

**Type B Water Licence S18L1-002**  
**KBL Environmental Ltd. – Norman Wells Soil Treatment Facility**

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## Part A: Scope and Definitions

### Scope:

1. This Licence entitles the Licensee to construct, operate, and maintain a soil treatment facility to receive and treat hydrocarbon impacted soil and snow and to dispose of Waste for the purposes of the operation of the Norman Wells Soil Treatment Facility in the Town of Norman Wells, NT Upper Industrial Area.
2. 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 by the Commissioner in Executive Council 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.
3. Compliance with the terms and conditions of this Licence does not relieve the Licensee from responsibility for compliance with the requirements of any applicable federal, territorial, Tlicho, Deline, or municipal legislation.

### Definitions:

**Act** - the *Waters Act*.

**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 subsection 65(1) of the Act.

**Board** - the Sahtu Land and Water Board established under Part 3 of the *Mackenzie Valley Resource Management Act*.

**Biotreatment Pad** – the engineered infrastructure designed to contain and treat hydrocarbon contaminated soil as described in *Operations and Maintenance Plan, Norman Wells Soil Treatment Facility*, KBL Environmental Ltd., August 2, 2018.

**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.

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

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

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

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

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

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

**Leachate Retention Pond**- the excavation within the Land Treatment Facility constructed for the purpose of storing contaminated snow and to collect runoff from precipitation and from the soil treatment pad as described in the *Operations and Maintenance Plan, Norman Wells Soil Treatment Facility*, KBL Environmental Ltd., August 2, 2018.

**Licensee** - the holder of this Licence.

**Maximum Grab Concentration** – the 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 *Waters Act* or the department responsible for administering that Act.

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

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

**Project** - the contaminated soil treatment facility undertaking as described in Part A, item 1.

**Receiving Environment** - the natural environment that receives any deposit of Discharge of Waste or Water, including runoff, from the Project.

**RECLAIM** – the current version of a computer-based spreadsheet program developed by Brodie Consulting Ltd., used to estimate security reclamation costs.

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

**Regulations** - Regulations proclaimed 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.

**Soil Treatment Facility** - means the Engineered Structure designed to contain and treat hydrocarbon contaminated soils and snow as described in the *Operations and Maintenance Plan, Norman Wells Soil Treatment Facility*, KBL Environmental Ltd., August 2, 2018.

**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** - a monitoring program established to define environmental sampling and analysis requirements, as detailed in Annex A of this Licence, to collect data, and assess compliance and potential for impacts to the Receiving Environment.

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

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

**Waste(s)** – any substance defined as Waste by section 1 of the Act.

**Waste Management Plan** - a document, developed in accordance with the MVLWB's *Guidelines for the Development of a Waste Management Plan*, that describes the methods of Waste management from Waste generation to final disposal.

**Water(s)** - any Waters as defined under section 1 of the Act.

**Water Storage Tank** - a skid-mounted, above ground container for the storage of snow, Water or hydrocarbon contaminated Water with a capacity of less than 65,000 litres as described in the *Operations and Maintenance Plan, Norman Wells Soil Treatment Facility*, KBL Environmental Ltd., August 2, 2018

**Water Treatment Plant** - the area and associated structures designated for the treatment of hydrocarbon-contaminated Water, as described in the *Operations and Maintenance Plan, Norman Wells Soil Treatment Facility*, KBL Environmental Ltd., August 2, 2018.

**Water Use** – a use of Water as defined by section 1 of the Act.

**Part B: General Conditions**

1. The Licensee shall ensure a copy of this Licence is maintained on site at all times.
2. 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 information and Traditional Knowledge that is made available to the Licensee.
4. 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.
5. The Licensee shall ensure all information submitted to the Board:
  - a) Is in a form acceptable to the Board;
  - b) Is in accordance with the MVLWB's *Document Submission Standards*;
  - c) Include a conformity table, which identifies where the pertinent requirements of this Licence are addressed; and
  - d) Includes a revision history table and summary of the revisions made.
6. The Licensee shall ensure management plans are submitted to the Board in a format consistent with the MVLWB's *Standard Outline for Management Plans*.
7. The Licensee shall comply with all plans and programs approved pursuant to the conditions of this Licence, including such revisions made as per the conditions of this Licence, and as approved by the Board.
8. The Licensee may propose revisions at any time by submitting a revised plan or program to the Board for approval. All revisions shall be submitted to the Board, for approval, at least 90 days, unless otherwise specified, prior to implementing any proposed updates or changes in the approved plans and programs.
9. If any submission is not approved by the Board, the Licensee shall revise the submission according to the Board's direction and resubmit for approval.
10. If any date for any submission falls on a weekend or holiday, the Licensee may submit the item on the following business day.
11. The Licensee shall comply with the Schedules which are annexed to an form part of this Licence, and any changes to the Schedules as may be made by the Board.
12. 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.
13. The Schedules, the Surveillance Network Program, and any compliance dates specified in this Licence may be changed at the discretion of the Board.
14. Prior to establishing, activating, or relocating any Surveillance Network Program station(s), the Licensee shall post sign(s) to identify the Surveillance Network Program station(s). The sign(s) shall be located and maintained to the satisfaction of an Inspector.

15. The Licensee shall install, operate, and maintain meters, devices, or other such methods used for measuring the volumes of Water used and Waste discharged to the satisfaction of an Inspector.
16. Beginning March 31, 2020 and no later than every March 31 thereafter, the Licensee shall submit an **Annual Water Licence Report** to the Board. The Report shall be in accordance with Schedule 1, condition 1.
17. The Licensee shall adhere to the **Engagement Plan**, once approved, and shall annually review the approved 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 prior to implementation.
18. A minimum of ten days prior to commencement of the Project, the Licensee shall provide written notification to the Board and an Inspector. Notification shall include the name and contact information for the Project Superintendent. Updates shall be provided to the board and an Inspector in writing as changes occur.

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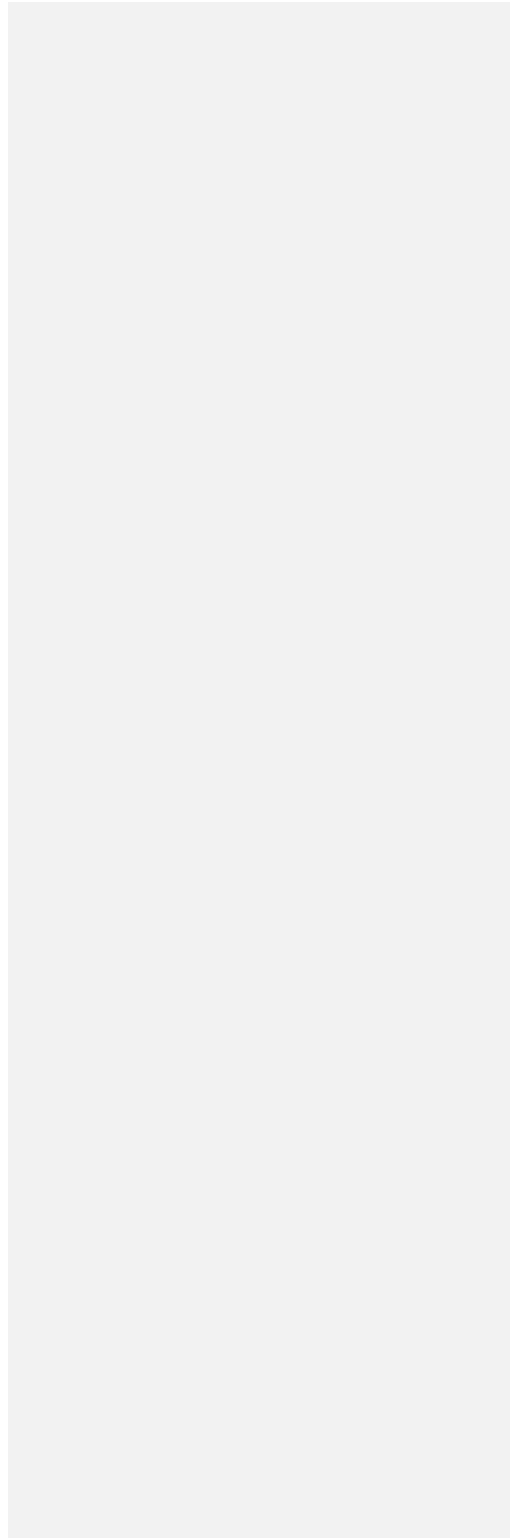
**Part C: Reclamation Security Requirements**

1. Prior to commencement of Construction, the Licensee shall post and maintain a Reclamation security deposit with the Minister, in accordance with Schedule 2, condition 1.
2. A minimum of ten days prior to the commencement of the Project, the Licensee shall provide written notification to the Board and an Inspector that the Reclamation security deposit has been posted. The Reclamation security deposit shall be maintained until such time as it is refunded by the Minister.
3. Upon request of the Board, the Licensee shall submit an updated closure cost estimate utilizing the current version of RECLAIM or another method acceptable to the Board.
4. The amount of the Reclamation security deposit required by Part C, condition 1 may be revised by the Board:
  - a) based on updated closure cost estimates referred to in Part C, condition 3; or
  - b) based on such other information as may become available to the Board.
5. If the amount of the Reclamation security deposit is revised by the Board as per Part C, condition 4, the Licensee shall post the revised amount with the Minister within 90 days of the Board giving notice of the revised amount, or as otherwise directed by the Board.

**Part D: Water Use**

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**Part E: Conditions Applying to Construction**

1. The Licensee shall ensure that all structures intended to contain, withhold, divert, or retain Water or Wastes are designed, constructed, and maintained to minimize the escape of Waste to the Receiving Environment.
2. A minimum of 45 days prior to the commencement of Construction of the Biotreatment Pad and the Leachate Retention Pond, the Licensee shall submit to the Board, a construction plan and design drawings stamped and signed by a Professional Engineer, which notes "issued for construction" or similar phrase.
3. The Licensee shall ensure that all Engineered Structures as described in Part E, condition 2 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. The Licensee shall maintain Construction records of Construction materials for all structures and make them available at the request of the Board or an Inspector.
5. A minimum of ten days prior to the commencement of Construction of any Engineered Structure(s), the Licensee shall provide written notification to the Board and an Inspector. Notification shall include the name and contact information for the Construction superintendent. Updates shall be provided to the Board and an Inspector in writing as changes occur.
6. Within 90 days of the completion of the Construction of each Engineered Structure, the Licensee shall submit to the Board an **As-built Report**, stamped and signed by a Professional Engineer, which shall include, but not be limited to the following information:
  - a) final as-built drawings of the Engineered Structure(s) stamped and signed by a Professional Engineer;
  - b) documentation of field decisions that deviate from the Design and Construction Plan; and
  - c) any data used to support these decisions.

**Part F: Modifications**

1. The Licensee may carry out a Modification to an existing or planned structure, without written approval from the Board, provided the proposed Modification is not an expansion, does not alter the purpose or function of the structure, and the following are consistent with the terms of this Licence and the following requirements are met prior to beginning the Modification:
  - a) The Licensee shall provide written notification to the Board and an Inspector a minimum of 45 days prior to beginning the Modification;
  - b) An Inspector has provided written notification to the Board authorizing the proposed Modification;
  - c) The Board has not informed the Licensee that additional information is required; and
  - d) The Board has not informed the Licensee that additional time is required to conduct a public review.
2. The Licensee may only carry out a Modification that does not meet Part F, condition 1 with written approval from the Board.
3. Within 90 days of the completion of the Modification referred to in Part E, condition 1, the Licensee shall submit to the Board an **As-Built Report**, stamped and signed by a Professional Engineer, which shall include final as-built drawings and specifications of the modified structure.

#### **Part G: Waste and Water Management**

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

#### **Management Plans and Monitoring Programs**

2. The Licensee shall adhere to the **Waste Management Plan**, once approved, and shall annually review the approved plan to make any necessary revisions to reflect changes in operations, technology, chemicals, or fuels, or as directed by the Board. 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.
3. Within 90 days prior to Construction of the Soil Treatment Facility, the Licensee shall submit to the Board, for approval, an **Environmental Monitoring Program**. The Plan shall be developed in accordance with Schedule 3, condition 1.
4. The Licensee shall adhere to the Environmental Monitoring Program, once approved, and shall annually review the approved plan to make any necessary revisions to reflect changes in design, operation, and maintenance, or as directed by the Board. 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**

5. The Licensee shall adhere to the **Operations and Maintenance Plan**, once approved, and shall annually review the approved plan and make any necessary revisions to reflect changes in operations, or as directed by the Board. Revisions to the Operations and Maintenance Plan shall be submitted to the Board for approval. The Operations and Maintenance Plan should include, but not be limited to, the following:
  - a) Acceptable soil types that can be treated in the Land Treatment Facility;
  - b) Details of on-site processing/treatment of soil, including the dimensions of soil piles that will be managed;
  - c) Water management and treatment systems operations and maintenance;
  - d) Remediation standards, methods, and frequency of any soil manipulation to promote remediation;
  - e) An identification and tracking system for soil stockpiles and holding tanks;
  - f) Routine facility inspection;
  - g) Monitoring of annual volume/mass of soil, Water and snow entering and leaving the facility;
  - h) Leachate management and monitoring strategy; and
  - i) Facility maintenance.
6. The Licensee shall maintain a Freeboard limit of 0.5 metre at the Leachate Retention Pond, or as recommended by a Professional Engineer and as approved in writing by the Board.
7. The Licensee shall operate and maintain the Soil Treatment Facilities to prevent structural failure and to the satisfaction of an Inspector.

#### **Inspection of Structures and Facilities**

8. The Licensee shall conduct monthly inspections of the Soil Treatment Facility during summer operations, or more frequently as directed by an Inspector and immediately after a major storm or catastrophic event, and periodic

inspections during the winter operations. Records of these inspections shall be made available to the Board or an Inspector upon request.

- The Licensee shall conduct daily erosion inspections of Discharge locations during periods of Discharge, or more frequently as directed by an Inspector. Records of these inspections shall be made available to the Board or an Inspector upon request.

**Discharge and Disposal Locations and Rates**

- The Licensee shall dispose of all Waste as described in the approved Waste Management Plan.
- The Licensee shall direct all effluent from the Leachate Retention Pond to the drainage ditch as described in the approved Operation and Maintenance Plan. The effluent shall meet the effluent quality criteria (EQC) as specified in Part G, condition 21 prior to discharge.

**Soil and Snow Acceptance Criteria**

- Only soils meeting the acceptance criteria outlined in Schedule 4, condition 1 shall enter the facility, unless otherwise authorized by the Inspector.
- Prior to accepting soil to the Soil Treatment Facility, the Licensee shall submit soil analyses results to the Inspector, unless otherwise authorized by the Inspector.
- Only snow meeting the acceptance criteria outlined in Schedule 4, item 1 shall enter the facility, unless otherwise authorized by the Inspector.
- Prior to accepting snow to the Soil Treatment Facility, the Licensee shall submit Water analyses results to the Inspector, unless otherwise authorized by the Inspector.

**Commented [BB1]:** The addition of “unless otherwise authorized by the Inspector” for conditions 12-15 is recommended in the event of an emergency, where the immediate movement of contaminated soil or snow may be required (prior to testing) if it presents a direct threat to the Receiving Environment (e.g. the Mackenzie River).

**Treated Soil Criteria**

- 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	Soil Maximum Concentration (mg/kg)
pH	6 – 8 pH units
Antimony	40
Arsenic (inorganic)	120
Barium	2000
Beryllium	8
Cadmium	22
Chromium (total)	87
Cobalt	300
Copper	91
Lead	600
Mercury	50
Molybdenum	40

Nickel	89	
Selenium	2.9	
Silver	40	
Thallium	1	
Tin	300	
Uranium	300	
Vanadium	130	
Zinc	360	
Petroleum Hydrocarbon Re-use Criteria	ADC Fine-grained Soil (mg/kg)	ADC Coarse-grained Soil (mg/kg)
F1 (C6 - C10)	660	310
F2 (> C10 – C16)	1500	760
F3 (> C16 – C34)	2500	1700
F4 (> C34)	6600	3300
Benzene	5.0	5.0
Toluene	0.8	0.8
Ethylbenzene	20	20
Xylenes	20	20

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

17. Treated soil meeting the re-use criteria outlined in Part G, condition 16 shall only be used for the purpose of cover material at the Town of Norman Wells Solid Waste Disposal Facility, unless otherwise approved by the Board and an Inspector.
18. Treated soil not meeting the re-use criteria outlined in Part G, condition 16 shall be disposed of at an approved facility.
19. Prior to removing soil from the Soil Treatment Facility, the Licensee shall submit soil analyses results to an Inspector.
20. The Licensee shall obtain representative samples as per the following, or as authorized by an Inspector:

Volume of Soil (m <sup>3</sup> )	Number of Composite Samples Required
1 - 50	1
51 - 500	2
501 - 1000	3
1001 - 2000	4
2001 - 4000	5
Volume of Snow (m <sup>3</sup> )	Number of Composite Samples Required
1-50	1
51-275	2

**Effluent Quality Criteria**

21. The Licensee shall ensure that Waste discharged from the Leachate Pond (SNP 18-002-01a and b) or the Water Holding Tanks (SNP 18-002-03a and b) meets the following effluent quality criteria (EQC):

Parameter	Maximum Concentration (mg/kg)
pH	6.5 - 9.0
Antimony	0.006
Arsenic (inorganic)	0.005
Barium	1
Beryllium	100
Boron	1.5
Iron	0.3
Selenium	0.001
Uranium	0.02
Zinc	0.03
Benzene	0.005
Toluene	0.024
Ethylbenzene	0.0024
Xylenes	0.3
Styrene	0.072
F1	2.2
F2	1.1
Acenaphthene	0.0058
Acenaphthylene	0.046
Anthracene	0.000012
Fluoranthene	0.00004
Fluorene	0.003
Naphthalene	0.0011
Phenanthrene	0.0004
Pyrene	0.000025
Carcinogenic PAHs (as B(a)P TPE)	0.00001
Benz[a]anthracene	0.000018
Benzo[b+j]fluoranthene	0.00048
Benzo[k]fluoranthene	0.00048
Benzo[a]pyrene	0.000017
Chrysene	0.0014
Dibenz[a,h]anthracene	0.00028
Indeno[1,2,3-c,d]pyrene	0.00023
Phenol	0.004
Polychlorinated biphenyls (PCBs)	0.0094

22. The Licensee shall immediately notify an Inspector of the exceedance of any effluent quality criterion.
23. Water meeting the Effluent Quality Criteria referred to in Part G, condition 21 may be:
- Reapplied to the Biotreatment Pad;
  - Used as a dust suppressant within the boundaries of the Soil Treatment Facility or the Norman Wells Solid waste Disposal Facility; and/or
  - Discharged to the Receiving Environment at SNP (Drainage ditch).

24. The volume of Waste discharged from SNP 18-002-01b or 18-002-03b to SNP 18-002-02 must not exceed 50 m<sup>3</sup>/day, or as authorized by an Inspector.
25. The rate of flow of Water discharged from SNP 18-002-01b or 18-002-03b to SNP 18-002-02 must not exceed 300 L per minute or as authorized by an Inspector.
26. Treated water not meeting the Effluent Quality Criteria referred to in Part G, condition 21, and which exceeds the capacities of the Leachate Retention Pond and Water Holding Tanks may be:
  - a) Reapplied to the Biotreatment Pad;
  - b) Treated in the Portable Water Treatment Plant to ensure it meets Effluent Quality Criteria; and/or
  - c) Transported to an approved facility for disposal.
27. The Licensee shall submit Water quality data for samples collected from Surveillance Network Program stations 18-002-01 a and b and/or 18-002-03 a and b to the Board and an Inspector as follows, unless otherwise authorized by the Inspector:
  - a) No later than five days prior to commencing or resuming discharge of effluent to the drainage ditch; and
  - b) No later than five days prior to commencing or resuming Discharge of effluent to the drainage ditch following an exceedance of the effluent quality criteria specified in Part G, condition 21.

## Part H: Spill Contingency Planning

1. The Licensee shall ensure that Unauthorized Discharges associated with the Project do not enter any Waters.
2. The Licensee shall adhere to the **Spill Contingency Plan**, once approved, and shall annually review the approved plan to make necessary revisions to reflect changes in operations, technology, chemicals, or fuels, or as directed by the Board. 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.
3. If, during the period of this Licence, a spill or Unauthorized Discharge occurs, or is foreseeable, the Licensee shall:
  - a) Implement the approved Spill Contingency Plan referred to in Part H, condition 2;
  - b) Immediately report it using the NU-NT Spill Report Form by one of the following methods:
    - Telephone (867) 920-8130
    - Fax: (867) 873-6924
    - E-mail: [spills@gov.nt.ca](mailto:spills@gov.nt.ca)
    - Online: Spill Reporting and Tracking Database
  - c) Within 24 hours, notify the Board and an Inspector; and
  - d) Within 30 days of initially reporting the incident, submit a detailed report, including descriptions of causes, response actions, and any changes to procedures to prevent similar occurrences in the future, to the Board and an Inspector. Updates shall be provided to the Board and an Inspector in writing as changes occur.
4. The Licensee shall ensure that adequate spill prevention infrastructure and spill response equipment is in place prior to commencement of the Project.
5. The Licensee shall restore all areas affected by spills and Unauthorized Discharges to the satisfaction of an Inspector.



**Part I: Closure and Reclamation**

1. Within one year following the commencement of construction, the Licensee shall submit to the Board, for approval, a **Closure and Reclamation Plan**. The Plan shall be in accordance with Schedule 5, condition 1.
2. Every three years following the previous approval, or as directed by the Board, the Licensee shall submit to the Board for approval, a revised Closure and Reclamation Plan.
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, condition 16.
4. The Licensee shall complete the reclamation and restoration work within the time schedule specified in the Closure and Reclamation Plan or as subsequently revised and approved by the Board.

**Signed on behalf of the Sahtu Land and Water Board**

\_\_\_\_\_  
Larry Wallace, Chair

\_\_\_\_\_  
Bonnie Bergsma, Witness

**Schedule 1**  
**Attached to Water Licence S18L1-002**  
**KBL Environmental Limited – Soil and Water Treatment Facility**

**Part B: General Conditions – Annual Water Licence Report**

1. The **Annual Water Licence Report** referred to in Part B, condition 16, of this Licence shall include, but not be limited to, the following information:

- a) Updates or revisions to the Engagement Plan referred to in Part B;
- b) A summary of Construction, Modifications and/or maintenance activities at the Soil Treatment Facility referred to in Parts E and F;
- c) Updates or revisions to the Waste Management Plan referred to in Part G;
- d) Updates or revisions to the Soil Treatment Facility Operations and Maintenance Plan referred to in Part G;
- e) Details and results of the Environmental Monitoring Program, referred to in Part G, including, but not limited to: monitoring location (GPS coordinates); inspection results, depths, frequency of monitoring events, flow direction, chemical parameters tested, and data analysis;
- f) Reporting of Action Levels exceedances and actions taken during the year as identified in the Groundwater Monitoring Program;
- g) Monthly and annual quantities in cubic metres of all effluent discharged from the Soil Treatment Facility;
- h) Origin of contaminated soil and water accepted at the facility, the volume accepted from each source, the total volume treated, and the final destination for the remediated soils;
- i) Volume and analytical results of snow accepted in the Soil Treatment Facility;
- j) Volume and analytical results of soils accepted into the Soil Treatment Facility;
- k) Volume of soil removed from the facility, the locations of the receiving sites and the land use activity occurring at each receiving site location. Analytical results must include soil chemistry and soil particle size;
- l) A description of the facility layout and location of contaminated soils including operational details (how the contaminated soil was tilled and dates of tilling);
- m) Contravention reports, if applicable;
- n) Tabular summaries of all data generated under the Surveillance Network Program;
- o) A sampling and analysis plan for the following year;
- p) Record of inspections of the Soil Treatment Facility;
- q) Updates or revisions to the Spill Contingency Plan referred to in Part H;
- r) A list of spills or Unauthorized Discharges;
- s) Updates or revisions to the Closure and Reclamation Plan referred to in Part I; and
- t) Any other details on Waste disposal requested by the as Board by November 1 of the year being reported.

**Schedule 2**  
**Attached to Water Licence S18L1-002**  
**KBL Environmental Limited – Soil and Water Treatment Facility**

**Part C: Reclamation Security Deposit**

1. Pursuant to Part C, condition 1, and subsection 35(1) of the Act and section 11 of the Regulations, a Reclamation security deposit of \_\_\_\_\_ is required by this Licence.

**Commented [BB2]:** A Reclamation Security Deposit of \$452,302.00 has been recommended by the GNWT-ENR.

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**Schedule 3**  
**Attached to Water Licence S18L1-002**  
**KBL Environmental Limited – Soil and Water Treatment Facility**

**Part G: Waste and Water Management – Environmental Monitoring Program**

1. The Environmental Monitoring Program, referred to in Part G, condition 3, 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 groundwater leachate related to the Soil Treatment Facility will be monitored, with appropriate maps or diagrams;
- iii. The location of all existing and proposed groundwater monitoring stations, with rationale, as provided by a Professional Engineer, Hydrologist; Hydrogeologist or equivalent professional;
- iv. A map and attached table or detailed legend illustrating monitoring and sampling locations;
- v. The purpose of each monitoring station;
- vi. The timing and frequency of groundwater monitoring events, including at least two monitoring events per year;
- vii. A description and rationale for the parameters to be tested and measured;
- viii. A description of monitoring protocols, methodologies, parameters, and frequency specific to each type of monitoring;
- ix. Definitions, with rationale, for Action Levels for parameters of concern that will be monitored under the Environmental Monitoring Program;
- x. For each Action Level, a description of actions taken in response to any Action Level exceedances under the Environmental Monitoring Program;
- xi. Reporting of Action Level exceedances and actions taken during the year in the Annual Water Licence Report as per Schedule 1, condition 1(f) of this Licence;
- xii. The Quality Assurance/Quality Control Plan for sample management; and
- xiii. An explanation of any actions to be taken in response to any exceedances of the Effluent Quality Criteria.

**Schedule 4**  
**Attached to Water Licence S18L1-002**  
**KBL Environmental Limited – Soil and Water Treatment Facility**

**Part G: Waste and Water Management – Acceptance Criteria**

1. As per Part G, conditions 13 and 15, all soil and snow entering the facility shall meet the following criteria:

Parameter	Soil Maximum Concentration (mg/kg)
<b>Soil Acceptance Criteria</b>	
pH	6 – 9 pH units
Antimony	40
Arsenic (inorganic)	120
Barium	2,000
Beryllium	8
Cadmium	22
Chromium (total)	87
Cobalt	300
Copper	91
Lead	600
Mercury	50
Molybdenum	40
Nickel	89
Selenium	2.9
Silver	40
Thallium	1
Tin	300
Uranium	300
Vanadium	130
Zinc	360
F1-F4	< 3% dw
<b>Snow Acceptance Criteria</b>	
F1 – F4	No free phase hydrocarbon product
pH	6-8 pH units

**Schedule 5**  
**Attached to Water Licence S18L1-002**  
**KBL Environmental Limited – Soil and Water Treatment Facility**

**Part I: Closure and Reclamation – Closure and Reclamation Plan**

1. With regard to the facility being closed, the **Closure and Reclamation Plan** referred to in Part I, condition 1 shall include, but not be limited to the following information:

- a) Closure and reclamation of the following facilities:
  - i. The Land Treatment Facility;
    - Final removal and disposal of treated and untreated soil;
    - Removal of synthetic liner system, Leachate Retention Pond/structures and berms, and Water Holding Tanks;
    - 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
  - ii. Any excavated areas;
    - Groundwater wells;
  - iii. The petroleum and contaminated Water storage areas;
  - iv. Any site affected by Waste spills;
- b) Target PHC concentrations;
- c) The management of natural runoff Waters from the development site;
- d) The restoration of natural drainage and the restoration of stream banks at the operation site(s);
- e) The potential for groundwater contamination;
- f) Any facilities or areas which may have been affected by development such that potential pollution problems exist;
- g) A phased approach and implementation schedule;
- h) Maps delineating all disturbed areas and site facilities including hydrological features and elevation contours;
- i) Future land use of the site; and
- j) A proposal identifying measures by which restoration costs will be financed by the Licensee upon closure.

**Annex A**  
**Surveillance Network Program (SNP)**  
**Annexed to Water Licence S18L1-002**  
**KBL Environmental Ltd.**

**Table of Contents**

Part A: Reporting Requirements

Part B: Site Descriptions and Monitoring Requirements

**Part A: Reporting Requirements**

1. The effective date of this Surveillance Network Program (SNP) is \_\_\_\_\_ .
2. Beginning March 31, 2020, and for every year thereafter, the Licensee shall submit to the Board and an Inspector, a **Surveillance Network Program Report**, which shall include, but not be limited to the following:
  - a) Electronic and tabular summaries of all data and information generated under Part B of this Annex for the month being reported, including rationale for SNP stations where samples were not collected and results and interpretation of quality assurance/quality control procedures;
  - b) Graphical summaries and interpretation of the analytical results from the SNP samples collected at the points of compliance compared to the Effluent Quality Criteria under Part G of this Licence, for the previous two (2) consecutive years;
  - c) An explanation of any actions taken in response to any exceedances of the Effluent Quality Criteria;
  - d) Information regarding the calibration and status of the meters and devices referred to in Part B, condition 15 of this Licence;
  - e) The exact coordinates of all SNP stations which were established within the year being reported, including an updated map identifying the locations of all the SNP stations; and
  - f) A tabular summary of cumulative water use.
3. More frequent sample collection may be required at the request of an Inspector.
4. All sampling, sample preservation, and analyses shall be conducted in accordance with methods prescribed in the current edition of American Public Health Association's (APHA) *Standard Methods for the Examination of Water and Wastewater* at the time of analysis, or by other such methods approved by an Analyst.
5. All analyses shall be performed in a laboratory accredited by the Canadian Association for Laboratory Accreditation (CALA) for the specific analyses to be performed or as approved by an Analyst.

**Part B: Site Descriptions and Monitoring Requirements**

1. The location of sampling sites is subject to approval of an Inspector.
2. Coordinates of the SNP stations shall be submitted to the Board within 60 days of establishment of the SNP stations.
3. The sampling station locations are as follows:

**SNP station Quick Reference Table**

SNP Station #	Description	Status
18-002-01a	Monitors retention waters in the Leachate Pond prior to discharge.	Active prior to proposed retention water discharge
18-002-01b	Monitors retention waters from the Leachate Pond at the point of discharge.	Active upon discharge and weekly during discharge
18-002-02	Monitors volume of water discharged from the Leachate Pond or Water Holding Tanks to the drainage ditch and rate of flow	During discharge from the Leachate Pond or Water Holding Tanks
18-002-03a	Monitors retention waters in the Water Holding Tank prior to discharge	Active prior to proposed water holding tank discharge
18-002-03b	Monitors retention waters in the Water Holding Tank at the point of discharge	Active upon discharge and weekly during discharge
18-002-04a, b, and c	Monitors groundwater downgradient of the Land Treatment Facility.	Active following spring freshet and before freeze-up
18-002-05	Monitors groundwater upstream of the site (reference).	Active following spring freshet and before freeze-up

**SNP Station 18-002-01a**

<b>Description</b>	Monitors retention waters in the Leachate Pond prior to a proposed discharge.
<b>Location</b>	Within the Leachate Pond
<b>Sampling Frequency</b>	As required prior to discharge
<b>Sampling Parameters</b>	As identified in Part G, item 22, pH, electrical conductivity, and temperature at the time of sampling.
<b>Rationale</b>	To ensure discharge Water meets Part G, item 22.
<b>Status</b>	Active prior to proposed retention Water discharge.

**SNP Station 18-002-01b**

<b>Description</b>	Monitors retention waters from the Leachate Pond during discharge.
<b>Location</b>	Outflow of Leachate Pond
<b>Sampling Frequency</b>	Upon discharge and weekly following discharge events
<b>Sampling Parameters</b>	As identified in Part G, item 22, pH, electrical conductivity, and temperature at the time of sampling.
<b>Rationale</b>	To ensure discharge Water meets Part G, item 22.



<b>Status</b>	Active upon discharge and weekly during discharge.
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**SNP Station 18-002-02**

<b>Description</b>	Monitors the rate of flow and volume of Water that is discharged from the Land Treatment Facility.
<b>Location</b>	Drainage ditch as described in the Operations and Maintenance Plan. Exact location to be determined.
<b>Sampling Frequency</b>	During discharge of Water from the Leachate Pond or Water Holding Tanks.
<b>Sampling Parameters</b>	Total volume of Water discharged; flow rate of water discharged.
<b>Rationale</b>	To monitor the flow rate and total volume of Water that is discharged from the Leachate Pond
<b>Status</b>	Active prior to proposed retention water discharge.

**SNP Station 18-002-02a**

<b>Description</b>	Monitors water in the Water Storage Tank prior to a proposed discharge.
<b>Location</b>	Within the Water Storage Tank
<b>Sampling Frequency</b>	As required prior to discharge
<b>Sampling Parameters</b>	As identified in Part G, item 22, pH, electrical conductivity, and temperature at the time of sampling.
<b>Rationale</b>	To ensure discharge Water meets Part G, item 22.
<b>Status</b>	Active prior to proposed retention Water discharge.

**SNP Station 18-002-02b**

<b>Description</b>	Monitors water from the Water Storage Tank during discharge.
<b>Location</b>	Outflow of Water Storage Tank
<b>Sampling Frequency</b>	Upon discharge and weekly following discharge events
<b>Sampling Parameters</b>	As identified in Part G, item 22, pH, electrical conductivity, and temperature at the time of sampling.
<b>Rationale</b>	To ensure discharge Water meets Part G, item 22.

**SNP Station 18-002-04 a, b and c**

<b>Description</b>	Monitors groundwater downgradient of the Land Treatment Facility.
<b>Location</b>	Exact location to be determined
<b>Sampling Frequency</b>	Following spring freshet and prior to freeze-up
<b>Sampling Parameters</b>	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
<b>Rationale</b>	To ensure leachate waters are not impacting surrounding environment.
<b>Status</b>	Active following spring freshet and before freeze-up

**SNP Station 18-002-05**

<b>Description</b>	Monitors groundwater upstream of the Land Treatment Facility (reference).
<b>Location</b>	Exact location to be determined
<b>Sampling Frequency</b>	Following spring freshet and prior to freeze-up
<b>Sampling Parameters</b>	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
<b>Rationale</b>	To ensure leachate waters are not impacting surrounding environment.
<b>Status</b>	Active following spring freshet and before freeze-up

Signed on behalf of the Sahtu Land and Water Board

\_\_\_\_\_  
Larry Wallace, Chair

\_\_\_\_\_  
Bonnie Bergsma, Witness

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

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

**Table 1: Water Licence Submission Requirements**

Part of Licence	Item	Date
B	Revisions to approved Plans or Programs	Within 90 days prior to implementing any proposed updates or changes
B	Post signs	Prior to establishing, activating, or relocating any SNP station
B	Submit Annual Water Licence Report	By March 31 of each year
B	Submit revised Engagement Plan	Upon any revisions
B	Notify Board and Inspector of Project commencement	10 days prior to Project commencement
C	Provide Reclamation Security Deposit to Minister	Prior to the commencement of activities
C	Notify Board of Reclamation Security Deposit	10 days prior to Project commencement
D	Submit updated Waste Management Plan	Upon any revisions
G	Notify Board and Inspector	Immediately upon the exceedance of any EQC
E	Submit Design and Construction Plan	45 days prior to construction
E	Submit Design Drawings	45 days prior to construction
E	Notify Board and Inspector of Construction	10 days prior to commencement of Construction
E	Submit As-built Report	90 days after completion of Construction
F	Notify Board and Inspector of proposed Modification	45 days prior to Modification
F	Submit As-built drawings for Modification	90 days after completion of Modification
G	Submit revised Waste Management Plan	Upon any revisions
	Submit Groundwater Monitoring Program I for Board approval	Within 90 days after commencement of construction
G	Submit revised Operation and Maintenance Plan	Upon any revisions
G	Submit soil analyses to Inspector and Board	Prior to accepting soil at the STF
G	Submit snow analyses to Inspector and Board	Prior to accepting snow at the STF
G	Submit soil analyses to Inspector and Board	Prior to removing treated soil from the STF
G	Notify Board and Inspector of any exceedance of EQC	Immediately
G	Submit water quality sample results from SNP stations to Board and Inspector	5 days prior to discharge of effluent
H	Submit revised Spill Contingency Plan	Upon any revision
I	Submit Closure and Reclamation Plan	Within one year of Licence Issuance
I	Submit Final Remediation Report	Prior to Licence expiry

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: Table of Revision History**

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

Date	Location of Change	Description of Change

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