Environmental Emergency Contingency Plan

Hamlet of Rankin Inlet, Nunavut

Water Licence No. 3BM-RAN1214

Updated by:

Government of Nunavut
Community and Government Services
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Document Management

	Description	Prepared by	Date
1	*Updated* Environmental Emergency Contingency Plan	GN-CGS	August 2015
2	Environmental Emergency Contingency Plan	Nuna Burnside	December 2008
3			
4			
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Executive Summary

Operation and maintenance of the Solid Waste Facilities in Rankin Inlet have the potential to cause environmental damage that violates the terms of the Nunavut Water Board (NWB) Licence No. 3BM-RAN1214. This document fulfills the conditions outlined in Part F, Item 3 of Water Licence No. 3BM-RAN1214 and provides detailed procedures to ensure that the least environmental harm is caused in case of adverse disposal of waste.

The current Licence has validity from May 20, 2012 to May 31, 2014. Following the procedures detailed in the Licence to the satisfaction of the NWB will allow for future Licence renewals. By adhering to the procedures set forth in this Environmental Emergency Contingency Plan, which were originally presented by Nuna Burnside in 2008, any mishandling of solid waste can be reduced and handled effectively.

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1. Introduction

1.1 Purpose of Plan

The impacts of spills can be catastrophic and may threaten or damage the environment, especially water supplies. As such, the Government of Nunavut (GN) requires contingency plans be written and fully implemented. The purpose of this plan is to provide a plan of action for all spills (sewage, solid waste, and petroleum products) that may occur as a result of sewage collection and treatment, and solid waste collection and disposal operations undertaken within the Hamlet of Rankin Inlet, Nunavut. Additionally, the plan focuses on the health and safety of both workers and the general public. It is for this reason that this Environmental Monitoring Contingency Plan outlines procedures and responsibilities of key personnel in case of sewage, solid waste, or hydrocarbon spills, and why the content in this Plan must be followed if and when a spill is discovered.

1.2 Objective

By diligently following the Environmental Monitoring Contingency Plan, the Hamlet of Rankin Inlet will:

- Comply with the Water Licence;
- Effectively treat and manage sewage and solid wastes; and
- Implement an appropriate emergency response in case of contaminant spills.

2. Background

The Hamlet of Rankin Inlet is located within the Kivalliq Region of Nunavut, at general latitude 62°49'N and general longitude 92°05'W. The Hamlet is on the west coast of Hudson Bay, 96 km southwest of Chesterfield Inlet and 1088 km east of Yellowknife (Appendix A – Figure 1). The community has a population of approximately 2904 residents in 2015.

Rankin Inlet is affected by arctic air masses, and experiences a maritime Arctic climate characterized by short cool summers, and long cold winters. The Rankin Inlet area receives an average of 18.1 cm of rainfall and 107 cm of snowfall per annum. Mean annual precipitation totals 29.7 cm per annum. July mean high and low temperatures are 14.9°C and 5.9°C, respectively. January mean high and low temperatures are -28.3°C and -35.5°C, respectively. Winds are generally northwest, and average 23 km/h.

The Hamlet of Rankin Inlet operates the Solid Waste Site authorized under Water Licence No. 3BM-RAN1214. The Solid Waste Site is located approximately 0.5 km south of the community and approximately 0.5 km from the Hudson Bay to the east, south and west.

The Government of Nunavut, Community and Government Services (GN-CGS) provides water supply and sewage disposal services for Rankin Inlet and is authorized under a separate Water Licence. Refer to Water Licence No. 3AM-GRA1015, held by GN-CGS, for more information.

The locations of these activities are shown in Appendix A – Figure 2.

3. Site Description

The Hamlet of Rankin Inlet provides regular solid waste pickup for the Community's residents, businesses, and institutions. Solid waste is collected by garbage truck once per week . Prior to pickup, waste is placed in 205-L drums in front of each building.

The 55,000m^2 solid waste site, located 0.5 km south of the town, consists of the following subdivisions as per Figure 3:

- Municipal Solid Waste Disposal Area;
- Hazardous Waste Storage Area; and
- Bulky Metals Disposal Area.

The Solid Waste Site consists of a gravel lay-down area and dump and cover waste disposal area. The site is designed as a natural attenuation landfill. It does not have a liner, so small amounts of contaminants are able to leach from the waste and enter the natural environment. The design also relies on permafrost gradually migrating into the waste at depth as it is covered over.

In order to protect the environment, the facility is designed to divert as much waste as possible from landfilling. This is especially important for hazardous wastes such as batteries, waste oil, waste antifreeze, and other materials that could harm the environment if landfilled.

4. Spill Contingency Plan

4.1 Potential Contaminants

At the date of this Spill Contingency Plan, the Hamlet of Coral Harbour had not completed a waste inventory and exact types and quantities of contaminants are unknown. However, the following contaminants are anticipated to be used at the facilities, and may be involved in a spill:

- Gasoline
- Diesel
- Hydraulic oil
- Motor oil
- Other lubricating oil
- Antifreeze and other coolants
- Sewage
- Chlorine powder

At the water, sewage and MSW facilities, spills may results from any of the following occurrences:

- Leaks or ruptures of fuel storage tanks;
- Valve or line failure in systems, vehicles or heavy equipment;
- Heat expansion due to overfilling or improper storage;
- Improper storage of contaminants;
- Vehicular accidents;
- Spill during transfer of contaminant;
- Vandalism; and
- Accidental release of sewage during collection, transport or offload to the detention cell.

4.2 Spill Report Procedure

Every time a spill is identified, the Hamlet Maintainer and/or Hamlet Foreman should be contacted as soon as possible (refer to Table 1 below for contact information). **All spills of oil, fuel, or other**

deleterious materials, regardless of size, are to be reported to the NWT-NU 24hr Spill Line. Environment Canada recommends that the proponent include a provision that drip pans be used when refueling equipment on site in order to help prevent spills from occurring.

24-HOUR EMERGENCY SPILL REPORT LINE: (867) 920 – 8130

Any person reporting a spill is required to give as much information as possible; however, reporting of a spill should not be delayed if all of the necessary information is not known. Additional information can be provided later. From the *Consolidation of Spill Contingency Planning and Reporting Regulations* (1998), as much of the following information should be reported during the initial spill report:

- Date and time of spill;
- Location of spill;
- Direction spill is moving;
- Name and phone number of a contact person close to the location of the spill;
- Type of contaminant spilled and quantity;
- Cause of spill;
- Whether spill is continuing or has stopped;
- Description of existing contaminant;
- Action taken to contain, recover, clean up, and dispose of spilled contaminant;
- Name, address and phone number of person reporting the spill; and,
- Name of owner or person in charge, management or control of contaminants at the time of the spill.

Table 1: Hamlet Contact Information in Case of Spill

Senior Administrative Officer	Hamlet Facility Manager
Tom Ng Hamlet of Rankin Inlet Office Phone: (867) 645-2895 Fax: (867) 645-2146 Email: sao@rankininlet.ca	Joe Kaludjak Hamlet of Rankin Inlet Office Phone: (867) 645-2895 Fax: (867) 645-2146 Email: works@rankininlet.ca

Other regulatory agencies which have a legislated (vested) interest in the event of a spill are summarized in Table 2 below. These authorities do not need to be immediately contact if a spill occurs, but may be involved in follow-up or additional clean-up activities.

Table 2: Regulatory Agency Contact Information

Agency	Legislation	Contact Information
Nunavut Water Board	*Nunavut Waters and Surface Right Tribunal Act*	Phone: (867) 360 – 6338 Fax: (867) 360 – 6369
Nunavut Impact Review Board	*Nunavut Land Claims Agreement Act*	Phone: (867) 983 – 2593 Fax: (867) 983-2574
Government of Nunavut Department of Environment	*Nunavut Environmental Protection Act*	Phone: (867) 975 – 7700 Fax: (867) 975 – 7742
Environment Canada	*Canadian Environmental Protection Act, 1999*	Phone: (204) 984 – 6203 Fax: (204) 983 – 0964
Department of Fisheries and Oceans Canada	*Fisheries Act*	Phone: (855) 852-8320
Transport Canada (Coast Guard)	*Transportation of Dangerous Goods Act*	Phone: (613) 992-4624 (call collect)
Aboriginal Affairs and Northern Development Canada (AANDC)		Manager of Field Operations Phone: 867-975-4295 Fax: 867-975-6445

4.2.1 Hydrocarbon/Water Spills

Three procedures for hydrocarbon spills have been developed depending on the media the spill has occurred. The following sections outline procedures for hydrocarbon or other waste spills occurring on land (soil, gravel, sand, rock and vegetation), water, or snow/ice.

In the event of a large spill in which not all of the spilled contaminant can be readily cleaned up with materials at hand (as described below), delineation of the affected area may be required. This would include subsurface investigation of the area (i.e. digging of test pits, soil sampling, installation of monitoring wells) to determine how large and how deep the contaminant affected the subsurface soil and/or groundwater (lateral and vertical extent of the spill). The delineation would result in the development of an appropriate remediation plan for the affected area. In this case, a qualified environmental consultant should be retained to provide advice on how to proceed with delineation and remediation of a large spill.

Spills on Land

1. Once a spill is identified, all sources of ignition turned off (e.g. no smoking, shut off engines).

2. The spilled material should be identified, if possible.

3. The affected area should be secured, ensuring the area is safe for entry and does not represent a threat to human health and safety of the spill responders. Public access of the area should be restricted.

4. If possible, identify the source of the spill. Determine if the spill is still occurring (i.e. still leaking) or if the spillage has stopped. If the spill has not stopped, determine if it is safe to stop or control the spill (e.g. plug hole, close valve, upright container), or contain the spill (e.g. place a container or tarp with built up edges under the spill source to contain the spill).

5. If the spill is too large to be controlled with the spill materials at hand, contact the facility(ies) manager and report the spill **immediately** (see Table 1 for contact information).

6. If the spill is small enough to be controlled with the materials at hand, prevent spilled contaminants from spreading or entering waterways by using sorbent (oil-absorbing) materials or a soil dyke down slope from the spill. This is especially the case with liquid contaminants (e.g. gasoline, diesel). If some contaminant has entered a waterway, follow procedures in the next section (Spills on Water) to contain and clean-up the contaminant in the water.

7. Once the spill has been controlled and further spreading prevented, contact the facility(ies) manager and report the spill (see Table 1 for contact information).

8. If possible with materials at hand, clean up the remaining spilled contaminant and store contaminated materials in a secure container for disposal. **Do not flush the affected area with water**.

9. If possible, remove any contained liquid by pumping into secure drums.

10. Complete the Nunavut Spill Report Form with as much information as possible. This form is included in Appendix B of this Contingency Plan.

11. Contact the 24-Hour Emergency Spill Report Line (Phone 867 – 920 – 8130) to report the spill as soon as possible and obtain additional advice.

12. Fax the completed Nunavut Spill Report Form to the 24-Hour Emergency Spill Report Line (Fax 867 – 873 – 6924).

Spills on Water

1. Once a spill is identified, all sources of ignition turned off (e.g. no smoking, shut off engines).

2. The spilled material should be identified, if possible.

3. The affected area should be secured, ensuring the area is safe for entry and does not represent a threat to human health and safety of the spill responders. Public access of the area should be restricted.

4. If possible, identify the source of the spill. Determine if the spill is still occurring (i.e. still leaking) or if the spillage has stopped. If the spill has not stopped, determine if it is safe to stop or control the spill (e.g. plug hole, close valve, upright container).

5. If the spill is too large to be controlled with the spill materials at hand, contact the facility(ies) manager and report the spill **immediately** (see Table 1 for contact information).

6. If the spill is small enough to be controlled with the materials at hand, use sorbent booms to contain the spill for recovery. Place sorbent sheets on the water within the boomed area to help contain the contaminant. For narrow waterways, place one or more sorbent booms across the waterway, downstream of the spill location, and anchor the booms on the each bank.

7. Once the spill has been controlled and further spreading prevented, contact the facility(ies) manager and report the spill (see Table 1 for contact information).

8. If possible with materials at hand, clean up the remaining spilled contaminant within the boomed area. Store contaminated materials in a secure container for disposal.

9. Complete the Nunavut Spill Report Form with as much information as possible. This form is included in Appendix B of this Contingency Plan.

10. Contact the 24-Hour Emergency Spill Report Line (Phone 867 – 920 – 8130) to report the spill as soon as possible and obtain additional advice.

11. Fax the completed Nunavut Spill Report Form to the 24-Hour Emergency Spill Report Line (Fax 867 – 873 – 6924).

Spills on Snow/Ice

1. Once a spill is identified, all sources of ignition turned off (e.g. no smoking, shut off engines).

2. The spilled material should be identified, if possible.

3. The affected area should be secured, ensuring the area is safe for entry and does not represent a threat to human health and safety of the spill responders. Public access of the area should be restricted.

4. If possible, identify the source of the spill.

5. Since a spill occurring on snow or ice presents the potential for immediate access of contaminants into waterways, contact the facility(ies) manager and report the spill **immediately** (see Table 1 for contact information) if the spill is too large to be controlled with the spill materials at hand.

6. Determine if the spill is still occurring (i.e. still leaking) or if the spillage has stopped. If the spill has not stopped, determine if it is safe to stop or control the spill (e.g. plug hole, close valve, upright container), or contain the spill (e.g. place a container or tarp with built up edges under the spill source to contain the spill).

7. If the spill is small enough to be controlled with the materials at hand, prevent spilled contaminants from spreading or entering waterways by using sorbent materials or a snow/soil dyke down slope from the spill. This is especially the case with liquid contaminants (e.g. gasoline, diesel).

8. Once the spill has been controlled and further spreading prevented, contact the facility(ies) manager and report the spill (see Table 1 for contact information).

9. If possible with materials at hand, clean up the remaining spilled contaminant and store contaminated materials in a secure container for disposal. Impacted snow should also be stored in drums for disposal.

10. Complete the Nunavut Spill Report Form with as much information as possible. This form is included in Appendix B of this Contingency Plan.

11. Contact the 24-Hour Emergency Spill Report Line (Phone 867 – 920 – 8130) to report the spill as soon as possible and obtain additional advice.

12. Fax the completed Nunavut Spill Report Form to the 24-Hour Emergency Spill Report Line (Fax 867 – 873 – 6924).

4.2.2 Sewage Spills

Raw sewage can contain infectious bacteria, viruses, fungi and parasites that may cause serious human illnesses and even death. A risk of environmental contamination also exists from sewage spills as raw sewage can also contain unknown chemicals from improper chemical disposal. It is imperative to safely and properly clean up all sewage spills to reduce the chance of human infection and environmental contamination.

Spills on Land

1. Once a spill is identified, the affected area should be vacated and secured, ensuring the area is safe for entry and does not represent an immediate threat to human health and safety of the spill responders. Public access of the area should be restricted.

2. If possible, identify the source of the spill. Determine if the spill is still occurring (i.e. still leaking) or if the spillage has stopped. If the spill has not stopped, determine if it is safe to stop or control the spill (e.g. plug hole, close valve, upright container), or contain the spill (e.g. place a container or tarp with built up edges under the spill source to contain the spill).

3. Ensure all spill responders wear the appropriate personal protective equipment, including waterproof gloves, safety glasses/goggles, rubber boots and disposable protective coveralls.

4. If the spill is too large to be controlled with the spill materials at hand, contact the facility(ies) manager and report the spill **immediately** (see Table 1 for contact information).

5. If the spill is small enough to be controlled with the materials at hand, prevent spilled sewage from spreading or entering waterways by constructing an impervious soil dyke or other impervious barrier.

6. Once the spill has been controlled and further spreading prevented, contact the facility(ies) manager and report the spill (see Table 1 for contact information).

7. If possible, remove any contained liquids using the sewage vacuum truck(s). Transport and dispose of this in the detention cell of the sewage disposal facility.

8. If possible with materials and equipment at hand, clean up the remaining spilled sewage and dispose of contaminated soil in the detention cell of the sewage disposal facility. **Do not flush the affected area with water**. Other materials used for clean-up of the sewage spill should be burned in the Burn Area of the MSW disposal facility.

9. Any hard surfaces (e.g. paving, concrete, equipment, rubber boots, etc) that having come into contact with spilled sewage should be cleaned with a detergent solution and then disinfected. Use only approved disinfectants.

10. Once the sewage spill has been cleaned up, dispose of disposable PPE (i.e. coveralls, gloves, safety glasses/goggles) in Burn Area of MSW disposal facility. Ensure other PPE (i.e. rubber boots) is properly cleaned and disinfected prior to re-use.

11. Complete the Nunavut Spill Report Form with as much information as possible. This form is included in Appendix B of this Contingency Plan.

12. Contact the 24-Hour Emergency Spill Report Line (Phone 867 – 920 – 8130) to report the spill as soon as possible and obtain additional advice.

13. Fax the completed Nunavut Spill Report Form to the 24-Hour Emergency Spill Report Line (Fax 867 – 873 – 6924).

Spills on Water

1. Once a spill is identified, the affected area should be vacated and secured, ensuring the area is safe for entry and does not represent an immediate threat to human health and safety of the spill responders. Public access of the area should be restricted.

2. If possible, identify the source of the spill. Determine if the spill is still occurring (i.e. still leaking) or if the spillage has stopped. If the spill has not stopped, determine if it is safe to stop or control the spill (e.g. plug hole, close valve, upright container), or contain the spill (e.g. place a container or tarp with built up edges under the spill source to contain the spill).

3. A sewage spill into a waterway should be **immediately** reported to the facility(ies) manager (see Table 1 for contact information).

4. Ensure all spill responders wear the appropriate personal protective equipment, including waterproof gloves, safety glasses/goggles, rubber boots and disposable protective coveralls.

5. If the spill is small enough to be controlled with the materials at hand, prevent spilled sewage from further spreading or entering waterways by constructing an impervious soil dyke or other impervious barrier.

6. If the sewage has entered a waterway which could directly impact human health (e.g. Post River, reservoir, etc), water removal (if any) from that source will be immediately stopped. Immediately contact the 24-Hour Emergency Spill Report Line (Phone 867 – 920 – 8130) and GN departments (see Table 3 below) to report the sewage spill and obtain additional advice on how to proceed further. The water should be sampled as soon as possible to determine if and how the sewage spill has impacted the waterway.

Table 3: Contacts to Notify in Case of Sewage Spill into Waterway That Could Directly Impact Human Health

GN-CGS **24-Hour Emergency Management**	**Government of Nunavut** **Department of Health & Social Services** **Environmental Health Officers**
867 – 645 – 3625	Kivalliq: 867 – 645 – 8071 EHO On-Call: 867-975 – 5772

7. If the sewage has entered a waterway which poses little risk to human health (e.g. into the sewage treatment tundra wetland, non-potable source), the public should be notified and the access to the area restricted. Further action may be required once the spill is reported to the 24-Hour Emergency Spill Report Line.

8. Once the sewage spill has been controlled and further spreading prevented, if possible remove any other contained liquids using the sewage vacuum truck(s). Transport and dispose of this in the detention cell of the sewage disposal facility.

9. If possible with materials and equipment at hand, clean up the any remaining spilled sewage on the land and dispose of contaminated soil in the detention cell of the sewage disposal facility. **Do not flush the affected area with water.** Other materials used for clean-up of the sewage spill should be burned in the Burn Area of the MSW disposal facility.

10. Any hard surfaces (e.g. paving, concrete, equipment, rubber boots, etc) that having come into contact with spilled sewage should be cleaned with a detergent solution and then disinfected. Use only approved disinfectants.

11. Once the sewage spill has been cleaned up, dispose of disposable PPE (i.e. coveralls, gloves, safety glasses/goggles) in Burn Area of MSW disposal facility. Ensure other PPE (i.e. rubber boots) is properly cleaned and disinfected prior to re-use.

12. Complete the Nunavut Spill Report Form with as much information as possible. This form is included in Appendix B of this Contingency Plan.

13. Contact the 24-Hour Emergency Spill Report Line (Phone 867 – 920 – 8130) to report the spill as soon as possible and obtain additional advice. Sewage spills must **always** be reported to the Emergency Spill Report Line.

14. Fax the completed Nunavut Spill Report Form to the 24-Hour Emergency Spill Report Line (Fax 867 – 873 – 6924).

Spills on Snow/Ice

1. Once a spill is identified, the affected area should be vacated and secured, ensuring the area is safe for entry and does not represent an immediate threat to human health and safety of the spill responders. Public access of the area should be restricted.

2. If possible, identify the source of the spill. Determine if the spill is still occurring (i.e. still leaking) or if the spillage has stopped. If the spill has not stopped, determine if it is safe to stop or control the spill (e.g. plug hole, close valve, upright container), or contain the spill (e.g. place a container or tarp with built up edges under the spill source to contain the spill).

3. Since a spill occurring on snow or ice presents the potential for immediate access of contaminants into waterways, contact the facility(ies) manager and report the spill **immediately** (see Table 1 for contact information).

4. Ensure all spill responders wear the appropriate personal protective equipment, including waterproof gloves, safety glasses/goggles, rubber boots and disposable protective coveralls.

5. If the spill is small enough to be controlled with the materials at hand, prevent spilled sewage from further spreading or entering waterways by constructing an impervious soil/snow dyke, or other impervious barrier. If the sewage spill has entered a waterway, follow the procedure in the preceding section (Spills on Water).

6. Once the spill has been controlled and further spreading prevented, if any liquid remains (e.g. is not frozen), remove contained liquids using the sewage vacuum truck(s). Transport and dispose of this in the detention cell of the sewage disposal facility.

7. If possible with materials and equipment at hand, clean up the any remaining spilled sewage on the snow/ice and dispose of contaminated snow/ice/soil in the detention cell of the sewage disposal facility. Other materials used for clean-up of the sewage spill should be burned in the Burn Area of the MSW disposal facility.

8. Any hard surfaces (e.g. paving, concrete, equipment, rubber boots, etc) that having come into contact with spilled sewage should be cleaned with a detergent solution and then disinfected. Use only approved disinfectants.

9. Once the sewage spill has been cleaned up, dispose of disposable PPE (i.e. coveralls, gloves, safety glasses/goggles) in Burn Area of MSW disposal facility. Ensure other PPE (i.e. rubber boots) is properly cleaned and disinfected prior to re-use.

10. Complete the Nunavut Spill Report Form with as much information as possible. This form is included in Appendix B of this Contingency Plan.

11. Contact the 24-Hour Emergency Spill Report Line (Phone 867 – 920 – 8130) to report the spill as soon as possible and obtain additional advice. Sewage spills must always be reported to the Emergency Spill Report Line.

12. Fax the completed Nunavut Spill Report Form to the 24-Hour Emergency Spill Report Line (Fax 867 – 873 – 6924).

4.3 Spill Kit and Training Requirements

4.3.1 Spill Kit Information

At least one spill kit should be clearly marked and present at the sewage disposal and MSW disposal facilities. Two spill kits should be present for amenities within the water distribution facility; one should be located at the Nipissar Lake pumphouse, and another at the Williamson Lake pumphouse.

Each spill kit should be regularly inspected to ensure it always contains the following, at a minimum (in part from INAC [2007]):

- 1 – 205 L open top steel drum with lid, bolting ring and gasket (spill kit container)
- 10 disposable large 5 mil polyethylene bags (dimensions 65 cm x 100 cm) with ties
- 4 – 12.5 cm (5 in.) x 3 m (10 ft.) sorbent booms
- 10 kg bag of sorbent particulate
- 100 sheets (1 bail) of 50 cm x 50 cm sorbent sheets
- 2 large (5 m x 5 m) plastic tarps
- 1 roll duct tape
- 1 utility knife
- 1 field notebook and pencil
- 1 rake
- 1 pick axe
- 3 spark-proof shovels

- 4 tyvek splash suits
- 4 pairs of chemical resistant gloves
- 4 pairs of splash protective goggles
- Instruction binder, including Spill Contingency Plan

All spill kit contents, with the exception of the spark-proof shovels, can be stored within the 205 L steel drum. The drum should be sealed securely to protect the spill kit contents though should always be accessible without the use of tools (i.e. finger tight bolt ring). The drum's bolt ring should be inspected regularly during facility inspections to ensure it turns freely and is lubricated.

Extra spill response materials should also be available for use in addition to the spill kit contents. These include:

- 10 – 205 L open top steel drum with lid, bolting ring and gasket
- 2 spark-proof shovels
- 50 disposable large 5 mil polyethylene bags (dimensions 65 cm x 100 cm)
- 10 – 12.5 cm (5 in.) x 3 m (10 ft.) sorbent booms
- 5 – 10 kg bags of sorbent particulate
- 500 sheets (5 bails) of 50 cm x 50 cm sorbent sheets
- 2 tyvex splash suits
- 2 pairs of oil-resistant gloves
- 2 pairs of splash-protective goggles

4.3.2 Required Training

To ensure the Spill Contingency Plan (SCP) is carried out effectively, the following actions should occur:

- The SCP should be reviewed annually to ensure it is still up-to-date for current conditions.
- When required, the SCP should be revised to reflect current conditions.
- The SCP should be distributed to and read by all personnel who work at the Hamlet's water, sewage and MSW facilities.
- Personnel at these facilities should be familiar with the location of all HHW and other potentially hazardous materials, and their associated Material Safety Data Sheets (MSDS).

- Personnel at these facilities should be trained to read and use MSDS.
- Personnel should receive proper spill response training to learn and understand the techniques and materials used to contain, clean up and remediate spills. Trained personnel will be aware of the importance of first response in reducing the impact of spills with respect to protecting human health and safety, the environment, and property.

5. References

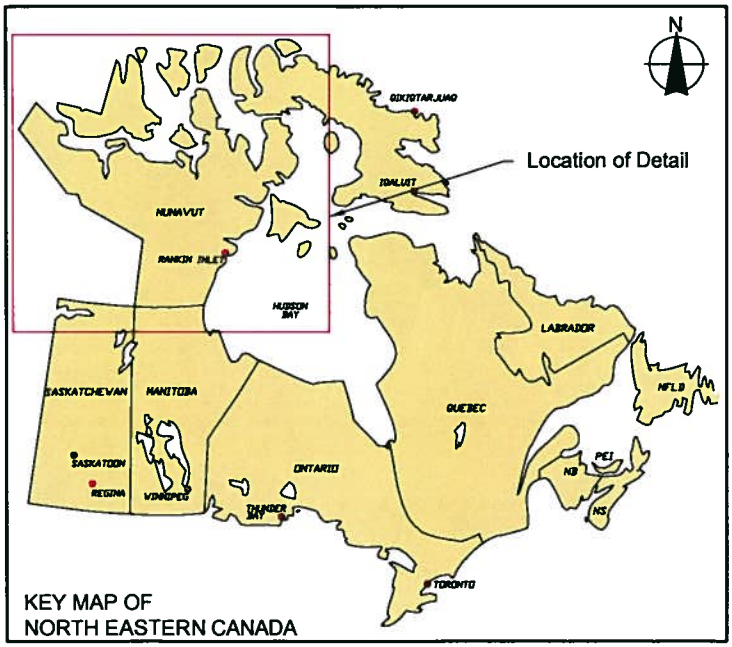
Nuna Burnside Engineering and Environmental Ltd. 2008. *Environmental Emergency Contingency Plan, Hamlet of Rankin Inlet.* Nuna Burnside Engineering and Environmental Ltd. Orangeville, Ontario. File No. N-O 14850.

Government of Nunavut, Community and Government Services. 2015. *Environmental Monitoring Program and Quality Assurance/Quality Control Plan, Hamlet of Rankin Inlet, Nunavut.* Government of Nunavut, Rankin Inlet.

Government of Nunavut, Community and Government Services. 2015. *Spill Contingency Plan, Hamlet of Coral Harbour, Nunavut.* Government of Nunavut, Rankin Inlet.

Appendix A: Figures

Map Reference:
Map Art Publishing



KEY MAP OF
NORTH EASTERN CANADA

FIGURE 1 - SITE LOCATION MAP

HAMLET OF RANKIN INLET
HAMLET OF RANKIN INLET, NUNAVUT

ENVIRONMENTAL EMERGENCY CONTINGENCY PLAN

December 2008
Project Number: N-O14850

Prepared by: C. Sheppard

Verified by: J. Walls

Nunn BURNSIDE

N-O14850 ENVIRONMENTAL EMERGENCY - HAMLET SL.dwg

Plot Time: Dec 08, 2008 - 2:11pm

Figure 2: Map of Facilities

N

Rankin Inlet Solid Waste Site

Figure 3

Legend

Approx. Location of New Fence

Approx. Area of Expanded Solid Waste Site

Location of Old Fence

SCALE: NOT TO SCALE

JG
INITIALS

Appendix B: Spill Report Form

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
TEL: (867) 920-8130
FAX: (867) 873-6924
EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE: MONTH – DAY – YEAR	REPORT TIME	☐ ORIGINAL SPILL REPORT, OR ☐ UPDATE # _____ TO THE ORIGINAL SPILL REPORT	REPORT NUMBER ____-_____
B	OCCURRENCE DATE: MONTH – DAY – YEAR	OCCURRENCE TIME		

C	LAND USE PERMIT NUMBER (IF APPLICABLE)	WATER LICENCE NUMBER (IF APPLICABLE)
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION	REGION ☐ NWT ☐ NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN
E	LATITUDE DEGREES MINUTES SECONDS	LONGITUDE 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
	SECOND PRODUCT SPILLED (IF APPLICABLE)	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER
I	SPILL SOURCE	SPILL CAUSE	AREA OF CONTAMINATION IN SQUARE METRES
J	FACTORS AFFECTING SPILL OR RECOVERY	DESCRIBE ANY ASSISTANCE REQUIRED	HAZARDS TO PERSONS, PROPERTY OR ENVIRONMENT
K	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 ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC | SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN | FILE STATUS ☐ OPEN ☐ CLOSED

AGENCY	CONTACT NAME	CONTACT TIME	REMARKS
LEAD AGENCY			
FIRST SUPPORT AGENCY			
SECOND SUPPORT AGENCY			
THIRD SUPPORT AGENCY			

Appendix C: NWB Water Licence No. 3BM-RAN1214

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

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NUNAVUT WATER BOARD
NUNAVUT IMALIRIYIN KATIMAYIT
OFFICE DES EAUX DU NUNAVUT

File No.: 3BM-RAN1214

March 22, 2012

Ms. Hilda Price
Senior Administrative Officer
Hamlet of Rankin Inlet
PO Box 310
Rankin Inlet, NU X0C 0G0
Email: sao@rankininlet.ca
BWestwell@gov.nu.ca

RE: NWB Licence No. 3BM-RAN1214

Dear Ms. Price:

Please find attached, renewal Licence No. 3BM-RAN1214 issued to the Hamlet of Rankin Inlet 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*. The terms and conditions of the attached Licence related to 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 waste disposal must cease, or the Licensee may be in contravention of the *Nunavut Land Claims Agreement* (NLCA) and the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* (NWNSRTA). However, the expiry or cancellation of a licence does not relieve the Licensee 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 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 the time of acceptance by the NWB. It is the responsibility of the Licensee to ensure that all application materials have been received and acknowledged by the Manager of Licensing.

The NWB strongly recommends that the Licensee consult the comments[1] received from interested persons on issues identified during the review process. This information is attached for your consideration.

Sincerely,

Thomas Kabloona
Nunavut Water Board
Chair

TK/kt/pb

Enclosure: Licence No. 3BM-RAN1214
Comments: INAC, EC, GN-DoE, GN-CLEY and BGC Engineering Inc. technical memo

cc: Kivalliq Distribution List

[1] GN-DoE, August 30, 2009; GN-CLEY, August 28, 2009; INAC, August 28, 2009; EC, August 28, 2009; and BGC Engineering Inc, November 12, 2010.

P.O. BOX 119
GJOA HAVEN, NU X0B 1J0
TEL: (867) 360-6338
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NUNAVUT WATER BOARD
NUNAVUT IMALIRIYIN KATIMAYIT
OFFICE DES EAUX DU NUNAVUT

DECISION

LICENCE NUMBER: 3BM-RAN1214

This is the decision of the Nunavut Water Board (NWB) with respect to an application received March 19, 2009 with supporting information submitted March 22, 2010 for a Licence renewal prepared by Nuna Burnside Engineering and Environmental Ltd. on behalf of the:

HAMLET OF RANKIN INLET

to allow for the disposal of solid wastes for the Hamlet of Rankin Inlet, located within the Kivalliq Region of Nunavut. With respect to this application, the NWB gave notice to the public that the Hamlet had filed an application for a water licence renewal.

DECISION

After having been satisfied that the application was exempt from the requirement for screening by the Nunavut Impact Review Board in accordance with S. 12.3.2 of the *Nunavut Land Claims Agreement* (NLCA), the NWB decided that the application could proceed through the regulatory process. After reviewing the full submission of the Applicant and written comments expressed by interested parties, 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 *Nunavut Waters and Nunavut Surface Rights Tribunal Act* (NWNSRTA), decided to waive the requirement to hold a public hearing and determined that:

Licence Number 3BM-RAN0207 be renewed and issued as 3BM-RAN1214 subject to the terms and conditions contained therein. (Motion #: 2012-00-L12)

SIGNED this 20th day of May, 2012 at Gjoa Haven, NU.

Thomas Kabloona
Nunavut Water Board, Chair

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I. BACKGROUND

The Hamlet of Rankin Inlet (Hamlet) is located within the Kivalliq Region of Nunavut, at general latitude 64°49'N and general longitude 92°05'W.

Waste disposal infrastructure for the Hamlet of Rankin Inlet (Hamlet) consists of an Old Landfill that reached capacity in 2002, a New Landfill that was built between 2003 and 2006 which has yet to be commissioned, and a landfarm built in 2005. These facilities serve a population of approximately 2,266 people (Statistics Canada 2011).

Water supply and sewage disposal infrastructure for the Hamlet is operated by the Government of Nunavut (GN), on behalf of the Hamlet, under a separate water licence 3BM-GRA0207, which was renewed in June, 2010 as Type A licence 3AM-GRA1015.

The GN also applied to the Nunavut Water Board (NWB) in 2008 for a water licence for a new landfarm facility to be constructed in 2009. This was approved under Licence 1BR-RAN0914.

II. PROCEDURAL HISTORY

The water licence held by the Hamlet for solid waste disposal was issued on December 1, 2002 and expired on November 30, 2007 (3BM-RAN0207). The NWB received an application to renew the licence on March 19, 2009 with additional information received on June 10, 2009. Following a preliminary review by the NWB, the information was distributed to interested parties on July 30, 2009.

The renewal application information package was prepared by Nuna Burnside Engineering and Environmental Ltd. (Nuna Burnside) on behalf of the Hamlet, and included the following documents:

- Cover Letter dated March 2, 2009;
- Application Form and additional information;
- Supplementary Questionnaire for Municipalities with additional Landfarm information;
- Executive Summary, English;
- Application Fee;
- 2008 Annual Report;
- Environmental Emergency Contingency Plan;
- Environmental Monitoring Program and Quality Assurance/Quality Control Plan;
- Solid Waste Management Facility, Operation and Maintenance (O&M) Plan;
- Translated Executive Summary (received June 10, 2009); and
- Signed Application Form (received June 10, 2009).

The application also included the following plan prepared by AECOM Canada Ltd, on behalf of the Hamlet:

- Rankin Inlet Solid Waste Site Abandonment and Restoration Plan (July 2009).

By the end of the comment period, on August 30, 2009 the NWB was in receipt of submissions from Indian and Northern Affairs Canada (INAC), Environment Canada (EC), Government of Nunavut Department of Environment (GN-DoE), and the Government of Nunavut Department of Culture Language Elders and Youth (GN-CLEY).

In its submission, INAC noted some uncertainty regarding the landfarm that was discussed by the Hamlet to be included in the licence renewal. It was unclear whether the landfarm was the same facility approved under licence 1BR-RAN0914, or if the Hamlet has two separate landfarms. In order to clarify, the NWB wrote to the Hamlet on December 14, 2009. In its letter to the Hamlet, the NWB also requested that parties confirm whether they had an opportunity to review the Abandonment and Restoration Plan (A&R Plan) for the old landfill.

On March 22, 2010 the NWB received a response from Nuna Burnside, on behalf of the Hamlet, clarifying that there are in fact two landfarms in the Hamlet. One landfarm is licensed to the GN under 1BR-RAN0914, and the second, for which the Hamlet was applying, was constructed in 2005 without an amendment application to the previous licence or an application for a new licence.

In response to the NWB's request that parties confirm their review of the A&R Plan, the NWB received written correspondence from the GN-DoE indicating that they had reviewed the A&R Plan and did not have any substantial comments. The NWB has since undertaken its own technical review of the A&R Plan through an independent consultant and included this assessment as part of the overall review process.

Based upon the results of the detailed assessment, including consideration of any potential accidents, malfunctions, or impacts to water that the overall project might have in the area, the Board has decided to renew licence No.3BM-RAN0207, and has issued licence 3BM-RAN1214.

III. ISSUES

Term of Licence

In accordance with section 45 of the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* (NWNSRTA or Act), the NWB may issue a licence for a term not exceeding twenty-five years. In determining an appropriate term of a water licence, the Board considers a number of factors, including the results of Aboriginal Affairs and Northern Development Canada (AANDC, previously INAC) site inspections and the compliance record of the applicant.

In review of the application and the comments received from interested parties, there were no comments provided with respect to the Hamlet's request for a term of five (5) years for the licence renewal. However, the Board has recently issued municipal licences for terms of no more than two (2) years where compliance issues have been a concern.

The NWB notes a number of compliance issues from the AANDC inspection reports occurring throughout the course of the previous licence term. Issues include, the failure to adhere to an Inspector's Direction issued to the Hamlet in 2008, which cites issues going back to 2003, failure to undertake the Monitoring Program outlined in the Licence, improper maintenance of the landfill, and improper storage of contaminated soils.

The most recent AANDC inspection report dated August 2, 2011 required the Hamlet to submit to the NWB and the Inspector a compliance plan outlining how the Hamlet will address the compliance issues. In addition the AANDC inspector required the Hamlet to resubmit a revised application for a renewal licence that accurately reflects the plans for the waste management facility, its continued operations and maintenance or abandonment and restoration.

To date the Board has not received a response from the Hamlet to the inspector's requests. The Board agrees with the Inspector regarding the need for a plan for compliance and as per Part B, Item 10 of the licence, the licensee is required to submit a plan that clearly demonstrates how the Hamlet will achieve full compliance with the licence conditions during the term of the licence.

In addition, following clarification provided by Nuna Burnside, on behalf of the Hamlet, the NWB is aware that the landfarm constructed in 2005 was done without an amendment application for the existing licence or an application for a new licence. Proceeding with the construction of a facility in this manner, without this Board's regulatory review and approval, is in direct contravention of section 12 of the Act.

In addition, although the renewal application contained the management plans requested by the NWB through the previous Licence, which has provided some assurance that the Hamlet intends to comply with the renewed Licence, the question of whether the new landfill will be operated and maintained in accordance with the plan submitted was raised as an issue:

> *We recommend that "Conditions" be added to the licence requiring that the recommendations in the O&M Plan be fully completed prior to commissioning the site. (Applicant response of March 22, 2010).*

The NWB appreciates the efforts made by Nuna Burnside, on behalf of the Hamlet, in preparing a complete application package. However, the two-year licence term is intended to provide the Hamlet time to take immediate action towards achieving full compliance with all licence requirements and demonstrate that the facilities can be operated, or decommissioned in the case

of the old landfill, in accordance with the plans submitted. Upon submission of an application to renew this licence, the Board fully expects the Hamlet to have achieved compliance with the Licence conditions.

Annual Report

Annual reports were not submitted for most years of the previous licence term. A 2008 annual report was submitted with the renewal application package by Nuna Burnside, on behalf of the Hamlet.

The NWB would like to emphasize the requirement to produce an annual report for submission, not later than March 31st of the year following the calendar year being reported. The requirement to produce annual reports is to ensure that the NWB has an accurate and timely annual update of municipal activities during a calendar year. This information is maintained on the public registry and is available to interested parties upon request. A *"Standardized Form for Annual Reporting"* is available for use from the NWB file transfer protocol (ftp) site under the public registry link at the NWB Website.

Link = ftp://nunavutwaterboard.org/ADMINISTRATION/Standardized%20Forms/

Although use of the standardized form is recommended for consistency, there may be additional information/collected that will require the submission of an addendum to the annual report for completeness.

Operational Plans

The application contained a detailed Operation and Maintenance (O&M) Plan for the new solid waste management facility, including the landfarm. The NWB finds that the O&M Plan is generally satisfactory; however, a revision to the O&M Plan must be provided to the Board for approval to reflect conditions of the renewed licence, including the landfarm effluent quality criteria and to address the comments received during the review of the document. The revised Plan is required within ninety (90) days of licence issuance as per Part F, Item 2 of the Licence. The revision should also include an executive summary in English and Inuktitut in accordance with Part B, Item 8 of the licence.

Part F, Item 4 of the previous licence (3BM-RAN0207) stated that in the event an unauthorized discharge of waste occurs, or if such a discharge is foreseeable, the licensee shall, among other actions, employ the appropriate contingency plan as provided for in the Operation and Maintenance Plan. The licensee has addressed this requirement with the submission of an Environmental Emergency Contingency Plan (EECP) with the renewal application. However, EC provided the following comments on the EECP:

- Secondary containment or surface liners (drip pans, fold a tanks, etc.) should be placed under all containers and vehicle fuel tank inlet and outlet points, hose connections and hose ends during fuel or hazardous substance transfers;
- That the appropriate spill response equipment and clean-up materials (absorbents, containment devices, etc.) be on hand during any transfer of fuel or hazardous substances and at vehicle maintenance areas; and
- The Plan should include locations of all hazardous materials, spill response equipment and clean up materials.

The NWB notes that the EECP acknowledges the requirement to update the information contained within it on an annual basis where necessary; however, given the timeline for submission of the O&M Plan revision, the licensee is also required to revise and resubmit the EECP within ninety (90) days of licence issuance, taking into account the recommendations made by EC.

Water Use

Water use is regulated by a separate licence held by the GN on behalf of the Hamlet. The previous Rankin Inlet solid waste licence (3BM-RAN0207) also included duplicate conditions for water use. As this Licence does not regulate water used by the Hamlet, the associated conditions have been removed in this renewal, Licence No. 3BM-RAN1214.

Sewage

Sewage treatment and disposal is not authorized under this Licence.

Solid Waste

Although the new landfill was considered in 2002 under the previous licence (3BM-RAN0207), the NWB notes that the O&M Plan contains some important recommendations for the commissioning of the facility. The NWB identified these recommendations in its letter to the applicant of December 14, 2009. Recommendations included:

- The design and construction of effective drainage of water surrounding the landfill;
- The need to construct a hazardous waste storage area; and
- Stockpiling of top soil in the fill area for use as cover material.

In its response to the NWB, Nuna Burnside acknowledged the recommendations and highlighted the following additional requirements prior to commissioning the new landfill:

- Background sampling of soil and water quality of the site should be completed;
- The O&M Plan be reviewed by a bird hazard expert; and

- A requirement for signed/as-built drawings be provided following the completion of the modification required for commissioning.

In order to ensure that the above-mentioned recommendations are undertaken, the NWB requires that an implementation report be submitted for NWB approval sixty (60) days prior to commissioning the landfill. The report shall detail the measures taken to address the items listed in Part F, Item 1 of the licence.

The NWB is also aware that the distance between an airport utilized by commercial aircraft and a landfill containing food wastes, which may attract birds, is to be a minimum of eight (8) kilometres, unless bird control measures acceptable to Transport Canada are employed. Therefore, the NWB requires that the Licensee consult with Transport Canada to obtain any authorizations and input needed prior to commissioning the new landfill.

Landfarm

In its submission, EC noted drawings of the landfarm, which indicate the presence of a water body in its vicinity. EC stated that a landfarm should be sited greater than 500 metres from a permanent surface water body. This issue clearly demonstrates the problems that arise when a waste disposal facility is built without the regulatory review and approval of the NWB, as is the case here with the Hamlet's landfarm. The licensee is reminded of it responsibility to ensure that leachate and runoff from the waste disposal facilities do not enter water.

In order to ensure that any surrounding water is not impacted, INAC recommended that a contingency plan be provided to deal with the possibility of seepage from the landfarm. INAC suggested the possibility of digging a trench around the landfarm with a liner to collect any seepage. The NWB agrees with the concerns raised by the parties and requires, in accordance with Part F, Item 3 (b) that the licensee submit a Landfarm Operational Contingency Plan outlining the measures that will be taken should seepage become an issue. The contingency plan is to be included as part of the addendum to the Environmental Emergency Contingency Plan due within ninety (90) days of licence issuance.

The Licensee will also be required to have a qualified engineer undertake an annual geotechnical inspection of the waste disposal facilities to report on their structural integrity and make recommendations on remedial works, where required. In addition, the NWB, in order to protect the receiving environment and in accordance with other municipal landfarms, has imposed effluent discharge criteria that must be met prior to any release of water from the facility to the environment.

Finally, the NWB has also imposed the requirement to install groundwater monitoring wells at the landfarm facility, with one located up-gradient and one down-gradient of the facility. This is a standard requirement in other landfarm licences including the licence issued to the GN for its

landfarm, also located in Rankin Inlet. Stamped as-built drawings of the facility shall also be provided to the NWB following the first geotechnical inspection in 2012 and installation of the groundwater monitoring wells.

Modifications and Construction

For the construction of new, or modifications to existing licensed facilities, the NWB generally requires that final design reports, accompanied by stamped and signed "for construction drawings" be provided to the NWB for review and approval **prior to the undertaking**. This provides assurance to the Board and interested persons that proper engineering practices will be in place through all phases of construction and operation.

Abandonment, Restoration and Closure

The Hamlet submitted an Abandonment and Restoration (A&R) Plan for the old landfill with the renewal application. The NWB acknowledges that this is a very important document given the issues on file with the facility and its location. No comments or concerns were raised by parties with respect to the A&R Plan, however the NWB undertook its own technical review and third party review of the document and believes there are a number of issues that need to be addressed prior to approving the Plan. The licensee is required to address the issues identified in the NWB's technical review, which have been highlighted in Part G, Item 1 of the licence. For further information, the NWB strongly recommends the Licensee review the NWB's technical evaluation of the A&R Plan as undertaken by BGC Engineering for the NWB. The report is attached for the licensee's information.

Finally, the NWB noted in its letter to the Hamlet of December 14, 2009 that the application stated a fuel spill occurred at the Nipissar Lake Pumphouse in Rankin Inlet with a few hundred litres of fuel oil spilling into the sand and gravel surface next to the pumphouse and a small amount reached the shore of the lake. EBA Engineering Ltd arranged the removal and disposal of the impacted soil at the Hamlet landfill.

In a response provided to the NWB on March 22, 2010 it was stated that no documentation is available to indicate the fate of the impacted soil after it went to the old landfill. If this soil has not been removed to the Landfarm, the issue will therefore need to be addressed as part of the abandonment and restoration of the facility.

Monitoring Program

A significant issue with the previous licence (3BM-RAN0207) was the lack of monitoring data collected and reported in accordance with the required monitoring program. This issue was highlighted in the 2008 inspection report. As a compliance component, it is the licensee's responsibility to comply with the monitoring program under Part H of the licence.

The monitoring program has been expanded to include the monitoring requirements for the landfarm and closure of the old landfill.

The NWB acknowledges receipt of a Quality Assurance Quality Control (QA/QC) Plan submitted with the renewal application. In accordance with Part H, Item 12 the licensee shall submit the QA/QC Plan to an analyst for approval. Upon approval, the licensee is required to provide the NWB with a covering letter from the accredited laboratory and analyst, confirming acceptance of the Plan for the analyses to be performed under this Licence.

When the licensee applies to renew the licence in approximately 18-months, the NWB will again consider the past performance of the licensee as well as compliance with the monitoring program. As previously stated, the NWB expects the licensee to be in full compliance with the terms and conditions of the Licence upon application to renew.

NUNAVUT WATER BOARD
WATER LICENCE

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

HAMLET OF RANKIN INLET, NUNAVUT

(Licensee)

P.O. BOX 310, RANKIN INLET, NUNAVUT X0A 0S0

(Mailing Address)

hereinafter called the Licensee, the right to deposit of a waste for a period subject to restrictions and conditions contained within this Licence:

Licence Number/Type:	3BM-RAN1214 TYPE "B"
Water Management Area:	NUNAVUT 06
Location:	RANKIN INLET, KIVALLIQ REGION, NUNAVUT
Classification:	MUNICIPAL UNDERTAKING
Purpose:	DEPOSIT OF WASTE
Quantity of Water use not to Exceed:	N/A
Date of Licence Issuance:	MAY 20, 2012
Expiry of Licence:	MAY 31, 2014

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

Thomas Kabloona,
Nunavut Water Board, Chair

PART A: SCOPE AND DEFINITIONS

1. Scope

a. This Licence allows for the deposit of waste for municipal undertakings at the Hamlet of Rankin Inlet, Kivalliq Region, Nunavut (64°49' N; 92°05'W);

b. 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

c. Compliance with the terms and conditions of this Licence does not absolve the Licensee from the responsibility for compliance with the requirements of all applicable Federal, Territorial and Municipal legislation.

d. The Licensee shall, in relation to any application to renew or amend the Licence, have in place, approved by the Board in writing, a Plan for Compliance to achieve full compliance with the conditions of this Licence, or a Plan for Compliance must be submitted at the time of Application, in order for the Application to be deemed complete.

2. Definitions

In this Licence: **3BM-RAN1214**

"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;

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

''Appurtenant undertaking'' means an undertaking in relation to which a use of waters 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*;

"Effluent" means treated or untreated liquid waste material that is discharged into the environment from a structure such as the landfill or landfarm;

"**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*;

"Final Discharge Point" in respect of an effluent, means an identifiable discharge point of a facility beyond which the operator of the facility no longer exercises control over the quality of the effluent;

"Geotechnical Engineer" means a professional engineer registered with the Association of Professional Engineers, Geologist and Geophysicists of Nunavut and whose principal field of specialization is with the engineering properties of earth materials in dealing with man-made structures and earthworks that will be built on a site. These can include shallow and deep foundations, retaining walls, dams, and embankments;

"Grab Sample" means a single water or wastewater Effluent sample taken at a time and place representative of the total discharge;

"Hazardous Waste" means waste classified as "hazardous" by Nunavut Territorial or Federal legislation, or as "dangerous goods" under the *Transportation of Dangerous Goods Act*;

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

"Landfarm Facility" means an area designed to biologically remediate petroleum hydrocarbon-impacted soil, as described in the renewal application filed by the applicant on March 19, 2009 and as described in the *Solid Waste Management Facility Operation and Maintenance Plan Hamlet of Rankin Inlet* (Nuna Burnside Engineering and Environmental December 2008);

"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, and changes to the operating system that are consistent with the terms of this Licence and do not require amendment;

"Monitoring Program" means a monitoring program established to collect data on surface water and groundwater to assess impacts to the freshwater aquatic environment of an appurtenant undertaking;

"New Landfill" means the facility described in the *Solid Waste Management Facility Operation and Maintenance Plan Hamlet of Rankin Inlet* (Nuna Burnside Engineering and Environmental December 2008);

"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;

"Old Landfill" means the facility described in the *Rankin Inlet Solid Waste Site Abandonment and Restoration Plan* (AECOM, July 2009);

"Petroleum Hydrocarbon-Impacted Soil" means soil in which the primary petroleum product present, as determined by laboratory analysis consistent with that described in the *Canada-Wide Standards for Petroleum Hydrocarbons in Soil*, generally consists of fuel oil, diesel fuel, gasoline and/or jet fuel and does not include lubricating oil or grease;

"Treatment Objective" means the treatment objective for the soil within the Landfarm which is the Canadian Council of Ministers of the Environment (CCME) *Canada – Wide Standard for Petroleum Hydrocarbon (PHC) in Soil*, revised January 2008 as determined by the Government of Nunavut, Environmental Protection Division based on the 2009 Environmental Guideline for Site Remediation;

"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 Disposal Facilities" means all facilities designated for the disposal of waste, and includes the Old Landfill and New Landfill; and

"Water" means water as defined in section 4 of the Act.

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 with the Board not later than March 31st of the year following the calendar year reported, which shall contain the following information:

a. tabular summaries of all data generated under the "Monitoring Program";
b. the monthly and annual quantities in cubic metres of all Effluent discharged;
c. a summary of modifications and/or major maintenance work carried out on the Waste Disposal Facilities and Landfarm;
d. a list of unauthorized discharges and summary of follow-up action taken;
e. a summary of any abandonment and restoration work completed during the year and an outline of any work anticipated for the next year;
f. Any addendum with updates or revisions for manuals and plans (i.e., *Operations and Maintenance Plan*) as required by changes in operation and/or technology;
g. a summary of any studies or reports requested by the Board that relate to waste disposal or restoration, and a brief description of any future studies planned; and
h. any other details on waste disposal requested by the Board by November 1st of the year being reported.

2. The Licensee shall comply with the "Monitoring Program" described in this Licence, and any amendments to the "Monitoring Program" as may be made from time to time, pursuant to the conditions of this Licence.

3. The "Monitoring Program" and compliance dates specified in the Licence may be modified at the discretion of the Board in writing.

4. The Licensee shall install, operate and maintain meters, devices or other such methods as approved by the Board in writing, used for measuring the volumes of waste discharged, to the satisfaction of an Inspector.

5. The Licensee shall maintain the necessary signs to appropriately identify the stations of

the Monitoring Program. Signs are to be posted at locations following confirmation by the Inspector and be in the Official Languages of Nunavut.

6. The Licensee shall immediately report to the 24-Hour Spill Report Line (867-920-8130), any spills of Waste which are reported to or observed by the Licensee, within the municipal boundaries or in the areas of the Waste Disposal Facilities or Landfarm Facility.

7. The Licensee shall ensure a copy of this Licence is maintained at the Municipal Office 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@nunavutwaterboard.org

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

8. The Licensee shall submit one paper copy and one electronic copy of all reports, studies, and plans to the Board. Reports, plans or studies submitted to the Board by the Licensee shall include a detailed executive summary in both English and Inuktitut.

9. The Licensee shall ensure that all documents and correspondence submitted by the Licensee to the Board are received and acknowledged by the Manager of Licensing.

10. The Licensee shall submit to the Board for approval, within thirty (30) days of Licence issuance, a Plan for Compliance that clearly demonstrates the measures the Licensee will undertake, including an implementation schedule, to achieve full compliance with the conditions of this Licence, including the issues raised in the Inspector's Reports.

11. 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.

12. The Licensee shall, for all Plans submitted under this Licence, implement the Plan as approved by the Board in writing.

13. 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 condition 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.

14. The Licensee shall review the Plans referred to in this Licence as required by changes in operation and/or technology and modify the Plans or Manuals accordingly. Revisions to the Plans or Manuals are to be submitted in the form of an addendum to be included with the Annual Report required by Part B, Item 1(j), complete with a revisions list detailing where significant content changes are made.

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

PART C: CONDITIONS APPLYING TO WATER USE

1. Water use is not authorized under this Licence.

PART D: CONDITIONS APPLYING TO WASTE DISPOSAL

1. 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.

2. The Licensee shall dispose of and permanently contain all solid wastes at the Waste Disposal Facilities or as otherwise approved by the Board in writing.

3. The Licensee shall not open burn plastics, wood treated with preservatives, electric wire, styrofoam, asbestos or painted wood to prevent the deposition of Waste materials of incomplete combustion and/or leachate from contaminated ash residual, from impacting any surrounding waters, unless otherwise approved by the Board in writing.

4. The Licensee shall segregate and store all hazardous materials and hazardous waste, including waste oil, within the Waste Disposal Facilities in a manner to prevent the deposit of deleterious substances into any water, until such a time that the materials have been removed for proper disposal at licensed facility.

5. The Licensee shall implement measures to ensure leachate from the Waste Disposal Facilities and Landfarm Facility do not enter Water.

6. The Licensee shall treat all Petroleum Hydrocarbon Impacted Soil in the Landfarm Facility to the Treatment Objective, or as otherwise approved by the Board.

7. The Licensee shall provide at least ten (10) days notice in writing to an Inspector, of the intent to discharge Effluent from the Landfarm Facility.

8. All water from dewatering contaminated soil areas and discharge of Effluent at Monitoring Station RAN-4 at the Landfarm Facility, shall not exceed the following Effluent quality limits:

Parameter	**Maximum Concentration of any Grab Sample (mg/L)**
pH	6 to 9 (units)
Total Suspended Solids	50
Oil and Grease	15 and no visible sheen
Benzene	0.370
Toluene	0.002
Ethylbenzene	0.090

9. Effluent that exceeds the Effluent quality limits of Part D, Item 8 shall be considered hazardous waste and require further treatment or disposal off-site at an approved facility.

10. The discharge location for all treated Effluents described in Part D, Item 8 shall be to the satisfaction of an Inspector and shall be located at a minimum of thirty one (31) metres from the ordinary high water mark of any water body and where direct or indirect flow into a water body is not possible and no additional impacts are created.

11. The Licensee shall dispose of soils containing contaminants in excess of the Treatment Objectives, off site at an approved treatment facility.

12. The Licensee shall, prior to the removal of any treated soil from the Landfarm Facility, confirm with the Government of Nunavut Environmental Protection Service that the soils have been treated so as to meet all legislatively-required Soil Quality Remediation Objectives.

13. 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.

PART E: CONDITIONS APPLYING TO MODIFICATION AND CONSTRUCTION

1. The Licensee shall submit to the Board for approval in writing, construction design drawings stamped by a qualified Engineer, sixty (60) days prior to the construction of any dams, dykes or structures intended to contain, withhold, divert or retain water or wastes.

2. The Licensee may, without written approval from the Board, carry out modifications to the Waste Disposal Facilities or Landfarm 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. these modifications do not place the Licensee in contravention of the Licence or the Act;
    c. 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;
    d. the Board has not rejected the proposed modifications; and
    e. Modifications for which all of these conditions have not been met, may be carried out only with approval from the Board in writing.

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. All construction and modification 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.

5. The Licensee shall implement and maintain sediment and erosion control measures prior to and during activities carried out under this Part, to prevent the release of sediment and minimize erosion.

PART F: CONDITIONS APPLYING TO OPERATION AND MAINTENANCE

1. The Licensee shall submit to the Board for approval, at least sixty (60) days prior to commissioning the New Landfill, a Status Update Report and photographic record, which demonstrates implementation of the pre-commissioning recommendations outlined in the *Solid Waste Management Facility Operation and Maintenance (O&M) Plan, Hamlet of Rankin Inlet*, dated December, 2008, including:

    a. The design and construction of effective drainage of water surrounding the landfill;
    b. The need to construct a hazardous waste storage area;
    c. Stockpiling of top soil in the fill area for use as cover material.
    d. Background sampling of soil and water quality of the site;
    e. Review of the O&M Plan by a bird hazard expert;
    f. The provision of signed/as-built drawings of the New Landfill and Landfarm following the completion of the above measures;
    g. Confirmation of correspondence with Transport Canada and a copy of any authorizations or recommendations provided through this consultation confirming that Transport Canada requirements have been met; and
    h. A schedule of activities.

2. The Licensee shall submit to the Board for approval, within ninety (90) days of Licence issuance, a revision to the *Solid Waste Management Facility Operation and Maintenance (O&M) Plan Hamlet of Rankin Inlet*, dated December, 2008, to address the following:

    a. An executive summary in English and Inuktitut;
    b. Procedures for the testing and characterization of sewage sludge generated by the Hamlet of Rankin Inlet under Licence 3AM-GRA1015 to ensure the materials are non-hazardous and proper storage and/or handling and disposal at the Waste Disposal Facilities are provided;
    c. Updated monitoring requirements in accordance with the Monitoring Program outlined in Part H;
    d. Types of wastes suitable for treatment in the Landfarm Facility in accordance with the definition provided in Part A of the Licence for Petroleum Hydrocarbon Impacted Soil;
    e. Recommended depths of contaminated soil placed in the Landfarm Facility;
    f. Independent third party sampling and testing of treated soil prior to removal from the Landfarm Facility for reuse; and
    g. Landfarm Facility Effluent quality criteria in accordance with Part D;

3. The Licensee shall submit to the Board for approval, within ninety (90) days of Licence issuance, a revision to the *Environmental Emergency Contingency Plan, Hamlet of Rankin Inlet*, dated December 2008, consisting of:

a. An executive summary in English and Inuktitut;
b. A Landfarm Operational Contingency Plan to deal with seepage from the facility;
c. A map of the 50 year flood plain relative to the Landfarm Facility and Waste Disposal Facilities;
d. The use of secondary containment or surface liners (drip pans, fold a tanks, etc.) under all containers and vehicle fuel tank inlet and outlet points, hose connections and hose ends during fuel or hazardous substance transfers;
e. An outline of appropriate spill response equipment and clean-up materials (absorbents, containment devices, etc.) to be on hand during any transfer of fuel or hazardous substances and at vehicle maintenance areas;
f. Updated contact information for the AANDC Field Operations Division; and
g. The locations of all hazardous materials, spill response equipment and clean up materials.

4. An inspection of all engineered facilities related to the management of Waste shall be carried out annually in July or August by a Geotechnical Engineer. The engineer's report shall be submitted to the Board for review, within sixty (60) days of the inspection, including a covering letter from the Licensee outlining an implementation plan addressing the Geotechnical Engineer's recommendations.

5. The Licensee shall perform more frequent inspections of the engineered facilities at the request of an Inspector.

6. If, during the period of this Licence, an unauthorized discharge of waste occurs, or if such a discharge is foreseeable, the Licensee shall:

a. employ the appropriate contingency measures within the Contingency Plan, approved for the Hamlet of Rankin Inlet;
b. report the incident immediately via the 24-Hour Spill Reporting Line at (867) 920-8130 and to the Inspector at (867) 975-4295; and
c. submit to the Inspector, a detailed report, not later than thirty (30) days after initially reporting the event, that provides the necessary information on the location (including the GPS coordinates), initial response action, remediation/clean-up, status of response (ongoing, complete), proposed disposal options for dealing with contaminated materials and preventative measures to be implemented.

PART G: CONDITIONS APPLYING TO ABANDONMENT, RESTORATION AND CLOSURE

1. The Licensee shall, within six (6) months of Licence issuance, revise and resubmit to the

Board for approval in writing, the *Hamlet of Rankin Inlet, Rankin Inlet Solid Waste Site Abandonment and Restoration (A&R) Plan*, dated July 2009, for the Old Landfill. The revision shall address the following:

a. A clear rationale for the decision to abandon and remediate the existing site rather than the option of removing and relocating the waste materials into a new engineered facility;
b. Design criteria for the cover, gas ventilation system and surface water management system;
c. Containment along the base given that the facility is unlined and test pit logs are unclear in specifying whether refusal was met in frozen ground when no bedrock was encountered;
d. Whether permafrost encapsulation was considered and the potential effects of saline permafrost conditions at the facility;
e. A geothermal design basis for the cover;
f. The need to monitor ground temperatures within the waste;
g. Concerns associated with the placement of the liner's outer edges on top of natural ground as indicated in Figure 9 of the A&R Plan;
h. Authorizations for the quarry source;
i. An assessment of alternative design strategies for the planned drainage ditches;
j. Describe how the area will be re-graded and what drainage and erosion protection measures will be implemented for the areas where contaminated soils are planned to be removed;
k. Justification for why the contaminated soil test pits were stopped at each of the respective depths;
l. Clarification that the estimated contaminated soil volumes are based on removing all the soil to the top of the permafrost table or bedrock;
m. Method for dealing with surface water flows and contact water during the planned excavation;
n. A contingency for dealing with seepage and drainage for soil excavated below the water table;
o. A contingency for dealing with free phase hydrocarbons and other potential liquid contaminants which may be encountered, especially near the bedrock or permafrost interfaces;
p. Reclamation and cover requirements for expose soils within the excavations following the removal of contaminated soil;
q. The need for water quality monitoring up-gradient of the landfill to establish background water quality; and
r. The need to install thermistors to monitor ground temperatures.

2. The Licensee shall submit to the Board for approval in writing, an *Abandonment and Restoration Plan*, at least six (6) months prior to abandoning any facilities or upon

submission of the final design drawings for the construction of new facilities to replace existing ones. Where applicable, the Plan shall include information on the following:

a. waste disposal sites and facilities;
b. petroleum and chemical storage areas;
c. any site affected by waste spills;
d. leachate prevention;
e. an implementation schedule;
f. maps delineating all disturbed areas, and site facilities;
g. consideration of altered drainage patterns;
h. type and source of cover materials;
i. future area use;
j. hazardous wastes; and
k. a proposal identifying measures by which restoration costs will be financed by the Licensee upon abandonment.

3. The Licensee shall complete the restoration work within the time schedule specified in the Plans approved under this Part, or as subsequently revised and approved by the Board in writing.

4. 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 H: CONDITIONS APPLYING TO THE MONITORING PROGRAM

1. The Licensee shall maintain Monitoring Program Stations at the following locations:

Monitoring Program Station Number	Description	Status
RAN-1	Unassigned	Inactive
RAN-2	Runoff from the Old Landfill	Active
RAN-3	Runoff from the New Landfill	Active Upon Commissioning
RAN-4	Discharge from the Landfarm Facility at the controlled point of release	Active
RAN-5	Monitoring well located up gradient of the Landfarm	Active
RAN-6	Monitoring well located down gradient of the Landfarm	Active

2. The Licensee shall sample monthly at Monitoring Program Station RAN-2 and RAN-3 upon commissioning, during periods of observed flow and annual discharges, to be analyzed for the following parameters:

Biochemical Oxygen Demand (BOD_5)	Fecal Coliforms
Total Suspended Solids	pH
Conductivity	Nitrate-Nitrite
Oil and Grease (visual)	Total Phenols
Magnesium	Calcium
Sodium	Potassium
Chloride	Sulphate
Total Hardness	Total Alkalinity
Ammonia Nitrogen	Total Zinc
Total Cadmium	Total Iron
Total Cobalt	Total Manganese
Total Chromium	Total Nickel
Total Copper	Total Lead
Total Aluminum	Total Arsenic

3. The Licensee shall carry out weekly inspections at Monitoring Program Stations RAN-2 and RAN-3 upon commissioning, from May to August inclusive, to identify effluent or water flow in order to fulfill the monitoring requirements of Part H, Item 2. A record of inspections shall be retained and made available to an Inspector upon request.

4. The Licensee shall measure and record the origin and volume of all soil, from all locations entering the Landfarm Facility.

5. The Licensee shall characterize through laboratory analysis and record the concentrations of petroleum hydrocarbons in Petroleum Hydrocarbon Impacted Soil entering the Landfarm Facility from all sources, as per the CCME *Canada-Wide Standard for Petroleum Hydrocarbons (PHC) in Soil*.

6. The Licensee shall record the date, amount of soil and soil quality and the final destination of all treated soil removed from the Landfarm Facility in order to meet the objectives of Part D, Item 12, and shall provide the ultimate final intended use and GPS coordinates of all soils removed.

7. The Licensee shall sample prior to discharge at Monitoring Program Station RAN-4, to verify compliance with the effluent quality limits under Part D, Item 8.

8. The Licensee shall record the volume of all Effluent discharged from the Landfarm Facility at Monitoring Program Station RAN-4.

9. The Licensee shall install groundwater monitoring wells at the Landfarm Facility. These wells shall be located with at least one located upstream of the facility for background data collection (RAN-5) and at least one downstream of the facility (RAN-6).

10. The Licensee shall sample at Monitoring Program Stations RAN-5 and RAN-6 once annually in the summer, giving consideration to adequate ground thaw and obtaining a representative groundwater sample. Samples shall be analyzed for the following parameters:

Biochemical Oxygen Demand (BOD_5)	Fecal Coliforms
Total Suspended Solids	pH
Conductivity	Nitrate-Nitrite
Oil and Grease	Total Phenols
Magnesium	Calcium
Sodium	Potassium
Chloride	Sulphate
Sulphate	Total Mercury
Total Hardness	Total Alkalinity
Ammonia Nitrogen	Total Zinc
Total Cadmium	Total Iron
Total Aluminum	Total Manganese
Total Chromium	Total Nickel
Total Copper	Total Lead
Total Arsenic	
TPH (Total Petroleum Hydrocarbons)	
PAH (Polycyclic Aromatic Hydrocarbons)	
BTEX (Benzene, Toluene, Ethylbenzene, Xylene)	

11. Additional monitoring stations, sampling and analysis may be requested by the Board or an Inspector .

12. 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 in writing.

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

14. The Licensee shall submit to the Board upon approval by an Analyst, a Quality Assurance/Quality Control (QA/QC) Plan. The Plan shall include up to date sampling methods to all applicable standards, acceptable to an accredited laboratory as required by

Part H, Item 12 and Part H, Item 13. The Plan shall include a covering letter from the accredited laboratory and Analyst, confirming acceptance of the Plan for analyses to be performed under this Licence.

15. The Licensee shall annually review the Quality Assurance/Quality Control Plan in Part H, Item 14 and modify it as necessary. Proposed modifications shall be submitted to the accredited laboratory for approval.

16. The Licensee shall include all of the data and information required by the "Monitoring Program" complete with an interpretation and discussion of the results, in the Licensee's Annual Report, as required *per* Part B, Item 1, or as requested by an Inspector.

17. Modifications to the Monitoring Program may be made only upon written approval of the Board.