Operation & Maintenance Plan for Chesterfield Inlet Municipal Water Licence:
Solid Waste Disposal Facilities
2022

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1.0 Site Description

Date this plan was prepared: December 7, 2022

1.1 Location of the Solid Waste Disposal Facility (SWDF)

Municipality:	Chesterfield Inlet
Latitude:	60°20’45” N
Longitude:	90°45’08” W
Proximity to Town:	2.2 km
Landfill Dimensions:	Undefined
Metal Waste Area Dimensions:	Undefined

Figure 1 Chesterfield Inlet Solid Waste Disposal Facility

1.2 SWDF Site Summary

Year of commissioning the SWDF: Unknown

Overview:

Chesterfield Inlet's solid waste disposal facilities consist of a fenced disposal area for municipal solid waste (MSW), a separate bulk metal disposal area approximately 200 m south of the fenced MSW area, and two drum storage areas, approximately 150 m and 270 m southeast of the MSW area. A decommissioned landfill is present between the fenced MSW area and the bulk metal disposal area, at the head of the sewage treatment wetland.

The Hamlet collects solid waste from community buildings on a scheduled daily basis (Monday to Friday) with a garbage truck and transports the waste to the MSW disposal facility, located 2.2 km west of the community. The MSW disposal facility covers an area approximately 24,000 m2 and is situated adjacent to and north of the sewage disposal facility. The MSW disposal facility is unlined and runoff from the MSW disposal facility flows into the sewage disposal facility. Daily open burning of MSW is typically practiced within the MSW disposal facility.

2.0 Staff

Role:	Senior Administrative Officer	**Name:**	John Ivey
Phone:	867-898-9951	**Email:**	SAO@chesterfield-inlet.ca

Responsibilities: The SAO manages the municipal staff to ensure that:

- proper operation of the SWDF is carried out
- sampling and inspections are completed
- annual reporting to the Nunavut Water Board (NWB) is prepared by the Government of Nunavut Department of Community and Government Services (GN-CGS)

Role:	Foreman	**Name:**	Don Tanuyak
Phone:	867-898-9939	**Email:**	chester_foreman@qiniq.com

Responsibilities: The foreman is responsible for:

- daily operations and maintenance of the SWDF
- managing waste collection

- proper segregation of waste
- compacting and burning of waste
- completing inspections and other maintenance activities
- The leachate sampling program at the monitoring stations
- maintaining signage at the SWMF and monitoring stations

Role:	Solid Waste Truck Drivers	**Name:**	Various
Phone:	N/A	**Email:**	N/A

Responsibilities: The drivers collect solid waste within the municipality from storage containers and deliver it to the SWDF.

3.0 Health and Safety

All personnel working within the SWDF must follow the *Nunavut Safety Act* and be made aware of potential health hazards associated with working around solid waste. This is imperative so individuals make a conscious effort to perform all necessary safety procedures to protect themselves, their co-workers and family members at home. Safety precautions include:

- Ensure all equipment is kept as clean as possible
- Protective clothing such as coveralls, gloves, boots, and safety glasses are to be provided to personnel and always worn when working around waste
- Workers must always wear protective gloves
- Work clothing is not worn home
- Workers must wash their hands with soap and water on a regular basis, especially before delivering drinking water, eating, and before going home
- Workers must keep their vaccinations up to date

4.0 Security and Control

Access Control of to the facility:

- Perimeter fencing around the SWDF
- Signage
- 450 m restricted land use development setback surrounding the SWDF

5.0 Facility Operations

5.1 Municipal Waste Disposal

Municipal waste collection:	Trucked pick-up
Other waste:	Drop-off
Number of days per week waste is collected:	5
SWMF Type:	Natural attenuation

Type of waste received at the SWMF:

- MSW
- Bulky metal waste
- Hazardous
- Industrial, construction and institutional

Overview of the SWDF:

The Chesterfield Inlet SWDF is not an engineered landfill and relies on natural attenuation of contaminants that may enter the surrounding environment. In this type of landfill, the rate that contaminants enter the environment is expected to occur at a rate such that contaminants can easily be broken down and the surrounding environment is not overwhelmed. Natural attenuation landfills also rely on permafrost aggrading into the covered waste cells of the landfill and eventually freezing them. However, as contaminants can freely enter the environment in this type of landfill, proper waste segregation is important to ensure harmful contaminants are kept out of the landfill.

Initial waste segregation should begin at the municipality's residences and other buildings, ensuring residents and business are familiar with acceptable wastes for the SWDF. Household hazardous or bulky wastes need to be kept out of the landfill and transported to the appropriate disposal storage locations.

The waste truck driver should monitor the waste they collect from community buildings every day, collecting only that which is acceptable for disposal at the SWDF. The municipality does provide a 'grace' day once per year to collect residents' household hazardous and/or bulk metal waste. The municipality will also provide help to residents who have larger items to dispose of and have no means of transporting them to the correct disposal area. The waste truck driver should be familiar with operational procedures for the SWDF.

Operations:

1. The SWDF needs to be properly signed to inform operators and residents of the correct location to dispose of or store certain wastes. At a minimum, the SWDF should have disposal/storage areas for:

    a. Domestic non-burnable waste (for landfilling)
    b. Hazardous waste
    c. Bulky Metal waste
    d. Domestic burnable waste

2. The waste truck driver collects municipal solid waste (MSW) from community buildings five times per week. The Chevrolet 3500 garbage truck has estimated weight capacity of 225-320 kg and is used to collect and transport municipal waste to the SWDF.

3. The compactor truck will be tipped into the SWMF. The driver should then complete an initial inspection of the waste pile to ensure it does not contain any hazardous wastes.

4. Any hazardous waste should be diverted to the appropriate disposal areas. The municipality must segregate and store all hazardous waste within the SWDF in a manner that prevents the deposit of deleterious substances into any water, until such a time that the materials have been removed for proper disposal at an approved facility.

5. Any materials requiring disposal in the bulk metal waste area should be transported there. Staff should inspect the area on a regular basis to check for new materials. Fluids (oil, antifreeze) should be drained from vehicles; batteries should be removed, packaged properly, and transferred to the hazardous waste storage area. Vehicles should then be tagged to indicate that they have been inspected and cleaned. Bulky metals can be grouped into materials such as appliances, bicycles, ATV’s, snowmobiles, and miscellaneous materials.

6. Reusable/recyclable materials (e.g. wood) should be transported to the salvage area of the SWDF. Salvaging of materials will only be supported in the designated area due to public health and safety concerns.

7. Burning of combustible waste should only occur in the designated area. A description of burning operations is described in section 5.2.

8. At least twice per month, the CAT bulldozer should be used to push the collected MSW pile over the edge of the landfill tipping face and spread out the MSW. The waste should be worked upslope gradually, to a maximum 3:1 grade. The CAT loader should drive over the waste pile at least three to five times to ensure it is packed down and the 3:1 grade is achieved.

9. The waste mound should only be allowed to reach two metres high. Annually, or once the waste mound is approximately three metres wide, the waste mound should be covered with 0.3 m of granular material and packed down to form a covered waste cell.

5.2 Open Burning

Operations:

1. Wastes for burning are identified and separated. Burning should only occur at the designated location at the SWDF and when winds are light and blowing away from the community. To prevent incomplete combustion and/or leachate from contaminated ash residual from impacting any surrounding waters, waste that cannot be burned includes:

    a. Non-wood building / construction materials (e.g. Styrofoam, roofing materials, electrical wire, insulation, plastics, asbestos, etc)
    b. Treated wood (e.g. telephone poles, pilings, cribbing, foundation wood)
    c. Asphalt & asphalt products
    d. Tires
    e. Hazardous wastes
    f. Waste paint
    g. Fuel & lubricant containers
    h. Aerosol cans & other compressed gas containers (e.g. propane tanks)

2. Staff shall burn municipal waste in accordance with the GN's Environmental Guideline for the Burning and Incineration of Solid Waste (2012). The Municipality will also apply for a permit to burn through the Fire Department. Controlling the open burn is extremely important to reduce the risk of uncontrolled fire and hazards to the public, employees, and the surrounding

environment.

3. The weather forecast must be checked prior to any burning. If heavy rain is or will be present, burning should be postponed (burning during heavy rain events may result in poor or incomplete combustion and the potential to generate harmful contaminants). Confirmation of wind speed and direction prior to any burning. If loose debris can be carried by the wind, burning should be postponed.
4. The SWDF must be closed to the public during burn events
5. Burning only in the designated burn area and ensuring burning does not occur in landfill piles.
6. Presence of an attendant during initial stages of the burn and periodic inspection of the burn once it has been established.
7. Maintaining a minimum of 5 m buffer zone around the burning area and all ensuring attendants or personnel remain upwind of the burn area.
8. Confirmation the waste is no longer hot or burning prior to the addition of more waste or covering with granular material. This can be accomplished by moving around the ash and remaining materials to ensure the fire is out and material can cool.

After every burn, once the MSW is confirmed to be cold and not burning, the CAT bulldozer should push the ash and remaining material to the landfill tipping face.

5.3 Hazardous Waste Management

Hazardous wastes are those that are known to be dangerous due to their chemical, physical or biological properties, are no longer used for their original purpose, and are intended for recycling, treatment, disposal or storage. All hazardous wastes require special handling, storage and disposal methods to prevent human health and environmental exposure.

The Environmental Guideline for the General Management of Hazardous Waste (GN, 2010) provides information regarding the proper management of hazardous waste in Nunavut. The generator of any hazardous waste is ultimately responsible for ensuring it will be properly managed from is creation to its disposal. Generators typically use carriers to transport the hazardous waste to appropriate receivers for disposal.

Coral Harbour's SWDF is only licensed to accept MSW for disposal and shall only accept household hazardous wastes for storage. Industrial hazardous wastes shall not be accepted for storage or disposal. Industrial sources (generators) are responsible to manage their own hazardous wastes.

The following hazardous waste operations and maintenance procedures deal with household hazardous wastes (HHW) only. Typical HHW which may be found in Coral Harbour include:

- Pesticides and herbicides
- Paint
- Solvents (e.g. paint cleaners)
- Flammable liquids
- Corrosive cleaners
- Batteries (wet and dry cell)
- Used fuel and oil
- Corrosive Explosive Flammable Poison
- Certain items considered HHW cannot be stored at the MSW disposal facility however. These include:
    - Ammunition, flares and explosives (including fireworks) – contact the Coral Harbour RCMP for proper disposal
    - Prescriptions, medications and bio-hazardous wastes (includes syringes) – dispose of these at the Nursing Station and/or Health Care Centre
    - Reactive chemicals – contact the GN-DOE office for disposal options

Contaminated soil can be accepted in a designated area and is typically stored in 205 L steel drums or bags approved for contaminated soil storage and must be shipped out of the municipality. Private entities responsible for creating the contaminated soil must contact the SAO to discuss storage options and provide a plan to ship the contaminants out of the municipality. The decision to store contaminated soil from industrial sources rests with the municipality.

Operations:

1. The SWDF needs to have an area set aside as a hazardous waste storage area. This area also needs to be properly signed as the "Hazardous Waste Storage Area" and should have appropriate storage options for expected waste. Proper signage helps operators, as well as the general public when residents arrive to dispose of their wastes. This area is intended for storage only, not disposal. It is expected that hazardous wastes will be stored for up to five years. This should

be sufficient time to build up enough waste to make it economical for a back haul out of the community to a licensed waste receiver.

2. Since the SWDF is generally accessible to the public, residents can come and drop off HHW throughout the year. However, the general public should not have direct access to the Hazardous Waste Storage Area for health and safety reasons. A designated public drop-off area for HHW should be used. The public drop-off area should be tended to regularly by the Foreman.

3. Inspection of the hazardous waste storage area should occur weekly inspections by the Foreman.

6.0 Maintenance

Overview of Maintenance Activities:

1. Annual inspections will be undertaken by Crown Indigenous Relations and Affairs Canada (CIRNAC) accompanied by a licensee and/or a licensee representative from GN-CGS. The inspection report and recommendations will be reviewed by a GN-CGS municipal engineer and submitted in the Annual Report submitted to the Nunavut Water Board (NWB).

2. Regular visual inspections by municipal staff of the:

- Berms
- Fence
- Signage
- Presence of water runoff in the SWDF

  Any issues identified by municipal staff must be reported to the regional municipal engineer. Follow-up actions will be undertaken by the municipality with support from the GN-CGS.

3. Geotechnical inspection of the berms by a qualified engineer as outlined in the municipal water licence.

7.0 Monitoring

Regulatory Inspection: The annual CIRNAC inspection will take place accompanied by the licensee and/or with a licensee representative from GN-CGS. The inspection report will be reviewed by a GN-CGS municipal engineer and submitted with the annual report.

Table 1 Water Licence requirements related to O&M of the SWDF

A summary of modifications and/or major maintenance work carried out on the SWDF	Proposal submitted to NWB 60 days prior
A list of spills and unauthorized discharges.	Annual report submitted to NWB
A summary of any studies requested for the SWDF and future planned studies planned	Annual report submitted to NWB
The Licensee shall sample Monitoring Program Station CHE-2 once per month in May, June, July and August, during periods of observed flow. Samples shall be analyzed for the parameters listed in Part H, Item 3 of the water license, as well as TPH (Total Petroleum Hydrocarbons), PAH (Polycyclic Aromatic Hydrocarbons) and BTEX (Benzene, Toluene, Ethylbenzene, Xylene).	Annual report submitted to NWB

Table 2 Monitoring Program Station description and locations

Station	**Description**	**Latitude**	**Longitude**
CHE-2	Runoff from the Solid Waste Disposal Facility	63° 34’ 62”	90° 75’ 64”

8.0 Surface Water Management

At some point, for a variety of reasons, impacted water may accumulate in the landfill, hazardous waste storage area, or the bulky metals area. The water may or may not be impacted by leachate, hazardous wastes, or contaminants from land farmed soil. In the event this occurs, the following procedures will be followed:

1. Collect samples from the water licence monitoring program at stations as outlined in the Environmental Monitoring Program and QA/QC Plan. It is recognized that it may take some time for results to be received from the accredited laboratory.

2. Analyze samples for parameters of concern and compare the results to the relevant Canadian Water Quality Guidelines.

3. Water should be inspected for odours, stain, or signs of visible impact (sheens, floating scum).

4. Consult with the GN-CGS municipal engineer and CIRNAC on discharge options.

9.0 Modifications and Upgrades

Modifications or upgrades needed for the SWDF: No

Planned modifications or upgrades: None

10.0 Previous Reports

- Water, Sewage and Solid Waste Operations and Maintenance Manual, Chesterfield Inlet, NU, Nunami Stantec, 2010