

**Type A Water Licence MV2015L2-0003**  
**North American Tungsten Corporation Ltd. – Cantung Mine**

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**Commented [KM1]:** NATCL has proposed the same scope and terms and conditions for Licence MV2023L2-0006 as the current Licence MV2015L2-0003.

Board staff propose updating certain conditions requiring the submission of plans, reports or studies to reflect submissions made in the past and the current status of the mine site (i.e., in care and maintenance with no intention to proceed to commercial operations or construct the Dry Stack Tailings Storage Facilities).

Tracked changes and comment bubbles from Board staff highlight updates made compared to the Licence MV2015L2-0003 conditions.

**Part A: Scope and Definitions**

1. Scope:

- a) This Licence entitles the Licensee to use Water and dispose of Waste for mining and milling, and associated uses at the Cantung Mine, Northwest Territories (Latitude - 61° 57'N; Longitude - 128° 16' W) including:
- i. Withdrawal of Water for continued mining and milling operations to the Water Supply Facility;
  - ii. Withdrawal of Water for domestic purposes through the Water Supply Facility;
  - iii. Deposit of Waste to the Tailings Containment Area, Dry Stack Tailings Storage Facilities, and underground;
  - iv. Deposit of Waste through the Wastewater Treatment Facilities;
  - v. Deposit of Waste to the Solid Waste Disposal Facility and Landfarm;
  - vi. Disposal of Waste Rock in underground workings and above ground;
  - vii. Disposal of Sewage;
  - viii. Handling and storage of petroleum products and hazardous materials;
  - ix. Operation and maintenance of Sewage Disposal Facilities;
  - x. Operation and maintenance of Wastewater Treatment Facilities;
  - xi. Operation and maintenance of Dry Stack Tailings Processing Facility;
  - xii. Operation and maintenance of Dry Stack Storage Facilities;
  - xiii. Operation and maintenance of Tailings Containment Area;
  - xiv. Operation and maintenance of Solid Waste Disposal Facilities and Landfarm; and
  - xv. Progressive Reclamation and associated closure activities.

These activities are described in submissions to the Mackenzie Valley Land and Water Board, including, but not limited to:

- xv. The complete Water Licence renewal Application received April 21, 2015;
- xvi. The complete Water Licence Application and attachments dated February 6, 2008, subsequent Information Requests, and Information Request responses dated May 20, 2008 and July 17, 2008; and
- xvii. Amendment Applications and related documents submitted after the February 6, 2008 Water Licence Application up to April 21, 2015.

If any discrepancy or conflict results from reference to the submissions in subparagraphs xv to xvii, the contents of the more recent document shall prevail.

- b) This Licence is issued subject to the conditions contained herein with respect to the taking 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 Governor in 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) The Licensee shall take every reasonable precaution to protect the environment.

- d) 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.
- e) Compliance with the terms and conditions of this Licence does not relieve the Licensee from responsibility for compliance with the requirements of any applicable federal, territorial or municipal legislation.

## 2. Definitions:

**Acid Rock Drainage** - the production of acidic leachate, seepage or drainage from underground workings, ore piles, Waste Rock, Tailings, or overburden that can lead to the release of metals to Groundwater and surface Water during the life of the Project and after closure.

**Act** - the *Mackenzie Valley Resource Management Act*, S.C. 1998, c. 25.

**Action Level** - a predetermined qualitative or quantitative event that, if met, 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 84(2) of the Act.

**Aquatic Effects Monitoring Program** - a monitoring program designed to determine the short and long-term effects in the Receiving Environment resulting from the Project; to evaluate the accuracy of impact predictions; to assess the effectiveness of planned impact mitigation measures; to identify additional impact mitigation measures to reduce or eliminate environmental effects; and as further described in Part H, item 1.

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

**Closure and Reclamation Plan** - a document developed in accordance with this Licence and the Mackenzie Valley Land and Water Board and Aboriginal Affairs and Northern Development Canada's November 2013 *Guidelines for the Closure and Reclamation of Advances Mineral Exploration and Mine Sites in the Northwest Territories*, that clearly describes the closure and reclamation activities for the Project, and encompasses the interim and final versions of the Plan.

**Dam Safety Guidelines** - the *Canadian Dam Association's (CDA) Dam Safety Guidelines, 2007*. The scope and application 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.

**Dry Stack Tailings Processing Facility** - the infrastructure and associated area designed to filter and dewater Tailings prior to disposal in the Dry Stack Tailings Storage Facilities.

**Dry Stack Tailings Storage Facilities** - the Engineered Structures designed to contain filtered Tailings: including Tailings Storage Facilities (TSF) 4b, 6, and 7.

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

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

**Flat River Tailings** - the historical Tailings that were deposited into the Flat River.

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

**Groundwater** - all Water below the ground surface.

**Inspector** - an Inspector designated by the Minister under subsection 84(1) of the Act.

**Landfarm** - the Engineered Structure and associated area designed to contain and treat hydrocarbon contaminated materials.

**Licensee** - North American Tungsten Corporation Ltd.

**Maximum Average Concentration** - the running average concentration of any four consecutive analytical results for a parameter listed in the Licence that cannot be exceeded.

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

**Metal Leaching** - the production of leachate under neutral or alkaline conditions by seepage or drainage from underground workings, ore piles, Waste Rock, Tailings, or overburden, in either disturbed or undisturbed conditions, that could lead to the release of metals to Groundwater and surface Water during the life of the Project and after closure.

**Minister** - means the Minister of Aboriginal Affairs and Northern Development Canada.

**Minewater** - Groundwater, surface Water, or any Water used in mining that is pumped or flows out of any underground workings or open pit.

**Modification** - in respect of a structure, means 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 (NAPEG) in accordance with the *Engineering and Geoscience Professions Act*, S.N.W.T. 2006, c.16, as a Professional Engineer, and whose principal field of specialization is appropriate to address the components of the project at hand.

**Professional Geoscientist** - a person who is registered with the Northwest Territories and Nunavut Association of Professional Engineers and Geoscientists (NAPEG) in accordance with the *Engineering and Geoscience*

*Professions Act*, S.N.W.T. 2006, c.16, as a Professional Geoscientist, and whose principal field of specialization is appropriate to address the components of the project at hand.

**Progressive Reclamation** - activities conducted during the operating period of the Project to modify and reclaim the land and Water affected by the Project to the satisfaction of an Inspector.

**Project** - the Cantung Mine Project as described in Part A, item 1 of this Licence.

**Regulations** - the Regulations promulgated pursuant to section 90.3 of the Act.

**Receiving Environment** - the aquatic environment that ultimately receives any Water or Waste released from the Project.

**Response Framework** - a systematic approach to responding when the results of a monitoring program indicate that an Action Level has been reached.

**Response Plan** - a part of the Response Framework that describes the specific actions to be taken by the Licensee in response to reaching or exceeding an Action Level.

**Seepage** - includes any Water or Waste that passes through or escapes from any structure designed to contain, withhold, divert, or retain the Water or Waste.

**Sewage** - includes all toilet Wastes and greywater.

**Sewage Disposal Facilities** - the Engineered Structures and areas designed to contain and treat Sewage.

**Significance Threshold** - a level of change in any monitored parameter which, if reached, would result in significant adverse effects.

**Solid Waste Disposal Facilities** - the Engineered Structures and areas designed to contain solid Wastes.

**Spill Contingency Plan** - a document, developed in accordance with this Licence and Indian and Northern Affairs Canada's 2007 *Guidelines for Spill Contingency Planning*, that clearly describes the activities required when a spill or Unauthorized Discharge occurs during the life of the Project.

**Standard Proctor Dry Density** - the maximum dry density at optimal moisture content as determined through compaction testing consistent with the American Society for Testing and Materials Standard D698.

**Stinky Pond** - the natural pond located adjacent to the east side of Tailings Pond 3.

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

**Tailings** - the material rejected from the mill after the recoverable minerals have been extracted.

**Tailings Containment Area** - includes the following Engineered Structures and areas designed to contain Tailings: Tailings Pond 1, Tailings Pond 2, Tailings Pond 3, Tailings Pond 4, and Tailings Pond 5.

**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 historical experiences of a people and adapts to social, economic, environmental, spiritual, and political change.

**Unauthorized Discharge** - is a release or Discharge of any Water or Waste not authorized under this Licence.

**Waste** - any Waste as defined by section 51 of the Act.

**Waste Rock** - all unprocessed rock materials, except ore and Tailings, which are produced as a result of mining and milling operations.

**Waste Management Plan** - a document, developed in accordance with this Licence and the Mackenzie Valley Land and Water Board's March 2011 *Guidelines for the Development of a Waste Management Plan*, that clearly describes the activities planned to manage and monitor Wastes during the life of the Project.

**Waste Rock** - all unprocessed rock materials, except ore and Tailings, which are produced as a result of mining and milling operations.

**Wastewater Treatment Facilities** - the infrastructure and associated areas designed to treat liquid Waste from the Tailings Containment Area, and from the Dry Stack Tailings Processing and Storage Facilities, and then Discharge the treated liquid Waste to Stinky Pond.

**Water(s)** - any Water as defined by section 51 of the Act.

**Water Content** - with respect to soils, means the ratio of the volume of water to the total volume of the soil, including air, in a given soil mass.

**Water Supply Facility** - the intake infrastructure and associated area to collect and supply Water for the Project.

**Water Use** - a use of Water as defined section 51 of the Act.

**Water Use Fee** - a fee for the use of Water set out in the Regulations promulgated under section 90.3 of the Act and the Board's March 2013 *Water Use Fee Policy*.

**Part B: General Conditions**

1. The Licensee shall ensure a copy of this Licence is maintained on site at all times.
2. The **Water Use Fee** shall be paid by the Licensee annually, in advance of any Water Use.
3. All references to policies, guidelines, codes of practice, statutes, regulations or other authorities shall be read as a reference to the most recent versions, unless otherwise denoted.
4. All information submitted to the Board, as required by this Licence, shall:
  - a) Be submitted in a form acceptable to the Board;
  - b) Be in accordance with the Board's March 2012 *Document Submission Standards*; and
  - c) Include a section within each submission which identifies wherein the pertinent requirements of this Licence are addressed.
5. The Licensee shall operate in accordance with approved plans, programs, studies and manuals 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.
6. The Licensee shall review the plans, programs, studies and manuals annually, or as directed by the Board, and make any necessary revisions to reflect changes in operations. All revised plans, programs, studies and manuals shall be submitted to the Board, for approval, at least 60 days, unless otherwise specified, prior to implementing any proposed updates or changes in the approved plan, program, study or manual, and shall be accompanied by a brief summary of the changes made. All revised plans, programs, studies, and manuals shall be presented in a format consistent with the Board's *Standard Outline for Management Plans*.
7. The Licensee shall comply with the Schedules, which are annexed to and form part of this Licence, and any changes to the Schedules as may be made from time to time by the Board.
8. 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.
9. The Schedules, the Surveillance Network Program, and any compliance dates specified in this Licence may be changed at the discretion of the Board. If any date for any submission falls on a weekend or holiday, the item shall be submitted on the following business day.
10. 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.
11. The Licensee shall maintain, to the satisfaction of an Inspector, the signs necessary to identify the stations of the Surveillance Network Program.
12. Beginning March 31, 2016, and no later than every March 31 thereafter, the Licensee shall submit to the Board an **Annual Water Licence Report**. The Report shall be in accordance with Schedule 1, item 1.

13. Within 30 days of issuance of this Licence, the Licensee shall submit an **Engagement Work Plan** to the Board for approval.
14. Within 90 days following Board approval of the Engagement Work Plan referenced in Part B, item 13, the Licensee shall submit to the Board, for approval, an **Engagement Plan**.

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**Part C: Conditions Applying to Security Requirements**

1. The Licensee shall post and maintain security deposits in accordance with Schedule 2, item 1.
2. Upon request of the Board, the Licensee shall submit an updated Project 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 may be revised by the Board based on estimates of the Project's reclamation liability referred to in Part C, item 2 or based on such other information as may become available to the Board. Security shall be sufficient to address the full current liability on the site.
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.

**Commented [KM2]:** Board staff are seeking input on the security requirements outlined in Schedule 2, item 1.

Specifically, Board staff are seeking input about if the requirements in Schedule 2, item 1 should be: removed; the phasing adjusted; or retained with the understanding that NATCL will not post the security given the Government of Canada funding for the Cantung Site discussed in NATCL's February 15, 2023 letter to the Board:

[NATCL - CIRNAC Financial Security Letter - Mar 11, 23.pdf \(mvlwb.ca\)](#)

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**Part D: Conditions Applying to Water Use**

1. The Licensee shall obtain all Water to be used from the Flat River through the Water Supply Facility, or as otherwise approved by the Board.
2. The weekly quantity of Water withdrawn using the Water Supply Facility shall not exceed 30,000 m<sup>3</sup>.
3. The Licensee shall equip and maintain the fresh Water intake pumps with a screen designed to prevent the impingement and/or entrainment of fish. The screen shall have a mesh size sufficient to ensure no entrainment of fish, as outlined in Fisheries and Oceans Canada's 1995 *Freshwater Intake End-of-Pipe Fish Screen Guidelines*.

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**Part E: 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 minimize the 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*.
3. The Licensee shall ensure that all Engineered Structures are constructed and maintained following the recommendations of the Professional Engineer responsible for the design, including but not limited to, recommendations regarding field supervision and inspection requirements.
4. The Licensee shall maintain construction records and geochemical records of construction materials for all Engineered Structures and make them available at the request of the Board or an Inspector.
5. The Licensee shall submit a revised schedule for construction and Project development upon request from the Board.

**Final Detailed Construction Plans and As-Built Reports**

6. The Licensee shall submit to the Board, for approval, a minimum of 90 days prior to the commencement of construction of a landfarm, a revised **Final Detailed Construction Plan - Landfarm**, in accordance with Schedule 3, item 1.
7. A minimum of 60 days prior to the commencement of construction of any new Solid Waste Disposal Facility, the Licensee shall submit to the Board, for approval, a **Final Detailed Construction Plan - Solid Waste Disposal Facility**, in accordance with Schedule 3, item 2.
8. ~~Within 90 days following issuance of this Licence, the Licensee shall submit to the Board for approval, and comply with the~~ **Tailings Containment Area Cover Design Study** prepared under the direction of, and signed off by a Professional Engineer. The Study shall satisfy the requirements of Schedule 3, item 3.
9. A minimum of 90 days prior to the commencement of construction of the Dry Stack Tailings Storage Facilities TSF4b and TSF7, and a minimum of six months prior to the commencement of construction of Dry Stack Tailings Storage Facility TSF6, the Licensee shall submit to the Board, for approval, the **Final Detailed Construction Plan** for each facility, in accordance with Schedule 3, item 4. Construction may be commenced only with written approval from the Board.
10. A minimum of 90 days prior to the commencement of the installation of a cover on the Dry Stack Tailings Storage Facilities TSF4b and TSF7, the Licensee shall submit to the Board, for approval, a **Final Detailed Cover Design Plan** for each facility, in accordance with Schedule 3, item 5. Construction may be commenced only with written approval from the Board.

**Commented [KM3]:** Board staff propose updating the wording to reflect that the Study was submitted in 2014 under Licence MV2002L2-0019.

[MV2002L2-0019 - NATCL - Tailings Containment Area Cover Design Study - Dec 30, 14 \(1\).pdf](#)

11. A minimum of six months prior to the commencement of the installation of a cover on Dry Stack Tailings Storage Facility TSF6, the Licensee shall submit to the Board, for approval, a **Final Detailed Cover Design Plan - TSF6**, in accordance with Schedule 3, item 5. Construction may be commenced only with written approval from the Board.
12. The Licensee shall ensure that the Engineered Structures identified in Part E, items 6 through 11, are constructed in accordance with the approved Final Detailed Construction Plans and the Final Detailed Cover Design Plans.
13. A minimum of 60 days prior to the commencement of construction of any Engineered Structures intended to contain, withhold, divert, or retain Water or Waste *not* referred to in Part E, items 6 through 11, the Licensee shall submit to the Board, the **Final Detailed Construction Plans**. The Plans shall include design drawings and specifications and a Quality Control Plan stamped by a Professional Engineer. The Licensee shall ensure that these Engineered Structures are constructed in accordance with the Final Detailed Construction Plans.
14. A minimum of 10 days prior to the commencement of construction of the Engineered Structures identified in Part E, items 6 through 13, the Licensee shall provide written notification to the Board and an Inspector. Notification shall include the name and contact information for the site manager.
15. Within 90 days of the completion of the construction of the Engineered Structures identified in Part E, items 6 through 13, the Licensee shall submit to the Board **As-Built Reports** which shall include as-built drawings of the structures, documentation of field decisions that deviate from the Final Detailed Construction Plans and the Final Detailed Cover Design Plan, and any data used to support these decisions.

**Part F: Conditions Applying to Modifications**

1. The Licensee may, without written approval from the Board, carry out Modifications to the existing or planned physical works, provided 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 the beginning of the Modifications;
  - b) The Modifications do not place the Licensee in contravention of either the Licence 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 F, item 1 have not been met, may be carried out only with written approval from the Board.
3. Within 90 days of completion of the Modifications referred to in Part F, item 1, the Licensee shall provide as-built drawings stamped by a Professional Engineer to the Board.

**Part G: Conditions Applying to Waste and Water Management**

1. The Licensee shall manage Water and Waste with the objectives of minimizing the impacts of the Project 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 comply with the approved **Waste Management Plan**. Any revisions to the Plan shall be in accordance with the Mackenzie Valley Land and Water Board's March 2011, *Guidelines for Developing a Waste Management Plan*.
3. The Licensee shall comply with the approved **Water Management and Mine-site Erosion and Sediment Protection Plan**. A minimum of 90 days prior to the commencement of construction of each Dry Stack Tailings Storage Facility, the Licensee shall submit to the Board, for approval, a revised Plan. The Plan shall provide details of the operating procedures for the handling, management and disposal of Water that comes into contact with the Project to meet the objectives listed in Part G, item 1, and satisfy the requirements of Schedule 4, item 1.
4. The Licensee shall comply with the approved **Flat River Erosion and Sediment Protection Plan**. A minimum of 90 days prior to the commencement of construction of Dry Stack Tailings Storage Facility TSF6, the Licensee shall submit to the Board, for approval, a revised Plan prepared under the direction of, and signed off by a Professional Engineer. The Plan shall meet the applicable *Dam Safety Guidelines* information requirements and shall satisfy the requirements of Schedule 4, item 2.
5. The Licensee shall submit to the Board for approval, an updated **Hydrogeological Groundwater Study Report** within 12 months of starting commercial operations. The Report shall satisfy the requirements of Schedule 4, item 3.
6. ~~Within 90 days following issuance of this Licence, the~~ Licensee shall ~~submit to the Board for approval, comply with the a~~ **Geochemical Risk Assessment Report**. The Report shall detail the activities planned to assess the long-term geochemical risks of the Project to meet the objectives listed in Part G, item 1, and satisfy the requirements of Schedule 4, item 4.
7. ~~Within 90 days following issuance of this Licence, the~~ Licensee shall ~~submit to the Board, for approval, comply with the~~ **Geochemical Load Balance Model** prepared under the direction of, and signed off by a Professional Engineer or Professional Geoscientist using the data from the approved studies referred to in Part G, item 5 [Hydrogeological Groundwater Study Report] and Part G, item 6 [Geochemical Risk Assessment Report]. This Model shall include an analysis as to how it contributes to and is incorporated within the closure and reclamation plans referred to in Part J of this Licence.
8. ~~Within 90 days following issuance of this Licence, the~~ Licensee shall ~~comply with the submit to the Board, for approval, an~~ **Information Gap Analysis Report**. This Report shall identify outstanding information gaps regarding hydrogeological and geochemical conditions at the Project, and shall outline recommended actions and timelines for addressing the identified gaps.

**Commented [KM4]:** Board staff propose updating the wording to reflect that the Report that was submitted in 2014 under Licence MV2002L2-0019.

[https://registry.mvlwb.ca/\\_layouts/15/download.aspx?SourceUrl=/Documents/MV2002L2-0019/MV2002L2-0019%2520-%2520NATCL%2520-%2520Geochemical%2520Risk%2520Assessment%2520Report%2520submission%2520-%2520May30-14.pdf](https://registry.mvlwb.ca/_layouts/15/download.aspx?SourceUrl=/Documents/MV2002L2-0019/MV2002L2-0019%2520-%2520NATCL%2520-%2520Geochemical%2520Risk%2520Assessment%2520Report%2520submission%2520-%2520May30-14.pdf)

**Commented [KM5]:** Board staff propose updating the wording to reflect that the Report that was submitted in 2014 under Licence MV2002L2-0019.

[https://registry.mvlwb.ca/\\_layouts/15/download.aspx?SourceUrl=/Documents/MV2002L2-0019/MV2002L2-0019%2520-%2520NATCL%2520-%2520Geochemical%2520Load%2520Balance%2520-%2520Mar31-14.pdf](https://registry.mvlwb.ca/_layouts/15/download.aspx?SourceUrl=/Documents/MV2002L2-0019/MV2002L2-0019%2520-%2520NATCL%2520-%2520Geochemical%2520Load%2520Balance%2520-%2520Mar31-14.pdf)

**Commented [KM6]:** Board staff propose updating the wording to reflect that the Report was submitted in 2015 under Licence MV2002L2-0019.

[https://registry.mvlwb.ca/\\_layouts/15/download.aspx?SourceUrl=/Documents/MV2002L2-0019/MV2002L2-0019%2520-NATCL%2520-%2520Geochemical%2520Information%2520Gap%2520Analysis%2520Jun%25201%25202015%2520-%2520Jun1-15.pdf](https://registry.mvlwb.ca/_layouts/15/download.aspx?SourceUrl=/Documents/MV2002L2-0019/MV2002L2-0019%2520-NATCL%2520-%2520Geochemical%2520Information%2520Gap%2520Analysis%2520Jun%25201%25202015%2520-%2520Jun1-15.pdf)

9. The Licensee shall ~~submit to the Board by October 31, 2016, for approval, and comply with the~~ **Integrated Geochemical Load Balance and Risk Assessment Report**. The Report shall satisfy the requirements of Schedule 4, item 5.
10. The Licensee shall comply with the approved **Tailings Containment Area Monitoring Plan**. Any revisions to the Plan shall satisfy the requirements of Schedule 4, item 6.
11. The Licensee shall submit to the Board by March 31<sup>st</sup> each year, beginning in the first year following the start of commercial operations, for approval, a **Tailings Storage Facility Cover Design Progress Report**, until the Final Detailed Cover Design Plan - TSF6 is approved by the Board as per Part E, item 11 of this Licence.
12. The Licensee shall submit a **Historical Data and Interpretation Report of the Cantung Mine Site** to the Board. The Report shall satisfy the requirements of Schedule 4, item 7.
13. ~~Within 90 days following issuance of this Licence, the Licensee shall submit to the Board, for approval, a~~ **minimum of six months prior to operation of the Dry Stack Tailings Processing Facility, the Licensee shall submit to the Board, for approval, a Research and Monitoring Plan for Dry Stack Tailings Storage Facility TSF4b**. This Plan shall describe how the Licensee plans to collect information from TSF4b in support of the development of the Final Detailed Construction Plans and Final Detailed Cover Design Plans for the Dry Stack Tailings Storage Facilities as referred to in Part E of this Licence.
14. A minimum of 90 days prior to the operation of the Dry Stack Tailings Processing Facility and to the construction of TSF4b and TSF7, and a minimum of six months prior to the construction of TSF6, the Licensee shall submit to the Board, for approval, a **Tailings Processing and Storage Facilities Management and Monitoring Plan**, which shall satisfy the requirements of Schedule 4, item 8.
15. The Licensee shall comply with the approved **Groundwater Pumping Contingency Plan**. Within six months of the submission referred to in Part G, item 5 [Hydrogeological Groundwater Study Report], the Licensee shall submit to the Board, for approval, a revised Plan updated to current site conditions. The Plan shall satisfy the requirements of Schedule 4, item 9.
16. The Licensee shall comply with the approved **Tailings Containment Area and Dry Stack Tailings Storage Facilities Emergency Preparedness Plan**. A minimum of 90 days prior to the construction of any new Dry Stack Tailings Storage Facility, the Licensee shall submit to the Board, for approval, a revised Plan, prepared under the direction of, and signed off by a Professional Engineer. Where applicable, the Plan shall be in accordance with Section 4 of the *Dam Safety Guidelines*.
17. A minimum of 60 days prior to recommencing operation of the Wastewater Treatment Facilities following any shutdown of a period greater than 90 days, the Licensee shall submit to the Board, for approval, a **Wastewater Treatment Facilities Operations, Maintenance and Surveillance Manual**. The Plan shall satisfy the requirements of Schedule 4, item 10.
18. The Licensee shall comply with the approved **Flat River Hydrology Plan**. Any revisions to the Plan shall be in accordance with Schedule 4, item 11.

**Commented [KM7]:** Board staff propose updating the wording to reflect that the Report was submitted in 2017 under Licence MV2015L2-0003.

[https://registry.mvlwb.ca/\\_layouts/15/download.aspx?SourceUrl=/Documents/MV2015L2-0003/MV2015L2-0003%2520-%2520NATCL%2520-%2520Integrated%2520Geochemical%2520Load%2520Balance%2520and%2520Risk%2520Assessment%2520Report%2520-%2520Jan27-17.pdf](https://registry.mvlwb.ca/_layouts/15/download.aspx?SourceUrl=/Documents/MV2015L2-0003/MV2015L2-0003%2520-%2520NATCL%2520-%2520Integrated%2520Geochemical%2520Load%2520Balance%2520and%2520Risk%2520Assessment%2520Report%2520-%2520Jan27-17.pdf)

**Commented [KM8]:** Board staff propose updating the submission timeline to be tied to operation of the Dry Stack Tailings Processing Facility (NATCL does not intend to construct this Facility).

19. The Licensee shall comply with the approved **Plume Delineation Study Design** for the effluent discharged from the Wastewater Treatment Facilities.
20. The Licensee shall complete and submit to the Board within 90 days of completion of the study, for approval, a **Plume Delineation Study Report** in accordance with the approved Plume Delineation Study Design required under Part G, item 19.
21. The Licensee shall submit to the Board, for approval, a **Nitrogen Response Plan** within one year of recommencing operation of the Wastewater Treatment Facility. This Plan shall satisfy the requirements listed in Schedule 4, item 12.
22. A minimum of six months prior to submitting the Final Closure and Reclamation Plan as per Part J, item 4, the Licensee shall complete and submit to the Board, for approval, an updated **Phase II Environmental Site Assessment Report** for the Project that satisfies the requirements of a Canadian Standards Association (Z769) Phase II Environmental Site Assessment and includes an analysis, conducted by a Professional Engineer or Professional Geoscientist, as to how the Phase II Environmental Site Assessment contributes to and is incorporated with the closure and reclamation plans referred to in Part J of this Licence.

#### **Operations of Structures and Facilities**

23. The Licensee shall construct, operate, and maintain the Dry Stack Tailings Storage Facilities to design specifications/engineering standards, such that:
  - a) The Dry Stack Tailings Storage Facilities and covers are geotechnically stable;
  - b) The potential for liquefaction within and beneath the Dry Stack Tailings Storage Facilities is minimized in the event of the design basis earthquake event for operations and the maximum design earthquake at closure;
  - c) All Tailings deposited in the Dry Stack Tailings Storage Facilities are compacted to a minimum of 95% Standard Proctor Dry Density, or as otherwise directed by the design Professional Engineer when it is not possible or practical to meet this density. Areas of reduced compaction density must be minimized;
  - d) Run-on Water entering the Dry Stack Tailings Storage Facilities from up-gradient sources of surface Water is minimized;
  - e) Surface Water interception and diversion structures are constructed to manage peak Discharge from 1/1000-year storm event;
  - f) Interactions between the Dry Stack Tailings Storage Facilities and the Flat River are minimized for the 1/1000-year flood event;
  - g) Any changes in the phreatic Water surface level shall not interfere with the geotechnical stability of the Dry Stack Tailings Storage Facilities;
  - h) Infiltration of Water during routine operations is minimized;
  - i) Generation of wind-blown dust from the Dry Stack Tailings Storage Facilities is minimized;
  - j) Signs of erosion or settlement are addressed immediately;
  - k) Conditions for eventual closure and reclamation of the Dry Stack Tailings Storage Facilities are optimized;
  - l) The maximum open area in Dry Stack Tailings Storage Facility 6 is 16 hectares at any given time; and
  - m) Monitoring of the Dry Stack Tailings Storage Facilities is sufficient to ensure that:



- i. Performance design criteria, as described in the Final Detailed Construction Plans referred to in Part E, item 9 and the Final Detailed Cover Design Plans referred to in Part E, items 10 and 11, are being met; and,
- ii. Necessary changes in operation of the Dry Stack Tailings Storage Facilities, including any additional mitigations, are identified.

#### **Inspections of Structures and Facilities**

24. The Licensee shall conduct daily inspections of the dams, Tailings line(s) and catchment basin(s) during milling operations; and daily inspections of the Wastewater Treatment Facilities, Stinky Pond, the drainage culvert, and the channel to the Flat River when the Wastewater Treatment Facilities are operational, or more frequently as directed by an Inspector. Records of these inspections shall be made available to an Inspector or the Board upon request.
25. The Licensee shall ensure that geotechnical inspections of the Tailings Containment Area and Dry Stack Tailings Storage Facilities are conducted annually, during the summer months, and following any unforeseen extreme events (such as earthquakes, flooding, cracks, sinkhole formation, etc), by a Professional Engineer. The Licensee shall:
  - a) Provide written notification to an Inspector a minimum of two weeks prior to the Professional Engineer's annual inspections; and
  - b) Within 60 days of completing the inspection, 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 and a summary of any actions taken by the Licensee to satisfy the previous review's engineering recommendations.
26. The Licensee shall conduct an independent **Dam Safety Review** of the Tailings Containment Area prior to October 1, 2017, and every five years thereafter, or at a frequency approved by the Board. The Dam Safety Review shall be conducted in accordance with the *Dam Safety Guidelines* by a Professional Engineer. Within 90 days of completing the Dam Safety Review, the Licensee shall submit the Professional Engineer's **Dam Safety Review 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, and a summary of any actions taken by the Licensee to satisfy the Professional Engineer's recommendations from the previous Review.
27. The Licensee shall conduct an independent inspection and review of the Dry Stack Tailings Storage Facilities every five years following the commencement of their construction, or at a frequency approved by the Board. The **Dry Stack Tailings Storage Facilities Inspection and Review** shall be conducted by a Professional Engineer and, where applicable, a Professional Geoscientist. Within 90 days of completing the Dry Stack Tailings Storage Facilities Inspection and Review, the Licensee shall submit the Professional Engineer's and, where applicable, Professional Geoscientist's, **Dry Stack Tailings Storage Facilities Inspection and Review Report** to the Board. The Report shall include a covering letter from the Licensee outlining an implementation plan to respond to any recommendation made by the Professional Engineer and, where applicable, the Professional Geoscientist, including a rationale for any decisions that deviate from the

Professional Engineer and Professional Geoscientist's recommendations, and a summary of any actions taken by the Licensee to satisfy the Professional Engineer and Professional Geoscientist's recommendations from the previous Review.

#### **Discharge Locations and Rates**

28. The Licensee shall direct all Tailings to the Tailings Containment Area, the Dry Stack Tailings Storage Facilities, or underground, as described in the approved Tailings Processing and Storage Facilities Management and Monitoring Plan referred to in Part G, item 14.
29. The Licensee shall direct all treated Sewage to the Tailings Containment Area.
30. The Licensee shall direct all liquid Waste from the Wastewater Treatment Facilities to Stinky Pond or to the Tailings Containment Area.
31. The Licensee shall ensure that a control structure is installed and maintained at the culvert at the outlet of Stinky Pond, such that the flow of Waste from Stinky Pond can be stopped and directed back to the Tailings Containment Area. The Licensee shall only seal the culvert if directed to do so by an Inspector.
32. The Licensee shall Discharge effluent from the Wastewater Treatment Facilities to Stinky Pond at the following rates:
  - a) When the flow rate of the Flat River is less than 50,000 m<sup>3</sup>/day, the maximum Discharge rate should not exceed 187.5 m<sup>3</sup>/hr, to a maximum Discharge of 4,500 m<sup>3</sup>/day;
  - b) When the flow rate of the Flat River is greater than or equal to 50,000 m<sup>3</sup>/day, the maximum Discharge rate should not exceed 333.3 m<sup>3</sup>/hr, to a maximum Discharge of 8,000 m<sup>3</sup>/day;
  - c) The maximum hourly Discharge rate specified in Part G, item 32(a) may be increased to a maximum rate of 333.3 m<sup>3</sup>/hr, when:
    - i. The Flat River flow rate exceeds 50,000 m<sup>3</sup>/day for three consecutive days, as verified by methods outlined in the approved Flat River Hydrology Plan;
    - ii. Ice-off conditions are present at Surveillance Network Program station 4-45 as verified by methods outlined in the approved Flat River Hydrology Plan; and
    - iii. An Inspector has provided written authorization; and
  - d) When the flow rate of the Flat River is less than 50,000 m<sup>3</sup>/day for three consecutive days or when ice-on conditions are observed at the Surveillance Network Program station 4-45, the maximum hourly Discharge rate must immediately revert to that specified in Part G, item 32(a).
33. During transition periods between the Discharge rates outlined in Part G, item 32, the Licensee shall record and report the daily Discharge volume of the Flat River to the Board and to an Inspector as described in the approved Flat River Hydrology Plan required under Part G, item 18.

#### **Effluent Quality Criteria**

34. The Licensee shall ensure that effluent from the Wastewater Treatment Facilities at Surveillance Network Program station 4-43 has a pH value between 6.5 and 9.0 and meets the following effluent quality criteria (EQC):

Parameter	EQC in mg/L	
	Maximum Average Concentration	Maximum Grab Concentration
Total Suspended Solids	12	24
Total Ammonia as N	5	10
Fluoride	4	7
Nitrate as N	8	16
Sulphate	384	768
Total Aluminum	1	2
Total Arsenic	0.02	0.04
Total Boron	4	8
Total Cadmium	0.0007	0.001
Total Chromium	0.0008	0.002
Total Copper	0.01	0.02
Total Iron	0.8	1.5
Total Lead	0.02	0.04
Total Molybdenum	0.3	0.6
Total Nickel	0.09	0.18
Total Zinc	0.1	0.2

35. The Licensee shall direct effluent from the Wastewater Treatment Facilities that does not meet the EQC specified in Part G, item 34 back to the Tailings Containment Area.
36. The Licensee shall submit the Water quality data for samples collected from Surveillance Network Program Station 4-43 [Wastewater Treatment Facility] to the Board and an Inspector as follows:
  - a) No later than five days prior to resuming Discharge of effluent to Stinky Pond following any mine closure or shutdown period, and
  - b) No later than five days prior to resuming Discharge to Stinky Pond following an exceedance of the EQC specified in Part G, item 34.
37. The Licensee shall only resume Discharge to Stinky Pond from the Wastewater Treatment Facilities with written authorization from an Inspector.
38. The Licensee shall ensure that Seepage down-gradient of the fuel berm at Surveillance Network Program station 4-34 meets the following EQC:

Parameter	EQC in mg/L	
	Maximum Average Concentration	Maximum Grab Concentration
Extractable Petroleum Hydrocarbons	4.00	5.00
Benzene	4.00	-
Ethyl Benzene	2.00	-
Toluene	0.39	-

39. If any EQCs as listed in Part G, item 38 are exceeded, the Licensee shall act in accordance with the approved Spill Contingency Plan referred to in Part I of this Licence.
40. The Licensee shall ensure that Groundwater sampled at Surveillance Network Program stations 4-27-4, 4-27-7 to 4-27-16 (inclusive), 4-28-1 and 4-28-2 has a pH value between 6.0 and 9.0 and meets the following EQC:

Parameter	EQC in mg/L	
	Maximum Average Concentration	Maximum Grab Concentration
Total Suspended Solids	15.0	30.0
Total Ammonia as N	5.00	10.00
Total Arsenic	0.20	0.40
Total Cadmium	0.01	0.02
Total Copper	0.20	0.40
Total Lead	0.20	0.40
Total Nickel	0.40	0.80
Total Zinc	0.20	0.40

41. If Water quality data from any Groundwater sample collected at Surveillance Network Program stations 4-27-4, 4-27-7 to 4-27-16 (inclusive), 4-28-1 and 4-28-2 exceeds the EQC specified in Part G, item 40, the Licensee shall:
- Implement the Groundwater Pumping Contingency Plan referred to in Part G, item 15 of this Licence;
  - Notify an Inspector immediately; and,
  - Within 30 days following implementation of the Groundwater Pumping Contingency Plan, report the occurrence to the Board and an Inspector, which shall include a description of actions taken to prevent Groundwater that exceeds the EQC from reaching the Flat River.

**Part H: Conditions Applying to Aquatic Effects Monitoring**

1. The Licensee shall design and implement an Aquatic Effects Monitoring Program (AEMP) that meets the following objectives:
  - a) To determine the short- and long-term effects of the Project on the Receiving Environment;
  - b) To test the predictions made in submissions to the Board regarding the impacts of the Project on the Receiving Environment;
  - c) To assess the effectiveness of mitigation measures that are used to minimize the effects of the Project on the Receiving Environment;
  - d) To identify whether there is any need for additional mitigation measures to reduce or eliminate Project -related effects; and
  - e) To provide an early warning system where the results of aquatic monitoring are used to prevent or avoid adverse environmental effects through a Response Framework and regular evaluation of the AEMP.
2. The Licensee shall submit to the Board a minimum of 24 months prior to transitioning to final closure of the mine, an **AEMP Design Plan**. The Plan shall satisfy the requirements of Schedule 5, item 1.
3. The Licensee shall implement the AEMP Design Plan referred to in Part H, item 2 once approved, and may at any time propose revisions to the Plan. The Licensee shall review and revise the Plan as necessary to reflect directives from the Board. All revised Plans shall be submitted to the Board for approval.
4. The Licensee shall submit to the Board, for approval, a revised AEMP Design Plan every three years following the previous approval, or as directed by the Board.
5. The Licensee shall submit to the Board by May 1, 2019 or as directed by the Board, for approval, an **Aquatic Effects Re-evaluation Report**, and every three years thereafter, that meets the following objectives and satisfies the requirements of Schedule 5, item 2:
  - a) To describe the Project-related effects on the Receiving Environment as measured from Project inception and compared against predictions;
  - b) To revise predictions of Project-related effects on the Receiving Environment based on monitoring results obtained since Project inception; and
  - c) To provide supporting evidence, if necessary, for proposed revisions to the AEMP Design Plan.
6. The Licensee shall submit to the Board on or before March 31, 2017, and by March 31 of each year thereafter, for approval, an **AEMP Annual Report**. The Report shall satisfy the requirements of Schedule 5, item 3, and include information relating to data collected in the preceding calendar year.
7. If any Action Level as defined in the approved AEMP Design Plan is exceeded, the Licensee shall:
  - a) Notify the Board within 30 days of when the exceedance is detected; and
  - b) Within 90 days of when the exceedance is detected, or as otherwise directed by the Board, submit to the Board, for approval, an **AEMP Response Plan** that satisfies the requirements of Schedule 5, item 4.

8. If not approved by the Board, the plans and reports referred to in Part H, items 2, 5, 6, and 7 shall be revised and resubmitted in accordance with directives from the Board.

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**Part I: Conditions Applying to Contingency Planning**

1. The Licensee shall adhere to the approved Spill Contingency Plan.
2. If, during the period of this Licence, a spill or Unauthorized Discharge of Waste occurs or is foreseeable the Licensee shall:
  - a) Implement the Spill Contingency Plan;
  - 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;
  - 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 and an Inspector within 30 days; and
  - e) Implement the relevant components of the Groundwater Pumping Contingency Plan as per Part G, item 15.
3. All spills and Unauthorized Discharges of Water or Waste shall be reclaimed to the satisfaction of an Inspector.

**Part J: Conditions Applying to Closure and Reclamation**

1. The Licensee shall submit to the Board, for approval, a revised **Interim Closure and Reclamation Plan** a minimum of 24 months prior to transitioning to final closure of the mine.
2. The Licensee shall submit a revised Interim Closure and Reclamation Plan every three years from its preceding date of approval or upon the request of the Board.
3. The Licensee shall operate in accordance with the Interim Closure and Reclamation Plan as approved by the Board and shall endeavor to carry out progressive Reclamation of areas as soon as is reasonably practicable.
4. A minimum of 24 months prior to the end of commercial operations, the Licensee shall submit a **Final Closure and Reclamation Plan** to the Board for approval.
5. A minimum of 18 months prior to start of final Closure and Reclamation, the Licensee shall apply to the Board for a new Licence specific to those activities.

**Signed behalf of the Mackenzie Valley Land and Water Board**

[Redacted signature]

Chair

Witness



**Schedules**  
**Attached to Water Licence MV2015L2-0003**  
**North American Tungsten Corporation Ltd. – Cantung Mine**

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## Schedule 1

### Part B – 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 information:

#### Management Plans and Activities

- a) A summary of engagement activities conducted in accordance with the approved **Engagement Plan**, referred to in Part B, item 14 of this Licence, undertaken during the previous calendar year, including a brief description of activities planned for the forthcoming year;
- b) An updated Project plan;
- c) A summary of **construction** and maintenance activities conducted in accordance with Part E of this Licence, undertaken during the previous calendar year;
- d) A summary of **Modification** activities conducted in accordance with Part F of this Licence, undertaken during the previous calendar year;
- e) A summary of activities conducted in accordance with the approved **Waste Management Plan** referred to in Part G, item 2 of this Licence, undertaken during the previous calendar year, including a summary of updates or changes to the processes or facilities required for the management of Waste, including the following:
  - i. Monthly and annual quantities in cubic meters of soil treated in the Landfarm;
  - ii. Monthly and annual quantities of solid Waste disposed of in the Solid Waste Disposal Facility;
  - iii. Monthly and annual quantities of hazardous Waste generated and removed from the Project site; and
  - iv. A summary of weekly Waste Rock composites, geochemical analysis, including acid base accounting analysis, sampling dates, and geologic rock types.
- f) A summary of activities conducted in accordance with the approved **Water Management and Mine-site Erosion and Sediment Protection Plan** referred to in Part G, item 3 of this Licence, undertaken during the previous calendar year, including a summary of updates or changes to the process or facilities required for the management of Water or liquid Waste, including the following:
  - i. Monthly and annual quantities in cubic metres of Water pumped from the Flat River;
  - ii. Monthly and annual quantities in cubic metres of liquid Waste pumped from each Dry Stack Tailings Storage Facility and directed to the Wastewater Treatment Facilities or the Tailings Containment Area, identified by facility;
  - iii. Monthly and annual quantities in cubic metres of the solid and liquid fractions discharged to the Tailings Containment Area;
  - iv. Weekly and annual quantities in cubic metres of liquid Waste discharged from the Wastewater Treatment Facilities to Stinky Pond;
  - v. Monthly and annual quantities in cubic metres of liquid Waste discharged from Stinky Pond to the Flat River;
  - vi. Weekly and annual Flat River flow volume in cubic metres;
  - vii. Monthly and annual quantities in cubic metres of treated Sewage discharged to the Tailings Containment Area;
  - viii. Monthly and annual quantities in cubic metres of recycled Minewater;
  - ix. Monthly and annual estimates and measurements of precipitation and runoff;

- x. Monthly and annual quantities of Water in cubic metres used for dust control;
  - xi. A description of any erosion susceptible areas encountered and a summary of activities to prevent or mitigate erosion;
  - xii. A report of the performance of erosion mitigations applied to each area;
  - xiii. A summary and interpretation of monitoring results, including any Action Level exceedances;
  - xiv. A description of actions taken in response to any Action Level exceedances; and
  - xv. An updated Water balance if required as per the approved Plan;
- g) A summary of activities conducted in accordance with the approved **Flat River Erosion and Sediment Protection Plan** referred to in Part G, item 4 of this Licence, undertaken during the previous calendar year, including the following:
- i. A description of any erosion susceptible areas encountered and a summary of activities to prevent or mitigate erosion; and
  - ii. A report of the performance of erosion mitigations applied to each area;
- h) A summary of activities conducted in accordance with the approved **Tailings Processing and Storage Facilities Management and Monitoring Plan** referred to in Part G, item 14 of this Licence, undertaken during the previous calendar year, including any Action Level exceedances and a description of actions taken in response to any Action Level exceedances:
- i. Monthly, annual, and total quantities in cubic metres of solid Waste discharged to each of the Dry Stack Tailings Storage Facilities;
  - ii. The total size of each of the Dry Stack Tailings Storage Facilities, including the area of the covered portion(s), the area of the open portion(s), and the minimum and maximum heights;
  - iii. A summary of the moisture and density data gathered for each of the Dry Stack Tailings Storage Facilities; and
  - iv. A summary and interpretation of monitoring results, including any Action Level exceedances; and
  - v. A description of actions taken in response to Action Level exceedances;
- i) A summary of activities conducted in accordance with the following approved plans, undertaken during the previous calendar year, including any Action Level exceedances and a description of actions taken in response to any Action Level exceedances for the following plans in Part G of this Licence:
- i. **Groundwater Pumping Contingency Plan;**
  - ii. **Tailings Containment Area and Dry Stack Tailings Storage Facilities Emergency Preparedness Plan;**
  - iii. **Wastewater Treatment Facilities Operations, Maintenance and Surveillance Manual;** and
  - iv. **Flat River Hydrology Plan**, including:
    - i. Daily, weekly, and annual flow data for the Middle Bridge station;
    - ii. The transition dates for high and low flow season Discharge from the Wastewater Treatment Facility;
    - iii. The number of days that the Wastewater Treatment Facility discharged at a rate greater than 4,500 m<sup>3</sup>/day;
    - iv. Dates and documentation of the ice-on and ice-off conditions;
    - v. Summaries of flows measured in tributary streams;
    - vi. Flow rates measured at the surface runoff stations; and

- vii. An updated stage-discharge rating curve for the Surveillance Network Monitoring Stations 4-45 and 4-5;
- j) A summary of actions taken in response to the various inspections conducted during the previous calendar year referred to in Part G of this Licence, including the following:
  - i. **Geotechnical Inspection Report** for the geotechnical inspection(s);
  - ii. **Dam Safety Review Report** when the Dam Safety Review was conducted; and
  - iii. **Dry Stack Tailings Storage Facilities Inspection and Review Report** when the Dry Stack Tailings Storage Facilities Inspection and Review was conducted;
- k) A summary of activities conducted in accordance with the approved **Spill Contingency Plan**, required in Part I, item 1 of this Licence, undertaken during the previous calendar year, including the following:
  - 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 I, item 2 of this Licence;
  - ii. An outline of any spill training and communications exercises carried out during the previous calendar year; and
  - iii. A detailed discussion on the performance, installation, and evaluation, including the use of photographs, of the primary and secondary containment measures used in fuel storage to prevent impacts to all Waters;
- l) A summary of activities conducted in accordance with the approved **Interim Closure and Reclamation Plan** referred to in Part J, item 1 of this Licence, undertaken during the previous calendar year, including the following:
  - i. A progress report on any reclamation research programs undertaken during the year;
  - ii. A progress report on the Flat River risk assessment;
  - iii. A summary of any Progressive Reclamation work undertaken during the year, supported by applicable environmental or analytical reports;
  - iv. An evaluation of the previous year's reclamation work;
  - v. An outline of activities planned for the forthcoming calendar year; and
  - vi. Any adjustments or transactions made in regards to the security deposit;

**Other Reporting Requirements**

- m) A progress report on any studies or plans, as requested by the Board during the previous calendar year and a brief description of any future studies planned by the Licensee;
- n) Any other details on Water Use or Waste disposal requested by the Board by November 1<sup>st</sup> of the year being reported;
- o) A summary of the calibration and status of the meters and devices referred to in Part B, item 10 of this Licence;
- p) Tabular summaries of all data and information generated during the previous calendar year under the Surveillance Network Program, and graphical summaries of parameters with EQC referred to in Part G, at the points of compliance (Surveillance Network Program stations 4-27-4, 4-27-7 TO 4-27-16 (inclusive), 4-28-1, 4-28-2, 4-34 and 4-43), in excel or an electronic and printed format acceptable to the Board. The Licensee shall provide raw data in electronic form to the Board;

- q) Discussion of any problems with data collection, analysis, or results;
- r) A list of submissions made to the Board during the previous calendar year; and
- s) A summary of actions taken to address concerns, non-conformances, or deficiencies in any reports filed by an Inspector during the previous calendar year.

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## Schedule 2

### Part C - Security Requirements

1. Pursuant to subsection 72.11(1) of the Act and section 12 of the [Mackenzie Valley Federal Areas Water Regulations](#)~~Northwest Territories Waters Regulations~~, the Licensee shall post and maintain security deposits on the schedule set out below and once achieved, shall maintain a security deposit totalling \$30,950,000, as follows:
  - a) Upon issuance of this Licence, the Licensee shall post and maintain a security deposit of \$27,950,000;
  - b) A minimum of 90 days prior to the construction of Tailings Storage Facility 4b and 7, the Licensee shall post and maintain an additional security deposit of \$1,100,000 to maintain a total security deposit of \$29,050,000; and
  - c) A minimum of 90 days prior to the construction of Tailings Storage Facility 6, the Licensee shall post and maintain an additional security deposit of \$1,900,000 to maintain a total security deposit of \$30,950,000.

### Schedule 3

#### Part E – Construction

1. The **Final Detailed Construction Plan - Landfarm** referred to in Part E, item 6 of this Licence, shall include, but not be limited to, the following information:
  - a) A description of the facility to be constructed, including a map to scale and GPS coordinates of the proposed location;
  - b) Relevant background information, including the data from geotechnical investigations, the results of programs to characterize soil, rock, Groundwater, ground ice, ground temperature conditions to the depth expected to be affected by the proposed facility, beneath the footprint of the facility, including runoff control structures, as deemed adequate by the Professional Engineer responsible for the design;
  - c) Quantities and the physical and geochemical characteristics of materials required for construction;
  - d) Design drawings and specifications of the facility, stamped by a Professional Engineer;
  - e) Stability analyses;
  - f) Construction considerations, including timing, sequencing, and a schedule;
  - g) A Quality Control Plan stamped by a Professional Engineer, a component of which includes a plan for a Professional Engineer to supervise and field check to construction activities; and
  - h) Operations and maintenance requirements for the facility, including but not limited to the following:
    - i. Descriptions of material inputs and acceptance criteria;
    - ii. Expected volumes of contaminated soil and snow;
    - iii. Leachate management methodologies;
    - iv. Methods and frequencies for any conditioning proposed to promote remediation;
    - v. Descriptions of the monitoring program for assessing soil and leachate chemistry within the facility, including, but not limited to, sampling locations and frequencies, and parameters to be measured;
    - vi. Remediation criteria;
    - vii. Methods for monitoring that the contaminated materials are effectively contained within the facility;
    - viii. Detailed instrumentation and monitoring plans, including but not limited to the following: sampling locations and frequencies, parameters to be measured, settlement, slope stability, Groundwater seepage and contaminant transport, and liner performance; and
    - ix. A closure and reclamation plan for the facility.
2. The **Final Detailed Construction Plan - Solid Waste Disposal Facility** referred to in Part E, item 7 of this Licence, shall include, but not be limited to, the following information:
  - a) A description of the facility to be constructed, including a map to scale and GPS coordinates of the proposed location;
  - b) Relevant background information, including the data from geotechnical investigations, the results of programs to characterize soil, rock, Groundwater, ground ice, and ground temperature conditions to the depth expected to be affected by the proposed facility, beneath the footprint of the facility including runoff control structures, as deemed adequate by the Professional Engineer responsible for the design;
  - c) Quantities and the physical and geochemical characteristics of materials required for construction;
  - d) Design drawings and specifications of Engineered Structures, stamped by a Professional Engineer;

- e) Stability analyses;
  - f) Construction considerations, including timing, sequencing, and a schedule;
  - g) The details of a volume balance and Solid Waste Disposal Facility sizing that considered but is not limited to: refuse volume and density, cover material volume and density, and material balance;
  - h) A Quality Control Plan stamped by a Professional Engineer, a component of which includes a plan for a Professional Engineer to supervise and field check construction activities;
  - i) Operations and maintenance requirements for the facility, including but not limited to the following:
    - i. Descriptions of material inputs;
    - ii. Expected volumes of leachate and management methodologies;
    - iii. Leachate management methodologies; and,
    - iv. Detailed instrumentation and monitoring plans, including but not limited to the following: sampling locations and frequencies, parameters to be measured, settlement, slope stability, Groundwater seepage and contaminant transport, and liner performance; and
  - j) A closure and reclamation plan for the facility, including an engineered final cover design, including, but not limited to health and safety considerations, vector and wildlife control, Water balance for net infiltration, material characteristics and configuration, and, final slopes and contouring to ensure the closed facility is geotechnically stable and Water pooling and erosion are minimized.
3. The **Tailings Containment Area Cover Design Study**, referred to in Part E, item 8 of this Licence shall include, but not be limited to, the following information:
- a) A cover design alternatives analysis, including pros and cons;
  - b) A summary table of cover design input variables noting what is known (measured or assumed) and unknown, with description of the limitations of assumed and unknown variables on cover performance;
  - c) A summary of how the results of the Tailings Containment Area Monitoring Plan referred to in Part G, item 10 of this Licence were integrated into the design and monitoring of the cover system;
  - d) The engineered design with supporting analysis, and description of the purpose of each component of the cover system;
  - e) The construction and materials specifications for the cover system;
  - f) The construction and materials Quality Assurance and Quality Control Plan program for the cover system;
  - g) The details of a monitoring program to assess, but not be limited to: cover performance; oxygen ingress into Tailings; net infiltration into Tailings; and, solids and pore Water geochemistry;
  - h) The details of how the monitoring program will confirm design assumptions;
  - i) A Contingency Plan outlining measures to be implemented should cover failure occur;
  - j) A Dust Management Plan for work occurring on the Tailings ponds; and
  - k) An analysis as to how this information provided in this Study contributes to a closure and reclamation plan.
4. The **Final Detailed Construction Plans - Dry Stack Tailings Facilities TSF4b, TSF7, and TSF6** referred to in Part E, item 9 of this Licence, shall include, but not be limited to, the following information:
- a) A description of the facilities to be constructed, including locations;
  - b) Relevant background information, including the data from geotechnical investigations, as deemed adequate by the Professional Engineer responsible for the design;



- c) Relevant supporting information, including the results from any relevant monitoring, research, or modelling programs, and an explanation of how this information has been considered in the Final Detailed Construction Plans;
  - d) For TSF6, the results of a hydro-technical analysis of potential interactions with the Flat River for the design flood event, and an explanation of how this information has been considered in the Final Detailed Construction Plans, including any mitigation measures;
  - e) Design drawings and specifications of the facility and any Water management structures, stamped by a Professional Engineer;
  - f) Construction and material specifications, including geotechnical properties of the Tailings;
  - g) Stability and sensitivity analyses;
  - h) Deformation ranges;
  - i) Construction considerations, including timing, sequencing, and a schedule;
  - j) Detailed instrumentation and monitoring plans, including but not limited to sampling locations, parameters measured, and frequencies of sampling to be carried out; and
  - k) A Quality Assurance and Quality Control Plan stamped by a Professional Engineer, a component of which includes a plan for a Professional Engineer to supervise and field check construction activities.
5. The **Final Detailed Cover Design Plan - Dry Stack Tailings Facilities TSF4b, TSF7, and TSF6** referred to in Part E, items 10 and 11 of this Licence, shall be signed and stamped by a Professional Engineer, and shall include, but not be limited to, the following information:
- a) Cover design alternatives analyses;
  - b) Summary table of cover design input variables noting what is known (measured or assumed) and unknown, with description of the limitations of assumed and unknown variables on cover performance;
  - c) Summary of how the results of any relevant monitoring, research, or modelling programs are integrated into the final cover design;
  - d) Design drawings and specifications, stamped by a Professional Engineer;
  - e) Construction and material specifications, including sources of materials;
  - f) A Quality Assurance and Quality Control Plan, a component of which includes a plan for a Professional Engineer to supervise and field check construction activities;
  - g) A monitoring program to assess, but not be limited to: cover performance; oxygen ingress into Tailings; net infiltration into Tailings; and, solids and pore Water geochemistry;
  - h) A description of how the monitoring program will confirm design assumptions;
  - i) A contingency plan outlining measures to be implemented should cover failure occur; and
  - j) An analysis as to how these Design Plans contribute to a closure and reclamation plan.

## Schedule 4

### Part G – Waste and Water Management

1. The **Water Management and Mine-site Erosion and Sediment Protection Plan**, referred to in Part G, item 3 of this Licence shall include, but not be limited to the following information:
  - a) Information regarding Water management:
    - i. A summary, with appropriate maps or diagrams, of components of the Water management system and all the Water and Waste streams that report to and from it;
    - ii. A qualitative and quantitative description of hydrological settings, including, but not limited to, climate, hydrology, and hydrogeology;
    - iii. A description of the processes and facilities intended for the purposes of:
      - i. Obtaining freshwater from the Flat River;
      - ii. Managing surface runoff from the Project (including the storm drain system);
      - iii. Diverting surface run-on Water;
      - iv. Collecting and managing any liquid Wastes resulting from the Project; and
      - v. Managing Sewage;
    - iv. An overall Water balance for the Project's major facilities (including, but not limited to, the mill, underground mine, Tailings Containment Area, Dry Stack Tailings Storage Facilities) a schematic representation, and description of when the Water balance will be recalculated;
    - v. A detailed Water balance for the Tailings Containment Area;
    - vi. A detailed Water balance for the Dry Stack Tailings Storage Facilities;
    - vii. A depiction of surface Water flow direction(s) overlaid on a topographic map that includes relevant facilities and topographic features; and
    - viii. Any other information required to describe how Water and liquid Waste will be managed such that the objectives listed in Part G, item 1 of this Licence are achieved;
  - b) Information regarding erosion and sediment control methodologies:
    - i. A summary, with appropriate maps or diagrams, of the Project identifying areas susceptible to erosion;
    - ii. The process and criteria for assessing erosion risk;
    - iii. A description of the best management practices that will be employed for different activities and for different levels of assessed risk; and
    - iv. Any other information required to describe how erosion and sedimentation will be minimized;
  - c) Information regarding monitoring activities:
    - i. Details of monitoring, including rationale, for each component of the Water management system;
    - ii. Details of monitoring, including rationale, that will be undertaken with respect to erosion and sediment control;
    - iii. A map of the surface Water and Groundwater quality monitoring locations, including relevant facilities and topographic features; and

- iv. Linkages to other monitoring programs in this Licence; and
- d) Information regarding responses to monitoring results:
- i. A description of how the Licensee will link the results of monitoring to those corrective actions necessary to ensure that the objective listed in Part G, item 1 of this Licence is met. This description shall include:
    - i. Definitions, with rationale, for Action Levels applicable to the performance of the Water management facilities and erosion and sedimentation control measures (not including the Tailings Containment Area and Dry Stack Tailings Storage Facilities); and
    - ii. For each Action Level, a description of how exceedances of the Action Level will be assessed and generally, which types of actions will be taken for the Action Levels exceeded; and
  - ii. Action Level exceedances and actions taken during the year shall be reported in the Annual Water Licence Report as per Part B, item 12 of this Licence.
2. The **Flat River Erosion and Sediment Protection Plan**, referred to in Part G, item 4 of this Licence shall include, but not be limited to the following information:
- a) A flood evaluation;
  - b) A description of how the engineering designs of the Tailings Containment Area and the Dry Stack Tailings Storage Facilities address floods associated with a flow rate that has an annual exceedance probability of 1/3 between the 1/1000 year flood and the probable maximum flood;
  - c) A summary of the engineering design, material characteristics, and construction details for erosion protection and slope armoring of the Tailings Containment Area and the Dry Stack Tailings Storage Facilities;
  - d) A description of flood control and flood response actions;
  - e) Details of the monitoring program demonstrating the effectiveness and maintenance of all erosion and sediment control measures and vegetation success;
  - f) A description of flood control and flood response actions; and
  - g) An analysis as to how this Plan contributes to a closure and reclamation plan.
3. The **Hydrogeological Groundwater Study Report**, referred to in Part G, item 5 of this Licence shall include, but not be limited to, the following information:
- a) An update to the Hydrogeological Groundwater Study, dated December 30, 2013;
  - b) Updated exfiltration rates and exfiltration pathways for all Tailings ponds and storage facilities;
  - c) Based on modelling data, a description of potential changes to the hydrogeologic regime as a result of each Dry Stack Tailings Storage Facility; and
  - d) A discussion and interpretation of results from the Hydrogeological Groundwater Study, including a description of the study methods and assumptions in the study.
4. The **Geochemical Risk Assessment Report**, referred to in Part G, item 6 of this Licence shall include, but not be limited to, the following information:

- a) An initial desktop survey of historical construction records, photos and correspondence to determine the history of Tailings and Waste Rock deposition on site and past use of Tailings and Waste Rock for construction (e.g. Tailings embankments, road construction);
  - b) An inventory of the quantity of potentially acid generating materials on site and the areas affected by these materials and exposures (including Tailings, Waste Rock, the underground mine and exposed walls);
  - c) A description of how the testing conducted provides an understanding of the character of the Wastes from each potential source (including each Tailings pond, Waste Rock piles, the underground mine and pit walls);
  - d) Field and laboratory kinetic testing of potentially acid generating and potentially non-acid generating material to determine current source concentrations and to predict future source concentrations from these materials. The field and laboratory program shall incorporate, but not be limited to, the following:
    - i. Eight field leach kinetic tests;
    - ii. Scale should be sufficiently large to include at least 150 kilograms of Waste material;
    - iii. Material placed in leaching tests should have geological description and solid phase geochemical characterization (static test) to allow association with comparable Waste at the site;
    - iv. At least two field tests should include Tailings to evaluate variable pH conditions and variable elemental content;
    - v. Monitoring wells installed in Tailings ponds to measure chemistry near Tailings cover interface in Tailings Ponds 1 and 2, and near the base of the impoundment in Tailings Ponds 1 and 2, and Tailings Ponds 3 or 4;
    - vi. A monitoring well installed in exposed acidic Tailings on the Flat River flood plain; and,
    - vii. Materials identified as requiring additional kinetic testing based on the extent of the field kinetic test program and the Waste inventory;
  - e) Static testing of:
    - i. Waste Rock produced from underground mine to document ARD risk of material deposited in the Waste Rock dump;
    - ii. Base material and surface material from the airstrip; and
    - iii. Materials identified as requiring additional static testing based on the quantity and type of Waste Rock that is determined from a Waste inventory;
  - f) A detailed Water balance for the site, including on-site measurements of precipitation, evaporation, intake to the mill from the Flat River, and Discharge from the Project site (including Tailings ponds, seepage, and culverts);
  - g) The establishment of management plans for current and future site conditions with respect to Acid Rock Drainage or Metal Leaching potential, including mitigation measures and contingencies for exceedances; and
  - h) An analysis by a Professional Engineer or Professional Geoscientist as to how the information provided in this Report contributes to a closure and reclamation plan.
5. The **Integrated Geochemical Load Balance and Risk Assessment Report**, referred to in Part G, item 9 of this Licence shall include, but not be limited to, the following information:

- a) Updates to the Geochemical Risk Assessment Report referred to in Part G, item 6 of this Licence and the Geochemical Load Balance Model referred to in Part G, item 7 of this Licence, to include the Dry Stack Tailings Storage Facilities;
  - b) Results from any additional studies and analyses recommended in the Geochemical Load Balance Model referred to in Part G, item 7 of this Licence;
  - c) Results from any additional studies or monitoring recommended in the Information Gap Analysis Report referred to in Part G, item 8 of this Licence; and
  - d) An analysis of how the information provided in this Report contributes to a closure and reclamation plan.
6. The **Tailings Containment Area Monitoring Plan**, referred to in Part G, item 10 of this Licence shall include, but not be limited to, the following information:
- a) A summary table of cover design input variables noting what is known (measured or assumed) and unknown;
  - b) The rationale, detailed methods, and equipment employed for proposed monitoring;
  - c) A description of how the field monitoring program will assist in designing the cover, this shall include, but not be limited to: cover material characteristics; oxygen ingress and net infiltration into Tailings; moisture content and suction profiles with depth in the Tailings ponds; solids and pore Water geochemistry profile with depth in the Tailings ponds; and Water table in Tailings ponds;
  - d) A description of proposed methods to predict post-closure conditions for different Tailings cover options along with the evolution of oxidation and geochemistry in the Tailings;
  - e) A discussion of cover materials, availability, sampling, locations and quantity of source material identified with summary of field and lab results; and
  - f) An analysis by a Professional Engineer or Professional Geoscientist as to how this Plan contributes to a closure and reclamation plan.
7. The **Historical Data and Interpretation Report of the Cantung Mine Site**, referred to in Part G, item 12 of this Licence shall include, but not be limited to, the following information:
- a) All historical sampling data concerning Project from all available sources;
  - b) Illustrate all trends from the data in Schedule 4, item 7(a);
  - c) Provide an analysis of all the trends illustrated in Schedule 4, item 7(b); and
  - d) An analysis by a Professional Engineer or Professional Geoscientist as to how the information provided in this Report contribute to a closure and reclamation plan.
8. The **Tailings Processing and Storage Facilities Management and Monitoring Plan**, referred to in Part G, item 14 of this Licence shall include, but not be limited to, the following information:
- a) A description of the physical properties of Tailings, including but not limited to, particle size, dry density, void ratio, and Water Content;
  - b) An evaluation of Tailings disposal options and alternatives;
  - c) A qualitative and quantitative discussion outlining reasoning for selected Tailings disposal options;
  - d) An engineering discussion on Tailings volume and storage capacity as a function of time for each facility and overall; and, where applicable, Tailings storage volume as a function of elevation;
  - e) An evaluation of remaining storage capacity compared to mine reserves;
  - f) A Tailings deposition plan, including timelines and sequencing;
  - g) A description of Tailings deposition methods and procedures;

- h) Operations, maintenance, and surveillance information for the Dry Stack Tailings Processing Facility;
  - i) Operations, maintenance, and surveillance information for the Dry Stack Tailings Storage Facilities;
  - j) Operations, maintenance, and surveillance information for the Tailings Containment Area, in accordance with the requirements of the *Dam Safety Guidelines*;
  - k) A summary of Water management for the Tailings Containment Area and the Dry Stack Tailings Storage Facilities, including run-on and run-off Water, Tailings contact water, and seepage from the facilities;
  - l) The details of sedimentation and erosion control for the Tailings Containment Area and the Dry Stack Tailings Storage Facilities;
  - m) The details of dust management for the Tailings Containment Area and the Dry Stack Tailings Storage Facilities;
  - n) The details of all geotechnical, geochemical, dust, and Water quantity and quality monitoring that will be undertaken, including but not limited to sampling locations, parameters measured, and frequencies of sampling;
  - o) Linkages to other monitoring programs required in this Water Licence;
  - p) Information regarding responses to monitoring results:
    - i. A description of how the Licensee will link the results of monitoring to those corrective actions necessary to ensure that the objective listed in Part G, item 1 of this Licence is met. This description shall include:
      - i. Definitions, with rationale, for Action Levels applicable to the performance of the Tailings management facilities; and
      - ii. For each Action Level, a description of how exceedances of the Action Level will be assessed and generally, which types of actions will be taken for the Action Levels exceeded; and
    - ii. Action Level exceedances and actions taken during the year shall be reported in the Annual Water Licence Report as per Part B, item 12 of this Licence; and
  - q) An analysis by a Professional Engineer as to how this Plan contributes to a closure and reclamation plan.
9. The **Groundwater Pumping Contingency Plan**, referred to in Part G, item 15 of this Licence, shall describe actions to be taken if the Water quality at Surveillance Network Program stations 4-27-4, 4-27-7 to 4-27-16, 4-28-1 and 4-28-2 inclusive, exceed the requirements specified in Part G, item 40; and shall include, but is not limited to, the following:
- a) The details on how the Licensee plans to collect exfiltrate Waters from Tailings Ponds 1, 2, 3, 4, and 5;
  - b) The details on specific Water quality limits that will trigger pumping from each Groundwater extraction well;
  - c) The details on expected Groundwater extraction rates, duration of extraction, and Water quality for each Groundwater extraction well;
  - d) The details on disposal location for Groundwater produced from extraction wells;
  - e) The details on a volumetric Water balance for the disposal location including all sources and sinks of Water and demonstrate that the disposal location is capable of retaining the produced Water from the wells;

- f) The depiction of the expected capture zone for each Groundwater extraction well, under the expected Groundwater extraction rates, on a topographic map depicting Tailings Ponds 1, 2, 3, 4, and 5, and topographic features; and
  - g) Should existing Groundwater extraction wells be incapable of collecting exfiltrate Waters from Tailings Ponds 1, 2, 3, 4, or 5, installation of additional Groundwater extraction wells shall be considered as a method to fulfill the objectives of the Groundwater Pumping Contingency Plan.
10. The **Wastewater Treatment Facilities Operations, Maintenance and Surveillance Manual**, referred to in Part G, item 17 of the Licence, shall include, but not be limited to, the following information:
- a) A description of the Wastewater Treatment Facilities and associated infrastructure;
  - b) The details of operating procedures for the Wastewater Treatment Facilities;
  - c) The details of maintenance procedures and schedules for the Wastewater Treatment Facilities;
  - d) The details of monitoring and surveillance procedures and schedules for the Wastewater Treatment Facilities, including any linkages to the Surveillance Network Program and any other monitoring conducted under other management plans required under this Licence;
  - e) A description of how the Licensee will link the results of monitoring to those corrective actions necessary to ensure that the objective listed in Part G, item 1 of this Licence is met. This description shall include:
    - i. Definitions, with rationale, for Action Levels applicable to the performance of the Wastewater Treatment Facilities; and
    - ii. For each Action Level, a description of how exceedances of the Action Level will be assessed and generally, which types of actions will be taken for the Action Levels exceeded;
  - f) A description of contingency plans for the Wastewater Treatment Facilities; and
  - g) The details on how the Licensee will document and report on activities conducted under this Manual.
11. The **Flat River Hydrology Plan**, referred to in Part G, item 18 of this Licence, shall include, but not be limited to, the following information:
- a) A description of the hydrologic monitoring stations and their locations;
  - b) A description of the methodology used for the measurement of the Flat River flow rate in all seasons;
  - c) Frequency of monitoring and measuring of the Flat River flow rate;
  - d) The details on how the Licensee determines when to change (increase or decrease) the maximum allowable Discharge rate from the Wastewater Treatment Facilities; and
  - e) The details on how the Licensee will report the information gathered under this Plan.
12. The **Nitrogen Response Plan**, referred to in Part G, item 21 of this Licence shall include, but not be limited to, the following information:
- a) An assessment and quantification of sources of nitrogen (including nitrite, nitrate, and ammonia) discharged to the Flat River from the Wastewater Treatment Facilities;
  - b) A description of the ecological implications of each form of nitrogen (including nitrite, nitrate, and ammonia) discharged to the Flat River;
  - c) A description of current practices for minimizing the amount and concentration of nitrogen (including nitrite, nitrate, and ammonia) discharged to the Flat River from the Wastewater Treatment Facilities;

- d) A summary of investigations into mitigation measures that would reduce the amount and concentration of nitrite discharged to the Flat River from the Wastewater Treatment Facilities; and
- e) Proposed mitigation measures to reduce the amount and concentration of nitrite discharged to the Flat River from the Wastewater Treatment Facilities, including a schedule for implementation and a discussion of how all nitrogen EQC will be met.

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## Schedule 5

### Part H – Aquatic Effects Monitoring

1. The **Aquatic Effects Monitoring Program (AEMP) Design Plan** referred to in Part H, item 2 of this Licence shall include, but not be limited to, the following:
  - a) A conceptual site model that describes the pathways of potential effects from the Project to the aquatic ecosystem and their relationships to the ecological characteristics within the Receiving Environment. The conceptual site model will clearly define testable hypotheses for the AEMP as well as a justification of assessment and measurement endpoints;
  - b) A description of the types of monitoring conducted under the AEMP:
    - i. Monitoring for the purpose of measuring Project-related effects on the following components of the Receiving Environment:
      - i. Hydrology;
      - ii. Surface Water quality;
      - iii. Sediment quality;
      - iv. Lower trophic organisms including plankton and benthic invertebrates;
      - v. Fish habitat and community;
      - vi. Fish health;
      - vii. Contaminants in fish tissue;
      - viii. The taste of fish; and
      - ix. Any other Receiving Environment components necessary to fulfill the objectives of Part H, item 1 of this Licence;
  - c) A description of the AEMP sampling and analysis plan required to satisfy the objectives of Part H, item 1 of this Licence and incorporate the specific monitoring activities listed in Schedule 5, item 1(b). The sampling and analysis plan shall include:
    - i. A description of the area to be monitored including maps showing all sampling and reference locations as well as the overall predicted zone of influence of the Project (i.e., predicted zone of influence of mining operations or any other disturbance activities);
    - ii. The variables, sample media, monitoring protocols, and quality assurance and quality control procedures;
    - iii. Statistical design criteria, including a description of sampling frequencies for each parameter that ensure both accurate characterization of short-term variability, the collection of sufficient data to establish long-term trends, and a method to conduct trend analysis;
    - iv. A description of procedures to analyze and interpret data collected for each component including a procedure to integrate the results of individual monitoring components;
    - v. The quality assurance and quality control procedures that will ensure any future changes in monitoring protocols will be calibrated to initial monitoring protocols and data sets so that continuity, consistency, validity, and applicability of monitoring results will be maintained. This program shall also explicitly describe the measures that will be taken to identify and address any information deficiencies; and
    - vi. A description of how relevant Surveillance Network Program and other monitoring will be incorporated into or coordinated with the AEMP;

- d) Procedures to minimize the impacts of the AEMP on fish populations and fish habitat;
  - e) A description of the approaches to be used to evaluate and adjust the AEMP;
  - f) A summary of how Traditional Knowledge has been collected and incorporated into the AEMP, as well as a summary of how Traditional Knowledge will be incorporated into further studies relating to the AEMP;
  - g) A description of an AEMP Response Framework that will link the results of the AEMP to those actions necessary to ensure that Project-related effects on the Receiving Environment remain within an acceptable range or are otherwise minimized to the extent practical. The Response Framework shall include:
    - i. Definitions, with rationale, for Significance Thresholds and tiered Action Levels applicable to the aquatic Receiving Environment of the Project; and
    - ii. For each Action Level:
      - i. A description of the rationale including, but not limited to, a consideration of predictions as well as AEMP results to date;
      - ii. A description of how exceedances of Action Levels will be assessed; and
      - iii. A general description of what types of actions may be taken if an Action Level is exceeded;
  - h) A description of the Annual AEMP Report format;
  - i) A plain language description of the program objectives, methodology, and interpretative framework; and
  - j) When updates are made to the AEMP Design Plan, a summary will be included of changes to the AEMP design since the last approved design and a rationale for the changes.
2. The **Aquatic Effects Re-evaluation Report** referred to in Part H, item 5 of this Licence shall include, but not be limited to, the following:
- a) A review and summary of AEMP data collected to date including a description of overall trends in the data and other key findings of the monitoring program;
  - b) An analysis that integrates the results of individual monitoring components (e.g., Water quality, sediment, fish health, etc.) to date and describes the overall ecological significance of the results;
  - c) A comparison of measured Project-related aquatic effects to predictions and an evaluation of any differences and lessons learned;
  - d) Updated predictions of Project-related aquatic effects or impacts from the time of writing to the end of Project life, based on AEMP results to date and any other relevant operational monitoring data;
  - e) A plain language summary of the major results of the above analyses and a plain language interpretation of the significance of those results;
  - f) Recommendations, with rationale, for changes to Action Levels;
  - g) Recommendations, with rationale, for changes to any aspect of the AEMP Design Plan; and
  - h) Any other information required to meet the objectives listed in Part H, item 1 of this Licence or as requested by the Board.
3. The **AEMP Annual Report** referred to in Part H, item 6 of this Licence shall include, but will not be limited to, the following:

- a) A plain language summary of the major results obtained in the preceding calendar year and a plain language interpretation of the significance of those results;
  - b) A summary of activities conducted under the AEMP;
  - c) An update of the Project development activities and any accidents, malfunctions, or spills within the report time frame that could influence the results of the AEMP;
  - d) Tabular summaries of all data and information generated under the AEMP in an electronic and printed format acceptable to the Board;
  - e) An interpretation of the results, including an evaluation of any identified environmental effects that occurred as a result of the Project;
  - f) An analysis that integrates the results of individual monitoring components collected in a calendar year and describes the ecological significance of the results;
  - h) A comparison of monitoring results to Action Levels as set in the AEMP Design Plan;
  - i) An evaluation of the overall effectiveness of the AEMP to date;
  - j) Recommendations for refining the AEMP to improve its effectiveness as required; and
  - k) Any other information specified in the approved AEMP Design Plan or that may be requested by the Board before November 1 of any year.
4. The **AEMP Response Plan** referred to in Part H, item 7 of this Licence shall contain the following information for each parameter that has been reported to have exceeded an Action Level:
- a) A description of the parameter, its relation to Significance Thresholds and the ecological implication of the Action Level exceedances;
  - b) A summary of how the Action Level exceedance was determined and confirmed;
  - c) Recommended values for subsequent Action Levels;
  - d) A description of likely causes of the Action Level exceedances and potential mitigation options if appropriate;
  - e) A description of actions to be taken by the Licensee in response to the Action Level exceedances including:
    - i. A justification of the selected action, which may include a cost/benefit analysis;
    - ii. A description of timelines to implement the proposed actions;
    - iii. A projection of the environmental response to the planned actions, if appropriate;
    - iv. A monitoring plan for tracking the response to the actions, if appropriate; and
    - v. A schedule to report on the effectiveness of actions and to update the AEMP Response Plan as required; and
  - f) Any other information necessary to assess the response to an Action Level exceedance or that has been requested by the Board.

**Signed on behalf of the Mackenzie Valley Land and Water Board**

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**Chair**

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**Witness**

**Annexes**  
**Annexed to Water Licence MV2015L2-0003**  
**North American Tungsten Corporation Ltd. – Cantung Mine**

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**Annex A - Surveillance Network Program (SNP),  
Referred to in Part B, item 8 of Water Licence MV2015L2-0003**

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Annex A: Surveillance Network Program (SNP)

Part A: Reporting Requirements

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Part D: Meteorological Monitoring Requirements

**Part A: Reporting Requirements**

1. The effective date of this Surveillance Network Program is January 28, 2016.
2. Beginning January 28, 2016, and for every month thereafter, the Licensee shall, within 60 days following the month being reported, submit to the Board and an Inspector, a **Surveillance Network Program Report**, which shall include, but not be limited to the following:
  - a) Electronic and tabular summaries of all data and information generated under the Parts B and C of this Annex for the month being reported, including 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 stations 4-27-4, 4-27-7 to 4-27-16 (inclusive), 4-28-1, 4-28-2, 4-34, and 4-43) compared to the EQC under Part G of this Licence, for the previous two consecutive years;
  - c) An explanation of any actions taken in response to any exceedances of the EQC;
  - d) Information regarding the calibration and status of the meters and devices referred to in Part B, item 9 of this Licence;
  - e) The coordinates of all SNP stations that were established within the month being reported, including an updated map identifying the locations of all the SNP stations;
  - f) A tabular summary of cumulative water use; and
  - g) Electronic and tabular summaries of all data and information generated under the Meteorological Monitoring Requirements referred to in Part D of this Annex.
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, for approval by 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. The Licensee shall provide a copy of the Analyst's decision or recommendation(s) to the Board.
7. The Licensee shall operate in accordance with 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 and an Analyst.
8. If the Quality Assurance and Quality Control Plan is not approved by an Analyst, the Licensee shall revise the Plan according to the Analyst's direction and re-submit it to an Analyst for a decision. The Licensee shall provide a copy of the Analyst's decision or recommendation(s) to the Board.

**Part B: Site Descriptions**

1. The location of the sampling sites is subject to approval of an Inspector.
2. The location of sampling sites and site-specific monitoring requirements are as follows:

**SNP station Quick Reference Table**

SNP station #	Description	Status
4-1	Flat River at the Project and mill freshwater intake, located in the Water Supply Facility.	Active
4-5	Flat River at bridge downstream of airstrip.	Active
4-6	Inflow to Wastewater Treatment Facilities.	Active
4-9	Discharge of oil/Water separator at Metre 628 at Sardine Creek.	Inactive-discontinued
4-10	Any point between Tailings Pond 3 and Tailings Pond 4 where Seepage is visible.	Inactive
4-13	Discharge from "E" Zone.	Active
5-2	Old Lagoon Outflow	Active
4-20	Drainage culvert from Stinky Pond.	Active
4-21	Water Survey of Canada Stream gauge located on Flat River.	Inactive
4-27-2	Groundwater monitoring well MW-2.	Inactive
4-27-4	Groundwater monitoring well MW-5.	Active
4-27-7	Groundwater monitoring well BH-43.	Active
4-27-8	Groundwater monitoring well BH-44.	Active

4-27-9	Groundwater monitoring well BH-53.	Active
4-27-10	TP4-07-MW01. Replacement for SNP station 4-27-6; Groundwater monitoring well BH-42, and includes piezometers BH42-3, BH42-2, and BH42-1.	Active
4-27-11	TP5-07-MW01.	Active
4-27-12	TP3-07-MW01. Replacement for SNP station 4-27-3; TP3-07-MW01/A, and includes piezometers MW3-10, MW3-6, and MW3-1.	Active
4-27-13	TP3-07-MW02. Replacement for SNP station 4-27-5; TP3-07-MW02/A, and includes piezometers MW6-13, MW6-8, and MW6-1.	Active
4-27-14	Groundwater well southeast of Tailings Pond 5 (between small creek and Tailings Pond 5).	Active
4-27-15	Groundwater well southeast of airstrip.	Active
4-27-16	Groundwater well east of Tailings Ponds 1 and 2. Replacement for SNP station 4-27-1; Groundwater monitoring well MW-1, and includes piezometers MW1-10, MW1-6, and MW1-1.	Active
4-27-17	Groundwater well upstream of the Project.	Active
4-27-18	Groundwater monitoring well (MW13-01) up-gradient of Tailings Storage Facility 7.	Active
4-27-19	Groundwater monitoring well down-gradient of Tailings Storage Facility 7.	Active
4-27-20	Groundwater monitoring well up-gradient of Tailings Storage Facility 6.	Active
4-27-21	Groundwater monitoring well (MW12-09) down-gradient of north end of Tailings Storage Facility 6.	Active
4-27-22	Groundwater monitoring well (MW12-3) down-gradient of middle of Tailings Storage Facility 6.	Active
4-27-23	Groundwater monitoring well (MW12-01 and MV12-02) down-gradient of south end of Tailings Storage Facility 6.	Active
4-28-1	Groundwater pumping well PW-1.	Active
4-28-2	Groundwater pumping well PW-2.	Active
4-29	Flat River, three (3) kilometres upstream of pumphouse.	Active
See 4-30	Mill Tailings at Tails Box in Mill. Replacement for SNP station 4-11: Tailings Discharge pipe into active Tailings Pond.	Active
4-31	Sardine Creek Upstream of oil-water separator.	Inactive
4-32	Sardine Creek.	Active
4-33	Far Field Downstream Station 8.5 km – Flat River.	Active
4-33R	Flat River, west of Tailings Storage Facility 6.	Active

4-34	Seepage down-gradient of the fuel berm.	Active
4-35	Decant from Sewage Disposal Facilities.	Inactive
4-36	Any point between Tailings Pond 3 and the Flat River, where Seepage is visible.	Active
4-37	Any point between Tailings Pond 4 and the Flat River, where Seepage is visible.	Active
4-38	Any point between Tailings Pond 1 and the Flat River, where Seepage is visible.	Active
4-39	Any point between Tailings Pond 2 and the Flat River, where Seepage is visible.	Active
4-40	Surface Water point on Flat River between Tailings Ponds 2 and 4.	Active
4-41	Surface Water point on Flat River downstream of Tailings Pond 3.	Active
4-42	Minewater pump in the mill. This station is a replacement for 4-12: Discharge from conveyor gallery.	Active
4-43	Effluent from the Wastewater Treatment Facilities (sample port).	Active.
4-44	Surface water point on Flat River approximately 180 metres downstream of drainage channel from Stinky Pond.	Active
4-45	Middle Bridge, upstream of Stinky Pond Discharge to Flat River.	Active
Se4-46	Thickener Overflow/Effluent.	Active
4-47	Collection point within Tailings Storage Facility 7 for Seepage/contact Water.	Active
4-48	Collection point within Tailings Storage Facility 6 for Seepage/contact Water.	Active
4-49	Flat River, west of the north end of Tailings Storage Facility 6.	Active
4-50	Flat River, immediately downstream of Tailings Storage Facility 6.	Active



**SNP station 4-1:**

<b>Description:</b>	Flat River at the Project and mill freshwater intake, located in the Water Supply Facility.
<b>Location:</b>	N 6871361.36 E 540034.38 Elevation 1111.78
<b>Sampling Frequency:</b>	Continuously by in-line monitoring
<b>Sampling Parameters:</b>	Volume; ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, nitrite-nitrogen, chloride, fluoride, sulphate, total suspended solids, total dissolved solids, alkalinity, pH, hardness
<b>Rationale:</b>	Operational Monitoring

Note: Footnotes are defined after the final table in Part B.

**SNP station 4-5:**

<b>Description:</b>	Flat River at bridge downstream of airstrip.
<b>Location:</b>	N 6869094.27 E 542519.57 Elevation 1101.19
<b>Sampling Frequency:</b>	Monthly
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, nitrite-nitrogen, chloride, fluoride, sulphate, total suspended solids, total dissolved solids, alkalinity, pH, hardness
<b>Rationale:</b>	Operational Monitoring

Note: Footnotes are defined after the final table in Part B.

**SNP station 4-6:**

<b>Description:</b>	Inflow to Wastewater Treatment Facilities.
<b>Location:</b>	N 6870572 E 540699 Elevation 1139
<b>Sampling Frequency:</b>	Monthly
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrite-nitrogen, nitrate-nitrogen, total Kjeldahl nitrogen, total phosphorus, dissolved phosphorous, orthophosphate, total organic carbon, biological oxygen demand, chloride, fluoride, sulphate, total suspended solids, total dissolved solids, alkalinity, pH, hardness, faecal coliforms, EPH/BTEX <sup>(2)</sup>
<b>Rationale:</b>	Operational Monitoring

**SNP station 4-13:** <sup>(6)</sup>

<b>Description:</b>	Discharge from “E” Zone.
<b>Location:</b>	
<b>Sampling Frequency:</b>	Monthly
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, nitrite-nitrogen, chloride, fluoride, sulphate, total suspended solids, total dissolved solids, alkalinity, pH, hardness, EPH/BTEX <sup>(2)</sup>
<b>Rationale:</b>	Operational Monitoring

**SNP station 5-2:** <sup>(6)</sup>

<b>Description:</b>	Old Lagoon Outflow.
<b>Location:</b>	
<b>Sampling Frequency:</b>	Monthly
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, nitrite-nitrogen, chloride, fluoride, sulphate, total suspended solids, total dissolved solids, alkalinity, pH, hardness, EPH/BTEX <sup>(2)</sup>
<b>Rationale:</b>	Operational Monitoring

**SNP station 4-20:**

<b>Description:</b>	Drainage culvert from Stinky Pond.	
<b>Location:</b>	N 6870330.45 E 541342.06 Elevation 1104.58	
<b>Sampling Frequency:</b>	Two times annually when the Wastewater Treatment Facilities are not discharging	Not less than three months prior to discharge from the Wastewater Treatment Facilities, and monthly while the Wastewater Treatment Facilities are discharging <sup>(3)</sup>
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrite-nitrogen, nitrate-nitrogen, orthophosphate, total organic carbon, biological oxygen demand, chloride, fluoride, sulphate, total suspended solids, total dissolved solids, alkalinity, pH, hardness, faecal coliforms, toxicity testing <sup>(3)</sup>	
<b>Rationale:</b>	Operational Monitoring. Designated as final Discharge point in the Metal and Diamond Mining Effluent Regulations.	

**SNP station 4-27-4:**

<b>Description:</b>	Groundwater monitoring well MW-5.  If sufficient Water is available, a sample shall be collected from each piezometer: MW5-9, MW5-5, and MW5-1. The piezometric head and number shall be recorded.	
<b>Location:</b>	N 6870401.17 E 540469.07 Elevation 1107.71	
<b>Sampling Frequency:</b>	Three times per year (approximately late June, August, and October) <sup>(8)</sup>	Annually
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, sulphate, total suspended solids, alkalinity, pH, hardness, total organic carbon, EPH/BTEX <sup>(2)</sup>	Total cyanide
<b>Rationale:</b>	Compliance Point	

**SNP station 4-27-7:**

<b>Description:</b>	Groundwater monitoring well BH-43.  If sufficient Water is available, a sample shall be collected from each piezometer: BH43-12, BH43-6, and BH43-1. The piezometric head and number shall be recorded.	
<b>Location:</b>	N 6870529.79 E 541055.24 Elevation 1107.09	
<b>Sampling Frequency:</b>	Three times per year (approximately late June, August, and October) <sup>(8)</sup>	Annually
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, sulphate, total suspended solids, alkalinity, pH, hardness, total organic carbon, EPH/BTEX <sup>(2)</sup>	Total cyanide
<b>Rationale:</b>	Compliance Point	

**SNP station 4-27-8:**

<b>Description:</b>	Groundwater monitoring well BH-44.  If sufficient Water is available, a sample shall be collected from each piezometer: BH44-4, BH44-2, and BH44-1. The piezometric head and number shall be recorded.	
<b>Location:</b>	N 6870457.79 E 541150.52 Elevation 1107.5	
<b>Sampling Frequency:</b>	Three times per year (approximately late June, August, and October) <sup>(8)</sup>	Annually
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, sulphate, total suspended solids, alkalinity, pH, hardness, total organic carbon, EPH/BTEX <sup>(2)</sup>	Total cyanide
<b>Rationale:</b>	Compliance Point	

**SNP station 4-27-9:**

<b>Description:</b>	Groundwater monitoring well BH-53.  If sufficient Water is available, a sample shall be collected from each piezometer. The piezometric head and number shall be recorded.	
<b>Location:</b>	N 6871000.43 E 540482.62 Elevation 1109.97	
<b>Sampling Frequency:</b>	Three times per year (approximately late June, August, and October) <sup>(8)</sup>	Annually
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, sulphate, total suspended solids, alkalinity, pH, hardness, total organic carbon, EPH/BTEX <sup>(2)</sup>	Total cyanide
<b>Rationale:</b>	Compliance Point	

**SNP station 4-27-10:**

<b>Description:</b>	TP4-07-MW01.  If sufficient Water is available, a sample shall be collected from each piezometer. The piezometric head and number shall be recorded.	
<b>Location:</b>	N 6870580.59 E 540991.52 Elevation 1109.91	
<b>Sampling Frequency:</b>	Three times per year (approximately late June, August, and October) <sup>(8)</sup>	Annually
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, sulphate, total suspended solids, alkalinity, pH, hardness, total organic carbon, EPH/BTEX <sup>(2)</sup>	Total cyanide
<b>Rationale:</b>	Compliance Point	

**SNP station 4-27-11:**

<b>Description:</b>	TP5-07-MW01.  If sufficient Water is available, a sample shall be collected from each piezometer. The piezometric head and number shall be recorded.	
<b>Location:</b>	N 6869955.63 E 541215.91 Elevation 1125.2	
<b>Sampling Frequency:</b>	Three times per year (approximately late June, August, and October) <sup>(8)</sup>	Annually
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, sulphate, total suspended solids, alkalinity, pH, hardness, total organic carbon, EPH/BTEX <sup>(2)</sup>	Total cyanide
<b>Rationale:</b>	Compliance Point	

**SNP station 4-27-12:**

<b>Description:</b>	TP3-07-MW01.  If sufficient Water is available, a sample shall be collected from each piezometer. The piezometric head and number shall be recorded.	
<b>Location:</b>	N 6870091.54 E 541357.03 Elevation 1114.54	
<b>Sampling Frequency:</b>	Three times per year (approximately late June, August, and October) <sup>(8)</sup>	Annually
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, sulphate, total suspended solids, alkalinity, pH, hardness, total organic carbon, EPH/BTEX <sup>(2)</sup>	Total cyanide
<b>Rationale:</b>	Compliance Point	

**SNP station 4-27-13:**

<b>Description:</b>	TP3-07-MW02.  If sufficient Water is available, a sample shall be collected from each piezometer. The piezometric head and number shall be recorded.	
<b>Location:</b>	N 6869967.73 E 541326.91 Elevation 1119.35	
<b>Sampling Frequency:</b>	Three times per year (approximately late June, August, and October) <sup>(8)</sup>	Annually
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, sulphate, total suspended solids, alkalinity, pH, hardness, total organic carbon, EPH/BTEX <sup>(2)</sup>	Total cyanide
<b>Rationale:</b>	Compliance Point	

**SNP station 4-27-14:**

<b>Description:</b>	Groundwater well southeast of Tailings Pond 5 (between small creek and Tailings Pond 5).  If sufficient Water is available, a sample shall be collected from each piezometer. The piezometric head and number shall be recorded.	
<b>Location:</b>	N 6869942.9 E 541256.87 Elevation 1124.35	
<b>Sampling Frequency:</b>	Three times per year (approximately late June, August, and October) <sup>(8)</sup>	Annually
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, sulphate, total suspended solids, alkalinity, pH, hardness, total organic carbon, EPH/BTEX <sup>(2)</sup>	Total cyanide

<b>Rationale:</b>	Compliance Point
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**SNP station 4-27-15:**

<b>Description:</b>	Groundwater well southeast of airstrip.  If sufficient Water is available, a sample shall be collected from each piezometer. The piezometric head and number shall be recorded.	
<b>Location:</b>	N 6869880.3 E 541600.61 Elevation 1110.45	
<b>Sampling Frequency:</b>	Three times per year (approximately late June, August, and October) <sup>(8)</sup>	Annually
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, sulphate, total suspended solids, alkalinity, pH, hardness, total organic carbon, EPH/BTEX <sup>(2)</sup>	Total cyanide
<b>Rationale:</b>	Compliance Point	

**SNP station 4-27-16:**

<b>Description:</b>	Groundwater well east of Tailings Ponds 1 and 2.  If sufficient Water is available, a sample shall be collected from each piezometer. The piezometric head and number shall be recorded.	
<b>Location:</b>	N 6871064.44 E 540502.87 Elevation 1111.15	
<b>Sampling Frequency:</b>	Three times per year (approximately late June, August, and October) <sup>(8)</sup>	Annually
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, sulphate, total suspended solids, alkalinity, pH, hardness, total organic carbon, EPH/BTEX <sup>(2)</sup>	Total cyanide
<b>Rationale:</b>	Compliance Point	

**SNP station 4-27-17:**

<b>Description:</b>	Groundwater well upstream of the Project.  If sufficient Water is available, a sample shall be collected from each piezometer. The piezometric head and number shall be recorded.	
<b>Location:</b>	N 6871380.14 E 539968.54 Elevation 1117.72	
<b>Sampling Frequency:</b>	Three times per year (approximately late June, August, and October) <sup>(8)</sup>	Annually
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, sulphate, total suspended solids, alkalinity, pH, hardness,	Total cyanide

	total organic carbon, EPH/BTEX <sup>(2)</sup>	
<b>Rationale:</b>		

**SNP station 4-27-18:**<sup>(5)</sup>

<b>Description:</b>	Groundwater monitoring well (MW13-01) up-gradient of Tailings Storage Facility 7.  If sufficient Water is available, a sample shall be collected from each piezometer. The piezometric head and number shall be recorded.	
<b>Location:</b>	N 6870369.63 E 540646.05 Elevation 1066.78	
<b>Sampling Frequency:</b>	Three times per year (approximately late June, August, and October)	
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, sulphate, total suspended solids, alkalinity, pH, hardness, total organic carbon, EPH/BTEX <sup>(2)</sup>	
<b>Rationale:</b>		

**SNP station 4-27-19:**<sup>(5)</sup>

<b>Description:</b>	Groundwater monitoring well down-gradient of Tailings Storage Facility 7.  If sufficient Water is available, a sample shall be collected from each piezometer. The piezometric head and number shall be recorded.	
<b>Location:</b>	N 6870788.48 E 540523.39 Elevation 1138.09	
<b>Sampling Frequency:</b>	Three times per year (approximately late June, August, and October)	Annually
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, sulphate, total suspended solids, alkalinity, pH, hardness, total organic carbon, EPH/BTEX <sup>(2)</sup>	Total cyanide
<b>Rationale:</b>		

**SNP station 4-27-20:**<sup>(5)</sup>

<b>Description:</b>	Groundwater monitoring well up-gradient of Tailings Storage Facility 6.  If sufficient Water is available, a sample shall be collected from each piezometer. The piezometric head and number shall be recorded.	
<b>Location:</b>	N 6868047.68 E 543765.09 Elevation 1109.67	
<b>Sampling Frequency:</b>	Three times per year (approximately late June, August, and October)	Annually
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen,	Total cyanide

<b>Parameters:</b>	sulphate, total suspended solids, alkalinity, pH, hardness, total organic carbon, EPH/BTEX <sup>(2)</sup>	
<b>Rationale:</b>		

**SNP station 4-27-21:**<sup>(5)</sup>

<b>Description:</b>	Groundwater monitoring well (MW12-09) down-gradient of north end of Tailings Storage Facility 6.  If sufficient Water is available, a sample shall be collected from each piezometer. The piezometric head and number shall be recorded.	
<b>Location:</b>	N 6868150.03 E 543414.08 Elevation 1099.37	
<b>Sampling Frequency:</b>	Three times per year (approximately late June, August, and October)	Annually
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, sulphate, total suspended solids, alkalinity, pH, hardness, total organic carbon, EPH/BTEX <sup>(2)</sup>	Total cyanide
<b>Rationale:</b>		

**SNP station 4-27-22:**<sup>(5)</sup>

<b>Description:</b>	Groundwater monitoring well (MW12-3) down-gradient of middle of Tailings Storage Facility 6.  If sufficient Water is available, a sample shall be collected from each piezometer. The piezometric head and number shall be recorded.	
<b>Location:</b>	N 6867899.6 E 543593.31 Elevation 1097.01	
<b>Sampling Frequency:</b>	Three times per year (approximately late June, August, and October)	Annually
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, sulphate, total suspended solids, alkalinity, pH, hardness, total organic carbon, EPH/BTEX <sup>(2)</sup>	Total cyanide
<b>Rationale:</b>		

**SNP station 4-27-23:**<sup>(5)</sup>

<b>Description:</b>	Groundwater monitoring well (MW12-02) down-gradient of south end of Tailings Storage Facility 6.  If sufficient Water is available, a sample shall be collected from each piezometer. The piezometric head and number shall be recorded.	
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<b>Location:</b>	MW12-01: N 6867627.55 E 544032.92 Elevation 1096.26 (damaged) MW12-02: N 6867738.65 E 543861.24 Elevation 1094.35	
<b>Sampling Frequency:</b>	Three times per year (approximately late June, August, and October)	Annually
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, sulphate, total suspended solids, alkalinity, pH, hardness, total organic carbon, EPH/BTEX <sup>(2)</sup>	Total cyanide
<b>Rationale:</b>		

**SNP station 4-28-1:**

<b>Description:</b>	Groundwater pumping well PW-1.  If sufficient Water is available, a sample shall be collected from each piezometer. The piezometric head and number shall be recorded.	
<b>Location:</b>	N 6870386 E 541224 Elevation 1092	
<b>Sampling Frequency:</b>	Monthly	Annually
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, sulphate, total suspended solids, alkalinity, pH, hardness, total organic carbon, EPH/BTEX <sup>(2)</sup>	Total cyanide
<b>Rationale:</b>	Compliance Point: designated as final Discharge point in <i>Metal Mining Effluent Regulations</i> .	

**SNP station 4-28-2:**

<b>Description:</b>	Groundwater pumping well PW-2.  If sufficient Water is available, a sample shall be collected from each piezometer. The piezometric head and number shall be recorded.	
<b>Location:</b>	N 6870491 E 541118 Elevation 1070	
<b>Sampling Frequency:</b>	Three times per year (approximately late June, August, and October)	Annually
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, sulphate, total suspended solids, alkalinity, pH, hardness, total organic carbon, EPH/BTEX <sup>(2)</sup>	Total cyanide
<b>Rationale:</b>	Compliance Point	

**SNP station 4-29:**

<b>Description:</b>	Flat River, three (3) kilometres upstream of pumphouse.	
<b>Location:</b>	N 6873871 E 538180 Elevation 1144	

<b>Sampling Frequency:</b>	Monthly
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, nitrite-nitrogen, chloride, fluoride, sulphate, total suspended solids, total dissolved solids, alkalinity, pH, hardness
<b>Rationale:</b>	Operational Monitoring

**SNP station 4-30:**

<b>Description:</b>	Slurry sample from Mill Tailings at Tails Box in Mill.
<b>Location:</b>	N 6870912 E 540162 Elevation 1156
<b>Sampling Frequency:</b>	Monthly
<b>Sampling Parameters:</b>	ICP total metal scan <sup>(1)</sup> , total ammonia, sulphate, total dissolved solids, alkalinity
<b>Rationale:</b>	Operational Monitoring

**SNP station 4-32:**

<b>Description:</b>	Sardine Creek.
<b>Location:</b>	N 6871229.02 E 540123.65 Elevation 1123.42
<b>Sampling Frequency:</b>	Monthly
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, nitrite-nitrogen, chloride, fluoride, sulphate, total suspended solids, total dissolved solids, alkalinity, pH, hardness, EPH/BTEX <sup>(2)</sup>
<b>Rationale:</b>	Operational Monitoring

**SNP station 4-33:**

<b>Description:</b>	Far Field Downstream Station 8.5 km – Flat River.
<b>Location:</b>	N 6864181 E 547271 Elevation 1024
<b>Sampling Frequency:</b>	Monthly, if accessible
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, nitrite-nitrogen, chloride, fluoride, sulphate, total suspended solids, total dissolved solids, alkalinity, pH, hardness
<b>Rationale:</b>	Operational Monitoring

**SNP station 4-33R:**

<b>Description:</b>	Flat River, west of Tailings Storage Facility 6.
<b>Location:</b>	N 6867874.61 E 543488.32 Elevation 1094.02

<b>Sampling Frequency:</b>	Monthly
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, nitrite-nitrogen, chloride, fluoride, sulphate, total suspended solids, total dissolved solids, alkalinity, pH, hardness
<b>Rationale:</b>	Operational Monitoring

**SNP station 4-34:**

<b>Description:</b>	Seepage down-gradient of the fuel berm.
<b>Location:</b>	
<b>Sampling Frequency:</b>	Monthly, when Seepage is visible
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, nitrite-nitrogen, chloride, fluoride, sulphate, total suspended solids, total dissolved solids, alkalinity, pH, hardness, EPH/BTEX <sup>(2)</sup>
<b>Rationale:</b>	Compliance Point

**SNP station 4-36:**

<b>Description:</b>	Any point between Tailings Pond 3 and the Flat River, where Seepage is visible.
<b>Location:</b>	N 6870158 E 541368 Elevation 1097
<b>Sampling Frequency:</b>	Monthly, when Seepage is visible
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, nitrite-nitrogen, chloride, fluoride, sulphate, total suspended solids, total dissolved solids, alkalinity, pH, hardness, EPH/BTEX <sup>(2)</sup>
<b>Rationale:</b>	Operational Monitoring

**SNP station 4-37:**

<b>Description:</b>	Any point between Tailings Pond 4 and the Flat River, where Seepage is visible.
<b>Location:</b>	
<b>Sampling Frequency:</b>	Monthly, when Seepage is visible
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, nitrite-nitrogen, chloride, fluoride, sulphate, total suspended solids, total dissolved solids, alkalinity, pH, hardness, EPH/BTEX <sup>(2)</sup>
<b>Rationale:</b>	Operational Monitoring

**SNP station 4-38:**

<b>Description:</b>	Any point between Tailings Pond 1 and the Flat River, where Seepage is visible.
<b>Location:</b>	
<b>Sampling Frequency:</b>	Monthly, when Seepage is visible
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, nitrite-nitrogen, chloride, fluoride, sulphate, total suspended solids, total dissolved solids, alkalinity, pH, hardness, EPH/BTEX <sup>(2)</sup>
<b>Rationale:</b>	Operational Monitoring

**SNP station 4-39:**

<b>Description:</b>	Any point between Tailings Pond 2 and the Flat River, where Seepage is visible.
<b>Location:</b>	
<b>Sampling Frequency:</b>	Monthly, when Seepage is visible
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, nitrite-nitrogen, chloride, fluoride, sulphate, total suspended solids, total dissolved solids, alkalinity, pH, hardness, EPH/BTEX <sup>(2)</sup>
<b>Rationale:</b>	Operational Monitoring

**SNP station 4-40:**

<b>Description:</b>	Surface Water point on Flat River between Tailings Ponds 2 and 4.
<b>Location:</b>	N 6870816.22 E 540858.16 Elevation 1106.23
<b>Sampling Frequency:</b>	Monthly
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, nitrite-nitrogen, chloride, fluoride, sulphate, total suspended solids, total dissolved solids, alkalinity, pH, hardness
<b>Rationale:</b>	Operational Monitoring

**SNP station 4-41:**

<b>Description:</b>	Surface Water point on Flat River downstream of Tailings Pond 3.
<b>Location:</b>	N 6869690 E541804 Elevation 1104
<b>Sampling Frequency:</b>	Monthly
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, nitrite-nitrogen, chloride, fluoride, sulphate, total suspended solids, total dissolved solids, alkalinity, pH, hardness
<b>Rationale:</b>	Operational Monitoring

**SNP station 4-42:**

<b>Description:</b>	Mine water pump in the mill.
<b>Location:</b>	N 6870899 E540169 Elevation 1154
<b>Sampling Frequency:</b>	Monthly
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, nitrite-nitrogen, chloride, fluoride, sulphate, total suspended solids, total dissolved solids, alkalinity, pH, hardness, EPH/BTEX <sup>(2)</sup>
<b>Rationale:</b>	Operational Monitoring

**SNP station 4-43:**

<b>Description:</b>	Effluent from the Wastewater Treatment Facilities (sample port).
<b>Location:</b>	N 6870572 E 540699 Elevation 1139
<b>Sampling Frequency:</b>	Weekly
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrite-nitrogen, nitrate-nitrogen, total Kjeldahl nitrogen, total phosphorus, dissolved phosphorous, orthophosphate, total organic carbon, biological oxygen demand, chloride, fluoride, sulphate, total suspended solids, total dissolved solids, alkalinity, pH, hardness, faecal coliforms
<b>Rationale:</b>	Compliance Point

**SNP station 4-44:** <sup>(7)</sup>

<b>Description:</b>	Surface Water point on Flat River approximately 180 metres downstream of drainage channel from Stinky Pond. Boundary of mixing zone.
<b>Location:</b>	N 6870223.15 E 541477.31 Elevation 1104.62
<b>Sampling Frequency:</b>	When discharging at rates less than or equal to 4,500m <sup>3</sup> /day – sample monthly, or when discharging at rates above 4,500m <sup>3</sup> /day – sample weekly
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, nitrite-nitrogen, chloride, fluoride, sulphate, total suspended solids, total dissolved solids, alkalinity, pH, hardness
<b>Rationale:</b>	Monitoring at the boundary of the mixing zone in the Flat River where Water quality objectives are to be met. <sup>(4)</sup>

**SNP station 4-45:**

<b>Description:</b>	Middle Bridge, upstream of Stinky Pond Discharge to Flat River.
<b>Location:</b>	N 6868828 E 543144 Elevation 1104.62
<b>Sampling Frequency:</b>	Daily when required under Part G, item 37; otherwise, monthly.
<b>Sampling Parameters:</b>	Flow (m <sup>3</sup> /day)
<b>Rationale:</b>	Flow monitoring station for Discharge rates detailed in Part G

**SNP station 4-46:**

<b>Description:</b>	Thickener Overflow/Effluent.
<b>Location:</b>	
<b>Sampling Frequency:</b>	Monthly, when the Thickener is operating
<b>Sampling Parameters:</b>	Total suspended solids
<b>Rationale:</b>	Operational monitoring

**SNP station 4-47:**

<b>Description:</b>	Collection point within Tailings Storage Facility 7 for Seepage/contact Water.
<b>Location:</b>	
<b>Sampling Frequency:</b>	Weekly, when Water is present
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, nitrite-nitrogen, chloride, fluoride, sulphate, total suspended solids, total dissolved solids, alkalinity, pH, hardness
<b>Rationale:</b>	

**SNP station 4-48:**

<b>Description:</b>	Collection point within Tailings Storage Facility 6 for Seepage/contact Water.
<b>Location:</b>	
<b>Sampling Frequency:</b>	Weekly, when Water is present
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, nitrite-nitrogen, chloride, fluoride, sulphate, total suspended solids, total dissolved solids, alkalinity, pH, hardness
<b>Rationale:</b>	

**SNP station 4-49:**<sup>(5)</sup>

<b>Description:</b>	Flat River, west of the north end of Tailings Storage Facility 6.
<b>Location:</b>	N 6868099.72 E 543343.79 Elevation 1095.36
<b>Sampling Frequency:</b>	Monthly
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, nitrite-nitrogen, chloride, fluoride, sulphate, total suspended solids, total dissolved solids, alkalinity, pH, hardness
<b>Rationale:</b>	

**SNP station 4-50:**<sup>(5)</sup>

<b>Description:</b>	Flat River, immediately downstream of Tailings Storage Facility 6.
<b>Location:</b>	N 6867532.93 E 544026.55 Elevation 1090.83
<b>Sampling Frequency:</b>	Monthly
<b>Sampling Parameters:</b>	ICP metal scan <sup>(1)</sup> , total ammonia, nitrate-nitrogen, nitrite-nitrogen, chloride, fluoride, sulphate, total suspended solids, total dissolved solids, alkalinity, pH, hardness
<b>Rationale:</b>	

**Footnotes:**

<sup>(1)</sup> The inductively coupled plasma (ICP) metal scan shall include, at a minimum, the total and dissolved concentrations for the following parameters: aluminum, arsenic, beryllium, boron, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, molybdenum, nickel, phosphorous, selenium, silver, strontium, thallium, tungsten, uranium, vanadium, and zinc.

<sup>(2)</sup> EPH means extractable petroleum hydrocarbons. BTEX shall include: benzene, toluene, ethyl benzene, and xylene.

<sup>(3)</sup> Toxicity shall be assessed at an accredited bioassay laboratory for the following analyses:

a. Chronic toxicity – invertebrates using Environment Canada. 1992. Biological Test Method: Test of MV2023L2-0006 – North American Tungsten Corporation Ltd. – Mining and Milling – DRAFT Page 63 of 72

Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia*. Environmental Protection Series, Report EPS 1/RM/21. Method Development and Application Section, Environmental Technology Centre, Ottawa, ON, Canada.

- b. Chronic toxicity – algae using Environment Canada. 2007. Biological Test Method: Growth Inhibition Test Using a Freshwater Alga *Pseudokirchneriella subcapitata*. Environmental Protection Series, Report EPS 1/RM/25. Method Development and Application Section, Environmental Technology Centre, Ottawa, ON, Canada.
- c. Chronic toxicity – aquatic plants using Environment Canada. 2007. Biological Test Method: Test for Measuring the Inhibition of Growth Using the Freshwater Macrophyte, *Lemna minor*. Environmental Protection Series, Report EPS 1/RM/37. Method Development and Application Section, Environmental Technology Centre, Ottawa, ON, Canada.
- d. Sublethal toxicity – fish using Environment Canada. 2011. Biological Test Method: Test of Larval Growth and Survival Using Fathead Minnows. Environmental Protection Series, Report EPS 1/RM/22. Method Development and Application Section, Environmental Technology Centre, Ottawa, ON, Canada.

<sup>(4)</sup> Water quality objectives to be met at the mixing zone boundary in the Flat River at SNP4-44:

Parameter	Water Quality Objective (mg/L)
Total Suspended Sediments	6
Ammonia as N	1.27
Nitrite-nitrogen	0.06
Nitrate-nitrogen	3.0
Sulphate	-
Chloride	120
Fluoride	1.03
Total Aluminum	0.3
Total Arsenic	0.005
Total Boron	1.5
Total Cadmium	0.00021
Total Chromium	0.001
Total Copper	0.0032
Total Iron	1.3
Total Lead	0.005
Total Mercury	0.000026
Total Molybdenum	0.073
Total Nickel	0.125
Total Selenium	0.001
Total Silver	0.0001
Total Thallium	0.0008
Total Uranium	0.015
Total Zinc	0.03
pH	6.5-9



<sup>(5)</sup> SNP stations 4-27-18, 4-27-19, 4-27-20, 4-27-21, 4-27-22, 4-27-23, 4-49, and 4-50 are temporarily suspended as of August 25, 2016. Sampling at these stations must resume not less than three months prior to construction of Tailings Storage Facility 6.

<sup>(6)</sup> SNP stations 4-13 and 5-2 are active on a temporary basis, until 3 months following the start of commercial operations

<sup>(7)</sup> SNP station 4-44 is temporarily suspended as of December 10, 2018. Sampling at this station must resume not less than three months prior to discharge from the Wastewater Treatment Facility.

<sup>(8)</sup> Sampling at SNP stations 4-27-4 and 4-27-7 to 4-27-17 is temporarily reduced to once-per-year as of December 10, 2018. If exceedances are observed at any of these stations, sampling must increase to twice per year for that station. Regularly-scheduled sampling at these stations must resume on the first ice-off season following re-commencement of commercial operations.

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### **Part C: Other Monitoring Requirements**

1. The Licensee shall record the following information for inclusion into the monthly SNP report referred to in Part A, item 2 of this Annex:
  - a) Weekly quantity of Water in cubic metres withdrawn from the Water Supply Facility;
  - b) Quantity of ore milled in tonnes per month;
  - c) Weekly quantity of Waste in cubic metres discharged to the Tailings Containment Area;
  - d) Weekly quantity of thickener overflow volume discharged to the Wastewater Treatment Facilities and/or Tailings Pond 5;
  - e) Weekly volume of contact Water discharged to the Wastewater Treatment Facilities or Tailings Pond 5 from each of the Dry Stack Tailings Storage Facilities;
  - f) Weekly quantity of liquid Waste in cubic metres discharged to Stinky Pond from the Wastewater Treatment Facilities;
  - g) Flow and velocity, twice per year, at the Discharge culvert and channel between Stinky Pond and the Flat River. The operational status of the Wastewater Treatment Facilities shall be recorded when the measurements of flow and velocity are made;
  - h) Discharge volume in cubic metres of the Flat River, twice per year, measured at SNP 4-45. During transition periods between Discharge rates, as outlined in the approved Hydrology Plan, referred to in Part G, item 18 of this Licence, the Licensee shall record and report the daily Discharge volume of the Flat River, measured at SNP 4-45, in cubic metres (m<sup>3</sup>) to the Board and an Inspector;
  - i) Results of the weekly lithological identification and sulphur plus carbon analyses used to determine acid generating potential of Waste Rock;
  - j) Monthly composite mill tails sample that is analyzed and used to characterize the potential for Acid Rock Drainage potential;
  - k) Observations from the daily inspection of the Tailings Containment Area as required by Part G, item 24 of this Licence;
  - l) Observations from the daily inspection of the Wastewater Treatment Facilities as required by Part G, item 24;
  - m) Results of weekly dry stack Tailings moisture and density testing; and
  - n) Data from the piezometers and inclinometers, and other approved instrumentation installed in the Tailings Containment Area and the Dry Stack Tailings Storage Facilities.

### **Part D: Meteorological Monitoring Requirements**

1. The Licensee shall measure and record the following meteorological data;
  - a) Mean, minimum and maximum daily temperatures, in degrees Celsius;
  - b) Precipitation, measured and recorded in hourly and daily totals, in millimetres;
  - c) Evaporation, as calculated by hourly and daily averages, in millimetres per day from a reasonable location near the Project, but sufficiently far away from manmade structures;
  - d) Wind speed, in kilometers per hour, including daily minima and maxima; and
  - e) Hourly wind direction.

**Annex B – Concordance Table of Items Requiring Submission**

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

Disclaimer: If there are any discrepancies between this table and the body of the Water Licence, the Water Licence conditions prevail.

Part of Licence	Item	Date
B	Water Use Fee	- Upon issuance - Annually thereafter prior to anniversary date
B	Annual Water Licence Report	- March 31, 2016 - Annually by March 31
B	Engagement Work Plan	- Within 30 days of issuance
B	Engagement Plan	- Within 90 days of Board approval of Engagement Work Plan - Annual review - 60 days prior to planned changes
C	Security Deposit	- Upon issuance - 90 days prior to construction (TSF4b and TSF7) - 90 days prior to construction (TSF6)
E	Final Detailed Construction Plan - Landfarm	- A minimum of 90 days prior to the commencement of construction of a landfarm.
E	Final Detailed Construction Plan – Solid Waste Disposal Facility	- 60 days prior to construction
<del>E</del>	<del>Tailings Containment Area Cover Design Study</del>	<del>- Within 90 days of issuance</del>
E	Final Detailed Construction Plan – Dry Stack Tailings Storage Facilities	- 90 days prior to construction of TSF4b and TSF7 - Six months prior to construction of TSF6
E	Final Detailed Cover Design Plan – TSF4b and TSF7	- 90 days prior to installation of cover on TSF4b and TSF7
E	Final Detailed Cover Design Plan – TSF6	- Six months prior installation of cover on TSF6

**Commented [KM9]:** Board staff seeking input on the security requirements.

**Commented [KM10]:** See Board staff comment for Part E, Condition 8 - propose modifying the condition as the Study was submitted in 2014.

E	Final Detailed Construction Plans – Engineered Structures	- 60 days prior to construction of any Engineered Structures
E	Written Notification to Board and Inspector Prior to Commencing Construction of Engineered Structures	- 10 days prior to construction of any Engineered Structures
E	As-Built Reports	- Within 90 days of completion of construction of any Engineered Structures
F	Modifications - Notification	- 60 days prior to carrying out modifications
F	Modifications – As-Built Reports	- Within 90 days of completion of modifications
G	Waste Management Plan	- Annual review - 60 days prior to planned changes
G	Water Management and Mine-site Erosion and Sediment Protection Plan	- Annual review - 60 days prior to planned changes
G	Flat River Erosion and Sediment Protection Plan	- Annual review - 60 days prior to planned changes - 90 days prior to construction of TSF6
G	Hydrogeological Groundwater Study Report	- Within 12 months of starting commercial operations
<del>G</del>	<del>Geochemical Risk Assessment Report</del>	<del>- Within 90 days of issuance</del>
<del>G</del>	<del>Geochemical Load Balance Model</del>	<del>- Within 90 days of issuance</del>
<del>G</del>	<del>Information Gap Analysis Report</del>	<del>- Within 90 days of issuance</del>
<del>G</del>	<del>Integrated Geochemical Load Balance and Risk Assessment Report</del>	<del>- October 31, 2016</del>
G	Tailing Containment Area Monitoring Plan	- Annual review - 60 days prior to planned changes

**Commented [KM11]:** See Board staff comment for Part G, Condition 6 - propose updating the condition as the Report was submitted in 2014.

**Commented [KM12]:** See Board staff comment for Part G, Condition 7 - propose updating the condition as the Model was submitted in 2014.

**Commented [KM13]:** See Board staff comment for Part G, Condition 8 - propose updating the condition as the Report was submitted in 2015.

**Commented [KM14]:** See Board staff comment for Part G, Condition 9 - propose updating the condition as the Report was submitted in 2015.

G	Tailings Storage Facility Cover Design Progress Report	- Annually, by March 31 <sup>st</sup> , beginning in the first year following the start of commercial operations, until Final Detailed Design Plan – TSF6 is approved by the Board
G	Historical Data and Interpretation Report	- As directed by the Board
G	Research and Monitoring Plan for Dry Stack Tailings Storage Facility TSF4b	- <del>A minimum of six months prior to operation of the Dry Stack Tailings Processing Facility</del> <del>Within 90 days of issuance</del> - Annual review - 60 days prior to planned changes
G	Tailings Processing and Storage Facilities Management and Monitoring Plan	- 90 days prior to operation of the dry stack tailings processing facility - 90 days prior to construction of TSF4b and TSF7 - Six months prior to construction of TSF6 - Annual review - 60 days prior to planned changes
G	Groundwater Pumping Contingency Plan	- Annual review - 60 days prior to planned changes
G	Tailings Containment Area and Dry Stack Tailings Storage Facilities Emergency Preparedness Plan	- 90 days prior to construction of each new Dry Stack Tailings Storage Facility - Annual review - 60 days prior to planned changes
G	Wastewater Treatment Facilities Operations, Maintenance and Surveillance Manual	- 60 days prior to recommending the WWTF following any shutdown greater than 90 days - Annual review - 60 days prior to planned changes
G	Flat River Hydrology Plan	- Annual review - 60 days prior to planned changes
G	Plume Delineation Study Design	- Annual review - 60 days prior to planned changes
G	Plume Delineation Study Report	- 90 days following completion of any plume study

**Commented [KM15]:** Board staff propose updating the submission timeline to be tied to operation of the Dry Stack Tailings Processing Facility (NATCL does not intend to construct this Facility).

<b>G</b>	Nitrogen Response Plan	<ul style="list-style-type: none"> <li>- Within one year of the startup of the Wastewater Treatment Facility</li> <li>- Annual review</li> <li>- 60 days prior to planned changes</li> </ul>
<b>G</b>	Phase II Environmental Site Assessment Report	<ul style="list-style-type: none"> <li>- Six months prior to submitting Final Closure and Reclamation Plan</li> </ul>
<b>G</b>	Geotechnical Inspection – Notification to Inspector	<ul style="list-style-type: none"> <li>- Two weeks prior to inspection</li> </ul>
<b>G</b>	Geotechnical Inspection Report	<ul style="list-style-type: none"> <li>- Within 60 days of completing the inspection</li> </ul>
<b>G</b>	Dam Safety Review	<ul style="list-style-type: none"> <li>- By October 1, 2017</li> <li>- Every five years thereafter</li> </ul>
<b>G</b>	Dam Safety Review Report	<ul style="list-style-type: none"> <li>- Within 90 days of completing Dam Safety Review</li> </ul>
<b>G</b>	Dry Stack Tailings Storage Facilities Inspection and Review	<ul style="list-style-type: none"> <li>- Every five years following commencement of construction of Dry Stack Tailings Storage Facilities</li> </ul>
<b>G</b>	Dry Stack Tailings Storage Facilities Inspection and Review Report	<ul style="list-style-type: none"> <li>- Within 90 days of completing inspection</li> </ul>
<b>G</b>	Reporting daily Discharge Volume to Board and Inspector	<ul style="list-style-type: none"> <li>- During transition periods between discharge rates</li> </ul>
<b>G</b>	Submit Water Quality Data for SNP Station 4-43 to Board and Inspector	<ul style="list-style-type: none"> <li>- Five days prior to resuming discharge to Stinky Pond following mine closure or shutdown</li> <li>- Five days prior to resuming discharge following an exceedance of EQC</li> </ul>
<b>G</b>	Exceedance of Groundwater EQC – Notification to Inspector	<ul style="list-style-type: none"> <li>- Immediately following detection of exceedance</li> </ul>
<b>G</b>	Exceedance of Groundwater EQC – Report to Board and Inspector	<ul style="list-style-type: none"> <li>- Within 30 days of implementing Groundwater Pumping Contingency Plan</li> </ul>
<b>H</b>	AEMP Design Plan	<ul style="list-style-type: none"> <li>- A minimum of 24 months prior to</li> </ul>

		transitioning to final closure of the mine.
H	AEMP Re-evaluation Report	<ul style="list-style-type: none"> <li>- May 1, 2019</li> <li>- Every three years thereafter</li> </ul>
H	AEMP Annual Report	<ul style="list-style-type: none"> <li>- March 31, 2017 and annually, by each March 31<sup>st</sup> thereafter</li> </ul>
H	AEMP Response Plan – Notification to Board	<ul style="list-style-type: none"> <li>- Within 30 days of detecting exceedance of Action Level</li> </ul>
H	AEMP Response Plan	<ul style="list-style-type: none"> <li>- Within 90 days of exceedance of Action Level, or as directed by the Board</li> </ul>
I	Spill Contingency Plan	<ul style="list-style-type: none"> <li>- Annual review</li> <li>- 60 days prior to planned changes</li> </ul>
I	Detailed Spill and Unauthorized Discharge Report	<ul style="list-style-type: none"> <li>- Within 30 days of each spill and Unauthorized Discharge</li> </ul>
J	Interim Closure and Reclamation Plan	<ul style="list-style-type: none"> <li>- A minimum of 24 months prior to transitioning to final closure of the mine.</li> </ul>
J	Final Closure and Reclamation Plan	<ul style="list-style-type: none"> <li>- 24 months prior to the end of commercial operations</li> </ul>
J	Closure and Reclamation Licence Application	<ul style="list-style-type: none"> <li>- 18 months prior to the start of Final Closure and Reclamation</li> </ul>

**Annex C: Table of Revision History for Water Licence MV2015L2-0003**

Table 1: Updates and changes that have been made to the Water Licence since issuance.

Date	Location of change	Description of change

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