

DRAFT - Type B Water Licence G17L1-002
KBL Environmental – Industrial

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PART A: SCOPE AND DEFINITIONS

1. Scope

- a) This Licence, subject to the conditions contained herein, entitles the Licensee to dispose of waste in association with the operation of the Inuvik Soil Treatment Facility, located within the boundaries of the Town of Inuvik municipal solid waste disposal facility.
- b) This Licence is renewed subject to the conditions contained herein with respect to 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 by the Commissioner in Executive Council under the *Act*, or other statutes imposing more stringent conditions relating to the quantity or type of Waste that may be so deposited or under which any such Waste may be so deposited, this Licence shall be deemed, upon promulgation of such Regulations, to be automatically amended to conform with such Regulations.
- c) Compliance with the terms and conditions of this Licence does not absolve the Licensee from responsibility for compliance with the requirements of all applicable Federal, Territorial and Municipal legislation.

2. Definitions

Act – the *Waters Act*, S.N.W.T. 2014, C.18.

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

Analyst – an Analyst designated by the Minister under Section 65 (1) of the *Act*.

Biotreatment Pad – the engineered infrastructure designed to contain and treat hydrocarbon contaminated soil as described in *Operations and Maintenance Plan: Inuvik Soil and Treatment Facility*, KBL Environmental Ltd., May 12, 2017.

Board – the Gwich'in Land and Water Board established under Part 3 of the *Mackenzie Valley Resource Management Act*.

Closure – the permanent dismantlement of one or more components of the Project with the intent of making the components incapable of its intended use. This includes the removal of associated equipment and structures used in the construction or maintenance of the Project.

Composite Soil Sample – three or more discrete soil samples which have been collected and combined into a single sample, representing the average conditions in the soil.

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

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

Engineered Structure – any structure or facility related to Water Use or the deposit of Waste that is normally designed and approved by a Professional Engineer, and that is associated with the Construction, Operation, Closure and Reclamation of the Project.

Engagement Plan – a document, developed in accordance with the *MVLWB Engagement and Consultation Policy and the Engagement Guidelines for Applicants and Holders of Water Licences and Land Use Permits*, which describes proposed engagement activities during the life of the undertaking.

Freeboard – the vertical distance between water line and the lowest elevation of the effective water containment crest on a dam or dyke's upstream slope.

Industrial Use – all land uses in which the primary activity is related to the production, manufacture or storage of materials. This does not include institutions (e.g., schools, hospitals, playgrounds). The public does not usually have uncontrolled access to this type of land.

Inspector – an Inspector designated by the Minister under Section 65 (1) of the Act.

Inuvik Soil Treatment Facility – comprises the area and associated engineered infrastructure designed to contain and treat hydrocarbon contaminated soil, as described in *Operations and Maintenance Plan: Inuvik Soil Treatment Facility*, KBL Environmental Ltd., May 25, 2017.

Leachate – water that has percolated through the soil on the Biotreatment pad and may contain some of the constituents.

Licensee – the holder of this Licence.

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

Minister – a duly appointed member of the Executive Council who is responsible for the Act.

Modification – an alteration to a physical work that introduces a new structure or replaces or eliminates an existing structure and does not alter the purpose or function of the work, but does not include an expansion.

Professional Engineer – a person registered with the Northwest Territories and Nunavut Association of Professional Engineers and Geoscientist, and whose principal field of specialization is appropriate to address the components of the undertaking at hand.

Project – the Inuvik Soil Treatment Facility undertaking in its entirety, as described in KBL's type B Water Licence application, dated May 12, 2017.

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

Regulations – Regulations promulgated pursuant to Section 63 of the Act.

Runoff – the overland flow of water that occurs when excess precipitation, meltwater, or other sources is not absorbed by the earth's surface, and instead drains downslope towards a surface water body.

Secondary Containment – a containment system that prevents the spread of hazardous liquids to the surrounding environment in the event of a leak, or failure, of a primary storage tank.

Spill – to allow or accidentally release Waste from containment vessels or structures into the receiving environment.

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

Surveillance Network Program (SNP) – a monitoring program established to define environmental sampling and analysis requirements, as detailed in Annex A of this Licence, to collect water quality data, and to assess discharge quality, compliance with Licence terms and conditions, and the potential for impact on the environment.

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

Waste(s) – any Waste as defined by Section 1 of the Act.

Waste Disposal Facilities – all facilities designated for the disposal of Waste.

Watercourse – a natural watercourse, body of water, or water supply, whether usually containing water or not, and includes groundwater, springs, swamps, and gulches, as defined in the *Waters Regulations*.

Water(s) – any Waters as defined by Section 1 of the Act.

Water Holding Tank – the above ground storage tanks designed to contain hydrocarbon contaminated water as described in *Operations and Maintenance Plan: Inuvik Soil Treatment Facility*, KBL Environmental Ltd., May 25, 2017.

Water Retention Pond – the engineered pond to contain hydrocarbon contaminated water, snow, and ice as described in *Operations and Maintenance Plan: Inuvik Soil Treatment Facility*, KBL Environmental Ltd., May 25, 2017.

PART B: GENERAL CONDITIONS

1. The Licensee shall operate in accordance with the plans and programs approved pursuant to the conditions of this Licence and with any revisions to the plans and programs as may be made pursuant to the conditions of this Licence and as approved by the Board. If any plan is not approved by the Board, the Licensee shall revise the plan as directed by the Board and resubmit it to the Board for approval.
2. The Licensee shall comply with the **Surveillance Network Program**, which is annexed to and forms part of this Licence, and any changes to the Surveillance Network Program as may be made by the Board.
3. The Licensee shall operate in accordance with the Schedules, which are annexed to, and form part of this Licence, and any changes to the Schedules as may be made by the Board.
4. The Schedules, Surveillance Network Program and any compliance dates specified in the Licence may be changed at the discretion of the Board. If any date for the submission of a plan, report, or program falls on a weekend or holiday, the plan, report, or program shall be submitted on the following business day.
5. The Licensee shall, within sixty (60) days of the issuance of this Licence, post the necessary signs, where possible, to identify the station(s) of the Surveillance Network Program, and post signs in the appropriate areas to inform the public of the Inuvik Soil Treatment Facility. All postings shall be located and maintained to the satisfaction of an Inspector.
6. The Licensee shall submit to the Board and Inspector an **Annual Water Licence Report** no later than March 31 of the year following the year reported (January – December 31), which shall be in accordance with **Schedule 1**.
7. The Licensee shall operate in accordance with the **Engagement Plan** submitted on May 25, 2017, and shall annually review the plan and make any necessary revisions to reflect changes in operations or as directed by the Board. Revisions to the plan shall be submitted to the Board for approval, and shall include a summary of revisions in the introductory section of the plan.
8. Meters, devices or other such methods used for measuring the volumes of Water obtained and Waste discharged shall be installed, operated and maintained by the Licensee to the satisfaction of an Inspector.
9. The Licensee shall ensure a copy of this Licence is maintained at the site of operation at all times, and that all employees conducting work related to any facilities within the scope of this Licence are made aware of the appropriate sections of the Licence.
10. The Licensee shall conduct further studies and submit the findings to the Board, if requested by the Board to do so at any time during the term of this Licence.
11. All information submitted to the Board for this Licence shall:
 - a) Be submitted in a form acceptable to the Board;
 - b) Be in accordance with the Mackenzie Valley Land and Water Board's *Document Submission Standards*; and
 - c) Include a section within each submission which identifies where the pertinent requirements of the Licence are addressed.
12. All references to policies, guidelines, codes of practice, statutes, Regulations or other authorities shall be read as a reference to the most recent versions, unless otherwise denoted.

PART C: CONDITIONS APPLYING TO SECURITY REQUIREMENTS

1. Prior to the commencement of activities, the Licensee shall provide and maintain with the Minister, a security deposit in the amount of \$450,116 pursuant to subsection 35(1) of the Act and section 11 of the Regulations. The security deposit shall be maintained until such time as it is fully or in part refunded by the Minister pursuant to section 35 of the Act. This clause shall survive the expiry of this Licence.
2. Upon request of the Board, the Licensee shall submit an updated reclamation liability estimate utilizing the current version of RECLAIM or another method acceptable to the Board.
3. The amount of the security deposit required by Part C, Item 1 may be revised by the Board based on estimates of the Project's reclamation liability referred to in Part C, Item 2 or based on such other information as may become available to the Board. Security shall be sufficient to address the full current liability on the site.
4. If the amount of the security deposit is revised by the Board as described under Part C, Item 3, the Licensee shall post the revised amount with the Minister within ninety (90) days of the Board giving notice of the revised amount.

PART D: CONDITIONS APPLYING TO WATER USE

This section intentionally left blank.

PART E: CONDITIONS APPLYING TO WASTE AND WATER MANAGEMENT

1. The Licensee shall take every reasonable precaution to ensure that unauthorized Waste(s) associated with this undertaking do not enter any Waters.
2. The Licensee shall immediately notify the Board and Inspector of the exceedance of any effluent quality criterion.

Management Plans and Monitoring Programs

3. The Licensee shall operate in accordance with the **Waste Management Plan** submitted on May 25, 2017, until such a time as a revised plan is approved by the Board.
4. Within sixty (60) days of issuance, the Licensee shall submit to the Board for approval, an updated Waste Management Plan, in accordance with the Mackenzie Valley Land and Water Board's *Guidelines for Developing a Waste Management Plan*.
5. Once approved, the Licensee shall review the Waste Management Plan annually, and modify the plans as necessary to reflect changes in design, operation and maintenance, or as otherwise required by the Board or Inspector. The proposed updates shall be submitted to the Board for approval, and shall include a summary of revisions in the introductory section of the plan.
6. The Licensee shall, within ninety (90) of the issuance of this Licence, submit to the Board for approval an **Environmental Monitoring Program**, as outlined in **Schedule 2**.
7. Once approved, the Licensee shall review the Environmental Monitoring Program annually, and modify the plans as necessary to reflect changes in design, operation and maintenance, or as otherwise required by the Board or Inspector. The proposed updates shall be submitted to the Board for approval, and shall include a summary of revisions in the introductory section of the plan

Operations and Maintenance

8. The Licensee shall act in accordance with the **Operations and Maintenance Plan** submitted on May 25, 2017, until such a time as a revised plan is approved by the Board.
9. Within sixty (60) days of issuance, the Licensee shall submit to the Board for approval, an updated Operations and Maintenance Plan.
10. Once approved, the Licensee shall review the Operation and Maintenance Plan annually, and modify the plan as necessary to reflect changes in design, operation and maintenance, or as otherwise required by the Board or Inspector. The proposed updates shall be submitted to the Board for approval, and shall include a summary of revisions in the introductory section of the plan.
11. The Licensee shall operate and maintain the Soil Treatment Facility to the satisfaction of an Inspector.
12. A Freeboard limit of 0.9 meters shall be maintained at all times at the Water Retention Pond, or as recommended by an Engineer and approved by an Inspector.
13. Weekly, during Project operations, and immediately after a major storm or catastrophic event, the Licensee shall carry out inspections on Soil Treatment Facility. These shall include, but not be limited to, the following:
 - a) Inspections of drainage systems, to detect evidence of deterioration, malfunction leaks or improper operation; and

- b) Inspections of leachate collection systems to ensure proper functioning, and to determine if leachate is being generated or accumulating.

Acceptance Criteria

14. Only soils meeting the acceptance criteria outlined in Schedule 3, Item 1 shall enter the facility.
15. Prior to accepting soil to the Soil Treatment Facility, the Licensee shall submit soil analyses results to an Inspector.
16. Only snow **and water** meeting the acceptance criteria outlined in Schedule 3, Item 2 shall enter the facility.
17. Prior to accepting snow **or water** to the Soil Treatment Facility, the Licensee shall submit snow/**water** analyses results to an Inspector.
18. The Licensee shall obtain representative samples of soil ~~and snow~~, **and water**-entering the facility as per Schedule 3, Item 3, or as authorized by an Inspector.

Treated Soil Criteria

19. The Licensee shall ensure all treated soil from the Biotreatment Pad meets the following criteria for Industrial Use, unless otherwise authorized by the Board and an Inspector:

Parameter	Maximum Composite Sample
pH	6–8
Antimony	40 mg/kg
Arsenic (inorganic)	120 mg/kg
Barium	2000 mg/kg
Beryllium	8 mg/kg
Cadmium	22 mg/kg
Total chromium	87 mg/kg
Cobalt	300 mg/kg
Copper	91 mg/kg
Lead	600 mg/kg
Mercury	50 mg/kg
Molybdenum	40 mg/kg
Nickel	89 mg/kg
Selenium	2.9 mg/kg
Silver	40 mg/kg
Thallium	1 mg/kg
Tin	300 mg/kg
Uranium	300 mg/kg
Vanadium	130 mg/kg
Zinc	360 mg/kg

Petroleum Hydrocarbons	Soil Maximum Concentration (Fine-grained Soil)	Soil Maximum Concentration (Coarse Grained Soil)
Fraction 1 (C6 - C10)	660 mg/kg	310 mg/kg
Fraction 2 (>C10 - C16)	1500 mg/kg	760 mg/kg
Fraction 3 (>C16 - C34)	2500 mg/kg	1700 mg/kg
Fraction 4 (>C34)	6600 mg/kg	3300 mg/kg
Benzene	5.0 mg/kg	5.0 mg/kg
Toluene	0.8 mg/kg	0.8 mg/kg
Ethylbenzene	20 mg/kg	20 mg/kg
Xylene	20 mg/kg	20 mg/kg

* If testing for particle size is not completed by the Licensee to determine if soil is Coarse or Fine-grained, soil must be treated to achieve the Coarse-grained soil criteria

20. Treated soil meeting the re-use criteria outlined in Part D, Item 19 shall only be used for the purpose of cover material at the Town of Inuvik Solid Waste Disposal Facility, unless otherwise approved by the Board and Inspector.
21. Treated soil not meeting the re-use criteria outlined in Part D, Item 19 shall be disposed of at an approved facility.
22. Prior to removing soil from the Soil Treatment Facility, the Licensee shall submit soil analyses results to an inspector.
23. The Licensee shall obtain representative samples as per the following, or as authorized by an Inspector:

Volume of Soil (m³)	Number of Composite Samples Required
1 - 50	1
51 - 500	2
501 - 1000	3
1001 - 2000	4
2001 - 4000	5

Effluent Quality Criteria

24. The Licensee shall ensure that all water discharged from SNP 0037-1 and SNP 0037-2 meets the following Effluent Quality Criteria:

Parameter	Maximum Grab Concentration
pH	6.5-8.5
Antimony	0.006 mg/L
Arsenic	0.005 mg/L
Barium	1 mg/L
Beryllium	100 mg/L
Boron	1.5 mg/L
Iron	0.3 mg/L
Manganese	0.05 mg/L
Selenium	0.001 mg/L
Uranium	0.02 mg/L
Zinc	0.03 mg/L
Benzene	0.005 mg/L
Toluene	0.024 mg/L
Ethylbenzene	0.0024 mg/L
Xylenes	0.3 mg/L
Styrene	0.072 mg/L
F1	2.2 mg/L
F2	1.1 mg/L
Acenaphthene	0.0058 mg/L
Acenaphthylene	0.046 mg/L
Anthracene	0.000012 mg/L
Fluoranthene	0.00004 mg/L
Fluorene	0.003 mg/L
Naphthalene	0.0011 mg/L
Phenanthrene	0.0004 mg/L
Pyrene	0.000025 mg/L
Carcinogenic PAHs (as B(a)P TPE)	0.00001 mg/L
Benz[a]anthracene	0.000018 mg/L
Benzo[b+j]fluoranthene	0.00048 mg/L
Benzo[k]fluoranthene	0.00048 mg/L
Benzo[a]pyrene	0.000017 mg/L
Chrysene	0.0014 mg/L
Dibenz[a,h]anthracene	0.00028 mg/L
Indeno[1,2,3-c,d]pyrene	0.00023 mg/L
Phenol	0.004 mg/L
Polychlorinated biphenyls	0.0094 mg/L

25. Water meeting the Effluent Quality Criteria referred to in Part D, Item 24 may be:

- a) Reapplied to the Biotreatment Pad;
- b) Used as a dust suppressant within the boundaries of the Inuvik Solid Waste Disposal Facility; and/or
- c) Discharged to the receiving environment at SNP 0037-1 or SNP 0037-2.

26. The volume of Waste discharged from SNP 0037-1 and SNP 0037-2 must not exceed 50m³ per discharge event at SNP 0037-3, or as authorized by an Inspector.
27. The rate of flow of Water discharged from SNP 0037-1 and SNP0037-2 must not exceed 300 L per minute at SNP 0037-3, or as authorized by an Inspector.
28. Treated water not meeting the Effluent Quality Criteria referred to in Part D, Item 24, and which exceeds the capacities of the Water Retention Pond and Water Holding Tanks may be:
 - a) Reapplied to the Biotreatment Pad;
 - b) Treated to ensure it meets Effluent Quality Criteria; and/or
 - c) Transported to an approved facility for disposal.
29. Prior to discharging effluent from the Soil Treatment Facility, the Licensee shall submit water analyses results to an Inspector.

PART F: CONDITIONS APPLYING TO CONSTRUCTION

1. Within sixty (60) days prior to the construction of any Engineered Structures intended to contain, treat, withhold, divert or retain Water or Wastes, the Licensee shall submit to the Board a construction plan and a design report signed and stamped by a Professional Engineer, which notes “issued for construction” or similar phrase.
2. Construction of designed structures as described in Part F, Item 1, shall be carried out in accordance with the recommendations of the Professional Engineer.
3. A minimum of ten (10) days prior to the commencement of construction of the structures referred to in Part F, Item 1, the Licensee shall provide written notification to the Board and an Inspector. Notification shall include the name and contact information for the construction superintendent.
4. Within ninety (90) days of the completion of the construction of the structures referred to in Part F, Item 1, the Licensee shall submit to the Board As-built Reports which shall include as-built drawings stamped and signed by a Professional Engineer and descriptions and rationale for changes made that deviate from the final design drawings referred to in Part F, Item 1.

PART G: CONDITIONS APPLYING TO MODIFICATIONS

1. The Licensee may, without written approval from the Board, carry out Modifications to the Inuvik Soil Treatment Facility 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 and an Inspector in writing of such proposed Modifications at least sixty (60) days prior to beginning the Modifications;
 - b) Such Modifications do not place the Licensee in contravention of either the Licence or the Act;
 - c) The Board has not, during the sixty (60) days following notification of the proposed Modifications, informed the Licensee that review of the proposal will require more than sixty (60) days;
 - d) An Inspector has authorized the proposed Modifications and provided a letter of notification to the Board; and
 - e) The Board has not rejected the proposed Modifications.
2. Modifications for which all of the conditions referred to in Part G, Item 1 have not been met may be carried out only with written approval from the Board.
3. A minimum of ten (10) days prior to the commencement of modifications referred to in Part G, Item 1, the Licensee shall provide written notification to the Board and an Inspector.
4. Within ninety (90) days of the completion of the Modifications referred to in Part G, Item 1, the Licensee shall submit to the Board as-built drawings stamped and signed by a Professional Engineer, which notes "final" or similar phrase.

PART H: CONDITIONS APPLYING TO SPILL CONTINGENCY PLANNING

1. The Licensee shall act in accordance with the **Spill Contingency Plan** submitted on May 12, 2017, until such a time as a revised plan is approved by the Board.
2. The Licensee shall review the Spill Contingency Plan annually, and if necessary, modify the plan to reflect changes in operation(s) and technology, chemicals or fuels, or as directed by the Board. The updated Spill Contingency Plan shall be submitted to the Board for approval, and shall include a summary of revisions in the introductory section of the plan.
3. If, during the period of this Licence, an unauthorized discharge of Waste occurs, or if such a discharge is foreseeable, the Licensee shall:
 - a) Implement the approved Spill Contingency Plan;
 - b) Report all Spills immediately via the (24) Hour NWT-Nunavut Spill Report Line (867) 920-8130 in accordance with the instructions contained in the NT-NU Spill Report Form and the Spills Working Agreement, Appendix A, Schedule 1 – Reportable Quantities for NT-NU Spills.;
 - c) Report each Spill to the Board and an Inspector within 24 hours; and
 - d) Submit to the Board and an Inspector a detailed report on each occurrence not later than thirty (30) days after initially reporting the event. The detailed report shall include descriptions of root causes, response actions, and any changes to procedures to prevent similar occurrences in the future.
4. All Spills and Unauthorized Discharges of Water or Waste shall be reclaimed to the satisfaction of an Inspector.

PART I: CONDITIONS APPLYING TO CLOSURE AND RECLAMATION

1. Within one year of issuance of this Licence, the Licensee shall submit to the Board for approval a **Closure and Reclamation Plan**. The plan shall be in accordance with Schedule 4, Item 1.
2. The Licensee shall implement the Plan specified in Part I, Item 1 as and when approved by the Board.
3. Upon implementation of the Closure and Reclamation Plan, the Licensee shall provide to the Board and Inspector updates of all Closure and Reclamation activities within the Annual Report as described in Part B, Item 6.

GWICH'IN LAND AND WATER BOARD

Witness – Leonard DeBastien

Chair – Paul Sullivan

Schedule 1 – Annual Water Licence Report

1. The **Annual Water Licence Report** referred to in Part B, Item 6 of this Licence shall include, but not be limited to, the following information:
 - a) The generator, carrier, volume and analytical results of soil and snow accepted at the Inuvik Soil Treatment Facility ;
 - b) The generator, carrier, volume, analytical results, of soil and snow refused from the Inuvik Soil Treatment Facility;
 - c) The volume, analytical results, carrier, and destination of treated soil removed from the Inuvik Soil Treatment Facility;
 - d) The monthly and annual quantities in cubic meters of all effluent discharged from the Water Retention Pond and Water Holding Tanks;
 - e) The water level and remaining capacity of each of the Water Holding Tanks and Water Retention Pond;
 - f) A description and volume or quantity of process additives used, with MSDS provided;
 - g) Discharge location(s) and effluent quality test results (raw and summarized data) for each discharge event from the Water Retention Pond and Treated Water Tanks;
 - h) Tabular summaries of all data generated under the Surveillance Network Program (SNP) in accordance with Part 2, Item 3, and Annex A of this Licence;
 - i) Details and results of the Environmental Monitoring Program, in accordance with Part E, Item 6, and Schedule 2 of this Licence;
 - j) Laboratory reports for all samples collected for the Surveillance Network Program, attached as an appendix;
 - k) For parameters that exhibit on-going or recurring exceedances of compliance criteria, provide:
 - i. additional data analysis;
 - ii. a comparison to monitoring data from previous years to detect trends or patterns; and
 - iii. a review of field conditions in order to explain results
 - l) A summary of Construction activities conducted in accordance with Part F of this Licence;
 - m) A summary of Modification activities and major maintenance work conducted on the Inuvik Soil Treatment Facility, including all associated structures, in accordance with Part G of this Licence;
 - n) A list and description of all Unauthorized Discharges that occurred during the previous calendar year, including the date, NWT spill number, volume, location, and summary of the circumstances and follow-up actions taken, and the status (i.e. open or closed), in accordance with the reporting requirements referred to in Part H of this Licence;
 - o) An outline of any spill training and communications exercises carried out during the previous calendar year;
 - p) A summary of any closure and reclamation work completed during the year and an outline of any work anticipated for the next year;
 - q) A summary of any studies requested by the Board that relate to Waste disposal or Reclamation, and a brief description of any future studies planned;

- r) A summary of actions taken to address concerns, non-conformances, or deficiencies in any reports filed by an Inspector;
- s) A summary of any updates or revisions to the Engagement Plan, Spill Contingency Plan, Waste Management Plan, Operation & Maintenance Plan, Environmental Monitoring Program, and Closure and Reclamation Plan; and
- t) Any other details on Waste disposal, operating procedures, Construction, Modifications, maintenance work, or other topics, requested by the Board on or before November 1 of the year being reported.

Schedule 2 – Environmental Monitoring Program

1. The **Environmental Monitoring Program** referred to in Part E, Item 6 of this Licence shall include, but not be limited to, the following information:

- a) Results of the geotechnical investigation;
- b) Proposed surface water monitoring program;
- c) Proposed groundwater monitoring program;
- d) Proposed soil monitoring program;
- e) Proposed permafrost monitoring program; and
- f) Proposed permafrost protection plan;

This information shall include, but not be limited to:

- i. A description of the underlying and surrounding hydrogeology, as assessed by a Professional Engineer, Hydrologist; Hydrogeologist or equivalent professional;
- ii. A description of how leachate related to the Biotreatment Pad and Water Retention Pond will be monitored, with appropriate maps or diagrams;
- iii. Baseline data that establishes existing concentration ranges of potential contaminants of concern (including but not limited to: benzene, toluene, ethylbenzene, and xylenes (BTEX); volatile organic compounds (VOCs); F1 to F4 hydrocarbon fractions; polycyclic aromatic hydrocarbons (PAHs); and total metals);
- iv. A schedule for the periodic monitoring of contaminants of concern (including but not limited to: benzene, toluene, ethylbenzene, and xylenes (BTEX); volatile organic compounds (VOCs); F1 to F4 hydrocarbon fractions; polycyclic aromatic hydrocarbons (PAHs); and total metals);
- v. Details of monitoring, including a rationale for each component of the Water management system;
- vi. A map and attached table or detailed legend illustrating monitoring and sampling locations;
- vii. A description, including detailed rationale, of the site-specific monitoring activities required to identify impacts from Project-related activities;
- viii. A description of monitoring protocols, methodologies, parameters, and frequency specific to each type of monitoring identified in Item (iv) above;
- ix. A description of the quality assurance and quality control measures followed for each monitoring type;
- x. A description of responses to monitoring results and an explanation of how the Licensee will link the results of monitoring to those corrective actions necessary to ensure that the conditions listed in Part E, Item 19 and 24 are met. This description shall include:
 - a. definitions, with rationale, for Action Levels for parameters of concern that will be monitored under the Environmental Monitoring Program; and
 - b. for each Action Level, a description of actions taken in response to any Action Level exceedances under the Monitoring Program.
- xi. Reporting methods for Action Levels exceedances and actions taken during the year, as per the Annual Water Licence Report requirements outlined in Schedule 1 of this Licence.

Schedule 3 – Soil ~~and~~ Snow and Water Acceptance Criteria

- As per Part E, Item 14, all soil entering the Inuvik Soil Treatment Facility shall meet the following criteria:

Parameter	Soil Composite Sample Maximum Concentration
pH	6–8
Antimony	40 mg/kg
Arsenic (inorganic)	120 mg/kg
Barium	2000 mg/kg
Beryllium	8 mg/kg
Cadmium	22 mg/kg
Total chromium	87 mg/kg
Cobalt	300 mg/kg
Copper	91 mg/kg
Lead	600 mg/kg
Mercury	50 mg/kg
Molybdenum	40 mg/kg
Nickel	89 mg/kg
Selenium	2.9 mg/kg
Silver	40 mg/kg
Thallium	1 mg/kg
Tin	300 mg/kg
Uranium	300 mg/kg
Vanadium	130 mg/kg
Zinc	360 mg/kg
Fraction 1 (C6 - C10)	< 3% dry weight
Fraction 2 (>C10 - C16)	< 3% dry weight
Fraction 3 (>C16 - C34)	< 3% dry weight
Fraction 4 (>C34)	< 3% dry weight

2. As per Part E, Item 16, all snow **and water** entering the Inuvik Soil Treatment Facility shall meet the following criteria:

Parameter	Maximum Grab Concentration
pH	6-8
F1 (C6 – C10)	No free-phase hydrocarbon product
F2 (>C10 – C16)	
F3 (>C16 – C34)	
F4 (>C34)	

3. As per Part E, Item 18 representative samples of soil ~~and~~ snow **and water** shall be collected according to the following:

Volume of Soil (m ³)	Number of Composite Samples Required
1 - 50	1
51 - 500	2
501 - 1000	3
1001 - 2000	4
2001 - 4000	5
Volume of snow/ water (m ³)	Number of Composite Samples Required
1 - 50	1
51 - 200	2

Schedule 4 – Closure and Reclamation

1. With regard to the facility being closed, the **Closure and Reclamation Plan** referred to in Part I, Item 1 shall include, but not be limited to, the following information:
 - a) A description of existing conditions, including photographs;
 - b) A summary compilation of pre-existing conditions, including assessments of soil, water and permafrost;
 - c) Final removal, transportation, and disposal of treated and untreated soil;
 - d) Final removal of synthetic liner system, Water Retention Pond, and Water Holding Tanks;
 - e) A schedule for the periodic monitoring of contaminants of concern (including benzene, toluene, ethylbenzene, and xylenes (BTEX); volatile organic compounds (VOCs); F1 to F4 hydrocarbon fractions; polycyclic aromatic hydrocarbons (PAHs); and total metals);
 - f) Plans to minimize the potential for leachate to contaminate groundwater and surface runoff;
 - g) Consideration of altered drainage patterns;
 - h) Consideration of climate change effects;
 - i) Contaminated site remediation;
 - j) Type and source of cover materials;
 - k) Future area use;
 - l) A post-closure monitoring plan;
 - m) An implementation schedule; and
 - n) Maps delineating all disturbed areas, borrow material locations, and site facilities including hydrological features and elevation contours.

**Annex A:
Surveillance Network Program (SNP)
Annexed to Water Licence G17L1-002 Part B, Item 2
KBL Environmental**

Table of Contents:

Part A: Reporting Requirements

Part B: Sampling and Analysis Requirements

Part C: Surveillance Network Program Station Descriptions

Part A: Reporting Requirements

1. The effective date of this Surveillance Network Program (SNP) is July 25, 2017
2. The Licensee shall include all of the data and information required in Part C of this Annex in the Annual Water Licence Report, as specified in Part B, Item 6 of this Licence.
3. The Licensee shall also provide SNP data at other times, if requested by an Inspector or the Board.

Part B: Sampling and Analysis Requirements

1. More frequent sample collection or provision of data may be required at the request of an Inspector.
2. The location of sampling sites is subject to the approval of an Inspector. The Licensee shall work with an Inspector to confirm suitability of sampling sites. Signs shall be posted as per Part B, Item 5 of this Licence.
3. All sampling, sample preservation, and analyses shall be conducted in accordance with methods prescribed in the current edition of American Public Health Association's (APHA) *Standard Methods for the Examination of Water and Wastewater* at the time of analysis, or by other such methods approved by an Analyst.
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.

Part C: SNP Station Descriptions and Monitoring Requirements

SNP #	Location	Sampling Frequency	Sampling Parameters	Rationale
0037-1	Water Retention Pond	a) Prior to proposed discharge b) during discharge	- ICP-MS Metal Scan (Total) - Field parameters - Total Petroleum Hydrocarbons (F1, F2, F3, F4 CCME Fractions) - Benzene, Toluene, Ethylbenzene, and Xylene - Chemical Oxygen Demand (COD) - Extractable Petroleum Hydrocarbons (EPH) - Total Suspended Solids (TSS) - Oil and Grease - pH	Point of compliance, prior to and during discharge
0037-2	Water Holding Tank	a) Prior to proposed discharge b) during discharge	- ICP-MS Metal Scan (Total) - Field parameters - Total Petroleum Hydrocarbons (F1 F2, F3, F4 CCME Fractions) - Benzene, Toluene, Ethylbenzene, and Xylene - Chemical Oxygen Demand (COD) - Extractable Petroleum Hydrocarbons (EPH) - Total Suspended Solids (TSS) - Oil and Grease - pH	Point of compliance, prior to discharge,
0037-3	Drainage Ditch (TBD)	During discharge of water from Retention Pond or Water Holding Tanks	- total volume of water discharged - rate of flow	
0037-4	Groundwater Well (TBD: North-East)	Twice annually (Spring and Fall)	- ICP-MS Metal Scan (Total) - Field parameters - Total Petroleum Hydrocarbons (F1 F2, F3, F4 CCME Fractions) - Benzene, Toluene, Ethylbenzene, and Xylene - Chemical Oxygen Demand (COD) - Extractable Petroleum	Upgradient Monitoring Well

			<ul style="list-style-type: none"> Hydrocarbons (EPH) - Total Suspended Solids (TSS) - Oil and Grease - pH 	
0037-5	Groundwater Well (TBD: South-East)	Twice annually (Spring and Fall)	<ul style="list-style-type: none"> - ICP-MS Metal Scan (Total) - Field parameters - Total Petroleum Hydrocarbons (F1 F2, F3, F4 CCME Fractions) - Benzene, Toluene, Ethylbenzene, and Xylene - Chemical Oxygen Demand (COD) - Extractable Petroleum Hydrocarbons (EPH) - Total Suspended Solids (TSS) - Oil and Grease - pH 	Downgradient Monitoring Well
0037-6	Groundwater Well (TBD: South)	Twice annually (Spring and Fall)	<ul style="list-style-type: none"> - ICP-MS Metal Scan (Total) - Field parameters - Total Petroleum Hydrocarbons (F1 F2, F3, F4 CCME Fractions) - Benzene, Toluene, Ethylbenzene, and Xylene - Chemical Oxygen Demand (COD) - Extractable Petroleum Hydrocarbons (EPH) - Total Suspended Solids (TSS) - Oil and Grease - pH 	Downgradient Monitoring Well
0037-7	Groundwater Well (TBD: South-West)	Twice annually (Spring and Fall)	<ul style="list-style-type: none"> - ICP-MS Metal Scan (Total) - Field parameters - Total Petroleum Hydrocarbons (F1 F2, F3, F4 CCME Fractions) - Benzene, Toluene, Ethylbenzene, and Xylene - Chemical Oxygen Demand (COD) - Extractable Petroleum Hydrocarbons (EPH) - Total Suspended Solids (TSS) - Oil and Grease - pH 	Downgradient Monitoring Well

0037-8	Surface Water Monitoring (TBD)	Twice annually (Spring and Fall)	<ul style="list-style-type: none"> - ICP-MS Metal Scan (Total) - Field parameters - Total Petroleum Hydrocarbons (F1 F2, F3, F4 CCME Fractions) - Benzene, Toluene, Ethylbenzene, and Xylene - Chemical Oxygen Demand (COD) - Extractable Petroleum Hydrocarbons (EPH) - Total Suspended Solids (TSS) - Oil and Grease - pH 	Downgradient of Water Retention Pond
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**Annex B:
Concordance Table of Items Requiring Submission (Water Licence G17L1-002)**

Licence Part	Item	Timeline for Submission
B	Post Signs	Within sixty (60) days of Licence issuance
B	Submit Annual Water Licence Report	By March 31 of each year
B	Submit updated Engagement Plan	Upon any revisions
C	Provide Security Deposit to Minister	Prior to the commencement of activities
E	Notify Board and Inspector	Immediately upon the exceedance of any EQC
E	Submit updated Waste Management Plan for Board approval	Within sixty (60) days of Licence issuance
E	Submit Environmental Monitoring Program for Board approval	Within ninety (90) days of Licence issuance
E	Submit updated Operation and Maintenance Plan for Board approval	Within sixty (60) days of Licence issuance
F	Submit As-Built drawings for Construction of any structures intended to contain, withhold, divert or retain Waters or Wastes	At least sixty (60) days prior to commencement
F	Notify Board and Inspector before commencing Construction of any structures intended to contain, withhold, divert or retain Waters or Wastes	At least ten (10) days prior to commencement
F	Submit Final design drawings for the Construction of any structures intended to contain, withhold, divert or retain Waters or Wastes	Within ninety (90) days of completion
G	Notify Board and Inspector of proposed Modifications to Water Supply or Waste Disposal Facilities	At least sixty (60) days prior to commencement
G	Notify Board and Inspector before commencing Modifications	At least ten (10) days prior to commencement
G	Submit as-built drawings for Modifications	Within ninety (90) days of completion
H	Submit updated Spill Contingency Plan	Upon any revisions
I	Submit Closure and Reclamation Plan	Within one year of Licence issuance

Note: This table summarizes the information the Licensee is required to submit as per the Water Licence Conditions. In the event of a discrepancy between this table and the body of the Water Licence, the Water Licence condition will prevail.

**Annex C:
Revisions to Water Licence G17L1-002**

Date	Location of Change	What has changed
November 23, 2017	Part C, Item 1	Security Requirements changed from \$760,000.00 to \$450,116.00
November 23, 2017	Part G, Item 1	Clerical Error corrected: "Water Supply Facilities or Solid Waste Disposal Facilities" changed to "Inuvik Soil Treatment Facility"
November 23, 2017	Part G, Item 1 a)	Clerical Error corrected: "ten (60) days prior" has been changed to "sixty (60) days prior"
November 23, 2017	Schedule 3, Item 2	Snow acceptance criteria updated to reflect approved Operations and Maintenance Plan
November 23, 2017	Annex B	Clerical Error corrected: Requirement for updated Waste Management Plan moved from Part D to Part E. Submission timelines updated to reflect Water Licence requirements
November 23, 2017	Annex C	Annex C, Table of Revisions, added to Licence
TO BE UPDATED, post Board Decision		