May 11, 2016

The Honourable Wally Schumann
Government of the Northwest Territories
P.O Box 1320
Yellowknife, NT
X1A 2L9

Dear Minister Schumann,

Re: Ministerial Approval Required for Amendment of Diavik Diamond Mines (2012) Inc.’s Type A Water Licence for the Diavik Mine


The Type A Water Licence requires your approval and signature, as per Section 72.13 of the Mackenzie Valley Resource Management Act (MVRMA) as delegated under Schedule A of the Delegation Instrument under the MVRMA. The WLWB recommends your approval and signature. The Water Licence and the WLWB’s Reasons for Decision are attached.

Should you have any questions, please contact Ryan Fequet, Executive Director at (867) 765-4589, or by email at rfequet@wlwb.ca.

Sincerely,

Rita Mueller
Chair of Proceeding, Wek’éezhii Land and Water Board

Attachments:
- Two copies of Water Licence W2015L2-0001, for signature
- Reasons for Decision

Copied to: DDMI Distribution List
Pursuant to the Mackenzie Valley Resource Management Act and Regulations, the Wek’éezhii Land and Water Board, hereinafter referred to as the Board, hereby grants to:


(Licensee)

of P.O. Box 2498 Suite 300, 5201-50th Avenue, Yellowknife, NT X1A 2P8

(Mailing Address)

Hereinafter called the Licensee, the right to alter, divert or otherwise use water and deposit Waste subject to the restrictions and conditions contained in the Waters Act and Regulations and in accordance with the conditions specified in this Licence.

Licence Number: W2015L2-0001 (Formerly W2007L2-0003, MV2005L2-0009, N7L2-1645)

Licence Type: A

Water Management Area: NORTHWEST TERRITORIES 05

Location: LAC DE GRAS, NT

Purpose: WATER USE AND WASTE DISPOSAL

Description: DIAMOND MINING AND MILLING

Quantity of water not to be exceeded: SEE PART D, ITEM 2

Effective Date of Licence: OCTOBER 19, 2015, Amended Date to be determined

Term of Licence: 8 YEARS

Expiry Date of Licence: OCTOBER 18, 2023

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

Wek’éezhii Land and Water Board:

Witness

Chair

APPROVED BY:

Minister of Environment and Natural Resources
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PART A: SCOPE AND DEFINITIONS

1. Scope

This Licence entitles Diavik Diamond Mines (2012) Inc. (DDMI) to use water, dewater a portion of Lac de Gras, and dispose of Waste, for the purpose of Construction, operation, closure, and Reclamation of the Diavik Diamonds Project in the Lac de Gras area of the Coppermine Watershed, Northwest Territories, as shown on Figure 2.1, (Overall Site Plan, page 13, Diavik Diamonds Project Supporting Documentation Class A Water Licence Application, August 1999).

2. Definitions

"A154 Pit" means the developed open pit and underground mine workings for the mining of the A154 North and South Kimberlite Pipes.

"A21 Pit" means the developed open pit for the mining of the A21 Kimberlite Pipe.

"A418 Pit" means the developed open pit and underground mine workings for the mining of the A418 Kimberlite Pipe.

"Acid Rock Drainage (ARD)" means the production of acidic leachate, Seepage or drainage from underground workings, pits, ore piles, Waste Rock, tailings, and overburden that could lead to the release of metals to Groundwater and surface water during the life of the mine and after mine closure.

"Act" means the Waters Act.

"Action Level" means a predetermined qualitative or quantitative event which, if met, requires the Licensee to take appropriate actions including, but not limited to: further investigations, changes to operations, or enhanced mitigation measures.

"Analyst" means an Analyst designated by the Minister under section 65(1) of the Act.

"Annual Load of Total Phosphorus" means the sum of monthly loads from a calendar year.

"Aquatic Effects Monitoring Program (AEMP)" means a monitoring program designed to determine the short and long-term effects in the aquatic environment resulting from the Project, to evaluate the accuracy of impact predictions, to assess the effectiveness of impact mitigation measures, and to identify additional impact mitigation measures to reduce or eliminate environmental effects of the licensed undertaking.

"Average Annual Loading of Total Phosphorus" means the sum of annual loads divided by the number of annual loads summed.

"Board" means the Wek'eezhii Land and Water Board established under section 57.1 of the Mackenzie Valley Resource Management Act.
"Closure and Reclamation Plan" means either an Interim or Final Closure and Reclamation Plan approved under this Licence and as described in the Mackenzie Valley Land and Water Board’s Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories.

"Closure Criteria" has the same meaning as that term in the Mackenzie Valley Land and Water Board and Aboriginal Affairs and Northern Development Canada’s Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories.

"Closure Objectives" has the same meaning as that term in the Mackenzie Valley Land and Water Board and Aboriginal Affairs and Northern Development Canada’s Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories.

"Construction" means any activities undertaken to construct or build any components of, or associated with, the development of the Diavik Diamond Mine.

"Cut-off Wall Trench" means a trench excavated vertically through a dike to allow the Construction of a Diaphragm Wall Seepage barrier.

"Dam" means an Engineered Structure that meets the definition of a dam under the Dam Safety Guidelines and is intended to contain, withhold, divert, or retain water or Waste.

"Dam Safety Guidelines (DSG)" means the Canadian Dam Association’s (CDA) Dam Safety Guidelines, 2007 (2013 edition). The scope and applicability of the DSG referred to in this Licence, is presented in section 1 of the DSG.

"Dewatering" is the complete removal of water from an existing water body or portion thereof by pumping or draining.

"Diaphragm Wall" means the plastic concrete Cut-off Wall constructed in a dike as a Seepage barrier.

"Diavik Geotechnical Review Board" means the Expert Review Board established by DDMI to review dike designs.

"Dike Rock Placement" means the placement of rock associated with the Construction of a dike.

"Dike Seepage" means any water which passes through a dike.

"Discharge" means the direct or indirect release or deposit of any water or Waste to the Receiving Environment.

"Drainage Control and Collection System" means the ditches, ponds, and associated piping and pumps used for the diversion, collection, and disposal of surface runoff and Seepage.

"Dredging Activities" means excavating and moving lake-bottom sediments and glacial till below the high water mark and from the bottom of Lac de Gras in the area of the footprints of the dikes.
"East Island" means the large eastern-most island in Lac de Gras as identified in Figure 1.1 B (Final Design Report Site Location, Volume II-A, Part A, Water Management Plan, Version 1, Water Licence Application, August 1999).

"Engagement Plan" a document developed in accordance with the Board’s Engagement and Consultation Policy and Engagement Guidelines for Applicants and Holders of Water Licences and Land Use Permits.

"Engineered Structure" means any constructed facility which was, or, in the Boards’ view, normally would be, designed and approved by a Professional Engineer.

"Engineering Geologist" means a professional geologist registered with the Northwest Territories and Nunavut Association of Professional Engineers and Geoscientists and whose principal field of specialization is the investigation and interpretation of geological conditions for civil engineering purposes.

"Freeboard" means the vertical distance between the water line and the effective water containment crest on a dam’s or dike’s upstream slope.

"Frozen Core" means a permafrost core comprising frozen ice-saturated aggregate material and functioning as an impervious Seepage barrier to water or tailings.

"Geotechnical Engineer" means a Professional Engineer whose principal field of specialization is the design and Construction of earthworks in a permafrost environment.

"Ground Ice" means ice that occupies pores and crevices in rock and soil.

"Groundwater" means all water below the ground surface.

"ICP Metal Scan" means the elements detected using an inductively coupled plasma mass spectrometer.

"Inspector" means an Inspector designated by the Minister under section 65(1) of the Act.

"Licensee" means the holder of this Licence.

"LC20" is the concentration of effluent in water that is estimated to be lethal to 20% of the test organisms. The LC20 and its 95% confidence limits are usually derived by statistical analysis of percent mortalities in several test concentrations, after a fixed period of exposure. The duration of exposure must be specified (e.g., 48-h LC20).

“Management Plans” means the specific plans required by the Board under this Water Licence.

"Maximum Average Concentration" means the moving average of any five (5) consecutive analytical results collected at six (6) day intervals as submitted to the Board in accordance with the sampling and analysis requirements specified in the Surveillance Network Program.
"Metal Leaching" means the production of leachate under neutral or alkaline conditions, Seepage or drainage from underground workings, pits, ore piles, Waste Rock, tailings, and overburden that could lead to the release of metals to Groundwater and surface water during the life of the mine and after mine closure.

"Mine Design" means the detailed engineered designs for all mine components stamped by a design Engineer.

"Mine Plan" means the plan for development of the proposed mine, including the sequencing of the development.

"Minewater" means any water that accumulates in any underground workings or open pits.

"Minister" means a duly-appointed member of the Executive Council who is responsible for the Act or the department responsible for administering the Act.

"Modification" in respect of an Engineered Structure, means a change, other than an expansion, that does not alter the purpose or function of a structure.

"Monthly Load of Total Phosphorus" means the load calculated from the daily flow volume measurements and analytical results collected at 6-day intervals that fall within a calendar month.


"North Inlet Facility" means the containment facility that is constructed within the North Inlet of East Island of Lac de Gras.

"North Inlet Water Treatment Plant" includes the treatment facility designated for the treatment of waters associated with the North Inlet Facility.

"Pit Water" means the water that seeps into and/or is collected within an open pit.

"Processed Kimberlite" means material rejected from the process plant after the recoverable minerals have been extracted.

"Processed Kimberlite Containment Facility" comprises the tailings containment basins and the Engineered Structures that are designed to contain tailings as identified in Drawing Number 1 110-42D3-1005 (Overall Site Plan, Volume II-B Part L, Processed Kimberlite Containment, Water Licence Application, August 1999).

"Professional Engineer" means a person who is registered with the Northwest Territories and Nunavut Association of Professional Engineers and Geoscientists in accordance with the Engineering and Geoscience Professions Act, as a Professional Engineer.
"Progressive Reclamation" has the same meaning as that term in the Mackenzie Valley Land and Water Board and Aboriginal Affairs and Northern Development Canada’s Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories.

"Project" means the undertaking described in Part A, Item 1.

"Receiving Environment" means, for the purpose of this Licence, the natural environment that receives any Discharge of Waste, including Seepage and runoff, from the Project.

"Reclamation" has the same meaning as that term in the Mackenzie Valley Land and Water Board and Aboriginal Affairs and Northern Development Canada’s Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories.

"Regulations" means Regulations proclaimed pursuant to section 63 of the Act.

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

“Response Plan” is a part of the Response Framework and describes the specific actions to be taken by the Licensee in response to reaching or exceeding an Action Level.

"Seepage" includes water or Waste that drains through or escapes from any structure designed to contain, withhold, divert, or retain water or Waste.

"Sewage" means all toilet Waste and greywater.

"Sewage Treatment Facility" means the facility that is designed to contain and treat Sewage.

"Spillway" means an Engineered Structure to facilitate the emergency release of water or Waste from a facility. The Spillway elevation is the elevation at which water or Waste begins to flow through the Spillway structure.

"Unauthorized Discharge" means any Discharge of any Waste not authorized by law or under this Licence.

"Waste" has the meaning set out in section 1 of the Act.

"Waste Rock" means all unprocessed rock materials that are produced as a result of mining operations.

"Waste Rock Storage Area" includes the engineered facilities for the disposal of rock and till, which are designated as the North and South Waste Rock Piles.

"Water Intake Facility" comprises the water intake infrastructure as identified in Drawing Number 1135-41D1-1001 (Raw Water Intake Earthworks & Section, Volume II-A, Part E, Water Intake Structure, WLA, August 1999).

"Water Licence Application" means the Type A Water Licence Application as submitted to the NWT Water Board and all additional supporting documents.
PART B: GENERAL CONDITIONS

1. This Licence is issued subject to the conditions contained herein with respect to the taking of water and the depositing of Waste of any type in any waters or in any place under any conditions where such Waste or any other Waste that results from the deposits of such Waste may enter any waters. Whenever new Regulations are made or existing Regulations are amended under the Waters 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.

2. The Licensee shall take every reasonable precaution to protect the environment.

3. In conducting its activities under this Licence, the Licensee shall make every reasonable effort to consider and incorporate any scientific and traditional knowledge that is made available to the Licensee.

4. Compliance with the terms and conditions of this Licence does not excuse the Licensee from its obligation to comply with the requirements of any other applicable federal, territorial, Tłı̨chǫ, or municipal laws.

5. The Licensee shall ensure a copy of this Licence is maintained at the site of operations at all times.

6. The water use fee shall be paid annually, in advance of any water use, in accordance with the Mackenzie Valley Land and Water Board’s Water Use Fee Policy.

7. The Licensee shall file an Annual Water Licence Report with the Board no later than March 31 of the year following the calendar year reported. The Report shall contain the information set out in Schedule 1, Item 1.

8. The Licensee shall comply with the Schedules, which are annexed to and form part of this Licence, and any amendments to the Schedules as may be made by the Board.

9. The Licensee shall comply with the Surveillance Network Program annexed to this Licence, and any amendment to the Surveillance Network Program as may be made by the Board, pursuant to the conditions of this Licence.

10. The Surveillance Network Program, Schedules, and compliance dates specified in the Licence may be modified at the discretion of the Board.

11. The Licensee shall install, operate, and maintain meters, devices, or other such methods employed for measuring the volumes of water used and Waste discharged, to the satisfaction of an Inspector.

12. The Licensee shall locate and maintain the signs identifying the stations of the Surveillance Network Program to the satisfaction of an Inspector.
13. The Licensee shall operate in accordance with the approved **Engagement Plan**, review the Plan annually, and submit updates to this Plan to the Board for approval at the following times:

   a) a minimum of ninety (90) days prior to any proposed changes to the approved Plan; and,
   
   b) upon the request of the Board.

14. Any revised Plan submitted to the Board under this Licence shall include a list of notable revisions to the Plan.

15. The Plans referred to in Part H, Items 2, 4, 5, 6, 7, 9, and 10, shall be presented in a format consistent with the Mackenzie Valley Land and Water Boards’ **Standard Outline for Management Plans**, unless otherwise approved by the Board.

16. The Licensee shall operate in accordance with any Plans approved pursuant to the conditions of this Licence.

17. Any reference to a Plan, Guideline, Act, or Regulation in this Licence is a reference to the most current version unless otherwise explicitly stated.
PART C: CONDITIONS APPLYING TO SECURITY DEPOSITS

1. The Licensee shall post and maintain a security deposit with the Minister in an amount which is in accordance with Schedule 2.

2. Upon request of the Board, the Licensee shall submit an updated mine Reclamation liability estimate utilizing the current version of RECLAIM or another method acceptable to the Board.

3. The amount of the security deposit required by Part C, Item 1 and Schedule 2 may be revised by the Board based on estimates of the mine Reclamation liability referred to in Part C, Item 2 of this Licence or based on such other information as may become available to the Board.

4. If the amount of the security deposit is revised by the Board as described under Part C, Item 3, the Licensee shall post the revised amount with the Minister within ninety (90) days of the Board giving notice of the revised amount.
PART D: CONDITIONS APPLYING TO WATER USE

1. The Licensee is authorized to use water from the Water Intake Facility or as approved by the Board.

2. The quantity of water used for all purposes shall not exceed the following:

   a) 1,750,000 cubic metres annually during the period from November 1, 2008 until December 31, 2009, during the operational phase for domestic, mining, milling and associated purposes;

   b) 1,280,000 cubic metres annually commencing January 1, 2010, during the operational phase for domestic, mining, milling and associated purposes;

   c) 11,400,000 cubic metres during the Dewatering of the A21 pool water; and,

   d) 3,500,000 cubic metres during in-lake Dredging Activities.

3. The Licensee shall construct and maintain the water intake(s) with a fish screen designed to prevent impingement and entrainment of fish. The fish screen shall be in accordance with the detailed guidance referred to in Schedule 3, Item 1.
PART E: CONDITIONS APPLYING TO DEWATERING

1. The Licensee is authorized to dewater a portion of Lac de Gras to facilitate mining the A21 kimberlite pipe.

2. Each water source shall be sampled and analyzed in accordance with the requirements set out in the Surveillance Network Program and the results shall be provided to an Inspector for approval prior to the commencement of Dewatering.

3. The Licensee shall ensure that any waters associated with Dewatering activities that are to be discharged to Lac de Gras, satisfy the effluent quality criteria specified in Part H, Items 26 and 29.

4. All Dewatering Discharge structures shall be designed and located to minimize erosion and impacts on receiving water quality.

5. During the Dewatering of any water source that is to be discharged to Lac de Gras, daily erosion inspections of the Discharge points shall be carried out and records of these inspections shall be kept for review, upon the request of an Inspector. If any erosion is observed, the Licensee shall immediately notify an Inspector and take the necessary corrective action to mitigate the erosion problem to the satisfaction of an Inspector.

6. Within sixty (60) days of the completion of Dewatering the A21 Pit, the Licensee shall submit to the Board an A21 Dewatering Summary Report that shall include, but not be limited to, the requirements of Schedule 4.
PART F: CONDITIONS APPLYING TO CONSTRUCTION

1. The Licensee shall ensure that all structures intended to contain, withhold, divert, or retain water or Waste are designed, constructed, and maintained to prevent escape of Waste to the Receiving Environment.

2. The Licensee shall ensure that all Dams are designed, constructed, and maintained to meet or exceed the Dam Safety Guidelines.

3. The Licensee shall ensure that all Engineered Structures are constructed and maintained 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.

4. At least forty-five (45) days prior to the start of Construction of any Dams, dikes, or structures intended to contain, withhold, divert or retain water or Wastes, the Licensee shall submit to the Board for approval, design drawings stamped by a Geotechnical Engineer.

5. All rock used in Construction must meet the geochemical criteria specified in the approved Waste Rock Management Plan as per Part H, Item 7.

6. Prior to the start of Construction the Licensee shall undertake and submit to the Board, the Results of a Comprehensive Delineation Program to identify soil, rock, and Ground Ice conditions along the centerline of all containment structures and runoff control ditches. This program shall be developed in accordance with Schedule 5, Item 1.

7. The Processed Kimberlite Containment Facility shall be constructed according to the approved Processed Kimberlite Containment Facility Design Report (including drawings stamped by a Geotechnical Engineer and/or Engineering Geologist) in accordance with Schedule 5, Item 2.

8. The Processed Kimberlite Containment Facility shall be designed, constructed, maintained, and operated to prevent Discharge to the Groundwater system.

9. There shall be no accumulation of water against the containment Dam structures of the Processed Kimberlite Containment Facility, unless approved by the Board.

10. The Licensee shall comply with the approved A21 Construction Environmental Management Plan which shall be in accordance with Schedule 5, Item 3.

11. The Licensee shall annually review the A21 Construction Environmental Management Plan and shall submit updates to the Board, for approval, at the following times:

   a) a minimum of ninety (90) days prior to any proposed changes to the requirements in the approved Plan; and,

   b) upon request of the Board.
12. The Licensee shall implement the approved *Characterization of Enhanced Permeability Zones and Hydrogeological Test Work Plan for the A21 Pit Area.*

13. The Licensee shall construct the A21 Water Retention Dike in accordance with the *Final A21 Dike Design Report* stamped by a Geotechnical Engineer and/or Engineering Geologist.

14. The Licensee shall construct the A21 Mine according to the *Final Detailed Mine Design Report*, stamped by a Geotechnical Engineer and/or an Engineering Geologist. This Report shall be developed in accordance with Schedule 5, Item 4.

15. The Licensee shall submit a comprehensive report from the Diavik Geotechnical Review Board that indicates their assessment and approval of the *Final Dike Design Report* and plastic concrete wall performance.

16. A minimum of six (6) months prior to the commencement of Construction of the south Waste Rock Storage Area, the Licensee shall submit a *Waste Rock Storage Area Design Report*. The Licensee shall construct the Waste Rock Storage Area according to the *Waste Rock Storage Area Design Report* stamped by a Professional Engineer and/or Engineering Geologist and meet the requirements of Schedule 5, Item 5.

17. The Licensee shall construct the Drainage Control and Collection System according to the final detailed *Drainage Control and Collection System Design Report* (including representative cross sections and drawings of the Drainage Control and Collection System stamped by a Professional Engineer and/or Engineering Geologist).

18. The Licensee shall ensure that all Construction of Engineered Structures is supervised by a Professional Engineer and/or Engineering Geologist. The Licensee shall also ensure that Construction records of Engineered Structures are maintained and made available at the request of the Board and/or Inspector.

19. The Licensee shall, within ninety (90) days after completion of any Dam, submit to the Board a *Geotechnical Engineering Report* prepared by a Professional Engineer and/or Engineering Geologist that shall include as-built drawings, documentation of field decisions that deviate from original plans, and any data used to support these decisions.

20. Prior to the start of Construction of all on-land water and Waste management structures, the Licensee shall prepare a *Quality Assurance/Quality Control Manual*. The Manual shall be submitted to the Board for approval, prior to the commencement of the Construction of those structures. This Manual shall be developed in accordance with Schedule 5, Item 6.

21. The Licensee shall operate in accordance with the approved *Quality Assurance/Quality Control Manual* for the Construction of the A21 Dike. The Manual shall be in accordance with Schedule 5, Item 7.
PART G: CONDITIONS APPLYING TO MODIFICATIONS

1. The Licensee may, without written approval from the Board, carry out Modifications to Engineered Structures related to water use and Waste disposal provided that such Modifications are consistent with the terms of this Licence and the following requirements are met:

   a) the Licensee has notified the Board in writing of such proposed Modifications at least forty-five (45) days prior to beginning the Modifications;

   b) the Modifications do not place the Licensee in contravention of either the Licence or the Act;

   c) the Board has not, during the forty-five (45) days following notification of the proposed Modifications, informed the Licensee that review of the proposal will require more than forty-five (45) days;

   d) an Inspector has confirmed the acceptability of the proposed Modification to the Board in writing; and,

   e) the Board has not rejected the proposed Modifications.

2. Modifications for which all of the conditions referred to in Part G, Item 1, have not been met may be carried out only with written approval from the Board.

3. Within ninety (90) days of the completion of Modifications referred to in Part G, Item 1, the Licensee shall provide as-built drawings stamped by a Professional Engineer to the Board.
PART H: CONDITIONS APPLYING TO WATER AND WASTE MANAGEMENT

1. Within ninety (90) days of the effective date of this Licence, the Licensee shall submit a Waste Management Plan. The Plan shall be in accordance with the Mackenzie Valley Land and Water Board’s Guidelines for Developing a Waste Management Plan, 2011. In addition to conforming to the Guidelines, the Plan shall include a section that addresses the Licensee’s plan for the mitigating and monitoring of dust resulting from its operations. Once approved, the Licensee shall operate in accordance with the approved Waste Management Plan.

2. The Licensee shall operate in accordance with the approved Water Management Plan. The Plan shall be in accordance with Schedule 6, Item 1.

3. Within sixty (60) days of the effective date of this Licence, the Licensee shall submit an updated Water Management Plan, for approval.

4. The Licensee shall operate in accordance with the approved Processed Kimberlite Containment Facility Plan. The Plan shall be in accordance with Schedule 6, Item 2.

5. The Licensee shall operate in accordance with the approved North Inlet Water Treatment Plant Operations Plan. The Plan shall be in accordance with Schedule 6, Item 3.

6. The Licensee shall operate in accordance with the approved Sewage Treatment Facility Operations Plan. The Plan shall be in accordance with Schedule 6, Item 4.

7. The Licensee shall operate in accordance with the approved Waste Rock Management Plan. The Plan shall be in accordance with Schedule 6, Item 5.

8. A minimum of six (6) months prior to the commencement of Construction of the south Waste Rock Storage Area, the Licensee shall submit an updated Waste Rock Management Plan, for approval.

9. The Licensee shall operate in accordance with the approved Hazardous Materials Management Plan.

10. The Licensee shall operate in accordance with the approved Ammonia Management Plan.

11. A minimum of twelve (12) months prior to pre-stripping of the A21 Pit, the Licensee shall submit an updated Ammonia Management Plan, for approval.
12. The Licensee shall annually review the Waste Management Plan, Water Management Plan, Processed Kimberlite Containment Facility Plan, North Inlet Water Treatment Plant Operations Plan, Sewage Treatment Facility Plan, Waste Rock Management Plan, Hazardous Materials Management Plan, and Ammonia Management Plan referred to in Part H, Items 1, 2, 4, 5, 6, 7, 9, and 10, respectively, and shall submit updates to the Plans to the Board, for approval, at the following times:

a) a minimum of ninety (90) days prior to any proposed changes to the requirements in the approved Plan; and,

b) upon request of the Board.

13. The Licensee shall implement the approved Standard Operating Procedures for pH adjustment for all Discharges to Lac de Gras from SNP Station # 1645-18.

14. Upon instruction from the Board, the Licensee shall modify the Standard Operating Procedures for pH adjustment referred to in Part H, Item 13, to reflect directives from the Board. The modified Procedures shall be submitted to the Board for approval and shall be implemented upon approval.

15. The Licensee shall conduct Seepage surveys for all constructed rock piles, stockpiles of Reclamation rock, ore stockpiles, areas constructed with mined or quarried rock, and water retention dikes and dams. The Seepage surveys shall be in accordance with Schedule 6, Item 6.

16. By March 31 each year, the Licensee shall submit to the Board, for approval, a Seepage Survey Report. The Report shall be in accordance with Schedule 6, Item 6.

17. Within six (6) months following the effective date of this Licence, the Licensee shall submit a Mount Polley Report Evaluation prepared by a Professional Engineer. The Report shall assess the applicability of the recommendations in the Mount Polley Report to the Diavik Diamond Mine Project.

18. On or before January 31, 2016, the Licensee shall submit a North Inlet Hydrocarbon Investigation Report. The objective of the Plan is to identify sources of hydrocarbon contamination in the North Inlet Facility. The Plan shall be in accordance with Schedule 6, Item 7.

19. On or before January 31, 2016, the Licensee shall submit to the Board, for approval, a North Inlet Sludge Management Report. The objective of the Report is to determine whether North Inlet Water Treatment Plant sludge should be disposed in an alternative location in order to meet the Closure Objectives in the approved Closure and Reclamation Plan. The Report shall be in accordance with Schedule 6, Item 8.
Engineering Standards

20. The Licensee shall operate and maintain the Water Retention Dikes to engineering standards such that at a minimum they comply with the *Dam Safety Guidelines*, and in accordance with the following:

   a) the lowest point on the upper edge of the Diaphragm Wall shall not be lower than 419.0 metres above mean sea level, or as recommended by a Geotechnical Engineer and as approved by the Board;

   b) the Licensee shall install and maintain geotechnical instrumentation in the Water Retention Dikes as described in the Water Retention Dikes Final Design Report, dated July 1999;

   c) a schedule of reading the instrumentation shall be submitted to the Board for approval not less than three (3) months before Dewatering is scheduled to commence. The Licensee shall carry out the instrumentation reading schedule upon approval of the Board;

   d) weekly inspections of the Water Retention Dikes shall be conducted and the records of these inspections and all monitoring records shall be kept for review upon request of an Inspector;

   e) any Seepage through the Water Retention Dikes that does not meet the effluent quality criteria Part H, Items 26 and 29 shall be collected and directed to the North Inlet or the Processed Kimberlite Containment Facility, and measures shall be employed to reduce Seepage;

   f) any deterioration or erosion of any Engineered Structures associated with the Water Retention Dikes shall be reported to an Inspector and repaired immediately; and,

   g) an inspection of the Water Retention Dikes shall be carried out annually in August by a Geotechnical Engineer. The Engineer’s report shall be submitted to the Board within ninety (90) days of the inspection, including a covering letter from the Licensee outlining an Implementation Plan for addressing each of the Engineer’s recommendations.

21. The Licensee shall operate and maintain the Processed Kimberlite Containment Facility to engineering standards such that:

   a) a minimum Freeboard limit of 1.5 metres below the lowest surveyed point of the liner or of the engineered emergency Spillway, whichever is lower, shall be maintained at all times; or as recommended by a Geotechnical Engineer and as approved by the Board;

   b) if Seepage from the Processed Kimberlite Containment Facility occurs, the Licensee shall collect and return the Seepage to the Processed Kimberlite Containment Facility and measures shall be undertaken to eliminate the Seepage;

   c) any deterioration or erosion of any Engineered Structures associated with the Processed Kimberlite Containment Facility shall be reported to an Inspector and repaired immediately;

   d) the solids fraction of all Processed Kimberlite shall be deposited and permanently contained within the Processed Kimberlite Containment Facility;
e) weekly inspections of the Processed Kimberlite Containment Facility Dams, emergency Spillway(s), pipeline(s), and catchment basin(s) shall be conducted and the records of these inspections shall be kept for review upon the request of an Inspector; and,

f) an inspection of the Processed Kimberlite Containment Facility shall be carried out annually in July by a Geotechnical Engineer. The \textbf{Engineer’s Report} shall be submitted to the Board within ninety (90) days of the inspection, including a covering letter from the Licensee outlining an \textbf{Implementation Plan} for addressing each of the Engineer’s recommendations.

22. The Licensee shall operate and maintain the Drainage Control and Collection System to engineering standards such that:

a) a minimum Freeboard limit of one (1) metre below the engineered emergency Spillways shall be maintained at all times or as recommended by a Geotechnical Engineer and as approved by the Board;

b) Seepage from the Drainage Control and Collection System shall be minimized, collected, and returned to the Drainage Control and Collection System or Processed Kimberlite Containment Facility;

c) any deterioration or erosion of any Engineered Structures associated with the Drainage Control and Collection System shall be reported to an Inspector and repaired immediately;

d) weekly inspections of the Drainage Control and Collection System, emergency Spillway(s), pipeline(s), and catchment basin(s) shall be conducted and the records of these inspections shall be kept for review upon the request of an Inspector;

e) during the weekly inspections required by Part H, Item 22(d), if DDMI detects Seepage,

i. the following information shall be reported in the subsequent monthly SNP report: date Seepage identified, location, rate of flow each day, number of days until Seepage was contained, and the results of the analysis of the Seepage for the parameters outlined in Part H, Item 22(e)(ii).

ii. DDMI must notify the Inspector immediately and provide any information requested by the Inspector. The Seepage must be sampled daily until contained and the daily samples analyzed for the following parameters: total metals, pH, total ammonia, NO$_3$, Cl, and SO$_4$.

f) an inspection of the Drainage Control and Collection System shall be carried out annually in July by a Geotechnical Engineer. The \textbf{Engineer’s Report} shall be submitted to the Board within ninety (90) days of the inspection, including a covering letter from the Licensee outlining an \textbf{Implementation Plan} for addressing each of the Engineer’s recommendations.

23. The Licensee shall operate and maintain the North Inlet Facility to engineering standards such that:

a) a minimum Freeboard limit of 1.5 metres below the engineered emergency Spillway shall be maintained at all times or as recommended by a Geotechnical Engineer and as approved by the Board;

b) any deterioration or erosion of any Engineered Structures associated with the North Inlet Facility shall be reported to an Inspector and repaired immediately;
c) the solids fraction of the lake bed sediments that are disposed in the North Inlet Facility shall be permanently contained within the North Inlet Facility or as approved by the Board;

d) Seepage from the west dike of the North Inlet Facility shall be minimized, collected, and returned to the North Inlet Facility;

e) weekly inspections of the North Inlet Facility, emergency Spillway(s), pipeline(s), and catchment basin(s) shall be carried out and records of these inspections shall be kept for review upon the request of an Inspector; and,

f) an inspection of the North Inlet Facility shall be carried out annually in August by a Geotechnical Engineer. The **Engineer’s Report** shall be submitted to the Board within ninety (90) days of the inspection, including a covering letter from the Licensee outlining an **Implementation Plan** for addressing each of the Engineer’s recommendations.

24. The Licensee shall conduct Dam Safety Reviews of the following:

   a) the Processed Kimberlite Containment Facility in 2017 and every seven (7) years thereafter, or at a frequency approved by the Board;

   b) the A418 dike in 2017 and every five (5) years thereafter, or at a frequency approved by the Board;

   c) the A154 dike in 2018 and every five (5) years thereafter, or at a frequency approved by the Board; and,

   d) the A21 dike in 2020 and every five (5) years thereafter, or at a frequency approved by the Board.

The Dam Safety Reviews shall be conducted in accordance with the *Dam Safety Guidelines* by a Professional Engineer. The timing of the Dam Safety Review inspection will be at the discretion of the review Engineer conducting the inspection.

25. Within ninety (90) days after completing a Dam Safety Review inspection, the Licensee shall submit to the Board:

   a) the Engineer’s **Dam Safety Review Report**; and,

   b) an **Implementation Plan** outlining how the Licensee will respond to each recommendation in the Engineer’s **Dam Safety Review Report**, including a rationale for any decisions that deviate from the Engineer’s recommendations.
**Effluent Quality Criteria (EQC)**

26. The Licensee shall ensure that all Discharges to Lac de Gras from the Water Treatment Facilities at SNP Station # 1645-18 meet the following Effluent Quality Criteria:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Maximum Average Concentration</th>
<th>Maximum Concentration of Any Grab Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Ammonia</td>
<td>6.0 mg/L</td>
<td>12.0 mg/L</td>
</tr>
<tr>
<td>Total Aluminum</td>
<td>1.5 mg/L</td>
<td>3.0 mg/L</td>
</tr>
<tr>
<td>Total Arsenic</td>
<td>0.05 mg/L</td>
<td>0.1 mg/L</td>
</tr>
<tr>
<td>Total Copper</td>
<td>0.02 mg/L</td>
<td>0.04 mg/L</td>
</tr>
<tr>
<td>Total Cadmium</td>
<td>0.0015 mg/L</td>
<td>0.003 mg/L</td>
</tr>
<tr>
<td>Total Chromium</td>
<td>0.02 mg/L</td>
<td>0.04 mg/L</td>
</tr>
<tr>
<td>Total Lead</td>
<td>0.01 mg/L</td>
<td>0.02 mg/L</td>
</tr>
<tr>
<td>Total Zinc</td>
<td>0.01 mg/L</td>
<td>0.02 mg/L</td>
</tr>
<tr>
<td>Total Nickel</td>
<td>0.05 mg/L</td>
<td>0.1 mg/L</td>
</tr>
<tr>
<td>Nitrite</td>
<td>1.0 mg/L</td>
<td>2.0 mg/L</td>
</tr>
<tr>
<td>Total Suspended Solids</td>
<td>15.0 mg/L</td>
<td>25.0 mg/L</td>
</tr>
<tr>
<td>Turbidity</td>
<td>10 NTU</td>
<td>15 NTU</td>
</tr>
<tr>
<td>BOD$_5$</td>
<td>15.0 mg/L</td>
<td>25.0 mg/L</td>
</tr>
<tr>
<td>Total Petroleum Hydrocarbons</td>
<td>3.0 mg/L</td>
<td>5.0 mg/L</td>
</tr>
<tr>
<td>Faecal Coliforms</td>
<td>10 CFU/100ml</td>
<td>20 CFU/100ml</td>
</tr>
</tbody>
</table>

27. All other authorized Discharges to Lac de Gras shall meet the Effluent Quality Criteria as specified in Part H, Items 26 and 29.

28. All surface runoff Discharged to Lac de Gras shall have a pH between 5.0 and 8.4 unless it can be demonstrated that a pH outside this range was not caused by mine activities.

29. All authorized Discharges to Lac de Gras (except for surface runoff) shall have a pH between 6.0 and 8.4.

30. No Discharge to Lac de Gras by the Licensee from the Water Treatment Facilities at SNP Station #1645-18 shall be acutely toxic under the following tests to be conducted as per the Surveillance Network Program annexed to this Licence:

   a) acute lethality to rainbow trout, *Oncorhynchus mykiss* as per Environment Canada’s Environmental Protection Series Biological Test Method EPS/1/RM/13; and,

   b) acute lethality to the crustacean, *Daphnia magna* (as per Environment Canada’s Environmental Protection Series Biological Test Method EPS/1/RM/14.

31. The Licensee shall ensure that all in-lake dredging, dike Construction, or other in-lake activities meet the following criteria set out in paragraph (a):
a) at SNP Station #1645-82 to 1645-84 inclusive, and at a 200 metre distance in any direction from the centerline of the dike footprint:
   i. the maximum concentration for Total Suspended Solids shall not exceed 25 mg/L over the above background concentration at SNP station #1645-55, in any grab sample, TSS in any daily sample, or 5 mg/L above background TSS averaged over any 30-day period;
   ii. all samples shall be taken on a depth-integrated basis;
   iii. each depth-integrated sample shall consist of a continuous sample taken between 1 m from the lake bottom to 1 m below the lake surface; and
b) for comparison to the samples required by paragraph (a), background TSS concentrations are to be measured at SNP Station #1645-55 based on samples collected in the manner set out in subparagraph (a)(ii) and subparagraph a(iii);

c) the Licensee must also notify the Inspector on any day when weather conditions do not permit the collection of a TSS sample.

32. Total phosphorus loads from all treatment facilities discharging to Lac de Gras must be controlled, as per approved operations plans, such that loads of total phosphorus do not exceed a maximum of 300 kg per month during the life of the mine, and do not exceed an average annual loading of 1,000 kg per year during the life of the mine, and do not exceed a maximum loading of 2,000 kg per year in any year during the life of the mine.

33. The Licensee shall provide water sampling results to an Inspector prior to any authorized Discharge to the Receiving Environment. Discharge shall not commence until authorized in writing by an Inspector.
PART I: CONDITIONS APPLYING TO CONTINGENCY PLANNING

1. The Licensee shall operate in accordance with the approved Contingency Plan. The Plan shall be in accordance with Indian and Northern Affairs Canada’s Guidelines for Spill Contingency Planning, 2007, and Schedule 7, Item 1.

2. The Licensee shall annually review the Contingency Plan and shall submit updates to the Plan to the Board, for approval, at the following times:
   a) a minimum of ninety (90) days prior to any proposed changes to the requirements in the approved Plan; and,
   b) upon request of the Board.

3. If, during the period of this Licence, an Unauthorized Discharge of Waste occurs or is foreseeable, the Licensee shall:
   a) implement the approved Contingency Plan;
   b) report the incident immediately via the 24 Hour Spill Report Line (867) 920-8130 in accordance with the instructions contained in the Spill Report Form NWT 1752/0593;
   c) report each spill and Unauthorized Discharge to an Inspector within 24 hours; and,
   d) within thirty (30) days of an Unauthorized Discharge or an incident reported under Part I, Item 3b, the Licensee shall submit a detailed report to the Board and an Inspector. The report shall include descriptions of causes, response actions, and any changes to procedures proposed to prevent similar occurrences in the future.

4. The Contingency Plan required under Part I, Item 1, shall not include the extraction of water from Lac de Gras for the purpose of pre-diluting the effluent as an ongoing operational approach for dealing with elevated levels of ammonia.

5. All spills and Unauthorized Discharges shall be reclaimed to the satisfaction of an Inspector.
PART J: CONDITIONS APPLYING TO AQUATIC EFFECTS MONITORING

1. The Licensee shall submit for approval a revised version of the May 2006 report, Historical Information Review – Aquatic Environmental, that was submitted under Licence N7L2-1645, if directed by the Board.

2. The Licensee shall comply with the approved AEMP Design Plan. The AEMP Design Plan shall include a Response Framework and be in accordance with Schedule 8, Item 1.

3. The Licensee shall review and revise, as necessary, the AEMP Design Plan every three years, or as directed by the Board.

4. The Licensee shall comply with the approved AEMP Quality Assurance Project Plan. To reflect changes to the AEMP Design Plan, the Licensee shall, every three years or as directed by the Board, review and revise the AEMP Quality Assurance Project Plan, for Board approval.

5. The Licensee shall complete Specific Effects Studies and shall submit the Specific Effects Study Reports to the Board for approval. These studies shall include, but not necessarily be limited to, those listed in Schedule 8, Item 2.

6. If any Action Level defined in the approved Response Framework is exceeded, the Licensee shall:

   a) notify the Board within thirty (30) days of when the exceedance is detected; and,
   
   b) within ninety (90) days of when the exceedance is detected, submit a Response Plan that satisfies the requirements of Schedule 8, Item 3 to the Board for approval.

7. The Licensee shall implement Response Plans as, and when, approved by the Board.

8. On or before March 31 each year, the Licensee shall submit an AEMP Annual Report to the Board for approval. This Report shall satisfy the requirements of Schedule 8, Item 4, and include information relating to data collected in the preceding calendar year.

9. The Licensee shall submit an Aquatic Effects Re-evaluation Report for Board approval every three (3) years, or upon direction from the Board. The Report shall meet the following objectives and satisfy the requirements of Schedule 8, Item 5:

   a) To describe the Project-related effects on the Receiving Environment compared against Environmental Assessment (EA) predictions;
   
   b) To update predictions of Project-related effects on the Receiving Environment based on monitoring results obtained since Project inception; and,
   
   c) To provide supporting evidence, if necessary, for proposed revisions to the AEMP Design Plan.

10. If not approved by the Board, the Plans and Reports referred to in Part J, Items 2, 4, 5, 6, 8, and 9 shall be revised and resubmitted in accordance with directives from the Board.
PART K: CONDITIONS APPLYING TO CLOSURE AND RECLAMATION

1. The Licensee shall implement the Closure and Reclamation Plan as approved by the Board and endeavour to carry out Progressive Reclamation as soon as is reasonably practicable.

2. Updates to the Closure and Reclamation Plan shall be in accordance with the Mackenzie Valley Land and Water Board and Aboriginal Affairs and Northern Development Canada’s Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories. In addition to conforming with the Guidelines, the Plan shall be in accordance with Schedule 9, Item 1, and any other direction from the Board.

3. The Licensee shall submit a revised Closure and Reclamation Plan upon request of the Board.

4. Prior to December 31 of each year, the Licensee shall submit an Annual Closure and Reclamation Plan Progress Report. The Report shall be developed in accordance with the Mackenzie Valley Land and Water Board and Aboriginal Affairs and Northern Development Canada’s Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories, Schedule 9, Item 2, and any other direction from the Board.

5. Following the closure and/or Reclamation of components of the Project, the Licensee shall submit a Reclamation Completion Report to the Board for approval. The Report shall be developed in accordance with the Mackenzie Valley Land and Water Board and Aboriginal Affairs and Northern Development Canada’s Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites within the Northwest Territories.

6. Once the Licensee has determined that Closure Objectives and Closure Criteria have been met, the Licensee shall submit a Performance Assessment Report to the Board for approval. The Report shall be developed in accordance with the Mackenzie Valley Land and Water Board’s Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites within the Northwest Territories.

7. The Licensee shall submit a Final Closure and Reclamation Plan to the Board for approval three (3) years prior to the expiry date of this Licence or a minimum of twenty-four (24) months prior to the end of commercial operations, whichever occurs first.
1. The **Annual Water Licence Report** referred to in Part B, Item 7, shall include, but not be limited to, the following:

**Quantities and Measurements**

a) the monthly and annual quantities in cubic metres of water obtained from Lac de Gras;
b) the monthly, annual, and total quantities in cubic metres of water dewatered from the A21 pool;
c) the monthly elevations of water within each of the cells in the North Inlet during the open water period;
d) the monthly and annual quantities in cubic metres of recycled water identifying both the source and use;
e) the monthly and annual quantities of solids in tonnes and liquid fractions in cubic metres of each Waste stream discharged to the Processed Kimberlite Containment Facility, and the North Inlet;
f) the monthly and annual quantities of dredged sediment in cubic metres;
g) the monthly and annual quantities in cubic metres of all Discharges to Lac de Gras, by source;
h) the monthly and annual quantities in cubic metres of all Waste directed to the North Inlet, by source;
i) the monthly and annual quantities in cubic metres of treated effluent discharged from the Sewage Treatment Facility;
j) the monthly and annual quantities in cubic metres of Sewage solids removed from the Sewage Treatment Facility;
k) a summary report which describes any important trends, notable events, or other significant interpretations of the data. all raw data in electronic form;
l) annual reporting of the quantity of Waste Rock disposed in each of the North and South country Waste Rock piles and inert rock stockpiled for Reclamation purposes;

**Management Plans and Activities**

m) a summary of Dewatering activities undertaken in accordance with Part E;
n) a summary of Construction activities conducted and an updated **Mine Plan**, including any changes to the schedule for mine development;
o) a summary of all work carried out under the Management Plans in accordance with Part H;
p) a summary of Modifications and/or major maintenance work carried out on the Water Treatment Facilities, Processed Kimberlite Containment Facility, Sewage Treatment Facilities, Drainage Control and Collection System and any associated structures;

Spills and Unauthorized Discharges

q) a list and description including volumes of all Unauthorized Discharges and spills of Waste, and summaries of follow-up actions taken;

r) an outline of any spill training exercises carried out;

Other Reporting Requirements

s) results and interpretation of further fracture zone characterization and hydrogeological test work conducted in accordance with Part F, Item 12, and its implications for potential Groundwater inflows and overall water balances;

t) a progress report on any studies requested by the Board and a brief description of any future studies planned by the Licensee; and,

u) any other details on water use or Waste disposal requested by the Board by November 1 of the year being reported.
SCHEDULE 2
SECURITY

1. The Licensee shall maintain a security deposit of $118,460,000 in accordance with section 35 of the Act and section 11 of the Waters Regulations.
SCHEDULE 3
WATER USE

1. The detailed guidance referred to in Part D, Item 3, is the Department of Fisheries and Oceans’ *Freshwater Intake End-of-Pipe Fish Screen Guidelines, 1995*, and *Fish Screen Design Criteria for Flood and Water Truck Pumps, 2011*. 
1. The **A21 Dewatering Summary Report** referred to in Part E, Item 6, that shall include, but not be limited to, the following:

   a) the metered daily, monthly, and total Discharge rates;
   
   b) a description of any water treatment undertaken, erosion problems encountered, and mitigative actions taken;
   
   c) the results of water quality monitoring and an evaluation of compliance with the regulated water quality requirements; and,
   
   d) an evaluation of any impacts to Lac de Gras resulting from Dewatering activities.
SCHEDULE 5
CONSTRUCTION

1. The Comprehensive Delineation Program referred to in Part F, Item 6, of the Licence, shall include, but not necessarily be limited to, the following:

   a) detailed delineation of ice rich features;
   b) follow up test pit and/or borehole investigations; and,
   c) geophysical surveys.

2. The Processed Kimberlite Containment Facility Design Report referred to in Part F, Item 7, of the Licence, shall include, but not necessarily be limited to, the following:

   a) a description of existing conditions beneath the footprint of the structure and extending at least fifty (50) metres beyond the footprint in either direction, including the distribution of the frozen and unfrozen soil and rock materials along representative cross sections of the dams;
   b) an explanation for any significant lateral variations in soil materials and the implications of the soil variability on the West Dam design;
   c) intended depth of excavation for each of the cross sections selected;
   d) a description of the variability of the spatial and engineering properties of the soil;
   e) the interpreted engineering properties of unfrozen materials below the depth of excavation within the areas delineated in the cross sections in Item 2 i);
   f) representative cross sections showing the various stages of Dam raises when geothermal modelling and short term slope stability analyses are to be conducted;
   g) a schedule indicating the time of year when the Construction of each lift will be carried out;
   h) representative cross sections showing the final configuration of the upstream toe of all dams when operation of the facility commences;
   i) an evaluation of the magnitude of differential settlement related to the taliks underneath the proposed dams, as well as foundation movement related to frost heave and thaw settlement over the design life of the structure; and,
   j) the results of revised geothermal modelling throughout the intermediate and final stages of Construction.
3. The A21 Construction Environmental Management Plan shall include but not necessarily be limited to:

a) Dredging Plan:
   i. a schedule of Dredging Activities;
   ii. dredging equipment design and operation;
   iii. production rates;
   iv. operational approaches for minimizing sediment disturbance; and,
   v. final monitoring plan details.

b) Dewatering Plan:
   i. the volume of water to be Dewatered from each source;
   ii. the expected quality of water to be discharged to Lac de Gras;
   iii. a schedule for Dewatering and daily Discharge rates;
   iv. pumping methods including locations of intake and outflow structures;
   v. the design of any erosion protection measures to be employed in the Discharge areas;
   vi. the description of procedures and schedules for visual inspections of any erosion along the Discharge areas;
   vii. the frequency and locations for water quality monitoring as referred to in the Surveillance Network Program;
   viii. the frequency, location, and procedures for monitoring flow rates in the Discharge stream;
   ix. the design of each pipeline and related facilities;
   x. the procedures and rates for Dewatering during the winter months to minimize erosion;
   xi. the identification of any treatment that may be used to ensure that effluent quality criteria are met; and,
   xii. a description of how the Licensee will link the results of monitoring to those corrective actions necessary to prevent or minimize any Dredging- or Dewatering-related effects to the Receiving Environment.

c) A conformance table identifying where each of the requirements in Schedule 5, Items 3(a), (b), and (c) are located in the Plan (e.g., page number and/or document section).

4. The Final Detailed Mine Design Report referred to in Part F, Item 14, of the Licence, shall include, but not necessarily be limited to, the following:

a) A detailed engineering report

b) the results of detailed analyses that demonstrate the compatibility of the Mine Design and water retention dike design, with special reference to Seepage and Groundwater flow, slope stability and deformations;
c) a complete characterization of the rock or soil properties (including thermal) of both in situ and placed materials necessary to meet performance objectives;

d) a description of the scope of any additional evaluations to be conducted prior to Construction, that includes foundation inspection, drill holes and test pits, samples to be collected, analyses to be conducted and details of any instrumentation to be installed;

e) the results of a comprehensive test program and structural assessment to demonstrate that the dike and plastic concrete wall will perform satisfactorily. The test program shall identify the range of acceptable material properties (dike fill zones, plastic concrete, jet grout and bedrock grout) that will meet performance expectations. The structural assessment shall demonstrate that the short and long term performance of the dike and plastic concrete, as an integrated structure, will be acceptable under the range of hydraulic, deformation and thermal conditions expected; and,

f) The plastic concrete testing shall include at a minimum laboratory testing for the optimization of the proposed mix design of the plastic concrete, laboratory testing to determine the freezing and frozen properties of the plastic concrete, geothermal analysis to determine the thermal regime as a function of time as permafrost aggrades into the dike and encompasses the Diaphragm Wall, and analyses of deformation and water retention characteristics under predicted insitu conditions, including the drawdown, mining and closure scenarios.

5. The final Waste Rock Storage Area Design Report referred to in Part F, Item 16, of the Licence, shall include, but not necessarily be limited to, the following:

   a) geothermal analysis of the foundation of the Waste Rock Storage Area and till storage areas; and,

   b) short term stability analyses that simulate the development of the Waste Rock disposal facilities and till storage area across the sediment retention pond and the clarification pond, particularly the portions underlain by thawed/thawing ice rich soils. These analyses should identify the method of Construction and lift thickness of the rock pile that will not result in the release of water or sediment from the facility and/or damage to the containment structures.

6. The Quality Assurance/Quality Control Manual for on-land water and Waste management structures referred to in Part F, Item 20 of the Licence, shall include, but not necessarily be limited to, the following:

   a) a complete characterization of the soil and/or rock properties of both insitu and placed materials necessary to meet performance objectives for each structure;

   b) the procedures to be followed upon identification of any unacceptable materials, that includes reporting, removal, replacement, specifications for insitu remediation and/or replacement materials;

   c) the protocol and schedule for inspections and sampling during the Construction of each structure;
d) the frequency of visual inspections for the identification of material types, stratigraphy, ice content and distribution, and any other parameters as may be identified in Item 5 a) above; and,
e) the schedule of sampling for confirmatory laboratory testing of the materials identified in Items 5 a) and 5 b) above.

7. The Quality Assurance/Quality Control Manual for the Construction of the Water Retention Dikes referred to in Part F, Item 21 of the Licence, shall include, but not necessarily be limited to, the following:

a) For Dredging Activities:
   i. the protocol and schedule of inspecting and sampling during the dredging period that includes a description of methods that will be used to assess dredging effectiveness to remove lakebed sediments;
   ii. the procedures to be followed upon identification of any unacceptable materials that includes reporting requirements and removal methods;
   iii. the operational measures that will be employed to minimize re-suspension of lakebed sediments in Lac de Gras as a result of Dredging Activities; and,
   iv. monitoring requirements and operational in-line dredge metering for determining dredging effectiveness.

b) For Dike Rock Placement Activities:
   i. the protocol and schedule of inspecting and sampling during the placement of rock materials to ensure performance objectives are met for grain size distribution, surveying and geometric control and verification of vibrodensification;
   ii. the schedule of monitoring that includes the type and distribution of instrumentation to be used, monitoring frequency, monitoring threshold limits upon which action should be taken and proposed contingency measures in the event that design specifications are not achieved; and,
   iii. identify operational measures to be employed to minimize introduction of sediments in Lac de Gras as a result of dike placement activities.

c) For Plastic Concrete Placement Activities:
   i. the protocol and schedule of inspecting and sampling for preparation of the plastic concrete;
   ii. the protocol of inspections and monitoring of the excavation of the Cut-off Wall Trench including vertical alignment, slurry loss, preparation of primary panel ends, cleaning of panel base, sequence of panel Construction and placement;
   iii. the schedule of monitoring that includes type and distribution of instrumentation, monitoring frequency, design specifications upon which action should be taken and proposed contingency measures in the event that design specifications and not met; and,
iv. measures to be employed for the management of all bentonite not confined to the Cut-off Wall trench.

d) For Jet Grouting and Bedrock Grouting Activities:
   i. the protocol and schedule of inspecting and sampling for preparation of the grout mixtures;
   ii. the protocol of inspections and monitoring for the alignment of drill holes;
   iii. the protocol of inspections and monitoring for the grouting pressures, grout take and return volume; and,
   iv. the schedule of monitoring including type and distribution of instrumentation and monitoring frequency.

8. The Quality Assurance/Quality Control Manuals in Items 6 and 7 above, shall describe the management thresholds upon which action will be taken to implement the contingency measures and mitigation in the event that design specifications are not met.
1. The **Water Management Plan** referred to in Part H, Item 2, shall include, but not necessarily be limited to the following:

   a) measures that will be undertaken to minimize the amount of raw water required from Lac de Gras; the measures shall integrate the requirements of, or work done under, other Management Plans or research projects and shall consider alternative water sources such as the Processed Kimberlite Containment Facility, Dredged Sediment Containment Facility, North Inlet Facility, and Pits;

   b) a complete list of Waste streams that are discharged to Lac de Gras without treatment;

   c) a summary of plans for managing water to be stored in the Processed Kimberlite Containment Facility, the North Inlet Facility, the Dredged Sediment Containment Facility and for the management of all other waters on East Island; and,

   d) an overall water balance for the Project, that includes the specific water balances for each of the Processed Kimberlite Containment Facility and the North Inlet Facility, and associated waters for both facilities as updated with current information respecting:
      
      i. on-site precipitation, evaporation and runoff;
      
      ii. volumes of recycled water and raw water utilized during the previous year;
      
      iii. Groundwater inflows to the pit;
      
      iv. realized capacity of water treatment plants; and,
      
      v. stage-volume curves that show the expected capacity of the Processed Kimberlite Containment and North Inlet Facilities.

2. The **Processed Kimberlite Containment (PKC) Facility Plan**, (formerly the Processed Kimberlite and Waste Water Management Plan) referred to in Part H, Item 4, shall be in accordance with the NWT Water Board’s "Guidelines for Tailings Impoundment in the Northwest Territories, February 1987", and will include, but not necessarily be limited to, the following:

   a) a comprehensive description of all sources and types of Waste and wastewater which will be deposited in the Processed Kimberlite Containment (PKC) Facility;

   b) a description of any proposed physical or chemical treatment of Waste or wastewater prior to its Discharge to the PKC Facility and prior to Discharge from the PKC Treatment Facility to the Receiving Environment;

   c) a description, including maps to scale, of the locations of all monitoring stations within the PKC Facility and Discharge locations to and from the PKC Facility. The description should include the sampling protocols for each station;

   d) a description of the management and scheduling of all Processed Kimberlite deposition within the PKC Facility;
e) stage-volume curves and water, solids and ice balance calculations showing life expectancy of the PKC Facility;

f) any operational and/or structural Modifications which may be implemented that will affect the management of the PKC Facility and associated wastewater operations;

g) a description of the methods that will be used to determine the volume in cubic metres of fine and coarse fractions of Processed Kimberlite disposed of in the PKC Facility on an annual basis;

h) a description of the procedures that will be used to characterize the physical, thermal and chemical properties of the fine kimberlite in the frozen and thawed condition within the PKC Facility;

i) a description of the procedures that will be used to characterize pore water within frozen and thawed zones; and,

j) a description of the thermal monitoring of Dam structures that will be conducted to ensure that the Frozen Core develops as planned and is maintained throughout the life of the mine.

3. The **North Inlet Water Treatment Plant Operations Plan** (formerly the North Inlet Sediment and Waste Water Management Plan) referred to in Part H, Item 5, shall include, but not necessarily be limited to, the following:

   a) a comprehensive characterization of all sources and types of wastewater and Wastes including sediments that will be directed and stored in the North Inlet Facility;

   b) a description of any proposed physical and chemical treatment of Waste prior to Discharge to the North Inlet Facility and proposed treatment of Waste stored in the North Inlet Facility prior to release to the environment;

   c) a description of proposed management and scheduling of sediment deposition in the North Inlet Facility; and,

   d) any operational and/or structural Modifications that may affect the North Inlet Facility operations.

4. The **Sewage Treatment Facility Operations Plan** referred to in Part H, Item 6, shall include, but not necessarily be limited to, the following:

   a) details on the design;

   b) operational capacity, management, and maintenance; and,

   c) disposal of sludge.
5. The **Waste Rock Management Plan** referred to in Part H, Item 8, shall incorporate the approved Biotite Schist Management Plan (Volume II-B, Part N, Version 1, Water Licence Application, August 1999) to address the management of all rock that is disturbed, moved, stored, or otherwise affected by mining-related activity on the property, over the term of the Project, and shall be in accordance with the Department of Indian and Northern Affairs Canada’s *Guidelines for Acid Rock Drainage Protection in the North*, 1992. This Plan shall describe decision criteria and operating procedures for how all rock will be placed and managed during Construction, mining and post closure, and include, but not necessarily be limited to, the following:

   a) an annual schedule for till storage, ore stockpiling, Processed Kimberlite generation and Waste Rock production by rock type, tonnage, and destination over the term of the Project including sources and volumes of each rock type;

   b) geochemical decision criteria for managing Waste Rock extracted from quarries and pits. Criteria will facilitate classification of rock which is suitable and not suitable for the following uses in terms of acid generation and heavy metals leaching potential:
      i. Construction of on-land roads and facilities;
      ii. Construction in Lac de Gras;
      iii. Reclamation;
      iv. disposal in Waste rock piles; and,
      v. segregated as potentially acid generating rock.

   c) a description of operational procedures that will be used to segregate and manage the rock that is identified for Construction;

   d) a complete description, including site maps to scale, of each till, ore and Waste Rock Storage Area including the PKC Facility;

   e) a description of the sampling design and analytical methods that will be used to support the operational classification of all rock types;

   f) a description of the methods that will be used to construct till storage, ore stockpiling, Processed Kimberlite, and Waste Rock facilities such that generation of acidic drainage and/or Metal Leaching is limited;

   g) design details for the Construction of large-scale tests for assessing the effectiveness of blending different combinations of biotite schist and granite. The Licensee shall undertake these tests as and when approved by the Board;

   h) a description of the temperature analysis that will be implemented in all Waste Rock Storage Area having Acid Rock Drainage (ARD) potential to evaluate the potential for oxidation reactions and to determine predicted ARD generation rates.

   i) a comparison of predicted and measured quantities of each rock type produced in the preceding year;

   j) results of geochemical sampling and testing of till, ore, Processed Kimberlite, and Waste Rock produced during the preceding year;
k)geochemical characteristics of each rock type and area of exposure in the current pit wall(s); updated predictions of water chemistry of the leachate from the Waste Rock based on measured results, from all sources; and,
l) the results and interpretation of any additional geochemical testing on various rock types or Processed Kimberlite.

6. The Seepage Survey Report referred to in Part H, Item 16, shall consist of the results of Seepage surveys of all mine components including: constructed rock piles, stockpiles of Reclamation rock, ore stockpiles, areas constructed with mined or quarried rock, and water retention dikes and dams, and include, but not necessarily be limited to:

a) monthly sampling of detected Seepages during periods of flow;
b) testing in the field shall include volume, dissolved oxygen, conductivity, Eh, field pH, water temperature, water colour, and precipitate colour;
c) laboratory analysis of each sample shall include major ions (as defined in the SNP), nitrite, nitrate, total ammonia, total arsenic, total dissolved solids, total phosphorus, TSS, pH, conductivity, total and dissolved metals determined by inductively coupled plasma mass spectrometry (ICP-MS) analysis as defined in this Licence and the SNP; and,
d) a Site Plan showing sampling locations, interpretation of SNP data collected from the drainage control and collection ponds and a description of how the results have been interpreted relative to the results of the QA/QC program.

7. The North Inlet Hydrocarbon Investigation Report referred to in Part H, Item 18, shall include, but not necessarily be limited to, the following:

a) a summary of the results of investigations into the source of hydrocarbon contamination in the North Inlet conducted to date, including but not limited to:
   i. a summary of the investigations, including dates;
   ii. a summary of what is known about the toxicity of North Inlet sediment;
   iii. a description of the types of hydrocarbons known to be present in North Inlet sediment; and,
   iv. a description of known sources of hydrocarbons contamination.
b) a list of all possible additional sources of hydrocarbon contamination and the types of hydrocarbons that may be associated with each source; and,
c) identification of most likely sources of hydrocarbon to the North Inlet.

8. The North Inlet Sludge Management Report referred to in Part H, Item 19, shall include, but not necessarily be limited to, the following:

a) the results of the North Inlet sediment characterization study update;
b) an estimate of the total volume and depth of sediments deposited in the North Inlet since the start of operations, and a prediction of the total volume and depth of sediments at the end of operations;
c) the results of the risk assessment described in Appendix VIII-5 of the approved ICRP;

d) a cost benefit analysis conducted by a third party of the following alternative disposal locations for sludge:

   i. Waste Rock Facility;
   ii. Processed Kimberlite Containment Facility;
   iii. New on-land facility;
   iv. Mixing with cover soils or hydrocarbon contaminated soils;
   v. Underground mine back fill mix;
   vi. North Inlet followed by selective dredging;

   The third party analysis shall assess the costs (financial, environmental, and other) and the benefits (operational, environmental, closure, other) of each alternative, and include a recommendation and rationale regarding the best location for sludge disposal; and,

e) a letter indicating the Licensee’s preferred sludge disposal location, with rationale. If the Licensee proposes to dispose sludge in an alternate location, the letter shall include a schedule for implementing the change, and shall identify any Management Plans that require revisions as a result of the change.
1. The Contingency Plan referred to in Part I, Item 1, of the Licence shall include, but not be necessarily limited to, the following contingencies for:

   a) contingencies for managing Groundwater and Pit Water flows should they become excessive and threaten to exceed treatment plant capacity or storage capacity;

   b) contingencies for the following items:
      i. water management during Construction;
      ii. treatment plant operation and the capacity to ensure the effluent quality criteria are met;
      iii. in-lake Construction activities, including spills of hazardous materials and any plume beyond the 200 metre zone;
      iv. Dam Seepage, reduced capacity, failures of containment facilities, uncontrolled Discharges, metal contamination and threshold limits at which point management action will be taken;
      v. handling of larger volumes of water than expected associated with pit Dewatering, and the capacity of the PKC and North Inlet Facilities;
      vi. hazardous materials storage areas, including spills of fuel and explosive chemical;
      vii. management of water associated with inland lake Dewatering, including poor water quality, and erosion;
      viii. operations of all treatment facilities including: poor treatment performance, toxic effluent, and inadequate diffuser performance;
      ix. stability and drainage control associated with Waste Rock management, including slope failure and poor Seepage quality;
      x. Seepage control systems, including the failure of collection ditches;
      xi. uncontrolled Discharges from Spillways;
      xii. Groundwater contamination; and,
      xiii. solid Waste management.

   c) specific triggers to define when contingency measures are to be implemented;

   d) specific contingency measures to deal with effluent and actions to be taken if effluent exceeds LC20 values due to ammonia in accordance with toxicity testing as required by the Surveillance Network Program annexed to this Licence. If the effluent exceeds LC20 values due to ammonia, the Contingency Plan shall address the following:
      i. in the event of a monthly toxicity test failure, the effluent shall be retested immediately (confirmatory testing);
      ii. if the confirmatory test also fails, the effluent shall be held and a Toxicity Identification Evaluation conducted to determine the cause of the toxicity;
iii. if failure is noted on two (2) tests in any four (4) month period, then the \textbf{Contingency Plan} shall be implemented, the effluent shall be held, and a Toxicity Identification Evaluation conducted;

iv. if the Toxicity Identification Evaluation indicates ammonia is the cause, actions will be taken in accordance with the \textbf{Contingency Plan}, and effluent will continue to be held until it passes an LC20 test;

v. if the Toxicity Identification Evaluation indicates a cause other than ammonia, DDMI will follow the steps identified in the \textbf{Contingency Plan} including continued Toxicity Identification Evaluation; and,

vi. a protocol for undertaking pH adjustments, based on the results of the Toxicity Identification Evaluation.

e) a summary of the Licensee’s current practices for minimizing hydrocarbon contamination;

f) details of improved spill reporting procedures;

g) hydrocarbon management performance tracking including a monitoring program; and,

h) a description of proposed mitigations to minimize hydrocarbon contamination and a schedule for implementation.
SCHEDULE 8
AQUATIC EFFECTS MONITORING

1. The AEMP Design Plan referred to in Part J, Item 2, shall include, but not be limited to, the following:

   a) a process for measuring Project-related effects on the following components of the Receiving Environment:
      i. water quality, quantity, and rate of flow;
      ii. sediment quality; plankton abundance, taxonomic richness, and diversity;
      iii. benthic invertebrate abundance, taxonomic richness, and diversity; and,
      iv. fish health and chemistry;
   b) plume characterization;
   c) a description of the AEMP components including dust monitoring;
   d) a description of the area to be monitored including maps showing all sampling and reference locations in the AEMP;
   e) a description of procedures to minimize the impacts of the AEMP on fish populations and fish habitat;
   f) a description of the approaches to be used to evaluate and adjust the AEMP;
   g) a summary of how Traditional Knowledge has been collected and incorporated into the AEMP, as well as a summary of how Traditional Knowledge will be incorporated into further studies relating to the AEMP;
   h) a description of an AEMP Response Framework which shall include:
      i. definitions, with rationale, for Significance Thresholds and tiered Action Levels applicable to the aquatic Receiving Environment of the Project; and,
      ii. for each Action Level:
         a. a description of the rationale including, but not limited to, a consideration of the predictions and conclusions of the Environmental Assessment as well as AEMP results to date;
         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.
   i) a plain language description of the program objectives, methodology, and interpretative framework; and
   j) a summary of changes to AEMP design since the last approved design and a rationale for the changes.
2. The Specific Effects Studies referred to in Part J, Item 5, are:

   a) in-situ evaluation of Metal Leaching and releases of explosives residues from the Water Retention Dikes;
   b) delineation study of any plumes from the main effluent Discharge;
   c) characterization of the toxicity of the effluent source waters;
   d) validation of nutrient input predictions for Lac de Gras;
   e) evaluation of the effects of dredging, dike Construction, and associated sediment plumes on water quality and biota;
   f) evaluation of contaminant loading and the fate of contaminants in Lac de Gras;
   g) an evaluation of various eutrophication monitoring tools that may be used to evaluate the effects of nutrient releases to Lac de Gras;
   h) an evaluation of the effects of nutrient releases on the algal, benthos, and zooplankton communities and trophic status of Lac de Gras; and,
   i) a site-specific evaluation of the impacts of cadmium on the waters of Lac de Gras.

3. The AEMP Response Plan referred to in Part J, Item 6, shall contain the following information for each parameter that has been reported in the AEMP 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 exceedance;
   b) a summary of how the Action Level exceedance was determined and confirmed;
   c) a description of likely causes of the Action Level exceedance and potential mitigation options if appropriate;
   d) a description of actions to be taken by the Licensee in response to the Action Level exceedance including:
      i. a justification of the selected action(s) which may include a cost/benefit analysis;
      ii. a description of timelines to implement the proposed actions;
      iii. a projection of the environmental response to the planned actions, if appropriate;
      iv. a monitoring plan for tracking the response to the actions, if appropriate; and
      v. a schedule to report on the effectiveness of actions and to update the AEMP Response Plan as required; and,
   e) any other information necessary to assess the response to an Action Level exceedance or that has been requested by the Board.
4. The AEMP Annual Report referred to in Part J, Item 9, shall include, but not be limited to, the following:

   a) a summary of activities conducted under the Aquatic Effects Monitoring Program;
   b) tabular summaries of all data and information generated under the AEMP in an electronic and printed format acceptable to the Board;
   c) An interpretation of the results, including an evaluation of any identified environmental changes that occurred as a result of the Project;
   d) an evaluation of any adaptive management response actions implemented during the year;
   e) recommendations for refining the Aquatic Effects Monitoring Program to improve its effectiveness as required; and,
   f) an evaluation of the overall effectiveness of the Aquatic Effects Monitoring Program to date; and, any other information specified in the approved Aquatic Effects Monitoring Program or that may be requested by the Board.

5. The Aquatic Effects Re-evaluation Report referred to in Part J, Item 10, shall include, but not be limited to, the following:

   a) a review and summary of AEMP data collected to date including a description of overall trends in the data and other key findings of the monitoring program;
   b) an analysis that integrates the results of individual monitoring components (e.g., water quality, fish health, etc.) to date and describes the overall ecological significance of the results;
   c) a comparison of measured Project-related aquatic effects to predictions made during the Environmental Assessment and an evaluation of any differences and lessons learned;
   d) updated predictions of Project-related aquatic effects or impacts from the time of writing to the end of mine life based on AEMP results to date and any other relevant operational monitoring data;
   e) a plain language summary of the major results of the above analyses and a plain language interpretation of the significance of those results;
   f) recommendations, with rationale, for changes to Action Levels as set in the AEMP Design Plan;
   g) recommendations, with rationale, for changes to any other aspect of the AEMP Design Plan; and,
   h) any other information required as requested by the Board.
SCHEDULE 9
CLOSURE AND RECLAMATION

1. The **Closure and Reclamation Plan** referred to in Part K, Item 2, shall include but not be limited to:

   a) contingencies for Pit Water treatment during closure;

   b) dike breach locations and sizes;

   c) a comprehensive assessment of materials suitability, including geochemical and physical characterization, and schedule of availability for Reclamation needs, with attention to top-dressing materials, including maps where appropriate, showing sources and stockpile locations of all Reclamation Construction materials;

   d) a description of any post-closure treatment that may be required for drainage water that is not acceptable for Discharge from any of the reclaimed mine components including a description for handling and disposing of post-closure treatment facility sludges;

   e) a description of the Plan to assess and monitor any Groundwater contamination during post-closure;

   f) a description of how metal uptake in re-vegetated plant communities will be monitored;

   g) a field testing program and an implementation timetable to verify the effectiveness of the proposed impermeable closure cap for the Process Kimberlite Containment Facility and the Waste Rock Storage Area;

   h) an evaluation of the potential to re-vegetate disturbed sites that includes the identification of criteria to be used to determine technical feasibility and alternative Reclamation options;

   i) a description of proposed means to provide long term maintenance of collection system and treatment plant;

   j) a conformance table that identifies the location within the **Interim Closure and Reclamation Plan** where the information required by a) through i) can be found;

   k) Reclamation of aquatic habitat in all areas; and,

   l) the placement of coarse kimberlite material over the Processed Kimberlite Containment slimes, and water handling during placement.

2. The **Annual Closure and Reclamation Plan Progress Report** referred to in Part K, Item 4, shall include but not be limited to:

   a) Report Summary:

      i. Summarize the key aspects of the previous year’s closure and Reclamation planning.

   b) Community Engagement:

      i. Summarize community engagement that was conducted during the previous year and is related to closure and Reclamation.
ii. Provide engagement records, in accordance with the MVLWB’s *Engagement Guidelines for Applicants and Holders of Water Licences and Land Use Permits*.

c) Reclamation Research Update:

For each research plan in the Closure and Reclamation Plan:

i. identify completed tasks and summarize results. Research or study results can be appended to the Annual ICRP Progress Report;

ii. analyse results and provide conclusions, focusing on how the results impact closure activities, objectives, criteria, or other key aspects of the **Closure Plan**;

iii. identify next steps and any proposed changes to research plans;

iv. develop detailed scopes of work for each research task that is within 3 years of implementation; and,

v. update the timelines for the completion of all research tasks.

d) Proposed Changes to Design Concepts:

i. Identify any proposed changes to the preferred closure activities currently outlined in the CRP and provide supporting rationale. Changes to closure activities for any mine components require approval, but will not need to be incorporated directly into the ICRP until the next version. Submit diagrams clearly demonstrating the configuration of any proposed changes to major physical features of the site (e.g., tailings covers, Waste Rock pile configuration, etc.).

e) Closure Objectives and Criteria:

i. Identify any proposed changes to Closure Objectives, including documentation of related engagement; and,

ii. Describe progress on development of Closure Criteria, and outline next steps.

f) Progressive Reclamation:

i. Report any Progressive Reclamation that occurred since submission of the previous version of the CRP. Describe the effectiveness of these activities, and identify any work expected for the upcoming year. Describe how the effectiveness of Progressive Reclamation will be monitored.

ii. Outline of any Progressive Reclamation work anticipated for the next year.

iii. This section should include a discussion about the impacts of leaving the Waste Rock pile uncovered, and provide enough information so that the Board can be confident that there are no unnecessary delays in placing the cover.
g) Schedule:
   i. Discuss whether the current closure planning schedule is on track (e.g., completion of research tasks within the specified timeframes, development of final design concepts, etc.) Identify the key milestones that must be completed within the next three years to ensure closure planning remains on track. Identify any unanticipated delays in the previous year or new threats to timely closure. This is one of the most important sections of the progress report, and the Licensee should provide sufficient detail to demonstrate that the Licensee is on schedule.

h) Other Important Information:
   Any other information related to closure planning. At a minimum, this should include:
   
   i. summary of any operational monitoring results (e.g., PKC Seepage monitoring) that impact closure;
   
   ii. any changes to the estimates of amounts of Reclamation materials that will be available or required;
   
   iii. once research results are available, a description of the effectiveness of potential top-dressing materials for revegetation and the amounts of required top-dressing material. If research on the amounts required are not complete, provide a rough estimate (e.g., as a range) of the total amount of top-dressing that might be required to re-vegetate the site;
   
   iv. a description of any collaboration with Dominion Diamonds Corporation or other companies on closure issues;
   
   v. new industry best practices or corporate requirements related to the mine’s Closure Plan;
   
   vi. a review of updated meteorological data and a discussion of whether the results impact closure planning, in particular as it relates to climate change; and,
   
   vii. improved diagrams of the Waste Rock pile, including cross-sectional diagrams, diagrams clearly demonstrating the scale of the piles, a depiction of possible configurations, information about covers, slopes, wildlife access, vegetation, etc. Include a figure showing the different pockets/areas of types of Waste Rock (including spill contaminated material).

i) Record of Revisions to be made in the next version of the CRP:
   i. Include a list of any CRP changes that the Licensee has proposed and the Board has approved since the previous CRP approval.
Annex 1: Surveillance Network Program

Revision History

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date to be Determined</td>
<td>Sampling Frequency of SNP Station 1645-55, 1645-82, 1645-83, and 1645-84 as per the TSS Amendment approved on enter date of approval</td>
</tr>
</tbody>
</table>

Part A - Reporting Requirements

1. The Licensee shall within 30 days following the month being reported, submit to the Board all data and information in an electronic and printed format acceptable to the Board required by the “Surveillance Network Program” including the results of the approved QA/QC plan.

Part B - Flow and Volume Measurement Requirements

Unless otherwise noted, all flow and volume measurements shall be recorded monthly and recorded in cubic metres.

1. The daily volume of water obtained from Lac de Gras for all purposes.

2. The daily volume of water dewatered from the A21 Pits.

3. The volume of water obtained from all sources for use in the process plant.

4. The volume of effluent recycled from the Processed Kimberlite Containment Facility.

5. The volumes of the solids in tonnes and liquid fractions cubic metres of each Waste pumped to the Processed Kimberlite Containment Facility.

6. The volume of effluent discharged from the Processed Kimberlite Containment Facility.

7. The volume of effluent discharged from the North Inlet Facility to the Treatment Facilities.

8. The daily volume of effluent discharged into Lac de Gras at SNP Station Number 1645-18.

9. The volume of dredged sediments deposited into the Dredged Sediment Containment Facility or the North Inlet Facility.

10. The daily volume of Minewater and seepage pumped from A154, A418 and A21 open pits to the North Inlet Facility and/or Lac de Gras.

11. The daily volume of treated Sewage effluent discharged from the Sewage Disposal Facilities.
12. The volume of Sewage solids removed from the Sewage Disposal Facilities.

13. The volume of water pumped from the run-off ponds to the Processed Kimberlite Containment Facility.

14. The volume of ice or frozen sediments removed from the Pit(s) areas.

15. The daily volume of water dewatered from the inland lakes.

**Part C - Sampling and Analysis Requirements**

1. The field pH, sample temperature, and ambient wind and weather conditions shall be recorded at all locations at the time of sampling.

2. The Licensee shall increase sampling if exceedances of the Effluent Quality Requirements occur or as directed by an Inspector.

3. All sampling, sample preservation and analyses shall be conducted in accordance with methods prescribed in the current edition of “Standards Methods for the Examination of Water and Wastewater”, or by such other methods approved by an Analyst.

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

5. The Licensee shall implement the Quality Assurance/Quality Control QA/QC Plan that includes field and laboratory procedures and requirements as approved by an Analyst under Licence N7L2-1645.

6. The Licensee shall annually review the approved the quality assurance/quality control (QA/QC) plan and modify the Plan as necessary. Proposed revisions shall be submitted to an Analyst for approval.

7. The QA/QC plan referred to in Part F, Items 20 and 21 and shall be implemented as approved by an Analyst.

**NOTES:**

1ICP-MS Metal Scan shall include at a minimum, the following regulated parameters:
Aluminum, Cadmium, Chromium, Copper, Lead, Nickel, Zinc

Once Annually the ICP shall also include the following monitored parameters:
Manganese, Molybdenum, Selenium, Strontium, Uranium

Total metals shall be analyzed unfiltered and dissolved using a 0.45 micron filter

2Major ions include the following parameters:
Calcium, Chloride, Sulphate, Magnesium, Fluoride, Potassium, Alkalinity, Hardness, Total Dissolved Solids

Field parameters include the following measurements:
- pH, Conductivity, Temperature

pH analyzed in the laboratory

Nutrients include the following parameters:
- Total Ammonia, Nitrite-Nitrogen, Nitrate-Nitrogen, Total Kjeldahl Nitrogen, Total Phosphorus, Total Dissolved Phosphorus, Ortho Phosphorus.

**Part D - Other Monitoring Requirements**

1. The Licensee shall measure and record the following data:
   a) Precipitation, measured and recorded in hourly and daily totals;
   b) Evaporation, which is calculated from the parameters list below with hourly and daily averages:
      i. Wind speed at approximately 2.0 meters above the water surface including daily minima and maxima;
      ii. Wind direction on an hourly basis;
      iii. Air temperature at approximately 0.75 and 2.0 metres above the water surface including daily minima and maxima;
      iv. Relative humidity at approximately 0.75 and 2.0 metres above the water surface;
      v. Water temperature at two levels approximately 1 and 2 metre depths;
      vi. Net solar radiation over the water surface; and
      vii. Water level; and
   c) The weather data for evaporation calculations shall be measured and recorded at a site located at or near the PKC Facility as approved by an Inspector.

2. The Licensee shall implement the location, methods, and frequency for measuring and recording the meteorological data identified in Part D, Item 1 of the SNP as approved under Licence N7L2-1645.

3. The methods and frequency referred to in Part D, Item 1 of the SNP shall be implemented as and when approved by the Board.

4. The quantity of ore processed shall be measured in tonnes and recorded monthly.

5. The quantity of Waste Rock, coarse tailings, and till shall be measured in tonnes and recorded monthly and their disposal locations recorded monthly.

6. The Licensee shall install and monitor a minimum of one (1) SNP station for monitoring the Lac de Gras background references for the regulation of the dredging and dike Construction activities. This
station shall not be located near developmental activities or the inlets of any rivers or streams and shall be sampled in accordance with SNP Part B, Item 3.

7. In the event that a second dredge is required during the Construction of the Water Retention Dikes, the Licensee shall establish additional SNP Stations for the second dredge in the same manner as those identified (SNP Stations 1645-66, 1645-67, and 1645-68) for the monitoring of a single dredge. These stations shall be numbered in sequence and monitored in accordance with SNP Station 1645-48.

**Part E – Site Descriptions and Sampling Requirements**

Location of sampling sites and specific monitoring requirements are as follows:

**NOTE:** The description of the SNP Stations is approximate and subject to the approval of an Inspector.

**SNP Site Quick Reference Table**

<table>
<thead>
<tr>
<th>SNP Site #</th>
<th>Description</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1645-1</td>
<td>Mine water Discharge</td>
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<tr>
<td>1645-2</td>
<td>Outflow decant from F1</td>
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</tr>
<tr>
<td>1645-3</td>
<td>Lac de Gras inflow from F1 Wetlands</td>
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</tr>
<tr>
<td>1645-4</td>
<td>Discharge from Sewage Disposal Facility</td>
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<tr>
<td>1645-5</td>
<td>Outflow from disposal pond</td>
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<td>1645-6</td>
<td>Prior to entering Lac de Gras at the stream outflow from the Sewage disposal</td>
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<tr>
<td>1645-7</td>
<td>Upstream of the confluence between the ice scrapings disposal area runoff and the stream from the Sewage outflow</td>
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<tr>
<td>1645-8</td>
<td>Down slope of the semi-permeable dike in D1 drainage way</td>
<td>INACTIVE</td>
</tr>
<tr>
<td>1645-9</td>
<td>Treated mine water pumped directly to Lac de Gras</td>
<td>INACTIVE</td>
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<tr>
<td>1645-10</td>
<td>Station applying to treated Effluent Discharge to monitor Sewage Discharge from North Construction Camp</td>
<td>INACTIVE</td>
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<tr>
<td>1645-11</td>
<td>Sewage Discharge</td>
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<tr>
<td>1645-12</td>
<td>West Cell – North Inlet Facility</td>
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<td>1645-13</td>
<td>North Inlet – Influent prior to treatment</td>
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<td>1645-14</td>
<td>North Inlet Treatment Plant treated effluent prior to mixing with PKC treated effluent</td>
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<tr>
<td>1645-15</td>
<td>Process Plan slurry Discharge to PKC facility</td>
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<td>1645-16</td>
<td>PKC pond water within the PKC</td>
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<td>PKC Treatment Plant Effluent prior to mixing with North Inlet Treatment Plant treated effluent</td>
<td>INACTIVE</td>
</tr>
<tr>
<td>1645-18/18B</td>
<td>Main effluent Discharge to Lac de Gras from NIWTP (point of compliance)</td>
<td>ACTIVE</td>
</tr>
<tr>
<td>1645-19</td>
<td>Effluent mixing zone in Lac de Gras</td>
<td>ACTIVE</td>
</tr>
<tr>
<td>1645-20</td>
<td>Northwest of clarification pond</td>
<td>INACTIVE</td>
</tr>
<tr>
<td>1645-21</td>
<td>West of Clarification pond (drainage course) between Pond 2 and Pond 3.</td>
<td>INACTIVE</td>
</tr>
<tr>
<td>1645-22</td>
<td>North of Quarry and till areas (drainage course) on the South side of North Inlet Facility</td>
<td>INACTIVE</td>
</tr>
<tr>
<td>1645-23</td>
<td>North perimeter road (drainage course) between road and North Inlet</td>
<td>INACTIVE</td>
</tr>
<tr>
<td>Facility</td>
<td>Status</td>
<td></td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>---------</td>
<td></td>
</tr>
<tr>
<td>1645-24 East of perimeter road (drainage course)</td>
<td>INACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-25 East PKC Dike area (drainage course)</td>
<td>INACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-26 West PKC Dike area (drainage course)</td>
<td>INACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-27 Airstrip Drainage Course</td>
<td>INACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-28 Groundwater GW1 between the North Rock Pile and North Inlet</td>
<td>INACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-29 Groundwater GW2</td>
<td>INACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-30 Groundwater GW3 Northwest of Till Disposal Area</td>
<td>INACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-31 Groundwater GW4 West of the PKC</td>
<td>INACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-32 Groundwater – South of PKC, between the Ammonium Nitrate Storage and Pond 7</td>
<td>INACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-33 Groundwater nearest to Bulk Fuel Storage</td>
<td>ACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-34 Near intake structure for De-watering of Lake E1</td>
<td>INACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-35 Near intake structure of De-watering of Lake E6</td>
<td>INACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-36 Near intake structure for De-watering of Lake E7</td>
<td>INACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-37 Near intake structure for De-watering of Lake E8</td>
<td>INACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-38 Near intake structure for De-watering of Lake E10</td>
<td>INACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-39 Near intake structure for De-watering within the dike enclosure of A154</td>
<td>INACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-40 Near intake structure for dike pool watering – A418</td>
<td>INACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-41 A21 SNP Station: Near intake structure for dike pool watering</td>
<td>ACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-42 Collection Pond</td>
<td>ACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-43 A21 SNP Station: Collection Pond</td>
<td>INACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-44 Collection Pond</td>
<td>ACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-45 Collection Pond</td>
<td>ACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-46 Collection Pond</td>
<td>ACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-47 Collection Pond</td>
<td>ACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-48 Clarification pond (Pond 3)</td>
<td>INACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-49 Mine water removed from A154 Pit</td>
<td>INACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-50 Mine water removed from A418 Pit</td>
<td>INACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-51 Sump A21 SNP Station</td>
<td>ACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-52 Seepage collected from inside toe of the A154 Dike</td>
<td>INACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-53 Seepage collected from inside toe of the A418 Dike</td>
<td>INACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-54 A21 SNP Station. Seepage collection from inside toe of A21 Dike.</td>
<td>ACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-55 A21 SNP reference station in Lac de Gras</td>
<td>ACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-56 Station applying to dredging and dike Construction</td>
<td>INACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-57 Station applying to dredging and dike Construction</td>
<td>INACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-58 Station applying to dredging and dike Construction</td>
<td>INACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-59 Station applying to dredging and dike Construction</td>
<td>INACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-60 Station applying to dredging and dike Construction</td>
<td>INACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-61 Station applying to dredging and dike Construction</td>
<td>INACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-62 Station applying to dredging and dike Construction</td>
<td>INACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-63 Station applying to dredging and dike Construction</td>
<td>INACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-64 Station applying to dredging and dike Construction</td>
<td>INACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-65 Station applying to dredging and dike Construction</td>
<td>INACTIVE</td>
<td></td>
</tr>
<tr>
<td>1645-66 Near intake structure for De-watering of North Inlet.</td>
<td>INACTIVE</td>
<td></td>
</tr>
<tr>
<td>Site Code</td>
<td>Description</td>
<td>Status</td>
</tr>
<tr>
<td>----------</td>
<td>------------------------------------------------------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>1645-67</td>
<td>Collection Pond</td>
<td>ACTIVE</td>
</tr>
<tr>
<td>1645-68</td>
<td>Collection Pond</td>
<td>ACTIVE</td>
</tr>
<tr>
<td>1645-69</td>
<td>Collection Pond</td>
<td>ACTIVE</td>
</tr>
<tr>
<td>1645-70</td>
<td>Station applying to dredging and dike Construction</td>
<td>INACTIVE</td>
</tr>
<tr>
<td>1645-71</td>
<td>Station applying to dredging and dike Construction</td>
<td>INACTIVE</td>
</tr>
<tr>
<td>1645-72</td>
<td>Station applying to dredging and dike Construction</td>
<td>INACTIVE</td>
</tr>
<tr>
<td>1645-73</td>
<td>Station applying to dredging and dike Construction</td>
<td>INACTIVE</td>
</tr>
<tr>
<td>1645-74</td>
<td>Collection Pond as described in DDMI’s request for additional SNP sites (December 7, 2006).</td>
<td>ACTIVE</td>
</tr>
<tr>
<td>1645-75</td>
<td>A154/A418 underground water (9290 Pump Station and Dewatering sumps)</td>
<td>ACTIVE</td>
</tr>
<tr>
<td>1645-75b</td>
<td>A154/A418 underground water (9105 Pump Station)</td>
<td>ACTIVE</td>
</tr>
<tr>
<td>1645-76</td>
<td>Collection Pond</td>
<td>ACTIVE</td>
</tr>
<tr>
<td>1645-77</td>
<td>PKC Seepage</td>
<td>ACTIVE</td>
</tr>
<tr>
<td>1645-78</td>
<td>PKC Seepage</td>
<td>ACTIVE</td>
</tr>
<tr>
<td>1645-79</td>
<td>PKC Seepage</td>
<td>ACTIVE</td>
</tr>
<tr>
<td>1645-80</td>
<td>PKC Seepage</td>
<td>ACTIVE</td>
</tr>
<tr>
<td>1645-81</td>
<td>Surface Runoff during Freshet</td>
<td>ACTIVE</td>
</tr>
<tr>
<td>1645-82</td>
<td>A21 SNP reference station in Lac de Gras referred to as A21-A in the CEMP</td>
<td>ACTIVE</td>
</tr>
<tr>
<td>1645-83</td>
<td>A21 SNP reference station in Lac de Gras referred to as A21-B in the CEMP</td>
<td>ACTIVE</td>
</tr>
<tr>
<td>1645-84</td>
<td>A21 SNP reference station in Lac de Gras referred to as A21-C in the CEMP</td>
<td>ACTIVE</td>
</tr>
<tr>
<td>1645-85a</td>
<td>Sludge Sampling from the North Inlet Water Treatment Plant</td>
<td>ACTIVE</td>
</tr>
<tr>
<td>1645-85b</td>
<td>Sludge Sampling from the North Inlet Water Treatment Plant</td>
<td>ACTIVE</td>
</tr>
<tr>
<td>1645-86a</td>
<td>Sludge Sampling from the North Inlet Water Treatment Plant</td>
<td>ACTIVE</td>
</tr>
<tr>
<td>1645-86b</td>
<td>Sludge Sampling from the North Inlet Water Treatment Plant</td>
<td>ACTIVE</td>
</tr>
</tbody>
</table>
### STATIONS APPLYING TO TREATED EFFLUENT DISCHARGE

#### Surveillance Network Program (SNP) Station 1645-11 (Active)

<table>
<thead>
<tr>
<th>Description</th>
<th>Sewage Discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>South Sewage Treatment Plant</td>
</tr>
<tr>
<td>Sampling Frequency</td>
<td>Annually</td>
</tr>
<tr>
<td>Sampling Parameters</td>
<td>BOD&lt;sub&gt;5&lt;/sub&gt;, pH&lt;sub&gt;4&lt;/sub&gt;, Faecal Coliforms, Nutrients&lt;sup&gt;5&lt;/sup&gt;, Oil and Grease, Temperature, Total Suspended Solids</td>
</tr>
<tr>
<td>Rationale for Station</td>
<td>To verify that Sewage treatment planting is operating effectively</td>
</tr>
</tbody>
</table>

#### Surveillance Network Program (SNP) Station 1645-13 (Active)

<table>
<thead>
<tr>
<th>Description</th>
<th>North Inlet – Influent prior to treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>North Inlet Water Treatment Plant</td>
</tr>
<tr>
<td>Sampling Frequency</td>
<td>Every six (6) days</td>
</tr>
<tr>
<td>Sampling Parameters</td>
<td>Total Arsenic, Dissolved Organic Carbon, Dissolved Oxygen, Field Parameters&lt;sup&gt;3&lt;/sup&gt;, ICP-MS Metal Scan&lt;sup&gt;1&lt;/sup&gt;(Total and Dissolved), Major Ions&lt;sup&gt;2&lt;/sup&gt;, pH&lt;sub&gt;4&lt;/sub&gt;, Nutrients&lt;sup&gt;5&lt;/sup&gt;, Total Mercury, Total Organic Carbon, Total Suspended Solids, Turbidity, Total Petroleum Hydrocarbons (TPH)</td>
</tr>
<tr>
<td>Rationale for Station</td>
<td>To monitor influent water quality prior to North Inlet Water Treatment Plant. Helps to determine treatment plant efficiency, and, in the event of poor effluent quality, can help determine the source of the problem. Also provides information regarding water quality in the north inlet, which can inform closure planning.</td>
</tr>
</tbody>
</table>

#### Surveillance Network Program (SNP) Station 1645-16 (Active)

<table>
<thead>
<tr>
<th>Description</th>
<th>PKC pond water within the PKC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>PKC Reclaim Barge</td>
</tr>
<tr>
<td>Sampling Frequency</td>
<td>Sampled Monthly</td>
</tr>
<tr>
<td>Sampling Parameters</td>
<td>Total Arsenic, Dissolved Organic Carbon, Dissolved Oxygen, Field Parameters&lt;sup&gt;3&lt;/sup&gt;, ICP-MS Metal Scan&lt;sup&gt;1&lt;/sup&gt;(Total and Dissolved), Major Ions&lt;sup&gt;2&lt;/sup&gt;, pH&lt;sub&gt;4&lt;/sub&gt;, Nutrients&lt;sup&gt;5&lt;/sup&gt;, Total Mercury, Total Organic Carbon, Total Suspended Solids, Turbidity, Total Petroleum Hydrocarbons (TPH)</td>
</tr>
<tr>
<td>Rationale for Station</td>
<td>Monitor water quality within PKC pond</td>
</tr>
</tbody>
</table>
Surveillance Network Program (SNP) Station 1645-18/18B (Active)

<table>
<thead>
<tr>
<th>Description:</th>
<th>Main effluent Discharge to Lac de Gras from NIWTP (point of compliance)</th>
</tr>
</thead>
</table>
| Location:    | North Inlet Water Treatment Plant  
              | Splitter box location |
| Sampling Frequency: | Every six (6) days  
                                    | Quarterly or monthly |
| Sampling Parameters: | Total Arsenic, Dissolved Organic Carbon, Dissolved Oxygen, Field Parameters, ICP-MS Metal Scan (Total and Dissolved), Major Ions, pH, Nutrients, Total Mercury, Total Organic Carbon, Total Suspended Solids, Turbidity, Total Petroleum Hydrocarbons (TPH)  
                          | Additionally, If effluent from Sewage Treatment Facilities are directed to Lac de Gras...  
                          | Faecal Coliforms, BOD, Oil and Grease |
| Rationale for Station: | This information is required to confirm compliance with EQC, and can also provide information about effectiveness of treatment plant. |

---

\( ^a \) Samples of effluent shall be provided to an accredited bioassay laboratory for the purpose of performing the following acute toxicity tests at the specified frequencies:

i. Tests required under Part H, Item 7 (a) and (b) of the Water Licence shall be performed quarterly unless and until a result of >50% mortality in 100% effluent is obtained for a test organism; at that time the frequency of the acute toxicity test will increase to monthly. If the monthly acute toxicity tests show less than or equal to 50% mortality in 100% effluent for 12 consecutive tests, the frequency of testing can again be reduced to quarterly. Note that acute toxicity for these tests is defined using the LC50 value; the Board may alter this definition for acute toxicity if deemed necessary (e.g., based on results of round whitefish testing). If a result of >50% mortality in 100% effluent is obtained, the Licensee must report both the LC50 and the LC20 values in the SNP reports required under SNP Part E, Item 1.

ii. The Licensee shall submit a revised round whitefish toxicity testing protocol, based on a directive to be provided by the Board. The purpose of the testing is to evaluate the relative sensitivity of round whitefish to ammonia compared to rainbow trout. The Board will provide further instructions regarding toxicity testing with round whitefish following submission of these results to the WLWB; and,

iii. Toxicity test with the amphipod, *Hyalella azteca* according to the testing protocol approved by the Board under Part H, Item 8 of the Licence shall be performed monthly until further notice.

---

\( ^b \) Bioassay samples shall be provided to an accredited bioassay laboratory for the following analyses:

i. Chronic toxicity to the early life stages of salmonid fish (as per Environment Canada’s Environmental Protection Series Biological Test Method EPS/1/RM/28); and
ii. Chronic toxicity to the crustacean, *Ceriodaphnia dubia* (as per Environment Canada’s Environmental Protection Series Biological Test Method EPS/1/RM/21); and

iii. Chronic toxicity to the alga, *Raphidocelis subcapitata* (as per Environment Canada’s Environmental Protection Series Biological Test Method EPS/1/RM/25).

### Surveillance Network Program (SNP) Station 1645-19 (Active)

<table>
<thead>
<tr>
<th>Description:</th>
<th>Effluent mixing zone in Lac de Gras</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
<td>60 meters from the effluent Discharge</td>
</tr>
<tr>
<td>Sampling Frequency:</td>
<td>Water Sampled Monthly at three (3) stations located at a sixty (60) metre radius from the diffuser. Samples shall be collected at surface and at five (5) metre intervals to depth at each station and analyzed&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Sediments sampled annually at each of the three (3) sites</td>
<td></td>
</tr>
<tr>
<td>Sampling Parameters:</td>
<td>Total Arsenic, Dissolved Organic Carbon, Dissolved Oxygen, Field Parameters&lt;sup&gt;d&lt;/sup&gt;, ICP-MS Metal Scan&lt;sup&gt;d&lt;/sup&gt;(Total and Dissolved), Major Ions&lt;sup&gt;e&lt;/sup&gt;, pH&lt;sup&gt;e&lt;/sup&gt;, Nutrients&lt;sup&gt;f&lt;/sup&gt;, Total Mercury, Total Organic Carbon, Total Suspended Solids, Turbidity</td>
</tr>
<tr>
<td>Total Metals (strong acid Digestion), Total Organic Carbon, Simultaneous Extracted Metals&lt;sup&gt;d&lt;/sup&gt;, Acid Volatile Sulphide, Total Ammonia, PAH’s, Hydrogen Sulfide</td>
<td></td>
</tr>
<tr>
<td>Rationale for Station:</td>
<td>To assess whether water quality objectives are being met at the edge of the initial dilution zone.</td>
</tr>
</tbody>
</table>

---

<sup>c</sup> Additionally, monthly water samples must be provided to an accredited bioassay laboratory for the purpose of performing a chronic toxicity test with the amphipod, *Hyalella azteca*, according to the testing protocol approved by the Board under H, Item 9.

<sup>d</sup> Methods for analysis for Simultaneous Extracted Metals and Acid Volatile Sulphide shall be approved by the Analyst.
### STATIONS APPLYING TO SURFACE RUNOFF AND GROUNDWATER

#### Surveillance Network Program (SNP) Station 1645-33 (Active)

<table>
<thead>
<tr>
<th>Description</th>
<th>Groundwater nearest to Bulk Fuel Storage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>South of Main Tank Farm</td>
</tr>
<tr>
<td>Sampling Frequency</td>
<td>Checked weekly for Groundwater flow and sampled monthly.</td>
</tr>
<tr>
<td>Sampling Parameters</td>
<td>Total Ammonia, Field Parameters, ICP-MS Metal Scan, Major Ions, pH, Total Petroleum Hydrocarbons</td>
</tr>
<tr>
<td>Rationale for Station</td>
<td>To monitor water down gradient of Bulk Fuel Storage</td>
</tr>
</tbody>
</table>

#### Surveillance Network Program (SNP) Station 1645-81 (Active)

<table>
<thead>
<tr>
<th>Description</th>
<th>Surface Runoff during Freshet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>Emulsion Plant and Ammonia Nitrate Storage Building</td>
</tr>
<tr>
<td>Sampling Frequency</td>
<td>Checked weekly for Groundwater flow and sampled monthly. Last data collected pre 2008.</td>
</tr>
<tr>
<td>Sampling Parameters</td>
<td>Total Ammonia, Field Parameters, ICP-MS Metal Scan, Major Ions, pH, Total Petroleum Hydrocarbons</td>
</tr>
<tr>
<td>Rationale for Station</td>
<td>To monitor surface runoff water quality and identify the presence of any contaminants from the Emulsion Plant and the Ammonia Nitrate Storage building in the receiving environment</td>
</tr>
</tbody>
</table>

### STATIONS APPLYING TO DEWATERING

#### Surveillance Network Program (SNP) Station 1645-42 (Active)

<table>
<thead>
<tr>
<th>Description</th>
<th>Collection Pond</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>Pond 4</td>
</tr>
<tr>
<td>Sampling Frequency</td>
<td>Monthly if water is present</td>
</tr>
<tr>
<td></td>
<td>Once prior to the commencement of Discharge to Lac de Gras</td>
</tr>
<tr>
<td></td>
<td>Daily during Discharge to Lac de Gras</td>
</tr>
<tr>
<td>Sampling Parameters</td>
<td>Total Ammonia, Field Parameters, ICP-MS Metal Scan, Major Ions, Nitrate, Nitrite, pH, Total Phosphorus, Total Suspended Solids, Turbidity</td>
</tr>
<tr>
<td></td>
<td>Total Petroleum Hydrocarbons (TPH)</td>
</tr>
<tr>
<td></td>
<td>TSS, pH, Turbidity</td>
</tr>
<tr>
<td>Rationale for Station</td>
<td>To monitor water quality of Pond 4</td>
</tr>
</tbody>
</table>

#### Surveillance Network Program (SNP) Station 1645-44 (Active)
<table>
<thead>
<tr>
<th><strong>Description:</strong></th>
<th>Collection Pond</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location:</strong></td>
<td>Pond 7</td>
</tr>
<tr>
<td><strong>Sampling Frequency:</strong></td>
<td>Monthly if water is present</td>
</tr>
<tr>
<td><strong>Sampling Parameters:</strong></td>
<td>Total Ammonia, Field Parameters[^3], ICP-MS Metal Scan[^1], Major Ions[^2], Nitrate, Nitrite, pH[^4], Total Phosphorus, Total Suspended Solids, Turbidity</td>
</tr>
<tr>
<td><strong>Rationale for Station:</strong></td>
<td>Pond 7, commissioned in fall 2009, collects surface runoff from a portion of the road to the ammonium nitrate storage and provides secondary containment for part of the PKC South Cell. Monthly monitoring can be used to identify the source of any effluent quality problems.</td>
</tr>
</tbody>
</table>

**Surveillance Network Program (SNP) Station 1645-45 (Active)**

<table>
<thead>
<tr>
<th><strong>Description:</strong></th>
<th>Collection Pond</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location:</strong></td>
<td>Pond 10</td>
</tr>
<tr>
<td><strong>Sampling Frequency:</strong></td>
<td>Monthly if water is present</td>
</tr>
<tr>
<td><strong>Sampling Parameters:</strong></td>
<td>Total Ammonia, Field Parameters[^3], ICP-MS Metal Scan[^1], Major Ions[^2], Nitrate, Nitrite, pH[^4], Total Phosphorus, Total Suspended Solids, Turbidity</td>
</tr>
<tr>
<td><strong>Rationale for Station:</strong></td>
<td>This pond receives runoff from the plant site area. Monthly monitoring provides information about the chemistry of the runoff and can be used to identify the source of any effluent quality problems.</td>
</tr>
</tbody>
</table>
### Surveillance Network Program (SNP) Station 1645-46 (Active)

<table>
<thead>
<tr>
<th>Description:</th>
<th>Collection Pond</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
<td>Pond 11</td>
</tr>
<tr>
<td>Sampling Frequency:</td>
<td>Monthly if water is present</td>
</tr>
<tr>
<td></td>
<td>Once prior to the commencement of Discharge to Lac de Gras</td>
</tr>
<tr>
<td></td>
<td>Daily during Discharge to Lac de Gras</td>
</tr>
<tr>
<td>Sampling Parameters:</td>
<td>Total Ammonia, Field Parameters(^1), ICP-MS Metal Scan(^1), Major Ions(^2), Nitrate, Nitrite, pH(^3), Total Phosphorus, Total Suspended Solids, Turbidity</td>
</tr>
<tr>
<td></td>
<td>Total Petroleum Hydrocarbons (TPH)</td>
</tr>
<tr>
<td></td>
<td>TSS, pH(^4), Turbidity</td>
</tr>
<tr>
<td>Rationale for Station:</td>
<td>This pond receives runoff from the plant site area. Monthly monitoring provides information about the chemistry of the runoff and can be used to identify the source of any effluent quality problems.</td>
</tr>
</tbody>
</table>

### Surveillance Network Program (SNP) Station 1645-47 (Active)

<table>
<thead>
<tr>
<th>Description:</th>
<th>Collection Pond</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
<td>Pond 12</td>
</tr>
<tr>
<td>Sampling Frequency:</td>
<td>Monthly if water is present</td>
</tr>
<tr>
<td></td>
<td>Once prior to the commencement of Discharge to Lac de Gras</td>
</tr>
<tr>
<td></td>
<td>Daily during Discharge to Lac de Gras</td>
</tr>
<tr>
<td>Sampling Parameters:</td>
<td>Total Ammonia, Field Parameters(^3), ICP-MS Metal Scan(^1), Major Ions(^2), Nitrate, Nitrite, pH(^3), Total Phosphorus, Total Suspended Solids, Turbidity</td>
</tr>
<tr>
<td></td>
<td>Total Petroleum Hydrocarbons (TPH)</td>
</tr>
<tr>
<td></td>
<td>TSS, pH(^4), Turbidity</td>
</tr>
<tr>
<td>Rationale for Station:</td>
<td>This pond receives runoff from the plant site area. Monthly monitoring provides information about the chemistry of the runoff and can be used to identify the source of any effluent quality problems.</td>
</tr>
</tbody>
</table>
### Surveillance Network Program (SNP) Station 1645-67 (Active)

<table>
<thead>
<tr>
<th>Description:</th>
<th>Collection Pond</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
<td>Pond 1</td>
</tr>
<tr>
<td>Sampling Frequency:</td>
<td>Monthly if water is present</td>
</tr>
<tr>
<td></td>
<td>Once prior to the commencement of Discharge to Lac de Gras</td>
</tr>
<tr>
<td></td>
<td>Daily during Discharge to Lac de Gras</td>
</tr>
<tr>
<td>Sampling Parameters:</td>
<td>Total Ammonia, Field Parameters, ICP-MS Metal Scan, Major Ions, Nitrate, Nitrite, pH, Total Phosphorus, Total Suspended Solids, Turbidity</td>
</tr>
<tr>
<td></td>
<td>Total Petroleum Hydrocarbons (TPH)</td>
</tr>
<tr>
<td></td>
<td>TSS, pH, Turbidity</td>
</tr>
<tr>
<td>Rationale for Station:</td>
<td>To monitor water quality of Pond 1. Since this pond collects water from the Waste Rock pile drainage area, the information can be used to identify any issues with Waste Rock pile drainage.</td>
</tr>
</tbody>
</table>

### Surveillance Network Program (SNP) Station 1645-68 (Active)

<table>
<thead>
<tr>
<th>Description:</th>
<th>Collection Pond</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
<td>Pond 2</td>
</tr>
<tr>
<td>Sampling Frequency:</td>
<td>Monthly if water is present</td>
</tr>
<tr>
<td></td>
<td>Once prior to the commencement of Discharge to Lac de Gras</td>
</tr>
<tr>
<td></td>
<td>Daily during Discharge to Lac de Gras</td>
</tr>
<tr>
<td>Sampling Parameters:</td>
<td>Total Ammonia, Field Parameters, ICP-MS Metal Scan, Major Ions, Nitrate, Nitrite, pH, Total Phosphorus, Total Suspended Solids, Turbidity</td>
</tr>
<tr>
<td></td>
<td>Total Petroleum Hydrocarbons (TPH)</td>
</tr>
<tr>
<td></td>
<td>TSS, pH, Turbidity</td>
</tr>
<tr>
<td>Rationale for Station:</td>
<td>To monitor water quality of Pond 2. Since this pond collects water from the Waste Rock pile drainage area, the information can be used to identify any issues with Waste Rock pile drainage.</td>
</tr>
<tr>
<td>Surveillance Network Program (SNP) Station 1645-69 (Active)</td>
<td></td>
</tr>
<tr>
<td>------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>Description:</strong> Collection Pond</td>
<td></td>
</tr>
<tr>
<td><strong>Location:</strong> Pond 5</td>
<td></td>
</tr>
<tr>
<td><strong>Sampling Frequency:</strong> Monthly if water is present</td>
<td></td>
</tr>
<tr>
<td>Once prior to the commencement of Discharge to Lac de Gras</td>
<td></td>
</tr>
<tr>
<td>Daily during Discharge to Lac de Gras</td>
<td></td>
</tr>
<tr>
<td><strong>Sampling Parameters:</strong></td>
<td></td>
</tr>
<tr>
<td>Total Ammonia, Field Parameters(^3), ICP-MS Metal Scan(^1), Major Ions(^2), Nitrate, Nitrite, pH(^4), Total Phosphorus, Total Suspended Solids, Turbidity</td>
<td></td>
</tr>
<tr>
<td>Total Petroleum Hydrocarbons (TPH)</td>
<td></td>
</tr>
<tr>
<td>TSS, pH(^4), Turbidity</td>
<td></td>
</tr>
<tr>
<td><strong>Rationale for Station:</strong> To monitor water quality of Pond 5</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Surveillance Network Program (SNP) Station 1645-74 (Active)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong> Collection Pond as described in DDMI's request for additional SNP sites (December 7, 2006).</td>
</tr>
<tr>
<td><strong>Location:</strong> Pond 13</td>
</tr>
<tr>
<td><strong>Sampling Frequency:</strong> Monthly if water is present</td>
</tr>
<tr>
<td>Once prior to the commencement of Discharge to Lac de Gras</td>
</tr>
<tr>
<td>Daily during Discharge to Lac de Gras</td>
</tr>
<tr>
<td><strong>Sampling Parameters:</strong></td>
</tr>
<tr>
<td>Total Ammonia, Field Parameters(^3), ICP-MS Metal Scan(^1), Major Ions(^2), Nitrate, Nitrite, pH(^4), Total Phosphorus, Total Suspended Solids, Turbidity</td>
</tr>
<tr>
<td>Total Petroleum Hydrocarbons (TPH)</td>
</tr>
<tr>
<td>TSS, pH(^4), Turbidity</td>
</tr>
<tr>
<td><strong>Rationale for Station:</strong> To continuously monitor water quality in Pond 13</td>
</tr>
</tbody>
</table>
## Surveillance Network Program (SNP) Station 1645-76 (Active)

<table>
<thead>
<tr>
<th>Description</th>
<th>Collection Pond</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
<td>Pond 3</td>
</tr>
<tr>
<td>Sampling Frequency:</td>
<td>Once prior to the commencement of the Discharge at a minimum of three (3) stations evenly spaced along a longitudinal transect at the centerline of the clarification pond collected at surface, and at two (2) metre intervals to depth</td>
</tr>
<tr>
<td>Daily during periods of Discharge</td>
<td>Every two (2) weeks during periods of Discharge and once on the final day of Discharge</td>
</tr>
<tr>
<td>Sampling Parameters:</td>
<td>pH, Field Parameters, ICP-MS Metal Scan (Total), Major Ions, Total Ammonia, Nitrite, Total Petroleum Hydrocarbons (TPH), Total Suspended Solids, Turbidity</td>
</tr>
<tr>
<td>Rationale for Station:</td>
<td>To monitor water quality of Pond 3, replacing SNP station 1645-48. Since this pond collects water from the Waste Rock pile drainage area, the information can be used to identify any issues with Waste Rock pile drainage.</td>
</tr>
</tbody>
</table>

### STATIONS APPLYING TO DREDGING AND DIKE CONSTRUCTION

## Surveillance Network Program (SNP) Station 1645-75 (Active)

<table>
<thead>
<tr>
<th>Description</th>
<th>A154/A418 underground water (9290 Pump Station and Dewatering sumps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
<td>North Inlet Water Treatment Plant</td>
</tr>
<tr>
<td>Sampling Frequency:</td>
<td>Every two (2) weeks</td>
</tr>
<tr>
<td>Sampling Parameters:</td>
<td>Field Parameters, ICP-MS Metal Scan (Total), Major Ions, Nutrients, pH, Total Suspended Solids, Turbidity, Total Petroleum Hydrocarbons</td>
</tr>
<tr>
<td>Rationale for Station:</td>
<td>This information helps understand how Minewater affects the quality of Water entering the treatment plant, provides information on the changes in Minewater quality over time and may inform closure planning.</td>
</tr>
</tbody>
</table>

## Surveillance Network Program (SNP) Station 1645-75b (Active)
**Description:** A154/A418 underground water (9105 Pump Station)

**Location:** Fresh Air Raise/Return Air Riser

**Sampling Frequency:** Every two (2) weeks

**Sampling Parameters:** Field Parameters\(^3\), ICP-MS Metal Scan\(^4\) (Total), Major Ions\(^2\), Nutrients\(^5\), pH\(^4\), Total Suspended Solids, Turbidity, Total Petroleum Hydrocarbons (TPH)

**Rationale for Station:** This information helps understand how Minewater affects the quality of Water entering the treatment plant, provides information on the changes in Minewater quality over time and may inform closure planning.

### STATIONS APPLYING TO THE PROCESSED KIMBERLITE CONTAINMENT FACILITY

**Surveillance Network Program (SNP) Station 1645-77 (Active)**

<table>
<thead>
<tr>
<th>Description:</th>
<th>PKC Seepage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
<td>East PKC Dam</td>
</tr>
<tr>
<td>Sampling Frequency:</td>
<td>Checked weekly, sampled monthly</td>
</tr>
<tr>
<td>Sampling Parameters:</td>
<td>Total Arsenic, Dissolved Organic Carbon, Dissolved Oxygen, Field Parameters(^3), ICP-MS Metal Scan(^1) (Total and Dissolved), Major Ions(^2), pH(^4), Nutrients(^5), Total Mercury, Total Organic Carbon, Total Suspended Solids, Turbidity</td>
</tr>
<tr>
<td>Rationale for Station:</td>
<td>To monitor PKC Seepage chemistry</td>
</tr>
</tbody>
</table>

**Surveillance Network Program (SNP) Station 1645-78 (Active)**

<table>
<thead>
<tr>
<th>Description:</th>
<th>PKC Seepage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
<td>East PKC Dam</td>
</tr>
<tr>
<td>Sampling Frequency:</td>
<td>Checked weekly, sampled monthly</td>
</tr>
<tr>
<td>Sampling Parameters:</td>
<td>Total Arsenic, Dissolved Organic Carbon, Dissolved Oxygen, Field Parameters(^3), ICP-MS Metal Scan(^1) (Total and Dissolved), Major Ions(^2), pH(^4), Nutrients(^5), Total Mercury, Total Organic Carbon, Total Suspended Solids, Turbidity</td>
</tr>
<tr>
<td>Rationale for Station:</td>
<td>To monitor PKC Seepage chemistry</td>
</tr>
</tbody>
</table>
Surveillance Network Program (SNP) Station 1645-79 (Active)

Description: PKC Seepage
Location: South PKC Dam
Sampling Frequency: Checked weekly, sampled monthly.
Sampling Parameters: Total Arsenic, Dissolved Organic Carbon, Dissolved Oxygen, Field Parameters, ICP-MS Metal Scan (Total and Dissolved), Major Ions, pH, Nutrients, Total Mercury, Total Organic Carbon, Total Suspended Solids, Turbidity
Rationale for Station: To monitor PKC Seepage chemistry

Surveillance Network Program (SNP) Station 1645-80 (Active)

Description: PKC Seepage
Location: West PKC Dam
Sampling Frequency: Checked weekly, sampled monthly.
Sampling Parameters: Total Arsenic, Dissolved Organic Carbon, Dissolved Oxygen, Field Parameters, ICP-MS Metal Scan (Total and Dissolved), Major Ions, pH, Nutrients, Total Mercury, Total Organic Carbon, Total Suspended Solids, Turbidity
Rationale for Station: To monitor PKC Seepage chemistry

STATIONS APPLYING TO THE SLUDGE SAMPLING PROGRAM

Surveillance Network Program (SNP) Station 1645-85a (Active)

Description: Sludge Sampling from the North Inlet Water Treatment Plant
Location: Clarifier 1, North Inlet Water Treatment Plant
Sampling Frequency: Every two (2) weeks
Sampling Parameters: Total Petroleum Hydrocarbons (TPH)
Rationale for Station: To monitor hydrocarbon levels in North Inlet Water Treatment Plant sludge to ensure sediment and water quality is suitable for aquatic life

Surveillance Network Program (SNP) Station 1645-85b (Active)

Description: Sludge Sampling from the North Inlet Water Treatment Plant
Location: Clarifier 2, North Inlet Water Treatment Plant
Sampling Frequency: Every two (2) weeks
Sampling Parameters: Total Petroleum Hydrocarbons (TPH)
| Rationale for Station: | To monitor hydrocarbon levels in North Inlet Water Treatment Plant Sludge to ensure sediment and water quality is suitable for aquatic life |

**Surveillance Network Program (SNP) Station 1645-86a (Active)**

| Description: | Sludge Sampling from the North Inlet Water Treatment Plant |
| Location: | Clarifier 3, North Inlet Water Treatment Plant |
| Sampling Frequency: | Every two (2) weeks |
| Sampling Parameters: | Total Petroleum Hydrocarbons (TPH) |
| Rationale for Station: | To monitor hydrocarbon levels in North Inlet Water Treatment Plant Sludge to ensure sediment and water quality is suitable for aquatic life |

**Surveillance Network Program (SNP) Station 1645-86b (Active)**

| Description: | Sludge Sampling from the North Inlet Water Treatment Plant |
| Location: | Clarifier 4, North Inlet Water Treatment Plant |
| Sampling Frequency: | Every two (2) weeks |
| Sampling Parameters: | Total Petroleum Hydrocarbons (TPH) |
| Rationale for Station: | To monitor hydrocarbon levels in North Inlet Water Treatment Plant Sludge to ensure sediment and water quality is suitable for aquatic life |

**STATIONS APPLYING TO THE A21 DEVELOPMENT**

**Surveillance Network Program (SNP) Station 1645-41 (Active)**

<p>| Description: | A21 SNP Station: Near intake structure for dike pool watering |
| Location: | A21 |
| Sampling Frequency: | Once prior to commencement of Discharge at a minimum of five (5) stations evenly spaced along a longitudinal transect as approved by an Inspector. At each station, samples must be collected at surface and at two (2) metre intervals Daily during Dewatering Every six (6) days during Dewatering Once on the final day of Dewatering at each of the five (5) sites |
| Sampling Parameters: | pH, Field Parameters, ICP-MS Metal Scan(Total), Major Ions, Total Suspended Solids, Turbidity, Nutrients, Total pH, Total Suspended Solids, Turbidity, Total Field Parameters, ICP-MS Metal Scan(Total), |</p>
<table>
<thead>
<tr>
<th></th>
<th>Petroleum Hydrocarbons (TPH)</th>
<th>Phosphorus Major Ions, Nutrients&lt;sup&gt;5&lt;/sup&gt;, Total Petroleum Hydrocarbons (TPH)</th>
<th>Major Ions&lt;sup&gt;2&lt;/sup&gt;, Total Suspended Solids, Turbidity, Nutrients&lt;sup&gt;5&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Note:</td>
<td>Additional sampling may be required at the request of an Inspector.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rationale for Station:</td>
<td>To monitor water quality during A21 development</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Surveillance Network Program (SNP) Station 1645-51 (Active)

<table>
<thead>
<tr>
<th>Description:</th>
<th>Sump A21 SNP Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
<td>A21 Open Pit</td>
</tr>
<tr>
<td>Sampling Frequency:</td>
<td>Every two (2) weeks Note: Will only apply at the time A21 Pit is developed</td>
</tr>
<tr>
<td>Sampling Parameters:</td>
<td>Field Parameters&lt;sup&gt;3&lt;/sup&gt;, ICP-MS Metal Scan&lt;sup&gt;1&lt;/sup&gt;(Total), Major Ions&lt;sup&gt;2&lt;/sup&gt;, Nutrients&lt;sup&gt;5&lt;/sup&gt;, pH&lt;sup&gt;4&lt;/sup&gt;, Total Suspended Solids, Turbidity, Total Petroleum Hydrocarbons (TPH)</td>
</tr>
<tr>
<td>Rationale for Station:</td>
<td>To monitor water quality during A21 development</td>
</tr>
</tbody>
</table>

### Surveillance Network Program (SNP) Station 1645-54 (Active)

<table>
<thead>
<tr>
<th>Description:</th>
<th>A21 SNP Station. Seepage collection from inside toe of A21 Dike.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
<td>To be determined</td>
</tr>
<tr>
<td>Sampling Frequency:</td>
<td>Once prior to Discharge Note: Will only apply when A21 pit is developed Daily during Discharge:</td>
</tr>
<tr>
<td>Sampling Parameters:</td>
<td>Total Ammonia, pH&lt;sup&gt;4&lt;/sup&gt;, Field Parameters&lt;sup&gt;3&lt;/sup&gt;, ICP-MS Metal Scan&lt;sup&gt;1&lt;/sup&gt;(Total), Major Ions&lt;sup&gt;2&lt;/sup&gt;, Nutrients&lt;sup&gt;5&lt;/sup&gt;, Turbidity, Total Suspended Solids, Total Dissolved Solids, Total Petroleum Hydrocarbons (TPH) Field Parameters&lt;sup&gt;3&lt;/sup&gt;, Total Suspended Solids, Total Phosphorus, Turbidity, Total Ammonia</td>
</tr>
<tr>
<td>Rationale for Station:</td>
<td>To monitor water quality during A21 development</td>
</tr>
</tbody>
</table>

### Surveillance Network Program (SNP) Station 1645-55 (Active)

<table>
<thead>
<tr>
<th>Description:</th>
<th>A21 SNP reference station in Lac de Gras</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
<td>Northing: 7151091, Easting: 537393</td>
</tr>
<tr>
<td>Sampling Frequency:</td>
<td>Sample daily using approved depth integrated sampler (provided safe</td>
</tr>
</tbody>
</table>

---

*W201SL2-0001 Surveillance Network Program, Amended [INSERT DATE OF AMENDMENT], 2016   Page 19 of 37*
Sample daily using depth-integrated sampler. If a TSS sample is not available (due to unsafe boating conditions) it may be estimated from the average of the results obtained the day(s) prior to and the day(s) following the day(s) that sample(s) could not be collected. For TSS samples not available prior to the commencement of open-water sampling, a value of 1.0 mg/L is to be used as the result at 1645-55, and 1645-82 to 1645-84 inclusive, for determination of the 30 day average value.

### Sampling Parameters:
- Total Suspended Solids, Turbidity

### Rationale for Station:
Reference station for regulation of dredging and dike Construction activities during A21 development

#### Surveillance Network Program (SNP) Station 1645-82 (Active)

<table>
<thead>
<tr>
<th>Description</th>
<th>A21 SNP reference station in Lac de Gras referred to as A21-A in the CEMP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>200 m from the dike center line</td>
</tr>
<tr>
<td>Sampling Frequency:</td>
<td>Sample daily using approved depth integrated sampler (provided safe boating conditions)</td>
</tr>
</tbody>
</table>

#### Surveillance Network Program (SNP) Station 1645-83 (Active)

<table>
<thead>
<tr>
<th>Description</th>
<th>A21 SNP reference station in Lac de Gras referred to as A21-B in the CEMP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>200 m from the dike center line</td>
</tr>
<tr>
<td>Sampling Frequency:</td>
<td>Sample daily using approved depth integrated sampler (provided safe boating conditions)</td>
</tr>
</tbody>
</table>
Sampling Parameters: Total Suspended Solids, Turbidity
Rationale for Station: Reference Station during A21 development

**Surveillance Network Program (SNP) Station 1645-84 (Active)**

<table>
<thead>
<tr>
<th>Description</th>
<th>A21 SNP reference station in Lac de Gras referred to as A21-C in the CEMP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>200 m from the dike center line</td>
</tr>
<tr>
<td>Sampling Frequency</td>
<td>Sample daily using approved depth integrated sampler (provided safe boating conditions) Sample daily using depth-integrated sampler. If a TSS sample is not available (due to unsafe boating conditions) it may be estimated from the average of the results obtained the day(s) prior to and the day(s) following the day(s) that sample(s) could not be collected. For TSS samples not available prior to the commencement of open-water sampling, a value of 1.0 mg/L is to be used as the result at 1645-55, and 1645-82 to 1645-84 inclusive, for determination of the 30 day average value.</td>
</tr>
<tr>
<td>Sampling Parameters:</td>
<td>Total Suspended Solids, Turbidity</td>
</tr>
<tr>
<td>Rationale for Station:</td>
<td>Reference Station during A21 development</td>
</tr>
</tbody>
</table>

**INACTIVE STATIONS**

**Surveillance Network Program (SNP) Station 1645-1 (Inactive)**

<table>
<thead>
<tr>
<th>Description</th>
<th>Minewater Discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rationale for Status</td>
<td>Class “B” Licence no longer active</td>
</tr>
</tbody>
</table>

**Surveillance Network Program (SNP) Station 1645-2 (Inactive)**

<table>
<thead>
<tr>
<th>Description</th>
<th>Outflow decant from F1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rationale for Status</td>
<td>Class “B” Licence no longer active</td>
</tr>
</tbody>
</table>

**Surveillance Network Program (SNP) Station 1645-3 (Inactive)**

<table>
<thead>
<tr>
<th>Description</th>
<th>Lac de Gras inflow from F1 Wetlands</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rationale for Status</td>
<td>Class “B” Licence no longer active</td>
</tr>
</tbody>
</table>

**Surveillance Network Program (SNP) Station 1645-4 (Inactive)**

<table>
<thead>
<tr>
<th>Description</th>
<th>Discharge from Sewage Disposal Facility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rationale for Status</td>
<td>Class “B” Licence no longer active</td>
</tr>
</tbody>
</table>
### Surveillance Network Program (SNP) Station 1645-5 (Inactive)

<table>
<thead>
<tr>
<th>Description</th>
<th>Outflow from disposal pond</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rationale for Status</td>
<td>Class “B” Licence no longer active</td>
</tr>
</tbody>
</table>

### Surveillance Network Program (SNP) Station 1645-6 (Inactive)

<table>
<thead>
<tr>
<th>Description</th>
<th>Prior to entering Lac de Gras at the stream outflow from the Sewage disposal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rationale for Status</td>
<td>Class “B” Licence no longer active</td>
</tr>
</tbody>
</table>

### Surveillance Network Program (SNP) Station 1645-7 (Inactive)

<table>
<thead>
<tr>
<th>Description</th>
<th>Upstream of the confluence between the ice scrapings disposal area runoff and the stream from the Sewage outflow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rationale for Status</td>
<td>Class “B” Licence no longer active</td>
</tr>
</tbody>
</table>

### Surveillance Network Program (SNP) Station 1645-8 (Inactive)

<table>
<thead>
<tr>
<th>Description</th>
<th>Down slope of the semi-permeable dike in D1 drainage way</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rationale for Status</td>
<td>Class “B” Licence no longer active</td>
</tr>
</tbody>
</table>

### Surveillance Network Program (SNP) Station 1645-9 (Inactive)

<table>
<thead>
<tr>
<th>Description</th>
<th>Treated Minewater pumped directly to Lac de Gras</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rationale for Status</td>
<td>Class “B” Licence no longer active</td>
</tr>
</tbody>
</table>

### Surveillance Network Program (SNP) Station 1645-10 (Inactive)

<table>
<thead>
<tr>
<th>Description</th>
<th>Station applying to treated Effluent Discharge to monitor Sewage Discharge from North Construction Camp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rationale for Status</td>
<td>Class “B” Licence no longer active</td>
</tr>
</tbody>
</table>

### Surveillance Network Program (SNP) Station 1645-12 (Inactive)

<table>
<thead>
<tr>
<th>Description</th>
<th>West Cell – North Inlet Facility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>N/A</td>
</tr>
<tr>
<td>Sampling Frequency</td>
<td>Monthly</td>
</tr>
<tr>
<td>Sampling Parameters</td>
<td>Total Ammonia, Turbidity, Field Parameters³, Nitrate, Total Suspended Solids, Nitrate, Total Phosphorus, ICP-MS Metal Scan¹ (Total), Major Ions², pH⁴</td>
</tr>
<tr>
<td><strong>Rationale for Station:</strong></td>
<td>Station applying to treated Effluent Discharge to monitor water in the West Cell of the North Inlet Facility</td>
</tr>
<tr>
<td>---------------------------</td>
<td>---------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Rationale for Status:</strong></td>
<td>West dike never constructed, intermediate SNP station deemed unnecessary.</td>
</tr>
</tbody>
</table>

**Surveillance Network Program (SNP) Station 1645-14 (Inactive)**

<table>
<thead>
<tr>
<th><strong>Description:</strong></th>
<th>North Inlet Treatment Plant treated effluent prior to mixing with PKC treated effluent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location:</strong></td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Sampling Frequency:</strong></td>
<td>Every (6) days during periods of Discharge to Lac de Gras</td>
</tr>
<tr>
<td><strong>Sampling Parameters:</strong></td>
<td>Total Arsenic, Dissolved Organic Carbon, Dissolved Oxygen, Field Parameters, ICP-MS Metal Scan (Total and Dissolved), Major Ions, pH, Nutrients, Total Mercury, Total Organic Carbon, Total Suspended Solids, Turbidity</td>
</tr>
<tr>
<td><strong>Rationale for Station:</strong></td>
<td>Station applying to treated Effluent Discharge to monitor water quality of treated effluent.</td>
</tr>
<tr>
<td><strong>Rationale for Status:</strong></td>
<td>Station was never established</td>
</tr>
</tbody>
</table>

**Surveillance Network Program (SNP) Station 1645-15 (Inactive)**

<table>
<thead>
<tr>
<th><strong>Description:</strong></th>
<th>Process Plan slurry Discharge to PKC facility</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location:</strong></td>
<td>Process Plant</td>
</tr>
<tr>
<td><strong>Sampling Frequency:</strong></td>
<td>Sampled monthly during periods of Discharge</td>
</tr>
<tr>
<td><strong>Sampling Parameters:</strong></td>
<td>Volume Percent Solids</td>
</tr>
<tr>
<td><strong>Rationale for Station:</strong></td>
<td>Station applying to treated Effluent Discharge to monitor slurry Discharge.</td>
</tr>
<tr>
<td><strong>Rationale for Status:</strong></td>
<td>Diavik proposes to move SNP Station 1645-15 to Section C, Flow and Volume Measurement Requirements as it would support other measurements of the Surveillance Network Program.</td>
</tr>
</tbody>
</table>

**Surveillance Network Program (SNP) Station 1645-17 (Inactive)**

<table>
<thead>
<tr>
<th><strong>Description:</strong></th>
<th>PKC Treatment Plant Effluent prior to mixing with North Inlet Treatment Plant treated effluent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location:</strong></td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Sampling Frequency:</strong></td>
<td>Every six (6) days</td>
</tr>
<tr>
<td><strong>Sampling Frequency:</strong></td>
<td>Quarterly</td>
</tr>
</tbody>
</table>

**Surveillance Network Program (SNP) Station 1645-14 (Inactive)**

<table>
<thead>
<tr>
<th><strong>Description:</strong></th>
<th>North Inlet Treatment Plant treated effluent prior to mixing with PKC treated effluent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location:</strong></td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Sampling Frequency:</strong></td>
<td>Every (6) days during periods of Discharge to Lac de Gras</td>
</tr>
<tr>
<td><strong>Sampling Parameters:</strong></td>
<td>Total Arsenic, Dissolved Organic Carbon, Dissolved Oxygen, Field Parameters, ICP-MS Metal Scan (Total and Dissolved), Major Ions, pH, Nutrients, Total Mercury, Total Organic Carbon, Total Suspended Solids, Turbidity</td>
</tr>
<tr>
<td><strong>Rationale for Station:</strong></td>
<td>Station applying to treated Effluent Discharge to monitor water quality of treated effluent.</td>
</tr>
<tr>
<td><strong>Rationale for Status:</strong></td>
<td>Station was never established</td>
</tr>
</tbody>
</table>

**Surveillance Network Program (SNP) Station 1645-15 (Inactive)**

<table>
<thead>
<tr>
<th><strong>Description:</strong></th>
<th>Process Plan slurry Discharge to PKC facility</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location:</strong></td>
<td>Process Plant</td>
</tr>
<tr>
<td><strong>Sampling Frequency:</strong></td>
<td>Sampled monthly during periods of Discharge</td>
</tr>
<tr>
<td><strong>Sampling Parameters:</strong></td>
<td>Volume Percent Solids</td>
</tr>
<tr>
<td><strong>Rationale for Station:</strong></td>
<td>Station applying to treated Effluent Discharge to monitor slurry Discharge.</td>
</tr>
<tr>
<td><strong>Rationale for Status:</strong></td>
<td>Diavik proposes to move SNP Station 1645-15 to Section C, Flow and Volume Measurement Requirements as it would support other measurements of the Surveillance Network Program.</td>
</tr>
</tbody>
</table>

**Surveillance Network Program (SNP) Station 1645-17 (Inactive)**

<table>
<thead>
<tr>
<th><strong>Description:</strong></th>
<th>PKC Treatment Plant Effluent prior to mixing with North Inlet Treatment Plant treated effluent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location:</strong></td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Sampling Frequency:</strong></td>
<td>Every six (6) days</td>
</tr>
<tr>
<td><strong>Sampling Frequency:</strong></td>
<td>Quarterly</td>
</tr>
</tbody>
</table>
### Sampling Parameters:
- Total Arsenic, Dissolved Organic Carbon, Dissolved Oxygen, Field Parameters³, ICP-MS Metal Scan¹ (Total and Dissolved), Major Ions², pH⁴, Nutrients⁵, Total Mercury, Total Organic Carbon, Total Suspended Solids, Turbidity
- BOD₅, Faecal Coliforms, Total Petroleum Hydrocarbons (TPH)

### Rationale for Station:
- To monitor PKC Effluent water quality

### Rationale for Status:
- The PKC Effluent is discharged into North Inlet and the two treated effluent streams do not mix

### Surveillance Network Program (SNP) Station 1645-20 (Inactive)

<table>
<thead>
<tr>
<th>Description:</th>
<th>Northwest of clarification pond</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
<td>NW of Pond 2</td>
</tr>
<tr>
<td>Sampling Frequency:</td>
<td>Checked weekly, sampled monthly. Last data collected in August 2009.</td>
</tr>
<tr>
<td>Sampling Parameters:</td>
<td>N/A</td>
</tr>
<tr>
<td>Rationale for Station:</td>
<td>To monitor Groundwater down gradient of Water Retention Structures.</td>
</tr>
<tr>
<td>Rationale for Status:</td>
<td>Lack of data from current Station. SNP station will be replaced by monitoring requirements in SNP Part D, Item 8.</td>
</tr>
</tbody>
</table>

### Surveillance Network Program (SNP) Station 1645-21 (Inactive)

<table>
<thead>
<tr>
<th>Description:</th>
<th>West of Clarification pond (drainage course) between Pond 2 and Pond 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
<td>West of Ponds 2 and 3</td>
</tr>
<tr>
<td>Sampling Frequency:</td>
<td>Checked weekly, sampled monthly. Last data collected in August 2009</td>
</tr>
<tr>
<td>Sampling Parameters:</td>
<td>N/A</td>
</tr>
<tr>
<td>Rationale for Station:</td>
<td>To monitor Groundwater down gradient of Water Retention Structures.</td>
</tr>
<tr>
<td>Rationale for Status:</td>
<td>Lack of data from current Station. SNP station will be replaced by monitoring requirements in SNP Part D, Item 8.</td>
</tr>
</tbody>
</table>

### Surveillance Network Program (SNP) Station 1645-22 (Inactive)

<table>
<thead>
<tr>
<th>Description:</th>
<th>North of Quarry and till areas (drainage course) on the South side of North Inlet Facility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
<td>North of Till Stockpile</td>
</tr>
<tr>
<td>Sampling Frequency:</td>
<td>Checked weekly, sampled monthly. Last data collected in October 2008</td>
</tr>
<tr>
<td>Sampling Parameters:</td>
<td>N/A</td>
</tr>
<tr>
<td>Rationale for Station:</td>
<td>To monitor potential surface ARD</td>
</tr>
</tbody>
</table>
Rationale for Status: To date, there has not been any observed Seepage from the NCRP. Any Seepage event will be reported in the Annual Seepage Report.

**Surveillance Network Program (SNP) Station 1645-23 (Inactive)**

<table>
<thead>
<tr>
<th>Description</th>
<th>North perimeter road (drainage course) between road and North Inlet Facility.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>North of Waste Rock Pile</td>
</tr>
<tr>
<td>Sampling Frequency</td>
<td>Checked weekly, sampled monthly. Last data collected in October 2011.</td>
</tr>
<tr>
<td>Sampling Parameters</td>
<td>N/A</td>
</tr>
<tr>
<td>Rationale for Station</td>
<td>To monitor potential surface ARD</td>
</tr>
<tr>
<td>Rationale for Status</td>
<td>To date, there has not been any observed Seepage from the NCRP. Any Seepage event will be reported in the Annual Seepage Report.</td>
</tr>
</tbody>
</table>

**Surveillance Network Program (SNP) Station 1645-24 (Inactive)**

<table>
<thead>
<tr>
<th>Description</th>
<th>East of perimeter road (drainage course)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>South of Pond 1</td>
</tr>
<tr>
<td>Sampling Frequency</td>
<td>Checked weekly, sampled monthly. Last data collected pre 2008.</td>
</tr>
<tr>
<td>Sampling Parameters</td>
<td>N/A</td>
</tr>
<tr>
<td>Rationale for Station</td>
<td>To monitor surface runoff and Seepage down gradient of Water Retention structures.</td>
</tr>
<tr>
<td>Rationale for Status</td>
<td>Lack of data from current Station. SNP station will be replaced by monitoring requirements in SNP Part D, Item 8.</td>
</tr>
</tbody>
</table>

**Surveillance Network Program (SNP) Station 1645-25 (Inactive)**

<table>
<thead>
<tr>
<th>Description</th>
<th>East PKC Dike area (drainage course)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>East of Pond 5 towards the bay</td>
</tr>
<tr>
<td>Sampling Frequency</td>
<td>Checked weekly, sampled monthly. Last data collected in September 2008.</td>
</tr>
<tr>
<td>Sampling Parameters</td>
<td>N/A</td>
</tr>
<tr>
<td>Rationale for Station</td>
<td>To monitor surface runoff and Seepage down gradient of Water Retention Structures</td>
</tr>
<tr>
<td>Rationale for Status</td>
<td>Lack of data from current Station. SNP station will be replaced by monitoring requirements in SNP Part D, Item 8.</td>
</tr>
</tbody>
</table>

**Surveillance Network Program (SNP) Station 1645-26 (Inactive)**
<table>
<thead>
<tr>
<th>Description</th>
<th>West PKC Dike area (drainage course)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
<td>West side of Pond 4</td>
</tr>
<tr>
<td>Sampling Frequency:</td>
<td>Checked weekly, sampled monthly. Last data collected in September 2008</td>
</tr>
<tr>
<td>Sampling Parameters:</td>
<td>N/A</td>
</tr>
<tr>
<td>Rationale for Station:</td>
<td>To monitor surface runoff and Seepage down gradient of Water Retention Structures</td>
</tr>
<tr>
<td>Rationale for Status:</td>
<td>Lack of data from current Station. SNP station will be replaced by monitoring requirements in SNP Part D, Item 8.</td>
</tr>
</tbody>
</table>

**Surveillance Network Program (SNP) Station 1645-27 (Inactive)**

<table>
<thead>
<tr>
<th>Description:</th>
<th>Airstrip Drainage Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
<td>North of Airstrip</td>
</tr>
<tr>
<td>Sampling Frequency:</td>
<td>N/A</td>
</tr>
<tr>
<td>Sampling Parameters:</td>
<td>N/A</td>
</tr>
<tr>
<td>Rationale for Station:</td>
<td>Station applying to surface runoff and Groundwater to monitor water quality of drainage course</td>
</tr>
<tr>
<td>Rationale for Status:</td>
<td>Drainage course dried up following Construction of airstrip</td>
</tr>
</tbody>
</table>

**Surveillance Network Program (SNP) Station 1645-28 (Inactive)**

<table>
<thead>
<tr>
<th>Description:</th>
<th>Groundwater GW1 between the North Rock Pile and North Inlet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
<td>North of Waste Rock Pile</td>
</tr>
<tr>
<td>Sampling Frequency:</td>
<td>Checked weekly for Groundwater flow and sampled monthly. Last data collected Pre 2008.</td>
</tr>
<tr>
<td>Sampling Parameters:</td>
<td>Total Ammonia, Field Parameters², ICP-MS Metal Scan¹(Total), Major Ions², pH², Total Petroleum Hydrocarbons</td>
</tr>
<tr>
<td>Rationale for Station:</td>
<td>To monitor potential Groundwater ARD</td>
</tr>
<tr>
<td>Rationale for Status:</td>
<td>To date, there has not been any observed Seepage from the NCRP. Any Seepage event will be reported in the Annual Seepage Report.</td>
</tr>
</tbody>
</table>

**Surveillance Network Program (SNP) Station 1645-29 (Inactive)**

<table>
<thead>
<tr>
<th>Description:</th>
<th>Groundwater GW2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
<td>North of Pond 2</td>
</tr>
<tr>
<td>Sampling Frequency:</td>
<td>Checked weekly for Groundwater flow and sampled monthly. Last data collected Pre 2008.</td>
</tr>
</tbody>
</table>

### Sampling Parameters:
- Total Ammonia, Field Parameters<sup>3</sup>, ICP-MS Metal Scan<sup>1</sup>(Total), Major Ions<sup>2</sup>, pH<sup>4</sup>, Total Petroleum Hydrocarbons

### Rationale for Station:
- To monitor Groundwater down gradient of Water Retention Structures

### Rationale for Status:
- Lack of data from current Station. SNP station will be replaced by monitoring requirements in SNP Part D, Item 8.

### Surveillance Network Program (SNP) Station 1645-30 (Inactive)

<table>
<thead>
<tr>
<th>Description</th>
<th>Groundwater GW3 Northwest of Till Disposal Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>N/A</td>
</tr>
<tr>
<td>Sampling Frequency</td>
<td>Checked weekly for Groundwater flow and sampled monthly.</td>
</tr>
<tr>
<td>Sampling Parameters</td>
<td>Total Ammonia, Field Parameters&lt;sup&gt;3&lt;/sup&gt;, ICP-MS Metal Scan&lt;sup&gt;1&lt;/sup&gt;(Total), Major Ions&lt;sup&gt;2&lt;/sup&gt;, pH&lt;sup&gt;4&lt;/sup&gt;, Total Petroleum Hydrocarbons</td>
</tr>
<tr>
<td>Rationale for Station</td>
<td>Station applying to surface runoff and Groundwater to monitor Groundwater quality</td>
</tr>
<tr>
<td>Rationale for Status</td>
<td>Area covered by Till Pile</td>
</tr>
</tbody>
</table>

### Surveillance Network Program (SNP) Station 1645-31 (Inactive)

<table>
<thead>
<tr>
<th>Description</th>
<th>Groundwater GW4 West of the PKC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>South of Pond 4</td>
</tr>
<tr>
<td>Sampling Frequency</td>
<td>Checked weekly for Groundwater flow and sampled monthly. Last data collected pre 2008.</td>
</tr>
<tr>
<td>Sampling Parameters</td>
<td>Total Ammonia, Field Parameters&lt;sup&gt;3&lt;/sup&gt;, ICP-MS Metal Scan&lt;sup&gt;1&lt;/sup&gt;(Total), Major Ions&lt;sup&gt;2&lt;/sup&gt;, pH&lt;sup&gt;4&lt;/sup&gt;, Total Petroleum Hydrocarbons</td>
</tr>
<tr>
<td>Rationale for Station</td>
<td>To monitor Groundwater down gradient of Water Retention Structures</td>
</tr>
<tr>
<td>Rationale for Status</td>
<td>Lack of data from current Station. SNP station will be replaced by monitoring requirements in SNP Part D, Item 8.</td>
</tr>
</tbody>
</table>

### Surveillance Network Program (SNP) Station 1645-32 (Inactive)

<table>
<thead>
<tr>
<th>Description</th>
<th>Groundwater – South of PKC, between the Ammonium Nitrate Storage and Pond 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>South of Pond 7 and Emulsion Plant</td>
</tr>
<tr>
<td>Sampling Frequency</td>
<td>Checked weekly for Groundwater flow and sampled monthly. Last data collected pre 2008.</td>
</tr>
<tr>
<td>Sampling Parameters</td>
<td>Total Ammonia, Field Parameters&lt;sup&gt;3&lt;/sup&gt;, ICP-MS Metal Scan&lt;sup&gt;1&lt;/sup&gt;(Total), Major Ions&lt;sup&gt;2&lt;/sup&gt;, pH&lt;sup&gt;4&lt;/sup&gt;, Total Petroleum Hydrocarbons</td>
</tr>
<tr>
<td>Rationale for Station</td>
<td>To monitor water down gradient of Water Retention Structure and</td>
</tr>
</tbody>
</table>
### Surveillance Network Program (SNP) Station 1645-34 (Inactive)

<table>
<thead>
<tr>
<th>Description:</th>
<th>Near intake structure for De-watering of Lake E1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
<td>N/A</td>
</tr>
<tr>
<td>Sampling Frequency:</td>
<td>Once prior to commencement of de-watering Daily during de-watering Once on the final day of de-watering</td>
</tr>
<tr>
<td>Sampling Parameters:</td>
<td>Total Ammonia, Total Suspended Solids, Field Parameters(^3), ICP-MS Metal Scan(^1)(Total), Major Ions(^2), Total Phosphorus, Nitrate, Nitrite, Turbidity</td>
</tr>
<tr>
<td>Rationale for Station:</td>
<td>To monitor water quality during de-watering</td>
</tr>
<tr>
<td>Rationale for Status:</td>
<td>Work is completed, Station no longer applicable.</td>
</tr>
</tbody>
</table>

### Surveillance Network Program (SNP) Station 1645-35 (Inactive)

<table>
<thead>
<tr>
<th>Description:</th>
<th>Near intake structure for De-watering of Lake E6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
<td>N/A</td>
</tr>
<tr>
<td>Sampling Frequency:</td>
<td>Once prior to commencement of de-watering Daily during de-watering Once on the final day of de-watering</td>
</tr>
<tr>
<td>Sampling Parameters:</td>
<td>Total Ammonia, Total Suspended Solids, Field Parameters(^3), ICP-MS Metal Scan(^1)(Total), Major Ions(^2), Total Phosphorus, Nitrate, Nitrite, Turbidity</td>
</tr>
<tr>
<td>Rationale for Station:</td>
<td>To monitor water quality during de-watering</td>
</tr>
<tr>
<td>Rationale for Status:</td>
<td>Work is completed, Station no longer applicable.</td>
</tr>
</tbody>
</table>

### Surveillance Network Program (SNP) Station 1645-36 (Inactive)
<table>
<thead>
<tr>
<th>Description</th>
<th>Near intake structure for De-watering of Lake E7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>N/A</td>
</tr>
<tr>
<td>Sampling Frequency</td>
<td>Once prior to commencement of de-watering</td>
</tr>
<tr>
<td></td>
<td>Daily during de-watering</td>
</tr>
<tr>
<td></td>
<td>Once on the final day of de-watering</td>
</tr>
<tr>
<td>Sampling Parameters</td>
<td>Total Ammonia, Total Suspended Solids, Field</td>
</tr>
<tr>
<td></td>
<td>Parameters³, ICP-MS Metal Scan¹(Total), Major</td>
</tr>
<tr>
<td></td>
<td>Ions², Total Phosphorus, Nitrate, Nitrite,</td>
</tr>
<tr>
<td></td>
<td>Turbidity</td>
</tr>
<tr>
<td></td>
<td>Total Suspended Solids, pH⁴, Turbidity</td>
</tr>
<tr>
<td></td>
<td>Total Ammonia, Total Suspended Solids, pH⁴,</td>
</tr>
<tr>
<td></td>
<td>Major Ions², Total Phosphorus, Nitrate, Nitrite,</td>
</tr>
<tr>
<td></td>
<td>Turbidity</td>
</tr>
<tr>
<td>Rationale for Station</td>
<td>To monitor water quality during de-watering</td>
</tr>
<tr>
<td>Rationale for Status</td>
<td>Work is completed, Station no longer applicable.</td>
</tr>
</tbody>
</table>

**Surveillance Network Program (SNP) Station 1645-37 (Inactive)**

<table>
<thead>
<tr>
<th>Description</th>
<th>Near intake structure for De-watering of Lake E8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>N/A</td>
</tr>
<tr>
<td>Sampling Frequency</td>
<td>Once prior to commencement of de-watering</td>
</tr>
<tr>
<td></td>
<td>Daily during de-watering</td>
</tr>
<tr>
<td></td>
<td>Once on the final day of de-watering</td>
</tr>
<tr>
<td>Sampling Parameters</td>
<td>Total Ammonia, Total Suspended Solids, Field</td>
</tr>
<tr>
<td></td>
<td>Parameters³, ICP-MS Metal Scan¹(Total), Major</td>
</tr>
<tr>
<td></td>
<td>Ions², Total Phosphorus, Nitrate, Nitrite,</td>
</tr>
<tr>
<td></td>
<td>Turbidity</td>
</tr>
<tr>
<td></td>
<td>Total Suspended Solids, pH⁴, Turbidity</td>
</tr>
<tr>
<td></td>
<td>Total Ammonia, Total Suspended Solids, pH⁴,</td>
</tr>
<tr>
<td></td>
<td>Major Ions², Total Phosphorus, Nitrate, Nitrite,</td>
</tr>
<tr>
<td></td>
<td>Turbidity</td>
</tr>
<tr>
<td>Rationale for Station</td>
<td>To monitor water quality during de-watering</td>
</tr>
<tr>
<td>Rationale for Status</td>
<td>Work is completed, Station no longer applicable.</td>
</tr>
</tbody>
</table>

**Surveillance Network Program (SNP) Station 1645-38 (Inactive)**

<table>
<thead>
<tr>
<th>Description</th>
<th>Near intake structure for De-watering of Lake E10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>N/A</td>
</tr>
<tr>
<td>Sampling Frequency</td>
<td>Once prior to commencement of de-watering</td>
</tr>
<tr>
<td></td>
<td>Daily during de-watering</td>
</tr>
<tr>
<td></td>
<td>Once on the final day of de-watering</td>
</tr>
</tbody>
</table>
### Sampling Parameters:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Ammonia, Total Suspended Solids, Field Parameters&lt;sup&gt;3&lt;/sup&gt;, ICP-MS Metal Scan&lt;sup&gt;1&lt;/sup&gt;(Total), Major Ions&lt;sup&gt;2&lt;/sup&gt;, Total Phosphorus, Nitrate, Nitrite, Turbidity</td>
<td>Total Suspended Solids, pH&lt;sup&gt;4&lt;/sup&gt;, Turbidity</td>
</tr>
</tbody>
</table>

### Rationale for Station:

To monitor water quality during de-watering

### Rationale for Status:

Work is completed, Station no longer applicable.

---

### Surveillance Network Program (SNP) Station 1645-39 (Inactive)

**Description:**
Near intake structure for De-watering within the dike enclosure of A154

**Location:**
N/A

**Sampling Frequency:**

<table>
<thead>
<tr>
<th>Sampling Frequency</th>
<th>Daily during Dewatering</th>
<th>Every six (6) days during Dewatering</th>
<th>Once on the final day of Dewatering at each of the five (5) sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Once prior to commencement of Discharge at a minimum of five (5) stations evenly spaced along a longitudinal transect as approved by an Inspector. At each station, samples must be collected at surface and at two (2) metre intervals</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Sampling Parameters:**

<table>
<thead>
<tr>
<th>pH&lt;sup&gt;4&lt;/sup&gt;, Field Parameters&lt;sup&gt;3&lt;/sup&gt;, ICP-MS Metal Scan&lt;sup&gt;1&lt;/sup&gt;(Total), Major Ions&lt;sup&gt;2&lt;/sup&gt;, Total Suspended Solids, Turbidity, Nutrients&lt;sup&gt;5&lt;/sup&gt;</th>
<th>pH&lt;sup&gt;4&lt;/sup&gt;, Total Suspended Solids, Turbidity, Total Phosphorus</th>
<th>pH&lt;sup&gt;4&lt;/sup&gt;, Field Parameters&lt;sup&gt;3&lt;/sup&gt;, ICP-MS Metal Scan&lt;sup&gt;1&lt;/sup&gt;(Total), Major Ions&lt;sup&gt;2&lt;/sup&gt;, Total Suspended Solids, Turbidity, Nutrients&lt;sup&gt;5&lt;/sup&gt;</th>
</tr>
</thead>
</table>

**Note:** Additional sampling may be required at the request of an Inspector

**Rationale for Station:**
To monitor water quality during de-watering

**Rationale for Status:**
Work is completed, Station no longer applicable.

---

### Surveillance Network Program (SNP) Station 1645-40 (Inactive)

**Description:**
Near intake structure for dike pool watering – A418

**Location:**
N/A
### Surveillance Network Program (SNP) Station 1645-43 (Inactive)

<table>
<thead>
<tr>
<th>Description:</th>
<th>A 21 SNP Station: Collection Pond</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
<td>Pond 6</td>
</tr>
<tr>
<td>Sampling Frequency:</td>
<td>Monthly if water is present</td>
</tr>
<tr>
<td>Sampling Parameters:</td>
<td>Total Ammonia, Field Parameters(^3), ICP-MS Metal Scan(^1)(Total), Major Ions(^2), Nitrate, Nitrite, pH(^4), Total Phosphorus, Total Suspended Solids, Turbidity</td>
</tr>
<tr>
<td>Rationale for Station:</td>
<td>To monitor water quality during A21 development</td>
</tr>
<tr>
<td>Rationale for Status:</td>
<td>The approved Construction Environmental Management Plan, Version 2.0, indicates that Pond 6 is no longer necessary.</td>
</tr>
</tbody>
</table>
### Surveillance Network Program (SNP) Station 1645-48 (Inactive)

<table>
<thead>
<tr>
<th>Description:</th>
<th>Clarification pond (Pond 3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
<td>West side of the North Rock Pile</td>
</tr>
<tr>
<td>Sampling Frequency:</td>
<td>Once prior to the commencement of the Discharge at a minimum of three (3) stations evenly spaced along a longitudinal transect at the centerline of the clarification pond collected at surface, and at two (2) metre intervals to depth</td>
</tr>
<tr>
<td>Sampling Parameters:</td>
<td>$\text{pH}^4$, Field Parameters$^3$, ICP-MS Metal Scan$^1$(Total), Major Ions$^2$, Total Ammonia, Nitrite, Oil and Grease, Total Phosphorus, Nitrate, Total Suspended Solids, Turbidity</td>
</tr>
</tbody>
</table>

Rationale for Station: To monitor water quality of Pond 3.

Rationale for Status: Pond is no longer large enough for three (3) stations along centre-line transect. It is now covered by SNP Station 1645-76.

### Surveillance Network Program (SNP) Station 1645-49 (Inactive)

<table>
<thead>
<tr>
<th>Description:</th>
<th>Mine water removed from A154 Pit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
<td>N/A</td>
</tr>
<tr>
<td>Sampling Frequency:</td>
<td>Every two (2) weeks</td>
</tr>
<tr>
<td>Sampling Parameters:</td>
<td>Field Parameters$^3$, ICP-MS Metal Scan$^1$(Total), Major Ions$^2$, Nutrients$^5$, $\text{pH}^4$, Total Suspended Solids, Turbidity, Oil and Grease</td>
</tr>
</tbody>
</table>

Rationale for Station: Station applying to Dewatering to monitor water quality from A154 Pit

Rationale for Status: Inactive after the closure of the A154 Open Pit

### Surveillance Network Program (SNP) Station 1645-50 (Inactive)

<table>
<thead>
<tr>
<th>Description:</th>
<th>Mine water removed from A418 Pit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
<td>A418 Open Pit</td>
</tr>
<tr>
<td>Sampling Frequency:</td>
<td>Not currently Monitored. Last data collected in June 2012 every two (2) weeks. Note: Will only apply at the time A418 Pit is developed.</td>
</tr>
</tbody>
</table>
**Surveillance Network Program (SNP) Station 1645-52 (Inactive)**

| Description: | Seepage collected from inside toe of the A154 Dike |
| Location: | A154 Dike |
| Sampling Frequency: | Not Currently monitored. Last data collected in 2008. Sample once prior to Discharge: |
| Sampling Parameters: | Total Ammonia, pH, Field Parameters, ICP-MS Metal Scan, Major Ions, Nutrients, Turbidity, Total Suspended Solids, Total Dissolved Solids, Oil and Grease |
| Rationale for Station: | Monitor Lake water Seepage through open pit dikes prior to Discharge to Lac de Gras |
| Rationale for Status: | Seepage through open pit dikes is considered intermediate and inconsistent and is discharged to North Inlet, not to Lac de Gras. |

**Surveillance Network Program (SNP) Station 1645-53 (Inactive)**

| Description: | Seepage collected from inside toe of the A418 Dike |
| Location: | A418 Dike |
| Sampling Frequency: | Not Currently monitored. Data collection was never established. Sample once prior to Discharge: |
| Sampling Parameters: | Total Ammonia, pH, Field Parameters, ICP-MS Metal Scan, Major Ions, Nutrients, Turbidity, Total Suspended Solids, Total Dissolved Solids, Oil and Grease |
| Rationale for Station: | Monitor Lake water Seepage through open pit dikes prior to Discharge to Lac de Gras |
| Rationale for Status: | Seepage through open pit dikes is considered intermediate and inconsistent and is discharged to North Inlet, not to Lac de Gras. |

**Surveillance Network Program (SNP) Station 1645-56 (Inactive)**

<p>| Description: | Station applying to dredging and dike Construction |</p>
<table>
<thead>
<tr>
<th>Station ID</th>
<th>Description</th>
<th>Rationale for Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1645-57</td>
<td>Station applying to dredging and dike Construction</td>
<td>Removed as per approved Dredging TSS Management and In Lake Construction Plan</td>
</tr>
<tr>
<td>1645-58</td>
<td>Station applying to dredging and dike Construction</td>
<td>Station as referenced in Figure 8.1 of the approved Dredging TSS Management and In Lake Construction Plan.</td>
</tr>
<tr>
<td>1645-59</td>
<td>Station applying to dredging and dike Construction</td>
<td>Station as referenced in Figure 8.1 of the approved Dredging TSS Management and In Lake Construction Plan.</td>
</tr>
<tr>
<td>1645-60</td>
<td>Station applying to dredging and dike Construction</td>
<td>Station as referenced in Figure 8.1 of the approved Dredging TSS Management and In Lake Construction Plan.</td>
</tr>
</tbody>
</table>
**Surveillance Network Program (SNP) Station 1645-61 (Inactive)**

<table>
<thead>
<tr>
<th>Description</th>
<th>Station applying to dredging and dike Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>N 7.153.263, E 537.666</td>
</tr>
<tr>
<td>Sampling Frequency</td>
<td>Sample daily using approved depth integrated sampler</td>
</tr>
<tr>
<td>Sampling Parameters</td>
<td>Total Suspended Solids, Turbidity</td>
</tr>
<tr>
<td>Rationale for Station</td>
<td>N/A</td>
</tr>
<tr>
<td>Rationale for Status</td>
<td>Station as referenced in Figure 8.1 of the approved Dredging TSS Management and In Lake Construction Plan.</td>
</tr>
</tbody>
</table>

**Surveillance Network Program (SNP) Station 1645-62 (Inactive)**

<table>
<thead>
<tr>
<th>Description</th>
<th>Station applying to dredging and dike Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>N 7.153.562, E 537.079</td>
</tr>
<tr>
<td>Sampling Frequency</td>
<td>Sample daily using approved depth integrated sampler</td>
</tr>
<tr>
<td>Sampling Parameters</td>
<td>Total Suspended Solids, Turbidity</td>
</tr>
<tr>
<td>Rationale for Station</td>
<td>N/A</td>
</tr>
<tr>
<td>Rationale for Status</td>
<td>Station as referenced in Figure 8.1 of the approved Dredging TSS Management and In Lake Construction Plan.</td>
</tr>
</tbody>
</table>

**Surveillance Network Program (SNP) Station 1645-63 (Inactive)**

<table>
<thead>
<tr>
<th>Description</th>
<th>Station applying to dredging and dike Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>N 7.153.744, E 536.463</td>
</tr>
<tr>
<td>Sampling Frequency</td>
<td>Sample daily using approved depth integrated sampler</td>
</tr>
<tr>
<td>Sampling Parameters</td>
<td>Total Suspended Solids, Turbidity</td>
</tr>
<tr>
<td>Rationale for Station</td>
<td>N/A</td>
</tr>
<tr>
<td>Rationale for Status</td>
<td>Station as referenced in Figure 8.1 of the approved Dredging TSS Management and In Lake Construction Plan.</td>
</tr>
</tbody>
</table>

**Surveillance Network Program (SNP) Station 1645-64 (Inactive)**

<table>
<thead>
<tr>
<th>Description</th>
<th>Station applying to dredging and dike Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>N 7.153.768, E 536.173</td>
</tr>
<tr>
<td>Sampling Frequency</td>
<td>Sample daily using approved depth integrated sampler</td>
</tr>
<tr>
<td>Sampling Parameters</td>
<td>Total Suspended Solids, Turbidity</td>
</tr>
</tbody>
</table>
### Rationale for Station:
N/A

### Rationale for Status:
Station as referenced in Figure 8.1 of the approved Dredging TSS Management and In Lake Construction Plan.

### Surveillance Network Program (SNP) Station 1645-65 (Inactive)

<table>
<thead>
<tr>
<th>Description:</th>
<th>Station applying to dredging and dike Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
<td>N 7.153.740, E 535.756</td>
</tr>
<tr>
<td>Sampling Frequency:</td>
<td>Sample daily using approved depth integrated sampler</td>
</tr>
<tr>
<td>Sampling Parameters:</td>
<td>Total Suspended Solids, Turbidity</td>
</tr>
<tr>
<td>Rationale for Station:</td>
<td>N/A</td>
</tr>
<tr>
<td>Rationale for Status:</td>
<td>Station as referenced in Figure 8.1 of the approved Dredging TSS Management and In Lake Construction Plan.</td>
</tr>
</tbody>
</table>

### Surveillance Network Program (SNP) Station 1645-66 (Inactive)

<table>
<thead>
<tr>
<th>Description:</th>
<th>Near intake structure for De-watering of North Inlet.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
<td>N/A</td>
</tr>
<tr>
<td>Sampling Frequency:</td>
<td>Once prior to commencement of de-watering</td>
</tr>
<tr>
<td>Sampling Parameters:</td>
<td>Total Ammonia, Total Suspended Solids, Field Parameters(^3), ICP-MS Metal Scan(^1)(Total), Major Ions(^2), Total Phosphorus, Nitrate, Nitrite, Turbidity</td>
</tr>
<tr>
<td>Rationale for Station:</td>
<td>Station applying to Dewatering to monitor water quality before, during, and at the end of De-watering North Inlet.</td>
</tr>
<tr>
<td>Rationale for Status:</td>
<td></td>
</tr>
</tbody>
</table>

### Surveillance Network Program (SNP) Station 1645-70 (Inactive)

<table>
<thead>
<tr>
<th>Description:</th>
<th>Station applying to dredging and dike Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
<td>N 7.151.848, E 537.057</td>
</tr>
<tr>
<td>Sampling Frequency:</td>
<td>Sample daily using approved depth integrated sampler</td>
</tr>
<tr>
<td>Sampling Parameters:</td>
<td>Total Suspended Solids, Turbidity</td>
</tr>
<tr>
<td>Rationale for Station:</td>
<td>To monitor suspended solids and turbidity caused by dredging and dike Construction.</td>
</tr>
<tr>
<td>Rationale for Status:</td>
<td></td>
</tr>
</tbody>
</table>
### Surveillance Network Program (SNP) Station 1645-71 (Inactive)

<table>
<thead>
<tr>
<th>Description</th>
<th>Station applying to dredging and dike Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>N 7.151.369, E 536.765</td>
</tr>
<tr>
<td>Sampling Frequency</td>
<td>Sample daily using approved depth integrated sampler</td>
</tr>
<tr>
<td>Sampling Parameters</td>
<td>Total Suspended Solids, Turbidity</td>
</tr>
<tr>
<td>Rationale for Station</td>
<td>To monitor suspended solids and turbidity caused by dredging and dike Construction.</td>
</tr>
<tr>
<td>Rationale for Status</td>
<td>Station referenced as 1645-A in Figure 1 of the April 12, 2005 DDMI request for additional SNP Stations.</td>
</tr>
</tbody>
</table>

### Surveillance Network Program (SNP) Station 1645-72 (Inactive)

<table>
<thead>
<tr>
<th>Description</th>
<th>Station applying to dredging and dike Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>N 7.151.319, E 536.414</td>
</tr>
<tr>
<td>Sampling Frequency</td>
<td>Sample daily using approved depth integrated sampler</td>
</tr>
<tr>
<td>Sampling Parameters</td>
<td>Total Suspended Solids, Turbidity</td>
</tr>
<tr>
<td>Rationale for Station</td>
<td>To monitor suspended solids and turbidity caused by dredging and dike Construction.</td>
</tr>
<tr>
<td>Rationale for Status</td>
<td>Station referenced as 1645-B in Figure 1 of the April 12, 2005 DDMI request for additional SNP Stations.</td>
</tr>
</tbody>
</table>

### Surveillance Network Program (SNP) Station 1645-73 (Inactive)

<table>
<thead>
<tr>
<th>Description</th>
<th>Station applying to dredging and dike Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>N/A</td>
</tr>
<tr>
<td>Sampling Frequency</td>
<td>Sample daily using approved depth integrated sampler</td>
</tr>
<tr>
<td>Sampling Parameters</td>
<td>Total Suspended Solids, Turbidity</td>
</tr>
<tr>
<td>Rationale for Station</td>
<td>Background reference station for the regulation of dredging and dike Construction association with A418 Pit</td>
</tr>
<tr>
<td>Rationale for Status</td>
<td>Station referenced as 1645-55B in Figure 1 of the April 12, 2005 DDMI request for additional SNP Stations - Relocated background reference Station (N 7.152.720 E 538.765)</td>
</tr>
</tbody>
</table>
Reasons for Decision

<table>
<thead>
<tr>
<th>Water Licence Amendment Application for the Diavik Diamonds Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reference/File Number</td>
</tr>
<tr>
<td>Project</td>
</tr>
</tbody>
</table>

Decision from Wek’ëezhii Land and Water Board Meeting of

May 3, 2016

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**1.0 Decision**

After reviewing the amendment application (the “Application”)

1 of Diavik Diamond Mines (2012) Inc. (DDMI) to amend Part H, Item 31 of Water Licence W2015L2-0001, and the written comments and submissions received from parties to this proceeding by the Wek’éezhii Land and Water Board (WLWB or the Board), and having due regard to the facts and circumstances, the merits of the submissions made to it, and to the purpose, scope, and intent of the Waters Act and Regulations made thereunder, the Board has determined that Part H, Item 31 of Water Licence W2015L2-0001 be amended to read:

“31. The Licensee shall ensure that all in-lake dredging, dike Construction, or other in-lake activities meet the criteria set out in paragraph (a):

a) at SNP Stations #1645-82 to 1645-84 inclusive, and at a 200 metre distance in any direction from the centerline of the dike footprint:

i. the maximum concentration for Total Suspended Solids (TSS) shall not exceed 25 mg/L above background TSS in any daily sample, or 5 mg/L above background TSS averaged over any 30-day period;

ii. all samples shall be taken on a depth-integrated basis;

iii. each depth-integrated sample shall consist of a continuous sample taken between 1 m from the lake bottom to 1 m below the lake surface; and

b) for comparison to the samples required by paragraph (a), background TSS concentrations are to be measured at SNP Station #1645-55 based on samples collected in the manner set out in subparagraph (a)(ii) and subparagraph a(iii);

c) the Licensee must also notify the Inspector on any day when weather conditions do not permit the collection of a TSS sample.”

The Board has also determined that the sampling frequency section of each of the description tables for SNP Stations 1645-55, and 1645-82 to 1645-84 inclusive, be amended to read:

“Sample daily using depth-integrated sampler. If a TSS sample is not available (due to unsafe boating conditions) it may be estimated from the average of the results obtained the day(s) prior to and the day(s) following the day(s) that sample(s) could not be collected. For TSS samples not available prior to the commencement of open-water sampling, a value of 1.0 mg/L above background is to be used as the result at 1645-82, 1645-83, and 1645-84, for determination of the 30-day average value.”

The Board’s reasons for this decision are set out in Section 3.

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1 See WLWB (www.wlwb.ca) Online Registry for Diavik – Amendment Application – TSS – Oct 21_15

2 See WLWB Online Registry for Diavik – WL Renewal – Water Licence – Oct 19_15
2.0 Background

On October 20, 2015, DDMI (the Applicant) submitted the Application to amend Part H, Item 31 of Water Licence W2015L2-0001 for the Diavik Diamonds Project. The Diavik Diamonds Project is located on Lac de Gras, NT, and involves the dewatering of inland lakes, the construction of dikes, transferring of water, open pit and underground mining to excavate kimberlite from four kimberlite pipes (A154N, A154S, A418, and A21), and eventual mine closure.

The Application for the amendment and a work plan for the proceeding were circulated for public review on October 27, 2015 to the WLWB’s Diavik distribution list. Circulation of the work plan served as notice to the parties that the regulatory process would proceed, and that the legislated timelines set out in subsection 47(1) of the Waters Act had commenced. The notice of Application and public hearing were advertised by the WLWB in accordance with subsections 43(1) and (2) of the Waters Act. DDMI notified the Board of a problem with the public hearing dates and so a revised work plan was circulated by the WLWB to the Diavik distribution list on December 1, 2015. The revised date and location of the public hearing were also advertised by the Board on their website, the Tłįchǫ Government website, and in the newspaper. Reviewer comments on the Application were due by December 18, 2015, and Applicant responses by January 4, 2016. Comments on the Application were received from Environment Canada (ECCC), the Environmental Monitoring Advisory Board (EMAB), Fisheries and Oceans Canada (DFO), the Government of the Northwest Territories Environment and Natural Resources Department (GNWT-ENR), and the Government of the Northwest Territories Lands Department (GNWT-Lands). Board staff, with input from external consultant Hutchinson Environmental Sciences Ltd. (HESL), also submitted comments on the Application. HESL provided technical assistance to the Board throughout the proceeding.

The Board received a request from DDMI on January 27, 2016, after the intervention deadline, to place three additional documents from the WLWB paper registry on the WLWB online registry and to “ensure these documents are properly included as part of the ‘public record’ for the TSS Amendment Application proceeding.” They included:

3 See WLWB Online Registry for Diavik - Amendment – Work Plan – Oct 27_15
4 See WLWB Online Registry for Diavik – Amendment – TSS – Distribution List – Oct 27_15
5 See WLWB Online Registry for Diavik – Amendment – TSS – Notice of Application and Public Hearing – Nov 2_15
6 See WLWB Online Registry for Diavik - Amendment – Work Plan – Nov 29_15
7 See WLWB Online Registry for Diavik – Amendment – TSS – Notice of Application and Public Hearing – Revised Date and Location – Dec 7_15
8 See WLWB Online Registry for Diavik – Amendment – TSS – Review Comment Summary and Attachments – Feb 25_16
9 See WLWB Online Registry for Diavik – Amendment – TSS – Diavik Request to Add Information to Record and Responses – Feb 1_16
1. MVLWB letter of June 14, 2001 re: approval of DDMI’s TSS Management Plan which included depth-integrated sampling and 30-day moving average.\(^{10}\)
2. MVLWB letter of July 4, 2005 re: clarifying reference to Construction Environmental Management Plan (CEMP) instead of TSS Management Plan.\(^{11}\)
3. Water Licence Inspector review comments for the November 2004 CEMP Review.\(^{12}\)

On January 27, 2016, the WLWB circulated a letter to the Diavik distribution list asking that parties indicate whether they had an objection to the filing of these documents on the record. No party communicated any objections to DDMI’s late introduction of these materials.

On February 12, 2016, the Board held a public hearing in Yellowknife, in accordance with subsection 41(2)(b) of the Waters Act. Written interventions were received from ECCC,\(^{13}\) DFO,\(^{14}\) GNWT-ENR,\(^{15}\) and the Yellowknives Dene First Nation (YKDFN).\(^{16}\) DDMI provided a written response to these interventions.\(^{17, 18}\) All four interveners and the Applicant filed presentation materials in advance of the public hearing.\(^{19, 20, 21, 22, 23}\) English and Tłı̨chǫ translation services were provided at the public hearing. Submissions made and questioning at the public hearing were recorded and transcribed.\(^{24}\) These transcripts were filed on the Board’s record for the proceeding.

Closing arguments from interveners were provided to the Board, in writing, by March 4, 2016. Interveners had an opportunity, in their closing arguments, to review and update their position based on the public hearing and to present their final recommendations to the Board. Closing arguments were received from ECCC,\(^{25}\) DFO,\(^{26}\) and GNWT-ENR.\(^{27}\) YKDFN did not provide a closing argument. DDMI submitted their closing argument to the Board by the deadline of March 11, 2016.\(^{28}\)

\(^{10}\) See WLWB Online Registry for N7L2-1645 – Diavik – SNP – Approved Changes – Jun 14_01
\(^{11}\) See WLWB Online Registry for N7L2-1645 – Diavik – SNP – Approved Changes – Reference Clarification – Jul 4_05
\(^{12}\) See WLWB Online Registry for N7L2-1645 – Diavik – CEMP – A418 – Version 1.0 – Inspectors Comments – Jan 21_05
\(^{13}\) See WLWB Online Registry for Diavik – Amendment – TSS – EC Intervention – Jan 20_16
\(^{14}\) See WLWB Online Registry for Diavik – Amendment – TSS – DFO Intervention – Jan 20_16
\(^{15}\) See WLWB Online Registry for Diavik – Amendment – TSS – GNWT-ENR Intervention – Jan 20_16
\(^{16}\) See WLWB Online Registry for Diavik – Amendment – TSS – YKDFN Intervention – Jan 20_16
\(^{17}\) See WLWB Online Registry for Diavik – Amendment – TSS – DMDI Intervention – Jan 27_16
\(^{18}\) See WLWB Online Registry for Diavik – Amendment – TSS – DMMI Intervention – Appendix (excel) – Jan 27_16
\(^{19}\) See WLWB Online Registry for Diavik – Amendment – TSS – EC Presentation – Feb 3_16
\(^{20}\) See WLWB Online Registry for Diavik – Amendment – TSS – DFO Presentation – Feb 3_16
\(^{21}\) See WLWB Online Registry for Diavik – Amendment – TSS – GNWT-ENR Presentation – Feb 3_16
\(^{22}\) See WLWB Online Registry for Diavik – Amendment – TSS – YKDFN Intervention – Feb 3_16
\(^{23}\) See WLWB Online Registry for Diavik – Amendment – TSS – DMMI Presentation – Feb 4_16
\(^{24}\) See WLWB Online Registry for Diavik – Amendment – TSS – February 12, 2016 Public Hearing Transcript – Feb 15_16
\(^{25}\) See WLWB Online Registry for Diavik – Amendment – TSS – EC Closing Argument – Mar 4_16
\(^{26}\) See WLWB Online Registry for Diavik – Amendment – TSS – DFO Closing Argument – Mar 2_16
\(^{27}\) See WLWB Online Registry for Diavik – Amendment – TSS – GNWT-ENR Closing Argument – Mar 4_16
\(^{28}\) See WLWB Online Registry for Diavik – Amendment – TSS – DMMI Closing Argument – Mar 9_16
3.0 Reasons for Decision

The amended condition set forth in the Water Licence has been developed in accordance with the Board’s statutory responsibilities, its ongoing role in regulation of the operation of the Diavik Diamond Mine, and in response to the matters that were raised during this amendment proceeding. Out of necessity, these Reasons for Decision focus on the major concerns raised by parties, including those that were the subject of substantive argument by one or more parties. These Reasons for Decision also address evidence relevant to the amended condition. The amendment made to the Licence is, in the Board’s view, based on the specifics of the Project and the evidence provided to the Board.

Subject to the amended condition set out in the Licence, and for the reasons expressed herein, the WLWB is of the opinion that the appurtenant undertaking including the Water use and Waste disposal associated with the Diavik Diamond Project can be completed by the Licensee while providing for the conservation, development, and utilization of Waters in a manner that will provide the optimum benefit for all Canadians and in particular for the residents of Wek’èezhii.

Amended Water Licence W2015L2-0001 contains provisions that the Board feels necessary to ensure and monitor compliance with the Waters Act and the Regulations made thereunder and to provide appropriate safeguards in respect of the Applicant’s use of Water and deposit of Waste.

3.1 Determinations: Section 26 and 27 of the Waters Act

3.1.1 Existing Licensees

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

3.1.2 Existing Water Users

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

The Board received no claims for compensation either during the prescribed period or afterwards. Provided that compliance with the Water Licence conditions is achieved, the Board finds that no users or persons listed in paragraph 26(5)(b) of the Waters Act will be adversely affected by the use of Waters or the deposit of Waste proposed by the Applicant.
3.1.3 Water Quality Standards
Insofar as subparagraph 26(5)(c)(i) of the Waters Act is concerned, the Board is of the view that compliance with the amended Licence conditions will ensure that Waste produced by the operation of the Diavik mine will be treated and deposited in a manner that will maintain water quality consistent with applicable standards and the Mackenzie Valley Land and Water Board (MVLWB) Water and Effluent Quality Management Policy (2011).\(^{29}\)

3.1.4 Effluent Quality Standards
In accordance with subparagraph 26(5)(c)(ii) of the Waters Act, the Board is satisfied that compliance with the amended Licence conditions will ensure that Waste produced by the Diavik Diamond Project will be collected and disposed of in a manner which will maintain water quality consistent with applicable standards and the Water and Effluent Quality Management Policy.

3.1.5 Financial Responsibility of the Applicant
The Board must satisfy itself of the financial responsibility of the Licensee under paragraph 26(5)(d) of the Waters Act before it can issue a Licence. The Board is satisfied that DDMI is capable of meeting the obligations set out in the Waters Act and the amended Licence. DDMI has provided and maintained the securities required by previous licences (W2007L2-0003 and N7L2-1645). There is no evidence before the Board indicating that the amendment of the Licence will affect security requirements. The Board concludes that security currently held by the Minister is sufficient and that paragraph 26(5)(d) has been satisfied.

3.1.6 Requirements of Subsection 27(2) of the Waters Act
It is the opinion of the Board that compliance with the conditions of the Licence will ensure that any potential adverse impacts on other water users, which might arise as a result of the amendment of the Licence, will be minimized.

3.2 Application to Amend Part H, Item 31
In the Application, DDMI requested a revision of Part H, Item 31 of W2015L2-0001, which currently reads:

“The Licensee shall ensure that all in-lake dredging, dike Construction, or other in-lake activities meet the following criteria: At SNP Station #1645-82 to 1645-84 inclusive, and at a 200 metre distance in any direction from the centerline of the dike footprint the maximum concentration for Total Suspended Solids shall not exceed 25 mg/L over the background concentration at SNP station #1645-55, in any grab sample.”

\(^{29}\) Mackenzie Valley Land and Water Board (MVLWB), Water and Effluent Quality Management Policy, 2011.
DDMI requested the condition be revised as follows:

“The Licensee shall ensure that all in-lake dredging, dike Construction, or other in-lake activities meet the following criteria: At SNP Station #1645-82 to 1645-84 inclusive, and at a 200 metre distance in any direction from the centerline of the dike footprint, the maximum concentration for Total Suspended Solids shall not exceed a 30-day moving average of 25 mg/L over the background concentration at SNP station #1645-55, as calculated from daily in any grab samples.”

In their response to interventions, DDMI also requested that the amendment specify that the daily grab samples would be depth-integrated. The current Water Licence SNP specifies that samples are depth-integrated, which is a sampling method that appears to have been approved by the MVLWB in 2001 and incorporated into the SNP without amending the related Water Licence condition.

3.2.1 Total Suspended Solids (TSS) Limit - Background

The Total Suspended Solids (TSS) limit for the Diavik Diamond Project has remained unchanged since the issuance of the original Diavik Diamond Project Water Licence (N7L2-1645) in 2000. As stated in the Reasons for Decision of the original Water Licence, the TSS limit was set at a maximum concentration of 25 mg/L (over background) to ensure the protection of aquatic life:

“During dredging and dyke construction, the Board has established a maximum concentration of TSS of 25 mg/L. ...to ensure that adverse effects on fish or other aquatic organisms do not occur beyond 200m from the centreline of the dyke, the water quality objective for Lac de Gras was adopted directly as the criterion. The Board is satisfied that this criterion can be achieved through the application of best management practices.”

The selection of this limit is clarified in a report made to the NWT Water Board by the Effluent Quality Criteria Subcommittee of the Technical Advisory Committee, which is the committee that, under the direction of the Board, prepared the original draft licence:

“In general, the members of the subcommittee have agreed that the Canadian water quality guidelines should be used as ambient water quality objectives for Lac de Gras...For TSS, the

30 See WLWB Online Registry for Diavik – Amendment – TSS – DDMI Intervention – Jan 27_16 (pg. 12)
31 See WLWB Online Registry for N7L2-1645 – Diavik – SNP – Approved Changes – Jun 14_01
32 See WLWB Paper Registry for N7L2-1645 Water Licence Reasons for Decision – Aug 21_00
33 See WLWB Paper Registry for N7L2-1645 Water Licence Reasons for Decision – Aug 21_00
34 See WLWB paper registry for “Development of Effluent Quality Criteria for the DDMI Class A Water Licence: Recommendations to the NWT Water Board”, April 2000 (Appendix I – page 65)
Canadian water quality guidelines are 25 mg/L and 5 mg/L for short (i.e. ≤24 hours)- and long (>24 hours)-term exposures, respectively.\textsuperscript{35}

### 3.2.2 Rationale for TSS Amendment

In the Application, DDMI stated that it believe their proposed TSS limit of 25 mg/L averaged over a 30-day period to be conservative and protective and stated that:\textsuperscript{36}

“DDMI took substantive measures in 2015 in an attempt to ensure compliance with the TSS limit of 25 mg/L. In addition to the continued application of best management practices to all in-lake construction activities, DDMI stopped or delayed in-lake construction activities for 28 days in 2015 as mitigation to ensure compliance with the TSS limit. These 28 days of stopped or delayed construction is 26% of the typical 106 ice-free days when in-lake construction can proceed. In addition to the 28 days when construction did not occur for regulatory reasons, 6 additional days of construction were lost due wind speeds exceeding construction equipment limits.”

In DDMI’s response to the Application review question requesting more detail be provided concerning the 28 days of stopped/delayed construction, DDMI offered that:\textsuperscript{37}

“Start of in-lake construction was delayed by eleven days to ensure complete installation of the turbidity barrier, mitigating the risk of non-compliance with the TSS limit. Ten days of construction were lost when activities were stopped until wind/wave damage to the turbidity barriers could be repaired, mitigating the risk of non-compliance with the TSS limit. Construction was stopped seven days before the first expected ice formation allowing time to remove the turbidity barriers and mitigate the risk of non-compliance with the TSS limit.”

The Board notes that none of the 28 days stoppage or delay of work noted by DDMI were in response to TSS concentrations but were instead related to operational considerations to carry-out the work. These construction activities (i.e., installation of turbidity barrier, repair of turbidity barrier, and removal of turbidity barrier) were required to be done regardless of what the TSS limit is/was.

In regards to the “cause of the delays that the Proponent said were one of the motivating factors in asking for this amendment”, YKDFN stated the following during their public hearing presentation:\textsuperscript{38}

\textsuperscript{35} It may be noted here that Water Licence N7L2-1645 did not contain a TSS limit for long-term exposure
\textsuperscript{36} See WLWB Online Registry for Diavik – Amendment Application – TSS – Supplementary Info - Newcombe and Jensen 1996 – Oct 29_15
\textsuperscript{37} See WLWB Online Registry for Diavik – Amendment – TSS – Review Comment Summary and Attachments – Feb 25_16 (comment WLWB #15)
\textsuperscript{38} See WLWB Online Registry for Diavik – Amendment – TSS – February 12, 2016 Public Hearing Transcript – Feb 15_16 (pg. 248)
“all three of these factors related to the turbidity curtain, or the turbidity barrier. So they lost days installing the turbidity barrier. They lost days because the turbidity barrier broke. And then they lost days because they had to take down the turbidity barrier. To us, this isn’t -- this isn’t a sign that the -- the values need to be increased, or need to be -- the constraints need to be loosened. This is a sign that, in fact, the current values are -- are working fine. This is exactly what it’s supposed to capture.”

DDMI’s Application, notes that with the exception of four days in 2015, all daily TSS results were “well below 10 mg/L.” On only one of these days, was TSS above 10 mg/L and this was attributed to a failure with the turbidity barrier. When asked at the public hearing, DDMI stated that on the day of the exceedance, it went up to 32 mg/L “very suddenly and came back down very suddenly” in about the span of 6 hours. DDMI noted “that was a more unusual event.”

At the public hearing, DDMI stated that when it uses “the word 'achievable' that would be achievable with all of the mitigation practices that we have in place, but not including stopping construction.” However, in the proposed management plan for the dike construction activities for the Diavik Diamond Project, which accompanied DDMI’s original Water Licence Application (1999), it is stated that:

“Regular monitoring of the suspended solids plume will be conducted to ensure water quality thresholds are not being exceeded at 200m. The dredging contractor will be instructed to slow or stop if turbidity measurements indicate a (sic) levels in excess of 75% of the threshold value. He will be required to wait until the turbidity levels reduce sufficiently.”

DDMI, at the public hearing for the original Water Licence, stated that:

“We identified I think it was in the construction area and activity plan was what our response would be during construction if we were seeing greater than anticipated sediments, and one of those is to have on site additional sedimentation curtains that we can use as a second ring, effectively, around the cutterhead.”

DDMI has noted in their CEMP that “additional lengths of turbidity barrier will be available for local deployment to deal with specific problem areas.”

39 See WLWB Online Registry for Diavik – Amendment Application – TSS – Oct 21_15
40 See WLWB Online Registry for Diavik – Amendment Application – TSS – Oct 21_15
41 See WLWB Online Registry for Diavik – Amendment – TSS – February 12, 2016 Public Hearing Transcript – Feb 15_16 (pg. 56)
42 See WLWB paper registry for DDMI’s Supporting Documentation (Volume I) for Class A Water Licence Application, August 1999 (pg. 41)
DDMI have stated that, with regards to SNP station 1645-84, if they “do have a lot of trouble in that area” that they “may want to put a second turbidity barrier out.” DDMI has stated that they would be revising the CEMP with a different design for the turbidity barrier described, in order to address some of the performance issues they had in 2015 with that barrier. DDMI may also request an amendment to the station locations, which are recorded in the SNP of the Licence, from the Board at any time, as long as they are within 200 m of the centreline of the dike.

DDMI’s definition of “achievability”, which does not include the potential for work stoppages, does not propose the use of all available or previously-documented corporate commitments to best management practices in the event of high TSS levels. The Board does, however, agree with DDMI’s statement during their public hearing presentation that “construction activities and TSS control measures can be managed adaptively in response to changing site conditions and measured TSS concentrations.” These practices may include measures such as installing a second silt curtain and/or stopping work - both of which DDMI has previously committed to doing.

### 3.2.2.1 Potential for Additional Problems in 2016

During the amendment proceeding, DDMI indicated concern that dike construction activities could potentially be more problematic in 2016 than in previous years. In the Application, DDMI stated that they are “concerned that Station 1645-84 in particular may be too close to the turbidity barrier during 2016 construction” and at the public hearing that they “think 2016 will be the more challenging year.” In their closing argument, DDMI stated that they:

_“would like to further note, as we have on several occasions, DDMI’s expectation that the 2016 dike construction will be more challenging from a TSS management perspective than it was in 2015. Any analysis of achievability using only the 2015 data must also take this into account.”_

Given the flexibility provided by the Licence to move the SNP Stations (as discussed in Section 3.2.3), the Board believes that DDMI should be able to manage TSS adequately if, for example, a particular SNP Station is “too close to the turbidity barrier.” The Board has determined that an increase in the Water Licence limit based on the possibility that undefined challenges may occur is not reasonable. The DDMI CEMP Response Plan should include all of the mitigations necessary to address potential TSS issues.

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44 See WLWB Online Registry for [W2007L2-0003 – Diavik – A21 Construction Environmental Management Plan – Version 4.2 – Sept 1_15](link)
45 See WLWB Online Registry for [Diavik – Amendment – TSS – February 12, 2016 Public Hearing Transcript – Feb 15_16](link) (pg. 59)
46 See WLWB Online Registry for [Diavik – Amendment – TSS – February 12, 2016 Public Hearing Transcript – Feb 15_16](link) (pg. 63)
47 See WLWB Online Registry for [Diavik – Amendment – TSS – February 12, 2016 Public Hearing Transcript – Feb 15_16](link) (pg. 55)
48 See WLWB Online Registry for [Diavik – Amendment – TSS – DDMI Closing Argument – Mar 9_16](link)
3.2.2.2 Protection of All Aquatic Life

Various opinions and lines of evidence regarding DDMI’s proposed limit of 25 mg/L over a 30-day period were heard during the proceeding. The GNWT-ENR recommended a daily maximum grab limit of 50 mg/L, a 7-day limit of 25 mg/L, and a 30-day limit of 11 mg/L above background. Environment and Climate Change Canada did not recommend a compliance limit, but did recommend that 25 mg/L daily and 22 mg/L average over 30 days be thresholds for triggering a response for investigation and corrective action under the CEMP. DFO indicated their support for either of DDMI or other reviewer’s recommendations based on their objective which was limited to the need to prevent any serious harm to fish. YKDFN objected to “the raising of allowable TSS to 25 mg/L above background”, however, and recommended that a 15-day moving average would be more acceptable than a 30-day average.

GNWT-ENR pointed out that DDMI’s conclusions for severity-of-ill-effects (SEV) were only based on calculations completed for three of the six models developed by Newcombe and Jensen (1996). These three models were salmonid-specific. Calculations were not completed for the non-salmonid freshwater species model developed by Newcombe and Jensen (1996). GNWT-ENR’s evidence indicated that non-salmonid species referenced in these models would require a higher level of protection than is being offered in the amendment proposal made by DDMI.

A further consideration is that, as pointed out by GNWT-ENR and agreed to by DDMI, the Newcombe and Jensen (1996) SEV scale is based on whole numbers. DDMI’s calculations were made to two decimal places of precision. GNWT argued that it is not appropriate to discriminate among effects to the degree that DDMI has estimated. Furthermore, as pointed out by GNWT-ENR, the determination of SEV itself is based on hypothetical models; therefore, conservatism should be applied when applying the results.

The Canadian Council of Ministers of the Environment (CCME) Canadian Water Quality Guidelines for the Protection of Aquatic Life: Total Particulate Matter (2002) concludes that the scientific evidence available suggests that “invertebrates are as sensitive to high levels of suspended sediments as salmonid fishes.” The Board is concerned about the protection of all aquatic life, not just fish, as “elevated

49 See WLWB Online Registry for Diavik — Amendment – TSS – GNWT-ENR Closing Argument – Mar 4_16
50 See WLWB Online Registry for Diavik — Amendment – TSS – EC Closing Argument – Mar 4_16
51 See WLWB Online Registry for Diavik — Amendment – TSS – YKDFN Intervention – Jan 20_16
52 See WLWB Online Registry for Diavik — Amendment – TSS – February 12, 2016 Public Hearing Transcript – Feb 15_16 (pg. 43)
53 See WLWB Online Registry for Diavik — Amendment – TSS – February 12, 2016 Public Hearing Transcript – Feb 15_16 (pg. 176)
54 See WLWB Online Registry for Diavik — Amendment – TSS – February 12, 2016 Public Hearing Transcript – Feb 15_16 (pg. 49)
55 See WLWB Online Registry for Diavik — Amendment – TSS – February 12, 2016 Public Hearing Transcript – Feb 15_16 (pg. 141)
suspended sediments affect whole ecosystems.”  

This concern for all aquatic life, not exclusively fish, was shared during the Application proceeding by other parties, such as GNWT-ENR, when they stated:

“The goal here really is to develop water quality objectives that will be protective of all fish and aquatic life species within Lac de Gras, not just salmonids, but non-salmonid fishes and invertebrates as well which serve as the basis of the food chain for those salmonid fishes and other salmonid fishes.”

GNWT-ENR proposed a daily TSS limit of 50 mg/L above background. GNWT-ENR showed that this limit would likely be safe using models for salmonid species. GNWT-ENR also proposed 7-day and 30-day TSS values of 25 mg/L and 11 mg/L, respectively. The latter is more than two times the CCME Guideline 30-day limit of 5 mg/L. The intent of the CCME Guideline is the protection of all aquatic life, and is also the guideline that informed the existing TSS Limit. Therefore, the Board is concerned that the limit proposed by GNWT-ENR would not be protective of all aquatic life.

The Board concludes that no party in the Application proceeding showed persuasively that the limits proposed by DDMI or GNWT-ENR would be sufficiently protective for all aquatic life of Lac de Gras.

3.2.2.3 Potential for Using Turbidity as a Compliance Limit

The potential of using turbidity as a compliance limit, rather than TSS, was discussed during the proceeding. GNWT-ENR stated in their closing argument that “field measurements cannot be considered a ‘legal’ sample.” Given the potential enforcement issues regarding this parameter as the measure of compliance, turbidity cannot be used as a compliance limit.

3.2.2.4 Potential for Long-Term Impacts of TSS

DDMI maintained that the Environmental Assessment for the Diavik Diamond Project set an SEV threshold (as described by Newcombe and Jensen (1996)) of 9 SEV and that their proposed limit of 25 mg/L over a 30 day average would ensure conditions remain below this effects threshold. GNWT-ENR suggested at the public hearing that it is appropriate to consider the implications of the potential TSS remaining just within the compliance limit for the entire construction period, as this is a possible outcome.

DDMI confirmed in their intervention that:

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58 See WLWB Online Registry for Diavik – Amendment – TSS – February 12, 2016 Public Hearing Transcript – Feb 15_16 (pg. 44)

59 See WLWB Online Registry for Diavik – Amendment – TSS – GNWT-ENR Closing Argument – Mar 4_16

60 See WLWB Online Registry for Diavik – Amendment – TSS – GNWT-ENR Closing Argument – Mar 4_16

61 See WLWB Online Registry for Diavik – Amendment – TSS – February 12, 2016 Public Hearing Transcript – Feb 15_16 (pg. 160)

62 See WLWB Online Registry for Diavik – Amendment – TSS – DDMI Intervention – Jan 27_16
“GNWT noted the theoretical possibility that if TSS levels remained at 25 mg/L throughout the entire duration of construction (106 days in the GNWT example) and this would have an estimated SEV higher than what is described for a 25 mg/L - 30-day limit. DDMI notes that this theoretical possibility is not unique to DDMI’s proposed 30-day average limit. This theoretical possibility also exists with the current TSS limit of 25 mg/L as a 1-day grab.”

At the public hearing, DDMI calculated that a sustained TSS level of 25 mg/L for the duration of construction, which they have estimated as 110-days, could result in an SEV of 8.57. As pointed out by GNWT-ENR the Newcombe and Jensen (1996) SEV scale is based on whole numbers, therefore, it may not be appropriate to discriminate among effects that are calculated to 2 decimal places of precision. DDMI responded that the calculation to two decimal places had simply been for clarity. The Board recognizes the potential for a SEV value of 9 to be approached or possibly exceeded during long-term exposures to elevated TSS should 25mg/L be maintained continuously throughout the construction period. The Board agrees that a one-day TSS limit may, by itself, not be sufficiently protective.

As detailed above, all parties were in support of a long-term compliance limit, however, were not in agreement about the numerical value of the limit. The Board believes that a greater level of protection will be provided if a time-dependent TSS value is also included in the limit. Therefore, the Board has decided to maintain a daily TSS limit and to add a time-averaged limit to the Water Licence condition.

3.2.2.5 Applicability of CCME Guideline
The TSS limit set out in the original Water Licence corresponds to the present-day water quality guideline for short-term (<24hr) exposures adopted by CCME for the protection of aquatic life from TSS in clear flow in freshwater, estuarine, and marine settings. This Guideline currently reads:

“Maximum increase of 25 mg·L from background levels for any short-term exposure (e.g., 24-h period). Maximum average increase of 5 mg·L from background levels for longer term exposures (e.g., inputs lasting between 24 h and 30 d).”

Some interveners noted the CCME Guideline was over-protective and might not be applicable because it was developed for flowing water. For example, ECCC, when asked if they had considered the CCME Guideline, stated:

63 See WLWB Online Registry for Diavik – Amendment – TSS – February 12, 2016 Public Hearing Transcript – Feb 15_16 (pg. 30)
64 See WLWB Online Registry for Diavik – Amendment – TSS – February 12, 2016 Public Hearing Transcript – Feb 15_16 (pg. 49)
65 See WLWB Online Registry for Diavik – Amendment – TSS – February 12, 2016 Public Hearing Transcript – Feb 15_16 (pg. 49)
67 See WLWB Online Registry for Diavik – Amendment – TSS – February 12, 2016 Public Hearing Transcript – Feb 15_16 (pg. 152)
“Those were developed primarily for flowing waters, and while are good guidance, I think that they -- Diavik had acknowledged they would not be feasible for them to meet in this case.”

This question of feasibility raised by ECCC is discussed in Section 3.2.4.

The evidence presented by parties, indicates that the CCME Guideline, which is based on flowing waters, may be relevant because the areas of Lac de Gras around the Diavik Diamond Mine have strong currents. For example, DFO noted that:

“past studies conducted by DDMI in Lac de Gras that aimed to determine the degree to which sediments settled out on spawning shoals during construction of dikes A154 and A418, and verify that such shoals were washed clean of sediment within one year as a condition of DDMI’s Fisheries Act Authorization, were inconclusive because tiles set out for the study were dislodged (DFO correspondence to DDMI, August 22, 2013). At the time, DFO concluded that currents strong enough to dislodge tiles were also sufficient to wash any sediments deposited from dike construction.”

Furthermore, DDMI has also noted that SNP Station #1645-84 for the A21 dike construction is in an area with strong currents. Also, as noted by DDMI: “there were no TSS limit non-compliance events with A154 or A418 dike construction. DDMI believes the difference relates to the site specific conditions at A21 - deeper water, greater wind exposure and higher currents - rather than construction or mitigation approaches.” This information supports use of the CCME Guideline, which is based on flowing water, and the Board therefore believes it to be applicable to the A21 construction area. GNWT-ENR also endorsed the concept of the CCME Guideline when they stated that it was their “expectation that the CCME water quality guidelines will be met in Lac de Gras” and that their recommendation is “to try to limit the extent” of Lac de Gras “that doesn’t meet the water quality guidelines.”

DDMI’s SNP depth-integrated data for the 2015 A21 construction season - data which was submitted in response to reviewers’ comments on the Application and is available on the public registry – were graphed by the Board to evaluate achievability of meeting CCME Guideline limits based on actual data. Figures 1-3 show that other than one spike up to 32 mg/L at SNP 1645-84 (which has been attributed to curtain failure), the CCME limits were achievable in 2015 by DDMI.

68 See WLWB Online Registry for Diavik – Amendment – TSS – Review Comment Summary and Attachments – Feb 25_16 (see DDMI response to WLWB comment #4)
69 See WLWB Online Registry for Diavik – Amendment – TSS – February 12, 2016 Public Hearing Transcript – Feb 15_16 (pg. 232)
70 See WLWB Online Registry for Diavik – Amendment – TSS – Review Comment Summary and Attachments – Feb 25_16 (see DDMI Attachment #2 – 2015 A21 TSS Data)
71 Days with missing TSS values were estimated with the average of the last result obtained prior to and the first following the missing value.
Figure 1. CCME Limits Applied to 2015 SNP Data at SNP Station 1645-82

Figure 2. CCME Limits Applied to 2015 SNP Data at SNP Station 1645-83
The Board agrees with suggestions that the water quality limit for Lac de Gras should support non-fish aquatic life and that use of the CCME Guideline is justified. The Board therefore believes that both the short-term and long-term limits described by the CCME Guideline are appropriate.

3.2.2.6 Time-Averaging Calculation Method
Interveners were concerned about the method that DDMI proposed to use to calculate the 30-day average.\textsuperscript{72,73,74,75} DDMI initially proposed that zeros would be used to describe TSS concentrations for days 1-29 of dike construction when sampling data had not yet been collected. Once 30 days of construction had occurred, and data had been collected, the calculation would become a 30-day moving average. The concerns of the intervening parties were based on the fact that use of baseline data from the 29 days before construction started would not provide an accurate representation of water quality during the actual construction period during which aquatic life were potentially exposed to elevated TSS.

\textsuperscript{72} See WLWB Online Registry for Diavik – Amendment – TSS – YKDFN Intervention – Feb 3_16
\textsuperscript{73} See WLWB Online Registry for Diavik – Amendment – TSS – EC Closing Argument – Mar 4_16
\textsuperscript{74} See WLWB Online Registry for Diavik – Amendment – TSS – DFO Closing Argument – Mar 2_16
\textsuperscript{75} See WLWB Online Registry for Diavik – Amendment – TSS – GNWT-ENR Closing Argument – Mar 4_16
Inclusion of low or zero values from outside the construction period would decrease the level of protection of aquatic life by dampening or masking any high TSS measured during construction.

In their closing argument, DDMI proposed using a value of 1.0 mg/L rather than zero. They note that a “value of 1.0 mg/L to represent the background condition of Lac de Gras prior to in-lake construction activities was based on GNWT Intervention” which states that “TSS levels at SNP Station 1645-55 are typically <2 mg/L; one-half of the detection limit for TSS is 1 mg/L.” The Board concludes that values of 1.0 mg/L are a more accurate representation of background concentrations of TSS in Lac de Gras than zero values. The Board has therefore decided to amend the SNP with the wording suggested by DDMI that “for analytical results not available prior to the commencement of open-water sampling, a value of 1.0 mg/L is to be used as the analytical result at 1645-55, 1645-82, 1645-83, and 1645-84.”

The use of 1.0 mg/L does not, however, address the concern of the parties, as explained by ECCC, that: “dampening or masking of high TSS above background events in the initial construction period” could occur, by including up to 29 “non-construction” values of 1 mg/L in a 30 day average. The Board therefore concludes that a 30-day average limit, in addition to the daily TSS limit, is needed to provide adequate protection of aquatic life during the first 30 days of construction and thereafter. The Board concludes that the CCME Guideline limits of 5 mg/L above background (30-day average) and 25 mg/L above background (daily value) will provide short- and long-term protection. Although this would allow inclusion of up to 29 pre-construction values of 1 mg/L in the 30-day average, DDMI would still have to meet the 25 mg/L above background daily limit, providing protection from the dampening effect of up to 29 values of 1 mg/L on any extreme values measured after construction started.

There were also concerns raised about how missing data would be treated when weather conditions are such that a sample cannot be taken. In their closing argument, GNWT-ENR recommended that “a reasonable approach would be to use an average of the TSS values observed on the day prior to and following the day that a sample could not be collected.” The Board agrees that this approach is reasonable and have amended the SNP to reflect the wording suggestion from DDMI that if an analytical result “is not available (due to unsafe boating conditions) it may be estimated from the average of the last result obtained prior to and the first following the day(s) that sample(s) could not be collected.”

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76 See WLWB Online Registry for Diavik – Amendment – TSS – DDMI Closing Argument – Mar 9_16
77 See WLWB Online Registry for Diavik – Amendment – TSS – DDMI Closing Argument – Mar 9_16
78 See WLWB Online Registry for Diavik – Amendment – TSS – EC Closing Argument – Mar 4_16
79 See WLWB Online Registry for Diavik – Amendment – TSS – GNWT-ENR Closing Argument – Mar 4_16
80 See WLWB Online Registry for Diavik – Amendment – TSS – DDMI Closing Argument – Mar 9_16
3.2.3 TSS Management and Response Planning

The Board is concerned that conditions which are unsafe for sampling (such as high winds) are also likely to be those in which dredging activities may generate high TSS and mitigation measures, such as turbidity curtains, are less likely to be fully effective. High TSS conditions which threaten aquatic life may occur when compliance cannot be established. The Board has therefore decided to amend the Water Licence such that DDMI must notify the Inspector when weather conditions are such that they cannot sample for TSS.

DDMI noted in their Application that “DDMI has no control over ambient conditions faced during A21 construction.” The Board agrees, but points out that DDMI does have control over their own operations. The CEMP must also specify the management actions associated with times when samples cannot be collected because unsafe conditions exist. The CEMP must set out the conditions in which TSS samples will not be taken (e.g., wind speeds, qualitative criteria, DDMI staff position responsible for this decision, etc.). For these events, the construction mitigations must also be described and should outline the situations which could warrant installation of a second curtain, slowing construction, or stopping construction. The Board is of the opinion that DDMI must provide safe and seaworthy boats that will allow sampling during conditions when dike construction is active and that if conditions are such that it is unsafe for DDMI staff to sample, then associated decreased or halted construction activity should be occurring. The Board expects that this will be addressed in the CEMP.

As explained by DDMI at the public hearing, the TSS levels on August 8, 2015, when the Water Licence limit was exceeded, “went up very suddenly and came back down very suddenly”, described by DDMI as a span of possibly 6 hours.”81 Part B, Item 22(a) of the original Water Licence (N7L2-1645), required that “once every two (2) weeks during dredging, dike construction, or in-lake activities, these stations shall be sampled every six (6) hours over a 24 hour period, at three (3) water depths, including one (1) metre below the water surface, one (1) metre above the sediment surface, and at the midpoint of the water column” for TSS and turbidity. The current Water Licence SNP does not include this additional requirement. The Board believes that the need for sampling multiple times per day may be avoided with a detailed Response Plan which includes management actions associated with real-time turbidity monitoring. The Board believes that real-time turbidity monitoring should be an important element of ongoing TSS management, particularly in situations when TSS samples cannot be taken due to weather. The Board expects that this will be addressed in the CEMP.

3.2.4 Moving SNP Sampling Locations to the Surveillance Network Program

In their Application, DDMI requested that the requirement that SNP stations must be within 200 m of the centreline of the dike, be removed and provided the following rationale:

81 See WLWB Online Registry for Diavik – Amendment – TSS – February 12, 2016 Public Hearing Transcript – Feb 15_16 (pg. 57)
“The amendment application includes removing the phrase ‘and at a 200 metre distance in any direction from the centerline of the dike footprint’ from Part H Item 31...And instead specifying the location of each Station (1645-82 to 1645-84) as georeferenced locations in the Surveillance Network Program (SNP) (as they are currently). Changing where the location reference is made in the License (from the body of the License to the SNP) would allow changes to be made to a location with approval of the WLWB rather than with an amendment to the license.”

Not all parties were in agreement with this request. In comments on the Application, the GNWT-ENR Inspector noted that: 82

“Complete removal of the “200 meter from centerline” condition would make it more challenging for the Inspector to enforce exceedances between the three designated SNP stations (i.e., at other locations “200 m from the centerline” that don’t happen to coincide with the three SNP station locations). Water between SNP stations is as much a concern as water which happens to be located at the SNP stations at the time of sampling. The “200 m from centerline” condition does need to be retained somewhere within the Water Licence.” 83

The Inspector recommended that the WLWB “retain the condition to ensure all in-lake dredging or other in-lake activities meet criteria (whatever the WLWB establishes them to be) at a 200 m distance in any direction from the centerline of the dike footprint somewhere in the Water Licence.” 84 In their responses, DDMI acknowledged the point. 85

When Board counsel noted at the public hearing that the wording in the condition regarding the 200 m distance is an indication of a continuous ring around the dike where DDMI has to meet the TSS limit, DDMI responded that they had not looked at it that way and that they considered that the distance reference was simply to where the SNP location was supposed to be. 86 DDMI then indicated that their proposal to eliminate these words was solely regarding the location of the SNP station.

DDMI confirmed at the public hearing that it would be “feasible to specify SNP stations regarding distance from the turbidity barrier instead of from the dike centreline” and noted, in both their response to comments on the Application and at the public hearing, that an SNP station 100 m from the curtain.

82 See WLWB Online Registry for Diavik – Amendment – TSS – Review Comment Summary and Attachments – Feb 25_16 (GNWT-Lands comment #3)
83 See WLWB Online Registry for Diavik – Amendment – TSS – Review Comment Summary and Attachments – Feb 25_16 (GNWT-Lands comment #3)
84 See WLWB Online Registry for Diavik – Amendment – TSS – Review Comment Summary and Attachments – Feb 25_16 (see DDMI response to GNWT-Lands comment #3)
85 See WLWB Online Registry for Diavik – Amendment – TSS – February 12, 2016 Public Hearing Transcript – Feb 15_16 (pg. 81)
86 See WLWB Online Registry for Diavik – Amendment – TSS – February 12, 2016 Public Hearing Transcript – Feb 15_16 (pg. 82)
would be achievable. The Board notes however, that eliminating the reference to a distance from the center line of the dike would mean that the turbidity curtain, and the SNP stations could be moved any distance away from the construction area. It was noted by GNWT-ENR that moving the curtain outward would expose a greater zone to the influence of TSS.

The flexibility for changing the locations with the approval of the WLWB rather than with an amendment to the Licence already exists through changes to SNP station locations, as long as the new locations are within 200 m of the centerline of the dike. The result of removal of the 200 m reference would mean that DDMI could request to change the location of the SNP station to any spot (including more than 200 m away from the centreline of the dike). Regardless of the rationale, as stated in their public hearing presentation, DDMI was proposing to remove the 200 m reference despite being aware that the georeferenced locations were already located in the SNP. For the reasons set out, the Board has therefore retained the requirement that SNP stations must remain within a 200 m distance from the centreline of the dike in the Water Licence condition, as DDMI’s desired intent is present in the amended Licence.

### 3.2.5 Depth-Integrated SNP Sampling

During the course of the Application proceeding, it became evident that there was a discrepancy between the Water Licence condition (Part H, Item 31), which specifies that a TSS grab sample must be taken, and the TSS sampling requirements as described in the Surveillance Network Program, which specify that the samples may be depth-integrated. In DDMI’s response to interventions, the request was made for the Water Licence condition to be reworded from “grab sample” to “depth-integrated sample.”

Neither ECCC nor DFO addressed the sampling method in their closing arguments. GNWT-ENR, in their closing argument, recommended discrete depth sampling as opposed to depth-integrated sampling and provided a potential framework for comparison of results with the Licence limit. ENR, in their closing argument, stated that:

> “ENR expects that high TSS may occur near the lake bottom, if the plume flowed under the barrier, in the middle of the water column, in the event of a barrier malfunction, or at the top of the water column depending on currents and as a result of wavy conditions. Thus, ENR’s recommendation is to use discrete sample locations, which would capture the magnitude of TSS at each of these depths, for compliance assessment. ENR’s opinion is that the proposed three

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87 See WLWB Online Registry for Diavik – Amendment – TSS – February 12, 2016 Public Hearing Transcript – Feb 15_16 (pg. 62)
88 See WLWB Online Registry for Diavik – Amendment – TSS – February 12, 2016 Public Hearing Transcript – Feb 15_16 (pg. 234)
89 See WLWB Online Registry for Diavik – Amendment – TSS – February 12, 2016 Public Hearing Transcript – Feb 15_16 (pg. 19)
90 See WLWB Online Registry for Diavik – WL Renewal – Water Licence – Oct 19_15 (pg. 20)
91 See WLWB Online Registry for Diavik – Amendment – TSS – DDMI Intervention – Jan 27_16
depth sampling method is the best method for assessing compliance with the TSS limits based upon the potential behavior of TSS plumes in Lac de Gras.”

DDMI, in their closing argument, noted that the limits proposed by GNWT-ENR to be met throughout the water column (to protect pelagic organisms) and, specifically, near the bottom (to protect benthic invertebrates) are not achievable. Specifically, DDMI concluded that, using the results from the discrete depth samples:

“the GNWT limits are not achievable based on the 2015 data. In particular:
- The GNWT proposed maximum limit of 50 mg/L would have been exceeded on 7 days;
- The GNWT proposed 7-day limit of 25 mg/L would have been exceeded on 24 days; and
- The GNWT proposed 30-day limit of 11 mg/L would have been exceeded on 53 days.”

Follow-up communication with DDMI revealed that the above conclusions were based on results of discrete sampling done for DDMI’s Fisheries Authorization – results that were not presented as part of the proceeding and not part of the public registry. With regards to GNWT-ENR’s discrete-depth recommendation, however, DDMI has noted that:

"If compliance is to be based on individual grab samples then to comply, BMP [Best Management Practices] would lead to a decision to remove the silt curtain and dilute the sediment over the entire water column. This is clearly not the intent of the requirements. The total quantity of sediments reaching and being deposited in a given area of lakebed and the rate of deposition are the concerns."

The Board recognizes the purpose of the silt curtain and the mitigation it provides by confining TSS and directing accumulation of disturbed sediments to the lake bottom within 200 m of the dike. This may focus suspended sediments in near-bottom waters making compliance by discrete-depth sampling difficult and less relevant to the overall goal of protecting aquatic life throughout the water column. The evidence in this proceeding is not sufficient to convince the Board that DDMI should be required to conduct discrete-depth sampling. Therefore, the SNP requirement will remain unchanged and DDMI’s SNP sampling is to be depth-integrated. To clarify that the entire water column is to be sampled, and to address GNWT-ENR’s concern regarding impacts to benthic organisms, the language has been refined to read that: “the depth-integrated sample shall consist of a continuous sample taken between 1 m from the lake bottom to 1 m below the lake surface.” This requirement reflects the distance from surface and

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92 See WLWB Online Registry for Diavik – Amendment – TSS – DDMI Closing Argument – Mar 9_16
93 See WLWB Online Registry for Diavik – Amendment – TSS – DDMI Closing Argument – Mar 9_16
94 See WLWB Online Registry for Diavik – Amendment – TSS – Follow-Up Correspondence re DDMI Closing Argument – Apr 4_16
95 See WLWB Online Registry for Diavik – Amendment – TSS – DDMI Closing Argument – Mar 9_16
bottom requirements that were originally required by Part B, Item 2 of the SNP of N7L2-1645, yet allows for depth-integrated sampling as requested by DDMI.\(^96\)

### 3.2.6 Previous Decisions and Approvals

DDMI has noted that both a 30-day 25 mg/L limit and depth-integrated sampling had been approved by the MVLWB previously.\(^97\)\(^98\) However, it is unclear why the Water Licence (N7L2-1645) was not amended at that time. While the Board does recognize these decisions made by the MVLWB, the Board has given greater weight to relevant evidence presented during the current amendment proceeding.

DDMI, in their closing argument, reference “regulatory framework” flowcharts that had been approved by both the MVLWB and WLWB over the years as part of their CEMP. DDMI details what they describe to be as a “paradigm change to this regulatory framework” when the WLWB required that the references to the Fisheries Authorizations be removed.\(^99\) The Board believes that the decision to correct the persistent discrepancy that existed between the Water Licence and the CEMP clarified that the Water Licence limits are independent of the requirements of the DDMI Fisheries Authorization.\(^100\) Reasons were given for that decision at the time and will not be repeated here.

The DFO-issued Fisheries Authorization considers only serious harm to fish, as opposed to the Water Licence which is intended to protect all aquatic life. ENR, in their closing argument, agreed that “what was approved in the CEMPs for other dikes is not binding on this amendment application.”

During this proceeding, DDMI has also referenced the TSS “effects threshold (Severity of Effect Level – SEV 9) established during the Environmental Assessment for the Project.”\(^101\) In the Reasons for Decision for the original Water Licence (N7L2-1645), the NWT Water Board noted the following: \(^102\)

> “The Applicant has suggested that the Board is bound by the recommendations contained in the Comprehensive Study Report relating to this project. The Board does not agree with this suggestion. While this Board can take guidance from the Comprehensive Study Report there is nothing in the Canadian Environmental Assessment Act that obliges this Board to adhere to the terms of the said Report. Under Section 14(6) of the N.W.T. Waters Act the Minister of Indian Affairs and Northern Development may always decide not to approve the Licence as drafted by

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\(^{96}\) See WLWB paper registry for Type A Water Licence N7L2-1645

\(^{97}\) See WLWB Online Registry for Diavik – Amendment – TSS – DDMI Intervention – Jan 27_16

\(^{98}\) See WLWB Online Registry for Diavik – Amendment – TSS – DDMI Closing Argument – Mar 9_16

\(^{99}\) See WLWB Online Registry for Diavik – Amendment – TSS – DDMI Closing Argument – Mar 9_16

\(^{100}\) See WLWB Online Registry for W2007L2-0003 – Diavik – A21 Dike Design Report CEMP QACQ – Board Directive and Reasons for Decision – Apr 29_15

\(^{101}\) See WLWB Online Registry for Diavik – Amendment – TSS – DDMI Closing Argument – Mar 9_16

\(^{102}\) See WLWB Online Registry for N7L2-1645 – Diavik – Water Licence – Reasons for Decision – Aug 21_00
The WLWB understands that the Environmental Assessment established a threshold of effects that were not to be exceeded. When setting licence limits, the WLWB ensures that these limits prevent significant impacts which informed mitigation decisions in the Environmental Assessment. The Board, however, can set more stringent requirements in a licence when the evidence requires. The WLWB does not see Environmental Assessment mitigations as the basis for a “pollute up to” limit. As per the Water and Effluent Quality Management Policy, the Board “may set EQC that are more stringent than what is necessary to meet water quality standards in the receiving environment.” The Board therefore, has decided to retain the CCME Guideline as the TSS limit.

SIGNATURE

Rita Mueller
Chair of Proceeding, Wek’eezhii Land and Water Board

May 11, 2016