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NUNATTA ENVIRONMENTAL SERVICES INC.

Revised Spill Contingency Plan

Hydrocarbon-Impacted Soil Landfarm Facility
1575 Sivumugiaq St.
City of Iqaluit, Nunavut, X0A 3H0

Water Licence Number – 1BR-NUN1828

Prepared for:

**Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU
X0B 1J0**

Prepared by:

**Nunatta Environmental Services Inc.
1575 Sivumugiaq St.
Iqaluit, Nunavut. X0A-3H0
Phone 1-867-979-1488**

Email Nunatta@northwestel.net

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Table of Contents

1.0	Landfarm Description.....	2
2.0	Landfarm Location.....	3
3.0	Landfarm Map.....	3
	Appendix I. Elevation and drainage	
	Appendix II. Site Map	
4.0	Spill Contingency Plan Outline.....	4
5.0	Identified Hazards and Risk.....	5
5.1	Diesel	
	Fuel.....	5
5.2	Gasoline.....	5
	Hydraulic Oil.....	6
5.3	Motor Oil: New and Used.....	6
5.4	Antifreeze.....	6
5.5	Granular Fertilizer.....	7
6.0	Risk Prevention.....	7
7.0	Response Procedure.....	7
7.1	Diesel Fuel.....	7
7.2	Gasoline.....	8
	Hydraulic Oil.....	8
7.3	Motor Oil (New and Used).....	8,9
7.4	Antifreeze.....	9
7.5	Granular Fertilizer.....	9
8.0	Reportable Incident Levels.....	9
9.0	Spills Response Plan.....	10
10.0	Spill Response Training for Employees and Implementation.....	10-15

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 on the landfarm consist of; accepting soils impacted with petroleum products to the containment cells, fertilizers, aeration, and moisture control of this impacted soil, monitoring and pumping water when required. Soils accepted at the landfarm are contaminated with diesel, gasoline and various automotive and industrial oils.

The land farm is located in the industrial area of the city, adjacent to a legacy metal dump. Many rotting barrels of unknown products are still visible and found throughout the adjacent properties to the west of the landfarm's fences. Pictures taken by the original owner in 1998 show the landfarm site was used as a crushing ground for old waste barrels and storage of unclaimed or rejected materials.

The landfarm has four containment cells which are geosynthetic lined platforms surrounded by a retention wall of 1 meter or more. Cell floors and inside walls are lined with this geosynthetic impermeable liner that protects the surrounding environment. The cells have a combined containment area of in excess of 7500 square meters.

The soil is screened of debris, treated with fertilizer and placed in windrows. This allows for maximum aeration and reduces thaw times to let the micro organisms break down the hydrocarbons into less harmful components such as water, carbon dioxide and hydrogen sulfide. This process allows the contaminated soil to be remediated and restores it to a usable state.

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.

Monitoring programs like sampling of contaminated soil is done twice bi-annually. Water sampling from the monitoring wells can not be fulfilled due to the required volume of water. Low volumes are collected and are unacceptable to fulfill the requirements of the test.

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

Maintenance and equipment repairs are performed in the onsite shop by Nunatta staff. There is no drain in the shop floor, which keeps all contaminants from exiting the building.

Equipment diesel fuel is stored onsite in approved tanks, pumps are approved fuel pumps and fire extinguishers and spill kits are in place at all times. 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 is located at 1575 Sivumugiaq Street, Industrial Park, within the City of Iqaluit, Nunavut (City of Iqaluit Lot 1, Block 229)

GPS coordinates N 63°45'43.8"

W 68°32'49.7"

Topographical map # 025N15

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

1BR-NUN1828

3.0 Landfarm Maps

Appendix I

Elevations and
drainage.pdf

Appendix II

Site map.pdf

4.0 Spill Contingency Plan Outline

In accordance with part H, item 1 of Nunavut Water Board licence **1BR-NUN1828**

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	2000L	100-300L	Loader or excavator
Gasoline	3	20L	10L	Pumps and generators
Hydraulic oil	3	400L	300L	Excavator or loader
Motor oil	3	1000L	25L	Excavator or loader
Antifreeze	Nr	200 L	20L	Excavator or loader
Granular Fertilizer	Nr	80 X25Kg	N/A	N/A

5.0 Identified Hazards and Risk

Hazards index

<p>Low</p> <p>Minimal impact and very little chance of occurrence.</p>
<p>Medium</p> <p>Greater impact and chance of occurrence.</p>
<p>High</p> <p>Major impact and highly likely chance of occurrence.</p>

5.1 Diesel Fuel

Diesel fuel is stored in an approved 500 gallon above ground storage tank that is set on a cement pad protected from impacted by bollards. Fuel is pumped using an approved fuel delivery pump and electricity is cut when pumping is complete. A 40 pound fire extinguisher and spill kit is present at the refuelling station at all times.

The equipment needed to excavate the occurrence is always on site and clean up would be immediately reducing impact to the environment.

Odds of Occurrence: Medium

Severity of consequence: Low

5.2 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 containers especially during transport to work sites. The environmental impact from a spill like this would be localised and contamination of soil or ground water would be minimal.

Since a spill like this would only occur with staff present, immediate action can take place to recover and contain the spilled product.

Odds of Occurrence: Low

Severity of consequence: Low

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

Odds of Occurrence: Medium

Odds of Occurrence: Low

Very little antifreeze is kept on site and is purchased as required. Even with general maintenance only a couple gallons is purchased each year.

Odds of Occurrence: Low

Pg 6

Fertilizer is kept on hand for treatment of the impacted 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 the total percentage of each of the three listed ingredients above N, P, K. At present we have 3 skids with approx 40 bags on hand.

Odds of Occurrence: Low
Severity of consequence: Low

- Fuels transported to landfarm by vehicles will be transported in approved container with a secured lid and in an upright position
- Loaders and excavators are inspected daily to locate and identify leaks and these are addressed before work begins.
- Close observation when refuelling equipment to ensure spills do not go unnoticed.
- Fertilizers will only be opened when needed.

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

In the event of a diesel spill;

- Pg 7

In the event of a gasoline spill;

- ### 7.3 Hydraulic Oil

In the event of a hydraulic oil spill;

- ## 7.4 Motor Oil (New and Used)

7.4 i) New motor oil

In the event of an oil spill;

- Pg 8

7.4 ii) 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 blended in with existing soil in Cell #1

Testing will be done to ensure all contamination is recovered.

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

7.5 Antifreeze

Antifreeze is purchased in 4 jugs. Should a spill happen it will be absorbed with granular absorbent or rags. Cleaned up would be immediate. Stained ground will be excavated and placed in cell #1 with other soils for remediation.

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

7.6 Granular Fertilizer

Should a fertilizer spill happen, the loose product will be shovelled up and used in soil treatment. 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, Phosphorus and potash will leach into the soil and lodge so recovery is easy with excavation as they will not migrate deep into soil.

8.0 Reportable Incidents Levels

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

Product	Dangerous goods class	Reportable Quantity	Classification
Diesel	3	50L	Flammable
Gasoline	3	50L	Flammable
Hydraulic Oil	3	40L	Flammable
Motor oil	3	60L	Flammable
Antifreeze	NR	60L	contaminant
Granular Fertilizer	NR	250Kg	contaminant

9.0 Spill Response Plan for Land, Water, Snow or Ice

Spills on Land:

- Locate and terminate the source of the spilled product.
- Identify the product spilled
- Contact Ministry of Environment as soon as possible
- Determine direction of flow of spilled product.
- Determine if it will enter a water course and where to locate a berm (dam) to stop advance of product
- Use absorbent materials to collect loose products.
- Remove all contaminated soil and place in appropriate container (landfarm contaminant cell one or barrels)
- Place contaminated pads and absorbent material in appropriate containers for proper disposal.

Spills on Water:

- Locate and terminate the source
- Identify the product spilled
- Contact Ministry of Fisheries and Oceans and Ministry of Environment as soon as possible
- Use booms and absorbent pads to collect as much product as possible before it enters the water course.
- Install booms across the water body to collect surface agents and contain the spill.
- Continue to absorb any collected or pooled product with pads or booms.

Spills on Snow or Ice:

- Locate and terminate the source
- Identify the product spilled
- Contact the ministry of Environment as soon as possible

Snow:

- dig through the layer of snow to determine the size of the contaminated area and distance flow has travelled.
- Collect loose product if any with absorbent material
- Scrape up contaminated snow and put in appropriate containers (landfarm contaminant cell one or barrels) for proper disposal.
- Access ground under snow to determine what next steps will be. Follow spill on land procedure.

Ice:

- Locate the leading edge of the spilled product. Place absorbent pads or boom along edge to restrict spill advancing. Might require building of a berm.
- Scoop up or scrap up spill products and place them in appropriate containers for proper disposal.
- Remove contaminated booms and pads and place in appropriate containers for proper disposal.

10.0 Spill Response Training for employees And implementation

In an attempt to better inform our employees the training for the Spill Response will be at actual spills. Our plan is to promote worker safety through education and by doing so employees will be better informed enabling them to feel confident in handling contaminants safely. Spill response training happens many times a year and employees will get first hand training.

Training will be hands-on. There will be a hand book placed in the employee area which is clearly marked "Spill Response Manual" employees can view at their convenience. Training will include (but not limited to the following)

- Spill Response phone numbers
- Safety measures
- MSDS sheets
- How to identify product spilled
- Where clean up products are located (should more than spill kit be required)
- What is the correct clean up product to use
- How to use the clean up product
- How to dispose of the clean up products
- What and where to dispose of the spilled product.
- Location of spill kits and contents of kits
- Sign off sheet for spill kits.
- Spill kits location, contents in spill kit and how they are to be used, and who to contact should a spill happen.

Supervisors and Management will be responsible to check contents of spill kits and to verify the contents are in usable condition e.g.: contents have not frozen or absorbents gone hard with moisture uptake or contents missing.

11.0 Employee Spill Response Handbook

In the event there is a spill at the landfarm the following steps shall be taken;

1. Identify source and contaminated area

A spill is discovered, the affected area is designated and to minimize further contamination remaining product is contained.

Examples: A container is punctured, the contents have leaked onto a surface and spread to a 1m x 1m area. The first step is to contain the source by plugging the puncture, catching contents or inverting the container.

2. *Identify contaminate*

Products onsite are identified with all employees, only three types of contaminants will be present: fuel, oils or glycol. Spill kits will contain products to clean up petroleum products.

Example: A drum tipped over during transport to storage cells at the land farm. The first step is to contain remaining contents of the drum and quarantine the contaminated area. Second step, identify the contents of the drum, by reading on the drum or use olfactory senses (colour, smell).

*****If you have concerns consult MSDS sheets at back of this manual*****

Contact Management

1st Response contact:	Jim Wilson867-222-4111
2nd Response contact:	Jennifer Denis.....289-251-0971
If spill is large or off site Contact Ministry of Environment.....867-975-7909	
If spill has chance of reaching water Contact Ministry of Fisheries and Oceans.....867-979-8021	

4. Safety

Handling of all products safely is important. Be aware of hazards if you do not know what to do to refer to the safety Data sheet (MSDS) found at the end of this manual. Or in the employee room in the binder labeled MSDS sheets

5. Correct spill clean up material

As a part of training the variation in absorbent material and effectiveness is explained.

6. Fill out spill report (found on next page)

<u>Phone or Fax information to Spill Report Line.</u> Phone.....867-920-8130 Fax867-873-6924 Email Spills@gov.nt.ca

7. Final

- When a spill has been contained, remove all pads, booms, and absorbent material from site using approved containers.
- Contaminated snow and soil shall be removed and deposited into appropriate cells.
- Replace missing components used from Spill kits and sign sheet verifying incident and product used.
- Contact spill line to inform them of progress or completion of clean up.

Spill Kit Locations and Contents

Spill Kit Locations and Contents

At the Landfarm there are 2 large spill kits located around the property. Locations are as follows.

1. Near the refueling station.
2. One kit is mobile and location will change as equipment is moved about landfarm.

Spill Kit Contents

- 2 bags of Clay absorbent
- 2 bags of Olkasorb (Cellulose)
- 2 bags of Cansorb (peat moss)
- 2 3 foot X2 inch boom
- 2 10 foot X 5 inch boom
- 100 15x19 inch pads
- 1 shovel
- 1 safety glasses
- 2 Tyvek suits
- 2 rubber gloves Heavy
- 2 nitrile gloves Light

List of contents and instructions
Garbage bags

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NUNATTA ENVIRONMENTAL SERVICES INC.

Pg 14

Spill Report Form

		NT-NU SPILL REPORT <small>OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS</small>		NT-NU 24-HOUR SPILL REPORT LINE <small>TEL: (867) 920-8130 FAX: (867) 873-8824 EMAIL: spills@gov.nt.ca</small>	
REPORT LINE USE ONLY					
A	REPORT DATE: MONTH – DAY – YEAR		REPORT TIME		REPORT NUMBER _____
B	OCCURRENCE DATE: MONTH – DAY – YEAR		OCCURRENCE TIME		
			<input type="checkbox"/> ORIGINAL SPILL REPORT, OR <input type="checkbox"/> UPDATE # _____ TO THE ORIGINAL SPILL REPORT		
C	LAND USE PERMIT NUMBER (IF APPLICABLE)		WATER LICENCE NUMBER (IF APPLICABLE)		
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION			REGION	
			<input type="checkbox"/> NWT <input type="checkbox"/> NUNAVUT <input type="checkbox"/> ADJACENT JURISDICTION OR OCEAN		
E	LATITUDE		LONGITUDE		
DEGREES		MINUTES	SECONDS	DEGREES MINUTES SECONDS	
F	RESPONSIBLE PARTY OR VESSEL NAME		RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION		
G	ANY CONTRACTOR INVOLVED		CONTRACTOR ADDRESS OR OFFICE LOCATION		
H	PRODUCT SPILLED		QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER	
I	SECOND PRODUCT SPILLED (IF APPLICABLE)		QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER	
J	SPILL SOURCE		SPILL CAUSE		AREA OF CONTAMINATION IN SQUARE METRES
K	FACTORS AFFECTING SPILL OR RECOVERY		DESCRIBE ANY ASSISTANCE REQUIRED		HAZARDS TO PERSONS, PROPERTY OR ENVIRONMENT
ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS					
L	REPORTED TO SPILL LINE BY	POSITION	EMPLOYER	LOCATION CALLING FROM	TELEPHONE
M	ANY ALTERNATE CONTACT	POSITION	EMPLOYER	ALTERNATE CONTACT LOCATION	ALTERNATE TELEPHONE
REPORT LINE USE ONLY					
N	RECEIVED AT SPILL LINE BY	POSITION STATION OPERATOR	EMPLOYER	LOCATION CALLED YELLOWKNIFE, NT	REPORT LINE NUMBER (867) 920-8130
LEAD AGENCY <input type="checkbox"/> EC <input type="checkbox"/> OGG <input type="checkbox"/> GNWT <input type="checkbox"/> GN <input type="checkbox"/> ILA <input type="checkbox"/> INAC <input type="checkbox"/> NEB <input type="checkbox"/> TC			SIGNIFICANCE <input type="checkbox"/> MINOR <input type="checkbox"/> MAJOR <input type="checkbox"/> UNKNOWN		FILE STATUS <input type="checkbox"/> OPEN <input type="checkbox"/> CLOSED
AGENCY		CONTACT NAME	CONTACT TIME	REMARKS	
LEAD AGENCY					
FIRST SUPPORT AGENCY					
SECOND SUPPORT AGENCY					
THIRD SUPPORT AGENCY					

MSDS SHEETS

Battery Acid.pdf	5w-30 gas motor oil.pdf	Diesel Fuel P50.pdf	Dowfrost HD (glycol).pdf	gasoline.pdf
engine antifreeze.pdf	hydraulic oil.pdf	transmission fluid.pdf	15w-40 Diesel motor oil.pdf	