62539.6	62539.599	1611.325	2.6	Standard
	Be	9.0	19784.9	19784.897	479.670	2.4	Standard
	Mg	24.0	63983.6	63983.586	1761.257	2.8	Standard
	Co	58.9	44400.8	44400.837	1660.471	3.7	Standard
	In	114.9	93907.4	93907.363	2106.256	2.2	Standard
	Pb	208.0	95229.5	95229.490	1589.915	1.7	Standard
	Bi	209.0	72440.4	72440.437	1119.057	1.5	Standard
	U	238.1	76717.6	76717.612	1120.291	1.5	Standard
⌈	CeO	155.9	1411.1	0.018	0.001	7.7	Standard
| >	Ce	139.9	79161.8	79161.839	1302.973	1.6	Standard
⌊	Ce++	70.0	1741.3	0.022	0.001	3.7	Standard
	Bkgd	220.0	0.3	0.267	0.365	136.9	Standard

Replicates

Repeat 1

Analyte	Mass	Meas. Intensity
Li	7	63776.041
Be	9	20357.161
Mg	24	66166.878
Co	59	46446.716
In	115	96789.447
Pb	208	97094.282
Bi	209	73392.041
U	238	77805.973
CeO	156	1556.085
Ce	140	79950.432
Ce++	70	1871.456
Bkgd	220	0.667

Repeat 2

Analyte	Mass	Meas. Intensity
Li	7	62416.055
Be	9	19328.400
Mg	24	63778.720
Co	59	43780.984
In	115	92556.198
Pb	208	94685.847
Bi	209	72449.917
U	238	76218.785
CeO	156	1308.060
Ce	140	78409.929
Ce++	70	1700.768
Bkgd	220	0.000

Repeat 3

Analyte	Mass	Meas. Intensity
Li	7	64191.228
Be	9	20146.195
Mg	24	65016.950
Co	59	45420.090
In	115	95261.226

Pb	208	96490.423
Bi	209	73522.040
U	238	77871.663
CeO	156	1538.083
Ce	140	80733.484
Ce++	70	1756.108
Bkgd	220	0.667

Repeat 4

Analyte	Mass	Meas. Intensity
Li	7	62227.903
Be	9	19811.061
Mg	24	63476.713
Co	59	44280.521
In	115	93364.767
Pb	208	94779.523
Bi	209	72070.002
U	238	76452.026
CeO	156	1382.067
Ce	140	79316.915
Ce++	70	1724.771
Bkgd	220	0.000

Repeat 5

Analyte	Mass	Meas. Intensity
Li	7	60086.766
Be	9	19281.670
Mg	24	61478.670
Co	59	42075.872
In	115	91565.176
Pb	208	93097.378
Bi	209	70768.185
U	238	75239.615
CeO	156	1271.390
Ce	140	77398.435
Ce++	70	1653.429
Bkgd	220	0.000

Current Conditions File Data

Current Value	Description
0.91	Nebulizer Gas Flow STD/KED [NEB]
1.20	Auxiliary Gas Flow
16.00	Plasma Gas Flow
-9.50	Deflector Voltage
1600.00	ICP RF Power
-1825.00	Analog Stage Voltage
1250.00	Pulse Stage Voltage
0.00	Quadrupole Rod Offset STD [QRO]
-14.50	Cell Rod Offset STD [CRO]
8.00	Discriminator Threshold
-5.00	Cell Entrance/Exit Voltage STD
0.00	RPa
0.45	RPq
0.91	DRC Mode NEB
-6.50	DRC Mode QRO
-1.50	DRC Mode CRO
-10.00	DRC Mode Cell Entrance/Exit Voltage
3.50	Cell Gas A
0.00	Cell Gas B
280.00	Axial Field Voltage
-15.00	KED Mode CRO
-12.00	KED Mode QRO
-4.00	KED Mode Cell Entrance Voltage
-40.00	KED Mode Cell Exit Voltage
0.00	KED Cell Gas A
5.00	KED Cell Gas B
0.00	KED RPa
0.25	KED RPq
475.00	KED Mode Axial Field Voltage

LABWORKS - Summary Report

Sample ID: Blank
Sample Date/Time: Friday, February 15, 2019 13:14:50
Sample Description:
Autosampler Position: 1
Number of Replicates: 3
Dataset File: C:\NexIONData\DataSet\021519A\Blank.005
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	159.7	3.7			ppb
|	Cr-KED3	53	35.3	37.7			ppb
⌊>	Ge-KED3	72	10985.9	2.4			ppb
⌈>	Lu-KED2	175	78337.2	0.5			ppb
⌊	Pb-KED2	208	59.3	27.5			ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % RDuplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52				
|	Cr-KED3	53				
⌊>	Ge-KED3	72				
⌈>	Lu-KED2	175				
⌊	Pb-KED2	208				

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

AM 2/15/19

LABWORKS - Summary Report

Sample ID: Standard 1
Sample Date/Time: Friday, February 15, 2019 13:16:43
Sample Description:
Autosampler Position: 2
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\Standard 1.006
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	8117.6	1.4	25.00000	2.0	ppb
|	Cr-KED3	53	1060.0	5.6	25.00000	5.8	ppb
⌊>	Ge-KED3	72	11695.1	0.7			ppb
⌈>	Lu-KED2	175	82753.0	1.9			ppb
⌊	Pb-KED2	208	219099.1	1.7	25.00000	0.4	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72					
⌈>	Lu-KED2	175					
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: ICV
Sample Date/Time: Friday, February 15, 2019 13:18:36
Sample Description:
Autosampler Position: 3
Number of Replicates: 3
Dataset File: C:\NexIONData\DataSet\021519A\ICV.007
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	3262.0	0.7	10.19208	0.8	ppb
|	Cr-KED3	53	407.3	14.1	9.49807	15.9	ppb
⌊>	Ge-KED3	72	11186.7	0.7			ppb
⌈>	Lu-KED2	175	81091.5	1.0			ppb
⌊	Pb-KED2	208	215989.9	0.1	25.15100	1.0	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % RDuplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52	102			
|	Cr-KED3	53	95			
⌊>	Ge-KED3	72		102		
⌈>	Lu-KED2	175		104		
⌊	Pb-KED2	208	101			

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: CCV
Sample Date/Time: Friday, February 15, 2019 13:20:30
Sample Description:
Autosampler Position: 2
Number of Replicates: 3
Dataset File: C:\NexIONData\DataSet\021519A\CCV.008
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	7477.6	2.3	25.42398	0.8	ppb
|	Cr-KED3	53	955.4	1.6	24.87303	3.1	ppb
⌊>	Ge-KED3	72	10595.6	1.7			ppb
⌈>	Lu-KED2	175	75876.0	1.7			ppb
⌊	Pb-KED2	208	201877.3	1.8	25.12207	0.8	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % RDuplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52	102			
|	Cr-KED3	53	99			
⌊>	Ge-KED3	72		96		
⌈>	Lu-KED2	175		97		
⌊	Pb-KED2	208	100			

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: ICB
Sample Date/Time: Friday, February 15, 2019 13:22:24
Sample Description:
Autosampler Position: 1
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\ICB.009
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	152.0	3.9	-0.01805	126.1	ppb
|	Cr-KED3	53	29.3	32.2	-0.14593	166.3	ppb
⌊>	Ge-KED3	72	10826.1	1.5			ppb
⌈>	Lu-KED2	175	80137.8	0.7			ppb
⌊	Pb-KED2	208	68.7	6.7	0.00094	57.6	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		99			
⌈>	Lu-KED2	175		102			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: CCB
Sample Date/Time: Friday, February 15, 2019 13:24:18
Sample Description:
Autosampler Position: 1
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\CCB.010
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	179.7	17.7	0.05845	194.9	ppb
|	Cr-KED3	53	34.0	17.6	-0.04871	313.7	ppb
⌊>	Ge-KED3	72	11163.7	1.4			ppb
⌈>	Lu-KED2	175	79495.9	0.8			ppb
⌊	Pb-KED2	208	66.0	19.9	0.00070	232.9	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % RDuplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52				
|	Cr-KED3	53				
⌊>	Ge-KED3	72		102		
⌈>	Lu-KED2	175		101		
⌊	Pb-KED2	208				

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: LLICVS
Sample Date/Time: Friday, February 15, 2019 13:26:11
Sample Description:
Autosampler Position: 4
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\LLICVS.011
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	309.3	7.3	0.44615	14.7	ppb
|	Cr-KED3	53	50.7	6.0	0.32938	22.6	ppb
⌊>	Ge-KED3	72	11599.0	0.6			ppb
⌈>	Lu-KED2	175	85318.0	0.1			ppb
⌊	Pb-KED2	208	948.0	0.8	0.09779	0.7	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52	112				
|	Cr-KED3	53	82				
⌊>	Ge-KED3	72		106			
⌈>	Lu-KED2	175		109			
⌊	Pb-KED2	208	98				

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: ICSA
Sample Date/Time: Friday, February 15, 2019 13:28:04
Sample Description:
Autosampler Position: 5
Number of Replicates: 3
Dataset File: C:\NexIONData\DataSet\021519A\ICSA.012
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	490.0	3.5	1.34734	5.6	ppb
|	Cr-KED3	53	462.0	8.5	12.87777	9.8	ppb
⌊>	Ge-KED3	72	9579.2	0.7			ppb
⌈>	Lu-KED2	175	78493.4	2.1			ppb
⌊	Pb-KED2	208	1245.4	1.9	0.14276	3.7	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		87			
⌈>	Lu-KED2	175		100			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: ICSAB
Sample Date/Time: Friday, February 15, 2019 13:29:58
Sample Description:
Autosampler Position: 6
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\ICSAB.013
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	14063.6	2.5	51.55004	1.8	ppb
|	Cr-KED3	53	2170.8	3.7	61.66018	7.1	ppb
⌊>	Ge-KED3	72	9935.8	3.7			ppb
⌈>	Lu-KED2	175	76138.7	0.9			ppb
⌊	Pb-KED2	208	1331.4	3.0	0.15801	3.3	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52	103				
|	Cr-KED3	53	123				
⌊>	Ge-KED3	72		90			
⌈>	Lu-KED2	175		97			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: MoSTD
Sample Date/Time: Friday, February 15, 2019 13:31:52
Sample Description:
Autosampler Position: 301
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\MoSTD.014
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	26.7	9.4	-0.43511	1.9	ppb
|	Cr-KED3	53	5.3	21.7	-0.76538	4.0	ppb
⌊>	Ge-KED3	72	9853.1	2.9			ppb
⌈>	Lu-KED2	175	83779.6	0.2			ppb
⌊	Pb-KED2	208	52.0	21.4	-0.00129	97.9	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		90			
⌈>	Lu-KED2	175		107			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: KQ1901912-01
Sample Date/Time: Friday, February 15, 2019 13:33:46
Sample Description: 5X
Autosampler Position: 302
Number of Replicates: 3
Dataset File: C:\NexIONData\DataSet\021519A\KQ1901912-01.015
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	166.0	6.3	0.01002	330.2	ppb
|	Cr-KED3	53	22.0	36.4	-0.35920	55.8	ppb
⌊>	Ge-KED3	72	11210.4	0.8			ppb
⌈>	Lu-KED2	175	84999.5	1.7			ppb
⌊	Pb-KED2	208	66.0	18.2	0.00020	741.6	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % RDuplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52				
|	Cr-KED3	53				
⌊>	Ge-KED3	72		102		
⌈>	Lu-KED2	175		109		
⌊	Pb-KED2	208				

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: KQ1901912-02
Sample Date/Time: Friday, February 15, 2019 13:35:39
Sample Description: 20X
Autosampler Position: 303
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\KQ1901912-02.016
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	6096.3	1.1	19.75067	2.6	ppb
|	Cr-KED3	53	774.7	9.8	19.10104	9.0	ppb
⌊>	Ge-KED3	72	11058.3	1.9			ppb
⌈>	Lu-KED2	175	81695.7	2.4			ppb
⌊	Pb-KED2	208	420460.5	0.8	48.61616	1.9	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		101			
⌈>	Lu-KED2	175		104			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: KQ1901912-03
Sample Date/Time: Friday, February 15, 2019 13:37:33
Sample Description: 5X
Autosampler Position: 304
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\KQ1901912-03.017
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	654.3	5.9	1.67875	6.2	ppb
|	Cr-KED3	53	96.7	18.7	1.62056	27.8	ppb
⌊>	Ge-KED3	72	10870.8	1.2			ppb
⌈>	Lu-KED2	175	82614.2	1.8			ppb
⌊	Pb-KED2	208	19627807.1	1.3	2244.12575	1.0	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		99			
⌈>	Lu-KED2	175		105			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: KQ1901912-03
Sample Date/Time: Friday, February 15, 2019 13:39:26
Sample Description: 20X
Autosampler Position: 305
Number of Replicates: 3
Dataset File: C:\NexIONData\DataSet\021519A\KQ1901912-03.018
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	330.3	2.5	0.58473	5.1	ppb
|	Cr-KED3	53	51.3	15.7	0.43201	48.3	ppb
⌊>	Ge-KED3	72	10856.1	0.4			ppb
⌈>	Lu-KED2	175	82355.4	5.0			ppb
⌊	Pb-KED2	208	5120015.0	0.3	588.07910	4.7	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % RDuplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52				
|	Cr-KED3	53				
⌊>	Ge-KED3	72		99		
⌈>	Lu-KED2	175		105		
⌊	Pb-KED2	208				

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

not needed
am 2/15/19

LABWORKS - Summary Report

Sample ID: K1900611-001
Sample Date/Time: Friday, February 15, 2019 13:41:20
Sample Description: 5X
Autosampler Position: 306
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\K1900611-001.019
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	799.0	4.9	2.38353	6.2	ppb
|	Cr-KED3	53	176.7	23.9	4.09250	28.8	ppb
⌊>	Ge-KED3	72	10072.9	0.4			ppb
⌈>	Lu-KED2	175	78784.0	0.5			ppb
⌊	Pb-KED2	208	133690.7	0.7	16.01994	0.5	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		92			
⌈>	Lu-KED2	175		101			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: KQ1901912-04
Sample Date/Time: Friday, February 15, 2019 13:43:13
Sample Description: 5X
Autosampler Position: 307
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\KQ1901912-04.020
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	816.4	1.0	2.36851	0.6	ppb
|	Cr-KED3	53	177.3	6.2	3.98234	7.2	ppb
⌊>	Ge-KED3	72	10343.7	0.6			ppb
⌈>	Lu-KED2	175	83266.7	1.8			ppb
⌊	Pb-KED2	208	140942.7	1.1	15.98188	1.4	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % RDuplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52				
|	Cr-KED3	53				
⌊>	Ge-KED3	72		94		
⌈>	Lu-KED2	175		106		
⌊	Pb-KED2	208				

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: K1900611-001L
Sample Date/Time: Friday, February 15, 2019 13:45:06
Sample Description: 25X
Autosampler Position: 308
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\K1900611-001L.021
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	289.3	2.6	0.46473	4.4	ppb
|	Cr-KED3	53	58.7	14.2	0.65680	35.9	ppb
⌊>	Ge-KED3	72	10649.3	0.7			ppb
⌈>	Lu-KED2	175	84240.3	1.3			ppb
⌊	Pb-KED2	208	30123.0	1.6	3.37021	1.2	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % RDuplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52				
|	Cr-KED3	53				
⌊>	Ge-KED3	72		97		
⌈>	Lu-KED2	175		108		
⌊	Pb-KED2	208				

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: K1900611-001A
Sample Date/Time: Friday, February 15, 2019 13:47:00
Sample Description: 5X +50ppb
Autosampler Position: 309
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\K1900611-001A.022
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	14603.5	1.6	52.64532	1.5	ppb
|	Cr-KED3	53	1938.8	3.2	53.96887	3.3	ppb
⌊>	Ge-KED3	72	10101.2	0.1			ppb
⌈>	Lu-KED2	175	82641.0	0.7			ppb
⌊	Pb-KED2	208	553738.8	0.4	63.27972	0.7	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % RDuplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52				
|	Cr-KED3	53				
⌊>	Ge-KED3	72		92		
⌈>	Lu-KED2	175		105		
⌊	Pb-KED2	208				

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: KQ1901912-05
Sample Date/Time: Friday, February 15, 2019 13:48:53
Sample Description: 5X
Autosampler Position: 310
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\KQ1901912-05.023
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	21512.2	1.1	77.41478	1.5	ppb
|	Cr-KED3	53	2881.6	2.5	80.27906	4.1	ppb
⌊>	Ge-KED3	72	10154.3	2.5			ppb
⌈>	Lu-KED2	175	81958.1	0.9			ppb
⌊	Pb-KED2	208	1408887.3	0.1	162.36049	1.0	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % RDuplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52				
|	Cr-KED3	53				
⌊>	Ge-KED3	72		92		
⌈>	Lu-KED2	175		105		
⌊	Pb-KED2	208				

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: K1900611-002
Sample Date/Time: Friday, February 15, 2019 13:50:47
Sample Description: 5X
Autosampler Position: 311
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\K1900611-002.024
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	1228.7	4.3	4.17106	6.1	ppb
|	Cr-KED3	53	206.7	6.4	5.23419	8.8	ppb
⌊>	Ge-KED3	72	9608.9	1.2			ppb
⌈>	Lu-KED2	175	79815.0	0.7			ppb
⌊	Pb-KED2	208	82600.3	0.8	9.76745	1.0	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		87			
⌈>	Lu-KED2	175		102			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: CCV
Sample Date/Time: Friday, February 15, 2019 13:52:43
Sample Description:
Autosampler Position: 2
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\CCV.025
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	7711.1	2.6	24.88043	2.3	ppb
|	Cr-KED3	53	952.7	11.4	23.43642	8.0	ppb
⌊>	Ge-KED3	72	11165.0	3.6			ppb
⌈>	Lu-KED2	175	82144.5	1.7			ppb
⌊	Pb-KED2	208	220900.7	0.7	25.39413	1.0	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52	100				
|	Cr-KED3	53	94				
⌊>	Ge-KED3	72		102			
⌈>	Lu-KED2	175		105			
⌊	Pb-KED2	208	102				

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: CCB
Sample Date/Time: Friday, February 15, 2019 13:54:37
Sample Description:
Autosampler Position: 1
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\CCB.026
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	162.7	11.0	0.00406	1354.0	ppb
|	Cr-KED3	53	20.0	20.0	-0.40392	26.9	ppb
⌊>	Ge-KED3	72	11102.6	2.4			ppb
⌈>	Lu-KED2	175	84835.2	1.9			ppb
⌊	Pb-KED2	208	167.3	12.4	0.01149	21.8	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		101			
⌈>	Lu-KED2	175		108			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: K1900611-003
Sample Date/Time: Friday, February 15, 2019 13:56:33
Sample Description: 5X
Autosampler Position: 312
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\K1900611-003.027
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	1129.7	1.5	3.30514	3.3	ppb
|	Cr-KED3	53	207.3	2.4	4.55731	2.4	ppb
⌊>	Ge-KED3	72	10825.4	1.5			ppb
⌈>	Lu-KED2	175	79476.5	0.3			ppb
⌊	Pb-KED2	208	98502.4	0.4	11.69873	0.7	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		99			
⌈>	Lu-KED2	175		101			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: K1900611-004
Sample Date/Time: Friday, February 15, 2019 13:58:26
Sample Description: 5X
Autosampler Position: 313
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\K1900611-004.028
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	361.3	6.5	0.68411	6.4	ppb
|	Cr-KED3	53	59.3	20.3	0.64263	54.2	ppb
⌊>	Ge-KED3	72	10899.5	3.3			ppb
⌈>	Lu-KED2	175	82979.6	0.8			ppb
⌊	Pb-KED2	208	118516.1	1.0	13.48325	1.5	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		99			
⌈>	Lu-KED2	175		106			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: K1900611-005
Sample Date/Time: Friday, February 15, 2019 14:00:19
Sample Description: 5X
Autosampler Position: 314
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\K1900611-005.029
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	643.0	1.7	1.52678	3.0	ppb
|	Cr-KED3	53	100.7	18.0	1.59043	29.3	ppb
⌊>	Ge-KED3	72	11475.3	0.7			ppb
⌈>	Lu-KED2	175	86819.0	0.5			ppb
⌊	Pb-KED2	208	30758.8	0.6	3.33912	1.1	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		104			
⌈>	Lu-KED2	175		111			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: K1900612-001
Sample Date/Time: Friday, February 15, 2019 14:02:12
Sample Description: 5X
Autosampler Position: 315
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\K1900612-001.030
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	716.4	2.3	1.94679	3.0	ppb
|	Cr-KED3	53	118.7	12.4	2.27284	15.9	ppb
⌊>	Ge-KED3	72	10619.9	1.2			ppb
⌈>	Lu-KED2	175	82372.5	0.5			ppb
⌊	Pb-KED2	208	104954.4	0.6	12.02681	0.1	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		97			
⌈>	Lu-KED2	175		105			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: K1900942-001
Sample Date/Time: Friday, February 15, 2019 14:04:06
Sample Description: 5X
Autosampler Position: 316
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\K1900942-001.031
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	785.0	3.4	1.98758	2.6	ppb
|	Cr-KED3	53	124.0	11.3	2.17797	15.8	ppb
⌊>	Ge-KED3	72	11446.9	1.4			ppb
⌈>	Lu-KED2	175	86065.5	1.9			ppb
⌊	Pb-KED2	208	3076789.9	0.7	337.71908	2.0	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % RDuplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52				
|	Cr-KED3	53				
⌊>	Ge-KED3	72		104		
⌈>	Lu-KED2	175		110		
⌊	Pb-KED2	208				

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: KQ1901912-06
Sample Date/Time: Friday, February 15, 2019 14:05:59
Sample Description: 5X
Autosampler Position: 317
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\KQ1901912-06.032
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	770.7	4.3	1.96670	9.0	ppb
|	Cr-KED3	53	97.3	10.1	1.52947	12.0	ppb
⌊>	Ge-KED3	72	11349.2	3.0			ppb
⌈>	Lu-KED2	175	86266.2	3.0			ppb
⌊	Pb-KED2	208	3130734.3	2.4	342.82077	1.4	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % RDuplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52				
|	Cr-KED3	53				
⌊>	Ge-KED3	72		103		
⌈>	Lu-KED2	175		110		
⌊	Pb-KED2	208				

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: K1900942-001L
Sample Date/Time: Friday, February 15, 2019 14:07:52
Sample Description: 25X
Autosampler Position: 318
Number of Replicates: 3
Dataset File: C:\NexIONData\DataSet\021519A\K1900942-001L.033
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	275.7	12.1	0.34957	25.8	ppb
|	Cr-KED3	53	40.7	49.3	0.09290	534.5	ppb
⌊>	Ge-KED3	72	11454.6	1.8			ppb
⌈>	Lu-KED2	175	85041.7	0.4			ppb
⌊	Pb-KED2	208	623258.1	0.3	69.21343	0.7	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % RDuplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52				
|	Cr-KED3	53				
⌊>	Ge-KED3	72		104		
⌈>	Lu-KED2	175		109		
⌊	Pb-KED2	208				

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: K1900942-001A
Sample Date/Time: Friday, February 15, 2019 14:09:46
Sample Description: 5X +50ppb
Autosampler Position: 319
Number of Replicates: 3
Dataset File: C:\NexIONData\DataSet\021519A\K1900942-001A.034
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	16027.3	1.9	52.33305	0.7	ppb
|	Cr-KED3	53	2050.1	4.3	51.70057	6.6	ppb
⌊>	Ge-KED3	72	11152.4	2.2			ppb
⌈>	Lu-KED2	175	88269.6	1.3			ppb
⌊	Pb-KED2	208	3589132.3	0.4	384.08216	1.7	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % RDuplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52				
|	Cr-KED3	53				
⌊>	Ge-KED3	72		102		
⌈>	Lu-KED2	175		113		
⌊	Pb-KED2	208				

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: KQ1901912-07
Sample Date/Time: Friday, February 15, 2019 14:11:39
Sample Description: 5X
Autosampler Position: 320
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\KQ1901912-07.035
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	22886.7	2.2	77.28652	0.3	ppb
|	Cr-KED3	53	2875.0	1.6	75.08318	0.8	ppb
⌊>	Ge-KED3	72	10818.4	2.3			ppb
⌈>	Lu-KED2	175	85530.0	2.2			ppb
⌊	Pb-KED2	208	4748804.1	1.6	524.58149	3.0	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		98			
⌈>	Lu-KED2	175		109			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: K1900942-002
Sample Date/Time: Friday, February 15, 2019 14:13:33
Sample Description: 5X
Autosampler Position: 321
Number of Replicates: 3
Dataset File: C:\NexIONData\DataSet\021519A\K1900942-002.036
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	1056.4	4.6	2.91645	6.2	ppb
|	Cr-KED3	53	146.0	6.0	2.78848	8.8	ppb
⌊>	Ge-KED3	72	11262.4	0.7			ppb
⌈>	Lu-KED2	175	81570.2	0.8			ppb
⌊	Pb-KED2	208	4250960.8	0.2	492.21395	0.6	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % RDuplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52				
|	Cr-KED3	53				
⌊>	Ge-KED3	72		103		
⌈>	Lu-KED2	175		104		
⌊	Pb-KED2	208				

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: CCV
Sample Date/Time: Friday, February 15, 2019 14:15:29
Sample Description:
Autosampler Position: 2
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\CCV.037
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	7589.7	0.8	24.91354	0.4	ppb
|	Cr-KED3	53	968.7	11.6	24.34048	12.5	ppb
⌊>	Ge-KED3	72	10970.9	0.8			ppb
⌈>	Lu-KED2	175	83289.8	1.8			ppb
⌊	Pb-KED2	208	225622.0	0.3	25.58258	1.7	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52	100				
|	Cr-KED3	53	97				
⌊>	Ge-KED3	72		100			
⌈>	Lu-KED2	175		106			
⌊	Pb-KED2	208	102				

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: CCB
Sample Date/Time: Friday, February 15, 2019 14:17:22
Sample Description:
Autosampler Position: 1
Number of Replicates: 3
Dataset File: C:\NexIONData\DataSet\021519A\CCB.038
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	187.3	2.0	0.04672	13.7	ppb
|	Cr-KED3	53	28.7	29.0	-0.22983	83.0	ppb
⌊>	Ge-KED3	72	11853.2	1.3			ppb
⌈>	Lu-KED2	175	86790.9	0.7			ppb
⌊	Pb-KED2	208	205.3	15.5	0.01520	23.5	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		108			
⌈>	Lu-KED2	175		111			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: LLCCVS
Sample Date/Time: Friday, February 15, 2019 14:19:16
Sample Description:
Autosampler Position: 4
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\LLCCVS.039
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	278.0	5.4	0.41836	10.3	ppb
|	Cr-KED3	53	40.7	18.6	0.16640	130.4	ppb
⌊>	Ge-KED3	72	10728.7	1.7			ppb
⌈>	Lu-KED2	175	83758.2	1.2			ppb
⌊	Pb-KED2	208	1064.7	4.7	0.11292	5.3	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52	105				
|	Cr-KED3	53	42				
⌊>	Ge-KED3	72		98			
⌈>	Lu-KED2	175		107			
⌊	Pb-KED2	208	113				

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: K1900942-003
Sample Date/Time: Friday, February 15, 2019 14:21:12
Sample Description: 5X
Autosampler Position: 322
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\K1900942-003.040
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	997.7	3.0	2.81079	2.6	ppb
|	Cr-KED3	53	142.7	8.6	2.79961	11.3	ppb
⌊>	Ge-KED3	72	10969.2	1.2			ppb
⌈>	Lu-KED2	175	87848.0	1.2			ppb
⌊	Pb-KED2	208	3354634.4	0.6	360.70892	1.8	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		100			
⌈>	Lu-KED2	175		112			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: K1900942-004
Sample Date/Time: Friday, February 15, 2019 14:23:05
Sample Description: 5X
Autosampler Position: 323
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\K1900942-004.041
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	1075.0	1.6	2.99333	2.4	ppb
|	Cr-KED3	53	153.3	2.0	2.99420	6.0	ppb
⌊>	Ge-KED3	72	11212.7	2.9			ppb
⌈>	Lu-KED2	175	84260.5	1.2			ppb
⌊	Pb-KED2	208	528479.1	0.8	59.23440	1.2	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		102			
⌈>	Lu-KED2	175		108			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: K1900942-005
Sample Date/Time: Friday, February 15, 2019 14:24:59
Sample Description: 5X
Autosampler Position: 324
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\K1900942-005.042
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	923.4	0.4	2.52891	2.9	ppb
|	Cr-KED3	53	126.7	14.9	2.34228	18.7	ppb
⌊>	Ge-KED3	72	11090.6	2.0			ppb
⌈>	Lu-KED2	175	84285.0	2.4			ppb
⌊	Pb-KED2	208	5184590.5	0.6	581.12708	1.8	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		101			
⌈>	Lu-KED2	175		108			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: K1900942-006
Sample Date/Time: Friday, February 15, 2019 14:26:52
Sample Description: 5X
Autosampler Position: 325
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\K1900942-006.043
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	1292.7	3.8	3.78322	2.2	ppb
|	Cr-KED3	53	172.0	2.0	3.54949	4.7	ppb
⌊>	Ge-KED3	72	11010.6	2.0			ppb
⌈>	Lu-KED2	175	82703.4	0.8			ppb
⌊	Pb-KED2	208	14734538.1	0.8	1682.72760	0.9	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		100			
⌈>	Lu-KED2	175		106			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: K1900942-007
Sample Date/Time: Friday, February 15, 2019 14:28:45
Sample Description: 5X
Autosampler Position: 326
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\K1900942-007.044
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	922.7	5.0	2.56715	4.3	ppb
|	Cr-KED3	53	138.0	9.1	2.68933	12.8	ppb
⌊>	Ge-KED3	72	10939.2	1.7			ppb
⌈>	Lu-KED2	175	84651.1	0.4			ppb
⌊	Pb-KED2	208	474615.0	0.9	52.94876	1.3	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		100			
⌈>	Lu-KED2	175		108			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: CCV
Sample Date/Time: Friday, February 15, 2019 14:30:40
Sample Description:
Autosampler Position: 2
Number of Replicates: 3
Dataset File: C:\NexIONData\DataSet\021519A\CCV.045
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	7850.8	2.8	24.96384	1.3	ppb
|	Cr-KED3	53	995.4	5.9	24.25964	9.4	ppb
⌊>	Ge-KED3	72	11329.5	4.0			ppb
⌈>	Lu-KED2	175	84648.8	2.6			ppb
⌊	Pb-KED2	208	228694.5	1.0	25.51645	1.6	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % RDuplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52	100			
|	Cr-KED3	53	97			
⌊>	Ge-KED3	72		103		
⌈>	Lu-KED2	175		108		
⌊	Pb-KED2	208	102			

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: CCB
Sample Date/Time: Friday, February 15, 2019 14:32:34
Sample Description:
Autosampler Position: 1
Number of Replicates: 3
Dataset File: C:\NexIONData\DataSet\021519A\CCB.046
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	158.0	1.9	-0.01394	97.8	ppb
|	Cr-KED3	53	20.0	17.3	-0.40698	22.8	ppb
⌊>	Ge-KED3	72	11163.7	0.7			ppb
⌈>	Lu-KED2	175	80143.5	1.1			ppb
⌊	Pb-KED2	208	248.0	10.5	0.02205	12.6	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		102			
⌈>	Lu-KED2	175		102			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: LLCCVS
Sample Date/Time: Friday, February 15, 2019 14:34:28
Sample Description:
Autosampler Position: 4
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\LLCCVS.047
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	306.0	5.3	0.48074	10.7	ppb
|	Cr-KED3	53	50.7	9.1	0.38729	30.6	ppb
⌊>	Ge-KED3	72	11085.3	0.7			ppb
⌈>	Lu-KED2	175	81866.8	3.7			ppb
⌊	Pb-KED2	208	1094.7	3.7	0.11924	5.4	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52	120				
|	Cr-KED3	53	97				
⌊>	Ge-KED3	72		101			
⌈>	Lu-KED2	175		105			
⌊	Pb-KED2	208	119				

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

ALS Environmental

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Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2160851-COFC

COC Number: 14 -

Report To		Report Format / Distribution	Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)
Company:	Wood plc	Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)	R ☑ Regular (Standard TAT if received by 3 pm - business days)
Contact:	Brian Geddes	Quality Control (QC) Report with Report ☑ Yes ☐ No	P ☐ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
Address:	#401-1925 18th Avenue NE Calgary, AB, T2E 7T8	☐ Criteria on Report - provide details below if box checked Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge
Phone:	403-387-1639	Email 1 or Fax brian.geddes@woodplc.com	Specify Date Required for E2,E or P:
		Email 2	Analysis Request

Invoice To		Invoice Distribution	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below
	Same as Report To ☑ Yes ☐ No		
	Copy of Invoice with Report ☑ Yes ☐ No	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	
Company:		Email 1 or Fax brian.geddes@woodplc.com	
Contact:		Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:		Approver ID:	Cost Center:
Job #:	VE52705B	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)	L2160851	ALS Contact: Suzette Chin	Sampler: CJ/LB

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Total Metals	Asbestos												Number of Containers
	18-BH02-01	03-Sep-18		Soil	R	R												
	18-BH03-01	03-Sep-18		Soil	R	R												
	18-BH04-01	03-Sep-18		Soil	R	R												
	18-BH05-01	03-Sep-18		Soil	R	R												
	18-BH06-01	03-Sep-18		Soil	R	R												
	18-BH06-02	31-Aug-18		Soil	R	R												
	18-BH07-01	03-Sep-18		Soil	R	R												
	18-BH07-02	03-Sep-18		Soil	R	R												
	18-BH08-01	03-Sep-18		Soil	R	R												
	18-BH18-01	31-Aug-18		Soil	R	R												
	18-BH19-01	31-Aug-18		Soil	R	R												
	18-PORCR-01	31-Aug-18		Soil	R	R												

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☐ No	
Are samples for human drinking water use? ☐ Yes ☐ No	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice packs Yes ☐ No ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C					
10.5					

FINAL COOLER TEMPERATURES °C					

SHIPMENT RELEASE (client use)		
Released by:	Date:	Time:

INITIAL SHIPMENT RECEPTION (lab use only)		
Received by: AC	Date: 5 Sep 18	Time: 10:25

FINAL SHIPMENT RECEPTION (lab use only)		
Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

ALS Environmental

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Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2160851-COFC

COC Number: 14 -

Page 2 of 3

Report To		Report Format / Distribution	Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)
Company:	Wood plc	Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)	R ☑ Regular (Standard TAT if received by 3 pm - business days)
Contact:	Brian Geddes	Quality Control (QC) Report with Report ☑ Yes ☐ No	P ☐ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
Address:	#401-1925 18th Avenue NE Calgary, AB, T2E 7T8	☐ Criteria on Report - provide details below if box checked Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge
Phone:	403-387-1639	Email 1 or Fax brian.geddes@woodplc.com	Specify Date Required for E2,E or P:
		Email 2	Analysis Request

Invoice To	Same as Report To ☑ Yes ☐ No	Invoice Distribution	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below
	Copy of Invoice with Report ☑ Yes ☐ No	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	
Company:		Email 1 or Fax brian.geddes@woodplc.com	
Contact:		Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:		Approver ID:	Cost Center:
Job #:	VE52705B	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)		ALS Contact:	Sampler:

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Total Metals	Asbestos											Number of Containers
	18-PORCR-02	31-Aug-18		Soil	R	R											
	18-PORCR-03	31-Aug-18		Soil	R	R											
	18-PORCR-04	31-Aug-18		Soil	R	R											
	18-PORCR-05	31-Aug-18		Soil	R	R											
	18-MILL-01	02-Sep-18		Soil	R	R											
	18-MILL-02	02-Sep-18		Soil	R	R											
	18-MILL-03	02-Sep-18		Soil	R	R											
	18-MILL-04	02-Sep-18		Soil	R	R											
	18-MILL-05	02-Sep-18		Soil	R	R											
	18-MILL-06	02-Sep-18		Soil	R	R											
	18-MILL-07	02-Sep-18		Soil	R	R											
	18-MILL-08	02-Sep-18		Soil	R	R											

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☐ No Are samples for human drinking water use? ☐ Yes ☐ No	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice packs Yes ☐ No ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NA-FMC032e v30 Front/04 January 2014

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L2160851-COFC

COC Number: 14 -

Page 3 of 3

Report To		Report Format / Distribution	Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)
Company:	Wood plc	Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)	R ☑ Regular (Standard TAT if received by 3 pm - business days)
Contact:	Brian Geddes	Quality Control (QC) Report with Report ☑ Yes ☐ No	P ☐ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
Address:	#401-1925 18th Avenue NE Calgary, AB, T2E 7T8	☐ Criteria on Report - provide details below if box checked	E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
Phone:	403-387-1639	Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge
		Email 1 or Fax brian.geddes@woodplc.com	Specify Date Required for E2,E or P:
		Email 2	

Invoice To	Same as Report To ☑ Yes ☐ No	Invoice Distribution	Analysis Request
	Copy of Invoice with Report ☑ Yes ☐ No	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below
Company:		Email 1 or Fax brian.geddes@woodplc.com	
Contact:		Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:		Approver ID:	Cost Center:
Job #:	VE52705B	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)		ALS Contact:	Sampler:

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Total Metals	Asbestos	Number of Containers
	18-MILL-09	02-Sep-18		Soil	R	R	
	18-MILL-10	02-Sep-18		Soil	R	R	
	18-BH11-02	04-Sep-18		Soil	R	R	
	18-BH12-02	02-Sep-18		Soil	R	R	
	18-BH17-02	31-Aug-18		Soil	R	R	
	18-PORCR-DUP-02	31-Aug-18		Soil	R	R	
	18-BH18-DUP-03	31-Aug-18		Soil	R	R	
	18-MILL-DUP-05	02-Sep-18		Soil	R	R	
	18-BH12-DUP-06	02-Sep-18		Soil	R	R	
	18-BH02-DUP-07	03-Sep-18		Soil	R	R	
	18-BH08-DUP-08	03-Sep-18		Soil	R	R	
				Soil	R	R	

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☐ No Are samples for human drinking water use? ☐ Yes ☐ No	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ | SIF Observations Yes ☐ No ☐

Ice packs Yes ☐ No ☐ | Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Wood E&IS, a Division of Wood Canada Limited
ATTN: Brian Geddes
#401, 1925 - 18 Ave NE
CALGARY AB T2E 7T8

Date Received: 21-SEP-18
Report Date: 06-MAR-19 16:43 (MT)
Version: FINAL REV. 2

Client Phone: 403-387-1639

Certificate of Analysis

Lab Work Order #: L2168626

Project P.O. #:	NOT SUBMITTED
Job Reference:	VE52705B
C of C Numbers:	1 of 1
Legal Site Desc:	

Comments: ADDITIONAL 21-JAN-19 09:15
ADDITIONAL 28-SEP-18 15:07

Suzette Chin
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2168626-1 18-HB03-02/82' (25M)							
Sampled By: CJ/LB on 06-SEP-18							
Matrix: SOIL							
Miscellaneous Parameters							
Mercury (Hg)	0.416	DLHC	0.050	mg/kg	05-OCT-18	05-OCT-18	R4262654
Quantitation of asbestos by point count							
Asbestos By Point Count	<0.1		0.10	%		26-SEP-18	R4249815
Mica	Trace <1		1.0	%		26-SEP-18	R4249815
Metals in Soil by CRC ICPMS							
Aluminum (Al)	2970		50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Antimony (Sb)	1.95		0.10	mg/kg	05-OCT-18	05-OCT-18	R4263045
Arsenic (As)	11.0		0.10	mg/kg	05-OCT-18	05-OCT-18	R4263045
Barium (Ba)	92.6		0.50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Beryllium (Be)	0.20		0.10	mg/kg	05-OCT-18	05-OCT-18	R4263045
Bismuth (Bi)	<0.20		0.20	mg/kg	05-OCT-18	05-OCT-18	R4263045
Boron (B)	<5.0		5.0	mg/kg	05-OCT-18	05-OCT-18	R4263045
Cadmium (Cd)	5.29		0.020	mg/kg	05-OCT-18	05-OCT-18	R4263045
Calcium (Ca)	92900		50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Chromium (Cr)	13.8		0.50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Cobalt (Co)	7.64		0.10	mg/kg	05-OCT-18	05-OCT-18	R4263045
Copper (Cu)	33.6		0.50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Iron (Fe)	20900		50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Lead (Pb)	8.89		0.50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Lithium (Li)	<2.0		2.0	mg/kg	05-OCT-18	05-OCT-18	R4263045
Magnesium (Mg)	4870		20	mg/kg	05-OCT-18	05-OCT-18	R4263045
Manganese (Mn)	363		1.0	mg/kg	05-OCT-18	05-OCT-18	R4263045
Molybdenum (Mo)	5.89		0.10	mg/kg	05-OCT-18	05-OCT-18	R4263045
Nickel (Ni)	42.4		0.50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Phosphorus (P)	2040		50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Potassium (K)	1120		100	mg/kg	05-OCT-18	05-OCT-18	R4263045
Selenium (Se)	17.6		0.20	mg/kg	05-OCT-18	05-OCT-18	R4263045
Silver (Ag)	1.02		0.10	mg/kg	05-OCT-18	05-OCT-18	R4263045
Sodium (Na)	<50		50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Strontium (Sr)	317		0.50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Sulfur (S)	11100		1000	mg/kg	05-OCT-18	05-OCT-18	R4263045
Thallium (Tl)	0.120		0.050	mg/kg	05-OCT-18	05-OCT-18	R4263045
Tin (Sn)	<2.0		2.0	mg/kg	05-OCT-18	05-OCT-18	R4263045
Titanium (Ti)	22.2		1.0	mg/kg	05-OCT-18	05-OCT-18	R4263045
Tungsten (W)	0.57		0.50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Uranium (U)	2.83		0.050	mg/kg	05-OCT-18	05-OCT-18	R4263045
Vanadium (V)	17.5		0.20	mg/kg	05-OCT-18	05-OCT-18	R4263045
Zinc (Zn)	153		2.0	mg/kg	05-OCT-18	05-OCT-18	R4263045
Zirconium (Zr)	1.7		1.0	mg/kg	05-OCT-18	05-OCT-18	R4263045
L2168626-2 18-BH13-02/85'							
Sampled By: CJ/LB on 09-SEP-18							
Matrix: SOIL							
Miscellaneous Parameters							
Mercury (Hg)	<0.050		0.050	mg/kg wwt	11-OCT-18	11-OCT-18	R4272567
Bulk Asbestos Content							
Asbestos: Chrysotile	10-25		1	%		26-SEP-18	R4249815
Other Fibres	<1		1	%		26-SEP-18	R4249815
Metals in Waste by CRC ICPMS							
Aluminum (Al)	2070		50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Antimony (Sb)	0.73		0.10	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Arsenic (As)	1.03		0.10	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2168626-2 18-BH13-02/85'							
Sampled By: CJ/LB on 09-SEP-18							
Matrix: SOIL							
Metals in Waste by CRC ICPMS							
Barium (Ba)	2.86		0.50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Beryllium (Be)	<0.10		0.10	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Boron (B)	128		5.0	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Cadmium (Cd)	<0.020		0.020	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Calcium (Ca)	223		50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Chromium (Cr)	1440		0.50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Cobalt (Co)	49.1		0.10	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Copper (Cu)	0.87		0.50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Iron (Fe)	21900		50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Lead (Pb)	<0.50		0.50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Lithium (Li)	<2.0		2.0	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Magnesium (Mg)	154000		20	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Manganese (Mn)	327		1.0	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Molybdenum (Mo)	<0.10		0.10	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Nickel (Ni)	1220		0.50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Phosphorus (P)	<50		50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Potassium (K)	<100		100	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Selenium (Se)	<0.20		0.20	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Silver (Ag)	<0.10		0.10	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Sodium (Na)	<50		50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Strontium (Sr)	1.02		0.50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Sulfur	<1000		1000	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Thallium (Tl)	<0.050		0.050	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Tin (Sn)	<2.0		2.0	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Titanium (Ti)	18.4		1.0	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Tungsten	<0.50		0.50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Uranium (U)	<0.050		0.050	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Vanadium (V)	12.8		0.20	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Zinc (Zn)	6.8		2.0	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Zirconium (Zr)	<1.0		1.0	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
L2168626-3 18-BH13-DUP-04/50'							
Sampled By: CJ/LB on 09-SEP-18							
Matrix: SOIL							
Miscellaneous Parameters							
Mercury (Hg)	<0.050		0.050	mg/kg wwt	11-OCT-18	11-OCT-18	R4272567
Bulk Asbestos Content							
Asbestos: Chrysotile	10-25		1	%		26-SEP-18	R4249815
Other Fibres	<1		1	%		26-SEP-18	R4249815
Metals in Waste by CRC ICPMS							
Aluminum (Al)	2410		50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Antimony (Sb)	1.09		0.10	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Arsenic (As)	3.18		0.10	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Barium (Ba)	7.36		0.50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Beryllium (Be)	<0.10		0.10	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Boron (B)	173		5.0	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Cadmium (Cd)	<0.020		0.020	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Calcium (Ca)	584		50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Chromium (Cr)	1950		0.50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Cobalt (Co)	78.5		0.10	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2168626-3 18-BH13-DUP-04/50'							
Sampled By: CJ/LB on 09-SEP-18							
Matrix: SOIL							
Metals in Waste by CRC ICPMS							
Copper (Cu)	3.84		0.50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Iron (Fe)	24200		50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Lead (Pb)	<0.50		0.50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Lithium (Li)	<2.0		2.0	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Magnesium (Mg)	207000		20	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Manganese (Mn)	467		1.0	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Molybdenum (Mo)	0.10		0.10	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Nickel (Ni)	1800		0.50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Phosphorus (P)	<50		50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Potassium (K)	<100		100	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Selenium (Se)	<0.20		0.20	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Silver (Ag)	<0.10		0.10	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Sodium (Na)	<50		50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Strontium (Sr)	2.85		0.50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Sulfur	3700		1000	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Thallium (Tl)	<0.050		0.050	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Tin (Sn)	<2.0		2.0	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Titanium (Ti)	29.3		1.0	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Tungsten	<0.50		0.50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Uranium (U)	<0.050		0.050	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Vanadium (V)	16.1		0.20	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Zinc (Zn)	8.9		2.0	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Zirconium (Zr)	<1.0		1.0	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
L2168626-4 BH2018-19-02/65'							
Sampled By: CJ/LB on 10-SEP-18							
Matrix: SOIL							
Miscellaneous Parameters							
Mercury (Hg)	0.333		0.050	mg/kg	05-OCT-18	05-OCT-18	R4262654
Quantitation of asbestos by point count							
Asbestos By Point Count	<0.1		0.10	%		26-SEP-18	R4249815
Mica	Trace <1		1.0	%		26-SEP-18	R4249815
Metals in Soil by CRC ICPMS							
Aluminum (Al)	3890		50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Antimony (Sb)	0.66		0.10	mg/kg	05-OCT-18	05-OCT-18	R4263045
Arsenic (As)	5.86		0.10	mg/kg	05-OCT-18	05-OCT-18	R4263045
Barium (Ba)	60.0		0.50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Beryllium (Be)	0.49		0.10	mg/kg	05-OCT-18	05-OCT-18	R4263045
Bismuth (Bi)	0.38		0.20	mg/kg	05-OCT-18	05-OCT-18	R4263045
Boron (B)	<5.0		5.0	mg/kg	05-OCT-18	05-OCT-18	R4263045
Cadmium (Cd)	0.304		0.020	mg/kg	05-OCT-18	05-OCT-18	R4263045
Calcium (Ca)	8120		50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Chromium (Cr)	12.5		0.50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Cobalt (Co)	16.4		0.10	mg/kg	05-OCT-18	05-OCT-18	R4263045
Copper (Cu)	27.9		0.50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Iron (Fe)	36200		50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Lead (Pb)	7.34		0.50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Lithium (Li)	3.3		2.0	mg/kg	05-OCT-18	05-OCT-18	R4263045
Magnesium (Mg)	3790		20	mg/kg	05-OCT-18	05-OCT-18	R4263045
Manganese (Mn)	529		1.0	mg/kg	05-OCT-18	05-OCT-18	R4263045
Molybdenum (Mo)	1.55		0.10	mg/kg	05-OCT-18	05-OCT-18	R4263045
Nickel (Ni)	41.8		0.50	mg/kg	05-OCT-18	05-OCT-18	R4263045

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2168626-4 BH2018-19-02/65'							
Sampled By: CJ/LB on 10-SEP-18							
Matrix: SOIL							
Metals in Soil by CRC ICPMS							
Phosphorus (P)	607		50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Potassium (K)	780		100	mg/kg	05-OCT-18	05-OCT-18	R4263045
Selenium (Se)	0.68		0.20	mg/kg	05-OCT-18	05-OCT-18	R4263045
Silver (Ag)	0.16		0.10	mg/kg	05-OCT-18	05-OCT-18	R4263045
Sodium (Na)	99		50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Strontium (Sr)	43.8		0.50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Sulfur (S)	1700		1000	mg/kg	05-OCT-18	05-OCT-18	R4263045
Thallium (Tl)	0.110		0.050	mg/kg	05-OCT-18	05-OCT-18	R4263045
Tin (Sn)	<2.0		2.0	mg/kg	05-OCT-18	05-OCT-18	R4263045
Titanium (Ti)	41.9		1.0	mg/kg	05-OCT-18	05-OCT-18	R4263045
Tungsten (W)	<0.50		0.50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Uranium (U)	1.50		0.050	mg/kg	05-OCT-18	05-OCT-18	R4263045
Vanadium (V)	16.0		0.20	mg/kg	05-OCT-18	05-OCT-18	R4263045
Zinc (Zn)	145		2.0	mg/kg	05-OCT-18	05-OCT-18	R4263045
Zirconium (Zr)	9.2		1.0	mg/kg	05-OCT-18	05-OCT-18	R4263045
L2168626-5 BH2018-16-20'							
Sampled By: CJ/LB on 12-SEP-18							
Matrix: SOIL							
Miscellaneous Parameters							
Mercury (Hg)	<0.050		0.050	mg/kg wwt	11-OCT-18	11-OCT-18	R4272567
Bulk Asbestos Content							
Asbestos: Chrysotile	25-50		1	%		26-SEP-18	R4249815
Other Fibres	<1		1	%		26-SEP-18	R4249815
Metals in Waste by CRC ICPMS							
Aluminum (Al)	2190		50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Antimony (Sb)	2.18		0.10	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Arsenic (As)	4.29		0.10	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Barium (Ba)	7.05		0.50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Beryllium (Be)	<0.10		0.10	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Boron (B)	111		5.0	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Cadmium (Cd)	<0.020		0.020	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Calcium (Ca)	370		50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Chromium (Cr)	1370		0.50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Cobalt (Co)	61.4		0.10	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Copper (Cu)	<0.50		0.50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Iron (Fe)	32200		50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Lead (Pb)	<0.50		0.50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Lithium (Li)	<2.0		2.0	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Magnesium (Mg)	158000		20	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Manganese (Mn)	377		1.0	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Molybdenum (Mo)	<0.10		0.10	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Nickel (Ni)	1360		0.50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Phosphorus (P)	<50		50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Potassium (K)	<100		100	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Selenium (Se)	<0.20		0.20	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Silver (Ag)	<0.10		0.10	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Sodium (Na)	<50		50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Strontium (Sr)	2.19		0.50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Sulfur	<1000		1000	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Thallium (Tl)	<0.050		0.050	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2168626-5 BH2018-16-20'							
Sampled By: CJ/LB on 12-SEP-18							
Matrix: SOIL							
Metals in Waste by CRC ICPMS							
Tin (Sn)	<2.0		2.0	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Titanium (Ti)	17.1		1.0	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Tungsten	<0.50		0.50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Uranium (U)	<0.050		0.050	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Vanadium (V)	15.1		0.20	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Zinc (Zn)	6.1		2.0	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Zirconium (Zr)	<1.0		1.0	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
L2168626-6 152018-04/38'							
Sampled By: CJ/LB on 13-SEP-18							
Matrix: SOIL							
Miscellaneous Parameters							
Mercury (Hg)	0.244		0.050	mg/kg wwt	11-OCT-18	11-OCT-18	R4272567
Bulk Asbestos Content							
Asbestos: Chrysotile	5-10		1	%		26-SEP-18	R4249815
Mica	Trace <1		1	%		26-SEP-18	R4249815
Metals in Waste by CRC ICPMS							
Aluminum (Al)	3690		50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Antimony (Sb)	3.48		0.10	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Arsenic (As)	13.1		0.10	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Barium (Ba)	66.2		0.50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Beryllium (Be)	0.22		0.10	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Bismuth (Bi)	<0.20		0.20	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Boron (B)	28.5		5.0	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Cadmium (Cd)	2.71		0.020	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Calcium (Ca)	54100		50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Chromium (Cr)	553		0.50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Cobalt (Co)	38.7		0.10	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Copper (Cu)	43.6		0.50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Iron (Fe)	26800		50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Lead (Pb)	7.50		0.50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Lithium (Li)	5.2		2.0	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Magnesium (Mg)	76900		20	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Manganese (Mn)	424		1.0	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Molybdenum (Mo)	4.61		0.10	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Nickel (Ni)	687		0.50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Phosphorus (P)	806		50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Potassium (K)	550		100	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Selenium (Se)	5.20		0.20	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Silver (Ag)	0.38		0.10	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Sodium (Na)	<50		50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Strontium (Sr)	216		0.50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Sulfur	3600		1000	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Thallium (Tl)	0.052		0.050	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Tin (Sn)	<2.0		2.0	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Titanium (Ti)	23.5		1.0	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Tungsten	<0.50		0.50	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Uranium (U)	1.47		0.050	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Vanadium (V)	18.6		0.20	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Zinc (Zn)	80.5		2.0	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575
Zirconium (Zr)	5.7		1.0	mg/kg wwt	11-OCT-18	14-OCT-18	R4277575

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2168626-7 BH2018-18-02/80'							
Sampled By: CJ/LB on 13-SEP-18							
Matrix: SOIL							
Miscellaneous Parameters							
Mercury (Hg)	0.120		0.050	mg/kg wwt	11-OCT-18	11-OCT-18	R4272567
Bulk Asbestos Content							
Asbestos: Chrysotile	1-5		1	%		26-SEP-18	R4249815
Mica	Trace <1		1	%		26-SEP-18	R4249815
Metals in Waste by CRC ICPMS							
Aluminum (Al)	8880		50	mg/kg wwt	21-OCT-18	21-OCT-18	R4290024
Antimony (Sb)	2.35		0.10	mg/kg wwt	21-OCT-18	21-OCT-18	R4290024
Arsenic (As)	11.6		0.10	mg/kg wwt	21-OCT-18	21-OCT-18	R4290024
Barium (Ba)	106		0.50	mg/kg wwt	21-OCT-18	21-OCT-18	R4290024
Beryllium (Be)	0.35		0.10	mg/kg wwt	21-OCT-18	21-OCT-18	R4290024
Bismuth (Bi)	0.31		0.20	mg/kg wwt	21-OCT-18	21-OCT-18	R4290024
Boron (B)	<5.0		5.0	mg/kg wwt	21-OCT-18	21-OCT-18	R4290024
Cadmium (Cd)	0.658		0.020	mg/kg wwt	21-OCT-18	21-OCT-18	R4290024
Calcium (Ca)	5230		50	mg/kg wwt	21-OCT-18	21-OCT-18	R4290024
Chromium (Cr)	58.2		0.50	mg/kg wwt	21-OCT-18	21-OCT-18	R4290024
Cobalt (Co)	20.4		0.10	mg/kg wwt	21-OCT-18	21-OCT-18	R4290024
Copper (Cu)	36.6		0.50	mg/kg wwt	21-OCT-18	21-OCT-18	R4290024
Iron (Fe)	37300		50	mg/kg wwt	21-OCT-18	21-OCT-18	R4290024
Lead (Pb)	20.5		0.50	mg/kg wwt	21-OCT-18	21-OCT-18	R4290024
Lithium (Li)	20.9		2.0	mg/kg wwt	21-OCT-18	21-OCT-18	R4290024
Magnesium (Mg)	12200		20	mg/kg wwt	21-OCT-18	21-OCT-18	R4290024
Manganese (Mn)	532		1.0	mg/kg wwt	21-OCT-18	21-OCT-18	R4290024
Molybdenum (Mo)	4.22		0.10	mg/kg wwt	21-OCT-18	21-OCT-18	R4290024
Nickel (Ni)	113		0.50	mg/kg wwt	21-OCT-18	21-OCT-18	R4290024
Phosphorus (P)	579		50	mg/kg wwt	21-OCT-18	21-OCT-18	R4290024
Potassium (K)	630		100	mg/kg wwt	21-OCT-18	21-OCT-18	R4290024
Selenium (Se)	1.22		0.20	mg/kg wwt	21-OCT-18	21-OCT-18	R4290024
Silver (Ag)	0.18		0.10	mg/kg wwt	21-OCT-18	21-OCT-18	R4290024
Sodium (Na)	64		50	mg/kg wwt	21-OCT-18	21-OCT-18	R4290024
Strontium (Sr)	30.2		0.50	mg/kg wwt	21-OCT-18	21-OCT-18	R4290024
Sulfur	<1000		1000	mg/kg wwt	21-OCT-18	21-OCT-18	R4290024
Thallium (Tl)	0.059		0.050	mg/kg wwt	21-OCT-18	21-OCT-18	R4290024
Tin (Sn)	<2.0		2.0	mg/kg wwt	21-OCT-18	21-OCT-18	R4290024
Titanium (Ti)	34.7		1.0	mg/kg wwt	21-OCT-18	21-OCT-18	R4290024
Tungsten	<0.50		0.50	mg/kg wwt	21-OCT-18	21-OCT-18	R4290024
Uranium (U)	1.10		0.050	mg/kg wwt	21-OCT-18	21-OCT-18	R4290024
Vanadium (V)	16.3		0.20	mg/kg wwt	21-OCT-18	21-OCT-18	R4290024
Zinc (Zn)	87.8		2.0	mg/kg wwt	21-OCT-18	21-OCT-18	R4290024
Zirconium (Zr)	9.2		1.0	mg/kg wwt	21-OCT-18	21-OCT-18	R4290024
L2168626-8 BH2018-05-02/151'							
Sampled By: CJ/LB on 17-SEP-18							
Matrix: SOIL							
Miscellaneous Parameters							
% Moisture	8.25		0.25	%		23-JAN-19	R4462788
Hexavalent Chromium	<0.10		0.10	mg/kg	26-JAN-19	27-JAN-19	R4470779
Chromium, Trivalent	24.7		0.50	mg/kg		28-JAN-19	
Mercury (Hg)	0.145		0.0050	mg/kg	05-OCT-18	05-OCT-18	R4262654
Special Request	See Attached					06-MAR-19	R3880127
Quantitation of asbestos by point count							
Asbestos By Point Count	<0.1		0.10	%		26-SEP-18	R4249815
Mica	Trace <1		1.0	%		26-SEP-18	R4249815

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2168626-8 BH2018-05-02/151'							
Sampled By: CJ/LB on 17-SEP-18							
Matrix: SOIL							
Metals in Soil by CRC ICPMS							
Aluminum (Al)	19700		50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Antimony (Sb)	1.36		0.10	mg/kg	05-OCT-18	05-OCT-18	R4263045
Arsenic (As)	7.67		0.10	mg/kg	05-OCT-18	05-OCT-18	R4263045
Barium (Ba)	78.6		0.50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Beryllium (Be)	0.63		0.10	mg/kg	05-OCT-18	05-OCT-18	R4263045
Bismuth (Bi)	0.30		0.20	mg/kg	05-OCT-18	05-OCT-18	R4263045
Boron (B)	<5.0		5.0	mg/kg	05-OCT-18	05-OCT-18	R4263045
Cadmium (Cd)	0.736		0.020	mg/kg	05-OCT-18	05-OCT-18	R4263045
Calcium (Ca)	18100		50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Chromium (Cr)	24.7		0.50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Cobalt (Co)	14.7		0.10	mg/kg	05-OCT-18	05-OCT-18	R4263045
Copper (Cu)	42.3		0.50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Iron (Fe)	36600		50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Lead (Pb)	17.3		0.50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Lithium (Li)	37.9		2.0	mg/kg	05-OCT-18	05-OCT-18	R4263045
Magnesium (Mg)	9980		20	mg/kg	05-OCT-18	05-OCT-18	R4263045
Manganese (Mn)	558		1.0	mg/kg	05-OCT-18	05-OCT-18	R4263045
Molybdenum (Mo)	6.23		0.10	mg/kg	05-OCT-18	05-OCT-18	R4263045
Nickel (Ni)	44.2		0.50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Phosphorus (P)	603		50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Potassium (K)	1010		100	mg/kg	05-OCT-18	05-OCT-18	R4263045
Selenium (Se)	2.78		0.20	mg/kg	05-OCT-18	05-OCT-18	R4263045
Silver (Ag)	0.37		0.10	mg/kg	05-OCT-18	05-OCT-18	R4263045
Sodium (Na)	208		50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Strontium (Sr)	111		0.50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Sulfur (S)	4700		1000	mg/kg	05-OCT-18	05-OCT-18	R4263045
Thallium (Tl)	0.106		0.050	mg/kg	05-OCT-18	05-OCT-18	R4263045
Tin (Sn)	<2.0		2.0	mg/kg	05-OCT-18	05-OCT-18	R4263045
Titanium (Ti)	57.0		1.0	mg/kg	05-OCT-18	05-OCT-18	R4263045
Tungsten (W)	<0.50		0.50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Uranium (U)	1.06		0.050	mg/kg	05-OCT-18	05-OCT-18	R4263045
Vanadium (V)	24.5		0.20	mg/kg	05-OCT-18	05-OCT-18	R4263045
Zinc (Zn)	117		2.0	mg/kg	05-OCT-18	05-OCT-18	R4263045
Zirconium (Zr)	12.0		1.0	mg/kg	05-OCT-18	05-OCT-18	R4263045
L2168626-9 BH2018-02-02/156'							
Sampled By: CJ/LB on 17-SEP-18							
Matrix: SOIL							
Miscellaneous Parameters							
Mercury (Hg)	0.321		0.050	mg/kg	05-OCT-18	05-OCT-18	R4262654
Quantitation of asbestos by point count							
Asbestos By Point Count	<0.1		0.10	%		26-SEP-18	R4249815
Mica	Trace <1		1.0	%		26-SEP-18	R4249815
Metals in Soil by CRC ICPMS							
Aluminum (Al)	8940		50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Antimony (Sb)	3.15		0.10	mg/kg	05-OCT-18	05-OCT-18	R4263045
Arsenic (As)	17.8		0.10	mg/kg	05-OCT-18	05-OCT-18	R4263045
Barium (Ba)	52.2		0.50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Beryllium (Be)	0.45		0.10	mg/kg	05-OCT-18	05-OCT-18	R4263045
Bismuth (Bi)	0.26		0.20	mg/kg	05-OCT-18	05-OCT-18	R4263045
Boron (B)	<5.0		5.0	mg/kg	05-OCT-18	05-OCT-18	R4263045
Cadmium (Cd)	0.854		0.020	mg/kg	05-OCT-18	05-OCT-18	R4263045

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2168626-9 BH2018-02-02/156'							
Sampled By: CJ/LB on 17-SEP-18							
Matrix: SOIL							
Metals in Soil by CRC ICPMS							
Calcium (Ca)	18300		50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Chromium (Cr)	18.1		0.50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Cobalt (Co)	13.9		0.10	mg/kg	05-OCT-18	05-OCT-18	R4263045
Copper (Cu)	57.4		0.50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Iron (Fe)	33300		50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Lead (Pb)	42.3		0.50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Lithium (Li)	13.8		2.0	mg/kg	05-OCT-18	05-OCT-18	R4263045
Magnesium (Mg)	2960		20	mg/kg	05-OCT-18	05-OCT-18	R4263045
Manganese (Mn)	244		1.0	mg/kg	05-OCT-18	05-OCT-18	R4263045
Molybdenum (Mo)	23.1		0.10	mg/kg	05-OCT-18	05-OCT-18	R4263045
Nickel (Ni)	38.2		0.50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Phosphorus (P)	651		50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Potassium (K)	930		100	mg/kg	05-OCT-18	05-OCT-18	R4263045
Selenium (Se)	7.52		0.20	mg/kg	05-OCT-18	05-OCT-18	R4263045
Silver (Ag)	0.78		0.10	mg/kg	05-OCT-18	05-OCT-18	R4263045
Sodium (Na)	304		50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Strontium (Sr)	99.1		0.50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Sulfur (S)	16000		1000	mg/kg	05-OCT-18	05-OCT-18	R4263045
Thallium (Tl)	0.207		0.050	mg/kg	05-OCT-18	05-OCT-18	R4263045
Tin (Sn)	<2.0		2.0	mg/kg	05-OCT-18	05-OCT-18	R4263045
Titanium (Ti)	35.0		1.0	mg/kg	05-OCT-18	05-OCT-18	R4263045
Tungsten (W)	<0.50		0.50	mg/kg	05-OCT-18	05-OCT-18	R4263045
Uranium (U)	1.37		0.050	mg/kg	05-OCT-18	05-OCT-18	R4263045
Vanadium (V)	21.9		0.20	mg/kg	05-OCT-18	05-OCT-18	R4263045
Zinc (Zn)	109		2.0	mg/kg	05-OCT-18	05-OCT-18	R4263045
Zirconium (Zr)	16.6		1.0	mg/kg	05-OCT-18	05-OCT-18	R4263045

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ASBESTOS-BULK-ED	Bulk	Bulk Asbestos Content	NIOSH 9002-Polarized Microscopy

Bulk samples are examined under a stereoscopic microscope. Individual fibers or fibre bundles are mounted in refractive index liquids and are observed under a polarized light microscope with a special dispersion staining objective. The dispersion staining colours are compared to reference samples of known asbestiforms.

Note: For non-friable organically bound asbestos (eg. floor tile) Polarized Light microscopy is not a definitive technique when negative results are obtained. Transmission electron microscopy is recommended to confirm the asbestos in these materials.

Asbestos results reported as <1% indicates that no asbestos fibers were observed.

ASBESTOS-PTCT-ED	Bulk	Quantitation of asbestos by point count	EPA/600/R-93/116

Bulk samples are examined under a stereoscopic microscope. Individual fibers or fiber bundles are mounted in refractive index liquids and are observed under a polarized light microscope, with a special dispersion staining objective. The dispersion staining colors are compared to reference samples of known asbestiforms.

Polarized microscopy is not a definitive technique for negative results for non-friable organically bound material (i.e.floor tiles). Transmission electron microscopy is recommended to confirm the asbestos in these materials.
Asbestos results reported as <0.10% indicates that no asbestos fibers were observed.

CR-CR3-SOIL-CALC-ED	Soil	Chromium, Trivalent (Cr +3)	Total Cr - Cr(+6)

This analysis is carried out using the method "Trivalent Chromium in Solids", as published in the BC WLAP Laboratory Methods Manual (2003). Chromium (III) is determined by subtraction of chromium (VI) from total chromium. Chromium (VI) is determined by the alkaline leach method, and total chromium is determined using CSR Analytical Method 8 "Strong Acid Leachable Metals (SALM) in Soil", BC Ministry of Environment, Lands and Parks, 26 June 2001. All results are reported as milligrams per dry kilogram of sediment/soil. The Limit of Reporting for Chromium (III) varies as a function of the test results.

CR-CR6-3060-ED	Soil	Chromium, Hexavalent (Cr +6)	APHA 3500-CR C, EPA 3060A ALKALINE

Field moist samples are digested with a sodium hydroxide/sodium carbonate solution. After cooling and filtration, the rinsate is adjusted to pH 9, and injected on an ion chromatograph to separate the hexavalent chromium ion. A post column color reaction with diphenylcarbohydrazide and absorbance measurement at 530 nm completes the quantitation.

HG-200.2-CVAA-ED	Soil	Mercury in Soil by CVAAS	EPA 200.2/1631E (Mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAAS.

HG-WET-200.2-CVAA-ED	Waste	Mercury (Hg) in waste	EPA 200.2/245.1

Waste samples are prepared for analysis by mixing to homogenize the as-received waste, then subsampling. The subsample is digested according to the EPA 200.2 method, using nitric and hydrochloric acids. Analysis is carried out by cold vapour atomic absorption. Results are reported on a wet basis (not corrected for any moisture content).

MET-200.2-CCMS-ED	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A (mod)

Soil/sediment is dried, disaggregated, and sieved (2 mm). Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.

Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H2S) may be excluded if lost during sampling, storage, or digestion.

MET-WET200.2-CCMS-ED	Waste	Metals in Waste by CRC ICPMS	EPA 200.2/6020A

This analysis is carried out using procedures from CSR Analytical Method: "Strong Acid Leachable Metals (SALM) in Soil", BC Ministry of Environment, 26 June 2009, and procedures adapted from EPA Method 200.2. The sample is manually homogenized, dried at 60 degrees Celsius, sieved through a 2 mm (10 mesh) sieve, and a representative subsample of the dry material is weighed. The sample is then digested at 95 degrees Celsius for 2 hours by block digester using concentrated nitric and hydrochloric acids. Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

PREP-MOISTURE-ED	Soil	% Moisture	CCME PHC in Soil - Tier 1 (mod)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
The weighed portion of soil is placed in a 105°C oven to dry to a constant weight; the drying time will vary based on the moisture content of the soil. The dried soil weight is then used to calculate % moisture.			
SPECIAL REQUEST-KL	Misc.	Special Request - Kelso	SEE SUBLET LAB RESULTS

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA
KL	ALS ENVIRONMENTAL - KELSO, WASHINGTON, USA

Chain of Custody Numbers:

1 of 1

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: Wood E&IS, a Division of Wood Canada Limited
#401, 1925 - 18 Ave NE
CALGARY AB T2E 7T8
Contact: Brian Geddes

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CR-CR6-3060-ED	**Soil**							
Batch R4470779								
WG2977857-3 CRM		**CR6-3060_SOIL**						
Hexavalent Chromium			99.2		%		80-120	26-JAN-19
WG2977857-2 LCS								
Hexavalent Chromium			104.2		%		80-120	26-JAN-19
WG2977857-1 MB								
Hexavalent Chromium			<0.10		mg/kg		0.1	26-JAN-19
HG-200.2-CVAA-ED	**Soil**							
Batch R4262654								
WG2895948-3 CRM		**TILL-1_SOIL**						
Mercury (Hg)			107.2		%		70-130	05-OCT-18
WG2895948-2 LCS								
Mercury (Hg)			119.0		%		70-130	05-OCT-18
WG2895948-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	05-OCT-18
MET-200.2-CCMS-ED	**Soil**							
Batch R4263045								
WG2895948-3 CRM		**TILL-1_SOIL**						
Aluminum (Al)			97.9		%		70-130	05-OCT-18
Antimony (Sb)			92.5		%		70-130	05-OCT-18
Arsenic (As)			91.7		%		70-130	05-OCT-18
Barium (Ba)			90.7		%		70-130	05-OCT-18
Beryllium (Be)			97.0		%		70-130	05-OCT-18
Bismuth (Bi)			95.9		%		70-130	05-OCT-18
Boron (B)			2.9		mg/kg		0-8.2	05-OCT-18
Cadmium (Cd)			91.7		%		70-130	05-OCT-18
Calcium (Ca)			102.4		%		70-130	05-OCT-18
Chromium (Cr)			96.8		%		70-130	05-OCT-18
Cobalt (Co)			95.2		%		70-130	05-OCT-18
Copper (Cu)			95.9		%		70-130	05-OCT-18
Iron (Fe)			91.5		%		70-130	05-OCT-18
Lead (Pb)			93.2		%		70-130	05-OCT-18
Lithium (Li)			103.7		%		70-130	05-OCT-18
Magnesium (Mg)			97.5		%		70-130	05-OCT-18
Manganese (Mn)			95.3		%		70-130	05-OCT-18
Molybdenum (Mo)			90.0		%		70-130	05-OCT-18
Nickel (Ni)			94.3		%		70-130	05-OCT-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R4263045								
WG2895948-3 CRM		**TILL-1_SOIL**						
Phosphorus (P)			92.0		%		70-130	05-OCT-18
Potassium (K)			100.1		%		70-130	05-OCT-18
Selenium (Se)			0.24		mg/kg		0.11-0.51	05-OCT-18
Silver (Ag)			0.23		mg/kg		0.13-0.33	05-OCT-18
Sodium (Na)			105.3		%		70-130	05-OCT-18
Strontium (Sr)			100.2		%		70-130	05-OCT-18
Thallium (Tl)			0.118		mg/kg		0.077-0.18	05-OCT-18
Tin (Sn)			0.9		mg/kg		0-3.1	05-OCT-18
Titanium (Ti)			93.4		%		70-130	05-OCT-18
Tungsten (W)			0.12		mg/kg		0-0.66	05-OCT-18
Uranium (U)			100.4		%		70-130	05-OCT-18
Vanadium (V)			96.3		%		70-130	05-OCT-18
Zinc (Zn)			97.8		%		70-130	05-OCT-18
Zirconium (Zr)			1.0		mg/kg		0-1.8	05-OCT-18
WG2895948-1 MB								
Aluminum (Al)			<50		mg/kg		50	05-OCT-18
Antimony (Sb)			<0.10		mg/kg		0.1	05-OCT-18
Arsenic (As)			<0.10		mg/kg		0.1	05-OCT-18
Barium (Ba)			<0.50		mg/kg		0.5	05-OCT-18
Beryllium (Be)			<0.10		mg/kg		0.1	05-OCT-18
Bismuth (Bi)			<0.20		mg/kg		0.2	05-OCT-18
Boron (B)			<5.0		mg/kg		5	05-OCT-18
Cadmium (Cd)			<0.020		mg/kg		0.02	05-OCT-18
Calcium (Ca)			<50		mg/kg		50	05-OCT-18
Chromium (Cr)			<0.50		mg/kg		0.5	05-OCT-18
Cobalt (Co)			<0.10		mg/kg		0.1	05-OCT-18
Copper (Cu)			<0.50		mg/kg		0.5	05-OCT-18
Iron (Fe)			<50		mg/kg		50	05-OCT-18
Lead (Pb)			<0.50		mg/kg		0.5	05-OCT-18
Lithium (Li)			<2.0		mg/kg		2	05-OCT-18
Magnesium (Mg)			<20		mg/kg		20	05-OCT-18
Manganese (Mn)			<1.0		mg/kg		1	05-OCT-18
Molybdenum (Mo)			<0.10		mg/kg		0.1	05-OCT-18
Nickel (Ni)			<0.50		mg/kg		0.5	05-OCT-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R4263045								
WG2895948-1 MB								
Phosphorus (P)			<50		mg/kg		50	05-OCT-18
Potassium (K)			<100		mg/kg		100	05-OCT-18
Selenium (Se)			<0.20		mg/kg		0.2	05-OCT-18
Silver (Ag)			<0.10		mg/kg		0.1	05-OCT-18
Sodium (Na)			<50		mg/kg		50	05-OCT-18
Strontium (Sr)			<0.50		mg/kg		0.5	05-OCT-18
Sulfur (S)			<1000		mg/kg		1000	05-OCT-18
Thallium (Tl)			<0.050		mg/kg		0.05	05-OCT-18
Tin (Sn)			<2.0		mg/kg		2	05-OCT-18
Titanium (Ti)			<1.0		mg/kg		1	05-OCT-18
Tungsten (W)			<0.50		mg/kg		0.5	05-OCT-18
Uranium (U)			<0.050		mg/kg		0.05	05-OCT-18
Vanadium (V)			<0.20		mg/kg		0.2	05-OCT-18
Zinc (Zn)			<2.0		mg/kg		2	05-OCT-18
Zirconium (Zr)			<1.0		mg/kg		1	05-OCT-18
Batch R4263775								
WG2895948-2 LCS								
Aluminum (Al)			104.6		%		80-120	07-OCT-18
Antimony (Sb)			102.9		%		80-120	07-OCT-18
Arsenic (As)			105.7		%		80-120	07-OCT-18
Barium (Ba)			105.8		%		80-120	07-OCT-18
Beryllium (Be)			98.0		%		80-120	07-OCT-18
Bismuth (Bi)			101.5		%		80-120	07-OCT-18
Boron (B)			92.7		%		80-120	07-OCT-18
Cadmium (Cd)			100.3		%		80-120	07-OCT-18
Calcium (Ca)			98.9		%		80-120	07-OCT-18
Chromium (Cr)			101.0		%		80-120	07-OCT-18
Cobalt (Co)			103.3		%		80-120	07-OCT-18
Copper (Cu)			98.9		%		80-120	07-OCT-18
Iron (Fe)			101.8		%		80-120	07-OCT-18
Lead (Pb)			98.8		%		80-120	07-OCT-18
Lithium (Li)			93.3		%		80-120	07-OCT-18
Magnesium (Mg)			103.3		%		80-120	07-OCT-18
Manganese (Mn)			100.7		%		80-120	07-OCT-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R4263775								
WG2895948-2 LCS								
Molybdenum (Mo)			101.6		%		80-120	07-OCT-18
Nickel (Ni)			100.5		%		80-120	07-OCT-18
Phosphorus (P)			118.2		%		80-120	07-OCT-18
Potassium (K)			103.6		%		80-120	07-OCT-18
Selenium (Se)			100.2		%		80-120	07-OCT-18
Silver (Ag)			103.7		%		80-120	07-OCT-18
Sodium (Na)			99.6		%		80-120	07-OCT-18
Strontium (Sr)			98.8		%		80-120	07-OCT-18
Sulfur (S)			104.7		%		80-120	07-OCT-18
Thallium (Tl)			98.6		%		80-120	07-OCT-18
Tin (Sn)			102.6		%		80-120	07-OCT-18
Titanium (Ti)			105.0		%		80-120	07-OCT-18
Tungsten (W)			102.8		%		80-120	07-OCT-18
Uranium (U)			97.3		%		80-120	07-OCT-18
Vanadium (V)			104.4		%		80-120	07-OCT-18
Zinc (Zn)			96.0		%		80-120	07-OCT-18
Zirconium (Zr)			97.3		%		80-120	07-OCT-18
PREP-MOISTURE-ED	**Soil**							
Batch R4462788								
WG2975228-2 LCS								
% Moisture			98.0		%		90-110	23-JAN-19
WG2975228-1 MB								
% Moisture			<0.25		%		0.25	23-JAN-19
HG-WET-200.2-CVAA-ED	**Waste**							
Batch R4272567								
WG2900568-3 CRM		**TILL-1_SOIL**						
Mercury (Hg)			99.3		%		70-130	11-OCT-18
WG2900568-4 DUP		**L2168626-7**						
Mercury (Hg)		0.120	0.062	J	mg/kg wwt	0.057	0.1	11-OCT-18
WG2900568-2 LCS								
Mercury (Hg)			83.7		%		80-120	11-OCT-18
WG2900568-1 MB								
Mercury (Hg)			<0.050		mg/kg wwt		0.05	11-OCT-18
MET-WET200.2-CCMS-ED	**Waste**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET200.2-CCMS-ED	**Waste**							
Batch R4277575								
WG2900568-3 CRM		**TILL-1_SOIL**						
Aluminum (Al)			100.3		%		70-130	14-OCT-18
Antimony (Sb)			100.3		%		70-130	14-OCT-18
Arsenic (As)			103.7		%		70-130	14-OCT-18
Barium (Ba)			99.8		%		70-130	14-OCT-18
Beryllium (Be)			95.8		%		70-130	14-OCT-18
Bismuth (Bi)			99.6		%		70-130	14-OCT-18
Boron (B)			4.6		mg/kg wwt		0-8.2	14-OCT-18
Cadmium (Cd)			102.5		%		70-130	14-OCT-18
Calcium (Ca)			98.1		%		70-130	14-OCT-18
Chromium (Cr)			103.1		%		70-130	14-OCT-18
Cobalt (Co)			103.5		%		70-130	14-OCT-18
Copper (Cu)			103.0		%		70-130	14-OCT-18
Iron (Fe)			103.4		%		70-130	14-OCT-18
Lead (Pb)			100.1		%		70-130	14-OCT-18
Lithium (Li)			106.0		%		70-130	14-OCT-18
Magnesium (Mg)			100.8		%		70-130	14-OCT-18
Manganese (Mn)			100.9		%		70-130	14-OCT-18
Molybdenum (Mo)			96.3		%		70-130	14-OCT-18
Nickel (Ni)			103.4		%		70-130	14-OCT-18
Phosphorus (P)			100.0		%		70-130	14-OCT-18
Potassium (K)			95.4		%		70-130	14-OCT-18
Selenium (Se)			0.31		mg/kg wwt		0.11-0.51	14-OCT-18
Silver (Ag)			0.25		mg/kg wwt		0.13-0.33	14-OCT-18
Sodium (Na)			100.2		%		70-130	14-OCT-18
Strontium (Sr)			95.7		%		70-130	14-OCT-18
Thallium (Tl)			0.126		mg/kg wwt		0.077-0.18	14-OCT-18
Tin (Sn)			1.1		mg/kg wwt		0-3.1	14-OCT-18
Titanium (Ti)			100.1		%		70-130	14-OCT-18
Tungsten			0.15		mg/kg wwt		0-0.66	14-OCT-18
Uranium (U)			103.8		%		70-130	14-OCT-18
Vanadium (V)			98.6		%		70-130	14-OCT-18
Zinc (Zn)			99.3		%		70-130	14-OCT-18
Zirconium (Zr)			0.7		mg/kg wwt		0-1.8	14-OCT-18
WG2900568-2 LCS								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET200.2-CCMS-ED	**Waste**							
Batch R4277575								
WG2900568-2 LCS								
Aluminum (Al)			103.4		%		80-120	14-OCT-18
Antimony (Sb)			105.2		%		80-120	14-OCT-18
Arsenic (As)			106.4		%		80-120	14-OCT-18
Barium (Ba)			105.3		%		80-120	14-OCT-18
Beryllium (Be)			95.7		%		80-120	14-OCT-18
Bismuth (Bi)			104.2		%		80-120	14-OCT-18
Boron (B)			101.3		%		80-120	14-OCT-18
Cadmium (Cd)			102.8		%		80-120	14-OCT-18
Calcium (Ca)			98.7		%		80-120	14-OCT-18
Chromium (Cr)			102.6		%		80-120	14-OCT-18
Cobalt (Co)			102.6		%		80-120	14-OCT-18
Copper (Cu)			99.7		%		80-120	14-OCT-18
Iron (Fe)			104.4		%		80-120	14-OCT-18
Lead (Pb)			99.3		%		80-120	14-OCT-18
Lithium (Li)			98.4		%		80-120	14-OCT-18
Magnesium (Mg)			101.4		%		80-120	14-OCT-18
Manganese (Mn)			102.5		%		80-120	14-OCT-18
Molybdenum (Mo)			101.8		%		80-120	14-OCT-18
Nickel (Ni)			102.1		%		80-120	14-OCT-18
Potassium (K)			103.5		%		80-120	14-OCT-18
Selenium (Se)			103.3		%		80-120	14-OCT-18
Silver (Ag)			104.4		%		80-120	14-OCT-18
Sodium (Na)			100.9		%		80-120	14-OCT-18
Strontium (Sr)			99.4		%		80-120	14-OCT-18
Sulfur			97.5		%		70-130	14-OCT-18
Thallium (Tl)			97.8		%		80-120	14-OCT-18
Tin (Sn)			103.5		%		80-120	14-OCT-18
Titanium (Ti)			103.3		%		80-120	14-OCT-18
Tungsten			103.2		%		70-130	14-OCT-18
Uranium (U)			101.7		%		80-120	14-OCT-18
Vanadium (V)			100.6		%		80-120	14-OCT-18
Zinc (Zn)			99.6		%		80-120	14-OCT-18
Zirconium (Zr)			100.6		%		80-120	14-OCT-18
WG2900568-1 MB								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET200.2-CCMS-ED	**Waste**							
Batch R4277575								
WG2900568-1 MB								
Aluminum (Al)			<50		mg/kg wwt		50	14-OCT-18
Antimony (Sb)			<0.10		mg/kg wwt		0.1	14-OCT-18
Arsenic (As)			<0.10		mg/kg wwt		0.1	14-OCT-18
Barium (Ba)			<0.50		mg/kg wwt		0.5	14-OCT-18
Beryllium (Be)			<0.10		mg/kg wwt		0.1	14-OCT-18
Bismuth (Bi)			<0.20		mg/kg wwt		0.2	14-OCT-18
Boron (B)			<5.0		mg/kg wwt		5	14-OCT-18
Cadmium (Cd)			<0.020		mg/kg wwt		0.02	14-OCT-18
Calcium (Ca)			<50		mg/kg wwt		50	14-OCT-18
Chromium (Cr)			<0.50		mg/kg wwt		0.5	14-OCT-18
Cobalt (Co)			<0.10		mg/kg wwt		0.1	14-OCT-18
Copper (Cu)			<0.50		mg/kg wwt		0.5	14-OCT-18
Iron (Fe)			<50		mg/kg wwt		50	14-OCT-18
Lead (Pb)			<0.50		mg/kg wwt		0.5	14-OCT-18
Lithium (Li)			<2.0		mg/kg wwt		2	14-OCT-18
Magnesium (Mg)			<20		mg/kg wwt		20	14-OCT-18
Manganese (Mn)			<1.0		mg/kg wwt		1	14-OCT-18
Molybdenum (Mo)			<0.10		mg/kg wwt		0.1	14-OCT-18
Nickel (Ni)			<0.50		mg/kg wwt		0.5	14-OCT-18
Phosphorus (P)			<50		mg/kg wwt		50	14-OCT-18
Potassium (K)			<100		mg/kg wwt		100	14-OCT-18
Selenium (Se)			<0.20		mg/kg wwt		0.2	14-OCT-18
Silver (Ag)			<0.10		mg/kg wwt		0.1	14-OCT-18
Sodium (Na)			<50		mg/kg wwt		50	14-OCT-18
Strontium (Sr)			<0.50		mg/kg wwt		0.5	14-OCT-18
Sulfur			<1000		mg/kg wwt		1000	14-OCT-18
Thallium (Tl)			<0.050		mg/kg wwt		0.05	14-OCT-18
Tin (Sn)			<2.0		mg/kg wwt		2	14-OCT-18
Titanium (Ti)			<1.0		mg/kg wwt		1	14-OCT-18
Tungsten			<0.50		mg/kg wwt		0.5	14-OCT-18
Uranium (U)			<0.050		mg/kg wwt		0.05	14-OCT-18
Vanadium (V)			<0.20		mg/kg wwt		0.2	14-OCT-18
Zinc (Zn)			<2.0		mg/kg wwt		2	14-OCT-18
Zirconium (Zr)			<1.0		mg/kg wwt		1	14-OCT-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET200.2-CCMS-ED	**Waste**							
Batch **R4281916**								
WG2900568-4 **DUP**		**L2168626-7**						
Aluminum (Al)		8880	11000		mg/kg wwt	25	50	16-OCT-18
Barium (Ba)		106	105		mg/kg wwt	34	50	16-OCT-18
Beryllium (Be)		0.35	0.34		mg/kg wwt	5.7	50	16-OCT-18
Bismuth (Bi)		0.31	0.26		mg/kg wwt	10	50	16-OCT-18
Boron (B)		<5.0	<5.0	RPD-NA	mg/kg wwt	N/A	50	16-OCT-18
Cadmium (Cd)		0.658	0.611		mg/kg wwt	46	50	16-OCT-18
Calcium (Ca)		5230	5860		mg/kg wwt	23	50	16-OCT-18
Cobalt (Co)		20.4	23.7		mg/kg wwt	37	50	16-OCT-18
Copper (Cu)		36.6	42.3		mg/kg wwt	30	50	16-OCT-18
Iron (Fe)		37300	37600		mg/kg wwt	9.2	50	16-OCT-18
Lead (Pb)		20.5	23.1		mg/kg wwt	8.2	50	16-OCT-18
Lithium (Li)		20.9	21.7		mg/kg wwt	26	50	16-OCT-18
Manganese (Mn)		532	547		mg/kg wwt	12	50	16-OCT-18
Molybdenum (Mo)		4.22	3.39		mg/kg wwt	20	50	16-OCT-18
Phosphorus (P)		579	577		mg/kg wwt	17	50	16-OCT-18
Potassium (K)		630	590		mg/kg wwt	7.3	50	16-OCT-18
Selenium (Se)		1.22	1.40		mg/kg wwt	8.7	25	16-OCT-18
Silver (Ag)		0.18	0.16	J	mg/kg wwt	0.17	0.2	16-OCT-18
Sodium (Na)		64	84		mg/kg wwt	18	25	16-OCT-18
Strontium (Sr)		30.2	31.6		mg/kg wwt	11	50	16-OCT-18
Sulfur		<1000	<1000	RPD-NA	mg/kg wwt	N/A	25	16-OCT-18
Thallium (Tl)		0.059	<0.050	RPD-NA	mg/kg wwt	N/A	50	16-OCT-18
Tin (Sn)		<2.0	<2.0	RPD-NA	mg/kg wwt	N/A	25	16-OCT-18
Titanium (Ti)		34.7	26.1		mg/kg wwt	38	50	16-OCT-18
Tungsten		<0.50	<0.50	RPD-NA	mg/kg wwt	N/A	25	16-OCT-18
Uranium (U)		1.10	1.26		mg/kg wwt	3.5	50	16-OCT-18
Vanadium (V)		16.3	16.5		mg/kg wwt	10	25	16-OCT-18
Zinc (Zn)		87.8	87.3		mg/kg wwt	7.3	50	16-OCT-18
Zirconium (Zr)		9.2	7.1		mg/kg wwt	25	50	16-OCT-18
ASBESTOS-BULK-ED	**Bulk**							
Batch **R4249815**								
WG2889556-2 **LCS**								
Asbestos: Actinolite			75-100		%			26-SEP-18
Other Fibres			<1		%			26-SEP-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ASBESTOS-BULK-ED	**Bulk**							
Batch R4249815								
WG2889556-1 MB								
Asbestos			<1		%			26-SEP-18
Other Fibres			<1		%			26-SEP-18
ASBESTOS-PTCT-ED	**Bulk**							
Batch R4249815								
WG2889556-3 DUP		**L2168626-1**						
Mica		Trace <1	Trace <1		%	Trace <1	50	26-SEP-18
WG2889556-2 LCS								
Asbestos: Actinolite			75-100		%			26-SEP-18
Other Fibres			<1		%			26-SEP-18
WG2889556-1 MB								
Asbestos By Point Count			<0.1		%			26-SEP-18
Other Fibres			<1		%			26-SEP-18

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Metals							
Mercury in Soil by CVAAS							
	1	06-SEP-18	05-OCT-18 00:00	28	29	days	EHT
Speciated Metals							
Chromium, Hexavalent (Cr +6)							
	8	17-SEP-18	26-JAN-19 00:00	30	131	days	EHT

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2168626 were received on 21-SEP-18 09:55.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS Environmental
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February 26, 2019

Analytical Report for Service Request No: K1900612

Suzette Chin
ALS Environmental - Canada
9450-17 Ave. NW
Edmonton, AB T6N 1M9

RE: L2168626

Dear Suzette,

Enclosed are the results of the sample(s) submitted to our laboratory January 22, 2019
For your reference, these analyses have been assigned our service request number **K1900612.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Elizabeth Harris
Project Manager

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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: ALS Environmental - Canada
Project: L2168626
Sample Matrix: Soil

Service Request: K1900612
Date Received: 01/22/2019

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt:

One soil sample was received for analysis at ALS Environmental on 01/22/2019. The sample was received in out of temperature as per the Cooler Receipt and Preservation Form, and consistent with the accompanying chain of custody form. The sample was stored in a refrigerator at 4ºC upon receipt at the laboratory.

Metals:

No significant anomalies were noted with this analysis.

Approved by _____ Date 02/26/2019

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Environmental

Subcontract Request Form

K1900612

Subcontract To:

ALS ENVIRONMENTAL - KELSO, WASHINGTON, USA
1317 S. 13TH AVE
KELSO,WA 98626

NOTES: Please reference on final report and invoice: PO# *L2168626*
ALS requires QC data to be provided with your final results.

Please see enclosed 1 **sample(s) in** 0 **Container(s)**

SAMPLE NUMBER	ANALYTICAL REQUIRED	DATE SAMPLED / DUE DATE	Priority Flag
L2168626-8 BH2018-05-02/151'		**9/ 17/ 2018**	
	Special Request - Kelso (SPECIAL REQUEST-KL 14)	3/5/2019	

Subcontract Info Contact: Rani Mangru (780) 413-5242
Analysis and reporting info contact: Suzette Chin
9450 17 AVENUE NW
EDMONTON,AB T6N 1M9
Phone: (780) 413-5242 Email: Suzette.Chin@alsglobal.com

Please email confirmation of receipt to: **Suzette.Chin@alsglobal.com**

Shipped By: _____ Date Shipped: _____
Received By: _____ Date Received: 1/22/19 0945
Verified By: _____ Date Verified: _____
Temperature: _____
Sample Integrity Issues: _____

PC 01

Cooler Receipt and Preservation Form

Client ALS / Canada Service Request KT8 1900612

Received: 1/22/19 Opened: 1/22/19 By: [illegible] Unloaded: 1/22/19 By: [illegible]

1. Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y (N) If yes, how many and where? _____
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID (NA)	Tracking Number NA	Filed
6.4	6.3	–	–	-0.1	370		774271843427	

4. Packing material: *Inserts* (*Baggies*) (*Bubble Wrap*) (*Gel Packs*) *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA Y (N)
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time
AVL		X								

Notes, Discrepancies, & Resolutions: _____

Total Solids

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900612
Project:	L2168626	**Date Collected:**	09/17/18
Sample Matrix:	Soil	**Date Received:**	01/22/19
Analysis Method:	160.3 Modified	**Units:**	Percent
Prep Method:	None	**Basis:**	As Received

Solids, Total

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
L2168626-8	K1900612-001	**93.7**	-	1	02/13/19 15:51	

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900612
Project:	L2168626	**Date Collected:**	09/17/18
Sample Matrix:	Soil	**Date Received:**	01/22/19
Analysis Method:	160.3 Modified	**Units:**	Percent
Prep Method:	None	**Basis:**	Air Dried

Solids, Total

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
L2168626-8	K1900612-001	**98.7**	-	1	02/13/19 14:54	

Metals

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900612
Project:	L2168626	**Date Collected:**	09/17/18
Sample Matrix:	Soil	**Date Received:**	01/22/19
		Date Extracted:	02/14/19
		Date Analyzed:	02/15/19

Bioaccessibility Value
Analyte: Chromium
Units: Percent (%)

Sample Name	Lab Code	Result
L2168626-8	K1900612-001	3.3

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900612
Project:	L2168626	**Date Collected:**	09/17/18
Sample Matrix:	Soil	**Date Received:**	01/22/19 09:45
Sample Name:	L2168626-8	**Basis:**	Dry
Lab Code:	K1900612-001		

Total Metals – IVBA Analysis

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Chromium	6020A	**29.6**	mg/Kg	0.20	5	02/15/19 13:35	02/14/19	

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900612
Project:	L2168626	**Date Collected:**	09/17/18
Sample Matrix:	Soil	**Date Received:**	01/22/19 09:45
Sample Name:	L2168626-8	**Basis:**	Dry
Lab Code:	K1900612-001		

IVBA Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Chromium	6020A	**0.98**	mg/Kg	0.20	5	02/15/19 14:02	02/14/19	

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900612
Project:	L2168626	**Date Collected:**	09/17/18
Sample Matrix:	Soil	**Date Received:**	01/22/19 09:45
Sample Name:	L2168626-8	**Basis:**	Dry
Lab Code:	K1900612-001		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Chromium	6020A	**19.6**	mg/Kg	0.21	5	02/15/19 14:42	02/14/19	

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900612
Project:	L2168626	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	Dry
Lab Code:	KQ1901914-01		

Total Metals – IVBA Analysis

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Chromium	6020A	ND U	mg/Kg	0.20	5	02/15/19 13:06	02/14/19	

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900612
Project:	L2168626	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	Dry
Lab Code:	KQ1901912-01		

IVBA Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Chromium	6020A	ND U	mg/Kg	0.20	5	02/15/19 13:33	02/14/19	

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K1900612
Project:	L2168626	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	Dry
Lab Code:	KQ1901915-01		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Chromium	6020A	ND U	mg/Kg	0.20	5	02/15/19 14:14	02/14/19	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - Canada
Project: L2168626
Sample Matrix: Soil

Service Request: K1900612
Date Analyzed: 02/15/19

Lab Control Sample Summary
Total Metals – IVBA Analysis

Units:mg/Kg
Basis: Dry

Lab Control Sample
KQ1901914-08

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Chromium	6020A	136	144	94	66-123

Client: ALS Environmental - Canada
Project: L2168626
Sample Matrix: Soil

Service Request: K1900612
Date Analyzed: 02/15/19

Lab Control Sample Summary
IVBA Metals

Units:mg/Kg
Basis: Dry

Lab Control Sample
KQ1901912-02

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Chromium	6020A	39.5	40.0	99	80-120

Client: ALS Environmental - Canada
Project: L2168626
Sample Matrix: Soil

Service Request: K1900612
Date Analyzed: 02/15/19

Lab Control Sample Summary
Total Metals

Units:mg/Kg
Basis: Dry

Lab Control Sample
KQ1901915-02

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Chromium	6020A	124	144	86	66-123

Prep Summary Report

Client: ALS Environmental - Canada **Service Request:** K1900612
Project: L2168626
Sample Matrix: Soil

Total Metals – IVBA Analysis

Prep Method: EPA 3050B **Extraction Lot:** 331390
Analytical Method: 6020A **Extraction Date:** 02/14/19 07:20

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
L2168626-8	K1900612-001	9/17/18	1/22/19	1.0000 g	100 mL	
Method Blank	KQ1901914-01MB	NA	NA	1.0000 g	100 mL	
Duplicate	KQ1901914-04DUP	NA	NA	1.0000 g	100 mL	
Matrix Spike	KQ1901914-05MS	NA	NA	1.0000 g	100 mL	
Lab Control Sample	KQ1901914-08LCS	NA	NA	1.0100 g	100 mL	

Prep Summary Report

Client: ALS Environmental - Canada **Service Request:** K1900612
Project: L2168626
Sample Matrix: Soil

IVBA Metals

Prep Method: EPA 9200.2-86 **Extraction Lot:** 331388
Analytical Method: 6020A **Extraction Date:** 02/14/19 12:05

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
L2168626-8	K1900612-001	9/17/18	1/22/19	1.0054 g	100 mL	
Method Blank	KQ1901912-01MB	NA	NA	1.0000 g	100 mL	
Lab Control Sample	KQ1901912-02LCS	NA	NA	1.0000 g	100 mL	
Duplicate	KQ1901912-04DUP	NA	NA	1.0187 g	100 mL	
Matrix Spike	KQ1901912-05MS	NA	NA	1.0180 g	100 mL	

Prep Summary Report

Client: ALS Environmental - Canada **Service Request:** K1900612
Project: L2168626
Sample Matrix: Soil

Metals

Prep Method: EPA 3050B **Extraction Lot:** 331391
Analytical Method: 6020A **Extraction Date:** 02/14/19 07:20

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
L2168626-8	K1900612-001	9/17/18	1/22/19	1.00 g	100 mL	
Method Blank	KQ1901915-01MB	NA	NA	1.00 g	100 mL	
Lab Control Sample	KQ1901915-02LCS	NA	NA	1.00 g	100 mL	
Duplicate	KQ1901915-03DUP	NA	NA	1.0200 g	100 mL	
Matrix Spike	KQ1901915-04MS	NA	NA	1.0400 g	100 mL	

Client: ALS Environmental - Canada **Service Request:** K1900612
Project: L2168626

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Concentration Units: ug/L

Sample ID / Analyte	Method	Analysis Batch:	Result	True Value	% Rec	% Rec. Limits
ICV 02/15/19 12:32						
Chromium	6020A	625393	9.79	10.0	98	90-110
CCV 02/15/19 12:34						
Chromium	6020A	625393	24.5	25.0	98	90-110
CCV 02/15/19 13:24						
Chromium	6020A	625393	24.8	25.0	99	90-110
CCV 02/15/19 13:50						
Chromium	6020A	625393	24.4	25.0	98	90-110
CCV 02/15/19 14:05						
Chromium	6020A	625393	24.9	25.0	99	90-110
CCV 02/15/19 14:36						
Chromium	6020A	625393	24.9	25.0	99	90-110
CCV 02/15/19 14:45						
Chromium	6020A	625393	25.0	25.0	100	90-110
ICV 02/15/19 13:18						
Chromium	6020A	625408	10.2	10.0	102	90-110
CCV 02/15/19 13:20						
Chromium	6020A	625408	25.4	25.0	102	90-110
CCV 02/15/19 13:52						
Chromium	6020A	625408	24.9	25.0	100	90-110
CCV 02/15/19 14:15						
Chromium	6020A	625408	24.9	25.0	100	90-110

Client: ALS Environmental - Canada **Service Request:** K1900612
Project: L2168626

INITIAL AND CONTINUING CALIBRATION BLANKS

Concentration Units: ug/L

Sample ID / Analyte	Method	Analysis Batch:	Result	C
ICB 02/15/19 12:36				
Chromium	6020A	625393	0.40	U
CCB 02/15/19 12:38				
Chromium	6020A	625393	0.40	U
CCB 02/15/19 13:26				
Chromium	6020A	625393	0.40	U
CCB 02/15/19 13:52				
Chromium	6020A	625393	0.40	U
CCB 02/15/19 14:07				
Chromium	6020A	625393	0.40	U
CCB 02/15/19 14:38				
Chromium	6020A	625393	0.40	U
CCB 02/15/19 14:47				
Chromium	6020A	625393	0.40	U
ICB 02/15/19 13:22				
Chromium	6020A	625408	0.40	U
CCB 02/15/19 13:24				
Chromium	6020A	625408	0.40	U
CCB 02/15/19 13:54				
Chromium	6020A	625408	0.40	U
CCB 02/15/19 14:17				
Chromium	6020A	625408	0.40	U

Client: ALS Environmental - Canada **Service Request:** K1900612
Project: L2168626

LOW LEVEL INITIAL AND LOW LEVEL CONTINUING CALIBRATION VERIFICATION

Concentration Units: ug/L

Sample ID / Analyte	Method	Analysis Batch:	Result	True Value	% Rec	% Rec. Limits	Analysis Date
LLICVS							
Chromium	6020A	625393	0.43	0.4	109	70-130	02/15/19 12:40
LLCCVS							
Chromium	6020A	625393	0.42	0.4	106	70-130	02/15/19 14:12
LLCCVS							
Chromium	6020A	625393	0.43	0.4	107	70-130	02/15/19 14:49
LLICVS							
Chromium	6020A	625408	0.45	0.4	112	70-130	02/15/19 13:26
LLCCVS							
Chromium	6020A	625408	0.42	0.4	105	70-130	02/15/19 14:19

Client: ALS Environmental - Canada **Service Request:** K1900612
Project: L2168626

ICP INTERFERENCE CHECK SAMPLE

Sample ID ICSA **Concentration Units:** ug/L

Analyte	Method	Analysis Batch:	Result	True Value	% Rec	% Rec. Limits	Analysis Date
Chromium	6020A	625393	1.21	-	-	-	02/15/19 12:43

Client: ALS Environmental - Canada **Service Request:** K1900612
Project: L2168626

ICP INTERFERENCE CHECK SAMPLE

Sample ID ICSAB **Concentration Units:** ug/L

Analyte	Method	Analysis Batch:	Result	True Value	% Rec	% Rec. Limits	Analysis Date
Chromium	6020A	625393	49.1	50.0	98	80-120	02/15/19 12:45

Client: ALS Environmental - Canada **Service Request:** K1900612
Project: L2168626

ICP INTERFERENCE CHECK SAMPLE

Sample ID ICSA **Concentration Units:** ug/L

Analyte	Method	Analysis Batch:	Result	True Value	% Rec	% Rec. Limits	Analysis Date
Chromium	6020A	625408	1.35	-	-	-	02/15/19 13:28

Client: ALS Environmental - Canada **Service Request:** K1900612
Project: L2168626

ICP INTERFERENCE CHECK SAMPLE

Sample ID ICSAB **Concentration Units:** ug/L

Analyte	Method	Analysis Batch:	Result	True Value	% Rec	% Rec. Limits	Analysis Date
Chromium	6020A	625408	51.6	50.0	103	80-120	02/15/19 13:29

Client: ALS Environmental - Canada **Service Request:** K1900612
Project: L2168626

POST SPIKE SAMPLE RECOVERY

Concentration Units: ug/L

Sample ID / Analyte	Method	Analysis Batch:	Initial Sample Result	Post Spike Result	True Value	% Rec	% Rec. Limits	Analysis Date
K1900611-001A								
Chromium	6020A	625393	42.0	90.7	50.0	97	80-120	02/15/19 13:17
Chromium	6020A	625393	30.8	81.1	50.0	101	80-120	02/15/19 14:25
K1900611-001A								
Chromium	6020A	625408	2.4	52.6	50.0	101	80-120	02/15/19 13:47

Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: ALS Environmental - Canada **Service Request:** K1900612
Project: L2168626

ICP SERIAL DILUTIONS

Concentration Units: ug/L

Sample ID / Analyte	Method	Analysis Batch:	Initial Sample Result	Serial Dillution Result	% Diff	% Diff. Limit	Analysis Date
K1900611-001SDL							
Chromium	6020A	625393	210	211	1	10	02/15/19 13:15
Chromium	6020A	625393	154	158	3	10	02/15/19 14:23
K1900611-001SDL							
Chromium	6020A	625408	12	12	3	10	02/15/19 13:45

Client: ALS Environmental - Canada **Service Request:** K1900612
Project: L2168626/

Detection Limits

Instrument: K-ICP-MS-04 **Matrix:** Soil

Analyte	Mass	Units	MRL	Method
Chromium	52	ug/L	0.4	6020A

Client: ALS Environmental - Canada **Service Request:** K1900612
Project: L2168626/

ICP Linear Range (Quarterly)

Instrument: K-ICP-MS-04

Analyte	Concentration (ug/L)	Method
Chromium 52	3000	6020A

Client: ALS Environmental - Canada **Service Request:** K1900612
Project: L2168626/

ICP Linear Range (Quarterly)

Instrument: K-ICP-MS-05

Analyte	Concentration (ug/L)	Method
Chromium 52	3000	6020A

Client: ALS Environmental - Canada **Service Request:** K1900612
Project: L2168626/

Analysis Run Log

Instrument ID: **K-ICP-MS-05** **Analytical BatchID:** **625393**

Sample	Dilution Factor	Date/Time	Cr
ZZZZZZ	1	02/15/19 12:27	
ZZZZZZ	1	02/15/19 12:30	
ICV	1	02/15/19 12:32	X
CCV	1	02/15/19 12:34	X
ICB	1	02/15/19 12:36	X
CCB	1	02/15/19 12:38	X
LLICVS	1	02/15/19 12:40	X
ICSA	1	02/15/19 12:43	X
ICSAB	1	02/15/19 12:45	X
KQ1901914-01MB	5	02/15/19 13:06	X
KQ1901914-08LCS1	20	02/15/19 13:08	X
ZZZZZZ	5	02/15/19 13:11	
K1900611-001DUP	5	02/15/19 13:13	X
K1900611-001SDL	25	02/15/19 13:15	X
K1900611-001PS	5	02/15/19 13:17	X
K1900611-001MS	5	02/15/19 13:19	X
ZZZZZZ	5	02/15/19 13:22	
CCV	1	02/15/19 13:24	X
CCB	1	02/15/19 13:26	X
ZZZZZZ	5	02/15/19 13:28	
ZZZZZZ	5	02/15/19 13:30	
ZZZZZZ	5	02/15/19 13:32	
K1900612-001	5	02/15/19 13:35	X
ZZZZZZ	5	02/15/19 13:37	
ZZZZZZ	5	02/15/19 13:39	
ZZZZZZ	25	02/15/19 13:41	
ZZZZZZ	5	02/15/19 13:43	
ZZZZZZ	5	02/15/19 13:46	
ZZZZZZ	5	02/15/19 13:48	
CCV	1	02/15/19 13:50	X
CCB	1	02/15/19 13:52	X
ZZZZZZ	5	02/15/19 13:54	
ZZZZZZ	5	02/15/19 13:56	
ZZZZZZ	5	02/15/19 13:59	
ZZZZZZ	5	02/15/19 14:01	
ZZZZZZ	5	02/15/19 14:03	
CCV	1	02/15/19 14:05	X

Client: ALS Environmental - Canada **Service Request:** K1900612
Project: L2168626/

Analysis Run Log

Instrument ID: **K-ICP-MS-05** **Analytical BatchID:** **625393**

Sample	Dilution Factor	Date/Time	Cr
CCB	1	02/15/19 14:07	X
ZZZZZZ	1	02/15/19 14:10	
LLCCVS	1	02/15/19 14:12	X
KQ1901915-01MB	5	02/15/19 14:14	X
KQ1901915-02LCS1	20	02/15/19 14:16	X
ZZZZZZ	5	02/15/19 14:18	
K1900611-001DUP	5	02/15/19 14:20	X
K1900611-001SDL	25	02/15/19 14:23	X
K1900611-001PS	5	02/15/19 14:25	X
K1900611-001MS	5	02/15/19 14:27	X
ZZZZZZ	5	02/15/19 14:29	
ZZZZZZ	5	02/15/19 14:31	
ZZZZZZ	5	02/15/19 14:34	
CCV	1	02/15/19 14:36	X
CCB	1	02/15/19 14:38	X
ZZZZZZ	5	02/15/19 14:40	
K1900612-001	5	02/15/19 14:42	X
CCV	1	02/15/19 14:45	X
CCB	1	02/15/19 14:47	X
LLCCVS	1	02/15/19 14:49	X

Client: ALS Environmental - Canada **Service Request:** K1900612
Project: L2168626/

Analysis Run Log

Instrument ID: **K-ICP-MS-04** **Analytical BatchID:** **625408**

Sample	Dilution Factor	Date/Time	Cr
ZZZZZZ	1	02/15/19 13:14	
ZZZZZZ	1	02/15/19 13:16	
ICV	1	02/15/19 13:18	X
CCV	1	02/15/19 13:20	X
ICB	1	02/15/19 13:22	X
CCB	1	02/15/19 13:24	X
LLICVS	1	02/15/19 13:26	X
ICSA	1	02/15/19 13:28	X
ICSAB	1	02/15/19 13:29	X
ZZZZZZ	1	02/15/19 13:31	
KQ1901912-01MB	5	02/15/19 13:33	X
KQ1901912-02LCS	20	02/15/19 13:35	X
ZZZZZZ	5	02/15/19 13:37	
ZZZZZZ	20	02/15/19 13:39	
ZZZZZZ	5	02/15/19 13:41	
K1900611-001DUP	5	02/15/19 13:43	X
K1900611-001SDL	25	02/15/19 13:45	X
K1900611-001PS	5	02/15/19 13:47	X
K1900611-001MS	5	02/15/19 13:48	X
ZZZZZZ	5	02/15/19 13:50	
CCV	1	02/15/19 13:52	X
CCB	1	02/15/19 13:54	X
ZZZZZZ	5	02/15/19 13:56	
ZZZZZZ	5	02/15/19 13:58	
ZZZZZZ	5	02/15/19 14:00	
K1900612-001	5	02/15/19 14:02	X
ZZZZZZ	5	02/15/19 14:04	
ZZZZZZ	5	02/15/19 14:05	
ZZZZZZ	25	02/15/19 14:07	
ZZZZZZ	5	02/15/19 14:09	
ZZZZZZ	5	02/15/19 14:11	
ZZZZZZ	5	02/15/19 14:13	
CCV	1	02/15/19 14:15	X
CCB	1	02/15/19 14:17	X
LLCCVS	1	02/15/19 14:19	X
ZZZZZZ	5	02/15/19 14:21	
ZZZZZZ	5	02/15/19 14:23	

Client: ALS Environmental - Canada **Service Request:** K1900612
Project: L2168626/

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Instrument ID: **K-ICP-MS-04** **Analytical BatchID:** **625408**

Sample	Date/Time	GeKED3	LuKED2
ZZZZZZ	02/15/19 13:14		
ZZZZZZ	02/15/19 13:16		
ICV	02/15/19 13:18	102	104
CCV	02/15/19 13:20	96	97
ICB	02/15/19 13:22	99	102
CCB	02/15/19 13:24	102	101
LLICVS	02/15/19 13:26	106	109
ICSA	02/15/19 13:28	87	100
ICSAB	02/15/19 13:29	90	97
ZZZZZZ	02/15/19 13:31		
KQ1901912-01MB	02/15/19 13:33	102	108
KQ1901912-02LCS	02/15/19 13:35	101	104
KQ1901912-03SRM	02/15/19 13:37		
KQ1901912-03SRM	02/15/19 13:39		
ZZZZZZ	02/15/19 13:41		
K1900611-001DUP	02/15/19 13:43	94	106
K1900611-001SDL	02/15/19 13:45	97	108
K1900611-001PS	02/15/19 13:47	92	105
K1900611-001MS	02/15/19 13:48	92	105
ZZZZZZ	02/15/19 13:50		
CCV	02/15/19 13:52	102	105
CCB	02/15/19 13:54	101	108
ZZZZZZ	02/15/19 13:56		
ZZZZZZ	02/15/19 13:58		
ZZZZZZ	02/15/19 14:00		
K1900612-001	02/15/19 14:02	97	105
ZZZZZZ	02/15/19 14:04		
ZZZZZZ	02/15/19 14:05		
ZZZZZZ	02/15/19 14:07		
ZZZZZZ	02/15/19 14:09		
ZZZZZZ	02/15/19 14:11		
ZZZZZZ	02/15/19 14:13		
CCV	02/15/19 14:15	100	106
CCB	02/15/19 14:17	108	111
LLCCVS	02/15/19 14:19	98	107
ZZZZZZ	02/15/19 14:21		
ZZZZZZ	02/15/19 14:23		

Client: ALS Environmental - Canada **Service Request:** K1900612
Project: L2168626/

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Instrument ID: **K-ICP-MS-05** **Analytical BatchID:** **625393**

Sample	Date/Time	Ge72He	Lu175He
ZZZZZZ	02/15/19 12:27		
ZZZZZZ	02/15/19 12:30		
ICV	02/15/19 12:32	100	101
CCV	02/15/19 12:34	101	102
ICB	02/15/19 12:36	102	101
CCB	02/15/19 12:38	102	102
LLICVS	02/15/19 12:40	102	102
ICSA	02/15/19 12:43	97	97
ICSAB	02/15/19 12:45	95	98
KQ1901914-01MB	02/15/19 13:06	106	107
KQ1901914-08LCS1	02/15/19 13:08	104	103
ZZZZZZ	02/15/19 13:11		
K1900611-001DUP	02/15/19 13:13	96	96
K1900611-001SDL	02/15/19 13:15	100	101
K1900611-001PS	02/15/19 13:17	99	102
K1900611-001MS	02/15/19 13:19	97	99
ZZZZZZ	02/15/19 13:22		
CCV	02/15/19 13:24	104	105
CCB	02/15/19 13:26	103	103
ZZZZZZ	02/15/19 13:28		
ZZZZZZ	02/15/19 13:30		
ZZZZZZ	02/15/19 13:32		
K1900612-001	02/15/19 13:35	109	108
ZZZZZZ	02/15/19 13:37		
ZZZZZZ	02/15/19 13:39		
ZZZZZZ	02/15/19 13:41		
ZZZZZZ	02/15/19 13:43		
ZZZZZZ	02/15/19 13:46		
ZZZZZZ	02/15/19 13:48		
CCV	02/15/19 13:50	106	105
CCB	02/15/19 13:52	108	109
ZZZZZZ	02/15/19 13:54		
ZZZZZZ	02/15/19 13:56		
ZZZZZZ	02/15/19 13:59		
ZZZZZZ	02/15/19 14:01		
ZZZZZZ	02/15/19 14:03		
CCV	02/15/19 14:05	102	103

Client: ALS Environmental - Canada **Service Request:** K1900612
Project: L2168626/

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Instrument ID: **K-ICP-MS-05** **Analytical BatchID:** **625393**

Sample	Date/Time	Ge72He	Lu175He
CCB	02/15/19 14:07	105	105
ZZZZZZ	02/15/19 14:10		
LLCCVS	02/15/19 14:12	106	106
KQ1901915-01MB	02/15/19 14:14	109	106
KQ1901915-02LCS1	02/15/19 14:16	107	105
ZZZZZZ	02/15/19 14:18		
K1900611-001DUP	02/15/19 14:20	108	107
K1900611-001SDL	02/15/19 14:23	103	103
K1900611-001PS	02/15/19 14:25	100	103
K1900611-001MS	02/15/19 14:27	103	105
ZZZZZZ	02/15/19 14:29		
ZZZZZZ	02/15/19 14:31		
ZZZZZZ	02/15/19 14:34		
CCV	02/15/19 14:36	104	104
CCB	02/15/19 14:38	102	102
ZZZZZZ	02/15/19 14:40		
K1900612-001	02/15/19 14:42	112	109
CCV	02/15/19 14:45	112	109
CCB	02/15/19 14:47	110	107
LLCCVS	02/15/19 14:49	110	107

Raw Data

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Total Solids

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Benchsheet

Service Request #:	**K1901319, KQ1901917, K1900611, K1900612**	**Run #:**	**625136**
Test:	**TS**	**Balance ID:**	**K-BALANCE-49**
Method:	**160.3 Modified**		

Matrix	Lab Code	Tare (g)	Wet Wt. (g)	Tare + Dry Wt. (g)	Dry Weight (g)	% Total Solids	RPD
Sediment	K1901319-001	1.286	24.647	16.080	14.8	60.0	
Sediment	K1901319-001DUP	1.293	22.556	14.795	13.5	59.9	<1
Sediment	K1901319-002	1.292	19.276	11.623	10.3	53.6	
Sediment	K1901319-003	1.300	13.023	9.441	8.14	62.5	
Soil	K1900611-001	1.289	19.255	18.826	17.5	91.1	
Soil	K1900611-002	1.297	15.172	15.523	14.2	93.8	
Soil	K1900611-003	1.286	17.934	17.656	16.4	91.3	
Soil	K1900611-004	1.310	32.292	30.276	29.0	89.7	
Soil	K1900611-005	1.302	26.839	24.966	23.7	88.2	
Soil	K1900612-001	1.288	24.942	24.656	23.4	93.7	

	Oven ID	Temp In	Temp Out	Date In	Time In	Date Out	Time Out	Thermometer ID
Oven1	**K-Oven-07**	**105**	**105**	**2/13/2019**	**15:51**	**2/14/2019**	**08:00**	

	Cal EQID	Cal Start Value	Cal End Value	Start Date	Start Time	End Date	End Time
Calibration1	**K-BALANCE-49**	**1.000, 99.999**	**0.999, 99.999**	**1/13/2019**	**15:03**	**2/13/2019**	**15:51**
Calibration2	**K-BALANCE-49**	**1.000, 100.000**	**1.001, 100.000**	**2/14/2019**	**08:52**	**2/14/2019**	**08:54**

Comments: TS SN: 42868 Reviewed by SC 2/14/19

Metals

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS, Inc.

Service Request Number(s)	K1900611, K1900612

37°C OVEN DRIED SOLIDS

Laboratory ID	Wet Weight (g)	Tare Weight (g)	Tare+Dry Weight (g)	Dry Weight (g)	% Solids
K1900611-001	203.34	302.62	488.10	185.48	91.2%
K1900611-001DUP	209.81	304.48	496.97	192.49	91.7%
K1900611-002	202.40	303.11	494.66	191.55	94.6%
K1900611-003	203.93	304.00	493.73	189.73	93.0%
K1900611-004	202.00	304.28	486.02	181.74	90.0%
K1900611-005	200.65	302.70	485.20	182.50	91.0%
K1900612-001	207.66	303.16	499.26	196.10	94.4%
				IW 1-28-19	

Comments: In 37° oven 1-24-19 1510. Out 37°C oven 1-28-19 1330.

Balance ID: ~~45~~ 52 IW 1-24-19 Date Checked: 1-24-19, 1-28-19 RPD = <1%

Analyst:	Date: 1-24-19
Reviewed:	Date: 1/28/19

ALS Inc.

Service Request Number(s):	K1900611, 0612

Sieve Data

Service Request #			<150µm			
K1900611-1			Yes			
2						
3						
4						
5						
K1900612-1						
			CCL 1/28			

All weights are in gram units.	
Balance ID:	Date Balance Checked:
Analyst: Caly Lalh	Date: 1/28/19
Reviewed:	Date: 1/31/19

Preparation Information Benchsheet

Prep Run#: 331388
Team: Metals/KLINN
Number of Copies to make: 3

Prep WorkFlow: MetDigIVBA
Prep Method: EPA 9200.2-86

Status: Prepped
Prep Date/Time: 2/14/19 12:05 PM

#	Lab Code	Client ID	B#	Method /Test	pH	Matrix	Amt. Ext.	Final Vol	Sample Description
1	KQ1901912-01	MB		6020A/IVBA Extract		Solid	1.0000g	100.00mL	
2	KQ1901912-02	LCS		6020A/IVBA Extract		Solid	1.0000g	100.00mL	
3	KQ1901912-03	SRM		6020A/IVBA Extract		Solid	1.0164g	100.00mL	
4	K1900611-001	L2160851-4	.03	6020A/IVBA Extract		Soil	1.0084g	100.00mL	
5	KQ1901912-04	K1900611-001 DUP	.03	6020A/IVBA Extract		Solid	1.0187g	100.00mL	
6	KQ1901912-05	K1900611-001 MS	.03	6020A/IVBA Extract		Solid	1.0180g	100.00mL	
7	K1900611-002	L2160851-6	.03	6020A/IVBA Extract		Soil	1.0058g	100.00mL	
8	K1900611-003	L2160851-8	.03	6020A/IVBA Extract		Soil	1.0023g	100.00mL	
9	K1900611-004	L2160851-9	.03	6020A/IVBA Extract		Soil	1.0029g	100.00mL	
10	K1900611-005	L2160851-32	.03	6020A/IVBA Extract		Soil	1.0035g	100.00mL	
11	K1900612-001	L2168626-8	.03	6020A/IVBA Extract		Soil	1.0054g	100.00mL	
12	K1900942-001	3041-SO-325	.03	6020A/IVBA Extract		Soil	1.0120g	100.00mL	
13	KQ1901912-06	K1900942-001 DUP	.03	6020A/IVBA Extract		Solid	1.0120g	100.00mL	
14	KQ1901912-07	K1900942-001 MS	.03	6020A/IVBA Extract		Solid	1.0038g	100.00mL	
15	K1900942-002	3041-SO-326	.03	6020A/IVBA Extract		Soil	1.0038g	100.00mL	
16	K1900942-003	3041-SO-327	.03	6020A/IVBA Extract		Soil	1.0080g	100.00mL	
17	K1900942-004	3041-SO-328	.03	6020A/IVBA Extract		Soil	1.0221g	100.00mL	
18	K1900942-005	3041-SO-329	.03	6020A/IVBA Extract		Soil	1.0250g	100.00mL	
19	K1900942-006	3041-SO-330	.03	6020A/IVBA Extract		Soil	1.0164g	100.00mL	
20	K1900942-007	3041-SO-331	.03	6020A/IVBA Extract		Soil	1.0040g	100.00mL	

Spiking Solutions

Name: K-MET Montana II Soil 2711a | Inventory ID 185868 | Logbook Ref: Montana II Soil2711a | Expires On: 01/01/2019

KQ1901912-03 1.02g

Name: K-MET SS3 | Inventory ID 194429 | Logbook Ref: MET3-60-B | Expires On: 02/27/2019

KQ1901912-02 1.00mL KQ1901912-05 1.00mL KQ1901912-07 1.00mL

Name: K-MET SS4 | Inventory ID 194622 | Logbook Ref: MET3-61-F | Expires On: 02/27/2019

KQ1901912-02 1.00mL KQ1901912-05 1.00mL KQ1901912-07 1.00mL

Name: K-MET SS1 | Inventory ID 196871 | Logbook Ref: MET3-68-C | Expires On: 06/19/2019

Preparation Information Benchsheet

Prep Run#: 331388
Team: Metals/KLINN
KQ1901912-02 2.00mL KQ1901912-05 2.00mL KQ1901912-07 2.00mL

Prep WorkFlow: MetDigIVBA
Prep Method: EPA 9200.2-86

Status: Prepped
Prep Date/Time: 2/14/19 12:05 PM

Preparation Materials

K-MET 50ml Centrifuge Tube P7265113 (195433)

Preparation Steps

Step:	Weigh	Step:	Extraction
Started:	2/14/19 12:05	Started:	2/14/19 12:05
Finished:	2/14/19 13:05	Finished:	2/14/19 13:05
By:	ISTENERSEN	By:	ISTENERSEN
Comments		Comments	

Preparation Equipment

K-Balance-18 Weigh Date Checked 2/14/19 Days

Comments: _____

Reviewed By: BC Date: 2/19/19

In Vitro Extraction

Sample ID	Sample Preparation		Extraction								Filtration	
	Weight (g)	Volume (mL)	Start Time	End Time	Elapsed Time (min)	Starting pH	Ending pH	ΔpH	Starting Temp. (°C)	Ending Temp. (°C)	Time	Time Elapsed from Extraction (min)
Acceptance Range	1g	100	---	---	60	---	---	max = 0.5	35-39	35-39		max = 90
MB		100	1205	1305	60	1.53	1.54	0.01	36	37	1320	75
LCS		100					1.35	0.18				
SRM	~~1.0001~~ 1.0164	100					1.60	0.07				
K1900611-1	1.0084	100					1.64	0.11				
1DUP	1.0187	100					1.63	0.10				
1MS	1.0180	100					1.49	0.09				
2	1.0058	100					1.88	0.35				
3	1.0023	100					1.62	0.09				
4	1.0029	100					1.58	0.05				
5	1.0035	100					1.56	0.03				
K1900612-1	1.0054	100				1.64	~~1.55~~	~~0.02~~ 0.11				
K1900942-1DUP	1.0120	100					1.54	0.01	FS 2/14/19			
1MS	1.0038	100					1.36	0.17				
2	1.0038	100					1.55	0.02				
3	1.0080	~~1.00~~ 100	FS 2/14/19				1.57	0.04				
4	1.0221	100					1.58	0.05				
5	1.0250	100					1.55	0.02				
6	1.0164	100					1.56	0.03				
7	1.0040	100					1.61	0.08				
-1	1.0120	100	1205	1305	60	1.53	~~1.64~~ 1.55	~~0.11~~ 0.02	36 FS 2/14/19	37 MK 2-14-19	1320	75

ID: 185868

7mL SS4: 194622

SRM = NIST 2711a, Montana Soil Spike Solution = 2mL SS1: 196871 7mL SS3: 194429 Tumbler Rotation Speed: 29.6 RPM

Analyst: Isabel Stenger Date: 2/14/19 Prep Run: 331388

Reviewer: Date: 2/19/19 Extraction Solution: Glycine : RE1-50-B

50mL Tubes : P7265113

Preparation Information Benchsheet

Prep Run#: 331388
Team: Metals/KLINN
Number of Copies to make: 3

Prep WorkFlow: MetDigIVBA
Prep Method: EPA 9200.2-86

Status: Draft
Prep Date/Time: 2/13/19 02:12 PM

#	Lab Code	Client ID	B#	√	Method /Test	Matrix	Amt. Ext.	pH	Int. Vol	Final Vol	Surr Amt	Spike Amt
1	**KQ1901912-01**	MB		—	6020A / IVBA Extract	Solid						
2	**KQ1901912-02**	LCS		—	6020A / IVBA Extract	Solid						
3	**KQ1901912-03**	SRM		—	6020A / IVBA Extract	Solid	1.0164					
4	**K1900611-001**	L2160851-4	.03	√	6020A / IVBA Extract	Soil	1.0084					
5	**KQ1901912-04**	K1900611-001 DUP	.03	√	6020A / IVBA Extract	Solid	1.0187					
6	**KQ1901912-05**	K1900611-001 MS	.03	√	6020A / IVBA Extract	Solid	1.0180					
7	**K1900611-002**	L2160851-6	.03	√	6020A / IVBA Extract	Soil	1.0058					
8	**K1900611-003**	L2160851-8	.03	√	6020A / IVBA Extract	Soil	1.0023					
9	**K1900611-004**	L2160851-9	.03	√	6020A / IVBA Extract	Soil	1.0029					
10	**K1900611-005**	L2160851-32	.03	√	6020A / IVBA Extract	Soil	1.0035					
11	**K1900612-001**	L2168626-8	.03	√	6020A / IVBA Extract	Soil	1.0054					
12	**K1900942-001**	3041-SO-325	.03	√	6020A / IVBA Extract	Soil	1.0120					
13	**KQ1901912-06**	K1900942-001 DUP	.03	√	6020A / IVBA Extract	Solid	1.0120					
14	**KQ1901912-07**	K1900942-001 MS	.03	√	6020A / IVBA Extract	Solid	1.0038					
15	**K1900942-002**	3041-SO-326	.03	√	6020A / IVBA Extract	Soil	1.0038					
16	**K1900942-003**	3041-SO-327	.03	√	6020A / IVBA Extract	Soil	1.0080					
17	**K1900942-004**	3041-SO-328	.03	√	6020A / IVBA Extract	Soil	1.0221					
18	**K1900942-005**	3041-SO-329	.03	√	6020A / IVBA Extract	Soil	1.0250					
19	**K1900942-006**	3041-SO-330	.03	√	6020A / IVBA Extract	Soil	1.0164					
20	**K1900942-007**	3041-SO-331	.03	√	6020A / IVBA Extract	Soil	1.0040					

Comments: K-Bal. 18 ✓ 2/14/19

Surrogate ID:

Spike ID:

Witnessed By:

Analyst: Isaiah Stevensen

Assisted By:

METALS SPIKING SOLUTIONS CONCENTRATIONS FORM

Solution Name	Element	mLs of 1000ppm Solution	Final Volume	Solution Conc. mg/L	Enter mls Added
K-MET SS1 *** Add after HNO3 and before ALS-89 when making the solution	HNO3	50.0	1000ml	-	
	Al	100*	1000ml	200	
	Ag	100*	1000ml	5	
	Ba	100*	1000ml	100	
	Be	100*	1000ml	5	
	Cd	100*	1000ml	5	
	Co	100*	1000ml	50	
	Cr	100*	1000ml	20	
	Cu	100*	1000ml	25	
	Fe	100*	1000ml	100	
	Pb	100*	1000ml	50	
	Mn	100*	1000ml	50	
	Ni	100*	1000ml	50	
	Sb***	50.0	1000ml	50	
	V	100*	1000ml	50	
	Zn	100*	1000ml	50	
K-MET SS2	HNO3	25.0	500ml	-	
	As	2.00	500ml	4	
	Cd	2.00	500ml	4	
	Pb	2.00	500ml	4	
	Se	2.00	500ml	4	
	Tl	2.00	500ml	4	
	Cu	2.00	500ml	4	
K-MET SS3	HNO3	25.0	500ml	-	
	As	50.0	500ml	100	
	Se	50.0	500ml	100	
	Tl	10.0	500ml	20	
	Hg	6.00	500ml	12	
K-MET SS4	HNO3	25.0	500ml	-	
	B	25.0	500ml	50	
	Mo	50.0	500ml	100	
	U	10.0	500ml	20	
K-MET SS5	HNO3	10.0	200ml	-	
	K**	20.0	200ml	1000	
	Na**	20.0	200ml	1000	
	Mg**	20.0	200ml	1000	
	Ca**	20.0	200ml	1000	

K-MET Hydride	HNO3	1.0	100ml	-	
	As, Se	0.25	100ml	2.5	
K-MET QCP-CICV-1	Ca, Mg, Na, K	no dilution	-	2500	
	Al, Ba	no dilution	-	1000	
	Fe	no dilution	-	500	
	Co, Mn, Ni, V, Zn	no dilution	-	250	
	Cu, Ag	no dilution	-	125	
	Cr	no dilution	-	100	
	Be	no dilution	-	25	
K-MET QCP-CICV-3	As, Pb, Se, Tl	no dilution	-	500	
	Cd	no dilution	-	250	

* Denotes volume of mixed stock standard.
** Denotes 10,000 ppm individual stock standards.

Standard	mls of standard	ppm	Logbook #	Exp. Date

Preparation Information Benchsheet

Prep Run#: 331391
Team: Metals/ISTENERSEN
Number of Copies to make: 2

Prep WorkFlow: MetDigSICP
Prep Method: EPA 3050B

Status: Prepped
Prep Date/Time: 2/14/19 07:20 AM

#	Lab Code	Client ID	B#	Method /Test	pH	Matrix	Amt. Ext.	Final Vol	Sample Description
1	KQ1901915-01	MB		6020A/Metals T		Solid	1.00g	100.00mL	10%HNO3, 10%HCl
2	KQ1901915-02	LCS1		6020A/Metals T		Solid	1.00g	100.00mL	10%HNO3, 10%HCl
3	K1900611-001	L2160851-4	.01	6020A/Metals T		Soil	1.0100g	100.00mL	10%HNO3, 10%HCl
4	KQ1901915-03	K1900611-001 DUP	.01	6020A/Metals T		Solid	1.0200g	100.00mL	10%HNO3, 10%HCl
5	KQ1901915-04	K1900611-001 MS	.01	6020A/Metals T		Solid	1.0400g	100.00mL	10%HNO3, 10%HCl
6	K1900611-002	L2160851-6	.01	6020A/Metals T		Soil	1.00g	100.00mL	10%HNO3, 10%HCl
7	K1900611-003	L2160851-8	.01	6020A/Metals T		Soil	1.00g	100.00mL	10%HNO3, 10%HCl
8	K1900611-004	L2160851-9	.01	6020A/Metals T		Soil	1.2200g	100.00mL	10%HNO3, 10%HCl
9	K1900611-005	L2160851-32	.01	6020A/Metals T		Soil	1.1500g	100.00mL	10%HNO3, 10%HCl
10	K1900612-001	L2168626-8	.01	6020A/Metals T		Soil	1.00g	100.00mL	10%HNO3, 10%HCl

Spiking Solutions

Name: K-MET SOIL CRM Inventory ID 190199 Logbook Ref: D099-540 Expires On: 05/31/2020

KQ1901915-02 1.00g

Name: K-MET SS3 Inventory ID 194429 Logbook Ref: MET3-60-B Expires On: 02/27/2019

KQ1901915-04 1.00mL

Name: K-MET SS4 Inventory ID 194622 Logbook Ref: MET3-61-F Expires On: 02/27/2019

KQ1901915-04 1.00mL

Name: K-MET SS5 Inventory ID 195639 Logbook Ref: MET3-66- A Expires On: 04/30/2019

KQ1901915-04 1.00mL

Name: K-MET SS1 Inventory ID 196871 Logbook Ref: MET3-68-C Expires On: 06/19/2019

KQ1901915-04 2.00mL

Preparation Materials

K-MET 100ml Centrifuge Tube 1804377 (194725) K-MET H2O2 58040812 (193235) K-MET HNO3 0000205793 (195631)
K-METPTFE Boiling chips D1069103 (190802)

Preparation Information Benchsheet

Prep Run#: 331391
Team: Metals/ISTENERSEN

Prep WorkFlow: MetDigSICP
Prep Method: EPA 3050B

Status: Prepped
Prep Date/Time: 2/14/19 07:20 AM

Preparation Steps

Step:	Weigh	Step:	Digestion
Started:	2/14/19 07:20	Started:	2/14/19 07:20
Finished:	2/14/19 11:40	Finished:	2/14/19 11:40
By:	ISTENERSEN	By:	ISTENERSEN
Comments		Comments	

Preparation Equipment

K-BlockDigester-07	Digestion	Corrected Temperature	95 deg C	K-BlockDigester-07	Digestion	Correction Factor	0 deg C
K-BlockDigester-07	Digestion	Observed Temperature	95 deg C	K-BlockDigester-07	Digestion	Thermometer #665292	deg C
K-BlockDigester-07	Digestion	Thermometer Location	32 NONE	K-Balance-02	Weigh	Date Checked	2/14/19
K-DG 1000D	Digestion						

Comments: R1:10mins, R2:65mins, R3:15mins HCl Lot# 208923

Reviewed By: SC Date: 2/19/19

Preparation Information Benchsheet

Prep Run#: 331391
Team: Metals/KLINN
Number of Copies to make: 2

Prep WorkFlow: MetDigSICP
Prep Method: EPA 3050B As Rec'd

Status: Draft
Prep Date/Time: 2/13/19 02:33 PM

#	Lab Code	Client ID	B#	√	Method /Test	Matrix	Amt. Ext.	pH	Int. Vol	Final Vol	Surr Amt	Spike Amt
1	**KQ1901915-01**	MB		—	6020A / Metals T	Solid	1.00					
2	**KQ1901915-02**	LCS1		—	6020A / Metals T	Solid	1.00					
3	**K1900611-001**	L2160851-4	.01	✓	6020A / Metals T	Soil	~~1.00~~ 1.01	IB 2/14/19				
4	**KQ1901915-03**	K1900611-001 DUP	.01	✓	6020A / Metals T	Solid	1.02					
5	**KQ1901915-04**	K1900611-001 MS	.01	✓	6020A / Metals T	Solid	1.04					
6	**K1900611-002**	L2160851-6	.01	✓	6020A / Metals T	Soil	1.00					
7	**K1900611-003**	L2160851-8	.01	✓	6020A / Metals T	Soil	1.00					
8	**K1900611-004**	L2160851-9	.01	✓	6020A / Metals T	Soil	1.22					
9	**K1900611-005**	L2160851-32	.01	✓	6020A / Metals T	Soil	1.15					
10	**K1900612-001**	L2168626-8	.01	✓	6020A / Metals T	Soil	1.00					

R1 0720 - 0730
R2 0745 - 0850
✓ ✓ ✓
R3 1125 - 1140

Comments: Tube # 1804377 K-Bal. 02 ✓ 2/14/19 KDG 10000 BD07/95/32 10% HNO_3 205793 9mL H_2O 5804081210% HCl 208923

Surrogate ID:

Spike ID: 2mL 551:196871 1mL 553:194429 1mL 554:194622 1mL 555:19564

Witnessed By:

Analyst: Isaiah Stevens

Assisted By:

METALS SPIKING SOLUTIONS CONCENTRATIONS FORM

Solution Name	Element	mLs of 1000ppm Solution	Final Volume	Solution Conc. mg/L	Enter mls Added
K-MET SS1 *** Add after HNO3 and before ALS-89 when making the solution	HNO3	50.0	1000ml	-	
	Al	100*	1000ml	200	
	Ag	100*	1000ml	5	
	Ba	100*	1000ml	100	
	Be	100*	1000ml	5	
	Cd	100*	1000ml	5	
	Co	100*	1000ml	50	
	Cr	100*	1000ml	20	
	Cu	100*	1000ml	25	
	Fe	100*	1000ml	100	
	Pb	100*	1000ml	50	
	Mn	100*	1000ml	50	
	Ni	100*	1000ml	50	
	Sb***	50.0	1000ml	50	
	V	100*	1000ml	50	
	Zn	100*	1000ml	50	
K-MET SS2	HNO3	25.0	500ml	-	
	As	2.00	500ml	4	
	Cd	2.00	500ml	4	
	Pb	2.00	500ml	4	
	Se	2.00	500ml	4	
	Tl	2.00	500ml	4	
	Cu	2.00	500ml	4	
K-MET SS3	HNO3	25.0	500ml	-	
	As	50.0	500ml	100	
	Se	50.0	500ml	100	
	Tl	10.0	500ml	20	
	Hg	6.00	500ml	12	
K-MET SS4	HNO3	25.0	500ml	-	
	B	25.0	500ml	50	
	Mo	50.0	500ml	100	
	U	10.0	500ml	20	
K-MET SS5	HNO3	10.0	200ml	-	
	K**	20.0	200ml	1000	
	Na**	20.0	200ml	1000	
	Mg**	20.0	200ml	1000	
	Ca**	20.0	200ml	1000	

K-MET Hydride	HNO3	1.0	100ml	-	
	As, Se	0.25	100ml	2.5	
K-MET QCP-CICV-1	Ca, Mg, Na, K	no dilution	-	2500	
	Al, Ba	no dilution	-	1000	
	Fe	no dilution	-	500	
	Co, Mn, Ni, V, Zn	no dilution	-	250	
	Cu, Ag	no dilution	-	125	
	Cr	no dilution	-	100	
	Be	no dilution	-	25	
K-MET QCP-CICV-3	As, Pb, Se, Tl	no dilution	-	500	
	Cd	no dilution	-	250	

* Denotes volume of mixed stock standard.
** Denotes 10,000 ppm individual stock standards.

Standard	mls of standard	ppm	Logbook #	Exp. Date

Preparation Information Benchsheet

Prep Run#: 331390
Team: Metals/ISTENERSEN
Number of Copies to make: 3

Prep WorkFlow: MetDigSICP
Prep Method: EPA 3050B

Status: Prepped
Prep Date/Time: 2/14/19 07:20 AM

#	Lab Code	Client ID	B#	Method /Test	pH	Matrix	Amt. Ext.	Final Vol	Sample Description
1	KQ1901914-01	MB		6020A/IVBA (Sieved Total)		Solid	1.0000g	100.00mL	10%HNO3, 10%HCl
2	KQ1901914-08	LCS1		6020A/IVBA (Sieved Total)		Solid	1.0100g	100.00mL	10%HNO3, 10%HCl
3	K1900611-001	L2160851-4	.03	6020A/IVBA (Sieved Total)		Soil	1.0100g	100.00mL	10%HNO3, 10%HCl
4	KQ1901914-04	K1900611-001 DUP	.03	6020A/IVBA (Sieved Total)		Solid	1.0000g	100.00mL	10%HNO3, 10%HCl
5	KQ1901914-05	K1900611-001 MS	.03	6020A/IVBA (Sieved Total)		Solid	1.0000g	100.00mL	10%HNO3, 10%HCl
6	K1900611-002	L2160851-6	.03	6020A/IVBA (Sieved Total)		Soil	1.0000g	100.00mL	10%HNO3, 10%HCl
7	K1900611-003	L2160851-8	.03	6020A/IVBA (Sieved Total)		Soil	1.0000g	100.00mL	10%HNO3, 10%HCl
8	K1900611-004	L2160851-9	.03	6020A/IVBA (Sieved Total)		Soil	1.0000g	100.00mL	10%HNO3, 10%HCl
9	K1900611-005	L2160851-32	.03	6020A/IVBA (Sieved Total)		Soil	1.0000g	100.00mL	10%HNO3, 10%HCl
10	K1900612-001	L2168626-8	.03	6020A/IVBA (Sieved Total)		Soil	1.0000g	100.00mL	10%HNO3, 10%HCl
11	K1900942-001	3041-SO-325	.03	6020A/IVBA (Sieved Total)		Soil	1.0000g	100.00mL	10%HNO3, 10%HCl
12	KQ1901914-06	K1900942-001 DUP	.03	6020A/IVBA (Sieved Total)		Solid	1.0000g	100.00mL	10%HNO3, 10%HCl
13	KQ1901914-07	K1900942-001 MS	.03	6020A/IVBA (Sieved Total)		Solid	1.0000g	100.00mL	10%HNO3, 10%HCl
14	K1900942-002	3041-SO-326	.03	6020A/IVBA (Sieved Total)		Soil	1.0000g	100.00mL	10%HNO3, 10%HCl
15	K1900942-003	3041-SO-327	.03	6020A/IVBA (Sieved Total)		Soil	1.0000g	100.00mL	10%HNO3, 10%HCl
16	K1900942-004	3041-SO-328	.03	6020A/IVBA (Sieved Total)		Soil	1.0000g	100.00mL	10%HNO3, 10%HCl
17	K1900942-005	3041-SO-329	.03	6020A/IVBA (Sieved Total)		Soil	1.0000g	100.00mL	10%HNO3, 10%HCl
18	K1900942-006	3041-SO-330	.03	6020A/IVBA (Sieved Total)		Soil	1.0000g	100.00mL	10%HNO3, 10%HCl
19	K1900942-007	3041-SO-331	.03	6020A/IVBA (Sieved Total)		Soil	1.0000g	100.00mL	10%HNO3, 10%HCl

Spiking Solutions

Name: K-MET SOIL CRM Inventory ID 190199 Logbook Ref: D099-540 Expires On: 05/31/2020

KQ1901914-08 1.00g

Name: K-MET SS3 Inventory ID 194429 Logbook Ref: MET3-60-B Expires On: 02/27/2019

KQ1901914-05 1.00mL KQ1901914-07 1.00mL

Name: K-MET SS4 Inventory ID 194622 Logbook Ref: MET3-61-F Expires On: 02/27/2019

KQ1901914-05 1.00mL KQ1901914-07 1.00mL

Name: K-MET SS5 Inventory ID 195639 Logbook Ref: MET3-66- A Expires On: 04/30/2019

KQ1901914-05 1.00mL KQ1901914-07 1.00mL

Preparation Information Benchsheet

Prep Run#: 331390
Team: Metals/ISTENERSEN

Prep WorkFlow: MetDigSICP
Prep Method: EPA 3050B

Status: Prepped
Prep Date/Time: 2/14/19 07:20 AM

Name: K-MET SS1	Inventory ID 196871	Logbook Ref: MET3-68-C	Expires On: 06/19/2019

KQ1901914-05 2.00mL KQ1901914-07 2.00mL

Preparation Materials

K-MET 100ml Centrifuge Tube	1804377 (194725)	K-MET H2O2	58040812 (193235)	K-MET HNO3	0000205793 (195631)
K-METPTFE Boiling chips	D1069103 (190802)				

Preparation Steps

Step:	Weigh	Step:	Digestion
Started:	2/14/19 07:20	Started:	2/14/19 07:20
Finished:	2/14/19 11:40	Finished:	2/14/19 11:40
By:	ISTENERSEN	By:	ISTENERSEN
Comments		Comments	

Preparation Equipment

K-BlockDigester-07	Digestion	Corrected Temperature	95 deg C	K-BlockDigester-07	Digestion	Correction Factor	0 deg C
K-BlockDigester-07	Digestion	Observed Temperature	95 deg C	K-BlockDigester-07	Digestion	Thermometer #665292	deg C
K-BlockDigester-07	Digestion	Thermometer Location	32 NONE	K-Balance-02	Weigh	Date Checked	2/14/18
K-DG 1000D	Digestion						

Comments: R1:10mins, R2:65mins, R3:15mins HCl Lot#:208923

Reviewed By: SL Date: 2/19/19

Preparation Information Benchsheet

Prep Run#: 331390
Team: Metals/KLINN
Number of Copies to make: 3

Prep WorkFlow: MetDigSICP
Prep Method: EPA 3050B

Status: Draft
Prep Date/Time: 2/13/19 02:32 PM

#	Lab Code	Client ID	B#	√	Method /Test	Matrix	Amt. Ext.	pH	Int. Vol	Final Vol	Surr Amt	Spike Amt
1	**KQ1901914-01**	MB		—	6020A / IVBA (Sieved Total)	Solid	1.00					
2	**KQ1901914-08**	LCS1		—	6020A / IVBA (Sieved Total)	Solid	1.01					
3	**K1900611-001**	L2160851-4	.03	✓	6020A / IVBA (Sieved Total)	Soil	1.01					
4	**KQ1901914-04**	K1900611-001 DUP	.03	✓	6020A / IVBA (Sieved Total)	Solid	1.00					
5	**KQ1901914-05**	K1900611-001 MS	.03	✓	6020A / IVBA (Sieved Total)	Solid	1.00					
6	**K1900611-002**	L2160851-6	.03	✓	6020A / IVBA (Sieved Total)	Soil	1.00					
7	**K1900611-003**	L2160851-8	.03	✓	6020A / IVBA (Sieved Total)	Soil	1.00					
8	**K1900611-004**	L2160851-9	.03	✓	6020A / IVBA (Sieved Total)	Soil	1.00					
9	**K1900611-005**	L2160851-32	.03	✓	6020A / IVBA (Sieved Total)	Soil	1.00					
10	**K1900612-001**	L2168626-8	.03	✓	6020A / IVBA (Sieved Total)	Soil	1.00					
11	**K1900942-001**	3041-SO-325	.03	✓	6020A / IVBA (Sieved Total)	Soil	1.00					
12	**KQ1901914-06**	K1900942-001 DUP	.03	✓	6020A / IVBA (Sieved Total)	Solid	1.00					
13	**KQ1901914-07**	K1900942-001 MS	.03	✓	6020A / IVBA (Sieved Total)	Solid	1.00					
14	**K1900942-002**	3041-SO-326	.03	✓	6020A / IVBA (Sieved Total)	Soil	1.00					
15	**K1900942-003**	3041-SO-327	.03	✓	6020A / IVBA (Sieved Total)	Soil	1.00					
16	**K1900942-004**	3041-SO-328	.03	✓	6020A / IVBA (Sieved Total)	Soil	1.00					
17	**K1900942-005**	3041-SO-329	.03	✓	6020A / IVBA (Sieved Total)	Soil	1.00					
18	**K1900942-006**	3041-SO-330	.03	✓	6020A / IVBA (Sieved Total)	Soil	1.00					
19	**K1900942-007**	3041-SO-331	.03	✓	6020A / IVBA (Sieved Total)	Soil	1.00					

R1 0720 - 0730
R2 0745 - 0850
✓ ✓ ✓
R3 1125 - 1140

SS 2/14/19

Comments: Tube # 1804377 K-Bal.02 ✓ 2/14/19 K-DG 10000D BD07/95/32 10% ~~HNO3~~ 205793 9mL H_2O 5804081210%HCl 208923

Surrogate ID:

Spike ID: 2mL SS1:196877 1mL SS3:194429 7mLSS4:194622 1mL SS5:195639

Witnessed By:

Analyst: Isaiah Stern

Assisted By:

METALS SPIKING SOLUTIONS CONCENTRATIONS FORM

Solution Name	Element	mLs of 1000ppm Solution	Final Volume	Solution Conc. mg/L	Enter mls Added
K-MET SS1 *** Add after HNO3 and before ALS-89 when making the solution	HNO3	50.0	1000ml	-	
	Al	100*	1000ml	200	
	Ag	100*	1000ml	5	
	Ba	100*	1000ml	100	
	Be	100*	1000ml	5	
	Cd	100*	1000ml	5	
	Co	100*	1000ml	50	
	Cr	100*	1000ml	20	
	Cu	100*	1000ml	25	
	Fe	100*	1000ml	100	
	Pb	100*	1000ml	50	
	Mn	100*	1000ml	50	
	Ni	100*	1000ml	50	
	Sb***	50.0	1000ml	50	
	V	100*	1000ml	50	
	Zn	100*	1000ml	50	
K-MET SS2	HNO3	25.0	500ml	-	
	As	2.00	500ml	4	
	Cd	2.00	500ml	4	
	Pb	2.00	500ml	4	
	Se	2.00	500ml	4	
	Tl	2.00	500ml	4	
	Cu	2.00	500ml	4	
K-MET SS3	HNO3	25.0	500ml	-	
	As	50.0	500ml	100	
	Se	50.0	500ml	100	
	Tl	10.0	500ml	20	
	Hg	6.00	500ml	12	
K-MET SS4	HNO3	25.0	500ml	-	
	B	25.0	500ml	50	
	Mo	50.0	500ml	100	
	U	10.0	500ml	20	
K-MET SS5	HNO3	10.0	200ml	-	
	K**	20.0	200ml	1000	
	Na**	20.0	200ml	1000	
	Mg**	20.0	200ml	1000	
	Ca**	20.0	200ml	1000	

K-MET Hydride	HNO3	1.0	100ml	-	
	As, Se	0.25	100ml	2.5	
K-MET QCP-CICV-1	Ca, Mg, Na, K	no dilution	-	2500	
	Al, Ba	no dilution	-	1000	
	Fe	no dilution	-	500	
	Co, Mn, Ni, V, Zn	no dilution	-	250	
	Cu, Ag	no dilution	-	125	
	Cr	no dilution	-	100	
	Be	no dilution	-	25	
K-MET QCP-CICV-3	As, Pb, Se, Tl	no dilution	-	500	
	Cd	no dilution	-	250	

* Denotes volume of mixed stock standard.
** Denotes 10,000 ppm individual stock standards.

Standard	mls of standard	ppm	Logbook #	Exp. Date

Service Request: K1900611, K1900912, K1900942
Instrument ID # K-ICP-MS-05
Calibration 021519AICPMS05
STAR LIMS Run # 625393

Cal Std: MS24-38-A
ICV Std: MS24-33-B
LLICV Std: MS24-38-B
I.S. Solution: MS24-5-B
Tune Standard: MS24-18-C
ICSA: MS24-38-C
ICSAB: MS24-38-D
Pipette I.D. R40946G,CH84849,MS1000, MS500, MS250

ICP-MS Data Review Form

	Yes	No	NA
1. Appropriate standardization completed	X		
2. ICV in control (+/- 10%)	X		
3. CCV's in control (+/- 10%)	X		
4. ICB/CCB's below MRL	X		
5. LLICV standard analyzed and in control	X		
6. ICS standards within 20% of true value	X		
6. All analytes within instrument linear range	X		
7. Adequate rinse out time allowed	X		
8. Internal standards in control	X		
9. Interferences checked	X		
10. Was the run terminated? If so, why.		X	

Primary Review by RRM Date 2/15/19
Secondary Review by [signature] Date 2/20/19

Data Review Form

Instrument ID#: **K-ICP-MS-05**
DataFile Name: **R:\ICP\WIP\DATA\K-ICP-MS-05 (Agilent)\021519A.csv**
RUNNO: **625393**

K1900611

K1900611-001DUP - Metals T -
DUP RPD
6020A/Metals T - 52 Cr [He] - RPD: 47 Limit: 20 *

K1900612

K1900611-001DUP - Metals T -
DUP RPD
6020A/Metals T - 52 Cr [He] - RPD: 47 Limit: 20 *

* non-homogenous, second sample has RPD 4%

K1900942

No exceptions to report.

Primary Approver: RPM 2/20/19
Secondary Approver: JK 2/20/19

	Sample						
		Rjct	Data File	Acq. Date-Time	Type	Level	Sample Name
1			001CALB.	2019-02-15 12:14:33	CalBlk		Prime
2			002CALB.	2019-02-15 12:16:44	CalBlk		Rinse
3			003CALB.	2019-02-15 12:18:55	CalBlk		Blank
4			004CALB.	2019-02-15 12:21:07	CalBlk		Rinse
5			005CALB.	2019-02-15 12:23:18	CalBlk		Prime
6			006CALB.	2019-02-15 12:25:30	CalBlk		Rinse
7			007CALB.	2019-02-15 12:27:49	CalBlk	1	Blank
8			008CALS.	2019-02-15 12:30:00	CalStd	2	25ppb
9			009_ICV.d	2019-02-15 12:32:10	ICV		ICV
10			010_CCV.	2019-02-15 12:34:21	CCV		CCV
11			011_ICB.d	2019-02-15 12:36:33	ICB		ICB
12			012_CCB.	2019-02-15 12:38:44	CCB		CCB
13			013LICV.d	2019-02-15 12:40:55	LLICV		LLICVS
14			014ICSA.d	2019-02-15 12:43:05	ICSA		ICSA
15			015ICSB.d	2019-02-15 12:45:15	ICSB		ICSAB
16			016_PB.d	2019-02-15 13:06:42	PB		KQ1901914-01
17			017_LCS.d	2019-02-15 13:08:53	QCS		KQ1901914-08
18			018_ARF.d	2019-02-15 13:11:08	AllRef		K1900611-001
19			019SMPL.	2019-02-15 13:13:19	Sample		KQ1901914-04
20			020SMPL.	2019-02-15 13:15:30	Sample		K1900611-001L
21			021_PDS.d	2019-02-15 13:17:40	PDS		K1900611-001A
22			022_Spk.d	2019-02-15 13:19:50	Spike		KQ1901914-05
23			023SMPL.	2019-02-15 13:22:01	Sample		K1900611-002
24			024_CCV.	2019-02-15 13:24:12	CCV		CCV
25			025_CCB.	2019-02-15 13:26:24	CCB		CCB
26			026SMPL.	2019-02-15 13:28:35	Sample		K1900611-003
27			027SMPL.	2019-02-15 13:30:46	Sample		K1900611-004
28			028SMPL.	2019-02-15 13:32:57	Sample		K1900611-005
29			029SMPL.	2019-02-15 13:35:09	Sample		K1900612-001
30			030_ARF.d	2019-02-15 13:37:19	AllRef		K1900942-001
31			031SMPL.	2019-02-15 13:39:30	Sample		KQ1901914-06
32			032SMPL.	2019-02-15 13:41:41	Sample		K1900942-001L
33			033_PDS.d	2019-02-15 13:43:52	PDS		K1900942-001A
34			034_Spk.d.	2019-02-15 13:46:03	Spike		KQ1901914-07
35			035SMPL.	2019-02-15 13:48:13	Sample		K1900942-002
36			036_CCV.	2019-02-15 13:50:24	CCV		CCV
37			037_CCB.	2019-02-15 13:52:35	CCB		CCB
38			038SMPL.	2019-02-15 13:54:46	Sample		K1900942-003
39			039SMPL.	2019-02-15 13:56:57	Sample		K1900942-004
40			040SMPL.	2019-02-15 13:59:08	Sample		K1900942-005

	Sample						
		Rjct	Data File	Acq. Date-Time	Type	Level	Sample Name
41			041SMPL.	2019-02-15 14:01:20	Sample		K1900942-006
42			042SMPL.	2019-02-15 14:03:31	Sample		K1900942-007
43			043_CCV.	2019-02-15 14:05:42	CCV		CCV
44			044_CCB.	2019-02-15 14:07:53	CCB		CCB
45			~~045LCCV.~~	~~2019-02-15 14:10:04~~	~~LLCCV~~		LLCCVS
46			046LCCV.	2019-02-15 14:12:14	LLCCV		LLCCVS
47			047_PB.d	2019-02-15 14:14:26	PB		KQ1901915-01
48			048_LCS.d	2019-02-15 14:16:37	QCS		KQ1901915-02
49			049_ARF.d	2019-02-15 14:18:48	AllRef		K1900611-001
50			050SMPL.	2019-02-15 14:20:58	Sample		KQ1901915-03
51			051SMPL.	2019-02-15 14:23:09	Sample		K1900611-001L
52			052_PDS.d	2019-02-15 14:25:20	PDS		K1900611-001A
53			053_Spk.d	2019-02-15 14:27:31	Spike		KQ1901915-04
54			054SMPL.	2019-02-15 14:29:41	Sample		K1900611-002
55			055SMPL.	2019-02-15 14:31:52	Sample		K1900611-003
56			056SMPL.	2019-02-15 14:34:04	Sample		K1900611-004
57			057_CCV.	2019-02-15 14:36:15	CCV		CCV
58			058_CCB.	2019-02-15 14:38:26	CCB		CCB
59			059SMPL.	2019-02-15 14:40:37	Sample		K1900611-005
60			060SMPL.	2019-02-15 14:42:49	Sample		K1900612-001
61			061_CCV.	2019-02-15 14:45:00	CCV		CCV
62			062_CCB.	2019-02-15 14:47:11	CCB		CCB
63			063LCCV.	2019-02-15 14:49:22	LLCCV		LLCCVS

2/15/19

Analyte							
Name		Mass	ISTD	Tune Mode	Conc.	Units	Replicate
1	Cr	52	72	He	0.4276	ug/l	3
2	Cr	53	72	He	0.4584	ug/l	3
3	[Pb]	206	175	He	0.0998	ug/l	3
4	[Pb]	207	175	He	0.1104	ug/l	3
5	Pb	208	175	He	0.1015	ug/l	3
6	Ge	72		He			3
7	In	115		He			3
8	Lu	175		He			3

US EPA Tune Check Report

Operator Name	ALKLS NoUser
Acq/Data Batch	D:\Agilent\ICPMH\1\DATA\021519A.b
Acq. Date-Time	2019-02-15 10:48:14
Report Comment	ALS Tune
Instrument Name	G3281A JP13482848

[No Gas]

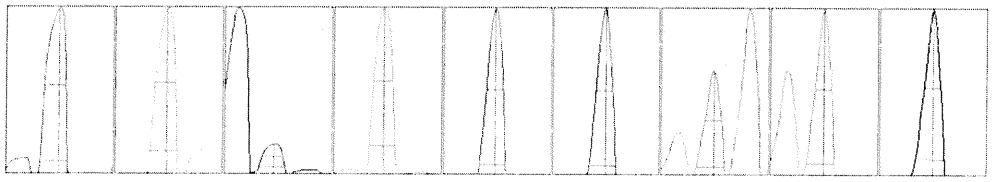
Sensitivity

Mass	CPS	RSD%	RSD% (Required)	RSD% (Flag)
7	150699.84	0.444	5.000	
9	37162.53	0.749	5.000	
24	136670.07	0.898	5.000	
59	188954.68	0.898	5.000	
115	292338.39	0.780	5.000	
140	314265.14	1.168	5.000	
208	201431.34	1.608	5.000	
209	315125.55	1.192	5.000	
238	435690.68	0.852	5.000	

Mass	Rep#1 Count	Rep#2 Count	Rep#3 Count	Rep#4 Count	Rep#5 Count
7	15042	15147	15016	15008	15136
9	3733	3711	3724	3671	3742
24	13843	13703	13689	13557	13543
59	19184	18898	18766	18843	18786
115	29575	29345	29108	29140	29001
140	32016	31529	31234	31275	31079
208	20483	20509	19944	19918	19861
209	32099	31534	31524	31321	31084
238	44156	43586	43547	43415	43141

Integration Time [sec] 0.1

Resolution/Axis



Mass	Peak Height	Axis	Axis (Required)	Axis (Flag)	W-5%	W-5% (Flag)	W-5% (Required)
7	25709.11	7.00	6.90 - 7.10		0.766		0.900
9	6543.58	8.95	8.90 - 9.10		0.754		0.900
24	23629.11	23.90	23.90 - 24.10		0.739		0.900

US EPA Tune Check Report

Mass	Peak Height	Axis	Axis (Required)	Axis (Flag)	W-5%	W-5% (Flag)	W-5% (Required)
59	34723.74	58.90	58.90 - 59.10		0.733		0.900
115	60988.41	114.95	114.90 - 115.10		0.731		0.900
140	66077.82	140.00	139.90 - 140.10		0.760		0.900
208	41789.20	208.00	207.90 - 208.10		0.781		0.900
209	66583.75	209.00	208.90 - 209.10		0.783		0.900
238	88540.21	238.00	237.90 - 238.10		0.827		0.900

Integration Time [sec]	0.1
Acquisition Time [sec]	268.4
Y Axis	Linear

Tune Parameters

Plasma Parameters

Plasma Mode	---	Nebulizer Gas	0.57 L/min	Dilution Gas	0.50 L/min
RF Power	1600 W	Option Gas	---	Auxiliary Gas	0.90 L/min
RF Matching	1.76 V	Nebulizer Pump	0.10 rps	Plasma Gas	15.0 L/min
Sample Depth	8.0 mm	S/C Temp	2 °C		

Lens Parameters

Extract 1	0.0 V	Omega Lens	7.9 V	Deflect	12.0 V
Extract 2	-160.0 V	Cell Entrance	-30 V	Plate Bias	-40 V
Omega Bias	-85 V	Cell Exit	-50 V		

Cell Parameters

Use Gas	No	3rd Gas Flow	---	Energy Discrimination	5.0 V
He Flow	0.0 mL/min	OctP Bias	-8.0 V		
H2 Flow	0.0 mL/min	OctP RF	190 V		

QP Parameters

Mass Gain	125	Axis Gain	1.0008	QP Bias	-3.0 V
Mass Offset	125	Axis Offset	-0.08		

Hardware Settings

Torch

Torch H	-0.6 mm	Torch V	0.7 mm		

EM

Discriminator	4.5 mV	Analog HV	1949 V	Pulse HV	1916 V

Calibration Blank Report

Sample Name	Blank
File Name	007CALB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\021519A2_#2.b
Acq Time	2019-02-15 12:27:49
Sample Type	CalBlk
Comment	---
ISTD Ref FileName	007CALB.d
Operator	**ALKLS** **NoUser**

QC Analyte Table

Name	Mass	ISTD	Tune Mode	CPS	CPS RSD
Cr	52	72	He	823.36	1.8
Cr	53	72	He	208.89	13.0
[Pb]	206	175	He	135.56	14.0
[Pb]	207	175	He	126.67	12.1
Pb	208	175	He	564.45	11.2

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD
Ge	72	He	174167.80	0.4
In	115	He	1744428.82	0.9
Lu	175	He	5356471.87	0.3

Calibration Standard Report

Sample Name	25ppb
File Name	008CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\021519A2_#2.b
Acq Time	2019-02-15 12:30:00
Sample Type	CalStd
Comment	---
ISTD Ref FileName	007CALB.d
Operator	**ALKLS** **NoUser**

QC Analyte Table

Name	Mass	ISTD	Tune Mode	CPS	CPS RSD
Cr	52	72	He	85740.50	0.5
Cr	53	72	He	10598.84	0.3
[Pb]	206	175	He	192318.04	1.1
[Pb]	207	175	He	171417.99	0.9
Pb	208	175	He	791273.95	0.6

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	173822.12	0.4	174167.8	99.8	
In	115	He	1770240.07	0.7	1744428.82	101.48	
Lu	175	He	5354496.60	1.1	5356471.87	99.96	

Initial Calibration Verification (ICV) Report

Sample Name	ICV
File Name	009_ICV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\021519A2_#2.b
Acq Time	2019-02-15 12:32:10
Sample Type	ICV
Comment	---
ISTD Ref FileName	007CALB.d
Operator	**ALKLS**
	NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	% Rec	QC Flag
Cr	52	72	He	9.7907	ug/l	1.1	34224.79	97.91	
Cr	53	72	He	9.8398	ug/l	3.4	4316.12	98.4	
[Pb]	206	175	He	23.7035	ug/l	4.2	183594.98	94.81	
[Pb]	207	175	He	24.6736	ug/l	3.8	170334.96	98.69	
Pb	208	175	He	24.2006	ug/l	3.5	771316.62	96.8	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	174566.20	0.4	174167.8	100.23	
In	115	He	1781068.68	1.2	1744428.82	102.1	
Lu	175	He	5395868.12	3.6	5356471.87	100.74	

Continuing Calibration Verification (CCV) Report

Sample Name CCV

File Name 010_CCV.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 12:34:21

Sample Type CCV

Comment ---

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	CPS	% Rec	QC Flag
Cr	52	72	He	24.4874	ug/l	2.1	85069.13	97.95	
Cr	53	72	He	24.9288	ug/l	5.8	10702.24	99.72	
[Pb]	206	175	He	25.0497	ug/l	1.3	195968.16	100.2	
[Pb]	207	175	He	24.6536	ug/l	1.1	171893.53	98.61	
Pb	208	175	He	24.7012	ug/l	1.1	795043.39	98.8	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	176048.87	0.7	174167.8	101.08	
In	115	He	1779310.69	0.6	1744428.82	102	
Lu	175	He	5445089.51	1.1	5356471.87	101.65	

Initial Calibration Blank (ICB) Report

Sample Name ICB

File Name 011_ICB.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 12:36:33

Sample Type ICB

Comment ---

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	0.0160	ug/l	183.0	892.25	
Cr	53	72	He	0.0342	ug/l	225.4	226.67	
[Pb]	206	175	He	0.0100	ug/l	104.1	214.45	
[Pb]	207	175	He	0.0102	ug/l	78.7	197.78	
Pb	208	175	He	0.0101	ug/l	69.0	890.02	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	176980.22	0.3	174167.8	101.61	
In	115	He	1765379.58	0.2	1744428.82	101.2	
Lu	175	He	5391980.48	1.2	5356471.87	100.66	

Continuing Calibration Blank (CCB) Report

Sample Name CCB

File Name 012_CCB.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 12:38:44

Sample Type CCB

Comment ---

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	0.0227	ug/l	108.7	923.37	
Cr	53	72	He	-0.0592	ug/l	N/A	188.89	
[Pb]	206	175	He	-0.0026	ug/l	N/A	117.78	
[Pb]	207	175	He	-0.0004	ug/l	N/A	126.67	
Pb	208	175	He	-0.0009	ug/l	N/A	547.78	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	178493.22	0.6	174167.8	102.48	
In	115	He	1796136.73	0.5	1744428.82	102.96	
Lu	175	He	5471059.64	0.8	5356471.87	102.14	

Low Level Initial Calibration Verification (LLICV) Report

Sample Name	LLICVS
File Name	013LICV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\021519A2_#2.b
Acq Time	2019-02-15 12:40:55
Sample Type	LLICV
Comment	---
ISTD Ref FileName	007CALB.d
Operator	**ALKLS**
	NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc.RSD	CPS	% Rec	QC Flag
Cr	52	72	He	0.4341	ug/l	1.9	2337.95	108.52	
Cr	53	72	He	0.3822	ug/l	61.9	374.45	95.55	
[Pb]	206	175	He	0.0999	ug/l	18.5	924.48	99.9	
[Pb]	207	175	He	0.1058	ug/l	17.1	871.70	105.8	
Pb	208	175	He	0.1009	ug/l	4.9	3845.22	100.9	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	176979.96	0.8	174167.8	101.61	
In	115	He	1791459.37	2.4	1744428.82	102.7	
Lu	175	He	5483572.15	1.7	5356471.87	102.37	

Interference Check Solution A (ICS-A) Report

Sample Name	ICSA
File Name	014ICSA.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\021519A2_#2.b
Acq Time	2019-02-15 12:43:05
Sample Type	ICSA
Comment	---
ISTD Ref FileName	007CALB.d
Operator	**ALKLS** **NoUser**

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	ExpValue	CPS	QC Flag
Cr	52	72	He	1.2147	ug/l	5.6	-1	4787.35	
Cr	53	72	He	1.1536	ug/l	3.7	-1	665.57	
[Pb]	206	175	He	0.1590	ug/l	3.4	-1	1322.29	
[Pb]	207	175	He	0.1486	ug/l	4.9	-1	1114.49	
Pb	208	175	He	0.1563	ug/l	3.0	-1	5364.86	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	168160.80	0.8	174167.8	96.55	
In	115	He	1619001.56	2.3	1744428.82	92.81	
Lu	175	He	5214086.88	1.5	5356471.87	97.34	

Interference Check Solution AB (ICS-AB) Report

Sample Name	ICSAB
File Name	015ICSB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\021519A2_#2.b
Acq Time	2019-02-15 12:45:15
Sample Type	ICSB
Comment	---
ISTD Ref FileName	007CALB.d
Operator	**ALKLS** **NoUser**

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	ExpValue	CPS	QC Flag
Cr	52	72	He	49.0867	ug/l	1.6	50	159071.29	
Cr	53	72	He	49.0723	ug/l	1.8	50	19559.99	
[Pb]	206	175	He	0.1590	ug/l	7.9	-1	1324.51	
[Pb]	207	175	He	0.1490	ug/l	7.0	-1	1120.05	
Pb	208	175	He	0.1542	ug/l	2.0	-1	5308.18	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	165041.91	1.4	174167.8	94.76	
In	115	He	1594125.11	1.3	1744428.82	91.38	
Lu	175	He	5223561.46	0.7	5356471.87	97.52	

Prep Blank (PB) Report

Sample Name KQ1901914-01

File Name 016_PB.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:06:42

Sample Type PB

Comment 5X

ISTD Ref FileName 007CALB.d

Operator ALKLS
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	0.1574	ug/l	17.6	1436.74	
Cr	53	72	He	0.0185	ug/l	215.9	228.89	
[Pb]	206	175	He	0.0033	ug/l	164.4	172.23	
[Pb]	207	175	He	0.0018	ug/l	191.1	148.89	
Pb	208	175	He	0.0033	ug/l	83.0	717.79	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	184120.07	0.4	174167.8	105.71	
In	115	He	1894526.87	1.7	1744428.82	108.6	
Lu	175	He	5748065.19	0.6	5356471.87	107.31	

Quality Control Sample (QCS) Report

Sample Name	KQ1901914-08
File Name	017_LCS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\021519A2_#2.b
Acq Time	2019-02-15 13:08:53
Sample Type	QCS
Total Dilution	1.0000
Comment	20X
ISTD Ref FileName	007CALB.d
Sample QC Pass/Fial	Pass
ISTD QC Pass/Fail	Pass
Operator	**ALKLS** **NoUser**

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	ExpValue	% Rec	QC Flag
Cr	52	72	He	68.5596	ug/l	1.6	242428.43	72	95.22	
Cr	53	72	He	68.9569	ug/l	1.8	29948.06	72	95.77	
[Pb]	206	175	He	59.0715	ug/l	1.6	468616.42	55.5	106.44	
[Pb]	207	175	He	55.7246	ug/l	1.4	393983.03	55.5	100.4	
Pb	208	175	He	57.2064	ug/l	1.1	1867153.72	55.5	103.07	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	%QC Low	%QC High	QC Flag
Ge	72	He	180334.55	1.3	174167.8	103.54	70	125	
In	115	He	1782747.85	1.5	1744428.82	102.2	70	125	
Lu	175	He	5523913.81	1.2	5356471.87	103.13	70	125	

Reference Sample Report

Sample Name	K1900611-001
File Name	018_ARF.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\021519A2_#2.b
Acq Time	2019-02-15 13:11:08
Sample Type	AllRef
Comment	5X
ISTD Ref FileName	007CALB.d
Sample QC Pass/Fial	Pass
ISTD QC Pass/Fail	Pass
Operator	**ALKLS** **NoUser**

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	41.9559	ug/l	0.6	146480.90	
Cr	53	72	He	41.9483	ug/l	3.4	18029.45	
[Pb]	206	175	He	68.5171	ug/l	2.1	537708.94	
[Pb]	207	175	He	64.1838	ug/l	1.9	448915.81	
Pb	208	175	He	66.2142	ug/l	2.0	2137862.90	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	177636.45	0.4	174167.8	101.99	
In	115	He	1775302.74	1.8	1744428.82	101.77	
Lu	175	He	5465207.14	1.5	5356471.87	102.03	

Sample Report

Sample Name KQ1901914-04

File Name 019SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:13:19

Sample Type Sample

Comment 5X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	43.1985	ug/l	2.9	142417.32	
Cr	53	72	He	43.6957	ug/l	3.5	17730.22	
[Pb]	206	175	He	70.8774	ug/l	3.4	524874.04	
[Pb]	207	175	He	66.9706	ug/l	4.5	441865.12	
Pb	208	175	He	68.6594	ug/l	3.7	2091659.50	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	167825.98	1.9	174167.8	96.36	
In	115	He	1655298.86	5.4	1744428.82	94.89	
Lu	175	He	5160722.99	3.9	5356471.87	96.35	

Sample Report

Sample Name K1900611-001L

File Name 020SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:15:30

Sample Type Sample

Comment 25X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	8.4446	ug/l	6.8	29435.05	
Cr	53	72	He	8.5710	ug/l	8.3	3759.32	
[Pb]	206	175	He	14.3867	ug/l	10.7	110960.08	
[Pb]	207	175	He	13.4776	ug/l	9.7	92707.42	
Pb	208	175	He	13.8346	ug/l	10.1	439174.86	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	173976.27	7.5	174167.8	99.89	
In	115	He	1730142.71	10.4	1744428.82	99.18	
Lu	175	He	5402697.98	9.9	5356471.87	100.86	

Post Digestion Spike Sample (PDS) Report

Sample Name K1900611-001A

File Name 021_PDS.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:17:40

Sample Type PDS

Comment 5X +50ppb

ISTD Ref FileName 007CALB.d

QC Ref File Name 018_
ARF.

Default Text ALKLS
NoUser

QC Analyte Table

Name	Mass	Tune	Conc.	Units	Conc. RSD	CPS	Spk Amt	% Rec	Flag
Cr	52	He	90.6948	ug/l	1.2	306059.56	50	97.48	
Cr	53	He	91.7896	ug/l	0.7	38008.22	50	99.68	
[Pb]	206	He	116.8464	ug/l	0.5	912459.58	50	96.66	
[Pb]	207	He	112.5690	ug/l	0.4	783421.39	50	96.77	
Pb	208	He	115.0329	ug/l	0.4	3695724.30	50	97.64	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	172237.98	1.1	174167.8	98.89	
In	115	He	1715855.80	1.9	1744428.82	98.36	
Lu	175	He	5437909.23	0.8	5356471.87	101.52	

Matrix Spike Sample (MS) Report

Sample Name KQ1901914-05

File Name 022_Spk.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:19:50

Sample Type Spike

Comment 5X

ISTD Ref FileName 007CALB.d

QC Ref File Name 018_
ARF.

Default Text ÁLKLS
NoUser

QC Analyte Table

Name	Mass	Tune	Conc.	Units	Conc. RSD	CPS	Spk Amt	% Rec	Flag
Cr	52	He	116.4312	ug/l	0.3	385568.92	80	93.09	
Cr	53	He	117.3095	ug/l	1.8	47635.21	80	94.2	
[Pb]	206	He	267.3295	ug/l	0.9	2025945.75	200	99.41	
[Pb]	207	He	260.1688	ug/l	0.4	1757160.27	200	97.99	
Pb	208	He	255.1583	ug/l	0.7	7955590.72	200	94.47	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	169109.95	1.3	174167.8	97.1	
In	115	He	1689077.51	0.8	1744428.82	96.83	
Lu	175	He	5277605.07	0.5	5356471.87	98.53	

Sample Report

Sample Name K1900611-002

File Name 023SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:22:01

Sample Type Sample

Comment 5X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	14.8982	ug/l	0.8	50549.89	
Cr	53	72	He	14.4923	ug/l	4.2	6126.67	
[Pb]	206	175	He	24.1310	ug/l	1.6	188081.99	
[Pb]	207	175	He	22.2698	ug/l	2.0	154697.36	
Pb	208	175	He	22.9191	ug/l	1.7	734966.57	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	170861.90	0.9	174167.8	98.1	
In	115	He	1700487.89	1.7	1744428.82	97.48	
Lu	175	He	5425184.23	1.6	5356471.87	101.28	

Continuing Calibration Verification (CCV) Report

Sample Name CCV

File Name 024_CCV.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:24:12

Sample Type CCV

Comment ---

ISTD Ref FileName 007CALB.d

Operator **ALKLS**

NoUser

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	CPS	% Rec	QC Flag
Cr	52	72	He	24.8337	ug/l	2.0	88877.05	99.33	
Cr	53	72	He	24.5007	ug/l	2.3	10848.99	98	
[Pb]	206	175	He	24.9052	ug/l	2.1	200920.24	99.62	
[Pb]	207	175	He	24.9558	ug/l	1.7	179434.01	99.82	
Pb	208	175	He	24.8481	ug/l	1.6	824773.63	99.39	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	181419.54	2.4	174167.8	104.16	
In	115	He	1821895.21	1.0	1744428.82	104.44	
Lu	175	He	5615611.72	1.4	5356471.87	104.84	

Continuing Calibration Blank (CCB) Report

Sample Name	CCB
File Name	025_CCB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\021519A2_#2.b
Acq Time	2019-02-15 13:26:24
Sample Type	CCB
Comment	---
ISTD Ref FileName	007CALB.d
Operator	**ALKLS**
	NoUser

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	0.0109	ug/l	208.2	888.92	
Cr	53	72	He	-0.1057	ug/l	N/A	170.00	
[Pb]	206	175	He	0.0123	ug/l	34.8	236.67	
[Pb]	207	175	He	0.0140	ug/l	28.2	230.00	
Pb	208	175	He	0.0129	ug/l	16.1	1002.24	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	179784.60	1.7	174167.8	103.22	
In	115	He	1810054.93	0.1	1744428.82	103.76	
Lu	175	He	5524986.59	1.7	5356471.87	103.15	

Sample Report

Sample Name	K1900611-003
File Name	026SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\021519A2_#2.b
Acq Time	2019-02-15 13:28:35
Sample Type	Sample
Comment	5X
ISTD Ref FileName	007CALB.d
Operator	**ALKLS** **NoUser**

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	22.7735	ug/l	0.1	78332.05	
Cr	53	72	He	22.5839	ug/l	0.4	9613.82	
[Pb]	206	175	He	42.0281	ug/l	1.1	327465.05	
[Pb]	207	175	He	39.5434	ug/l	1.5	274584.33	
Pb	208	175	He	40.4863	ug/l	1.1	1297834.42	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	174163.52	0.7	174167.8	100	
In	115	He	1733075.97	0.9	1744428.82	99.35	
Lu	175	He	5424546.87	1.1	5356471.87	101.27	

Sample Report

Sample Name K1900611-004

File Name 027SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:30:46

Sample Type Sample

Comment 5X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	35.0858	ug/l	0.6	131146.85	
Cr	53	72	He	35.1924	ug/l	3.1	16210.97	
[Pb]	206	175	He	50.8148	ug/l	1.0	418753.29	
[Pb]	207	175	He	48.2216	ug/l	1.7	354124.10	
Pb	208	175	He	49.2465	ug/l	1.2	1669603.57	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	189971.96	0.9	174167.8	109.07	
In	115	He	1903482.56	1.4	1744428.82	109.12	
Lu	175	He	5737857.83	1.7	5356471.87	107.12	

Sample Report

Sample Name K1900611-005

File Name 028SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:32:57

Sample Type Sample

Comment 5X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	51.0272	ug/l	1.0	193740.64	
Cr	53	72	He	51.6960	ug/l	1.1	24136.84	
[Pb]	206	175	He	15.2163	ug/l	1.0	128291.55	
[Pb]	207	175	He	14.0240	ug/l	1.5	105382.30	
Pb	208	175	He	14.4638	ug/l	1.2	501714.24	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	193382.52	0.6	174167.8	111.03	
In	115	He	1929606.66	1.7	1744428.82	110.62	
Lu	175	He	5865425.46	1.6	5356471.87	109.5	

Sample Report

Sample Name K1900612-001

File Name 029SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:35:09

Sample Type Sample

Comment 5X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	58.4246	ug/l	1.2	217644.87	
Cr	53	72	He	58.7373	ug/l	1.2	26891.97	
[Pb]	206	175	He	48.5364	ug/l	1.9	404398.43	
[Pb]	207	175	He	45.7033	ug/l	1.7	339382.02	
Pb	208	175	He	46.9139	ug/l	2.1	1608114.74	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	189851.38	0.8	174167.8	109	
In	115	He	1902466.52	2.8	1744428.82	109.06	
Lu	175	He	5801864.77	1.7	5356471.87	108.32	

Reference Sample Report

Sample Name	K1900942-001
File Name	030_ARF.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\021519A2_#2.b
Acq Time	2019-02-15 13:37:19
Sample Type	AllRef
Comment	5X
ISTD Ref FileName	007CALB.d
Sample QC Pass/Fial	Pass
ISTD QC Pass/Fail	Pass
Operator	**ALKLS** **NoUser**

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	28.2854	ug/l	0.6	106754.73	
Cr	53	72	He	28.6955	ug/l	1.8	13369.66	
[Pb]	206	175	He	439.6084	ug/l	1.0	3652899.72	
[Pb]	207	175	He	426.0628	ug/l	0.7	3155169.11	
Pb	208	175	He	418.1761	ug/l	0.6	14295935.20	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	191499.78	0.5	174167.8	109.95	
In	115	He	1903857.64	1.4	1744428.82	109.14	
Lu	175	He	5787121.58	1.2	5356471.87	108.04	

Sample Report

Sample Name KQ1901914-06

File Name 031SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:39:30

Sample Type Sample

Comment 5X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	29.1530	ug/l	0.9	108980.42	
Cr	53	72	He	29.8604	ug/l	1.6	13772.19	
[Pb]	206	175	He	438.8571	ug/l	1.3	3656044.72	
[Pb]	207	175	He	415.4765	ug/l	1.9	3084678.07	
Pb	208	175	He	412.8421	ug/l	0.8	14149786.38	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	189717.99	0.6	174167.8	108.93	
In	115	He	1864281.73	3.2	1744428.82	106.87	
Lu	175	He	5801588.52	0.6	5356471.87	108.31	

Sample Report

Sample Name K1900942-001L

File Name 032SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:41:41

Sample Type Sample

Comment 25X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	5.8160	ug/l	0.9	22246.55	
Cr	53	72	He	5.6156	ug/l	4.7	2748.02	
[Pb]	206	175	He	86.8445	ug/l	0.5	716645.84	
[Pb]	207	175	He	84.0683	ug/l	0.2	618266.87	
Pb	208	175	He	85.0444	ug/l	0.5	2887254.14	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	187931.58	1.1	174167.8	107.9	
In	115	He	1907284.58	0.8	1744428.82	109.34	
Lu	175	He	5746004.77	0.4	5356471.87	107.27	

Post Digestion Spike Sample (PDS) Report

Sample Name K1900942-001A

File Name 033_PDS.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:43:52

Sample Type PDS

Comment 5X +50ppb

ISTD Ref FileName 007CALB.d

QC Ref File Name 030_
ARF.

Default Text ÁLKLS
NoUser

QC Analyte Table

Name	Mass	Tune	Conc.	Units	Conc. RSD	CPS	Spk Amt	% Rec	Flag
Cr	52	He	76.4611	ug/l	1.9	290740.08	50	96.35	
Cr	53	He	77.0025	ug/l	3.3	35939.40	50	96.61	
[Pb]	206	He	477.0101	ug/l	2.5	4052916.78	50	74.8	Flag
[Pb]	207	He	461.6145	ug/l	1.7	3495572.57	50	71.1	Flag
Pb	208	He	455.4543	ug/l	1.7	15921782.63	50	74.56	Flag

Simple conc.
5X
N/A
2/15/19

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	194017.67	2.1	174167.8	111.4	
In	115	He	1916029.85	1.3	1744428.82	109.84	
Lu	175	He	5918406.85	1.3	5356471.87	110.49	

Matrix Spike Sample (MS) Report

Sample Name KQ1901914-07

File Name 034_Spk.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:46:03

Sample Type Spike

Comment 5X

ISTD Ref FileName 007CALB.d

QC Ref File Name 030_
ARF.

Default Text ALKLS
NoUser

QC Analyte Table

Name	Mass	Tune	Conc.	Units	Conc. RSD	CPS	Spk Amt	% Rec	Flag
Cr	52	He	103.2559	ug/l	0.8	377357.41	80	93.71	
Cr	53	He	103.1301	ug/l	1.8	46235.95	80	93.04	
[Pb]	206	He	607.3229	ug/l	2.5	5046312.16	200	83.86	
[Pb]	207	He	593.4964	ug/l	3.0	4394886.49	200	83.72	
Pb	208	He	585.3388	ug/l	1.8	20011470.46	200	83.58	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	186563.10	1.4	174167.8	107.12	
In	115	He	1882337.01	1.7	1744428.82	107.91	
Lu	175	He	5789203.52	2.8	5356471.87	108.08	

Sample Report

Sample Name K1900942-002

File Name 035SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:48:13

Sample Type Sample

Comment 5X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	30.6097	ug/l	0.5	110282.74	
Cr	53	72	He	32.1137	ug/l	1.1	14264.81	
[Pb]	206	175	He	636.4417	ug/l	1.3	5133097.57	
[Pb]	207	175	He	607.0914	ug/l	1.5	4363228.16	
Pb	208	175	He	605.9319	ug/l	1.1	20104683.64	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	182925.98	0.9	174167.8	105.03	
In	115	He	1824686.66	1.4	1744428.82	104.6	
Lu	175	He	5616588.94	0.8	5356471.87	104.86	

Continuing Calibration Verification (CCV) Report

Sample Name CCV

File Name 036_CCV.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:50:24

Sample Type CCV

Comment ---

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	CPS	% Rec	QC Flag
Cr	52	72	He	24.4090	ug/l	1.8	89246.51	97.64	
Cr	53	72	He	24.4131	ug/l	1.2	11038.01	97.65	
[Pb]	206	175	He	25.2855	ug/l	1.1	204432.91	101.14	
[Pb]	207	175	He	25.2629	ug/l	0.8	182034.73	101.05	
Pb	208	175	He	25.1718	ug/l	1.0	837290.42	100.69	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	185276.84	0.6	174167.8	106.38	
In	115	He	1894124.51	1.8	1744428.82	108.58	
Lu	175	He	5627008.80	0.4	5356471.87	105.05	

Continuing Calibration Blank (CCB) Report

Sample Name CCB

File Name 037_CCB.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:52:35

Sample Type CCB

Comment ---

ISTD Ref FileName 007CALB.d

Operator **ALKLS**

QC Analyte Table **NoUser**

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	0.0325	ug/l	75.3	1007.82	
Cr	53	72	He	-0.0319	ug/l	N/A	210.00	
[Pb]	206	175	He	0.0496	ug/l	13.6	560.01	
[Pb]	207	175	He	0.0458	ug/l	10.7	478.90	
Pb	208	175	He	0.0495	ug/l	12.9	2307.87	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	187589.81	3.3	174167.8	107.71	
In	115	He	1905846.80	3.9	1744428.82	109.25	
Lu	175	He	5817680.60	4.7	5356471.87	108.61	

Sample Report

Sample Name K1900942-003

File Name 038SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:54:46

Sample Type Sample

Comment 5X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	32.5150	ug/l	0.7	116501.96	
Cr	53	72	He	33.1542	ug/l	0.7	14647.38	
[Pb]	206	175	He	509.2128	ug/l	1.0	4150871.78	
[Pb]	207	175	He	488.5657	ug/l	0.7	3549091.11	
Pb	208	175	He	484.4178	ug/l	0.8	16244890.88	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	182005.41	1.2	174167.8	104.5	
In	115	He	1848573.95	0.4	1744428.82	105.97	
Lu	175	He	5676708.25	1.4	5356471.87	105.98	

Sample Report

Sample Name K1900942-004

File Name 039SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:56:57

Sample Type Sample

Comment 5X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	22.6688	ug/l	3.0	77146.92	
Cr	53	72	He	22.0409	ug/l	4.3	9288.08	
[Pb]	206	175	He	79.5853	ug/l	2.9	608539.23	
[Pb]	207	175	He	75.0599	ug/l	3.2	511462.53	
Pb	208	175	He	76.6424	ug/l	2.6	2411156.99	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	172355.26	1.4	174167.8	98.96	
In	115	He	1697328.27	1.5	1744428.82	97.3	
Lu	175	He	5326943.26	2.8	5356471.87	99.45	

Sample Report

Sample Name K1900942-005

File Name 040SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 13:59:08

Sample Type Sample

Comment 5X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	23.5991	ug/l	0.3	89188.47	
Cr	53	72	He	24.0396	ug/l	2.6	11233.70	
[Pb]	206	175	He	771.1915	ug/l	0.8	6457302.94	
[Pb]	207	175	He	743.3669	ug/l	0.5	5547151.03	
Pb	208	175	He	741.6349	ug/l	0.4	25548111.20	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	191433.35	0.2	174167.8	109.91	
In	115	He	1912691.87	0.9	1744428.82	109.65	
Lu	175	He	5831382.69	0.2	5356471.87	108.87	

Sample Report

Sample Name K1900942-006

File Name 041SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:01:20

Sample Type Sample

Comment 5X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	28.7951	ug/l	0.9	108350.78	
Cr	53	72	He	28.9891	ug/l	3.6	13464.16	
[Pb]	206	175	He	1963.4629	ug/l	1.9	16137342.14	
[Pb]	207	175	He	1890.3389	ug/l	2.6	13844494.45	
Pb	208	175	He	1894.6398	ug/l	2.4	64055437.46	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	190959.06	1.1	174167.8	109.64	
In	115	He	1914901.24	1.2	1744428.82	109.77	
Lu	175	He	5725387.83	2.4	5356471.87	106.89	

Sample Report

Sample Name K1900942-007

File Name 042SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:03:31

Sample Type Sample

Comment 5X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	21.7380	ug/l	1.7	79728.64	
Cr	53	72	He	21.7457	ug/l	2.3	9875.08	
[Pb]	206	175	He	78.2385	ug/l	0.3	635809.54	
[Pb]	207	175	He	73.8103	ug/l	0.1	534562.86	
Pb	208	175	He	75.2479	ug/l	0.2	2515754.54	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	185627.53	0.6	174167.8	106.58	
In	115	He	1836335.28	0.7	1744428.82	105.27	
Lu	175	He	5658332.41	1.1	5356471.87	105.64	

Continuing Calibration Verification (CCV) Report

Sample Name CCV

File Name 043_CCV.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:05:42

Sample Type CCV

Comment ---

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	CPS	% Rec	QC Flag
Cr	52	72	He	24.8700	ug/l	1.0	87122.68	99.48	
Cr	53	72	He	24.7946	ug/l	1.6	10737.83	99.18	
[Pb]	206	175	He	25.3772	ug/l	0.8	201462.71	101.51	
[Pb]	207	175	He	25.1643	ug/l	0.2	178047.94	100.66	
Pb	208	175	He	25.1200	ug/l	0.7	820441.84	100.48	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	177541.94	0.7	174167.8	101.94	
In	115	He	1779086.18	0.3	1744428.82	101.99	
Lu	175	He	5525252.14	1.1	5356471.87	103.15	

Continuing Calibration Blank (CCB) Report

Sample Name CCB

File Name 044_CCB.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:07:53

Sample Type CCB

Comment ---

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	0.0126	ug/l	79.0	906.69	
Cr	53	72	He	-0.1142	ug/l	N/A	168.89	
[Pb]	206	175	He	0.0567	ug/l	1.9	602.24	
[Pb]	207	175	He	0.0480	ug/l	9.5	480.01	
Pb	208	175	He	0.0542	ug/l	2.6	2402.32	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	182285.98	0.3	174167.8	104.66	
In	115	He	1862714.72	3.2	1744428.82	106.78	
Lu	175	He	5643589.36	0.3	5356471.87	105.36	

Low Level Continuing Calibration Verification (LLCCV) Report

Sample Name	LLCCVS
File Name	045LCCV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\021519A2_#2.b
Acq Time	2019-02-15 14:10:04
Sample Type	LLCCV
Comment	---
ISTD Ref FileName	007CALB.d
Sample QC Pass/Fial	Fail
ISTD QC Pass/Fail	Pass
Operator	ALKLS NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	% Rec	QC Flag
Cr	52	72	He	0.4140	ug/l	6.2	2325.73	103.5	
Cr	53	72	He	0.3412	ug/l	19.6	365.56	85.3	
[Pb]	206	175	He	0.1368	ug/l	1.9	1232.28	136.8	
[Pb]	207	175	He	0.1356	ug/l	6.8	1094.49	135.6	
Pb	208	175	He	0.1348	ug/l	1.8	5007.01	134.8	LLCCV Failed

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	181520.32	1.3	174167.8	104.22	
In	115	He	1834475.62	1.5	1744428.82	105.16	
Lu	175	He	5555247.97	1.3	5356471.87	103.71	

Rev
2/15/19

Low Level Continuing Calibration Verification (LLCCV) Report

Sample Name	LLCCVS
File Name	046LCCV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\021519A2_#2.b
Acq Time	2019-02-15 14:12:14
Sample Type	LLCCV
Comment	---
ISTD Ref FileName	007CALB.d
Sample QC Pass/Fial	Pass
ISTD QC Pass/Fail	Pass
Operator	**ALKLS** **NoUser**

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	% Rec	QC Flag
Cr	52	72	He	0.4240	ug/l	14.3	2390.18	106	
Cr	53	72	He	0.3772	ug/l	39.9	385.56	94.3	
[Pb]	206	175	He	0.1244	ug/l	5.5	1153.39	124.4	
[Pb]	207	175	He	0.1196	ug/l	4.7	1000.04	119.6	
Pb	208	175	He	0.1217	ug/l	1.5	4659.20	121.7	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	183880.59	2.1	174167.8	105.58	
In	115	He	1840756.31	2.6	1744428.82	105.52	
Lu	175	He	5655390.19	2.5	5356471.87	105.58	

Prep Blank (PB) Report

Sample Name	KQ1901915-01
File Name	047_PB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\021519A2_#2.b
Acq Time	2019-02-15 14:14:26
Sample Type	PB
Comment	5X
ISTD Ref FileName	007CALB.d
Operator	**ALKLS** **NoUser**

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	0.0946	ug/l	27.1	1243.38	
Cr	53	72	He	0.0116	ug/l	200.2	232.23	
[Pb]	206	175	He	0.0137	ug/l	76.3	255.56	
[Pb]	207	175	He	0.0240	ug/l	6.8	308.89	
Pb	208	175	He	0.0200	ug/l	18.0	1268.92	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	189303.47	2.1	174167.8	108.69	
In	115	He	1890602.43	3.0	1744428.82	108.38	
Lu	175	He	5688031.02	1.2	5356471.87	106.19	

Quality Control Sample (QCS) Report

Sample Name	KQ1901915-02
File Name	048_LCS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\021519A2_#2.b
Acq Time	2019-02-15 14:16:37
Sample Type	QCS
Total Dilution	1.0000
Comment	20X
ISTD Ref FileName	007CALB.d
Sample QC Pass/Fial	Pass
ISTD QC Pass/Fail	Pass
Operator	**ALKLS** **NoUser**

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	ExpValue	% Rec	QC Flag
Cr	52	72	He	61.9184	ug/l	0.6	227228.61	72	86	
Cr	53	72	He	64.2681	ug/l	1.4	28969.76	72	89.26	
[Pb]	206	175	He	53.3247	ug/l	1.8	432088.74	55.5	96.08	
[Pb]	207	175	He	50.2567	ug/l	1.5	362939.40	55.5	90.55	
Pb	208	175	He	51.6376	ug/l	1.3	1721529.32	55.5	93.04	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	%QC Low	%QC High	QC Flag
Ge	72	He	187060.77	0.3	174167.8	107.4	70	125	
In	115	He	1872296.25	0.8	1744428.82	107.33	70	125	
Lu	175	He	5642229.78	1.2	5356471.87	105.33	70	125	

Reference Sample Report

Sample Name K1900611-001

File Name 049_ARF.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:18:48

Sample Type AllRef

Comment 5X

ISTD Ref FileName 007CALB.d

Sample QC Pass/Fial Pass

ISTD QC Pass/Fail Pass

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	30.8051	ug/l	2.2	107422.72	
Cr	53	72	He	31.1772	ug/l	1.3	13414.12	
[Pb]	206	175	He	41.3097	ug/l	1.3	327035.02	
[Pb]	207	175	He	38.7925	ug/l	1.0	273708.03	
Pb	208	175	He	39.7136	ug/l	1.2	1293507.30	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	177081.10	1.1	174167.8	101.67	
In	115	He	1762766.25	1.1	1744428.82	101.05	
Lu	175	He	5511518.12	0.8	5356471.87	102.89	

Sample Report

Sample Name KQ1901915-03

File Name 050SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:20:58

Sample Type Sample

Comment 5X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	50.1674	ug/l	0.7	184713.83	
Cr	53	72	He	51.4175	ug/l	2.1	23277.88	
[Pb]	206	175	He	35.8194	ug/l	0.8	295282.17	
[Pb]	207	175	He	33.6907	ug/l	0.8	247524.39	
Pb	208	175	He	34.5836	ug/l	0.7	1172933.67	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	187517.87	0.9	174167.8	107.67	
In	115	He	1881799.92	0.6	1744428.82	107.87	
Lu	175	He	5738675.61	1.0	5356471.87	107.14	

Sample Report

Sample Name K1900611-001L

File Name 051SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:23:09

Sample Type Sample

Comment 25X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	6.3181	ug/l	1.4	22888.45	
Cr	53	72	He	6.2798	ug/l	2.5	2894.70	
[Pb]	206	175	He	8.5390	ug/l	0.5	67733.25	
[Pb]	207	175	He	8.0876	ug/l	1.6	57186.62	
Pb	208	175	He	8.2312	ug/l	0.4	268648.59	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	178572.68	1.9	174167.8	102.53	
In	115	He	1779558.96	2.4	1744428.82	102.01	
Lu	175	He	5513037.00	0.2	5356471.87	102.92	

Post Digestion Spike Sample (PDS) Report

Sample Name K1900611-001A

File Name 052_PDS.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:25:20

Sample Type PDS

Comment 5X +50ppb

ISTD Ref FileName 007CALB.d

QC Ref File Name 049_
ARF.

Default Text ÁLKLS
NoUser

QC Analyte Table

Name	Mass	Tune	Conc.	Units	Conc. RSD	CPS	Spk Amt	% Rec	Flag
Cr	52	He	81.0625	ug/l	1.4	277788.21	50	100.51	
Cr	53	He	81.6798	ug/l	2.3	34354.04	50	101.01	
[Pb]	206	He	90.7461	ug/l	0.1	716476.00	50	98.87	
[Pb]	207	He	87.6576	ug/l	0.7	616771.61	50	97.73	
Pb	208	He	88.7597	ug/l	0.4	2883104.04	50	98.09	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	174854.58	1.1	174167.8	100.39	
In	115	He	1768390.28	1.9	1744428.82	101.37	
Lu	175	He	5497709.92	1.0	5356471.87	102.64	

Matrix Spike Sample (MS) Report

Sample Name KQ1901915-04

File Name 053_Spk.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:27:31

Sample Type Spike

Comment 5X

ISTD Ref FileName 007CALB.d

QC Ref File Name 049_
ARF.

Default Text ÁLKLS
NoUser

QC Analyte Table

Name	Mass	Tune	Conc.	Units	Conc. RSD	CPS	Spk Amt	% Rec	Flag
Cr	52	He	104.1074	ug/l	0.6	365544.03	80	91.63	
Cr	53	He	104.7260	ug/l	1.6	45101.78	80	91.94	
[Pb]	206	He	233.7037	ug/l	1.2	1895564.92	200	96.2	
[Pb]	207	He	218.8489	ug/l	1.8	1582358.76	200	90.03	
Pb	208	He	221.1305	ug/l	1.1	7380607.00	200	90.71	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	179262.03	1.1	174167.8	102.92	
In	115	He	1801933.89	1.0	1744428.82	103.3	
Lu	175	He	5649049.08	1.4	5356471.87	105.46	

Sample Report

Sample Name K1900611-002

File Name 054SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:29:41

Sample Type Sample

Comment 5X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	13.2334	ug/l	0.3	45623.11	
Cr	53	72	He	13.1499	ug/l	4.9	5655.39	
[Pb]	206	175	He	23.0625	ug/l	1.5	180750.24	
[Pb]	207	175	He	21.2181	ug/l	1.5	148213.20	
Pb	208	175	He	21.8889	ug/l	1.3	705802.63	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	173251.94	0.2	174167.8	99.47	
In	115	He	1749061.11	0.8	1744428.82	100.27	
Lu	175	He	5454372.84	0.8	5356471.87	101.83	

Sample Report

Sample Name K1900611-003

File Name 055SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:31:52

Sample Type Sample

Comment 5X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	16.2879	ug/l	2.3	57231.72	
Cr	53	72	He	16.4756	ug/l	3.1	7192.64	
[Pb]	206	175	He	30.0370	ug/l	1.5	238785.61	
[Pb]	207	175	He	28.2998	ug/l	1.2	200515.24	
Pb	208	175	He	28.8954	ug/l	1.3	945077.32	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	177174.06	0.7	174167.8	101.73	
In	115	He	1787450.63	1.3	1744428.82	102.47	
Lu	175	He	5533930.20	1.5	5356471.87	103.31	

Sample Report

Sample Name K1900611-004

File Name 056SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:34:04

Sample Type Sample

Comment 5X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	34.7113	ug/l	1.0	130024.58	
Cr	53	72	He	33.6011	ug/l	2.7	15520.33	
[Pb]	206	175	He	65.8914	ug/l	0.8	545187.55	
[Pb]	207	175	He	62.5687	ug/l	1.6	461330.36	
Pb	208	175	He	63.9484	ug/l	1.2	2176721.23	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	190372.04	1.1	174167.8	109.3	
In	115	He	1876592.15	2.9	1744428.82	107.58	
Lu	175	He	5761204.49	1.5	5356471.87	107.56	

Continuing Calibration Verification (CCV) Report

Sample Name CCV

File Name 057_CCV.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:36:15

Sample Type CCV

Comment ---

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	CPS	% Rec	QC Flag
Cr	52	72	He	24.8656	ug/l	1.1	88775.24	99.46	
Cr	53	72	He	24.9493	ug/l	1.2	11011.32	99.8	
[Pb]	206	175	He	25.2757	ug/l	1.3	202814.69	101.1	
[Pb]	207	175	He	24.8589	ug/l	1.7	177768.08	99.44	
Pb	208	175	He	24.9219	ug/l	1.4	822723.93	99.69	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	180956.71	1.7	174167.8	103.9	
In	115	He	1806679.51	0.5	1744428.82	103.57	
Lu	175	He	5584904.08	1.0	5356471.87	104.26	

Continuing Calibration Blank (CCB) Report

Sample Name CCB

File Name 058_CCB.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:38:26

Sample Type CCB

Comment ---

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	0.0130	ug/l	55.7	883.36	
Cr	53	72	He	-0.1847	ug/l	N/A	134.45	
[Pb]	206	175	He	0.0202	ug/l	15.1	296.67	
[Pb]	207	175	He	0.0147	ug/l	7.0	231.12	
Pb	208	175	He	0.0185	ug/l	3.8	1171.14	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	177301.56	1.1	174167.8	101.8	
In	115	He	1793599.30	3.3	1744428.82	102.82	
Lu	175	He	5452599.09	2.1	5356471.87	101.79	

Sample Report

Sample Name K1900611-005

File Name 059SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:40:37

Sample Type Sample

Comment 5X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	53.8476	ug/l	2.0	210435.82	
Cr	53	72	He	53.9969	ug/l	2.7	25944.97	
[Pb]	206	175	He	17.5721	ug/l	1.1	150553.21	
[Pb]	207	175	He	16.2032	ug/l	2.2	123728.25	
Pb	208	175	He	16.7620	ug/l	1.6	590857.34	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	199115.81	1.1	174167.8	114.32	
In	115	He	1965120.27	0.9	1744428.82	112.65	
Lu	175	He	5961244.62	0.7	5356471.87	111.29	

Sample Report

Sample Name K1900612-001

File Name 060SMPL.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:42:49

Sample Type Sample

Comment 5X

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	36.7641	ug/l	0.8	141090.98	
Cr	53	72	He	36.6711	ug/l	2.4	17339.87	
[Pb]	206	175	He	29.5877	ug/l	0.8	248292.91	
[Pb]	207	175	He	27.9522	ug/l	0.4	209052.82	
Pb	208	175	He	28.5655	ug/l	1.1	986204.98	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	195117.92	2.1	174167.8	112.03	
In	115	He	1914215.69	0.8	1744428.82	109.73	
Lu	175	He	5841027.27	1.9	5356471.87	109.05	

Continuing Calibration Verification (CCV) Report

Sample Name CCV

File Name 061_CCV.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:45:00

Sample Type CCV

Comment ---

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	CPS	% Rec	QC Flag
Cr	52	72	He	24.9618	ug/l	0.7	95747.61	99.85	
Cr	53	72	He	25.2232	ug/l	1.7	11958.62	100.89	
[Pb]	206	175	He	24.8512	ug/l	1.5	209372.03	99.4	
[Pb]	207	175	He	24.5177	ug/l	0.6	184093.26	98.07	
Pb	208	175	He	24.5910	ug/l	0.7	852369.55	98.36	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	194405.72	0.7	174167.8	111.62	
In	115	He	1984720.41	1.8	1744428.82	113.77	
Lu	175	He	5863290.46	0.4	5356471.87	109.46	

Continuing Calibration Blank (CCB) Report

Sample Name CCB

File Name 062_CCB.d

Data Path Name D:\Agilent\ICPMH\1\DATA\021519A2_#2.b

Acq Time 2019-02-15 14:47:11

Sample Type CCB

Comment ---

ISTD Ref FileName 007CALB.d

Operator **ALKLS**
NoUser

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Units	Conc. RSD	CPS	QC Flag
Cr	52	72	He	0.0324	ug/l	18.5	1025.59	
Cr	53	72	He	-0.0444	ug/l	N/A	208.89	
[Pb]	206	175	He	0.0212	ug/l	4.8	318.89	
[Pb]	207	175	He	0.0131	ug/l	32.0	231.11	
Pb	208	175	He	0.0165	ug/l	19.5	1157.80	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	191329.24	1.1	174167.8	109.85	
In	115	He	1923166.31	1.9	1744428.82	110.25	
Lu	175	He	5718398.80	1.5	5356471.87	106.76	

Low Level Continuing Calibration Verification (LLCCV) Report

Sample Name	LLCCVS
File Name	063LCCV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\021519A2_#2.b
Acq Time	2019-02-15 14:49:22
Sample Type	LLCCV
Comment	---
ISTD Ref FileName	007CALB.d
Sample QC Pass/Fial	Pass
ISTD QC Pass/Fail	Pass
Operator	**ALKLS** **NoUser**

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	Conc. RSD	CPS	% Rec	QC Flag
Cr	52	72	He	0.4276	ug/l	2.5	2500.19	106.9	
Cr	53	72	He	0.4584	ug/l	33.9	438.90	114.6	
[Pb]	206	175	He	0.0998	ug/l	3.4	970.04	99.8	
[Pb]	207	175	He	0.1104	ug/l	7.3	947.82	110.4	
Pb	208	175	He	0.1015	ug/l	1.5	4054.69	101.5	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	QC Flag
Ge	72	He	191095.94	1.7	174167.8	109.72	
In	115	He	1896654.51	2.4	1744428.82	108.73	
Lu	175	He	5752069.77	2.5	5356471.87	107.39	

Service Request # K1900611, K1900612, K1900942
Instrument ID # K-ICP-MS-04
Calibration 021519AICPMS04
ALS LIMS Run # 625408

Cal Std: MS24-36-L
ICV Std: MS24-36-M
LLICV Std: MS24-36-N
I.S. Solution: MS24-9-I
Tune Solution: MS24-21-C
Pipettes: 18010244, DH12718, 18005955
Pipette Check Due: 3/19/19

ICSA: MS24-37-A
ICSAB: MS24-37-B

ICP-MS Data Review Form

	Yes	No	NA
1. Appropriate standardization completed	X		
2. ICV in control (+/- 10%)	X		
3. CCV's in control (+/- 10%)	X		
4. ICB/CCB's below MRL	X		
5. LLICV standard analyzed and in control	X		
6. ICS standards within 20% of true value	X		
6. All analytes within instrument linear range	X		
7. Adequate rinse out time allowed	X		
8. Internal standards in control	X		
9. Interferences checked	X		
10. Was the run terminated? If so, why.		X	

See Benchsheet exception report for sample batch QC information.
Comments: IVBA Extract

Sample Batches: 331388

Primary Review by [signature] Date 2/15/19
Secondary Review by [signature] Date 2/19/19

Data Review Form

Instrument ID#: **K-ICP-MS-04**
DataFile Name: **R:\ICP\WIP\DATA\K-ICP-MS-04 (NexION)\021519a.TXT**
RUNNO: **625408**

K1900611

No exceptions to report.

K1900612

No exceptions to report.

K1900942

K1900611-001MS - IVBA Extract - report K1900942-001 BQC
MS Recovery
6020A/IVBA Metals T - Pb-KED2 - Recovery: 73 Limits: 75 - 125 post spike okay

Primary Approver: aw 2/15/19
Secondary Approver: 2/19/19

Dataset Report

User Name: ALKLS.ALKLSXP373
Computer Name: ALKLSXP373
Dataset File Path: C:\NexIONData\DataSet\021519A\
Report Date/Time: Friday, February 15, 2019 14:39:47

The Dataset

Sample ID	Date and Time	Read Type	Description	Batch ID	Samp. File Name
Prime	13:07:11 Fri 15-Feb-19	Sample			C:\NexIONData\DataSet\021519A\Prime.001
Rinse	13:09:05 Fri 15-Feb-19	Sample			C:\NexIONData\DataSet\021519A\Rinse.002
Prime	13:10:58 Fri 15-Feb-19	Sample			C:\NexIONData\DataSet\021519A\Prime.003
Rinse	13:12:52 Fri 15-Feb-19	Sample			C:\NexIONData\DataSet\021519A\Rinse.004
Blank	13:14:50 Fri 15-Feb-19	Blank			C:\NexIONData\DataSet\021519A\Blank.005
Standard 1	13:16:43 Fri 15-Feb-19	Standard #1			C:\NexIONData\DataSet\021519A\Standard 1
ICV	13:18:36 Fri 15-Feb-19	QC Std #1			C:\NexIONData\DataSet\021519A\ICV.007
CCV	13:20:30 Fri 15-Feb-19	QC Std #2			C:\NexIONData\DataSet\021519A\CCV.008
ICB	13:22:24 Fri 15-Feb-19	QC Std #3			C:\NexIONData\DataSet\021519A\ICB.009
CCB	13:24:18 Fri 15-Feb-19	QC Std #4			C:\NexIONData\DataSet\021519A\CCB.010
LLICVS	13:26:11 Fri 15-Feb-19	QC Std #5			C:\NexIONData\DataSet\021519A\LLICVS.01
ICSA	13:28:04 Fri 15-Feb-19	QC Std #8			C:\NexIONData\DataSet\021519A\ICSA.012
ICSAB	13:29:58 Fri 15-Feb-19	QC Std #9			C:\NexIONData\DataSet\021519A\ICSAB.013
MoSTD	13:31:52 Fri 15-Feb-19	QC Std #10			C:\NexIONData\DataSet\021519A\MoSTD.01
KQ1901912-01	13:33:46 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\KQ190191
KQ1901912-02	13:35:39 Fri 15-Feb-19	Sample	20X		C:\NexIONData\DataSet\021519A\KQ190191
KQ1901912-03	13:37:33 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\KQ190191
KQ1901912-03	13:39:26 Fri 15-Feb-19	Sample	20X		C:\NexIONData\DataSet\021519A\KQ190191
K1900611-001	13:41:20 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\K1900611-
KQ1901912-04	13:43:13 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\KQ190191
K1900611-001L	13:45:06 Fri 15-Feb-19	Sample	25X		C:\NexIONData\DataSet\021519A\K1900611-
K1900611-001A	13:47:00 Fri 15-Feb-19	Sample	5X +50ppb		C:\NexIONData\DataSet\021519A\K1900611-
KQ1901912-05	13:48:53 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\KQ190191
K1900611-002	13:50:47 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\K1900611-
CCV	13:52:43 Fri 15-Feb-19	QC Std #2			C:\NexIONData\DataSet\021519A\CCV.025
CCB	13:54:37 Fri 15-Feb-19	QC Std #4			C:\NexIONData\DataSet\021519A\CCB.026
K1900611-003	13:56:33 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\K1900611-
K1900611-004	13:58:26 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\K1900611-
K1900611-005	14:00:19 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\K1900611-
K1900612-001	14:02:12 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\K1900612-
K1900942-001	14:04:06 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\K1900942-
KQ1901912-06	14:05:59 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\KQ190191
K1900942-001L	14:07:52 Fri 15-Feb-19	Sample	25X		C:\NexIONData\DataSet\021519A\K1900942-
K1900942-001A	14:09:46 Fri 15-Feb-19	Sample	5X +50ppb		C:\NexIONData\DataSet\021519A\K1900942-
KQ1901912-07	14:11:39 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\KQ190191
K1900942-002	14:13:33 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\K1900942-
CCV	14:15:29 Fri 15-Feb-19	QC Std #2			C:\NexIONData\DataSet\021519A\CCV.037
CCB	14:17:22 Fri 15-Feb-19	QC Std #4			C:\NexIONData\DataSet\021519A\CCB.038
LLCCVS	14:19:16 Fri 15-Feb-19	QC Std #6			C:\NexIONData\DataSet\021519A\LLCCVS.0
K1900942-003	14:21:12 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\K1900942-
K1900942-004	14:23:05 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\K1900942-
K1900942-005	14:24:59 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\K1900942-
K1900942-006	14:26:52 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\K1900942-
K1900942-007	14:28:45 Fri 15-Feb-19	Sample	5X		C:\NexIONData\DataSet\021519A\K1900942-
CCV	14:30:40 Fri 15-Feb-19	QC Std #2			C:\NexIONData\DataSet\021519A\CCV.045
CCB	14:32:34 Fri 15-Feb-19	QC Std #4			C:\NexIONData\DataSet\021519A\CCB.046
LLCCVS	14:34:28 Fri 15-Feb-19	QC Std #6			C:\NexIONData\DataSet\021519A\LLCCVS.0

SmartTune Wizard - Details

Optimization Details

SmartTune file: C:\NexIONData\Wizard\SmartTune\CAS SmartTune Full FAST.swz

Optimization Status

Start Time: 2/15/2019 11:50:10 AM

Mass Calibration and Resolution

Optimization Settings:

Method: C:\NexIONData\Method\CAS Tuning.mth.
MassCal File: C:\NexIONData\MassCal\Default.tun
Iterations: 6
Target accuracy (+/- amu): 0.1 for Mass Cal. and 0.1 for Resolution
Peak height (%) for Res. Opt.: 5

Optimization Results:

Initial Try

Target/Obtained mass (7.016/7.025), Target/Obtained resolution (0.7/0.670)
Target/Obtained mass (9.0122/9.025), Target/Obtained resolution (0.7/0.654)
Target/Obtained mass (23.985/24.025), Target/Obtained resolution (0.7/0.680)
Target/Obtained mass (58.9332/58.975), Target/Obtained resolution (0.7/0.688)
Target/Obtained mass (114.904/114.925), Target/Obtained resolution (0.7/0.692)
Target/Obtained mass (139.905/139.875), Target/Obtained resolution (0.7/0.715)
Target/Obtained mass (207.977/207.975), Target/Obtained resolution (0.7/0.690)
Target/Obtained mass (208.98/208.975), Target/Obtained resolution (0.7/0.691)
Target/Obtained mass (238.05/238.075), Target/Obtained resolution (0.7/0.690)

[Passed] Optimum value(s): N/A

Daily Performance Report

Sample ID: Daily Performance Check

Sample Date/Time: Friday, February 15, 2019 11:57:03
Sample Description:
Method File: C:\NexION Data\Method\CAS Daily Performance.mth
Dataset File: C:\NexION Data\DataSet\Default\Daily Performance Check.1934
MassCal File: C:\NexION Data\MassCal\Default.tun
Conditions File: C:\NexION Data\Conditions\Default.dac
Dual Detector Mode: Pulse
Acq. Dead Time (ns): 35
Current Dead Time (ns): 35
Torch Z position (mm): 0.00

Summary

	Analyte	Mass	Meas. Intens. Mean	Net Intens. Mean	Net Intens. SD	Net Intens. RSD	Mode
	Li	7.0	62539.6	62539.599	1611.325	2.6	Standard
	Be	9.0	19784.9	19784.897	479.670	2.4	Standard
	Mg	24.0	63983.6	63983.586	1761.257	2.8	Standard
	Co	58.9	44400.8	44400.837	1660.471	3.7	Standard
	In	114.9	93907.4	93907.363	2106.256	2.2	Standard
	Pb	208.0	95229.5	95229.490	1589.915	1.7	Standard
	Bi	209.0	72440.4	72440.437	1119.057	1.5	Standard
	U	238.1	76717.6	76717.612	1120.291	1.5	Standard
⌈	CeO	155.9	1411.1	0.018	0.001	7.7	Standard
| >	Ce	139.9	79161.8	79161.839	1302.973	1.6	Standard
⌊	Ce++	70.0	1741.3	0.022	0.001	3.7	Standard
	Bkgd	220.0	0.3	0.267	0.365	136.9	Standard

Replicates

Repeat 1

Analyte	Mass	Meas. Intensity
Li	7	63776.041
Be	9	20357.161
Mg	24	66166.878
Co	59	46446.716
In	115	96789.447
Pb	208	97094.282
Bi	209	73392.041
U	238	77805.973
CeO	156	1556.085
Ce	140	79950.432
Ce++	70	1871.456
Bkgd	220	0.667

Repeat 2

Analyte	Mass	Meas. Intensity
Li	7	62416.055
Be	9	19328.400
Mg	24	63778.720
Co	59	43780.984
In	115	92556.198
Pb	208	94685.847
Bi	209	72449.917
U	238	76218.785
CeO	156	1308.060
Ce	140	78409.929
Ce++	70	1700.768
Bkgd	220	0.000

Repeat 3

Analyte	Mass	Meas. Intensity
Li	7	64191.228
Be	9	20146.195
Mg	24	65016.950
Co	59	45420.090
In	115	95261.226

Pb	208	96490.423
Bi	209	73522.040
U	238	77871.663
CeO	156	1538.083
Ce	140	80733.484
Ce++	70	1756.108
Bkgd	220	0.667

Repeat 4

Analyte	Mass	Meas. Intensity
Li	7	62227.903
Be	9	19811.061
Mg	24	63476.713
Co	59	44280.521
In	115	93364.767
Pb	208	94779.523
Bi	209	72070.002
U	238	76452.026
CeO	156	1382.067
Ce	140	79316.915
Ce++	70	1724.771
Bkgd	220	0.000

Repeat 5

Analyte	Mass	Meas. Intensity
Li	7	60086.766
Be	9	19281.670
Mg	24	61478.670
Co	59	42075.872
In	115	91565.176
Pb	208	93097.378
Bi	209	70768.185
U	238	75239.615
CeO	156	1271.390
Ce	140	77398.435
Ce++	70	1653.429
Bkgd	220	0.000

Current Conditions File Data

Current Value	Description
0.91	Nebulizer Gas Flow STD/KED [NEB]
1.20	Auxiliary Gas Flow
16.00	Plasma Gas Flow
-9.50	Deflector Voltage
1600.00	ICP RF Power
-1825.00	Analog Stage Voltage
1250.00	Pulse Stage Voltage
0.00	Quadrupole Rod Offset STD [QRO]
-14.50	Cell Rod Offset STD [CRO]
8.00	Discriminator Threshold
-5.00	Cell Entrance/Exit Voltage STD
0.00	RPa
0.45	RPq
0.91	DRC Mode NEB
-6.50	DRC Mode QRO
-1.50	DRC Mode CRO
-10.00	DRC Mode Cell Entrance/Exit Voltage
3.50	Cell Gas A
0.00	Cell Gas B
280.00	Axial Field Voltage
-15.00	KED Mode CRO
-12.00	KED Mode QRO
-4.00	KED Mode Cell Entrance Voltage
-40.00	KED Mode Cell Exit Voltage
0.00	KED Cell Gas A
5.00	KED Cell Gas B
0.00	KED RPa
0.25	KED RPq
475.00	KED Mode Axial Field Voltage

LABWORKS - Summary Report

Sample ID: Blank
Sample Date/Time: Friday, February 15, 2019 13:14:50
Sample Description:
Autosampler Position: 1
Number of Replicates: 3
Dataset File: C:\NexIONData\DataSet\021519A\Blank.005
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	159.7	3.7			ppb
|	Cr-KED3	53	35.3	37.7			ppb
⌊>	Ge-KED3	72	10985.9	2.4			ppb
⌈>	Lu-KED2	175	78337.2	0.5			ppb
⌊	Pb-KED2	208	59.3	27.5			ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % RDuplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52				
|	Cr-KED3	53				
⌊>	Ge-KED3	72				
⌈>	Lu-KED2	175				
⌊	Pb-KED2	208				

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

AM 2/15/19

LABWORKS - Summary Report

Sample ID: Standard 1
Sample Date/Time: Friday, February 15, 2019 13:16:43
Sample Description:
Autosampler Position: 2
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\Standard 1.006
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	8117.6	1.4	25.00000	2.0	ppb
|	Cr-KED3	53	1060.0	5.6	25.00000	5.8	ppb
⌊>	Ge-KED3	72	11695.1	0.7			ppb
⌈>	Lu-KED2	175	82753.0	1.9			ppb
⌊	Pb-KED2	208	219099.1	1.7	25.00000	0.4	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72					
⌈>	Lu-KED2	175					
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: ICV
Sample Date/Time: Friday, February 15, 2019 13:18:36
Sample Description:
Autosampler Position: 3
Number of Replicates: 3
Dataset File: C:\NexIONData\DataSet\021519A\ICV.007
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	3262.0	0.7	10.19208	0.8	ppb
|	Cr-KED3	53	407.3	14.1	9.49807	15.9	ppb
⌊>	Ge-KED3	72	11186.7	0.7			ppb
⌈>	Lu-KED2	175	81091.5	1.0			ppb
⌊	Pb-KED2	208	215989.9	0.1	25.15100	1.0	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % RDuplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52	102			
|	Cr-KED3	53	95			
⌊>	Ge-KED3	72		102		
⌈>	Lu-KED2	175		104		
⌊	Pb-KED2	208	101			

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: CCV
Sample Date/Time: Friday, February 15, 2019 13:20:30
Sample Description:
Autosampler Position: 2
Number of Replicates: 3
Dataset File: C:\NexIONData\DataSet\021519A\CCV.008
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	7477.6	2.3	25.42398	0.8	ppb
|	Cr-KED3	53	955.4	1.6	24.87303	3.1	ppb
⌊>	Ge-KED3	72	10595.6	1.7			ppb
⌈>	Lu-KED2	175	75876.0	1.7			ppb
⌊	Pb-KED2	208	201877.3	1.8	25.12207	0.8	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % RDuplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52	102			
|	Cr-KED3	53	99			
⌊>	Ge-KED3	72		96		
⌈>	Lu-KED2	175		97		
⌊	Pb-KED2	208	100			

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: ICB
Sample Date/Time: Friday, February 15, 2019 13:22:24
Sample Description:
Autosampler Position: 1
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\ICB.009
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	152.0	3.9	-0.01805	126.1	ppb
|	Cr-KED3	53	29.3	32.2	-0.14593	166.3	ppb
⌊>	Ge-KED3	72	10826.1	1.5			ppb
⌈>	Lu-KED2	175	80137.8	0.7			ppb
⌊	Pb-KED2	208	68.7	6.7	0.00094	57.6	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		99			
⌈>	Lu-KED2	175		102			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: CCB
Sample Date/Time: Friday, February 15, 2019 13:24:18
Sample Description:
Autosampler Position: 1
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\CCB.010
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	179.7	17.7	0.05845	194.9	ppb
|	Cr-KED3	53	34.0	17.6	-0.04871	313.7	ppb
⌊>	Ge-KED3	72	11163.7	1.4			ppb
⌈>	Lu-KED2	175	79495.9	0.8			ppb
⌊	Pb-KED2	208	66.0	19.9	0.00070	232.9	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % RDuplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52				
|	Cr-KED3	53				
⌊>	Ge-KED3	72		102		
⌈>	Lu-KED2	175		101		
⌊	Pb-KED2	208				

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: LLICVS
Sample Date/Time: Friday, February 15, 2019 13:26:11
Sample Description:
Autosampler Position: 4
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\LLICVS.011
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	309.3	7.3	0.44615	14.7	ppb
|	Cr-KED3	53	50.7	6.0	0.32938	22.6	ppb
⌊>	Ge-KED3	72	11599.0	0.6			ppb
⌈>	Lu-KED2	175	85318.0	0.1			ppb
⌊	Pb-KED2	208	948.0	0.8	0.09779	0.7	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52	112				
|	Cr-KED3	53	82				
⌊>	Ge-KED3	72		106			
⌈>	Lu-KED2	175		109			
⌊	Pb-KED2	208	98				

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: ICSA
Sample Date/Time: Friday, February 15, 2019 13:28:04
Sample Description:
Autosampler Position: 5
Number of Replicates: 3
Dataset File: C:\NexIONData\DataSet\021519A\ICSA.012
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	490.0	3.5	1.34734	5.6	ppb
|	Cr-KED3	53	462.0	8.5	12.87777	9.8	ppb
⌊>	Ge-KED3	72	9579.2	0.7			ppb
⌈>	Lu-KED2	175	78493.4	2.1			ppb
⌊	Pb-KED2	208	1245.4	1.9	0.14276	3.7	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		87			
⌈>	Lu-KED2	175		100			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: ICSAB
Sample Date/Time: Friday, February 15, 2019 13:29:58
Sample Description:
Autosampler Position: 6
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\ICSAB.013
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	14063.6	2.5	51.55004	1.8	ppb
|	Cr-KED3	53	2170.8	3.7	61.66018	7.1	ppb
⌊>	Ge-KED3	72	9935.8	3.7			ppb
⌈>	Lu-KED2	175	76138.7	0.9			ppb
⌊	Pb-KED2	208	1331.4	3.0	0.15801	3.3	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52	103				
|	Cr-KED3	53	123				
⌊>	Ge-KED3	72		90			
⌈>	Lu-KED2	175		97			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: MoSTD
Sample Date/Time: Friday, February 15, 2019 13:31:52
Sample Description:
Autosampler Position: 301
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\MoSTD.014
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	26.7	9.4	-0.43511	1.9	ppb
|	Cr-KED3	53	5.3	21.7	-0.76538	4.0	ppb
⌊>	Ge-KED3	72	9853.1	2.9			ppb
⌈>	Lu-KED2	175	83779.6	0.2			ppb
⌊	Pb-KED2	208	52.0	21.4	-0.00129	97.9	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		90			
⌈>	Lu-KED2	175		107			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: KQ1901912-01
Sample Date/Time: Friday, February 15, 2019 13:33:46
Sample Description: 5X
Autosampler Position: 302
Number of Replicates: 3
Dataset File: C:\NexIONData\DataSet\021519A\KQ1901912-01.015
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	166.0	6.3	0.01002	330.2	ppb
|	Cr-KED3	53	22.0	36.4	-0.35920	55.8	ppb
⌊>	Ge-KED3	72	11210.4	0.8			ppb
⌈>	Lu-KED2	175	84999.5	1.7			ppb
⌊	Pb-KED2	208	66.0	18.2	0.00020	741.6	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % RDuplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52				
|	Cr-KED3	53				
⌊>	Ge-KED3	72		102		
⌈>	Lu-KED2	175		109		
⌊	Pb-KED2	208				

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: KQ1901912-02
Sample Date/Time: Friday, February 15, 2019 13:35:39
Sample Description: 20X
Autosampler Position: 303
Number of Replicates: 3
Dataset File: C:\NexIONData\DataSet\021519A\KQ1901912-02.016
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	6096.3	1.1	19.75067	2.6	ppb
|	Cr-KED3	53	774.7	9.8	19.10104	9.0	ppb
⌊>	Ge-KED3	72	11058.3	1.9			ppb
⌈>	Lu-KED2	175	81695.7	2.4			ppb
⌊	Pb-KED2	208	420460.5	0.8	48.61616	1.9	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		101			
⌈>	Lu-KED2	175		104			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: KQ1901912-03
Sample Date/Time: Friday, February 15, 2019 13:37:33
Sample Description: 5X
Autosampler Position: 304
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\KQ1901912-03.017
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	654.3	5.9	1.67875	6.2	ppb
|	Cr-KED3	53	96.7	18.7	1.62056	27.8	ppb
⌊>	Ge-KED3	72	10870.8	1.2			ppb
⌈>	Lu-KED2	175	82614.2	1.8			ppb
⌊	Pb-KED2	208	19627807.1	1.3	2244.12575	1.0	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		99			
⌈>	Lu-KED2	175		105			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: KQ1901912-03
Sample Date/Time: Friday, February 15, 2019 13:39:26
Sample Description: 20X
Autosampler Position: 305
Number of Replicates: 3
Dataset File: C:\NexIONData\DataSet\021519A\KQ1901912-03.018
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	330.3	2.5	0.58473	5.1	ppb
|	Cr-KED3	53	51.3	15.7	0.43201	48.3	ppb
⌊>	Ge-KED3	72	10856.1	0.4			ppb
⌈>	Lu-KED2	175	82355.4	5.0			ppb
⌊	Pb-KED2	208	5120015.0	0.3	588.07910	4.7	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % RDuplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52				
|	Cr-KED3	53				
⌊>	Ge-KED3	72		99		
⌈>	Lu-KED2	175		105		
⌊	Pb-KED2	208				

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

not needed
am 2/15/19

LABWORKS - Summary Report

Sample ID: K1900611-001
Sample Date/Time: Friday, February 15, 2019 13:41:20
Sample Description: 5X
Autosampler Position: 306
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\K1900611-001.019
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	799.0	4.9	2.38353	6.2	ppb
|	Cr-KED3	53	176.7	23.9	4.09250	28.8	ppb
⌊>	Ge-KED3	72	10072.9	0.4			ppb
⌈>	Lu-KED2	175	78784.0	0.5			ppb
⌊	Pb-KED2	208	133690.7	0.7	16.01994	0.5	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		92			
⌈>	Lu-KED2	175		101			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: KQ1901912-04
Sample Date/Time: Friday, February 15, 2019 13:43:13
Sample Description: 5X
Autosampler Position: 307
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\KQ1901912-04.020
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	816.4	1.0	2.36851	0.6	ppb
|	Cr-KED3	53	177.3	6.2	3.98234	7.2	ppb
⌊>	Ge-KED3	72	10343.7	0.6			ppb
⌈>	Lu-KED2	175	83266.7	1.8			ppb
⌊	Pb-KED2	208	140942.7	1.1	15.98188	1.4	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		94			
⌈>	Lu-KED2	175		106			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: K1900611-001L
Sample Date/Time: Friday, February 15, 2019 13:45:06
Sample Description: 25X
Autosampler Position: 308
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\K1900611-001L.021
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	289.3	2.6	0.46473	4.4	ppb
|	Cr-KED3	53	58.7	14.2	0.65680	35.9	ppb
⌊>	Ge-KED3	72	10649.3	0.7			ppb
⌈>	Lu-KED2	175	84240.3	1.3			ppb
⌊	Pb-KED2	208	30123.0	1.6	3.37021	1.2	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % RDuplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52				
|	Cr-KED3	53				
⌊>	Ge-KED3	72		97		
⌈>	Lu-KED2	175		108		
⌊	Pb-KED2	208				

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: K1900611-001A
Sample Date/Time: Friday, February 15, 2019 13:47:00
Sample Description: 5X +50ppb
Autosampler Position: 309
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\K1900611-001A.022
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	14603.5	1.6	52.64532	1.5	ppb
|	Cr-KED3	53	1938.8	3.2	53.96887	3.3	ppb
⌊>	Ge-KED3	72	10101.2	0.1			ppb
⌈>	Lu-KED2	175	82641.0	0.7			ppb
⌊	Pb-KED2	208	553738.8	0.4	63.27972	0.7	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % RDuplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52				
|	Cr-KED3	53				
⌊>	Ge-KED3	72		92		
⌈>	Lu-KED2	175		105		
⌊	Pb-KED2	208				

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: KQ1901912-05
Sample Date/Time: Friday, February 15, 2019 13:48:53
Sample Description: 5X
Autosampler Position: 310
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\KQ1901912-05.023
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	21512.2	1.1	77.41478	1.5	ppb
|	Cr-KED3	53	2881.6	2.5	80.27906	4.1	ppb
⌊>	Ge-KED3	72	10154.3	2.5			ppb
⌈>	Lu-KED2	175	81958.1	0.9			ppb
⌊	Pb-KED2	208	1408887.3	0.1	162.36049	1.0	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		92			
⌈>	Lu-KED2	175		105			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: K1900611-002
Sample Date/Time: Friday, February 15, 2019 13:50:47
Sample Description: 5X
Autosampler Position: 311
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\K1900611-002.024
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	1228.7	4.3	4.17106	6.1	ppb
|	Cr-KED3	53	206.7	6.4	5.23419	8.8	ppb
⌊>	Ge-KED3	72	9608.9	1.2			ppb
⌈>	Lu-KED2	175	79815.0	0.7			ppb
⌊	Pb-KED2	208	82600.3	0.8	9.76745	1.0	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		87			
⌈>	Lu-KED2	175		102			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: CCV
Sample Date/Time: Friday, February 15, 2019 13:52:43
Sample Description:
Autosampler Position: 2
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\CCV.025
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	7711.1	2.6	24.88043	2.3	ppb
|	Cr-KED3	53	952.7	11.4	23.43642	8.0	ppb
⌊>	Ge-KED3	72	11165.0	3.6			ppb
⌈>	Lu-KED2	175	82144.5	1.7			ppb
⌊	Pb-KED2	208	220900.7	0.7	25.39413	1.0	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52	100				
|	Cr-KED3	53	94				
⌊>	Ge-KED3	72		102			
⌈>	Lu-KED2	175		105			
⌊	Pb-KED2	208	102				

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: CCB
Sample Date/Time: Friday, February 15, 2019 13:54:37
Sample Description:
Autosampler Position: 1
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\CCB.026
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	162.7	11.0	0.00406	1354.0	ppb
|	Cr-KED3	53	20.0	20.0	-0.40392	26.9	ppb
⌊>	Ge-KED3	72	11102.6	2.4			ppb
⌈>	Lu-KED2	175	84835.2	1.9			ppb
⌊	Pb-KED2	208	167.3	12.4	0.01149	21.8	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		101			
⌈>	Lu-KED2	175		108			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: K1900611-003
Sample Date/Time: Friday, February 15, 2019 13:56:33
Sample Description: 5X
Autosampler Position: 312
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\K1900611-003.027
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	1129.7	1.5	3.30514	3.3	ppb
|	Cr-KED3	53	207.3	2.4	4.55731	2.4	ppb
⌊>	Ge-KED3	72	10825.4	1.5			ppb
⌈>	Lu-KED2	175	79476.5	0.3			ppb
⌊	Pb-KED2	208	98502.4	0.4	11.69873	0.7	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		99			
⌈>	Lu-KED2	175		101			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: K1900611-004
Sample Date/Time: Friday, February 15, 2019 13:58:26
Sample Description: 5X
Autosampler Position: 313
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\K1900611-004.028
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	361.3	6.5	0.68411	6.4	ppb
|	Cr-KED3	53	59.3	20.3	0.64263	54.2	ppb
⌊>	Ge-KED3	72	10899.5	3.3			ppb
⌈>	Lu-KED2	175	82979.6	0.8			ppb
⌊	Pb-KED2	208	118516.1	1.0	13.48325	1.5	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		99			
⌈>	Lu-KED2	175		106			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: K1900611-005
Sample Date/Time: Friday, February 15, 2019 14:00:19
Sample Description: 5X
Autosampler Position: 314
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\K1900611-005.029
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	643.0	1.7	1.52678	3.0	ppb
|	Cr-KED3	53	100.7	18.0	1.59043	29.3	ppb
⌊>	Ge-KED3	72	11475.3	0.7			ppb
⌈>	Lu-KED2	175	86819.0	0.5			ppb
⌊	Pb-KED2	208	30758.8	0.6	3.33912	1.1	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		104			
⌈>	Lu-KED2	175		111			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: K1900612-001
Sample Date/Time: Friday, February 15, 2019 14:02:12
Sample Description: 5X
Autosampler Position: 315
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\K1900612-001.030
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	716.4	2.3	1.94679	3.0	ppb
|	Cr-KED3	53	118.7	12.4	2.27284	15.9	ppb
⌊>	Ge-KED3	72	10619.9	1.2			ppb
⌈>	Lu-KED2	175	82372.5	0.5			ppb
⌊	Pb-KED2	208	104954.4	0.6	12.02681	0.1	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		97			
⌈>	Lu-KED2	175		105			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: K1900942-001
Sample Date/Time: Friday, February 15, 2019 14:04:06
Sample Description: 5X
Autosampler Position: 316
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\K1900942-001.031
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	785.0	3.4	1.98758	2.6	ppb
|	Cr-KED3	53	124.0	11.3	2.17797	15.8	ppb
⌊>	Ge-KED3	72	11446.9	1.4			ppb
⌈>	Lu-KED2	175	86065.5	1.9			ppb
⌊	Pb-KED2	208	3076789.9	0.7	337.71908	2.0	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		104			
⌈>	Lu-KED2	175		110			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: KQ1901912-06
Sample Date/Time: Friday, February 15, 2019 14:05:59
Sample Description: 5X
Autosampler Position: 317
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\KQ1901912-06.032
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	770.7	4.3	1.96670	9.0	ppb
|	Cr-KED3	53	97.3	10.1	1.52947	12.0	ppb
⌊>	Ge-KED3	72	11349.2	3.0			ppb
⌈>	Lu-KED2	175	86266.2	3.0			ppb
⌊	Pb-KED2	208	3130734.3	2.4	342.82077	1.4	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		103			
⌈>	Lu-KED2	175		110			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: K1900942-001L
Sample Date/Time: Friday, February 15, 2019 14:07:52
Sample Description: 25X
Autosampler Position: 318
Number of Replicates: 3
Dataset File: C:\NexIONData\DataSet\021519A\K1900942-001L.033
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	275.7	12.1	0.34957	25.8	ppb
|	Cr-KED3	53	40.7	49.3	0.09290	534.5	ppb
⌊>	Ge-KED3	72	11454.6	1.8			ppb
⌈>	Lu-KED2	175	85041.7	0.4			ppb
⌊	Pb-KED2	208	623258.1	0.3	69.21343	0.7	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % RDuplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52				
|	Cr-KED3	53				
⌊>	Ge-KED3	72		104		
⌈>	Lu-KED2	175		109		
⌊	Pb-KED2	208				

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: K1900942-001A
Sample Date/Time: Friday, February 15, 2019 14:09:46
Sample Description: 5X +50ppb
Autosampler Position: 319
Number of Replicates: 3
Dataset File: C:\NexIONData\DataSet\021519A\K1900942-001A.034
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	16027.3	1.9	52.33305	0.7	ppb
|	Cr-KED3	53	2050.1	4.3	51.70057	6.6	ppb
⌊>	Ge-KED3	72	11152.4	2.2			ppb
⌈>	Lu-KED2	175	88269.6	1.3			ppb
⌊	Pb-KED2	208	3589132.3	0.4	384.08216	1.7	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % RDuplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52				
|	Cr-KED3	53				
⌊>	Ge-KED3	72		102		
⌈>	Lu-KED2	175		113		
⌊	Pb-KED2	208				

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: KQ1901912-07
Sample Date/Time: Friday, February 15, 2019 14:11:39
Sample Description: 5X
Autosampler Position: 320
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\KQ1901912-07.035
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	22886.7	2.2	77.28652	0.3	ppb
|	Cr-KED3	53	2875.0	1.6	75.08318	0.8	ppb
⌊>	Ge-KED3	72	10818.4	2.3			ppb
⌈>	Lu-KED2	175	85530.0	2.2			ppb
⌊	Pb-KED2	208	4748804.1	1.6	524.58149	3.0	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		98			
⌈>	Lu-KED2	175		109			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: K1900942-002
Sample Date/Time: Friday, February 15, 2019 14:13:33
Sample Description: 5X
Autosampler Position: 321
Number of Replicates: 3
Dataset File: C:\NexIONData\DataSet\021519A\K1900942-002.036
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	1056.4	4.6	2.91645	6.2	ppb
|	Cr-KED3	53	146.0	6.0	2.78848	8.8	ppb
⌊>	Ge-KED3	72	11262.4	0.7			ppb
⌈>	Lu-KED2	175	81570.2	0.8			ppb
⌊	Pb-KED2	208	4250960.8	0.2	492.21395	0.6	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % RDuplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52				
|	Cr-KED3	53				
⌊>	Ge-KED3	72		103		
⌈>	Lu-KED2	175		104		
⌊	Pb-KED2	208				

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: CCV
Sample Date/Time: Friday, February 15, 2019 14:15:29
Sample Description:
Autosampler Position: 2
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\CCV.037
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	7589.7	0.8	24.91354	0.4	ppb
|	Cr-KED3	53	968.7	11.6	24.34048	12.5	ppb
⌊>	Ge-KED3	72	10970.9	0.8			ppb
⌈>	Lu-KED2	175	83289.8	1.8			ppb
⌊	Pb-KED2	208	225622.0	0.3	25.58258	1.7	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52	100				
|	Cr-KED3	53	97				
⌊>	Ge-KED3	72		100			
⌈>	Lu-KED2	175		106			
⌊	Pb-KED2	208	102				

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: CCB
Sample Date/Time: Friday, February 15, 2019 14:17:22
Sample Description:
Autosampler Position: 1
Number of Replicates: 3
Dataset File: C:\NexIONData\DataSet\021519A\CCB.038
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	187.3	2.0	0.04672	13.7	ppb
|	Cr-KED3	53	28.7	29.0	-0.22983	83.0	ppb
⌊>	Ge-KED3	72	11853.2	1.3			ppb
⌈>	Lu-KED2	175	86790.9	0.7			ppb
⌊	Pb-KED2	208	205.3	15.5	0.01520	23.5	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % RDuplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52				
|	Cr-KED3	53				
⌊>	Ge-KED3	72		108		
⌈>	Lu-KED2	175		111		
⌊	Pb-KED2	208				

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: LLCCVS
Sample Date/Time: Friday, February 15, 2019 14:19:16
Sample Description:
Autosampler Position: 4
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\LLCCVS.039
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	278.0	5.4	0.41836	10.3	ppb
|	Cr-KED3	53	40.7	18.6	0.16640	130.4	ppb
⌊>	Ge-KED3	72	10728.7	1.7			ppb
⌈>	Lu-KED2	175	83758.2	1.2			ppb
⌊	Pb-KED2	208	1064.7	4.7	0.11292	5.3	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52	105				
|	Cr-KED3	53	42				
⌊>	Ge-KED3	72		98			
⌈>	Lu-KED2	175		107			
⌊	Pb-KED2	208	113				

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: K1900942-003
Sample Date/Time: Friday, February 15, 2019 14:21:12
Sample Description: 5X
Autosampler Position: 322
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\K1900942-003.040
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	997.7	3.0	2.81079	2.6	ppb
|	Cr-KED3	53	142.7	8.6	2.79961	11.3	ppb
⌊>	Ge-KED3	72	10969.2	1.2			ppb
⌈>	Lu-KED2	175	87848.0	1.2			ppb
⌊	Pb-KED2	208	3354634.4	0.6	360.70892	1.8	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		100			
⌈>	Lu-KED2	175		112			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: K1900942-004
Sample Date/Time: Friday, February 15, 2019 14:23:05
Sample Description: 5X
Autosampler Position: 323
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\K1900942-004.041
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	1075.0	1.6	2.99333	2.4	ppb
|	Cr-KED3	53	153.3	2.0	2.99420	6.0	ppb
⌊>	Ge-KED3	72	11212.7	2.9			ppb
⌈>	Lu-KED2	175	84260.5	1.2			ppb
⌊	Pb-KED2	208	528479.1	0.8	59.23440	1.2	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		102			
⌈>	Lu-KED2	175		108			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: K1900942-005
Sample Date/Time: Friday, February 15, 2019 14:24:59
Sample Description: 5X
Autosampler Position: 324
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\K1900942-005.042
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	923.4	0.4	2.52891	2.9	ppb
|	Cr-KED3	53	126.7	14.9	2.34228	18.7	ppb
⌊>	Ge-KED3	72	11090.6	2.0			ppb
⌈>	Lu-KED2	175	84285.0	2.4			ppb
⌊	Pb-KED2	208	5184590.5	0.6	581.12708	1.8	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		101			
⌈>	Lu-KED2	175		108			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: K1900942-006
Sample Date/Time: Friday, February 15, 2019 14:26:52
Sample Description: 5X
Autosampler Position: 325
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\K1900942-006.043
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	1292.7	3.8	3.78322	2.2	ppb
|	Cr-KED3	53	172.0	2.0	3.54949	4.7	ppb
⌊>	Ge-KED3	72	11010.6	2.0			ppb
⌈>	Lu-KED2	175	82703.4	0.8			ppb
⌊	Pb-KED2	208	14734538.1	0.8	1682.72760	0.9	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		100			
⌈>	Lu-KED2	175		106			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: K1900942-007
Sample Date/Time: Friday, February 15, 2019 14:28:45
Sample Description: 5X
Autosampler Position: 326
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\K1900942-007.044
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	922.7	5.0	2.56715	4.3	ppb
|	Cr-KED3	53	138.0	9.1	2.68933	12.8	ppb
⌊>	Ge-KED3	72	10939.2	1.7			ppb
⌈>	Lu-KED2	175	84651.1	0.4			ppb
⌊	Pb-KED2	208	474615.0	0.9	52.94876	1.3	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		100			
⌈>	Lu-KED2	175		108			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: CCV
Sample Date/Time: Friday, February 15, 2019 14:30:40
Sample Description:
Autosampler Position: 2
Number of Replicates: 3
Dataset File: C:\NexIONData\DataSet\021519A\CCV.045
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	7850.8	2.8	24.96384	1.3	ppb
|	Cr-KED3	53	995.4	5.9	24.25964	9.4	ppb
⌊>	Ge-KED3	72	11329.5	4.0			ppb
⌈>	Lu-KED2	175	84648.8	2.6			ppb
⌊	Pb-KED2	208	228694.5	1.0	25.51645	1.6	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % RDuplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52	100			
|	Cr-KED3	53	97			
⌊>	Ge-KED3	72		103		
⌈>	Lu-KED2	175		108		
⌊	Pb-KED2	208	102			

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: CCB
Sample Date/Time: Friday, February 15, 2019 14:32:34
Sample Description:
Autosampler Position: 1
Number of Replicates: 3
Dataset File: C:\NexIONData\DataSet\021519A\CCB.046
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	158.0	1.9	-0.01394	97.8	ppb
|	Cr-KED3	53	20.0	17.3	-0.40698	22.8	ppb
⌊>	Ge-KED3	72	11163.7	0.7			ppb
⌈>	Lu-KED2	175	80143.5	1.1			ppb
⌊	Pb-KED2	208	248.0	10.5	0.02205	12.6	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52					
|	Cr-KED3	53					
⌊>	Ge-KED3	72		102			
⌈>	Lu-KED2	175		102			
⌊	Pb-KED2	208					

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

LABWORKS - Summary Report

Sample ID: LLCCVS
Sample Date/Time: Friday, February 15, 2019 14:34:28
Sample Description:
Autosampler Position: 4
Number of Replicates: 3
Dataset File: C:\NexION Data\DataSet\021519A\LLCCVS.047
User Name: EM
Batch ID:

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Conc. Mean	Conc. RSD	Sample Unit
⌈	Cr-KED3	52	306.0	5.3	0.48074	10.7	ppb
|	Cr-KED3	53	50.7	9.1	0.38729	30.6	ppb
⌊>	Ge-KED3	72	11085.3	0.7			ppb
⌈>	Lu-KED2	175	81866.8	3.7			ppb
⌊	Pb-KED2	208	1094.7	3.7	0.11924	5.4	ppb

QC Calculated Values

IS Symbol	Analyte	Mass	QC Std % Recovery	IS % Recovery	Spike % R	Duplicate Rel. % Difference	Dilution % Difference
⌈	Cr-KED3	52	120				
|	Cr-KED3	53	97				
⌊>	Ge-KED3	72		101			
⌈>	Lu-KED2	175		105			
⌊	Pb-KED2	208	119				

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L2168626-COFC

COC Number: 14 -

Page 1 of 1

Report To		Report Format / Distribution	Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)
Company:	Wood plc	Select Report Format: ☑PDF ☑EXCEL ☐EDD (DIGITAL)	R ☑Regular (Standard TAT if received by 3 pm - business days)
Contact:	Brian Geddes + ATT: Suzette Chin	Quality Control (QC) Report with Report ☑ Yes ☐ No	P ☐Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
Address:	#401-1925 18th Avenue NE Calgary, AB, T2E 7T8	☐Criteria on Report - provide details below if box checked Select Distribution: ☑EMAIL ☐MAIL ☐FAX	E ☐Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT E2 ☐Same day or weekend emergency - contact ALS to confirm TAT and surcharge
Phone:	403-387-1639	Email 1 or Fax brian.geddes@woodplc.com	Specify Date Required for E2,E or P:
		Email 2 Suzette.Chin [redacted]	Analysis Request
Invoice To	Same as Report To ☑ Yes ☐ No	Invoice Distribution	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below
	Copy of Invoice with Report ☑ Yes ☐ No	Select Invoice Distribution: ☑EMAIL ☐MAIL ☐FAX	
Company:		Email 1 or Fax brian.geddes@woodplc.com	
Contact:		Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:		Approver ID:	Cost Center:
Job #:	VE52705B	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)		ALS Contact: Suzette Chin	Sampler: CJ/LB

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Total Metals	Asbestos	Number of Containers
	18-BH03-02/ 82' (25m)	06-Sep-18		Soil	R	R	
	18-BH13-02/ 85'	09-Sep-18		Soil	R	R	
	18-BH13-DUP-04/ 50'	09-Sep-18		Soil	R	R	
	BH2018-19-02/ 65'	10-Sep-18		Soil	R	R	
	BH2018-16/20'	12-Sep-18		Soil	R	R	
	BH2018-04/38'	13-Sep-18		Soil	R	R	
	BH2018-18-02/80'	13-Sep-18		Soil	R	R	
	BH2018-05-02/151'	17-Sep-18		Soil	R	R	
	BH2018-02-02/156'	17-Sep-18		Soil	R	R	

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☐ No Are samples for human drinking water use? ☐ Yes ☐ No	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen	☐	SIF Observations	Yes ☐	No ☐
Ice packs	Yes ☐	No ☐	Custody seal intact	Yes ☐ No ☐
Cooling Initiated	☐			

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
3°					

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Nick Proulx	19/09/2018	Time:	Received by:	Date: Sep 21/18	Time: 09:55	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

Appendix G
Air Monitoring Report

401, 1925 – 18 Avenue NE
Calgary, AB T2E 7T8
T: +1 403 248-4331
F: +1 403 248-2188
www.woodplc.com

Memo

To: Brian Geddes, P.Eng.

Company: Wood Environment & Infrastructure Solutions

From: Stephen Barber

Date: 6 March 2019

CC: Patrick Campbell, Wood

Ref: VE52705C.100.2

Re: **Clinton Creek 2018 Site Investigation - Summary Report for Area and Personal Asbestos Air Monitoring During Field Program**

1.0 INTRODUCTION

Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited (Wood) is pleased to provide this final report summarizing the area and personal air monitoring and analytical services provided during the geotechnical drilling assessment and related work at the former Clinton Creek asbestos mine. This report summarizes the information and air monitoring data provided from 16 August 2018 to 18 September 2018. The Clinton Creek mine (the Site) is located approximately 100 km northwest of Dawson City, YT and approximately 10 km north of the former Clinton Creek town site. The drilling subcontractor was Midnight Sun Drilling of Whitehorse, YT.

The air monitoring program was conducted to address three central purposes:

- to confirm that on-site occupational exposures to asbestos were below prescribed limits;
- to expand the dataset on asbestos in air concentrations that will be used to update the project Human Health and Environmental Risk Assessment (HHERA); and
- to identify potential changes to the asbestos Safe Work Practice that may be indicated or supported by the monitoring data.

1.1 Previous Air Monitoring

The 2018 air monitoring program and protocols were guided by the outcomes of air monitoring conducted by Wood (formerly Amec Foster Wheeler; Amec) during the 2016 field investigation program. The conduct and findings of that program are described in Amec (2016)[1]. A summary description of the program and its outcomes follows:

[1] Amec Foster Wheeler. Final Report for Ambient and Occupational Air Monitoring During Field Program at Clinton Creek Asbestos Mine, Clinton Creek, YT. 28 October 2016.

- the program monitored asbestos concentrations in air over two, one-week periods during the drilling program;
- the sampling regime was comprised of the following air samples; 10 background (representative of air quality outside the work areas), 33 ambient (representative of air quality in various work areas) and 35 occupational (representative of air quality immediately proximate to drilling operations); and
- none of the air samples exhibited asbestos fibre counts that exceeded the conservative ambient and occupational sample investigative criteria established for the project air sampling strategy protocol (see the following section). Only one of the 35 occupational samples reached the initial threshold trigger value which, according to the protocol, would have required further evaluation and possible changes to the asbestos Safe Work Practice for the project.

These 2016 monitoring outcomes supported the conclusion that asbestos exposures for workers were low and largely not detectable during the 2018 program. As such, based on further evaluation by the project team as part of the 2018 project planning and development of the 2018 project Health and Safety Plan (HASP), the 2018 air sampling strategy protocol was reduced which respect to the collection of asbestos air sampling. In addition, as was the goal of the 2016 program, worker exposure controls elements in the 2018 HASP and associated 2018 asbestos Safe Work Practice were re-evaluated and relaxed or reduced to reflect the work conditions. These relaxed protocols were reflected in the in the Asbestos Safe Work practice that is included in the project HASP.

2.0 SCOPE OF WORK

2.1 Performance Objectives

The 2016 air monitoring program applied the following performance standards and action limits:

- a 12 hour occupational exposure limit (OEL) of 0.05 asbestos fibres per cubic centimeter (f/cc) - this was taken from the British Columbia (BC) Occupational Health and Safety Regulation; and
- an investigative criterion (i.e., site action level) of 0.01 f/cc, set at 20% of the OEL.

The BC OEL and the 20% investigative criterion are more conservative than the current Yukon occupational exposure limits (OELs) and were adopted to mitigate the uncertainties that were relevant at the time about levels of asbestos exposure that could be associated with drilling operations at Clinton Creek.

The results of the 2016 air monitoring program indicated that airborne asbestos fibre exposures were low even when compared to the more conservative BC Regulation, which addressed the above expressed uncertainties. Given this information, it was decided that the 2018 program would apply the relevant Yukon OELs, supplemented by site-specific assessment criteria, specifically:

- a 12 hour OEL of 0.25 f/cc;
- a site action level of 0.05 f/cc; and
- a project air sampling strategy protocol assessment criterion of 0.015 f/cc.

These limits were established as follows:

- the OEL is adjusted for a 12 hour shift from the 8 hour limits for chrysotile specified in Table 10 of the Yukon Occupational Health Regulations (OHS) (YWCHSB 1986) (i.e., 0.5 (8 hrs/12 hrs) x (24 hrs - 12 hrs) / 16);
- the site action level of 0.05 f/cc OEL is the 12 hour OEL specified in the British Columbia Occupational Health and Safety Regulation (a standard that is more representative of generally accepted international standards). This action level is 20% of the OEL of 0.25 f/cc and is, therefore, conservatively consistent with the 25% of OEL specified in Section 40 of the Yukon OHS as the threshold for defining an "exposed worker" (i.e., a worker who, for at least 10 days in a 12 month period, has been, or could be exposed to airborne asbestos in an amount equal to or greater than 25% of the Table 10 limits). Concentrations above the site action level would precipitate changes in work procedures and/or reductions in the durations of worker exposures; and
- the assessment criterion of 0.015 f/cc was set to approximate the upper end of exposures observed during the 2016 program. Measured concentrations above this value will prompt assessments of the potential reasons for exposures above the 2016 results and considerations of potential mitigative actions if elevated asbestos fibre concentrations persist.

In addition to asbestos fibres, several other potential contaminants of concern are known to be associated with the Clinton property, specifically, antimony, arsenic, barium chromium, lead, manganese, mercury, uranium, and crystalline silica. While these contaminants were not specifically monitored, most share the same major route of entry as asbestos; namely inhalation. The control measures implemented at site focused on dust suppression and decontamination and were, therefore, expected to mitigate inhalation of contaminated dust. The personal protective equipment (PPE) utilized at site was also commonly used for most metals and crystalline silica. The exposure controls for dust and asbestos exposure were also expected to provide protection against inhalation exposure to these other contaminants. Additionally, the implemented work practices (e.g., decontamination before consumption of food) were designed to protect personnel against exposure to metals via incidental ingestion and skin absorption.

2.2 Monitoring Scope

The original scope of work, outlined in Section 7.4 of the project HASP, consisted of three monitoring events run in five-day blocks to assess occupational asbestos exposures through the collection of personal and area air samples. Also specified was a five-day monitoring event on, or near the tailings that will be designed to evaluate the influence of activities that can be correlated to potential transient post closure land uses. While the actual monitoring activities were not stratified timewise in such a manner, the results of the air monitoring program can be interpreted to have captured such events. This is due to the diversity of on-site activities that were sampled through personal and area sampling, such as area sampling in both restricted and non-restricted areas, and personal sampling of several different site personnel performing a variety of tasks.

Additional area air samples were collected in locations of the Site were no drilling or other activities were being conducted. These samples were referred to as passive and were collected for evaluating exposure risk in areas where soils and tailings materials were not being actively disturbed.

Area air sampling for asbestos was completed by installing sampling pumps in areas where airborne asbestos fibre exposures were anticipated to be a risk. This consisted of areas where disturbance activities were occurring and areas where build-up of ground materials might occur due to cross contamination by personnel. Sampling media was set an approximate height of 1.5 meters (m) above ground (approximate average human height). Sample pumps were set to operate in a downward facing manner for collection times generally representing full shifts (approximately 8 to 12 hours).

Personal air samples were collected from personnel directly involved in drilling and sample preparation, as well as personnel performing ancillary functions. Personal samples were collected from general labourers, the on-site medic, heavy equipment operators, driller operators/helpers, environmental samplers, geotechnical personnel, lab technicians and office staff. Sample pumps were positioned in a downward facing manner in the worker's breathing zone (attached to collar) for collection times ranging from approximately 5 to 10 hours.

Area and personal air sampling pumps were set to operate at a flow rate of approximately 2 to 3 L/min and calibrated using a Bios DryCal Primary Flow Meter Calibrator. Pumps were calibrated prior to and following each sampling event. Approximately one (1) field blank was collected for every thirteen (13) samples collected for quality control purposes in accordance with the applicable NIOSH method of analysis. The field blank sample cassettes were handled the same way as the actual samples, with the exception that no air was drawn through the field blank filters.

Asbestos fibre counting was completed by EMSL Analytical, Inc. of Burnaby, BC. EMSL is certified under the Canadian Analytical Laboratory Association (CALA) Proficiency Testing Program for asbestos and other fibres. Samples were analyzed as per NIOSH Method 7400 and results were field blank corrected. Samples were transported from the Site to Dawson City and shipped via courier to the Burnaby EMSL lab. Personnel shipping and receiving samples followed appropriate chain of custody protocols. Once received by EMSL, samples were analyzed at a turnaround time of six hours, allowing on-site personnel to be made aware of the results the same day they were received by the analysis lab.

In the event that the analysis results of a sample exceeded the site-specific assessment criterion of 0.015 f/cc, EMSL was instructed by Wood to perform an additional analysis under NIOSH Method 7402: Transmission Electron Microscopy (TEM). While NIOSH 7400 includes all fibres of a certain size and width in the analysis, TEM is specific to asbestos fibres and provides greater accuracy with regards to the assessment of airborne asbestos fibres.

3.0 DISCUSSION OF SITE ACTIVITIES AND AIR MONITORING RESULTS

In total 44 area, 53 personal and 68 passive samples were collected and analyzed over the course of the field program. Four (4) personal samples and one (1) passive sample were voided due to being overloaded or the integrity of the sample cassettes were suspect due to handling and shipping issues from the field. A summary of the samples collected is provided in Table 3.1 below:

Table 3.1: Sample Personnel, Locations and Quantities

Location/Personnel	No of Air Samples by Type		
	Passive	Area	Personal
Gate	23		
Waste Rock	22		
Tailings	23		
Mobile Laboratory		4	
BH01		1	
Bottom of Tailings Pile		1	
D4 Dozer Cab		1	
UTV		1	
Office		3	
Waste Truck		1	
Emergency Transport Vehicle		5	
BH7		1	
BH11		1	
Area Adjacent to BH11		2	
Area Adjacent to BH7		3	
Wood Pickup Truck (Dirty, i.e., used within Restricted Area		2	
Drilling Rig at BH3 and Pickup Truck at BH19		1	
Midnight Sun Drilling Company Pickup Truck		3	
BH13 Decontamination Booth		1	
BH19, Front of Rig Bomb, Geotechnical Work Area		1	
Mud Bay Truck		2	
BH2 Decontamination Area		1	
BH4 Decontamination Area		1	
Water Truck		1	
BH8 Decontamination Area		1	
Office Exterior		1	
BH5 Decontamination Area		2	
Geotech Trailer Decom Area		2	
Biologist Truck (Upper Tailings)		1	
General Labourer/Driller Helper			12
Dozer Operator			3
Medic			1
Water Truck Driver			1
Drill Rig Operator			27
Environmental Sampler			1
Site Lead Performing Office Work			1
Site Lead Performing Office Work/Field Inspections			1
Lab Technician			2
Drilling Crew Engineer/Observer			1
Geotechnical Engineer			2
Air Sampler Performing Field Inspections/Office Work			1
Total	**68**	**44**	**53**

Air monitoring results are provided in Appendix A. The laboratory analysis reports are provided in Appendix B.

Twenty three (23) boreholes were drilled at site, centred around the two areas of the site associated with asbestos-containing ground materials: the Tailings Area and the Waste Rock Area. Drilling was performed using a truck-mounted hydraulic drill rig.

Area air sampling began on 16 August and personal sampling began on 17 August. Although no drilling was conducted on these days, two bulldozers were used to clear pads in the lower tailings area. These tasks were captured by area samples of a dozer cab and on the UTV and personal samples of both dozer operators and two general labourers aiding the work. Of the five area samples and six personal samples collected, two of the personal samples collected from a general labourer, exceeded the site specific criterion of 0.015 f/cc; however, both were below the Action Level of 0.05 f/cc and the Yukon OEL. The two of the personal samples exceeding the site specific criterion of 0.015 f/cc, were further analyzed by TEM and determined to have asbestos fibre concentrations below the site specific criterion.

On 21 and 22 August, five personal samples were collected from workers directly participating in drilling activities, as well as from field and lab technologists, the site lead in the office and the water truck driver. In addition, three passive samples were collected from the gate, waste rock and tailings areas. Two of the personal samples collected from a driller helper and water truck driver, exceeded the site specific criterion of 0.015 f/cc; however, both were below the Action Level of 0.05 f/cc and the Yukon OEL. The two of the personal samples exceeding the site specific criterion of 0.015 f/cc were further analyzed by TEM and determined to have asbestos fibre concentrations below the site specific criterion.

From 25 to 29 August, 11 personal samples were collected from either the drill rig operator or their helper/labourer. In addition, 30 passive samples were collected from the gate, waste rock and tailings areas during the period of 25 August to 3 September 2018. One of the personal samples collected from a driller exceeded the site specific criterion of 0.015 f/cc; however, both were below the Action Level of 0.05 f/cc and the Yukon OEL. The personal sample exceeding the site specific criterion of 0.015 f/cc was further analyzed by TEM and determined to have non-detectable asbestos fibre concentrations.

On 31 August, on-site personnel resumed collection of area samples, and continued until 5 September, collecting 11 samples within the office, waste truck cab, mobile laboratory, emergency transport (medic) vehicle as well as the BH18-07 and BH18-11 work areas. Twelve personal samples over this same period were collected from drill rig operators, driller helpers/labourers, a bulldozer operator and a geotechnical engineer. Seven of the samples exceeded the site specific criterion of 0.015 f/cc. The samples were submitted for TEM analysis which indicated two area samples from the waste truck cab and from the BH18-07 work area, as well as one of the labourer personal samples, exceeded the site specific criterion of 0.015 f/cc (however, both were below the Action Level of 0.05 f/cc).

The BH18-07 work area was within a restricted area, as was the labourer for most of the work day. Such elevated concentrations were anticipated and controlled using asbestos PPE, as outlined in the asbestos safe work procedure in the project HASP. However, the elevated asbestos fibre concentrations present in the waste truck cab indicates that asbestos fibres were being transported out of the restricted areas where disturbance is occurring, and into areas where asbestos PPE use was not required under the project HASP.

As observed on-site, the source of this cross contamination was likely the tracking of mud and dirt from the tailings and waste rock areas into the waste truck cab. The elevated levels in the cab were addressed during morning safety meetings and managed through cleaning and vacuuming with a HEPA vacuum.

From 7 to 13 September, 14 personal samples were collected from drill rig operators, driller helpers/ general labourers, the site co-lead, a geotechnical engineer and the asbestos safety technologist. Seventeen area samples were collected from the emergency transport (medic) vehicle, the cab of the Wood pickup truck used within restricted areas, the office, within the BH18-3 and BH18-19 work areas, within the MSD pickup truck cab, the mobile lab, and the BH18-13 work area decontamination booth. Six of the samples were determined to have elevated asbestos fibre concentrations compared to the site specific criterion (but below the Action Level). Based on the TEM sampling, one of the personal samples collected from the asbestos safety technologist was determined to have an asbestos concentration exceeding the site specific criterion of 0.015 f/cc. This person spent considerable time within restricted work areas that day and, therefore, was wearing asbestos PPE during this exposure. Four area samples that exceeded the site specific criterion of 0.015 f/cc were also submitted for TEM analysis. The samples collected from the mobile lab and office areas were determined to have asbestos fibre concentrations exceeding the site specific criterion of 0.015 f/cc; however, both were below the Action Level of 0.05 f/cc and the Yukon OEL. With regards to the mobile laboratory, this area consisted of a modular trailer and itself was classified as a restricted area, due to the handling of asbestos contaminated core samples. Full asbestos PPE was required for entry into the trailer. The elevated concentrations found in the remaining area samples indicate that asbestos fibres may transported out of restricted areas into non-restricted areas.

These elevated concentrations were discussed during morning safety meetings and managed through extensive cleaning and vacuuming using a HEPA vacuum. It was noted that follow up samples collected in the mud bay truck and MSD truck did not show elevated asbestos fibre concentrations.

Eleven area samples collected from 15 to 18 September included the BH18-02, BH18-04, BH18-05 and BH18-08 decontamination areas as well as from the emergency transport (medic) vehicle, water truck cab, biologist truck cab, the geotech trailer decontamination area and the office exterior. Five personal samples over this time were collected exclusively from drill rig operators. Twelve passive air samples were also collected. No elevated asbestos fibre concentrations were found through sample analysis during this period, indicating that improvements to the on-site practices and increased cleaning were effective in managing potential asbestos occupational exposures.

Based on the air sampling completed during the 15 to 18 September 2019, it was determined that the asbestos inspection and air sampling program could be concluded and that the HASP was effective in managing potential asbestos occupational exposures.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the air monitoring, elevated concentrations of asbestos fibres, when compared to the conservative assessment criterion, were found in several locations, within and outside of restricted areas. Elevated asbestos fibre concentrations were also associated with several personnel performing tasks within the restricted areas of the site. While none of the elevated concentrations reached the site specific Action Level of 0.05 f/cc or the applicable Yukon OEL, the results indicate that intrusive site activities have

the potential to generate airborne asbestos fibres in the waste rock and tailings areas of site. Furthermore, elevated concentrations of asbestos fibres present in non-restricted areas indicated that asbestos contamination may be transported from restricted areas either through wind transport or through cross-contamination.

It is important to note that the air monitoring results indicate that the intrusive activities did not generate asbestos fibre concentrations above the Action Level or the applicable Yukon OEL. Nevertheless, the assessment criterion was put in place as a benchmark to determine if improvement measures with regards to safe work practices are potential required. Based on the air samples and observation s made at the end of the field program, it was evident that adherence to the HASP, in addition to effective training and program oversight, are effective in managing potential asbestos occupational exposures at the site during the drilling program.

5.0 CLOSURE

Wood has prepared this report for the express use of the Yukon Government for asbestos analysis during the geotechnical drilling assessment performed at the Clinton Creek mine site in August and September of 2018.

Thank you once again for the opportunity to be of service. If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

Reviewed by:

Stephen Barber, B.Sc.
Occupational Hygienist

Patrick Campbell, B.Sc., EP, CRSP
Senior Associate Environmental Scientist

SB/PC/jm

Attachment A

Results of Asbestos Air Monitoring

														PCM Analysis							Standard/ Site-specific Assessment Criteria		TEM Analysis							
Sample Date	**Sample Date**	**Sample Type**	**Sample Description**	**Time On**		**Time Off**		**Sampling Time**	**Sample Time**	**F1**	**F2**	**Sample Flow Rate**	**Sample Volume**	**Lab Report No.**	**Fibres**	**Fields**	**LOD**	**Fibres/ mm²**	**Fibres/ cc**	**Lab Report Notes**	**Percentage (%) Compare to OHS 12-hr OEL**	**Yukon OHS 12-hr OEL = 0.25 f/cc Site Action Level = 0.05 f/cc (20% of the OEL of 0.25 f/cc) Assessment Criterion = 0.015 f/cc (6% of the OEL/ set to approx. upper end of exposures observed during 2016 program)**	**Non Asbestos Fibres**	**Asbestos Types (s)**	**Asbestos Fibres**	**PCM**	**Asbestos % of Total**	**7402 Adjusted (TEM)**	**Percentage (%) Compare to OHS 12-hr OEL**	**Comments**
Start	**End**			**(hr.)**	**(min.)**	**(hr.)**	**(min.)**		**(Min)**	**(L/M)**	**(L/M)**	**(L/M)**	**(L)**				**(fib/cc)**								**(F/cc)**				**(F/cc)**		
16-Aug-18	16-Aug-18	Area	Mobile Laboratory										1536.52	691802208	<5.5	100	0.002	<7.01	<0.002			< LOD								
16-Aug-18	16-Aug-18	Area	BH01										1447.55	691802208	5.5	100	0.002	7.01	0.002		0.8%	< Standard/ Criterion								
16-Aug-18	16-Aug-18	Area	Bottom of Tailings Pile										1266.92	691802208	5.5	100	0.002	7.01	0.002		0.8%	< Standard/ Criterion								
17-Aug-18	17-Aug-18	Personal	General Labourer										859.93	691802213	45.5	100	0.003	58.0	0.026		10.4%	< OEL, < Action Level, > Assessment Criterion	4	Chrysotile	2	0.026	33.3	0.0087	3.5%	< Action Level/ Assessment Criterion
17-Aug-18	17-Aug-18	Personal	General Labourer										821.83	691802213	62.5	100	0.003	79.6	0.037		14.8%	< OEL, < Action Level, > Assessment Criterion	5.5	Chrysotile	1.5	0.037	21.4	0.0079	3.2%	< Action Level/ Assessment Criterion
17-Aug-18	17-Aug-18	Area	D4 Dozer Cab										1690.74	691802213	18.5	100	0.002	23.6	0.005		2.0%	< Standard/ Criterion								
17-Aug-18	17-Aug-18	Personal	Dozer Operator										1781.12	691802213	15.5	100	0.002	19.7	0.004		1.6%	< Standard/ Criterion								
17-Aug-18	17-Aug-18	Area	UTV										1879.20	691802213	<5.5	100	0.001	<7.01	<0.001			< LOD								
17-Aug-18	17-Aug-18	Personal	Medic										1635.76	691802213	6	100	0.002	7.64	0.002		0.8%	< Standard/ Criterion								
17-Aug-18	17-Aug-18	Personal	D4 Dozer Operator										1770.42	691802213	24.5	100	0.002	31.2	0.007		2.8%	< Standard/ Criterion								
17-Aug-18	17-Aug-18	Personal	Environmental Sampling										1746.23	691802213	30	100	0.002	38.2	0.008		3.2%	< Standard/ Criterion								
21-Aug-18	21-Aug-18	Personal	Drill Operator - Drilling BH 1										1994.22	691802278	16.5	100	0.001	21.0	0.004		1.6%	< Standard/ Criterion								
21-Aug-18	21-Aug-18	Personal	Geo Tech, Drilling BH 9/ Logging																	Overloaded										
21-Aug-18	21-Aug-18	Personal	Lab Tech, Washing Material/ Moisture										1893.48	691802278	21.5	100	0.001	27.4	0.006		2.4%	< Standard/ Criterion								
22-Aug-18	22-Aug-18	Personal	Drill Helper, Drilling BH 9										1046.05	691802278	31.5	100	0.003	40.1	**0.015**		6.0%	< OEL, < Action Level, > Assessment Criterion	17.5	None Detected	0	0.015	0	<0.0026	<1.04%	No asbestos fibres
22-Aug-18	22-Aug-18	Personal	Water Truck Driver										987.69	691802278	58	100	0.003	73.9	**0.029**		11.6%	< OEL, < Action Level, > Assessment Criterion	49.5	Actinolite Chrysotile Tremolite	1 14 4	0.029	27.7	0.008	3.2%	< Action Level/ Assessment Criterion
22-Aug-18		Blank	Field Blank										0	691802278	<5.5	100		<7.01		Field blank										
14-Aug-18	21-Aug-18	Passive	Gate									3.095	31042.85	691802278	18	100	0.0001	22.9	0.0003		0.1%	< Standard/ Criterion								
17-Aug-18	21-Aug-18	Passive	Waste Rock									3.059	18705.79	691802278	7.5	100	0.0001	9.55	0.0002		0.1%	< Standard/ Criterion								
17-Aug-18	21-Aug-18	Passive	Tailings									3.054	18684.37	691802278	<5.5	100	0.0001	<7.01	<0.0001			< LOD								
22-Aug-18	22-Aug-18	Personal	Site Lead, Office Work										1256.84	691802278	21.5	100	0.002	27.4	0.008		3.2%	< Standard/ Criterion								
23-Aug-18		Blank	Field Blank										0	691802278	<5.5	100		<7.01		Field blank										
25-Aug-18	25-Aug-18	Personal	Lab Technician										244.80	691802322	15	100	0.011	19.1	**0.030**		12.0%	< OEL, < Action Level, > Assessment Criterion	2	None Detected	0	0.03	0	<0.0110	<4.4%	No asbestos fibres
25-Aug-18	25-Aug-18	Personal	Drilling Crew - Engineer, Observer										246.00	691802322	17	100	0.011	21.7	**0.034**		13.6%	< OEL, < Action Level, > Assessment Criterion	6	Chrysotile	2	0.034	25	<0.0110	<4.4%	< Action Level/ Assessment Criterion
25-Aug-18	25-Aug-18	Personal	Drilling Crew										245.16	691802322	6	100	0.011	7.64	0.012		4.8%	< Standard/ Criterion								
21-Aug-18	25-Aug-18	Passive	Gate									2.817	16338.6	691802322	69.5	100	0.0002	88.5	0.002		0.8%	< Standard/ Criterion								
21-Aug-18	24-Aug-18	Passive	Waste Rock									3.073	4425.12	691802322	35.5	100	0.001	45.2	0.004		1.6%	< Standard/ Criterion								
21-Aug-18	26-Aug-18	Passive	Tailings									3.035	20106.8	691802322	88	100	0.0001	112	0.002		0.8%	< Standard/ Criterion								
24-Aug-18	26-Aug-18	Passive	Waste Rock									2.962	8085.08	691802322	62.5	100	0.0003	79.6	0.004		1.6%	< Standard/ Criterion								
26-Aug-18	26-Aug-18	Passive	Gate									2.421	1428.1	691802322	<5.5	100	0.002	<7.01	<0.002			< LOD								
		Passive	Waste Rock									2.290																		
26-Aug-18	26-Aug-18	Passive	Tailings									2.340	1392.00	691802322	<5.5	100	0.002	<7.01	<0.002			< LOD								
27-Aug-18	27-Aug-18	Passive	Gate									2.614	1503.05	691802349	8.5	100	0.002	10.8	0.003		1.2%	< Standard/ Criterion								
27-Aug-18	27-Aug-18	Passive	Waste Rock									2.434	1375.21	691802349	8	100	0.002	10.2	0.003		1.2%	< Standard/ Criterion								
27-Aug-18	27-Aug-18	Passive	Tailings									2.424	1405.92	691802349	<5.5	100	0.002	<7.01	<0.002			< LOD								
28-Aug-18	28-Aug-18	Passive	Gate									2.401	1416.00	691802349	<5.5	100	0.002	<7.01	<0.002			< LOD								
28-Aug-18	28-Aug-18	Passive	Waste Rock									2.323	1138.27	691802349	<5.5	100	0.002	<7.01	<0.002			< LOD								
28-Aug-18	28-Aug-18	Passive	Tailings									2.036	1160.52	691802349	<5.5	100	0.002	<7.01	<0.002			< LOD								
26-Aug-18	26-Aug-18	Personal	Driller										1310.44	691802349	<5.5	100	0.002	<7.01	<0.002			< LOD								
26-Aug-18	26-Aug-18	Personal	Labourer										367.50	691802349	<5.5	100	0.007	<7.01	<0.007			< LOD								
27-Aug-18	27-Aug-18	Personal	Driller										793.80	691802349	10	100	0.003	12.7	0.006		2.4%	< Standard/ Criterion								
28-Aug-18	28-Aug-18	Personal	Labourer										514.80	691802349	<5.5	100	0.005	<7.01	<0.005			< LOD								
28-Aug-18	28-Aug-18	Personal	Driller										327.60	691802349	<5.5	100	0.008	<7.01	<0.008			< LOD								
28-Aug-18	28-Aug-18	Personal	Driller										577.50	691802349	<5.5	100	0.005	<7.01	<0.005			< LOD								
29-Aug-18	29-Aug-18	Personal	Driller										330.20	691802349	13.5	100	0.008	17.2	**0.020**		8.0%	< OEL, < Action Level, > Assessment Criterion	None Detected	NA	0	0.020	0	<0.0082	NA	No asbestos fibres
29-Aug-18	29-Aug-18	Personal	Driller										315.00	691802349	<5.5	100	0.009	<7.01	<0.009			< LOD								
29-Aug-18	29-Aug-18	Passive	Gate									2.603	1678.94	691802349	<5.5	100	0.002	<7.01	<0.002			< LOD								
29-Aug-18	29-Aug-18	Passive	Waste Rock									2.287	1269.29	691802349	<5.5	100	0.002	<7.01	<0.002			< LOD								
29-Aug-18	29-Aug-18	Passive	Tailings									2.298	1321.35	691802349	<5.5	100	0.002	<7.01	<0.002			< LOD								
30-Aug-18	30-Aug-18	Passive	Gate									2.040	1173.00	691802392	6	100	0.002	7.64	0.003		1.2%	< Standard/ Criterion								
30-Aug-18	30-Aug-18	Passive	Waste Rock									2.401	1368.57	691802392	<5.5	100	0.002	<7.01	<0.002			< LOD								
30-Aug-18	30-Aug-18	Passive	Tailings									2.224	1089.76	691802392	9	100	0.002	11.5	0.004		1.6%	< Standard/ Criterion								
31-Aug-18	31-Aug-18	Passive	Gate									2.425	1552.00	691802392	<5.5	100	0.002	<7.01	<0.002			< LOD								
31-Aug-18	31-Aug-18	Passive	Waste Rock									2.634	1514.55	691802392	<5.5	100	0.002	<7.01	<0.002			< LOD								
31-Aug-18	31-Aug-18	Passive	Tailings									2.342	1358.36	691802392	<5.5	100	0.002	<7.01	<0.002			< LOD								
1-Sep-18	1-Sep-18	Passive	Gate									2.360	1534.00	691802392	<5.5	100	0.002	<7.01	<0.002			< LOD								
1-Sep-18	1-Sep-18	Passive	Waste Rock									2.053	1211.27	691802392	<5.5	100	0.002	<7.01	<0.002			< LOD								
1-Sep-18	1-Sep-18	Passive	Tailings									2.408	1505.00	691802392	<5.5	100	0.002	<7.01	<0.002			< LOD								
2-Sep-18	2-Sep-18	Passive	Gate									2.314	1249.56	691802392	<5.5	100	0.002	<7.01	<0.002			< LOD								
2-Sep-18	2-Sep-18	Passive	Waste Rock									2.435	1351.43	691802392	<5.5	100	0.002	<7.01	<0.002			< LOD								
2-Sep-18	2-Sep-18	Passive	Tailings									2.248	1157.72	691802392	<5.5	100	0.002	<7.01	<0.002			< LOD								
3-Sep-18	3-Sep-18	Passive	Gate									2.343	1370.07	691802392	6	100	0.002	7.64	0.002		0.8%	< Standard/ Criterion								
3-Sep-18	3-Sep-18	Passive	Waste Rock									2.320	1229.60	691802392	<5.5	100	0.002	<7.01	<0.002			< LOD								
3-Sep-18	3-Sep-18	Passive	Tailings									2.321	1229.60	691802392	<5.5	100	0.002	<7.01	<0.002			< LOD								
29-Aug-18	29-Aug-18	Personal	Driller at BH10										459.00	691802392	<5.5	100	0.006	<7.01	<0.006			< LOD								
31-Aug-18	31-Aug-18	Area	Office										1049.94	691802392	45	100	0.003	57.3	**0.021**		8.4%	< OEL, < Action Level, > Assessment	3	Chrysotile	7	0.021	70	0.0147	5.9%	< Action Level/ Assessment
31-Aug-18	31-Aug-18	Personal	Labourer										1422.63	691802392	<5.5	100	0.002	<7.01	<0.002			< LOD								
31-Aug-18	31-Aug-18	Personal	Bulldozer Operator										1071.18	691802392	24.5	100	0.003	31.2	0.011		4.4%	< Standard/ Criterion								
1-Sep-18	1-Sep-18	Personal	Driller										1071.63	691802392	<5.5	100	0.003	<7.01	<0.003			< LOD								
1-Sep-18	1-Sep-18	Personal	Driller at BH6											691802392						Overload										
1-Sep-18	1-Sep-18	Area	Waste Truck										1232.79	691802392	102.5	65	0.002	201	**0.063**		**25.2%**	< OEL, > Action Level, > Assessment Criterion	16.5	Chrysotile	9.5	0.063	36.5	**0.0230**	9.2%	> Assessment Criterion, < Action Level
1-Sep-18	1-Sep-18	Area	Lab										1173.93	691802392	<5.5	100	0.002	<7.01	<0.002			< LOD								
2-Sep-18	2-Sep-18	Personal	Driller											691802392						Filter Damaged										
2-Sep-18	2-Sep-18	Personal	Geotechnical Engineer (Jim McDonald)										277.56	691802392	<5.5	100	0.010	<7.01	<0.010			< LOD								
3-Sep-18	3-Sep-18	Area	Emergency Transport Vehicle										576.30	691802392	17.5	100	0.005	22.3	**0.015**		6.0%	< OEL, < Action Level, > Assessment Criterion	0	None Detected	0	0.015	0	<0.0047	NA	No asbestos fibres
2-Sep-18	2-Sep-18	Area	BH7										1090.13	691802392	<5.5	100	0.002	<7.01	<0.002			< LOD								
3-Sep-18	3-Sep-18	Personal	Labourer										806.25	691802392	26.5	100	0.003	33.8	**0.016**		6.4%	< OEL, < Action Level, > Assessment Criterion	2	Chrysotile	1.5	0.016	42.9	0.0069	2.8%	< Action Level/ Assessment Criterion
3-Sep-18	3-Sep-18	Personal	Labourer (Driller's helper - Josh at BH6)										878.67	691802392	35.5	100	0.003	45.2	**0.020**		8.0%	< OEL, < Action Level, > Assessment Criterion	4	Actinolite Chrysotile	4 4.5	0.02	68	0.0136	5.4%	< Action Level/ Assessment Criterion
3-Sep-18	3-Sep-18	Area	BH11										900.24	691802392	<5.5	100	0.003	<7.01	<0.003		<1.2%	< LOD								
3-Sep-18	3-Sep-18	Area	Area adjacent to BH7										963.90	691802392	82.5	100	0.003	105	**0.042**		**16.8%**	< OEL, < Action Level, > Assessment Criterion	4	Actinolite Chrysotile	8.5 3	0.042	74.2	**0.0312**	12.5%	> Assessment Criterion, < Action Level
3-Sep-18	3-Sep-18	Personal	Worker at BH11										974.4	691802392	5.5	100	0.003	7.01	0.003		1.2%	< Standard/ Criterion								

												PCM Analysis							Standard/ Site-specific Assessment Criteria		TEM Analysis									
Sample Date	Sample Date	Sample Type	Sample Description	Time On		Time Off		Sampling Time	Sample Time	F1	F2	Sample Flow Rate	Sample Volume	Lab Report No.	Fibres	Fields	LOD	Fibres/ mm^2	Fibres/ cc	Lab Report Notes	Percentage (%) Compare to OHS 12-hr OEL	Yukon OHS 12-hr OEL = 0.25 f/cc Site Action Level = 0.05 f/cc (20% of the OEL of 0.25 f/cc) Assessment Criterion = 0.015 f/cc (6% of the OEL/ set to approx. upper end of exposures observed during 2016 program)	Non Asbestos Fibres	Asbestos Types (s)	Asbestos Fibres	PCM	Asbestos % of Total	7402 Adjusted (TEM)	Percentage (%) Compare to OHS 12-hr OEL	Comments
Start	End			(hr.)	(min.)	(hr.)	(min.)		(Min)	(L/M)	(L/M)	(L/M)	(L)				(fib/cc)								(F/cc)		(F/cc)		
4-Sep-18	4-Sep-18	Passive	Gate	7	25	18	15	7:25-18:15	650			2.325	1511.25	691802424	<5.5	100	0.002	<7.01	<0.002		<0.8%	< Standard/ Criterion								
4-Sep-18	4-Sep-18	Passive	Waste Rock	7	35	18	0	7:35-18:00	625			2.234	1396.25	691802424	<5.5	100	0.002	<7.01	<0.002		<0.8%	< Standard/ Criterion								
4-Sep-18	4-Sep-18	Passive	Tailings	7	55	17	35	7:55-17:35	580			2.388	1385.04	691802424	<5.5	100	0.002	<7.01	<0.002		<0.8%	< Standard/ Criterion								
5-Sep-18	5-Sep-18	Passive	Gate	7	50	16	35	7:50-16:35	525			2.357	1237.16	691802424	<5.5	100	0.002	<7.01	<0.002		<0.8%	< Standard/ Criterion								
5-Sep-18	5-Sep-18	Passive	Waste Rock	8	20	16	25	8:20-16:25	485			2.600	1260.76	691802424	5.5	100	0.002	7.01	0.002		0.8%	< Standard/ Criterion								
5-Sep-18	5-Sep-18	Passive	Tailings	8	0	16	10	8:00-16:10	490			2.416	1183.84	691802424	<5.5	100	0.002	<7.01	<0.002		<0.8%	< Standard/ Criterion								
4-Sep-18	4-Sep-18	Area	Area adjacent to BH 11	8	30	17	50	8:30-17:50	560			2.256	1263.36	691802424	<5.5	100	0.002	<7.01	<0.002		<0.8%	< Standard/ Criterion								
4-Sep-18	4-Sep-18	Area	Area adjacent to BH 7	10	15	17	30	10:15-17:30	435			2.573	1119.26	691802424	26	100	0.002	33.1	0.011		4.4%	< Standard/ Criterion								
4-Sep-18	4-Sep-18	Personal	Labourer (Michael) MSD	9	0	17	30	9:00-17:30	510			2.292	1168.92	691802424	54	100	0.002	68.8	**0.023**		**9.2%**	< OEL, < Action Level, > Assessment Criterion	0	Chrysotile	2.5	0.023	100	**0.023**	9.2%	> Assessment Criterion, < Action Level
4-Sep-18	4-Sep-18	Personal	Labourer (Dustin) MSD	9	0	17	0	9:00-17:00	480			2.359	1132.32	691802424	5.5	100	0.002	7.01	0.002		0.8%	< Standard/ Criterion								
5-Sep-18	5-Sep-18	Area	Area adjacent to BH 7	8	50	15	50	8:50-15:50	420			2.172	912.24	691802424	<5.5	100	0.003	<7.01	<0.003		<1.2%	< Standard/ Criterion								
5-Sep-18	5-Sep-18	Area	Area adjacent to BH 11	8	30	15	10	8:30-15:10	400			2.285	914.00	691802424	<5.5	100	0.003	<7.01	<0.003		<1.2%	< Standard/ Criterion								
5-Sep-18	5-Sep-18	Personal	Driller (Justin) at BH3	14	15	17	30	14:15-17:30	195			2.374	462.93	691802424	12.5	100	0.006	15.9	0.013		5.2%	< Standard/ Criterion								
5-Sep-18	5-Sep-18	Personal	Driller (Jake Jacobs) at BH11	14	0	18	10	14:00-18:10	250	2.330	2.336	2.333	583.25	691802424	<5.5	100	0.005	<7.01	<0.005		<2%	< Standard/ Criterion								
7-Sep-18	7-Sep-18	Personal	Drill Helper (Ryan Berg) at BH11 (drilling)	12	41	17	58	12:41-17:58	317	2.518	2.569	2.544	806.29	691802425	21.5	100	0.003	27.4	0.013		5.2%	< Standard/ Criterion								
7-Sep-18	7-Sep-18	Personal	Site Co-lead (Sam Fuller), Field inspections/ office work	13	49	16	41	13:49-16:41	172	2.541	2.588	2.565	441.09	691802425	6.5	100	0.006	8.28	0.007		2.8%	< Standard/ Criterion								
7-Sep-18		Blank	Field Blank	0	0	0	0	0:00-0:00	0	0.000	0.000	0.000	0.00	691802425	<5.5	100		<7.01		Field Blank										
8-Sep-18	8-Sep-18	Personal	Driller (Jake Jacobs) at BH11 (drilling & mobilizing) &BH13 (mobilizing)	8	8	17	52	8:08-17:52	584	2.301	2.369	2.335	1363.64	691802425	<5.5	100	0.002	<7.01	<0.002		<0.8%	< Standard/ Criterion								
8-Sep-18	8-Sep-18	Personal	Driller (Dustin Loewen) at BH3	8	45	18	28	8:45-18:28	583	2.592	2.497	2.545	1483.44	691802425	10	100	0.002	12.7	0.003		1.2%	< Standard/ Criterion								
8-Sep-18	8-Sep-18	Passive	Gate	8	58	17	10	8:58-17:10	492	2.206	2.177	2.192	1078.22	691802425	7.5	100	0.002	9.55	0.003		1.2%	< Standard/ Criterion								
8-Sep-18	8-Sep-18	Passive	Waste Rock	9	44	16	48	9:44-16:48	424	2.192	2.285	2.239	949.12	691802425	<5.5	100	0.003	<7.01	<0.003		<1.2%	< Standard/ Criterion								
8-Sep-18	8-Sep-18	Passive	Tailings	11	33	16	35	11:33-16:35	302	2.473	2.563	2.518	760.44	691802425	<5.5	100	0.004	<7.01	<0.004		<1.6%	< Standard/ Criterion								
8-Sep-18	8-Sep-18	Area	Emergency Transport Vehicle, Passenger seat at window (passenger amd driver windows opened 2", light rain most of the day)	10	11	17	30	10:11-17:30	439	2.356	2.458	2.407	1056.67	691802425	<5.5	100	0.003	<7.01	<0.003		<1.2%	< Standard/ Criterion								
8-Sep-18	8-Sep-18	Area	Wood 'Dirty' Pick-up Truck (RGA70), Site Co-lead (Sam Fuller) vehicle	10	32	18	26	10:32-18:26	474	2.348	2.310	2.329	1103.95	691802425	17.5	100	0.002	22.3	0.008		3.2%	< Standard/ Criterion								
8-Sep-18	8-Sep-18	Area	Office, Northwest corner	8	51	17	50	8:51-17:50	539	2.413	2.453	2.433	1311.39	691802425	37.5	100	0.002	47.8	0.014		5.6%	< Standard/ Criterion								
8-Sep-18		Blank	Field Blank	0	0	0	0	0:00-0:00	0	0.000	0.000	0.000	0.00	691802425	<5.5	100		<7.01		Field Blank	0.0%									
9-Sep-18	9-Sep-18	Personal	Driller (Jake Jacobs) at BH13, drilling	8	50	17	57	8:50-17:57	547	2.463	2.458	2.461	1345.89	691802425	15.5	100	0.002	19.7	0.006		2.4%	< Standard/ Criterion								
9-Sep-18	9-Sep-18	Area	Rig at BH3 & Pick-up Truck at BH19, drilling	10	1	16	17	10:01-16:17	376	2.463	2.511	2.487	935.11	691802425	16	100	0.003	20.4	0.008		3.2%	< Standard/ Criterion								
9-Sep-18	9-Sep-18	Area	MSD's (Glenn Thiessen) Pick-up Truck	7	33	17	6	7:33-17:06	573	2.397	2.429	2.413	1382.65	691802425	18	100	0.002	22.9	0.006		2.4%	< Standard/ Criterion								
9-Sep-18	9-Sep-18	Personal	Geotechnical Engineer (Jim McDonald), Logging at BH13	7	45	17	30	7:45-17:30	585	2.322	2.351	2.337	1366.85	691802425	<5.5	100	0.002	<7.01	<0.002		<0.8	< Standard/ Criterion								
9-Sep-18	9-Sep-18	Area	Lab	7	40	17	48	7:40-17:48	608	2.281	2.291	2.286	1389.89	691802425	59	100	0.002	75.2	**0.021**		**8.4%**	< OEL, < Action Level, > Assessment Criterion	1	Chrysotile	38	0.021	97.40%	**0.0205**	**8.2%**	> Assessment Criterion, < Action Level
9-Sep-19	9-Sep-19	Passive	Waste Rock	10	21	17	35	10:21-17:35	434	2.559	2.579	2.569	1114.95	691802425	<5.5	100	0.002	<7.01	<0.002		<0.8	< Standard/ Criterion								
9-Sep-19	9-Sep-19	Passive	Tailings	9	55	17	10	9:55-17:10	435	2.296	2.281	2.289	995.50	691802425	5.5	100	0.003	7.01	0.003		1.2%	< Standard/ Criterion								
9-Sep-19	9-Sep-19	Passive	Gate	10	41	17	45	10:41-17:45	424	2.262	2.285	2.274	963.96	691802425	<5.5	100	0.003	<7.01	<0.003		<1.2%	< Standard/ Criterion								
9-Sep-18		Blank	Field Blank	0	0	0	0	0:00-0:00	0	0.000	0.000	0.000	0.00	691802425	<5.5	100		<7.01		Field Blank	0.0%	< Standard/ Criterion								
10-Sep-18	10-Sep-18	Passive	Gate	8	51	17	54	8:51-17:54	543	2.734	2.765	2.750	1492.98	691802462	<5.5	100	0.002	<7.01	<0.002		<0.8%	< Standard/ Criterion								
10-Sep-18	10-Sep-18	Passive	Tailings	9	24	17	42	9:24-17:42	498	2.749	2.751	2.750	1369.50	691802462	6.7	100	0.002	8.54	0.002		0.8%	< Standard/ Criterion								
10-Sep-18	10-Sep-18	Passive	Waste Rock	9	43	17	28	9:43-17:28	465	2.703	2.713	2.708	1259.22	691802462	21.2	100	0.002	27	0.008		3.2%	< Standard/ Criterion								
10-Sep-18	10-Sep-18	Area	BH13, Decontamination Booth beside Asbestos Waste Bag	10	43	17	30	10:43-17:30	407	2.447	2.575	2.511	1021.98	691802462	13.7	100	0.003	17.5	0.007		2.8%	< Standard/ Criterion								
10-Sep-18	10-Sep-18	Personal	Driller (Jake Jacobs) at BH13 (drilling)	10	45	17	30	10:45-17:30	405	2.752	2.819	2.786	1128.13	691802462	<5.5	100	0.002	<7.01	<0.002		<0.8%	< Standard/ Criterion								
10-Sep-18	10-Sep-18	Area	Wood 'Dirty' Pick-up Truck (RGM62), Site Asbestos Safety (Wei Chye) Vehicle	9	5	17	56	9:05-17:56	531	2.691	2.753	2.722	1445.38	691802462	22.2	100	0.002	28.3	0.008		3.2%	< Standard/ Criterion								
10-Sep-18	10-Sep-18	Personal	Driller (Dustin Loewen) at BH19, drilling	10	40	18	27	10:40-18:27	467	2.687	2.709	2.698	1259.97	691802462	11.2	100	0.002	14.3	0.004		1.6%	< Standard/ Criterion								
10-Sep-18	10-Sep-18	Area	BH19, Front of Rig Bomb, Geotechnical Work Area	10	40	18	27	10:40-18:27	467	2.734	2.688	2.711	1266.04	691802462	<5.5	100	0.002	<7.01	<0.002			< Standard/ Criterion								
10-Sep-18		Blank	Field Blank	0	0	0	0	0:00-0:00	0	0.000	0.000	0.000	0.00	691802462	<5.5	100		<7.01		Field Blank		< Standard/ Criterion								
11-Sep-18	11-Sep-18	Area	Emergency Transport Vehicle, Passenger seat at window (mostly closed, driver side opened 2" as needed)	9	42	17	44	9:42-17:44	482	2.747	2.819	2.783	1341.41	691802462	30.7	100	0.002	39.1	0.011		4.4%	< Standard/ Criterion								
11-Sep-18	11-Sep-18	Personal	Site Asbestos Safety (Wei Chye), Field inspections/ office work	9	15	18	4	9:15-18:04	529	2.499	2.516	2.508	1326.47	691802462	102.8	63	0.002	208	0.06		24.0%	< OEL, > Action Level, > Assessment Criterion	15	Chrysotile	6.5		30.23%	0.0181	**7.2%**	> Assessment Criterion, < Action Level
11-Sep-18	11-Sep-18	Personal	Driller (Jake Jacobs) at BH13 (drilling & mobilizing) & BH 15 (mobilizing & drlling)	8	0	17	34	8:00-17:34	574	2.683	2.756	2.720	1560.99	691802462	14.7	100	0.002	18.7	0.005		2.0%	< Standard/ Criterion								
11-Sep-18	11-Sep-18	Personal	Driller (Dustin Loewen) at BH19, drilling	8	45	18	20	8:45-18:20	575	2.606	2.611	2.609	1499.89	691802462	10.2	100	0.002	13	0.003		1.2%	< Standard/ Criterion								
11-Sep-18	11-Sep-18	Area	Lab	7	40	17	48	7:40-17:48	608	2.695	2.785	2.740	1665.92	691802462	83.7	100	0.002	107	0.025		10.0%	< OEL, < Action Level, > Assessment Criterion								
11-Sep-18	11-Sep-18	Passive	Gate	9	35	17	41	9:35-17:41	486	2.706	2.727	2.717	1320.22	691802462	10.2	100	0.002	13	0.004		1.6%	< Standard/ Criterion								
11-Sep-18	11-Sep-18	Passive	Tailings	9	50	17	14	9:50-17:14	444	2.682	2.674	2.678	1189.03	691802462	<5.5	100	0.002	<7.01	<0.002		<0.8%	< Standard/ Criterion								
11-Sep-18	11-Sep-18	Passive	Waste Rock	10	23	17	29	10:23-17:29	426	2.707	2.734	2.721	1158.93	691802462	<5.5	100	0.002	<7.01	<0.002		<0.8%	< Standard/ Criterion								
11-Sep-18		Blank	Field Blank	0	0	0	0	0:00-0:00	0	0.000	0.000	0.000	0.00	691802462	<5.5	100		<7.01		Field Blank		< Standard/ Criterion								
12-Sep-18	12-Sep-18	Personal	Driller (Dustin Loewen) at BH18, drilling	12	0	18	0	12:00-18:00	360	2.628	2.640	2.634	948.24	691802462	22.2	100	0.003	28.3	0.011		4.4%	< Standard/ Criterion								
12-Sep-18	12-Sep-18	Personal	Driller (Jake Jacobs) at BH15 (drilling & mobilizing) & BH 16 (mobilizing and drilling)	8	30	18	0	8:30-18:00	570	2.739	2.723	2.731	1556.67	691802462	<5.5	100	0.002	<7.01	<0.002		<0.8%	< Standard/ Criterion								
12-Sep-18	12-Sep-18	Area	Office	7	15	18	24	7:15-18:24	669	2.645	2.637	2.641	1766.83	691802462	102.3	54	0.002	241	0.053		21.2%	< OEL, > Action Level, > Assessment Criterion	7.5	Chrysotile	37		90.20%	0.0226	**9.0%**	> Assessment Criterion, < Action Level
12-Sep-18	12-Sep-18	Area	Mud Bay Truck	7	11	18	12	7:11-18:12	661	2.250	2.280	2.265	1497.17	691802462	52.2	100	0.002	66.5	0.017		6.8%	< OEL, < Action Level, > Assessment Criterion								
12-Sep-18	12-Sep-18	Area	MSD Truck	7	9	18	10	7:09-18:10	661	2.184	2.236	2.210	1460.81	691802462	46.2	100	0.002	58.9	0.016		6.4%	< OEL, < Action Level, > Assessment Criterion								
12-Sep-18	12-Sep-18	Passive	Waste Rock	8	37	17	36	8:37-17:36	539	2.760	2.739	2.750	1481.98	691802462	9.2	100	0.002	11.7	0.003		1.2%	< Standard/ Criterion								
12-Sep-18	12-Sep-18	Passive	Gate	8	2	17	56	8:02-17:56	594	2.740	2.756	2.748	1632.31	691802462	6.7	100	0.002	8.54	0.002		0.8%	< Standard/ Criterion								
12-Sep-18	12-Sep-18	Passive	Tailings	8	18	17	14	8:18-17:14	536	2.752	2.726	2.739	1468.10	691802462	7.7	100	0.002	9.81	0.003		1.2%	< Standard/ Criterion								
12-Sep-18	12-Sep-18	Blank	Field Blank	0	0	0	0	0:00-0:00	0	0.000	0.000	0.000	0.00	691802462	<5.5	100		<7.01		Field Blank										
13-Sep-18	13-Sep-18	Area	Mud Bay Truck	10	0	18	0	10:00-18:00	480	2.281	2.279	2.280	1094.40	691802592	19	100	0.002	24.3	0.009		3.6%	< Standard/ Criterion								
13-Sep-18	13-Sep-18	Area	MSD Truck	7	35	16	24	7:35-16:24	529	2.690	2.715	2.703	1429.62	691802592	39.5	100	0.002	50.3	0.014		5.6%	< Standard/ Criterion								
13-Sep-18		Personal	Driller (Dustin Loewen) at BH18 (installing) & BH06 (mobilizing & drilling)	8	15	18	13	8:15-18:13	598	2.642	2.699	2.671	1596.96	691802592	13	100	0.002	16.6	0.004		1.6%	< Standard/ Criterion								
13-Sep-18	NA	Personal	Driller - VOID due to pump error	NA	NA	NA	NA	NA:NA-NA:NA	#VALUE!	2.740	NA	2.740	#VALUE!	691802592															VOID due to pump error
13-Sep-18	13-Sep-18	Area	Emergency Transport Vehicle, Passenger seat at window (passenger window opened 2", driver, window opened)	9	10	17	50	9:10-17:50	520	2.712	2.787	2.750	1429.74	691802592	17	100	0.002	21.7	0.006		2.4%	< Standard/ Criterion								
13-Sep-18	13-Sep-18	Passive	Tailings	9	29	17	9	9:29-17:09	460	2.733	2.755	2.744	1262.24	691802592	<5.5	100	0.002	<7.01	<0.002		<0.8%	< Standard/ Criterion								

													PCM Analysis							Standard/ Site-specific Assessment Criteria		TEM Analysis							
Sample Date	Sample Date	Sample Type	Sample Description	Time On		Time Off		Sampling Time	Sample Time	F1	F2	Sample Flow Rate	Sample Volume	Lab Report No.	Fibres	Fields	LOD	Fibres/ mm^2	Fibres/ cc	Lab Report Notes	Percentage (%) Compare to OHS 12-hr OEL	Yukon OHS 12-hr OEL = 0.25 f/cc Site Action Level = 0.05 f/cc (20% of the OEL of 0.25 f/cc) Assessment Criterion = 0.015 f/cc (6% of the OEL/ set to approx. upper end of exposures observed during 2016 program)	Non Asbestos Fibres	Asbestos Types (s)	Asbestos Fibres	PCM	Asbestos % of Total	7402 Adjusted (TEM)	Percentage (%) Compare to OHS 12-hr OEL	Comments
Start	End			(hr.)	(min.)	(hr.)	(min.)		(Min)	(L/M)	(L/M)	(L/M)	(L)				(fib/cc)									(F/cc)		(F/cc)		
13-Sep-18	13-Sep-18	Passive	Gate	8	57	17	55	8:57-17:55	538	2.226	2.218	2.222	1195.44	691802592	<5.5	100	0.002	<7.01	<0.002		<0.8%	< Standard/ Criterion								
13-Sep-18	13-Sep-18	Passive	Waste Rock	9	50	17	36	9:50-17:36	466	2.725	2.692	2.709	1262.16	691802592	<5.5	100	0.002	<7.01	<0.002		<0.8%	< Standard/ Criterion								
13-Sep-18		Blank	Field Blank	0	0	0	0	0:00-0:00	0	0.000	0.000	0.000	0.00	691802592	<5.5	100		<7.01		Field Blank										
15-Sep-18	15-Sep-18	Passive	Tailings	9	29	17	9	9:29-17:09	460	2.733	2.755	2.744	1262.24	691802592	<5.5	100	0.002	<7.01	<0.002		<0.8%	< Standard/ Criterion								
15-Sep-18	15-Sep-18	Passive	Gate	9	55	16	30	9:55-16:30	395	2.730	2.680	2.705	1068.48	691802592	<5.5	100	0.003	<7.01	<0.003		<1.2%	< Standard/ Criterion								
15-Sep-18	15-Sep-18	Passive	Waste Rock	10	24	16	49	10:24-16:49	385	2.660	2.420	2.540	977.90	691802592	<5.5	100	0.003	<7.01	<0.003		<1.2%	< Standard/ Criterion								
15-Sep-18	15-Sep-18	Personal	Driller (Dustin Lowen) at BH2	12	10	17	1	12:10-17:01	291	2.850	2.830	2.840	826.44	691802592	<5.5	100	0.003	<7.01	<0.003		<1.2%	< Standard/ Criterion								
15-Sep-18	15-Sep-18	Personal	Driller (Jack Jacobs) at BH4	12	0	17	10	12:00-17:10	310	2.740	2.760	2.750	852.50	691802592	7.5	100	0.003	9.55	0.004		1.6%	< Standard/ Criterion								
15-Sep-18	15-Sep-18	Area	BH2 Decom Area	12	10	17	0	12:10-17:00	290	2.240	2.240	2.240	649.60	691802592	6.5	100	0.003	8.28	0.004		1.6%	< Standard/ Criterion								
15-Sep-18	15-Sep-18	Area	BH4 Decom Area	11	54	17	10	11:54-17:10	316	2.190	2.200	2.195	693.62	691802592	<5.5	100	0.004	<7.01	<0.004		<1.6%	< Standard/ Criterion								
15-Sep-18	15-Sep-18	Area	Medic Truck	11	26	16	25	11:26-16:25	299	2.790	2.790	2.790	834.21	691802592	6	100	0.003	7.64	0.004		2.4%	< Standard/ Criterion								
15-Sep-18	15-Sep-18	Blank	Field Blank					:0-:0	0			#DIV/0!	#DIV/0!	691802592	<5.5	100		<7.01		Field Blank										
16-Sep-18	16-Sep-18	Personal	Driller (Jack Jacobs) at BH8 + Mobilization	7	0	15	0	7:00-15:00	480	2.740	2.830	2.785	1336.80	691802592	10	100	0.002	12.7	0.004		1.6%	< Standard/ Criterion								
16-Sep-18	16-Sep-18	Personal	Driller (Dustin Loewen) at BH5 + Mobilization	7	1	16	42	7:01-16:42	581	2.850	2.770	2.810	1632.61	691802592	13	100	0.002	16.6	0.005		2.0%	< Standard/ Criterion								
16-Sep-18	16-Sep-18	Passive	Gate	7	27	17	35	7:27-17:35	608	2.660	2.760	2.710	1647.68	691802592	<5.5	100	0.002	<7.01	<0.002		<0.8%	< Standard/ Criterion								
16-Sep-18	16-Sep-18	Passive	Tailings	7	55	17	2	7:55-17:02	547	2.640	2.770	2.705	1479.64	691802592	<5.5	100	0.002	<7.01	<0.002		<0.8%	< Standard/ Criterion								
16-Sep-18	16-Sep-18	Passive	Waste Rock	8	13	16	32	8:13-16:32	499	2.150	2.240	2.195	1095.31	691802592	<5.5	100	0.002	<7.01	<0.002		<0.8%	< Standard/ Criterion								
16-Sep-18	16-Sep-18	Area	Water Truck	8	15	16	52	8:15-16:52	517	2.620	2.670	2.645	1367.47	691802592	11	100	0.002	14	0.004		1.6%	< Standard/ Criterion								
16-Sep-18	16-Sep-18	Area	BH8 Decom Area	9	10	15	0	9:10-15:00	350	2.200	2.270	2.235	782.25	691802592	5.5	100	0.003	7.01	0.003		1.2%	< Standard/ Criterion								
16-Sep-18	16-Sep-18	Area	Geotech Trailer Decom Area	9	47	16	54	9:47-16:54	427	2.700	2.700	2.700	1152.90	691802592	<5.5	100	0.002	<7.01	<0.002		<0.8%	< Standard/ Criterion								
16-Sep-18	16-Sep-18	Blank	Field Blank					:0-:0	0			#DIV/0!	#DIV/0!	691802592	<5.5	100		<7.01		Field Blank										
17-Sep-18	17-Sep-18	Personal	Driller (Dustin Loewen) at BH5	7	5	17	0	7:05-17:00	595	2.760	2.830	2.795	1663.03	691802592	33	100	0.002	42	0.01		4.0%	< Standard/ Criterion								
17-Sep-18	17-Sep-18	Passive	Tailings	7	50	16	45	7:50-16:45	535	2.890	2.800	2.845	1522.08	691802592	<5.5	100	0.002	<7.01	<0.002		<0.8%	< Standard/ Criterion								
17-Sep-18	17-Sep-18	Passive	Gate	7	20	17	20	7:20-17:20	600	2.665	2.730	2.698	1618.50	691802592	<5.5	100	0.002	<7.01	<0.002		<0.8%	< Standard/ Criterion								
17-Sep-18	17-Sep-18	Passive	Waste Rock	8	5	17	6	8:05-17:06	541	2.160	2.200	2.180	1179.38	691802592	8.5	100	0.002	10.8	0.004		1.6%	< Standard/ Criterion								
17-Sep-18	17-Sep-18	Area	Biologist Truck (Upper Tailings)	7	25	14	7	7:25-14:07	402	2.890	2.800	2.845	1143.69	691802592	18.5	100	0.002	23.6	0.008		3.2%	< Standard/ Criterion								
17-Sep-18	17-Sep-18	Area	Geotech Trailer Decom Area	7	34	15	0	7:34-15:00	446	2.630	2.650	2.640	1177.44	691802592	8	100	0.002	10.2	0.003		1.2%	< Standard/ Criterion								
17-Sep-18	17-Sep-18	Area	BH5 Decom	8	27	17	1	8:27-17:01	514	2.210	2.200	2.205	1133.37	691802592	<5.5	100	0.002	<7.01	<0.002		<0.8%	< Standard/ Criterion								
17-Sep-18	17-Sep-18	Blank	Field Blank					:0-:0	0			#DIV/0!	#DIV/0!	691802592	<5.5	100		<7.01		Field Blank										
18-Sep-18	18-Sep-18	Personal	Driller (Dustin Loewen) at BH5 and in truck VOID* DUE TO MISHANDLING OF PUMP BY DRILLERS (RECUPERATED CASETTE WAS FOUND ON THE FLOOR OF DRILL RIG AND	NA	NA	NA	NA	NA:NA-NA:NA	#VALUE!	2.760	NA	2.760	#VALUE!																
18-Sep-18	18-Sep-18	Passive	Tailings	7	53	17	10	7:53-17:10	557	2.600	2.720	2.660	1481.62	691802592	<5.5	100	0.002	<7.01	<0.002		<0.8%	< Standard/ Criterion								
18-Sep-18	18-Sep-18	Passive	Gate	7	35	17	30	7:35-17:30	595	2.630	2.750	2.690	1600.55	691802592	<5.5	100	0.002	<7.01	<0.002		<0.8%	< Standard/ Criterion								
18-Sep-18	18-Sep-18	Passive	Waste Rock	8	10	16	45	8:10-16:45	515	2.160	2.200	2.180	1122.70	691802592	9.5	100	0.002	12.1	0.004		1.6%	< Standard/ Criterion								
18-Sep-18	18-Sep-18	Area	Office Exterior	7	40	17	31	7:40-17:31	591	2.210	2.210	2.210	1306.11	691802592	<5.5	100	0.002	<7.01	<0.002		<0.8%	< Standard/ Criterion								
18-Sep-18	18-Sep-18	Area	BH5 Decom	8	15	16	40	8:15-16:40	505	2.610	2.740	2.675	1350.88	691802592	<5.5	100	0.002	<7.01	<0.002		<0.8%	< Standard/ Criterion								
18-Sep-18	18-Sep-18	Blank	Field Blank					:0-:0	0			#DIV/0!	#DIV/0!	691802592	<5.5	100		<7.01		Field Blank										

		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day 11	Day 12	Day 13	Day 14	Day 15	Day 16	Day 17	Day 18	Day 19	Day 20	Day 21	Day 22	Day 23	Day 24	Day 25	Day 26	Day 27	Day 28	Day 29	Day 30
	Personal - Wood	16-Aug	17-Aug	18-Aug	19-Aug	20-Aug	21-Aug	22-Aug	23-Aug	24-Aug	25-Aug	26-Aug	27-Aug	28-Aug	29-Aug	30-Aug	31-Aug	1-Sep	2-Sep	3-Sep	4-Sep	5-Sep	6-Sep	7-Sep	8-Sep	9-Sep	10-Sep	11-Sep	12-Sep	13-Sep	14-Sep
Personal Samples	Site Lead																														
	Drilling Supervisor - Drill Rig #1 (Waste)																														
	Drilling Supervisor - Drill Rig #2 (Tailings)																														
	Lab Technician																														
	Environmental Engineer																														
	Personal - Support Staff																														
	Medic																														
	Water truck driver / helper																														
	Personal - Midnight Sun																														
	Drill Rig #1 (Waste Rock) Operator																														
	Drill Rig #1 (Waste Rock) Labourer																														
	Drill Rig #1 (Waste Rock) Labourer																														
	Drill Rig #1 (Waste Rock) Supervisor																														
	Drill Rig #1 (Waste Rock) Operator																														
	Drill Rig #1 (Waste Rock) Labourer																														
	Drill Rig #2 (Tailings) Operator																														
	Drill Rig #2 (Tailings) Labourer																														
	Drill Rig #2 (Tailings) Supervisor																														
	Dozer Operator																														
	Location	16-Aug	17-Aug	18-Aug	19-Aug	20-Aug	21-Aug	22-Aug	23-Aug	24-Aug	25-Aug	26-Aug	27-Aug	28-Aug	29-Aug	30-Aug	31-Aug	1-Sep	2-Sep	3-Sep	4-Sep	5-Sep	6-Sep	7-Sep	8-Sep	9-Sep	10-Sep	11-Sep	12-Sep	13-Sep	14-Sep
Area Samples	Downwind of waste rock drilling sites																														
	Downwind of tailings drilling sites																														
	Inside excavator/dozer cab																														
	Inside water truck cab																														
	Inside truck cab																														
	Inside UTV																														
	Inside lab																														
	At Decontamination Station																														
	Main Gate (Medic truck/station)																														
	Inside Emergency Transport Vehicle (Medic)																														
	Inside Wood office																														
	Location	16-Aug	17-Aug	18-Aug	19-Aug	20-Aug	21-Aug	22-Aug	23-Aug	24-Aug	25-Aug	26-Aug	27-Aug	28-Aug	29-Aug	30-Aug	31-Aug	1-Sep	2-Sep	3-Sep	4-Sep	5-Sep	6-Sep	7-Sep	8-Sep	9-Sep	10-Sep	11-Sep	12-Sep	13-Sep	14-Sep
Background Samples (2 km from any activities)	Camp / Townsite																														
	Open Pit Area																														
	Hudgeon Lake Outlet																														
	5 km from site on access road																														
	Weather Station																														
	Mill Site																														
	Entrance to Airstrip																														

Total Personal
Total Area
Total Background

Total Samples (assume 4 personal, 2 area, and 2 background samples can be taken per day)

Date	Time	Pump #	Flow Rate Reading	Average flow rate	Sample ID
14-Aug-18	1800	26	3.088		
15-Aug-18	750	26	3.293		
15-Aug-18	750	9	3.314		
15-Aug-18	1815	9	3.214		
15-Aug-18	1815	2	3.189		
16-Aug-18	650	2	3.063		
16-Aug-18	650	4	3.023		
16-Aug-18	1715	4	3.113		
16-Aug-18	1715	N/A	3.013		
17-Aug-18	715	N/A	3.004		
17-Aug-18	715	N/A	3.215		
17-Aug-18	1730	N/A	3.22		
17-Aug-18	1730	N/A	3.241		
18-Aug-18	730	N/A	3.171	3.095	2018-PAS-01
18-Aug-18	730	19	3.088		
18-Aug-18	1705	19	3.032		
18-Aug-18	1705	3	3.038		
19-Aug-18	715	3	2.859		
19-Aug-18	715	14	2.926		
19-Aug-18	1705	14	2.917		
19-Aug-18	1705	12	2.968		
20-Aug-18	945	12	3.063		
20-Aug-18	945	19	3.065		
20-Aug-18	1720	19	3.111		
20-Aug-18	1720	11	3.043		
21-Aug-18	800	11	3.185		
21-Aug-18	800	N/A	3.039		
21-Aug-18	1710	N/A	3.157		
21-Aug-18	1710	10	2.996		
22-Aug-18	745	10	1.651		
22-Aug-18	745	14	2.932		
22-Aug-18	1705	14	3.016		
22-Aug-18	1705	10	2.944		
23-Aug-18	730	10	1.075		
23-Aug-18	730	7	3.265		
23-Aug-18	1655	7	3.232		
23-Aug-18	1655	14	2.921	2.817	2018-PAS-04
24-Aug-18	745	14	3.033		
24-Aug-18	745	19	3.03		
24-Aug-18	1750	19	3.166		
24-Aug-18	1750	7	3.203		
25-Aug-18	815	7	3.223		
25-Aug-18	815	4	2.808		
25-Aug-18	1750	4	2.839		
25-Aug-18	1750	12	2.563		
26-Aug-18	735	12	2.408	2.4205	2018-PAS-08
26-Aug-18	1730	3	2.433		
27-Aug-18	855	7	2.61	2.614	2018-PAS-11
27-Aug-18	1830	7	2.618		
28-Aug-18	840	3	2.399	2.4005	2018-PAS-14
28-Aug-18	1830	3	2.402		
29-Aug-18	745		2.59	2.6025	2018-PAS-17
29-Aug-18	1830		2.615		
30-Aug-18	845	12	2.017	2.04	2018-PAS-20
30-Aug-18	1820	12	2.063		
31-Aug-18	745	3	2.402	2.425	2018-PAS-23
31-Aug-18	1825	3	2.448		
1-Sep-18	735	4	2.291	2.3595	2018-PAS-26
1-Sep-18	1825	4	2.428		
2-Sep-18	800	11	2.297	2.3135	2018-PAS-29
2-Sep-18	1700	11	2.33		
3-Sep-18	815	4	2.322	2.3425	2018-PAS-32
3-Sep-18	1800	4	2.363		
4-Sep-18	725	14	2.301	2.3245	2018-PAS-35
4-Sep-18	1815	14	2.348		
5-Sep-18	750	4	2.341	2.3565	2018-PAS-38
5-Sep-18	1635	4	2.372		

UTM
514178 7147123

*calibrated with capsule on from now on

Date	Time	Pump #	Flow Rate Reading	Average flow rate	Sample ID
17-Aug-18	1130	010	3.116	3.059	2018-PAS-02
18-Aug-18	850	010	2.943		
18-Aug-18	850	011	3.036		
18-Aug-18	1800	011	3.033		
18-Aug-18	1800	010	3.091		
19-Aug-18	730	010	3.057		
19-Aug-18	730	11	2.992		
19-Aug-18	1815	11	3.109		
19-Aug-18	1815	10	3.014		
20-Aug-18	1015	10	3.003		
20-Aug-18	1015	08	3.12		
20-Aug-18	1730	08	3.17		
20-Aug-18	1730	07	3.247		
21-Aug-18	815	07	3.187		
21-Aug-18	815	11	2.986		
21-Aug-18	1725	11	2.845		
21-Aug-18	1725	N/A	3.039	3.073	2018-PAS-05
22-Aug-18	805	N/A	3.114		
22-Aug-18	805	04	2.902		
22-Aug-18	N/A	N/A	N/A		
22-Aug-18	N/A	N/A	N/A		
23-Aug-18	N/A	N/A	N/A		
23-Aug-18	N/A	N/A	N/A		
23-Aug-18	N/A	N/A	N/A		
23-Aug-18	N/A	N/A	N/A		
24-Aug-18	N/A	N/A	N/A		

Date	Time	Pump #	Flow Rate Reading	Average flow rate	Sample ID
24-Aug-18	1050	3	2.952	2.962	2018-PAS-07
24-Aug-18	1800	3	2.972		
24-Aug-18	1800	8	3.112		
25-Aug-18	740	8	3.148		
25-Aug-18	740	3	2.901		
25-Aug-18	1820	3	2.924		
25-Aug-18	1820	7	3.235		
26-Aug-18	815	7	2.489		
26-Aug-18	815	11	2.285	2.2895	2018-PAS-09
26-Aug-18	1755	11	2.294		
26-Aug-18					
27-Aug-18	825	19	N/A	2.434	2018-PAS-12
27-Aug-18	1750	19	2.434		
27-Aug-18					
27-Aug-18					
28-Aug-18	855	.	2.417	2.3225	2018-PAS-15
28-Aug-18	1705	10	2.228		
28-Aug-18					
28-Aug-18					
29-Aug-18	850		2.272	2.2865	2018-PAS-18
29-Aug-18	1805		2.301		
29-Aug-18					
29-Aug-18					
30-Aug-18	820	19	2.387	2.401	2018-PAS-21
30-Aug-18	1750	19	2.415		
30-Aug-18					
30-Aug-18					
31-Aug-18	830	7	2.624	2.634	2018-PAS-24
31-Aug-18	1805	7	2.644		
1-Sep-18	810	12	2.005	2.0525	2018-PAS-27
1-Sep-18	1800	12	2.1		

Date	Time	Pump #	Flow Rate Reading	Average flow rate	Sample ID
2-Sep-18	815	3	2.483		2018-PAS-30
2-Sep-18	1730	3	2.387	2.435	
3-Sep-18	845	14	2.309		2018-PAS-33
3-Sep-18	1735	14	2.331	2.32	
4-Sep-18	735	.	2.219		2018-PAS-36
4-Sep-18	1800	10	.	2.219	
5-Sep-18	820	7	2.584		2018-PAS-39
5-Sep-18	1625	7	2.615	2.5995	

UTM

512971 7147381

*calibrated with capsule on from now on

Date	Time	Pump #	Flow Rate Reading	Average flow rate	Sample ID
17-Aug-18	1145	N/A	3.116	3.054	2018-PAS-03
18-Aug-18	905	N/A	3.013		
18-Aug-18	905	7	3.286		
18-Aug-18	1800	7	3.251		
18-Aug-18	1800	4	2.944		
19-Aug-18	745	4	2.971		
19-Aug-18	745	7	3.226		
19-Aug-18	1800	7	3.272		
19-Aug-18	1800	4	2.933		
20-Aug-18	1000	4	2.926		
20-Aug-18	1000	14	2.861		
20-Aug-18	1745	14	3.015		
20-Aug-18	1745	10	3.026		
21-Aug-18	830	10	3.026		
21-Aug-18	805	N/A	3.017		
21-Aug-18	1743	N/A	2.988		
21-Aug-18	1743	07	3.216	3.035	2018-PAS-06
22-Aug-18	840	07	3.062		
22-Aug-18	840	3	2.982		
22-Aug-18	1720	3	2.991		
22-Aug-18	1720	11	3.046		
23-Aug-18	745	11	3.074		
23-Aug-18	745	8	3.099		
23-Aug-18	1710	8	3.164		
23-Aug-18	1710	10	3.001		
24-Aug-18	755	10	2.931		
24-Aug-18	755	11	3.057		
24-Aug-18	1825	11	3.299		
24-Aug-18	1825	12	2.969		
25-Aug-18	805	12	3.07		
25-Aug-18	805	19	3.057		
25-Aug-18	1800	19	3.096		
25-Aug-18	1800	8	3.089		
26-Aug-18	750	8	2.43		
26-Aug-18	750	4	2.331	2.340	2018-PAS-10
26-Aug-18	1745	4	2.348		
26-Aug-18					
27-Aug-18	840	8	N/A	2.424	2018-PAS-13
27-Aug-18	1820	8	2.424		
27-Aug-18					
27-Aug-18					

Date	Time	Pump #	Flow Rate Reading	Average flow rate	Sample ID
28-Aug-18	800	12	2.031	2.036	2018-PAS-16
28-Aug-18	1730	12	2.04		
28-Aug-18					
28-Aug-18					
29-Aug-18	800	N/A	2.303	2.298	2018-PAS-19
29-Aug-18	1735	N/A	2.292		
29-Aug-18					
29-Aug-18					
30-Aug-18	1000	10	2.209	2.224	2018-PAS-22
30-Aug-18	1810	10	2.239		
30-Aug-18					
30-Aug-18					
31-Aug-18	810	14	2.308	2.342	2018-PAS-25
31-Aug-18	1750	14	2.375		
1-Sep-18	750	19	2.393	2.4075	2018-PAS-28
1-Sep-18	1815	19	2.422		
2-Sep-18	835	10	2.231	2.2475	2018-PAS-31
2-Sep-18	1700	10	2.264		
3-Sep-18	830	11	2.311	2.3205	2018-PAS-34
3-Sep-18	1720	.	2.33		
4-Sep-18	755	3	2.359	2.388	2018-PAS-37
4-Sep-18	1735	3	2.417		
5-Sep-18	800	19	2.383	2.416	2018-PAS-40
5-Sep-18	1610	19	2.449		

***calibrated with capsule on from here (per Jeremy's direction)**

Attachment B

Laboratory Analysis Reports

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1

Tel/Fax: (604) 757-3158 / (604) 757-4731

http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order:	691802208
Customer ID:	55AGRA53
Customer PO:	VE52705B
Project ID:	

Attention:	Geoff Graham Wood Env. & Infrastructure Solutions 4445 Lougheed Highway Suite 600 Burnaby, BC spvo	**Phone:**	(604) 294-3811
		Fax:	(604) 294-4664
		Received Date:	08/20/2018 9:25 AM
		Analysis Date:	08/20/2018
		Collected Date:	08/16/2018
Project:	VE52705B		

Test Report: Fiber Count by Phase Contrast Microscopy (PCM), NIOSH 7400 Method - A Rules, Revision 3, Issue 2, 8/15/94

Sample	*Location*	*Sample Date*	*Volume (liters)*	*Fibers*	*Fields*	*LOD (fib/cc)*	*Fibers/ mm²*	*Fibers/ cc*	*Notes*
2018-AMB-01 *691802208-0001*	MOBILE LABORATORY-AMBIENT	8/16/2018	1536.52	<5.5	100	0.002	<7.01	<0.002	
2018-AMB-02 *691802208-0002*	BH01- AMBIENT	8/16/2018	1447.55	5.5	100	0.002	7.01	0.002	
2018-AMB-03 *691802208-0003*	BOTTOM OF TALINGS PILE-AMBIENT	8/16/2018	1266.92	5.5	100	0.002	7.01	0.002	

This method requires the submission of field blanks with each sample set. No discernable field blanks were submitted, samples are not blank corrected.

Analyst(s):

Kathleen Cruz PCM (3)

Nicole Yeo, Laboratory Manager
or Other Approved Signatory

Limit of detection is 7 fibers/mm². Intra-laboratory Sr values: 5-20 fibers = 0.29, 21-50 fibers = 0.19, 51-100 fibers = 0.16. Inter-laboratory Sr values (Average of EMSL round robin data) = 0.32. The laboratory is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. Results have been blank corrected as applicable. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Canada Inc. Burnaby, BC CALA Accreditation #A3998

Initial report from: 08/20/2018 13:31:26

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Tel/Fax: (604) 757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order:	691802213
Customer ID:	55AGRA53
Customer PO:	VE52705B
Project ID:	

Attention:	Geoff Graham Wood Env. & Infrastructure Solutions 4445 Lougheed Highway Suite 600 Burnaby, BC spvo	**Phone:**	(604) 294-3811
		Fax:	(604) 294-4664
		Received Date:	08/20/2018 3:47 PM
		Analysis Date:	08/21/2018
		Collected Date:	08/17/2018
Project:	VE52705B		

Test Report: Fiber Count by Phase Contrast Microscopy (PCM), NIOSH 7400 Method - A Rules, Revision 3, Issue 2, 8/15/94

Sample	*Location*	*Sample Date*	*Volume (liters)*	*Fibers*	*Fields*	*LOD (fib/cc)*	*Fibers/ mm²*	*Fibers/ cc*	*Notes*
2018-PER-01 *691802213-0001*	GENERAL LABOURER	8/17/2018	859.93	45.5	100	0.003	58.0	0.026	
2018-PER-02 *691802213-0002*	GENERAL LABOURER	8/17/2018	821.83	62.5	100	0.003	79.6	0.037	
2018-PER-03 *691802213-0003*	MEDIC	8/17/2018	1635.76	6	100	0.002	7.64	0.002	
2018-PER-04 *691802213-0004*	D4 DOZER OPERATOR	8/17/2018	1770.42	24.5	100	0.002	31.2	0.007	
2018-AMB-04 *691802213-0005*	D4 DOZER CAB	8/17/2018	1690.74	18.5	100	0.002	23.6	0.005	
2018-AMB-05 *691802213-0006*	DOZER OPERATOR	8/17/2018	1781.12	15.5	100	0.002	19.7	0.004	
2018-AMB-06 *691802213-0007*	UTV	8/17/2018	1879.20	<5.5	100	0.001	<7.01	<0.001	
2018-PER-05 *691802213-0008*	ENVIRONMENTAL SAMPLING	8/17/2018	1746.23	30	100	0.002	38.2	0.008	

This method requires the submission of field blanks with each sample set. No discernable field blanks were submitted, samples are not blank corrected.

Analyst(s):

Kathleen Cruz PCM (8)

Nicole Yeo, Laboratory Manager
or Other Approved Signatory

Limit of detection is 7 fibers/mm². Intra-laboratory Sr values: 5-20 fibers = 0.29, 21-50 fibers = 0.19, 51-100 fibers = 0.16. Inter-laboratory Sr values (Average of EMSL round robin data) = 0.32. The laboratory is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. Results have been blank corrected as applicable. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Canada Inc. Burnaby, BC CALA Accreditation #A3998

Initial report from: 08/21/2018 12:02:46

EMSL Canada Inc.
4506 Dawson Street, Burnaby, BC V5C 4C1
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http://www.EMSL.com vancouverlab@EMSL.com

EMSL Canada Or	691802213
CustomerID:	55AGRA53
CustomerPO:	VE52705B
ProjectID:	

Attn: **Geoff Graham**
Wood Env. & Infrastructure Solutions
4445 Lougheed Highway
Suite 600
Burnaby, BC spvo

Phone:	(604) 294-3811
Fax:	(604) 294-4664
Received:	08/20/18 3:47 PM
Analysis Date:	8/23/2018
Collected:	8/17/2018

Project: **VE52705B**

Test Report: Asbestos Analysis of Air Samples by Transmission Electron Microscopy via NIOSH Method 7402

Sample	Volume (Liters)	Non Asbestos Fibers	Asbestos Type(s)	Asbestos Fibers	PCM F/cc	*Asbestos % of total	7402 Adjusted (TEM) F/cc	Notes
2018-PER-01 *691802213-0001*	859.93	4	Chrysotile	2	0.026	33.3 %	**0.0087**	
2018-PER-02 *691802213-0002*	821.83	5.5	Chrysotile	1.5	0.037	21.4 %	**0.0079**	

NIOSH 7402 method only reports fibers > 5µm in length and > 0.25µm in width.
This method requires a minimum of 2 field blank analyses per set.
* The above results are not blank corrected
Average number of asbestos fibers on field blanks: n/a
Average number of non-asbestos fibers on field blanks: n/a

Analyst(s)
Natalie D'Amico (2)

Nicole Yeo, Laboratory Manager
or other approved signatory

EMSL is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. The above report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL Analytical, Inc. Samples received in good condition unless otherwise noted.
Samples analyzed by EMSL Canada Inc. Burnaby, BC

Initial report from 08/23/2018 11:20:55

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Tel/Fax: (604) 757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order:	691802278
Customer ID:	55AGRA53
Customer PO:	VE52705B
Project ID:	

Attention:	Geoff Graham Wood Env. & Infrastructure Solutions 4445 Lougheed Highway Suite 600 Burnaby, BC spvo	**Phone:**	(604) 294-3811
		Fax:	(604) 294-4664
		Received Date:	08/24/2018 2:18 PM
		Analysis Date:	08/27/2018
		Collected Date:	08/14/2018
Project:	VE52705B		

Test Report: Fiber Count by Phase Contrast Microscopy (PCM), NIOSH 7400 Method - A Rules, Revision 3, Issue 2, 8/15/94

Sample	*Location*	*Sample Date*	*Volume (liters)*	*Fibers*	*Fields*	*LOD (fib/cc)*	*Fibers/ mm²*	*Fibers/ cc*	*Notes*
2018-PER-06 *691802278-0001*	DRILL OPERATOR - DRILLING BH 1	8/21/2018	1994.22	16.5	100	0.001	21.0	0.004	
2018-PER-07 *691802278-0002*	GEO TECH - DRILLING BH 9 / LOGGING	8/21/2018							Overloaded
2018-PER-08 *691802278-0003*	LAB TECH - WASHING MATERIAL / MOISTURE	8/21/2018	1893.48	21.5	100	0.001	27.4	0.006	
2018-PER-09 *691802278-0004*	DRILL HELPER - DRILLING BH 9	8/22/2018	1046.05	31.5	100	0.003	40.1	0.015	
2018-PER-10 *691802278-0005*	WATER TRUCK DRIVER	8/22/2018	987.69	58	100	0.003	73.9	0.029	
2018-PER-11 *691802278-0006*	SITE LEAD / OFFICE WORK	8/22/2018	1256.84	21.5	100	0.002	27.4	0.008	
2018-PER-01 *691802278-0007*	AREA SAMPLE / GATE	8/14/2018	31042.85	18	100	0.0001	22.9	0.0003	
2018-PER-02 *691802278-0008*	AREA SAMPLE / WASTE ROCK	8/17/2018	18705.79	7.5	100	0.0001	9.55	0.0002	
2018-PER-03 *691802278-0009*	AREA SAMPLE / TRAILING	8/17/2018	18684.37	<5.5	100	0.0001	<7.01	<0.0001	
FB1 *691802278-0010*	FIELD BLANK	8/22/2018	0.00	<5.5	100		<7.01		Field Blank
FB2 *691802278-0011*	FIELD BLANK	8/22/2018	0.00	<5.5	100		<7.01		Field Blank

The results reported have been blank corrected as applicable.

Limit of detection is 7 fibers/mm². Intra-laboratory Sr values: 5-20 fibers = 0.29, 21-50 fibers = 0.19, 51-100 fibers = 0.16. Inter-laboratory Sr values (Average of EMSL round robin data) = 0.32. The laboratory is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. Results have been blank corrected as applicable. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Canada Inc. Burnaby, BC CALA Accreditation #A3998

Initial report from: 08/27/2018 10:42:15

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1

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http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order:	691802278
Customer ID:	55AGRA53
Customer PO:	VE52705B
Project ID:	

Attention:	Geoff Graham Wood Env. & Infrastructure Solutions 4445 Lougheed Highway Suite 600 Burnaby, BC spvo	**Phone:**	(604) 294-3811
		Fax:	(604) 294-4664
		Received Date:	08/24/2018 2:18 PM
		Analysis Date:	08/27/2018
		Collected Date:	08/14/2018
Project:	VE52705B		

Test Report: Fiber Count by Phase Contrast Microscopy (PCM), NIOSH 7400 Method - A Rules, Revision 3, Issue 2, 8/15/94

Sample	*Location*	*Sample Date*	*Volume (liters)*	*Fibers*	*Fields*	*LOD (fib/cc)*	*Fibers/ mm²*	*Fibers/ cc*	*Notes*

Analyst(s):

Nicole Yeo PCM (11)

Nicole Yeo, Laboratory Manager
or Other Approved Signatory

Limit of detection is 7 fibers/mm². Intra-laboratory Sr values: 5-20 fibers = 0.29, 21-50 fibers = 0.19, 51-100 fibers = 0.16. Inter-laboratory Sr values (Average of EMSL round robin data) = 0.32. The laboratory is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. Results have been blank corrected as applicable. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Canada Inc. Burnaby, BC CALA Accreditation #A3998

Initial report from: 08/27/2018 10:42:15

EMSL Canada Inc.
4506 Dawson Street, Burnaby, BC V5C 4C1
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http://www.EMSL.com vancouverlab@EMSL.com

EMSL Canada Or	691802278
CustomerID:	55AGRA53
CustomerPO:	VE52705B
ProjectID:	

Attn: **Geoff Graham**
Wood Env. & Infrastructure Solutions
4445 Lougheed Highway
Suite 600
Burnaby, BC spvo

Phone:	(604) 294-3811
Fax:	(604) 294-4664
Received:	08/24/18 2:18 PM
Analysis Date:	8/29/2018
Collected:	8/22/2018

Project: **VE52705B**

Test Report: Asbestos Analysis of Air Samples by Transmission Electron Microscopy via NIOSH Method 7402

Sample	Volume (Liters)	Non Asbestos Fibers	Asbestos Type(s)	Asbestos Fibers	PCM F/cc	*Asbestos % of total	7402 Adjusted (TEM) F/cc	Notes
2018-PER-09 *691802278-0004*	1046.05	17.5	None Detected		0.015	0 %	**<0.0026**	
2018-PER-10 *691802278-0005*	987.69	49.5	Actinolite Chrysotile Tremolite	1 14 4	0.029	27.7 %	**0.0080**	

NIOSH 7402 method only reports fibers > 5µm in length and > 0.25µm in width.
This method requires a minimum of 2 field blank analyses per set.
* The above results are not blank corrected
Average number of asbestos fibers on field blanks: n/a
Average number of non-asbestos fibers on field blanks: n/a

Analyst(s)
Anne Balayboa (2)

Nicole Yeo, Laboratory Manager
or other approved signatory

EMSL is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. The above report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL Analytical, Inc. Samples received in good condition unless otherwise noted.
Samples analyzed by EMSL Canada Inc. Burnaby, BC

Initial report from 08/29/2018 14:25:37

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Tel/Fax: (604) 757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order:	691802322
Customer ID:	55AGRA53
Customer PO:	VE52705B
Project ID:	

Attention:	Geoff Graham Wood Env. & Infrastructure Solutions 4445 Lougheed Highway Suite 600 Burnaby, BC spvo	**Phone:**	(604) 294-3811
		Fax:	(604) 294-4664
		Received Date:	08/29/2018 1:54 PM
		Analysis Date:	08/30/2018
		Collected Date:	08/21/2018
Project:	VE52705B		

Test Report: Fiber Count by Phase Contrast Microscopy (PCM), NIOSH 7400 Method - A Rules, Revision 3, Issue 2, 8/15/94

Sample	*Location*	*Sample Date*	*Volume (liters)*	*Fibers*	*Fields*	*LOD (fib/cc)*	*Fibers/ mm²*	*Fibers/ cc*	*Notes*
2018-PER-15 *691802322-0001*	LAB TECHNICIAN	8/25/2018	244.80	15	100	0.011	19.1	0.030	
2018-PER-16 *691802322-0002*	DRILLING CREW - ENGINEER, OBSERVER	8/25/2018	246.00	17	100	0.011	21.7	0.034	
2018-PER-17 *691802322-0003*	DRILLING CREW	8/25/2018	245.16	6	100	0.011	7.64	0.012	
2018-PAS-06 *691802322-0004*	TAILINGS	8/21/2018	20106.80	88	100	0.0001	112	0.002	
2018-PAS-10 *691802322-0005*	TAILINGS	8/26/2018	1392.00	<5.5	100	0.002	<7.01	<0.002	
2018-PAS-07 *691802322-0006*	WASTE DOCK	8/24/2018	8085.08	62.5	100	0.0003	79.6	0.004	
2018-PAS-05 *691802322-0007*	WASTE DOCK	8/21/2018	4425.12	35.5	100	0.001	45.2	0.004	
2018-PAS-04 *691802322-0008*	GATE	8/21/2018	16338.60	69.5	100	0.0002	88.5	0.002	
2018-PAS-08 *691802322-0009*	GATE	8/26/2018	1428.10	<5.5	100	0.002	<7.01	<0.002	

This method requires the submission of field blanks with each sample set. No discernable field blanks were submitted, samples are not blank corrected.

Analyst(s):

Nicole Yeo PCM (9)

Nicole Yeo, Laboratory Manager
or Other Approved Signatory

Limit of detection is 7 fibers/mm². Intra-laboratory Sr values: 5-20 fibers = 0.29, 21-50 fibers = 0.19, 51-100 fibers = 0.16. Inter-laboratory Sr values (Average of EMSL round robin data) = 0.32. The laboratory is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. Results have been blank corrected as applicable. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Canada Inc. Burnaby, BC CALA Accreditation #A3998

Initial report from: 08/30/2018 11:08:59

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EMSL Canada Or	691802322
CustomerID:	55AGRA53
CustomerPO:	VE52705B
ProjectID:	

Attn: **Geoff Graham**
Wood Env. & Infrastructure Solutions
4445 Lougheed Highway
Suite 600
Burnaby, BC spvo

Phone:	(604) 294-3811
Fax:	(604) 294-4664
Received:	08/29/18 1:54 PM
Analysis Date:	8/31/2018
Collected:	8/25/2018

Project: **VE52705B**

Test Report: Asbestos Analysis of Air Samples by Transmission Electron Microscopy via NIOSH Method 7402

Sample	Volume (Liters)	Non Asbestos Fibers	Asbestos Type(s)	Asbestos Fibers	PCM F/cc	*Asbestos % of total	7402 Adjusted (TEM) F/cc	Notes
2018-PER-15 *691802322-0001*	244.8	2	None Detected		0.030	0 %	**<0.0110**	
2018-PER-16 *691802322-0002*	246	6	Chrysotile	2	0.034	25.0 %	**<0.0110**	

NIOSH 7402 method only reports fibers > 5µm in length and > 0.25µm in width.
This method requires a minimum of 2 field blank analyses per set.
* The above results are not blank corrected
Average number of asbestos fibers on field blanks: n/a
Average number of non-asbestos fibers on field blanks: n/a

Analyst(s)
Natalie D'Amico (2)

Nicole Yeo, Laboratory Manager
or other approved signatory

EMSL is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. The above report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL Analytical, Inc. Samples received in good condition unless otherwise noted.
Samples analyzed by EMSL Canada Inc. Burnaby, BC

Initial report from 08/31/2018 12:15:02

EMSL Canada Inc.

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EMSL Canada Order:	691802349
Customer ID:	55AGRA53
Customer PO:	VE52705B
Project ID:	

Attention:	Geoff Graham Wood Env. & Infrastructure Solutions 4445 Lougheed Highway Suite 600 Burnaby, BC spvo	**Phone:**	(604) 294-3811
		Fax:	(604) 294-4664
		Received Date:	08/31/2018 2:31 PM
		Analysis Date:	09/04/2018
		Collected Date:	08/26/2018
Project:	VE52705B		

Test Report: Fiber Count by Phase Contrast Microscopy (PCM), NIOSH 7400 Method - A Rules, Revision 3, Issue 2, 8/15/94

Sample	*Location*	*Sample Date*	*Volume (liters)*	*Fibers*	*Fields*	*LOD (fib/cc)*	*Fibers/ mm²*	*Fibers/ cc*	*Notes*
2018-PAS-11	GATE	8/27/2018	1503.05	8.5	100	0.002	10.8	0.003	
691802349-0001									
2018-PAS-12	WASTE ROCK	8/27/2018	1375.21	8	100	0.002	10.2	0.003	
691802349-0002									
2018-PAS-13	TAILINGS	8/27/2018	1405.92	<5.5	100	0.002	<7.01	<0.002	
691802349-0003									
2018-PAS-14	GATE	8/28/2018	1416.00	<5.5	100	0.002	<7.01	<0.002	
691802349-0004									
2018-PAS-15	WASTE ROCK	8/28/2018	1138.27	<5.5	100	0.002	<7.01	<0.002	
691802349-0005									
2018-PAS-16	TAILINGS	8/28/2018	1160.52	<5.5	100	0.002	<7.01	<0.002	
691802349-0006									
2018-PER-25	DRILLER	8/26/2018	1310.44	<5.5	100	0.002	<7.01	<0.002	
691802349-0007									
2018-PER-26	LABOURER	8/26/2018	367.50	<5.5	100	0.007	<7.01	<0.007	
691802349-0008									
2018-PER-27	DRILLER	8/27/2018	793.80	10	100	0.003	12.7	0.006	
691802349-0009									
2018-PER-28	LABOURER	8/28/2018	514.80	<5.5	100	0.005	<7.01	<0.005	
691802349-0010									
2018-PER-29	DRILLER	8/28/2018	327.60	<5.5	100	0.008	<7.01	<0.008	
691802349-0011									
2018-PER-30	DRILLER	8/28/2018	577.50	<5.5	100	0.005	<7.01	<0.005	
691802349-0012									
2018-PER-31	DRILLER	8/29/2018	330.20	13.5	100	0.008	17.2	0.020	
691802349-0013									

Limit of detection is 7 fibers/mm². Intra-laboratory Sr values: 5-20 fibers = 0.29, 21-50 fibers = 0.19, 51-100 fibers = 0.16. Inter-laboratory Sr values (Average of EMSL round robin data) = 0.32. The laboratory is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. Results have been blank corrected as applicable. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Canada Inc. Burnaby, BC CALA Accreditation #A3998

Initial report from: 09/04/2018 11:08:11

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Customer PO:	VE52705B
Project ID:	

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		Fax:	(604) 294-4664
		Received Date:	08/31/2018 2:31 PM
		Analysis Date:	09/04/2018
		Collected Date:	08/26/2018
Project:	VE52705B		

Test Report: Fiber Count by Phase Contrast Microscopy (PCM), NIOSH 7400 Method - A Rules, Revision 3, Issue 2, 8/15/94

Sample	*Location*	*Sample Date*	*Volume (liters)*	*Fibers*	*Fields*	*LOD (fib/cc)*	*Fibers/ mm²*	*Fibers/ cc*	*Notes*
2018-PER-32	DRILLER	8/29/2018	315.00	<5.5	100	0.009	<7.01	<0.009	
691802349-0014									
2018-PAS-17	GATE	8/29/2018	1678.94	<5.5	100	0.002	<7.01	<0.002	
691802349-0015									
2018-PAS-18	WASTE ROCK	8/29/2018	1269.29	<5.5	100	0.002	<7.01	<0.002	
691802349-0016									
2018-PAS-19	TAILINGS	8/29/2018	1321.35	<5.5	100	0.002	<7.01	<0.002	
691802349-0017									

This method requires the submission of field blanks with each sample set. No discernable field blanks were submitted, samples are not blank corrected.

Analyst(s):

Kathleen Cruz PCM (17)

Nicole Yeo, Laboratory Manager
or Other Approved Signatory

Limit of detection is 7 fibers/mm². Intra-laboratory Sr values: 5-20 fibers = 0.29, 21-50 fibers = 0.19, 51-100 fibers = 0.16. Inter-laboratory Sr values (Average of EMSL round robin data) = 0.32. The laboratory is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. Results have been blank corrected as applicable. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Canada Inc. Burnaby, BC CALA Accreditation #A3998

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Phone:	(604) 294-3811
Fax:	(604) 294-4664
Received:	08/31/18 2:31 PM
Analysis Date:	9/6/2018
Collected:	8/29/2018

Project: **VE52705B**

Test Report: Asbestos Analysis of Air Samples by Transmission Electron Microscopy via NIOSH Method 7402

Sample	Volume (Liters)	Non Asbestos Fibers	Asbestos Type(s)	Asbestos Fibers	PCM F/cc	*Asbestos % of total	7402 Adjusted (TEM) F/cc	Notes
2018-PER-31 *691802349-0013*	330.2	0.5	None Detected		0.020	0 %	**<0.0082**	

NIOSH 7402 method only reports fibers > 5µm in length and > 0.25µm in width.
This method requires a minimum of 2 field blank analyses per set.
* The above results are not blank corrected
Average number of asbestos fibers on field blanks: n/a
Average number of non-asbestos fibers on field blanks: n/a

Analyst(s)

Natalie D'Amico (1)

Nicole Yeo, Laboratory Manager
or other approved signatory

EMSL is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. The above report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL Analytical, Inc. Samples received in good condition unless otherwise noted.
Samples analyzed by EMSL Canada Inc. Burnaby, BC

Initial report from 09/06/2018 11:20:05

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EMSL Canada Order:	691802392
Customer ID:	55AGRA53
Customer PO:	VE52705B
Project ID:	

Attention:	Geoff Graham Wood Env. & Infrastructure Solutions 4445 Lougheed Highway Suite 600 Burnaby, BC spvo	**Phone:**	(604) 294-3811
		Fax:	(604) 294-4664
		Received Date:	09/06/2018 10:11 AM
		Analysis Date:	09/06/2018
		Collected Date:	08/29/2018
Project:	VE52705B		

Test Report: Fiber Count by Phase Contrast Microscopy (PCM), NIOSH 7400 Method - A Rules, Revision 3, Issue 2, 8/15/94

Sample	*Location*	*Sample Date*	*Volume (liters)*	*Fibers*	*Fields*	*LOD (fib/cc)*	*Fibers/ mm²*	*Fibers/ cc*	*Notes*
2018-PAS-20	GATE	8/30/2018	1173.00	6	100	0.002	7.64	0.003	
691802392-0001									
2018-PAS-21	WASTE ROCK	8/30/2018	1368.57	<5.5	100	0.002	<7.01	<0.002	
691802392-0002									
2018-PAS-22	TAILINGS	8/30/2018	1089.76	9	100	0.002	11.5	0.004	
691802392-0003									
2018-PAS-23	GATE	8/31/2018	1552.00	<5.5	100	0.002	<7.01	<0.002	
691802392-0004									
2018-PAS-24	WASTE ROCK	8/31/2018	1514.55	<5.5	100	0.002	<7.01	<0.002	
691802392-0005									
2018-PAS-25	TAILINGS	8/31/2018	1358.36	<5.5	100	0.002	<7.01	<0.002	
691802392-0006									
2018-PAS-26	GATE	9/01/2018	1534.00	<5.5	100	0.002	<7.01	<0.002	
691802392-0007									
2018-PAS-27	WASTE ROCK	9/01/2018	1211.27	<5.5	100	0.002	<7.01	<0.002	
691802392-0008									
2018-PAS-28	TAILINGS	9/01/2018	1505.00	<5.5	100	0.002	<7.01	<0.002	
691802392-0009									
2018-PAS-29	GATE	9/02/2018	1249.56	<5.5	100	0.002	<7.01	<0.002	
691802392-0010									
2018-PAS-30	WASTE ROCK	9/02/2018	1351.43	<5.5	100	0.002	<7.01	<0.002	
691802392-0011									
2018-PAS-31	TAILINGS	9/02/2018	1157.72	<5.5	100	0.002	<7.01	<0.002	
691802392-0012									
2018-PAS-32	GATE	9/03/2018	1370.07	6	100	0.002	7.64	0.002	
691802392-0013									

Limit of detection is 7 fibers/mm². Intra-laboratory Sr values: 5-20 fibers = 0.29, 21-50 fibers = 0.19, 51-100 fibers = 0.16. Inter-laboratory Sr values (Average of EMSL round robin data) = 0.32. The laboratory is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. Results have been blank corrected as applicable. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Canada Inc. Burnaby, BC CALA Accreditation #A3998

Initial report from: 09/06/2018 13:42:55

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EMSL Canada Order:	691802392
Customer ID:	55AGRA53
Customer PO:	VE52705B
Project ID:	

Attention:	Geoff Graham Wood Env. & Infrastructure Solutions 4445 Lougheed Highway Suite 600 Burnaby, BC spvo	**Phone:**	(604) 294-3811
		Fax:	(604) 294-4664
		Received Date:	09/06/2018 10:11 AM
		Analysis Date:	09/06/2018
		Collected Date:	08/29/2018
Project:	VE52705B		

Test Report: Fiber Count by Phase Contrast Microscopy (PCM), NIOSH 7400 Method - A Rules, Revision 3, Issue 2, 8/15/94

Sample	Location	Sample Date	Volume (liters)	Fibers	Fields	LOD (fib/cc)	Fibers/ mm²	Fibers/ cc	Notes
2018-PAS-33	WASTE ROCK	9/03/2018	1229.60	<5.5	100	0.002	<7.01	<0.002	
691802392-0014									
2018-PAS-34	TAILINGS	9/03/2018	1229.60	<5.5	100	0.002	<7.01	<0.002	
691802392-0015									
2018-PERS-33	DRILLER BH10	8/29/2018	459.00	<5.5	100	0.006	<7.01	<0.006	
691802392-0016									
2018-PERS-34	LABOURER	8/31/2018	1422.63	<5.5	100	0.002	<7.01	<0.002	
691802392-0017									
2018-PERS-35	BULLDOZER OPERATOR	8/31/2018	1071.18	24.5	100	0.003	31.2	0.011	
691802392-0018									
2018-PERS-36	OFFICE SAMPLE	8/31/2018	1049.94	45	100	0.003	57.3	0.021	
691802392-0019									
2018-PERS-37	DRILLER	9/01/2018	1071.63	<5.5	100	0.003	<7.01	<0.003	
691802392-0020									
2018-PERS-38	DRILLER BH6	9/01/2018							Overloaded
691802392-0021									
2018-PERS-39	AREA - WASTE TRUCK	9/01/2018	1232.79	102.5	65	0.002	201	0.063	
691802392-0022									
2018-PERS-40	LAB	9/01/2018	1173.93	<5.5	100	0.002	<7.01	<0.002	
691802392-0023									
2018-PERS-41	DRILLER	9/02/2018							Filter Damaged
691802392-0024									
2018-PERS-42	PERSONAL ON JIM MCDONALD	9/02/2018	277.56	<5.5	100	0.010	<7.01	<0.010	
691802392-0025									
2018-PERS-43	TRANSPORT VEHICLE	9/03/2018	576.30	17.5	100	0.005	22.3	0.015	
691802392-0026									

Limit of detection is 7 fibers/mm². Intra-laboratory Sr values: 5-20 fibers = 0.29, 21-50 fibers = 0.19, 51-100 fibers = 0.16. Inter-laboratory Sr values (Average of EMSL round robin data) = 0.32. The laboratory is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. Results have been blank corrected as applicable. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Canada Inc. Burnaby, BC CALA Accreditation #A3998

Initial report from: 09/06/2018 13:42:55

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EMSL Canada Order:	691802392
Customer ID:	55AGRA53
Customer PO:	VE52705B
Project ID:	

Attention:	Geoff Graham Wood Env. & Infrastructure Solutions 4445 Lougheed Highway Suite 600 Burnaby, BC spvo	**Phone:**	(604) 294-3811
		Fax:	(604) 294-4664
		Received Date:	09/06/2018 10:11 AM
		Analysis Date:	09/06/2018
		Collected Date:	08/29/2018
Project:	VE52705B		

Test Report: Fiber Count by Phase Contrast Microscopy (PCM), NIOSH 7400 Method - A Rules, Revision 3, Issue 2, 8/15/94

Sample	*Location*	*Sample Date*	*Volume (liters)*	*Fibers*	*Fields*	*LOD (fib/cc)*	*Fibers/ mm²*	*Fibers/ cc*	*Notes*
2018-PERS-44	LABOURER	9/03/2018	806.25	26.5	100	0.003	33.8	0.016	
691802392-0027									
2018-PERS-45	LABOURER	9/03/2018	878.67	35.5	100	0.003	45.2	0.020	
691802392-0028									
2018-PERS-46	AREA SAMPLE BH7	9/02/2018	1090.13	<5.5	100	0.002	<7.01	<0.002	
691802392-0029									
2018-PERS-47	BH11 (AREA)	9/03/2018	900.24	<5.5	100	0.003	<7.01	<0.003	
691802392-0030									
2018-PERS-48	BH 7 (AREA)	9/03/2018	963.90	82.5	100	0.003	105	0.042	
691802392-0031									
2018-PERS-49	BH11 (OCC)	9/03/2018	974.40	5.5	100	0.003	7.01	0.003	
691802392-0032									

This method requires the submission of field blanks with each sample set. No discernable field blanks were submitted, samples are not blank corrected.

Analyst(s):

Kathleen Cruz PCM (31)

Nicole Yeo, Laboratory Manager
or Other Approved Signatory

Limit of detection is 7 fibers/mm². Intra-laboratory Sr values: 5-20 fibers = 0.29, 21-50 fibers = 0.19, 51-100 fibers = 0.16. Inter-laboratory Sr values (Average of EMSL round robin data) = 0.32. The laboratory is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. Results have been blank corrected as applicable. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Canada Inc. Burnaby, BC CALA Accreditation #A3998

Initial report from: 09/06/2018 13:42:55

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CustomerPO:	VE52705B
ProjectID:	

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Phone:	(604) 294-3811
Fax:	(604) 294-4664
Received:	09/06/18 10:11 AM
Analysis Date:	9/10/2018
Collected:	9/3/2018

Project: **VE52705B**

Test Report: Asbestos Analysis of Air Samples by Transmission Electron Microscopy via NIOSH Method 7402

Sample	Volume (Liters)	Non Asbestos Fibers	Asbestos Type(s)	Asbestos Fibers	PCM F/cc	*Asbestos % of total	7402 Adjusted (TEM) F/cc	Notes
2018-PERS-36 *691802392-0019*	1049.94	3	Chrysotile	7	0.021	70.0 %	**0.0147**	
2018-PERS-39 *691802392-0022*	1232.79	16.5	Chrysotile	9.5	0.063	36.5 %	**0.0230**	
2018-PERS-44 *691802392-0027*	806.25	2	Chrysotile	1.5	0.016	42.9 %	**0.0069**	
2018-PERS-45 *691802392-0028*	878.67	4	Actinolite Chrysotile	4 4.5	0.020	68.0 %	**0.0136**	
2018-PERS-48 *691802392-0031*	963.9	4	Actinolite Chrysotile	8.5 3	0.042	74.2 %	**0.0312**	

NIOSH 7402 method only reports fibers > 5µm in length and > 0.25µm in width.
This method requires a minimum of 2 field blank analyses per set.
* The above results are not blank corrected
Average number of asbestos fibers on field blanks: n/a
Average number of non-asbestos fibers on field blanks: n/a

Analyst(s)
Natalie D'Amico (5)

Nicole Yeo, Laboratory Manager
or other approved signatory

EMSL is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. The above report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL Analytical, Inc. Samples received in good condition unless otherwise noted.
Samples analyzed by EMSL Canada Inc. Burnaby, BC

Initial report from 09/10/2018 09:29:11

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EMSL Canada Or	691802392
CustomerID:	55AGRA53
CustomerPO:	VE52705B
ProjectID:	

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Received:	09/06/18 10:11 AM
Analysis Date:	9/14/2018
Collected:	9/3/2018

Project: **VE52705B**

Test Report: Asbestos Analysis of Air Samples by Transmission Electron Microscopy via NIOSH Method 7402

Sample	Volume (Liters)	Non Asbestos Fibers	Asbestos Type(s)	Asbestos Fibers	PCM F/cc	*Asbestos % of total	7402 Adjusted (TEM) F/cc	Notes
2018-PERS-36 *691802392-0019*	1049.94	3	Chrysotile	7	0.021	70.0 %	**0.0147**	
2018-PERS-39 *691802392-0022*	1232.79	16.5	Chrysotile	9.5	0.063	36.5 %	**0.0230**	
2018-PERS-43 *691802392-0026*	576.3	0	None Detected		0.015	0 %	**<0.0047**	
2018-PERS-44 *691802392-0027*	806.25	2	Chrysotile	1.5	0.016	42.9 %	**0.0069**	
2018-PERS-45 *691802392-0028*	878.67	4	Actinolite Chrysotile	4 4.5	0.020	68.0 %	**0.0136**	
2018-PERS-48 *691802392-0031*	963.9	4	Actinolite Chrysotile	8.5 3	0.042	74.2 %	**0.0312**	

NIOSH 7402 method only reports fibers > 5µm in length and > 0.25µm in width.
This method requires a minimum of 2 field blank analyses per set.
* The above results are not blank corrected
Average number of asbestos fibers on field blanks: n/a
Average number of non-asbestos fibers on field blanks: n/a

Analyst(s)

Matthew Davis (1)
Natalie D'Amico (5)

Nicole Yeo, Laboratory Manager
or other approved signatory

EMSL is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. The above report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL Analytical, Inc. Samples received in good condition unless otherwise noted.
Samples analyzed by EMSL Canada Inc. Burnaby, BC

Report Amended: 09/14/2018 12:16:20 Replaces the Inital Report 09/10/2018 09:29:19. Reason Code: Client-Additional Analysis

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EMSL Canada Order:	691802424
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		Received Date:	09/11/2018 10:15 AM
		Analysis Date:	09/11/2018
		Collected Date:	09/04/2018
Project:	VE52705B		

Test Report: Fiber Count by Phase Contrast Microscopy (PCM), NIOSH 7400 Method - A Rules, Revision 3, Issue 2, 8/15/94

Sample	Location	Sample Date	Volume (liters)	Fibers	Fields	LOD (fib/cc)	Fibers/ mm²	Fibers/ cc	Notes
2018-PAS-35 *691802424-0001*	GATE	9/04/2018	1511.25	<5.5	100	0.002	<7.01	<0.002	
2018-PAS-36 *691802424-0002*	WASTE ROCK	9/04/2018	1396.25	<5.5	100	0.002	<7.01	<0.002	
2018-PAS-37 *691802424-0003*	TAILINGS	9/04/2018	1385.04	<5.5	100	0.002	<7.01	<0.002	
2018-PAS-38 *691802424-0004*	GATE	9/05/2018	1237.43	<5.5	100	0.002	<7.01	<0.002	
2018-PAS-39 *691802424-0005*	WASTE ROCK	9/05/2018	1261.00	5.5	100	0.002	7.01	0.002	
2018-PAS-40 *691802424-0006*	TAILINGS	9/05/2018	1183.84	<5.5	100	0.002	<7.01	<0.002	
2018-AMB-14 *691802424-0007*	AREA SAMPLE ADJACENT TO BH 11	9/05/2018	1263.36	<5.5	100	0.002	<7.01	<0.002	
2018-AMB-15 *691802424-0008*	AREA SAMPLE ADJACENT TO BH 7	9/05/2018	1119.26	26	100	0.002	33.1	0.011	
2018-PER-33 *691802424-0009*	OCCUPATIONAL SAMPLE - JIM MACDONALD	9/05/2018	1168.92	54	100	0.002	68.8	0.023	
2018-PER-34 *691802424-0010*	OCCUPATIONAL SAMPLE (NISA)	9/05/2018	1132.32	5.5	100	0.002	7.01	0.002	
2018-AMB-16 *691802424-0011*	AREA SAMPLE NEXT TO BH 7	9/05/2018	912.24	<5.5	100	0.003	<7.01	<0.003	
2018-AMB-17 *691802424-0012*	AREA SAMPLE NEXT TO BH 7	9/05/2018	914.00	<5.5	100	0.003	<7.01	<0.003	
2018-PER-35	DRILLER (JUSTIN) AT BH3	9/05/2018	462.93	12.5	100	0.006	15.9	0.013	

Limit of detection is 7 fibers/mm². Intra-laboratory Sr values: 5-20 fibers = 0.29, 21-50 fibers = 0.19, 51-100 fibers = 0.16. Inter-laboratory Sr values (Average of EMSL round robin data) = 0.32. The laboratory is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. Results have been blank corrected as applicable. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Canada Inc. Burnaby, BC CALA Accreditation #A3998

Initial report from: 09/11/2018 14:10:24

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		Analysis Date:	09/11/2018
		Collected Date:	09/04/2018
Project:	VE52705B		

Test Report: Fiber Count by Phase Contrast Microscopy (PCM), NIOSH 7400 Method - A Rules, Revision 3, Issue 2, 8/15/94

Sample	*Location*	*Sample Date*	*Volume (liters)*	*Fibers*	*Fields*	*LOD (fib/cc)*	*Fibers/ mm²*	*Fibers/ cc*	*Notes*
691802424-0013									
2018-PER-36	DRILLER (JAKE JACOBS) AT BH11	9/05/2018	583.25	<5.5	100	0.005	<7.01	<0.005	
691802424-0014									

This method requires the submission of field blanks with each sample set. No discernable field blanks were submitted, samples are not blank corrected.

Analyst(s):

Nicole Yeo PCM (14)

Nicole Yeo, Laboratory Manager
or Other Approved Signatory

Limit of detection is 7 fibers/mm². Intra-laboratory Sr values: 5-20 fibers = 0.29, 21-50 fibers = 0.19, 51-100 fibers = 0.16. Inter-laboratory Sr values (Average of EMSL round robin data) = 0.32. The laboratory is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. Results have been blank corrected as applicable. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Canada Inc. Burnaby, BC CALA Accreditation #A3998

Initial report from: 09/11/2018 14:10:24

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Received:	09/11/18 10:15 AM
Analysis Date:	9/14/2018
Collected:	9/5/2018

Project: **VE52705B**

Test Report: Asbestos Analysis of Air Samples by Transmission Electron Microscopy via NIOSH Method 7402

Sample	*Volume (Liters)*	*Non Asbestos Fibers*	*Asbestos Type(s)*	*Asbestos Fibers*	*PCM F/cc*	**Asbestos % of total*	*7402 Adjusted (TEM) F/cc*	*Notes*
2018-PER-33	1168.92	0	Chrysotile	2.5	0.023	100 %	**0.0230**	
691802424-0009								

NIOSH 7402 method only reports fibers > 5µm in length and > 0.25µm in width.
This method requires a minimum of 2 field blank analyses per set.
* The above results are not blank corrected
Average number of asbestos fibers on field blanks: n/a
Average number of non-asbestos fibers on field blanks: n/a

Analyst(s)
Matthew Davis (1)

Nicole Yeo, Laboratory Manager
or other approved signatory

EMSL is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. The above report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL Analytical, Inc. Samples received in good condition unless otherwise noted.
Samples analyzed by EMSL Canada Inc. Burnaby, BC

Initial report from 09/14/2018 12:19:43

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EMSL Canada Order:	691802425
Customer ID:	55AGRA53
Customer PO:	BH52705B
Project ID:	

Attention:	Geoff Graham Wood Env. & Infrastructure Solutions 4445 Lougheed Highway Suite 600 Burnaby, BC spvo	**Phone:**	(604) 294-3811
		Fax:	(604) 294-4664
		Received Date:	09/11/2018 10:15 AM
		Analysis Date:	09/11/2018
		Collected Date:	09/07/2018
Project:	BH52705B		

Test Report: Fiber Count by Phase Contrast Microscopy (PCM), NIOSH 7400 Method - A Rules, Revision 3, Issue 2, 8/15/94

Sample	Location	Sample Date	Volume (liters)	Fibers	Fields	LOD (fib/cc)	Fibers/ mm²	Fibers/ cc	Notes
2018-PER-37 *691802425-0001*	DRILL HELPER (RYAN BERG) AT BH11	9/07/2018	806.29	21.5	100	0.003	27.4	0.013	
2018-PER-38 *691802425-0002*	SITE CO-LEAD (SAM FULLER), INSPECTIONS/OFFICE	9/07/2018	441.09	6.5	100	0.006	8.28	0.007	
FB3 *691802425-0003*	FIELD BLANK	9/07/2018	0.00	<5.5	100		<7.01		Field Blank
2018-PER-39 *691802425-0004*	DRILLER (JAKE JACOBS) AT BH11/13	9/08/2018	1363.64	<5.5	100	0.002	<7.01	<0.002	
2018-PER-40 *691802425-0005*	DRILLER (DUSTIN LOEWEN) AT BH3	9/08/2018	1483.44	10	100	0.002	12.7	0.003	
2018-PAS-41 *691802425-0006*	GATE	9/08/2018	1078.22	7.5	100	0.002	9.55	0.003	
2018-PAS-42 *691802425-0007*	WASTE ROCK	9/08/2018	949.12	<5.5	100	0.003	<7.01	<0.003	
2018-PAS-43 *691802425-0008*	TAILINGS	9/08/2018	760.44	<5.5	100	0.004	<7.01	<0.004	
2018-AMB-18 *691802425-0009*	EMERGENCY TRANSPORT VEHICLE	9/08/2018	1056.67	<5.5	100	0.003	<7.01	<0.003	
2018-AMB-19 *691802425-0010*	WOOD 'DIRTY' PICK-UP TRUCK (RGA70)	9/08/2018	1103.95	17.5	100	0.002	22.3	0.008	
2018-AMB-20 *691802425-0011*	OFFICE, NORTHWEST CORNER	9/08/2018	1311.39	37.5	100	0.002	47.8	0.014	
FB4 *691802425-0012*	FIELD BLANK	9/08/2018	0.00	<5.5	100		<7.01		Field Blank

Limit of detection is 7 fibers/mm². Intra-laboratory Sr values: 5-20 fibers = 0.29, 21-50 fibers = 0.19, 51-100 fibers = 0.16. Inter-laboratory Sr values (Average of EMSL round robin data) = 0.32. The laboratory is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. Results have been blank corrected as applicable. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Canada Inc. Burnaby, BC CALA Accreditation #A3998

Initial report from: 09/11/2018 14:12:13

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Attention:	Geoff Graham Wood Env. & Infrastructure Solutions 4445 Lougheed Highway Suite 600 Burnaby, BC spvo	**Phone:**	(604) 294-3811
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		Received Date:	09/11/2018 10:15 AM
		Analysis Date:	09/11/2018
		Collected Date:	09/07/2018
Project:	BH52705B		

Test Report: Fiber Count by Phase Contrast Microscopy (PCM), NIOSH 7400 Method - A Rules, Revision 3, Issue 2, 8/15/94

Sample	*Location*	*Sample Date*	*Volume (liters)*	*Fibers*	*Fields*	*LOD (fib/cc)*	*Fibers/ mm²*	*Fibers/ cc*	*Notes*
2018-PER-41 *691802425-0013*	DRILLER (JAKE JACOBS) AT BH13	9/09/2018	1345.89	15.5	100	0.002	19.7	0.006	
2018-AMB-21 *691802425-0014*	RIG AT BH3 & PICK-UP TRUCK AT BH19	9/09/2018	935.11	16	100	0.003	20.4	0.008	
2018-AMB-22 *691802425-0015*	MSD'S (GLENN THIESSEN) PICK-UP TRUCK	9/09/2018	1382.65	18	100	0.002	22.9	0.006	
2018-PER-42 *691802425-0016*	EOTECHNICAL ENGINEER (JIM MCDONALD)	9/09/2018	1366.85	<5.5	100	0.002	<7.01	<0.002	
2018-AMB-23 *691802425-0017*	LAB	9/09/2018	1389.89	59	100	0.002	75.2	0.021	
2018-PAS-44 *691802425-0018*	WASTE ROCK	9/09/2018	1114.95	<5.5	100	0.002	<7.01	<0.002	
2018-PAS-45 *691802425-0019*	TAILINGS	9/09/2018	995.50	5.5	100	0.003	7.01	0.003	
2018-PAS-46 *691802425-0020*	GATE	9/09/2018	936.96	<5.5	100	0.003	<7.01	<0.003	
FB5 *691802425-0021*	FIELD BLANK	9/09/2018	0.00	<5.5	100		<7.01		Field Blank

The results reported have been blank corrected as applicable.

Analyst(s):

Nicole Yeo PCM (21)

Nicole Yeo, Laboratory Manager
or Other Approved Signatory

Limit of detection is 7 fibers/mm². Intra-laboratory Sr values: 5-20 fibers = 0.29, 21-50 fibers = 0.19, 51-100 fibers = 0.16. Inter-laboratory Sr values (Average of EMSL round robin data) = 0.32. The laboratory is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. Results have been blank corrected as applicable. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Canada Inc. Burnaby, BC CALA Accreditation #A3998

Initial report from: 09/11/2018 14:12:13

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Received:	09/11/18 10:15 AM
Analysis Date:	9/14/2018
Collected:	9/9/2018

Project: **BH52705B**

Test Report: Asbestos Analysis of Air Samples by Transmission Electron Microscopy via NIOSH Method 7402

Sample	Volume (Liters)	Non Asbestos Fibers	Asbestos Type(s)	Asbestos Fibers	PCM F/cc	*Asbestos % of total	7402 Adjusted (TEM) F/cc	Notes
2018-AMB-23	1389.89	1	Chrysotile	38	0.021	97.4 %	**0.0205**	
691802425-0017								

NIOSH 7402 method only reports fibers > 5µm in length and > 0.25µm in width.
This method requires a minimum of 2 field blank analyses per set.
* The above results are not blank corrected
Average number of asbestos fibers on field blanks: n/a
Average number of non-asbestos fibers on field blanks: n/a

Analyst(s)
Matthew Davis (1)

Nicole Yeo, Laboratory Manager
or other approved signatory

EMSL is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. The above report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL Analytical, Inc. Samples received in good condition unless otherwise noted.
Samples analyzed by EMSL Canada Inc. Burnaby, BC

Initial report from 09/14/2018 12:18:27

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Customer ID:	55AGRA53
Customer PO:	VE52705B
Project ID:	

Attention:	Geoff Graham Wood Env. & Infrastructure Solutions 4445 Lougheed Highway Suite 600 Burnaby, BC spvo	**Phone:**	(604) 294-3811
		Fax:	(604) 294-4664
		Received Date:	09/14/2018 1:19 PM
		Analysis Date:	09/14/2018
		Collected Date:	09/10/2018
Project:	VE52705B		

Test Report: Fiber Count by Phase Contrast Microscopy (PCM), NIOSH 7400 Method - A Rules, Revision 3, Issue 2, 8/15/94

Sample	Location	Sample Date	Volume (liters)	Fibers	Fields	LOD (fib/cc)	Fibers/ mm²	Fibers/ cc	Notes
2018-PAS-47 *691802462-0001*	GATE	9/10/2018	1492.98	<5.5	100	0.002	<7.01	<0.002	
2018-PAS-48 *691802462-0002*	TAILINGS	9/10/2018	1369.50	6.7	100	0.002	8.54	0.002	
2018-PAS-49 *691802462-0003*	WASTE ROCK	9/10/2018	1259.22	21.2	100	0.002	27.0	0.008	
2018-AMB-24 *691802462-0004*	BH13, DECONT. TENT BESIDE ASB WASTE BAG	9/10/2018	1021.98	13.7	100	0.003	17.5	0.007	
2018-PER-43 *691802462-0005*	DRILLER (JAKE JACOBS) AT BH13	9/10/2018	1128.13	<5.5	100	0.002	<7.01	<0.002	
2018-AMB-25 *691802462-0006*	WOOD 'DIRTY' PICK-UP TRUCK (RGM62)	9/10/2018	1445.38	22.2	100	0.002	28.3	0.008	
2018-PER-44 *691802462-0007*	DRILLER (DUSTIN LOEWEN) AT BH19	9/10/2018	1259.97	11.2	100	0.002	14.3	0.004	
2018-AMB-26 *691802462-0008*	BH19, FRONT OF RIG BOMB, GEOTECH WA	9/10/2018	1266.04	<5.5	100	0.002	<7.01	<0.002	
FB6 *691802462-0009*	FIELD BLANK	9/10/2018	0.00	<5.5	100		<7.01		Field Blank
2018-AMB-27 *691802462-0010*	EMERGENCY TRANSPORT VEHICLE	9/11/2018	1341.41	30.7	100	0.002	39.1	0.011	
2018-PER-45 *691802462-0011*	SITE ASBESTOS SAFETY (WEI CHYE)	9/11/2018	1326.47	102.8	63	0.002	208	0.060	
2018-PER-46 *691802462-0012*	DRILLER (JAKE JACOBS) AT BH13 & BH15	9/11/2018	1560.99	14.7	100	0.002	18.7	0.005	

Limit of detection is 7 fibers/mm². Intra-laboratory Sr values: 5-20 fibers = 0.29, 21-50 fibers = 0.19, 51-100 fibers = 0.16. Inter-laboratory Sr values (Average of EMSL round robin data) = 0.32. The laboratory is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. Results have been blank corrected as applicable. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Canada Inc. Burnaby, BC CALA Accreditation #A3998

Initial report from: 09/17/2018 09:32:37

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Received Date: 09/14/2018 1:19 PM
Analysis Date: 09/14/2018
Collected Date: 09/10/2018

Test Report: Fiber Count by Phase Contrast Microscopy (PCM), NIOSH 7400 Method - A Rules, Revision 3, Issue 2, 8/15/94

Sample	Location	Sample Date	Volume (liters)	Fibers	Fields	LOD (fib/cc)	Fibers/ mm²	Fibers/ cc	Notes
2018-PER-47	DRILLER (DUSTIN LOEWEN) AT BH19	9/11/2018	1499.89	10.2	100	0.002	13.0	0.003	
691802462-0013									
2018-AMB-28	LAB	9/11/2018	1665.92	83.7	100	0.002	107	0.025	
691802462-0014									
2018-PAS-50	GATE	9/11/2018	1320.22	10.2	100	0.002	13.0	0.004	
691802462-0015									
2018-PAS-51	TAILINGS	9/11/2018	1189.03	<5.5	100	0.002	<7.01	<0.002	
691802462-0016									
2018-PAS-52	WASTE ROCK	9/11/2018	1158.93	<5.5	100	0.002	<7.01	<0.002	
691802462-0017									
FB7	FIELD BLANK	9/11/2018	0.00	<5.5	100		<7.01		Field Blank
691802462-0018									
2018-PER-48	DRILLER (DUSTIN LOEWEN) AT BH18	9/12/2018	948.24	22.2	100	0.003	28.3	0.011	
691802462-0019									
2018-PER-49	DRILLER (JAKE JACOBS) AT BH15 & BH16	9/12/2018	1556.67	<5.5	100	0.002	<7.01	<0.002	
691802462-0020									
2018-AMB-29	OFFICE	9/12/2018	1766.83	102.3	54	0.002	241	0.053	
691802462-0021									
2018-AMB-30	MUD BAY TRUCK	9/12/2018	1497.17	52.2	100	0.002	66.5	0.017	
691802462-0022									
2018-AMB-31	MSD TRUCK	9/12/2018	1460.81	46.2	100	0.002	58.9	0.016	
691802462-0023									
2018-PAS-53	WASTE ROCK	9/12/2018	1481.98	9.2	100	0.002	11.7	0.003	
691802462-0024									
2018-PAS-54	GATE	9/12/2018	1632.31	6.7	100	0.002	8.54	0.002	

Limit of detection is 7 fibers/mm². Intra-laboratory Sr values: 5-20 fibers = 0.29, 21-50 fibers = 0.19, 51-100 fibers = 0.16. Inter-laboratory Sr values (Average of EMSL round robin data) = 0.32. The laboratory is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. Results have been blank corrected as applicable. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

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Initial report from: 09/17/2018 09:32:37

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Attention:	Geoff Graham Wood Env. & Infrastructure Solutions 4445 Lougheed Highway Suite 600 Burnaby, BC spvo	**Phone:**	(604) 294-3811
		Fax:	(604) 294-4664
		Received Date:	09/14/2018 1:19 PM
		Analysis Date:	09/14/2018
		Collected Date:	09/10/2018
Project:	VE52705B		

Test Report: Fiber Count by Phase Contrast Microscopy (PCM), NIOSH 7400 Method - A Rules, Revision 3, Issue 2, 8/15/94

Sample	*Location*	*Sample Date*	*Volume (liters)*	*Fibers*	*Fields*	*LOD (fib/cc)*	*Fibers/ mm²*	*Fibers/ cc*	*Notes*
691802462-0025									
2018-PAS-55	TAILINGS	9/12/2018	1468.10	7.7	100	0.002	9.81	0.003	
691802462-0026									
FB8	FIELD BLANK	9/12/2018	0.00	<5.5	100		<7.01		Field Blank
691802462-0027									

The results reported have been blank corrected as applicable.

Analyst(s):

Kathleen Cruz PCM (27)

Nicole Yeo, Laboratory Manager
or Other Approved Signatory

Limit of detection is 7 fibers/mm². Intra-laboratory Sr values: 5-20 fibers = 0.29, 21-50 fibers = 0.19, 51-100 fibers = 0.16. Inter-laboratory Sr values (Average of EMSL round robin data) = 0.32. The laboratory is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. Results have been blank corrected as applicable. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

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Received:	09/14/18 1:19 PM
Analysis Date:	9/19/2018
Collected:	9/12/2018

Project: **VE52705B**

Test Report: Asbestos Analysis of Air Samples by Transmission Electron Microscopy via NIOSH Method 7402

Sample	*Volume (Liters)*	*Non Asbestos Fibers*	*Asbestos Type(s)*	*Asbestos Fibers*	*PCM F/cc*	**Asbestos % of total*	*7402 Adjusted (TEM) F/cc*	*Notes*
2018-PER-45 *691802462-0011*	1326.47	15	Chrysotile	6.5	0.060	30.2 %	**0.0181**	
2018-AMB-28 *691802462-0014*	1665.92	4	Chrysotile	37	0.025	90.2 %	**0.0226**	
2018-AMB-29 *691802462-0021*	1766.83	7.5	Chrysotile	5	0.053	40.0 %	**0.0212**	

NIOSH 7402 method only reports fibers > 5µm in length and > 0.25µm in width.
This method requires a minimum of 2 field blank analyses per set.
* The above results are not blank corrected
Average number of asbestos fibers on field blanks: n/a
Average number of non-asbestos fibers on field blanks: n/a

Analyst(s)
Natalie D'Amico (3)

Nicole Yeo, Laboratory Manager
or other approved signatory

EMSL is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. The above report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL Analytical, Inc. Samples received in good condition unless otherwise noted.
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Initial report from 09/19/2018 10:18:31

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Project: VE52705B

Phone: (604) 294-3811
Fax: (604) 294-4664
Received Date: 09/27/2018 11:59 AM
Analysis Date: 09/27/2018
Collected Date: 09/13/2018

Test Report: Fiber Count by Phase Contrast Microscopy (PCM), NIOSH 7400 Method - A Rules, Revision 3, Issue 2, 8/15/94

Sample	Location	Sample Date	Volume (liters)	Fibers	Fields	LOD (fib/cc)	Fibers/ mm²	Fibers/ cc	Notes
2018-AMB-32	MUD BAY TRUCK	9/13/2018	1094.40	19	100	0.002	24.2	0.009	
691802592-0001									
2018-AMB-33	MSD TRUCK	9/13/2018	1429.62	39.5	100	0.002	50.3	0.014	
691802592-0002									
2018-PER-50	DRILLER (DUSTIN LOEWEN) AT BH18/BH06	9/13/2018	1596.96	13	100	0.002	16.6	0.004	
691802592-0003									
2018-AMB-34	EMERGENCY TRANSPORT VEHICLE	9/13/2018	1429.74	17	100	0.002	21.7	0.006	
691802592-0004									
2018-PAS-56	TAILINGS	9/13/2018	1262.24	<5.5	100	0.002	<7.01	<0.002	
691802592-0005									
2018-PAS-57	GATE	9/13/2018	1195.44	<5.5	100	0.002	<7.01	<0.002	
691802592-0006									
2018-PAS-58	WASTE ROCK	9/13/2018	1262.16	<5.5	100	0.002	<7.01	<0.002	
691802592-0007									
FB9	FIELD BLANK	9/13/2018	0.00	<5.5	100		<7.01		Field Blank
691802592-0008									
2018-PAS-59	TAILINGS	9/15/2018	1158.03	<5.5	100	0.002	<7.01	<0.002	
691802592-0009									
2018-PAS-60	GATE	9/15/2018	1068.48	<5.5	100	0.003	<7.01	<0.003	
691802592-0010									
2018-PAS-61	WASTE ROCK	9/15/2018	977.90	<5.5	100	0.003	<7.01	<0.003	
691802592-0011									
2018-PER-51	DRILLER (DUSTIN LOEWEN) AT BH2	9/15/2018	826.44	<5.5	100	0.003	<7.01	<0.003	
691802592-0012									
2018-PER-52	DRILLER (JACK JACOBS) AT BH4	9/15/2018	852.50	7.5	100	0.003	9.55	0.004	

Limit of detection is 7 fibers/mm². Intra-laboratory Sr values: 5-20 fibers = 0.29, 21-50 fibers = 0.19, 51-100 fibers = 0.16. Inter-laboratory Sr values (Average of EMSL round robin data) = 0.32. The laboratory is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. Results have been blank corrected as applicable. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

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Project ID:	

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		Analysis Date:	09/27/2018
		Collected Date:	09/13/2018
Project:	VE52705B		

Test Report: Fiber Count by Phase Contrast Microscopy (PCM), NIOSH 7400 Method - A Rules, Revision 3, Issue 2, 8/15/94

Sample	Location	Sample Date	Volume (liters)	Fibers	Fields	LOD (fib/cc)	Fibers/ mm²	Fibers/ cc	Notes
691802592-0013									
2018-AMB-34	BH2 DECOM AREA	9/15/2018	849.60	6.5	100	0.003	8.28	0.004	
691802592-0014									
2018-AMB-35	BH4 DECOM AREA	9/15/2018	693.62	<5.5	100	0.004	<7.01	<0.004	
691802592-0015									
2018-AMB-36	MEDIC TRUCK	9/15/2018	834.21	6	100	0.003	7.64	0.004	
691802592-0016									
FB10	FIELD BLANK	9/15/2018	0.00	<5.5	100		<7.01		Field Blank
691802592-0017									
2018-PER-53	DRILLER (JACK JACOBS) BH8 + MOBILIZATION	9/16/2018	1336.80	10	100	0.002	12.7	0.004	
691802592-0018									
2018-PER-54	DRILLER (DUSTIN LOEWEN) BH5+MOBILIZATION	9/16/2018	1362.61	13	100	0.002	16.6	0.005	
691802592-0019									
2018-PAS-62	GATE	9/16/2018	1647.68	<5.5	100	0.002	<7.01	<0.002	
691802592-0020									
2018-PAS-63	TAILINGS	9/16/2018	1479.64	<5.5	100	0.002	<7.01	<0.002	
691802592-0021									
2018-PAS-64	WASTE ROCK	9/16/2018	1095.31	<5.5	100	0.002	<7.01	<0.002	
691802592-0022									
2018-AMB-37	WATER TRUCK	9/16/2018	1367.47	11	100	0.002	14.0	0.004	
691802592-0023									
2018-AMB-38	BH8 DECOM AREA	9/16/2018	782.25	5.5	100	0.003	7.01	0.003	
691802592-0024									
2018-AMB-39	GEOTECH TRAILER DECOM AREA	9/16/2018	1152.90	<5.5	100	0.002	<7.01	<0.002	
691802592-0025									

Limit of detection is 7 fibers/mm². Intra-laboratory Sr values: 5-20 fibers = 0.29, 21-50 fibers = 0.19, 51-100 fibers = 0.16. Inter-laboratory Sr values (Average of EMSL round robin data) = 0.32. The laboratory is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. Results have been blank corrected as applicable. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

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		Collected Date:	09/13/2018
Project:	VE52705B		

Test Report: Fiber Count by Phase Contrast Microscopy (PCM), NIOSH 7400 Method - A Rules, Revision 3, Issue 2, 8/15/94

Sample	*Location*	*Sample Date*	*Volume (liters)*	*Fibers*	*Fields*	*LOD (fib/cc)*	*Fibers/ mm²*	*Fibers/ cc*	*Notes*
FB11	FIELD BLANK	9/16/2018	0.00	<5.5	100		<7.01		Field Blank
691802592-0026									
2018-PER-55	DRILLER (DUSTIN LOEWEN) BH5	9/17/2018	1663.03	33	100	0.002	42.0	0.010	
691802592-0027									
2018-PAS-65	TAILINGS	9/17/2018	1522.08	<5.5	100	0.002	<7.01	<0.002	
691802592-0028									
2018-PAS-66	GATE	9/17/2018	1618.50	<5.5	100	0.002	<7.01	<0.002	
691802592-0029									
2018-PAS-67	WASTE ROCK	9/17/2018	1179.38	8.5	100	0.002	10.8	0.004	
691802592-0030									
2018-AMB-40	BIOLOGIST TRUCK (UPPER TAILINGS)	9/17/2018	1143.69	18.5	100	0.002	23.6	0.008	
691802592-0031									
2018-AMB-41	GEOTECH TRAILER DECOM AREA	9/17/2018	1177.44	8	100	0.002	10.2	0.003	
691802592-0032									
2018-AMB-42	BH5 DECOM, AREA	9/17/2018	1135.94	<5.5	100	0.002	<7.01	<0.002	
691802592-0033									
FB12	FIELD BLANK	9/17/2018	0.00	<5.5	100		<7.01		Field Blank
691802592-0034									
2018-PAS-68	TAILINGS	9/18/2018	1481.62	<5.5	100	0.002	<7.01	<0.002	
691802592-0035									
2018-PAS-69	GATE	9/18/2018	1600.55	<5.5	100	0.002	<7.01	<0.002	
691802592-0036									
2018-PAS-70	WASTE ROCK	9/18/2018	1122.70	9.5	100	0.002	12.1	0.004	
691802592-0037									
2018-AMB-43	OFFICE EXTERIOR	9/18/2018	1306.11	<5.5	100	0.002	<7.01	<0.002	

Limit of detection is 7 fibers/mm². Intra-laboratory Sr values: 5-20 fibers = 0.29, 21-50 fibers = 0.19, 51-100 fibers = 0.16. Inter-laboratory Sr values (Average of EMSL round robin data) = 0.32. The laboratory is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. Results have been blank corrected as applicable. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

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		Received Date:	09/27/2018 11:59 AM
		Analysis Date:	09/27/2018
		Collected Date:	09/13/2018
Project:	VE52705B		

Test Report: Fiber Count by Phase Contrast Microscopy (PCM), NIOSH 7400 Method - A Rules, Revision 3, Issue 2, 8/15/94

Sample	*Location*	*Sample Date*	*Volume (liters)*	*Fibers*	*Fields*	*LOD (fib/cc)*	*Fibers/ mm²*	*Fibers/ cc*	*Notes*
691802592-0038									
2018-AMB-44	BH5 DECOM	9/18/2018	1350.88	<5.5	100	0.002	<7.01	<0.002	
691802592-0039									
FB13	FIELD BLANK	9/18/2018	0.00	<5.5	100		<7.01		Field Blank
691802592-0040									

The results reported have been blank corrected as applicable.

Analyst(s):

Nicole Yeo PCM (40)

Nicole Yeo, Laboratory Manager
or Other Approved Signatory

Limit of detection is 7 fibers/mm². Intra-laboratory Sr values: 5-20 fibers = 0.29, 21-50 fibers = 0.19, 51-100 fibers = 0.16. Inter-laboratory Sr values (Average of EMSL round robin data) = 0.32. The laboratory is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. Results have been blank corrected as applicable. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

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Appendix H
Small Mammals Survey

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Memo

To: Brian Geddes, P.Eng.

Company: Wood Environment & Infrastructure Solutions

From: Kent Brown

Date: 16 January 2019

CC: Eric Hamelin, Wood

Ref: VE52705C.100.2

Re: **Clinton Creek 2018 Site Investigation - Small Mammals Survey**

1.0 INTRODUCTION

The Clinton Creek Mine is an abandoned open-pit asbestos mine in west-central Yukon within the Traditional Territory of the Tr'ondëk Hwëch'in First Nation (Figure 1). It was in production from 1967-1978. Concerns raised by the Government of Yukon and the Government of Canada over potential heavy metal toxicity and asbestos contamination after mine closure resulted in a drilling program in fall 2018. Due to the potential for heavy metal toxicity within the food chain, a program to test for metals and other potential effects in small mammals, including histological effects, was also conducted from 15-19 September 2018. This report summarizes that program.

2.0 STUDY AREA

The Clinton Creek Asbestos mine is located in west-central Yukon, approximately 75 km northwest of the City of Dawson, and 12 km east of the Alaska border (Figure 1). It is in the Klondike Plateau Ecoregion, within the Boreal Cordillera Ecozone (Yukon Territorial Government 1995). Terrain is steep in most areas, although the original mill site and upper tailings area are relatively level. Vegetation in the region is primarily coniferous and mixedwood forest.

Small mammal traps were deployed in three areas including the original asbestos mill site (Mill), adjacent to the upper tailings pile (Tailings), and in a control area (Control) located approximately 250 m west of the Mill site (Figure 2).

2.1 Mill

The Mill site consists of several concrete structures and pads that are the remnants of the original asbestos mill. Terrain is relatively level. Vegetation cover is comprised of open field/grassland, scattered regenerating aspen, and sparsely vegetated gravel areas (See Appendix A for Site Photos).

2.2 Tailings

The Tailings trapping area is located at the lower edge of the tailings pile, in adjacent grassland. Terrain is relatively level and vegetated with grasses and widely scattered shrubs (See Appendix A for Site Photos).

2.3 Control

The Control trapping area is located 250-320 m northwest of the Mill area. The area is vegetated with regenerating aspen, shrubs, and some grassland.

This area shows some signs of disturbance, including levelled ground and exposed gravel under the forb/ shrub layer (i.e., moss/lichen layer development and scrap metal pieces). However, there were no indications that the area had been contaminated by asbestos or tailings.

3.0 METHODS

3.1 Permitting

The study was done under Yukon Wildlife Research Permit 0297-2018. Export of the captured animals and associated tissues was authorized under Export Permit 26181.

3.2 Capture

Animals were caught with Sherman live traps. Traps were baited with a mixture of peanut butter and rolled oats. The bait was placed at the back of the trap to lure the animals onto the treadle. Each trap contained polyester bedding and was placed inside an unused 2 L milk carton to maintain insulation and protect the trap from precipitation.

Sixty-nine and 72 traps, respectively, were placed at 10 m intervals in grid patterns at the Mill and Control sites. At the Tailings site, 72 traps were placed in three rows, with one row paralleling the base of the tailings and the other two rows at 10-m and 20-m intervals, respectively, paralleling the first (Figure 2).

Traps were checked twice daily, in the morning and late afternoon. Ten animals captured in each of the Mill and Control areas were anaesthetized, measured, and weighed. Blood samples were drawn from the heart while the animal was anaesthetized. The animal was then euthanized by cervical dislocation, placed in a sealed plastic bag, and placed in a cooler with ice to delay decomposition.

On the day of capture, tissue samples were collected from the liver, heart, kidney, lung, and thyroid. Tissues samples were placed in a 10% formalin solution. The remaining body and blood samples were placed in a sealed plastic bag and frozen for further analyses.

Tissue and blood samples were submitted to the Department of Veterinary Medicine at the University of Calgary for metal and histological analyses.

Incidental wildlife sightings noted on-site were also recorded.

4.0 RESULTS

4.1 Capture Program

Traps were set on 15 September, and trapping was conducted from 16 to 19 September. Weather during the program was relatively consistent, and there were no weather events or trends that would have affected animal activity or trapping success. High temperatures ranged from 11 to 15°C. Overnight lows ranged from -3 to -7°C. Winds were calm to light (0-10 km/h), and skies were clear throughout the program.

Trap nights[1] in each area ranged from 270 to 281 (Table 4-1). Red-backed voles (*Myodes rutilus*) and meadow voles (*Microtus pennsylvanicus*) were the only species captured (Appendix B). Red-backed voles were the most commonly captured species (n = 13 in the Mill area and n = 19 in the Control area). Only four meadow voles were captured, all in the Mill area. No deer mice (*Peromyscus maniculatus*), a target species, were captured.

Capture rates were 0 captures/100 trap nights in the Tailings area and 6.3 and 6.9 captures/100 trap nights, respectively, in the Mill and Control areas (Table 4-1).

Table 4-1:Trapping Results, Clinton Creek Asbestos Mine, 16-19 September 2018

Trapping Area	Red-backed Voles Captured	Meadow Voles Captured	Total Captures	Trap Nights	Captures/100 Trap Nights
Mill	13	4	17	270	6.3
Control	19	0	19	276	6.9
Tailings	0	0	0	281	0

4.2 Metal Analyses

Levels of 21 metals in the livers of 10 red-backed voles in both the Mill and Control trapping areas were within normal ranges[2], except for high-normal levels of selenium (20 of 20 animals), magnesium (18 of 20 animals), cobalt (seven of 20 animals), copper (eight of 20 animals), molybdenum (four of 20 animals), and iron (one animal) (Appendix C). Levels of selenium and magnesium were consistently high in both the Mill and Control trapping areas (Table 4-2). Cobalt levels were significantly higher in the Mill trapping area (mean = 94.1; SD = 45.8) than in the Control (mean = 68.0; SD = 17.5) (unpaired t-test (DF 18), t = 2.29, p = 0.034). The number of animals with high-normal levels of copper was higher in the Control area (mean = 11.9; SD = 6.19) than in the Mill area (mean = 9.9; SD = 4.71); however, the difference was not significant (unpaired t-test (DF = 18), t = -0.787, p = 0.440).

[1] A trap night is defined as one trap open for one night. Traps found closed with no captures were not included in the total. Total trap nights were calculated by adding all open traps each of the four nights of trapping at each site.

[2] Note that because normal values are not available for this species, interpretation was based on comparable mammalian species, and it is possible that some of the high-normal values may be normal in this species (Appendix C). However, no indications could be found in the literature that high-normal values are usual in this species, and these interpretations are likely correct.

Table 4-2:Metals with High-Normal Levels in the Livers of Red-Backed Voles in the Clinton Creek Study Area

Metal	Control (number of animals)		Range	Mean	Mill (number of animals)		Range	Mean
	Normal	High-Normal			Normal	High-Normal		
Selenium	0	10	0.63-1.47	1.19	0	10	0.92-1.95	1.32
Magnesium	1	9	179.2-359.8	291.01	1	9	114.7-354.7	282.87
Cobalt	9	1	33.9-99.4	68.0	4	6	45.8-160.2	94.1
Copper	4	6	5.90-25.4	11.93	2	8	3.93-21.20	9.99
Molybdenum	7	3	0.356-1.59	1.26	1	9	0.62-1.97	1.38
Iron	10	0	96.4-196.5	141.0	9	1	83.4-297.9	155.0

Note: All values are expressed as parts per million, except for cobalt which is expressed in parts per billion.

4.3 Histology

Tissues examined included:

- Main tissues (all or majority of individuals) included:
  - Lung
  - Kidney
  - Liver
  - Heart
  - Thyroid Gland
  - Skeletal Muscle
- Additional tissues included in some individuals:
  - Adrenal Gland
  - Esophagus
  - Trachea
  - Stomach
  - Pancreas
  - Testes
  - Ovary
  - Urinary Bladder

Among Mill area voles, there were a total of 18 lesions in 56 tissues compared to 12 lesions in 52 tissues from Control area voles (Table 4-3) (excluding pulmonary edema and congestion, which may have resulted from euthanasia) (Appendix D). There is no statistically significant difference between these

groups (chi-square p = 0.293). The pulmonary congestion in the Mill area samples may have resulted from capture and euthanasia; however, because animals were handled similarly in both areas, there may be environmental factors involved.

Table 4-3:Summary of Organ Lesions

Organ	Lesion Name	Lesion Description	Mill Site n (%)*	Control Site n (%)*
Lung	Pulmonary Edema	Alveolar are filled with homogenous, pink extracellular fluid	1 (10)	0 (0)
	Pulmonary Congestion	Capillaries in alveolar septa are contain erythrocytes	6 (60)	0 (0)
	iBALT	Inducible bronchus-associated lymphoid tissue -clusters of lymphocytes adjacent to bronchioles/bronchi	2 (20)	1 (13)
Liver	Focal/multifocal necrosis	Small foci of hepatic cord disruption with pyknotic nuclear debris	0 (0)	1 (10)
	Periportal hepatitis	Infiltration by lymphocytes and plasma cells in periportal areas	3 (30)	3 (30)
	Mononuclear cell aggregates	Small aggregates of lymphocytes and plasma cells in multifocal, non-portal areas of the liver parenchyma	2 (20)	1 (10)
	Hepatocyte vacuoles	Clear vacuoles within hepatocytes	4 (40)	1 (10)
	Parasite	Cross-sections of trematode parasites within bile ducts and in association with lymphoplasmacytic inflammation in the adjacent parenchyma	0 (0)	1 (10)
Kidney	Interstitial nephritis	Small, few multifocal clusters of lymphocytes and plasma cells within the interstitium of the cortex and medulla	0 (0)	1 (10)
Thyroid gland	Thyroid follicular hyperplasia	Thyroid follicles are collapsed with little colloid	3 (30)	1 (11)
Heart	Interstitial myocarditis	Multifocal clusters of lymphocytes and plasma cells in myocardium subjacent to endo/epicardium	1 (10)	1 (10)
Esophagus	Esophagitis	Few lymphocytes and/or granulocytes in interstitium of submucosa and muscularis	3 (50)	1 (20)

4.4 Incidental Wildlife Observations

Twelve bird species and five mammal species were observed in the Clinton Creek Mine area during the field program (Appendix E).

5.0 DISCUSSION

5.1 Capture

Two species of small mammals were captured in the Clinton Creek Asbestos Mine area: red-backed vole (n = 32) and meadow vole (n = 4), both herbivores. Similar numbers of red-backed voles were captured in the Mill and Control areas (n = 13 and 19, respectively).

The deer mouse, a target species because of its omnivorous diet which would better reflect movements of trace metals through the food chain (Rainbow 2018; Smith and Rongstad 1982), was not captured. Although Sherman traps are effective in catching deer mice (Anthony et al. 2005), the reason no deer mice were captured is unknown. Since the trapping area is at the edge of deer mouse range in the Yukon (Government of Yukon 2018), it is probable none were present.

No voles were captured adjacent to the tailings area during 281 trap nights. Habitat in the Tailings trapping area was mostly grasses and shrubs. There were no obvious habitat characteristics or features, other than proximity to the tailings, that would make the area unsuitable for small mammals. It is unknown if the absence of small mammals in that area is related to the tailings themselves.

5.2 Metal Analyses

Barbeau et al. (1985) identified chromium and nickel as major contaminants in milled chrysolite asbestos in Quebec, and chromium and nickel are the two primary metals of concern at Clinton (see Table 4-7.) Small mammal sampling at the Clinton Creek asbestos mine did not indicate increased levels of those metals in any of the voles sampled. However, there were elevated levels of other metals in the samples, discussed below. Note that of these metals, the available data for the Clinton tailings indicate that cobalt and magnesium are elevated above background (see Tables 4-7 and 4-11).

5.2.1 Selenium

Selenium is an important micronutrient in mammalian physiology (Kneteman 2016). Acute selenium toxicity can have severe effects in animals, and chronic toxicity, evidenced by liver cirrhosis, hair loss and emaciation, can be caused by levels of 4-5 ppm (National Research Council (US) Subcommittee on Selenium 1983). Selenium levels observed in voles in the Clinton Creek study area (0.63-1.95 ppm; Table 4-2) did not reach levels cited to cause clinical effects. However, effects of toxic selenium bioavailability are believed to be largely subclinical (Hebert and McTaggart-Cowan 1971, Flueck et al. 2012). Effects manifest in mammals as poor population performance, principally reduced reproductive success and recruitment.

Mountain environments (such as the Clinton Creek area) typically have reduced selenium levels (Hebert and McTaggart-Cowan 1971). Therefore, selenium levels in mammal tissues in our study area would be expected to be low. However, sites disturbed by mining, particularly coal mining, may have elevated selenium levels (Sasmaz 2009). No data corresponding to asbestos mining could be found in the literature. Surficial and subsurface disturbance levels at the Clinton Creek mine could be expected to be similar to coal mining, and it is possible that the levels observed in voles from the study area are a result of disturbance from asbestos mining. The potential effects of elevated selenium levels in voles cannot be determined from the data collected during this study.

5.2.2 Magnesium

No adverse effects of elevated magnesium levels in mammalian tissues were found in the literature and, therefore, there are no recognizable concerns of levels measured in voles in the Clinton Creek mine area.

5.2.3 Cobalt

Kim (2006) noted that an adverse effect of cobalt on birds and wild mammals would appear unlikely, but cobalt deficiency in ruminants is more likely than cobalt toxicosis. The same principle likely applies to other herbivores, including voles, and no clinical effects of high-normal cobalt levels in voles are anticipated. In Quebec, cobalt was present only in minute quantities in chrysolite ore (Barbeau et al. 1985). The source of elevated levels in the Mill trapping area is unknown.

5.2.4 Copper

Copper levels in vole liver tissues were higher in the Control trapping area (n = six individuals) than in the Mill area (n = two individuals) (Table 4-2). High levels of copper in mammalian tissues is uncommon, and mammals have efficient mechanisms to regulate copper stores such that they are generally protected from excess dietary copper levels.

5.2.5 Molybdenum

Molybdenum is an essential element associated with a variety of metalloenzymes and corresponding metabolic functions. Only three of 20 voles (15%) exhibited high-normal levels of molybdenum. Excessive dietary intake of molybdenum may induce a secondary copper deficiency (Blakley 2018). That effect was not observed in Clinton Creek voles as no animals were observed to have abnormally low levels of copper. Acute molybdenum toxicity is rare (Blakley 2018).

5.2.6 Iron

One vole captured in the Mill area had an elevated level of iron. Iron can be a toxic element; however, given that only a single individual had a high-normal level of iron, there is no indication of population-wide concern.

5.3 Histology

The only substantive histological difference between voles captured in the Mill and Control areas was the presence of erythrocytes (indicating blood) in lung tissue of voles captured in the Mill area. That condition may be an artifact of euthanasia; however, because animals were handled similarly in both areas, there may be environmental factors involved. There were no other indications that the animals were affected by exposure to contaminants.

5.4 Incidental Wildlife Observations

Twelve bird species and five mammal species were observed during the trapping program. All species were within their anticipated ranges and none were considered of conservation concern (https://wildlife-species.canada.ca/species-risk-registry).

6.0 CLOSURE

We trust that the information presented in this report meets your current requirements. Should you have any questions, or concerns, please do not hesitate to contact the undersigned.

With appreciation,

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

Reviewed by:

Kent Brown

Janet Bauman, B.Sc., P.Ag., P.Biol.
Senior Environmental Scientist

KB/EH/jm

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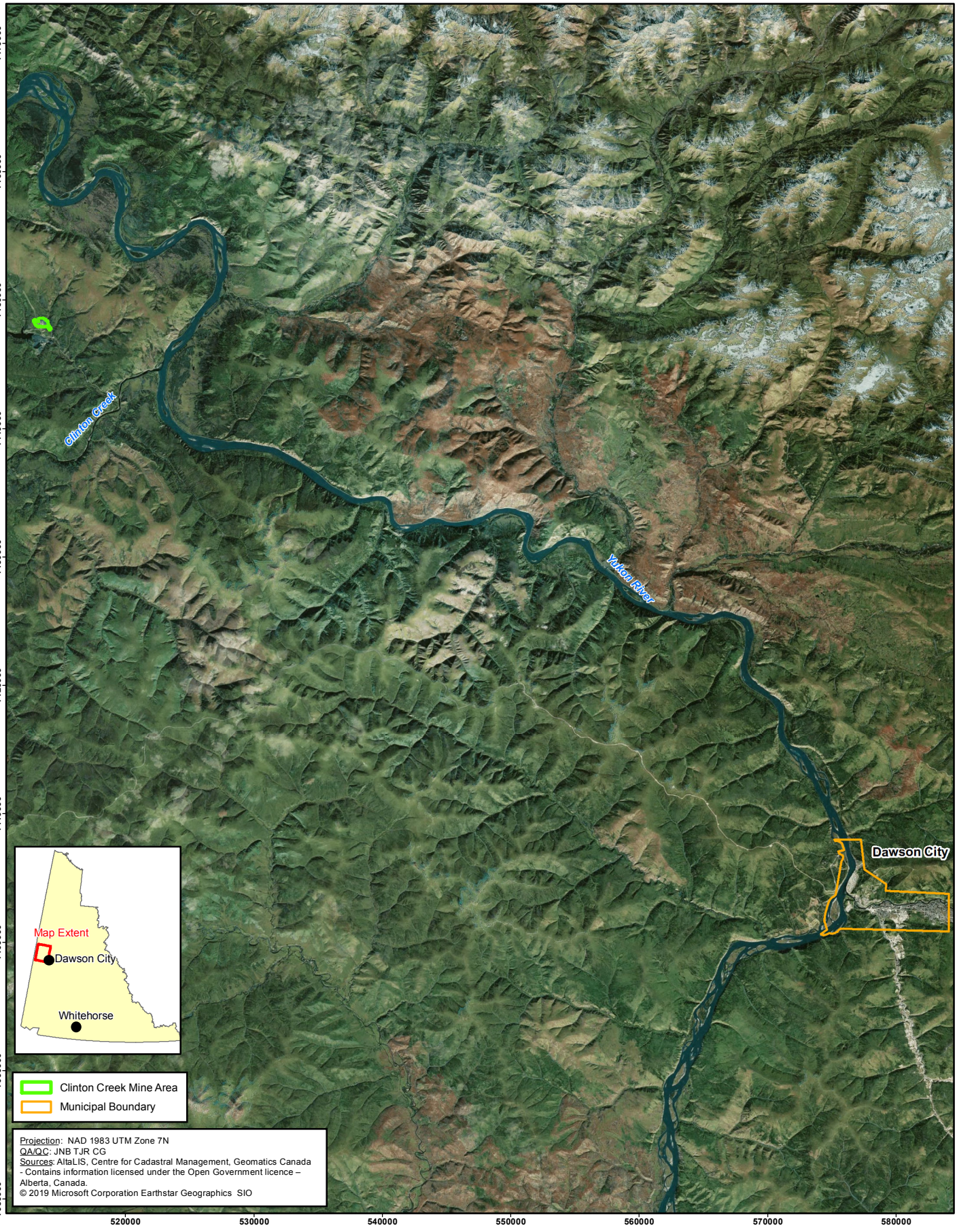
Figures



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Clinton Creek Asbestos Mine

Clinton Creek

DRAFT

Clinton Creek Project Location

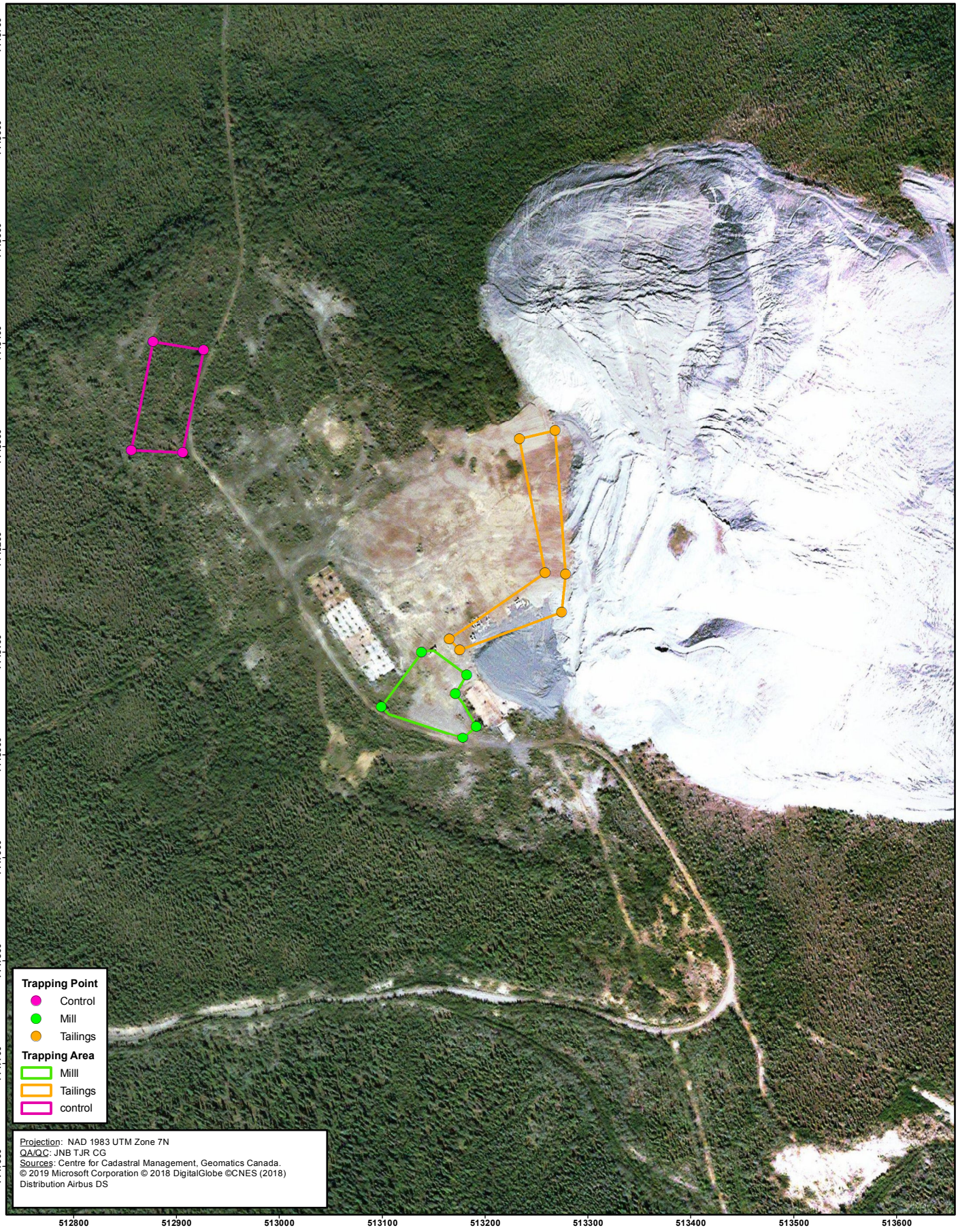
0 4 8
Kilometres
1:400,000

N

wood.

January 2019

Figure 1



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Clinton Creek Asbestos Mine

Clinton Creek

DRAFT

Small Mammal Trapping Study Areas

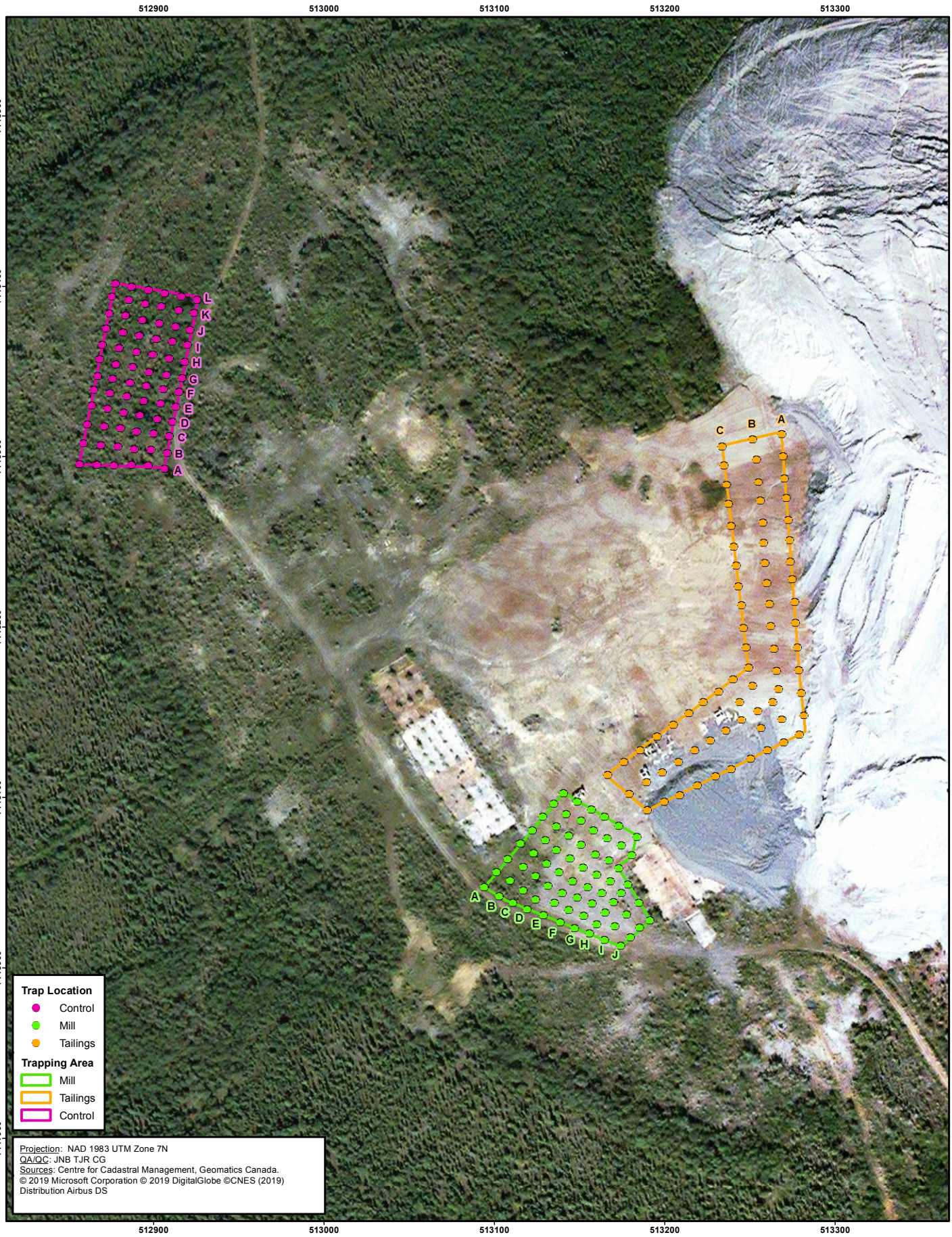
0 50 100
Meters
1:5,000

N

wood.

January 2019

Figure 2



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Clinton Creek Asbestos Mine

Clinton Creek

Small Mammal Trapping Study Areas

0 25 50
Meters
1:3,000

N

wood.

February 2019

Figure 3

Clinton Creek Small Mammals Trapping Program - Trap Location Co-ordinates

OBJECTID *	SHAPE *	Type_area	Easting	Northing	ID	Trap
1	Point	Tailings	513268	7148314	1	A1
2	Point	Tailings	513269	7148301	2	A2
3	Point	Tailings	513270	7148288	3	A3
4	Point	Tailings	513271	7148276	4	A4
5	Point	Tailings	513272	7148263	5	A5
6	Point	Tailings	513273	7148252	6	A6
7	Point	Tailings	513273	7148239	7	A7
8	Point	Tailings	513274	7148229	8	A8
9	Point	Tailings	513276	7148216	9	A9
10	Point	Tailings	513276	7148203	10	A10
11	Point	Tailings	513277	7148189	11	A11
12	Point	Tailings	513278	7148175	12	A12
13	Point	Tailings	513280	7148162	13	A13
14	Point	Tailings	513281	7148149	14	A14
15	Point	Tailings	513279	7148137	15	A15
16	Point	Tailings	513269	7148133	16	A16
17	Point	Tailings	513260	7148128	17	A17
18	Point	Tailings	513250	7148123	18	A18
19	Point	Tailings	513239	7148117	19	A19
20	Point	Tailings	513229	7148113	20	A20
21	Point	Tailings	513219	7148108	21	A21
22	Point	Tailings	513209	7148102	22	A22
23	Point	Tailings	513199	7148098	23	A23
24	Point	Tailings	513189	7148093	24	A24
25	Point	Tailings	513251	7148311	25	B1
26	Point	Tailings	513254	7148299	26	B2
27	Point	Tailings	513255	7148286	27	B3
28	Point	Tailings	513256	7148275	28	B4
29	Point	Tailings	513257	7148262	29	B5
30	Point	Tailings	513258	7148250	30	B6
31	Point	Tailings	513258	7148238	31	B7
32	Point	Tailings	513260	7148226	32	B8
33	Point	Tailings	513261	7148214	33	B9
34	Point	Tailings	513262	7148201	34	B10
35	Point	Tailings	513264	7148188	35	B11
36	Point	Tailings	513265	7148175	36	B12
37	Point	Tailings	513266	7148164	37	B13
38	Point	Tailings	513268	7148147	38	B14
39	Point	Tailings	513263	7148157	39	B15
40	Point	Tailings	513254	7148151	40	B16
41	Point	Tailings	513245	7148146	41	B17
42	Point	Tailings	513236	7148140	42	B18
43	Point	Tailings	513226	7148134	43	B19
44	Point	Tailings	513217	7148128	44	B20

Clinton Creek Small Mammals Trapping Program - Trap Location Co-ordinates

OBJECTID *	SHAPE *	Type_area	Easting	Northing	ID	Trap
45	Point	Tailings	513208	7148121	45	B21
46	Point	Tailings	513198	7148115	46	B22
47	Point	Tailings	513189	7148110	47	B23
48	Point	Tailings	513179	7148103	48	B24
49	Point	Tailings	513233	7148307	49	C1
50	Point	Tailings	513234	7148296	50	C2
51	Point	Tailings	513236	7148285	51	C3
52	Point	Tailings	513237	7148273	52	C4
53	Point	Tailings	513238	7148260	53	C5
54	Point	Tailings	513240	7148248	54	C6
55	Point	Tailings	513242	7148237	55	C7
56	Point	Tailings	513243	7148225	56	C8
57	Point	Tailings	513245	7148213	57	C9
58	Point	Tailings	513246	7148200	58	C10
59	Point	Tailings	513247	7148189	59	C11
60	Point	Tailings	513249	7148177	60	C12
61	Point	Tailings	513251	7148166	61	C13
62	Point	Tailings	513256	7148141	62	C14
63	Point	Tailings	513244	7148157	63	C15
64	Point	Tailings	513240	7148170	64	C16
65	Point	Tailings	513231	7148163	65	C17
66	Point	Tailings	513222	7148157	66	C18
67	Point	Tailings	513214	7148150	67	C19
68	Point	Tailings	513204	7148143	68	C20
69	Point	Tailings	513195	7148136	69	C21
70	Point	Tailings	513185	7148128	70	C22
209	Point	Tailings	513176	7148121	71	C23
208	Point	Tailings	513166	7148114	72	C24
196	Point	Control	512856	7148297	73	A1
195	Point	Control	512867	7148296	74	A2
172	Point	Control	512877	7148296	75	A3
171	Point	Control	512887	7148296	76	A4
148	Point	Control	512897	7148296	77	A5
147	Point	Control	512906	7148294	78	A6
197	Point	Control	512859	7148309	79	B1
194	Point	Control	512869	7148308	80	B2
173	Point	Control	512879	7148307	81	B3
170	Point	Control	512889	7148305	82	B4
149	Point	Control	512899	7148305	83	B5
146	Point	Control	512908	7148303	84	B6
198	Point	Control	512861	7148320	85	C1
193	Point	Control	512871	7148319	86	C2
174	Point	Control	512881	7148317	87	C3
169	Point	Control	512890	7148316	88	C4
150	Point	Control	512900	7148314	89	C5

Clinton Creek Small Mammals Trapping Program - Trap Location Co-ordinates

OBJECTID *	SHAPE *	Type_area	Easting	Northing	ID	Trap
145	Point	Control	512909	7148313	90	C6
199	Point	Control	512864	7148331	91	D1
192	Point	Control	512873	7148329	92	D2
175	Point	Control	512882	7148327	93	D3
168	Point	Control	512892	7148325	94	D4
151	Point	Control	512902	7148323	95	D5
144	Point	Control	512911	7148321	96	D6
200	Point	Control	512865	7148340	97	E1
191	Point	Control	512875	7148338	98	E2
176	Point	Control	512884	7148336	99	E3
167	Point	Control	512894	7148334	100	E4
152	Point	Control	512904	7148332	101	E5
143	Point	Control	512913	7148330	102	E6
201	Point	Control	512867	7148348	103	F1
190	Point	Control	512876	7148346	104	F2
177	Point	Control	512886	7148344	105	F3
166	Point	Control	512896	7148342	106	F4
153	Point	Control	512906	7148340	107	F5
142	Point	Control	512915	7148339	108	F6
202	Point	Control	512868	7148358	109	G1
189	Point	Control	512878	7148355	110	G2
178	Point	Control	512888	7148353	111	G3
165	Point	Control	512897	7148350	112	G4
154	Point	Control	512908	7148349	113	G5
141	Point	Control	512916	7148347	114	G6
203	Point	Control	512870	7148366	115	H1
188	Point	Control	512880	7148364	116	H2
179	Point	Control	512890	7148362	117	H3
164	Point	Control	512899	7148361	118	H4
155	Point	Control	512909	7148358	119	H5
140	Point	Control	512918	7148357	120	H6
204	Point	Control	512872	7148376	121	I1
187	Point	Control	512882	7148374	122	I2
180	Point	Control	512891	7148372	123	I3
163	Point	Control	512901	7148370	124	I4
156	Point	Control	512911	7148368	125	I5
139	Point	Control	512920	7148366	126	I6
205	Point	Control	512874	7148385	127	J1
186	Point	Control	512883	7148383	128	J2
181	Point	Control	512894	7148381	129	J3
162	Point	Control	512903	7148379	130	J4
157	Point	Control	512913	7148377	131	J5
138	Point	Control	512921	7148375	132	J6
206	Point	Control	512875	7148394	133	K1
185	Point	Control	512885	7148393	134	K2

Clinton Creek Small Mammals Trapping Program - Trap Location Co-ordinates

OBJECTID *	SHAPE *	Type_area	Easting	Northing	ID	Trap
182	Point	Control	512895	7148390	135	K3
161	Point	Control	512905	7148389	136	K4
158	Point	Control	512915	7148387	137	K5
137	Point	Control	512924	7148385	138	K6
207	Point	Control	512878	7148402	139	L1
184	Point	Control	512887	7148400	140	L2
183	Point	Control	512897	7148398	141	L3
160	Point	Control	512906	7148396	142	L4
159	Point	Control	512916	7148394	143	L5
136	Point	Control	512925	7148393	144	L6
78	Point	Mill	513140	7148103	145	A1
77	Point	Mill	513135	7148097	146	A2
76	Point	Mill	513128	7148089	147	A3
75	Point	Mill	513122	7148081	148	A4
74	Point	Mill	513115	7148074	149	A5
73	Point	Mill	513108	7148065	150	A6
72	Point	Mill	513101	7148057	151	A7
71	Point	Mill	513094	7148048	152	A8
86	Point	Mill	513148	7148098	153	B1
85	Point	Mill	513142	7148091	154	B2
84	Point	Mill	513136	7148084	155	B3
83	Point	Mill	513129	7148076	156	B4
82	Point	Mill	513123	7148068	157	B5
81	Point	Mill	513117	7148060	158	B6
80	Point	Mill	513109	7148052	159	B7
79	Point	Mill	513103	7148043	160	B8
94	Point	Mill	513157	7148094	161	C1
93	Point	Mill	513151	7148087	162	C2
92	Point	Mill	513144	7148078	163	C3
91	Point	Mill	513136	7148070	164	C4
90	Point	Mill	513130	7148062	165	C5
89	Point	Mill	513124	7148055	166	C6
88	Point	Mill	513117	7148046	167	C7
87	Point	Mill	513110	7148039	168	C8
102	Point	Mill	513164	7148089	169	D1
101	Point	Mill	513158	7148081	170	D2
100	Point	Mill	513151	7148073	171	D3
99	Point	Mill	513144	7148065	172	D4
98	Point	Mill	513137	7148057	173	D5
97	Point	Mill	513131	7148049	174	D6
96	Point	Mill	513124	7148041	175	D7
95	Point	Mill	513119	7148035	176	D8
110	Point	Mill	513173	7148084	177	E1
109	Point	Mill	513166	7148077	178	E2
108	Point	Mill	513159	7148067	179	E3

Clinton Creek Small Mammals Trapping Program - Trap Location Co-ordinates

OBJECTID *	SHAPE *	Type_area	Easting	Northing	ID	Trap
107	Point	Mill	513152	7148059	180	E4
106	Point	Mill	513146	7148051	181	E5
105	Point	Mill	513139	7148045	182	E6
104	Point	Mill	513135	7148039	183	E7
103	Point	Mill	513128	7148032	184	E8
125	Point	Mill	513183	7148077	185	F1
133	Point	Mill	513174	7148072	186	F2
116	Point	Mill	513167	7148064	187	F3
115	Point	Mill	513160	7148056	188	F4
114	Point	Mill	513154	7148048	189	F5
113	Point	Mill	513148	7148042	190	F6
112	Point	Mill	513143	7148035	191	F7
111	Point	Mill	513138	7148027	192	F8
124	Point	Mill	513180	7148067	193	G1
123	Point	Mill	513173	7148059	194	G2
134	Point	Mill	513168	7148052	195	G3
122	Point	Mill	513163	7148045	196	G4
121	Point	Mill	513157	7148038	197	G5
120	Point	Mill	513152	7148031	198	G6
119	Point	Mill	513147	7148024	199	G7
131	Point	Mill	513178	7148050	200	H1
130	Point	Mill	513174	7148045	201	H2
129	Point	Mill	513169	7148039	202	H3
128	Point	Mill	513164	7148033	203	H4
127	Point	Mill	513160	7148027	204	H5
126	Point	Mill	513155	7148021	205	H6
213	Point	Mill	513185	7148039	206	I1
212	Point	Mill	513177	7148032	207	I2
211	Point	Mill	513170	7148025	208	I3
210	Point	Mill	513164	7148017	209	I4
135	Point	Mill	513191	7148029	210	J1
117	Point	Mill	513185	7148025	211	J2
118	Point	Mill	513180	7148019	212	J3
132	Point	Mill	513174	7148014	213	J4

Appendix A

Site Photos

Photo A1: Mill Site Photo showing trap set-up and habitat

Photo A2: Mill Site Photo showing trap set-up and habitat

Photo A3: Tailings Site Photo showing trap set-up and vegetation, facing west at north edge

Photo A4: Tailings Site Photo showing trap set-up and vegetation, facing east at north edge

Photo A5: Control Area Photo showing habitat and vegetation structure, facing west from east boundary

Appendix B

Capture Record

Appendix 1. Small mammals captured in the Clinton Creek trapping area, 16-19 September 2018. No animals were captured in the Tailings trapping area.

MILL											
Date	**Trap #**	**Animal Number**	**Species[1]**	**Sex**	**Age**	**Repro Status**	**Body Length (mm)**	**Tail Length (mm)**	**Tarsus Length (mm)**	**Wt (g)**	**Result**
16-Sep-18	M-A7	M-RBV1	RBVO	M	J	Immature	82	22	17	16.7	Sampled
16-Sep-18	M-C6	M-RBV2	RBVO	M	J	Immature	72	26	18	14.4	Sampled
16-Sep-18	M-G5	M-RBV3	RBVO	F	A	Not lactating	104	31	18	27.9	Sampled
16-Sep-18	M-H4	M-RBV4	RBVO	F	J	Immature	84	23	19	18.2	Sampled
16-Sep-18	M-A4	M-RBV5	RBVO	M	J	Immature	92	23	17	19.5	Sampled
17-Sep-18	M-G2	M-RBV6	RBVO	M	J	Immature	86	24	16	15.6	Sampled
17-Sep-18	M-D3	M-RBV7	RBVO	F	A	Not lactating; had litter	113	33	18	30.5	Sampled
18-Sep-18	M-D3	M-RBV8	RBVO	M	J	Immature	86	27	17	15.7	Sampled
18-Sep-18	M-H2	M-RBV9	RBVO	M	J	Immature	86	27	17	14.0	Sampled
18-Sep-18	M-G4	M-RBV10	RBVO	M	A	Testes not descended	92	27	17	18.3	Sampled
19 Sep 18	M-C5	-	RBVO	F	J	Immature	-	-	-	-	Released
19 Sep 18	M-B5	-	RBVO	M	J	Immature	-	-	-	-	Released
19 Sep 18	M-D7	-	RBVO	M	J	Immature	-	-	-	-	Released
16-Sep-18	M-B1	M-MDV1	MDVO	F	A	Testes not descended	90	32	18	20.5	Sampled
18-Sep-18	M-B2	M-MDV2	MDVO	M	A	Testes not descended	90	29	17	20.9	Sampled
19 Sep 18	M-A1	M-MDV3	MDVO	M	A	Trap Mortality	-	-	-	-	Not Sampled
19 Sep 18	M-B1	M-MDV4	MDVO	M	A		-	-	-	-	Released

[1] RBVO = red-backed vole; MDVO = meadow vole

CONTROL

Date	Trap #	Animal Number	Species [2]	Sex	Age	Repro Status	Body Length (mm)	Tail Length	Tarsus Length	Wt (g)	Result
16-Sep-18	C-G5	C-RBV1	RBVO	M	J	Immature	79	21	17	11.1	Sampled
16-Sep-18	C-K3	C-RBV2	RBVO	M	U	Testes not descended	94	25	17	16.9	Sampled
16-Sep-18	C-J3	C-RBV3	RBVO	F	J	Not Lactating	91	27	17	17.1	Sampled
16-Sep-18	C-L4	C-RBV4	RBVO	F	J	Immature	89	27	19	17.0	Sampled
16-Sep-18	C-J6	C-RBV5	RBVO	F	A	Not lactating	105	33	17	23.8	Sampled
16-Sep-18	C-K1	C-RBV6	RBVO	F	J	Immature	76	27	17	11.1	Sampled
17-Sep-18	C-A2	C-RBV7	RBVO	M	J	Immature	84	27	17	17.4	Sampled
17-Sep-18	C-G5	C-RBV8	RBVO	M	J	Immature	74	24	15	12.3	Sampled
17-Sep-18	C-K1	C-RBV9	RBVO	M	J	Immature	77	25	17	12.9	Sampled
17-Sep-18	C-L5	C-RBV10	RBVO	F	J	Immature	82	26	17	15.3	Sampled
18-Sep-18	C-A4	-	RBVO	-	J	-	-	-	-	-	Released
18-Sep-18	C-H4	-	RBVO	-	J	-	-	-	-	-	Released
18-Sep-18	C-K5	-	RBVO	-	J	-	-	-	-	-	Released
19 Sep 18	C-A2	-	RBVO	-	J	-	-	-	-	-	Released
19 Sep 18	C-B3	-	RBVO	-	J	-	-	-	-	-	Released
19 Sep 18	C-E1	-	RBVO	-	A	-	-	-	-	-	Escaped
19 Sep 18	C-G6	-	RBVO	-	J	-	-	-	-	-	Released
19 Sep 18	C-H4	-	RBVO	-	J	-	-	-	-	-	Released
19 Sep 18	C-K6	-	RBVO	-	J	-	-	-	-	-	Released

[2] RBVO = red-backed vole; MDVO = meadow vole

Appendix C

Mineral Panel Results

Prairie Diagnostic Services Inc.
52 Campus Drive, Saskatoon, SK S7N 5B4
Phone: (306) 966-7316 Fax: (306) 966-2488 Email: pds.info@usask.ca

Test Report

External Id: Various - 22 Sample Sources	Submitted: 23-Oct-2018
Species: Mammals Breed: Vole (W2)	Collected: NA
Sex:	Veterinarian: Dr. Smits, Judit
Age:	Owner: Smits, Judit
	Copy To:
	Copy To:
Smits, Judit 3280 Hospital Drive NW Calgary, AB T2N 4Z6	Samples Submitted: Liver x 22
Phone: (403) 210-7407 Fax:	

Contents: Mineral Panel #4 (FINAL) x 22

Toxicology ICP-MS - Final

Comment:

Reliable normal values are not available for this species.
Interpretation based on comparable mammalian species.
Some of the High Normal interpretations may be normal in this species.

Collected: NA	Received: 23-Oct-2018	Tested: 25-Oct-2018	Completed: 25-Oct-2018

Mineral Panel #4

ID	Sample	Target	Result	Units	Result Code	Comment
M-RBV1	Liver	Beryllium	0.337	ppb	Normal	
		Magnesium	302.3	ppm	High Normal	
		Vanadium	0.010	ppb	Normal	
		Chromium	70.4	ppb	Normal	
		Manganese	3.30	ppm	Normal	
		Iron	297.9	ppm	High Normal	
		Cobalt	85.2	ppb	Normal	
		Nickel	502.7	ppb	Normal	
		Copper	8.80	ppm	Normal	
		Zinc	42.1	ppm	Normal	
		Arsenic	16.3	ppb	Normal	
		Selenium	1.05	ppm	High Normal	
		Strontium	81.9	ppb	Normal	
		Molybdenum	1.56	ppm	High Normal	
		Cadmium	228.5	ppb	Normal	
		Tin	4.55	ppb	Normal	
		Antimony	9.16	ppb	Normal	
		Barium	85.9	ppb	Normal	
		Thallium	0.444	ppb	Normal	
		Lead	0.088	ppm	Normal	
		Bismuth	<1.00	ppt	Normal	

Mineral Panel #4

ID	Sample	Target	Result	Units	Result Code	Comment
M-RBV2	Liver	Beryllium	<4.00	ppt	Normal	
		Magnesium	326.1	ppm	High Normal	
		Vanadium	0.664	ppb	Normal	

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Mineral Panel #4

ID	Sample	Target	Result	Units	Result Code	Comment
		Chromium	58.0	ppb	Normal	
		Manganese	2.89	ppm	Normal	
		Iron	115.6	ppm	Normal	
		Cobalt	102.0	ppb	High Normal	
		Nickel	592.4	ppb	Normal	
		Copper	14.6	ppm	High Normal	
		Zinc	43.8	ppm	Normal	
		Arsenic	6.63	ppb	Normal	
		Selenium	0.917	ppm	High Normal	
		Strontium	246.3	ppb	Normal	
		Molybdenum	1.97	ppm	High Normal	
		Cadmium	<6.00	ppt	Normal	
		Tin	5.83	ppb	Normal	
		Antimony	6.23	ppb	Normal	
		Barium	367.8	ppb	Normal	
		Thallium	0.114	ppb	Normal	
		Lead	0.015	ppm	Normal	
		Bismuth	<1.00	ppt	Normal	

Mineral Panel #4

ID	Sample	Target	Result	Units	Result Code	Comment
M-RBV3	Liver	Beryllium	1.46	ppb	Normal	
		Magnesium	300.4	ppm	High Normal	
		Vanadium	3.09	ppb	Normal	
		Chromium	173.2	ppb	Normal	
		Manganese	2.37	ppm	Normal	
		Iron	250.4	ppm	Normal	
		Cobalt	115.9	ppb	High Normal	
		Nickel	571.2	ppb	Normal	
		Copper	21.2	ppm	High Normal	
		Zinc	40.1	ppm	Normal	
		Arsenic	12.2	ppb	Normal	
		Selenium	1.19	ppm	High Normal	
		Strontium	207.8	ppb	Normal	
		Molybdenum	0.924	ppm	Normal	
		Cadmium	1179	ppb	Normal	
		Tin	7.22	ppb	Normal	
		Antimony	10.1	ppb	Normal	
		Barium	222.4	ppb	Normal	
		Thallium	0.502	ppb	Normal	
		Lead	0.097	ppm	Normal	
		Bismuth	<1.00	ppt	Normal	

Mineral Panel #4

ID	Sample	Target	Result	Units	Result Code	Comment
M-RBV4	Liver	Beryllium	0.580	ppb	Normal	
		Magnesium	285.0	ppm	High Normal	
		Vanadium	1.41	ppb	Normal	
		Chromium	94.2	ppb	Normal	
		Manganese	3.09	ppm	Normal	
		Iron	120.4	ppm	Normal	
		Cobalt	45.8	ppb	Normal	
		Nickel	320.7	ppb	Normal	
		Copper	8.26	ppm	Normal	
		Zinc	49.0	ppm	Normal	
		Arsenic	93.3	ppb	Normal	

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Mineral Panel #4

ID	Sample	Target	Result	Units	Result Code	Comment
		Selenium	1.95	ppm	High Normal	
		Strontium	122.9	ppb	Normal	
		Molybdenum	1.44	ppm	Normal	
		Cadmium	339.3	ppb	Normal	
		Tin	3.00	ppb	Normal	
		Antimony	10.1	ppb	Normal	
		Barium	96.6	ppb	Normal	
		Thallium	2.38	ppb	Normal	
		Lead	0.047	ppm	Normal	
		Bismuth	<1.00	ppt	Normal	

Mineral Panel #4

ID	Sample	Target	Result	Units	Result Code	Comment
M-RBV5	Liver	Beryllium	0.654	ppb	Normal	
		Magnesium	324.4	ppm	High Normal	
		Vanadium	<10.0	ppt	Normal	
		Chromium	53.5	ppb	Normal	
		Manganese	3.52	ppm	Normal	
		Iron	108.4	ppm	Normal	
		Cobalt	96.2	ppb	High Normal	
		Nickel	153.0	ppb	Normal	
		Copper	8.69	ppm	Normal	
		Zinc	46.7	ppm	Normal	
		Arsenic	13.7	ppb	Normal	
		Selenium	1.70	ppm	High Normal	
		Strontium	36.0	ppb	Normal	
		Molybdenum	1.66	ppm	Normal	
		Cadmium	629.0	ppb	Normal	
		Tin	<7.00	ppt	Normal	
		Antimony	6.47	ppb	Normal	
		Barium	86.2	ppb	Normal	
		Thallium	0.322	ppb	Normal	
		Lead	0.079	ppm	Normal	
		Bismuth	<1.00	ppt	Normal	

Mineral Panel #4

ID	Sample	Target	Result	Units	Result Code	Comment
M-RBV6	Liver	Beryllium	<4.00	ppt	Normal	
		Magnesium	285.5	ppm	High Normal	
		Vanadium	0.605	ppb	Normal	
		Chromium	94.7	ppb	Normal	
		Manganese	2.51	ppm	Normal	
		Iron	182.2	ppm	Normal	
		Cobalt	102.4	ppb	High Normal	
		Nickel	343.0	ppb	Normal	
		Copper	8.51	ppm	Normal	
		Zinc	36.3	ppm	Normal	
		Arsenic	13.5	ppb	Normal	
		Selenium	1.13	ppm	High Normal	
		Strontium	199.3	ppb	Normal	
		Molybdenum	1.37	ppm	Normal	
		Cadmium	887.8	ppb	Normal	
		Tin	4.31	ppb	Normal	
		Antimony	4.85	ppb	Normal	
		Barium	115.4	ppb	Normal	
		Thallium	0.679	ppb	Normal	

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Mineral Panel #4

ID	Sample	Target	Result	Units	Result Code	Comment
		Lead	0.341	ppm	Normal	
		Bismuth	<1.00	ppt	Normal	

Mineral Panel #4

ID	Sample	Target	Result	Units	Result Code	Comment
M-RBV7	Liver	Beryllium	0.168	ppb	Normal	
		Magnesium	354.7	ppm	High Normal	
		Vanadium	0.411	ppb	Normal	
		Chromium	113.9	ppb	Normal	
		Manganese	2.07	ppm	Normal	
		Iron	121.0	ppm	Normal	
		Cobalt	97.5	ppb	High Normal	
		Nickel	292.8	ppb	Normal	
		Copper	8.96	ppm	Normal	
		Zinc	45.8	ppm	Normal	
		Arsenic	12.0	ppb	Normal	
		Selenium	0.934	ppm	High Normal	
		Strontium	145.7	ppb	Normal	
		Molybdenum	1.01	ppm	Normal	
		Cadmium	136.9	ppb	Normal	
		Tin	0.438	ppb	Normal	
		Antimony	4.57	ppb	Normal	
		Barium	153.6	ppb	Normal	
		Thallium	0.701	ppb	Normal	
		Lead	0.302	ppm	Normal	
		Bismuth	<1.00	ppt	Normal	

Mineral Panel #4

ID	Sample	Target	Result	Units	Result Code	Comment
M-RBV8	Liver	Beryllium	0.271	ppb	Normal	
		Magnesium	271.7	ppm	High Normal	
		Vanadium	<10.0	ppt	Normal	
		Chromium	56.4	ppb	Normal	
		Manganese	2.97	ppm	Normal	
		Iron	124.6	ppm	Normal	
		Cobalt	160.2	ppb	High Normal	
		Nickel	535.6	ppb	Normal	
		Copper	7.56	ppm	Normal	
		Zinc	38.3	ppm	Normal	
		Arsenic	10.0	ppb	Normal	
		Selenium	1.67	ppm	High Normal	
		Strontium	167.7	ppb	Normal	
		Molybdenum	1.25	ppm	Normal	
		Cadmium	330.8	ppb	Normal	
		Tin	1.73	ppb	Normal	
		Antimony	3.21	ppb	Normal	
		Barium	96.3	ppb	Normal	
		Thallium	0.193	ppb	Normal	
		Lead	0.085	ppm	Normal	
		Bismuth	<1.00	ppt	Normal	

Mineral Panel #4

ID	Sample	Target	Result	Units	Result Code	Comment
M-RBV9	Liver	Beryllium	1.96	ppb	Normal	
		Magnesium	114.7	ppm	Normal	

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Mineral Panel #4

ID	Sample	Target	Result	Units	Result Code	Comment
		Vanadium	4.26	ppb	Normal	
		Chromium	5.87	ppb	Normal	
		Manganese	1.48	ppm	Marginal	
		Iron	82.4	ppm	Normal	
		Cobalt	59.2	ppb	Normal	
		Nickel	230.6	ppb	Normal	
		Copper	3.93	ppm	Normal	
		Zinc	30.5	ppm	Normal	
		Arsenic	38.6	ppb	Normal	
		Selenium	1.25	ppm	High Normal	
		Strontium	<3.00	ppt	Normal	
		Molybdenum	0.620	ppm	Normal	
		Cadmium	26.2	ppb	Normal	
		Tin	<7.00	ppt	Normal	
		Antimony	5.63	ppb	Normal	
		Barium	35.9	ppb	Normal	
		Thallium	1.87	ppb	Normal	
		Lead	0.048	ppm	Normal	
		Bismuth	<1.00	ppt	Normal	

Mineral Panel #4

ID	Sample	Target	Result	Units	Result Code	Comment
M-RBV10	Liver	Beryllium	<4.00	ppt	Normal	
		Magnesium	263.9	ppm	High Normal	
		Vanadium	2.76	ppb	Normal	
		Chromium	108.6	ppb	Normal	
		Manganese	2.69	ppm	Normal	
		Iron	146.9	ppm	Normal	
		Cobalt	76.1	ppb	Normal	
		Nickel	322.4	ppb	Normal	
		Copper	9.40	ppm	Normal	
		Zinc	43.1	ppm	Normal	
		Arsenic	28.1	ppb	Normal	
		Selenium	1.41	ppm	High Normal	
		Strontium	155.8	ppb	Normal	
		Molybdenum	1.96	ppm	High Normal	
		Cadmium	726.8	ppb	Normal	
		Tin	2.71	ppb	Normal	
		Antimony	12.8	ppb	Normal	
		Barium	200.8	ppb	Normal	
		Thallium	0.722	ppb	Normal	
		Lead	0.050	ppm	Normal	
		Bismuth	<1.00	ppt	Normal	

Mineral Panel #4

ID	Sample	Target	Result	Units	Result Code	Comment
M-MDV1	Liver	Beryllium	0.846	ppb	Normal	
		Magnesium	324.7	ppm	High Normal	
		Vanadium	<10.0	ppt	Normal	
		Chromium	23.3	ppb	Normal	
		Manganese	1.98	ppm	Marginal	
		Iron	151.0	ppm	Normal	
		Cobalt	102.2	ppb	High Normal	
		Nickel	245.6	ppb	Normal	
		Copper	8.83	ppm	Normal	
		Zinc	31.0	ppm	Normal	

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Mineral Panel #4

ID	Sample	Target	Result	Units	Result Code	Comment
		Arsenic	5.34	ppb	Normal	
		Selenium	0.811	ppm	High Normal	
		Strontium	273.7	ppb	Normal	
		Molybdenum	1.55	ppm	Normal	
		Cadmium	<6.00	ppt	Normal	
		Tin	0.545	ppb	Normal	
		Antimony	3.60	ppb	Normal	
		Barium	387.3	ppb	Normal	
		Thallium	1.94	ppb	Normal	
		Lead	0.248	ppm	Normal	
		Bismuth	<1.00	ppt	Normal	

Mineral Panel #4

ID	Sample	Target	Result	Units	Result Code	Comment
M-MDV2	Liver	Beryllium	<4.00	ppt	Normal	
		Magnesium	311.9	ppm	High Normal	
		Vanadium	<10.0	ppt	Normal	
		Chromium	42.0	ppb	Normal	
		Manganese	2.65	ppm	Normal	
		Iron	139.8	ppm	Normal	
		Cobalt	92.5	ppb	High Normal	
		Nickel	148.0	ppb	Normal	
		Copper	7.23	ppm	Normal	
		Zinc	36.1	ppm	Normal	
		Arsenic	189.1	ppb	Normal	
		Selenium	2.12	ppm	High Normal	
		Strontium	105.7	ppb	Normal	
		Molybdenum	1.15	ppm	Normal	
		Cadmium	389.8	ppb	Normal	
		Tin	0.275	ppb	Normal	
		Antimony	6.77	ppb	Normal	
		Barium	95.5	ppb	Normal	
		Thallium	0.279	ppb	Normal	
		Lead	0.066	ppm	Normal	
		Bismuth	<1.00	ppt	Normal	

Mineral Panel #4

ID	Sample	Target	Result	Units	Result Code	Comment
C-RBV1	Liver	Beryllium	0.514	ppb	Normal	
		Magnesium	298.4	ppm	High Normal	
		Vanadium	0.920	ppb	Normal	
		Chromium	38.1	ppb	Normal	
		Manganese	3.57	ppm	Normal	
		Iron	120.3	ppm	Normal	
		Cobalt	69.1	ppb	Normal	
		Nickel	206.4	ppb	Normal	
		Copper	8.33	ppm	Normal	
		Zinc	53.5	ppm	Normal	
		Arsenic	9.63	ppb	Normal	
		Selenium	1.22	ppm	High Normal	
		Strontium	161.4	ppb	Normal	
		Molybdenum	1.45	ppm	Normal	
		Cadmium	520.7	ppb	Normal	
		Tin	2.20	ppb	Normal	
		Antimony	6.08	ppb	Normal	
		Barium	119.4	ppb	Normal	

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Mineral Panel #4

ID	Sample	Target	Result	Units	Result Code	Comment
		Thallium	1.31	ppb	Normal	
		Lead	0.047	ppm	Normal	
		Bismuth	<1.00	ppt	Normal	

Mineral Panel #4

ID	Sample	Target	Result	Units	Result Code	Comment
C-RBV2	Liver	Beryllium	0.507	ppb	Normal	
		Magnesium	336.5	ppm	High Normal	
		Vanadium	<10.0	ppt	Normal	
		Chromium	108.2	ppb	Normal	
		Manganese	2.95	ppm	Normal	
		Iron	96.4	ppm	Normal	
		Cobalt	78.1	ppb	Normal	
		Nickel	338.3	ppb	Normal	
		Copper	12.2	ppm	High Normal	
		Zinc	38.5	ppm	Normal	
		Arsenic	13.5	ppb	Normal	
		Selenium	1.36	ppm	High Normal	
		Strontium	55.6	ppb	Normal	
		Molybdenum	1.41	ppm	Normal	
		Cadmium	1157	ppb	Normal	
		Tin	3.28	ppb	Normal	
		Antimony	3.37	ppb	Normal	
		Barium	135.0	ppb	Normal	
		Thallium	0.031	ppb	Normal	
		Lead	0.019	ppm	Normal	
		Bismuth	<1.00	ppt	Normal	

Mineral Panel #4

ID	Sample	Target	Result	Units	Result Code	Comment
C-RBV3	Liver	Beryllium	<4.00	ppt	Normal	
		Magnesium	282.7	ppm	High Normal	
		Vanadium	<10.0	ppt	Normal	
		Chromium	32.2	ppb	Normal	
		Manganese	2.25	ppm	Normal	
		Iron	156.6	ppm	Normal	
		Cobalt	71.6	ppb	Normal	
		Nickel	431.2	ppb	Normal	
		Copper	10.1	ppm	High Normal	
		Zinc	41.5	ppm	Normal	
		Arsenic	4.59	ppb	Normal	
		Selenium	1.29	ppm	High Normal	
		Strontium	60.2	ppb	Normal	
		Molybdenum	1.24	ppm	Normal	
		Cadmium	1460	ppb	Normal	
		Tin	2.27	ppb	Normal	
		Antimony	4.61	ppb	Normal	
		Barium	126.7	ppb	Normal	
		Thallium	3.38	ppb	Normal	
		Lead	0.983	ppm	Normal	
		Bismuth	<1.00	ppt	Normal	

Mineral Panel #4

ID	Sample	Target	Result	Units	Result Code	Comment
C-RBV4	Liver	Beryllium	0.128	ppb	Normal	

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Mineral Panel #4

ID	Sample	Target	Result	Units	Result Code	Comment
		Magnesium	359.8	ppm	High Normal	
		Vanadium	0.250	ppb	Normal	
		Chromium	92.5	ppb	Normal	
		Manganese	2.12	ppm	Normal	
		Iron	146.3	ppm	Normal	
		Cobalt	72.5	ppb	Normal	
		Nickel	155.1	ppb	Normal	
		Copper	10.1	ppm	High Normal	
		Zinc	39.2	ppm	Normal	
		Arsenic	11.5	ppb	Normal	
		Selenium	1.46	ppm	High Normal	
		Strontium	104.4	ppb	Normal	
		Molybdenum	1.49	ppm	Normal	
		Cadmium	523.2	ppb	Normal	
		Tin	13.1	ppb	Normal	
		Antimony	21.4	ppb	Normal	
		Barium	162.3	ppb	Normal	
		Thallium	0.081	ppb	Normal	
		Lead	0.014	ppm	Normal	
		Bismuth	<1.00	ppt	Normal	

Mineral Panel #4

ID	Sample	Target	Result	Units	Result Code	Comment
C-RBV5	Liver	Beryllium	0.183	ppb	Normal	
		Magnesium	179.2	ppm	Normal	
		Vanadium	2.50	ppb	Normal	
		Chromium	31.5	ppb	Normal	
		Manganese	3.30	ppm	Normal	
		Iron	196.5	ppm	Normal	
		Cobalt	99.4	ppb	High Normal	
		Nickel	179.2	ppb	Normal	
		Copper	7.87	ppm	Normal	
		Zinc	55.4	ppm	Normal	
		Arsenic	10.2	ppb	Normal	
		Selenium	1.47	ppm	High Normal	
		Strontium	100.9	ppb	Normal	
		Molybdenum	1.59	ppm	High Normal	
		Cadmium	514.2	ppb	Normal	
		Tin	6.98	ppb	Normal	
		Antimony	17.8	ppb	Normal	
		Barium	186.3	ppb	Normal	
		Thallium	0.738	ppb	Normal	
		Lead	0.027	ppm	Normal	
		Bismuth	<1.00	ppt	Normal	

Mineral Panel #4

ID	Sample	Target	Result	Units	Result Code	Comment
C-RBV6	Liver	Beryllium	<4.00	ppt	Normal	
		Magnesium	239.6	ppm	High Normal	
		Vanadium	<10.0	ppt	Normal	
		Chromium	99.3	ppb	Normal	
		Manganese	2.13	ppm	Normal	
		Iron	191.0	ppm	Normal	
		Cobalt	75.6	ppb	Normal	
		Nickel	144.7	ppb	Normal	
		Copper	12.2	ppm	High Normal	

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Mineral Panel #4

ID	Sample	Target	Result	Units	Result Code	Comment
		Zinc	37.0	ppm	Normal	
		Arsenic	9.68	ppb	Normal	
		Selenium	1.15	ppm	High Normal	
		Strontium	87.9	ppb	Normal	
		Molybdenum	1.14	ppm	Normal	
		Cadmium	402.1	ppb	Normal	
		Tin	5.80	ppb	Normal	
		Antimony	11.2	ppb	Normal	
		Barium	154.6	ppb	Normal	
		Thallium	1.16	ppb	Normal	
		Lead	0.363	ppm	Normal	
		Bismuth	<1.00	ppt	Normal	

Mineral Panel #4

ID	Sample	Target	Result	Units	Result Code	Comment
C-RBV7	Liver	Beryllium	<4.00	ppt	Normal	
		Magnesium	236.0	ppm	High Normal	
		Vanadium	0.807	ppb	Normal	
		Chromium	60.2	ppb	Normal	
		Manganese	2.74	ppm	Normal	
		Iron	112.9	ppm	Normal	
		Cobalt	70.8	ppb	Normal	
		Nickel	234.9	ppb	Normal	
		Copper	5.90	ppm	Normal	
		Zinc	40.1	ppm	Normal	
		Arsenic	9.96	ppb	Normal	
		Selenium	1.24	ppm	High Normal	
		Strontium	69.5	ppb	Normal	
		Molybdenum	1.27	ppm	Normal	
		Cadmium	428.7	ppb	Normal	
		Tin	1.42	ppb	Normal	
		Antimony	2.88	ppb	Normal	
		Barium	74.2	ppb	Normal	
		Thallium	1.36	ppb	Normal	
		Lead	0.023	ppm	Normal	
		Bismuth	0.515	ppb	Normal	

Mineral Panel #4

ID	Sample	Target	Result	Units	Result Code	Comment
C-RBV8	Liver	Beryllium	<4.00	ppt	Normal	
		Magnesium	342.0	ppm	High Normal	
		Vanadium	1.05	ppb	Normal	
		Chromium	121.5	ppb	Normal	
		Manganese	1.15	ppm	Normal	
		Iron	99.4	ppm	Normal	
		Cobalt	33.9	ppb	Normal	
		Nickel	298.8	ppb	Normal	
		Copper	7.05	ppm	Normal	
		Zinc	42.4	ppm	Normal	
		Arsenic	6.95	ppb	Normal	
		Selenium	0.628	ppm	High Normal	
		Strontium	173.1	ppb	Normal	
		Molybdenum	0.357	ppm	Normal	
		Cadmium	62.9	ppb	Normal	
		Tin	4.98	ppb	Normal	
		Antimony	10.5	ppb	Normal	

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Mineral Panel #4

ID	Sample	Target	Result	Units	Result Code	Comment
		Barium	161.2	ppb	Normal	
		Thallium	0.359	ppb	Normal	
		Lead	0.107	ppm	Normal	
		Bismuth	0.109	ppb	Normal	

Mineral Panel #4

ID	Sample	Target	Result	Units	Result Code	Comment
C-RBV9	Liver	Beryllium	<4.00	ppt	Normal	
		Magnesium	315.8	ppm	High Normal	
		Vanadium	<10.0	ppt	Normal	
		Chromium	61.6	ppb	Normal	
		Manganese	2.07	ppm	Normal	
		Iron	146.2	ppm	Normal	
		Cobalt	50.1	ppb	Normal	
		Nickel	202.0	ppb	Normal	
		Copper	25.4	ppm	High Normal	
		Zinc	40.2	ppm	Normal	
		Arsenic	3.93	ppb	Normal	
		Selenium	1.06	ppm	High Normal	
		Strontium	75.3	ppb	Normal	
		Molybdenum	1.34	ppm	Normal	
		Cadmium	125.9	ppb	Normal	
		Tin	34.0	ppb	Normal	
		Antimony	6.26	ppb	Normal	
		Barium	132.2	ppb	Normal	
		Thallium	0.072	ppb	Normal	
		Lead	0.084	ppm	Normal	
		Bismuth	<1.00	ppt	Normal	

Mineral Panel #4

ID	Sample	Target	Result	Units	Result Code	Comment
C-RBV10	Liver	Beryllium	1.03	ppb	Normal	
		Magnesium	320.3	ppm	High Normal	
		Vanadium	2.83	ppb	Normal	
		Chromium	113.2	ppb	Normal	
		Manganese	2.75	ppm	Normal	
		Iron	144.8	ppm	Normal	
		Cobalt	58.4	ppb	Normal	
		Nickel	500.0	ppb	Normal	
		Copper	20.1	ppm	High Normal	
		Zinc	48.7	ppm	Normal	
		Arsenic	17.0	ppb	Normal	
		Selenium	1.04	ppm	High Normal	
		Strontium	38.3	ppb	Normal	
		Molybdenum	1.27	ppm	Normal	
		Cadmium	447.7	ppb	Normal	
		Tin	61.2	ppb	Normal	
		Antimony	11.1	ppb	Normal	
		Barium	92.5	ppb	Normal	
		Thallium	1.78	ppb	Normal	
		Lead	0.797	ppm	Normal	
		Bismuth	<1.00	ppt	Normal	

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Supervisor: Dr. Barry Blakley ...Phone (306) 966-7350
Samples are discarded in 2 weeks, unless otherwise notified by client.

Authorizing Signature: VJ May Date: 25-Oct-2018

Victoria May, Laboratory Technologist

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Appendix D

Clinton Creek Histology Results

Clinton Creek Remediation Project Area, Clinton Creek, Yukon Small Mammal Monitoring

Histology Results

Assessment by:
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1. Summary

I examined tissues from a total of 20 northern red-backed voles, *Myodes rutilus* (10 each from the Mill and Control sites). Identified lesions were typically mild and likely of limited clinical significance to the health of individuals animals. Overall, the voles appear to be in good health with no significant signs of overt disease. The exception was thyroid follicular hyperplasia in 4 individuals (3 from the Mill site and 1 from the Control site) and the presence of a liver parasite in a different individual from the Control site. There was no appreciable difference in the prevalence of various lesions in the Mill Site vs. Control Site groups. This applied to individual lesions and aggregated lesions considering all voles collected from each of the Mill and Control sites.

2. Results

Tissues were of high quality and were well-preserved with minimal artefact. The tissues available for each individual varied (these are noted in the spreadsheet by the presence/absence of each tissue).

Main tissues examined (all or majority of individuals):

- Lung
- Kidney
- Liver
- Heart
- Thyroid Gland
- Skeletal Muscle

Additional tissues included in some individuals:

- Adrenal Gland
- Esophagus
- Trachea
- Stomach
- Pancreas
- Testes
- Ovary
- Urinary Bladder

Among Mill Site voles, there were a total of 18 lesions in 56 tissues compared to 12 lesions in 52 tissues from Control Site voles (excluding pulmonary edema and congestion, which likely resulted from euthanasia). There is no statistically significant difference between these groups (chi-square $p=0.293$).

Table 1. Summary of lesions

Organ	Lesion Name	Lesion Description	Mill Site n (%)*	Control Site n (%)*
Lung	Pulmonary Edema	Alveolar are filled with homogenous, pink extracellular fluid	1 (10)	0 (0)
	Pulmonary Congestion	Capillaries in alveolar septa are contain erythrocytes	6 (60)	0 (0)
	iBALT	Inducible bronchus-associated lymphoid tissue -clusters of lymphocytes adjacent to bronchioles/bronchi	2 (20)	1 (13)
Liver	Focal/multifocal necrosis	Small foci of hepatic cord disruption with pyknotic nuclear debris	0 (0)	1 (10)
	Periportal hepatitis	Infiltration by lymphocytes and plasma cells in periportal areas	3 (30)	3 (30)
	Mononuclear cell aggregates	Small aggregates of lymphocytes and plasma cells in multifocal, non-portal areas of the liver parenchyma	2 (20)	1 (10)
	Hepatocyte vacuoles	Clear vacuoles within hepatocytes	4 (40)	1 (10)
	Parasite	Cross-sections of trematode parasites within bile ducts and in association with lymphoplasmacytic inflammation in the adjacent parenchyma	0 (0)	1 (10
Kidney	Interstitial nephritis	Small, few multifocal clusters of lymphocytes and plasma cells within the interstitium of the cortex and medulla	0 (0)	1 (10)
Thyroid gland	Thyroid follicular hyperplasia	Thyroid follicles are collapsed with little colloid	3 (30)	1 (11)
Heart	Interstitial myocarditis	Multifocal clusters of lymphocytes and plasma cells in myocardium subjacent to endo/epicardium	1 (10)	1 (10)
Esophagus	Esophagitis	Few lymphocytes and/or granulocytes in interstitium of submucosa and muscularis	3 (50)	1 (20)

* percentages vary due to some tissues being absent

Lesions were scored as follows:

0 – absent
1 – mild
2 – moderate
3 – severe

3. Lesion Interpretation

3.1 Lung

Pulmonary edema and congestion are common changes found in the lungs of animals and can occur for a number of reasons. In these voles, this likely resulted from their capture, handling and euthanasia. Inducible bronchus-associated lymphoid tissue can develop in rodents following exposure to infectious agents. There changes in the lungs likely occurred due to past exposure to viruses and/or bacterial infections which were subsequently cleared by the immune system.

3.2 Liver

Necrosis (tissue death) and accumulations of inflammatory cells (lymphocytes and plasma cells) in the liver can occur for a variety of causes. There were no obvious infection agents in the affected areas so the exact cause remains unknown. Because the affected areas were rare and small, the clinical significance of these changes is likely minimal. Vacuoles can occur in liver cells most often due to accumulation of fat or glycogen. These can be seen commonly in rodents, especially after consuming high fat diets and are likely of no to minimal clinical significance. One vole from the control site had a trematode parasite in the liver. Liver parasites occur frequently in rodent species as they serve as intermediate hosts in many lifecycles. The parasite was likely of minimal clinical significance to this individual.

3.3 Kidney

Interstitial nephritis is inflammation of the connective tissue portions of the kidney. This lesion is commonly present as a background lesion in a wide range of mammals and is likely of minimal clinical significance to this individual.

3.4 Thyroid Gland

Follicular hyperplasia in the thyroid includes collapse of the normal follicle structure with limited to no colloid. The remaining cells are clumped and larger than normal. This can occur for several causes, including seasonal changes, iodine deficiency and presence of goitrogenic substances. This lesion can be associated with signs of ill health including reduced body condition, poor hair coat, decreased reproductive capacity and increased susceptibility to infection. There was no obvious evidence of this in the tissues examined, however additional tests would be necessary to determine if there was reduced thyroid function (hypothyroidism).

3.5 Heart

Small areas of inflammation in the heart muscle can be seen with a variety of disease conditions but can also occur as a background change without associated disease. The changes were mild and likely of minimal clinical significance to these individuals.

3.6. Esophagus

There was mild inflammation in the deeper esophageal tissues. This can be seen in other rodent species and likely reflects immune system stimulation. The changes were mild and likely of minimal clinical significance to these individuals.

Appendix E

Incidental Wildlife Species Observations

Table E-1:Incidental Wildlife Species Observed During the Clinton Creek Small Mammal Trapping Program, 15-19 September 2018

Birds	
Common Name	**Scientific Name**
Ruffed Grouse	*Bonasa umbellus*
Spruce Grouse	*Falcipennis canadensis*
Cooper's Hawk	*Accipiter cooperii*
Merlin	*Falco columbarius*
Gyrfalcon	*Falco rusticolus*
Northern Shrike	*Lanius borealis*
Canada Jay	*Perisoreus canadensis*
Common Raven	*Corvus corax*
American Robin	*Turdus migratorius*
Common Redpoll	*Acanthis flammea*
Dark-eyed Junco	*Junco hyemalis*
Yellow-rumped Warbler	*Setophaga coronata*
Mammals	
Snowshoe Hare	*Lepus americanus*
Red Squirrel	*Tamiasciurus hudsonicus*
American Porcupine	*Erethizon dorsatum*
Lynx	*Lynx canadensis*
Moose	*Alces alces*

Appendix I
Physical Hazard Photos

Photo 1: Access to BH19-08, potential hazard if someone was to drive an ATV on site (20180919)

Photo 2: Garbage and random debris in the former crusher feed pile (20180919)

Photo 3: Old metal debris remaining in old crusher feed stockpile (20180919)

Photo 4: Old foundation and metal debris in the tailings pile (20180919)

Photo 5: Old foundations and metal debris in the crusher source rock pile (20180919)

Photo 6: Old foundations remaining in the area of the former mill (20180919)

Photo 7: Old foundations remaining in the area of the former mill (20180919)

Photo 8: Old foundations remaining in the area of the former mill (20180919)

Photo 9: Voids in the tailings deposits (20180919)

Photo 10: Tension cracks and open gaps in the tailings deposits (20180919)

Photo 11: Tension cracks and open gaps in the tailings deposits (20180919)

Photo 12: Tension cracks and open gaps in the tailings deposits (20180919)

Photo 13: Tension cracks and open gaps in the tailings deposits (20180919)

Photo 14: Tension cracks and open gaps in the tailings deposits (20180919)

Photo 15: Steep slopes with tension cracks in the tailings deposit (20180919)

Photo 16: Erosion gullies and tension cracks in the surface of the tailings deposits (20180919)

Photo 17: Uneven surfaces on the tailings deposits (20180919)

Photo 18: Narrow road between north and south tailings lobes, with thawing permafrost (20180919)

Photo 19: Steep slopes showing signs of washing and down slope movements in the tailings area (20180919)

Photo 20: Tailings and debris deposited near the site gate (20180919)

Photo 21: Steep slopes and potentially unstable slopes in the tailings area (20180919)

Photo 22: Debris, garbage and uneven surfaces in the Clinton Creek Waste Dump (20180919)

Photo 23: Garbage and debris near the weather station on the Clinton Creek Waste Dump 20180919