Mackenzie Valley Land and Water Board

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February 26, 2021

File: MV2019X0007 &
MV2007L8-0031

Natalie Plato
Crown-Indigenous Relations and Northern Affairs Canada
PO Box 1200
Yellowknife NT X1A 2R3

Sent by e-mail

Dear Natalie Plato:

Administrative Updates to MV2019X0007 and MV2007L8-0031
Crown-Indigenous Relations and Northern Affairs Canada – Giant Mine Remediation Project (CIRNAC-GMRP)

The Mackenzie Valley Land and Water Board (MVLWB or the Board) met on February 25, 2021 to review several administrative updates to Permit MV2019X0007 and Licence MV2007L8-0031. Mistakes and inconsistencies identified in conditions of the Permit and Licence, as well as the Schedules and Surveillance Network Program of the Licence have been corrected.

If you have any questions or concerns, please contact Shannon Allerston at (867) 766-7465 or sallerston@mvlwb.com.

Yours sincerely,

Mavis Cli-Michaud
MVLWB, Chair

Copied to: Distribution List

Attached: Land Use Permit MV2019X0007
Water Licence MV2007L8-0031

Land Use Permit

Permit Class	Permit No	Amendment No
A	MV2019X0007	

Subject to the Mackenzie Valley Land Use Regulations and the terms and conditions in this Permit, authority is hereby granted to:

Crown-Indigenous Relations and Northern Affairs
Canada – Giant Mine Remediation Project

Permittee

to proceed with the land use operation described in the Application of:

Signature Ms. Natalie Plato	Date April 1, 2019
Type of Land Use Operation Miscellaneous - Remediation	
Location Giant Mine Site - Yellowknife, NT	

This Permit may be assigned, extended, discontinued, suspended, or cancelled pursuant to the Mackenzie Valley Land Use Regulations.

Dated at Yellowknife this 7 day of August , 2020

Signature Chair

Mavis Cli-Michaud

Signature Witness

Amanda Gauthier

Effective Date
August 7, 2020

Expiry Date
August 6, 2025

ATTENTION

It is a condition of this Permit that the Permittee comply with the provisions of the *Mackenzie Valley Resource Management Act* and Regulations and the terms and conditions set out herein. A failure to comply may result in suspension or cancellation of this Permit.

Conditions Annexed to and Forming Part of Land Use Permit # MV2019X0007

Part A: Scope of Permit

1. This Permit entitles the Permittee to conduct the following activities associated with Existing Condition (Phase 1) and Active Remediation and Adaptive Management (Phase 2) of the Giant Mine Remediation Project:

   a) Use of motorized earth drilling machinery;
   b) Fuel storage; and
   c) Use of equipment for moving earth and clearing land.

2. The scope of this Permit is as described in the scope of Development in the Report of Environmental Assessment EA0809-001; as described in the scope of Preliminary Screening for MV2007L8-0031 and MV2019X0007, dated October 8, 2019; as described in the project scope of MV2012L8-0010; as described in the scope of Preliminary Screenings for MV2016S0016, dated July 21, 2016 and December 18, 2017; as described in the scope of Preliminary Screening for MV2017L8-0006 and MV2017X0030, dated September 28, 2017; and as described in the **Giant Mine Remediation Project Closure and Reclamation Plan**.

3. This Permit is issued subject to the conditions contained herein with respect to the use of land for the activities and area identified in Part A, conditions 1 and 2 of this Permit.

4. Compliance with the terms and conditions of this Permit does not excuse the Permittee from its obligation to comply with the requirements of any applicable Federal, Territorial, or Municipal laws.

Part B: Definitions (defined terms are capitalized throughout the Permit)

Active Remediation and Adaptive Management (Phase 2) – begins when Construction commences on the first Project Component(s). The Active Remediation and Adaptive Management phase lasts until all Closure Activities are complete.

Archaeological Impact Assessment – as defined by the Prince of Wales Northern Heritage Centre – *Guidelines for Developers for the Protection of Archaeological Sites in the Northwest Territories*.

Arsenic Trioxide Frozen Shell – a zone of frozen bedrock or fill around each arsenic containing chamber, stope, drift, or pit fill to contain the arsenic trioxide Waste as described in the **Arsenic Trioxide Frozen Shell Management and Monitoring Plan**.

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

Borehole – a hole that is made in the surface of the ground by drilling or boring.

Closure Activities – the Closure and Reclamation activity chosen from the closure options for each Project Component.

Closure and Reclamation Completion Report – provides details, including figures and photos, of the final reclamation work; an explanation of any work that deviated from the approved **Design Plan** and/or **Closure and Reclamation Plan**; an inventory of the infrastructure removed and that remaining; all engineered As-Built Reports; and descriptions of any monitoring that is still required.

Closure Criteria – standards that measure the success of selected Closure Activities in meeting Closure Objectives. Closure Criteria may have a temporal component (e.g., a standard may need to be met for a pre-defined number of years). Closure Criteria can be site-specific or adopted from territorial/federal or other standards and can be narrative statements or numerical values.

Closure Objectives – statements that describe what the selected Closure Activities are aiming to achieve; they are guided by the closure principles. Closure Objectives are typically specific to Project components, are measurable and achievable, and allow for the development of Closure Criteria.

Closure and Reclamation – the process and activities which facilitate the return of areas affected by historical mining activities to viable and, wherever practicable, self-sustaining ecosystems that are compatible with a healthy environment, human activities, and the surrounding environment.

Construction – any activities undertaken during any phase of the Project to construct or build any structures, facilities or components of, or associated with, the development of the Project.

Dam – an Engineered Structure or barrier that meets the definition of a Dam as per the *Dam Safety Guidelines* and is intended to contain, withhold, divert, or retain Water or Waste.

Dogleg – the clearing of a line, trail, or right-of-way that is curved sufficiently so that no part of the clearing beyond the curve is visible when approached from either direction.

Drilling Fluids – any liquid mixture of water, sediment, drilling muds, chemical additives or other Wastes that are pumped down hole while drilling and are specifically related to drilling activity.

Drilling Waste – all materials or chemicals, solid or liquid, associated with drilling, including drill cuttings and Drilling Fluids.

Engagement Plan – a document, developed in accordance with the Board's *Engagement and Consultation Policy and the Engagement Guidelines for Applicants and Holders of Water Licences and Land Use Permits*, that clearly describes how, when, and which engagement activities will occur with an affected party during the life of the Project.

Engineered Structure – Any structure or facility and associated area related to Water Use or the deposit of Waste that is designed and approved by a Professional Engineer, including but not limited to the underground mine workings, freeze system, pit fill cover(s), soil cover(s), nearshore sediment cover, surface water management sumps/pond/channels/culverts, Baker Creek channel/banks, Tailings Containment Area (TCA) covers, TCA spillways, Foreshore Tailings cover, Dams, New Water Treatment Plant and outfall system, Water crossings, borrow sources, Non-Hazardous Waste Landfill and associated stormwater management pond, and Existing Effluent Treatment Plant associated with the Project.

Environmental Assessment (EA0809-001) – Environmental Assessment EA0809-001, conducted by the Mackenzie Valley Environmental Impact Review Board for the Giant Mine Remediation Project.

Existing Condition (Phase 1) – the period that commences upon Permit issuance and continues until the commencement of the the Active Remediation and Adaptive Management (Phase 2) activities.

Existing Effluent Treatment Plant System (Effluent Treatment Plant) – the Wastewater treatment plant in operation at the time of Licence issuance and associated infrastructure including: pumping station, piping systems, storage, and treatment ponds.

Foreshore Tailings – Tailings that were historically deposited along the shore of north Yellowknife Bay without Dams to contain them.

Fuel Storage Container – a container for the storage of petroleum or allied petroleum products with a capacity of less than 230 litres.

Fuel Storage Tank – a closed container for the storage of petroleum or allied petroleum products with a capacity of more than 230 litres.

Giant Mine Remediation Project Closure and Reclamation Plan – a document, developed in accordance with this Permit, Licence MV2007L8-0031, and the MVLWB/AANDC *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories*, that clearly describes the Closure and Reclamation activities for the Project.

Greywater – all liquid Wastes from showers, baths, sinks, kitchens, and domestic washing facilities but not including Toilet Wastes.

Habitat – the area or type of site where a species or an individual of a species of wildlife naturally occurs or on which it depends, directly or indirectly, to carry out its life processes.

Inspector – an Inspector designated by the Minister under subsection 84.1 of the *Mackenzie Valley Resource Management Act*.

Minister – the Minister of Northern Affairs.

New Water Treatment Plant (Water Treatment Plant) – the Wastewater treatment facility, consisting of a Minewater intake, treatment facility, outfall pipe, and outfall in Yellowknife Bay

Non-Hazardous Waste Landfill – the Project Component designed to contain solid non-hazardous Waste.

Ordinary High Water Mark – the usual or average level to which a body of Water rises at its highest point and remains for sufficient time so as to change the characteristics of the land. In flowing Waters (rivers, streams) this refers to the "active channel/bank-full level" which is often the 1:2 year flood flow return level. In inland lakes, wetlands, or marine environments, it refers to those parts of the Watercourse bed and banks that are frequently flooded by Water so as to leave a mark on the land and where the natural vegetation changes from predominately aquatic vegetation to terrestrial vegetation (excepting Water tolerant species). For reservoirs, this refers to normal high operating levels (full supply level).

Permittee – the holder of this permit.

Perpetual Care Plan – required by the Environmental Agreement, a document that addresses improvements in records management, communication with future generations, long-term access to funds for the Project and analysis of different possible future scenarios that might affect the Perpetual Care of the Project.

Project – the undertaking described in Part A, conditions 1 and 2.

Project Component – the Giant Mine Remediation Project has been divided into twelve components, following the approach outlined in the *MVLWB/AANDC Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories*. The twelve Project Components are: 1) underground mine workings; 2) freeze/Arsenic Trioxide Frozen Shell; 3) open pit mine workings; 4) contaminated soils and sediments, 5) Baker Creek and surface Water drainage, 6) Tailings Containment Areas; 7) borrow/quarry material; 8) Water Treatment Plant and outfall systems; 9) buildings and site infrastructure; 10) Non-Hazardous Waste Landfill; 11) contamination downgradient from Dam 3; and 12) passive/semi-passive wetland treatment.

Remediation – the removal, reduction, or neutralization of substances, Wastes, or hazardous material from a site in order to prevent or minimize any adverse effects on the environment and public safety, now and in the future.

Secondary Containment – containment that prevents liquids that leak from Fuel Storage Tanks or containers from reaching outside the containment area and includes double-walled Tanks, piping, liners, and impermeable barriers.

Sewage – all Toilet Wastes but does not include Greywater.

Site-Wide Management and Monitoring Plans – plans that outline the general, site-wide, requirements for the maintenance and management of Water and Waste for the Project.

Spill Contingency Plan – a document developed for the Project in accordance with INAC's *Guidelines for Spill Contingency Planning*.

Spring Break-Up – April 15 each year, for the purpose of this operation.

Sump – a human-made excavation or natural depression designed for depositing Water and/or Waste.

Tailings - the materials rejected from the processing facilities after the recoverable valuable materials have been extracted.

Tailings Containment Areas – the area(s) designed to contain Tailings generated during historical operations, including the Northwest Pond, the North Pond, Central Pond, and the South Tailings Pond.

Toxic Material – any substance that:

a) Has or may have an immediate or long-term harmful effect on the environment or its biological diversity;
b) Constitutes or may constitute a danger to the environment on which life depends; or
c) Constitutes or may constitute a danger in Canada to human life or health.

Waste – as defined in section 51 of the *Mackenzie Valley Resource Management Act***.**

Waste Management and Monitoring Plan – a document, developed in accordance with the Board's *Guidelines for Developing a Waste Management Plan*, which describes the methods of Waste management from Waste generation to final disposal.

Water(s) – any Waters as defined by section 51 of the *Mackenzie Valley Resource Management.*

Watercourse – a body of flowing or standing Water or an area occupied by Water during part of the year, and includes streams, springs, swamps and gulches but does not include groundwater.

Part C: Conditions Applying to All Activities (headings correspond to subsection 26(1) of the Mackenzie Valley Land Use Regulations)

	Condition	Category
	26(1)(*a*) Location and Area	
1.	The Permittee shall only conduct this land-use operation on lands identified under Part A, condition 2.	**LOCATION OF ACTIVITIES**
2.	At least 48 hours prior to the commencement of drilling, the Permittee shall submit the drill hole locations on a 1:50,000-scale map with coordinates and map datum to the Board and an Inspector.	**DRILL LOCATIONS**
3.	The Permittee shall not conduct a quarry operation within 100 metres of the Ordinary High Water Mark of any Watercourse, unless otherwise authorized in writing by an Inspector.	**QUARRY SETBACK**
4.	The Permittee shall not construct parallel lines or roads, unless an existing line or road cannot be used.	**PARALLEL ROADS**
5.	The Permittee shall locate all new lines, trails, and right-of-ways to be constructed parallel to any Watercourse a minimum of 100 metres from the Ordinary High Water Mark, except at crossings.	**PARALLEL WATERCOURSE SETBACK**
6.	The Permittee shall not locate any new Sump within 100 metres of the Ordinary High Water Mark of any Watercourse, unless otherwise authorized in writing by an Inspector.	**SUMP SETBACK**
7.	Prior to the commencement of the land-use operation and the initiation of activities approved under any **Design Plan**, the Permittee shall accompany an Inspector during an inspection of the proposed land use area.	**INSPECT LOCATIONS**
8.	The Permittee shall confine the width of the right-of-way of a road to a maximum of 30 metres.	**WIDTH RIGHT-OF-WAY**
	26(1)(*b*) Time	
9.	At least 48 hours prior to the commencement of the land-use operation, the Permittee's Field Supervisor shall contact an Inspector at (867) 669-2442.	**INITIAL NOTIFICATION - CONTACT INSPECTOR**
10.	At least ten days prior to commencement of the land-use operation and the initiation of activities described under each **Design Plan**, the Permittee shall provide the following information, in writing, to the Board and an Inspector: a) the name(s) of the person(s) in charge of the field operation or activity; b) alternates; and c) all methods for contacting the above person(s).	**IDENTIFY AGENT**

11. At least ten days prior to the completion of activities described under each **Design Plan**, the Permittee shall advise an Inspector of:

REPORTS BEFORE FINAL REMOVAL

a) the plan for removal or storage of equipment and materials; and
b) when final cleanup and reclamation of the land used will be completed.

26(1)(*c*) Type and Size of Equipment

12. The Permittee shall not use any equipment except of a similar type, size, and number to that listed in the application.

USE APPROVED EQUIPMENT

26(1)(*d*) Methods and Techniques

13. The Permittee shall comply with the **Erosion and Sediment Management and Monitoring Plan**, once approved.

EROSION AND SEDIMENT MANAGEMENT AND MONITORING PLAN

14. A minimum of 90 days prior to the commencement of Active Remediation and Adaptive Management (Phase 2), the Permittee shall submit to the Board, for approval, an **Erosion and Sediment Management and Monitoring Plan**.

EROSION AND SEDIMENT MANAGEMENT AND MONITORING PLAN – REVISED

15. The Permittee shall comply with the **Dust Management and Monitoring Plan**, once approved.

DUST MANAGEMENT AND MONITORING PLAN

16. A minimum of 90 days prior to the commencement of Active Remediation and Adaptive Management (Phase 2), the Permittee shall submit to the Board, for approval, a **Dust Management and Monitoring Plan**.

DUST MANAGEMENT AND MONITORING PLAN – REVISED

17. The Permittee shall comply with the **Tailings Management and Monitoring Plan**, once approved.

TAILINGS MANAGEMENT AND MONITORING PLAN

18. A minimum of 90 days prior to the commencement of Active Remediation and Adaptive Management (Phase 2), the Permittee shall submit to the Board, for approval, a **Tailings Management and Monitoring Plan**.

TAILINGS MANAGEMENT AND MONITORING PLAN – REVISED

19. The Permittee shall comply with the **Borrow Materials and Explosives Management and Monitoring Plan**, once approved.

BORROW MATERIALS AND EXPLOSIVES MANAGEMENT AND MONITORING PLAN

20. A minimum of 120 days prior to the commencement of Active Remediation and Adaptive Management (Phase 2), the Permittee shall submit to the Board, for approval, a **Borrow Materials and Explosives Management and Monitoring Plan**.

SUBMIT BORROW MATERIALS AND EXPLOSIVES MANAGEMENT AND MONITORING PLAN

21. The Permittee shall comply with the **Arsenic Trioxide Frozen Shell Management and Monitoring Plan**, once approved.

ARSENIC TRIOXIDE FROZEN SHELL MANAGEMENT AND MONITORING PLAN

22. A minimum of 120 days prior to commencement of Construction of the Arsenic Trioxide Frozen Shell System, the Permittee shall submit to the Board, for approval, an **Arsenic Trioxide Frozen Shell Management and Monitoring Plan**.

SUBMIT ARSENIC TRIOXIDE FROZEN SHELL MANAGEMENT AND MONITORING PLAN

23. A minimum of 90 days prior to commencement of Construction of any Project Component, the Permittee shall submit to the Board, for approval, a **Design Plan**. The Permittee shall not commence Construction prior to Board approval.

DESIGN PLANS

24. Once approved, the management and monitoring details submitted in the **Design Plans** are to be incorporated into the applicable existing Site-Wide Management and Monitoring Plans. Updated Plans are to be submitted to the Board.

UPDATE PLANS

25. A minimum of 45 days prior to commencement of Construction of any Engineered Structure, the Permittee shall submit to the Board, a **Construction Plan**.

CONSTRUCTION PLANS

26. The Permittee shall Dogleg lines, trails and right-of-way that approach Watercourses or public roads.

DOGLEG APPROACHES

27. Prior to the movement of any vehicle that exerts pressure on the ground in excess of 35 kPa, the Permittee shall scout proposed lines and routes to select the best location for crossing streams and avoiding terrain obstacles.

DETOURS AND CROSSINGS

28. As the land-use operation progresses, the Permittee shall recontour craters caused by explosives, as described in applicable **Design Plan(s)**, **Construction Plan(s)**, and the **Borrow Materials and Explosives Management and Monitoring Plan**.

RECONTOUR CRATERS

29. Immediately upon completion of operations at each Borehole, except for Boreholes for freeze program of the underground arsenic trioxide stores, underground stabilization, paste backfill delivery and monitoring, or those with instrumentation for long-term monitoring, the Permittee shall remove or cut off and seal each drill casing at ground level.

DRILL CASINGS

30. The Permittee shall replace all excavated material from any test pits prior to the expiry of this Permit, unless otherwise authorized in writing by an Inspector

TEST PITS

31. The Permittee shall remove all wire from the land as the land-use operation progresses.

REMOVE WIRE

32. The Permittee shall construct and maintain the overland portion of winter roads with a minimum of ten cm of packed snow and/or ice at all times during this land-use operation. **WINTER ROADS**

33. The Permittee shall not erect camps or store material, other than that required for immediate use, on the ice surface of a Watercourse. **STORAGE ON ICE**

26(1)(*e*) Type, Location, Capacity, and Operation of All Facilities

34. The Permittee shall ensure that the land use area is kept clean at all times. **CLEAN WORK AREA**

26(1)(*f*) Control or Prevention of Ponding of Water, Flooding, Erosion, Slides, and Subsidence of Land

35. The Permittee shall install and maintain culverts such that scouring does not occur. **CULVERT SIZE**

36. The Permittee shall minimize erosion by installing erosion control structures as the land-use operation progresses. **PROGRESSIVE EROSION CONTROL**

37. The Permittee shall, where flowing Water from a Borehole is encountered: **FLOWING ARTESIAN WELL**

a) plug the Borehole in such a manner as to permanently prevent any further outflow of Water; and
b) immediately report the occurrence to the Board and an Inspector.

38. The Permittee shall prepare the site in such a manner as to prevent rutting of the ground surface. **PREVENTION OF RUTTING**

39. The Permittee shall suspend overland travel of equipment or vehicles at the first sign of rutting or gouging. **SUSPEND OVERLAND TRAVEL**

40. The Permittee shall not move any equipment or vehicles unless the ground surface is in a state capable of fully supporting the equipment or vehicles without rutting or gouging. **VEHICLE MOVEMENT FREEZE-UP**

41. The Permittee shall only use clean Water and snow in the Construction of ice bridges and snow fills. **CONSTRUCT ICE BRIDGES SNOWFILLS**

42. Prior to Spring Break-Up or completion of the land-use operation, the Permittee shall clean up and either remove or v-notch all ice bridges and snow fills from stream crossings, unless otherwise authorized in writing by an Inspector. **REMOVE ICE BRIDGES/SNOWFILLS**

43. The Permittee shall not cut any stream bank, unless otherwise authorized in writing by an Inspector. **STREAM BANKS**

44. The Permittee shall contour approach grades on all Watercourse crossings, as approved through applicable **Design Plan(s)** and/or **Construction Plan(s)**. **CONTOUR APPROACH**

45. The Permittee shall slope the sides of Waste material piles, excavations, and embankments — except in solid rock — as per an approved **Design Plan(s)**, or as otherwise authorized in writing by an Inspector. **EXCAVATION AND EMBANKMENTS**

26(1)(*g*) Use, Storage, Handling, and Ultimate Disposal of Any Chemical or Toxic Material

46. At least seven days prior to the use of any chemicals that were not identified in the application, the Safety Data Sheets must be provided to the Board and an Inspector. **CHEMICALS**

47. When drilling within 100 metres of the Ordinary High Water Mark of any Watercourse, and when drilling on ice, the Permittee shall contain all drill Water and Drilling Waste in a closed circuit system for reuse, off-site disposal, or deposit into a land-based Sump or natural depression. **DRILLING NEAR WATER OR ON ICE**

48. The Permittee shall remove all Drilling Waste in accordance with the approved Waste Management and Monitoring Plan. **DRILLING WASTE DISPOSAL**

49. The Permittee shall not allow any Drilling Waste to spread to the surrounding lands or Watercourses. **DRILLING WASTE CONTAINMENT**

50. The Permittee shall dispose of all Toxic Material as described in the approved **Waste Management and Monitoring Plan.** **WASTE CHEMICAL DISPOSAL**

51. The Permittee shall dispose of all Waste petroleum products as described in the approved **Waste Management and Monitoring Plan.** **WASTE PETROLEUM DISPOSAL**

26(1)(*h*) Wildlife and Fish Habitat

52. The Permittee shall comply with the **Wildlife and Wildlife Habitat Management and Monitoring Plan**, once approved. **WILDLIFE AND WILDLIFE HABITAT MANAGEMENT AND MONITORING PLAN**

53. A minimum of 90 days prior to the commencement of Active Remediation and Adaptive Management (Phase 2), the Permittee shall submit to the Board, for approval, a revised **Wildlife and Wildlife Habitat Management and Monitoring Plan**. **WILDLIFE AND WILDLIFE HABITAT MANAGEMENT AND MONITORING PLAN**

54. The Permittee shall take all reasonable measures to prevent damage to wildlife and fish Habitat during this land-use operation. **HABITAT DAMAGE**

26(1)(*i*) Storage, Handling, and Disposal of Refuse or Sewage

55. The Permittee shall comply with the **Waste Management and Monitoring Plan**, once approved, and shall annually review the plan and make any necessary revisions to reflect changes in operations, technology, chemicals, or fuels, or as directed by the Board. Revisions to the plan shall be submitted to the Board for approval. **WASTE MANAGEMENT AND MONITORING PLAN**

56. A minimum of 90 days prior to the commencement of Active Remediation and Adaptive Management (Phase 2), the Permittee shall submit to the Board, for approval, a revised **Waste Management and Monitoring Plan**. **WASTE MANAGEMENT AND MONITORING PLAN – REVISED**

57. The Permittee shall keep all domestic garbage and debris in a secure container until disposal. **GARBAGE CONTAINER**

58. The Permittee shall dispose of all garbage, Waste, and debris as described in the approved **Waste Management and Monitoring Plan**, unless otherwise authorized in writing by an Inspector. **WASTE DISPOSAL**

59. The Permittee shall dispose of all Sewage and Greywater as described in the approved **Waste Management and Monitoring Plan.** **SEWAGE DISPOSAL – PLAN**

26(1)(*j*) Protection of Historical, Archaeological, and Burial Sites

60. The Permittee shall not operate any vehicle or equipment within 30 metres of a known or suspected historical or archaeological site or burial ground. **ARCHAEOLOGICAL BUFFER**

61. The Permittee shall, where a suspected archaeological or historical site, or burial ground, is discovered: **SITE DISCOVERY AND NOTIFICATION**

a) immediately suspend operations on the site; and
b) notify the Board at (867) 669-0506 or an Inspector at (867) 669-2442, and the Prince of Wales Northern Heritage Centre at 767-9347 ext. 71250 or ext. 71251; and
c) notify any affected Aboriginal communities and organizations.

62. The Permittee shall not knowingly remove, disturb, or displace any archaeological specimen or site unless deemed sufficiently mitigated by the Prince of Wales Northern Heritage Centre (PWNHC) as demonstrated through the submission of a Report signed by the PWNHC to the Board and the Inspector. **SITE DISTURBANCE**

63. Prior to any new land disturbance, the Permittee shall conduct an Archaeological Impact Assessment of the sites where disturbance is planned and shall submit a summary report to the Board and the Prince of Wales Northern Heritage Centre. **ARCHAEOLOGICAL IMPACT ASSESSMENT**

26(1)(*k*) Objects and Places of Recreational, Scenic, and Ecological Value

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26(1)(*l*) Security Deposit

64. All costs to remediate the area under this Permit are the responsibility of the Permittee. **RESPONSIBILITY FOR REMEDIATION COSTS**

26(1)(*m*) Fuel Storage

65. The Permittee shall: **REPAIR LEAKS**

a) regularly examine all Fuel Storage Containers and Tank for leaks; and
b) repair all leaks immediately.

66. The Permittee shall not place any Fuel Storage Containers or Tanks within 100 metres of the Ordinary High Water Mark of any Watercourse, unless otherwise authorized in writing by an Inspector. **FUEL STORAGE SETBACK**

67. The Permittee shall ensure that all fuel caches have adequate Secondary Containment. **FUEL CACHE SECONDARY CONTAINMENT**

68. The Permittee shall set up all refueling points with Secondary Containment. **SECONDARY CONTAINMENT – REFUELING**

69. The Permittee shall not allow petroleum products to spread to surrounding lands or Watercourses. **FUEL CONTAINMENT**

70. The Permittee shall locate mobile fuel facilities on land when the facilities are stationary for more than 12 hours. **FUEL ON LAND**

71. The Permittee shall mark all Fuel Storage Containers and Tanks with the Permittee's name. **MARK CONTAINERS AND TANKS**

72. The Permittee shall mark all stationary fuel caches and Fuel Storage Tanks and Containers with flags, posts, or similar devices so that they are at all times plainly visible to local vehicle travel. **MARK FUEL LOCATION**

73. The Permittee shall seal all outlets of Fuel Storage Containers and store the containers on their sides with the outlets located at three and nine o'clock, except for containers currently in use. **SEAL OUTLET**

74. The Permittee shall comply with the **Spill Contingency Plan**, once approved, and shall annually review the plan and make any necessary revisions to reflect changes in operations, technology, chemicals, or fuels, or as directed by the Board. Revisions to the plan shall be submitted to the Board for approval. **SPILL CONTINGENCY PLAN**

75. A minimum of 90 days prior to the commencement of Active Remediation and Adaptive Management (Phase 2), the Permittee shall submit to the Board, for approval, a revised **Spill Contingency Plan** in accordance with the INAC *Guidelines for Spill Contingency Planning*. **SPILL CONTINGENCY PLAN – REVISED**

76. Prior to commencement of the land-use operation the Permittee shall ensure that spill-response equipment is in place to respond to any potential spills. **SPILL RESPONSE**

77. All equipment that may be parked for two hours or more, shall have a haz-mat/drip tray under it or be sufficiently diapered. Leaky equipment shall be repaired immediately. **DRIP TRAYS**

78. The Permittee shall clean up all leaks, spills, and contaminated material. **CLEAN UP SPILLS**

79. During the term of this Permit, if a spill occurs or is foreseeable, the Permittee shall: **REPORT SPILLS**

a) implement the approved **Spill Contingency Plan**;
b) report it immediately using the NU-NT Spill Report Form by one of the following methods:
   - Telephone: (867) 920-8130
   - Fax: (867) 873-6924
   - E-mail: spills@gov.nt.ca
   - Online: Spill Reporting and Tracking Database
c) within 24 hours, notify the Board and an Inspector; and
d) within 30 days of initially reporting the incident, submit a detailed report to the Board and an Inspector, including descriptions of causes, response actions, and any changes to procedures to prevent similar occurrences in the future. Any updates to this report shall be provided to the Board and an Inspector in writing as changes occur.

26(1)(*n*) Methods and Techniques for Debris and Brush Disposal

80. The Permittee shall progressively dispose of all brush and trees; all disposal shall be completed prior to the end of this land use operation. **BRUSH DISPOSAL/ TIME**

81. The Permittee shall not clear areas larger than identified in the application. **MINIMIZE AREA CLEARED**

26(1)(*o*) Restoration of the Lands

82. The Permittee shall comply with the **Giant Mine Remediation Project Closure and Reclamation Plan**, once approved. The Plan shall be developed in accordance with the MVLWB/AANDC *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories.* **CLOSURE AND RECLAMATION PLAN**

83. Within nine months following the effective date of this Permit, the Permittee shall submit to the Board, a revised version of the **Giant Mine Remediation Project Closure and Reclamation Plan**. The updated version shall be developed in accordance with the MVLWB/AANDC *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories.* **CLOSURE AND RECLAMATION PLAN – REVISED**

84. The Permittee shall submit an updated version of the **Giant Mine Remediation Project Closure and Reclamation Plan**, including tables of Closure Objectives and Closure Criteria, each year to reflect Project updates and changes identified in any Site-Wide Management and Monitoring Plan(s) or **Design Plan(s)**, approved by the Board. **CLOSURE AND RECLAMATION PLAN – ANNUAL UPDATES**

85. The Permittee shall submit a Table of Contents and Draft Schedule for the **Post-Closure Monitoring and Maintenance Plan** to the Board, for approval, within one year of completing all **Design Plans**. The **Perpetual Care Plan** should be included, for information only, as an appendix to the **Post-Closure Monitoring and Maintenance Plan**.

POST-CLOSURE MONITORING AND MAINTENANCE PLAN – TABLE OF CONTENTS

86. Within six months of completing Closure and Reclamation of any Project Component, the Permittee shall submit to the Board, a Project Component-specific **Closure and Reclamation Completion Report**. The Report shall be in accordance with the MVLWB/AANDC *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories.*

CLOSURE AND RECLMATION COMPLETION REPORT

87. Within one year of submission of all **Closure and Reclamation Completion Reports**, the Permittee shall submit to the Board, a **Final Closure and Reclamation Report**.

FINAL CLOSURE AND RECLAMATION REPORT

88. Upon submission of the **Final Closure and Reclamation Report** and a minimum of every five years thereafter, the Permittee shall submit to the Board, for approval, a **Performance Assessment Report**. The Report shall be in accordance with the MVLWB/AANDC *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories*.

PERFORMANCE ASSESSMENT REPORT

89. The Permittee shall manage overburden as approved in the **Waste Management and Monitoring Plan**, **Giant Mine Remediation Project Closure and Reclamation Plan**, and associated **Design Plan(s)**, or as otherwise authorized in writing by an Inspector.

MANAGEMENT OF OVERBURDEN

90. Prior to the expiry date of this Permit, the Permittee shall complete all cleanup and restoration of the lands used as described in the approved **Giant Mine Remediation Closure and Reclamation Plan** and associated **Design Plans**.

FINAL CLEANUP AND RESTORATION

91. Prior to the expiry date of this Permit, the Permittee shall initiate active revegetation of disturbed areas as described in the approved **Giant Mine Remediation Closure and Reclamation Plan** and associated **Design Plan(s)**.

ACTIVE REVEGETATION

92. The Permittee shall carry out progressive reclamation of disturbed areas as soon as it is practical to do so.

PROGRESSIVE RECLAMATION

26(1)(*p*) Display of Permits and Permit Numbers

93. The Permittee shall display a copy of this Permit in the main administrative building established to carry out this land-use operation.

DISPLAY PERMIT

94. **26(1)(*q*) Biological and Physical Protection of the Land**

If any plan is not approved by the Board, the Permittee shall revise the plan according to the Board's direction and re-submit it to the Board for approval.

RESUBMIT PLAN

95. The Permittee shall comply with the **Engagement Plan**, once approved, and shall annually review the plan and make any necessary revisions to reflect changes in operations or as directed by the Board. Revisions to the plan shall be submitted to the Board for approval. **ENGAGEMENT PLAN**

96. The Permittee shall, within six months following the effective date of this Permit, submit to the Board, for approval, an updated version of the **Engagement Plan.** The updated version shall be developed in accordance with the MVLWB *Engagement Guidelines for Applicants and Holders of Water Licences and Land Use Permit*s. **ENGAGEMENT PLAN – REVISED**

97. All revised plans submitted to the Board shall include a brief summary of the changes made to the plan. **SUMMARY OF CHANGES**

Mackenzie Valley Land and Water Board
Water Licence

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

Crown-Indigenous Relations and Northern Affairs Canada – Giant Mine Remediation Project
(Licensee)

of Box 1500 Yellowknife NT X1A2R3
(Mailing Address)

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

Licence Number:	MV2007L8-0031
Licence Type:	A
Water Management Area:	Northwest Territories 01
Location:	**62°28'51.7224" N** **114°23'10.3122" W**
Purpose:	To use water and dispose of waste and associated uses
Description:	Miscellaneous (L8)
Quantity of Water **not to be exceeded**:	1,200 cubic metres (m^3)/day
Effective date of Licence:	
Expiry date of Licence:	

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

Mackenzie Valley Land and Water Board

Mavis Cli-Michaud, Chair

Amanda Gauthier, Witness

Approved by

Honourable Daniel Vandal
Minister of Northern Affairs

SEP 16 2020

Type A Water Licence MV2007L8-0031
CIRNAC-GMRP – Giant Mine Remediation Project

Table of Contents

Part A: Scope and Definitions

1. Scope

a) This Licence entitles the Licensee to use Water and deposit Waste for miscellaneous activities during Existing Condition (Phase 1) and Active Remediation and Adaptive Management (Phase 2) of the Giant Mine Remediation Project (Project). **SCOPE**

The scope of this Licence includes:

a) Closure and Remediation activities and long-term site management, including engineering investigations, site stabilization, Construction, decommissioning and demolition, operation, monitoring, and mitigation activities;
b) Withdrawal of fresh Water from Yellowknife Bay;
c) Watercourse crossings;
d) Deposit of Waste in the Tailings Containment Areas, open pits, underground stopes and chambers, Baker Creek, Great Slave Lake, and an on-site Non-Hazardous Waste Landfill;
e) Management of underground Minewater;
f) Construction, operation, and maintenance of on-site infrastructure;
g) Construction, maintenance, and monitoring of Baker Creek, including Watercourse training, diversions, floodplains and breakwaters;
h) Construction, operation, and maintenance of the Existing Effluent Treatment Plant and the New Water Treatment Plant, including the new outfall;
i) Construction and maintenance of the Foreshore Tailings cover, including shoreline soils and near-shore sediments along the Townsite/marina area;
j) Construction, maintenance, and monitoring of wetland treatment systems or other passive treatment technology;
k) Removal of contaminated sediments from Baker Creek and Yellowknife Bay; and
l) Operation, maintenance and Remediation of the Tailings Containment Areas.

b) The scope of this Licence is as described in the scope of Development in the Report of Environmental Assessment EA0809-001; as described in the scope of Preliminary Screening for MV2007L8-0031 and MV2019X0007, dated October 8, 2019; as described in the project scope of MV2012L8-0010; as described in the scope of Preliminary Screenings for MV2016S0016, dated July 21, 2016 and December 18, 2017; as described in the scope of Preliminary Screening for MV2017L8-0006 and MV2017X0030, dated September 28, 2017; and as described in the **Giant Mine Remediation Project Closure and Reclamation Plan**. **SCOPE – POST ENVIRONMENTAL ASSESSMENT**

c) This Licence is issued subject to the conditions contained herein with respect to the use of Water and the deposit of Waste in any Waters or in any place under any conditions where such Waste or any other Waste that results from the deposits of such Waste may enter any Waters. Whenever new Regulations are made or existing Regulations are amended by the Governor in Council under the *Mackenzie Valley Resource Management 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. **LEGISLATION SUBJECT TO CHANGE**

d) Compliance with this Licence does not relieve the Licensee from its responsibility for compliance with the requirements of any applicable federal, territorial, or municipal laws. **LEGISLATIVE COMPLIANCE**

2. Definitions

Acid Rock Drainage – acidic Water, often with elevated sulphate concentrations, that occurs as a result of oxidation of sulphide minerals contained in rock or other materials that are exposed as a result of natural weathering processes, Construction, or Project activities.

Action Level – a predetermined qualitative or quantitative threshold that, if exceeded, requires the Licensee to take appropriate actions.

Active Remediation and Adaptive Management (Phase 2) – begins when Construction commences on the first Project Component(s). The Active Remediation and Adaptive Management phase lasts until all Closure Activities are complete.

Analyst – an Analyst designated by the Minister by subsection 84(2) of the *Mackenzie Valley Resource Management Act*.

Aquatic Effects Monitoring Program – a monitoring program developed for the Project in accordance with this Licence and the MVLWB/GNWT *Guidelines for Aquatic Effects Monitoring Programs.*

Arsenic Trioxide Frozen Shell – a zone of frozen bedrock or fill around each arsenic-containing chamber, stope, drift, or pit fill to contain the arsenic trioxide Waste as described in the **Arsenic Trioxide Frozen Shell Management and Monitoring Plan**.

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

Closure Activities – the Closure and Reclamation activity chosen from the closure options for each Project Component.

Closure and Reclamation Completion Report – provides details, including figures and photos, of the final reclamation work; an explanation of any work that deviated from the approved **Design Plan** and/or **Closure and Reclamation Plan**; an inventory of the infrastructure removed and that remaining; all engineered As-Built Reports; and descriptions of any monitoring that is still required.

Closure Criteria – standards that measure the success of selected Closure Activities in meeting Closure Objectives. Closure Criteria may have a temporal component (e.g., a standard may need to be met for a pre-defined number of years). Closure Criteria can be site-specific or adopted from territorial/federal or other standards and can be narrative statements or numerical values.

Closure Objectives – statements that describe what the selected Closure Activities are aiming to achieve; they are guided by the closure principles. Closure Objectives are typically specific to Project Components, are measurable and achievable, and allow for the development of Closure Criteria.

Closure and Reclamation – the process and activities which facilitate the return of areas affected by historical mining activities to viable and, wherever practicable, self-sustaining ecosystems that are compatible with a healthy environment, human activities, and the surrounding environment.

Construction – any activities undertaken during any phase of the Project to construct or build any structures, facilities or components of, or associated with, the development of the Project.

Contact Water – Runoff or Seepage that has encountered Wastewater and/or Waste, within the Developed Areas as described in the **Giant Mine Remediation Project Closure and Reclamation Plan** and **Water Management and Monitoring Plan**.

Dam – an Engineered Structure or barrier that meets the definition of a Dam as per the *Dam Safety Guidelines* and is intended to contain, withhold, divert, or retain Water or Waste.

Dam Class – the category of Dam based on its failure consequences, as described in the *Dam Safety Guidelines*.

Dam Safety Guidelines – the Canadian Dam Association's (CDA) *Dam Safety Guidelines* including the *Dam Safety Technical Bulletins*.

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

Developed Area – areas that were developed to support mining operations (i.e., mill/roaster area, tailings retreatment plant, Townsite/marina, roadway network, and various laydown and material storage areas) and as represented the **Giant Mine Remediation Project Closure and Reclamation Plan** and **Water Management and Monitoring Plan**.

Effluent – a Wastewater Discharge.

Effluent Quality Criteria (EQC) – numerical or narrative limits on the quality or quantity of the Waste deposited to the Receiving Environment.

Engagement Plan – a document, developed in accordance with the MVLWB *Engagement and Consultation Policy* and the *Engagement Guidelines for Applicants and Holders of Water Licences and Land Use Permits,* that clearly describes how, when, and which engagement activities will occur with an affected party during the life of the Project.

Engineered Structure – Any structure or facility and associated area related to Water Use or the deposit of Waste that is designed and approved by a Professional Engineer, including but not limited to the underground mine workings, freeze system pit fill cover(s), soil cover(s), nearshore sediment cover, surface water management sumps/ponds/channels/culverts, Baker Creek channel/banks, Tailings Containment Area covers, Tailings Containment Area spillways, Foreshore Tailings cover, Dams, New Water Treatment Plant and outfall system, Water crossings, borrow sources, Non-Hazardous Waste Landfill and associated stormwater management pond, and Existing Effluent Treatment Plant associated with the Project.

Engineer of Record – a qualified Professional Engineer who is responsible for the performance of the Tailings Containment Areas and Dams.

Environmental Assessment (EA0809-001) – Environmental Assessment EA0809-001, conducted by the Mackenzie Valley Environmental Impact Review Board for the Giant Mine Remediation Project.

Existing Condition (Phase 1) – the period that commences upon Licence issuance and continues until the commencement of the Active Remediation and Adaptive Management (Phase 2) activities.

Existing Effluent Treatment Plant System (Effluent Treatment Plant) – the Wastewater treatment plant in operation at the time of Licence issuance and associated infrastructure including: pumping station, piping systems, storage, and treatment ponds.

Foreshore Tailings – tailings that were historically deposited along the shore of north Yellowknife Bay without Dams to contain them.

Freeboard – the vertical distance between the still Water surface elevation in a reservoir and the lowest elevation at the top of the containment structure.

Fresh Water Intake – the structures and associated infrastructure used to collect and supply Water for the Project.

Giant Mine Remediation Project Closure and Reclamation Plan – a document, developed in accordance with this Licence and the MVLWB/AANDC *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories*, that clearly describes the Closure and Reclamation activities for the Project.

Greywater – all liquid wastes from showers, baths, sinks, kitchens, and domestic washing facilities but not including toilet wastes.

Groundwater – as defined in section 2 of the Mackenzie Valley Federal Areas Waters Regulations: all water in a zone of saturation below the land surface, regardless of its origin. Does not include Minewater.

Inspector – an Inspector designated by the Minister under subsection 84(1) of the *Mackenzie Valley Resource Management Act*.

Licensee – the holder of this Licence.

Mackenzie Valley Federal Areas Waters Regulations – the regulations proclaimed pursuant to section 90.3 of the *Mackenzie Valley Resource Management Act.*

Maximum Average Concentration – the concentration of a parameter that cannot be exceeded by the running average of any four consecutive analytical results, collected in accordance with the sampling and analysis requirements specified in the Surveillance Network Program (SNP).

Maximum Grab Concentration – a concentration of a parameter that cannot be exceeded in any one analytical result, collected in accordance with the sampling and analysis requirements specified in the Surveillance Network Program (SNP).

Minewater – Groundwater, surface Water or any Water that is pumped, seeps, or flows out of any underground mine working or open pit.

Minister – the Minister of Northern Affairs.

New Water Treatment Plant (Water Treatment Plant) – the Wastewater treatment facility, consisting of a Minewater intake, treatment facility, outfall pipe, and outfall in Yellowknife Bay.

Non-Hazardous Waste Landfill – the Project Component designed to contain solid non-hazardous Waste.

Ordinary High-Water Mark – the usual or average level to which a Watercourse rises at its highest point and remains for sufficient time so as to change the characteristics of the land. In flowing Watercourses (rivers, streams), this refers to an active channel/bank-full level, which is often the 1:2-year flood flow return level. In inland lakes, wetlands or marine environments, it refers to those parts of the Watercourse bed and banks that are frequently flooded by Water so as to leave a mark on the land and where the natural vegetation changes from predominantly aquatic vegetation

to terrestrial vegetation (excepting Water tolerant species). For reservoirs, this refers to normal high operating levels (full supply level).

Perpetual Care Plan – required by the Environmental Agreement, a document that addresses improvements in records management, communication with future generations, long-term access to funds for the Project and analysis of different possible future scenarios that might affect the Perpetual Care of the Project.

Potentially Acid Generating – any rock that has the potential to produce Acid Rock Drainage.

Professional Engineer – a person registered with the Northwest Territories and Nunavut Association of Professional Engineers and Geoscientists to practice as a Professional Engineer in the Northwest Territories as per the territorial *Engineering and Geoscience Professions Act* and whose professional field of specialization is appropriate to address the components of the Project at hand.

Project – the undertaking described in Part A, conditions 1 and 2.

Project Component – The Giant Mine Remediation Project has been divided into twelve components, following the approach outlined in the MVLWB/AANDC *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories*. The twelve Project Components are: 1) underground mine workings; 2) freeze/Arsenic Trioxide Frozen Shell; 3) open pit mine workings; 4) contaminated soils and sediments, 5) Baker Creek and surface Water drainage, 6) Tailings Containment Areas; 7) borrow/quarry material; 8) Water Treatment Plant and outfall systems; 9) buildings and site infrastructure; 10) Non-Hazardous Waste Landfill; 11) contamination downgradient from Dam 3; and 12) passive/semi-passive wetland treatment.

Receiving Environment – the natural environment that, directly or indirectly, receives any deposit of Waste from the Project.

Reclamation Research – literature reviews, laboratory or pilot-scale tests, engineering studies, and other methods of resolving uncertainties. Proponents conduct Reclamation Research to answer questions pertaining to environmental risks; the design of Reclamation Research plans aims to provide data and information which will reduce uncertainties for closure options, selected Closure Activities, and/or Closure Criteria.

Remediation – the removal, reduction, or neutralization of substances, Wastes, or hazardous material from a site in order to prevent or minimize any adverse effects on the environment and public safety, now and in the future.

Response Framework – a systematic approach to responding to the results of a monitoring program through adaptive management actions.

Response Plan – a document describing the actions that will be taken by the Licensee in response to an Action Level exceedance.

Runoff – the overland flow of Water or Wastewater that occurs when precipitation, meltwater, or other Water is not absorbed by the land.

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

Sewage – all toilet Waste but does not include Greywater.

Site-Wide Management and Monitoring Plans – Plans that outline the general, site-wide, requirements for the maintenance and management of Water and Waste for the Project.

Spill Contingency Plan – a document developed for the Project in accordance with INAC's *Guidelines for Spill Contingency Planning*.

Sump – a human-made excavation or a natural depression designated for depositing Water and/or Waste.

Surface Runoff Criteria – Water quality standards that apply to Runoff and Seepage from within the Developed Areas including, but not limited to, runoff from the remediated Tailings Containment Area, remediated pits, and the Non-Hazardous Waste Landfill. During closure, Contact Water from pits, Tailings Containment Area and engineered covers, will be collected, conveyed to the underground mine pool, and treated until concentrations are confirmed to meet the Surface Runoff Criteria as approved in the Water Management and Monitoring Plan.

Surveillance Network Program (SNP) – a monitoring program required by this Licence detailed in Annex A.

Tailings – the materials rejected from the processing facilities after the recoverable valuable materials have been extracted.

Tailings Containment Areas – the area(s) designed to contain Tailings generated during historical operations, including the Northwest Pond, the North Pond, Central Pond, and the South Tailings Pond.

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

Unauthorized Discharge – a release or Discharge of any Water or Waste not authorized under this Licence.

Waste – Waste as defined in section 51 of the *Mackenzie Valley Resource Management Act*.

Waste Management and Monitoring Plan – a document, developed in accordance with the MVLWB *Guidelines for Developing a Waste Management Plan,* which describes the methods of Waste management for the Project from Waste generation to final disposal.

Wastewater – any Water that is generated by Project activities or originates within the Project boundary and requires treatment or management, including but not limited to Seepage, Contact Water, Minewater, Sewage, Greywater, and Effluent.

Water(s) – any Waters as defined by section 51 of the *Mackenzie Valley Resource Management Act.*

Watercourse – a body of flowing or standing Water or an area occupied by Water during part of the year, and includes streams, springs, swamps and gulches but does not include Groundwater.

Water Use – a use of Water as defined by section 51 of the *Mackenzie Valley Resource Management Act*.

Part B: General Conditions

1.	The Licensee shall ensure a copy of this Licence is maintained on site at all times.	**COPY OF LICENCE**
2.	The Licensee shall take every reasonable precaution to protect the environment.	**PRECAUTION TO PROTECT ENVIRONMENT**
3.	In conducting its activities under this Licence, the Licensee shall make every reasonable effort to consider and incorporate any scientific information and Traditional Knowledge that is made available to the Licensee.	**INCORPORATE SCIENTIFIC INFORMATION AND TRADITIONAL KNOWLEDGE**
4.	In each submission required by this Licence or any Directive from the Board, the Licensee is to identify all recommendations based on Traditional Knowledge received, describe how the recommendations were incorporated into the submission, and provide justification for any recommendation not adopted.	**IDENTIFY TRADITIONAL KNOWLEDGE**
5.	All references to policies, guidelines, codes of practice, statutes, regulations, or other authorities shall be read as reference to the most recent version, unless otherwise noted.	**USE UP-TO-DATE REFERENCES**
6.	The Licensee shall ensure all submissions to the Board: a) Are in accordance with the MVLWB *Document Submission Standards*; b) Include a conformity statement or table which identifies where the requirements of this Licence, or other directives from the Board, are addressed; and c) Include any additional information requested by the Board.	**SUBMISSION FORMAT AND CONFORMITY**
7.	The Licensee shall ensure management and monitoring plans are submitted to the Board in a format consistent with the MVLWB *Standard Outline for Management Plans*, unless otherwise specified.	**MANAGEMENT AND MONITORING PLAN FORMAT**
8.	The Licensee shall comply with all plans and programs approved pursuant to the conditions of this Licence, including revisions approved pursuant to the conditions of this Licence.	**COMPLY WITH SUBMISSIONS AND REVISIONS**
9.	The Licensee shall conduct an annual review of all plans and programs and make any revisions necessary to reflect changes in operations, contact information, or other details. No later than March 31 each year, the Licensee shall send a notification letter to the Board, listing the documents that have been reviewed and do not require revisions.	**ANNUAL REVIEW**
10.	The Licensee may propose changes at any time by submitting revised plans to the Board, for approval, a minimum of 90 days prior to the proposed implementation date for the changes. The Licensee shall not implement the changes until approved by the Board.	**REVISIONS**
11.	The Licensee shall revise any submission and submit it as per the Board's directive.	**REVISE AND SUBMIT**
12.	If any date for any submission falls on a weekend or holiday, the Licensee may submit the item on the following business day.	**SUBMISSION DATE**

13. The Licensee shall comply with the **Schedules**, which are annexed to and form part of this Licence, and any updates to the Schedules as may be made by the Board. **COMPLY WITH SCHEDULE(S)**

14. The Licensee shall comply with the **Surveillance Network Program** which is annexed to and forms part of this Licence, and any updates to the Surveillance Network Program as may be made by the Board. **COMPLY WITH SURVEILLANCE NETWORK PROGRAM**

15. The Licensee shall comply with all directives issued by the Board in respect of the implementation of the conditions of this Licence. **COMPLY WITH BOARD DIRECTIVES**

16. The Schedules, the Surveillance Network Program, and any compliance dates specified in this Licence may be updated at the discretion of the Board. **UPDATES TO COMPLIANCE DATE(S)**

17. The Licensee shall ensure signs are posted for all active Surveillance Network Program stations. All sign(s) shall be located and maintained to the satisfaction of an Inspector. **POST SURVEILLANCE NETWORK PROGRAM SIGN(S)**

18. The Licensee shall install, operate, and maintain meters, devices, or other such methods for measuring the volumes of Water used and Waste Discharged, to the satisfaction of an Inspector. **MEASURE WATER USE AND WASTE DISCHARGED**

19. The Licensee shall, to the satisfaction of an Inspector, replace, repair, or decommission any monitoring wells that become inoperable. For greater certainty, a "dry well" is not an inoperable well within the meaning of this Licence. **INOPERABLE WELL**

20. Beginning April 30, 2021, and no later than every April 30 thereafter, the Licensee shall submit an **Annual Water Licence Report** to the Board and Inspector. The Report shall be in accordance with the requirements of Schedule 1, condition 1. **ANNUAL WATER LICENCE REPORT**

21. The Licensee shall comply with the **Engagement Plan**, once approved. The Plan shall be developed in accordance with the MVLWB *Engagement Guidelines for Applicants and Holders of Water Licences and Land Use Permits.* **ENGAGEMENT PLAN**

22. Within 90 days following the effective date of this Licence, the Licensee shall submit to the Board, for approval, a revised **Engagement Plan.** The updated version shall be developed in accordance with the MVLWB *Engagement Guidelines for Applicants and Holders of Water Licences and Land Use Permit*s and Schedule 1, condition 2. **ENGAGEMENT PLAN – REVISED**

23. The Licensee shall submit a current Project schedule to the Board and an Inspector upon request. **SUBMIT CURRENT PROJECT SCHEDULE**

24. A minimum of ten days prior to commencement of Project activities, including the initiation of activities described under each approved **Design Plan**, the Licensee shall provide written notification to the Board and an Inspector. Notification shall include the commencement date and the name and contact information for the individual responsible for overseeing the Project activity. Written notification shall be provided to the Board and an Inspector if any changes occur. **NOTIFICATION – COMMENCEMENT**

25. The Licensee shall immediately provide written notification to the Board and an Inspector of any non-compliance with the conditions of the Licence. **NOTIFICATION – NON-COMPLIANCE WITH CONDITION**

26. The Licensee shall immediately provide written notification to the Board of any non-compliance with a Board Directive issued in respect of the implementation of the conditions of this Licence. **NOTIFICATION – NON-COMPLIANCE WITH DIRECTIVES**

27. The Licensee shall ensure that a copy of any written authorization issued to the Licensee by an Inspector is provided to the Board. **COPY – WRITTEN AUTHORIZATION**

Part C: Water Use

1. The Licensee shall only obtain fresh Water for the Project from Yellowknife Bay. The Licensee may withdraw up to 438,000 m^3/year of Water from this source. **WATER SOURCE AND MAXIMUM VOLUME**

2. The Licensee may use Wastewater for dust suppression only if it meets the Effluent Quality Criteria identified in Part F, condition 26 while the Effluent Treatment Plant is operational or Part F, condition 27 while the Water Treatment Plant is operational, unless otherwise approved by the Board in the **Water Management and Monitoring Plan** or **Dust Management and Monitoring Plan**. The Licensee shall submit the Water quality data to the Board and an Inspector to confirm Part F, conditions 26 or 27 can be met as applicable prior to use. **WASTEWATER USE**

3. The Licensee shall withdraw Water from Yellowknife Bay using a Fresh Water Intake identified and approved through the **Water Management and Monitoring Plan**. **WATER WITHDRAWAL – FACILITIES**

4. Prior to withdrawing Water from an approved Water source, the Licensee shall post sign(s) to identify the intake for the Water supply facilities. All sign(s) shall be located and maintained to the satisfaction of an Inspector. **POST WATER INTAKE SIGN(S)**

5. The Licensee shall construct and maintain the Water intake(s) with a screen designed to prevent impingement or entrapment of fish. **WATER INTAKE SCREEN**

6. Prior to locating a Water intake in fish-bearing Waters, the Licensee shall obtain written authorization for the location from an Inspector. **WATER INTAKE LOCATION – AUTHORIZATION**

Part D: Closure and Reclamation

1. The Licensee shall comply with the **Giant Mine Remediation Project Closure and Reclamation Plan**, once approved. The Plan shall be developed in accordance with the MVLWB/AANDC *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories.* **CLOSURE AND RECLAMATION PLAN**

2. Within six months following the effective date of this Licence, the Licensee shall submit to the Board, a revised version of the **Giant Mine Remediation Project Closure and Reclamation Plan.** The updated version shall be developed in accordance with the MVLWB/AANDC *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories* and Schedule 2, condition 1. **CLOSURE AND RECLAMATION PLAN - REVISED**

3. The Licensee shall submit an updated version of the **Giant Mine Remediation Project Closure and Reclamation Plan**, including tables of Closure Objectives and Closure Criteria, each year to reflect project updates and changes identified in any Site-Wide Management and Monitoring Plan(s) or **Design Plans(s)** approved by the Board.

CLOSURE AND RECLAMATION PLAN – ANNUAL UPDATES

4. The Licensee shall submit a Table of Contents and Draft Schedule for the **Post-Closure Monitoring and Maintenance Plan** to the Board, for approval, within one year of completing all **Design Plans** referred to in Part E. The **Perpetual Care Plan** should be included, for information only, as an appendix to the **Post-Closure Monitoring and Maintenance Plan**.

POST-CLOSURE MONITORING AND MAINTENANCE PLAN – TABLE OF CONTENTS

5. Within six months of completing Closure and Reclamation of any Project Component, the Licensee shall submit to the Board a Project Component-specific **Closure and Reclamation Completion Report**. The Report shall be in accordance with the MVLWB/AANDC *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories* and with Schedule 2, condition 2.

CLOSURE AND RECLAMATION COMPLETION REPORT

6. Within one year of submission of all **Closure and Reclamation Completion Reports**, the Licensee shall submit to the Board, a **Final Closure and Reclamation Report**.

FINAL CLOSURE AND RECLAMATION REPORT

7. Upon submission of the **Final Closure and Reclamation Report** and a minimum of every five years thereafter, the Licensee shall submit to the Board, for approval, a **Performance Assessment Report**. The Report shall be in accordance with the MVLWB/AANDC *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories* and with Schedule 2, condition 3.

PERFORMANCE ASSESSMENT REPORT

Part E: 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.

OBJECTIVE – CONSTRUCTION

2. The Licensee shall ensure that all 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, maintained, and monitored to meet or exceed the *Dam Safety Guidelines*.

DAMS – GENERAL

3. The Licensee shall retain an Engineer of Record for all Dams.

DAMS - ENGINEER OF RECORD

4. The Licensee shall ensure that the Engineer of Record establishes and annually reviews the Dam Class for all Dams on site and shall report any changes to the Dam Class in the **Geotechnical Inspection Report** referred to in Part F, condition 19.

DAM CLASSIFICATION

5. The Licensee shall ensure that the Engineer of Record establishes performance objectives for all Dams on site and reviews the associated quantifiable performance criteria annually for the life of the Facility.

QUANTIFIABLE PERFORMANCE OBJECTIVES

6. The Licensee shall ensure that all Engineered Structures are constructed and maintained in accordance with the recommendations of the Professional Engineer responsible for the design, including, but not limited to, recommendations regarding field supervision and inspection requirements. **ENGINEERED STRUCTURES - GENERAL**

7. The Licensee shall ensure that all material used in Construction of the Project meets the geochemical criteria specified in the approved relevant **Design Plan** or the **Borrow Materials and Explosives Management and Monitoring Plan** referred to in Part F, condition 12. **CONSTRUCTION MATERIAL – GEOCHEMICAL CRITERIA**

8. The Licensee shall maintain records of Construction materials for all structures and make them available at the request of the Board or an Inspector. **CONSTRUCTION RECORDS**

9. The Licensee shall maintain geochemical records of Construction materials for all structures and make them available at the request of the Board or an Inspector. **GEOCHEMICAL RECORDS**

10. A minimum of 90 days prior to commencement of Construction of any Project Component, the Licensee shall submit to the Board, for approval, a **Design Plan**, in accordance with Schedule 3, condition 1 and Schedule 3, condition 2. The Licensee shall not commence Construction prior to Board approval. **DESIGN PLAN**

11. A minimum of 45 days prior to commencement of Construction of any Engineered Structure, the Licensee shall submit to the Board, a **Construction Plan**, in accordance with Schedule 3, condition 3. **CONSTRUCTION PLAN**

12. A minimum of 10 days prior to the commencement of Construction of any Engineered Structure, the Licensee shall provide written notification to the Board and an Inspector. Notification shall include the Construction commencement date, and the name and contact information for the individual responsible for overseeing Construction. Written notification shall be provided to the Board and an Inspector if any changes occur. **NOTIFICATION – CONSTRUCTION**

13. The Licensee shall ensure that all Engineered Structures are constructed in accordance with applicable approved **Design Plans** and applicable **Construction Plans**. **CONSTRUCT AS DESIGNED**

14. Within 90 days of completion of the Construction of each Engineered Structure, the Licensee shall submit to the Board, an **As-Built Report** stamped and signed by a Professional Engineer, which shall include, but not be limited to, the following information: **AS-BUILT REPORT - ENGINEERED STRUCTURE(S)**

    a) Final as-built drawings of the Engineered Structure(s), stamped and signed by a Professional Engineer;
    b) Documentation, with rationale, of field decisions that deviate from the Design Drawings submitted in accordance with Schedule 3, Condition 1; and
    c) Any data used to support these decisions.

15. Once approved, the management and monitoring details submitted in the **Design Plans** are to be incorporated into the applicable existing Site-Wide Management and Monitoring Plans. Updated Plans are to be submitted to the Board. **UPDATE PLANS**

Part F: Waste and Water Monitoring

1. The Licensee shall manage Waste and Water with the objective 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.

OBJECTIVE – WASTE AND WATER MANAGEMENT

Site-Wide Management Plans and Monitoring Programs

2. The Licensee shall comply with the **Waste Management and Monitoring Plan**, once approved. The Plan shall be developed as per the MVLWB *Guidelines for Developing a Waste Management Plan*.

WASTE MANAGEMENT AND MONITORING PLAN

3. A minimum of 90 days prior to commencement of Active Remediation and Adaptive Management (Phase 2), the Licensee shall submit to the Board, for approval, a revised **Waste Management and Monitoring Plan**. The Plan shall be developed as per the MVLWB *Guidelines for Developing a Waste Management Plan* and in accordance with Schedule 4, condition 1.

WASTE MANAGEMENT AND MONITORING PLAN – REVISED

4. The Licensee shall comply with the **Water Management and Monitoring Plan**, once approved. The Plan shall be in accordance with Schedule 4, condition 2.

WATER MANAGEMENT AND MONITORING PLAN

5. A minimum of 90 days prior to commencement of Active Remediation and Adaptive Management (Phase 2), the Licensee shall submit to the Board, for approval, a revised **Water Management and Monitoring Plan**. The Plan shall be in accordance with Schedule 4, condition 2, and Schedule 4, condition 3.

WATER MANAGEMENT AND MONITORING PLAN - REVISED

6. The Licensee shall comply with the **Erosion and Sediment Management and Monitoring Plan**, once approved. The Plan shall be in accordance with Schedule 4, condition 4.

EROSION AND SEDIMENT MANAGEMENT AND MONITORING PLAN

7. A minimum of 90 days prior to the commencement of Active Remediation and Adaptive Management (Phase 2), the Licensee shall submit to the Board, for approval, a revised **Erosion and Sediment Management and Monitoring Plan**. The Plan shall be in accordance with Schedule 4, condition 4, and Schedule 4, condition 5.

EROSION AND SEDIMENT MANAGEMENT AND MONITORING PLAN - REVISED

8. The Licensee shall comply with the **Dust Management and Monitoring Plan**, once approved. The Plan shall be in accordance with Schedule 4, condition 6.

DUST MANAGEMENT AND MONITORING PLAN

9. A minimum of 90 days prior to the commencement of Active Remediation and Adaptive Management (Phase 2), the Licensee shall submit to the Board, for approval, a revised **Dust Management and Monitoring Plan**. The Plan shall be in accordance with Schedule 4, condition 6, and Schedule 4, condition 7.

DUST MANAGEMENT AND MONITORING PLAN - REVISED

10. The Licensee shall comply with the **Tailings Management and Monitoring Plan**, once approved. The Plan shall be in accordance with Schedule 4, condition 8.

TAILINGS MANAGEMENT AND MONITORING PLAN

11. A minimum of 90 days prior to the commencement of Active Remediation and Adaptive Management (Phase 2), the Licensee shall submit to the Board, for approval, a revised **Tailings Management and Monitoring Plan**. The Plan shall be in accordance with Schedule 4, condition 8.

TAILINGS MANAGEMENT AND MONITORING PLAN - REVISED

12. The Licensee shall comply with the **Borrow Materials and Explosives Management and Monitoring Plan**, once approved. The Plan shall be in accordance with Schedule 4, condition 9.

BORROW MATERIALS AND EXPLOSIVES MANAGEMENT AND MONITORING PLAN

13. A minimum of 120 days prior to the commencement of Active Remediation and Adaptive Management (Phase 2), or within one year of Licence issuance, the Licensee shall submit to the Board, for approval, a **Borrow Materials and Explosives Management and Monitoring Plan**. The Plan shall be in accordance with Schedule 4, condition 9.

SUBMIT BORROW MATERIALS AND EXPLOSIVES MANAGEMENT AND MONITORING PLAN

14. The Licensee shall comply with the **Arsenic Trioxide Frozen Shell Management and Monitoring Plan**, once approved. The Plan shall be in accordance with Schedule 4, condition 10.

ARSENIC TRIOXIDE FROZEN SHELL MANAGEMENT AND MONITORING PLAN

15. A minimum of 120 days prior to commencement of Construction of the Arsenic Trioxide Frozen Shell system, the Licensee shall submit to the Board, for approval, an **Arsenic Trioxide Frozen Shell Management and Monitoring Plan**. The Plan shall be in accordance with Schedule 4, condition 10.

SUBMIT ARSENIC TRIOXIDE FROZEN SHELL MANAGEMENT AND MONITORING PLAN

Operation of Structures and Facilities

16. The Licensee shall construct, operate, and maintain all Engineered Structures to the design specifications and engineering standards, such that:

ENGINEERED STRUCTURES

a) The specifications described in the applicable approved **Design Plans** referred to in Part E are maintained at all times;
b) Any Contact Water from the facility to the Receiving Environment that does not meet the Surface Runoff Criteria, as specified in the **Water Management and Monitoring Plan** shall be collected and returned for treatment;
c) Any deterioration or erosion of structures or facilities shall be reported immediately to an Inspector;
d) Any deterioration or erosion of structures or facilities that requires repair shall be reported to an Inspector and the Board, and repaired immediately; and
e) Monitoring of the facility is sufficient to ensure that:
    i. Closure Criteria, as described in the approved **Giant Mine Remediation Project Closure and Reclamation Plan** and applicable approved **Design Plans** referred to in Part E are being met; and
    ii. Necessary changes in operation of the facility, including additional mitigations, are identified.

Inspection of Structures and Facilities

17. The Licensee shall conduct inspections of the Engineered Structures at a frequency outlined in approved applicable **Design Plans** and/or Site-Wide Management and Monitoring Plans, or as otherwise directed by an Inspector or the Board. Records of

INSPECTION OF ENGINEERED STRUCTURES

these inspections shall be made available to the Board or an Inspector upon request.

18. The Licensee shall conduct erosion inspections of Discharge locations during periods of Discharge as identified in approved **Design Plans** and/or **Erosion and Sediment Management and Monitoring Plan**. **INSPECTIONS OF DISCHARGE LOCATIONS**

19. The Licensee shall ensure that geotechnical inspections of all Dams and Engineered Structures, as per the approved **Design Plan**, are conducted annually, during the summer months, and following any unforeseen events that exceed design criteria, by a Professional Engineer. The Licensee shall: **ANNUAL GEOTECHNICAL INSPECTIONS**

    a) A minimum of two weeks prior to the annual inspections, and following an event that exceeds design criteria, provide written notification to an Inspector; and
    b) Within 120 days of completing the inspection, submit the Professional Engineer's full **Geotechnical Inspection Report** to the Board and an Inspector. The Report shall include:
        i. A covering letter from the Licensee outlining an implementation plan to respond to any recommendations made by the Professional Engineer, including rationale for any decisions that deviate from the Professional Engineer's recommendations;
        ii. Identification of Dam classifications; and
        iii. A summary of any actions taken by the Licensee to address the recommendations made following the previous year's inspection.

20. The Licensee shall conduct Dam Safety Review(s) of 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*. The Dam Safety Review(s) shall be conducted in accordance with the *Dam Safety Guidelines* by a Professional Engineer. **DAM SAFETY REVIEW**

21. Within 120 days of completing a 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 recommendation 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 address the recommendations made following the previous Dam Safety Review. **THIRD-PARTY DAM SAFETY REVIEW REPORT**

Discharge and Disposal Locations and Rates

22. The Licensee shall deposit all Waste and Wastewater as described in the approved **Waste Management and Monitoring Plan** and **Water Management and Monitoring Plan**. **WASTE AND WASTEWATER**

23. The Licensee shall direct Effluent from the Effluent Treatment Plant to Baker Creek, via the existing Discharge system, and Effluent from the Water Treatment Plant, once operational, to Yellowknife Bay, or as approved by the Board in the **Dust Management and Monitoring Plan** or the **Water Management and Monitoring Plan**. **EFFLUENT DISCHARGE – EFFLUENT TREATMENT PLANT AND WATER TREATMENT PLANT**

24. A minimum of ten days prior to depositing any Waste, for the first time in the calendar year, into an off-site licenced facility, the Licensee shall provide written notification, including a letter of acceptance from a licensed facility, to the Board and an Inspector.

NOTIFICATION – WASTE DEPOSIT

25. The Licensee shall ensure that Discharges to the Receiving Environment shall not be acutely toxic to aquatic life as determined at SNP 43-1 and 43-1A by the acute toxicity tests described in Part A of the Surveillance Network Program for the Effluent Treatment Plant and Water Treatment Plant, respectively.

EFFLUENT QUALITY – TOXICITY – EFFLUENT TREATMENT PLANT AND WATER TREATMENT PLANT

26. The Licensee shall ensure that Discharges from the Effluent Treatment Plant at SNP 43-1 have a pH between 6.5 and 8.5 and meet the following Effluent Quality Criteria (EQC):

EFFLUENT QUALITY CRITERIA – EFFLUENT TREATMENT PLANT

Parameters	Maximum Average Concentration (mg/L)	Maximum Grab Concentration (mg/L)
Total Ammonia	See Table Below	See Table Below
Total Arsenic	0.3	0.6
Chloride	660	720
Total Copper	0.03	0.06
Total Lead	0.003	0.006
Total Nickel	0.1	0.2
Nitrate (as N)	13	25
Sulphate	1310	1440
Total Zinc	0.1	0.2
Total Suspended Solids	15	30
Total Petroleum Hydrocarbons	3	5

mg/L = milligrams per litre

pH	Maximum Average Total Ammonia Concentration (mg-N/L)	Maximum Grab Total Ammonia Concentration (mg-N/L)
6.5	3.1	6.2
7.0	2.7	5.5
7.1	2.6	5.3
7.2	2.5	5.0

7.3	2.4	4.7
7.4	2.2	4.4
7.5	2.0	4.1
7.6	1.8	3.7
7.7	1.7	3.3
7.8	1.5	3.0
7.9	1.3	2.6
8.0	1.1	2.3
8.1	0.97	2.0
8.2	0.83	1.7
8.3	0.71	1.4
8.4	0.60	1.2
8.5	0.51	1.0

mg-N/L = milligrams of Nitrogen per litre

EFFLUENT QUALITY CRITERIA – WATER TREATMENT PLANT

27. The Licensee shall ensure that Discharges from the Water Treatment Plant at SNP 43-1A have a pH between 6.5 and 8.0, and meet the following Effluent Quality Criteria (EQC):

Parameters	Maximum Average Concentration (mg/L)	Maximum Grab Concentration (mg/L)
Total Ammonia	See Table Below	See Table Below
Total Antimony	0.2	0.3
Total Arsenic	0.01	0.02
Total Copper	0.024	0.033
Total Lead	0.003	0.008
Total Nickel	0.1	0.15
Nitrate (as N)	13	25
Total Zinc	0.08	0.16
Total Suspended Solids	15	30
Total Petroleum Hydrocarbons	3	5

mg/L = milligrams per litre

pH	Maximum Average Total Ammonia Concentration (mg-N/L)	Maximum Grab Total Ammonia Concentration (mg-N/L)
6.5	10.9	22
7.0	9.7	19
7.1	9.2	19
7.2	8.8	18
7.3	8.3	17
7.4	7.7	15
7.5	7.1	13
7.6	6.5	11
7.7	5.8	9.6
7.8	5.2	8.1
7.9	4.6	6.8
8.0	4.0	5.6

mg-N/L = milligrams of Nitrogen per litre

TESTING BEFORE DISCHARGE – EFFLUENT TREATMENT PLANT

28. A minimum of five days prior to commencing or resuming Discharge of Effluent from SNP 43-1 to the Receiving Environment, the Licensee shall submit the Surveillance Network Program Water quality data to the Board and an Inspector to confirm Part F, condition 26, can be met.

TESTING BEFORE DISCHARGE – WATER TREATMENT PLANT

29. A minimum of five days prior to commencing or resuming Discharge of Effluent from SNP 43-1A to the Receiving Environment, the Licensee shall submit the Surveillance Network Program Water quality data to the Board and an Inspector to confirm Part F, condition 27, can be met.

EFFLUENT QUALITY CRITERIA – EXCEEDANCE – EFFLUENT TREATMENT PLANT AND WATER TREATMENT PLANT

30. If Water quality data from any sample collected at SNP 43-1 or 43-1A exceed the EQC specified in Part F, condition 26, or Part F, condition 27, respectively, or are determined acutely toxic as per Part F, condition 25, the Licensee shall:

    a) Cease the Discharge;
    b) Notify the Board and an Inspector immediately;
    c) Report the spill immediately in accordance with the **Spill Contingency Plan** referred to in Part G, condition 2;
    d) Comply with the approved Standard Operating Procedures and QA/QC Plan for Effluent and Water Sampling and any other applicable procedures and contingencies outlined in the approved **Water Management and Monitoring Plan**; and
    e) Within 30 days of initially reporting the incident, or within a timeframe authorized by an Inspector, submit a detailed report on the occurrence, including a summary of corrective actions taken, to the Board and an Inspector.

31. A minimum of six months prior to initial Discharge from the Water Treatment Plant, the Licensee shall submit a **Water Treatment Plant Effluent Quality Criteria Report** to the Board demonstrating that the Water Treatment Plant design will satisfy the EQC in Part F, condition 27 and approved EA0809-001 measures 14 and 15. **WATER TREATMENT PLANT EFFLUENT QUALITY CRITERIA REPORT**

32. The Licensee shall ensure that Contact Water is managed in accordance with the approved **Water Management and Monitoring Plan**. **CONTACT WATER**

33. The Licensee shall ensure that Discharges of Runoff and Seepage to the Receiving Environment are not acutely toxic to aquatic life as described in the **Water Management and Monitoring Plan**. **DISCHARGE QUALITY – TOXICITY –RUNOFF AND SEEPAGE**

34. A minimum of five days prior to commencing post-Remediation release of Runoff or Seepage to the Receiving Environment at the locations outlined in the Surveillance Network Program, the Licensee shall submit the Runoff or Seepage Water quality data to the Board and an Inspector to confirm Surface Runoff Criteria, as specified in **Water Management and Monitoring Plan**, can be met. **RUNOFF AND SEEPAGE DISCHARGE – AUTHORIZATION**

Part G: Spill Contingency Planning

1. The Licensee shall ensure that Unauthorized Discharges associated with the Project do not enter any Waters. **OBJECTIVE – PREVENT WASTE INTO WATER**

2. The Licensee shall comply with the **Spill Contingency Plan**, once approved. **SPILL CONTINGENCY PLAN**

3. Within 90 days following the effective date of this Licence, the Licensee shall submit to the Board, for approval, a revised **Spill Contingency Plan** in accordance with the INAC *Guidelines for Spill Contingency Planning* and Schedule 5, condition 1. **SPILL CONTINGENCY PLAN – REVISED**

4. If, during the term of this Licence, a spill or Unauthorized Discharge occurs or is foreseeable, the Licensee shall: **REPORT SPILLS**

    a) Implement the approved **Spill Contingency Plan** referred to in Part G, condition 2;
    b) Report it immediately using the NU-NT Spill Report Form by one of the following methods:
        i. Telephone: (867) 920-8130;
        ii. Fax: (867) 873-6924;
        iii. E-mail: spills@gov.nt.ca; and
        iv. Online: Spill Reporting and Tracking Database.
    c) Within 24 hours, notify the Board and an Inspector; and
    d) Within 30 days of initially reporting the incident, submit a detailed report to the Board and an Inspector, including descriptions of causes, response actions, and any changes to procedures to prevent similar occurrences in the future. Written notification shall be provided to the Board and an Inspector if any changes occur.

5. The Licensee shall ensure that adequate spill prevention infrastructure and spill response equipment is in place prior to commencement of the Project. **SPILL PREVENTION AND RESPONSE EQUIPMENT**

6. The Licensee shall restore all areas affected by spills and Unauthorized Discharges to the satisfaction of an Inspector. **CLEAN UP SPILLS**

7. The Licensee shall not establish any fuel storage facilities or refueling stations, or store chemical or deleterious substances within 100 metres of the Ordinary High Water Mark of any Watercourse, unless otherwise authorized in writing by an Inspector.

MATERIAL STORAGE – ORDINARY HIGH WATER MARK

Part H: Aquatic Effects Monitoring

1. The Licensee shall design and implement an **Aquatic Effects Monitoring Program** in accordance with the MVLWB/GNWT *Guidelines for Aquatic Effects Monitoring Programs* including:

OBJECTIVE – AQUATIC EFFECTS MONITORING PROGRAM

   a) An evaluation of the short- and long-term effects of the Project on the Receiving Environment;
   b) An evaluation of the predictions made in the Environmental Assessment and in other submissions to the Board regarding the impacts of the Project on the Receiving Environment;
   c) A description of any engagement activities undertaken to inform the **Aquatic Effects Monitoring Program**;
   d) An evaluation of how the Project has been designed, implemented, and managed such that the approved EA0809-001 measures 12, 13, 15 and 17 are being met;
   e) An evaluation of the effectiveness of mitigation measures used to minimize the effects of the Project on the Receiving Environment;
   f) An evaluation of any need for additional mitigation measures to reduce or eliminate Project-related effects; and
   g) A discussion of how the **Aquatic Effects Monitoring Program** can provide an early warning system to avoid adverse effects through the Response Framework and/or regular evaluation of the **Aquatic Effects Monitoring Program**.

2. Within 90 days of the effective date of this Licence, the Licensee shall re-submit to the Board, for approval, an **Aquatic Effects Monitoring Program Design Plan**. The Plan shall be in accordance with the MVLWB/GNWT *Guidelines for Aquatic Effects Monitoring Programs* and the requirements of Schedule 6, condition 1, and Schedule 6, condition 2 and address approved EA0809-001 measure 17. The Licensee shall submit an updated **Aquatic Effects Monitoring Program Design Plan** to the Board, for approval, by June 2023 and every three years thereafter, or as directed by the Board.

AQUATIC EFFECTS MONITORING PROGRAM DESIGN PLAN

3. Beginning May 1, 2021 and no later than every May 1 thereafter, the Licensee shall submit to the Board, for approval, an **Aquatic Effects Monitoring Program Annual Report**. The Report shall be in accordance with the MVLWB/GNWT *Guidelines for Aquatic Effects Monitoring Programs* and the requirements of Schedule 6, condition 3.

AQUATIC EFFECTS MONITORING PROGRAM ANNUAL REPORT

4. A minimum of six months prior to initial Discharge from the Water Treatment Plant, and every three years thereafter, or as directed by the Board, the Licensee shall submit to the Board, for approval, an Updated **Aquatic Effects Monitoring Program Design Plan**. The Plan shall be in accordance with the MVLWB/GNWT *Guidelines for Aquatic Effects Monitoring Programs* and the requirements of Schedule 6, condition 1, and address approved EA0809-001 measures 12, 13, and 15.

AQUATIC EFFECTS MONITORING PROGRAM DESIGN PLAN – UPDATED

5. A minimum of six months prior to initial Discharge from the Water Treatment Plant, the Licensee shall submit to the Board an **Aquatic Effects Baseline Report for Yellowknife Bay** which shall include an analysis of the results of studies done prior to installation of the outfall and Discharge from the Water Treatment Plant to establish the existing baseline conditions for Water quality, quantity and aquatic life in Yellowknife Bay.

AQUATIC EFFECTS BASELINE REPORT FOR YELLOWKNIFE BAY

6. The Licensee shall submit to the Board, for approval, a **Plume Delineation Study Design** as part of the 2023 **Aquatic Effects Monitoring Program Design Plan**. The Study Design shall be developed in accordance with the MVLWB/GNWT *Guidelines for Effluent Mixing Zones* and approved EA0809-001 measures 12, 13, and 15.

PLUME DELINEATION STUDY DESIGN

7. The Licensee shall submit the results of the **Plume Delineation Study Report** in the **Aquatic Effects Monitoring Program Annual Report**, following completion.

PLUME DELINEATION STUDY REPORT

8. The Licensee shall submit an **Aquatic Effects Monitoring Program Re-Evaluation Report**, to the Board, for approval:

   a) By June 2023 and every three years thereafter, or as directed by the Board; and
   b) A minimum of 9 months prior to Discharge from the New Water Treatment Plant and every three years thereafter, or as directed by the Board.

   The Report shall be in accordance with the MVLWB/GNWT *Guidelines for Aquatic Effects Monitoring Programs*, shall evaluate the overall effectiveness of the **Aquatic Effects Monitoring Program** to date, and meet the following objectives and satisfy the requirements of Schedule 6, condition 4:

   a) To describe the Project-related effects on the Receiving Environment as measured from Project inception and compared against predictions made in the Environmental Assessment, and in any other submissions to the Board; and
   b) To provide supporting evidence, if necessary, for proposed revisions to the **Aquatic Effects Monitoring Program Design Plan**.

AQUATIC EFFECTS MONITORING PROGRAM RE-EVALUATION REPORT

9. If any low Action Level established in the approved **Aquatic Effects Monitoring Program Design Plan** is exceeded, the Licensee shall, at a minimum, implement the response actions described in the approved **Aquatic Effects Monitoring Program Design Plan**, and report the exceedance in the **Aquatic Effects Monitoring Program Annual Report**.

LOW ACTION LEVEL EXCEEDANCE

10. If any moderate or high Action Level established in the approved **Aquatic Effects Monitoring Program Design Plan** is exceeded, the Licensee shall:

    a) Within the timeframe identified in the approved **Aquatic Effects Monitoring Program Design Plan**, notify the Board and an Inspector; and
    b) Within the timeframe identified in the approved **Aquatic Effects Monitoring Program Design Plan** or as otherwise directed by the Board, submit an **Aquatic Effects Monitoring Program Response Plan** to the Board for approval. The Response Plan shall be in accordance with the MVLWB/GNWT *Guidelines for Aquatic Effects Monitoring Programs* and meet the requirements of Schedule 6, condition 5.

MODERATE OR HIGH ACTION LEVEL EXCEEDANCE

Part I: Mitigation to Address Compensation Claims

1. The Licensee shall, at least 90 days prior to active remediation at the Town Site, submit a **Public Access Plan**, for Board approval, that identifies how the Licensee will maintain access to a public boat launch at the Giant Mine Town Site at all times during the open Water season, and if required, how the Licensee will design and construct an alternate public boat launch in the area, or ensure a level of access similar to that available at the date of issuance.

COMPENSATION

Signed on behalf of the Mackenzie Valley Land and Water Board

Mavis Cli-Michaud, Chair

Amanda Gauthier, Witness

Schedule 1
Attached to Water Licence MV2007L8-0031
CIRNAC-GMRP – Giant Mine Remediation Project

Part B: General Conditions

Schedule 1, Condition 1: The **Annual Water Licence Report** referred to in Part B, condition 20 of this Licence shall include, but not be limited to, the following:

a) A **Giant Mine Remediation Project Closure and Reclamation Plan** progress update, including:

i. A summary of Reclamation progress from the previous year including engineering work undertaken and Closure Activities commenced, completed, and in progress;
ii. An updated general and Project Component-specific Project schedule including an outline of engineering work and Closure Activities planned for the upcoming calendar year with estimated timelines for upcoming **Design Plans**, **Construction Plans**, and **Performance Assessment Report** submission(s), as applicable;
iii. A summary of monitoring undertaken during and after completion of activities approved through **Design Plans** and outlined in **Construction Plans**, including a summary of any maintenance work identified or implemented.
iv. A summary of adaptive management actions taken for completed portions of Project Components;
v. Updated forecast of borrow volume to be blasted by year for duration of borrow activities;
vi. A summary of Reclamation Research, including:
    a. Identification of completed tasks undertaken in the previous year;
    b. A summary of analysis, results, and conclusions, focusing on how the results of the Reclamation Research Plan may affect Closure Activities, Closure Objectives, Closure Criteria, or other key aspects of the **Giant Mine Remediation Project Closure and Reclamation Plan** (research or study results can be appended to this report);
    c. Identification of next steps and any proposed changes to each Reclamation Research Plan; and
    d. Updated timelines for all research tasks, as applicable.
vii. Any other important information, as applicable, such as:
    a. New industry best practices, guidelines, or federal government requirements related to closure of the site; and
    b. Any other updates or information that reflect or supports closure of the site.

b) A summary of Site-Wide Management and Monitoring Plan results, including:

i. A summary of activities conducted in accordance with the approved **Waste Management and Monitoring Plan**, required in Part F, condition 2 of this Licence, undertaken during the previous calendar year, including:
    a. Volumes and/or counts of new Waste generated;
    b. Results of Waste segregation auditing to confirm Waste stream segregation is as described in the **Waste Management and Monitoring Plan**;
    c. Volumes of each Waste type moved to a final disposal location, including an estimate of remaining available volume(s) compared to remaining volume of Wastes to be managed; and
    d. A summary of lessons learned, and changes made to minimize effects on the environment.
ii. A summary of management and monitoring activities conducted in accordance with the approved **Water Management and Monitoring Plan** as required in Part F, condition 4 of this Licence, undertaken during the previous calendar year, including:
    a. A summary of updates or changes to the process or facilities required for the management of Water and Wastewater;
    b. A summary of any activity-specific updates to the **Water Management and Monitoring Plan**;
    c. The monthly and annual quantities in cubic metres of Water obtained for all purposes, identified by source location compared to anticipated Water use needs;

d. The monthly and annual quantities in cubic metres of any Contact Water collected or managed and its source;
e. Monthly elevations of Water in the Tailings Containment Areas, prior to Remediation of the Tailings Containment Areas, and any other Wastewater management ponds or structures;
f. Monthly average and maximum Minewater levels;
g. Monthly and annual quantities in cubic metres of Minewater pumped from the underground;
h. Monthly and annual estimates and measurements of precipitation and streamflow;
i. Monthly and annual quantities of treated Wastewater Discharged to the Receiving Environment by source;
j. Monthly and annual quantities of Water Treatment Plant residuals transferred to the Non-Hazardous Waste Landfill;
k. A summary and interpretation of Water Treatment Plant residuals monitoring results demonstrating residuals are non-hazardous, including a discussion on how it compares to relevant guidelines;
l. A comparison of Water and Wastewater quantities measured in the year to the Water balance predictions for the year in the approved **Water Management and Monitoring Plan**, and an explanation of any significant divergence between predictions and actual measurements;
m. A summary and interpretation of Water monitoring results;
n. A summary and interpretation of monitoring results within the Developed Areas, including cover performance, monitoring for Runoff and Seepage quality, comparisons to the Surface Runoff Criteria, and volume of Seepage and Runoff that has met Surface Runoff Criteria and been released to the Receiving Environment;
o. A summary of Action Level exceedances and a description of actions taken in response to Action Level exceedances including any response or corrective action taken to verify Part F, condition 1 of this Licence is met;
p. An update on work with laboratories to develop an appropriate analytical method for phosphorus (due to interference between arsenic and phosphorous); and
q. A summary of lessons learned, and any changes made to minimize effects on the environment.

iii. A summary of management and monitoring activities conducted in accordance with the approved **Erosion and Sediment Management and Monitoring Plan**, required in Part F, condition 6 of this Licence, undertaken during the previous calendar year including:
a. A summary of activities undertaken to prevent or mitigate erosion in moderate and high erosion susceptible areas;
b. A summary of any activity-specific monitoring updates to the **Erosion and Sediment Management and Monitoring Plan**;
c. A report of the performance of mitigations applied to each area;
d. A summary of Action Level exceedances and a description of actions taken in response to Action Level exceedances including any response or corrective action taken to verify Part F, condition 1 of this Licence is met; and
e. A summary of lessons learned, and any changes made to minimize effects on the environment.

iv. A summary of management and monitoring activities conducted in accordance with the approved **Dust Management and Monitoring Plan**, required in Part F, condition 8 of this Licence, undertaken during the previous calendar year, including:
a. A summary of updates or changes to the methodologies or Standard Operating Procedures required for the management of dust;
b. A comparison of predictions made through the meteorological information presented and any modelling of dust dispersion to any monitoring or observations made during the year and an explanation of any significant difference between predictions and actual measurements;
c. A summary of activity-specific monitoring updates to the **Dust Management and Monitoring Plan**;
d. A summary of relevant findings from the Air Quality Monitoring Plan as they relate to dust deposition at site;

e. A summary and interpretation of monitoring results, including: the location(s), number of wind thresholds events, along with the actions taken and an assessment of these mitigations; and an assessment of road/work site wetting, including a review of the frequency and distribution;
f. A summary and interpretation of vegetation monitoring results;
g. A summary of Action Level exceedances and a description of actions taken in response to Action Level exceedances including any response or corrective action taken to verify Part F, condition 1 of this Licence is met; and
h. A summary of lessons learned, and any changes made to minimize effects on the environment.

v. A summary of management and monitoring activities conducted in accordance with the approved **Tailings Management and Monitoring Plan**, required in Part F, condition 10 of this Licence, undertaken during the previous calendar year, including:
   a. A summary of any activity-specific updates to the **Tailings Management and Monitoring Plan**;
   b. A report on the annual review of quantifiable performance objectives and criteria for any Dams, identified by the Engineer of Record;
   c. A summary of Action Level exceedances and a description of actions taken in response to Action Level exceedances including any response or corrective action taken to verify Part F, condition 1 of this Licence is met; and
   d. A summary of lessons learned, and any changes made to minimize effects on the environment.

vi. A summary of management and monitoring activities conducted in accordance with the approved **Borrow Materials and Explosives Management and Monitoring Plan**, required in Part F, condition 12 of this Licence, undertaken during the previous calendar year, including:
   a. Location of borrow sources used and volumes of borrow materials sourced from each location;
   b. Volumes of explosives spent;
   c. A summary of results of geochemical verification of borrow materials;
   d. A summary and interpretation of monitoring results;
   e. A summary of Action Level exceedances and a description of actions taken in response to Action Level exceedances including any response or corrective action taken, to verify Part F, condition 1 of this Licence is met; and
   f. A summary of lessons learned, and any changes made to minimize effects on the environment.

vii. A summary of management and monitoring activities conducted in accordance with the approved **Arsenic Trioxide Frozen Shell Management and Monitoring Plan**, required in Part F, condition 14 of this Licence, undertaken during the previous calendar year, including:
   a. A summary of updates or changes to the process or facilities required for the management of the Arsenic Trioxide Frozen Shell;
   b. A summary and interpretation of monitoring results;
   c. A summary of Action Level exceedances and a description of actions taken in response to Action Level exceedances including any response or corrective actions taken to verify Part F, condition 1 of this Licence is met; and
   d. A summary of lessons learned, and any changes made to minimize effects on the environment.

c) Other reporting requirements including:

i. A summary of activities conducted in accordance with the approved **Spill Contingency Plan**, required in Part G, condition 2 of this Licence, undertaken during the previous calendar year, including:
   a. A list and description of all Unauthorized Discharges that occurred during the previous calendar year, including the date, NWT spill number, volume, location, summary of the circumstances and follow-up actions taken, and status (i.e. open or closed), in accordance with the reporting requirements in Part G, condition 4 of this Licence;
   b. An outline of any spill training and communications exercises carried out during the previous calendar year; and
   c. A summary of lessons learned, and any changes made to minimize effects on the environment.

ii. A summary of activities and monitoring conducted in accordance with the **Wildlife and Wildlife Habitat Management and Monitoring Plan**, required by condition 52 of Permit MV2019X0007, undertaken during the previous year;
iii. A summary of results of Discharge location inspections completed as per Part F, condition 18, including any recommendations addressed and outstanding within the calendar year;
iv. A summary of results from the annual geotechnical inspections completed as per Part F, condition 19, including any recommendations addressed and outstanding within the calendar year;
v. A summary of engagement activities conducted in accordance with the approved **Engagement Plan**, undertaken during the previous calendar year and a brief description of activities planned for the forthcoming year, including engagement associated with the following external initiatives:
    a. Health Effects Monitoring Program;
    b. Stress Study;
    c. Socio-Economic Strategy;
    d. Perpetual Care Plan; and
    e. Quantitative Risk Assessment.
vi. Tabular summaries of all data and information generated under the **Surveillance Network Program** and graphical summaries of parameters with Effluent Quality Criteria referred to in Part F, condition 26 and 27 at the points of compliance (SNP 43-1 and 43-1A for the Effluent Treatment Plant and Water Treatment Plant, respectively), in Excel™ or an electronic and printed format acceptable to the Board;
vii. Tabular summaries of data generated under Operational Monitoring Program stations that characterize overland, upstream flow and influence the quality of Water in Baker Creek. This includes Operational Monitoring Program stations P-LA, A1-R1, and A1-R2;
viii. A reference to the **Aquatic Effects Monitoring Program Annual Report;**
ix. A summary of activities undertaken, and results collected through the Community-Based Monitoring Program;
x. A summary of the calibration and status of the meters and devices referred to in Part B, condition 18 of this Licence;
xi. A summary of any wells replaced or repaired, according to Part B, condition 19;
xii. A tabular summary of all existing Dams and Tailings Containment Areas on site and their respective Engineer of Record, and Dam classifications under the *Canadian Dam Safety Guidelines,* and Dam Safety Review schedules as per the *Dam Safety Guidelines*;
xiii. A summary of the activities carried out to implement approved measures and suggestions identified in EA0809-001;
xiv. A table detailing all commitments made during EA0809-001with descriptions of how each commitment is being, or has been, met;
xv. A list of submissions made to the Board during the previous calendar year;
xvi. A summary of inspections and actions taken to address concerns, non-conformances, or deficiencies in any reports filed by an Inspector; and
xvii. Any other details on Water Use or Waste disposal requested by the Board by November 30 of the year being reported.

Schedule 1, Condition 2: **Board Directives for the revised Engagement Plan** referred to in Part B, condition 22 of this Licence shall include, but not be limited to, the following:

a) Update to include commitment to meet with the City of Yellowknife and the Government of the Northwest Territories to review and update the traffic and access plans;
b) Update the trigger table to reflect the commitments made through the licensing process and to reflect changes in the proposed submission process;
c) Outline pre-engagement for the Site-Wide Management and Monitoring Plans;
d) Update to include a description of how engagement with affected parties will occur for scaling back the dust management and monitoring post-remediation;

e) Update to include plans to communicate advances in the Project implementation schedule ahead of time;
f) Outline the plan for engaging on the following specific topics:
    i. Final volumes and location of borrow sources;
    ii. Post-closure site appearance;
    iii. Baker Creek final design and Closure Criteria;
    iv. Remediation activities in Yellowknife Bay including nearshore sediments and Foreshore Tailings design(s);
    v. Closure Criteria under development; and
    vi. Timing and access to the Townsite and marina area.
g) Update to clarify engagement process with respect to all Fisheries Authorizations;
h) Update on the development of the Community-Based Monitoring Program and how it will be engaged upon;
i) Update to include the commitment to document engagement related to:
    i. Health Effects Monitoring Program;
    ii. Socio-Economic Strategy;
    iii. Perpetual Care Plan; and
    iv. Quantitative Risk Assessment.
j) Outline how the results of the Stress Study will inform further engagement and communication;
k) Outline the plan for the development of any socio-economic strategy; and
l) Append Emergency Communication Plan.

Schedule 2
Attached to Water Licence MV2007L8-0031
CIRNAC-GMRP – Giant Mine Remediation Project

Part D: Closure and Reclamation

Schedule 2, Condition 1: **Board Directives for the Giant Mine Remediation Project Closure and Reclamation Plan** referred to in Part D, condition 2 of this Licence shall include, but not be limited to, the following:

a) Update with re-evaluated climate change assumptions (MAAT of +7.3°C with winter air temperatures increasing +9.0°C over 100 years and summer air temperatures increasing by +5.5°C);
b) Include Figure 3.4-1 in the Plain Language Summary;
c) Summarize the results of the Quantitative Risk Assessment;
d) Update to reflect that the controlled raise of the Minewater in the underground mine workings and associated Reclamation Research Plan was removed from the Application;
e) Update to include any new information about historic arsenic disposal locations being discovered;
f) Update SW1-1 in Table 5.0-1 (and 5.0A-1) to previous wording ("*NWT Ambient Air Quality Standards*, or *Ontario Ambient Air Quality Standards* where there are no applicable NWT standards, are met for PM-10 and integrated total suspended particulate metals, including arsenic");
g) Edit SW4-2 in Table 5.0-1 (and 5.0A-1) to refine wording to read "A final report land map with residual risks/constraints identified will be made available to the Commissioner of the NWT, and posted on the Project website";
h) Update Table 5.5-3 (and 5.0A-6) wording above BC5-2 and BC5-3 to "Criterion in Development through the outcomes of engagement for the Fisheries Act Authorization";
i) Update Table 5.6-3 (and 5.0A-7) criteria for objective T4 as applicable to demonstrate that the objective will be achieved. This could include a quantification of Water ponding that would be considered, acceptable, if any;
j) Edit SI1-1 in Table 5.9-1 (and 5.0A-10) to include references to appropriate and applicable guidelines;
k) Add confirmatory-type criteria and Waste classification and tracking to objective SI2 in Table 5.9-1 (and 5.0A-10) to provide positive confirmation and documentation that all inventoried hazardous materials have been removed;
l) Include a definition of 'classified Tailings';
m) Update Section 5.1.4 to include details of the breakdown of the 16,000 m^3 of arsenic contaminated material; and
n) Update Section 5.0 according to the Board approved regulatory process.

Schedule 2, Condition 2: The **Closure and Reclamation Completion Reports** referred to in Part D, condition 5 shall include, but not be limited to:

a) Reference to the relevant **As-Built Report(s)** for Engineered Structures, as per Part E, condition 14;
b) Photographs of the completed work;
c) An inventory of any structures or materials removed, and any that remain;
d) A summary of confirmatory soil sampling;
e) List the relevant Closure Objectives and Closure Criteria that the completed work is to satisfy in part or in full;
f) Any anticipated maintenance and the approximate timeframe/frequency in which it is anticipated;
g) Any updates to identified contingencies that may be required should the implemented design not satisfy the Closure Criteria identified in the associated **Design Plan(s)**;
h) Updates as required to associated monitoring programs, including where and how results are being analyzed and reported; and

i) Any updates to the approved activity-specific monitoring and management details for the post-Construction period, including updates to anticipated maintenance, contingencies, and how results will be analyzed and reported, as presented in the **Design Plan(s)**.

Schedule 2, Condition 3: The **Performance Assessment Report** referred to in Part D, condition 7, shall include but not be limited to:

a) An analysis of the conditions at site compared to the Closure Objectives and Closure Criteria approved through the **Giant Mine Remediation Project Closure and Reclamation Plan** and/or **Design Plan(s)**, with supporting evidence from the associated monitoring programs and an assessment of residual risks;
b) A discussion of human and/or wildlife health and safety related to each Project Component, as applicable;
c) Any associated updates required to be made to the **Post-Closure Monitoring and Maintenance Plan**;
d) Updated photographs of each Project Component;
e) Descriptions of engagement and community participation in the monitoring of closure conditions at each Project Component; and
f) Any other information as requested by the Board.

Schedule 3
Attached to Water Licence MV2007L8-0031
CIRNAC-GMRP – Giant Mine Remediation Project

Part E: Construction

Schedule 3, Condition 1: The **Design Plans** referred to in Part E, condition 10 shall include, but not be limited to:

a) A detailed description, with appropriate maps or diagrams, of the location and design of the Project Component, including:
   i. Summary of existing condition, including an erosional site assessment, stability analysis, and any site investigation details and how it influences the design;
   ii. Identification of any other critical assumptions for design;
   iii. Proposed engineering work including a description of the processes and facilities that will support final design and closure conditions, including as an appendix, design drawings and specifications for the Engineered Structures, stamped and signed by a Professional Engineer including final thermal, geotechnical, and stability criteria as appropriate;
   iv. Discussion of design criteria that consider any unforeseen events that exceed design criteria (i.e. seismic activity or forest fire);
   v. A description of any linkages to the design and schedule of other Project Components;
   vi. Identification of the Closure Objectives and Closure Criteria from the **Giant Mine Remediation Project Closure and Reclamation Plan** that implementation of the engineered design is to satisfy in whole or in part;
   vii. Identification of new or updated Closure Objectives, Closure Activities, and/or Closure Criteria being proposed including rationale;
   viii. Discussion on how the design addresses site-wide Closure Objective SW3-1 to "minimize perpetual care requirements";
   ix. A description of long-term operational requirements and any anticipated maintenance, as applicable; and
   x. Any other design specific information.
b) A description of how implementation of the design will support meeting approved EA0809-001 measures, as applicable;
c) A description of any engagement activities undertaken to inform the development of the **Design Plan**;
d) Relevant background information used to inform the design, including, as is relevant:
   i. Data from geotechnical and/or geochemical investigations, as applicable;
   ii. A description of the results or recommendations from any site-specific or Project Component-specific studies, research, modelling or testing and how they are addressed by the proposed design including, but not limited to:
      a. The results of programs to characterize soil, rock, geochemistry, Groundwater, ground ice or permafrost, and ground temperature conditions to the depth expected to be affected by the proposed activity, beneath the footprint of all containment and Contact Water control structures, as deemed adequate by the Professional Engineer responsible for the design; and
      b. Recommendations or conclusions from relevant Reclamation Research Plans.
   iii. Discussion of how results of the Quantitative Risk Assessment have been incorporated into the design, as applicable;
   iv. Any other data collected to help inform development of the engineered design or specification; and
   v. Any other background information specific to the Project Component.
e) Activity-specific monitoring and mitigation details for the post-Construction phase, including:
   i. Monitored components;
   ii. Linkages to existing Site-Wide Management and Monitoring Plans, including any applicable updates and rationale;

iii. Details and rationale for sampling locations, including a map to scale, types of instrumentation, including Surveillance Network Program updates, Operational Monitoring Program stations, parameters measured, sampling frequency, and where data will be reported;
iv. Duration of monitoring to confirm Closure Criteria will be met and rationale to support that Closure Criteria are expected to remain met;
v. An explanation of how proposed monitoring will consider the results of the Stress Study, as applicable; and
vi. Any other monitoring details required to monitor and mitigate impacts to the Receiving Environment.

f) A description of contingency activities that will be undertaken if monitoring results show that Project Components are not meeting Closure Criteria, or are not trending towards meeting Closure Criteria, this includes:
i. Risks that have been identified related to not achieving of the Closure Criteria;
ii. A threshold or Action Level which defines the point at which monitoring indicates a response is necessary; and
iii. The proposed response to be implemented if a threshold is exceeded.

g) A description, including frequency, of the inspections for Engineered Structures, including geotechnical inspections; and
h) Any other information required by the Board.

Schedule 3, Condition 2: **Board Directives for Specific Project Component Design Plans** referred to in Part E, condition 10 of this Licence shall include, but not be limited to, the following:

1. Underground Mine Workings
   a) Infrastructure details related to the decommissioning of the high-test line.

2. Arsenic Trioxide Frozen Shell
   a) An explanation of how the results of the Freeze Optimization Study satisfy approved EA0809-001 measure 18 and the requirements of approved EA0809-001 measure 19, including a summary of recommendations from the Freeze Optimization Study; and
   b) Operational requirements and any anticipated maintenance, as applicable.

3. Borrow/Quarry Sources
   a) Linkages between pit filling and borrow requirements;
   b) A rationale supporting the choice in borrow sources including aesthetics, health and safety, cultural significance, and environmental considerations including source quantity and quality;
   c) A description of borrow requirements, sources, methods for quarrying, and storage of borrow materials, including:
      i. Closure Activities that require borrow materials for completion including estimated volumes;
      ii. Closure Activities that create borrow materials which contribute to overall volumes needed for Closure Activities, including estimated volumes;
      iii. Borrow sources that will provide the anticipated deficit in borrow material required to complete the activities described in Schedule 3, condition 2, item 3(c)(i), including the criteria used to select on-site borrow sources and the estimated volumes of each source; and
      iv. Location and description of any temporary storage areas for borrow materials on site, prior to use in support of Reclamation activities identified in Schedule 3, condition 2, item 3(c)(i).
   d) Information regarding reclamation of borrow source locations including:
      i. Description of methods of reclamation for coarse and fine borrow sources including linkages to the **Giant Mine Remediation Project Closure and Reclamation Plan**; and
      ii. Identify the Closure Objectives and Closure Criteria as indicated in the **Giant Mine Remediation Project Closure and Reclamation Plan** that reclamation of borrow sources is to satisfy in whole or in part.

4. Open Pit Mine Workings
    a) Linkage between pit filling and borrow requirements.

5. Water Treatment Plant and Outfall Systems
    a) Include details of monitoring Water Treatment Plant residuals; and
    b) Discuss the consideration of heat tracing (or incorporation, if appropriate) into the design.

6. Contaminated soils and sediment
    a) Details of soil washing, if applicable.

7. Baker Creek and Surface Water Drainage
    a) Include specific subsidence mitigation measures for the Baker Creek re-alignment;
    b) Include re-evaluated climate change assumptions;
    c) Review updated climate forecasts to reduce uncertainty in the probable maximum flood prediction and then review which pits, if any, require additional Freeboard, as well as possible scour protection;
    d) Include the development of specified design criteria for berms/diversions that will be developed during detailed design; and
    e) Information about the establishment of one sediment sampling location in Baker Creek once Remediation is complete in Baker Creek.

8. Tailings Containment Areas
    a) Identify acceptable limits of differential settlement in the cover that are needed to protect liner integrity;
    b) Identify mitigation or repair measures to be undertaken if differential settlement exceeds these limits; and
    c) Include any quantifiable performance objectives and criteria identified by the Engineer of Record, as required by Part E, condition 5, including how annual reviews will be reported.

9. Constructed wetlands
    a) A description of the design and operation of constructed wetlands, if implemented, including:
        i. Information regarding the long-term operation of the constructed wetlands;
        ii. Predicted performance values based on design;
        iii. A summary, with appropriate maps or diagrams, of the location of the constructed wetlands and its components;
        iv. A description of the process and facilities intended for the purposes of maintaining the constructed wetlands in the long-term, including the frequency of dredging, and the quality and disposal location of any dredged sediment;
        v. Linkages to any Closure Objectives and Closure Criteria from the approved **Giant Mine Remediation Project Closure and Reclamation Plan** or **Design Plan(s)** that are satisfied in whole or in part by the management systems detailed in this Plan;
        vi. Any other information required to describe how the constructed wetlands will be managed and maintained to continue to meet the Closure Criteria; and
        vii. Any other information about the monitoring that will be performed to verify that the constructed wetlands are being managed to continue to meet the final design criteria for the structure.

Schedule 3, Condition 3: The **Construction Plans** referred to in Part E, condition 11 shall include, but not be limited to:

a) Contacts responsible for overseeing Construction activity;
b) A description of any engagement activities undertaken to inform the Construction schedule;
c) A detailed description, with appropriate maps or diagrams, of the location and design of the Engineered Structure including Construction considerations, including:
    i. Specific timing, sequencing, and schedule of Construction;

ii. Quantities and the physical and geochemical characteristics of materials required for Construction, as applicable;
iii. Information on operational constraints; and
iv. Any other information required to describe how the Engineered Structure will be constructed.

d) Activity-specific monitoring and mitigation details for the Construction period, including:
   i. Demonstration of alignment with existing Site-Wide Management and Monitoring Plans;
   ii. Details of erosion management and monitoring specific to Closure Activities on site, and any contingencies; and
   iii. Any other monitoring details required to monitor and mitigate impacts to the Receiving Environment.
e) A Quality Control Plan for the construction of the Engineered Structure; and
f) Any other information required by the Board.

Schedule 4
Attached to Water Licence MV2007L8-0031
CIRNAC-GMRP – Giant Mine Remediation Project

Part F: Waste and Water Management

Schedule 4, Condition 1: **Board Directives for the Waste Management and Monitoring Plan** referred to in Part F, conditions 2 and 3.

a) Update definition of Greywater to mirror the definition in the Licence;
b) Ensure that all activities on-site are covered under one **Waste Management and Monitoring Plan**, including those in past authorizations administered by the Board;
c) Attach letter from the City of Yellowknife that indicates the current agreement to accept both sanitary Sewage and municipal solid Waste from the Giant Mine Remediation Project;
d) Include the temporary storage location for all non-arsenic contaminated hazardous Waste that will meet the GNWT *Guideline for Hazardous Waste Management*;
e) Update to reflect the commitment to document the type, quantity, location, and placement of arsenic-impacted materials in Chamber 15 or B1 pit;
f) Details of soil washing, if applicable;
g) Update with detail and clarification on how Waste material will be verified and segregated, as well as the auditing procedure;
h) Outline any maintenance or contingency activities that will be undertaken if monitoring results show that improper Waste segregation has occurred; and
i) Include details about the management of overburden that may be contaminated from historic aerial deposition.

Schedule 4, Condition 2: The **Water Management and Monitoring Plan** referred to in Part F, conditions 4 and 5 of this Licence shall include, but not be limited to, the following:

a) Information regarding Water, Wastewater and Contact Water management, including:
    i. A summary, with appropriate maps or diagrams, of the components of the Water management system, including monitoring locations, at key stages of Remediation and at post-Closure including all the Water and Wastewater streams that report to and from the Water management system at each stage;
    ii. A description of the Closure Activities that will influence the Water management system at the site;
    iii. A description of the process and facilities, including duration of use, intended for the purposes of:
        a. Obtaining Water from Yellowknife Bay;
        b. Managing and maintaining Minewater levels;
        c. Collecting, storing, and managing Contact Water, including a description of how surface Water management will change at key stages as site Remediation progresses;
        d. Collecting, storing, and managing any Wastewater resulting from the Project including a description of how Wastewater management will change at key stages as site Reclamation progresses; and
        e. The management of Sewage.
    iv. A description of the process and facilities for the treatment and Discharge of Wastewater to the Receiving Environment, including:
        a. A description of the Effluent Treatment Plant;
        b. A description of the Water Treatment Plant and outfall;
        c. Plans for disposal of treatment residuals and reference to plans in the **Waste Management and Monitoring Plan** for disposal of treatment residuals;
        d. Information on the chloride and sulphate management and monitoring plan for the Water Treatment Plant, including frequency of monitoring and Action Levels;
        e. Information on the Contact Water transition management and monitoring plan, including, but not limited to:

i. Identification and evaluation of Surface Runoff Criteria (parameters and concentrations) in alignment with the MVLWB *Water and Effluent Quality Management Policy*;
ii. Details of toxicity testing for Contact Water, including a procedure for follow up Water chemistry monitoring and additional toxicity tests if necessary;
iii. Identification of Surveillance Network Program stations sites that will monitor Surface Runoff Criteria compliance for Discharge prior to release to the Receiving Environment;
iv. A description of how Runoff and Seepage is deemed appropriate for Discharge to the Receiving Environment including duration, frequency, and analysis of testing;
v. A protocol for continued monitoring of Runoff and Seepage from Engineered Structures, once Discharged, and determination that Discharge criteria continue to be met; and
vi. Contingency measures if Runoff and Seepage does not meet Surface Runoff Criteria.

f. Details of soil washing, if applicable; and
g. Details on the use of Wastewater/Effluent for dust suppression, paste backfill or other Project activities.

v. A discussion of how constructed wetlands may be incorporated into the plan and where more information will be provided, if applicable.

b) Water balance estimates for the period of Active Remediation and Adaptive Management (Phase 2) and triggers for when the water balance requires revisions;
c) A description of any engagement activities undertaken to inform the Water Management and Monitoring Plan;
d) Information regarding monitoring activities including:
   i. The Operational Monitoring Program for Water and Wastewater;
   ii. Linkages to other Site-Wide Management and Monitoring Plans, the **Aquatic Effects Monitoring Program**, **Giant Mine Remediation Project Closure and Reclamation Plan**, **Design Plans**, **Construction Plans**, and **Closure and Reclamation Completion Reports**;
   iii. Linkages to any Closure Objectives and Closure Criteria from the approved **Giant Mine Remediation Project Closure and Reclamation Plan** or **Design Plan(s)** that are satisfied in whole or in part by the management systems detailed in the Water Management and Monitoring Plan;
   iv. An inspection plan for the Water management system to verify that it is operating as appropriate for the relevant Remediation phase including rational; and
   v. Any other information about the monitoring that will be performed to meet the objectives in Part F, condition 1 of this Licence and any approved EA0809-001 measures.
e) A description of maintenance or contingency activities that will be undertaken if monitoring results show that Water management systems are not trending towards meeting Closure Criteria, or not meeting Part F, condition 1 of this Licence. The contingencies section of the **Water Management and Monitoring Plan** will include:
   i. Identified risks related to Water management;
   ii. A threshold or Action Levels for all specific monitoring locations that define the point at which monitoring indicates a response is necessary; and
   iii. Proposed response and possible contingency actions to be implemented if threshold is exceeded.

Schedule 4, Condition 3: **Board Directives for the Water Management and Monitoring Plan** referred to in Part F, condition 5 of this Licence:

a) Edit the inconsistencies between the **Water Management and Monitoring Plan** and the Standard Operating Procedure for Effluent and Water Sampling; and
b) Update to reflect that the controlled raise of the Minewater in the underground mine workings and associated Reclamation Research Plan was removed from the Application.

Schedule 4, Condition 4: The **Erosion and Sediment Management and Monitoring Plan** referred to in Part F, conditions 6 and 7 of this Licence shall include, but not be limited to, the following:

a) Information regarding erosion and sediment control methodologies:
    i. A summary, with appropriate maps or diagrams, of the Project site identifying areas susceptible to erosion, including wind erosion;
    ii. The process and criteria for assessing erosion risk;
    iii. A description of the best management practices that will be employed for different Closure Activities and for different levels of assessed risk;
    iv. Identification of areas planned for re-vegetation efforts; and
    v. Any other information required to describe how erosion and sediment release into the Receiving Environment will be minimized.
b) A description of any engagement activities undertaken to inform the Plan;
c) Information about monitoring including:
    i. Details for monitoring, including rationale, that will be undertaken with respect to erosion and sediment control and where data will be reported;
    ii. Linkages to other Site-Wide Management and Monitoring Plans, the **Giant Mine Remediation Project Closure and Reclamation Plan**, **Design Plans**, **Construction Plans**, and **Closure and Reclamation Completion Reports** required in this Licence;
    iii. Linkages to any Closure Objectives and Closure Criteria from the approved **Giant Mine Remediation Project Closure and Reclamation Plan** or **Design Plan(s)** that are satisfied in whole or in part by the management systems detailed in the **Erosion and Sediment Management and Monitoring Plan**; and
    iv. Any other information about monitoring that will be performed to meet the objectives in Part F, condition 1 of this Licence and any approved EA0809-001 measures.
d) A description of maintenance or contingency activities that will be undertaken if monitoring results show that erosion management systems are not trending towards meeting Closure Criteria, or not meeting Part F, condition 1 of this Licence. The contingencies section of the **Erosion and Sediment Management and Monitoring Plan** will include:
    i. Identified risks related to erosion management for each phase of the Project;
    ii. A threshold or Action Level to define the point at which monitoring indicates a response is necessary; and
    iii. Proposed response and possible contingency actions to be implemented if threshold is exceeded.

Schedule 4, Condition 5: **Board Directives for the Erosion and Sediment Management and Monitoring Plan** referred to in Part F, condition 7 of this Licence:

a) Add details to Step 3 for 'Ecological Consequences' that this step of the assessment will look at potential arsenic levels in soils and eroded material to determine the level of activity-specific monitoring and mitigation that takes place;
b) Add definition of "near Water" to the Plan;
c) Include cover Construction as an activity that may require erosion and sediment control measures in Active Remediation and Adaptive Management (Phase 2);
d) Include general classification of erosion potential at the site, using polygons to identify areas of erosion potential;
e) Add clarity about which mitigation measures or best management practices for sediment and erosion control falls under each of the categories defined in Table 4-5 and describe how mitigation measures correlate to risks and the characterizations currently identified; and
f) Provide a framework for decision-making about re-vegetation requirements at the site.

Schedule 4, Condition 6: The **Dust Management and Monitoring Plan** referred to in Part F, conditions 8 and 9 of this Licence shall include, but not be limited to, the following:

a) Information regarding potential dust dispersion on site;
b) A summary of meteorological information related to typical wind directions and speeds at the site;
c) A description of potential extreme meteorological events that could influence dust dispersion from the site with recommendations for wind conditions under which any dust-generating activities should be halted in

order to minimize the chances of dust and contaminants blowing into the City of Yellowknife, Dettah and Ndilǫ;

d) A description of any engagement activities undertaken to inform the **Dust Management and Monitoring Plan**;
e) Information regarding dust control and mitigation methodologies:
    i. A summary of the types of site activities that could generate dust;
    ii. For each of the activities identified above, a description of the best management practices or mitigations that may be employed to minimize the generation of dust;
    iii. Details on the use of Wastewater/Effluent for dust suppressant activities; and
    iv. Any other information required to describe how the Licensee will minimize the release of dust and contaminants from any part of the site into the Receiving Environment.
f) Information about monitoring including:
    i. Details for air quality monitoring, including the locations, parameters monitored, rationale, that will be undertaken with respect to dust generated from the site, and where data will be reported;
        a. Append the Air Quality Monitoring Plan.
    ii. Details of dust monitoring, including vegetation monitoring pre- and post-demolition of major structures, other parameters monitored at the site with rationale, and where data will be reported;
    iii. Linkages to other Site-Wide Management and Monitoring Plans, the **Giant Mine Remediation Project Closure and Reclamation Plan**, **Design Plans**, **Construction Plans**, and **Closure and Reclamation Completion Reports** required in this Licence;
    iv. Linkages to any Closure Objectives and Closure Criteria from the approved **Giant Mine Remediation Project Closure and Reclamation Plan** or **Design Plan(s)** that are satisfied in whole or in part by the management systems detailed in this Plan; and
    v. Any other information about monitoring that will be performed to meet the objectives in Part F, condition 1 of this Licence and approved EA0809-001 measure 20.
g) A description of maintenance or contingency activities that will be undertaken if monitoring results show that dust management systems are not meeting *Guidelines for Ambient Air Quality Standards in the Northwest Territories*, or *Canadian Ambient Air Quality Standards*, or are not trending towards meeting Closure Criteria, guidelines or standards, or not meeting Part F, condition 1 of this Licence. The contingencies section of the **Dust Management and Monitoring Plan** will include:
    i. Identified risks related to dust management;
    ii. A threshold or Action Level to define the point at which monitoring indicates a response is necessary; and
    iii. Proposed response and possible contingency actions to be implemented if threshold is exceeded.

Schedule 4, Condition 7: **Board Directives for the Dust Management and Monitoring Plan** referred to in Part F, condition 9 of this Licence:

a) Include a subsection which includes approved EA0809-001 measure 20 and suggestion 12, and reference to past dust events;
b) Add information related to general best management practices for stockpile management that will be implemented onsite;
c) Identify the need to reconsider NO_2 in the event of a change in the Freeze program in the contingencies section of the Air Quality Monitoring Plan;
d) Include adaptive management thresholds for $PM_{2.5}$, NO_2 and metals (arsenic, antimony, lead, iron, and nickel);
e) Define short-term, short-medium term, medium-term, and long-term;
f) Further describe the wind threshold levels;
g) Clarify the intention of the 'Values at Risk' section of Table 6.2-1 that is referring to the Valued Components as outlined in Section 1.4.2 of the Updated Project Description; and
h) Modify the text in Table 6.2-1 to provide numeric/further descriptions for the 'Values at Risk' column.

Schedule 4, Condition 8: The **Tailings Management and Monitoring Plan** referred to in Part F, conditions 10 and 11 of this Licence shall include, but not be limited to, the following:

a) Information regarding the management of the Tailings Containment Areas:
   i. A summary, with appropriate maps or diagrams, of the locations and key characteristics of the Tailings Containment Areas on site;
   ii. A summary of Water management in the Tailings Containment Areas;
   iii. A description of the cap for each Tailing Containment Area;
   iv. A clear reference to compliance with the *Dam Safety Guidelines* including the Technical Bulletin: Application of *Dam Safety Guidelines* to Mining Dams; and
   v. Identification of Dam classifications for all existing Dams.
b) Information regarding the management of the Foreshore Tailings:
   i. A summary, with appropriate maps or diagrams, of the locations and key characteristics of the Foreshore Tailings on site; and
   ii. A description of the Foreshore Tailings cover;
c) A description of any engagement activities undertaken to inform the **Tailings Management and Monitoring Plan**;
d) Information regarding monitoring and maintenance of the Tailings Containment Areas including:
   i. Details and rationale for monitoring for all components of the Tailings Containment Areas, including:
      a. Monitoring locations, types of instrumentation used and frequency of monitoring, including site map to scale and where data will be reported; and
      b. Quantifiable performance objectives and criteria identified by the Engineer of Record, as required by Part E, condition 5.
   ii. Information regarding the monitoring and management of Tailings being moved including:
      a. Procedures for the safe movement of Tailings; and
      b. Risks and mitigation measures for potential leaks or spills of Tailings.
   iii. Acceptable performance values based on facility design;
   iv. Linkages to other Site-Wide Management and Monitoring Plans, the **Giant Mine Remediation Project Closure and Reclamation Plan**, **Design Plans**, **Construction Plans**, and **Closure and Reclamation Completion Reports** required in this Licence;
   v. Linkages to any Closure Objectives and Closure Criteria from the **Giant Mine Remediation Project Closure and Reclamation Plan** or **Design Plan(s)** that are satisfied in whole or in part by the management systems detailed in this Plan; and
   vi. Any other information about the monitoring that will be performed to meet the objectives in Part F, condition 1 of this Licence and approved EA0809-001 measure 23.
e) Information regarding monitoring and maintenance of Foreshore Tailings including details and rationale for monitoring of the Foreshore Tailings, monitoring locations, types of instrumentation used and frequency of monitoring, including site map to scale and where data will be reported.
f) A description of maintenance or contingency activities that will be undertaken if monitoring results show that Closure Activities are not trending towards meeting Closure Criteria, or not meeting Part F, condition 1 of this Licence and approved EA0809-001 measure 23. The contingencies section of the **Tailings Management and Monitoring Plan** will include:
   i. Identified risks related to Tailings cover management;
   ii. A threshold or Action Level to define the point at which monitoring indicates a response is necessary; and
   iii. Proposed response and possible contingency actions to be implemented if threshold is exceeded.

Schedule 4, Condition 9: The **Borrow Materials and Explosives Management and Monitoring Plan** referred to in Part F, conditions 12 and 13 of this Licence shall include, but not be limited to, the following:

a) A summary, with appropriate maps or diagrams of all borrow source locations and storage location(s) for

explosives;

b) A description of any engagement activities undertaken to inform the **Borrow Materials and Explosives Management and Monitoring Plan**;
c) Illustrate the impact of borrow on the final landscape;
d) A description of blast notification procedures, including:
    i. A description of the qualified personnel that will oversee the blast;
    ii. Clear communication to the public regarding blast days and times;
    iii. Defined blast safety radius;
    iv. Engineered blast tie-ins;
    v. Blast vibration analysis;
    vi. Blast fume monitoring; and
    vii. Wind direction monitoring.
e) Description of management and mitigations to be implemented when quarrying coarse and fine-grained materials at the site;
f) Location and description of any temporary storage areas for borrow materials on site, prior to use in support of Reclamation activities identified in Schedule 3, condition 2, item 3(c)(i);
g) A Geochemical Verification Program, which shall include but not be limited to:
    i. A summary of findings from geochemical characterization studies (Potentially Acid Generating/metal leaching potential) on the borrow materials to be used during Reclamation;
    ii. Criteria for defining Potentially Acid Generating, non-Potentially Acid Generating and metal leaching materials with supporting rationale;
    iii. The Project's proposed approach to preventing Potentially Acid Generating conditions in the borrow selected;
    iv. Sampling and testing methods for the Geochemical Verification Program with supporting rationale;
    v. Timing and frequency of verification sampling and where data will be reported;
    vi. Quality assurance and quality control measures; and
    vii. A contingency plan in the event of increasing trends in metal leaching or acid generation potential.
h) A description of the process and facilities that will be used to transport, store, and implement the use of explosives in support of Closure Activities:
    i. Types of explosives anticipated for use in quarrying;
    ii. Location and description of any on-site explosives use areas including any operational storage pads, temporary handling facilities, explosives storage areas, interim magazines, and powder trucks, as applicable;
    iii. Best management practices and mitigation measures for management of explosives including:
        a. Transportation of explosives;
        b. Handling of explosives;
        c. Blast size management;
        d. Maintaining low wastage rates and powder factors;
        e. Incomplete consumption (failed shot) scenarios;
        f. Housekeeping and accounting;
        g. Minimization of nitrogen residues;
        h. Spill prevention; and
        i. Any other applicable best management practices that will be required to support explosives use.
i) Information regarding monitoring activities including:
    i. Details of monitoring, including rationale, for quarrying and explosives use;
    ii. Details of geochemical monitoring including sampling and analysis of any Seepage and Runoff from borrow materials, visual inspections, and any other supplemental sampling which may be required to support geochemical characterization of borrow materials and where data will be reported;
    iii. Details of nitrogen residue monitoring and where data will be reported;
    iv. Details of monitoring of reclaimed borrow source locations which will be implemented to confirm the

methods implemented in Schedule 3, condition 2, item 3(d)(i), satisfy the Closure Objectives and Closure Criteria in Schedule 3, condition 2, item 3(d)(ii);

v. Linkages to other Site-Wide Management and Monitoring Plans, the **Giant Mine Remediation Project Closure and Reclamation Plan**, **Design Plans**, **Construction Plans**, and **Closure and Reclamation Completion Reports** required by this Licence;

vi. An inspection plan for the explosives management areas to verify they are operating in accordance with best practices; and

vii. Any other information about the monitoring that will be performed to meet the objectives in Part F, condition 1 of this Licence and any approved EA0809-001 measures.

j) A description of maintenance or contingency activities for the management of borrow and explosives that will be undertaken if monitoring results show that borrow and explosives management activities are not trending towards meeting Closure Criteria, or not meeting Part F, condition 1 of this Licence. The contingencies section of the **Borrow Materials and Explosives Management and Monitoring Plan** shall include:

i. Identified risks related to borrow and explosives management for each phase of the Project;

ii. A threshold or Action Levels that define the point at which monitoring indicates a response is necessary; and

iii. Proposed response and possible contingency actions to be implemented if threshold is exceeded.

Schedule 4, Condition 10: The **Arsenic Trioxide Frozen Shell Management and Monitoring Plan** referred to in Part F, conditions 14 and 15 shall include, but not be limited to, the following:

a) Information regarding the long-term operation of the Arsenic Trioxide Frozen Shell system;

b) An explanation of the triggers that will prompt climate model updates and how those will inform **the Arsenic Trioxide Frozen Shell Management and Monitoring Plan**;

c) Information regarding the long-term maintenance and management of the Arsenic Trioxide Frozen Shell system, including:

i. A summary, with appropriate maps or diagrams, of the location of the Arsenic Trioxide Frozen Shell and its components;

ii. A description of the process and facilities intended for the purposes of maintaining the Arsenic Trioxide Frozen Shell in situ, including the minimum number of thermistors required;

iii. Any other information required to describe how the Arsenic Trioxide Frozen Shell will be managed to continue to meet the Closure Criteria for the structure; and

iv. Details of the option to convert passive thermosyphons to hybrid units if climate trends are on a path to exceed current expectations.

d) A description of any engagement activities undertaken to inform the Plan;

e) Information regarding monitoring and inspection of the Arsenic Trioxide Frozen Shell including:

i. Details and rationale for monitoring and inspection, for all components of the Arsenic Trioxide Frozen Shell including monitoring locations, types of instrumentation used and frequency of monitoring, including a site map to scale and where data will be reported;

ii. Predicted performance values based on facility design;

iii. Details on the intended frequency of thermal model calibrations for temperature sensors that measure ground temperature, as well as factors that would indicate that a change in calibration frequency would be appropriate;

iv. Linkages to other Site-Wide Management and Monitoring Plans, the **Giant Mine Remediation Project Closure and Reclamation Plan**, **Design Plans**, **Construction Plans**, and **Closure and Reclamation Completion Reports** required in this Licence;

v. Provide a list of relevant Closure Objectives and Closure Criteria; Linkages to any Closure Objectives and Closure Criteria from the approved **Giant Mine Remediation Project Closure and Reclamation Plan** or **Design Plan(s)** that are satisfied in whole or in part by the management systems detailed in this Plan; and

vi. Any other information about the monitoring that will be performed to verify that Arsenic Trioxide Frozen Shell is being managed to continue to meet the final design criteria for the structure and any approved

EA0809-001 measures.

f) A description of maintenance or contingency activities that will be undertaken if monitoring results show that Closure Activities are not meeting Closure Criteria, or are not trending towards meeting Closure Criteria, or not meeting Part F, condition 1 of this Licence. The contingencies section of the **Arsenic Trioxide Frozen Shell Management and Monitoring Plan** will include:
   i. Identified risks related to management of the Arsenic Trioxide Frozen Shell;
   ii. Contingencies to address climate change uncertainties;
   iii. Details on the option to convert passive thermosyphons to hybrid units if climate trends are on a path to exceed current estimates;
   iv. A threshold or Action Level to define the point at which monitoring indicates a response is necessary;
   v. Details about action response timing following a deviation between predicted temperature and actual temperature;
   vi. Details about model update timing following a deviation between predicted temperature and actual temperature; and
   vii. Proposed response and possible contingency actions to be implemented if threshold is exceeded.

Schedule 5
Attached to Water Licence MV2007L8-0031
CIRNAC-GMRP – Giant Mine Remediation Project

Part G: Spill Contingency Planning

Schedule 5, Condition 1: Board Directives for the Spill Contingency Plan referred to in Part G, condition 2 of this Licence:

a) Update to indicate that Dynalene is planned to be removed; and
b) Ensure that all activities on site are covered under one Spill Contingency Plan, including those in past authorizations administered by the Board.

Schedule 6
Attached to Water Licence MV2007L8-0031
CIRNAC-GMRP – Giant Mine Remediation Project

Part H: Aquatic Effects Monitoring

Schedule 6, Condition 1: The **Aquatic Effects Monitoring Program Design Plan** referred to in Part H, condition 2 and 4 of this Licence shall include, but not be limited to, the following:

a) Clearly identifiable objectives;
b) A conceptual site model that describes the pathways of potential effects from the Project to the aquatic ecosystem. The conceptual site model will clearly define testable hypotheses for the **Aquatic Effects Monitoring Program** as well as a justification of assessment and measurement endpoints;
c) A description of the types of monitoring conducted under the **Aquatic Effects Monitoring Program**:
    i. Monitoring for the purpose of measuring Project-related effects on the following components of the Receiving Environment:
        a. Surface Water quality;
        b. Sediment quality;
        c. Sediment resuspension;
        d. Toxicity testing at the edge of mixing zone;
        e. Benthic invertebrates;
        f. Small-bodied fish health; and
        g. Any other Receiving Environment components, or supporting information (e.g., hydrology and weather conditions), as necessary to fulfill the objectives of Part H, condition 1 of this Licence.
    ii. Monitoring to verify or assess the Water quality objectives contained within approved EA0809-001 measures 12, 13, 15 and 17 are being met;
    iii. Monitoring to meet the requirements of approved EA0809-001 measure 17 including monitoring for the accumulation of arsenic over time in the Water, sediment or fish in the Receiving Environment;
    iv. Monitoring for the purpose of assessing the mixing of treated Wastewater in Great Slave Lake; and
    v. Monitoring to assess whether arsenic in sediments near to the outfall of the Water Treatment Plant are being re-suspended and/or made more bioavailable due to Discharges from the outfall (EA0809-001 measure 16).
d) A description of the **Aquatic Effects Monitoring Program** sampling and analysis plan required, including:
    i. A description of the areas to be monitored including maps showing all sampling and reference locations as well as the overall predicted zone of influence of the Project;
    ii. The variables, sample media, monitoring protocols, and quality assurance and quality control procedures;
    iii. A description of procedures to analyze and interpret data collected;
    iv. The quality assurance and quality control procedures to be followed during monitoring and data analysis such 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
    v. A description of how relevant **Surveillance Network Program** and Operation Monitoring Program monitoring will be incorporated into the **Aquatic Effects Monitoring Program**.
e) Procedures to minimize the impacts of the **Aquatic Effects Monitoring Program** on fish populations and fish habitat;
f) A summary of how engagement and Traditional Knowledge has been collected and incorporated into the **Aquatic Effects Monitoring Program**, as well as a summary of how Traditional Knowledge will be incorporated into further studies relating to the **Aquatic Effects Monitoring Program**;

g) A description of an **Aquatic Effects Monitoring Program** Response Framework including:
   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:
      a. A description of the rationale including, but not limited to, a consideration of the predictions and conclusion of the Report of Environmental Assessment EA0809-001;
      b. A description of how exceedances of Action Levels will be assessed; and
      c. A general description of what types of actions may be taken if an Action Level is exceeded.
h) A description of the **Aquatic Effects Monitoring Program** Annual Report format; and
i) A plain language description of the program objectives, methodology, and interpretative framework.

Schedule 6, Condition 2: **Board Directives for the existing Aquatic Effects Monitoring Program Design Plan** referred to in Part H, condition 2 of this Licence shall include, but not be limited to, the following:

a) Add information about confirmed effects for fish age to the summary of the Phase 5 Environmental Effects Monitoring Investigation of Cause Study;
b) Add fish age to the growth endpoints assessed and included as measured endpoints;
c) Update the frequency of sublethal testing for toxicity in Table 6-3;
d) Add details about data that will be collected for habitat characteristics;
e) Add methodology to describe how the top 5 to 10 cm of sediment will be sampled using the Ekman grab;
f) Reference the Metal Mining EEM Technical Guidance Document as appropriate;
g) Update Table 7-7 to clarify endpoints for non-lethal surveys;
h) Adjust the wording in Table 8.1 for the low Action Level;
i) Include additional effects indicators for the benthic communities;
j) Add details about the application of the Bray Curtis Index;
k) Provide an update about technical guidance from ECCC with respect to a revised methodology for testing the significance of differences in Bray Curtis Index data;
l) Update on the status of the post-hoc power analysis to be competed as part of the upcoming Phase 6 EEM program;
m) Update to explain how standardization for size bias will be applied based on habitat; and
n) Add further details about the percentage of sticklebacks that will be subsampled for ageing and gonad histology for the laboratory analysis for fish aging.

Schedule 6, Condition 3: The **Aquatic Effects Monitoring Program Annual Report** referred to in Part H, condition 3 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 any relevant results from other aquatic monitoring programs such as the Surveillance Network Program;
c) Results and interpretation of the Plume Delineation Study, one time, after completion of the Study;
d) Results and interpretation of the Reference Area Reconnaissance Special Study, one time, after completion of the Study;
e) A summary of activities conducted under the **Aquatic Effects Monitoring Program**;
f) A description of any engagement activities undertaken to inform the **Aquatic Effects Monitoring Program**, including through the Community-Based Monitoring Program;
g) An update of the Remediation activities and any accidents, malfunctions, or spills within the report time frame that could influence the results of the **Aquatic Effects Monitoring Program**;
h) Updates about any Traditional Knowledge used to inform monitoring components;
i) Tabular summaries of all data and information generated under **Aquatic Effects Monitoring Program** in an electronic format acceptable to the Board;

j) An interpretation of the results, including an evaluation of any identified environmental effects that occurred as a result of the Project;
k) A comparison of Water quality monitoring data to predictions in Baker Creek during Discharge from the Effluent Treatment Plant, and in Great Slave Lake once Discharge from the Water Treatment Plant commences;
l) An analysis that integrates the results of individual monitoring components collected in a calendar year and describes the ecological significance of the results;
m) A comparison of monitoring results to Action Levels as set in **the Aquatic Effects Monitoring Program Design Plan**;
n) An evaluation of the overall effectiveness of the **Aquatic Effects Monitoring Program** to date;
o) Recommendations, with rationale, for refining the **Aquatic Effects Monitoring Program** to improve its effectiveness as required; and
p) Any other information specified in the approved **Aquatic Effects Monitoring Program Design Plan** or that may be requested by the Board before November 1 of any year.

Schedule 6, Condition 4: The **Aquatic Effects Monitoring Program Re-Evaluation Report** referred to in Part H, condition 8 of this Licence shall include, but not be limited to, the following:

a) A review and summary of **Aquatic Effects Monitoring Program** data collected to date including a description of overall trends in the data and other key findings of the monitoring program;
b) A review and summary of the **Aquatic Effects Baseline Report for Yellowknife Bay**, when relevant;
c) A review and summary of the Plume Delineation Study when relevant;
d) A review and summary of the Reference Area Reconnaissance Special Study, when relevant;
e) An analysis that integrates the results of individual monitoring components to date and describes the overall ecological significance of the results;
f) A comparison of measured Project-related aquatic effects to predictions made during the Report of Environmental Assessment EA0809-001 and an evaluation of any differences and lessons learned;
g) Updated predictions of Project-related aquatic effects or impacts from the time of writing to the end of Project life or the appropriate Project Phase based on **Aquatic Effects Monitoring Program** results to date and any other relevant operational monitoring data;
h) A plain language summary of the major results of the above analyses and a plain language interpretation of the significance of those results;
i) Recommendations, with rationale, for changes to Action Levels;
j) Recommendations, with rationale, for changes to any aspect of the **Aquatic Effects Monitoring Program Design Plan**; and
k) Any other information required to meet the objectives listed in Part H, condition 1 of this Licence or as requested by the Board.

Schedule 6, Condition 5: The **Aquatic Effects Monitoring Program Response Plan** referred to in Part H, condition 10 of this Licence shall contain the following information for each parameter that has been reported in the **Aquatic Effects Monitoring Program Annual Report** 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;
v. A schedule to report on the effectiveness of actions and to update the **Aquatic Effects Monitoring Program Response Plan** as required; and
vi. Any other information necessary to assess the response to an Action Level exceedance or that has been requested by the Board.

ANNEX A: SURVEILLANCE NETWORK PROGRAM

LICENSEE:	CIRNAC-GMRP
LICENCE NUMBER:	MV2007L8-0031
EFFECTIVE DATE OF LICENCE:	September 18, 2020
EFFECTIVE DATE OF SURVEILLANCE NETWORK PROGRAM (SNP):	September 18, 2020

Part A – Surveillance Network Program Description and Monitoring Requirements

1. The location of sampling sites and specific monitoring requirements are as follows:

Surveillance Network Program (SNP) 43-1:

Description:	Treated Effluent Discharge from Effluent Treatment Plant	
Location:	UTM 11V (NAD 83) 636367.00E, 6933862.00N	
Sampling Frequency:	Ten days prior to commencement of Discharge from Polishing Pond near the pipe inlet (UTM 11V (NAD 83) 636554.00E, 6934079.00N) Weekly (24-hour composite) during periods of Effluent Discharge at SNP43-1 Monthly grab sample during periods of Effluent Discharge at spigot on pipe at SNP 43-1	Ten days prior to commencement of Discharge from Polishing Pond near the pipe inlet (UTM 11V (NAD 83) 636554.00E, 6934079.00N) – acute toxicity Monthly during Discharge – acute toxicity Once per calendar quarter during Discharge - sublethal toxicity
Sampling Parameters:	Weekly: Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)], total petroleum hydrocarbons[(g)], total cyanide, radium-226 Monthly: As for weekly parameter list, plus sulphide and fecal coliforms	Acute (multi-concentration) - Rainbow Trout and *Daphnia magna*[(h)] Sublethal - *Pseudokirchneriella subcapitata, Lemna minor, Ceriodaphnia dubia and Pimephales promelas*[(i)]
Rationale:	Point of compliance; ensures Effluent from the Effluent Treatment Plant meets the EFFLUENT QUALITY CRITERIA – EFFLUENT TREATMENT PLANT condition. Monitors volume of Effluent Discharged.	
Status:	Active	

Note:
Flow monitoring requirements are described in Part B.
For weeks when a monthly sample is collected, the monthly sample will be collected instead of the weekly sample.
A week is defined as Sunday to Saturday, and a sample must be collected within each weekly time period during Discharge.

Surveillance Network Program (SNP) 43-1A:

Description:	Treated Effluent Discharge from outfall of the Water Treatment Plant into Yellowknife Bay	
Location:	Exact outfall location to be determined	
Sampling Frequency:	Ten days prior to commencement of Discharge Weekly during Discharge Monthly during Discharge	Ten days prior to commencement of Discharge – acute toxicity Monthly during Discharge – acute toxicity Once per calendar quarter - sublethal toxicity
Sampling Parameters:	Weekly: Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)], total petroleum hydrocarbons[(g)], total cyanide, radium-226 Monthly: As for weekly parameter list, plus fecal coliforms	Acute (multi-concentration) - Rainbow Trout and *Daphnia magna*[(h)] Sublethal - *Pseudokirchneriella subcapitata, Lemna minor, Ceriodaphnia dubia and Pimephales promelas*[(i)]
Rationale:	Point of compliance; ensures Water Treatment Plant Effluent meets the EFFLUENT QUALITY CRITERIA – WATER TREATMENT PLANT condition. Monitors volume of Effluent Discharged.	
Status:	Inactive; future monitoring location	

Note: Flow monitoring requirements described in Part B.
For weeks when a monthly sample is collected, the monthly sample will be collected instead of the weekly sample.
A week is defined as Sunday to Saturday, and a sample must be collected within each weekly time period during Discharge.

Surveillance Network Program (SNP) 43-5:

Description:	Baker Creek just prior to entering Yellowknife Bay
Location:	UTM 11V (NAD 83) 635893.00E, 6931243.00N
Sampling Frequency:	Twice monthly during open Water season
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)], total petroleum hydrocarbons[(g)]
Rationale:	Monitors quality of combined Water leaving Baker Creek to Yellowknife Bay including input from adjacent lake.
Status:	Active

Surveillance Network Program (SNP) 43-11:

Description:	Baker Creek, upstream of SNP 43-1 (instream reference area)
Location:	UTM 11V (NAD 83) 635726.00E, 6933914.00N
Sampling Frequency:	Monthly during open Water
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)], total petroleum hydrocarbons[(g)], plus radium-226 during discharge only

Rationale:	Monitors Water quality upstream entering site of the Effluent Treatment Plant.
Status:	Active

Surveillance Network Program (SNP) 43-12:

Description:	End of breakwater at the outlet of Baker Creek to Yellowknife Bay sampled from the Great Slave Sailing Club
Location:	UTM 11V (NAD 83) 636056.00E, 6931125.00N
Sampling Frequency:	Monthly during open Water season
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)], total petroleum hydrocarbons[(g)]
Rationale:	Monitors Water quality of initial mixing in Yellowknife Bay; related to approved EA0809-001 measure 13. Maintains long-term dataset at this location.
Status:	Active

Surveillance Network Program (SNP) 43-16:

Description:	Trapper Creek below the Northwest Pond Tailings Dams (Dam 21A, B, C, and D) and above the confluence of Trapper Creek and Baker Pond/Baker Creek
Location:	UTM 11V (NAD 83) 636000.00E, 6933911.00N
Sampling Frequency:	Monthly during open Water season
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)]
Rationale:	To characterize Runoff, lateral Seepage, and upstream loading to Baker Creek.
Status:	Active

Surveillance Network Program (SNP) 43-17:

Description:	Minewater from the Supercrest area at 750L (overflow of High Test Line to Northwest Pond)
Location:	UTM 11V (NAD 83) 636436.00E, 6934857.00N
Sampling Frequency:	Monthly when pumps are active
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)]
Rationale:	Monitors the quality of underground Minewater pumped into Northwest Pond, when activated as needed for supplemental pumping.
Status:	Active

Surveillance Network Program (SNP) 43-21:

Description:	Northwest Shaft pumping Minewater from underground to Northwest Pond
Location:	UTM 11V (NAD 83) 636475.00E, 6935416.00N
Sampling Frequency:	Autosampler (Weekly year-round)[1] – sample only if SNP 43-21 is the main source of Minewater pumped to surface (i.e., alternative sampling station to SNP 43-21A). Sampling to correspond with SNP 43-1 or SNP 43-1A during Discharge.
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)], total petroleum hydrocarbons[(g)], fecal coliforms
Rationale:	Monitors the quality of Minewater pumped from underground to Northwest Pond.
Status:	Active

Note: Flow monitoring requirements are described in Part B.

Surveillance Network Program (SNP) 43-21A:

Description:	New submersible Northwest pumps transferring Water to Northwest Pond
Location:	UTM 11V (NAD 83) 636618.00E, 6935360.00N
Sampling Frequency:	Autosampler (Weekly year-round)[1] corresponding with SNP 43-1 or SNP 43-1A during Discharge
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)], total petroleum hydrocarbons[(g)], fecal coliforms
Rationale:	Monitors the quality of Minewater from underground to Northwest Pond.
Status:	Active

Note: Flow monitoring requirements are described in Part B.

Surveillance Network Program (SNP) 43-23:

Description:	Baker Creek, Reach 1
Location:	UTM 11V (NAD 83) 635621.00 E 6931323.00 N
Sampling Frequency:	Weekly during open Water season
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)]
Rationale:	Monitors the Water quality at Baker Creek upstream of input from the City of Yellowknife Landfill and Joe Lake watershed.
Status:	Active

Surveillance Network Program (SNP) 43-24:

Description:	Fresh Water Intake from Yellowknife Bay

[1] During periods of pumping.

Location:	To be determined
Sampling Frequency:	To be determined
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[€], total and dissolved metals[(f)], intake Water volume
Rationale:	Monitors the volume of water use; ensures the WATER SOURCE AND MAXIMUM VOLUME condition is met.
Status:	Inactive; future monitoring location

Note: Intake volume monitoring requirements described in Part B.

Surveillance Network Program (SNP) 43-25:

Description:	Initial mixing in Yellowknife Bay
Location:	To be determined
Sampling Frequency:	To be determined
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[€], total and dissolved metals[(f)]
Rationale:	Monitors the Water quality of initial mixing in Yellowknife Bay; related to approved EA0809-001 measure 13. Maintains long-term dataset at this location.
Status:	Inactive; will replace SNP 43-12

Surveillance Network Program (SNP) 43-26A:

Description:	New Sump at on-site Non-Hazardous Waste Landfill
Location:	To be determined
Sampling Frequency:	Monthly during non-frozen ground conditions
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[€], total and dissolved metals[(f)], pump-back volume
Rationale:	Monitors the Water quality of Runoff and Seepage from the on-site Non-Hazardous Waste Landfill. Monitors pump-back volume.
Status:	Inactive; future monitoring location

Note: Pump-back volume monitoring requirements described in Part B.

Surveillance Network Program (SNP) 43-26B:

Description:	New Sump at on-site Non-Hazardous Waste Landfill
Location:	To be determined
Sampling Frequency:	Monthly during non-frozen ground conditions
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[€], total and dissolved metals[(f)], pump-back volume
Rationale:	Monitors the Water quality of Runoff and Seepage from the on-site Non-Hazardous Waste Landfill. Monitors pump-back volume.

Status:	Inactive; future monitoring location

Note: Pump-back volume monitoring requirements described in Part B.

Surveillance Network Program (SNP) 43-26C:

Description:	New Sump at on-site Non-Hazardous Waste Landfill
Location:	To be determined
Sampling Frequency:	Monthly during non-frozen ground conditions
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)], pump-back volume
Rationale:	Monitors the Water quality of Runoff and Seepage from the on-site Non-Hazardous Waste Landfill. Monitors pump-back volume.
Status:	Inactive; future monitoring location

Note: Pump-back volume monitoring requirements described in Part B.

Surveillance Network Program (SNP) 43-27A:

Description:	Edge of mixing zone, station 1	
Location:	To be determined	
Sampling Frequency:	Monthly during Discharge	Toxicity: Under review
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)]	Toxicity: Under review
Rationale:	Monitors Water quality at the edge of the mixing zone and compare to water quality objectives.	
Status:	Inactive; future monitoring location	

Surveillance Network Program (SNP) 43-27B:

Description:	Edge of mixing zone, station 2	
Location:	To be determined	
Sampling Frequency:	Monthly during Discharge	Toxicity: Under review
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)]	Toxicity: Under review
Rationale:	Monitors Water quality at the edge of the mixing zone and compare to water quality objectives.	
Status:	Inactive; future monitoring location	

Surveillance Network Program (SNP) 43-27C:

Description:	Edge of mixing zone, station 3	
Location:	To be determined	
Sampling Frequency:	Monthly during Discharge	Toxicity: Under review
Sampling Parameters:	Field[a], conventional[b], major ions[c], nutrients[d], organic carbon[e], total and dissolved metals[f]	Toxicity: Under review
Rationale:	Monitors Water quality at the edge of the mixing zone and compare to water quality objectives.	
Status:	Inactive; future monitoring location	

Surveillance Network Program (SNP) 43-28:

Description:	Minewater at C Shaft. Location to be determined once new pumps installed at C Shaft
Location:	To be determined
Sampling Frequency:	Autosampler - Weekly year-round
Sampling Parameters:	Field[a], conventional[b], major ions[c], nutrients[d], organic carbon[e], total and dissolved metals[f]
Rationale:	Sample Minewater influent at the new pump location at C-Shaft.
Status:	Inactive; future monitoring location

Surveillance Network Program (SNP) 43-29:

Description:	Sump for South Pond
Location:	UTM 11V (NAD 83) 636568.00E, 6932586.00N
Sampling Frequency:	Monthly during open Water season
Sampling Parameters:	Field[a], conventional[b], major ions[c], nutrients[d], organic carbon[e], total and dissolved metals[f], pump-back volume
Rationale:	Monitors the Water quality of Runoff and Seepage from South Pond - includes pumpback from Dam 11. Monitors pump-back volume.
Status:	Active

Note: Pump-back volume monitoring requirements described in Part B.

Surveillance Network Program (SNP) 43-30:

Description:	Sump on north end of Northwest Pond
Location:	UTM 11V (NAD 83) 636224.00E, 6935573.00N
Sampling Frequency:	Monthly during open Water season
Sampling Parameters:	Field[a], conventional[b], major ions[c], nutrients[d], organic carbon[e], total and dissolved metals[f], pump-back volume

Rationale:	Monitors the Water quality of Runoff and Seepage from Northwest Pond - includes pumpback from Dam 22 and existing landfill. Monitors pump-back volume.
Status:	Active

Note: Pump-back volume monitoring requirements described in Part B.

Surveillance Network Program (SNP) 43-31:

Description:	Sump on north end of North Pond
Location:	UTM 11V (NAD 83) UTM 11V (NAD 83) 637192.00E, 6934233.00N
Sampling Frequency:	Monthly during open Water season
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)], pump-back volume
Rationale:	Monitors the Water quality of Runoff and Seepage from North Pond and Dam 3 - close to Yellowknife River. Monitors pump-back volume.
Status:	Active

Note: Pump-back volume monitoring requirements described in Part B.

Surveillance Network Program (SNP) 43-32:

Description:	Sump downstream of Dam 1 and Polishing Pond
Location:	UTM 11V (NAD 83) 636340.00E, 6933860.00N
Sampling Frequency:	Monthly during open Water season
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)], pump-back volume
Rationale:	Monitors the Water quality of Runoff and Seepage from the Polishing Pond. Monitors pump-back volume.
Status:	Active

Note: Pump-back volume monitoring requirements described in Part B.

Surveillance Network Program (SNP) 43-33:

Description:	Sump south of B2 Pit near Brock Pit
Location:	UTM 11V (NAD 83) 635601.00E, 6932612.00N
Sampling Frequency:	Monthly during open Water season
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)], pump-back volume
Rationale:	Monitors the Water quality of Runoff and Seepage from B2 Pit. Monitors pump-back volume.
Status:	Active

Note: Pump-back volume monitoring requirements described in Part B.

Surveillance Network Program (SNP) 43-34:

Description:	Contact Water from Mill Pond cover
Location:	To be determined
Sampling Frequency:	Weekly during freshet
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)], total petroleum hydrocarbons[(g)]
Rationale:	Monitors the Water quality of Contact Water from Mill Pond before flow to Baker Creek.
Status:	Inactive; future monitoring location

Surveillance Network Program (SNP) 43-35:

Description:	Contact Water from B4 Pit
Location:	To be determined
Sampling Frequency:	Weekly during freshet
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)], total petroleum hydrocarbons[(g)]
Rationale:	Monitors the Water quality of Contact Water from B4 Pit before flow to Trapper Creek.
Status:	Inactive; future monitoring location

Surveillance Network Program (SNP) 43-36:

Description:	Contact Water from C1 Pit
Location:	To be determined
Sampling Frequency:	Weekly during freshet
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)], total petroleum hydrocarbons [(g)]
Rationale:	Monitors the Water quality of Contact Water from C1 Pit before flow to Baker Creek.
Status:	Inactive; future monitoring location

Surveillance Network Program (SNP) 43-37:

Description:	Contact Water from B1 Pit
Location:	To be determined
Sampling Frequency:	Weekly during freshet
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)], total petroleum hydrocarbons [(g)]

Rationale:	Monitors the Water quality of Contact Water from B1 Pit before flow to Baker Creek.
Status:	Inactive; future monitoring location

Surveillance Network Program (SNP) 43-38:

Description:	Contact Water from A2 Pit to Baker Creek
Location:	To be determined
Sampling Frequency:	Weekly during freshet
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)], total petroleum hydrocarbons [(g)]
Rationale:	Monitors the Water quality of Contact Water from A2 Pit before flow to Baker Creek.
Status:	Inactive; future monitoring location

Surveillance Network Program (SNP) 43-39:

Description:	Contact Water from covered Northwest Pond
Location:	To be determined
Sampling Frequency:	Weekly during freshet
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)], total petroleum hydrocarbons [(g)]
Rationale:	Monitors the Water quality of Contact Water from covered Northwest Pond before flow into Trapper Creek.
Status:	Inactive; future monitoring location

Surveillance Network Program (SNP) 43-40:

Description:	Contact Water from covered Polishing Pond to Baker Creek
Location:	To be determined
Sampling Frequency:	Weekly during freshet
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)], total petroleum hydrocarbons [(g)]
Rationale:	Monitors the Water quality of Contact Water from Polishing Pond before flow to Baker Creek.
Status:	Inactive; future monitoring location

Surveillance Network Program (SNP) 43-41:

Description:	Contact Water from A1 Pit
Location:	To be determined

Sampling Frequency:	Weekly during freshet
Sampling Parameters:	Field[a], conventional[b], major ions[c], nutrients[d], organic carbon[e], total and dissolved metals[f], total petroleum hydrocarbons [g]
Rationale:	Monitors the Water quality of Contact Water from A1 Pit.
Status:	Inactive; future monitoring location

Surveillance Network Program (SNP) 43-42:

Description:	Contact Water from B3 Pit
Location:	To be determined
Sampling Frequency:	Weekly during freshet
Sampling Parameters:	Field[a], conventional[b], major ions[c], nutrients[d], organic carbon[e], total and dissolved metals[f], total petroleum hydrocarbons [g]
Rationale:	Monitors the Water quality of Contact Water from B3 Pit.
Status:	Inactive; future monitoring location

Surveillance Network Program (SNP) 43-43:

Description:	Contact Water from Central Pond spillway
Location:	To be determined
Sampling Frequency:	Weekly during freshet
Sampling Parameters:	Field[a], conventional[b], major ions[c], nutrients[d], organic carbon[e], total and dissolved metals[f], total petroleum hydrocarbons [g]
Rationale:	Monitors the Water quality of Contact Water from Central Pond spillway.
Status:	Inactive; future monitoring location

Surveillance Network Program (SNP) 43-44:

Description:	Contact Water from North Pond spillway
Location:	To be determined
Sampling Frequency:	Weekly during freshet
Sampling Parameters:	Field[a], conventional[b], major ions[c], nutrients[d], organic carbon[e], total and dissolved metals[f], total petroleum hydrocarbons [g]
Rationale:	Monitors the Water quality of Contact Water from North Pond.
Status:	Inactive; future monitoring location

Surveillance Network Program (SNP) MW00-02:

Description:	Shallow well - south of Northwest Pond
Location:	UTM 11V (NAD 83) 635969, 6934326
Sampling Frequency:	Twice per year (spring/fall)
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)], Water level[(j)]
Rationale:	Monitors Groundwater quality between Northwest Pond and Trapper Creek.
Status:	Active

Surveillance Network Program (SNP) MW00-03A/B:

Description:	Shallow well - north of Northwest Pond
Location:	UTM 11V (NAD 83) 636095, 6935530
Sampling Frequency:	Twice per year (spring/fall)
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)], Water level[(j)]
Rationale:	Monitors Groundwater quality between Northwest Pond and Trapper Lake.
Status:	Active

Surveillance Network Program (SNP) MW01-2A/B:

Description:	Shallow well - within the Foreshore Tailings
Location:	UTM 11V (NAD 83) 636666, 6932302
Sampling Frequency:	Twice per year (spring/fall)
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)], Water level[(j)]
Rationale:	Monitors Groundwater quality in Foreshore Tailings area.
Status:	Active

Surveillance Network Program (SNP) MW00-04A/B:

Description:	Shallow well - north Tailings release, northwest of North Pond
Location:	UTM 11V (NAD 83) UTM 11V (NAD 83) 637310, 6934220
Sampling Frequency:	Twice per year (spring/fall)
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)], Water level[(j)]
Rationale:	Monitors Groundwater quality between Northwest Pond and Yellowknife River.

Status:	Active

Surveillance Network Program (SNP) to be determined:

Description:	West of the Northwest Pond
Location:	To be determined
Sampling Frequency:	Water quality twice per year, spring/fall; Water level monthly for the first year during thawed conditions then twice per year thereafter (spring/fall) concurrent with Water quality sample collection.
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)], Water level[(j)]
Rationale:	Monitors Groundwater quality.
Status:	Inactive; future monitoring location

Surveillance Network Program (SNP) to be determined:

Description:	South of the Northwest Pond
Location:	To be determined
Sampling Frequency:	Water quality twice per year, spring/fall; Water level monthly for the first year during thawed conditions then twice per year thereafter (spring/fall) concurrent with Water quality sample collection.
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)], Water level[(j)]
Rationale:	Monitors and characterizes bedrock Groundwater quality.
Status:	Inactive; future monitoring location

Surveillance Network Program (SNP) to be determined:

Description:	North-northeast of Dam 3C toward Yellowknife Bay
Location:	To be determined
Sampling Frequency:	Water quality twice per year, spring/fall; Water level monthly for the first year during thawed conditions then twice per year thereafter (spring/fall) concurrent with Water quality sample collection.
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)], Water level[(j)]
Rationale:	Monitors Groundwater quality.
Status:	Inactive; future monitoring location

Surveillance Network Program (SNP) to be determined:

Description:	East-northeast of Dam 3D toward Yellowknife Bay
Location:	To be determined

Sampling Frequency:	Water quality twice per year, spring/fall; Water level monthly for the first year during thawed conditions then twice per year thereafter (spring/fall) concurrent with Water quality sample collection.
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)], Water level[(j)]
Rationale:	Monitors Groundwater quality.
Status:	Inactive; future monitoring location

Surveillance Network Program (SNP) to be determined:

Description:	East of North Pond
Location:	To be determined
Sampling Frequency:	Water quality twice per year, spring/fall; Water level monthly for the first year during thawed conditions then twice per year thereafter (spring/fall) concurrent with Water quality sample collection.
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)], Water level[(j)]
Rationale:	Monitors Groundwater quality.
Status:	Inactive; future monitoring location

Surveillance Network Program (SNP) to be determined:

Description:	East of Central Pond
Location:	To be determined
Sampling Frequency:	Water quality twice per year, spring/fall; Water level monthly for the first year during thawed conditions then twice per year thereafter (spring/fall) concurrent with Water quality sample collection.
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)], Water level[(j)]
Rationale:	Monitors Groundwater quality.
Status:	Inactive; future monitoring location

Surveillance Network Program (SNP) to be determined:

Description:	North of the City of Yellowknife Landfill, entering the site boundary
Location:	To be determined
Sampling Frequency:	Water quality twice per year, spring/fall; Water level monthly for the first year during thawed conditions then twice per year thereafter (spring/fall) concurrent with Water quality sample collection.
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)], Water level[(j)]

Rationale:	Monitors Groundwater quality.
Status:	Inactive; future monitoring location

Surveillance Network Program (SNP) to be determined:

Description:	Calcine and Mill Pond Area
Location:	To be determined
Sampling Frequency:	Water quality twice per year, spring/fall; Water level monthly for the first year during thawed conditions then twice per year thereafter (spring/fall) concurrent with Water quality sample collection.
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)], Water level[(j)]
Rationale:	Monitors Groundwater quality.
Status:	Inactive; future monitoring location

Surveillance Network Program (SNP) S-DIAND-001:

Description:	Deep multiport well - near Baker Creek and YK Bay zones 4, 8 & 10
Location:	UTM 11V (NAD 83) 635827, 6931283
Sampling Frequency:	Twice per year (spring/fall)
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)], pressure measurement[(k)]
Rationale:	Monitors and characterizes bedrock Groundwater quality near Baker Creek and Yellowknife Bay.
Status:	Active

Surveillance Network Program (SNP) S-DIAND-022:

Description:	Deep multiport well - east of Northwest Pond zones 2, 4 &11
Location:	UTM 11V (NAD 83) 636983, 6935127
Sampling Frequency:	Twice per year (spring/fall)
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)], pressure measurement[(k)]
Rationale:	Monitors and characterizes bedrock Groundwater quality east of Northwest Pond.
Status:	Active

Surveillance Network Program (SNP) S-DIAND-023:

Description:	Deep multiport well - south of North Pond and north of Central Pond zones 2 & 10
Location:	UTM 11V (NAD 83) UTM 11V (NAD 83) 637005, 6933462

Sampling Frequency:	Twice per year (spring/fall)
Sampling Parameters:	Field[a], conventional[b], major ions[c], nutrients[d], organic carbon[e], total and dissolved metals[f], pressure measurement[k]
Rationale:	Monitors and characterizes bedrock Groundwater quality south of North Pond and north of Central Pond.
Status:	Active

Surveillance Network Program (SNP) S-1954:

Description:	Deep multiport well - south of South Pond, near the Foreshore Tailings and towards
Location:	UTM 11V (NAD 83) 636799, 6932433
Sampling Frequency:	Twice per year (spring/fall)
Sampling Parameters:	Field[a], conventional[b], major ions[c], nutrients[d], organic carbon[e], total and dissolved metals[f], pressure measurement[k]
Rationale:	Monitors and characterizes bedrock Groundwater quality south of South Pond, near the Foreshore Tailings and towards Yellowknife Bay.
Status:	Active

Surveillance Network Program (SNP) S-1955:

Description:	Deep multiport well - shoreline of Yellowknife Bay zones 2 & 6
Location:	UTM 11V (NAD 83) 636473, 6932122
Sampling Frequency:	Twice per year (spring/fall)
Sampling Parameters:	Field[a], conventional[b], major ions[c], nutrients[d], organic carbon[e], total and dissolved metals[f], pressure measurement[k]
Rationale:	Monitors and characterizes bedrock Groundwater quality.
Status:	Active

Surveillance Network Program (SNP) S-1956:

Description:	Deep multiport well - East of South Pond, towards Yellowknife Bay zones 4 & 10
Location:	UTM 11V (NAD 83) 636855, 6932792
Sampling Frequency:	Twice per year (spring/fall)
Sampling Parameters:	Field[a], conventional[b], major ions[c], nutrients[d], organic carbon[e], total and dissolved metals[f], pressure measurement[k]
Rationale:	Monitors and characterizes bedrock Groundwater quality.
Status:	Active

Surveillance Network Program (SNP) S-2224:

Description:	Deep multiport well - North of North Pond and Dam 3C zones 3 & 9
Location:	UTM 11V (NAD 83) UTM 11V (NAD 83) 637119, 6934284
Sampling Frequency:	Twice per year (spring/fall)
Sampling Parameters:	Field[(a)], conventional[(b)], major ions[(c)], nutrients[(d)], organic carbon[(e)], total and dissolved metals[(f)], pressure measurement[(k)]
Rationale:	Monitors and characterizes bedrock Groundwater quality.
Status:	Active

a) *Field parameters shall include pH, temperature, dissolved oxygen, specific conductivity, redox potential (Groundwater only), and turbidity.*
b) *Conventional (routine) parameters shall include pH, specific conductivity, hardness as $CaCO_3$, total alkalinity as $CaCO_3$, total dissolved solids, total suspended solids, and turbidity.*
c) *Major ions shall include bicarbonate as $CaCO_3$, calcium, carbonate as $CaCO_3$, chloride, fluoride, magnesium, potassium, sodium, sulphate, and reactive silica.*
d) *Nutrients shall include nitrate, nitrite, total ammonia, and total phosphorus.*
e) *Organic carbon shall include total organic carbon and dissolved organic carbon.*
f) *Total and dissolved metals shall include aluminum, antimony, arsenic, barium, beryllium, bismuth, boron, cadmium, cesium, chromium, cobalt, copper, iron, lead, lithium, manganese, mercury, molybdenum, nickel, rubidium, selenium, silver, strontium, Sulphur, thallium, tin, titanium, uranium, vanadium, zinc, and zirconium. Metals shall be analyzed by inductively coupled plasma mass spectrometry or equivalent method. Total metals shall be analyzed in an unfiltered sample and dissolved metals shall be analyzed after passing an unpreserved sample through a 0.45 micron filter.*
g) *Total petroleum hydrocarbon analysis shall include volatile organic compounds (VOCs); i.e., benzene, toluene, ethylbenzene and xylenes (BTEX) and petroleum hydrocarbons (PHC) fractions F1 to F4.*
h) *As described in Reference Method EPS 1/RM/13 – Biological Test Method: Reference method for Determining Acute Lethality of Effluents to Rainbow Trout and EPS 1/RM/14 – Biological Test Method: Reference for Determining Acute Lethality of Effluents to Daphnia magna.*
i) *As described in Reference Method EPS 1/RM/25 – Biological Test Method: Growth Inhibition using a Freshwater Alga Pseudokirchneriella subcapitata (formerly Selenastrum capricornutum); EPS 1/RM/37 – Biological Test Method: Test for Measuring the Inhibition of Growth Using the Freshwater Macrophyte, Lemna minor; EPS 1/RM/21 – Biological Test Method: Test of Reproduction and Survival Using the Cladoceran Ceriodaphnia dubia; and EPS 1/RM/22 – Biological Test Method: Test of Larval Growth and Survival Using Fathead Minnows Pimephales promelas.*
j) *Water level at shallow Groundwater wells to be recorded in metres below ground surface.*
k) *Pressure measurements to be collected at all ports of multiport wells and recorded in pounds per square inch.*

2. The location of sampling sites is subject to approval of the Inspector.

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 edition of American Public Health Association's (APHA) *Standard Methods for the Examination of Water and Wastewater* current at the time of analysis, or by such other methods approved by an Analyst.

5. All analyses shall be performed in a laboratory accredited by the Canadian Association for Laboratory Accreditation (CALA) or equivalent for the specific analyses to be performed or as approved by an Analyst.

6. The Licensee shall annually review the approved QA/QC Plan and modify the Plan as necessary. Proposed modifications shall be submitted to an Analyst for approval. The QA/QC Plan shall be implemented as approved by an Analyst.

Part B – Flow and Volume Measurements

1. All flow and volume measurements shall be measured and recorded continuously (i.e. using electronic data storage chips or equivalent) during periods of flow or pumping and reported as follows:
   a) SNP 43-1 or 43-1A: Discharge volume shall be recorded monthly and annually in cubic metres.
   b) SNP 43-21 and 43-21A: Pumping volume shall be recorded monthly in cubic metres.
   c) SNP 43-24: The Fresh Water Intake volume (if new Fresh Water Intake is installed) shall be recorded monthly in cubic metres.
   d) SNP 43-26A, 43-26B, 43-26C, 43-29, 43-30, 43-31, 43-32, 43-33: Pump-back volume shall be recorded monthly in cubic metres.

Part C – Reporting Requirements

1. The Licensee shall, within 30 days following the month being reported, submit to the Board and Inspector, in electronic formats acceptable to the Board, all data and information required by the Surveillance Network Program, including the results of the approved QA/QC program and any interpretive comments and calculations.

2. The Licensee shall submit a scaled map of all Surveillance Network Program stations, including UTM Coordinates, 60 days after the issuance of this Licence and when revisions are made to the Surveillance Network Program stations.

ANNEX B: CONCORDANCE OF ITEMS REQUIRING SUBMISSION

This table summarizes the information the Licensee is required to submit as per the Water Licence conditions.

Part of Licence	Item	Date
Part B, condition 9	Notification letter listing documents that have been reviewed and do no require revisions	No later than March 31 each year
Part B, condition 10	Revised Plans	A minimum of 90 days prior to the proposed implementation date for the changes
Part B, condition 20	Annual Water Licence Report	Beginning April 30, 2021, and no later than every April 30 thereafter
Part B, condition 22	Engagement Plan - Revised	Within 90 days following the effective date of this Licence
Part D, condition 2	Closure and Reclamation Plan – Revised	Within six months following the effective date of this Licence
Part D, condition 3	Closure and Reclamation Plan – Annual Updates	Each year
Part D, condition 4	Post-Closure Monitoring and Maintenance Plan – Table of Contents and Draft Schedule	Within one year of completing all Design Plans
Part D, condition 5	Project Component-specific Closure and Reclamation Completion Report	Within six months of completing Closure and Reclamation of any Project Component
Part D, condition 6	Final Closure and Reclamation Report	Within one year of submission of all Closure and Reclamation Completion Reports
Part D, condition 7	Performance Assessment Report	Upon submission of the Final Closure and Reclamation Report and a minimum of every five years thereafter
Part E, condition 8	Construction Records	At the request of the Board or an Inspector
Part E, condition 9	Geochemical Records	At the request of the Board or an Inspector
Part E, condition 10	Design Plan	A minimum of 90 days prior to the commencement of Construction of any Project Component
Part E, condition 11	Construction Plan	A minimum of 45 days prior to the commencement of Construction of any Engineered Structure

Part E, condition 12	Written Notification of Construction	A minimum of 10 days prior to the commencement of Construction of any Engineered Structure
Part E, condition 14	As-Built Report stamped and signed by a Professional Engineer	Within 90 days of completion of the Construction of each Engineered Structure
Part E, condition 15	Site-Wide Management and Monitoring Plans	Following approval of management and monitoring details submitted in the Design Plans
Part F, condition 3	Waste Management and Monitoring Plan - Revised	A minimum of 90 days prior to the commencement of Active Remediation and Adaptive Management (Phase 2)
Part F, condition 5	Water Management and Monitoring Plan - Revised	A minimum of 90 days prior to the commencement of Active Remediation and Adaptive Management (Phase 2)
Part F, condition 7	Erosion and Sediment Management and Monitoring Plan - Revised	A minimum of 90 days prior to the commencement of Active Remediation and Adaptive Management (Phase 2)
Part F, condition 9	Dust Management and Monitoring Plan - Revised	A minimum of 90 days prior to the commencement of Active Remediation and Adaptive Management (Phase 2)
Part F, condition 11	Tailings Management and Monitoring Plan - Revised	A minimum of 90 days prior to the commencement of Active Remediation and Adaptive Management (Phase 2)
Part F, condition 13	Borrow Materials and Explosives Management and Monitoring Plan	A minimum of 120 days prior to the commencement of Active Remediation and Adaptive Management (Phase 2) or within one year of Licence issuance
Part F, condition 15	Arsenic Trioxide Frozen Shell Management and Monitoring Plan	A minimum of 120 days prior to commencement of Construction of the Arsenic Trioxide Frozen Shell system.
Part F, condition 17	Records of Inspections of Engineered Structures	At the request of the Board or an Inspector
Part F, condition 19	Geotechnical Inspection Report	Within 120 days of completing the annual geotechnical inspections of all Dams and Engineered Structures
Part F, condition 21	Dam Safety Review Report	Within 120 days of completing a Dam Safety Review

Part F, condition 24	Written notification, including a letter of acceptance from licensed facility	A minimum of ten days prior to depositing any Waste, for the first time in the calendar year
Part F, condition 28	Surveillance Network Program Water quality data	A minimum of five days prior to commencing or resuming Discharge of Effluent from SNP 43-1 to the Receiving Environment
Part F, condition 29	Surveillance Network Program Water quality data	A minimum of five days prior to commencing or resuming Discharge of Effluent from SNP 43-1A to the Receiving Environment
Part F, condition 31	Water Treatment Plant Effluent Quality Criteria Report	A minimum of six months prior to initial Discharge from the Water Treatment Plant
Part F, condition 34	Surveillance Network Program Water quality data to confirm Surface Runoff Criteria	A minimum of five days prior to commencing post-Remediation release of Runoff or Seepage
Part G, condition 3	Spill Contingency Plan - Revised	Within 90 days following the effective date of this Licence
Part H, condition 2	Aquatic Effects Monitoring Program Design Plan	Within 90 days of the effective date of this Licence, and by June 2023 and every three years thereafter, or as directed by the Board
Part H, condition 3	Aquatic Effects Monitoring Program Annual Report	Beginning May 1, 2021 and no later than every May 1 thereafter
Part H, condition 4	Aquatic Effects Monitoring Program Design Plan – Updated	A minimum of six months prior to initial Discharge from the Water Treatment Plant, and every three years thereafter, or as directed by the Board
Part H, condition 5	Aquatic Effects Baseline Report for Yellowknife Bay	A minimum of six months prior to initial Discharge from the Water Treatment Plan
Part H, condition 6	Plume Delineation Study Design	As part of the 2023 Aquatic Effects Monitoring Program Design Plan
Part H, condition 7	Plume Delineation Study Report	Results submitted in the Aquatic Effects Monitoring Program Annual Report following completion

Part H, condition 8	Aquatic Effects Monitoring Program Re-Evaluation Report	By June 2023 and every three years thereafter, or as directed by the Board; and a minimum of 9 months prior to Discharge from the New Water Treatment Plant and every three years thereafter, or as directed by the Board
Part H, condition 9	Notification of moderate or high Action Level	Within the timeframe identified in the approved Aquatic Effects Monitoring Program Design Plan
Part H, condition 9	Aquatic Effects Monitoring Program Response Plan	Within the timeframe identified in the approved Aquatic Effects Monitoring Program Design Plan or as otherwise directed by the Board (following any moderate or high Action Level)
Part I, condition 1	Public Access Plan	At least 90 days prior to active remediation at the Town Site
Annex A, Part C, condition 1	All data and information required by the Surveillance Network Program	Within 30 days following the month being reported
Annex A, Part C, condition 2	Scaled map of all Surveillance Network Program stations	60 days after issuance of the Licence and when revisions are made to the Surveillance Network Program stations

ANNEX C: TABLE OF REVISION HISTORY

Date	Location of Change	Description of Change
February 25, 2021	Throughout	Administrative Updates