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NUNATTA ENVIRONMENTAL SERVICES INC.

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PROTECTING OUR ARCTIC ENVIRONMENT

## **Spill Contingency Plan**

**Hydrocarbon-Impacted Soil Landfarm Facility  
1575 Federal Road.  
City of Iqaluit, Nunavut**

**Water Licence Number - NWB4NUN0511-Type “B”**

Prepared for:

**Nunavut Water Board  
P.O. Box 119  
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Prepared by:

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**NUNATTA ENVIRONMENTAL SERVICES INC.**

Dated: October, 2011

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## **1.0 Landfarm Description**

Nunatta Environmental Services Inc. (Nunatta) owns and operates a Hydrocarbon-Impacted Soil Landfarm Facility within the City of Iqaluit, Nunavut. This treatment facility is commonly referred to as the 'landfarm'. Nunatta's operations consist of accepting soils impacted with petroleum products at various concentrations at the landfarm's geosynthetic lined platform (Cells) and with addition of fertilizers, aeration, and moisture control, allow indigenous soil microorganisms to degrade petroleum products to breaking them down into compounds such as water, carbon dioxide and hydrogen sulfide. Soils accepted at the landfarm are contaminated with diesel, gasoline and various automotive and construction/mining oils.

The site where the land farm is located is in the industrial part adjacent the old metal dump where all old equipment and cars and trucks were junked. Many rotting barrels of unknown products are still visible on adjacent properties around the landfarm and through out the dump site to the west of our fences. Pictures show the landfarm site was used as crushing grounds for any old waste barrels and storage of unclaimed or rejected materials.

This landfarm has 4 containment cells surrounded by a retention wall of 1 meter or more.

Containment area of all cells is in excess of 7500 square meters. Cell floors and inside walls are lined with an impermeable liner to protect the environment from the hydrocarbon contained within.

The soil is cleaned of stones and cobbles and treated with fertilizer and placed in windrows to allow micro organisms to break down the hydrocarbons into harmless components such as water, carbon dioxide and hydrogen sulfide. Aeration takes place as often as the weather allows usually 3-4 times a year. Soils are put through a rotary screening plant and restacked into long windrows for maximum exposure and to reduce thaw times.

Other activities include monitoring water levels and pumping when required. Wetting or soil during dry conditions.

Sampling of contained soil is done twice (2) times a year. Water samples are taken when volume of water is such samples can be taken. Due to large quantities needed for sampling we are unable to obtain enough water to fill sample jars or water present is frozen year round.

All equipment is owned and operated by Nunatta. All staff are trained on Nunatta equipment. Labour is hired from local employment.

All maintenance is done on site by Nunatta staff. Shop is located on site where maintenance is done during winter months. There is no drain in the shop floor, which keeps all contaminants from exiting the building.

Equipment diesel is stored in approved tanks on site with bollards to protect from impact, pumps are approved fuel pumps and fire extinguishers are in place at all times. Spill kits are not out in the elements but all necessary spill containment and absorption supplies are stored 30 meters from fuel storage tank. All necessary equipment is kept on site and should a spill occur it can be cleaned up quickly.

## **2.0 Landfarm Location**

Nunatta's Hydrocarbon-Impacted Soil Landfarm Facility located at 1575 Federal Road, Industrial Park, within the City of Iqaluit, Nunavut (City of Iqaluit Lot 1, Block 229)

**GPS coordinates      N 63-45-43.8**  
**W 068-32-49.7**

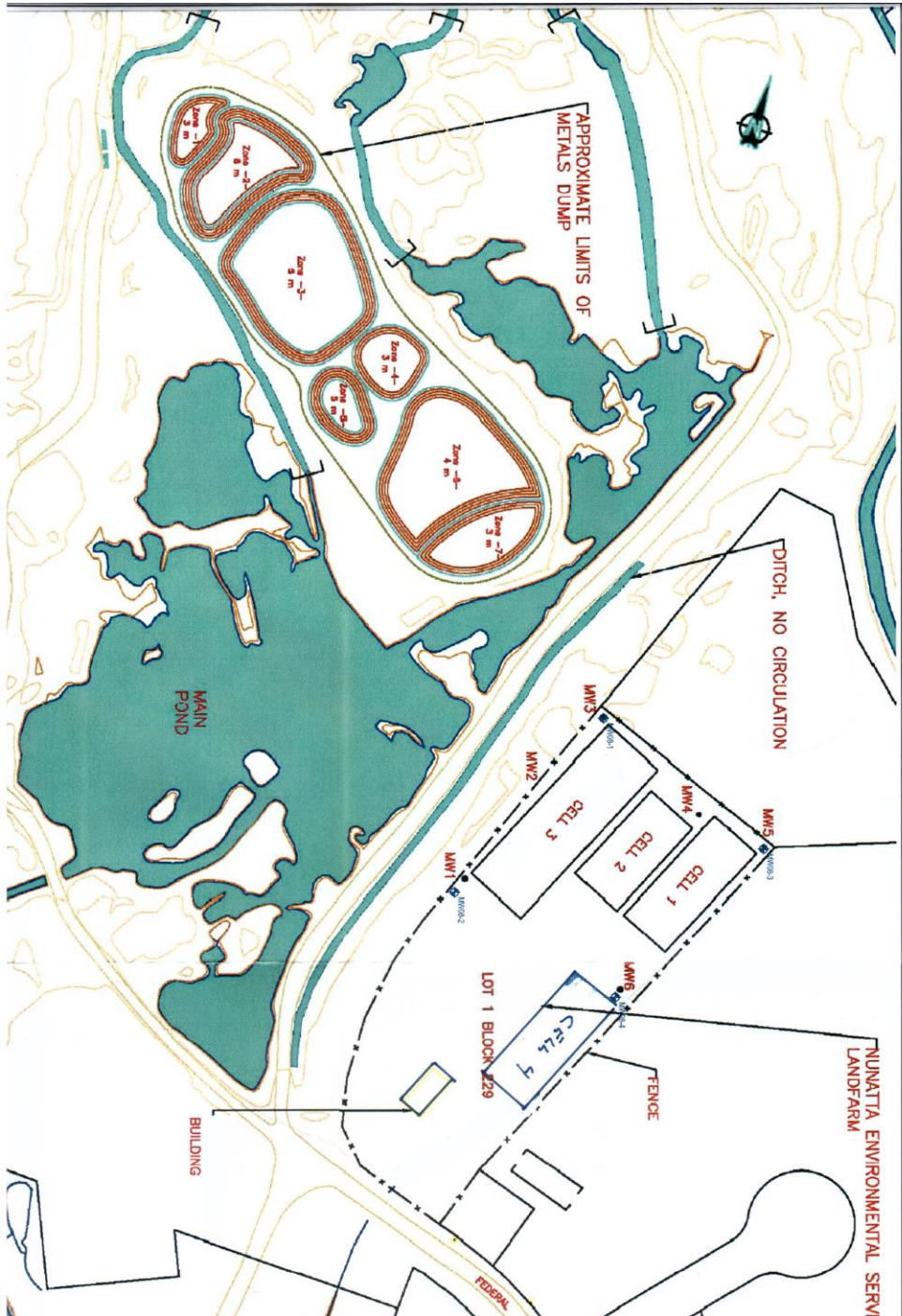
**Topographical map      # 025N15**

The NWB License number for the Hydrocarbon-Impacted Soil Landfarm Facility is

**NWB4NUN0511 "B"**

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**NUNATTA ENVIRONMENTAL SERVICES INC.**

**Landfarm Map**



### 3.0 Spill Contingency Plan Outline

In accordance with part H, item1 of Nunavut water board **licence NWB4NUN0511 “B”**

Hazards associated with storage and handling of pollution related products has been considered in the development of this plan.

Product	TDG class	Stored on site Approved containers	Machine capacity	Notes
Diesel fuel	3	2200L	100-300L	Loader or excavator
Gasoline	3	20L	10L	Pumps and generators
Hydraulic oil	3	200L	300L	Excavator or loader
Motor oil	3	500L	25L	Excavator or loader
Antifreeze	Nr	500 L	40L	Excavator or loader
Granular Fertilizer 19,19,19	Nr	120 X25Kg bags	expressed at total N, P, K	

## **4.0 Identified Hazards and Risk**

### **4.1 Diesel Fuel**

Diesel fuel is stored in approved 500 Gallon above ground storage tank. Tank is set on a cement pad and is protected by Cement Bollards. Fuel is pumped using an approved fuel delivery pump and electricity is cut when pumping is complete. 40 pound fire extinguisher is present at refuelling station at all times. No spill kit is located at the refuelling station but should a spill occur 30 meters away is the storage of all our spill containment and absorption supplies.

The equipment needed to excavate the job is always on site and clean up would be immediate reducing impact to environment. Future plan is to move fuel containment to inside of cell #3 where should a spill happen it will be contained.

Odds of Occurrence..... **MEDIUM**

Severity of consequence.....**LOW**

### **4.2 Gasoline**

Pumping of water requires use of a gas powered 2 inch water pump. This small motor uses very little fuel and fuel is bought only when needed and transported to site in 20 L containers.

Risk is over filling or tipping over of container especially during transport to work site.

The environmental impact from a spill like this would be localised.

Contamination of soil or ground water would be minimal.

Since a spill like this would only occur when staff s close at hand the spill, immediate can take place to recover and contain spilled product.

Odds of Occurrence .....**LOW**

Severity of consequence...**LOW**

### **4.3 Hydraulic Oil**

All the equipment used at the land farm uses hydraulic oil. The biggest users are the Excavator, the Loader and the Rotary screening plant.

The largest capacity is the excavator followed by the rotary screening plant. But since both of these pieces of equipment are used within the confines of the cells we will assume the loader as the highest risk piece of equipment.

The capacity on a Case 621-C loader is 153.5 L.

Since there would be an operator in the machine the whole time it is operational it is safe to assume not all the contents would be lost. And immediate action can be taken to recover and contain the spilled product.

Odds of Occurrence .....**MEDIUM**

Severity of consequence...**LOW**

#### **4.4 Motor Oil: New and Used**

**4.4a New motor oil:** is kept inside the buildings away from any chance of rupture and since there is no drain or holes in shop floor should a barrel leak the spill would be contained and clean up would be easy and immediate.

**4.4b Used motor oil:** is stored in approved petroleum containers outside. Each year oil is disposed of by letting sludge settle to bottom of barrel. Top oil is taken to local businesses that burn used oil for heat. Sludge and heavy oils are packaged and shipped out to be disposed of in a certified disposal facility.  
All barrels of dirty oil are labelled and banded onto skids and placed inside the cell walls to await shipping times.

Odds of Occurrence .....**MEDIUM**  
Severity of consequence...**LOW**

#### **4.5 Antifreeze**

Very little antifreeze is kept on site. Most antifreeze is purchased as required. Since equipment is kept in good working order only a couple gallons is purchased each year. Old or spend antifreeze is placed in approved plastic barrels labelled and banded onto skids and placed inside the berms walls until the ship returns the following summer. Since very little antifreeze is handled and staff is present when it is being handle so immediate action can be taken to recover and contain the spilled product.  
Since Antifreeze is a not listed as a Dangerous Goods the impact would not be severe.

Odds of Occurrence .....**MEDIUM**  
Severity of consequence...**LOW**

#### **4.6 Granular Fertilizer**

Fertilizer is kept on hand for treatment of the soil in the cells. It is a basic Nitrogen, Phosphorous, Potash blend with no additives except sand as a carrier agent. The fertilizer on hand is a 19, 19, 19 which is total percentage or each of the three listed ingredients above N, P, K. At present we have 1 crate with 2 skids of 40 bags and 1 skid with approx 40 bags on hand.  
With time fertilizer clumps and become hard reducing the likely hood of a spill. Also Nitrogen will wick off when exposed to sunlight and water reducing the risk of it running off in surface water. Phosphorous and potash will leach into the soil a lodge making recovery easy should it need to be recovered.

Odds of Occurrence .....**LOW**  
Severity of consequence...**LOW**



## **5.0 Risk Prevention**

- Fuels delivered by truck must have transport can held in an upright position with approved tops used to seal containers.
- Refuelling of pumps and generators is best if undertaken with in the cell walls.
- Loaders and excavators will be inspected Dailey to locate and identify leaks and these will be address before work will resume.
- 2 people will be present when refuelling equipment to ensure spills do not go un noticed.
- Fertilizers will only be opened when needed and no part bags will be returned to the storage site.

## **6.0 Response Procedure**

**In the event of a spill the following measures will ensure minimum impact**

### **6.1 Diesel Fuel**

In the event of a diesel spill, pooled or puddle material should be scooped up or the use of granular absorbents or absorbent pads will recover as much spilled product as possible. All pads and absorbent materials will be placed in barrels for proper disposal later.

All granular absorbent material shall be spread thin on top of soil with in the containment cell.

The stained area shall be excavated and removed material will be spread thin on top of the soils within the cells.

Samples will be taken to verify the clean up has been done to code.

### **6.2 Gasoline**

In the event of a gasoline spill

All spark or risk of ignition sources will be removed from area until deemed safe.

Use of granular absorbents or absorbent pads will recover as much spilled product as possible.

All pads will be placed in barrels for proper disposal.

All granular absorbent material shall be spread thin on top of soil with in the containment cell.

The stained area shall be excavated and soils spread thin on top of soils with in the cells.

## **6.3 Hydraulic Oil**

In the even to a Hydraulic oil spill the loose oil will be picked up with absorbent material. Contaminated soil will be spread out in a thin layer inside the cells.

Should it happen outside the cells the area will be excavated and all soils cleaned up by the excavation process will be put into cells and spread in a thin layer to maximise breakdown.

Soil Samples will be taken to verify clean up is complete.

## **6.4 Motor Oil (New and Used)**

### **6.4a New motor oil**

Should it happen to spill it will be inside the shop area and clean up will be using peat moss absorbent.

Peat absorbent will be used to soak up the spilled oil, then peat will be put into one of the cells in a thin layer.

### **6.4b Used motor oil**

Should a spill happen with used motor oil the loose product will be scooped up and then granular or peat absorbents will be applied to reduce travel into soil.

Excavation equipment will be used to remove the stained area and this soil will be placed inside the cell in a thin layer.

Testing will be done to ensure all contamination is recovered.

When confirmed clean soil will be used to fill the excavated area.

## **6.5 Antifreeze**

Antifreeze is purchased in 4 or 10 L jugs. Should a spill happen it will be absorbed with granular absorbent or rags and in most cases when staff is present. Cleaned up would be immediate. Stained ground will be excavated and placed along with granular absorbed in a thin layer with in the cell.

Should the spill happen while machine is in operation (ruptured hose) the operator will be present and not all coolant will be lost. Operator will shut down machine and proceed with containment and cleanup immediately.

## **6.6 Granular Fertilizer**

Should a fertilizer spill happen, the loose product will be shovelled into pails or bags and spread out on top of the soil in a cell. If staining is noted this should also be dug up and put into the cell. The nitrogen will evaporate off with presence of moisture and it will run off in water, Phosphorous and potash will leach into the soil and lodge so recovery is easy with excavation as they will not migrate deep into soil.

## 7.0 Reportable Incidents Levels

The following chart outlines product quantities, when theses values are exceeded spill will be reported to Nunavut Spill Line.

Product	Dangerous goods class	Reportable Quantity	Classification
Diesel	3	100L	Flammable
Gasoline	3	100L	Flammable
Hydraulic Oil	3	100L	Flammable
Motor oil	3	100L	Flammable
Antifreeze	NR	100L	contaminant
Granular Fertilizer	NR	100Kg	contaminant

## **8.0 Reporting of Spills**

**Staff is instructed to contact management immediately in the event of a spill followed by appropriate authorities. The following is a list of Contact information to be used in the event of a spill:**

**Jim Wilson - General Manager**  
**Nunatta Environmental Services Inc.**  
**P. O. Box 267**  
Iqaluit, Nunavut. X0A-0H0  
Phone 1-867-979-1488  
Fax 1-867-97-1478  
Cell 1-867-222-4111  
Email [Nunatta@northwestel.net](mailto:Nunatta@northwestel.net)

**Nunavut Spill Line reporting.....1-867-920-8130 (24 hours)**  
**INAC's Spill Inspector.....1-867-975-4289**  
**Ambulance.....1-867-979-4422**  
**Hospital.....1-867-975-8609**  
**Fire Department.....1-867-979-4422**  
**Police.....1-867-979-1111**