



**Mackenzie Valley Land and Water Board**

7th Floor - 4910 50th Avenue • P.O. Box 2130  
YELLOWKNIFE, NT X1A 2P6  
Phone (867) 669-0506 • FAX (867) 873-6610

June 2, 2010

File: MV2009L3-0005

Mr. Michael Richardson  
Town of Hay River  
73 Woodland Drive  
HAY RIVER NT X0E 1G1

Fax: (867) 874-3237

Dear Mr. Richardson:

**Issuance of Type A Water Licence  
Municipal Water Use and Waste Disposal, Hay River, NT**

Attached is Water Licence MV2009L3-0005 granted by the Minister of Indian Affairs and Northern Development in accordance with the *Northwest Territories Waters Act*. The Minister approved Water Licence MV2009L3-0005 for a period of ten years commencing May 31, 2010 and expiring May 30, 2020. Also attached is a copy of the General Procedures for the Administration of Licences in the Northwest Territories which you are requested to review.

A copy of this Licence has been filed on the Public Registry at the office of the MVLWB. This letter, with attached procedures, all inspection reports, and correspondence related thereto is part of the Public Registry and is intended to keep all interested parties informed of the manner in which the Licence requirements are being met. All Public Registry material will be considered if an amendment to the Licence is requested.

Your full cooperation is anticipated and appreciated. If you have any questions or concerns, please telephone (867) 669-0506 or email [permits@mvlwb.com](mailto:permits@mvlwb.com).

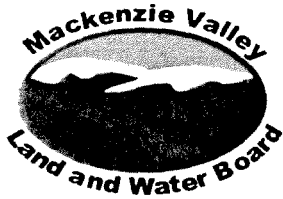
Yours sincerely,

A handwritten signature in black ink, appearing to read "W. Hagen".

Willard Hagen  
Chair

Copied to: Shannon Hayden, Regulatory Officer, MVLWB  
Marty Sanderson, A/District Manager, South Mackenzie District, INAC  
Robert Jenkins, Water Resources Division, INAC  
Distribution List

Attachments:



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

Town of Hay River  
(Licensee)

of 73 Woodland Drive, Hay River, NT X1A 1G1  
(mailing address)

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

Licence number: MV2009L3-0005

Licence type: A

Water management area: Northwest Territories 01

Location: 60°51' N; 115°43' W

Purpose: Use of water and disposal of waste

Description: Municipal purposes

Quantity of water **not to be exceeded**: 750, 000 cubic meters annually

Effective date of licence: May 31, 2010

Expiry date of licence: May 30, 2020

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

**Mackenzie Valley Land and Water Board**

Chair

Witness

**Approved by**

Minister of Indian Affairs and Northern Development

## **Part A: Scope and Definitions**

### **Scope**

This Licence entitles the Town of Hay River to use Waters and dispose of Waste for municipal purposes at the Town of Hay River, Northwest Territories, located at: 60°51' N and 115°43' W.

### **Definitions**

In this Licence, **MV2009L3-0005**:

**"Act"** means the *Northwest Territories Waters Act*.

**"Analyst"** means an Analyst designated by the Minister under subsection 35(1) of the Act.

**"Average Concentration"** means the discrete average of four consecutive analytical results, or if less than four analytical results, the discrete average of the analytical results collected during a batch decant, and as submitted to the Board in accordance with the sampling and analysis requirements specified in the Surveillance Network Program.

**"Average Concentration for Faecal Coliform"** means the running geometric mean of any four consecutive analytical results submitted to the Board in accordance with the sampling and analysis requirements specified in the Surveillance Network Program.

**"Biotreatment Pad"** comprises the area and associated engineered infrastructure designed to contain and treat hydrocarbon contaminated soils, as defined in Hazco Environmental Services "Biopad – General Layout" drawing number HR-2, dated June 2003.

**"Board"** means the Mackenzie Valley Land and Water Board established under Part 4 of the *Mackenzie Valley Resource Management Act*.

**"Coarse-Grained Soil"** means coarse-textured soil having a median grain size of >75 µm as defined by the American Society for Testing and Materials D422-63 Standard Test Methods for Particle-Size Analysis of Soils or subsequent edition.

**"Engineer"** means a professional Engineer registered to practice in the Northwest Territories in accordance with the *Engineering and Geoscience Professions Act*, S.N.W.T. 2006, c.16.

**"Fine-Grained Soil"** means fine-textured soil having a median grain size of <75 µm as defined by the American Society for Testing and Materials D422-63 Standard Test Methods for Particle-Size Analysis of Soils or subsequent edition.

**"Freeboard"** means the vertical distance between the Water line and the lowest elevation of the effective Water containment crest on a dam or dyke's upstream slope.

**"Greywater"** means all liquid Wastes from showers, baths, sinks, kitchens, and domestic washing facilities but does not include Toilet Wastes.

**"Inspector"** means an Inspector designated by the Minister under subsection 35(1) of the Act.

**"Licensee"** means the holder of this Licence.

**"Minister"** means the Minister of Indian Affairs and Northern Development.

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

**"Pumpout Sewage"** means all Toilet Wastes and/or Greywater collected by means of a vacuum truck for disposal at the Sewage Disposal Facilities.

**"Record Drawings"** mean as-built drawings that have been verified by an Engineer.

**"Regulations"** means the Regulations proclaimed pursuant to Section 33 of the Act.

**"Sewage"** means all Toilet Wastes and Greywater.

**"Sewage Disposal Facilities"** comprises the area and engineered structures designed to contain and treat Sewage as identified in UMA Engineering Limited Town of Hay River Sewage Treatment System Improvements drawing number 00-CM1003, dated September 29, 2006, as well as the adjacent wetland area.

**"Solid Waste Disposal Facilities"** comprises the area and associated structures designed to contain solid Wastes, as identified in UMA Engineering Limited Landfill Layout Hay River, NWT, Figure 8 of the Water Licence Application.

**"Surveillance Network Program"** means a monitoring program established to define environmental sampling and analysis requirements, to collect data on surface Water and groundwater quality, and to assess discharge quality and licence compliance, and the potential for impacts to the environment.

**"Toilet Wastes"** means all human excreta and associated products but does not include Greywater.

**"Waste(s)"** means Waste as defined by Section 2 of the Act.

**"Waste Disposal Facilities"** mean all facilities designated for the disposal of Waste, and includes the Solid Waste Disposal Facilities and Sewage Disposal Facilities.

**“Water(s)”** mean any Waters as defined by Section 2 of the Act.

**“Water Licence Application”** means the application filed with the Board on June 16, 2009 and all associated correspondence filed by the Licensee and listed on the Board’s Public Registry.

**“Water Supply Facilities”** comprises the area and associated intake infrastructure, as identified in Stanley Associates Engineering Limited’s Town of Hay River Intake Pumphouse Site Plan drawing number 694-50-4-G2, dated September 1977.

## **Part B: General Conditions**

- B.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 deposition of such Waste may enter any Waters. Whenever new Regulations are made or existing Regulations are amended by the Governor in Council under the *Northwest Territories 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.
- B.2 Compliance with the terms and conditions of this Licence does not absolve the Licensee from the responsibility for compliance with the requirements of all applicable federal, territorial, and municipal legislation.
- B.3 The Licensee shall file an annual report with the Board not later than March 31 of the year following the calendar year reported which shall contain the information as set in Schedule 1, item 1, included in this Licence.
- B.4 The Licensee shall comply with the Surveillance Network Program annexed to this Licence, and with any amendment(s) to the said Surveillance Network Program, as approved by the Board.
- B.5 The Licensee shall comply with the Schedules annexed to this Licence, and with any amendments to the said Schedules, as approved by the Board.
- B.6 The Surveillance Network Program, Schedules, and compliance dates specified in the Licence may be modified at the discretion of the Board.
- B.7 Meters, devices, or other such methods used for measuring the volumes of Waters used and Waste discharged shall be installed, operated, and maintained by the Licensee to the satisfaction of an Inspector.

- B.8 The Licensee shall maintain, to the satisfaction of an Inspector, the necessary signs to identify the stations of the Surveillance Network Program.
- B.9 The Licensee shall maintain all signs posted to inform the public of Water Supply Facilities and Waste Disposal Facilities and shall post any additional signage as required, to the satisfaction of an Inspector.
- B.10 The Licensee shall ensure a copy of this Licence is maintained at the Hay River municipal office(s), the Solid Waste Disposal Facilities and the Water Supply Facility office, at all times.

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

- C.1 The Licensee shall obtain all Water from Great Slave Lake using the Water Supply Facilities for municipal undertakings as described in the Water Licence Application received by the Board on June 16, 2009 or as otherwise approved by the Board.
- C.2 The total amount of Water obtained from Great Slave Lake for municipal purposes shall not exceed 750,000 cubic metres per year.
- C.3 The maximum amount of Water obtained shall not exceed 90,000 cubic metres per month.
- C.4 The Water intake hoses used on the Water pumps shall be equipped with a screen with a mesh size and screen design sufficient to ensure no entrainment or impingement of fish, as outlined in Fisheries and Oceans Canada "Freshwater Intake End-of-Pipe Fish Screen Guideline" (1995) or subsequent approved editions.

**Part D: Conditions Applying to Waste Disposal**

- D.1 The Licensee shall direct all piped and pumpout Sewage through the Sewage lagoons and wetlands that comprise the Sewage Disposal Facilities or as otherwise approved by the Board. Discharge from the Sewage Disposal Facility will be from the wetland to Great Slave Lake.
- D.2 Only one lagoon treatment cell within the Sewage Disposal Facility may be taken out of operation for conducting maintenance work at any time. Only with the approval of the Inspector can more than one treatment cell be taken out of operation at any time.
- D.3 All Sewage effluent discharged from the Sewage Disposal Facilities at Surveillance Network Program Station Number 0053-2 shall meet the following effluent quality requirements:

<b>Parameter</b>	<b>Maximum Average Concentration</b>	<b>Maximum Grab Sample</b>
Faecal Coliform (FC)	1000 FC per 100 ml	2000 FC per 100 ml
BOD <sub>5</sub>	20mg/L	30mg/L
Total Suspended Solids	20 mg/L	40mg/L
Oil and Grease	no visible sheen	

The Waste discharged shall have a pH between 6 and 9.

- D.4 The Licensee shall complete monitoring of wastewater effluent quality for carbaceous biological oxygen demand (CBOD) and biological oxygen demand (BOD) for a minimum of three years. The study findings, including a trend analysis, shall be submitted to the Board for approval in a report that is completed before August 31, 2014.
- D.5 A Freeboard limit of 1 meter shall be maintained at all times at all constructed berms, dykes, and dams within the Sewage Disposal Facilities or as recommended by an Engineer and approved by the Inspector.
- D.6 The Licensee shall maintain the Sewage Disposal Facilities to the satisfaction of an Inspector.
- D.7 The Licensee shall, by October 31, 2010, submit to the Board, for approval, a sludge management plan for the Sewage Disposal Facilities that includes, but is not limited to estimates of the quantities of sludge likely to be produced; frequency of extraction of sludge from the lagoons; operational procedures developed for removal and disposal; recommendations for chemical and biological composition analysis for sludge removed from the lagoons; storage, treatment and disposal of sludge; and recommendation for monitoring of run-off and seepage Waters from the sludge disposal area.
- D.8 The Licensee shall dispose of all solid Wastes at the Solid Waste Disposal Facilities or as otherwise approved by the Board.
- D.9 The Licensee shall, by October 31, 2010, submit to the Board a review of available site surface and groundwater quality and quantity information. Following this review and at the direction of the Board, the Licensee shall submit, for approval, a drainage and seepage study for the Solid Waste Disposal Facilities that includes, but is not limited to, the information as set in Schedule 2, item 1, included in this Licence.
- D.10 The Licensee shall, by October 31, 2010, submit to the Board a study into the Solid Waste Disposal Facilities operations to measure, define, and identify the

remaining lifespan of the facilities and volumes of Waste the facilities can accept.

- D.11 The Licensee shall, within 90 days of the issuance of this Licence, submit to the Board a snow disposal plan including, but not limited to, a topographic map identifying areas currently used or planned to be used for snow disposal.
- D.12 The Licensee shall annually review the Snow Disposal Plan and shall modify the plan as required.
- D.13 The Licensee shall maintain all dams, berms, dykes, and control structures associated with Waste Disposal Facilities and Water Supply Facilities to the satisfaction of an Engineer. Inspection of all dams, berms, dykes, and control structures shall be completed once every two years by an Engineer. All results are to be reported to the Board within 60 days of the inspection.
- D.14 The Licensee shall, within six months of the issuance of this Licence, submit to the Board as-built plans and Record Drawings, signed and stamped by an Engineer, of:
  - a) The Sewage Disposal Facilities lagoon, associated structures and sludge storage area; and
  - b) The Solid Waste Disposal Facilities and Biotreatment Pad.
- D.15 The Licensee shall, within six months of the issuance of this Licence, submit to the Board a surveyed description of the wetland and associated structures that comprise part of the Sewage Disposal Facilities. It should include, but not be limited to, a description of the wetlands in terms of hydrological patterns, including an evaluation of where Sewage is flowing and identification of which portion of the wetland is impacted.
- D.16 The Licensee shall ensure all treated soil from the Biotreatment Pad that will be used for capping material of landfill cells will meet the following criteria prior to incorporation:

<b>Parameter</b>	<b>Maximum Grab Sample</b>
pH	6–8
Benzene	5.0 mg/kg
EthylBenzene	20 mg/kg
Toluene	0.8 mg/kg
Xylene	20 mg/kg



As outlined for Industrial undertakings in the GNWT “Guideline for Contaminated Site Remediation” or subsequent approved editions, total petroleum hydrocarbons shall meet the following criteria prior to incorporation:

<b>Total Petroleum Hydrocarbons</b>	<b>Fine Grained Soils</b>	<b>Coarse Grained Soils</b>
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

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.

**Part E: Conditions Applying to Modifications**

- E.1 The Licensee may, without written approval from the Board, carry out Modifications to the Water Supply Facilities and Waste Disposal Facilities 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 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 60 days following the notification of the proposed Modifications, informed the Licensee that review of the proposal will require more than 60 days; and
  - d) The Board has not rejected the proposed Modifications.
  
- E.2 Modifications for which all of the conditions referred to in Part E, item 1, have not been met, can be carried out only with the written approval of the Board.
  
- E.3 The Licensee shall provide to the Board as-built plans and Record Drawings, signed and stamped by an Engineer that notes “issued for construction” or similar phrase, of Modifications referred to in Part E within 90 days of completion of the Modifications.

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

- F.1 The Licensee shall, by December 2010, submit to the Board, for approval, an interim closure and reclamation plan for the Solid Waste Disposal Facilities. The plan shall include, but not be limited to, the information as set in Schedule 3, item 1, included in this Licence.

- F.2 The Licensee shall submit to the Board, for approval, a final closure and reclamation plan at least six months prior to abandoning any Waste Disposal Facilities. The plan shall include, but not be limited to, the information as set in Schedule 3, item 1, included in this licence.
- F.3 The Licensee shall implement the plan specified in Part F, items 1 and 2 as and when approved by the Board.

**Part G: Conditions Applying to Construction**

- G.1 Prior to construction of any dams, dykes or control structures intended to contain, withhold, divert or retain Waters or Wastes, the Licensee shall submit to the Board, at least 60 days prior to construction, final design drawings stamped and signed by an Engineer, which notes "issued for construction" or similar phrase.
- G.2 Construction of designed structures shall be carried out as approved by the Board.
- G.3 The Licensee shall provide to the Board as-built plans and Record Drawings, signed and stamped by an Engineer, of the constructed facilities referred to in Part G, item 1 within 90 days of completion.

**Part H: Conditions Applying to Operation and Maintenance**

- H.1 The Licensee shall, within three months of the issuance of this Licence, submit to the Board for approval an updated plan for the operation and maintenance of the Waste Disposal Facilities. With regard to the Solid Waste Disposal Facilities and the Sewage Disposal Facilities, the Operation and Maintenance Plan shall be completed in accordance with Government of Northwest Territories, Municipal and Community Affairs 1996 "Guidelines for the Preparation of an Operation and Maintenance Manual for Sewage and Solid Waste Disposal Facilities in the Northwest Territories". This plan shall include, but not be limited to, the information as set in Schedule 4, item 1, included in this Licence.
- H.2 The Licensee shall implement the updated plan specified in Part H, item 1 as and when approved by the Board.
- H.3 The Licensee shall annually review the updated Operations and Maintenance Plan and shall modify the plan to identify changes in operations and technology and the results from research and other studies. All proposed updates or revisions to the plan shall be submitted to the Board for approval and included as an update in the Annual Report.

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

- I.1 The Licensee shall, by March 31, 2011, submit to the Board for approval a spill contingency plan in accordance with Indian and Northern Affairs Canada's 2007 "Guidelines for Spill Contingency Planning". The Spill Contingency Plan shall apply to the Waste Disposal Facilities, the Biotreatment Pad, and the Water Supply Facilities.
- I.2 The Licensee shall review the Spill Contingency Plan annually and modify the plan as necessary to reflect changes in operation, technology, and staffing. Any proposed updates or revisions shall be submitted to the Board for approval.
- I.3 The Licensee shall immediately report to the 24-Hour Spill Report Line (867-920-8130) any spills of Waste, as outlined in Indian and Northern Affairs Canada's 2007 "Guidelines for Spill Contingency Planning", which are reported to or observed by the Licensee, within the Town of Hay River boundaries or in the areas of the Water Supply Facilities or Waste Disposal Facilities.
- I.4 If, during the period of this Licence, an unauthorized discharge of Waste occurs or if such a discharge is foreseeable, the Licensee shall:
  - a) Employ the Spill Contingency Plan;
  - b) Report the incident immediately via the 24-Hour Spill Report Line at (867) 920-8130; and
  - c) Submit to an Inspector a detailed report on each occurrence not later than 30 days after initially reporting the event.

**Mackenzie Valley Land and Water Board**



Chair



Witness

## **Schedule 1 – General Conditions**

1. The Annual Report referred to in Part B, item 3 shall include, but not be limited to, the following:
  - a) The monthly and annual quantities in cubic metres of fresh Water obtained from all sources;
  - b) The monthly and annual quantities in cubic metres of each and all Waste discharged through the Waste Disposal Facilities;
  - c) The monthly and annual quantities of Waste removed from the Waste Disposal Facilities;
  - d) Comparison of Waste volumes accepted to the remaining storage volume at the Solid Waste Disposal Facility;
  - e) Comparison of Waste volumes accepted to the remaining storage volume at the Biotreatment Pad;
  - f) Volume of treated soil removed from the Biotreatment Pad and analytical results for soil chemistry and particle size analysis;
  - g) Results of any leachate testing and analysis and how leachate is discharged or stored;
  - h) Results of any inspection of all dams, berms, dykes, and control structures;
  - i) Updates or revisions to the Waste Disposal Facilities Operation and Maintenance Plan;
  - j) Updates or revisions to the Snow Disposal Plan;
  - k) Updates or revisions to the Spill Contingency Plan;
  - l) A summary of Modifications and/or major maintenance work carried out on the Water Supply Facilities and Waste Disposal Facilities, including all associated structures;
  - m) Tabular summaries of all data generated under the Surveillance Network Program;
  - n) Comparison of the Surveillance Network Program data to the Water Licence regulated limits and sampling and analysis requirements;
  - o) Groundwater monitoring analyses from the Solid Waste Disposal Facilities;
  - p) A summary of any abandonment and restoration 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, Water use, or reclamation and a brief description of any future studies planned;
  - r) A list of unauthorized discharges;
  - s) The inclusion of all correspondence between the Inspector and the Licensee; and,
  - t) Any other details on Water use or Waste disposal requested by the Board by November 1 of the year being reported.

## **Schedule 2 – Conditions Applying to Waste Disposal**

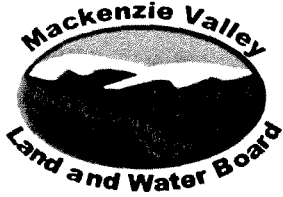
1. The Solid Waste Disposal Facilities Drainage Study shall include, but not be limited to, the following:
  - a) Conceptual model of leachate generation, surface Water flow, and groundwater flow;
  - b) Validation of the conceptual model of leachate generation, surface Water flow, and groundwater flow;
  - c) Recommended subsurface monitoring locations and implementation schedule for any changes;
  - d) Leachate management and monitoring after closure;
  - e) Water balance for the Solid Waste Disposal Facilities to characterize the quantity and quality of leachate generated;
  - f) Determination of the applicability of the existing Surveillance Network Program stations and recommendation of new stations if the study determines that the existing stations are not adequately placed to monitor quality and quantity of all surface Water out points; and
  - g) Establishment of a general understanding of the composition of leachate across the Solid Waste Disposal Facilities site.

### **Schedule 3 – Conditions Applying to Closure and Reclamation**

1. The Closure and Reclamation Plan shall include, but not be limited to, the following:
  - a) Contaminated site remediation;
  - b) Leachate management, monitoring plan, and annual reporting details;
  - c) An implementation schedule;
  - d) Maps delineating all disturbed areas, borrow material locations, and site facilities;
  - e) Consideration of altered drainage patterns;
  - f) Type and source of cover materials;
  - g) Future area use;
  - h) Hazardous Wastes;
  - i) Details for the abandonment of the Biotreatment Pad;
  - j) On-going reclamation details of the existing Solid Waste Disposal Facilities; and
  - k) Monitoring and annual reporting details regarding leachate and surface and subsurface runoff during and after closure.

#### **Schedule 4 – Conditions Applying to Operation and Maintenance**

2. The Operations and Maintenance Plan shall include, but not be limited to, the following:
  - a) Frequency of inspection of dams, dykes, and drainage courses;
  - b) Removal of floating materials from the Sewage Disposal Facilities;
  - c) Wastewater collection, treatment, and storage details;
  - d) Sludge management;
  - e) Optimizing effluent discharge quality;
  - f) Runoff and drainage control within and around the facilities and restoration of erosion;
  - g) Treatment of contaminated drainage;
  - h) Prevention of windblown debris;
  - i) A hazardous Waste management plan that shall be completed in general accordance with Government of Northwest Territories, Department of Environment and Natural Resources 2009 Developing a Community Hazardous Waste Management Plan;
  - j) Segregation of domestic, metal, and recyclable Waste materials;
  - k) Method and frequency of site maintenance, including burning where permitted;
  - l) Details of Waste compaction and soil cover application including schedules and management criteria;
  - m) Locations for Water sampling, and Water sampling and analysis requirements;
  - n) A map depicting all existing and planned Surveillance Network Program stations including the latitude and longitude of each;
  - o) Details for the operation and maintenance of the Biotreatment Pad including, but not limited to:
    - i. management of each lot of soil accepted to the Biotreatment Pad (e.g., location of material accepted to the Biotreatment Pad);
    - ii. sources of contaminated soil, volume, and characteristics;
    - iii. frequency and mode of tillage;
    - iv. frequency and extent of additives;
    - v. frequency of testing to determine progress of treatment;
    - vi. how future increases in soil volume will be managed; and
    - vii. how leachate will be discharged or stored.
  - p) A quality assurance/quality control plan for "Surveillance Network Program" sampling. The Quality Assurance/Quality Control Plan for sampling and transport of Water samples shall be completed in accordance with Indian and Northern Affairs Canada's "Quality Assurance (QA) and Quality Control (QC) Guidelines" for Use by Class "A" Licensees in Meeting Surveillance Network Program Requirements and for Submission of a QA/QC Plan, 1996; and,
  - q) A copy of the Water Licence.



**Mackenzie Valley Land and Water Board  
Surveillance Network Program**

**Licensee:** Town of Hay River

**Licence Number:** MV2009L3-0005

**Effective Date of Licence:** May 31, 2010

**Effective Date of Surveillance Network Program (SNP):** May 30, 2020

**Location and Description of Surveillance Network Stations**

<u>Station Number</u>	<u>Description</u>
0053-1	Raw Water supply from Great Slave Lake at intake pumphouse.  Rationale: To determine the quality of Great Slave Lake Water for use as a municipal potable Water supply source.
0053-2	Swampland effluent from the upstream end of the constricted area of the ditch leading to Great Slave Lake, approximately 200 meters downstream from the confluence of the swampland discharge and the drainage ditch.  Rationale: Site of compliance. To monitor final effluent quality before discharge into Great Slave Lake.
0053-3	At the discharge pipe where effluent from the lagoon discharges to the swampland.  Rationale: To monitor Water quality prior to discharge into the wetland sewage treatment system.
0053-4	Raw sewage at the No. 1 lift station.  Rationale: To characterize the quality of the Sewage.



0053-5	Surface run off or seepage from the Solid Waste Disposal Facilities.  Rationale: To monitor Water quality associated with runoff and seepage from the Solid Waste Disposal Facilities.
0053-6	Return Water at pumphouse.  Rationale: To determine Water quality of return Water into Great Slave Lake.
0053-7	Groundwater from the Biotreatment Pad  Rationale: To monitor Water quality associated with runoff and seepage from the Biotreatment Pad.
0053-8	Leachate from the Biotreatment Pad  Rationale: To monitor Water quality prior to discharge to the Sewage Disposal Facilities.

### Sampling and Analysis Requirements

1. The effluent from Station Number 0053-2 shall be sampled at commencement and monthly during periods of flow and analyzed for the following parameters:

<sup>3</sup> Nutrients	<sup>4</sup> Major ions
Faecal Coliform (FC)	Faecal Streptococci
Suspended Solids	Oil and Grease
<sup>2</sup> Field parameters	BOD <sub>5</sub>
Total Organic Carbon	CBOD

2. Station Number 0053-5 shall be sampled monthly during periods of flow and analyzed for the following parameters:

Nitrate and Nitrite	Faecal Coliform
Total Phenols	Oil and Grease
Total Arsenic	Total Copper
Total Iron	Total Mercury
<sup>1</sup> ICP-MS Metal Scan(Total)	Total Petroleum Hydrocarbons
<sup>2</sup> Field parameters	<sup>4</sup> Major Ions
BOD <sub>5</sub>	Groundwater Level

- The effluent from Station Number 0053-6 shall be sampled monthly during periods of flow and analyzed for the following parameter:

Total Chlorine

- All sampling, sample preservation, and analyses shall be conducted in accordance with methods prescribed in the current edition of Standard Methods for the Examination of Water and Wastewater, or by such other methods approved by the Analyst.
- All analyses shall be performed in a laboratory approved by the Analyst.
- The Licensee shall maintain records of the results of any analysis done for coliform, chlorine, and turbidity at the main pumphouse.
- The Licensee shall obtain one representative sample from each of the groundwater wells that make up Station 0053-7 once during spring break up and again before freeze-up in the fall for the following parameters:

pH
Benzene, Toluene, Ethylbenzene, and Xylene
Total Petroleum Hydrocarbons (F1 + F2 + F3 + F4 CCME Fractions)
Electrical conductivity
<sup>1</sup> ICP-MS Metal Scan(Total)
methyl <i>tert</i> -butyl ether
Water levels

- The Licensee shall obtain a representative sample based on Table 1 for treated soil and test for the following parameters prior to final disposal of soil from the Biotreatment Pad:

pH
Benzene, Toluene, Ethylbenzene, and Xylene
Total Petroleum Hydrocarbons (F1 + F2 + F3 + F4 CCME Fractions)
Electrical conductivity
<sup>1</sup> ICP-MS Metal Scan(Total)

Volume of Soil ( cubic metres)	Number of Composite Samples*
1 – 50	1
51 – 500	2
501- 1000	3
1001 - 2000	4
2001 – 5000	5
Each additional 1000	1 additional

\* A composite sample should consist of no less than 3 representative grab samples.

9. Station Number 0053-8 shall be sampled if leachate is to be discharged from the Biotreatment Pad and analyzed for the following parameters:

<sup>2</sup> Field Parameters
Benzene, Toluene, Ethylbenzene, and Xylene
Total Petroleum Hydrocarbons (F1 + F2 + F3 + F4 CCME Fractions)
<sup>1</sup> ICP-MS Metal Scan(Total)
methyl <i>tert</i> -butyl ether
water levels

**Notes:**

<sup>1</sup>ICP-MS Metal Scan (Total) shall include, at a minimum, the following parameters:

Aluminium	Arsenic
Beryllium	Boron
Cadmium	Chromium
Cobalt	Copper
Iron	Lead
Manganese	Mercury
Molybdenum	Nickel
Selenium	Silver
Strontium	Vanadium
Zinc	

<sup>2</sup>Field parameters include the following measurements:

pH	Temperature
Conductivity	Dissolved Oxygen

<sup>3</sup>Nutrients include the following parameters:

Total Ammonia	Total Phosphorus
Nitrate-Nitrogen	Ortho Phosphorus
Total Dissolved Phosphorus	Total Organic Carbon
Total Kjeldahl Nitrogen	

<sup>4</sup>Major ions include the following parameters:

Calcium	Magnesium
Chloride	Sodium

Alkalinity	Fluoride
Total Dissolved Solids	Potassium
Sulphate	Total Hardness

**Flow Measurement Requirements**


The Licensee shall measure and record the monthly quantity of Water in cubic metres taken from and returned to Great Slave Lake.


The volume of effluent discharged from Station Number 0053-2 shall be measured and recorded monthly in cubic metres.

**Reports**

The Licensee shall submit all of the information generated by Parts B and C of the Surveillance Network Program annually as specified in Part B, item 3 of this Licence.

**Mackenzie Valley Land and Water Board**

  
 \_\_\_\_\_  
 Chair

  
 \_\_\_\_\_  
 Witness

## Annex A Schedule

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

<b>Licence Condition</b>	<b>Report Title/Require Action</b>	<b>Timeline for Submission</b>
<b>B.3</b> (Schedule 1, item 1)	Annual Report	March 31 each year
<b>B.8</b>	Identify SNP station(s) with signage.	At all times
<b>B.9</b>	Identify Water Supply and Waste Disposal Facilities with signage.	At all times
<b>B.10</b>	Copies of Water Licence in the Town of Hay River office(s), Solid Waste Disposal Facilities, and Water Supply Facilities	At all times
<b>D.2</b>	Notify Inspector prior to conducting maintenance work on lagoon cells.	Prior to maintenance activities
<b>D.4</b>	BOD and CBOD trend analysis	August 31, 2014
<b>D.7</b>	Sludge Management Plan	October 31, 2010
<b>D.9</b> (Schedule 2, item 1)	Solid Waste Disposal Facility Drainage Study	October 31, 2010
<b>D.10</b>	Solid Waste Disposal Facilities Operations Report to measure, define, and identify the remaining lifespan of the facilities and	October 31, 2010

	volumes of Waste the facilities can accept.	
<b>D.11</b>	Snow Disposal Plan	Within 90 days of issuance of the Water Licence
<b>D.12</b>	Review of the Snow Disposal Plan and submission of updates/revision.	Annually – Annual Reporting Requirement
<b>D.13</b>	Inspection of constructed berms, dykes, and dams within the Sewage Disposal Facility.	Once every two years during the summer season by an Engineer
<b>D.14</b>	As-built plans and Record Drawings of the Sewage Disposal Facilities, lagoon and associated structures, sludge storage area, Solid Waste Facilities, and Biotreatment Pad.	Within six months of issuance of the Water Licence
<b>D.15</b>	A surveyed description of the wetland and associated structures that comprise part of the Sewage Disposal Facilities	Within six months of issuance of the water Licence
<b>E.1</b>	Notification of Modification	60 days prior to the proposed Modification
<b>E.3</b>	Modifications to Water Supply Facilities and Waste Disposal Facilities	Within 90 days of completion of the Modifications
<b>F.1</b> (Schedule 3, item 1)	Interim Closure and Reclamation Plan for the Solid Waste Disposal Facility	December 31, 2010
<b>F.2</b> (Schedule 3, Item 1)	Final Closure and Reclamation Plan	At least six months prior to abandoning any Waste Disposal Facilities

<b>G.1</b>	Final design drawings for the construction of any dams, dykes, or control structures	Prior to construction
<b>G.3</b>	As-built plans and Record Drawings	Within 90 days of completion
<b>H.1</b> (Schedule 4, item 1)	Updated plan for the operation and maintenance of the Waste Disposal Facilities (Note that this can be one plan or one plan for each Facility.)	Within three months of issuance of the Water Licence
<b>H.3</b>	Review of Operation and Maintenance Plan and submission of updates/revision	Annually – Annual Reporting Requirement
<b>I.1.</b>	Spill Contingency Plan in accordance with Indian and Northern Affairs Canada's 2007 "Guidelines for Spill Contingency Planning"	March 31, 2011
<b>I.2.</b>	Review of Spill Contingency Plan and submission of updates/revision	Annually – Annual Reporting Requirement

**General Procedures for the Administration of Licences  
Issued Under the *Northwest Territories Waters Act*  
in the Northwest Territories**

1. At the time of issuance, a copy of the Licence is placed on the Public Registry in the office of the Mackenzie Valley Land and Water Board (MVLWB or the Board) in Yellowknife and is then available to the public.
2. To enforce the terms and conditions of the Licence, the Minister of Indian Affairs and Northern Development has appointed Inspectors in accordance with subsection 35(1) of the *Northwest Territories Waters Act*. The Inspectors coordinate their activities with staff of the MVLWB. The Inspector responsible for Licence MV2009L3-0005 is located in Fort Smith, NT.
3. To keep the MVLWB and members of the public informed of the Licensee's conformity to the Licence's conditions, the Inspectors prepare reports which detail observations on how each item in the Licence has been met. These reports are forwarded to the Licensee with a covering letter indicating what action, if any, should be taken. The Inspection Reports and Cover Letters are placed on the Public Registry, as are any responses received from the Licensee pertaining to the Inspection Reports. It is therefore of prime importance that you react in all areas of concern regarding all inspection reports so that these concerns may be clarified.
4. It is the responsibility of the Licensee to apply to the MVLWB for a new licence. The past performance of the Licensee, new documentation and information, and points raised during a public hearing, if required, will be used to determine the terms and conditions of any new licence. Please note that if the Licence expires and another has not been issued, then Water and Waste disposal must cease, or you, the Licensee, would be in contravention of the *Northwest Territories Waters Act*. It is suggested that an application for a new licence be made at least eight months in advance of the Licence's expiry date.
5. If, for some reason, Licence # MV2009L3-0005 requires amendment, a public hearing may be required. You are reminded that applications for amendments should be submitted as soon as possible to provide the MVLWB ample time to complete the amendment process. The process may take up to six months or more depending on the scope of the amendment requested.

.../2



6. Specific clauses of your Licence make reference to the Board, Analyst or Inspector. The contact person, address, phone, and fax number of each is:

**Mackenzie Valley Land and Water Board:**

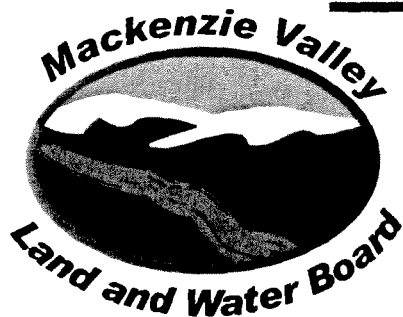
Public Registry Clerk  
Mackenzie Valley Land and Water Board  
7th Floor - 4922 48 Street  
P.O. Box 2130  
YELLOWKNIFE NT XIA 2P6  
Phone (867) 669-0506  
Fax (867) 873-6610

**Analyst:**

Analyst  
Water Laboratory  
Indian and Northern Affairs Canada  
P.O. Box 1500  
4601- 52nd Avenue  
YELLOWKNIFE NT XIA 2R3  
Phone (867) 669-2780  
Fax (867) 669-2718

**Inspector:**

Inspector  
Indian and Northern Affairs Canada  
136 Simpson Street  
PO Box 658  
FORT SMITH NT X0E 0P0  
Phone (867) 872-2558  
Fax (867) 872-3472



**Mackenzie Valley Land and Water Board**  
 7th Floor - 4910 50th Avenue  
 P.O. Box 2130  
 YELLOWKNIFE NT X1A 2P6  
 Phone (867) 669-0506  
 FAX (867) 873-6610

**Reasons for Decision**

<b>Preliminary Screener:</b>	MVLWB
<b>Reference/File Number:</b>	MV2009L3-0005
<b>Applicant:</b>	Town of Hay River
<b>Project:</b>	Municipal Sewage and Solid Waste Facilities, Hay River, NT

**Decision from Mackenzie Valley Land and Water Board Section 103 Panel Meeting of:**

**April 1, 2010**

**Reasons for Decision**

Issued pursuant to section 26 of the *Northwest Territories Waters Act* (NWTWA)

**Regulatory History**

The Town of Hay River's (the Town or Licensee) Sewage and Solid Waste Facilities have been licenced since 1977.

**Northwest Territories Water Board 1972 – 2000**

On Dec 19, 1972, the Town of Hay River applied for a type A Water licence for Water use and Waste disposal for municipal purposes. The Licence, N1L4-0053, was issued after a public hearing on June 15, 1977 and renewed in 1981 and again in 1991, each for a period of ten years.

**Mackenzie Valley Land and Water Board First Renewal 2001 – 2002**

On April 12, 2001, the Mackenzie Valley Land and Water Board (MVLWB or the Board) initiated a review of an application for renewal of Water Licence N1L4-0053. This Licence was given a new file number, N1L3-0053 by the MVLWB. A public hearing was scheduled by the MVLWB for November 8 and 9, 2001 to consider the Water Licence Renewal Application submitted by the Town of Hay River. The public hearing was cancelled as no interventions were received by the Board.

The MVLWB issued Water Licence N1L3-0053 which was approved by the Minister of Indian Affairs and Northern Development in May, 2002 for a period of eight years.

#### **Mackenzie Valley Land and Water Board Amendment 2004**

On April 23, 2004, the Town applied to the Board for an amendment to N1L3-0053. The amendment request was for the construction and operation of a Biotreatment Pad located at the Town's Solid Waste Disposal Facility.

On June 30, 2004, the Board held a meeting to consider the Town's application and decided, pursuant to subsection 21(1) of the NWTWA, to hold a public hearing because of the public concern expressed by Hay River First Nations and Métis.

The public hearing was held as scheduled on August 30 and 31, 2004 in Hay River, NT. Written interventions were submitted by:

- K'atloodeeche First Nation (KFN); and
- Government of the Northwest Territories (GNWT), Department of Resources, Wildlife, and Economic Development (RWED).

The amendment was approved on September 13, 2004.

#### **Mackenzie Valley Land and Water Board Current Renewal 2009–2010**

On June 11, 2009, the Town applied for a renewal of their Type A Water Licence. This Licence was given a new file number, MV2009L3-0005. N1L3-0053 expires on May 30, 2010. The application was distributed to First Nations, communities, government agencies, and other organizations for review and comment and was determined to be exempt from preliminary screening according to paragraph 2 of Part 1, Schedule 1 of the *Exemption List Regulations*.

The Board scheduled the Public Hearing for January 26 and 27, 2010 in Hay River, NT, held a technical session in Yellowknife on November 13, 2009 and a pre-hearing conference on January 11, 2010. Notice of a public hearing was published in accordance with subsection 23(2) of the NWTWA in *News North* on November 23, 2009 and in the *Hay River Hub* on January 6, 2010.

Interventions were due on December 2, 2009 with the Town's response due on January 14, 2010. The public hearing was held at the community centre in Hay River, NT. Written interventions were submitted by:

- Environment Canada (EC);
- Indian and Northern Affairs Canada (INAC); and

- Government of the Northwest Territories (GNWT) Department of Environment and Natural Resources (ENR)

## **Decision**

The MVLWB has decided to issue Water Licence MV2009L3-0005 (the renewal of Licence N1L3-0053) subject to the terms and conditions contained therein. The Licence has been issued under separate cover. The reasons for the Board's decision are described below under the headings contained in the Licence.

The Licence contains the conditions that the Board feels are necessary to protect the environment, conserve the Water resources, and provide appropriate safeguards in respect of the Licensee's use of Waters and deposit of Waste.

## **Requirements of Section 14 of the NWTWA**

### **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 14(4)(a) of the NWTWA, the granting of the Licence to the Applicant would not adversely affect, in a significant way, any existing Licensee, providing the conditions of the Licence are met. There are no other Applicants with precedence.

### **Existing Water Users**

Paragraph 14(4)(b) of the NWTWA prohibits the issuance of a licence unless the Board is satisfied that appropriate compensation has been or will be paid by the Applicant to members of the classes of Water users and persons listed in that paragraph who have claimed compensation within the period specified in the notice of the application. The Board received no claims for compensation either during the prescribed period or afterwards. Provided that compliance with the Licence's conditions is achieved, the Board does not believe that any users or persons listed in paragraph 14(4)(b) of the NWTWA will be adversely affected by the use of Waters or the deposit of Waste proposed by the Applicant.

### **Water Quality Standards**

Insofar as subparagraph 14(4)(c)(i) of the NWTWA is concerned, the Board is of the view that compliance with the Licence's conditions will ensure the Waste produced by this municipality will be treated and disposed of in a manner which will maintain Water quality consistent with applicable standards.

### **Effluent Quality Standards**

Consistent with subparagraph 14(4)(c)(ii) of the NWTWA, the Board is satisfied that the effluent standards it has developed and set out in the Licence as conditions are acceptable and will protect the receiving Waters and environment. These are further discussed below under Part D: Conditions Applying to Waste Disposal.

## **Financial Responsibility of the Applicant**

The Board must satisfy itself of the financial responsibility of the Applicant under paragraph 14(4)(d) of the NWTWA before it can issue the Licence. The project will be undertaken by the Town of Hay River. The Board is confident that the Town of Hay River is capable of meeting the financial obligations set out in the Act and Licence concerning the use of Water, the deposit of Waste for municipal purposes, and any restoration and/or maintenance work that results from closure of the facilities at the Town of Hay River.

## **Requirements of Subsection 15(2) of the NWTWA**

The Board is convinced that adherence to the terms and conditions it has imposed on the Applicant in the Licence will ensure that any potential adverse effects on other Water users which might arise as a result of the issuance of the Licence are minimized.

## **Water Licence MV2009L3-0005 Terms and Conditions**

### **Licence Term**

The Town of Hay River requested a five to ten-year term for the Water Licence renewal, with ten years preferred. No interveners opposed the ten-year request which has historically been granted to the Town. The Board has considered the Town's request and has decided to approve a 10-year term.

### **Licence Conditions**

The conditions set forth in the Water Licence have been imposed in order to address the Board's statutory responsibilities and those concerns which arose during the regulatory process. These reasons address the more significant of those concerns.

### **Part A: Scope and Definitions**

Upon review of the application and evidence in the Public Registry, the Board has determined that the scope of the undertaking covered by the Licence should remain unchanged from that set out in previous licences, i.e. "This Licence entitles the Town of Hay River to use Waters and dispose of Waste for municipal purposes at the Town of Hay River, Northwest Territories, located at: 60°51' N; 115°43' W".

The definitions section, for the most part, contains standard wording as per previous licences issued by the Board. Any changes made were done to ensure consistency with other recent Water licences.

### **Part B: General Conditions**

The General Conditions stipulate which types of data must be reported to the Board in the form of an annual report. The Board uses the annual reports to monitor compliance with Water use, Waste disposal, and Water quality. Having

a clear and accurate description of the activities occurring on site allows the Board and Inspectors to more effectively regulate the licenced undertakings. This includes modifying the Surveillance Network Program and Schedules where appropriate and necessary.

### **Part C: Conditions Applying to Water Use**

- C.1 This is a standard condition that has been slightly rephrased. It states where Waters may be obtained for municipal purposes at the Town of Hay River. No evidence was filed during the renewal process that suggested that this condition should be changed. Water withdrawal is limited to the Water Supply Facilities to ensure that the Water withdrawal by the Licensee is measured accurately.
- C.2 The Licence calls for a maximum use of 750,000 cubic meters annually; this is the historic Water allowance. In 2008, the Licensee withdrew 447,198.19 cubic metres. No suggestion was made during the renewal process that this volume should be changed, and it is believed that limiting Water use to this amount adequately protects the environment.
- C.3 The Licence calls for a maximum use of 90,000 cubic meters per month; this is the historic Water allowance. No suggestion was made during the renewal process that this volume should be changed and it is believed that limiting Water use to this amount adequately protects the environment.
- C.4 This condition was recommended by DFO in its September 1, 2009 comments on the Water licence renewal application which states in part:
- To reduce potential impacts to fish and fish habitat we are recommending the following mitigation measures be included into the proposed plans:
1. Water intakes should be properly screened and be equipped with fine mesh of 2.54 mm (1/10") to prevent the entrainment and/or impingement of fish.

The Board has decided to include this condition as it is a historic and standard condition present in most, if not all, current water licences.

### **Part D: Conditions Applying to Waste Disposal**

- D.1 This is the historic condition regarding Water source and transport through the Town of Hay River municipal intake and Waste facilities, it has been reworded, but no evidence was filed during the renewal process that its intent should be changed.
- D.2 This is a historic condition which has been changed based on comments from INAC. In the past, only one treatment cell could be taken out of

operation at any time, with Inspector approval. With additional lagoon cells now in the system, this new condition allows the Town to remove one cell after notifying the Inspector and allows the Town to remove more than one cell, if necessary, with Inspector approval. INAC's rationale for this change includes:

[T]he Town only removes one cell of the lagoon from service during maintenance, leaving three cells in operation for Sewage treatment. Removing more than one cell at a time would result in a reduction in wastewater treatment capacity... Such notification would allow the INAC Inspector to remain informed of site activities, as well as provide knowledgeable feedback to the Town on their proposed maintenance activities.

The Board supports this rationale and trusts the Inspector's ability to provide feedback and advice to the Town regarding lagoon maintenance activities, when required.

- D.3 The Board has prescribed effluent quality criteria (EQC) to be achieved at the discharge point to protect aquatic habitat and Water uses in the receiving Waters.

Water quality concerns and information were received through review comments during the initial type 'A' application amendment and renewals, as described above under Regulatory History.

Effluent quality criteria for discharges have been reviewed and deemed technically achievable and sufficiently stringent for preventing adverse effects on the receiving environment. Interveners did not identify any serious concerns in relation to the effluent from the Sewage Disposal Facilities.

**Faecal Coliforms** – The Board had previously established a maximum Average Concentration of 1000 FC per 100 ml and a maximum Concentration in any grab sample of 2000 FC per 100 ml for Faecal Coliform bacteria. The 1000 FC per 100 ml was derived from the Canadian Council of Ministers of the Environment (CCME) "Canadian Water Quality Guidelines for Recreational Waters" (CCME 1999). These effluent quality criteria were intended to protect the most sensitive Water use likely to occur in the receiving waterbody, namely non-contact or secondary Water use (i.e. fishing, boating).

Health Canada's "Guidelines for Canadian Recreational Water Quality" was updated in 2002 and recommends that E.Coli should not exceed 2000 E.Coli/L; if 90 percent of the fecal coliforms are E.Coli, either fecal coliforms or E.Coli may be determined. Assuming this to be the case, the Health Canada fecal coliform effluent quality recommendation would be 2,000 FC/L, which is about

two orders of magnitude more stringent than the previous Water Licence's limit of 10,000 FC/L (1000 FC/mL).

Since the point of compliance for the Town of Hay River is still in a drainage ditch, at least 1000 metres before actually reaching Great Slave Lake, INAC suggests that the new Health Canada limits for recreational Waters may be overly conservative in this case. They recommended keeping the former limits. Since the Board agrees that it is extremely unlikely that recreational activities will take place at this location and considering the time and opportunity for further treatment as the Waters make their way towards Great Slave Lake, the Board has agreed to keep the limits consistent with past licences.

**Biological Oxygen Demand (BOD<sub>5</sub>)** – The Board had previously established a maximum Average Concentration of 20 mg/L BOD<sub>5</sub> and a maximum grab sample Concentration of 30 mg/L BOD<sub>5</sub> for Sewage effluent. These effluent quality criteria were loosely based on the NWT Water Board's "Guidelines for Discharge of Treated Municipal Water" and were set during the Water licencing process in 2001-2002. These criteria were intended to protect the receiving Water body from harm due to the introduction of oxygen-consuming materials. No evidence was filed during the renewal process that this EQC should be changed.

**Total Suspended Solids (TSS)** – The Board had previously established a maximum Average Concentration of 20 mg/L TSS and a maximum concentration in any grab sample of 40 mg/L TSS for Sewage effluent.

In setting these effluent quality criteria, the Board recognized that elevated levels of TSS could adversely affect fish and other aquatic organisms, with the severity of the effect dependant on both the concentration of TSS and the duration of exposure to TSS. The effluent quality criteria were established to ensure that the Water quality objectives could be met in the discharge and are consistent with other Water licences. These values were derived, in part, from the "Canadian Water Quality Guidelines" (CCME 1999) for TSS.

**Oil and Grease** – This is the historic condition based on INAC comments in 2001. These comments stated that "Oil and Grease should only be sampled if there is a visible sheen on the Water".

**Acute Toxicity** – The Board had previously established the effluent quality criterion for whole undiluted effluents to be not acutely toxic and essentially equivalent in results to "no observed effects concentration" with respect to survival of all test organisms. Previous prescribed bioassays employed rainbow trout and *Daphnia magna* to achieve 100 percent survival for whole effluent samples three times per year.

EC and INAC have recommended new requirements for a static pass/fail bioassay test. EC noted that since the bioassay test methods allow for 90



percent survival of control organisms in the rainbow trout test, it is not reasonable to require a higher survival rate in the test organisms. They recommend testing for rainbow trout only with a survival rate of 70 percent representing a pass. Both parties recommended reducing the frequency of sampling to twice per year in the spring and fall. All these changes would improve the cost efficiency of the bioassay test. EC's rationale for keeping the bioassay testing in the Water Licence includes the following:

Toxicity testing provides an evaluation of effluent quality that integrates all the measured parameters, and provides the proponent with an indication of overall effluent characterization with respect to deleteriousness. By doing the testing in spring and fall, a range of conditions are represented in the samples. Environment Canada is no longer able to provide toxicity testing services, and this is more appropriately done by the proponent. The pass/fail bioassay test is a single concentration test that requires less effluent than the LC50 test, and costs less [at approximately \$150 per test].

The Town of Hay River does not believe it should be responsible for carrying out the bioassay testing and quotes the upcoming Canada Wide Strategy (CWS) to support their case. In anticipation of the CWS, the Board has decided to remove the condition to carry out bioassay sampling at the Town of Hay River's Sewage Waste Facilities.

**pH** – This is a historic condition to ensure the Waters discharged from the Sewage Treatment Facilities do not become excessively acidic or basic.

D.4 This condition stems from discussions surrounding EC and INAC interventions requesting that the Town introduce CBOD into their suite of parameters for SNP Station 0053-2. EC indicated that:

CBOD analysis is a useful indicator of organic material loading to the receiving Waters, and is a parameter that has been added to other licences in the NWT and NU to identify the relative contribution to BOD. This has been of interest in light of ongoing discussions of Northern performance standards for lagoons, and would provide helpful information.

INAC supported this by noting that “[T]he CCME Municipal Wastewater Strategy for the Treatment of Municipal Wastewater Effluent uses CBOD as an indicator for the quality of municipal wastewater”.

Both interveners recommended that the two parameters (CBOD and BOD) be sampled concurrently for three years so that the Town could conduct a trend analysis on the results. This program would help

maintain the existing long-term dataset, identify a relationship between the two parameters, and help provide information to inform the upcoming CCME CWS requirements.

The Town opposed the requirement to test for CBOD in conjunction with BOD and to carry out the three-year trend analysis but was willing to convert from BOD to CBOD. They are of the opinion that the Town should not have to pay for testing to benefit the federal government.

In anticipation of the incorporation of the CCME CWS and to keep consistent with the reasons for decision regarding the bioassay sampling, the Board has decided to integrate the sampling of CBOD into the parameters measured at the Town of Hay River's Sewage Waste Facilities. The Town will carry out a three-year trend analysis of CBOD and BOD in an effort to define northern-specific values for the development of effluent quality criteria for CBOD. The costs associated with the CBOD sampling are minimal and the information gained from the analysis will better inform environmental decision-making, management, and protection throughout the North.

- D.5 This is a standard and historic condition.
- D.6 This is a standard and historic condition.
- D.7 The Licensee has agreed to meet this condition which ensures that the Town include the operational procedures for removal and disposal of Sewage sludge as part of the lagoon maintenance program for Board review. The information contained in a sludge management plan will help the Board and Inspectors determine if the estimated quantities of sludge produced, the frequency of extraction and disposal from the lagoons, the chemical composition of the sludge, and the methods for sludge storage, treatment, and disposal are environmentally sound and appropriate.
- D.8 This is a standard and historic condition.
- D.9 Discussions during the public hearing identified the need for more information on drainage around the Solid Waste Facilities:

MR. JAMIE VANGULCK: Thank you, Mr.Chair. Jamie Vangulck. I'll move over to some questions about the Solid Waste Disposal Facility. And you address some of the -- some of Environment Canada's concerns about monitoring, and the groundwater monitoring wells at the Solid Waste Disposal Facility as well as the surface Water monitoring.

During your presentation you described that you weren't able to locate all the wells when you went out to visit the site today. What information gaps are there to understand the locations for monitoring at the facility? And what information does Environment Canada recommend to have on the record with regards to how and where Water is sampled?

MS. ANNE WILSON: It's Anne Wilson. As briefly touched on earlier, it would be very useful to have a plan view map of the site and have some indication of the drainage paths and proximity to the river. And also the potential sources of contaminants identified on -- on the map which are currently in -- in the system...

MR. JAMIE VANGULCK: Thank you, Mr. Chair. I'll move on to another line of questioning here. INAC recommended completing groundwater monitoring in the vicinity of the Solid Waste Disposal Facility. Is INAC of the opinion that there's sufficient groundwater and surface monitoring locations at the Solid Waste Disposal Facility?

MR. ROBERT JENKINS: Mr. Chair, it's Robert Jenkins. Yeah, we're -- I mean, we are happy that the -- the Town is -- is monitoring for groundwater at their Solid Waste Facility. I think before we could provide a recommendation to the Board that it's -- it's adequate, there's a lot of things that would need to be considered, so sort of a clear definition of where those locations are, where just to be -- to confirm that these are the -- still the same locations, what they're seeing in those from their results. So I think we'd need a little bit more information before you could -- could give a full thumbs up that -- that the site is covered for all subsurface drainage patterns.

THE CHAIRPERSON: Thank you. Further from Board staff?

MR. JAMIE VANGULCK: Thank you, Mr. Chair. Is it INAC's advice that these information gaps

about the sufficiency of groundwater and surface Water monitoring locations be included in the current Water licence?...

MR. ROBERT JENKINS: Mr. Chair, it's Robert Jenkins. Yes, I mean, we had a recommendation on groundwater monitoring and that that information be provided. I believe we also had -- just let me check here...

MR. ROBERT JENKINS: No, actually that's the only recommendation we had that they provide information on the -- the monitoring of the groundwater on the site and that would provide information on subsurface drainage patterns, quality, leachate, which we felt it's important to not only managing that site but closing it at some point in the future..

MR. JAMIE VANGULCK: Thank you, Mr. Chair. Jamie Vangulck. Does INAC recommend groundwater monitoring in the vicinity of the Solid Waste Disposal Facility to include groundwater level measurements?

MR. ROBERT JENKINS: Mr. Chair, it's Robert Jenkins. We didn't specifically recommend that in our intervention but we don't feel that that is something that would be that onerous to collect and then could be useful in -- in helping to characterize the - the drainage and the -- the subsurface Water patterns at the Solid Waste Facility.

Comments on the draft Water Licence from INAC indicated that the analysis and interpretation of existing monitoring data should be conducted prior to carrying out the conditions outlined in Schedule 2, item 1 for the Drainage Study.

The Board has agreed with this logic and has decided to ask the Town to carry out a review of the available Solid Waste Facilities' surface and groundwater information before initiating a drainage and seepage study. The Board's intent behind the study is that it will help determine the value and function of current monitoring locations, recommend new sampling locations, identify leachate composition, and provide insight into management and closure options.

- D.10 The Licensee has agreed to meet this condition through an on-going desktop study which is expected for March 31, 2010. This study was initiated by the Town prior to the public hearing. The Water Licence provides an extra seven months for report submission in case more time is required by the Town for completion.
- D.11 This is the historic condition with the addition of a request that the plan include a topographic map showing the location currently used or planned to be used for snow disposal. The map will help the Board and the Inspector stay informed on snow management issues and activities.
- D.12 The annual updates will help the Board and the Inspector stay informed about snow management issues and activities.
- D.13 This is a standard condition requesting that an Engineer inspect a structure on a regular basis once it has been built to ensure its ongoing integrity.
- D.14 This is a standard condition requesting that the Town provide up-to-date Record Drawings of its Waste Disposal Facilities. This provides the Board with the satisfaction that all facilities have been approved by an Engineer.
- D.15 This condition came about as a result of discussions during the public hearing. Several interveners wanted more information about the performance of the wetlands since the only SNP station currently being sampled is at the end of the wetland where Waste flows into Great Slave Lake.

MR. JAMIE VANGULCK: ...Is there an engineering design report that demonstrates that the lagoon and wetland system are capable of treating wastewater to regulated levels for the future population of Hay River?

MR. MICHAEL RICHARDSON: Mr. Chair, there is no such report...

MR. JAMIE VANGULCK: Yes. Jamie Vangulck. What characteristics of the wetland should a Proponent submit to regulators to provide confidence that Waste is managed to achieve regulated limits?

MR. RON KENT: Ron Kent for the Town. The area of the wetland, any should be submitted -- any -- the flow pattern through the wetland, as

well. Plant species and things like that really doesn't matter as long as it's -- but - - but those two (2) -- those two (2) things are important.

The Board has decided to request a surveyed description of the wetlands as it would provide the Board and reviewers with a better understanding of how Waters flow through the wetlands. This condition partially replaces the request by EC to carry out a full suite of parameter testing at SNP Station 0053-3 in an attempt to characterize Waste running through the lagoon and wetland system.

- D.16 The Board has established soil quality criteria for the final treatment of contaminated soil based on the GNWT "Guideline for Contaminated Site Remediation". This guideline describes the process that is used to manage (e.g. identify, assess, remediate) contaminated or potentially contaminated sites on Commissioner's land including private land within municipalities. The Board recognizes that the Biotreatment Pad has been established in the Town's Solid Waste Disposal Facilities and the treated soil will be used as cover. As such, the Board has chosen industrial criteria for the final remedial standard. The Board believes this will ensure adequate protection of the environment within this setting.

The Board has removed a historic condition which had been in the Town's Water Licence since 1991, referring to the requirement to provide notice and obtain Board approval before accepting any new industrial or agricultural Waste into the municipal disposal facilities. This type of condition is within the Board's jurisdiction and may be considered as a standard municipal Water licence condition in the future. It has been removed in this case to keep this Licence consistent with contemporary Water licences. In the Board's assessment of this condition, new Waste will refer to completely new, exotic materials not previously or presently accepted by the facilities. This condition would provide an opportunity for the Board and the Inspector to satisfy themselves that any proposed new Waste can be properly treated by the municipality and will not cause undue harm to the environment.

#### **Part E: Conditions Applying to Modifications**

The conditions applying to Modifications are included to ensure that best practices are followed when the Licensee modifies an existing physical works. These conditions ensure the Board that an Engineer has designed the structure and that an Engineer has inspected the structure once it is built. It also allows the Board to raise any concerns it may have regarding the Modifications before they are started.

## **Part F: Conditions Applying to Closure and Reclamation**

Under this Licence, the Board clarified what is expected from the Licensee. Conditions found in Schedule 3, item 1 are related to the submission of a closure and reclamation plan for the Solid Waste Disposal Facilities. There was a requirement for the submission of a closure and reclamation plan six months prior to closure in the previous Water Licence. During this renewal process, evidence was presented and accepted by the Board for the inclusion of a condition requesting an interim closure and reclamation plan (F.1) as well as a final closure and reclamation plan six months prior to closure (F.2).

F.1 A new condition which required the Town to develop an interim closure and reclamation plan was included based on comments from ENR and INAC and discussion during the public hearing. ENR was concerned that:

The initial steps of developing a Closure and Reclamation Plan (C&R Plan) are not in place, and the town will be unprepared to meet a closure scenario; this concern is augmented when considering that the town has not considered the projected lifespan of the SWF.

The development of a C&R Plan is important. There are three distinct steps, performed in the proper order, through the development of a Final C&R Plan:

1. Preliminary Closure and Reclamation Plan
2. Interim Closure and Reclamation Plan
3. Final Closure and Reclamation Plan

Step 1, a Preliminary C&R Plan, is appropriately prepared in conjunction with the planning and permitting stage of the SWF. The general purpose is to propose closure objectives, alternatives analysis, and proposed closure criteria to understand the Proponent's intent. Determining appropriate closure options should also be integrated with a level of community engagement to build consensus upfront.

Step 2, the Interim C&R Plan, is to identify uncertainties surrounding certain closure options that guide corresponding areas for reclamation research during operations prior to closure. There are typically several versions that are prepared during the life of the facility to address changes in development alternatives, and to refine as the facility progresses towards closure and subsequent versions of the Closure and Reclamation Plan are produced. Interim plans are prepared on a regular basis to coincide with operational changes, advances in technology, key milestones, information

collected during reclamation research, and results of community engagement.

Step 3, the Final C&R Plan, should be more detailed because more information and studies are available to determine duration, frequency, and magnitude of the effects. The final version of the C&R Plan is to contain detailed reclamation activities, and should be prepared and approved prior to a scheduled permanent closure or immediately after an unplanned closure.

Further, paragraph 6(2)(h) of the Regulations states that Applicants shall include plans for abandonment, or any temporary closing, of a proposed undertaking in their Water Licence Application. Since there was no plan included in the Town's application, the Board now requests submission of an interim plan that shows that significant thought has gone into future and on-going closure activities.

#### **Part G: Conditions Applying to Construction**

These are standard conditions ensuring that all new structures are designed, constructed, approved, and inspected by an Engineer.

#### **Part H: Conditions Applying to Operation and Maintenance**

H.1 The Licensee submitted an updated operations and maintenance plan (O&M Plan) with its Water Licence Renewal Application. This plan was not previously submitted or approved by the Board. An update to this plan is due within three months of licence issuance. Any subsequent changes or updates to this plan must be reported to the Board and included in the Annual Report. Any proposed major changes must be submitted to the Board for approval.

EC and INAC asked that an updated O&M Plan be submitted to the Board for approval. INAC recommended that the Town update its O&M manual to include operations from the Hydrocarbon Biopile Treatment Facility, including how the Town will manage future increases in soil volume, how leachate will be tested and analyzed, how results will be reported, and how leachate will be discharged or stored. Likewise, EC recommended that the plan include practical guidance on the operation of the engineered treatment pad, the leachate control pond, recycling, handling, and disposal of hazardous materials, treatment of contaminated drainage from the landfill, all aspects of the wastewater collection and treatment, including the cell adjacent to the lagoons.



Environment Canada referenced a guide prepared for GNWT's Municipal and Community Affairs titled "Guidelines for the Planning, Design, Operations and Maintenance of Modified Solid Waste Sites" as rationale for the requirements outlined in Schedule 4, item 1.

The information discussing Operation and Maintenance Plans is very thorough and can be applied not only to solid Waste sites but also Sewage treatment systems. As stated in Subsection 4.6.1 of the document: "The stated purpose of an Operations and Maintenance Plan is to assist community staff in the proper operation and maintenance of their Waste Disposal Facilities. It must include:

- A description of how facilities are operated and maintained;
- How often these tasks are performed; and
- Who is responsible for their completion.

The Plan must also demonstrate to the Water Board [sic] that the community is capable of operating and maintaining their Waste sites.

Inspectors will use the community's manual as part of their inspection procedure to ensure that the stated procedure are [sic] being undertaken."

The document also states in Subsection 4.6.2 that regulatory compliance requires due diligence and goes on to provide the definition of due diligence as:

- Establishing a proper system to prevent contravention of regulatory standards; and
- Taking all reasonable steps to ensure effective operation of that system.

The Town argued that an O&M Plan, with the level of detail required for operators, is not necessary for the purposes of the Licence. The Board agreed, but the condition for a detailed O&M plan is a standard condition and the Board supports the above-mentioned rationale in developing the conditions outlined in Schedule 4, item 1.

**Schedule 4, item 1(o):** In 2004, the Board noted Environment Canada's request that the O&M Plan be amended to include detailed procedures for the treatment of contaminated soil including the frequency of tillage, type, and application rate of land treatment amendments (i.e. Water, air, lime or nutrients) to be used. The Town noted that this request would be difficult to implement given the unknown nature of contaminated material that might be accepted. As such, the Board accepted the Town's proposal that a treatment plan be created for each individual lot of soil accepted for treatment. These individual plans include, at a minimum:

- Location of material on the Biotreatment Pad;
- Results of the classification of the contaminated soil;
- Source of the contaminated soil, volume, and characteristics of the soil;
- Frequency and mode of tillage; and
- Frequency of testing to determine the progress of treatment.

The Board supports the requirement for better reporting of the operation and maintenance of the Biotreatment Pad in the O&M Plan and has decided, based on reviewer comments and the development of past licences, that this condition remain for the development of an O&M plan.

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

The four conditions under Part I are standard conditions to ensure a contingency plan is in place, and that during unauthorized discharge of Waste, the Licensee must implement the plan and inform the appropriate regulators.

#### **Surveillance Network Program**

The requirements and criteria for monitoring the characteristics of Water and Waste associated with the Town of Hay River's Water use and Waste disposal for municipal purposes are outlined in the Surveillance Network Program (SNP), which is included in the Water Licence. The SNP calls for extensive and ongoing sampling and analysis to be conducted at the stations identified in the Schedule. The number of stations, the sampling frequency, and the list of variables reflect the information that was considered necessary to determine the effectiveness of the Water treatment at the Waste Disposal Facilities and to monitor potential downstream and groundwater effects. The Board believes that the conditions specified in the SNP will ensure that adequate monitoring data are collected to characterize Waters and wastewaters, to assess compliance with the effluent quality criteria, and evaluate the Water treatment options.

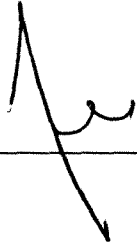
**Part B, item 9:** The Town agreed to this condition during the public hearing. SNP Station 0053-8 only requires sampling if leachate is to be discharged from the Biotreatment Pad into the environment to ensure that no parameters of major concern are released.

#### **Conclusion**

Subject to the terms and conditions set out in the Licence, and for the reasons expressed herein, the MVLWB is of the opinion that the licenced undertaking for Water use and Waste disposal for municipal purposes at the Town of Hay River can be completed by the Town of Hay River in a manner that will ensure the conservation, development, and utilization of Waters that will provide the optimum benefit there from for all Canadians and for the residents of the Northwest Territories in particular.

Signature

Mackenzie Valley Land and Water Board  
Preliminary Screening Organization



\_\_\_\_\_  
Chair



\_\_\_\_\_  
Witness

APRIL 14, 2010

\_\_\_\_\_  
Date

APRIL 14, 2010

\_\_\_\_\_  
Date



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Re:  
Water Licence – Issuance of Type A Water Licence  
Town of Hay River

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Town of Hay River

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**Cc:** 'Shannon Hayden - MVLWB'; 'Anne Umpleby'  
**Subject:** Town of Hay River - Issuance of Type A Water Licence  
**Attachments:** MV2009L3-0005 - Town of Hay River.pdf

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Please find the attached document for your review. If you have any questions, please contact Shannon Hayden at (867) 669-0506 or email [permits@mvlwb.com](mailto:permits@mvlwb.com).

Regards,

Amanda Gauthier

Regulatory Clerk

Mackenzie Valley Land and Water Board

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