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May 8, 2020

Ms. Jacqueline Ho
Technical Regulatory Specialist
Mackenzie Valley Land and Water Board
7th Floor – 4910 50th Avenue
PO Box 2130
Yellowknife, NT X1A 2P6 email: jho@mvlwb.com

Dear Ms. Ho,

Re: MV2017L2-0007 and MV2019X006 Submission of Revised Management Plans

As per the Water Use Permit MV2017L2-0007 and Land Use Permit MV2019X006 issued by the Mackenzie Valley Land and Water Board (MVLWB) on October 25, 2017 and May 16, 2019, respectfully, please find attached the submission of the following documents:

- *Pine Point Mine Tailings Impoundment Water Treatment Manual,*
- *Pine Point Mine Tailings Impoundment Waste Management Plan*
- *Pine Point Mine Tailings Impoundment Contingency Manual*.

These documents have been updated to include the projected use of flocculants to control suspended sediments within the polishing pond. A revision table is included within the manuals identifying section changes.

Additional changes to the *Pine Point Mine Tailings Impoundment Water Treatment Manual* are associated with measuring and managing the suspended solids including:

- On site analysis of total suspended sediments (TSS) and total zinc analysis which will allow Teck to better manage the water treatment process without waiting for third-party lab analysis.
- A description of how the wind is potentially affecting the turbidity/Total Suspended Sediments (TSS) at site, and the intended mitigation measures to be enacted in the event of elevated TSS within the polishing pond.
- Section 15 ‘Treatment Options and Water Management Strategies’ has been added which includes the sediment removal procedure including the preparation and planning, methodology, geotechnical monitoring requirements, and documentation, as well as continuous improvement considerations.

These processes will be initiated for the 2020 water treatment season tentatively scheduled to occur early July. If you have any further questions or concerns, please feel free to contact me at (250) 427-8422.

Kind Regards,

Michelle Unger
Manager, Environmental Performance
Teck Metals Ltd

Enc.:

- *Pine Point Mine Tailings Impoundment Water Treatment Manual, May 7, 2020,* prepared by Teck
- *Pine Point Mine Tailings Impoundment Waste Management Plan, May 7, 2020,* prepared by Teck
- *Pine Point Mine Tailings Impoundment Contingency Manual, May 7, 2020,* prepared by Teck

Pine Point Mine Tailings Impoundment

Waste Management Plan

Effective Date : June 30, 2019

Revised Date: May 7, 2020

Teck

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Table of Revisions

Revision No.	Date Created / Revised (yyyy-mmm-dd)	Revision(s) Made	Revised By
V001	2019-Mar-26	Waste Management Plan	M. Unger
V002	2019-Jun-30	Updated plan to address comments from the MVLWB Land Use Permit Application review including Section 4.3.3 house hold waste section and confirmation from the facility that it will accept Teck's waste Section 4.1 includes threshold volumes for hazardous waste Section 4.1.4 Contaminated soil section to address contaminated soil handling on site	M. Unger
V003	2020-May 5	Section 4.1.1 updated to state batteries taken to Kimberley for recycling Section 4.1.2 minor edits & updated to state that all unused or expired chemicals are returned to Kimberley for disposal Section 4.1.3 Added photos of equipment and secondary containment and statement Section 4.1.5 minor edits and container descriptions added Previously labelled as Section 4.1.4 Section 4.1.6 deleted statement concerning recycling in Hay River Previously labelled as Section 4.1.5 Section 4.2.2 Statement added – refuse taken to Hay River for disposal Section 4.1.4 Added section of use and management of flocculants Section 4.3.2 Added statement on flocculant use and precipitation in sediment accumulations	D. Haggar N. MacDonald

AUTHORIZATION

Authorized By	Authorized Signature	Authorized Date
Michelle Unger, Manager, Environmental Performance	Digitally signed by Michelle Unger DN: cn=Michelle Unger, o=Teck, ou, email=michelle.unger@teck.com, c=CA Date: 2020.05.07 14:47:56 -06'00'	2020-05-07

1.0 Introduction

The Teck Metals Ltd. (Teck) Pine Point Tailings Impoundment Area (TIA) is located in the Northwest Territories (NWT), approximately 50 km southwest of Fort Resolution and approximately 75 km east of Hay River (Figure 1). The TIA is associated with the former Pine Point lead-zinc mine that was in operation from 1964 to 1988. In 1996, the majority of the lands leased to Teck's predecessor, Cominco, were released back to the Government of Northwest Territories. The remaining lease (#85B/16-9-9) at closure includes the north portion of the TIA and some surrounding area.

The TIA is approximately 700 ha and is located to the north of the former Pine Point mill site on terrain that slopes gently downward towards the northwest. The earthfill perimeter dyke system retains the tailings and ponded water. The dyke system extends fully along the north and west sides of the TIA, but is required along only a portion of the south and east sides. The TIA is covered with 10 to 20 cm of coarse sandy gravel overlaying fine, sandy tailings. Typical native soil for the area is gravelly clay. No historic waste management locations are known.

Current activities at the facility are those associated with the "Active Closure Phase" of the TIA. The Active Closure Phase of the Pine Point Facility includes the active treatment of water that collects in the TIA main pond according to Water Licence MV2017L2-0007 and Land Use Permit MV2019X0006. Surface water runoff from the tailings area is collected and treated onsite with lime to precipitate zinc before discharge to the environment. As a condition of the last water licence renewal, research is currently underway at the facility to develop a final closure plan to transition the site to a Passive Closure Phase.

In summer/fall months (approximately June to October) two people are on site to run the water treatment program, and occupy a recreational vehicle onsite. During these months, additional workers may also commute from Hay River and Fort Resolution, NT, for reclamation research purposes. Fewer daily commuters are expected in winter months. The maximum daily occupancy of the site is expected at 20 people, which would only be expected to occur rarely for short periods of time.

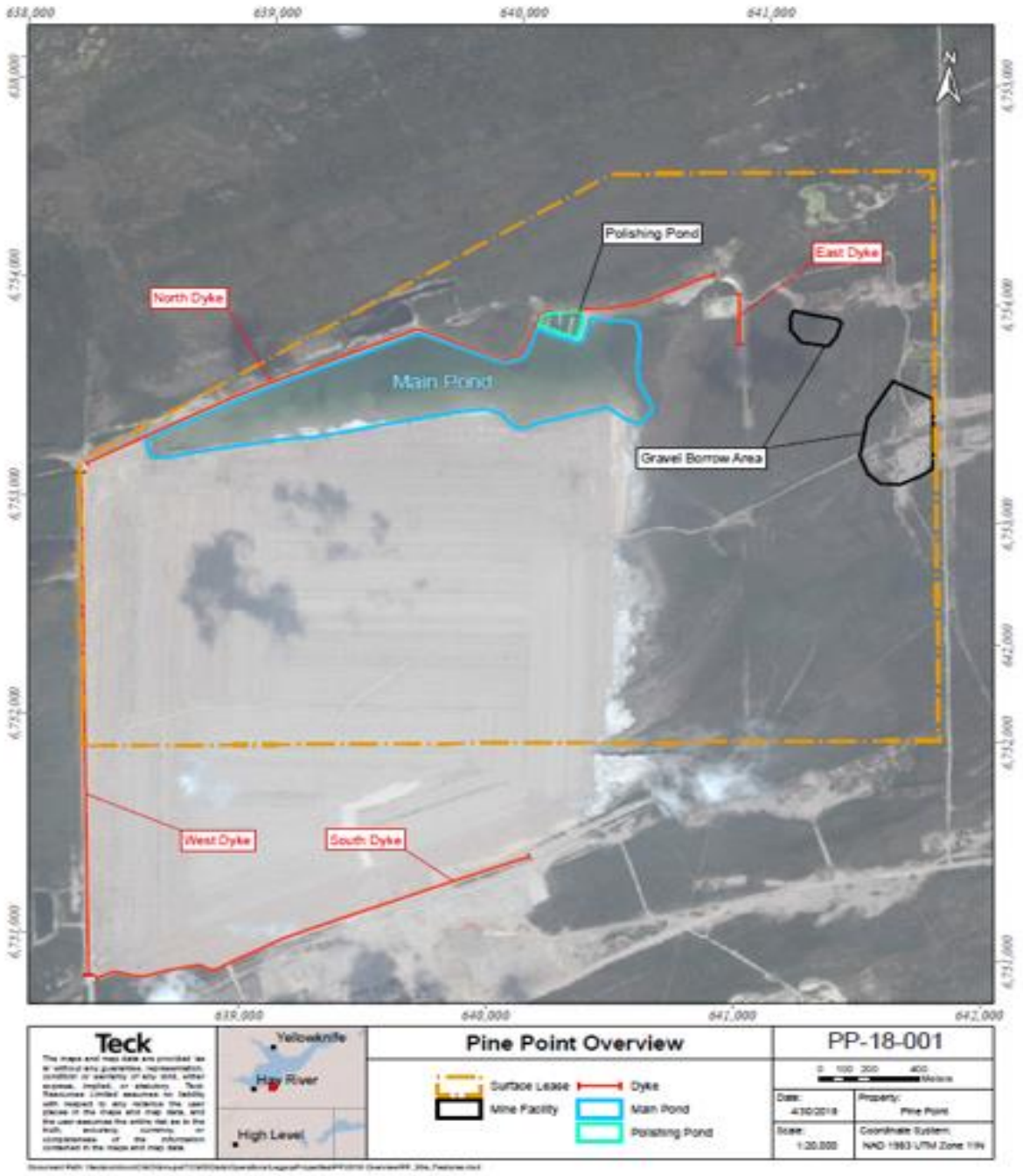
2.0 Company Name and Contact

Teck Metals Ltd. Bag 2000
Kimberley, BC
V1A 3E1

Contact: Michelle Unger, Manager Environmental Performance

Pine Point Coordinates (associated with decant area at TIA):
60°53'41.3"N 114°25'30.7"W

Figure 1 Surface Lease



3.0 Environmental Policy

As part of Teck's Code of Sustainable Conduct, Teck implements "practices to ensure the safe operation and closure of tailings storage facilities" and promotes "the efficient and responsible use of energy, water and other resources throughout our business." This waste management plan was completed according to Teck's Code of Sustainable Conduct in that it outlines the practice for handling waste during the current phase of the facility. The objective of this waste management plan is to identify the methods by which Teck will handle and remove solid waste, with specific focus on environmental protection and avoiding wildlife encounters.

4.0 Waste Types

4.1 Potentially Hazardous Wastes

Potentially hazardous waste that might be produced at the Pine Point TIA include batteries, chemical waste from the on-site laboratory and meteorological station, hydrocarbons, and contaminated soils, which are described in the following subsections below. The amount of hazardous waste produced per month in each of these categories is expected to be less than the "Small Quantity Threshold" defined in Schedule V of the Guideline for Hazardous Waste Management (GNWT revised 2017) (Table 1). Therefore, Teck is not registered in the NWT as a hazardous waste generator. However, if the amount of hazardous waste is expected to reach or exceed the threshold amount outlined in Schedule V, Teck will register as a hazardous waste generator.

Table 1 Schedule V - Small Quantity Threshold for Types of Hazardous Waste

Column I: Hazardous Waste Type	Column II: Amount
1. All hazardous waste unless otherwise specified	5 kg or L
2. Dangerous Goods Class 6.1, Packing Group I	1 kg or L
3. Waste batteries	50 kg
4. Contaminated snow/water	20 kg or L
5. Contaminated soil	500 kg
6. Waste Glycol	20 L
7. Incinerator ash	20 kg
8. Waste paint	20 kg or L
9. Used Oil	20 L
10. Leachable waste containing Severely Toxic Contaminants	1 kg or L
11. Severely Toxic Contaminants in pure form	n/a hazardous waste in any quantity

From: Guideline for Hazardous Waste Management (GNWT revised 2017)

4.1.1 Batteries

Batteries are used for hand-held monitoring and sampling devices. Typically, lithium ion and alkaline batteries are used. Batteries of this type are considered Household Hazardous Wastes (HHW), and are therefore collected/segregated in a clearly labeled container housed at the mobile laboratory currently onsite. Once the container is filled, the batteries are returned to the Teck office in Kimberley at the end of the treatment season, where batteries are contributed to the battery recycling program. Approximately 1 kg of batteries are estimated to be generated per year. Source reduction may be possible if rechargeable batteries are used. Batteries will not be co-disposed with non-hazardous wastes.

4.1.2 Chemical Wastes

Neutralizing acids and bases are used at the on-site laboratory for analysis and preserving collected water samples prior to shipment to an outside analytical laboratory. Occasionally, these liquids are unused or expired. These liquids are contained, stored, and disposed of in their original, clearly labelled plastic containers to prevent spills during waste management. These chemicals are not mixed as to prevent the formation of unknown by-products. Safety Data Sheets (SDSs) are available for all chemicals. Approximately 4 L of total chemicals are estimated to be consumed / generated per treatment season any unused or expired chemicals will be disposed of by returning these products to the Teck office in Kimberley, B.C. at the end of the season.

The meteorological station includes a small tank with a 10-L mixture of antifreeze (same product as used in recreational vehicles to over-winter water lines), methanol and baby oil. This mixture is used to melt snow to measure annual precipitation. The tank is removed in the spring and re-installed in the winter. In the spring, the mixture is drained and properly disposed off-site

No chemical wastes are released to the environment.

4.1.3 Hydrocarbons

Hydrocarbons are required for operation of vehicles and machinery. This includes gasoline and diesel fuel, engine/other oils, lubricants, and greases. Collapsible heavy-duty plastic berms have been placed around site machinery to collect any possible spills. See photos below.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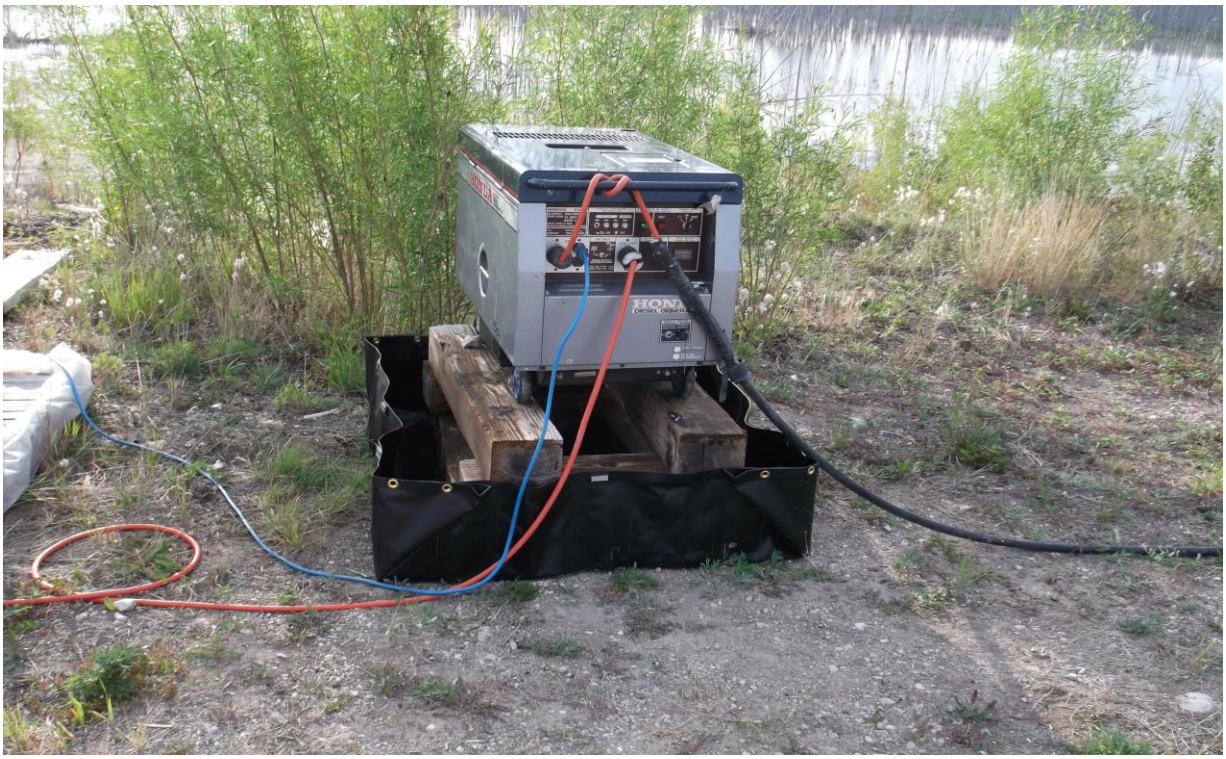
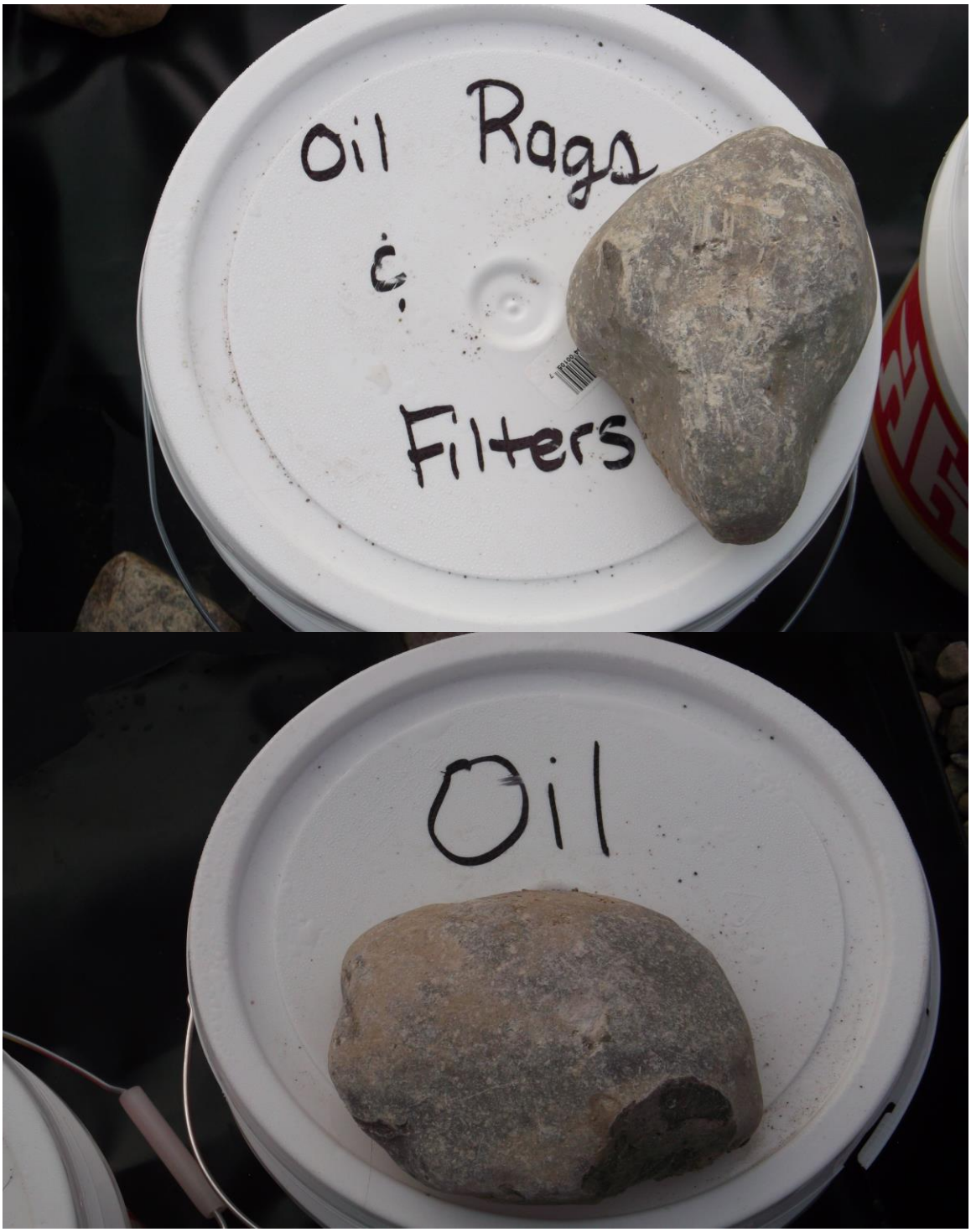
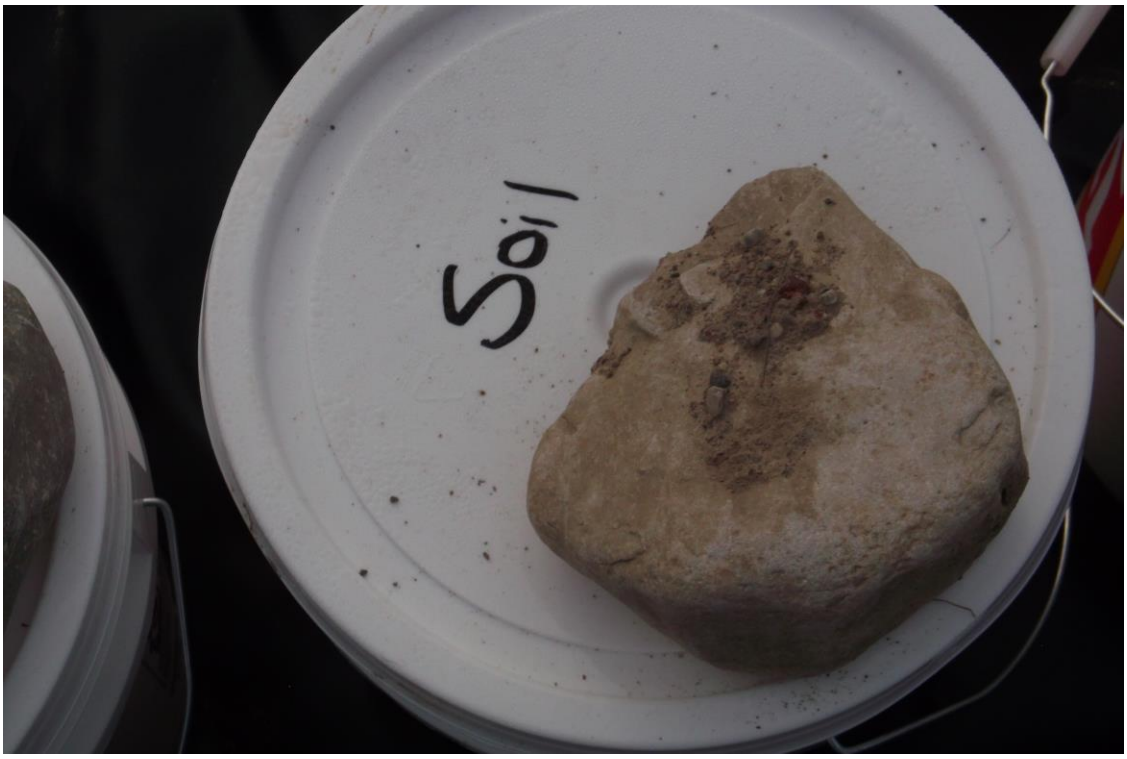


Materials laden with hydrocarbons (e.g., oil filters) and spill containment tools (e.g., drip trays) are also included in this category. These types/volumes of hydrocarbon wastes are considered HHW. All major vehicles service will be conducted off-site and hydrocarbon waste is not typically generated on-site. During reclamation activities, there may be circumstances where more equipment is on-site for short periods of time that might generate hydrocarbon waste. The hydrocarbon waste that might be expected during reclamation activities includes rags or absorbents to clean out drip trays.

If hydrocarbon-laden material is generated it will be stored in a dedicated, labelled, and sealed 20L pail so as not to contaminate inert/non-hazardous wastes (separate from contaminated soils) for offsite disposal. The water treatment facility, which is where the greatest potential for hydrocarbon generation currently exists, is approximate (within 25 to 50 m) to the main pond and polishing pond. Storage of the hydrocarbon waste 20L pails will be within a bermed area as far away from the water's edge as feasible, approximately over 50 m. If there any hydrocarbon material present in the 20L pails the area around the pails will be inspected regularly to detect leaks.


Oil Rags
&
Filters
Oil



If activities at the site change such that hydrocarbon waste is generated in quantities that approach the small volume thresholds identified in Table 1, then the plan will be revised.

4.1.4 Flocculants

Anionic flocculant blocks are intended for use within the invert culvert prior to the polishing pond to effect reduction of suspended sediments (TSS) by collagulation with sediment particles to enhance setting. Unused portions of the flocculant blocks are at times removed from the culvert and are stored in original packaging and away from sunlight for use at a later time. Partially used and unused blocks are stored in sealed containers and stored off site for future use.

Flocculant-embedded curtains function much the same way and are used in the polishing pond. Fine particles combine with the active flocculant substance contained within the curtain material. The curtains are suspended across the width of the channel and anchored. At the conclusion of the treatment campaign, these curtains are removed and folded onto pallets for immediate relocation to Hay River and storage in a weather-proof sea can. Curtains that exceed their intended life span are considered potentially hazardous wastes and are removed from site and disposed of in an appropriately licensed landfill.

Safety Data Sheets (SDSs) are available for all flocculants intended for use or temporary located on site.

Sediments accumulating within the polishing pond will inevitably contain residual flocculant. At no time will this material be released other than relocation to the Tailings Impoundment during sediment removals and maintenance of works operations. Typically, the flocculant chemicals become inert after approximately 2 years and no longer pose risks of toxic effects.

4.1.5 Contaminated Soils

In the event of a spill, the procedures in the Teck Pine Point Contingency Manual (PP-EP-005.V001) are followed. As per the manual, any small contaminated soils identified are collected and stored in dedicated 20 L pails for offsite disposal. If spill is large then a temporary solution will be to place contaminated soils on an impermeable barrier-lined (i.e., plastic sheet) depression and covered with a plastic sheet that is secured around the perimeter to avoid loss of material and contact with precipitation until access to a large disposal bin is possible. Storage of the 20L pails will be located as far away from the waterbodies as possible, but may be less than 50 m due to practical limitations as discussed in Section 4.1.3. Source reduction is possible by carefully handling materials according to best practices and mitigating impacts from spills by actively using spill kits, containment, and leak/drip trays with vehicles. Since activity at the site is minimal, little contaminated soil is expected to be generated and require offsite disposal annually. Contaminated soils are considered Hazardous, and as such, if generated in quantities greater than 500 kg (GNWT 2017), the waste will be registered for transport using the *Hazardous Waste Generator and Carrier Registration Forms*.

4.1.6 Hazardous Waste Management

Hazardous wastes such as batteries, chemical wastes, or similar product type wastes, will be transported to the Teck office in Kimberley, B.C. for appropriate recycling and disposal

Hydrocarbons and contaminated soil will be treated and/or disposed at the landfill facility in Hay River. Licensed disposal facilities will be notified prior to producing or sending any hazardous waste. The Hay River Solid Waste Disposal Facility in accordance with its Landfill Operation and Maintenance Plan and pursuant to its Water Licence MV2009L3-0005, accepts waste outside of municipal boundaries for a levied tipping fee. Teck will provide any required waste profile information and coordinate disposal directly with the facility, specifically with regard to hydrocarbon contaminated soil that would be treated on the facility's Bio-Pad.

Where possible, potentially hazardous wastes are immediately disposed of offsite. If temporary storage is necessary, the storage method is specific to the waste type, as described in each section above. The following efforts are made to reduce the volume of potentially hazardous waste produced:

- using non-hazardous alternatives where possible;
- following the Contingency Manual for rapid collection of spilled materials;
- minimizing generation of contaminated materials;
- avoiding storage of large volumes of fuel onsite; and
- advocating for maintenance and repair of engines and hydraulic systems in a controlled environment at dedicated facilities in the Town of Hay River or Fort Resolution.

All potentially hazardous wastes are removed from site and disposed of in an appropriately licensed landfill. No hazardous wastes are released to the environment.

4.2 Non-Mineral Wastes and Sewage

4.2.1 Domestic Refuse

Domestic refuse is expected to be generated by the two workers carrying out water treatment duties and temporary workers carrying out research activities. Domestic waste, includes typical household–

generated wastes and packaging. All domestic waste is expected to be inert. Approximately, 250 kg of domestic refuse is estimated to be generated per year.

4.2.2 Putrescible Waste

Organic, biodegradable wastes are expected to be generated by camp occupants and temporary access workers. These are exclusively food wastes. Approximately 10 kg of organic waste is estimated to be generated per year and will be combined with the domestic refuse. Refuse is taken to Hay River and placed in a proper disposal bin.

4.2.3 Non-Mineral Waste Management

Non-mineral wastes (i.e., domestic refuse and putrescible wastes) are temporarily stored in vehicles and trailers onsite, to prevent animals from accessing the waste, before offsite disposal. Animal proof bins will be introduced if the storage space cannot accommodate the amount of waste. Efforts are made to reduce waste generation whenever possible, by reusing materials and avoiding the use of overly packaged items. Domestic and putrescible wastes are transported to the domestic landfill at the Hay River Solid Waste Disposal Facility in accordance with its Landfill Operation and Maintenance Plan and pursuant to its Water Licence MV2009L3-0005. The landfill accepts waste outside of municipal boundaries for a levied tipping fee. Teck will provide any required waste profile information and coordinate disposal directly with the facility.

4.2.4 Sewage

Temporary staff conducting research-related activities are not expected to produce sewage waste onsite. In the event that a large research program is implemented (i.e., where 5 or more people will be on site for several weeks), Teck may place a chemical toilet onsite, which will be managed by a third-party provider. The two water treatment operators will produce sewage, which is contained in a limed septic pit positioned below the trailer. When the trailer is not on-site the pit is limed, and covered with a plywood board to prevent access. Any grey water produced on site (i.e., dishwasher, shower, laundry) will also be disposed of in the septic pit.

4.3 Mineral Waste

4.3.1 Drill Cuttings

The only drilling at the TIA is for the purposes of environmental and geotechnical investigation. No mineral exploration is planned, and the only drilling fluid potentially used is freshwater brought to site. Drill cuttings are expected to be generated during soil investigation and delineation activities. Boreholes are typically a maximum of 25 m deep, 30-cm (12-inch) diameter, and do not core into the bedrock. Soil borings into the legacy tailings facility are also expected. Soil samples are typically collected from the entire borehole depth, so drill cuttings are typically limited to 10% of the total borehole volume. Approximately,100 kg of soil or tailings material is estimated to be generated per year from drill cuttings. All drill cuttings are disposed of downhole within the stratigraphy from which it was extracted since nothing is being introduced to the environment that did not exist before borehole drilling activities. No transportation of this waste stream is anticipated. Boreholes are sealed with bentonite and the cover soil is replaced.

4.3.2 Water Treatment Precipitates

The water treatment process involves precipitating zinc using lime. A by-product of this process is lime sludge, which accumulates in the bottom of the polishing pond. The lime sludge is periodically (typically once per 5 to 10 years) dredged to maintain the treatment system effective volume. Currently, the sludge is re-deposited within the TIA confinement system on-site. Efforts to reduce the sludge volume involve reducing the volume of lime used in the chemical treatment process, which can change treatment effectiveness. However, future efforts may involve pilot and full-scale passive treatment systems (i.e., no requirement for lime application), with the goal of minimizing future sludge generations.

Limited use of flocculants has been undertaken since 2019. Sediments within the polishing pond are expected to contain minor amounts of deployed flocculant. Due to limited use of flocculants and minimal deployment, accumulations within the precipitated sediments are likely to be relatively insignificant.

5.0 Infrastructure Required for Waste Management

No infrastructure is required for waste management at Teck Pine Point project.

6.0 References

MVLWB. 2017. Water Licence MV2017L2-0007 Granted to Teck Metals Inc. Effective October 25, 2017.

MVLWB. 2019. Type A Land Use Permit MV2019X0006 Granted to Teck Metals Inc. Effective May 16, 2019.

Teck Metals Ltd. 2019. Pine Point Contingency Plan PP-EP-005.V.002. Effective May 2018, Updated May 2020.