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NUNAVUT WATER BOARD
NUNAVUT IMALIRIYIN KATIMAYINGI
OFFICE DES EAUX DU NUNAVUT

File No.: **3BC-HMP1318** Renewal

November 13, 2013

Dr. Pascal Lee
The Mars Institute
NASA Ames Research Center, MS 245-3
Moffett Field, CA, 94035-1000, USA
Email: pascal.lee@marsinstitute.net

RE: NWB Licence No. 3BC-HMP1318 Renewal

Dear Dr. Lee,

Please find attached Licence No. **3BC-HMP1318** issued to the Mars Institute by the Nunavut Water Board (NWB) pursuant to its authority under Article 13 of the *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in Right of Canada (Nunavut Land Claims Agreement or NLCA)*. The terms and conditions of the attached Licence related to water use and waste disposal are an integral part of this approval.

If the Licensee contemplates the renewal of this Licence, it is the responsibility of the Licensee to apply to the NWB for its renewal. The past performance of the Licensee, new documentation and information, and issues raised during a public hearing, if the NWB is required to hold one, will be used to determine the terms and conditions of the Licence renewal. Note that if the Licence expires before the NWB issues a new one, then water use and waste disposal must cease, or the Licensee may be in contravention of the *Nunavut Land Claims Agreement* and the *Nunavut Waters and Nunavut Surface Rights Tribunal Act*. However, the expiry or cancellation of a licence does not relieve the holder from any obligations imposed by the licence. The NWB recommends that an application for the renewal of this Licence be filed at least three months prior to the Licence expiry date.

If the Licensee contemplates or requires an amendment to this licence, the NWB may decide, in the public interest, to hold a public hearing. The Licensee should submit applications for amendment as soon as possible to give the NWB sufficient time to go through the amendment process. The process and timing may vary depending on the scope of the amendment, however a minimum of sixty (60) days is required from time of acceptance by the NWB. It is the responsibility of the Licensee to ensure that all application materials have been received and are acknowledged by the Manager of Licensing.

The NWB strongly recommends that the Licensee consult the comments received by Fisheries and Oceans Canada (DFO) and Aboriginal Affairs and Northern Development Canada (AANDC) on identified issues. Among other issues noted in AANDC's inspection of the project on August 2nd, 2007, the Licensee is reminded that the capability of any incinerator unit installed on site should meet the *Canada-wide Standards for Dioxins and Furans and the Canada-wide Standard for Mercury Emissions*. This information is attached for your consideration¹.

Sincerely,



Thomas Kabloona
Nunavut Water Board
Chair

TK/cz/ri

Enclosure: Licence No. **3BC-HMP1318**
Comments

Cc: Qikiqtani Distribution List

¹ Aboriginal Affairs and Northern Development Canada (AANDC), Aug 28, 2013; Fisheries and Oceans Canada (DFO), Aug 23, 2013; AANDC Inspection, August 2007 [formerly known as Indian and Northern Affairs Canada].

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DECISION

LICENCE NUMBER: 3BC-HMP1318

This is the decision of the Nunavut Water Board (NWB) with respect to an application dated April 2013 for a renewal of a Water Licence made by:

Pascal Lee, Mars Institute

to allow for the use of water and disposal of waste during camp operations and scientific research activities at the Haughton-Mars Project located within the Qikiqtani Region, Nunavut generally located at the following geographical coordinates:

Project Extents		
	Latitude	Longitude
NW	76° 00' 00" N	93° 00' 00" W
NE	76° 00' 00" N	83° 00' 00" W
SE	74° 30' 00" N	83° 00' 00" W
SW	74° 30' 00" N	93° 00' 00" W
Camp	75° 25' 57" N	89° 51' 45" W

DECISION

After having been satisfied that the application was in conformity with the North Baffin Regional Land Use Plan¹ and exempt from the requirement for screening as described within Section 12.4.3 / Schedule 12-1 by the Nunavut Impact Review Board² in accordance with Article 12 of the *Nunavut Land Claim Agreement (NLCA)*, the NWB decided that the application could proceed through the regulatory process. In accordance with S.55.1 of the *Nunavut Waters and Nunavut Surface Rights Tribunal Act (Act)* and Article 13 of the *NLCA*, public notice of the application was given and interested persons were invited to make representations to the NWB.

After reviewing the submission of the Applicant and considering the representations made by AANDC and DFO, 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 *Act*, waived the requirement to hold a public hearing, and determined that:

Licence No. 3BC-HMP0712 will be renewed as Licence No. 3BC-HMP1318 subject to the terms and conditions contained therein. (Motion #: 2013-B1-044)

1 NPC Conformity Review. (2007). *Haughton-Mars Project [NIRB 06L N083] [NWB 3BC-HMP]*. Nunavut Planning Commission, Cambridge Bay.

2 NIRB Screening Assessment. (2013). *Application exempt from Screening pursuant to NLCA Schedule 12-1: Dr. Pascal Lee's "Haughton-Mars Project" proposal*. Nunavut Impact Review Board, Cambridge Bay.

Signed this 13th day of November 2013 at Gjoa Haven, NU.



Thomas Kabloona
Nunavut Water Board
Chair

TK/cz/ri

INTRODUCTION

The Haughton-Mars Project (HMP) is an international interdisciplinary field research project that focuses on the scientific study of the Haughton Impact Crater and its surrounding terrain, located on Devon Island, Nunavut. Devon Island has been used by the HMP for the purposes of research since the project began in 1997. The Haughton Crater and surrounding terrain were selected because the site presents many exceptional attributes not found anywhere else on Earth. The presence of a large, well-preserved meteorite impact crater and other terrain features similar to the Moon and Mars are of particular interest to the project.

The Mars Institute is one of the key organizations leading the international research effort at the HMP. The Mars Institute was incorporated as a 501(c)(3) non-profit public benefit corporation on September 18, 2002 in the State of California and as a federal non-profit corporation in Canada on November 15, 2002. The Mars Institute is generally known for:

- Developing, implementing and supporting high quality peer-reviewed scientific research about the planet Mars, its present nature, and its climatic, geologic, and possibly biologic evolution, including through investigations of similarities and differences between the Earth, Mars, and other planets;
- Analyzing, developing, and implementing concepts, technologies and strategies for the exploration of Mars, by robotic systems and humans; and
- Informing the public on the results, progress, and benefits to humankind of Mars exploration through the development and implementation of educational and public outreach activities.

The stated purpose of the Mars Institute is to further the scientific study, exploration, and public understanding of the planet Mars. Accordingly, the HMP seeks to achieve the following three goals:

1. *Space Science*: to advance our knowledge of planets;
2. *Space Exploration*: to prepare for future space and planetary exploration with robots and humans; and
3. *Public Awareness*: to share the excitement of space science and exploration with the public.

The HMP is jointly managed by the Mars Institute and the Search for Extra-Terrestrial Intelligence (SETI) Institute. Support for the research comes mainly from the National Aeronautics and Space Administration (NASA) and the Canadian Space Agency. Over the coming years, the HMP plans to conduct various research activities on site, including the following:

- The scientific study of the Haughton Crater and surrounding terrain (e.g. the history of water and adaptations of microbial life to extreme environments);
- The testing and validation of new technologies and approaches to exploration (e.g. rovers, habitats, tools, etc.); and
- Education and public outreach activities (e.g. articles, consultation with nearby communities).

The Mars Institute has collaborated and extended its gratitude to the communities of Grise Fiord and Resolute Bay for their support and participation over the years.

PROCEDURAL HISTORY

The Mars Institute submitted an application to the Nunavut Water Board (NWB) for a water licence on June 16, 2006. On July 12, 2007 the NWB granted the Licence 3BC-HMP0712 to the Mars Institute for the use of water (5 m³ per day) and disposal of waste during camp activities and scientific research at the HMP site, with the licence expiration date of August 31, 2012.

As required under Part H, Item 1 of Licence No. 3BC-HMP0712, the NWB received the Spill Contingency Plan (Plan) for the HMP on June 23, 2011. The preliminary technical review of the submission identified some deficiencies and missing information. As such, the Licensee was advised to address these deficiencies and resubmit the Plan. The revised Plan was submitted to the NWB on July 15, 2011 and reviewed by interested parties. The revised Plan generally met standard reporting requirements and was accordingly approved by the NWB under Board Motion No. 2011-11-L21, dated August 29, 2011, with a request for the Licensee to address several outstanding issues by submitting an Addendum to the Spill Response Plan. An updated Spill Contingency Plan was submitted with the application for a water licence renewal and dated as effective on July 31, 2013.

The Mars Institute submitted an application to the NWB for a water licence renewal (*Licence No. 3BC-HMP1318*) on August 4, 2013. The application then proceeded through the regulatory process as described in the Decision of this licence.



NUNAVUT WATER BOARD WATER LICENCE RENEWAL

Licence No. 3BC-HMP1318

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

Pascal Lee, Mars Institute

(Licensee)

NASA Ames Research Center, MS 245-3, Moffett Field, CA 94035-1000, USA

(Mailing Address)

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

Licence Number/Type: 3BC-HMP1318 TYPE "B"

Water Management Area: 56 EASTERN DEVON ISLAND WATERSHED

Location: QIKIQTANI REGION, NUNAVUT

Classification: OTHER UNDERTAKING: SCIENTIFIC RESEARCH

Purpose: DIRECT WATER USE AND DEPOSIT OF WASTE

Quantity of Water Use not
to Exceed: FIVE (5) CUBIC METRES PER DAY

Date of Licence Issuance: November 13, 2013

Expiry of Licence: November 12, 2018

This Licence renewal, issued and recorded at Gjoa Haven, Nunavut, includes and is subject to the annexed conditions.

Thomas Kabloona,
Nunavut Water Board
Chair

PART A: SCOPE, DEFINITIONS AND ENFORCEMENT

1. Scope

This Licence allows for the use of water and the disposal of waste for an Other Undertaking (Scientific Research) classified as per Schedule 1 of the *Regulations* at the Haughton-Mars Project, located approximately 170 km northeast of Resolute Bay within the Qikiqtani Region, Nunavut.

- a. 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
- b. Compliance with the terms and conditions of this Licence does not absolve the Licensee from responsibility for compliance with the requirements of all applicable Federal, Territorial and Municipal legislation.

2. Definitions

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

“Addendum” means the supplemental text that is added to a full plan or report usually included at the end of the document and is not intended to require a full resubmission of the revised report.

“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;

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

“Board” means the Nunavut Water Board established under the *Nunavut Land Claims Agreement* and the *Nunavut Waters and Nunavut Surface Rights Tribunal Act*;

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

“Engineer” means a professional engineer registered to practice in Nunavut in accordance with the *Consolidation of Engineers and Geoscientists Act S. Nu 2008, c.2* and the *Engineering and Geoscience Professions Act S.N.W.T. 2006, c.16 Amended by S.N.W.T. 2009, c.12*;

“Greywater” means all liquid wastes from showers, baths, sinks, kitchens and domestic washing facilities, but does not include toilet wastes;

“High Water Mark” means the usual or average level to which a body of water rises at its highest point and remains for sufficient time so as to change the characteristics of the land (ref. Department of Fisheries and Oceans Canada, Operational Statement: Mineral Exploration Activities);

“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 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;

“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;

“Regulations” means the *Nunavut Waters Regulations SOR/2013-69 18th April, 2013*;

“Sewage” means all toilet wastes and greywater;

“Spill Contingency Plan” means a Plan developed to deal with unforeseen petroleum and hazardous materials events that may occur during the operations conducted under the Licence;

“Sump” means an excavation in impermeable soil for the purpose of catching or storing water or waste;

“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” or “Waters” means waters as defined in section 4 of the Act.

3. Enforcement

- a. Failure to comply with this Licence will be a violation of the *Act*, subjecting the Licensee to the enforcement measures and the penalties provided for in the *Act*;
- b. All inspection and enforcement services regarding this Licence will be provided by Inspectors appointed under the *Act*; and
- c. For the purpose of enforcing this Licence and with respect to the use of water and deposit or discharge of waste by the Licensee, Inspectors appointed under the *Act*, hold all powers, privileges and protections that are conferred upon them by the *Act* or by other applicable law.

PART B: GENERAL CONDITIONS

1. The water use fees of \$30, payable to the Receiver General for Canada, shall be sent to the Board annually for the right to the use of water in accordance with Section 12 of the *Regulations*.
2. The Licensee shall file an Annual Report on the Appurtenant Undertaking with the Board no later than March 31st of the year following the calendar year being reported, containing the following information:
 - a. A summary report of water use and waste disposal activities;
 - b. A list of unauthorized discharges and a summary of follow-up actions taken;
 - c. Any revisions to the Spill Contingency Plan, as required by Part B, Item 7, submitted in the form of an Addendum;
 - d. A description of all progressive and or final reclamation work undertaken, including photographic records of site conditions before, during and after completion of operations;
 - e. Report all artesian flow occurrences as required under Part F, Item 4;
 - f. A summary of all information requested and results of the Monitoring Program; and
 - g. Any other details on water use or waste disposal requested by the Board by November 1 of the year being reported.
3. The Licensee shall notify the NWB of any changes in operating plans or conditions associated with this project at least thirty (30) days prior to any such change.
4. The Licensee shall install flow meters or other such devices, or implement suitable

methods required for the measuring of water volumes as required under Part J, Item 1.

5. The Licensee shall, for all Plans submitted under this Licence, include a proposed timetable for implementation. Plans submitted, cannot be undertaken without subsequent written Board approval and direction. The Board may alter or modify a Plan if necessary to achieve the legislative objectives and will notify the Licensee in writing of acceptance, rejection or alteration of the Plan.
6. The Licensee shall, for all Plans submitted under this Licence, implement the Plan as approved by the Board in writing.
7. The Licensee shall review the Plans referred to in this Licence, as required by changes in operation and/or technology, and modify the Plan accordingly. Revisions to the Plans shall be submitted in the form of an Addendum to be included with the Annual Report.
8. Every Plan to be carried out pursuant to the terms and conditions of this Licence shall become a part of this Licence, and any additional terms and conditions imposed upon approval of a Plan by the Board become part of this Licence. All terms and conditions of the Licence should be contemplated in the development of a Plan where appropriate.
9. The Licensee shall ensure a copy of this Licence is maintained at the site of operations at all times. Any communication with respect to this Licence shall be made in writing to the attention of:
 - (a) **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
 - (b) **Inspector Contact:**
Manager of Field Operations, AANDC
Nunavut District, Nunavut Region
P.O. Box 100
Iqaluit, NU X0A 0H0
Telephone: (867) 975-4295
Fax: (867) 979-6445
10. 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.
11. The Licensee shall ensure that any document(s) or correspondence submitted by the Licensee to the NWB is received and acknowledged by the Manager of Licensing.

12. This Licence is assignable as provided for in Section 44 of the *Act*.

PART C: CONDITIONS APPLYING TO WATER USE

1. The Licensee shall obtain all water for domestic camp and drill use from Lowell Creek. Total camp and drill water use shall not exceed five (5) cubic metres per day. Accordingly, the total volume of water for the purposes of this Licence shall not exceed five (5) cubic metres per day.
2. Streams cannot be used as a water source unless authorized and approved by the Board in writing.
3. If the Licensee requires water in sufficient volume that the source water body may be drawn down the Licensee shall, at least thirty (30) days prior to commencement of use of water, submit to the Board for approval in writing, the following: volume required, hydrological overview of the water body, details of impacts, and proposed mitigation measures.
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.
5. The Licensee shall not remove any material from below the ordinary high water mark of any water body unless authorized.
6. The Licensee shall not cause erosion to the banks of any body of water and shall provide necessary controls to prevent such erosion.
7. Sediment and erosion control measures shall be implemented prior to and maintained during the undertaking to prevent entry of sediment into water.

PART D: CONDITIONS APPLYING TO WASTE DISPOSAL

1. The Licensee shall locate areas designated for waste disposal at a minimum distance of thirty one (31) metres from the ordinary high water mark of any water body such that the quality, quantity or flow of water is not impaired, unless otherwise approved by the Board in writing.
2. The Licensee shall not practice on-site land filling of domestic waste, unless otherwise approved by the Board in writing.
3. The Licensee is authorized to dispose of all acceptable food waste, paper waste and untreated wood products in an incinerator.

4. The Licensee shall not open burn plastics, wood treated with preservatives, electric wire, Styrofoam, asbestos or painted wood to prevent the deposition of waste materials of incomplete combustion and/or leachate from contaminated ash residual, from impacting any surrounding waters, unless otherwise approved by the Board in writing.
5. The Licensee shall provide to the Board documented authorization from all communities in Nunavut receiving wastes from the Houghton-Mars Project prior to any backhauling and disposal of wastes to those communities.
6. The Licensee shall backhaul and dispose of all hazardous wastes, waste oil and non-combustible waste generated through the course of the operation at a licensed waste disposal site.
7. The Licensee shall maintain records of all waste backhauled and records of confirmation of proper disposal of backhauled waste. These records shall be made available to an Inspector upon request.
8. The Licensee shall contain all greywater in a sump located at a distance of at least thirty one (31) metres above the ordinary high water mark of any water body, at a site where direct flow into a water body is not possible and no additional impacts are created, unless otherwise approved by the Board in writing.
9. The Licensee shall contain all toilet wastes in latrine pits or use incineration, chemical, portable or composting toilets. Latrine pits shall be located at a distance of at least thirty one (31) metres above the ordinary high water mark of any water body, treated with lime and covered with native material to achieve the pre-existing natural contours of the land prior to abandonment.

PART E: CONDITIONS FOR CAMPS, ACCESS INFRASTRUCTURES AND OPERATIONS

1. The Licensee shall not erect camps or store material on the surface of frozen streams or lakes including the immediate banks except what is for immediate use. Camps shall be located such as to minimize impacts on surface drainage.
2. The Licensee shall conduct all activities in such a way as to minimize impacts on surface drainage and the Licensee shall immediately undertake corrective measures in the event of any impacts on surface drainage.
3. With respect to access road, pad construction or other earthworks, the deposition of debris or sediment into or onto any water body is prohibited. These materials shall be disposed a distance of at least thirty one (31) metres from the ordinary high water mark in such a fashion that they do not enter the water.

4. The Licensee shall not mobilize heavy equipment or vehicles for trenching or other activities unless the ground surface is capable of fully supporting the equipment or vehicles without rutting or gouging. Overland travel of equipment or vehicles shall be suspended if rutting occurs

PART F: CONDITIONS APPLYING TO DRILLING OPERATIONS

1. The Licensee shall not conduct any land based drilling within thirty one (31) metres of the ordinary high water mark of any water body, unless otherwise approved by the Board in writing.
2. The Licensee shall dispose of all drill waste, including water, chips, muds and salts (CaCl₂) in any quantity or concentration, from land-based drilling, in a properly constructed sump or an appropriate natural depression located at a distance of at least thirty one (31) metres from the ordinary high water mark of any adjacent water body, where direct flow into a water body is not possible and no additional impacts are created.
3. If artesian flow is encountered, drill holes shall be immediately sealed and permanently capped to prevent induced contamination of groundwater or salinization of surface waters. The Licensee shall report all artesian flow occurrences within the Annual Report, including the location (GPS coordinates) and dates.
4. On-ice drilling is not authorized under this Licence.

PART G: CONDITIONS APPLYING TO MODIFICATIONS

1. The Licensee may, without written consent 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 sixty (60) days prior to beginning the Modifications;
 - b. such Modifications do not place the Licensee in contravention of the Licence or the *Act*;
 - c. such Modifications are consistent with the NIRB Screening Decision;
 - d. 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
 - e. the Board has not rejected the proposed Modifications.
2. Modifications for which all of the conditions referred to in Part G, Item 1 have not been

met can be carried out only with written approval from the Board.

3. 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.

PART H: CONDITIONS APPLYING TO SPILL CONTINGENCY PLANNING

1. The Board has approved the Plan entitled “HMP-2013 Spill Contingency Plan (Plan)” dated July 31, 2013 that was submitted as additional information with the Application, with the condition that the Licensee updates the SCP to include the correct contact telephone number for the AANDC Manager, Field Operations: (867)-975-4295.
2. The Licensee shall prevent any chemicals, petroleum products or wastes associated with the project from entering water. All sumps and fuel caches shall be located at a distance of at least thirty one (31) metres from the ordinary high water mark of any adjacent water body and inspected on a regular basis.
3. The Licensee shall review the Plan referred to in this Part as required by changes in operation and/or technology and modify the Plan accordingly. Revisions to the Plan are to be submitted in the form of an Addendum to be included with the Annual Report, unless directed otherwise by an Inspector.
4. The Licensee shall conduct any equipment maintenance and servicing in designated areas and shall implement special procedures (such as the use of drip pans) to manage motor fluids and other waste and contain potential spills.
5. If during the term of this Licence, an unauthorized discharge of waste occurs, or if such a discharge is foreseeable, the Licensee shall:
 - a. Employ the approved Spill Contingency Plan;
 - b. Report the spill immediately to the 24-Hour Spill Line at (867)-920-8130 and to the Inspector at (867)-975-4295; and
 - c. For each spill occurrence, submit to the Inspector, no later than thirty (30) days after initially reporting the event, a detailed report that will include the amount and type of spilled product, the GPS location of the spill, and the measures taken to contain and clean up the spill site.

PART I: CONDITIONS APPLYING TO ABANDONMENT AND RESTORATION OR TEMPORARY CLOSING

1. The Licensee shall complete all restoration work prior to the expiry of this Licence.

2. The Licensee shall carry out progressive reclamation of any components of the project no longer required for the Licensee's operations.
3. The Licensee shall backfill and restore all sumps to the pre-existing natural contours of the land.
4. The Licensee shall remove from the site, all infrastructure and site materials, including all fuel caches, drums, barrels, buildings and contents, docks, water pumps and lines, material and equipment prior to the expiry of this Licence.
5. All roads and airstrip, if any, shall be re-graded to match natural contour to reduce erosion.
6. The Licensee shall remove any culverts and restore the drainage to match the natural channel. Measures shall be implemented to minimize erosion and sedimentation.
7. In order to promote growth of vegetation and the needed microclimate for seed deposition, all disturbed surfaces shall be prepared by ripping, grading, or scarifying the surface to conform to the natural topography.
8. Areas that have been contaminated by hydrocarbons from normal fuel transfer procedures shall be reclaimed to meet objectives as outlined in the Government of Nunavut's *Environmental Guideline for Site Remediation, 2010*. The use of reclaimed soils for the purpose of back fill or general site grading may be carried out only upon consultation and approval by the Government of Nunavut, Department of Environment and an Inspector.
9. The Licensee shall restore all drill holes and disturbed areas to natural conditions immediately upon completion of the drilling. The restoration of drill holes must include the removal of any drill casing materials and if having encountered artesian flow, the capping of holes with a permanent seal.
10. The Licensee may store drill cores produced by the appurtenant undertaking in an appropriate manner and location at least thirty one (31) metres above the ordinary high water mark of any adjacent water body, where any direct flow into a water body is not possible and no additional impacts are created.
11. The Licensee shall contour and stabilize all disturbed areas to a pre-disturbed state upon completion of work.

PART J: CONDITIONS APPLYING TO THE MONITORING PROGRAM

1. The Licensee shall measure and record, in cubic metres, the daily quantities of water utilized for camp, drilling and other purposes.

2. The Licensee shall provide the GPS co-ordinates (in degrees, minutes and seconds of latitude and longitude) of all locations where sources of water are utilized for all purposes.
3. The Licensee shall determine the GPS co-ordinates (in degrees, minutes and seconds of latitude and longitude) of all locations where wastes associated with camp operations and drilling operations are deposited.
4. 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 in writing.
5. All analyses shall be performed in a laboratory accredited according to ISO/IEC Standard 17025. The accreditation shall be current and in good standing.
6. An Inspector may impose additional monitoring requirements.
7. The Licensee shall include in the Annual Report required under Part B, Item 2 all data, monitoring results and information required by this Part.