# Transport Canada
# Iqaluit, Nunavut Land Treatment Unit
# Operation and Maintenance Plan

**January 1, 2009**

**To:**

**Nunavut Water Board**
**P.O. Box 119**
**Gjoa Haven, Nunavut**
**X0B 0P6**

## Introduction

Transport Canada (TC) received a water license from the Nunavut Water Board to operate a landfarm in order to treat petroleum hydrocarbon (PHC) contaminated soil at the Iqaluit airport. The water license No. 1BR-LTU0608 was issued on August 21, 2006 which outlines the terms and conditions for the operations and maintenance of the facility. The following operation and maintenance plan is required under the terms and conditions of the agreement. The plan will outline the types of material accepted at the facility, the procedures to be utilized in the treatment and storage of the PHC impacted soil, the criteria to be attained prior to soil being deemed remediated, and the ultimate deposition of any treated soil.

## History

Prior to July 1, 1995 Iqaluit Airport was owned by the Government of Canada and operated by the Quebec Region of the Department of Transport. From July 1, 1995 until April 1, 1999 the airport was owned by the Government of Northwest Territories and operated by the Arctic Airports Division of the Department of Transportation. Since April 1, 1999 the airport has been owned by the Government of Nunavut and operated by the Nunavut Airports Division of the Nunavut Department of Community Government, Housing and Transportation.

As a condition of the Arctic A Airport transfer agreement (July 1995) between GNWT and Transport Canada, the environmental issues, which existed prior to the airport transfer, are to be remediated as well as any items identified by the GN within six years of the transfer date. Works identified under this document address some of the issues identified in the transfer agreement as well as post transfer issues. For the purposes of this O&M Plan only, PHC contaminated soil will be considered from this document and the placement of this material in the LTU. Types of PHC contaminated soils encountered for disposal in the LTU are gasoline, diesel, and jet fuel (A,B) which are the main sources of fuel spills and leaks over the past 60 years at this location. The depth of contaminated soil in the LTU will not be greater then 1m and will be constructed based on the parameters outlined in the water licence application (also see attached engineered drawing).

Transport Canada is obligated to remediate all hazardous substances that are the department's responsibility that do not comply with the applicable environmental laws.

## A) Operation and Maintenance Program

## Sampling Program

The first objective is to conduct a comprehensive soil sampling program at the beginning of each field season to identify the levels of PHC contamination in the soil. Due to the long winter season at this location, TC anticipates initially sampling the LTU in the beginning of June depending on weather conditions. The soil criteria used for this site will be under the CCME Canada Wide Standards for Petroleum Hydrocarbon Contaminated Soils Tier 1, coarse grain soil, Industrial site. This criteria is used due to the location of the facility between Runway 18-35 and Apron I. To access the site airport security clearance is required. The location will not be used for commercial development due to the location adjacent to the runway and Apron.

1a) The sampling program will require eight (8) composite soil samples and a sample from each monitoring well from the LTU for submission to a laboratory for analysis. The sampling protocol for the LTU will require a random grid pattern covering the entire area. All sampling procedures will be in accordance with the standards contained in the CCME Guidance Manual on Sampling, Analysis and Data Management for Contaminated Sites Volume I &II. Quality assurance/quality control will be observed while conducting the sampling program and include at a minimum the following:

- Use of trip, field and equipment blanks;
- Use of duplicate and spiked samples;
- Proper sample containment, preservation, chain of custody; and
- Due regard for necessary health and safety precautions.

1b) All samples should be analyzed for the following parameters:

- BTEX;
- Total Extractable Hydrocarbons (TEH);
- CCME Canada Wide Standards for Petroleum Hydrocarbons in Soil for Fractions #1 to #4 for the Tier 1 criteria, coarse grain soil for Industrial Sites.
- Polycyclic Aromatic Hydrocarbons (PAH);
- Total Heavy Metals (Al, As, Cd, Co, Cu, Fe, Pb, Mo, Ni, Se, Ag, T1, Zn).

**Summary of Tier 1 Levels (mg/kg) for surface soil CCME.***

| Land Use | Soil Texture | F 1 | F 2 | F 3 | F 4 |
|---|---|---|---|---|---|
| Agriculture | Coarse grain soil<br>Fine grain soil | 30b<br>210 (170a) | 150<br>150 | 300<br>1300 | 2800<br>5600 |
| Residential/Parkland | Coarse grain soil<br>Fine grain soil | 30b<br>210(170a) | 150<br>150 | 300<br>1300 | 2800<br>5600 |
| Commercial | Coarse grain soil<br>Fine grain soil | 320(240a)<br>320(170a) | 260<br>260(230a) | 1700<br>2500 | 3300<br>6600 |
| Industrial | Coarse grain soil<br>Fine grain soil | 320 (240a)<br>320 (170a) | 260<br>260 (230a) | 1700<br>2500 | 3300<br>6600 |

* Additional Tier 1 levels are presented in Technical Supplement.
a= Where applicable, for protection of potable groundwater.
b= assumes contamination near residence

2a) The use of a gas Photo Ionization Detector (PID) or similar equipment to monitor hydrocarbon vapours will be required to field screen the soil sample taken. The use of field screening the soil will provide an immediate representation of the conditions and levels of the PHC in the soil. This process does not replace laboratory results, however it does give a good sense of the conditions.

The results of the laboratory analysis are to be compared to the Nunavut Environmental Guidelines for Site Remediation (most current edition), CCME Canada Wide Standards Petroleum Hydrocarbon Guidelines (most current edition) and the CCME Interim Canadian Environmental Quality Criteria for Contaminated Sites (most current edition) remediation criteria for industrial zoned sites. The selected laboratory must provide quality assurance (QA) and quality control (QC) procedures. All samples are to be procured through approved methods and procedures and are to be submitted to a Certified Laboratory (CAEAL/ Standards Council of Canada) for formal analysis.

Once the laboratory and field screening results are obtained, TC can proceed with several options. The landfarm will require nutrient amendments and tilling if it does not meet the previous mentioned criteria. This process will immediately proceed the sampling program each June when the soil is able to be worked. The following procedures will be followed:

## Nutrient Amendments and Tilling

Biodegradation requires micro-organisms are meeting nutritional requirements. The optimal range of carbon:nitrogen:phosphorus (C:N:P) is 100:10:1 to 100:1:0.5. Soil amendments in the form of commercially used solid fertilizers will be applied in sufficient amounts as recommended by the manufacturer to achieve this target ratio for the specified volume of soil in the LTU.

Once the nutrients have been added to the LTU the soil will be turned over with the use of a backhoe. This will expose the soil to oxygen and for micro-organisms as well as distributes nutrients and moisture in the soil, thereby aiding in biodegradation. Care must be taken by the backhoe operator not to tear the liner and report any cracks, blisters or punctures to the liner.

## Leachate Management

The LTU is constructed with a 1% slope which allows any leachate to collect in the sump area. Visual monitoring of the sump ensures that water is collecting in the sump area indicates the liner is not damaged. Leachate may be recirculated over the LTU soil surface as a means of irrigation to maintain optimal biodegradation rates. Discharge of the leachate may be required if the sump collection area rises to within 1 foot of the top of the berm. This is not likely to happen due to the height of the engineered berms taking into consideration the amount of precipitation and evaporation rates at this location. If the leachate is required to be discharged it must first meet the discharge levels within CCME EQGs and the Water License 1BR-LTU0608 agreement for LTU wastewater discharge criteria:

| Parameter | Maximum Allowable Concentration (ug/l) |
|---|---|
| Oil & Grease | 5000 |
| Lead | 1 |
| Benzyene | 370 |
| Toluene | 2 |
| Ethylbenzene | 90 |

The area designated for leachate disposal is located adjacent to the LTU in the open field between Apron I and the runway. This area is located greater then 1 km away from any water body and potable water source.

The LTU will continue to be monitored each field season to ensure the facility is operating as it has been designed. Additional soil sampling will be conducted in the fall of each year to determine the effectiveness of the previous amendments in the spring. A soil sampling program will be conducted in August or September as described earlier including monitoring wells. The following outlines when the samples and activities will be conducted:

| Activity | Time of Year | Time of Year |
|---|---|---|
| Soil Sample | June | August - September |
| Monitoring Well Sample | June | August - September |
| Tilling/Fertilizer | June | If Required Aug - Sept |

## Monitoring Well Sampling

TC will undertake sampling the monitoring wells and the sump inside the LTU as described in the Water License No. 1BR-LTU0608. The frequency and time of year are outlined in the above table. The sump will be tested prior to any required discharge and tested prior to the decommissioning of the facility. The parameters for testing the monitoring wells are as follows:

| Station | Location | Parameter | Frequency |
|---|---|---|---|
| **LTU -1** | Sump | PTH, BTEX, HM,PAH | Discharge |
| **LTU – MW1** | Upgradient - LTU | PTH, BTEX, HM,PAH | Twice/year |
| **LTU – MW2** | Downgradient - LTU | PTH, BTEX, HM,PAH | Twice/year |
| **LTU – MW3** | Downgradient - LTU | PTH, BTEX, HM,PAH | Twice/year |

## B) Remediation Targets and LTU Closure

As mentioned earlier, TC is required to meet the required PHC criteria under the Nunavut Environmental Guidelines for Site (most current edition), CCME Petroleum Hydrocarbon Guidelines (most current edition) and the CCME Interim Canadian Environmental Quality Criteria for Contaminated Sites (most current edition) remediation criteria for coarse grain soil, industrial zoned sites. Once the LTU has been sampled and shows PHC levels are below the required criteria, the facility will be decommissioned and restored back to its original state.

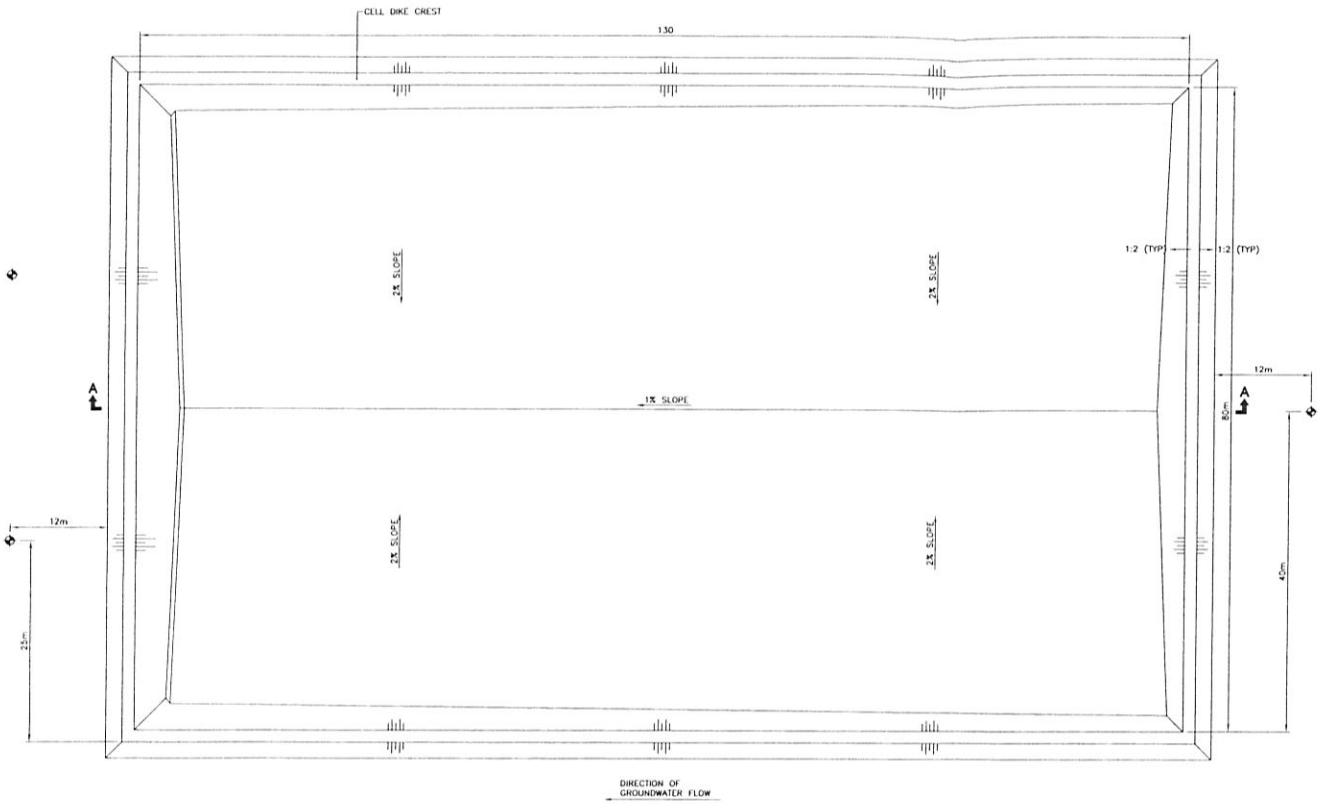
The decommissioning will be done by removing the treated soil from the liner and removing the liner from the LTU. Using a gas Photo Ionization Detector (PID) or similar equipment to monitor hydrocarbon vapours, random samples of the material below the liner will be tested to ascertain if any contamination leached beneath the liner. In addition to the portable hydrocarbon vapour testing, 10 soil samples will be taken from under the liner area and sent to a certified laboratory for analysis of the same parameters as listed earlier. The liner itself will be taken to an approved landfill site for proper disposal. If contaminated soil is found below the LTU, this material will be removed and placed in an adjacent LTU TC is operating on site (please see attached drawing).

The treated soil will be used to backfill the LTU excavation and compacting, if necessary, to match the surrounding soil conditions. All monitoring wells will remain in place for future sampling until it is determined no contamination exists (approximately one year). Once this is completed the monitoring wells will be removed and sealed with bentonite using accepted standards under the Environmental Protection Agency (EPA).

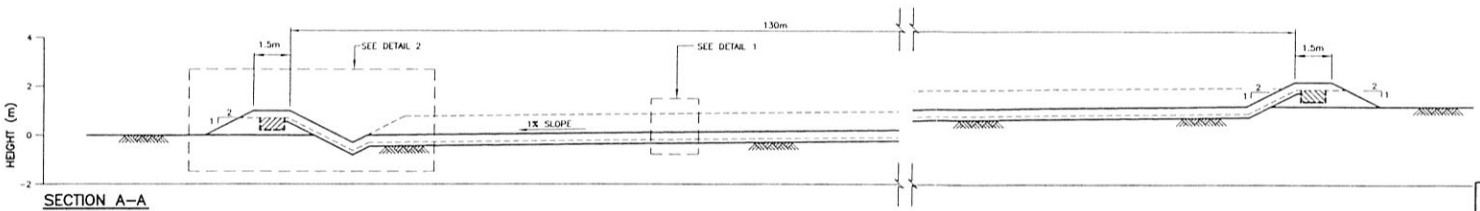
Finally, once the LTU area has been replaced with the treated soil, the soil and berms shall be leveled and compacted to match the surrounding conditions, unless the Airport Manager wishes for a different land use for the area. The former LTU area will be re-seeded with vegetation that is natural and noninvasive to the area.

## ATTACHMENTS:

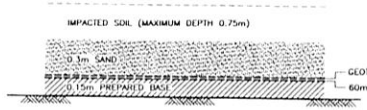
1 Engineered Drawing of LTU
2 Google Earth photo of Site
3 Site Photos
4 Water License No. 1BR-LTU0608



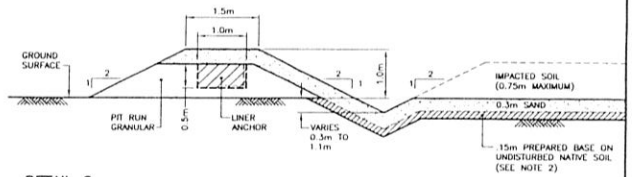

PLAN



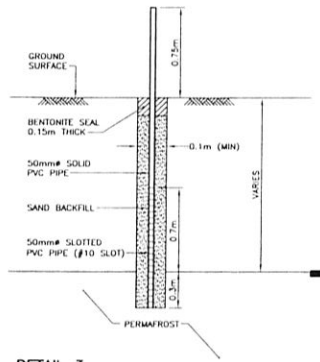

SECTION A–A
SCALE: 1:100 (24"x36")
1:200 (11"x17")




DETAIL 1 (FLOOR LINER)
SCALE: 1:20 (24"x36")
1:40 (11"x17")




DETAIL 2
SCALE: 1:50 (24"x36")
1:100 (11"x17")




DETAIL 3
SCALE: 1:20 (24"x36")
1:40 (11"x17")

LEGEND

MONITORING WELL (SEE DETAIL 3)

NOTES

1. EXACT LOCATION OF FACILITY TO BE DETERMINED ON SITE.
2. IF SUITABLE SOIL CONDITIONS EXIST, BASE TO BE PREPARED BY SCARIFYING EXISTING GROUND TO A MINIMUM DEPTH OF 0.15m, REMOVING STONES LARGER THAN 50mm AND COMPACTING TO 95% DENSITY. IF SOIL CONDITIONS ARE NOT SUITABLE, BASE TO BE PREPARED BY PLACING SAND TO A MINIMUM DEPTH OF 0.15m AND COMPACTING TO 95% DENSITY.

0 6 12 18 24 30m
SCALE: 1:300 METRIC 24"x36"
(PLAN) 1:600 METRIC 11"x17"

| NO | D / M / Y | DESCRIPTION | BY |
|---|---|---|---|
| A | 26/04/06 | PRELIMINARY DESIGN NOT FOR CONSTRUCTION | EC |

REVISIONS / ISSUE

A. SECTION LETTER OR DETAIL NUMBER
B. DRAWING WHERE SECTION OR DETAIL IS DRAWN
OR
DRAWING WHERE SECTION OR DETAIL WAS INDICATED
— SECTION OR DETAIL SHOWN ON SAME DRAWING

KGS GROUP
CONSULTING ENGINEERS & PROJECT MANAGERS
WINNIPEG (204) 896-1209
THUNDER BAY (807) 345-2233

CLIENT:
WINNIPEG ENVIRONMENTAL REMEDIATION INCORPORATED

PROJECT:
LAND TREATMENT UNIT
IQALUIT AIRPORT
NUNAVUT

DWG. DESCRIPTION:
SOIL TREATMENT CELL
PLAN, SECTIONS AND DETAILS

PERMIT TO PRACTICE
KGS GROUP
Signature
Date Apr 24/06
PERMIT NUMBER: P419
The Association of Professional Engineers, Geologists and Geophysicists of the NWT/NU

ENG. STAMP: PROFESSIONAL ENGINEER EDWARD J. COLLOM NWT

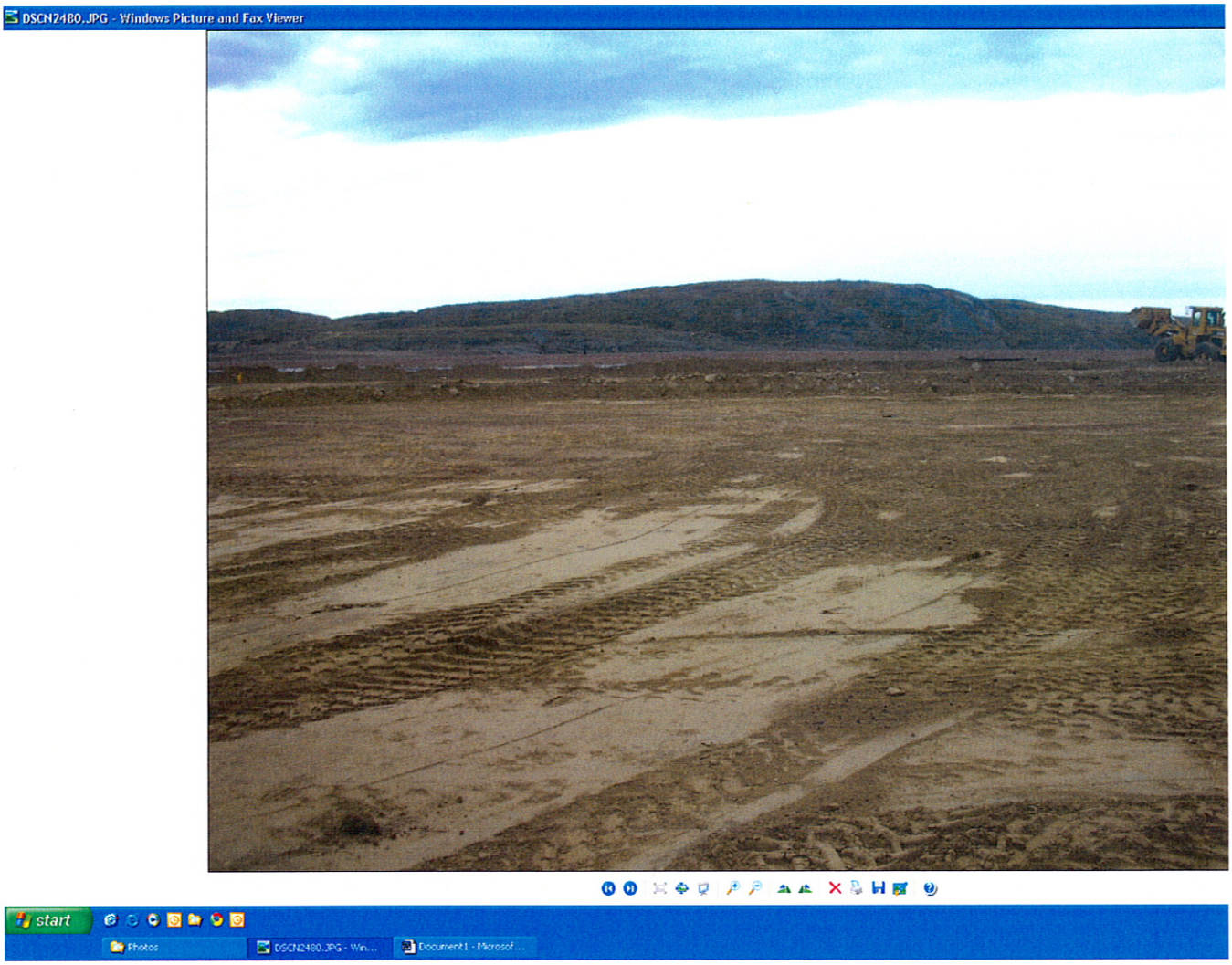
| DESIGNED BY | EC | DRAWN BY | EC |
|---|---|---|---|
| CHECKED | RS | CHECKED | |
| APPROVED | EC | | |
| SCALE | AS NOTED | DATE | APRIL 2006 |
| KGS DWG. NO. | 06-1344-01 | | 01 |
| CLIENT DWG. NO. | | REV. | A |

FIGURE 1

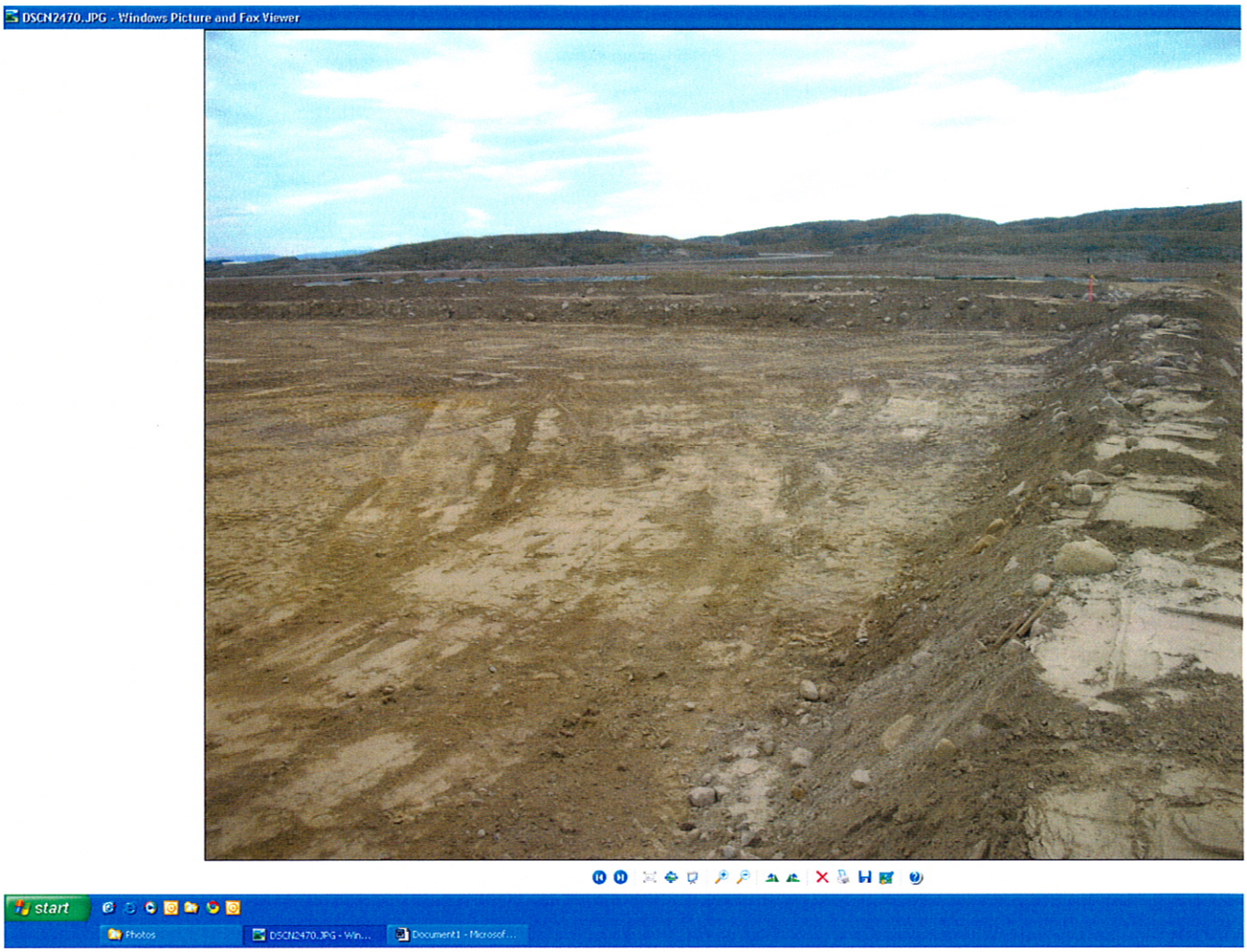
KGS FILE NO.: P:\Projects\2006\06-1344-01\Engr\Design A\06-1344-01-Drwg.dwg
24"x36"/PLOT SCALE: 1


TAXIWAY "C"
LTU
RUNWAY 16-34
APRON I
Google


TAXIWAY "C"
LTU
HISTORIC LTU
HISTORIC LTU
APRON I
Google


DSCN2480.JPG - Windows Picture and Fax Viewer
start
Photos
DSCN2480.JPG - Win...
Document1 - Microsof...


DSCN2404..JPG - Windows Picture and Fax Viewer
start
Photos
DSCN2404.JPG - Win...
Document1 - Microsof
9:00 AM
Wednesday
3/4/2009


DSCN2470.JPG - Windows Picture and Fax Viewer
start
Photos
DSCN2470.JPG - Win...
Document1 - Microsof...

P.O. Box 119
Gjoa Haven, NU X0B 1J0
Tel: (867) 360-6338
Fax: (867) 360-6369

NUNAVUT WATER BOARD
NUNAVUT IMALIRIYIN KATIMAYINGI
OFFICE DES EAUX DU NUNAVUT

File No.: **1BR-LTU0608**

August 21, 2006

Mike Molinski
Environmental Affairs
Transport Canada
3rd Floor- 344 Edmonton St.
Winnipeg, MB R3C 0P6

**RE: NWB Licence No. 1BR-LTU0608**

Dear Mr. Molinski:

Please find attached Licence No. **1BR-LTU0608** issued to Transport Canada by the Nunavut Water Board 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.* The terms and conditions of the attached Licence related to waste disposal are an integral part of this approval.

Sincerely,

***Original Signed By:***

Philippe di Pizzo
Chief Administrative Officer

PDP/sg/rqd

Enclosure: Licence No. **1BR-LTU0608**

cc:

| | |
|---|---|
| Carson Gillis | Nunavut Tungavik Incorporated |
| Colette Spagnuolo | Environment Canada |
| Doug Sitland | Government of Nunavut Community & Government Services |
| Earle Baddaloo | Government of Nunavut Department of Environment |
| Erin Calder | Nunavut Wildlife Management Board |
| Jim Rogers | Indian and Northern Affairs Canada |
| Peter Kusugak | Indian and Northern Affairs Canada |
| Salamonie Shoo | Qikiqtani Inuit Association |
| Tania Gordanier | Department of Fisheries & Oceans |

P.O. Box 119
Gjoa Haven, NU X0B 1J0
Tel: (867) 360-6338
Fax: (867) 360-6369

ᓄᓇᕗᑦ ᐃᒪᓕᕆᔨᒃᑯᑦ ᑲᑎᒪᔨᖏᑦ
NUNAVUT WATER BOARD
NUNAVUT IMALIRIYIN KATIMAYINGI
OFFICE DES EAUX DU NUNAVUT

# DECISION

## LICENCE NUMBER: 1BR-LTU0608

This is the decision of the Nunavut Water Board (NWB) with respect to an application for a new of a Water Licence dated May 4, 2006 made by:

**TRANSPORT CANADA – ENVIRONMENTAL AFFAIRS**

to allow for the disposal of waste during the construction and operation of a land treatment unit located within the Qikiqtani Region, Nunavut (contained within the geographical coordinates indicated in the application).

**DECISION**

After having been satisfied that the application was in conformity with the applicable Land Use Plan and exempt from the requirement for screening by the Nunavut Impact Review Board in accordance with Schedule 12.1, Paragraph 5 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 (NWNSRTA)* 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 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 *NLCA* and of the *NWNSRTA*, decided to waive the requirement to hold a public hearing and furthermore to delegate its authority to approve the application to the Chief Administrative Officer pursuant to S. 13.7.5 of the *NLCA* and S. 49(a) of the *NWNSRTA*, and determined that:

**Licence Number 1BR-LTU0608 be issued subject to the terms and conditions contained therein.**

SIGNED this 21st day of August 2006 at Gjoa Haven, NU.

*Original Signed By:*

Philippe di Pizzo
**CHIEF ADMINISTRATIVE OFFICER**

# LICENCE 1BR-LTU0608

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

**TRANSPORT CANADA – ENVIRONMENTAL AFFAIRES**
(Licensee)

of

**3rd Floor – 344 Edmonton Street, Winnipeg, MB R3C 0P6**
(Mailing Address)

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

Licence Number: **1BR-LTU0608**

Water Management Area: **NUNAVUT 05**

Location: **QIKIQTANI REGION, NUNAVUT**

Purpose: **WASTE DISPOSAL**

Classification of Undertaking: **INDUSTRIAL – TYPE "B"**

Quantity of Water Not to Exceed: **0 CUBIC METRES PER DAY**

Date of Licence: **AUGUST 21, 2006**

Expiry Date of Licence: **DECEMBER 31, 2008**

Dated this 21st day of August 2006 at Gjoa Haven, NU.

*Original Signed By:*

Philippe di Pizzo, Chief Administrative Officer

# PART A: SCOPE, DEFINITIONS AND ENFORCEMENT

## 1. Scope

This Licence allows for the use of water and the disposal of waste for an undertaking classified as Industrial as per the geographical coordinates indicated in the application.

i. 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;

ii. 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;*

**"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;*

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

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

**"Land Treatment Unit"** means the landfarm facility licensed to be constructed and operated under this Licence as described in the application;

**"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;

**"Project Drawing"** means the KGS Group drawing number 06-1344-01 stamped by a professional engineer that was submitted with the application;

**"Regulations"** means the *Northwest Territories Water Regulations sor/93-303 8th June, 1993*;

**"Spill Contingency Plan"** means a Plan developed to deal with unforeseen petroleum and chemical events that may occur during the operations conducted under the Licence;

**"Treatment Objective"** means the treatment objective for the Land Treatment Unit, which is the Canadian Council of Ministers of the Environment (CCME), 2001 *Canada – Wide Standard for Petroleum Hydrocarbon in Soil*, for Industrial land use; and

**"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.

## 3. Enforcement

i. 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*;

ii. All inspection and enforcement services regarding this Licence will be provided by Inspectors appointed under the *Act*; and

iii. 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. Water use fees are not required for this Licence as per S. 7 of the *Act.*

2. 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 which shall contain the following information:

   i. A summary report of waste disposal activities, including photographic records of the waste disposal facilities;

   ii. A list of unauthorized discharges and a summary of follow-up actions taken;

   iii. A up-to-date copy of the Spill Contingency Plan;

   iv. A description of all progressive and or final reclamation work undertaken, including photographic records of site conditions before, during and after completion of operations;

   v. Results of the Monitoring Program; and

   vi. 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. 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 will be in contravention of the Nunavut Land Claims Agreement. The NWB recommends that an application for the renewal of this Licence be filed at least three months before the Licence expiry date.

5. If this Licence requires an amendment, a public hearing may be required. 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 may vary depending on the scope of the amendment requested.

6. 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:

**(i) Manager of Licensing:**

Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU X0B 1J0
Telephone: (867) 360-6338
Fax: (867) 360-6369

**(ii) Inspector Contact:**

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

7. 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.

8. It is the responsibility of the Licensee to ensure that any documents or correspondence submitted by the Licensee to the Board have been acknowledged by the Manager of Licensing.

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

## PART C: CONDITIONS APPLYING TO THE PROTECTION OF WATER

1. The Licensee shall not remove any material from below the ordinary high water mark of any water body.

2. The Licensee shall not do anything that will cause erosion to the banks of any body of water and shall provide necessary controls to prevent such erosion.

3. Sediment and erosion control measures shall be implemented prior to and maintained during the operation 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 (30) 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 authorized by the Board.

2. The Licensee shall provide at least 15 days written notice to the Inspector prior to any planned discharges from the sump in the Land Treatment Unit. The notice shall include the volume proposed for discharge.

3. Any planned discharge from the sump in the Land Treatment Unit to the environment shall meet the following wastewater discharge criteria:

| **Parameter** | **Maximum Allowable Concentration (µg/l)** |
|---|---|
| Oil & Grease | 5000 |
| Lead | 1 |
| Benzyene | 370 |
| Toluene | 2 |
| Ethylbenzene | 90 |

4. The Licensee shall select a discharge location that is to the satisfaction of an Inspector for any discharge as described in Part D Items 2 and 3.

5. The Licensee shall maintain the Land Treatment Unit to the satisfaction of an Inspector.

## PART E: CONDITIONS FOR CONSTRUCTION AND OPERATION

1. All activities shall be conducted in such a way as to minimize impacts on surface drainage and the Licensee shall immediately undertake any corrective measures in the event of any impacts on surface drainage.

2. With respect to earthworks, the deposition of debris or sediment into any water body is prohibited. These materials shall be disposed at a distance of at least thirty (30) metres from the ordinary high water mark in such a fashion that they do not enter the water.

3. The Licensee shall construct the Land Treatment Unit as per the Project Drawing and as described in the project application.

4. The Licensee shall provide to the Board, within 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 treatment and disposal of hydrocarbon contaminated soil, all respective design drawings and construction reports, including all as-built drawings, documentation of field decisions that deviate from original plans and any data used to support these decisions.

5. The Licensee shall submit for Board approval, within 90 days of the issuance of the Licence, an operation and maintenance manual for the Land Treatment Unit.

6. If, by the expiry of this Licence, the soil within the land treatment facility does not meet the Treatment Objectives the Licensee shall submit a plan for Board approval.

## PART F: CONDITIONS APPLYING TO DRILLING OPERATIONS

1. The Licensee is authorized to drill and install the monitoring wells as shown in the Project Drawing.

## 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 License and the following requirements are met:

    i. the Licensee has notified the Board in writing of such proposed Modifications at least sixty (60) days prior to beginning the Modifications;

    ii. such Modifications do not place the Licensee in contravention of the License or the *Act*;

    iii. the Board has not, during the sixty (60) days following notification of the proposed Modifications, informed the Licensee that review of the proposal will require more than sixty (60) days; and

    iv. the Board has not rejected the proposed Modifications.

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 License 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. In accordance with section 6(2)(g)(i) and (ii) of the Regulations, the Licensee shall,

within thirty (30) days of issuance of this Licence, keep on the site of operations a Spill Contingency Plan that will describe how petroleum products and hazardous materials will be handled, stored and disposed of, as well as how they will be contained and cleaned-up in the event of a spill. This Plan shall include, but not be limited to, the following:

i. The name, address and contact number for the person in charge, management or control of the contaminant (in this case, fuel oil and any other chemicals associated with the program);
ii. The name and address and telephone number of the employer;
iii. The name, job title and 24 hour contact number for the person or persons responsible for activating the spill plan;
iv. A detailed description of the facility, including its geographic location – in UTM coordinates (map sheet number, Eastings and Northings) and geographic coordinates (Lat/Long) – size and storage capacity;
v. A description of the type and amount of contaminants stored on site;
vi. A description of the spill prevention measures to be undertaken in the handling, storage and disposal of petroleum products and hazardous materials;
vii. Steps taken to report, contain, clean up and dispose of a spill;
viii. A site map of sufficiently large scale to show the location of buildings, contaminants storage areas, sensitive areas such as water bodies, probable pathways of contaminant flow and general topography;
ix. A description of the spill response training provided to employees who will respond to a spill;
x. An inventory and location of the response and clean up equipment available to the spill clean up team;
xi. The means by which the spill plan is activated; and
xii. The date that the spill plan was prepared.

2. The Licensee shall annually review the Plan referred to in this Part and if needed, modify it to reflect changes in operation and/or technology. The Plan and any revisions shall be submitted with the Annual Report.

3. The Licensee shall ensure that any chemicals, petroleum products or wastes associated with the project do not enter water. All sumps and fuel caches shall be located at a distance of at least thirty (30) metres from the ordinary high water mark of any adjacent water body and inspected on a regular basis.

4. The Licensee shall ensure that any equipment maintenance and servicing be conducted only 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:

i. Employ the Spill Contingency Plan;

ii. Report the spill immediately to the 24-Hour Spill Line at (867) 920-8130 and to

the Inspector at (867) 975-4295; and

iii. 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

1. The Licensee shall submit for Board approval an abandonment and restoration plan for the Land Treatment Unit six months prior to the expiry of this Licence or six months prior to the planned abandonment and restoration of the site, which ever occurs first.

2. If the Plan referred to in Part I, Item 1 is not accepted, the Licensee shall make the necessary changes and resubmit the addendum within thirty (30) days following notification from the Board.

## PART J: CONDITIONS APPLYING TO THE MONITORING PROGRAM

1. The Licensee shall measure and record the volume of all soil from all locations entering the Land Treatment Unit.

2. The Licensee shall assess and record the concentration of petroleum hydrocarbon contaminated soil, according to the CCME *Canada-Wide Standard for Petroleum Hydrocarbons (PHC) in Soil* F1-F4 fractions, entering the Land Treatment Unit from all sources and excavations.

3. The Licensee shall maintain Monitoring Stations as shown in Table 1.

4. An Inspector may impose additional monitoring requirements.

5. 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.

6. All analyses shall be performed in a laboratory accredited according to ISO/IEC Standard 17025. The accreditation shall be current and in good standing.

7. The Licensee shall, within 90 days of issuance of this Licence submit to the Board for approval a Quality Assurance/Quality Control (QA/QC) Plan.

8. The Licensee shall, within 30 days following the month being reported, submit to the Board all data and information required by the "Monitoring Program" in Table 1, including the results of the approved QA/QC Plan.

9. The Licensee shall include in the Annual Report required under Part B, Item 2 all data and information required by this Part.

**Table 1 Monitoring Requirements for 1BR-LTU0608**

| Station | Location | Parameter[1] | Frequency |
|---|---|---|---|
| LTU-1 | Discharge from the sump | TPH<br>BTEX<br>HM<br>PAH | Representative sample prior to each discharge |
| LTU-MW1 | Monitoring well upgradient of the Land Treatment Unit | TPH<br>BTEX<br>HM<br>PAH | Twice per year (after freshet and at the end of the treatment season) |
| LTU-MW2 | Monitoring well downgradient of the Land Treatment Unit | TPH<br>BTEX<br>HM<br>PAH | Twice per year (after freshet and at the end of the treatment season) |
| LTU-MW3 | Monitoring well down gradient of the Land Treatment Unit | TPH<br>BTEX<br>HM<br>PAH | Twice per year (after freshet and at the end of the treatment season) |

[1] Parameters: TPH (Total Petroleum Hydrocarbons)
PAH (Polycyclic Aromatic Hydrocarbons)
BTEX (Benzene, Toluene, Ethylbenzene, Xylene)
HM (Heavy Metals, Al, As, Cd, Co, Cu, Fe, Pb, Mo, Ni, Se, Ag, Tl, Zn)