



Mackenzie Valley Land and Water Board
7th Floor - 4922 48th Street
P.O. Box 2130
YELLOWKNIFE NT X1A 2P6
Phone (867) 669-0506
FAX (867) 873-6610

December 18, 2017

File: MV2017L2-0007

Ms. Michelle Unger
Manager, Environmental Compliance
Teck Metals Ltd.
Bag 2000
Kimberley BC V1A 3E1

Email: MICHELLE.UGER@TECK.COM

Dear Ms. Unger:

Administrative update to Water Licence MV2017L2-0007 and Reasons for Decision – Approved Water Monitoring – Pine Point, NT

The Mackenzie Valley Land and Water Board (MVLWB/the Board) met on December 18, 2017 to review an administrative update to Section 5.2.10 of the Reasons for Decision document, which accompanies the issuance of Water Licence MV2017L2-0007. This update was requested by Teck Metals Ltd. on November 24, 2017.

The Board accepted the requested changes to the Reasons for Decision document. In addition, Annex B: Concordance Table of Items Requiring Submission of Water Licence MV2017L2-0007 has been updated to better align with the Licence conditions. The updated Licence and Reasons for Decision documents are attached below.

If you have any questions or concerns, please contact Kierney Leach at (867) 766-7470 or email kleach@mvlwb.com.

Yours sincerely,

A handwritten signature in blue ink, appearing to read "Mavis Cli-Michaud".

Mavis Cli-Michaud
MVLWB, Chair

Copied to: Distribution List
Wendy Bidwell, GNWT-ENR, Water Resources Officer

Attached: Water Licence MV2017L2-0007
Reasons for Decision
General Procedures for the Administration of Licences in the Northwest Territories



Mackenzie Valley Land and Water Board
Water Licence

Pursuant to the *Mackenzie Valley Resource Management Act*, the *Waters Act*, and the Waters Regulations, the Mackenzie Valley Land and Water Board, hereinafter referred to as the Board, hereby grants to:

Teck Metals Inc.
(Licensee)

of _____
Bag 2000, Kimberley, British Colombia V1A 3E1
(Mailing Address)

hereinafter called the Licensee, the right to alter, divert, or otherwise use water subject to the restrictions and conditions contained in the *Waters Act* and Regulations made thereunder and subject to and in accordance with the conditions specified in this Licence.

Licence Number:	_____ MV2017L2-0007
Licence Type:	_____ B
Water Management Area:	_____ Northwest Territories 01
Location:	_____ 60°53'41.3"N and 114°25'30.7"W (Formerly known as Pine Point, NT)
Purpose:	_____ To dispose of waste and associated uses
Description:	_____ Mining and Milling
Quantity of Water <u>not to be exceeded:</u>	_____ 0 cubic metres (m ³)
Effective date of licence:	_____ October 25, 2017
Expiry date of licence:	_____ October 24, 2027

This Licence issued and recorded at Yellowknife includes and is subject to the annexed conditions.

Mackenzie Valley Land and Water Board

Chair

A handwritten signature in blue ink, appearing to read "P. G. Pinard", is written over a horizontal line.

Witness

A handwritten signature in blue ink, appearing to read "Joyce Mullaney", is written over a horizontal line.

Type B Water Licence MV2017L2-0007
Teck Metals Ltd. – Pine Point Tailings Impoundment Area
Water Monitoring and Management

Table of Contents

Part A:	Scope and Definitions
Part B:	General Conditions
Part C:	Conditions Applying to Security Requirements
Part D:	Conditions Applying to Construction
Part E:	Conditions Applying to Modifications
Part F:	Conditions Applying to Waste and Water Management
Part G:	Conditions Applying to Contingency Planning
Part H:	Conditions Applying to Closure and Reclamation

Schedules:

Schedule 1:	Annual Water Licence Report
Schedule 2:	Security Requirements

Annexes:

Annex A:	Surveillance Network Program
	Part A: Reporting Requirements
	Part B: Site Descriptions and Monitoring Requirements
Annex B:	Concordance Table of Items Requiring Submissions
Annex C:	Table of Revision History

Part A: Scope and Definitions

1. Scope

- a) This Licence entitles the Licensee to monitor and manage Water within the Tailings Impoundment Area, and dispose of Wastewater from the Main Pond at the former Pine Point Mine, Northwest Territories, as described in the Accepted Application.
- b) This Licence is issued subject to the conditions contained herein with respect to the management of Water and the depositing of Waste of any type in any Waters or in any place under any conditions where such Waste or any other Waste that results from the deposit of such Waste may enter any Waters. Whenever new Regulations are made or existing Regulations are amended by the Commissioner in Executive Council under the Act, or other statutes imposing more stringent conditions relating to the quantity or type of Waste that may be so deposited or under which any such Waste may be so deposited this Licence shall be deemed, upon promulgation of such Regulations, to be automatically amended to conform with such Regulations.
- c) Compliance with the term and conditions of this Licence does not relieve the Licensee from responsibility for compliance with the requirements of all applicable Federal, Territorial or municipal legislation.
- d) The Licensee shall take every reasonable precaution to protect the environment.
- e) In conducting its activities under this Licence, the Licensee shall make best efforts to consider and incorporate any scientific and Traditional Knowledge that is made available to the Licensee.

2. Definitions

Act - the *Waters Act*, S.N.W.T. 2014, c.18.

Accepted Application – the application and supporting documentation submitted August 22, 2017 and the additional information submitted during the regulatory process.

Action Level – a predetermined qualitative or quantitative trigger which, if exceeded, requires the Licensee to take appropriate actions including, but not limited to: further investigations, changes to operations, or enhanced mitigation measures and reporting.

Analyst - an Analyst designated by the Minister under subsection 65(1) of the Act.

Board - the Mackenzie Valley Land and Water Board established under subsection 99(1) of the *Mackenzie Valley Resource Management Act*;

Construction - any activities undertaken to construct or build any components of, or associated with, the undertaking.

Dam Safety Guidelines - the Canadian Dam Association's (CDA) *Dam Safety Guidelines*, 2007. The scope and applicability of the Dam Safety Guidelines referred to in this Licence is presented in Section 1 of the Dam Safety Guidelines.

Discharge - the direct or indirect release of any Water or Waste to the Receiving Environment.

Engagement Plan - a document, developed in accordance with the Board's June 2013 *Engagement and Consultation Policy* and the *Engagement Guidelines for Applicants and Holders of Water Licences and Land Use Permits* describes proposed engagement activities during the life of the undertaking.

Engineered Structures - any structure or facility related to Water Use or the deposit of Waste that is designed and approved by a Professional Engineer.

Freeboard - the vertical distance between the Water line and the effective containment crest on the upstream slope of a dam or dyke.

Groundwater - all Water below the ground surface.

Inspector - an Inspector designated by the Minister under subsection 65(1) of the Act.

Licensee – the holder of this Licence.

Main Pond – the pond located north of the Tailings as outlined in Attachment 7, Figure 7 of the Accepted Application.

Maximum Average Concentration - the discrete average of four consecutive analytical results, or if less than four, the analytical results collected during a batch decant and as submitted to the Board in accordance with the sampling and analysis requirements specified in the Surveillance Network Program.

Maximum Grab Concentration - a concentration of a parameter listed in the Licence that cannot exceeded in any one grab sample.

Minewater - Groundwater or any Water that is pumped or flows out of any underground working.

Minister - a duly appointed member of the Executive Council who is responsible for the *Waters Act* or the department responsible for administering that Act.

Modification - a change, other than an expansion, that does not alter the purpose or function of a structure.

Professional Engineer - a person who is registered with the Northwest Territories and Nunavut Association of Professional Engineers and Geoscientists in accordance with the *Engineering and Geoscience Professions Act*. S.N.W.T. 2006, V.16, as a Professional Engineer, and whose principal field of specialization is appropriate to address the components of the undertaking at hand.

Receiving Environment - the aquatic environment that receives any Water or Waste released from the undertaking.

Reclamation - activities which facilitate the return of areas affected by the undertaking to viable and, wherever practicable, self-sustaining ecosystems that are compatible with a healthy environment,

human activities, and the surrounding environment.

Regulations - Regulations promulgated pursuant to section 63 of the Act.

Seepage - Water or Waste that drains through or escapes from any structure designed to contain, withhold, divert or retain Water or Waste.

Sewage - all Toilet Wastes and Greywater.

Spill Contingency Plan - a document, developed in accordance with Indian and Northern Affairs Canada's April 2007 *Guidelines for Spill Contingency Planning*, that describes the set of procedures to be implemented to minimize the effects of a spill.

Surveillance Network Program (SNP) - the totality of the sampling requirements detailed in Annex A of this Licence.

Traditional Knowledge - the cumulative collective body of knowledge, experience and values built up by a group of people through generations of living in close contact with nature. It builds upon the historic experiences of a people, and adapts to social, economic, environmental, spiritual and political change.

Tailings Impoundment Area - comprises the Tailings storage area and the Engineered Structures designed to contain Tailings as described in Teck's 2017 Operations and Maintenance Plan (Operations, Maintenance and Surveillance Manual for Pine Point Tailings Impoundment Area, 2017) and shown on Figure 2 (Pine Point Tailings Impoundment Area Site Plan) in the Accepted Application.

Tailings – the materials rejected from the mill after the recoverable valuable minerals have been extracted.

Unauthorized Discharge - a Discharge or spill of any Water or Waste not authorized under this Licence.

Waste – any Waste as defined in section 1 of the Act.

Wastewater - any Water that is generated by activities or originates on site and contains Waste and includes, but is not limited to, runoff, Seepage, or Minewater.

Water - any Water as defined in section 1 of the Act.

Part B: General Conditions

1. The Licensee shall ensure a copy of this Licence is maintained on site at all times.
2. All references to policies, guidelines, codes of practice, statutes, Regulations or other authorities shall be read as a reference to the most recent versions.
3. All information submitted to the Board, as required by this Licence, shall:
 - a) Be in accordance with the Mackenzie Valley Land and Water Board's March 2012, *Document Submission Standards*; and
 - b) Include a section within each submission which identifies where the pertinent requirements of the Licence are addressed.
4. The Licensee shall operate in accordance with approved plans referred to in this Licence, including such revisions as may be made pursuant to the conditions of this Licence and as approved by the Board. If any plan is not approved by the Board, the Licensee shall revise the plan as directed and resubmit it to the Board for approval.
5. The Licensee shall comply with the **Schedules** which are annexed to and forms part of this Licence, and any changes to the Schedules as may be made from time to time by the Board.
6. The Licensee shall comply with the **Surveillance Network Program**, which is annexed to and forms part of this Licence, and any changes to the Surveillance Network Program as may be made from time to time by the Board.
7. The Schedules, Surveillance Network Program, and any compliance dates specified in this Licence may be changed at the discretion of the Board. If any date for a submission falls on a weekend or holiday, the submission shall be made on the following business day.
8. The Licensee shall maintain, to the satisfaction of an Inspector, the signs necessary to identify the stations of the Surveillance Network Program.
9. Meters, devices, or other such methods used for measuring the volumes of Water used and Waste Discharged shall be installed, operated, and maintained by the Licensee to the satisfaction of an Inspector.
10. Within 60 days following issuance of this Licence, the Licensee shall post signs to identify the Surveillance Network Program stations. All signs shall be located and maintained to the satisfaction of an Inspector.
11. The Licensee shall act in accordance with the **Engagement Plan**, once approved by the Board. The Licensee shall annually review the approved Plan and make any necessary revisions to reflect changes in operations, or as directed by the Board. The revised Plan shall include a brief summary of the changes made, and shall be submitted to the Board, for approval, at least 60 days prior to any proposed changes to the requirements in the approved Plan.
12. Beginning March 31, 2018, and no later than every March 31 thereafter, the Licensee shall submit to the Board, an **Annual Water Licence Report**, which shall be in accordance with Schedule 1, item 1.

Part C: Conditions Applying to Security Requirements

1. The Licensee shall post and maintain a security deposit in accordance with Schedule 2, item 1.
2. Upon request of the Board, the Licensee shall submit a revised Reclamation liability estimate utilizing the current version of RECLAIM or another method acceptable to the Board.
3. The amount of the security deposit required by Part C, item 1 and Schedule 2 may be revised by the Board based on estimates of the current Reclamation liability referred to in Part C, item 2 or based on such other information as it may become available to the Board.
4. If the amount of the security deposit is revised by the Board as described under Part C, item 3, the Licensee shall post the revised amount with the Minister within 90 days of the Board giving notice of the revised amount.

Part D: Conditions Applying to Construction

1. The Licensee shall ensure that all structures intended to contain, withhold, divert, or retain Water or Wastes are designed, constructed, and maintained to prevent escape of Waste to the Receiving Environment.
2. The Licensee shall ensure that all Engineered Structures intended to contain, withhold, divert, or retain Water or Wastes and which meet the definition of a dam under the *Dam Safety Guidelines* are designed, constructed, and maintained to meet or exceed the *Dam Safety Guidelines*.

Part E: Conditions Applying to Modifications

1. The Licensee may, without written approval from the Board, carry out Modifications to the Engineered Structures provided that such Modifications are consistent with the terms of this License and the following requirements are met:
 - a) The Licensee has notified the Board and an Inspector in writing of such proposed Modifications at least 60 days prior to beginning the Modifications;
 - b) Such Modifications do not place the Licensee in contravention of either the License or the Act;
 - c) The Board has not, during the 60 days following notification of the proposed Modifications, informed the Licensee that review of the proposal will require more than 60 days;
 - d) An Inspector has authorized the proposed Modifications and provided a letter of notification to the Board; and
 - e) The Board has not rejected the proposed Modifications.
2. Modifications for which all of the conditions referred to in Part E, Item 1 have not been met, may be carried out only with written approval from the Board.
3. The Licensee shall provide to the Board as-built plans and drawings of the Modifications referred to in this License within 90 days of completion of the Modifications.

Part F: Conditions Applying to Waste and Water Management

1. The Licensee shall manage Water and Waste with the objectives of minimizing impacts on the quantity and quality of Water in the Receiving Environment through the use of appropriate mitigation measures, monitoring, and follow-up actions.

Management Plans and Monitoring Programs

2. The Licensee shall act in accordance with the **Water Management Plan**, once approved by the Board. The Licensee shall annually review the approved Plan and make any necessary revisions to reflect changes in operations, technology, chemicals, or fuels, or as directed by the Board. The revised Plan shall include a brief summary of the changes made, and shall be submitted to the Board, for approval, at least 60 days prior to any proposed changes to the requirements in the approved Plan.
3. The Licensee shall act in accordance with the **Operations and Maintenance Plan** in the Accepted Application, and submit a revised Plan by February 1, 2018, for approval, which shall include the addition of the following information:
 - a) A description, including detailed rationale, of the monitoring endpoints (Action Levels) for each parameter monitored in the Surveillance Network Program;
 - b) Mitigation measures for decreasing pH at SNP station 35-1b when it exceeds effluent quality criteria, as specified in Part F, item 10;
 - c) A description of response actions to be carried out if the Action Levels are exceeded; and
 - d) Any other item as directed by the Board.
4. Once approved by the Board, the Licensee shall annually review the Operations and Maintenance Plan and make any necessary revisions to reflect changes in operations, or as directed by the Board. The revised Plan shall include a brief summary of the changes made, and shall be submitted to the Board, for approval, at least 60 days prior to any proposed changes to the requirements in the approved Plan.

Operations of Structures and Facilities

5. The Licensee shall maintain the Tailings Impoundment Area structures, and all other Waste storage facilities, to design specifications/engineering standards such that:
 - a) The solids fraction of the Mill Tailings shall be permanently contained within the Tailings Impoundment Area;
 - b) Seepage from the Tailings Impoundment Area is minimized;
 - c) Any Seepage from the Tailings Impoundment Area that occurs and does not meet effluent quality criteria, as specified in Part F, item 10, shall be prevented from entering the Receiving Environment;
 - d) A Freeboard limit of one meter is maintained at all times;
 - e) The rate of Waste Discharge is controlled and measured at all times;
 - f) Any constructed facilities that are eroded are repaired immediately; and
 - g) Conditions for eventual closure and Reclamation of the Waste storage facilities are optimized.

Inspections of Structures and Facilities

6. The Licensee shall conduct daily inspections for erosion at Discharge points during periods of Discharge, or more frequently as directed by an Inspector. Records of these inspections shall be kept for review upon request of an Inspector.
7. The Licensee shall ensure that geotechnical inspections of the dams, dykes, culverts, spillways, and any other Engineered Structures are conducted annually, during the summer months, by a Professional Engineer and following any unforeseen extreme events (such as earthquakes, flooding, cracks, sinkhole formation, etc). The Licensee shall:
 - a) Provide written notification to an Inspector a minimum of two weeks prior to inspections; and,
 - b) Within 90 days of completing an inspection, the Licensee shall submit the Professional Engineer's full **Geotechnical Inspection Report** to the Board. The Report shall include a covering letter from the Licensee outlining an implementation plan to respond to any recommendations made by the Professional Engineer, including a rationale for any decisions that deviate from the Professional Engineer's recommendations.
8. The Licensee shall conduct inspections of the Tailings dams after spring freshet, once during the summer period, and again prior to spring freeze-up in the fall. Records of these inspections shall be kept for review upon request of an Inspector or the Board.

Effluent Quality Criteria (EQC)

9. The Licensee shall provide Water sampling results from Surveillance Network Program (SNP) station 35-1b to an Inspector no later than five days prior to the first annual Discharge of treated Wastewater to the Receiving Environment. Discharge shall not commence until authorized in writing by an Inspector.
10. Discharges from SNP station 35-1b shall have a pH between 6.5 and 9.5 and meet the following EQC:

Parameter	Maximum Average Concentration (in mg/L)	Maximum Grab Concentration (in mg/L)
Total Arsenic	0.50	1.00
Total Copper	0.15	0.30
Total Cyanide	0.10	0.20
Total Lead	0.20	0.40
Total Zinc	0.50	1.00
Ammonia as N	2.00	4.00
Total Suspended Solids	25.00	50.00

mg/L = milligrams per litre

11. If any of the EQC's as listed in Part F, item 10 are exceeded, the Licensee shall cease all Discharge to the Receiving Environment, shall immediately notify the Board and an Inspector, and shall take the necessary corrective action to mitigate the exceedance, as outlined in the approved Operations and Maintenance Plan referred to in Part F, items 3 and 4, to the satisfaction of an Inspector.

Part G: Conditions Applying to Contingency Planning

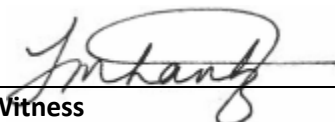
1. The Licensee shall act in accordance with the **Spill Contingency Plan**, once approved by the Board. The Licensee shall annually review the approved Plan and make any necessary revisions to reflect changes in operations, technology, chemicals, or fuels, or as directed by the Board. The revised Plan shall include a brief summary of the changes made, and shall be submitted to the Board, for approval, at least 60 days prior to any proposed changes to the requirements in the approved Plan.
2. If, during the period of this Licence, a spill or an Unauthorized Discharge occurs, or is foreseeable, the Licensee shall:
 - a) Implement the Spill Contingency Plan referred to in Part G, item 1;
 - b) Report the incident immediately via the 24-Hour Spill Reporting Line (867) 920-8130 in accordance with the instructions contained in the Spill Report Form NWT 1752/0593;
 - c) Report each spill and Unauthorized Discharge to the Board and an Inspector within 24 hours; and
 - d) Submit a detailed report on each spill and Unauthorized Discharge, including descriptions of root causes, response actions and any changes to procedures to prevent similar occurrences in the future, to the Board within 30 days.
3. All spills and Unauthorized Discharges of Water or Waste shall be reclaimed to the satisfaction of an Inspector.

Part H: Conditions Applying to Closure and Reclamation

1. The Licensee shall act in accordance with the **Closure and Reclamation Plan** in the Accepted Application, and submit a revised Plan, by December 31, 2020, for approval, in accordance with the Mackenzie Valley Land and Water Board and Aboriginal Affairs and Northern Development Canada's November 2013 *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories*.
2. The Licensee shall annually review the approved Closure and Reclamation Plan and make any necessary revisions to reflect changes in operations, technology, chemicals, or fuels, or as directed by the Board. The revised Plan shall include a brief summary of the changes made, and shall be submitted to the Board, for approval, at least 60 days prior to any proposed changes to the requirements in the approved Plan.
3. The Licensee shall submit to the Board for approval, by May 1, 2018, a **Reclamation Research Plan**. This Plan shall detail the type of research required to update to the Closure and Reclamation Plan as required in Part H, item 1.
4. The Licensee shall carry out progressive Reclamation of areas as soon as is reasonably practicable.

Signed on behalf of the Mackenzie Valley Land and Water Board


Chair


Witness

Schedule 1:

Part B, item 12: Annual Water Licence Report

1. The **Annual Water Licence Report** referred to in Part B, item 12 of this Licence shall include, but not be limited to, the following:
 - a) A summary of the calibration and status of the meters and devices referred to in Part B of this Licence;
 - b) A summary of engagement activities conducted in accordance with the approved **Engagement Plan**, in Part B of this Licence, undertaken during the previous calendar year and shall include a brief description of activities planned for the forthcoming year;
 - c) A summary of **Construction** activities and major maintenance work conducted in accordance with Part E of this Licence, undertaken during the previous calendar year;
 - d) A summary of activities conducted in accordance with the approved **Water Management Plan**, required in Part F of this Licence, undertaken during the previous calendar year, including:
 - i. A summary of updates or changes to the process or facilities required for the management of Water and Wastewater;
 - ii. Daily, monthly and annual quantities in cubic metres of all Water and Wastewater collected, treated and pumped from the Post-Treatment Effluent Discharge point, identified by Discharge location;
 - e) A summary of activities conducted in accordance with the approved **Operations and Maintenance Plan**, required in Part F of this Licence, undertaken during the previous calendar year, including:
 - i. A summary of updates or changes to the process or facilities required for the management of the Tailings Impoundment Area;
 - ii. A description of response actions that were carried out if any Action Levels were exceeded.
 - f) A summary of activities conducted in accordance with the approved **Spill Contingency Plan**, required in Part G of this Licence, undertaken during the previous calendar year, including:
 - i. A list and description for all Unauthorized Discharges that occurred during the previous calendar year, including the date, NWT spill number, volume, location, summary of the circumstances and follow-up actions taken, and status (i.e. open or closed), in accordance with the reporting requirements in Part G of this Licence; and
 - ii. An outline of any spill training and communications exercises carried out during the previous calendar year.
 - g) A summary of activities conducted in accordance with the **Closure and Reclamation Plan**, required in Part H of this Licence, completed during the year, a summary of updates or changes made, and an outline of any work anticipated for the next year;
 - h) Any other details on Water Use or Waste disposal requested by the Board by November 1 of the year being reported;
 - i) Electronic and tabular summaries of all data and information generated under the **Surveillance Network Program** for the previous year, in excel, or an electronic and printed format acceptable to the Board. This shall also include, but not be limited to the following:
 - a. Rationale for SNP stations where samples were not collected and results and interpretation of quality assurance/quality control procedures;
 - b. Graphical summaries and interpretation of the analytical results from the SNP samples collected at the points of compliance (SNP station 35-1) compared to the Effluent Quality Criteria under Part F of this Licence, for the previous two

- consecutive years;
- c. An explanation of any actions taken in response to any exceedances of the Effluent Quality Criteria;
- d. Results from the Hach system monitoring, including all calibration and maintenance records for the Hach system;
- j) A summary of actions taken to address concerns, non-conformances, or deficiencies in any reports filed by an Inspector.

Schedule 2:**Part C, item 1: Security Requirements**

1. Pursuant to section 35 of the Act and section 11 of the Waters Regulations, the Licensee shall post security totaling \$8,815,000.00 prior to the deposit of Waste.

Annex A: Surveillance Network Program
Annexed to Water Licence MV2017L2-0007
Teck Metals Inc. – Pine Point Tailings Impoundment Area

Part A: Reporting Requirements

1. The effective date of this Surveillance Network Program (SNP) is October 25, 2017.
2. The **Surveillance Network Program Report** is required as a component of the Annual Water Licence Report referred to in Part B, item 12 of this Licence.
3. More frequent sample collection may be required at the request of an Inspector.
4. All sampling, sample preservation, and analyses shall be conducted in accordance with methods prescribed in the current edition of American Public Health Association's (APHA) *Standard Methods for the Examination of Water and Wastewater* at the time of analysis, or by other such methods approved by an Analyst.
5. All analyses shall be performed in a laboratory accredited by the Canadian Association for Laboratory Accreditation (CALA) for the specific analyses to be performed or as approved by an Analyst.
6. Prior to the collection of SNP samples, the Licensee shall submit to the Board and an Analyst, a **Quality Assurance and Quality Control Plan**, which shall include a list of techniques that will be used to collect and analyze samples collected under the SNP, for the purposes of quality assurance and quality control. An Analyst shall provide a recommendation to the Board. The Licensee shall not commence Discharge of Water until an Analyst has approved the Plan.
7. The Licensee shall adhere to the Quality Assurance and Quality Control Plan, once approved, and shall annually review the Plan and make any necessary revisions to reflect changes in Operations or as directed by the Board. Revisions to the Plan shall be submitted to the Board for a decision.
8. If the Quality Assurance and Quality Control Plan is not approved by an Analyst, the Licensee shall revise the Plan according to an Analyst's direction and re-submit it to an Analyst for a decision.

Part B: Site Descriptions and Monitoring Requirements

1. The location of sampling sites is subject to approval of an Inspector.
2. The sampling station locations and monitoring requirements are as follows:

SNP station 35-1a and 35-1b

Description	The Tailings area Discharge at the decant structure.		
Location	60°53'41.3"N 114°25'30.7"W		
	35-1a: Main Pond		35-1b: Post-Treatment Effluent Discharge
Sampling Frequency	Weekly during Discharge	Water Level	Weekly during Discharge
Sampling Parameters	Total Copper; Total Lead; Total Zinc; pH; and Total Suspended Solids	3 times per year, once in Spring, Summer, and Fall; during periods of open Water	Volume, measured and recorded in cubic meters
Rationale	Compliance monitoring site, in accordance with EQCs listed in Part F of this Licence.		
Status	Active during Discharge.		

SNP station 35-4

Description	Muskeg surface Water due north of SNP station 35-1, 4.0 km from Great Slave Lake.
Location	60°54'41.8"N 114°26'17.2"W
Sampling Frequency	Annually; in Fall following Discharge.
Sampling Parameters	Total Copper; Total Lead; Total Zinc; and pH
Rationale	To ensure there are no mine-related impacts to the Receiving Environment.
Status	Active.

SNP station 35-5

Description	Muskeg surface Water 1.6 km south of Great Slave Lake.
Location	60°54'27.7"N 114°26'17.2"W
Sampling Frequency	Annually; in Fall following Discharge.
Sampling Parameters	Total Copper; Total Lead; Total Zinc; and pH
Rationale	To ensure there are no mine-related impacts to the Receiving Environment.
Status	Active.

SNP station 35-6

Description	Muskeg surface Water 2.4 km due south of SNP station 35-5.
Location	60°55'26.6"N 114°28'25.4"W
Sampling Frequency	Annually; in Fall following Discharge.
Sampling Parameters	Total Copper; Total Lead; Total Zinc; and pH
Rationale	To ensure there are no mine-related impacts to the Receiving Environment.
Status	Active.

SNP station 35-9

Description	Great Slave Lake, 2.4 km southwest of Presquile Point.
Location	60°55'35.0"N 114°36'04.1"W
Sampling Frequency	Annually; in Fall following Discharge.
Sampling Parameters	Total Copper; Total Lead; Total Zinc; and pH
Rationale	To ensure there are no mine-related impacts to the Receiving Environment.
Status	Active.

SNP station 35-10

Description	Great Slave Lake, 4.8 km east of Presquile Point.
Location	60°57'00.2"N 114°27'56.6"W
Sampling Frequency	Annually; in Fall following Discharge.
Sampling Parameters	Total Copper; Total Lead; Total Zinc; and pH
Rationale	To ensure there are no mine-related impacts to the Receiving Environment.
Status	Active.

SNP station 35-12

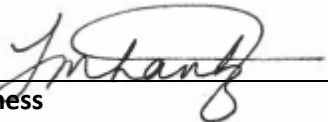
Description	Muskeg surface Water 4.8 km north of Tailings area decant structures, 0.8 km south of Great Slave Lake shoreline.
Location	60°57'02.1"N 114°25'06.6"W
Sampling Frequency	Annually; in Fall following Discharge.
Sampling Parameters	Total Copper; Total Lead; Total Zinc; and pH
Rationale	To ensure there are no mine-related impacts to the Receiving Environment.
Status	Active.

SNP station 35-13

Description	Muskeg surface Water, 4.0 km east of SNP Station 35-9, and 0.8 km south of Great Slave Lake shoreline.
Location	60°55'59.1"N 114°31'59.0"W
Sampling Frequency	Annually; in Fall following Discharge.
Sampling Parameters	Total Copper; Total Lead; Total Zinc; and pH
Rationale	To ensure there are no mine-related impacts to the Receiving Environment.
Status	Active.

Signed the 25 day of October, 2017 on behalf of the Mackenzie Valley Land and Water Board


Chair


Witness

Annex B: Concordance Table of Items Requiring Submission

Supplemental information to be submitted by Licensee as required through Water Licence conditions.

Part	Item	Date
B	Annual Water Licence Report	- March 31, 2018 - Annually on each March 31
B	Engagement Plan	- Annual Review
C	Security Deposit	- Prior to the deposit of Waste
F	Water Management Plan	- Annual Review
F	Operations and Maintenance Plan	- February 1, 2018 - Annual Review
F	Notification to an Inspector of Annual Geotechnical Inspection	- Two weeks prior to annual inspection
F	Geotechnical Inspection Report	- Report and implementation plan to be submitted 90 days from date of each inspection
F	Provide Water sampling results from SNP station 35-1b to an Inspector	- 5 days prior to the first annual Discharge of treated Wastewater
G	Spill Contingency Plan	- Annual Review
H	Closure and Reclamation Plan	- December 31, 2020
H	Reclamation Research Plan	- May 1, 2018
Annex A	Surveillance Network Program Report	- Component of Annual Water Licence Report
Annex A	Quality Assurance Quality Control Plan	- Prior to the collection of SNP samples - Annual Review

Annex C: Revisions to Water Licence # MV2017L2-0007

List of changes that have been made to the Water Licence since issuance

Date	Location of Change	What has changed
December 18, 2017	Annex B	To clarify that the security deposit is to be posted prior to the deposit of Waste.



Mackenzie Valley Land and Water Board
7th Floor - 4922 48th Street
P.O. Box 2130
YELLOWKNIFE NT X1A 2P6
Phone (867) 669-0506
FAX (867) 873-6610

Reasons for Decision

Issued pursuant to sections 72.25 and 121 of the *Mackenzie Valley Resource Management Act* (MVRMA)

Type B Water Licence Renewal Application	
Preliminary Screener	Mackenzie Valley Land and Water Board
Reference/File Number	MV2017L2-0007
Applicant	Teck Metals Ltd.
Project	Water Monitoring and Management, Pine Point, NT
Date of Decision	October 25, 2017 (administrative update: December 18, 2017)

These Reasons for Decision set out the Mackenzie Valley Land and Water Board's (the Board or MVLWB) decision on an Application made by Teck Metals Ltd. (Teck Metals) to the Board on August 22, 2017 for a Type B Water Licence MV2017L2-0007 (Licence).

1.0 Background

Project History

The Pine Point mine was operated by Cominco from 1964 to 1988 and produced 70 million tons of ore, with grades of 2.9% lead and 6.8% zinc. The project has operated under a water licence since 1975. When the mine closed in 1988, a Closure and Reclamation Plan, which had been approved June 1987, was implemented. The Plan was updated in 1990 and 1991 during reclamation activities. A Type B Licence N1L3-0035 was issued on June 1, 1993 for five years, which was followed by Type B Licence N1L2-0035, issued on July 1, 1997, for a ten-year term to June 30, 2007. In July 2001, Cominco and Teck Metals merged. Since the merger, Teck Metals has managed the site. In June 2009, Teck Cominco Metals Ltd. changed its name to Teck Metals Ltd. The current Type B Licence MV2006L2-0013 expires on October 28, 2017; this is also referred to as a post-closure licence.

Submission Description

On August 22, 2017, Teck Metals submitted a renewal application for a Type B Water Licence to the Board. The purpose of this Application is to continue water monitoring and management at the Pine Point Tailings Impoundment Area (TIA). The TIA is located to the north of the former Pine Point mill site on terrain which slopes downwards towards the northwest. The terrain slopes gently for about 13 km towards Great Slave Lake from an approximate elevation of 230 m at the former mill site to an approximate lake elevation of 160 m.

The effluent is the result of accumulation of natural precipitation and snowmelt that falls within the TIA, and then ponds at the north end of the facility. The contact water is then treated each open water season using a temporary water treatment plant located at the north end of the TIA. The treatment plan injects a lime/water mixture into the contact water as it flows into a serpentine settling channel (located within the TIA). As the water flows through the channel, the pH of the water is increased by the lime and zinc is precipitated out of solution and settles out of the water

column. At the end of the settling channel, the water is periodically discharged from the TIA during the open water season to the receiving environment. The facility typically operates for 3 to 6 weeks each summer.

The existing SNP sample locations that were monitored during operation of the mine have been maintained through closure and into post-closure. These include one sample of tailings water before treatment, one sample of tailings water after treatment, and seven downstream stations between the impoundment and Great Slave Lake.

The 2006 update to the Closure and Reclamation Plan (previously titled Abandonment and Restoration Plan), which was included with this Application and was last updated prior to the issuance of the previous Licence MV2006L2-0013, clarified that the primary issue associated with effluent quality is dissolved zinc in the pond water, which exceeds the Licence limits and requires treatment prior to discharge. This water has been treated for each of the 10 years of the current Licence MV2006L2-0013.

As the mine remains permanently closed, there are no personnel on-site except during the summer when the treatment plant is operated.

Management Plans

A Water Management Plan, Operations and Maintenance Plan, Closure and Reclamation Plan, Spill Contingency Plan, and Engagement Plan were included with the Application.

The Engagement Plan and Spill Contingency Plan appear to meet applicable guidelines and sufficiently reflect the scope of the proposed activities.

The Water Management Plan (or Water Treatment Manual) describes how water flows and is treated on site to meet Licence requirements.

The Operation and Maintenance Plan submitted with the Application was completed in February 2017, and contained appropriate and relevant information, and is an adequate Plan. However, Board staff included a condition in the draft Licence that went out for review, requesting the submission of a revised Plan by February 1, 2018, to include the following additional information:

- a) A description, including detailed rationale, of the monitoring endpoints (Action Levels) for each parameter monitored in the Surveillance Network Program;*
- b) A description of response actions to be carried out if the Action Levels are exceeded; and*
- c) Any other item as directed by the Board.*

The Closure and Reclamation Plan submitted with this Application was a 2006 update to the 1991 Abandonment and Restoration Plan. This Plan (1991 version with 2006 update) does not adhere to the Mackenzie Valley Land and Water Board and Aboriginal Affairs and Northern Development Canada's November 2013 Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories.

Eligibility

Following initial implementation of the closure and reclamation activities in accordance with the Closure and Reclamation Plan (1991 version), surface leases were surrendered back to the Crown during the mid to late 1990s, with the exception of one surface lease (#85B/16-9-9), which encompasses the TIA. This retained surface lease allows Teck Metals to continue to manage the TIA and treat ponded water. All mining claims were also surrendered back to the Crown.

2.0 Public Review

Application

By September 21, 2017, comments and recommendations on the Application were received from the following reviewers:

- Environment and Climate Change Canada (ECCC); and
- Government of the Northwest Territories – Environment and Natural Resources (GNWT-ENR).

Teck Metals responded on October 3, 2017.

GNWT-ENR and ECCC commented that certain Figures were incorrect and missing from the Application cover letter. Teck Metals responded by resubmitting an updated cover letter.

Further information was requested by ECCC and ENR on the Surveillance Network Program (SNP), and on water quality results, correlations and trends. This information was provided in the responses, and raw data was provided in an attached excel spreadsheet.

Draft Licence

By October 6, 2017, comments and recommendations on the Draft Licence were received from GNWT – Environment and Natural Resources (GNWT-ENR). Teck Metals responded on October 13, 2017.

Notable Comments and Responses

Evidence and recommendations regarding the upper limit for pH discharge criteria were presented, as seen in GNWT-ENR comments 7 and 13. Teck Metal's current water treatment methods rely upon elevated pH to assist in precipitating metals (e.g. zinc), which makes it difficult for them to meet CCME guidelines of pH 9.0. Based on review comments, GNWT-ENR has suggested discharge criteria for pH of 9.5, which is consistent with the Metal Mining Effluent Regulations (MMER). Teck Metals has requested discharge criteria of pH 10. Board staff agree with GNWT-ENR, in that Board staff can only support a maximum upper limit of pH 9.5 to be included in the authorization. In the mean time, Teck Metals has agreed to research and test treatment mechanisms or controls to lower pH in the existing treatment system, which will allow Teck Metals to meet the upper limit of pH 9.5 during treatment. Teck Metals could be required to update their Water Management Plan prior to implementing the proposed changes. Board staff recognize that prior to implementing additional treatment mechanisms to reduce pH, Teck Metals may have difficulties meeting discharge criteria of pH 9.5 in the 2018 season.

In addition, GNWT-ENR stated that they support Teck Metals request to change the sampling frequency at SNP station 35-1 from daily to weekly, as seen in GNWT-ENR comment 19, and requested that results from the Hach treatment system monitoring be included in annual SNP Report.

Additionally, in the Application, Teck Metals requested to remove SNP station 35-6, as it has been dry since 2011, and samples that were taken previously were well below Licence limits. As described in GNWT-ENR comment 22, ENR recommends keeping this sampling station for two additional years, and if no flow or no exceedances are noted in that time, then Teck Metals could request to amend the Licence SNP, or have an Inspector submit an SNP change/discontinuance request to the Board. Teck Metals agreed with this recommendation in their response.

Multiple comments and recommendations were made during the application and draft Licence reviews on Closure and Reclamation. During the review, ENR recommended that Teck Metals update the Closure and Reclamation Plan to include closure strategies, methods and activities that are

intended to set closure goals, objectives and criteria. The current Plan does not fully meet the Mackenzie Valley Land and Water Board and Aboriginal Affairs and Northern Development Canada's November 2013 Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories. In the draft Licence that went out for review, Board staff included a condition for an updated Closure and Reclamation Plan to be submitted by May 1, 2018. Teck Metals responded stating that the development of these strategies and methodologies will require a significant amount of technical evaluation and engineering studies, and requested that the Board allow Teck Metals to complete these evaluations and studies as a requirement under the renewed Licence MV2017L2-0007 with a commitment to submit the results of these analyses and studies by December 31, 2020. ENR commented on this request, supporting a deadline of December 31, 2020 to provide a more complete assessment of the Pine Point site, given the relative stability of the site. ENR suggested that Teck Metals provide a research and study plan that would provide necessary detail and type of research or study it believes would be required to provide an updated Closure and Reclamation Plan as a requirement of the Licence. Board staff agree with the recommendations made by both Teck Metals and ENR, and have updated the draft Licence to include a Closure and Reclamation Plan submission by December 31, 2020, and a Reclamation Research Plan by May 1, 2018.

Preliminary Screening

Teck Metals requested to be exempt from Preliminary Screening and provided evidence in their Application in the form of a letter from the Minister of Indian and Northern Development, from 1993, which states:

*A screening of the water use application pursuant to the **Environmental Assessment and Review Process Guidelines Order** was completed and I am satisfied that any potentially adverse environmental and related social effects that may be caused by the project are insignificant or mitigatable with known technology.*

The Board confirmed the exemption of a Preliminary Screening in 2007 prior to issuance of Licence MV2006L2-0013, as per Schedule 1, Part 1, item 2 of the Exemption Regulations. As these activities have not changed since the 2007 screening, the Board decided this Application is exempt from further screening pursuant to Part 1(2) of Schedule 1 (Section 2) of the Exemption List Regulations.

3.0 Decision

The Board is satisfied that:

- the project has been screened pursuant to the MVRMA;
- any potential adverse environmental effects are insignificant or mitigable with known technology; and,
- there is no likelihood that the proposed development might be a cause of public concern.

After reviewing the evidence and submissions from Teck Metals Ltd. and the written comments and submissions from parties received by the Board, the Staff Report prepared for the Board, and having due regard to the facts, circumstances, and the merits of the submissions made to it, and to the purpose, scope, and intent of the MVRMA and *Waters Act* and Regulations made thereunder, the Board has determined that Water Licence MV2017L2-0007 be issued, subject to the scope, term, and conditions contained therein. The Board's determinations and reasons for this decision are set out below.

4.0 General Principles for Water Licence MV2017L2-0007

In conducting the review process for the renewal Application, the Board has ensured that all applicable legal and procedural requirements have been satisfied, including:

- Notice of the Licence application was given in accordance with sections 63 and 64 of the MVRMA and section 43 of the *Waters Act*. The Board is satisfied that a reasonable period of notice was given to Communities and First Nations so that they could provide comments to the Board.
- The use of water and/or deposit of waste proposed by the Applicant is of a nature contemplated by the MVRMA.
- It is the opinion of the Board that the terms and conditions attached to Licence MV2017L2-0007, pursuant to the MVRMA and the *Waters Act*, will prevent or mitigate any potential significant environmental impacts which might result from Teck Metal Ltd.'s management of water and discharge of treated effluent. Specific conditions and how they relate to issues raised during the regulatory proceeding are discussed below.

The scope, definitions, conditions, and term set forth in the Licence have been developed in order to address the Board's statutory responsibilities and the concerns that arose during the regulatory proceeding.

5.0 Determinations Pertaining to the Water Licence (MV2017L2-0007)

5.1 Requirements of Section 26 of the *Waters Act*

5.1.1 Existing Licensees

After reviewing the submissions filed on the Public Registry, the Board is satisfied that, with respect to paragraph 26(5)(a) of the *Waters Act*, the granting of this Licence will not adversely affect, in a significant way, any existing Licensee, provided that compliance with the conditions of the Licence are adhered to. There are no applicants with precedence.

5.1.2 Existing Water Users

Paragraph 26(5)(b) of the *Waters Act* prohibits renewal of a Licence unless the Board is satisfied that appropriate compensation has been or will be paid by the Applicant to people who were, at the time when the Applicant filed its application with the Board, members of the classes of water users, depositors, owners, occupiers, or holders listed under paragraph 26(5)(b), who would be adversely affected by the use of waters, or deposit of waste proposed by the Applicant.

The Board received no claims for compensation either during the prescribed period or afterwards. Provided that compliance with the renewed Licence conditions is achieved, the Board does not believe that any water users or persons listed in paragraph 26(5)(b) of the *Waters Act* will be adversely affected by the deposit of Waste proposed by the Applicant.

5.1.3 Water Quality Standards

With regards to subparagraph 26(5)(c)(i) of the *Waters Act*, the Board is satisfied that compliance with the renewed Licence conditions will ensure that waste will be collected and disposed of in a manner which will maintain water quality consistent with applicable standards and the Board's *Water and Effluent Quality Management Policy*.

5.1.4 Effluent Quality Standards

Consistent with subparagraph 26(5)(c)(ii) of the *Waters Act*, the Board is satisfied that the effluent quality standards it has set out in the renewed Licence as conditions are consistent with the Board's *Water and Effluent Quality Management Policy* and will protect the receiving waters and environment.

5.1.5 Financial Responsibility of the Applicant

The Board must satisfy itself of the financial responsibility of the Applicant under paragraph 26(5)(d) of the *Waters Act* before it can issue the renewed Licence.

Security in the amount of \$8,815,000.00 has been set by the Board. The Board is satisfied that there will not be any further deposit of Waste associated with this undertaking until adequate security to reclaim the site has been posted.

5.2 Water Licence MV2017L2-0007 Terms and Conditions

The Board presents the following information and rationale to support Licence MV2017L2-0007:

5.2.1 Water Licence Term

Teck Metals applied for a term of 10 years. The existing Licence MV2006L2-0007 expires October 28, 2017. The Board has approved Licence MV2017L2-0007 for a term of 10 years.

5.2.2 Part A: Scope and Definitions

Scope

The scope of the Licence ensures the Teck Metals is entitled to conduct activities which have been applied for and screened by the Board. In setting out the scope of the Licence, the Board endeavoured to provide enough detail to describe the authorized activities, and allow for project flexibility.

The Board has notified the Applicant, through a statement included in the scope, that compliance with the term and conditions of this Licence does not absolve Teck Metals from responsibility for compliance with the requirements of any other legislation.

Part A, items 1(b) through 1(e) are consistent with other recently issued water licences. These conditions ensure that the scope of the authorization includes all water uses and deposits of waste associated with the Project, reflect and comply with all applicable legislation for the life of the MV2017L2-0007 authorization, and consider and incorporate scientific and traditional knowledge where available in the Licensee's effort to protect the environment.

Definitions

The Board included a list of defined terms used in the Permit in order to ensure a common understanding of conditions and to avoid future differences in interpretation. The definitions and conditions in the Licence are based on recent Licences of similar scope and scale including recently issued Type B Licences, and reflect upon information in the Application and recommendations or concerns raised by reviewers. Where appropriate, the Board created new definitions, as described below:

Tailings Impoundment Area – this definition was provided by Teck Metals to replace the outdated term 'Tailings Containment Area' used in the current Licence MV2006L2-0013, and to align with their renewal application terminology and updated Management Plan terminology.

5.2.3 Part B: General Conditions and Schedule 1

Part B of the Licence applies to matters regarding compliance and conformity with the MVRMA and *Waters Act*, and is consistent with standard conditions found in previous Licences issued by the Board. This section addresses conformity and compliance with plans, submission timelines, revisions, and format of the Surveillance Network Program (SNP) and the Schedules which are

annexed to and form part of the Licence. This section also addresses signage, measuring devices, public engagement requirements, and annual water licence reporting.

Part B, item 11 refers to an Engagement Plan. This Plan describes how Teck Metals will engage with stakeholders about their licenced activities. The Plan is to be annually reviewed to ensure that any changes are submitted for a public review, and Board approval.

Part B, item 12 and Schedule 1 details the requirements for the Annual Water Licence Report. The purpose of the Annual Water Licence Report is to provide the Board and reviewers with a summary of activities that have occurred on-site during the previous year, and are not meant to be onerous. These summaries include engagement activities, summary of works/maintenance completed onsite, summaries of all monitoring data, and anticipated activities for the following year.

5.2.4 Part C: Conditions Applying to Security Requirements and Schedule 2

Security requirements are standard in licences issued by the Board to any non-government entity, to ensure any liabilities incurred as a result of licenced and permitted activities are borne by the Applicant, and do not become the responsibility of the landowner, which in this case is the GNWT. When setting security for a licence, the Board endeavors to adhere to the direction provided in INAC's *Mine Site Reclamation Policy for the Northwest Territories*, chiefly, that "[a]dequate security should be provided to ensure the cost of reclamation, including shutdown, closure and post-closure, is born (sic) by the operator of the mine rather than the Crown".¹ The Board's authority to require a licence holder to post and maintain security is granted by subsection 35(1) of the *Waters Act* and subsection 71(1) of the MVRMA. Regulations promulgated under the *Waters Act* and MVRMA authorize the Board to determine the total amount of security to be posted, taking into consideration the aggregate costs of abandonment and restoration of the undertaking, and any ongoing measures that may be necessary following abandonment of the undertaking.²

Teck Metals included a security estimate calculated using RECLAIM in the Application, and determined a total reclamation cost of \$2,176,095.00. The GNWT-ENR noted during the Application review period that this includes provisions for carrying out 10 years of water treatment and 10 years of site monitoring and inspection. GNWT-ENR noted that this approach does not align with the requirements under Indian Affairs and Northern Development Canada's *Mine Site Reclamation Policy for the Northwest Territories*, which states that the purpose of the reclamation security is to provide access to sufficient funds to complete all the activities required to bring a site to final closure, including conducting any long-term monitoring that is required to confirm that all closure objectives have been met. As such, security should include activities that are to be completed beyond the current Water Licence term. In response, Teck Metals considered these recommendations and submitted an updated RECLAIM calculation on October 3, 2017, totalling \$5,534,500.00.

During the draft Licence review, on October 6, 2017, GNWT-ENR stated their intent to submit a RECLAIM estimate by October 13, 2017. On October 17, 2017, GNWT-ENR submitted a RECLAIM estimate, totalling \$8,905,028.00. This was provided to Teck Metals on October 17, 2017 for comment. On October 19, 2017, Teck Metals provided their response to the GNWT's estimate. This response clarified some of the monetary values that were used in Teck Metals' estimate that the GNWT had adopted in their estimate. In the October 19, 2017 response, Teck Metals stated that they recognized the cost for completing the TIA final design and closure activities were not

¹ <http://www.aadnc-aandc.gc.ca/eng/1100100036038/1100100036040#chp4>

² Subsection 11(1) of the Waters Regulations and subsection 32(1) of the MVLUR

included within the Water Licence application and accepted the security estimate provided by the GNWT.

Teck Metals had included an 'Other' activity item in their estimate, which the GNWT had adopted into their estimate but had stated that they were unsure what it was for. Teck Metals clarified that this 'Other' item of \$4,500 x 20 years, was meant to cover the Dam Safety Review that is required every 10 years (2 times in 20 years or 3 times in 30 years); therefore, GNWT's estimate includes this line item twice, as they had also included a 3-time cost of \$60,000 as a separate line item in their estimate. As such, the Board determined that a security of **\$8,815,000.00** shall be posted with the GNWT, which removes the 'Other' line item that was covered under the Dam Safety Review line item in the GNWT's estimate. The Board agrees with all other components of the estimate provided by the GNWT, and notes that Teck Metals accepted the GNWT's estimate in their response.

This section of the Licence, with reference to Schedule 2, sets the level of security to be maintained by the Licensee and sets out requirements related to posting and updating security. As in other licences, the Board may request a security update from the proponent at any time, and may adjust the security amount at any time, based on available information. The conditions in this section are standard conditions found in other Licences issued by the Board.

In the cover letter submitted with the GNWT-ENR's RECLAIM security estimate, it was noted that they consider this estimate to be an interim security estimate until such time that additional information is available following approval of an updated Closure and Reclamation Plan.

5.2.5 Part D: Conditions Applying to Construction

Part D of the Licence contains conditions related to all structures in the TIA, including Engineered Structures, and is consistent with standard conditions found in previous Licences issued by the Board. These conditions ensure that Engineered Structures are built and maintained to appropriate guidelines and standards.

5.2.6 Part E: Conditions Applying to Modifications

Part E of the Licence contains conditions outlining when and how modifications of existing or planned physical works may be authorized. The conditions also ensure the Board and the Inspector are kept informed and have had the opportunity to request more information or reject the proposed modification. This section is closely linked to the construction section (Part D), which contains conditions related to the design and construction of Engineered Structures. Part E relies on the definition of modification, which does not include expansions, nor alterations of the purpose or function of a structure. The conditions in Part E are consistent with standard conditions found in previous Licences issued by the Board. The purpose of Part E is to streamline the process for authorizing modifications and ensure that any proposed changes to structures that might be outside the scope of the Licence are brought to the Board's attention.

5.2.7 Part F: Conditions Applying to Waste and Water Management

Part F of the Licence contains conditions related to water and waste management activities at the Project site, and is consistent with standard conditions included in previous Licences issued by the Board. Site-specific conditions were developed where necessary.

Part F, item 1 sets out the objectives for the management of water and waste for the Project. This condition is consistent with the principles of objective-based regulation: it essentially defines the objectives of any required management actions, plans or reports. This condition is standard for Licences issued by the Board, and reminds the Licensee of the need to manage water and waste with the goal of minimizing impacts on the receiving environment.

Part F, item 2 refers to a Water Management Plan. This Plan was submitted with the Application, and was titled 'Water Treatment Manual'. The name has been updated to Water Management Plan to align with previous Licences issued by the Board. This Plan describes how water flows and is treated on site in order to meet Licence discharge requirements. The Plan is to be annually reviewed to ensure that any changes in water management or treatment methods (e.g. technologies or chemicals used) require an update to the plan, a public review, and Board approval.

Part F, item 3 refers to an Operations and Maintenance Plan. This Plan was submitted with the Application and includes a variety of site information, including: site reference data, information on site conditions, facility components and information on site design and design criteria. The condition requires the Operations and Maintenance Plan to be revised and resubmitted by February 1, 2018, to include action levels for each parameter monitored in the SNP, and response actions if action levels are triggered. This resubmission is to also include mitigation measures for decreasing pH when it does not meet Effluent Quality Criteria; Teck Metals' current water treatment methods rely upon elevated pH to assist in precipitating metals (e.g. zinc) making it difficult for Teck Metals to ensure they stay within the upper limit of pH 9.5 as stipulated in the Licence. Teck Metals has agreed (see GNWT-ENR comment 13) to research and test treatment mechanisms or controls to lower pH in the existing treatment system, which will allow them to remain compliant and meet the upper limit of 9.5 during treatment. Therefore, an update to the Operations and Maintenance Plan is required to outline that research and testing is taking place, and to identify how pH exceedances will be addressed. Part F, item 4 requires the approved Plan to be annually reviewed to reflect any changes to operations, or as directed by the Board.

Part F, item 5 is a standard condition included in Licences issued by the Board that requires waste storage areas to be constructed and operated in such a way as to ensure compliance with Part F, item 5, and prevent release of waste to the receiving environment. Similarly, Part F, items 6, 7 and 8 are also standard conditions, and require regular inspections of discharge points and waste storage facilities to ensure the facilities are operating as intended, and in compliance with the Licence.

Effluent Quality Criteria (EQC)

The Board's approach to managing the deposit of waste to the receiving environment through water licence terms and conditions is described in the MVLWB's *Water and Effluent Quality Management Policy*³. Effective March 31, 2011, this Policy is applied to all new and renewal water licence applications throughout the Mackenzie Valley.

EQC are included for the discharge from the SNP station 35-1b as per Part F, item 10 of the Licence. For this location, Board staff proposed the parameters in the draft Licence, and requested input from reviewers on the listed parameters and associated EQC.

During the draft Licence review, comments were received by the GNWT-ENR to ensure arsenic and cyanide are included in the Licence MV2017L2-0007, but did not provide recommendations

³ Water and Effluent Quality Management Policy, Standard Procedure and Consistency Working Groups (WG), March 2011.

on the EQC. Discussions also took place throughout the review of the Application and draft Licence regarding the upper limit of pH, as the previous Licence MV2006L2-0013 EQC for pH was >6.0, and therefore did not contain an upper limit. Currently, Teck Metal's water treatment methods rely upon elevated pH to assist in precipitating metals (e.g. zinc), which makes it difficult for them to meet CCME guidelines of pH 9.0. Based on review comments, ENR suggested discharge criteria of pH 9.5, which is consistent with the Metal Mining Effluent Regulations (MMER). Teck Metals requested discharge criteria of pH 10. The Board has decided on an EQC of pH 9.5 as requested by GNWT-ENR, and as outlined in the MMER.

Teck Metals requested the removal of BOD and Faecal Coliforms as they were not in the previous Licence MV2006L2-0013 and they are unnecessary parameters for this particular undertaking. Nitrate as N and Total Dissolved Solids were included in the draft and were not part of the previous licence. As no comments were received on these parameters, and they are not parameters of concern, the Board has decided to remove them from Licence MV2017L2-0007.

The parameters and EQC listed below have been set by the Board in Licence MV2017L2-0007. All EQC are consistent with the MMER and/or the previous Licence MV2006L2-0013.

Discharges from SNP station 35-1b shall have a pH between 6.5 and 9.0 and meet the following EQC:		
Parameter	Maximum Average Concentration (in mg/L)	Maximum Grab Concentration (in mg/L)
Total Arsenic	0.50	1.00
Total Copper	0.15	0.30
Total Cyanide	0.10	0.20
Total Lead	0.20	0.40
Total Zinc	0.50	1.00
Ammonia as N	2.00	4.00
Total Suspended Solids	25.0	50.0

Part F, item 11 is a standard condition consistent with previously issued licences by the Board. This condition states that if the EQC's in Part F item 10 are exceeded, the Licensee shall cease all discharge to the receiving environment, notify the Board and an Inspector, and take the necessary corrective action to mitigate the exceedance, as outlined in the approved Operations and Maintenance Plan. The intent of this condition is to protect the receiving environment.

5.2.8 Part G: Conditions Applying to Contingency Planning

Part G of the Licence contains conditions related to spill contingency planning and reporting, and the reclamation of spills and unauthorized discharges. The purpose of this part is to ensure that the Licensee is fully prepared to respond to spills and unauthorized discharges. The planning and reporting requirements in this part ensure that Teck Metals has identified the lines of authority and responsibility, has an action plan(s) for responses to spills and unauthorized discharges, and has established reliable reporting and communication procedures. This will ensure that any spills or unauthorized discharges are effectively controlled and cleaned up, with the goal of preventing or limiting damage to the receiving environment. The conditions in Part G are consistent with standard conditions found in previous Licences issued by the Board. The Board determined that the Spill Contingency Plan submitted with the Applications was in compliance with applicable guidelines. Since no comments or concerns were received related to this Plan during review of the Application, the Board approved the Plan.

5.2.9 Part H: Conditions Applying to Closure and Reclamation

Part H contains conditions related to the submission of a Closure and Reclamation Plan. Part H, item 1 requires the submission of a revised Plan by December 31, 2020, for approval, and in accordance with the Mackenzie Valley Land and Water Board and Aboriginal Affairs and Northern Development Canada's November 2013 *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories*. The 2006 Closure and Reclamation Plan that was submitted with the Application does not meet the guidelines, in that it does not include closure strategies, methods and activities that are intended to set closure goals, objectives and criteria. The submission date of December 31, 2020 was requested during the review period by Teck Metals, and accepted by the Board. Part H, items 2 and 4 are standard conditions requiring annual reviews of the approved Plan and progressive reclamation activities.

Part H, item 3 requires the submission of a Reclamation Research Plan to be submitted by May 1, 2018. The intent of this condition is to have Teck Metals provide necessary detail and information on the type of research or study it believes would be required to provide an updated Closure and Reclamation Plan. This submission will be sent for review and approved by the Board, and therefore will aid Teck Metals in the development of their Closure and Reclamation Plan referred to in Part H, item 1.

5.2.10 Annex A: Surveillance Network Program

The SNP has been annexed to the Licence to detail sampling and monitoring requirements related to compliance with conditions and plans required by the Licence.

Part A: Reporting Requirements

Items 1-8 are standard reporting requirements for Licences issued by the Board which require SNP monitoring.

Part B: Site Descriptions and Monitoring Requirements

In the Application, Teck Metals requested to reduce the sampling frequency at SNP station 35-1 from daily during discharge to weekly during discharge. This proposed change was included in the draft Licence that was circulated for review. After providing some additional rationale requested by GNWT-ENR during the review, GNWT-ENR commented, supporting this sampling frequency change. The Board agrees, and has decided to include a sampling frequency of weekly during discharge at SNP station 35-1.

Additionally, in the Application, Teck Metals requested to remove SNP station 35-6, as it has been dry since 2011, and samples that were taken previously were well below Licence limits. As described in GNWT-ENR comment 22, ENR recommends keeping this sampling station for 2 additional years, and if no flow or no exceedances are noted in that time, then Teck Metals could request to amend the Licence SNP, or have the Inspector submit an SNP change/discontinuance request to the Board. Teck Metals agreed with this recommendation in their response. The Board has decided to include SNP station 35-6 in Licence MV2017L2-0007.

All the SNP station locations, sampling frequencies (aside from station 35-1), and measured parameters included in Licence MV2017L2-0007 are consistent with those from the previous Licence MV2006L2-0013. The SNP station locations include one sample of tailings water prior to treatment (SNP station 35-1a), one sample of tailings water post treatment (35-1b), and seven downstream stations (SNP stations 35-4, 35-5, 35-6, 35-9, 35-10, 35-12, 35-13) between the TIA and Great Slake Lake (Figure 2 of the Water License Renewal Form).

6.0 Conclusion

Subject to the term and conditions set out in the Licence, and for the reasons expressed herein, the Board is of the opinion that the undertaking for water treatment and discharge associated with the Teck Metals Ltd. water management at the Pine Point Mine Tailings Impoundment Area can be completed by Teck Metals Ltd. while providing for the conservation of Waters in a manner that will provide the optimum benefit for all Canadians and in particular for the residents of the Mackenzie Valley.

Water Licence MV2017L2-0007 contain provisions that the Board feels necessary to ensure and monitor compliance with the MVRMA and *Waters Act*, and the Regulations made thereunder, and to provide appropriate safeguards in respect of the Applicant's management of waters.

Mackenzie Valley Land and Water Board



Mavis Cli-Michaud, Chair

December 18, 2017

Date

**General Procedures for the Administration of Licences
Issued Under the *Waters Act*
in the Northwest Territories**

1. At the time of issuance, a copy of the Licence is placed on the Public Registry in the office of the Mackenzie Valley Land and Water Board (MVLWB or the Board) in Yellowknife and is then available to the public.
2. To enforce the term and conditions of the Licence, the Minister of Environment and Natural Resources has appointed Inspectors in accordance with subsection 65(1) of the *Waters Act*. The Inspectors coordinate their activities with staff of the MVLWB. The Inspector responsible for Licence MV2017L2-0007 is located in the South Slave Region, Fort Smith office.
3. To keep the MVLWB and members of the public informed of the Licensee's conformity to the Licence's conditions, the inspectors prepare reports which detail observations on how each item in the Licence has been met. These reports are forwarded to the Licensee with a covering letter indicating which action, if any, should be taken. The inspection reports and cover letters are placed on the Public Registry, as are any responses received from the Licensee pertaining to the inspection reports. It is therefore of prime importance that you react in all areas of concern regarding all inspection reports so that these concerns may be clarified.
4. Licence MV2017L2-0007 will expire on October 24, 2027, if required; it is the responsibility of the Licensee to apply to the MVLWB for a new licence. The past performance of the Licensee, new documentation and information, and points raised during a public hearing, if required, will be used to determine the terms and conditions of any new licence. Please note that if the Licence expires and another has not been issued, then water and waste disposal must cease, or you, the Licensee, would be in contravention of the *Waters Act*. For a Type A Licence, an application for a new licence shall be made at least one year in advance of the Licence's expiry date. In the case of a Type B Licence, an application shall be made at least six months in advance of the Licence's expiry date.
5. If, for some reason, Licence MV2017L2-0007 requires amendment, a public hearing may be required. You are reminded that applications for amendments should be submitted as soon as possible to provide the MVLWB ample time to complete the amendment process. The process may take up to six months or more depending on the scope of the amendment requested.

6. Specific clauses of your Licence make reference to the Board, Analyst, or Inspector. The contact person, address, phone, and fax number of each is:

Mackenzie Valley Land and Water Board:

Public Registry Clerk
Mackenzie Valley Land and Water Board
7th Floor - 4922 48 Street,
P.O. Box 2130
YELLOWKNIFE NT X1A 2P6
Phone: (867) 669-0506
Fax: (867) 873-6610

Analyst:

Street Address:

Taiga Environmental Laboratory
4601 – 52nd Ave
Yellowknife, NT
X1A 1L4

Mailing Address:

Taiga Environmental Laboratory
P.O. Box 1320
Yellowknife, NT
X1A 2L9

Phone: (867) 767-9235, ext 53151
Fax: (867) 920-8740
General Email: taiga@gov.nt.ca

Inspector:

Wendy Bidwell, Water Resource Officer
South Slave Region
Government of the Northwest Territories
P.O. Box 900
Fort Smith, NT
X0E 0P0
Phone: (867) 872-6421

7. Specific clauses of your licence may reference security. The contact person, address, and phone and fax numbers of the individual administering security deposits is:

Director, Water Resources
Department of Environment and Natural Resources
Government of the Northwest Territories
P.O. Box 1320
YELLOWKNIFE NT X1A 2L9
Phone: (867) 873-7401
Fax: (867) 669-2716