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NUNAVUT IMALIRIYIN KATIMAYINGI  
NUNAVUT WATER BOARD  
OFFICE DES EAUX DU NUNAVUT

File No: 3BM-PEL0712

September 7, 2007

Mr. Guido Tigvareark, SAO  
Municipality of Kugaaruk  
P.O. Box 205  
Kugaaruk, NU X0B 1K0  
Fax: 867-769-6069

**RE: NWB Licence No. 3BM-PEL0712**

Dear Mr. Tigvareark:

Please find attached Licence No. 3BM-PEL0712, Motion 2007-24, issued to the Hamlet of Kugaaruk by the Acting Chief Executive Officer of the Nunavut Water Board pursuant to Article 13 of the *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in Right of Canada*. The terms and conditions of the attached Licence related to water use and waste disposal are an integral part of this approval.

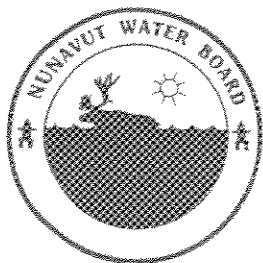
Sincerely,

Thomas Kabloona  
Acting Chief Executive Officer

TK/dh/pb

Enclosure: Licence No. 3BM-PEL0712

cc: Jim Rogers, INAC Iqaluit  
Peter Kusugak, INAC Iqaluit  
Andrew Kein, INAC Iqaluit  
Kevin Tweedle, KIA  
Erin Calder, Nunavut Wildlife Management Board  
Cindy Parker, Environment Canada  
Earle Baddaloo, GN-DOE  
Paul Savoie, Department of Fisheries and Oceans  
Carson Gillis, NTI  
John Dawe, GN  
Tom Livingston, CGS  
Leslie Payette, NIRB



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NUNAVUT WATER BOARD  
NUNAVUT IMALIRIYIN KATIMAYINGI  
OFFICE DES EAUX DU NUNAVUT

## DECISION

### LICENCE NUMBER: 3BM-PEL0712

This is the decision of the Nunavut Water Board (NWB) with respect to an application for a Licence amendment and renewal originally received May 31, 2006, made by:

#### **Hamlet of Kugaaruk**

to allow for the use of water and disposal of waste for the Hamlet of Kugaaruk, located within the Kitikmeot Region, Nunavut. With respect to this application, the NWB gave notice to the public that the Hamlet had filed an application for a water licence.

### DECISION

After having been satisfied that the application was exempt from the requirement for screening by the Nunavut Impact Review Board in accordance with S. 12.3.2 of the *Nunavut Land Claim Agreement* (NLCA), the NWB decided that the application could proceed through the regulatory process. After reviewing the full submission of the Applicant and written comments expressed by interested parties, the NWB, having given due regard to the facts and circumstances, the merits of the submissions made to it and to the purpose, scope and intent of the *NLCA* and of the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* (NWNSRTA), decided to waive the requirement to hold a public hearing and determined that:

**Licence Number 3BM-PEL0712 be issued subject to the terms and conditions contained therein. (Motion #: 2007-24)**

SIGNED this 7th day of September, 2007 at Gjoa Haven, NU.

Thomas Kabloona  
Acting Chief Executive Officer

## TABLE OF CONTENTS

DECISION .....	i
TABLE OF CONTENTS .....	ii
<b>I. BACKGROUND .....</b>	<b>1</b>
<b>II. PROCEDURAL HISTORY .....</b>	<b>1</b>
<b>III. ISSUES.....</b>	<b>2</b>
<b>IV. LICENCE 3BM-PEL0712.....</b>	<b>8</b>
PART A: SCOPE AND DEFINITIONS.....	9
PART B: GENERAL CONDITIONS .....	12
PART C: CONDITIONS APPLYING TO WATER USE .....	14
PART D: CONDITIONS APPLYING TO WASTE DISPOSAL .....	14
PART E: CONDITIONS APPLYING TO MODIFICATIONS AND CONSTRUCTION.....	16
PART F: CONDITIONS APPLYING TO OPERATION AND MAINTENANCE .....	17
PART G: CONDITIONS APPLYING TO ABANDONMENT AND RESTORATION.....	19
PART H: CONDITIONS APPLYING TO THE MONITORING PROGRAM.....	20

## **I. BACKGROUND**

The Hamlet of Kugaaruk is located 68°32' north latitude and 89°49' west longitude in central Nunavut, within the Kitikmeot Region. This places Kugaaruk along the east coast of Pelly Bay, which is roughly nine hundred and sixty kilometers (960 km) west of the capital of Iqaluit. The annual snowfall in Kugaaruk is approximately 125 cm and the annual rainfall is approximately 11 cm. In January the daily mean temperatures is approximately minus 33<sup>0</sup>C while in July the daily mean temperature is approximately plus 6<sup>0</sup>C. Freeze up usually occurs during the month of November but may happen as early as September or October while spring thaw usually happens between late May and June.

## **II. PROCEDURAL HISTORY**

On May 31, 2006, an application for the amendment and renewal of water licence NWB3PEL9803 was filed by Dillon Consulting Ltd.(Dillon), Yellowknife, NT, on behalf of the Hamlet of Kugaaruk.

The Hamlet of Kugaaruk is applying for the renewal of its Water License, which was issued on November 1, 1998 and expired on October 31, 2003. The scope of the application included the planned upgrades to the sewage (lagoon) and solid waste disposal facilities (improved fencing).

An initial assessment of the Hamlet's application for water use and waste disposal activities within the Hamlet was undertaken, so that the Board could make a fully informed decision on the merits of application. An internal technical assessment was completed and a request for additional information and clarification was made by the NWB on November 14, 2006. The response to this request and to comments received from interested parties on an initial request in May, 2007, was received on July 19, 2007.

Information contained in the July 19, 2007 submission and distributed for review was as follows:

- Detailed Design Phase II (July, 2007; Dillon Consulting Ltd.), with the following Appendices
  - Appendix A: Stamped Design Drawings
  - Appendix B: Population Statistics
  - Appendix C: Laboratory Analyses
  - Appendix D: Sample Tables of Contents (Spill Contingency, O&M)
  - Appendix E: NWB letter of November 14, 2006
  - Appendix F: Laboratory Analysis & INAC inspection
  - Appendix G: Letters from Hamlet & from NWB
  - Appendix H: Community poster
  - Appendix I: GCL specification sheet
  - Appendix J: Letters from INAC, Env. Can., GN Dept of Env.
- Response to the NWB letter of November 14, 2006
- GN/Dillon response (Questions 1-3)

- AMEC response (Questions 4-14)
- GN response to previous INAC, Environment Canada, and GN-DOE comments

The Nunavut Water Board publicly posted notice of this application, in accordance with the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* S. 55.1 and Article 13 of the *Nunavut Land Claims Agreement*, on May 7, 2007. This assessment process included the referral of the application to a variety of Federal, Territorial and local organizations for their review and comment. The additional information received on July 19, 2007 from the Department of Community and Government Services, Government of Nunavut on behalf of the Hamlet, containing information prepared by Dillon, was forwarded to the parties for additional review on July 24, 2007.

As no public concern was expressed, the NWB waived the requirement to hold a public hearing and proceeded with the application process.

Based upon the results of the detailed assessment, including consideration of any potential accidents, malfunctions, or impacts to water, that the overall project might have in the area, the Board approved the application and has issued Licence 3BM-PEL0712.

### III. ISSUES

#### **Term of the Licence, Reporting, Manual and Plan Submissions**

In accordance with the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* S. 45, the NWB may issue a licence for a term not exceeding twenty-five years. In determining an appropriate term of a water licence, the Board considers a number of factors, including, but not limited to, the results of the Department of Indian Affairs and Northern Development (INAC) site inspections and the compliance record of the Applicant. In review of the previous water licence NWB3PEL9803, the NWB has noted that there were several issues of non-compliance with conditions contained therein. The issues varied throughout the duration of the Licence, however re-occurring items were significant and as follows:

- i. The Licensee did not include in Annual Reports, the water quality results for monitoring under Schedule 1: Surveillance Network Program;
- ii. The Licensee did not submit an Operations and Maintenance Plan during the Licence term; and
- iii. Based on Inspectors sample results, effluent standards regarding Biochemical Oxygen Demand, Suspended Solids and Fecal Coliforms were not met.

#### **Term of Licence**

In review of the application and the comments received from interested persons, there were no objections to the Applicants request for a term of five (5) years for the Licence renewal. The NWB concurs that a term of five (5) years is appropriate, and will allow enough time for the Hamlet to establish a consistent compliance record with the terms and conditions of its licence. Appropriate Plans need to be developed to the satisfaction of the NWB for the operation and maintenance of the facilities as well as for the protection of the environment with regard to potential spills through day-to-day operations.

### **Annual Report**

The NWB has imposed on the Licensee, the requirement to produce an Annual Report. These Reports are for the purpose of ensuring that the NWB has an accurate annual update of municipal activities during a calendar year. This information is maintained on the public registry and is available to interested parties upon request. A “*Standardized Form for Annual Reporting*” is to be used by the Licensee and is available from the NWB file transfer protocol (FTP) site under the Public Registry link at the NWB Website.

### **Operational Plans**

The NWB recognizes the significant efforts put forward by the Licensee within the renewal application. It is noted, however, that the Licensee has not submitted an Operations and Maintenance (O&M) Plan or an Environmental Emergency Contingency Plan with the Application for Renewal of Licence, filed with the Board on May 31, 2006 or in its follow-up submissions. This Licence has therefore, included the requirement to provide to the NWB the following Plans, as identified within the Licence:

- i. *Water Distribution Facility Operation and Maintenance (O&M) Plan;*
- ii. *Sewage Treatment Facility Operation and Maintenance (O&M) Plan;*
- iii. *Solid Waste Facility Operation and Maintenance (O&M) Plan;*
- iv. *Environmental Emergency Contingency Plan For Water, Sewage and Solid Waste Operations in the Hamlet of Kugaaruk, Nunavut; and the*
- v. *Monitoring Program Quality Assurance/Quality Control Plan*

The purpose of the *Plans* noted above is to assist Hamlet staff in the proper operation and maintenance of their water distribution and waste disposal facilities. The *Plans* should demonstrate to the Nunavut Water Board that the Hamlet is capable of operating and maintaining the infrastructure related to water use and waste disposal adequately and to meet the requirements of the Licence. The Plans should be based, at a minimum on the various NWB-approved guidelines available (i.e. *Guidelines for the Preparation of an Operations and Maintenance Manual for Sewage and Solid Waste Disposal Facilities in the Northwest Territories*, Duong and Kent, 1996) and other regulatory guidelines as deemed appropriate.

The purpose of the Monitoring Program, the *Quality Assurance/Quality Control (QA/QC) Plan* is to

ensure that samples taken in the field, as part of the Monitoring Program, will maintain a high quality, so as to accurately represent the physical and chemical nature of the samples being taken. It should also be noted that while sampling requirements have been imposed, additional sampling may be requested by an Inspector.

### **Water Use**

The Hamlet of Kugaaruk currently utilizes the Kugajuk River as a source of potable water. The intake for the Hamlet's Water Supply Facility is located approximately one kilometer (1 km) upriver from the community. The intake consists of two (2) one hundred and fifty two millimeter (152 mm) submerged lines that extend from the shore approximately fifteen meters (15 m) along the bottom of the river. The two intake lines travel up from the shoreline about ten meters (10 m) where they enter the Water Supply Facility truck fill station. Water is transferred by submersible pump to the distribution vehicles following chlorine treatment, and is then distributed to the community by truck. Water consumption in 2006 was reported to be 23,507 m<sup>3</sup>. Projected water use in 2012 is reported to be 31,205 m<sup>3</sup>. The amount of water use requested by the Applicant for the term of the Licence is 35,000 cubic metres per year.

No concerns were raised by the parties in their written submissions as to the amount of water required by the Applicant, the manner in which it is obtained or in the manner in which this water will be used. The NWB has determined that the increase in water use volume requested within this application will not substantially affect the quality, quantity or flow of waters, and has set the terms and conditions associated with water use by the Hamlet accordingly.

### **Deposit of Waste**

#### **Sewage**

The Hamlet of Kugaaruk currently provides trucked sewage services for the Community's residents, businesses and institutions. The Sewage Treatment Facility, operated by the Hamlet of Kugaaruk is located approximately 1.0 km from the Hamlet. Sewage is collected by vacuum truck from customer holding tanks and discharged to the sewage lagoon located to the east of the community, north of the Access Road and adjacent to the solid waste disposal facility. The Hamlet currently utilizes a two cell facultative lagoon system that began operating about 14 years ago. The original lagoon was designed as a single cell. The second cell was only constructed later as an ad hoc addition to the system by Hamlet crews and has little capacity. The system developed leaks and attempts were made to reinforce the berms surrounding the cells in the summer of 2004. Subsequent to the repairs, the leaking was reduced however the effluent continues to leak from the system at an elevated rate. Dillon Consulting made an initial site visit to the community in July 2005 to assess the breaches in the lagoon berms and to test the quality of the effluent being discharged into the ocean.

Upgrading of the current sewage lagoon system has been applied for within the current application

for amendment and renewal, to provide annual sewage treatment for the Hamlet for the projected twenty (20) year period.

Sewage effluent from the new lagoon system will be discharged as before, annually overland through a Wetland Treatment Area to the Final Discharge Point approximately one hundred and sixty meters (160 m) at the ocean shoreline. The wetland is contained by rock outcroppings on both sides. The change in elevation is roughly seventeen meters (17 m) and consists of multiple channels with three or four ponding areas.

Discharge from this upgraded facility is planned to take place annually, weather dependent, from July until October.

During the construction phase, a packaged two stage temporary sewage treatment system is to be used to treat the Hamlet wastewater while the Lagoon is being completed. This system is expected to provide treatment well above primary treatment, and will be close to secondary sewage treatment (TSS and BOD<sub>5</sub> below 45 mg/L). This system will be subject to the same effluent quality criteria as the lagoon system and will be required to comply under Part D, Item 3.

Specific comments relevant to sewage disposal operations in the Hamlet were provided by GN-DOE, INAC and Environment Canada.

Environment Canada noted that any effluent discharged must be in compliance with Section 36(3) of the Fisheries Act. The Department of the Environment (GN) also noted the requirements that effluent quality meet applicable legislative requirements. Monitoring of the Sewage Lagoon effluent (Sewage Disposal Facility) was requested, by both Parties, in order to assess the treatment efficiency within the wetland treatment area. The NWB concurs with this and has included monitoring requirements for the Sewage Lagoon. In order to effectively monitor these effluents for compliance purposes, the NWB has imposed acute toxicity testing as a licence requirement under Part D, Item 10.

Both the Department of the Environment (GN) and Environment Canada noted that maintenance should include removal and disposal of sewage sludge. Environment Canada recommended that prior to de-sludging occurring, the Licensee submit for approval a Sewage Sludge Management Plan that clearly outlines the chemical composition of the sludge, and how sludge will be stored, treated and eventually disposed of. The NWB concurs with this recommendation, and has imposed this requirement in Part F, Item 1(ii).

The NWB recognizes the need to determine the treatment efficiencies of the wetland treatment over a suggested period of 5 years. In order to provide the additional design data required to adequately assess the system, a Wetland Treatment Area Assessment Report is to be developed that will provide the criteria needed in order to properly assess the efficiency of the system over time. Verification of assumed flow pattern, residence time and determination of a focal point of release for the Final



Discharge Point are all needed in order to demonstrate the effectiveness of the system. This requirement is detailed in Part D, Item 7.

In considering that the Licence term has been set to five (5) years, and in allowing for the construction of the facilities, the Board has determined that a future treatment efficiency of the Wetland Treatment Area be assessed in year 5 of this Licence. For future planning a further assessment may be considered by the Board in an application for Licence renewal.

Both the Department of the Environment (GN) and Environment Canada noted that an Environmental Emergency Contingency Plan for Water, Sewage and Solid Waste Operations in the Hamlet of Kugaaruk, Nunavut has not yet been prepared, and submitted to the NWB by the Licensee. Both Parties recommended that the Licensee develop this Plan as soon as possible, and submit it to the NWB for approval. The NWB concurs with this recommendation, and has imposed this requirement in Part F, Item 2

### **Solid Waste**

The Hamlet's Solid Waste Facility is located southeast of the sewage treatment lagoon, approximately 2.3 km east of the community, north of the Access Road. Waste is collected by the Hamlet and transported to the waste disposal facility. The bulky metal/hazardous waste storage area is located approximately half a kilometer (500m) southeast of the sewage lagoon and landfill sites. The information submitted to the NWB has indicated that the storage of these materials is in need of clean-up, planning, design and implementation. Recommendations have been provided to the GN by Dillon within the additional information received July 10, 2007, however no formal plan has been developed to address this issue. The development of an Operations and Maintenance Plan for the Solid Waste Disposal Facility will be required to set out procedures for the segregation, storage and eventual removal for disposal of hazardous wastes.

Environment Canada noted in their comments, the requirement for a Solid Waste Disposal Facility Operation and Maintenance (O&M) Plan, which reflects a commitment to waste reduction and proper handling of hazardous waste. The NWB notes that a Plan for this facility has not yet been prepared and submitted to the Board.

Accordingly, this Plan has been requested under Part F, Item 1 to ensure the Plan is current and takes into consideration concerns presented during the review of the Application, including any incineration planned at the Solid Waste Disposal Facility.

Additionally, in their comments regarding the disposal of solid wastes, the Department of the Environment (GN) recommended that groundwater monitoring wells be installed downstream of the solid waste landfill and the existing metals dump area. Although diversion ditches or berms are commonly installed around landfills to redirect surface runoff, groundwater monitoring wells are intended to help verify that historical contaminants which may be present in the landfill are not

migrating off site as a result of precipitation or snowmelt. The NWB concurs with this recommendation and has specifically requested that the inclusion of groundwater monitoring be addressed in the Solid Waste Disposal Facility's Operation and Maintenance Plan as presented in Part F, Item 1.

#### **Abandonment and Restoration**

To ensure that all future abandoned facilities are reclaimed in an appropriate manner, the NWB requires Licensees to submit an *Abandonment and Restoration Plan*. This plan is to be submitted at least six (6) months prior to final closure of Licenced facilities or upon submission of the final design drawings for the construction of new facilities to replace existing ones. The requirements for the Plan are outlined in Part G of this License. The NWB encourages the Licensee to undertake progressive reclamation on sites where possible.

**IV. LICENCE 3BM-PEL0712**

Pursuant to the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Agreement Between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in Right of Canada*, the Nunavut Water Board, hereinafter referred to as the Board, hereby grants to

**HAMLET OF KUGAARUK**

(Licensee)

of

**P.O. BOX 205, KUGAARUK, NUNAVUT X0B 1K0**

(Mailing Address)

hereinafter called the Licensee, the right to alter, divert or otherwise use water for a period subject to restrictions and conditions contained within this licence:

**3BM-PEL0712**

Licence Number

**NUNAVUT 07**

Water Management Area

**KUGAARUK, NUNAVUT (Latitude 68°32'N and Longitude 89°49'W)**

Location

**WATER USE AND WASTE DISPOSAL**

Purpose

**MUNICIPAL UNDERTAKINGS**

Description

**35,000 CUBIC METRES ANNUALLY**

Quantity of Water Not to Exceed

**September 7, 2007**

Date of Licence

**December 31, 2012**

Expiry Date of Licence

Dated this 7th of September 2007 at Gjoa Haven, NU.

  
Thomas Kabloona  
Acting Chief Executive Officer

## **PART A: SCOPE AND DEFINITIONS**

### **1. Scope**

- a. This Licence allows for the use of water and the disposal of waste for municipal undertakings at the Hamlet of Kugaaruk, Kitikmeot Region, Nunavut (68°31' N; 89°54'W);
- b. 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 Governor in Council under the *Nunavut Waters and Nunavut Surface Rights Tribunal 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 subject to such requirements; and;
- c. Compliance with the terms and conditions of this Licence does not absolve the Licensee from responsibility for compliance with the requirements of all applicable Federal, Territorial and Municipal legislation.

### **2. Definitions**

In this Licence: **3BM-PEL0712**

“**Act**” means the *Nunavut Waters and Nunavut Surface Rights Tribunal Act*;

“**Amendment**” means a change to original terms and conditions of this licence requiring correction, addition or deletion of specific terms and conditions of the licence; modifications inconsistent with the terms of the set terms and conditions of the Licence;

“**Analyst**” means an Analyst designated by the Minister under Section 85 (1) of the *Act*;

“**Appurtenant undertaking**” means an undertaking in relation to which a use of waters or a deposit of waste is permitted by a licence issued by the Board;

“**Average Concentration**” means the arithmetic mean of the last four consecutive analytical results for composite or grab samples collected from the monitoring stations identified in Part H;

“**Board**” means the Nunavut Water Board established under the *Nunavut Land Claims*

*Agreement;*

**“Chief Administrative Officer”** means the Executive Director of the Nunavut Water Board;

**“Commercial Waste Water”** means water and associated waste generated by the operation of a commercial enterprise, but does not include toilet wastes or greywater;

**“Composite Sample”** means a water or wastewater sample made up of four (4) samples taken at regular periods over a 24 hour period;

**“Effluent”** means treated or untreated liquid waste material that is discharged into the environment from a structure such as a settling pond or a treatment plant;

**“Engineer”** means a professional engineer registered to practice in Nunavut in accordance with the *Engineering, Geological and Geophysical Act (Nunavut)* S.N.W.T. 1998, c.38, s.5;

**“Final Discharge Point”** means the discharge location at the Sewage Disposal Facility as described in the Final Design Report, to be confirmed through on-site investigation and approval by an Inspector under Part D, Items 3 and 9;

**“Freeboard”** means the vertical distance between water line and the designed maximum operating height on the crest of a dam or dyke’s upstream slope;

**“Geotechnical Engineer”** means a professional engineer registered with the Association of Professional Engineers, Geologist and Geophysicists of Nunavut and whose principal field of specialization with the engineering properties of earth materials in dealing with man-made structures and earthworks that will be built on a site. These can include shallow and deep foundations, retaining walls, dams, and embankments;

**“Grab Sample”** means a single water or wastewater sample taken at a time and place representative of the total discharge;

**“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 Section 85 (1) of the *Act*;

**“Licensee”** means the holder of this Licence;

**“Modification”** means an alteration to a physical work that introduces new structure or eliminates an existing structure and does not alter the purpose or function of the work, but does not include an expansion, and changes to the operating system that are consistent with the terms of this Licence and do not require amendment;

**“Monitoring Program”** means a monitoring program established to collect data on surface water and groundwater quality to assess impacts to the freshwater aquatic environment of an appurtenant undertaking;

**“Nunavut Land Claims Agreement” (NLCA)** means the *“Agreement Between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada”*, including its preamble and schedules, and any amendments to that agreement made pursuant to it;

**“Sewage”** means all toilet wastes and greywater;

**“Sewage Disposal Facilities”** comprises the engineered lagoon and decant structures designed to contain and treat sewage as described in the Application for Water Licence filed by the Applicant on May 31, 2006 along with the additional information and final design drawings, signed and stamped submitted July, 2007;

**“Solid Waste Disposal Facilities”** means the facilities designated for the disposal of solid waste, as described in the Application for Water Licence filed by the Licensee on May 31, 2006 along with the additional information and final design drawings, signed and stamped submitted July, 2007;

**“Toilet Wastes”** means all human excreta and associated products, but does not include greywater;

**“Waste”** means, as defined in S.4 of the *Act*, any substance that, by itself or in combination with other substances found in water, would have the effect of altering the quality of any water to which the substance is added to an extent that is detrimental to its use by people or by any animal, fish or plant, or any water that would have that effect because of the quantity or concentration of the substances contained in it or because it has been treated or changed, by heat or other means;

**“Water Supply Facilities”** comprises the area and associated intake infrastructure at the Kugajuk River, as described in the Application for Water Licence filed by the Licensee on May 31, 2006;

**“Wetland Treatment Area”** comprises the area of land immediately downstream of the Waste Water Treatment Facility (Sewage Lagoon), to the Final Discharge Point approximately one hundred and sixty meters (160 m) down to the ocean shoreline as described in the Application for Water Licence filed by the Applicant on May 31, 2006.

## **PART B: GENERAL CONDITIONS**

1. The Licensee shall file an Annual Report with the Board not later than March 31<sup>st</sup> of the year following the calendar year reported which shall contain the following information:
  - i. tabular summaries of all data generated under the “Monitoring Program”;
  - ii. the monthly and annual quantities in cubic metres of fresh water obtained from the Water Supply Facilities;
  - iii. the monthly and annual quantities in cubic metres of each and all waste discharged;
  - iv. a summary of modifications and/or major maintenance work carried out on the Water Supply and Waste Disposal Facilities, including all associated structures and facilities;
  - v. a list of unauthorized discharges and summary of follow-up action taken;
  - vi. a summary of any abandonment and restoration work completed during the year and an outline of any work anticipated for the next year;
  - vii. Any updates or revisions for manuals and plans (i.e., *Operations and Maintenance, Abandonment and Restoration, QA/QC*) as required by changes in operation and/or technology;
  - viii. a summary of any studies or reports requested by the Board that relate to water use and waste disposal or reclamation, and a brief description of any future studies planned;
  - ix. any other details on water use or waste disposal requested by the Board by November 1<sup>st</sup> of the year being reported; and
2. The Licensee shall comply with the “Monitoring Program” described in this Licence, and any amendments to the “Monitoring Program” as may be made from time to time, pursuant to the conditions of this Licence.
3. The “Monitoring Program” and compliance dates specified in the Licence may be modified at the discretion of the Board.
4. Meters, devices or other such methods used for measuring the volumes of water used and waste discharged shall be installed, operated and maintained by the Licensee to the satisfaction of an Inspector.
5. The Licensee shall, within ninety (90) days after the first visit by the Inspector following

issuance of this Licence, post the necessary signs, where possible, to identify the stations of the "Monitoring Program." All signage postings shall be in the Official Languages of Nunavut, and shall be located and maintained to the satisfaction of an Inspector.

6. The Licensee shall immediately report to the 24-Hour Spill Report Line (867-920-8130) any spills of Waste, which are reported to, or observed by the Licensee, within the municipal boundaries or in the areas of the Water Supply or Waste Disposal Facilities.
7. The Licensee shall ensure a copy of this Licence is maintained at the Municipal Office at all times. Any communication with respect to this Licence shall be made in writing to the attention of:

**(i) Manager of Licensing:**

Nunavut Water Board  
P.O. Box 119  
Gjoa Haven, NU X0B 1J0  
Telephone: (867) 360-6338  
Fax: (867) 360-6369  
Email: [licensing@nunavutwaterboard.org](mailto:licensing@nunavutwaterboard.org)

**(ii) Inspector Contact:**

Water Resources Officer  
Nunavut District, Nunavut Region  
P.O. Box 100  
Iqaluit, NU X0A 0H0  
Telephone: (867) 975-4295  
Fax: (867) 979-6445

**(iii) Analyst Contact:**

Taiga Laboratories  
Department of Indian and Northern Affairs  
4601 – 52 Avenue, P.O. Box 1500  
Yellowknife, NT X1A 2R3  
Telephone: (867) 669-2781  
Fax: (867) 669-2718

8. The Licensee shall submit one paper copy and one electronic copy of all reports, studies, and plans to the Board. Reports or studies submitted to the Board by the Licensee shall include a detailed executive summary in Inuktitut.
9. The Licensee shall ensure that any document(s) or correspondence submitted by the Licensee to the Board is received and acknowledged by the Manager of Licensing.



10. This Licence is not assignable except as provided in Section 44 of the Act.

**PART C: CONDITIONS APPLYING TO WATER USE**

1. The Licensee shall obtain all fresh water from the Kugajuk River using the Water Supply Facilities or as otherwise approved by the Board.
2. The annual quantity of water used for all purposes shall not exceed 35,000 cubic metres.
3. The Licensee shall maintain the Water Supply Facilities to the satisfaction of the Inspector.
4. The Licensee shall equip all water intake hoses with a screen of an appropriate mesh size to ensure that fish are not entrained and shall withdraw water at a rate such that fish do not become impinged on the screen.

**PART D: CONDITIONS APPLYING TO WASTE DISPOSAL**

1. The Licensee shall direct all Sewage to the Sewage Disposal Facilities or as otherwise approved by the Board.
2. The Licensee shall provide notice to an Inspector at least ten (10) days prior to initiating any decant of the Sewage Disposal Facilities.
3. All Effluent discharged from the Sewage Disposal Facilities at Monitoring Program Station PEL-3 shall meet the following effluent quality standards:

<b>Parameter</b>	<b>Maximum Average Concentration</b>
BOD <sub>5</sub>	120 mg/L
Total Suspended Solids	180 mg/L
Faecal Coliforms	1 x 10 <sup>4</sup> CFU/100mL
Oil and grease	No visible sheen
pH	between 6 and 9

4. The Licensee shall maintain at all times, a freeboard of at least 1.0 metre, or as recommended by a qualified geotechnical engineer and as approved by the Board, for all dams, dykes or other structures intended to contain, withhold, divert or retain water or wastes.

5. The Sewage Disposal Facility shall be maintained and operated, to the satisfaction of an Inspector in such a manner as to prevent structural failure.
6. The Licensee shall provide to the Board for approval, prior to the commissioning of the Enhanced Wetland Treatment Area as an integral component of the sewage treatment or within ninety (90) days of completion, whichever occurs first, a Wetland Treatment Area assessment that includes, but is not limited to:
  - i. Final, as built plans/drawings that have been signed, stamped and sealed by an Engineer, of the Wetland Treatment Area that include but are not limited to a topographical map, cross and longitudinal sections of the treatment area indicating anticipated flow patterns;
  - ii. Identify the Final Discharge Point as required to complete monitoring requirements under Part D, Item 9;
  - iii. An ecological/vegetative assessment of the area to be used, including a prediction of the time required to achieve the effluent quality as described in the Application for Water Licence renewal filed by the Licensee on May 31, 2006; and
  - iv. A Description of the gradient, holding capacity, and verification of the total area utilized which has been predicted as required to attain the proposed effluent quality, describing any discrepancies and the affects it will have on the predictive model outcome along with contingencies.
7. The Licensee shall notify the Board and the Inspector, at least sixty (60) days prior to the commissioning of the Wetland Treatment Area for sewage treatment.
8. Upon commissioning of the Wetland Treatment Area, all effluent discharges from the Wetland Treatment Area at its Final Discharge Point, Monitoring Program Station PEL-4 shall meet the following effluent quality standards:

<b>Parameter</b>	<b>Maximum Average Concentration</b>
BOD <sub>5</sub>	45 mg/L
Total Suspended Solids	45 mg/L
Faecal Coliforms	(1 x 10 <sup>4</sup> CFU/100ml)
Oil and grease	No visible sheen
pH	between 6 and 9

9. All Effluent discharged from the Wetland Treatment Area Final Discharge Point (PEL-4), shall be demonstrated to be Not Acutely Toxic under the following tests to be conducted once annually approximately mid-way through discharge:
  - i. Acute lethality to Rainbow Trout, *Oncorhynchus mykiss* (as per Environment Canada's Environmental Protection Series Biological Test Method EPS/1/RM/13); and
  - ii. Acute lethality to the crustacean, *Daphnia magna* (as per Environment Canada's Environmental Protection Series Biological Test Method EPS/1/RM/14).
10. The Licensee shall dispose of and contain all solid wastes at the Solid Waste Disposal Facilities or as otherwise approved by the Board.
11. The Licensee shall segregate and store all hazardous materials and/or hazardous waste within the Solid Waste Disposal Facility in a manner as to prevent the deposit of deleterious substances into any water until such a time as proper disposal arrangements are made.

**PART E: CONDITIONS APPLYING TO MODIFICATION AND CONSTRUCTION**

1. The Licensee shall submit to the Board for approval, design drawings stamped by a qualified engineer registered in Nunavut, prior to the construction of any dams, dykes or structures intended to contain, withhold, divert or retain water or wastes.
2. The Licensee may, without written approval from the Board, carry out modifications to the Water Supply and Waste Disposal Facilities provided that such modifications are consistent with the terms of this Licence and the following requirements are met:
  - i. the Licensee has notified the Board in writing of such proposed modifications at least sixty (60) days prior to beginning the modifications;
  - ii. these modifications do not place the Licensee in contravention of the Licence or the Act;
  - iii. the Board has not, during the sixty (60) days following notification of the proposed modifications, informed the Licensee that review of the proposal will require more than sixty (60) days; and
  - iv. the Board has not rejected the proposed modifications.
3. Modifications for which all of the conditions referred to in Part E, Item 2, have not been met may be carried out only with written approval from the Board. The Licensee shall provide as-built plans and drawings of the Modifications referred to in this Licence within ninety (90) days of completion of the Modification. These plans and drawings shall be stamped by an Engineer.

4. All activities shall be conducted in such a way as to minimize impacts on surface drainage and the Licensee shall immediately undertake any corrective measures in the event of any impacts on surface drainage
5. The Licensee shall ensure that sediment and erosion control measures are implemented prior to and maintained during the operation to prevent the release of sediment and minimize erosion.
6. The Licensee shall designate an area for the deposition of excavated and stockpiled materials that is at least thirty (30) metres above the ordinary high water mark of any water body and in such a manner as to prevent sediment from entering any surrounding water body.
7. All activities shall be conducted in such a way as to minimize impacts on surface drainage and the Licensee shall immediately undertake any corrective measures in the event of any impacts on surface drainage.
8. The Licensee shall ensure that all fill material used in construction and that the ground to be constructed upon, is free of contaminants. If contaminated soils are identified, notification shall be made in the Licensee's annual report. All contaminated soils shall be treated and disposed of as approved by the Board.
9. The Licensee shall provide a Final Construction Report, within ninety (90) days of completion of the construction, outlining any alteration or deviation from the Final Design and Specifications, which will include, but not be limited to, as built plans/drawings that have been signed, stamped and sealed by an Engineer, of the upgrades to the Sewage Disposal Facilities and Solid Waste Disposal Facilities as described in the Application for Water Licence renewal filed by the Licensee on May 31, 2006 and the additional information submitted on July 10, 2007.

#### **PART F: CONDITIONS APPLYING TO OPERATION AND MAINTENANCE**

1. The Licensee shall submit to the Board for approval, within ninety (90) days of issuance of the Licence, the following operations and maintenance manuals prepared where appropriate, in accordance with the "*Guidelines for the Preparation of an Operation and Maintenance Manual for Sewage and Solid Waste Disposal Facilities in the Northwest Territories; 1996*". These Manuals shall take into consideration, at a minimum, the comments received during the application review process and any necessary changes to be consistent with this Licence:
  - i "*Water Collection and Distribution Operation and Maintenance (O&M) Manual*";
  - ii "*Sewage Treatment Facility Operation and Maintenance (O&M) Manual*". This Plan shall also include a Sewage Sludge Management Plan that will specifically address, but not be limited to, characterization of the sludge, identifying the chemical

- composition of the sludge and how the sludge will be stored, treated and eventually disposed of ; and
- iii “*Solid Waste Disposal Facility Operation and Maintenance (O&M) Manual*”. In addition to the guidelines, the Licensee shall include a design, implementation and monitoring schedule for the placement of monitoring wells at the Solid Waste Disposal Facility.
2. The Licensee shall submit to the Board for approval within ninety (90) days of issuance of the Licence, an Environmental Emergency Contingency Plan For Water, Sewage and Solid Waste Operations in the Hamlet of Kugaaruk, Nunavut” for any upsets, breakages or malfunctions that may occur as a result of operating these facilities. This Plan is to take into consideration at a minimum, the comments received during the Application review process and any applicable guidance documents approved by the NWB.
3. If the Manuals or Plans referred to in this Part are not approved, the Licensee shall make the necessary revisions and resubmit the Manual(s) or Plan within thirty (30) days following notification from the Board.
4. The Licensee shall implement the Manuals and Plan specified in this Part as and when approved by the Board.
5. The Licensee shall review the Manuals and Plan referred to in this Part as required by changes in operation and/or technology and modify accordingly. Revisions are to be submitted in the form of an Addendum to be included with the Annual Report, unless directed otherwise by an Inspector
6. An inspection of all engineered facilities related to the management of water and waste shall be carried out annually in July or August by a Geotechnical Engineer. The engineer’s report shall be submitted to the Board within sixty (60) days of the inspection, including a covering letter from the Licensee outlining an implementation plan addressing each of the Engineer’s recommendations.
7. The Licensee shall perform more frequent inspections of the engineered facilities at the request of an Inspector.
8. If, during the period of this Licence, an unauthorized discharge of waste occurs, or if such a discharge is foreseeable, the Licensee shall:
- i. employ the appropriately approved contingency plan for the Hamlet of Kugaaruk;
  - ii. report the incident immediately via the 24-Hour Spill Reporting Line at (867) 920-8130 and to the Inspector at (867) 975-4295; and
  - iii. submit to the Inspector, a detailed report on each occurrence, not later than thirty (30) days after initially reporting the event, that provides the necessary information on the

location (including the GPS coordinates), initial response action, remediation/clean-up, status of response (ongoing, complete), propose disposal options for dealing with contaminated materials and preventative measures to be implemented.

#### **PART G: CONDITIONS APPLYING TO ABANDONMENT AND RESTORATION**

1. The Licensee shall submit to the Board for approval an *Abandonment and Restoration Plan* at least six (6) months prior to abandoning any facilities or the construction of new facilities to replace existing ones. The Plan shall include, but not be limited to: (where applicable)
  - i. water intake facilities;
  - ii. the water treatment and waste disposal sites and facilities;
  - iii. petroleum and chemical storage areas;
  - iv. any site affected by waste spills;
  - v. leachate prevention;
  - vi. an implementation schedule;
  - vii. maps delineating all disturbed areas, and site facilities;
  - viii. consideration of altered drainage patterns;
  - ix. type and source of cover materials;
  - x. future area use;
  - xi. hazardous wastes; and
  - xii. a proposal identifying measures by which restoration costs will be financed by the Licensee upon abandonment.
2. If the Plan referred to in Part G, Item 1 is not approved, the Licensee shall make the necessary revisions and resubmit the Plan within thirty (30) days following notification from the Board.
3. The Licensee shall implement the plan specified in Part G, Item 1 as and when approved by the Board.
4. The Licensee shall complete the restoration work within the time schedule specified in the Plan, or as subsequently revised and approved by the Board.

#### **PART H: CONDITIONS APPLYING TO THE MONITORING PROGRAM**

1. The Licensee shall maintain Monitoring Program Stations at the following locations:

Monitoring Program Station Number	Description	Status
PEL-1	Raw water supply intake at the Kugajuk	Active

	River	(Volume)
PEL-2	Raw Sewage from pump-out truck	Active (Volume)
PEL-3	Discharge from the Sewage Disposal Facilities at the controlled point of release following treatment; including the Temporary Packaged Sewage Treatment Plant operation during construction	Active
PEL-4	Final Discharge Point of the Wetland Treatment Area	New
PEL-5	Ocean water five (5) metres from point where effluent enters ocean	New
PEL-6	Run-off from the Solid Waste Disposal Facility	Active
PEL-7	Monitoring well located up gradient of the Solid Waste Disposal Facilities	New
PEL-8-1	Monitoring well located down gradient of the Solid Waste Disposal Facilities	New
PEL-8-2	Monitoring well located down gradient of the Solid Waste Disposal Facilities	New

2. The Licensee shall sample at Monitoring Program Stations PEL-3, PEL-4 and PEL-5 once at the beginning, middle and near the end of discharge. Samples shall be analyzed for the following parameters:

Biochemical Oxygen Demand - BOD	Faecal Coliforms
Total Suspended Solids	pH
Conductivity	Nitrate-Nitrite
Oil and Grease (visual)	Total Phenols
Magnesium	Calcium
Sodium	Potassium
Chloride	Sulphate
Total Hardness	Total Alkalinity
Ammonia Nitrogen	Total Zinc
Total Cadmium	Total Iron
Total Cobalt	Total Manganese
Total Chromium	Total Nickel
Total Copper	Total Lead

Total Aluminum  
Total Mercury

Total Arsenic  
Total Organic Carbon (TOC)

3. The Licensee shall sample at Monitoring Program Station PEL-6 annually during periods of runoff or seepage. Samples shall be analyzed for the following parameters:

TPH (Total Petroleum Hydrocarbons)	
PAH (Polycyclic Aromatic Hydrocarbons)	
BTEX (Benzene, Toluene, Ethylbenzene, Xylene)	
BOD	Faecal Coliforms
pH	Conductivity
Total Suspended Solids	Oil and Grease
Nitrate-Nitrite	Ammonia Nitrogen
Total Phenols	Total Alkalinity
Total Hardness	Calcium
Magnesium	Potassium
Sodium	Sulphate
Total Arsenic	Total Cadmium
Total Copper	Total Chromium
Total Iron	Total Lead
Total Mercury	Total Nickel

4. The Licensee shall install groundwater monitoring wells at the Solid Waste Disposal Facilities in accordance with the proposal set out in the Solid Waste Disposal Facility's Operation and Maintenance Plan, as approved by the Board. At a minimum, these wells shall be located with at least one upstream of the facility for background data collection and at least two downstream of the landfill.
5. Upon installation of any monitoring wells, the Licensee shall sample at Monitoring Program Stations PEL-7, PEL-8-1 and PEL-8-2, and any other locations as determined by the SWDF O&M Plan, giving due consideration to adequate ground thaw and obtaining a representative groundwater sample. Samples shall be analyzed for the following parameters:

BOD	Faecal Coliforms
pH	Conductivity
Total	Suspended Solids
Nitrogen	Ammonia
Nitrate-Nitrite	Oil and Grease
Total Phenols	Total Alkalinity
Total Hardness	Calcium
Magnesium	Potassium



Sodium  
Total Arsenic  
Total Copper  
Total Iron  
Total Mercury

Sulphate  
Total Cadmium  
Total Chromium  
Total Lead  
Total Nickel

TPH (Total Petroleum Hydrocarbons)  
PAH (Polycyclic Aromatic Hydrocarbons)  
BTEX (Benzene, Toluene, Ethylbenzene, Xylene)

6. The Licensee shall report all results of acute toxicity testing as required under Part D, Item 9 within the Annual Report as per Part B, Item 1.
7. The Licensee shall measure and record in cubic metres, the monthly and annual quantities of water pumped at Monitoring Program Station PEL-1, for all purposes.
8. The Licensee shall measure and record in cubic metres the monthly and annual quantities of raw sewage offloaded from trucks at Monitoring Program Station PEL-2 for all purposes.
9. Additional monitoring stations, sampling and analysis may be requested by an Inspector.
10. The Licensee shall submit to the Board, for approval within ninety (90) days of issuance of the Licence, a "*Quality Assurance/Quality Control (QA/QC) Plan for the Hamlet Sewage Lagoon and Solid Waste Disposal Facility Monitoring Program*" prepared in accordance with the INAC "*Quality Assurance (QA) and Quality Control (QC) Guidelines for use by Class "B" Licensees in Collecting Representative Water Samples in the Field, 1996*".
11. The Plan shall to take into consideration comments received during the Application review process.
12. If the Plan referred to in Part H, Item 10 is not approved, the Licensee shall make the necessary revisions and resubmit the Plan within thirty (30) days following notification from the Board.
13. The Licensee shall implement the Plan referred to in Part H, Item 10 as and when approved by the Board.
14. 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 Board.
15. All analyses shall be performed in a Canadian Association of Environmental Analytical Laboratories (CAEAL) Certified Laboratory, or as otherwise approved by an Analyst.

16. The Licensee shall measure and record the annual quantities of sewage solids removed from the Sewage Disposal Facility.
17. The Licensee shall include all of the data and information required by the “Monitoring Program” in the Licensee's Annual Report, as required *per* Part B, Item 1, or as requested by an Inspector.