FINAL

2023 Annual Geotechnical Inspection

Sa Dena Hes Mine, Watson Lake, Yukon
Teck Resources Ltd.

SRK Consulting (Canada) Inc. ■ CAPR002559 ■ August 2023

srk consulting

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Cover Image(s):
Upper Left: Backfill at the 1380 Portal. Lower Left: Reclaimed 1408 Portal Waste Rock Dump. Right: Monitoring Well MW13-03 at the 1408 Portal Waste Rock Dump.

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Useful Definitions

This list contains definitions of symbols, units, abbreviations, and terminology that may be unfamiliar to the reader.

DDRP	Detailed Decommissioning & Reclamation Plan
ECWFM	European Centre for Medium-Range Weather Forecasts
ha	hectares
IDF	Inflow Design Flood
MAP	Mean Annual Precipitation
QML	Quartz Mining License
SDH	Sa Dena Hes
SRS	Sediment Retaining Structure
SWE	snow water equivalent
TMA	Tailings Management Area

1 Introduction

SRK Consulting (Canada) Inc. was retained by Teck Resources Ltd. on behalf of the Sa Dena Hes Operating Corp. to complete the annual geotechnical inspection of the site as required by the Quartz Mining License QML-004 and Yukon Water Board Licence QZ16-051.

- Clause 11.1 of Quartz Mining License QML-004 requires all engineered structures, works and installations located at the site to be conducted by an independent engineer by September 30 of each year.
- Clause 45 of the Water Licence QZ16-051 also requires all earthworks and water retaining structures including, but not limited to, open pits, waste dumps, ditches, dikes, weirs, and appurtenance be inspected by a Professional Engineer as per the Post-Closure Geotechnical Monitoring Plan (SRK 2014). The water licence requires annual inspections through 2026 and every five years thereafter until the expiry of the water licence at the end of 2040.

This report presents the results of the inspection completed on June 6 and 7, 2023 and covers the following engineering structures, work, and installations:

- Main Zone and Jewelbox Ore Zones: Pits, Waste Rock Dumps, and Portals
- Burnick Ore Zone Waste Rock Dumps and Portals
- The South Drainage Channel and Camp Creek Drainage Channel
- The North Creek Channel that was reclaimed following decommissioning of the North Creek Dike and Second Crossing of the North Creek
- The Landfill area.

The purpose of the inspection of these structures was to document the physical conditions based on visual observations and to provide geotechnical assessment, noting potential signs of physical instability such as erosion, differential settlement, sloughing or bulging of material, seepage, etc. The reporting period covered by this report is since the last SRK annual inspection documented in SRK (2022), i.e., August 2022 to June 2023.

Results of the inspection of the Tailings Management Area (TMA) including the North Embankment, Tailings Cover, Sediment Retaining Structure (SRS) and North Drainage Channel are documented separately in the 2023 Annual Facility Performance Report.

The geotechnical inspection was completed by Peter Mikes, P.Eng., and Ignacio Cueto, of SRK. SRK staff were accompanied by several Teck staff throughout the visit including Jeff Basarich, the site Caretaker, who was the primary contact for information about the site conditions and performance during the past year. Weather during the site inspection was mostly sunny with temperatures ranging between approximately 5°C to 18°C. 14 mm of precipitation was recorded at the Watson Lake Airport between June 4 and 6. The ground surface was mostly free of snow and moist/wet from previous precipitation. Snow was present at the Jewelbox Pit and the condition of the pit highwall was unable to be observed.

2 Background

2.1 Site History

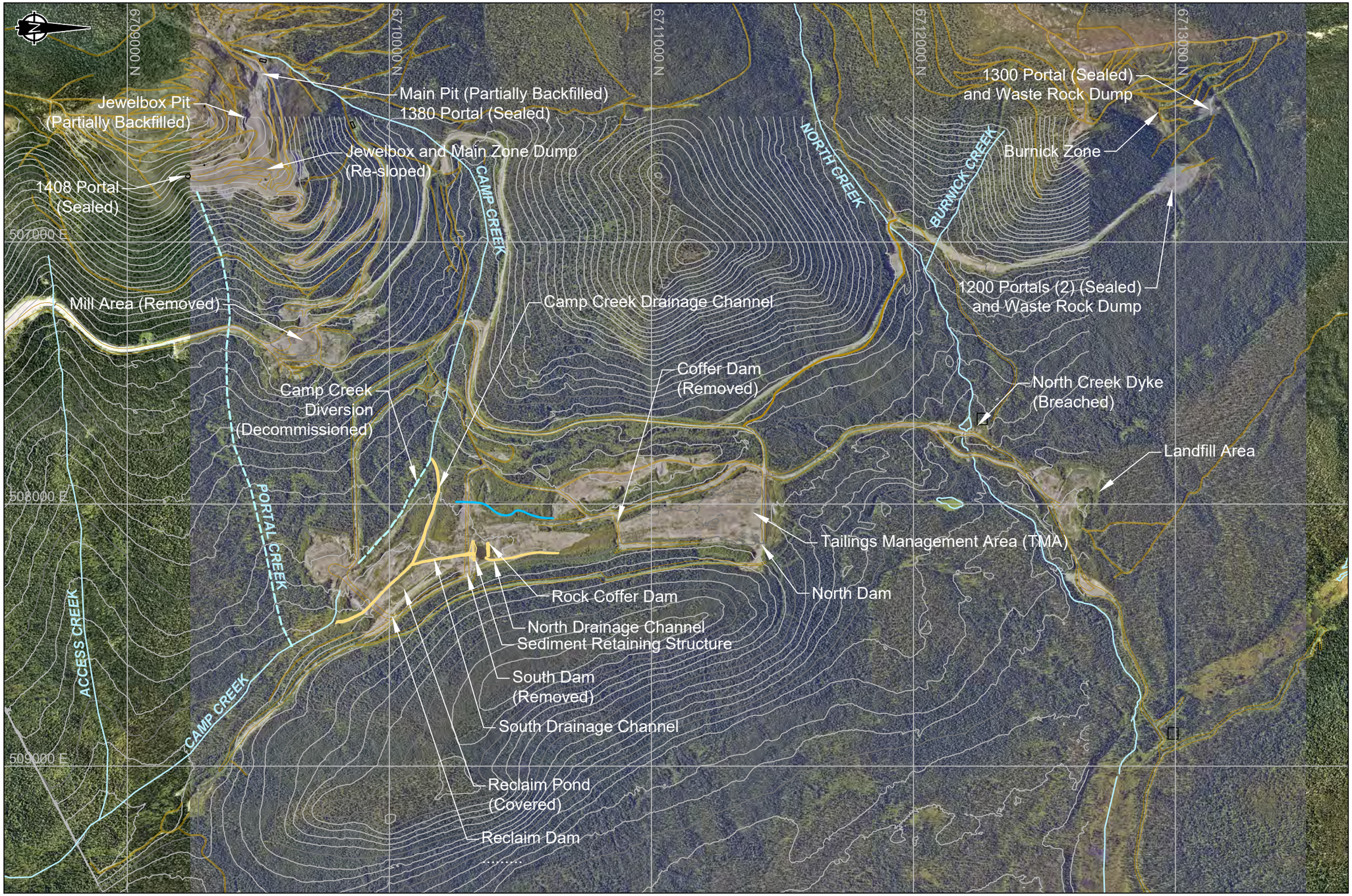
The Sa Dena Hes (SDH) site is a former lead-zinc mining operation that operated from July 1991 to December 1992 at which time operations were suspended indefinitely.

The SDH Detailed Decommissioning and Reclamation Plan (DDRP) (Teck 2015) details the closure plan for the mine that were executed in 2014 and 2015 and documented in AMECFW (2015a and 2015b) and SRK (2015). The key activities associated with the site reclamation were:

- Demolition and disposal of site infrastructure
- Sealing of underground mine workings
- Re-sloping of waste rock dumps
- Removal of the Reclaim and South Dams
- Decommissioning, capping, and reclamation of the TMA
- Capping and revegetation of mine facilities.

2.2 Facility Description

This section presents an overview description of the inspected site facilities with a general arrangement plan provided in Figure 2.1.



LEGEND

Creeks

NOTES

1. Contours are shown at 10.0m intervals.
2. All units are in meters unless otherwise specified.

REFERENCES

1. Coordinate system is UTM NAD 83CSRS zone 9V.
2. 2022 topographic contour data and aerial photos provided by Teck.

0m 10 20 30 40 50 60

srk consulting

SRK JOB NO.: CAPR002559 | REG. NO.:

FILE NAME: CAPR002559 - Vicinity Map.dwg

Teck

Sä Dena Hes

2023 Mine Area Inspection

DRAWING TITLE: Vicinity Map

DATE: July 2023 | APPROVED: PM | FIGURE: 2-1

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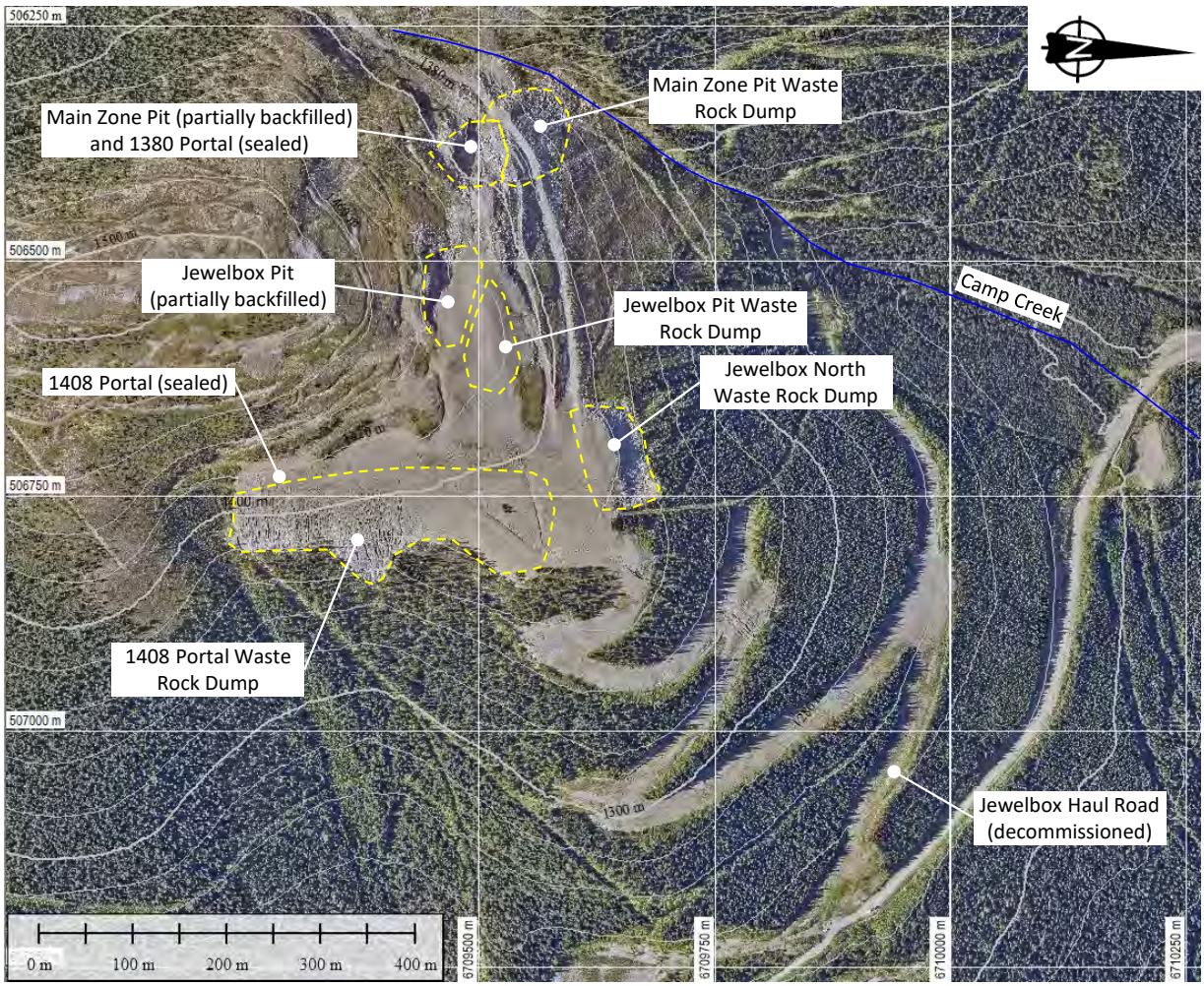
Jewelbox and Main Ore Zone Areas

A site plan of the Jewelbox and Main Ore Zone areas is shown in Figure 2.2. A description of the site features in this area is provided in Table 2.1.

Figure 2.2: Jewelbox and Main Ore Zone Area Plan



Sources: https://srk.sharepoint.com/sites/NACAPR002559/Deliverables/03_MineArea_Geotech_Inspection/040_Figures/SDH_Mine_Area_In-text_Figures.pptx?web=1

Notes:
1. 2022 Orthophoto.
2. 20 m contour interval.

Table 2.1: Jewelbox and Main Ore Zone Site Features

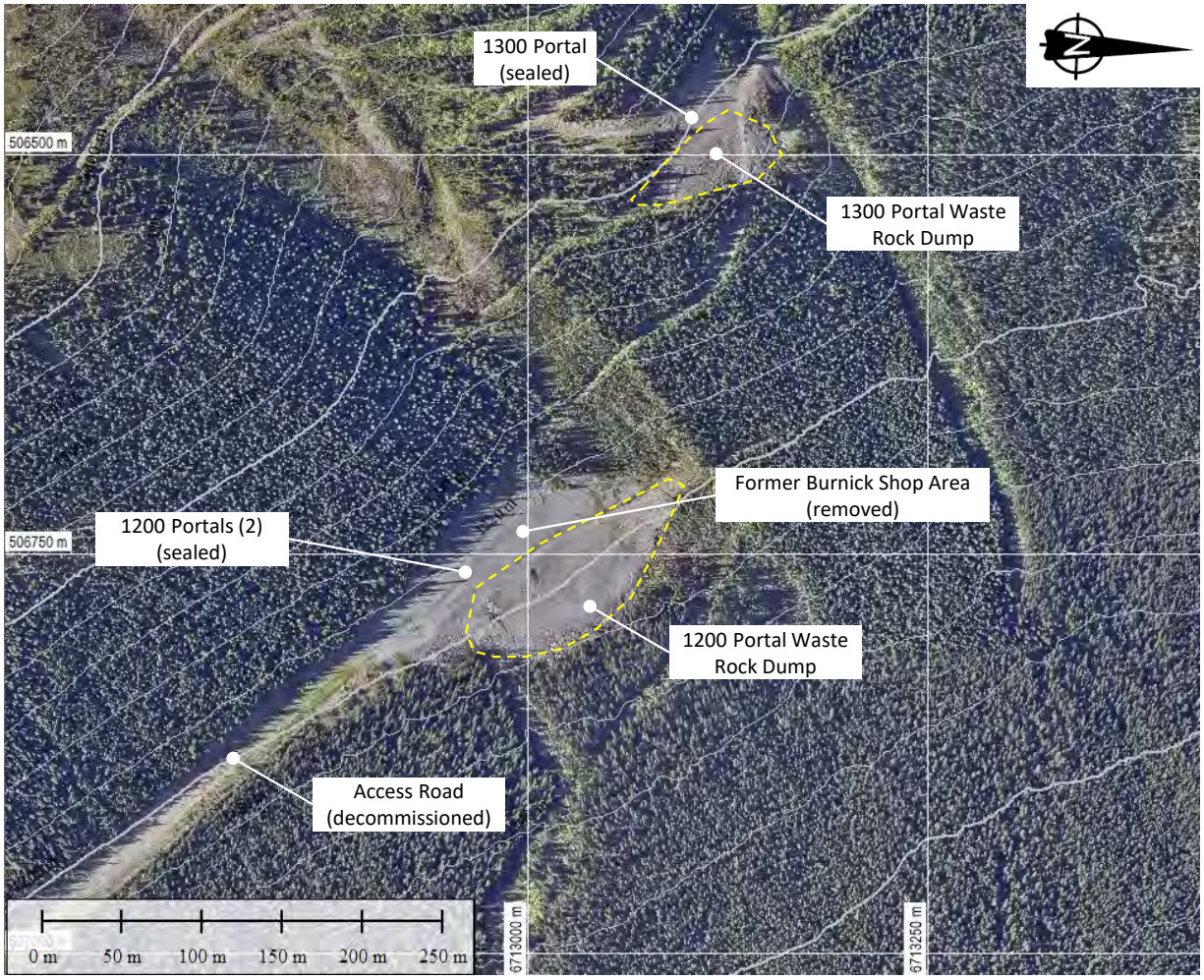
Site Feature	Description
1408 Portal	The Jewelbox 1408 portal is located immediately above the mill site and provided access to the main ramp of the underground workings of the Jewelbox Zone. The portal was roughly 4.5 m by 4.5 m. The portal was sealed off using coarse waste rock to at least 5 m into the portal beyond the entrance. At surface, the waste rock was sloped and contoured to tie into the surrounding terrain. Two 100 mm diameter HDPE pipes were installed to prevent air from pressurizing within the mine and to provide a conduit for mine water drainage if required.
Jewelbox Vent Raises	Two ventilation raises were present in the Jewelbox area: one near the summit of Jewelbox Hill (not inspected during the site visit because it was inaccessible), and the other located immediately upslope from the 1408 Portal. Both raises were sealed with engineered concrete seals with small vent pipes to provide a physical barrier to eliminate public or wildlife access.
Jewelbox Pit	The Jewelbox Pit is located between the 1408 Portal and the Main Zone 1380 Portal. The pit bottom is at elevation 1,400 m and rises steeply to 1,430 m. The pit walls were partially stabilized by re-sloping and hauling in waste rock from adjacent dumps to partially fill the pit and significantly reduce the highwall. Fill at the base of the pit functions like a French Drain to ensure that water continues to have a route to discharge out of the pit.
Jewelbox Waste Rock Dumps – 1408 Portal and Jewelbox North	Waste rock from the Jewelbox underground workings was placed immediately below the 1408 portal and covered an area of 2.6 ha. In the upper section of the dump (1.3 ha), the material was placed in two to three lifts with an overall slope of approximately 2H:1V, while the lower sections were end-dumped on steep slopes at the angle of repose (1.3H:1V). Waste rock from the Jewelbox Pit is located on a ridge immediately east of the pit. The dump was built in two phases and covered an area of 1.9 ha, with side slopes that were generally sloped at 2H:1V. Waste rock was also deposited on steep ground immediately below the upper Jewelbox Pit waste rock dump over an area of 0.4 ha at an angle of repose (1.3H:1V). Hydrocarbon and metal contaminated rock were covered with soil. The crest of the waste dump below 1408 Portal was pulled back and contoured to tie into the surrounding terrain. Some of the waste rock in the Jewelbox Pit dump on the ridge was relocated into the Jewelbox Pit and recontoured as much as practical to provide a slope of 2H:1V. The crest of the Jewelbox North waste dump was also pulled back and used for re-sloping the Main Zone Pit walls. In 2015, most of the waste rock dumps were capped with soil from the Reclaim Dam stockpile and revegetated. A total of 64,500 m^2 of area was capped with a minimum 200 mm of cover material.
Main Zone Pit	The Main Zone Pit is the lower of the two open pits located on the south flank of the Camp Creek catchment. The pit is a side hill excavation with the pit floor at elevation 1,370 m rising to an elevation of approximately 1,400 m. During reclamation, the pit walls were partially stabilized by dozing in waste rock material from adjacent waste rock dumps.
Main Zone 1380 Portal	The 1380 Portal is located within the Main Zone Pit and was approximately 4.5 m by 4.5 m in section. The portal is a relatively short adit that was apparently stopped due to very poor ground conditions and does not connect with any other underground workings. The portal was sealed off using coarse waste rock to at least 5 m into the portal beyond the entrance and was covered by waste rock from the closure of the Main Zone Pit. Two 100 mm diameter HDPE pipes were installed to prevent air from pressurizing within the mine and to provide a conduit for mine water drainage if required.
Main Zone Waste Rock	Waste rock from the Main Zone Pit was end-dumped on hillside slopes below the pit floor and into the adjacent gully. The slope of the dump was about 1.3H:1V and covered an area of about 0.3 ha. During reclamation, the crest of the waste rump was pulled back and rounded for aesthetic purposes and to improve stability.

Sources: Teck (2015), AMECFW (2015a and 2015b)

Burnick Ore Zone Area

The Burnick Ore Zone body is located on the North Hill approximately 4km north of the mill site (Figure 2.1). A site plan of the area is shown in Figure 2.3.

Figure 2.3: Burnick Zone Plan



Sources: https://srk.sharepoint.com/sites/NACAPR002559/Deliverables/03_MineArea_Geotech_Inspection/040_Figures/SDH_Mine_Area_In-text_Figures.pptx?web=1

Notes:

1. 2022 Orthophoto.
2. 20 m contour interval.

Table 2.2: Burnick Ore Zone Site Features

Site Feature	Description
1200 Portals	Two portals are located at the 1200 level of the Burnick Ore Zone that are separated by several meters. One is the main access to the ore body and the second is for ventilation. Water from the mine workings drains through the ventilation portal. Both portals were sealed off using coarse waste rock to at least 5 m into each portal beyond their entrance. At surface, the waste rock was sloped and contoured to tie into the surrounding terrain. Two HDPE pipes were installed in the ventilation portal to prevent air from pressurizing within the mine and to provide a conduit for mine water drainage if required.
1200 Portal Waste Rock Dump	The waste rock dump at the 1200 Level covered an area of about 1.4 ha and is located on a steep side hill immediately below the 1200 Portals. At closure, the top of the dump was re-sloped to reduce loading and improve stability and the surface seeded.
1300 Portal and Waste Rock Dump	The 1300 Portal is accessible via an old exploration road by UTV. The portal is at the highest elevation in the mine and slopes downward connecting to the 1200 Level Portal so that there is no potential for drainage out of the mine workings through the 1300 Level Portal. The associated waste rock dump is small as not much mining work was done in this area. At closure, the portal was sealed off using coarse waste rock to at least 5 m into the portal beyond their entrance. At surface, the waste rock was sloped to 2H:1V and contoured to tie into the surrounding terrain. Two HDPE pipes were installed in the portal to prevent air from pressurizing within the mine.

Sources: Teck (2015), AMEC (2015a and 2015b)

South Drainage Channel

The South Drainage Channel was constructed from the Sediment Retaining Structure (SRS) spillway through the former South Dam and connects with the Camp Creek Drainage Channel. The location of the channel is shown in Figure 2.1 with the as-built channel drawings provided in Appendix A.

The channel length is about 230 m and it was installed with riprap erosion protection placed on top of a non-woven geotextile. The channel is designed for the 1 in 1000-year, 24-hour Inflow Design Flood (IDF). Upstream and downstream side slopes are 2H:1V. Average grade of the channel is 4%.

Camp Creek Drainage Channel

The Camp Creek Drainage Channel was constructed during the 2014 TMA decommissioning through the former Reclaim Dam and pond area to route Camp Creek flows along its historical alignment. The location of the channel is shown in Figure 2.1 with the as-built channel drawings provided in Appendix A.

The channel length is about 940 m and it was installed with riprap erosion protection placed on top of a non-woven geotextile. The channel is designed for the 1 in 1000-year, 24-hour IDF. Upstream and downstream side slopes are 2H:1V. Average grade of the channel is 5%.

North Creek

During operation of the mine, a dyke was built over the North Creek as a water storage facility for the mill. The dyke (see Figure 2.1 for location) was decommissioned in 2015 and a riprapped channel was built through the structure to convey the North Creek flow to False Canyon Creek. A similar channel was also built downstream to convey the North Creek flow through a decommissioned access road.

Landfill

An on-site permitted landfill was constructed for the disposal of non-putrescible industrial waste that has no salvage value generated during the closure activities. The landfill is located 1.1 km north of the Tailings Management Area as shown in Figure 2.1.

A total of 14,406 m^3 of loose material was transported to the landfill during closure in 2014 that consisted of:

- Mill rubble including insulation, steel, tin, cladding, wood, and electrical cable
- Materials from the site boneyard (primarily scrap steel)
- Small shacks and structures
- Core boxes and core racks
- Steel water pipeline
- Culverts (steel)
- Concrete from water decant structure from the South Dam
- Pump house rubble from North Creek Dyke, Lower North Creek, and Reclaim Dam access road.

Landfill operations were completed by excavating a deposition cell, placing layers of crushed debris mixed with fill to minimize void space, further crushing and compaction with a dozer, and capping with a minimum of 1 m of cover material. During construction, a drainage channel was contracted through an alignment of the landfill that did not contain debris to manage runoff and promote drainage. In 2015, approximately 50% of the landfill area was subsequently covered with organic material excavated from the Camp Creek Drainage Channel. The entire landfill footprint was scarified, seeded, and planted with alders.

2.3 Surveillance and Maintenance during Reporting Period

Surveillance of the site consists of routine visual inspections and water quality sampling. Routine inspections area completed by the Site Caretaker in the spring and fall, with an additional summer inspection (this report) completed by a Professional Engineer. The Fall 2022 inspection was completed on October 14, 2022 and the Spring 2023 inspection was completed on May 27 and 28, 2023. The routine inspection forms are provided in Appendix C.

Water quality sampling is completed bi-monthly with the results reported separately.

Maintenance during the reporting period consisted of the installation of fence delineation at the North Creek Second Crossing to allow for continued access to the landfill area and monitoring wells (Figure B-11 in Appendix B).

2.4 Review and Summary of Climate Data

As there is no on-site weather station, data from select local meteorological stations were used to estimate on-site temperatures and precipitation. Regional and regression analyses were carried out by SRK to develop correlations from the available data to the site in absence of any site-specific data (SRK 2023).

Table 2.3 and Figure 2.4 presents a comparison of the estimated climate conditions from July 2022 through June 2023 compared to average values. Mean site temperatures are estimated to be 2 °C cooler than temperatures at the Watson Lake Airport. The evaporation potential was estimated in the Hydrometeorological Characterization Report (SRK 2023). ERA5-Land climatic gridded model produced by European Centre for Medium-Range Weather Forecasts (ECWFM) was used to predict a mean annual precipitation (MAP) for the site of 675 mm.

Table 2.3: Site Climate Data Compared to Climate averages (1980-2021)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Annual
Normals													
Daily Max. Temp [°C]	18.6	16.4	10.1	1.4	-10.0	-15.3	-15.7	-10.7	-3.9	3.8	11.1	16.9	1.9
Daily Min. Temp [°C]	5.5	3.6	-0.5	-6.7	-19.6	-25.3	-26.0	-24.0	-19.6	-9.8	-1.7	3.4	-10.1
Daily Mean Temp [°C]	12.1	10.0	4.8	-2.6	-14.8	-20.3	-20.9	-17.3	-11.7	-3.0	4.7	10.2	-4.1
Precip. (Site) [mm]	98	77	72	61	41	37	38	25	29	37	63	96	675
Reporting Period (July 2022 through June 2023)													
Mean Temp [°C]	14.1	13.2	7.6	1.0	-15.8	-23.3	-14.2	-17.8	-12.6	-1.5	8.7	10.0	-2.6
Precipitation [mm]	38	33	31	33	8	26	62	47	11	19	13	78	398

Sources: SRK (2023b), https://srk.sharepoint.com/sites/FS261/Internal/Monitoring%20Data/Climate/WatsonLake_Precip_rev01.xlsx?web=1

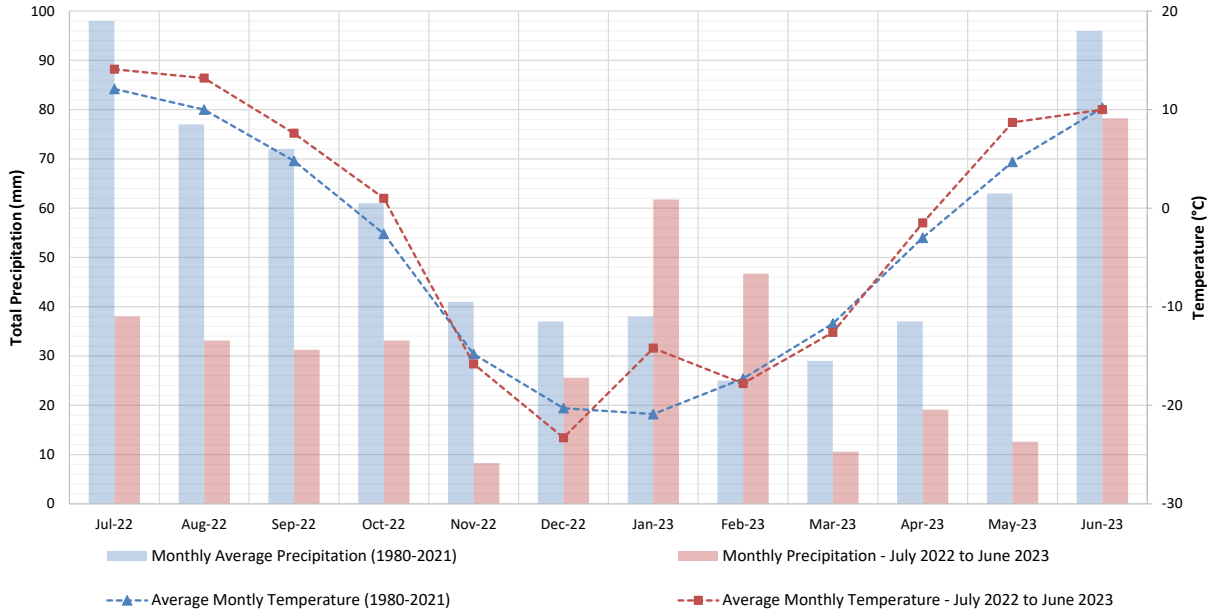
The Watson Lake Airport station (Climate ID: 2101204) was used as the reference station for weather data as it is the most representative station close to the site that is currently active. Total precipitation recorded at Watson Lake from July 2022 through June 2023 was reported as 275 mm. An undercatch correction factor of 1.13 (SRK 2018) and a 1.28 ratio was applied to convert the Watson Lake precipitation to a representative site precipitation based on the ERA5-Land regression analysis (SRK 2018) to result in a total precipitation of 398 mm for the site during the reporting period.

The climate data indicates that precipitation was lower than the average (41% lower).

The Yukon Government Department of Environment's Water Resources Branch issues the Yukon Snow Survey Bulletin and Water Supply Forecast three times annually in early March, April, and May (YG 2023). Data from May 1, 2023 for the Liard River Basin (Hyland Meteorological Station) shows that due to a delayed melt, the Liard River basin-average snow water equivalent (SWE) was estimated

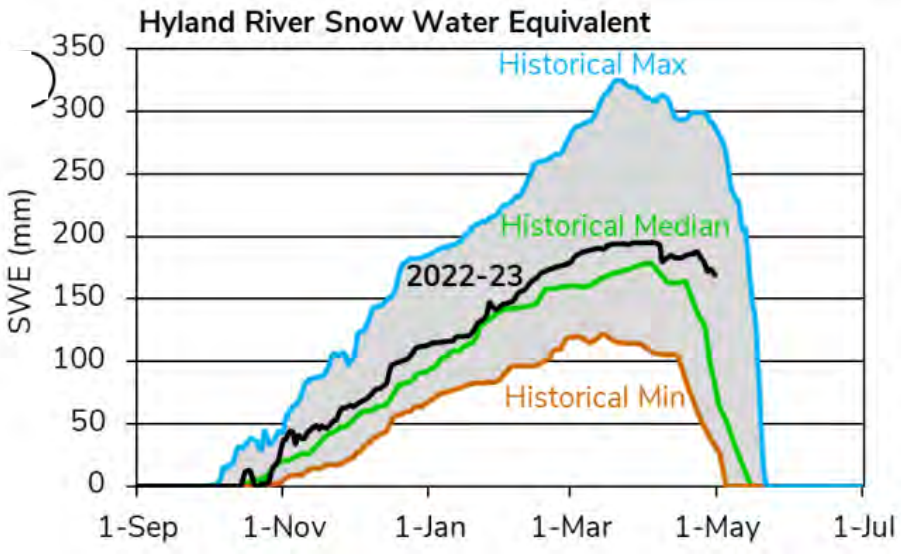
to be 140% of the historical median with a SWE of 189 mm. A graph of the SWE over the winter of 2022-23 at the Hyland Station is provided in Figure 2.5. While the snowpack was higher than average, it was significantly less than the May 2022 snowpack of 324 mm at the Hyland Station that was the historical maximum SWE recorded for May with records extending back to 1980.

Figure 2.4: Precipitation and Temperature Data



Sources: https://srk.sharepoint.com/sites/FS261/Internal/Monitoring%20Data/Climate/WatsonLake_Precip_rev01.xlsx?web=1

Figure 2.5: Winter 2022-2023 Liard River Basin Snow Water Equivalent Data



Sources: https://yukon.ca/sites/yukon.ca/files/env/env-snow-bulletin-may-2023-en.pdf

3 Site Observations

3.1 Visual Inspections

Weather during the June 6 and 7, 2023 site inspection was mostly sunny with temperatures ranging between approximately 5°C to 18°C. 14 mm of precipitation was recorded at the Watson Lake Airport between June 4 and 6. The ground surface was mostly free of snow and moist/wet from previous precipitation. Snow was present at the Jewelbox Pit and the condition of the pit highwall was unable to be observed.

Site observations are provided in the following subsections. Select photographs taken during the inspection are provided in Appendix B. The start of Appendix B also includes figures that provide the photograph locations.

3.1.1 Jewelbox and Main Ore Zone Areas

The conditions of the Jewelbox and Main Ore Zone Areas were largely the same as those observed during the 2022 inspection. Table 3.1 provides the inspection observations along with references to corresponding photographs and applicable recommendations.

Table 3.1: Jewelbox and Main Ore Zone Area Observations

Observation	Figure (App. B)	Photo	Associated Recommend-ation
■ At the low point of the Jewelbox waste rock dump, the 2 to 3 m deep erosion gully that has been monitored over the last few years showed some additional deterioration since last year, but the extent of the erosion appears to be unchanged. The base of the gully is primarily situated in bedrock. The sidewalls of the gully are near vertical and prone to further erosion. There is no impact on the stability of the dump and no action is required.	B-13	WR-03, WR-04	n/a
■ Water that flows down the gully mentioned above, crosses the decommissioned access road to the waste rock area at four locations. Erosion gullies were noted at the upper three crossings that are up to 0.3 m deep. These gullies appear to be self-armouring, and no action is needed at this time.			
■ Surficial sloughing of the soil cover is located downslope of the 1408 Portal. The circular sloughs are typically 0.3 m deep and resulted in bulges at the slough toe. There is no impact on the overall dump stability and no action is required.	B-14	WR-05	n/a
■ The 1408 Portal drainpipes and the vent pipe in the 1408 Portal area are in good condition.	B-14	WR-06a, WR-06b	n/a
■ Rill erosion in the soil cover is present at the south end of the 1408 Portal WRD where the slope is approximately 2H:1V. The condition of the rill erosion appears unchanged compared to the 2021 inspection and no action is required.	B-14	WR-05	n/a

Observation	Figure (App. B)	Photo	Associated Recommend -ation
■ Previous inspections have noted two small openings in the Jewelbox Pit highwall. These openings may have been caused by internal subsidence but currently do not pose a safety concern. During the 2023 inspection, the openings were covered with snow, with an apparent animal burrow opening present. No action is required.	B-15	WR-08	n/a
■ The erosion gully first observed in 2022 on the Main Zone Pit backfill above the 1380 Portal appears unchanged from the 2022 inspection. The gully is situated in waste rock and appears to be self-armouring with no significant catchment that reports to the gully at the upstream end. No remedial action is required.	B-16	WR-09	n/a
■ The two 1380 Portal drainpipes are functional.	B-17	WR-10a, WR-10b	n/a

3.1.2 Burnick Ore Zone Area

The conditions of the waste rock dump and portal areas were largely the same as those observed during the 2022 inspection. Table 3.2 provides the inspection observations along with references to corresponding photographs and applicable recommendations.

Table 3.2: Burnick Ore Zone Area Observations

Observation	Figure (App. B)	Photo	Associated Recommend -ation
■ The regraded fill over the 1200 Portal is in good conditions and the portal drainpipe is functional. Minor settlement of the fill that was placed over the 1200 portal has resulted in a settlement crack in the fill. This crack was noted in previous inspections and is approximately 10 m long, up to 15 cm wide, and up to 10 cm deep. No action is required.	B-17	WR-11, WR-12	n/a
■ The regraded waste rock in the 1300 Portal area is also in good condition with no signs of deformation. The 1300 Portal drainpipe appears functional with no flow observed. A drip-like sound could be heard through the pipe indicating no blockage.	B-18	WR-13, WR-14	n/a

3.1.3 South Drainage and Camp Creek Drainage Channels

Three riprapped drainage channels (North Drainage Channel, South Drainage Channel, and the Camp Creek Drainage Channel) were constructed during the decommissioning in 2014. Table 3.3 provides the inspection observations for the South Drainage and Camp Creek Drainage Channels along with references to corresponding photographs and applicable recommendations. Observations related to the North Drainage Channel are provided in the 2023 Annual Facility Performance Report for the Tailings Management Area.

Table 3.3: Drainage Channel Observations

Channel	Observation	Figure (App. B)	Photo	Associated Recommend-ation
South Diversion Channel	■ Additional sediment accumulation has occurred at the upstream end of the channel immediately downstream of the Sediment Retaining Structure (SRS). The sediment is likely caused by water flowing beneath the spillway riprap and geotextile in the spillway that is internally eroding the underlying embankment fill. ■ The current amount of sediment accumulation is not believed to significantly reduce the channel conveyance capacity and no actions are required.	B-6	DC-01	n/a
	■ The condition of the remaining portions of the channel is unchanged compared to the 2022 inspection. The channel is in good condition with no signs of major subsidence or movement of the riprap erosion protection.	B-6, B-7	DC-02, DC-03	n/a
	■ As noted in previous inspections, minor cracking is present parallel to the channel that was typically offset from the crest by 1 to 2 meters. The cracking is suspected to have resulted from frost heave and does not impact channel performance.	n/a	n/a	n/a
	■ Iron-staining on the riprap is present over the last 30 m of the channel.	B-7	DC-03, DC-04	n/a
Camp Creek Channel	■ The Camp Creek Channel is in good condition with no signs of major subsidence or movement of the riprap erosion protection.	B-7, B-8	DC-04, DC-05, DC-06	n/a

3.1.4 North Creek

The 2015 site reclamation works included decommissioning of culvert crossings of North Creek at three locations: the access road to the Burnick Zone, the North Creek Dyke, and the access road to the Landfill area (“Second Crossing”). Table 3.4 provides the inspection observations along with references to corresponding photographs and applicable recommendations.

Table 3.4: North Creek Observations

Observation	Figure (App. B)	Photo	Associated Recommend-ation
■ Continued channel erosion observed across the decommissioned access road to the Burnick Zone. In the 2021 inspection, subsidence of the south slope of the road crossing was observed with the erosion protection material in good condition (jute netting and riprap). In the 2022 inspection, the south slope was in similar condition, but new erosion observed on the north bank, along with some displacement of the erosion protection riprap and exposing of the underlying geotextile. Seepage was observed entering the channel on the north bank with rusty reddish coloured staining. In the 2023 inspection, conditions were similar with on-going erosion on the north bank extending in the upstream direction.	B-9	NC-01, NC-02	n/a

Observation	Figure (App. B)	Photo	Associated Recommend-ation
■ The creek will continue to erode this section of the channel area but will eventually sustain itself with no intervening maintenance required.			
■ The beaver dam present during the 2022 inspection has been removed and no further beaver activity observed. A beaver dam was previously removed in 2020, with no dam observed in 2021.	B-10	NC-03	n/a
■ No change in condition was observed of the channel erosion at the downstream end of the decommissioned North Creek Dyke Structure. The creek will continue to erode this section of the channel area but will eventually sustain itself with no intervening maintenance required.	B-10	NC-04	n/a
■ At the landfill area road crossing (also known as the "Second Crossing"), erosion of the north side slope of the channel is ongoing. Additional sloughing of the bank has occurred since the 2022 site inspection. A fence delineation barrier was installed to prevent inadvertent access for UTV traffic crossing the creek. ■ Like the other North Creek crossing locations, the creek will continue to erode this section of the channel area but will eventually sustain itself without maintenance. No remedial action is required.	B-11	NC-05, NC-06	n/a

3.1.5 Landfill

Table 3.5 provides the landfill inspection observations along with references to corresponding photographs and applicable recommendations.

Table 3.5: Landfill Observations

Observation	Figure (App. B)	Photo	Associated Recommend-ation
■ The condition of the landfill is unchanged since the 2022 inspection.			n/a
■ The main drainage channel near the center of the spillway was dry with no erosion.	B-19	L-1, L-2	n/a
■ No change in condition was observed in the erosion gully that drains into the main drainage channel that was first noted in the annual inspection in 2021. The gully is about 20 cm deep and appears to be self-armouring. No landfill debris was exposed at the base of the gulley. A comparison to the landfill as-built plan (AMEC 2015) indicates that the gully location is to the west of the miscellaneous site debris disposal cell. No action is required to repair the gulley as it appears to be self armouring.	B-20	L-3	n/a

3.2 Instrumentation Review

There is no instrumentation related to physical performance of the engineered structures covered under the scope of this report.

In 2022, Teck undertook a historical InSAR satellite survey study to assess site-wide surface displacements at SDH using satellite imagery during snow-free periods between 2018 and 2021 (3V

Geomatics 2022). SRK was provided access to 3vGeomatics' web-based platform to review the results of the InSAR analysis. The results show no significant deformation at the site, with some minor settlement in the 1408 Portal Waste Rock Dump area (up to 8 cm over the 4-year period).

3.3 Routine Inspection Forms

Routine inspections of the site are made by the Teck Site Caretaker twice a year in the spring and the fall. No safety concerns were identified during review of the routine inspection forms. The Fall 2022 and Spring 2023 routine inspection form are provided in Appendix C.

4 Recommendations

No actions are required for the engineered structures, works, and installations at the areas covered by this inspection.

Closure

This report, 2023 Annual Geotechnical Inspection, was prepared by

PROFESSIONAL ENGINEER YUKON TERRITORY PETER H. MIKES

2023-08-21

Peter Mikes, P.Eng.
Principal Consultant

and reviewed by

Ignacio Cueto
Senior Consultant

PERMIT TO PRACTICE
Signature
Date 2023-08-21
PERMIT NUMBER: PP019
Association of Professional Engineers of Yukon

All data used as source material plus the text, tables, figures, and attachments of this document have been reviewed and prepared in accordance with generally accepted professional engineering and environmental practices.

References

3vGeomatics, 2022. InSAR Monitoring at Teck Legacy Sites, June 2022 Archive Analysis. August 31.

[AMECFW] Amec Foster Wheeler Environment & Infrastructure, 2015a. 2014 Reclamation Activities and As-built Report. Prepared for Teck Resources Ltd. Project Number TE133102. March.

[AMECFW] Amec Foster Wheeler Environment & Infrastructure, 2015b. 2015 Reclamation Activities and As-built Report. Prepared for Teck Resources Ltd. Project Number TE133102. November.

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SRK Consulting (Canada) Inc., 2018. Sä Dena Hes Mine: 2015 Dam Safety Review Technical Studies – FINAL. SRK Project Number 1CT008.061. December

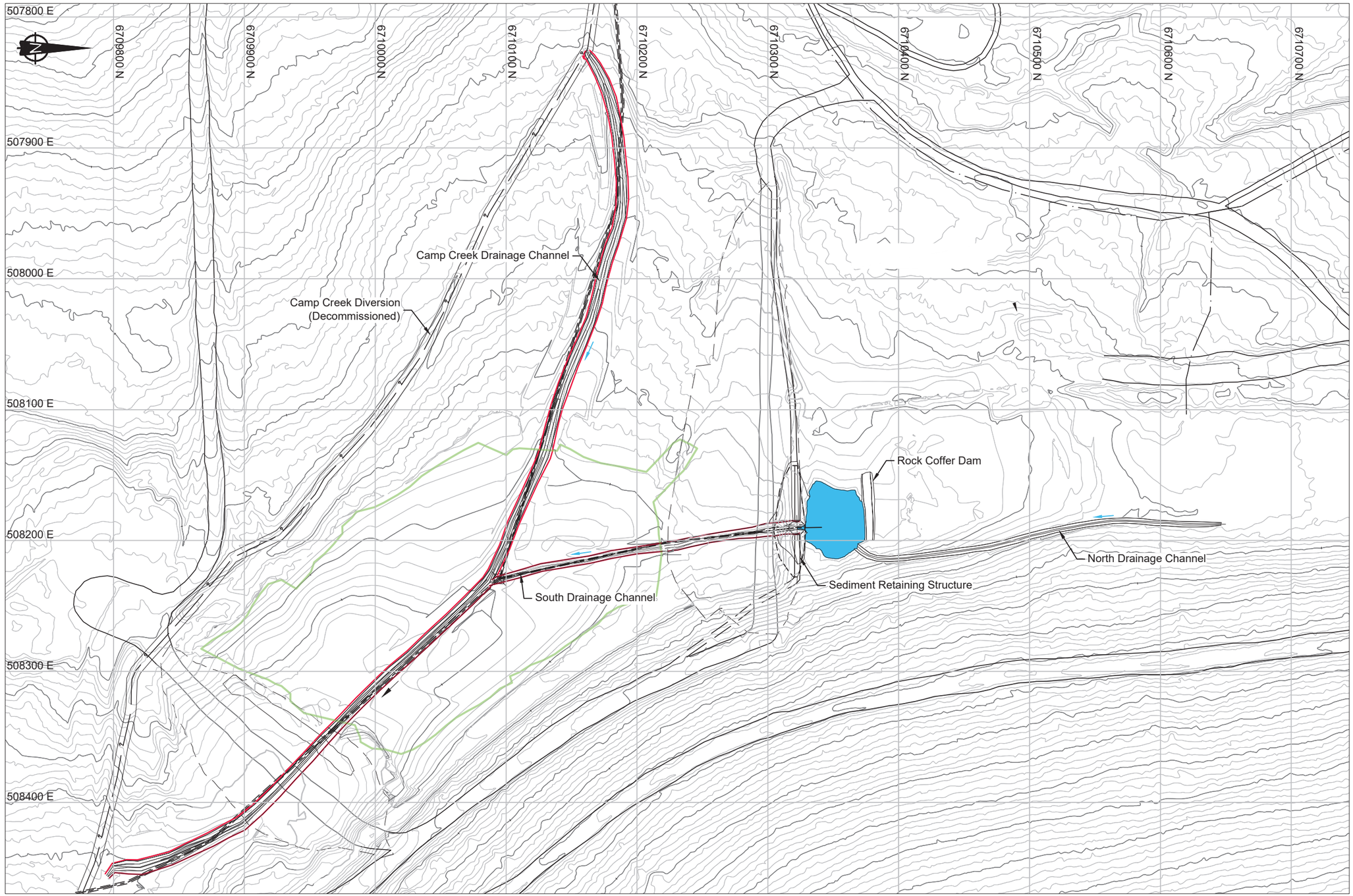
SRK Consulting (Canada) Inc., 2022. 2022 Annual Facility Performance Review. Prepared for Teck Resources Ltd., SRK Project Number CAPR001928. November.

SRK Consulting (Canada) Inc. 2023. Sa Dena Hes Hydrometeorological Characterization Report. DRAFT. Prepared for Teck Resources: Kimberley, BC. Project number: CAPR000463. Issued May.

Teck Resources Ltd. 2015. Sa Dena Hes Mine, Detailed Decommissioning & Reclamation Plan, August 2015 Update.

[YG] Yukon Government Department of Environment, Water Resources Branch, 2023. Yukon Snow Survey Bulletin and Water Supply Forecast.

Appendix A Channel Drawings



LEGEND

- Major Contour (5m)
- Minor Contour (1m)
- Dam Crest
- Dam Toe
- Edge of Road
- Direction of Flow
- Sediment Pond

NOTES

1. Contours are shown at 1.0m intervals.
2. All units are in meters unless otherwise specified.
3. As-built Camp Creek Drainage Channel upstream and downstream tie-in locations and North Drainage Channel alignments were modified from the design by Amec foster wheeler, with consultation from SRK and Teck, based on field conditions.

REFERENCES

1. Coordinate system is UTM NAD 83CSRS zone 9V.
2. Topographic contour data and aerial photos were obtained from McElhanney and are based on August 15, 2012 LiDAR survey.

0m 30 60 90 120

srk consulting

SRK JOB NO.: CAPR002559 | REG. NO.:

FILE NAME: Sheet 9.dwg

Teck

Sä Dena Hes

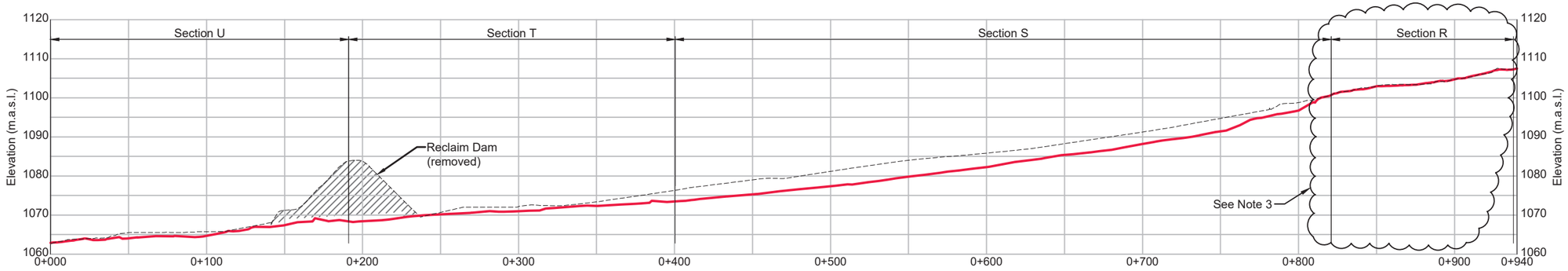
2023 Mine Area Inspection

DRAWING TITLE:

Drainage Channel Plan

DATE: July 2023 | APPROVED: PM | FIGURE: A-01

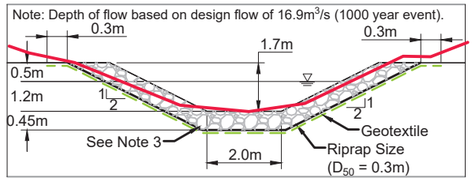
C:\Users\rmadon\SRK Consulting\F S281 Sa Dena Hes - f040_CAD_GIS\ACAD_C3D\IF\2022 Annual Facility Performance Review\Sheet 9.dwg



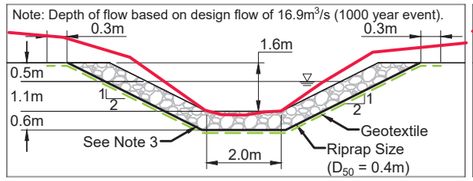
W 09 **Profile W - W'**
Camp Creek Channel

Horizontal: 0 10 20 30 40 50 Scale in Metres

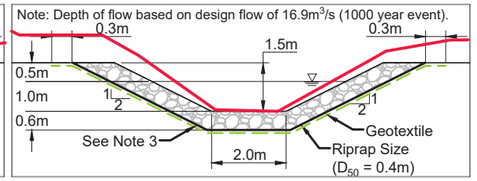
Vertical: 0 5 10 15 20 25 Scale in Metres



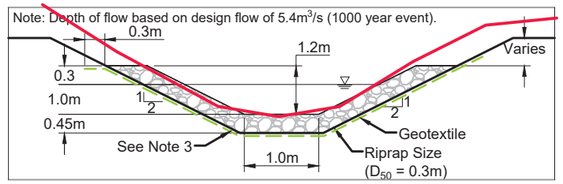
U 09 **DESIGN SECTION U- U'**
Camp Creek Drainage Channel
N.T.S.



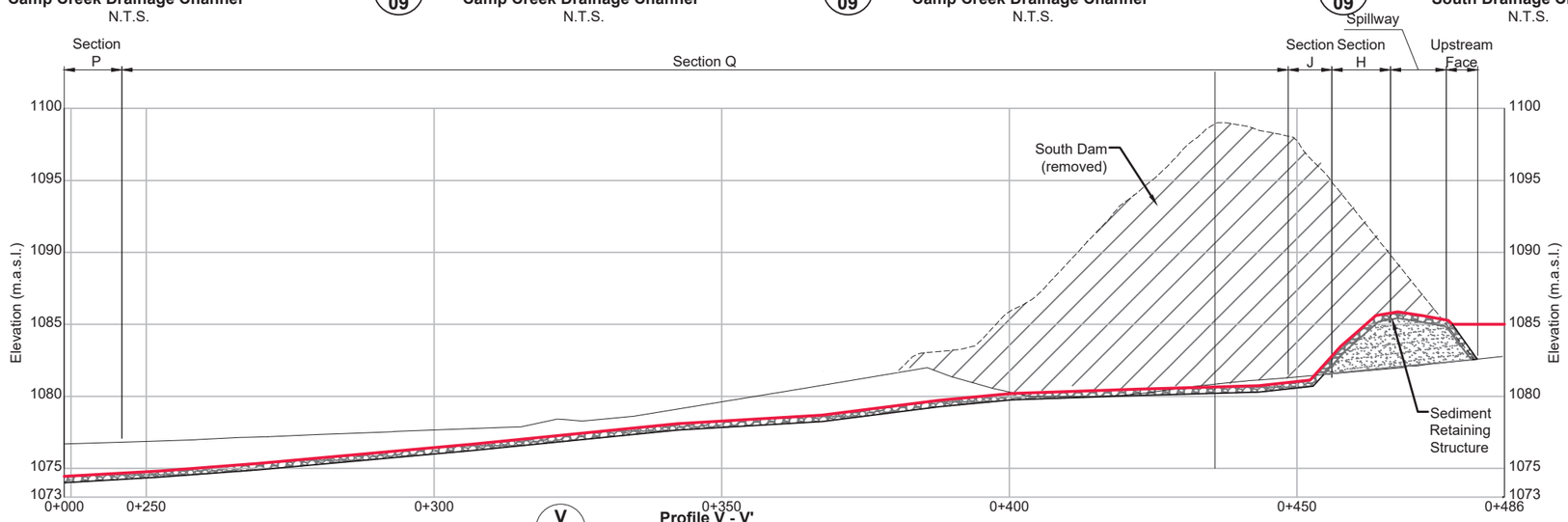
T 09 **DESIGN SECTION T- T'**
Camp Creek Drainage Channel
N.T.S.



S 09 **DESIGN SECTION S - S'**
Camp Creek Drainage Channel
N.T.S.



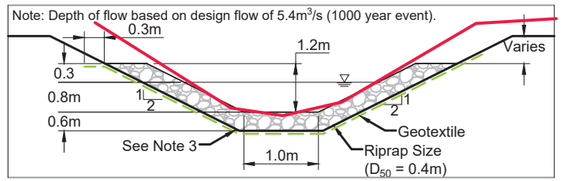
Q 09 **DESIGN SECTION Q - Q'**
South Drainage Channel
N.T.S.



V 09 **Profile V - V'**
South Drainage Channel

Horizontal: 0 5 10 15 20 25 Scale in Metres

Vertical: 0 2 4 6 8 10 Scale in Metres



P 09 **DESIGN SECTION P - P'**
South Dam Drainage Channel
N.T.S.

Design Drainage Channel
Riprap Volume Summary Table

Location	D_{50} (m)	Armoring Depth (m)	Volume (m^3)
Section U	0.3	0.45	993
Section T	0.4	0.6	1409
Section S	0.4	0.6	2875
Section P	0.4	0.6	52

AS-BUILT EXCAVATED RIPRAP QUANTITIES USED FOR CHANNEL CONSTRUCTION

Material	Units	Quantity	Notes
Riprap developed from the Quarry	m^3	5,492	Volume tracked by Amec Foster Wheeler
Riprap salvaged from Toe Buttresses	m^3	3,592	Volume tracked by Amec Foster Wheeler

LEGEND

- Top of Drainage Channel Profile
- Pre-existing Ground
- Pre-Construction Ground
- Sediment Retaining Structure
- Non-woven Geotextile
- Material to be removed
- Rip Rap
- Till (left in place from Original Dam)
- As-built Surface (2015)

NOTES

1. All units are in meters unless otherwise specified.
2. Based on field conditions Section R was removed from the design and the upstream tie-in location was modified.
3. Design extents of rip rap and geotextile, as no as-built survey.

REFERENCES

1. Coordinate system is UTM NAD 83CSRS zone 9V.
2. Topographic contour data and aerial photos were obtained from McElhanney and are based on August 15, 2012 LiDAR survey.

srk consulting

SRK JOB NO.: CAPR002559 | REG. NO.:
FILE NAME: Sheet 10 and 11.dwg

Teck

Sä Dena Hes

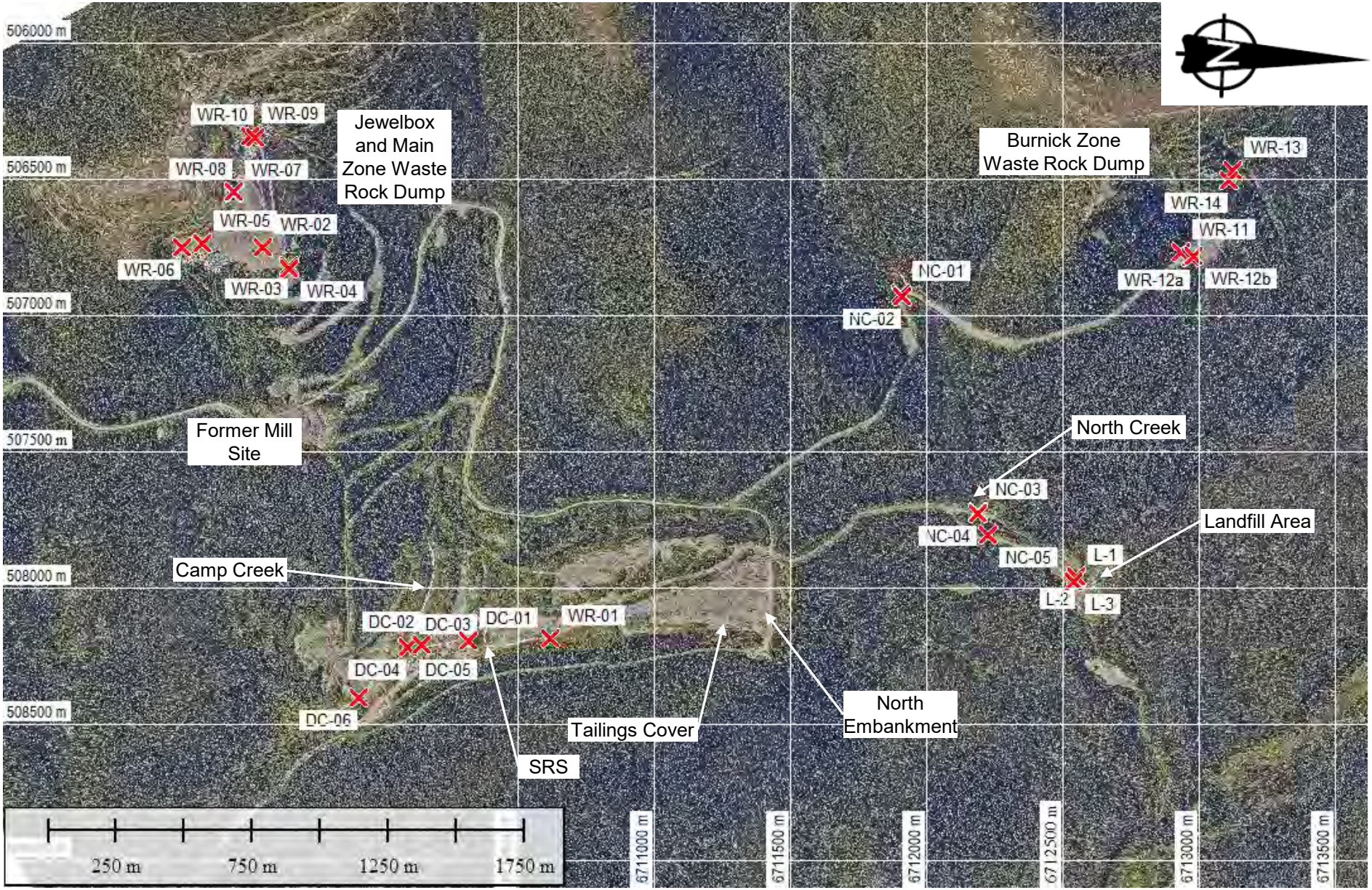
2023 Mine Area Inspection

DRAWING TITLE: Drainage Channel Sections

DATE: July 2023 | APPROVED: PM | FIGURE: A-02

C:\Users\madonn\SRK Consulting\FS261 Sa Dena Hes - 1040_CAD_GIS\ACAD_C3D\FS\2022 Annual Facility Performance Review\Sheet 10 and 11.dwg

Appendix B Site Photographs



Notes:
1. 2022 orthographic photo.
2. Coordinate system is UTM NAD83 Zone 9.

Photo location

srk consulting

Teck

2023 Mine Area Inspection

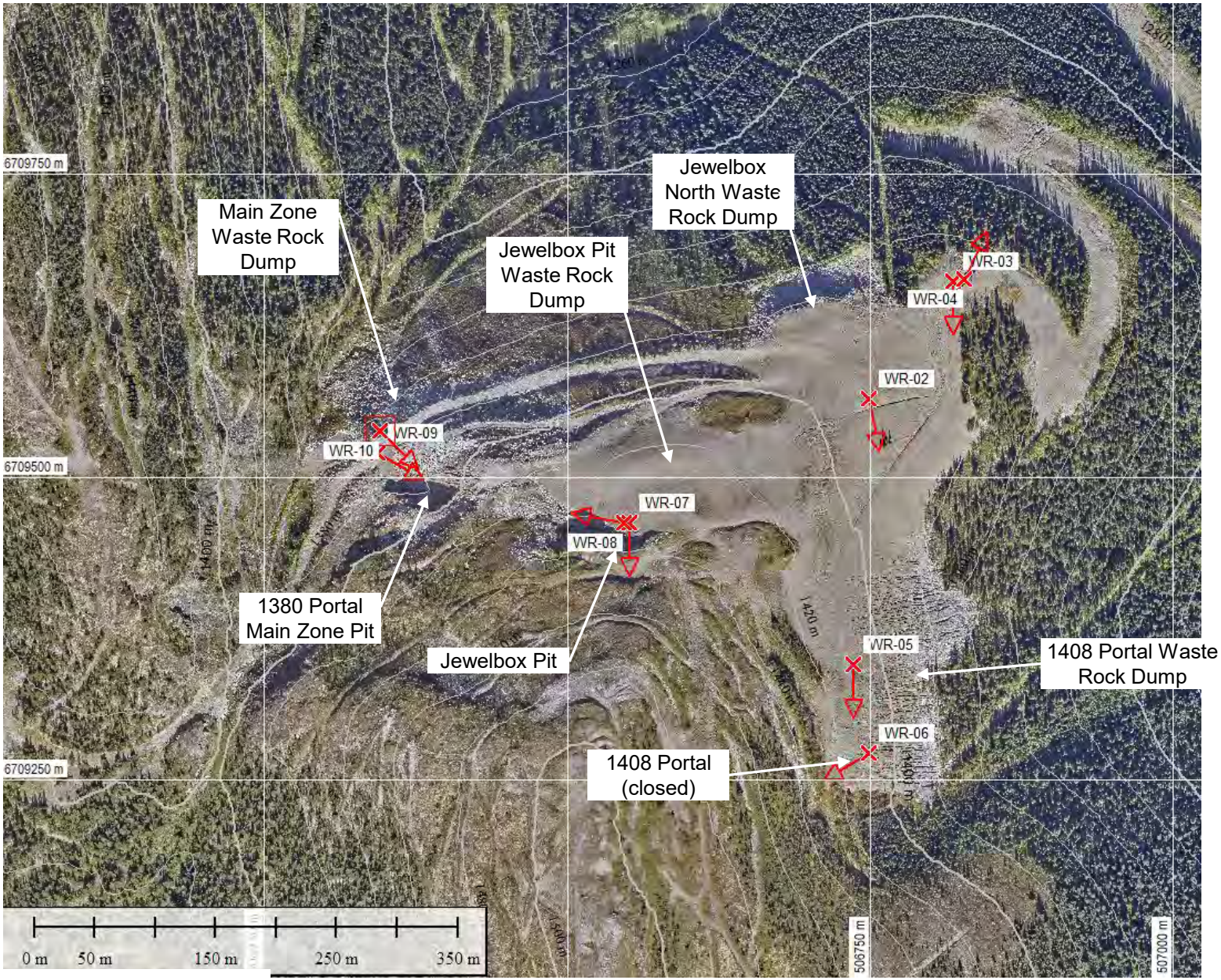
Inspection Areas and Photo Logs

Job No: CAPR002559

Filename: SDH_2023_MineSiteInspect_PhotoLocs.pptx

Sa Dena Hes

Date:	Approved:	Figure:
July 2023	PHM	**B-1**



Notes:
1. 2022 orthographic photo.
2. Coordinate system is UTM NAD83 Zone 9.

srk consulting

Teck

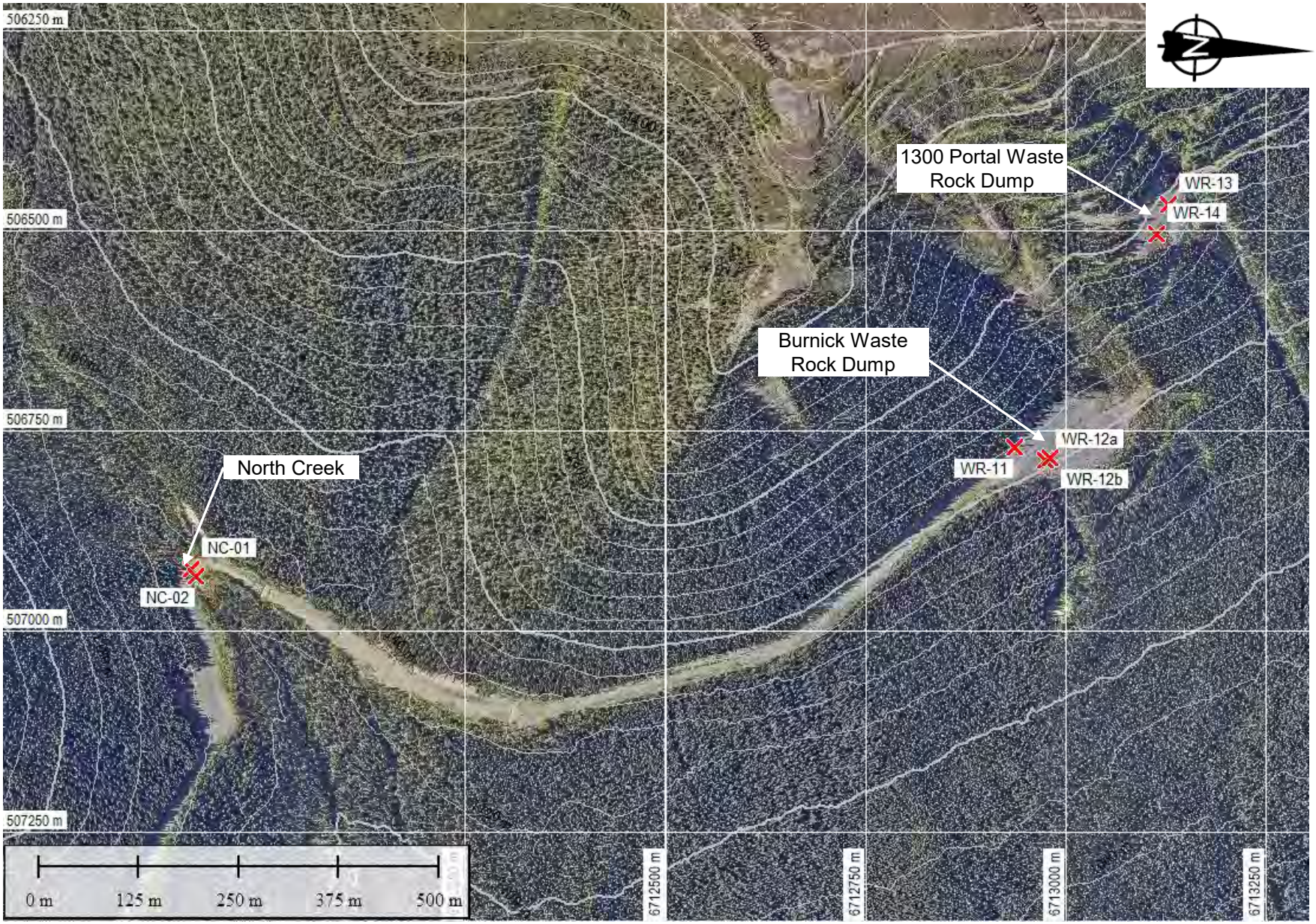
2023 Mine Area Inspection

Main and Jewelbox Zone Waste Rock Dump Photo Locations

Job No: CAPR002559
Filename: SDH_2023_MineSiteInspect_PhotoLocs.pptx

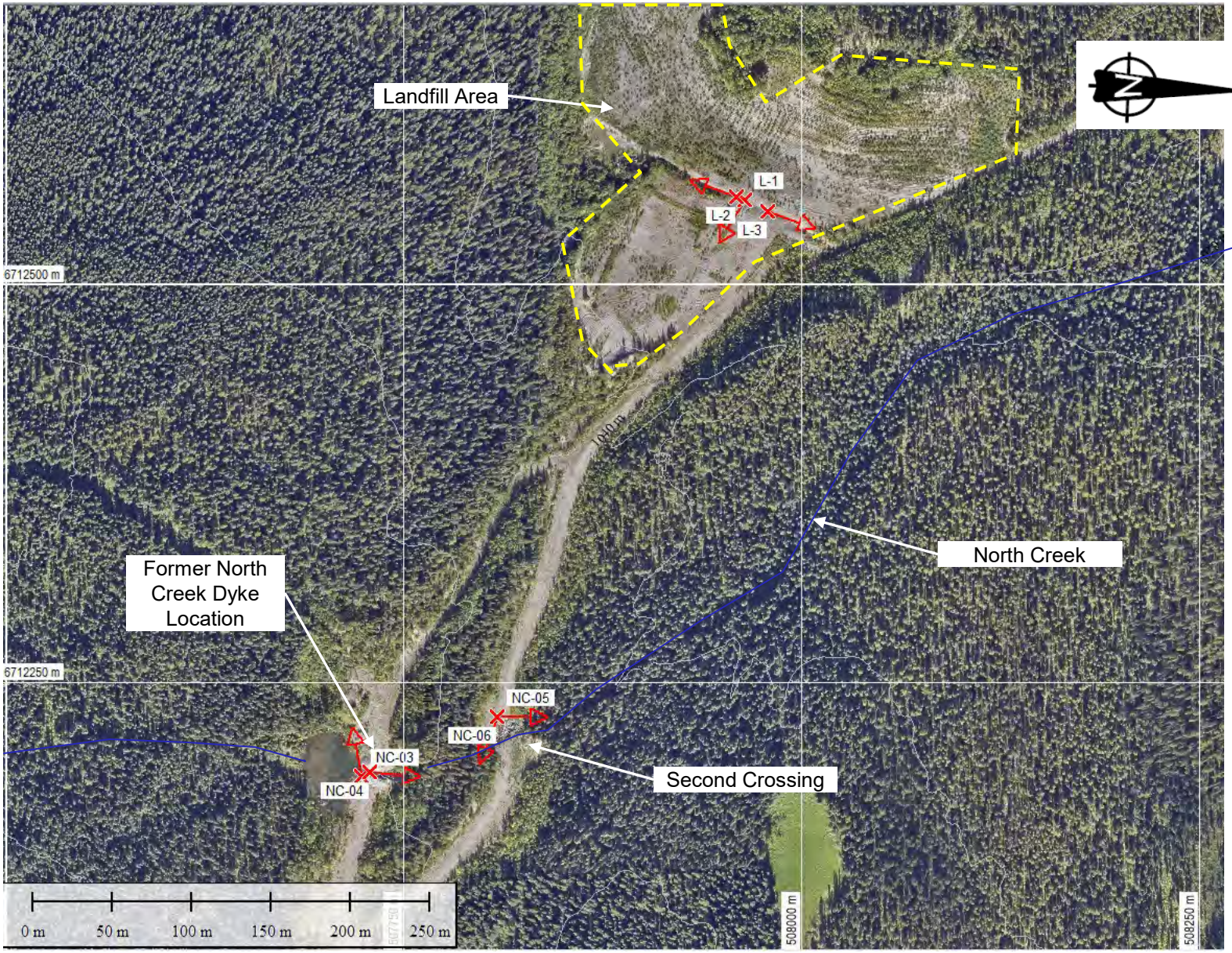
Sa Dena Hes

Date: July 2023
Approved: PHM
Figure: **B-2**



Notes:
1. 2022 orthographic photo.
2. Coordinate system is UTM NAD83 Zone 9.

srk consulting	Teck	2023 Mine Area Inspection
		Burnick Zone Waste Rock Dump Photo Locations
Job No: CAPR002559 Filename: SDH_2023_MineSiteInspect_PhotoLocs.pptx	Sa Dena Hes	Date: July 2023 / Approved: PHM / Figure: **B-3**



Notes:
1. 2022 orthographic photo.
2. Coordinate system is UTM NAD83 Zone 9.

srk consulting	Teck	2023 Mine Area Inspection
		North Creek and Landfill Photo Locations
Job No: CAPR002559 Filename: SDH_2023_MineSiteInspect_PhotoLocs.pptx	Sa Dena Hes	Date: July 2023 / Approved: PHM / Figure: **B-4**

Notes:
1. 2022 orthographic photo.
2. Coordinate system is UTM NAD83 Zone 9.

srk consulting

Teck

2023 Mine Area Inspection

South Drainage Channel and Camp Creek Drainage Channel Photo Locations

Job No: CAPR002559

Filename: SDH_2023_MineSiteInspect_PhotoLocs.pptx

Sa Dena Hes

Date: July 2023

Approved: PHM

Figure: **B-5**

Photo DC-01: Upstream end of the South Drainage Channel immediately downstream of the SRS Spillway. Sediments are accumulating in the channel due to erosion at the base of the SRS spillway.

Photo DC-02: Downstream end of the South Drainage Channel looking downstream towards the confluence with the Camp Creek Channel Iron-staining on the riprap is present over the last 30 m of the channel.

srk consulting	Teck	2023 Mine Area Inspection **South Diversion Channel and Camp Creek**
Job No: CAPR002559 Filename: SDH_2023_MineSite_Photolog.pptx	Sa Dena Hes	Date: July 2023 | Approved: PHM | Figure: **B-6**

Photo DC-03: South Drainage Channel looking upstream from the confluence with Camp Creek.

Photo DC-04: Camp Creek looking downstream from the confluence with the South Drainage Channel.

srk consulting	Teck	2023 Mine Area Inspection **South Diversion Channel and Camp Creek**		
Job No: CAPR002559 Filename: SDH_2023_MineSite_Photolog.pptx	Sa Dena Hes	Date: July 2023	Approved: PHM	Figure: **B-7**

Photo DC-05: Camp Creek looking upstream from the confluence with the South Drainage Channel.

Photo DC-06: Camp Creek near the former Reclaim Dam area looking downstream.

srk consulting	Teck	2023 Mine Area Inspection **South Diversion Channel and Camp Creek**		
Job No: CAPR002559 Filename: SDH_2023_MineSite_Photolog.pptx	Sa Dena Hes	Date: July 2023	Approved: PHM	Figure: **B-8**

Photo NC-01: Decommissioned Access Road Crossing to Burnick Zone looking south.

Photo NC-02: Decommissioned Access Road Crossing to Burnick Zone looking upstream.

srk consulting	Teck	2023 Mine Area Inspection		
		North Creek		
Job No: CAPR002559 Filename: SDH_2023_MineSite_Photolog.pptx	Sa Dena Hes	Date: July 2023	Approved: PHM	Figure: **B-09**

Photo NC-03: Former North Creek Dyke area. Inlet to the decommissioned dyke.

Photo NC-04: Downstream end of the decommissioned North Creek Dyke.

srk consulting	Teck	2023 Mine Area Inspection		
		North Creek		
Job No: CAPR002559 Filename: SDH_2023_MineSite_Photolog.pptx	Sa Dena Hes	Date: July 2023	Approved: PHM	Figure: **B-10**

Photo NC-05: On-going erosion at the North Creek second crossing (to landfill) looking downstream.

Photo NC-06: On-going erosion at the North Creek second crossing (to landfill) looking upstream.

srk consulting	Teck	2023 Mine Area Inspection		
		North Creek		
Job No: CAPR002559 Filename: SDH_2023_MineSite_Photolog.pptx	Sa Dena Hes	Date: July 2023	Approved: PHM	Figure: **B-11**

Photo WR-01: View of the Jewelbox and Main Zone Area from the Tailings Area.

Photo WR-02: 1408 Portal Waste Rock Dump looking south.

srk consulting	Teck	2023 Mine Area Inspection		
		Main Zone and Jewelbox Zone Waste Rock Dump Areas		
Job No: CAPR002559 Filename: SDH_2023_MineSite_Photolog.pptx	Sa Dena Hes	Date: July 2023	Approved: PHM	Figure: **B-12**

Photo WR-03: Erosion at the lowest point of the Jewelbox Waste Rock Dumps through the former Jewelbox Haul Road (looking south).

Photo WR-04: Erosion at the lowest point of the Jewelbox Waste Rock Dumps through the former Jewelbox Haul Road (looking north). Erosion has developed down to bedrock. Extent of erosion is unchanged compared to 2022 inspection.

srk consulting	Teck	2023 Mine Area Inspection **Main Zone and Jewelbox Zone Waste Rock Dump Areas**
Job No: CAPR002559 Filename: SDH_2023_MineSite_Photolog.pptx	Sa Dena Hes	Date: July 2023 | Approved: PHM | Figure: **B-13**

Photo WR-05: Surficial slumping near the south end of the 1408 Portal Waste Rock Dump.

Photo WR-06a and b: (a) one of the two 1408 Portal drainage pipes; (b) Vent pipe from the 1408 Portal.

srk consulting	Teck	2023 Mine Area Inspection **Main Zone and Jewelbox Zone Waste Rock Dump Areas**
Job No: CAPR002559 Filename: SDH_2023_MineSite_Photolog.pptx	Sa Dena Hes	Date: July 2023 | Approved: PHM | Figure: **B-14**

Photo WR-07: Potential animal burrow in the Jewelbox Pit wall. .

Photo WR-08: Partially backfilled Jewelbox Pit looking west.

srk consulting	Teck	2023 Mine Area Inspection **Main Zone and Jewelbox Zone Waste Rock Dump Areas**
Job No: CAPR002559 Filename: SDH_2023_MineSite_Photolog.pptx	Sa Dena Hes	Date: July 2023 | Approved: PHM | Figure: **B-15**

Photo WR-09: Backfill at the 1380 Portal below the Main Zone Waste Rock Dump.

Photo WR-10a and b: Two drainage pipes at the 1380 Portal.

srk consulting	Teck	2023 Mine Area Inspection **Main Zone and Jewelbox Zone Waste Rock Dump Areas**
Job No: CAPR002559 Filename: SDH_2023_MineSite_Photolog.pptx	Sa Dena Hes	Date: July 2023 | Approved: PHM | Figure: **B-16**

Photo WR-11: Regraded Burnick Waste Dump at the 1200 Portal. A crack is present above the portal that is approximately 10 m long, up to 15 cm wide, and up to 10 cm deep.

Photo WR-12a and b: Two drainage pipes at the Burnick 1200 Portal.

srk consulting	Teck	2023 Mine Area Inspection **Burnick Zone Waste Rock Dump Areas**		
Job No: CAPR002559 Filename: SDH_2023_MineSite_Photolog.pptx	Sa Dena Hes	Date: July 2023	Approved: PHM	Figure: **B-17**

Photo WR-13: Regraded 1300 Portal Waste Rock Dump and 1300 Portal area.

Photo WR-14: 1300 Portal drainpipe.

srk consulting	Teck	2023 Mine Area Inspection **Burnick Zone Waste Rock Dump Areas**
Job No: CAPR002559 Filename: SDH_2023_MineSite_Photolog.pptx	Sa Dena Hes	Date: July 2023 | Approved: PHM | Figure: **B-18**

Photo L-1: Landfill drainage channel looking upstream.

Photo L-2: Landfill drainage channel looking downstream.

srk consulting	Teck	2023 Mine Area Inspection		
		Landfill		
Job No: CAPR002559 Filename: SDH_2023_MineSite_Photolog.pptx	Sa Dena Hes	Date: July 2023	Approved: PHM	Figure: **B-19**

Photo L-3: Erosion channel that enters the Landfill drainage channel. The condition of the channel is unchanged compared to the 2022 inspection and no signs of debris were observed.

Appendix C Routine Inspection Forms

Sa Dena Hes Mine Site Geotechnical Inspection

No.
00007

General Information

Inspected By:
Jeff Basarich

Jewel Box

Jewelbox Soil Caps

Date:
13/10/2022

General Appearance
Few deepening rills and slumping on hillside below old capped portal

Erosion
Deepening of erosion at top end of road onto cap.

Settlement/Depressions
Slumping below portal area

Standing Water
No Issues

Vegetation
Slowly developing greenish hue over entire area, indicating grass & plant growth.

Waste Rock Dumps

Cracks/Scarps
No Issues

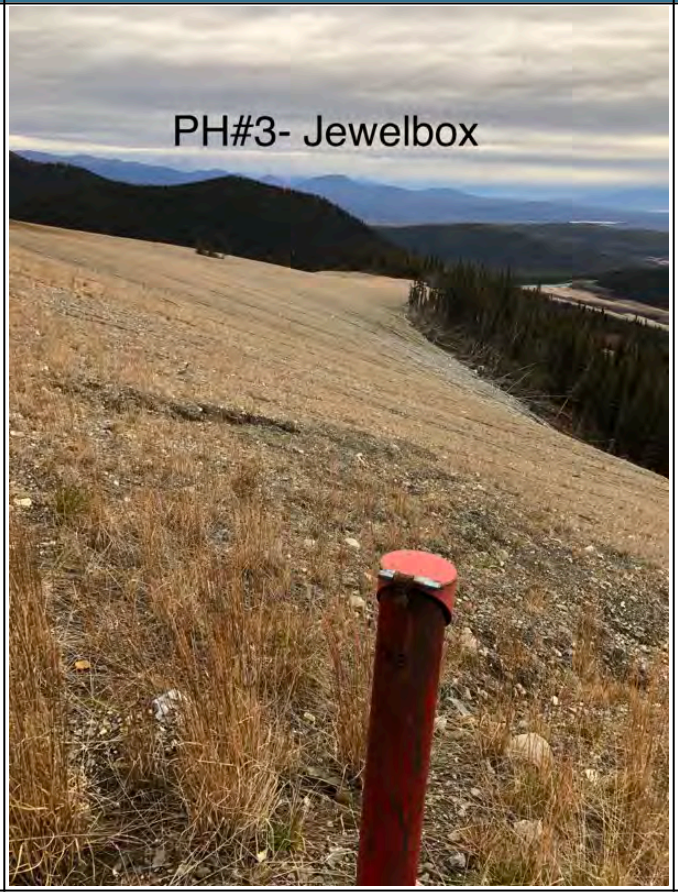
Susidence
No Issues

Erosion
None out of the ordinary

Seeps
No Issues

Jewel Box Photo's

Sa Dena Hes Mine Site Geotechnical Inspection

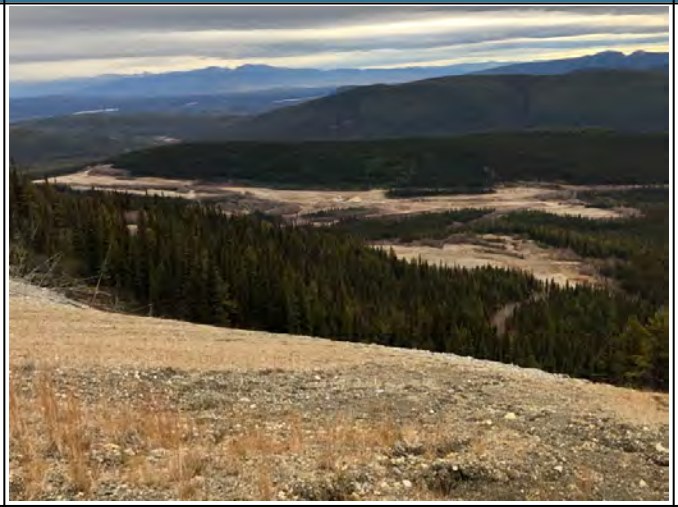
Photo Discription	Photo	Photo Location
Jewelbox 1		

No.
00007

Sa Dena Hes Mine Site Geotechnical Inspection

Photo Discription	Photo	Photo Location
Jewelbox waste rock dumps		
Deepening erosion at access entrance to Jewelbox		

Sa Dena Hes Mine Site Geotechnical Inspection

Photo Discription	Photo	Photo Location
Jewelbox- slumps below 40+ meters below old portal area		
Jewelbox-hole in the wall getting slightly larger		

Sa Dena Hes Mine Site Geotechnical Inspection

Photo Discription	Photo	Photo Location
Slumping along slope below old portal area		
Slumps 2		

Sa Dena Hes Mine Site Geotechnical Inspection

No.
00007

Photo Discription	Photo	Photo Location
Portal drains		

Burnick

Inspection Date:
13/10/2022
Weather:
15 sunny
Burnick 1200 Waste Rock Dump
Cracks/Scarps
Crack that opens and then silts in not present at this time.

Subsidence
No Issues
Erosion
No Issues
Seeps
Appears to have had heavy runoff but no excessive erosion or rills.
Water coming from middle portal drain.
Burnick 1300 Waste Rock Dump

Cracks
No Issues
Subsidence
No Issues
Erosion
No Issues
Seeps
Burnick heartbeat sound from 1300 portal drains, stopped prior to October 14th.

Burnick Photo's

Sa Dena Hes Mine Site Geotechnical Inspection

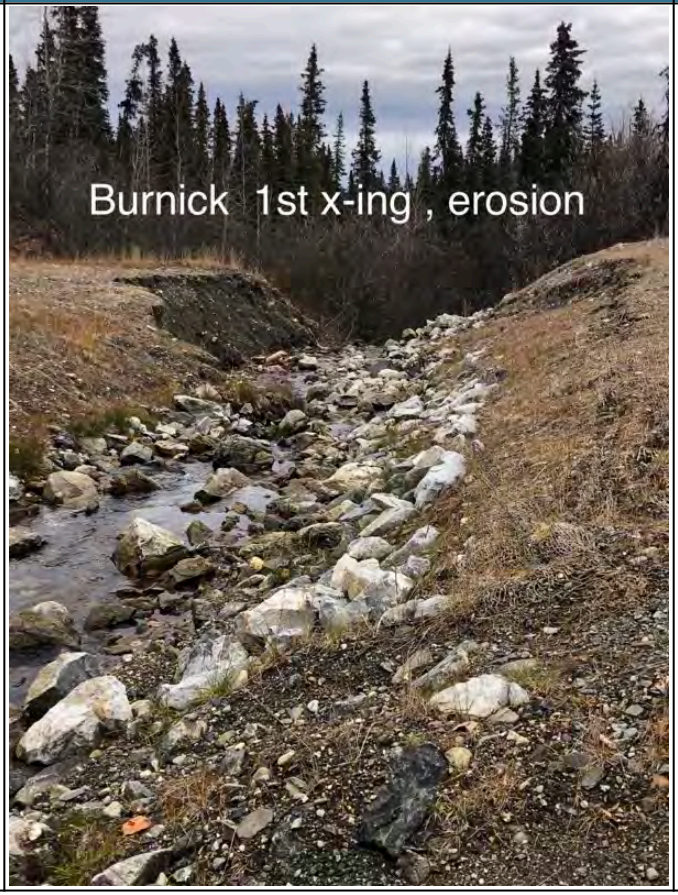
No.
00007

Photo Discription	Photo	Photo Location
Water from portal drain		

Sa Dena Hes Mine Site Geotechnical Inspection

Photo Discription	Photo	Photo Location
Waste rock dump		

Sa Dena Hes Mine Site Geotechnical Inspection

Photo Discription	Photo	Photo Location
Erosion at Burnick 1st crossing.		

Sa Dena Hes Mine Site Geotechnical Inspection

No.
00007

Photo Discription	Photo	Photo Location
1200 waste rock dump		
Burnick 1300 portal-waste rock dump, no issues.		

North Creek Dike Breach

Date

Settlement/Depressions

Vegetation

Sa Dena Hes Mine Site Geotechnical Inspection

No.
00007

14/10/2022

No Issues Found

No Issues Found

Sideslopes

Continuing erosion/settlement of riprap, washing down stream.

Riprap

Further erosion of rip rap

Debris at Inlet

Some beaver debris , clean out with mini excavator

Discharge

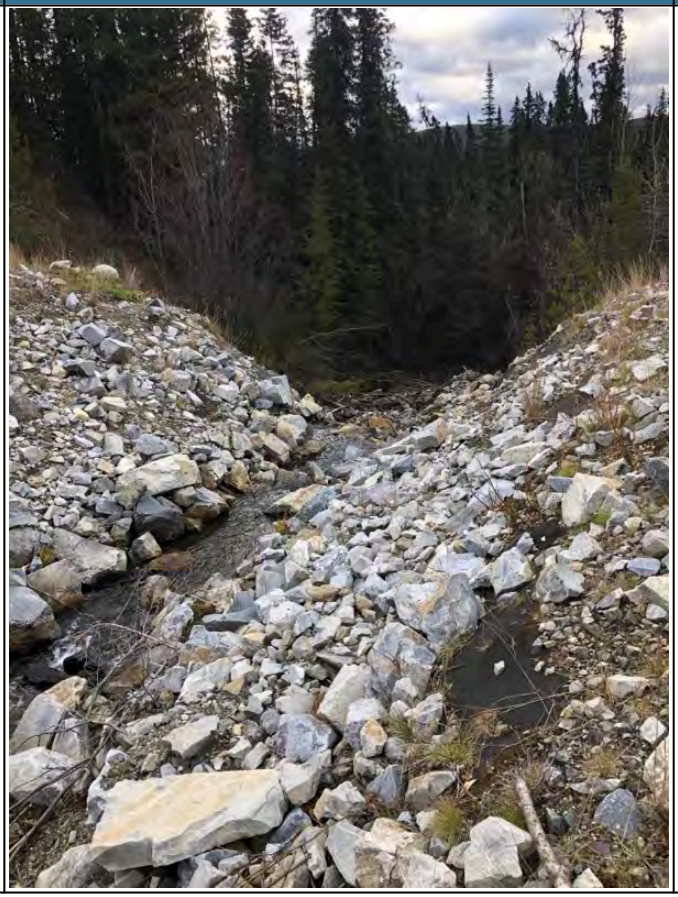
Discharge end eroding further as rip rap washes away

North Creek Dike Photo's

Photo Discription	Photo	Photo Location
Beaver debris at N. creek dyke breach		

Sa Dena Hes Mine Site Geotechnical Inspection

No.
00007

Photo Discription	Photo	Photo Location
Erosion at dyke breach		

Sa Dena Hes Mine Site Geotechnical Inspection

Photo Discription	Photo	Photo Location
Debris cleaned out October 14th after beavers trapped		

Sa Dena Hes Mine Site Geotechnical Inspection

No.
00007

Photo Discription	Photo	Photo Location
Cleaned out		

North Creek Second Crossing

Date:
13/10/2022

Sideslopes
Substantial erosion, pull back and build up x-ing with rip rap & mini excavator to re-establish a passable road across.

Riprap
Riprap getting washed downstream

Settlement/Depressions
No Issues Found

Debris at Inlet
No Issues Found

Discharge
Discharge erosion has increased over the summer. Built up UTV crossing with riprap.

Vegetation
No Issues Found

North Creek Dike Second Crossing Photo's

Sa Dena Hes Mine Site Geotechnical Inspection

No.
00007

Photo Discription	Photo	Photo Location
Erosion at 2nd crossing		

North Dam

Date:
13/10/2022

Ponded Water
Shallow puddles along soil cap and crest but migrates towards center drainage channel

Erosion
Major erosion issue , west of center of N. Dam. Large erosion gulley washed from tailings cap to the toe of downstream face. Contacted appropriate supervisor and repairs were performed.

Settlement/Depressions
No Issues

Cracks/Movement
No Issues

Vegetation
No Issues

Downstream Toe Seepage
3 sections of silt fencing installed across repaired dam seepages

North Dam Photo's

Sa Dena Hes Mine Site Geotechnical Inspection

No.
00007

Photo Discription	Photo	Photo Location
Slump at bottom west side of riprap, vertical cracking along downstream riprap, under jute matting.		

South Drainage Channel

Date:
13/10/2022

Slideslopes
No Issues

Riprap
No Issues

Debris
No Issues

South Drainage Photo's

Sa Dena Hes Mine Site Geotechnical Inspection

No.
00007

Photo Discription	Photo	Photo Location
South channel		

Camp Creek Drainage Channel

Date:
14/10/2022

Slideslopes
No Issues

Riprap
No Issues

Debris
No Issues

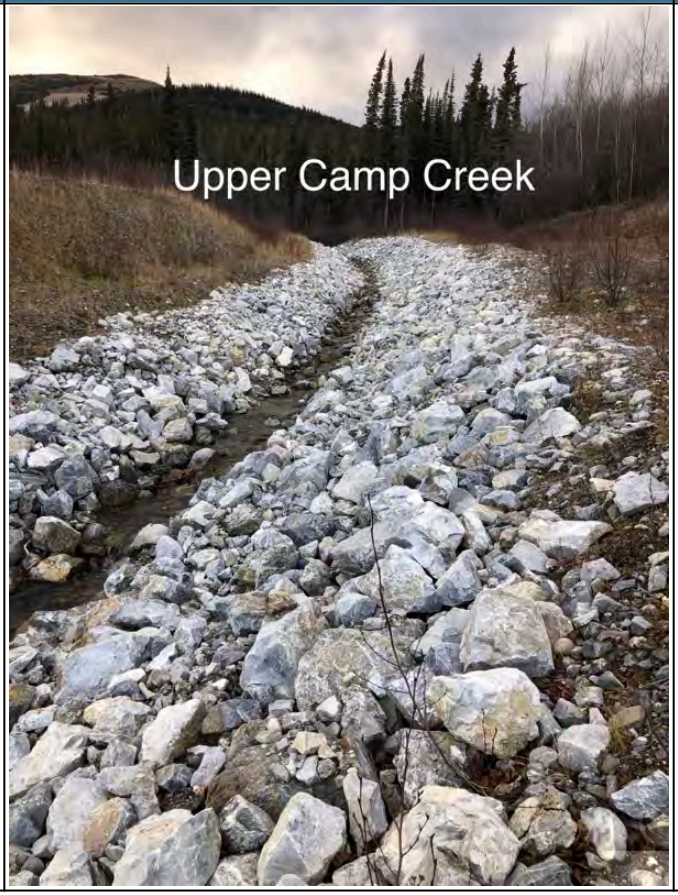
Camp Creek Photo's

Sa Dena Hes Mine Site Geotechnical Inspection

Photo Discription	Photo	Photo Location
Convergence of South and Camp Creek Channels		

Sa Dena Hes Mine Site Geotechnical Inspection

No.
00007

Photo Discription	Photo	Photo Location
Upper end of Camp Creek		

Reclaim Pond Soil Cap

Date:
13/10/2022

General Appearance
Osprey’s did not come back to nest again this year

Settlement/Depressions
No Issues

Standing Water
No Issues

Drainage Swale
No Issues

Sa Dena Hes Mine Site Geotechnical Inspection

No.
00007

Erosion
No Issues

Vegetation
Growth is doing very well with many 6'+ alder, grasses creating a thick blanket of cover.

Reclaim Pond Photo's

Photo Discription	Photo	Photo Location
Reclain area		
Reclaim #2		

Sa Dena Hes Mine Site Geotechnical Inspection

No.
00007

Photo Discription	Photo	Photo Location
Reclaim area from Osprey nest.		

Sign:

Sa Dena Hes Mine Site Geotechnical Inspection

No.
00009

General Information

Inspected By:
Jeff Basarich

Jewel Box

Jewelbox Soil Caps

Date:
27/05/2023

General Appearance
Erosion channels slightly deeper in some areas, generally standing up well.

Erosion
Several new shallow(30cm)erosion channels throughout face/slope of waste rock dump.

Settlement/Depressions
Several new slumps up to 1.2m deep, downstream slope.

Standing Water
No Issues

Vegetation
No Issues

Waste Rock Dumps

Cracks/Scarps
No Issues

Susidence
Slumps

Erosion
Several shallow erosion channels, up to 40cm on down stream slope, much more pronounced at base of slope.

Seeps
No flow from portal drains

Jewel Box Photo's

Sa Dena Hes Mine Site Geotechnical Inspection

Photo Discription	Photo	Photo Location
Slumping below portal area and along contour of hillside		
Slumping		

Sa Dena Hes Mine Site Geotechnical Inspection

Photo Discription	Photo	Photo Location
Rills & erosion		
Hole in the wall still snow covered		

Sa Dena Hes Mine Site Geotechnical Inspection

Photo Discription	Photo	Photo Location
Waste rock dump		
Waste rock dump 2		

Sa Dena Hes Mine Site Geotechnical Inspection

Photo Discription	Photo	Photo Location
1407 Portal drains		
1390 portal drains, no apparent flow.		

Sa Dena Hes Mine Site Geotechnical Inspection

No.
00009

Photo Discription	Photo	Photo Location
Erosion monitoring posts - Erosion channel at entrance to Jewelbox.		

Burnick

Inspection Date:
27/05/2023

Weather:
+13, sun/cloud mix, brisk swirling winds

Burnick 1200 Waste Rock Dump

Cracks/Scarps
No Issues

Subsidence
No Issues

Erosion
No Issues

Seeps
Flow from middle portal overflow drain is flowing at 4.5L/per min. Believe this pipe is being called 1B.

Burnick 1300 Waste Rock Dump

Cracks
No Issues

Subsidence
No Issues

Erosion
No Issues

Seeps
No Issues

Burnick Photo's

Sa Dena Hes Mine Site Geotechnical Inspection

Photo Discription	Photo	Photo Location
Flow from main portal drain 1200		

Sa Dena Hes Mine Site Geotechnical Inspection

Photo Discription	Photo	Photo Location
1300 - no changes		Latitude: 60.553974 Longitude: -128.881927

Sa Dena Hes Mine Site Geotechnical Inspection

Photo Discription	Photo	Photo Location
Portal drains 1300, upper pipe heartbeat weak & irregular		Latitude: 60.554005 Longitude: -128.881836

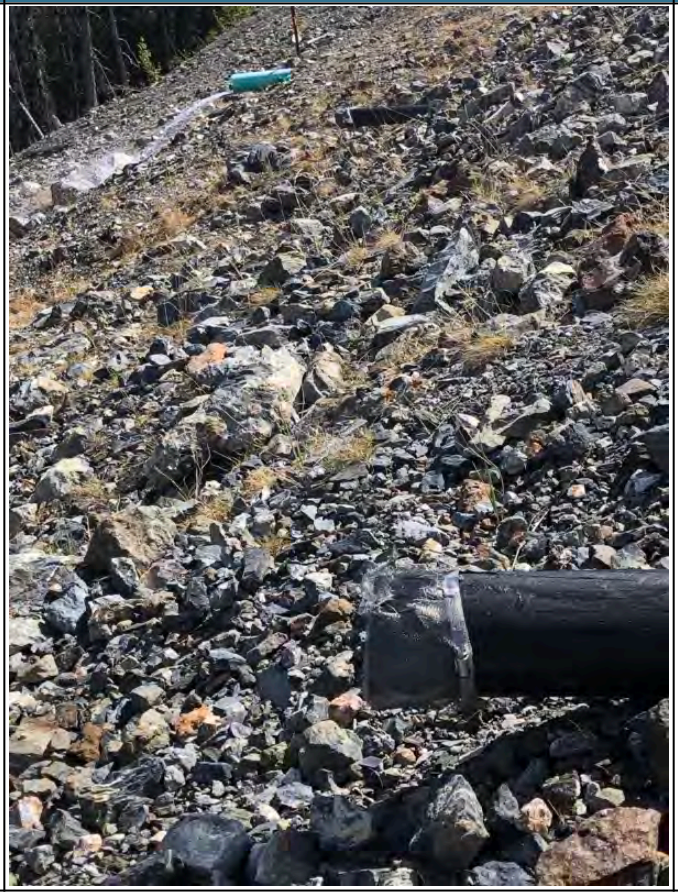
Sa Dena Hes Mine Site Geotechnical Inspection

No.
00009

Photo Discription	Photo	Photo Location
1200 waste rock dumps, no changes		

Sa Dena Hes Mine Site Geotechnical Inspection

No.
00009

Photo Discription	Photo	Photo Location
1200 Burnick portal drains		

Sa Dena Hes Mine Site Geotechnical Inspection

Photo Discription	Photo	Photo Location
1200 waste rock dump		Latitude: 60.553387 Longitude: -128.877380

Sa Dena Hes Mine Site Geotechnical Inspection

No.
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Photo Discription	Photo	Photo Location
Flow from middle portal drain(1B) flow rate 4.5L/per min.		

North Creek Dike Breach

Date
27/05/2023

Sideslopes
Slippage and erosion at outlet end

Settlement/Depressions
Minor settlements along downstream upper edges of riprap.

Debris at Inlet

Vegetation
No Issues Found

Sa Dena Hes Mine Site Geotechnical Inspection

No.
00009

Riprap
Riprap eroded/washed off of geotextile along bottom of channel

No Issues Found

Discharge
Cracking along upper sides of downstream end of channel.

North Creek Dike Photo's

Photo Discription	Photo	Photo Location
Breach channel		Latitude: 60.545578 Longitude: -128.859100
Looking upstream, no beavers present at this time.		Latitude: 60.545582 Longitude: -128.859177

Sa Dena Hes Mine Site Geotechnical Inspection

No.
00009

North Creek Second Crossing

Date:
27/05/2023

Sideslopes
Severely eroded

Riprap
Getting washed downstream, will need to move it back to repair trail crossing.

Settlement/Depressions
No Issues Found

Debris at Inlet
No Issues Found

Discharge
No Issues Found

Vegetation
No Issues Found

North Creek Dike Second Crossing Photo's

Photo Discription	Photo	Photo Location
Erosion of crossing		Latitude: 60.545753 Longitude: -128.857651

Teck

Sa Dena Hes Mine Site Geotechnical Inspection

No.
00009

Photo Discription	Photo	Photo Location
Trail eroded		
Soft barricading of erosion in crossing		Latitude: 60.545769 Longitude: -128.857590

North Dam

Date:

Settlement/Depressions

Downstream Toe Seepage

No.
00009

Sa Dena Hes Mine Site Geotechnical Inspection

South Drainage Photo's

Photo Discription	Photo	Photo Location
Downstream flow		Latitude: 60.528767 Longitude: -128.850372

Sa Dena Hes Mine Site Geotechnical Inspection

No.
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Photo Discription	Photo	Photo Location
Convergence of Camp Creek and South channel		Latitude: 60.526821 Longitude: -128.850067

Camp Creek Drainage Channel

Date:
28/05/2023

Slideslopes
No Issues

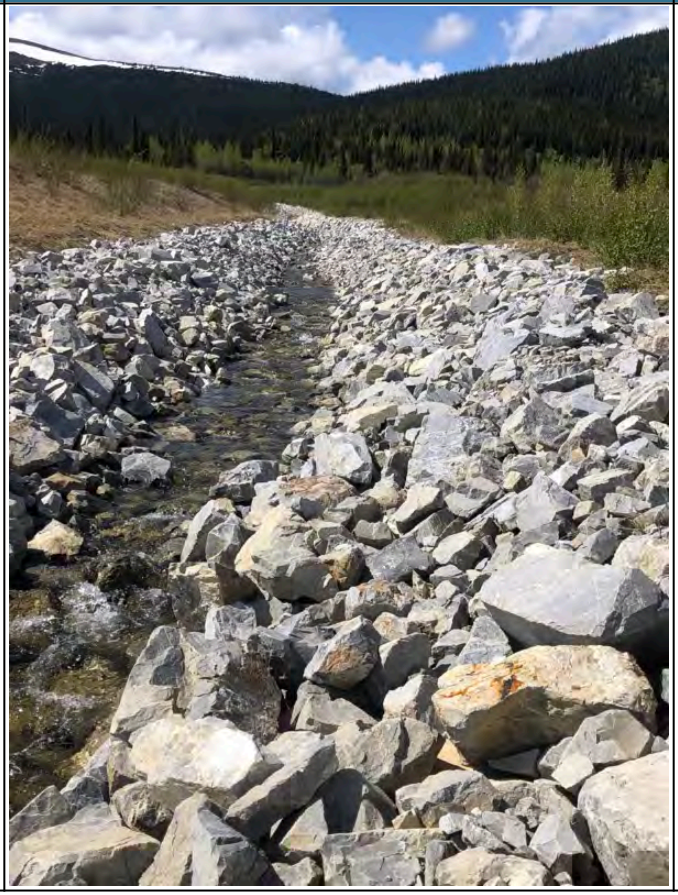
Riprap
No Issues

Debris
No Issues

Camp Creek Photo's

No.
00009

Sa Dena Hes Mine Site Geotechnical Inspection

Photo Discription	Photo	Photo Location
Camp creek upstream from Reclaim/South channel.		Latitude: 60.526676 Longitude: -128.849915

Sa Dena Hes Mine Site Geotechnical Inspection

Photo Discription	Photo	Photo Location
South end, into wetland.		Latitude: 60.525112 Longitude: -128.846863

Sa Dena Hes Mine Site Geotechnical Inspection

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Photo Discription	Photo	Photo Location
Upstream end		Latitude: 60.527695 Longitude: -128.856110

Reclaim Pond Soil Cap

Date:
28/05/2023

Settlement/Depressions
No Issues

Drainage Swale
No Issues

General Appearance
Vegetation growth doing well, grassy mat, alders,

Standing Water
Occasional small puddles, shallow freshet pools.

Sa Dena Hes Mine Site Geotechnical Inspection

willow, and poplar trees up to approximately 4m tall.

Erosion

No Issues

Vegetation

Alder bushes coning, Poplar trees up to 4m tall, substantial grass covering.

Reclaim Pond Photo's

Photo Discription	Photo	Photo Location
Soil cap looking west		Latitude: 60.528740 Longitude: -128.850983
Soil cap facing South		

No.
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Sa Dena Hes Mine Site Geotechnical Inspection

Photo Discription	Photo	Photo Location
S/E end of Reclaim pond , Osprey nest.		Latitude: 60.526638 Longitude: -128.849579
Sizeable Poplar growth		Latitude: 60.526649 Longitude: -128.849747

No.
00009

Sa Dena Hes Mine Site Geotechnical Inspection

Photo Discription	Photo	Photo Location
Hillside seepage- West side of Lower Camp Cr.		Latitude: 60.525085 Longitude: -128.847153

Sign: