Report to:

DEPARTMENT OF COMMUNITY & GOVERNMENT SERVICES
GOVERNMENT OF NUNAVUT

Kugaaruk Landfarm Spill Contingency Plan

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WARDROP

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DEPARTMENT OF COMMUNITY & GOVERNMENT
SERVICES GOVERNMENT OF NUNAVUT

KUGAARUK LANDFARM SPILL CONTINGENCY PLAN

FEBRUARY 2010

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1.0 FACILITY DESCRIPTION

The Kugaaruk Landfarm is located approximately 2 km south-east of the Hamlet of Kugaaruk. The facility is accessed by a gravel road from the Hamlet. The closest surface water body is St. Peters Bay, 1.5 km to the west.

The landfarm is used for treatment of petroleum impacted soil and consists of a 3500-m^2 soil treatment cell and a 1500-m^2 water retention cell. Both cells are surrounded by berms with heights of one metre or more. The cell base and interior sides of the berms are equipped with an impermeable liner system. There are no buildings or ancillary equipment at the landfarm. No materials are stored at the facility.

The soil in the treatment cell is turned twice a year by a contractor using an excavator, which is brought to the site for this purpose. The contractor also pumps water from the retention cell on an annual basis using a gasoline driven pump. Other activities at the facility involve monitoring and sampling of water and soil quality.

Turning of the soil layer is the only activity undertaken regularly to promote natural biodegradation of the petroleum contaminants in the soil. If deemed necessary, a commercially available granular fertilizer may be added to the soil to optimize nutrient ratios and microbial activity.

Landfarm Coordinates

Latitude/Longitude:	
Degrees, Minutes, Seconds:	68° 31' 10" N /89° 48' 28" W
Decimal Degrees:	68.52° N /89.808° W
UTM Coordinates:	16W 385281 7603422
Topographic Map Sheet Number:	057A10

2.0 HAZARD IDENTIFICATION AND RISK ASSESSMENT

In accordance with Part G of Nunavut Water Board Licence 8BR-KRK0609, hazards associated with the storage and handling of petroleum products and other hazardous materials have been considered in the development of this Spill Contingency Plan.

Table 2.1 describes the materials that have been considered as potential spill sources.

TABLE 2.1
SUMMARY OF PRODUCTS AND HAZARDS

Product	TDG Class	Stored On-Site	Handled On-Site	Comments
Gasoline	3	Nil	20 L	Container to refuel water discharge pump or generator
Hydraulic Fluid	NR	Nil	375 L	Overall capacity of Hitachi 400 excavator hydraulic system
Granular Fertilizer	NR	Nil	Unknown number of 25 kg bags	Type and quantity of fertilizer to be determined after analysis of soil nutrient levels.

Note: NR = Not Regulated

2.1 IDENTIFIED HAZARDS AND RISK DETERMINATION

2.1.1 GASOLINE

Water discharge from the retention cell is carried out using a 2-inch gasoline powered pump. For water circulation to the carbon treatment system, a smaller gasoline driven pump is used or an electric pump is connected to a gasoline powered generator. In all of these cases, the contractor carries a 20-L gasoline container to refuel the equipment while on site at the landfarm. Refueling would occur outside of the bermed area. The primary hazards would be either a product spill while gasoline is being transferred to the on-site equipment or an overturned container on the ground or in the contractor's vehicle. The environmental impact of a spill under these circumstances would include localized contamination of soil and/or groundwater.

The maximum release would be limited to the 20-L container volume. Since this type of spill could only occur while staff are in close proximity, immediate action can be taken to contain and recover the spilled product.

Risk determination is as follows:

- Likelihood of Occurrence: Medium
- Severity of Consequence: Low

2.1.2 HYDRAULIC OIL

The excavator used to turn the soil contains approximately 375 L of hydraulic oil in total to operate all systems on the machine. In the event of a hydraulic cylinder leak or ruptured hydraulic hose, a portion of this total volume could be released. The likelihood of such a release is realistically only present while the unit is in operation using the boom and bucket. Since the excavator only operates within the soil treatment cell, any release of hydraulic oil would be contained within the lined cell, thereby eliminating a threat to the surrounding environment. As a result of the relatively low toxicity and flammability of hydraulic oil, the release within the treatment cell would not be expected to have an adverse impact on the on-going biodegradation process

Risk Determination

- Likelihood of Occurrence: Medium
- Severity of Consequence: Low

2.1.3 GRANULAR FERTILIZER

As of the end of the 2009 operating season, no fertilizer had been used at the Kugaaruk landfarm. In the event that an amendment is considered to be required to improve the rate of biodegradation within the soil cell, a calculation will be made of the type and quantity of fertilizer required to achieve an optimum carbon-nitrogen-phosphorus ratio. A commercial granular fertilizer would then be acquired. Granular fertilizer would be shipped in 25 kg bags. The required number of bags would be shipped to the landfarm site and would be placed directly within the treatment cell. The bags would be opened and the fertilizer would be mixed with water from the retention cell and applied over the soil pile. A product release could occur as a result of breakage of one or more fertilizer bags during handling at the site. Since most of the handling will occur within the treatment cell where the material is to be applied, the probability of an uncontrolled release into the environment is very low. Granular fertilizer is classified as an oxidizer which would result in increased hazards if the material is involved in a fire. Considering the nature of landfarm operation, the risk of a fire that may involve the granular fertilizer is essentially non-existent.

Risk Determination

- Likelihood of Occurrence: Low
- Severity of Consequence: Low

3.0 RISK PREVENTION AND MITIGATION

A number of measures are in place to prevent or mitigate the risk factors identified in Section 2.

- Vehicles used by the contractor at the landfarm are equipped with spill kits consisting of granular absorbent, absorbent pads, pails, shovels and drip trays. A larger spill kit consisting of a recovery drum, additional absorbent pads and booms is also brought to the work site.
- Procedures for refueling of pumps and/generators require that a drip tray be placed below the fuelling point and that absorbent material be readily available to recover any small spills.
- Earth moving equipment is checked for any fluid leaks before entering the treatment cell to turn or excavate soil. Any identified leaks must be repaired before proceeding.
- Fertilizer bags are only delivered to the facility when they will be used immediately. Where possible the vehicle delivering the bags will pull directly onto the access ramp into the treatment cell so that any bag breakage occurring during unloading will be contained within the bermed area.

4.0 RESPONSE PROCEDURES

The following procedures have been developed in the event of a release of one of the products indentified in Table 2.1.

4.1 GASOLINE RELEASE

In the event of a spill of gasoline during refueling or from an overturned or damaged container:

- Use granular absorbent or pads to recover as much spilled product as possible
- Place pads in a drum for transport off-site for disposal
- Place saturated granular absorbent on the soil pile in the treatment cell
- Excavate any stained soil form the spill area and place on the soil pile in the treatment cell

4.2 HYDRAULIC OIL

- If hydraulic oil release occurs within the treatment cell, spread the stained soil in a thin layer over the soil pile
- If hydraulic oil release occurs outside the bermed area, excavate any visibly stained soil and spread it in a thin layer over the soil pile in the treatment cell

4.3 GRANULAR FERTILIZER

- Salvage spilled material and re-use as normal as an amendment in the soil pile

5.0 REPORTING

The following contact information is based on the requirements of part G of Nunavut Water Board Licence No. 8BR-KRK0609.

Party having charge and management of the contaminants listed in Section 2 of this Plan:

Kudlik Construction Ltd.
Attention: Dominique Marceau
1519 Federal Road
IQALUIT, Nunavut X0A 0H0
Phone 1- 866–781-0704

*(**Note:** It is anticipated that Kudlik will continue as the contractor on the Kugaaruk landfarm project, subject to confirmation by the Nunavut Department of Community & Government Services. Local contact information is not available as of February 2010)*

Party responsible for activating the Spill Plan:

Kudlik Construction – as above

Reportable Incidents

The following categories of incidents will be reported to the Nunavut Spill Line by the party having charge and management of the contaminant at the time of the release:

Product	Category	Reportable Quantity
Gasoline	Flammable Liquid	100 L
Hydraulic Oil	Contaminant	100 L
Granular Fertilizer	Contaminant	100 kg

NUNAVUT SPILL LINE
(867) 920-8130 (24 hours)