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NUNAVUT WATER BOARD
NUNAVUT IMALIRIYIN KATIMAYINGI
OFFICE DES EAUX DU NUNAVUT

File No.: **1BR-THI1722**
Renewal - Amendment

May 4, 2017

Oliver Simard
P.O. Box 1228
Iqaluit, NU
X0A 0H0

Email: osimard@genv.ca

RE: NWB Renewal Amendment Licence No. 1BR-THI1722

Dear Mr. Simard:

Please find attached Licence No. 1BR-THI1722 issued to Qikiqtaaluk Environmental Inc. 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 Agreement)*. 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 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 (3) 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's 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 Indigenous and Northern Affairs and Canada (INAC) and the GN Department of Health on issues identified. This information is attached for your consideration¹.

Sincerely,

Thomas Kabloona
Nunavut Water Board
Chair

TK/sa/ip

Enclosure: Licence No. **1BR-THI1722 Renewal**
Comments: INAC
Department of Health, Public Health Unit

Cc: Qikiqtani Region Distribution List

¹ INAC, Water Resources Division, July 14, 2016 and GN Department of Health, July 16, 2016

TABLE OF CONTENTS

DECISION	ii
INTRODUCTION	iii
I. PROCEDURAL HISTORY	iii
A. Requirements of the NWSRTA and the Nunavut Agreement:	iii
II. GENERAL CONSIDERATIONS	v
A. Compliance with Licence 1BR-THI1419	v
<i>Plans Submission</i>	v
<i>Annual Reports</i>	vi
B. Term of the Licence	vi
C. Security	vii
D. Waste Management	vii
<i>Water Treatment Facility (WTF)</i>	vii
<i>Soil Treatment Facility (Landfarm)</i>	x
<i>Hazardous Waste Facility</i>	xii
E. Construction	xiii
F. Operations	xiv
G. Spill Contingency Planning	xiv
H. Abandonment and Reclamation	xiv
I. Monitoring	xv
PART A: SCOPE, DEFINITIONS AND ENFORCEMENT	2
1. Scope	2
2. Definitions	2
3. Enforcement	6
PART B: GENERAL CONDITIONS	6
PART C: CONDITIONS APPLYING TO SECURITY	9
PART D: CONDITIONS APPLYING TO WATER USE	9
PART E: CONDITIONS APPLYING TO WASTE DISPOSAL	9
PART F: CONDITIONS APPLYING TO MODIFICATIONS AND CONSTRUCTION ..	13
PART G: CONDITIONS APPLYING TO OPERATIONS	14
PART H: CONDITIONS APPLYING TO SPILL CONTINGENCY PLANNING	15
PART I: CONDITIONS APPLYING TO ABANDONMENT AND RESTORATION OR TEMPORARY CLOSURE	16
PART J: CONDITIONS APPLYING TO THE MONITORING PROGRAM	17

DECISION

LICENCE No. 1BR-THI1722

This is the decision of the Nunavut Water Board (NWB) with respect to an application dated February 17, 2016 for the renewal - amendment of a Water Licence made by:

QIKIQTAAALUK ENVIRONMENTAL INC.

to allow for the deposit of waste during the operation of a commercial Environmental Waste Processing Facility (EWPF) located within the City of Iqaluit (Lot 666, Plan 1673, Parcels O and Q), in the Qikiqtani Region, Nunavut, generally located at the geographical coordinates as follows:

EWPF location	Latitude: 63° 44' 40" N	Longitude: 68° 33' 03" W
	Latitude: 63° 44' 34" N	Longitude: 68° 32' 51" W

DECISION

After having been satisfied that the Application is for a project proposal that falls outside of an area with an approved land use plan in place, and, as such, a conformity determination not required as determined by the Nunavut Planning Commission (NPC)² and that a review of the Project is not required pursuant to paragraph s. 92(1)(a) of the Nunavut Planning and Project Assessment Act (*NuPPAA*) as determined by the Nunavut Impact Review Board (NIRB)³, 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 (*NWNSRTA* or *Act*) and Article 13 of the *Nunavut Agreement*, 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 interested persons, 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 *Nunavut Agreement* and of the *Act*, waived the requirement to hold a public hearing, and determined that:

Licence Number 1BR-THI1419 be renewed as Licence No. 1BR-THI1722 subject to the terms and conditions contained therein (Motion #: 2017-B1-004).

SIGNED this 4th day of May, 2017 at Gjoa Haven, NU.

Thomas Kabloona
Nunavut Water Board Chair
TK/sa/ip

² NPC Letter Re: NPC File # 148158 Iqaluit Land Farm (Qikiqtaaluk Environmental New Lot Development) dated November 24, 2015

³ NIRB Screening Decision Report NIRB File No. 15XN051 dated April 15, 2016

INTRODUCTION

Qikiqtaaluk Environmental Inc. (Qikiqtaaluk Environmental, QE, the Licensee or the Applicant) has been established in Iqaluit, Nunavut, since year 2003. Currently, QE commercially treats hydrocarbon impacted water, an activity that is regulated under the existing Nunavut Water Board's Licence type "B" 1BR-THI1419. Existing Water Licence 1BR-THI1419 authorizes QE to carry out the construction and operation of a commercial Water Treatment Facility (WTF) for the purposes of treating hydrocarbon impacted water generated from hydrocarbon spills in the City of Iqaluit, Nunavut.

On February 17, 2016 the Licensee submitted to the NWB an amendment - renewal application (Application) for Water Licence 1BR-THI1419, seeking to obtain authorization to commercially treat contaminated soil, contaminated water and manage hazardous waste in a facility renamed Environmental Waste Processing Facility (EWPF), located in a Heavy Industrial Zoned lot, at Lot 666, Plan 1673, Parcels O and Q (new location) in the city of Iqaluit.

The Licensee has requested to add the following activities under the scope of the renewal - amended licence:

- the treatment of water contaminated with organic compounds and / or metal compounds;
- the treatment of hydrocarbon contaminated soil through a biopile (landfarming);
- the operation of a Hazardous Waste Transfer Centre licensed by the government of Nunavut.

I. PROCEDURAL HISTORY

On August 20, 2014 the Nunavut Water Board issued a type "B" Water Licence 1BR-THI1419 to Qikiqtaaluk Environmental Inc. (QE) to allow for the disposal of waste during the operation of a commercial Hydrocarbon Impacted Water Treatment Facility located within the City of Iqaluit, Nunavut. The Licence will expiry on August 19, 2019.

On February 17, 2016 a renewal-amendment application (the Application) for the type "B" Water Licence 1BR-THI1419 was filed with the NWB by Qikiqtaaluk Environmental Inc.

A. Requirements of the NWNSTRA and the Nunavut Agreement:

On November 24, 2015 the Nunavut Planning Commission (NPC) issued correspondence⁴ indicating that the Application is for a project proposal that falls outside the area of an applicable Regional Land Use Plan.

In addition, the Screening Decision Report⁵ issued by the NIRB indicated that at this time a review of Qikiqtaaluk Environmental Inc.'s "Environmental Waste Processing Facility Project" is not required pursuant to paragraph 92(1)(a) of the Nunavut Planning and Project Assessment Act (*NuPPAA*).

⁴ NPC Letter Re: NPC File # 148158 Iqaluit Land Farm (Qikiqtaaluk Environmental New Lot Development) dated November 24, 2015

⁵ NIRB Screening Decision Report NIRB File No. 15XN051 dated April 15, 2016

Therefore, the Project does not require further review by the NPC or the NIRB and the file may proceed to water licensing review under the NWB.

Following this, the NWB considered the requirements of the *NWNSRTA* and the *Nunavut Agreement* to be fulfilled such that the NWB could process the Application.

On June 14, 2016 the NWB distributed the Application to interested parties for a thirty (30) day comment and review period. During the review period, comments were provided by Indigenous and Northern Affairs Canada (INAC)⁶ and the Department of Health, Public Health Unit⁷. Comments and recommendations provided by INAC and the Department of Health were related to measures that the proponent could implement to enhance protection of the environment within the project's footprint.

The following documents were submitted to the NWB in support to the renewal - amendment of Water Licence 1BR-THI1419:

- NWB Application for Water Licence Renewal - Amendment, dated February 17, 2016;
- Appendix A: Authorization letter;
- Appendix B: Maps and Plans;
- Appendix C: Active Permits and Land Use Authorizations;
- Appendix D: Previous NPC Confirmation
- Appendix E: Previous NIRB Confirmation
- Appendix F: Cost Estimate
- Appendix G: Statement of Financial Security;
- Appendix H: Certificate of Incorporation and Business Licence;
- Appendix I: Compliance Assessment;
- Appendix K: Summary of Application for Renewal - Amendment in English;
- Appendix L: Summary of Application for Renewal - Amendment in Inuktitut;
- Appendix M: "*Abandonment and Remediation Plan Environmental Waste Processing Facility*";
- Appendix N: "*Spill Contingency Plan Environmental Waste Processing Facility Lot 666, Plan 1673, Parcels Q and O*", with the following: a) MSDS of liquid hazardous waste stored on site b) Spill Response Flowchart c) Standard Nunavut Spill Report Form;
- Appendix O: Operation Manuals:
 - "*Operation and Management Plan Contaminated Water Treatment Unit*",
 - "*Operation and Management Plan Soil Treatment Facility*",
 - "*Operation and Management Plan Hazardous Waste Transfer Station*";
- Appendix P: "*Environmental Protection Plan Qikiqtaaluk Environment Inc. Lot 666, Plan 1673 Parcels Q and O Environmental Waste Processing Facility*";
- Appendix Q: Archaeological Research

6 INAC, Water Resources Division, Re: Indigenous and Northern Affairs Canada's (INAC) Review of Qikiqtaaluk Environmental Inc.'s Amendment Application for Water Licence #1BR-THI1419 – Environmental Waste Processing Facility, July 14, 2016

7 Department of Health, Re: Environmental Waste Processing Facility Iqaluit Project, File # 1BR-THI1419, July 6 2016

- Appendix R: Photos

II. GENERAL CONSIDERATIONS

QE operates a commercial facility that treats hydrocarbon impacted water collected from spills, site remediation and fuel storage facilities; under the existing Water Licence 1BR-THI1419. QE is authorized by the NWB to collect, store, treat and discharge the treated water at the QE's Water Treatment Facility (WTF). QE seeks to expand the scope of services offered by the Facility, and in addition to the treatment of hydrocarbon impacted water, it is planning to also treat water contaminated by metals and organics, soils contaminated by hydrocarbons, and manage (collect, storage and transport) a Hazardous Waste Transfer Facility.

An amendment to the water licence is required whenever new proposed activities trigger changes to terms and conditions established under the licence. Among other things, an amendment may involve a change to water source, the volume of water authorized for use, a new activity related to water use or waste disposal, a new component related to water use or waste disposal, and/or a change in predicted environmental impacts(s).

Water use is not authorized under the existing Water Licence. This condition will be maintained in the renewal - amended licence as the Applicant has indicated that the planned modifications would not affect the Project requirement of water and it did not apply for a Board's authorization to use water.

With respect to waste, changes in the type and the volume of waste are expected as a consequence of adding new activities to the Project. Written procedures for the operation and management of the Contaminated Water Treatment Unit, the Soil Treatment Unit and the Hazardous Waste Transfer Station were included in the Application. The following is a summary of the methods that will be applied to manage the waste at the Environmental Waste Processing Facility (EWPF).

- Treated water from the Water Treatment Unit will be tested and if compliant, will be discharged with any hazardous contaminated residues shipped south for disposal;
- Treated soils from the Biopile Treatment Unit (Landfarm) will be tested and if compliant will be used as backfill or placed at the Iqaluit landfill; hazardous contaminated residues will be shipped south for disposal; and
- Hazardous waste will be shipped south.

The following section outlines the issues identified by the NWB and raised by interested parties and provides the background and reasons for the terms and conditions imposed within the body of the licence.

A. Compliance with Licence 1BR-THI1419

Plans Submission

Conditions established under the existing Licence 1BR-THI1419 required the Licensee to submit the following documents:

- Operation and Management Plan for the Water Treatment Facility (Part G, Item 4);
- A revision of the approved Spill Contingency Plan (Part H, Item 2);
- Monitoring Plan (Part J, Item 6).

Following the Licence approval in April 2015, the Licensee had submitted the following Plans

- A revision of the Spill Contingency Plan (SCP) dated April, 2015
- Operation and Management (O&M) Plan Hydrocarbon Impacted Water Treatment, dated April 2015

In the revised version of the submitted SCP, the Licensee has included updates as required by the existing 1BR-THI1419 Licence. The NWB has reviewed the Plan and is satisfied with the updated document and considers that the revised Spill Contingency Plan, dated April 2015 meets the requirements of Licence No. 1BR-THI1419.

The O&M Plan for the Hydrocarbon Impacted Water Treatment Plant was sent for review with a deadline of September 13, 2015. Comments were provided by INAC and recommended that the Plan be revised and resubmitted. Further to this, an updated Plan has been submitted with the Amendment Application and found to be complete and meeting the reporting requirements of the Licence. Therefore, the Plan is approved with the issuance of the licence.

Regarding the Monitoring Plan required under Part J, Item 6 of the Existing License, the Board has noticed that monitoring is included in the Environmental Protection Plan as well as in the O&M Plan for the Soil Treatment Facility. The Board deems that it is not necessary that the Licensee present a standalone monitoring plan and that the submitted Plans fulfill the existing licence requirement, therefore the Licensee does not need to take further action on this subject.

The Licensee should note that the revised 2016 *Spill Contingency Plan Environmental Waste Processing Facility Lot 666, Plan 1673, Parcels Q and O* and the 2016 *Operation and Management Plan Contaminated Water Treatment Unit* will be considered hereafter and the previous Plans will no longer apply.

Annual Reports

Under Part B of the Licence, the Licensee is required to file an Annual Report on the Undertakings operations. Following this, the Licensee has submitted the 2014 and 2015 Annual Reports. The NWB has completed a technical review of the 2014 and 2015 Annual Reports for the Project. The reports were opportunely forwarded to the distribution list for information; no comments have been received. The 2014 and 2015 Annual Reports were found to be complete as submitted and meeting the reporting requirements of Licence 1BR-THI1419.

B. Term of the Licence

The Licensee has requested a term of five (5) years for the Water Licence renewal. In accordance with s.45 of the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* (NWNSRTA or the Act), the NWB may issue a licence for a term not exceeding twenty-five (25) years. In determining an appropriate term for the renewal licence, the Board took into consideration several factors including the Licensee's compliance story and rationale included

in the Application.

Given the Licensee's ongoing compliance disposition, the Board agrees with the Licence term requested by the Licensee and has decided to renew the licence for a five-year term. The five-year term assigned to the Licence will provide stakeholders and the Board with an opportunity to continue to examine the overall performance of the licensee over time and prior to considering any future renewal licence that might include a longer term.

C. Security

Under Part C, Item 2 of the existing 1BR-THI1419 the Applicant is required to update the security estimate provided, as needed, to reflect the change of scope of and operational conditions for the project over time. Accordingly, the Applicant has included in the Application submission under Appendix F "*Cost Estimate*", a financial estimate of CAD \$324,460 for potential reclamation activities associated with the proposed project.

While the Board welcomes the information on reclamation security provided by the Proponent, at this time the Board has decided to exempt the Licensee from posting a reclamation security amount for the Project. The Board understands that reclamation security for this type of undertaking has to be examined in a holistic manner and in accordance with the type of undertaking so as to avoid a tiered approach to reclamation security requirements for similar undertakings.

The Board maintains, however, under Part C Item 2 of the Water Licence, the requirement to update the security estimate as needed. In addition, should the Project scope change or further reviews of subsequent applications and information provided through Annual Reports and Inspection Reports warrant the need, and the Board approach to reclamation security broadens, the requirements for providing a total reclamation security for site liability may be required during the term of this licence.

D. Waste Management

The Licensee is planning to operate three facilities or units at the Environmental Waste Processing Facility. Two units are intended to treat contaminated waters and soils and the other is to store / transfer hazardous waste. The management of the water, waste and wastewater related to these units requires the proponent to follow applicable legislation and guidelines, and be consistent with the terms and conditions included in this licence.

Water Treatment Facility (WTF)

The WTF will treat hydrocarbon impacted water (including water originating from impacted snow and ice) as well as water impacted by inorganic contaminants (i.e. metals) and organic contaminants (i.e. solvents, glycols, etc.). The WTF includes the following components:

- an oil/Water separator;
- particulate filters;
- patented ultra-sorption filters;
- activated carbon filters;
- Water pumps; and

- storage tanks for the treated effluent and the impacted water

Hydrocarbon contaminated Water is passed first through an oil/water separator and preliminary filtered to remove suspended solids. Following this, water is circulated through ultra-sorption filters and then activated carbon filters to remove the organic contaminants (solvents, glycol, etc.). Inorganic contaminated water may be chemically processed by precipitation or undergo ion-exchange treatment using an ion-exchange resin.

The Facility can treat up to a maximum of 15 m³ of contaminated water per day. The total water storage capacity at the Facility, that is the capacity to store impacted Water as well as treated Water, is thirty (30) m³. Water will be stored in tanks and as indicated in the Application; the storage tanks are provided with a system consisting of secondary containment and berms to prevent spills.

Details provided in the Application indicate that, in addition to the treated effluent that originates through processing contaminated water, the following residual or secondary types of waste may be generated during the treatment: waste fuel, oil and lubricants; waste filter media from treatment units and used absorbent materials; sludge; contaminated Water; contaminated soil; and other hydrocarbon, metal and organic contaminated waste. All waste generated is required to be managed in accordance with the terms and conditions in this licence and/or applicable legislation, regulations and guidelines. In addition, hazardous waste shall be removed from site to an approved hazardous waste management facility.

The Applicant has indicated that treated compliant water generated at the WTF can be reused for equipment cleaning or discharged directly to the environment. Furthermore, contaminated water may be added to soils with similar contaminants in order to aid in the soil biotreatment.

In addition:

- sludge originating from the treatment of hydrocarbon impacted water will be shipped off to an authorized facility;
- sludge generated from the treatment of inorganic contaminated water will either be disposed of at the Municipal Landfill or shipped off to an authorized facility;
- hydrocarbons recovered during the water treatment operations will either be used in a waste oil furnace or shipped off site to an authorized facility;
- used filter media will be shipped off site to an authorized facility;
- treatable hydrocarbon impacted soil will be treated at site;
- untreatable contaminated soil will be shipped off site; and
- untreatable hydrocarbon contaminated material will be shipped off site

Effluent from the WTF

The water quality of the treated effluent generated at the WTF is to be either reused for cleaning (equipment washing) or discharged to the environment, where it must not exceed the Water Quality Guidelines set in the Canadian Water Quality Guidelines for the Protection of Aquatic Life, Canadian Council of Ministers of Environment (CCME) for surface water reception. In addition, water reused for cleaning is then treated, tested and if compliant, discharged.

According to this, under Part E of the Water Licence, the NWB has set discharge limits for the most usual parameters expected to be found in the contaminated water and has also included limits for oil and grease and total suspended solids (TSS), that are consistent with limits set for those parameters under licences for similar types of undertaking.

The Licensee should note that parameters which are not included under Part E, but relevant to the undertaking must not exceed values set in the Canadian Council of Ministers of Environment (CCME) Canadian Water Quality Guidelines for the Protection of Aquatic Life

Other waste produced in the WTF

Sludge is a semi-solid residual that usually needs to be dewatered prior to disposal. Sludge is generated as by product of water treatment (water contaminated by hydrocarbons, metals and/or other inorganic compounds).

Sludge is generated as residual from the treatment of hydrocarbon impacted water and would likely be contaminated by hydrocarbons. This sludge is considered hazardous waste and shall be shipped off to an authorized waste disposal site. On the other hand, the disposal of sludge generated by chemical treatment of inorganic impacted water depends on the sludge physio-chemical characteristics. Provided it is not hazardous waste, this type of sludge might be disposed of in a landfill; it is the Licensee's responsibility to ensure that the sludge is suitable for disposal of at the municipal landfill.

The *Government of Nunavut's Environmental Guideline for Industrial Waste Discharges into Municipal Solid Waste and Sewage Treatment Facilities*⁸ recommends a leachate testing method to determine the acceptability of a process residual (or sludge) in a landfill. If the process residual meets the relevant criteria indicated in the Guideline, it can be disposed of in a landfill; process residual which does not meet the Guideline relevant criteria is considered to be hazardous waste and shall be disposed of according to the *Guideline for the General Management of Hazardous Waste in Nunavut*⁹.

With respect to the waste oil, the Applicant has indicated its intention of burning the waste oil in a waste oil furnace. Regarding this use, it should be taken in account that the quality of the burner feedstock is one of the greatest determinants of emissions quality¹⁰. For this reason, DOE – GN does not recommend the burning of used oil or waste fuel when the undiluted levels of metals, halogens and polychlorinated biphenyls (PCBs) exceed those recommended in the *Guideline for Used Oil and Waste Fuel*. With respect to the residue collected from the burning appliance (ash and other solid residue) it is suitable for burial in municipal solid waste facility when it meets the criteria set out in Table 1 of the *Environmental Guideline for Industrial Waste Discharges into Municipal Solid Waste and Sewage Treatment Facilities*. When the residue meets the criteria and is to be disposed of into a municipal landfill, consent from the local community government must first be obtained. Ash not meeting the criteria is considered

8 Environmental Guideline for Industrial Waste Discharge into Municipal Solid Waste and Sewage Treatment Facilities, DOE-GN, Rev. 2011

9 Environmental Guideline for the General Management of Hazardous Waste, DOE-GN, Rev. October 2010

10 Environmental Guideline for Used Oil and Waste Fuel, DOE-GN, 2012

to be a hazardous waste and must be managed in accordance with the *Environmental Guideline for the General Management of Hazardous Waste*.

All waste generated at the Environmental Waste Processing Facility will require management in accordance with the terms and conditions established under Part E of this licence and/or applicable legislation for this type of waste. In addition to the above, the Licensee is required to manage the waste generated from the undertaking in accordance with applicable guidelines including but no limited to:

- GN - DOE, *Environmental Guideline for Used Oil and Waste Fuel* (June 2012),
- GN – DOE *Environmental Guideline for Industrial Waste Discharge* (rev. April 2011) and the GN-DOE *Environmental Guideline for the General Management of Hazardous Waste* (rev. October 2010).

Soil Treatment Facility (Landfarm)

At the Soil Treatment Facility (STF) or Landfarm, up to a maximum of 500 m³ of contaminated soil will be stored, and treated using a combination of physical (screening and washing) chemical (oxidation) and biological (biopiles and/or landfarm techniques) methods.

The STF or landfarm is expected to treat hydrocarbon contaminated soils resulting from oil spills (e.g. from oil storage tanks and furnaces). The targeted contaminants are mostly petroleum hydrocarbons (PHCs), including Benzene, Toluene, Ethylbenzene, and Xylene (BTEX), Monocyclic Aromatic Hydrocarbons (MAHs) and Polycyclic Aromatic Hydrocarbons (PAHs). The estimated treatment capacity of the facility is 1,000 t of soil per year. The system is to be operational during the summer and early fall season.

The soil treatment unit consists of a soil storage and processing area with a biopile pad, and a water collection pond. It will be constructed using a 30 mil thick HDPE liner or similar, covered and underlain by a protective geotextile liner and further protected by a 0.3 m thick layer of clean gravel.

The biopile pad has a berm around the perimeter to prevent soil or water loss. Soils undergoing treatment are covered by semi permeable liners in order to prevent dust. The pad will be built with a slope towards a water collection drain. The drain directs the collected leachate/water toward the water collection pond.

The water collection pond is installed at the low point between the treatment pad and the processing storage area. The water storage pond has a capacity of 41 m³. The function of the pond is to collect water from precipitation, the leachate from the soil pile and the water from the air/water separators. The pond is equipped with a submersible pump to direct water back onto the soil piles or to direct excess water to the WTF.

The soil storage area is used for the temporary storage and screening of soils as well as rock washing.

The soils will be received, weighed and inspected to check for the nature of the soil, extent of

contamination, etc. Representative soil samples will be taken and analyzed. After treatment the batches will again be sampled and analyzed. Depending on results the soils may undergo further treatment.

Further details on the management of soils are discussed in the Application and include:

- the disposal of compliant treated soil at the Iqaluit landfill, alternatively treated compliant soil - after sampling, analysis and verification of compliance- can be used as backfill;
- the off-site disposal of untreatable soil such as soil contaminated with oil, grease creosote, PCBs, metals, etc.;

With respect to effluent discharge, the Applicant has indicated that the system is configured in a way that no effluent is discharged into the environment. The collection pond will collect the water, which will then be recycled or treated.

With regards to groundwater impact due to soil treatment, QE is planning the installation of monitoring wells and to put in place an environmental monitoring program in order to ensure that no contamination migrates off-site. However, no details of this monitoring plan are further described in the submission documents. The Applicant has submitted with the Application, the “*Operation and Management Plan, Soil Treatment Facility*” (O&M Plan STF) dated February 2016. The O&M plan includes:

- A description of landfarm processes and design;
- A summary of the waste management;
- A discussion on soil monitoring.

While the Board acknowledges the Plan submission, it also noted that certain topics are either not included in the Plan or require further elaboration. Such is the case for the criteria of acceptance of soil for treatment at the facility, soil monitoring plan, etc.

With respect to the soil quality criteria to be required after treatment or soil remediation objective, the Board agrees with the Licensee’s proposed soil remediation objective, in that soils will be treated to satisfy the Tier 1 Criteria for PHC as provided by the *Nunavut Guideline for Contaminated Site Remediation*, 2009 (GN-DOE).

The Applicant has also indicated its intention to dispose of the treated soil at the Iqaluit Municipal Landfill. In such case, in addition of the generic Tier 1 Criteria, the soil quality shall also satisfy the criteria established under Column 2 of Table 1 of the *Environmental Guideline for Industrial Discharge into a Municipal Solid Waste and Sewage Treatment Facility*, April 2011(GN-DOE).

In addition to the above named Guidelines, the following Guidelines also apply for the undertaking and shall be consulted by the Applicant:

- *Federal Guidelines for Landfarming Petroleum Hydrocarbon Contaminated Soils*

(updated 2013, Federal Contaminated Sites Action Plan, Government of Canada), and

- *Canada Wide Standards for Petroleum Hydrocarbons (PHC) in Soil* (2001, CCME).

Finally, in order to corroborate that proper procedures pertaining to the operation of the facility are in place, under PART G, Item 5 of the amended Water Licence, the Licensee is required to submit for Board approval an updated Operation and Maintenance (O&M) Plan for the Soil Treatment Facility (STF), to address the soil collection, soil acceptance criteria, treatment, soil remediation objective and the handling of wastes, to be submitted within sixty (60) days from the date of issuance of this licence. In addition, the Licensee is required to include in the updated Plan, details on the groundwater monitoring program and a site plan including the monitoring wells that are to be installed around the Facility.

Hazardous Waste Transfer Facility

The Licensee is planning to operate a Hazardous Waste Transfer Facility. The Applicant has indicated that all hazardous waste will be conveniently segregated, consolidated, packaged, labelled and shipped off site for disposal in accordance with Regulations. The following is a tentative list provided by the Applicant, of the type of Hazardous Waste that the Facility may receive:

- glycols,
- batteries,
- paint or paint related materials,
- regulated building demolition debris, and
- biohazard medical waste.

In addition, the Licensee has included with the Amendment Application, the form presented before the DOE –GN in order to register as a hazardous waste management facility in Nunavut and obtain an identification number as generator and carrier. Further to that, an email from the GN-DOE¹¹ informs the approval of the application and QE's registration number as generator and carrier.

The DOE - GN *Guideline General Management of Hazardous Waste*¹² provides helpful information to generators, carriers and receivers of hazardous waste to develop an environmentally sound system of waste management. According to the Guide, some general points to consider when establishing an hazardous waste storage facility are:

- Inspections at the facility and of stored wastes should be performed and recorded at least once every week.
- Containers should be placed so that each can readily and easily be inspected for signs of leakage, corrosion or deterioration. Leaking, corroded or deteriorated containers should immediately be removed and their contents transferred to a sound container.
- Records should be maintained indicating the type and quantity of waste being stored along with the date, type and quantity of hazardous waste brought into or removed from

11 Email from Robert Eno to QE, Re: application for waste carrier and waste generator, dated August 31, 2011

12 Environmental Guideline for the General Management of Hazardous Waste, DOE-GN, Rev. October 2010

the facility.

- Drainage into and from the storage facility site should be controlled to prevent spills or leaks from leaving the site and to prevent run-off from entering the site.
- All waste should be stored on a firm working surface that is impervious to leaks.
- Incompatible waste must be stored in a manner that prevents contact in the event of a spill or accidental release.
- An Emergency Response Plan should be developed

Additionally, the following guidelines from the DOE-GN may apply and shall be consulted by the Applicant in order to use the best available environmental practices at the Facility:

- *Environmental Guideline for the General Management of Hazardous Waste*, DOE-GN, October 2010;
- *Environmental Guideline for Waste Lead and Lead Paint*, GN-DOE, revised March 2011;
- *Environmental Guideline for Used Oil and Waste Fuel*, GN-DOE, June 2012;
- *Environmental Guideline for Waste Batteries*, GN-DOE, January 2011;
- *Environmental Guidelines for Waste Solvent*, GN-DOE, January 2011;
- *Environmental Guidelines for Waste Lead and Lead Paint*, GN-DOE, March 2011;
- *Environmental Guidelines for Waste Asbestos*, GN-DOE, January 2011;
- *Mercury – Containing Products and Waste Mercury*, GN-DOE, November 2010.

It should be noted that all hazardous wastes must be handled in accordance with applicable regulations including the *Transportation of Dangerous Goods Act*. In addition, the Licensee is required, under Part E of the Amended Licence to dispose of all hazardous substances and/or materials at approved facilities.

Finally, under PART E: Item 23 of the Renewal – Amended Licence, the Board has established criteria to govern the discharge to the environment of the surface contact water and seepage from the Environmental Waste Processing Facility. Surface water shall be collected, sampled and analyzed; water in compliance with Licence quality limits can be discharged to the freshwater environment; non-compliant water shall be treated and the cause of the non-compliance investigated and determined.

E. Construction

Under Part G, item 1 of the existing 1BR-THI1419 Water Licence, the Licensee is required to submit to the Board for review

at least sixty (60) days prior to the commencement of construction of any dams, dykes or structures intended to contain, withhold, divert or retain Water or waste, including facilities or systems for the storage and treatment of hydrocarbon contaminated Water, for-construction design drawings and plans, stamped by an Engineer

According to this, the Applicant's submitted documents include a site plan with the location, size, and details of design of the Environmental Waste Processing Facility. These drawings,

signed by an Engineer, also include cross-section drawings of the Soil biopile and the layout and Flow Diagram of the Water Treatment Facility.

Following this, under Part F, Item 5 of the Licence the Applicant is required to submit to the Board within ninety (90) days of the completion of construction, a Construction Summary Report, complete with as-built drawings of the Environmental Waste Processing Facility, stamped by an Engineer.

F. Operations

Under Part G of the Licence, standard conditions related to drilling operations for the purpose of installing groundwater monitoring wells have been included.

In addition, under Part G, the following Management Plans are approved with the issuance of the Amended Licence:

- “*Operation and Management Plan Contaminated Water Treatment Unit*”, dated February 2016;
- “*Operation and Management Plan Hazardous Transfer Station*” dated February 2016;
- “*Environmental Protection Plan Qikiqtaaluk Environment Inc. Lot 666, Plan 1673 Parcels Q and O Environmental Waste Processing Facility*” dated February 2016;
- “*Operation and Management Plan Contaminated Water Treatment Unit*”, and
- “*Operation and Management Plan Hazardous Transfer Station*”.

Also, under Part G of the Renewal - Amended Licence, the following Management Plan is required to be updated and submitted to the Board for review / approval:

- “*Operation and Maintenance Plan (O&MP) for the Soil Treatment Facility*”.

G. Spill Contingency Planning

Under Part H, Item 1 of the Water Licence 1BR-THI1722, the Board has approved the Plan entitled “*Spill Contingency Plan, Environmental Waste Processing Facility Lot 666, Plan 1673, Parcels Q and O*” dated February 2016. The Licensee shall submit for review of the Board, an updated Spill Contingency Plan addressing matters highlighted by the reviewers during the review of the Application.

H. Abandonment and Reclamation

Under Part I, Item 1 of the Water Licence 1BR-THI1722, the Board has approved the Plan entitled “*Abandonment and Remediation (A&R) Plan, Environmental Waste Processing Facility*” dated February 2016.

The Licensee has informed the NWB that it has changed the location of the Facility to a new lot. Also, the Licensee has indicated that conversations between the Inspector and the Licensee have taken place to discuss remedial measures on the abandoned lot. Following this, under the same section, the Board requires the Licensee to submit an update of the A&R Plan for the abandoned facility with a schedule of the reclamation work.

Also, under Part B, Item 1(g). the Licensee is required to include in the Annual Report “*a description of all progressive and or final reclamation work undertaken, including photographic records of site conditions before, during and after completion of operations.*”

Further to that, the Licensee is required to annually review the A&R Plan and submit to the Board for approval, at least one year prior to the Project’s closure, a Final Abandonment and Remediation Plan.

I. Monitoring

Conditions have been included under Part J, in the 1BR-THI1722 Water Licence, requiring the Licensee to install and maintain six Monitoring Stations at the Environmental Waste Treatment Facility (EWTF), Monitoring Stations No. THI-1 through No. THI-6.

In addition, the Board has included conditions under Part E in the Licence to ensure that effluents generated by the EWTF meet appropriate Water quality criteria prior to being discharged to the receiving environment. Further, under Part J, Item 5, the NWB has included additional parameters to be monitored to assist in determining site specific criteria and limits that may potentially be included under any future licence renewal.

All of the monitoring results are to be provided to the NWB as part of the annual report. This requirement is included in Part B, Item 1 of the Amended Licence.

In the event of temporary or long term closure, the Board has included conditions under Part J, Item 16 of the Licence requiring the Licensee to submit a Monitoring Plan to the Board for approval at least sixty (60) days prior to the suspension of temporary or long-term operation of site facilities.

Also, as established in condition under Part J Item 11 the Licensee is required to submit to the Board for review, an updated Quality Assurance/ Quality Control (QA/QC) Plan. The Plan must be approved in writing by an accredited laboratory, confirming that the plan is acceptable.

TABLE A: RECOMMENDED LEVELS OF IMPURITY FOR BURNING USED OIL & WASTE FUEL¹³

IMPURITY	USED OIL	WASTE FUEL
	MAXIMUM CONCENTRATION (PPM)	MAXIMUM CONCENTRATION (PPM)
Cadmium	2	2
Chromium	10	10
Lead	100	100
Total Organic Halogens (as chlorine)	1,0000	1,5000
Polychlorinated Biphenyls	2	2
Ash content		0.6% by weight

TABLE B: CRITERIA FOR PROCESS RESIDUALS^{14a}

Substance	Column 2: Process Residual Criteria mg/L
Arsenic	2.5
Barium	0.5
Cadmium	0.5
Carbon Tetrachloride (tetrachloromethane)	0.5
Chromium	5
Lead	5
Mercury	0.1
Methyl Ethyl Ketone	200
Polychlorinated Biphenyls (PCBs)	50 ^b
Polychlorinated Dibenzo Dioxins and Furans	0.0000015 I-TEQ ^c
Selenium	1
Silver	5
Tetrachloroethylene	3
Trihalomethanes (Total)	10
Vinyl Chloride	0.2
Zinc	500

- a. Refer to the Canadian Environmental Protection Act (CEPA) Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations - Schedule 6 for criteria regulating other process residuals.
- b. Based on concentration by mass.
- c. International Toxicity Equivalents.

¹³ Environmental Guideline for Used Oil and Waste Fuel, DOE-GN, 2012

¹⁴ Environmental Guidelines for Industrial Waste Discharges into Municipal Solid Waste and Sewage Treatment Facilities, Department of Environment, Government of Nunavut, revised April 2011



NUNAVUT WATER BOARD WATER LICENCE RENEWAL

Licence No. 1BR-THI1722

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

QIKIQTAAALUK ENVIRONMENTAL INC.

(Licensee)

9935 AVE CATANIA, ENTRANCE 1, SUITE 200, MONTREAL, QC J4Z 3V4

(Mailing Address)

Herein after 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: 1BR-THI1722 TYPE "B"

Water Management Area: FROBISHER BAY WATERSHED (53)

Location: CITY OF IQALUIT / QIKIQTANI REGION, NUNAVUT

Classification: INDUSTRIAL

Purpose: DEPOSIT OF WASTE

Quantity of Water use not
to Exceed: USE OF WATER IS NOT AUTHORIZED

Date of Amendment
Issuance: MAY 4, 2017

Expiry of Licence: MAY 3, 2022

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

Thomas Kabloona,
Nunavut Water Board, Chair

Licence No. 1BR-THI1722

PART A: SCOPE, DEFINITIONS AND ENFORCEMENT

1. Scope

This Licence allows for the deposit of Waste for an undertaking classified as ‘Industrial’ as per Schedule I of the *Regulations*, at the Qikiqtaaluk Environmental Inc.’s Environmental Waste Processing Facility, located in an industrial area within the City of Iqaluit, Qikiqtani Region, Nunavut, generally located at:

Latitude: 63° 44’ 40” N Longitude: 68° 33’ 03” W
Latitude: 63° 44’ 34” N Longitude: 68° 32’ 51” W

- a. This Licence is issued subject to the conditions contained herein with respect to the depositing of waste of any type in any waters or in any place under any conditions where such waste or any other waste that results from the deposits of such waste may enter any waters. Whenever new *Regulations* are made or existing *Regulations* are amended by the 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;

“**Batch Discharge**” means the controlled discharge of a discrete, contained volume of effluent from the WTF at the Final Discharge Point. The maximum volume of a batch discharge shall not exceed 21,000 m³ per batch, or otherwise as permitted by an

Inspector;

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

“**Care and Maintenance**” in respect of operation, means when the Licensee ceases production or commercial operation for an undefined period of time;

“**Construction**” means any activities undertaken to establish and install any or all components of the Environmental Waste Processing Facility;

“**Dangerous Good**” means any product, substance or organism included by its nature or by the Transportation of Dangerous Goods Regulations in any of the classes listed in the Schedule provided in the Transportation of Dangerous Goods 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;

“**Environmental Waste Processing Facility (EWPF)**” means the commercial Facility used for the collection, and temporarily storage of water, soil and hazardous waste. It is designed to treat contaminated Water, soil and manage (collect, store and transfer) Hazardous waste, as described in the Application for Water Licence amendment filed with the Board by the Applicant on February 17, 2016;

“**Existing Licence**” means the 1BR-THI 1419 Water Licence;

“**Final Discharge Point**” means the point at which the Licensee no longer exerts care and/or control over the quality and/or quantity of the effluent from a treatment process;

“**Hazardous waste**” means waste classified as “hazardous” by Nunavut Territorial or Federal Legislation, or as “dangerous goods” under the Transportation of Dangerous Goods Act at the time of clean-up;

“**Hazardous Waste Transfer Facility**” means the commercial facility used for the collection, storage and transfer, of a hazardous waste as described in the Application for Water Licence amendment filed by the Applicant on February 17, 2016;

“**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);

“**ICP Scan**” means the laboratory method for determining trace metals in water through Emission Spectroscopy using inductively coupled plasma (including from approximately 22 to 32 elements, depending on the laboratory performing the analysis);

“**Incompatible Hazardous Waste**” means a hazardous waste that, when in contact with another substance or hazardous waste under normal circumstances, reacts to produce heat, gas, fire, explosion or a corrosive or toxic substance;

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

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

“**Long Term Storage of Hazardous Waste**” means the storage of hazardous waste for a period of 180 days or more;

“**Minister**” means the Minister of Aboriginal Affairs and Northern Development Canada;

“**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;

“**Monitoring Program**” means a program established to collect data on surface Water, groundwater, and soil quality to assess impacts to the environment of an appurtenant undertaking;

“**Nunavut Agreement**” 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;

“**Process Residuals**” means solid, semi-solid or sludge waste resulting from an industrial operation;

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

“**Renewal Water Licence or Licence**” means this Licence, 1BR-THI1722;

“**Secondary Containment**” means an impermeable structure, external to and separate from primary containment, which prevents unplanned spills of hazardous materials and provides a minimum capacity of 110% of the original vessel. Where multiple vessels are stored within the containment, it must provide a minimum capacity equal to the sum of the largest vessel and 10% of the aggregate volume of all other vessels located in the containment. This structure shall also provide containment and control of hoses and nozzles;

“Seepage” means any Water that drains through or escapes from any structure designed to contain, withhold, divert or retain Water or waste;

“Soil Treatment Facility” means the commercial Facility used for the collection, temporarily storage and treatment of contaminated soil, as described in the Application for Water Licence amendment filed by the Applicant on February 17, 2016;

“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 or Sumps” A structure or depression that collects, controls, and filters liquid waste before it is released to the environment. This structure should be designed to prevent erosion while allowing percolation of liquid waste;

“Tier I Soil” means soil containing contaminant concentrations within the types and ranges defined for Tier I soil at the Canada Wide Standards (CWS) for Petroleum Hydrocarbons (PHC) in Soil, CCME;

“Transfer” means the temporary storage of hazardous waste for a period of 179 days or less for the purpose of changing from one vehicle or means of transportation to another;

“Transporter” means a person who accepts hazardous waste for transportation or transports hazardous waste, whether or not for hire or reward. A transporter is also referred to as a carrier of hazardous waste;

“Used Oil” means Engine, turbine and gear lubricating oil, hydraulic and transmission fluid and insulating coolant (i.e. transformer fluid) that is unsuitable for its intended purpose due to the presence of impurities or the loss of original properties, but does not include waste derived from animal or vegetable fat or a petroleum product spilled on land or water;

“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;

“Waste Fuel” means A flammable or combustible petroleum hydrocarbon that is unsuitable for its intended purpose due to the presence of impurities or the loss of original properties, and includes gasoline, diesel and fuel oil, aviation fuel, kerosene and naphtha, but does not include paint, solvent or propane;

“Water” or “Waters” means waters as defined in section 4 of the *Act*;

“Water Treatment Facility (WTF)” means the commercial Facility used for the collection, temporary storage and treatment of contaminated Water, as described in the Application for Water Licence renewal - amendment filed by the Applicant on February 17, 2016.

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 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 of the Water Treatment Facility (WTF) activities:
 - i. quantity and chemical characterization of Contaminated Water/snow/ice collected for treatment at the WTF;
 - ii. quantity of waste generated at the WTF including petroleum, oil, and lubricants (POL), sludge, waste filter media, and any other waste resulting from the treatment of Water at the WTF, and details of the waste fate;
 - iii. an inventory of contaminated Water stored at the project site; and
 - iv. an inventory of treated Water stored at the project site, lab analysis results of the treated water;
 - v. effluent discharged to the receiving environment from the WTF including location and quantity and quality of Effluent discharged;
 - vi. treated water reused for cleaning, quantity and analysis results;
 - vii. sludge disposal, if sludge is disposed of at the landfill, lab results and Hamlet authorization; and
 - viii. a summary of all waste backhauled for disposal at approved facilities
 - b. a summary of the Soil Treatment Facility (STF) activities:
 - i. quantity and chemical characterization of soil received/ collected at the STF;
 - ii. summary of the origin of the soil treated at the Facility and associated

- spill report number;
 - iii. quantity and chemical characterization of soils placed within the STF for treatment;
 - iv. laboratory results of the soil monitoring for verification of remediation;
 - v. average time of soil treatment;
 - vi. tabular data of annual quantities in cubic metres of: soils treated, collected at the Facility and a list of type of contaminants;
 - vii. a summary of all waste backhauled for disposal at approved facilities;
 - viii. results of the groundwater monitoring program.
 - c. a summary of the Hazardous Waste Management Facility activities:
 - i. quantity and type of hazardous waste received;
 - ii. a summary of all hazardous waste backhauled, for disposal at approved facilities.
 - d. a list of unauthorized discharges and a summary of follow-up actions taken;
 - e. a summary of any construction work, modification and major maintenance work (including as-built diagrams) carried out on all new and existing licensed waste facilities;
 - f. any revisions to the Spill Contingency Plan, Abandonment and Restoration Plan, and any other Plans as required in Part B, Item 6, submitted in the form of an Addendum;
 - g. a description of all progressive and or final reclamation work undertaken, including photographic records of site conditions before, during and after completion of operations;
 - h. a review of the reclamation cost estimate, as required in Part C, Item 1;
 - i. tabular summary of all information requested and results of the Monitoring Program;
 - j. an analysis of data collected during the “Monitoring Program” and a brief description of any future studies planned by the Licensee;
 - k. a public consultation/participation report describing consultation with local organizations and the residents of the nearby communities; and
 - l. any other details on Water use or waste disposal requested by the Board by November 1 of the year being reported.
- 2. 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.

3. The Licensee shall install flow meters or other such devices, or implement suitable methods to the satisfaction of the Inspector for the measuring of Effluent volumes discharged into the receiving environment at the Final Discharge Point as required under Part J, Item 2.
4. 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.
5. The Licensee shall, for all Plans submitted under this Licence, implement the Plan as approved by the Board in writing.
6. 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.
7. 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.
8. 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@nwb-oen.ca
 - 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
9. 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.

10. 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.
11. This Licence is assignable as provided for in Section 44 of the *Act*.
12. The expiry or cancellation of this Licence does not relieve the Licensee from any obligation imposed by the Licence, or any other regulatory requirement.

PART C: CONDITIONS APPLYING TO SECURITY

1. The Licensee shall review annually, the reclamation cost estimate submitted as part of the Application for this Licence. Any changes made to the estimate should be submitted to the Board for review with the Annual Report required under Part B, Item 1.
2. The Licensee shall provide a revised reclamation/closure cost estimate to the Board for approval in writing, within sixty (60) days of receiving notice, that the estimate provided under Part C, Item 1 was not acceptable to the Board.

PART D: CONDITIONS APPLYING TO WATER USE

1. Water use is not authorized under this Licence.
2. The Licensee shall not remove any material from below the ordinary High Water Mark of any water body unless authorized.
3. The Licensee shall not cause erosion to the banks of any body of water and shall provide necessary controls to prevent such erosion.
4. Sediment and erosion control measures shall be implemented prior to and maintained during the operation to prevent entry of sediment into water.

PART E: CONDITIONS APPLYING TO WASTE DISPOSAL

1. The Licensee shall provide at least ten (10) days' notice in writing, to an Inspector prior to any planned discharge of Effluent from the Environmental Waste Processing Facility (EWPF). The notice shall include the volumes proposed for discharge, the Water quality of the proposed discharge, location of discharge and an indication of any nearby Water bodies that may be impacted.
2. The Licensee shall confirm, with an Inspector, the suitable location(s) or Final Discharge Point(s) for the Effluent from the EWPF prior to any discharge into the

receiving environment.

3. 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.
4. The Licensee shall implement appropriate measures to minimize erosion during any discharge of Effluent from the EWTF into the receiving environment.
5. The Licensee shall ensure that temporary storage areas are maintained such that dust control measures are implemented and surface ponding of water is minimized.
6. The Licensee shall operate and maintain the EWTF to the satisfaction of an Inspector and in accordance with acceptable engineering standards and the corresponding approved Operation and Maintenance Plans.
7. The Licensee shall operate and maintain the EWTF to engineering standards such that:
 - a. During periods of flow, the Licensee shall carry out, at a minimum, weekly inspection of the berms and keep records for review upon the request of an Inspector. Areas of deterioration and erosion shall be repaired immediately;
 - b. Monitoring Wells shall be monitored in accordance with the Monitoring Plan as per Part J of the Licence and should analytical results indicated contamination associated with the Facility, the Licensee shall implement immediate corrective action; and
 - c. Washing of all rock reject from soil stockpiles shall be done within the berms of the Soil Treatment Facility (STF).
8. The Licensee shall not combine incompatible waste types for the purpose of storage, shipment, buffering concentration of waste constituents or for any other purposes unless authorized by the Board in writing.
9. The Licensee shall store, transport and treat all Waste generated by the undertaking in accordance with applicable regulations and best management practices.
10. The Licensee shall backhaul and dispose of all hazardous wastes collected or generated throughout the course of the EWPF operation at a licensed waste disposal facility.
11. 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.
12. The Licensee shall establish and confirm compliance with Effluent quality limits of Part

E, Items 14 and 23 prior to reuse or discharge the Effluent.

13. If Effluent does not meet the Effluent quality limits of Part E, Items 14 and 23, it shall be considered hazardous waste and disposed of off-site at an approved facility.
14. All Effluent discharged from Monitoring Program Station **THI -1a** shall not exceed the following Effluent quality criteria:

Parameter	Maximum Concentration of any Grab Sample
pH	between 6.5 and 9.0
Total Suspended Solids(TSS)	50 mg/L
Oil and grease	15 mg/L and no visible sheen
Benzene	370 µg/L
Toluene	2 µg/L
Ethyl benzene	90 µg/L
Total Lead	When the hardness is 0 to ≤ 60 mg/L, the CWQG is 1 µg/L;
	When hardness >60 to ≤ 180 mg/L the CWQG is calculated using: $CWQG (\mu g/L) = e\{1.273[\ln(hardness)]-4.705\}$
	When hardness >180 mg/L, the CWQG is 7 µg/L
Total Arsenic	5.0 µg/L
Total Cadmium	1.0 µg/L
Total Copper	When the water hardness is 0 to < 82 mg/L, the CWQG is 2 µg/L
	When hardness is ≥82 to ≤180 mg/L the CWQG is calculated using: $CWQG (\mu g/L) = 0.2 * e\{0.8545[\ln(hardness)]-1.465\}$
	When hardness is >180 mg/L, the CWQG is 4 µg/L
Total Mercury	0.026 µg/L
Total Silver	0.25 µg/L
Total Zinc	30 µg/L

15. If the Effluent referred to in Part E, Item 14 does not meet the discharge criteria, it shall be considered hazardous waste and be disposed off-site at an approved hazardous waste facility or as otherwise approved by the Board in writing.
16. The Licensee shall treat contaminated soil at the Soil Treatment Facility to meet the remediation objectives and in accordance with the corresponding approved Operation & Maintenance Plan or as otherwise approved by the Board in writing.

17. The Licensee shall for the purposes of monitoring, install ground water monitoring wells, at least one up-gradient and two down-gradient of the Soil Treatment Facility, as per the approved Operation and Maintenance Plan (O&MP) for the Soil Treatment Facility (STF) required under Part G, Item 7.
18. The Licensee shall for the purposes of monitoring, install ground water monitoring wells in any area of the Project site requiring monitoring.
19. The Licensee shall dispose of soils containing contaminants in excess of the Treatment Objectives off site at an approved treatment facility.
20. The Licensee shall not mix or blend soils for the expressed purpose of attaining the specific limits of the relevant quality criteria.
21. The Licensee shall, prior to the removal of any treated soil for future use, confirm with the Government of Nunavut, Environmental Protection Service that the soils have been treated so as to meet all legislatively-required treatment objectives.
22. The Licensee shall, prior to disposal of any sludge at the Iqaluit Landfill, confirm with the Government of Nunavut, Environmental Protection Service that the sludge meets all legislatively required treatment objectives.
23. Surface water and seepage collected from the perimeter of the Environmental Waste Processing Facility (drainage ditches) shall not exceed the following Effluent discharge criteria at Monitoring Station **THI-3** (down gradient):

Parameter	Maximum Concentration of any Grab Sample
pH	between 6.5 and 9.0
Total Suspended Solids (TSS)	50 mg/L
Oil and grease	15 mg/L and no visible sheen
Benzene	370 µg/L
Toluene	2.0 µg/L
Ethyl benzene	90 µg/L
Total Lead	When hardness is 0 to ≤ 60 mg/L, the CWQG is 1 µg/L; When hardness >60 to ≤ 180 mg/L the CWQG is calculated using: CWQG (µg/L) = $e\{1.273[\ln(\text{hardness})]-4.705\}$ When hardness >180 mg/L, the CWOG is 7 µg/L
Total Cadmium	1.0 µg/L
Total Mercury	0.026 µg/L

24. All Effluent discharge shall be located at least thirty-one (31) meters 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.

25. The Licensee shall provide the Board with documented authorization from any community in Nunavut receiving waste from the QE Environmental Waste Treatment Facility.
26. The Licensee shall maintain records of all waste stored, transported and final destinations, including details confirming proper disposal of the waste through a waste manifest. Detail related to waste backhauled should be included with the Annual Report as per Part B, Item 1 and made available to and Inspector upon request.

PART F: CONDITIONS APPLYING TO MODIFICATIONS AND CONSTRUCTION

1. The Licensee may, without written consent from the Board, carry out Modifications to the Environmental Waste Processing Facility provided that such Modifications are consistent with the terms of this Licence and the following requirements are met:
 - a. the Licensee has notified the Board 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 do not change the scope of the project as approved by NIRB 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 F, 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.
4. The Licensee shall submit to the Board for review, at least sixty (60) days prior to the commencement of construction of any dams, dykes or structures intended to contain, withhold, divert or retain Water or waste, including facilities or systems for the storage and treatment of contaminated Waters, soil, and storage of hazardous wastes, for-construction design drawings and plans, stamped by an Engineer.
5. The Licensee shall provide to the Board, within ninety (90) days of completion of the construction of any dams, dykes or structures intended to contain, withhold, divert or

retain Water or waste, including facilities or systems for the storage, treatment and disposal of contaminated Waters, soils, and storage of hazardous wastes, design drawings and construction reports, including as-built drawings stamped by an Engineer, documentation of field decisions that deviate from original plans, and any data used to support these decisions.

PART G: CONDITIONS APPLYING TO OPERATIONS

1. The Licensee is authorized to drill for the purpose of installing groundwater monitoring wells.
2. 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.
3. The Licensee shall, where drilling has penetrated below the permafrost layer, record the depth of permafrost and location of the drill hole for inclusion in the annual report required under Part B, Item 1.
4. The Licensee shall conduct all activities in such a manner as to minimize impacts on surface drainage and immediately undertake and implement corrective measures in the event of any impacts on surface drainage.
5. The Board has approved with the issuance of the Licence the Plan entitled “*Operation and Management Plan Contaminated Water Treatment Unit*”, dated February 2016 that was submitted as additional information with the Application.
6. The Board has approved with the issuance of this Licence the Plan entitled “*Environmental Protection Plan Qikiqtaaluk Environment Inc. Lot 666, Plan 1673 Parcels Q and O Environmental Waste Processing Facility*” dated February 2016 that was submitted as additional information with the Application.
7. The Licensee shall submit to the Board for approval within sixty (60) days from the date of issuance of this Licence, an updated *Operation and Maintenance Plan (O&MP) for the Soil Treatment Facility (STF)*. The updated O&MP shall include information addressing but not limited to the following:
 - a. Recommended analytical parameters for soil analysis based on suspected soil contamination;
 - b. Criteria of acceptance of contaminated soils for treatment, based on soil lithology and soil geochemistry: concentration of F1, F2, F3 and F4 fractions of petroleum hydrocarbon contaminated soil entering the STF from all sources, as per the CCME Canada-Wide Standard for Petroleum Hydrocarbons in (PHC) in Soil (2001);
 - c. Soil sampling frequency to assess the performance of the treatment;

- d. Groundwater monitoring, parameters, frequency;
 - e. A site plan indicating the location of the STF groundwater monitoring stations;
 - f. Contingency planning and measures to ensure collection pond volumes are not exceeded during melting; and
 - g. Measures to prevent damage to the liner during mechanical operations at the STF.
8. The Board has approved the Plan entitled “*Operation and Management Plan Hazardous Transfer Station*” dated February 2016 that was submitted as additional information with the Application.
 9. Equipment used should be well cleaned and free of oil and grease and maintained free of fluid leaks.
 10. The Licensee shall operate the Water Treatment Facility, the Solid Treatment Facility and the Hazardous Waste Transfer Facility in accordance with the approved Management Plans, or as otherwise approved by the Board in writing.

PART H: CONDITIONS APPLYING TO SPILL CONTINGENCY PLANNING

1. The Board has approved the Plan entitled “*Spill Contingency Plan, Environmental Waste Processing Facility Lot 666, Plan 1673, Parcels Q and O*” dated February 2016 that was submitted as additional information with the Application.
2. The Licensee shall submit for review of the Board, within sixty (60) days from the date of issuance of this Licence, a revision of the Plan referred to in Part H, Item 1, to address the following:
 - a. response to spills involving impacts to water;
 - b. include INAC contact personnel information (INAC Manager of Field Operations, phone number 975-4295 and INAC Water Resources Officer – phone number 975-4517); and
 - c. an Emergency Response Plan.
3. 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.
4. 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 and to the Board, 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.
5. The Licensee shall, in addition to Part H, Item 4, regardless of the quantity of releases of harmful substances, report to the NWT/NU Spill Line if the release is near or into a Water body.
6. Spills, overfills, and storm Water from product transfer areas shall be contained, and treated at the WTF to remove any residual hydrocarbons prior to being discharged.
7. The oil-water separator at the WTF shall be equipped with a spill containment device at the point of oil removal.
8. The Licensee shall provide secondary containment for fuel, chemical and contaminated water storage as required by applicable standards and acceptable industry practice.

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

1. The Board has approved the Plan entitled “*Abandonment and Remediation Plan Environmental Waste Processing Facility*” dated February 2016, that was submitted as additional information with the Application. The Licensee shall submit within sixty (60) days from the date of issuance of this Licence, an addendum to the Plan that includes:
 - a. A schedule of reclamation work to be completed on the Hydrocarbon Impacted Water Treatment Facility (previous location) located at 63° 45' 44" N and 68° 32' 41" W, within the City of Iqaluit
2. The Licensee shall annually review the approved Plan in Part I, Item 1 and modify the Plan as necessary to reflect changes in personnel, operations and/or technology. Any proposed modifications to the Plan shall be submitted to the Board for approval in writing.
3. The Licensee shall submit to the Board for approval in writing, at least one year prior to the Project’s closure, an Environmental Processing Facility’s Final Abandonment and Remediation Plan.
4. The Licensee shall complete the restoration work within the time schedule specified in the approved Plan, or as subsequently revised and accepted by the Board in writing.
5. The Licensee shall carry out progressive reclamation for any components of the project no longer required for the Licensee’s operations.

6. The Licensee shall notify the Board of its intention to proceed with final abandonment of undertaking at least six (6) months prior to the planned dates of closure.
7. The Licensee shall backfill and restore, all temporary containment sumps, to the pre-existing natural contours of the land.
8. All disturbed areas shall be stabilized and re-vegetated as required, upon completion of work, and restored as practically as possible to a pre-disturbed state.

PART J: CONDITIONS APPLYING TO THE MONITORING PROGRAM

1. The Licensee shall establish and maintain, at a minimum, the following Monitoring Program Stations or as otherwise approved by the Board in writing:

Monitoring Station ID	Description	Frequency	Parameters
THI-1 a	Monitoring Station at new location of the WTF, treated effluent prior to be reused for equipment cleaning discharged to the environment	as per Part J, Item 3	Volume as per Part J, Item 2, Quality as per Part J, Item 5
THI-2 & THI-3	Monitoring Stations at the EWPF, surface contact water and seepage up gradient and down gradient, collected from the perimeter of the Facility (drainage ditches)	As per approved Environmental Protection Plan	Quality as per Part J, Item 6
THI-4	Monitoring well installed up-gradient of the STF	Once during spring freshet, and once during late summer	Quality as per Part J, Item 6
THI-5	Monitoring well installed down-gradient of the STF	Once during spring freshet, and once during late summer	Quality as per Part J, Item 6
THI-6	Monitoring well installed down-gradient of the STF	Once during spring freshet, and once during late summer	Quality as per Part J, Item 6

2. The Licensee shall measure and record in cubic metres, the quantity of treated Effluent to be recycled for equipment cleaning and or discharged from the Water Treatment Facility (WTF) at Monitoring Station THI-1a.
3. The Licensee shall sample prior to discharge at Monitoring Station THI-1a, at minimum once prior to each batch discharge event and again prior to completion of the discharge to verify compliance with Effluent Quality Limits under Part E, Item 14.

4. The Licensee shall take a representative sample of contact water at Monitoring Station No. THI-3 (down gradient) to verify compliance with Effluent Quality Limits under Part E, Item 23.
5. The Licensee shall sample at Monitoring Station THI-1a, at minimum, once prior to each batch discharge event and prior to completion of discharge, and analyze for the following parameters:

pH	Conductivity
Total Suspended Solids	Ammonia Nitrogen
Nitrate – Nitrite	Oil and Grease (visual)
Total Phenols	Sulphate
Total Hardness	Total Alkalinity
Sodium	Potassium
Magnesium	Calcium
Chloride	Total Cadmium
Total Copper	Total Chromium
Total Iron	Total Lead
Total Mercury	Total Nickel
Total Zinc	Total Aluminum
Total Manganese	Total Cobalt
Total Arsenic	
Polycyclic Aromatic Hydrocarbons (PAHs)	
Total Petroleum Hydrocarbons (TPH)	
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)	

6. The Licensee shall sample at Monitoring Stations THI-2, THI-3, THI-4, THI-5 and THI-6 with a frequency as established under Part J, Item 1. Samples shall be analyzed for the parameters included under Part J, Item 5.
7. Additional sampling and analysis may be requested by the Board or an Inspector.
8. The Licensee shall determine, prior to discharge and upon agreement with an Inspector the final discharge location(s), and record the GPS co-ordinates (in degrees, minutes and seconds of latitude and longitude) where treated effluent is discharged.
9. 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 as approved by the Board in writing.
10. All analyses shall be performed in a laboratory accredited according to ISO/IEC Standard 17025. The accreditation shall be current and in good standing.
11. The Licensee shall submit to the Board for review, within three (3) months from the date of issuance of this licence, a Quality Assurance/ Quality Control Plan, approved by an Analyst, that includes requirements for independent third party sampling and

analysis. This Plan shall be developed in accordance with the *1996 Quality Assurance (QA) and Quality Control (QC) Guidelines for Use by Class “A” (INAC)*.

12. The Quality Assurance/ Quality Control Plan referred to in Part J, Item 11 shall include Water and soil sampling procedures and chemical analysis methodology, and be consistent where appropriate with the Guidance Manual on Sampling, Analysis and Data Management for Contaminated Sites, Volume 1: Main Report (CCME, 1993), and Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil – Tier 1 Method (CCME, 2001).
13. If the Analyst does not approve the Plan referred to in Part J, Item 11, the Licensee shall revise the Plan and resubmit to the Analyst for approval within thirty (30) days of notification by the Analyst.
14. The Board shall be notified within thirty (30) days of the Analyst decision with respect to the QA/QC Plan referred to in Part J, Items 11 and 12.
15. The Licensee shall include summaries and an interpretation of all the data and information required by the “Monitoring Program”, required under Part J, in the Annual Report as per Part B, Item 1.
16. The Licensee shall submit to the Board for approval, at least sixty (60) days prior to temporary or permanent suspension of normal site activities, a Post-Closure Monitoring Plan that includes information on monitoring requirements of the Environmental Waste Processing Facility, and that addresses water quality monitoring requirements as well as monitoring the condition and stability of any soil left on site.