

OPERATION AND MANAGEMENT PLAN HAZARDOUS WASTE TRANSFER STATION

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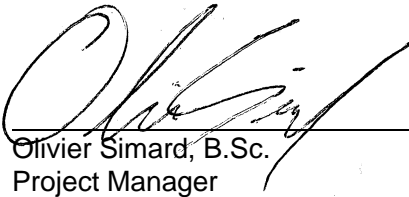


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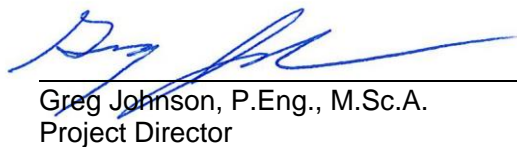
Document presented to:

***NUNAVUT WATER BOARD
AND
NUNAVUT IMPACT REVIEW BOARD***

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LIST OF ABBREVIATIONS

GN:	Government of Nunavut
HAZWOPER:	Hazardous Waste Operations
HDPE:	High density polyethylene
IMDG:	International Maritime Dangerous Goods
Imp. gal.:	Imperial gallon
INAC:	Indigenous and Northern Affairs CanadaCode
N.O.S.:	Not Otherwise Specified
PCB:	Polychlorinated biphenyls
pH:	Measure of acidity or alkalinity
RCMP:	Royal Canadian Mounted Police
TDG:	Transportation of Dangerous Goods
TDGR:	Transportation of Dangerous Goods Regulation
UN:	United Nations
WHMIS:	Workplace Hazardous Materials Information System

1. OPERATION AND MANAGEMENT PLAN

1.1 General

The facility was developed based on the need arising from the generation of various types of hazardous waste by clients who are not familiar or comfortable with the regulations pertaining to the proper packaging, safe storage, and authorized disposal of said waste. The hazardous waste is transported to the facility by the client or Qikiqtaaluk Environmental (QE) for temporary storage prior to being shipped off-site to authorized disposal facilities in southern Canada.

Hazardous waste will be stored inside 20-foot marine containers installed on-site. Approximately 10 to 15 marine containers will be used for waste storage purposes.

1.2 Location

The facility is located on a property in Iqaluit. The approximate coordinates of the centre of the property are:

Latitude: 63°44'38.22" N

Longitude: 68°32'58.59" W

2. HAZARDOUS WASTE INVENTORY AND DESCRIPTION

The main types of hazardous waste generated in Iqaluit that may be encountered at and managed by the transfer station are presented in Table 1.

TABLE 1: Hazardous Waste to be Managed

Type of Waste	Composition	Quantity Generated	Treatment Method	Disposal Method
Contaminated Water	Water is tested to meet discharge criteria.	Varies depending on the source of the contaminated water. Our treatment unit can treat a maximum of 15 m ³ /24 hrs.	<ul style="list-style-type: none"> pH adjustment to precipitate metals, polymers used for flocculation; Oil/water separator; Particulate filter; ULTRASORPTION™ filter; Activated carbon filter. 	Discharge on land 30 m from a waterbody in a location approved by authorities having jurisdiction.
Waste Petroleum, Oil, and Lubricants (POL)	Hydrocarbons collected from the settling tank and oil/water separator or from other clients in Iqaluit.	Varies	<ul style="list-style-type: none"> Segregation; Consolidation; Packaging and labelling. 	Ship south for disposal in accordance with regulations or incineration on-site in a waste oil furnace.
Waste filter media from treatment units and used absorbent materials	<ul style="list-style-type: none"> ULTRASORPTION™ (shredded absorbent); Granular activated carbon; Particulate filters; and Absorbents used during spill response. 	<ul style="list-style-type: none"> Varies depending on volume of water to be treated and level of contamination; Maximum 5 m³/yr of each waste type. 	<ul style="list-style-type: none"> Segregation; Consolidation; Packaging and labelling. 	Ship south for disposal in accordance with regulations.
Sludge	Acid and or caustics used for pH adjustment, coagulating agent, metals.	<ul style="list-style-type: none"> Varies depending on volume of water to be treated, metal concentration, and process efficiency; Estimated maximum 15 m³. 	<ul style="list-style-type: none"> Dry; Segregation; Consolidation; Packaging and labelling. 	Disposal in local landfill if meet disposal criteria or ship south for disposal in accordance with regulations.
Contaminated Soils	Soils contaminated by organics and metals.	Varies, maximum 500 m ³ .	<ul style="list-style-type: none"> Soils with organic contaminants: <ul style="list-style-type: none"> treated on-site in a biopile or landfarm after volume reduction if treatment will allow the soils to meet guidelines within a reasonable period of time; 	<ul style="list-style-type: none"> Treated soils can be used as backfill or for other purposes approved by INAC and GN; All untreatable contaminated soils will be transported south for disposal in accordance with regulations.

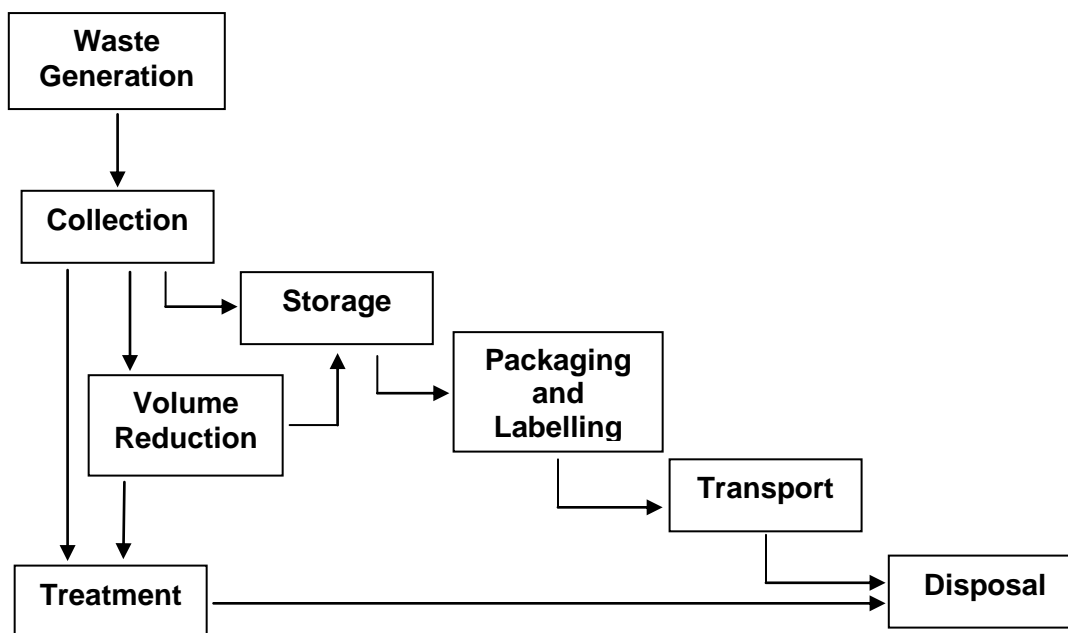
Type of Waste	Composition	Quantity Generated	Treatment Method	Disposal Method
			<ul style="list-style-type: none"> Untreatable organics (such as oil, grease creosote and PCBs): <ul style="list-style-type: none"> volume reduction, packaging and labelling; Metal soils: <ul style="list-style-type: none"> packaged and labelled. 	
Glycols	Antifreeze agents used in machinery and vehicles, as well as waste antifreeze used for de-icing purposes.	Varies according to client needs.	<ul style="list-style-type: none"> Segregation; Consolidation; Packaging and labelling. 	Ship south for disposal in accordance with regulations.
Batteries	Batteries from vehicles and other equipment.	Varies according to client needs.	<ul style="list-style-type: none"> Segregation; Consolidation; Packaging and labelling. 	Ship south for disposal in accordance with regulations.
Paint and/or paint related materials	Waste paint from building construction or demolition.	Varies according to client needs	<ul style="list-style-type: none"> Segregation; Consolidation; Packaging and labelling. 	Ship south for disposal in accordance with regulations.
Regulated Building Demolition Debris	Ballasts, light bulbs, capacitors, thermostats, asbestos.	Varies according to client needs.	<ul style="list-style-type: none"> Segregation; Consolidation; Packaging and labelling. 	Ship south for disposal in accordance with regulations.
Biohazard, medical waste	Medical sharps	Varies according to client needs.	Biohazard packaged in proper Class 8 containers at hospital or health centre.	<ul style="list-style-type: none"> Containers consolidated in a locked marine container; Ship south for disposal in accordance with regulations.

In the future, new types of waste materials may be generated in the community. These materials will need to be evaluated and analyzed to determine if they are hazardous and how they should be managed.

3. HAZARDOUS WASTE MANAGEMENT PROCEDURES

Hazardous waste management begins at the source when hazardous waste items are generated. Waste then proceeds through various steps until it is finally safely disposed of or eliminated. The steps for successful hazardous waste management can be summarized by the following flow chart.

FIGURE 1 : Hazardous Waste Management Steps



3.1 COLLECTION

3.1.1 Transfer Station

Hazardous waste is collected at the Transfer Station, which is a voluntary drop-off site. Waste materials are received by site personnel, inspected, identified (with client code and product ID), classified, segregated and placed on a temporary storage pad.

The Transfer Station will maintain flexible operating hours to allow drop-off of waste materials outside of regular business hours (9 a.m. to 5 p.m.). Waste management technicians will be available on-site to provide guidance and assistance to clients.

3.1.2 Pick-up Services

QE will also offer waste pick-up services. Transport of waste materials from client locations to the transfer station will be carried out by TDGR-trained drivers trained in vehicles equipped for the transport of such materials.

3.2 TREATMENT

The 2 types of waste that will undergo treatment at the transfer station are contaminated water and hydrocarbon contaminated soils. Treatment of water and soils are described in 2 separate Operation and Management plans.

3.3 VOLUME REDUCTION

Specialized equipment will be used to reduce the volume of aerosol cans and fluorescent tubes received at the transfer station.

An aerosol can recycling system will be used to safely puncture the cans. Residual liquid will then be drained into a drum (ready for transport) and the residual gas will be filtered through activated carbon. The 2 main types of residual liquids, flammable (e.g., paints, solvents) and corrosive (e.g., oven cleaners), are segregated and stored in separate drums. Empty aerosol cans (metal) can be further crushed and then recycled.

Fluorescent lamp crushers will be used to reduce the volume of tubes by breaking the tubes into fine glass particles inside a steel drum (ready for transport) while recovering the mercury vapour.

Spent gas filtration media will be sampled and analyzed and managed according to contaminant content. Non-hazardous spent filtration media may be disposed of at the municipal landfill site, while hazardous filtration media will be shipped south for disposal in authorized facilities.

3.4 STORAGE

Proper storage of hazardous waste is critical to ensuring the safety of users and site personnel, as well as regulatory compliance. Storage is a temporary operation that serves to accumulate waste until sufficient quantities are available for off-site shipment, and until marine transport is available (i.e., summer season). The proposed facility will be used for commercial purposes to store hazardous waste for periods that may exceed 180 days or more. Furthermore, the quantity of waste to be stored on-site will exceed the criteria set out in Appendix 8 of the *Environmental Guideline for the General Management of Hazardous Waste*¹, namely for Class 3 materials, and possibly for Class 8 materials.

As stated in the *Environmental Guideline for the General Management of Hazardous Waste*, the proposed hazardous waste transfer station will meet the following requirements:

- The facility will meet all local and territorial sitting and construction requirements and be readily accessible for firefighting and other emergency response requirements. The local Fire Chief will be advised of the storage facility and its contents for emergency planning and response purposes.
- The facility will be secure. Access will be limited to employees who have been trained in safety and emergency procedures. These procedures will be documented and a copy will be made available to employees with access to the facility.
- Containers will be placed so that each can readily and easily be inspected for signs of leaks, corrosion or deterioration. Leaking, corroded or deteriorated containers will be immediately removed and their contents transferred to a sound container.
- Drainage into and from the storage facility site will be controlled to prevent spills or leaks from leaving and run-off from entering the site.
- All waste will be stored on a firm working surface that is impervious to leaks.
- Incompatible waste will be stored in a manner that contact in the event of a spill or accidental release is not possible.
- Emergency response plans will be developed in cooperation with local emergency response personnel and emergency response equipment will be locally available in the event of a spill, fire or other emergency situation.

3.4.1 Transfer Station

Where possible, all hazardous waste received will be handled manually or with a backhoe loader for heavier items.

1. Department of Environment, Government of Nunavut, Original: April 1999, Revised: January 2002, April 2010, October 2010

Hazardous waste will be stored in sound containers approved for the type of material to be stored. The containers will be stored at a location on the site where there is minimal traffic to reduce the risk of an accidental release of the stored material resulting from contact with the storage container. The containers will be placed within the fenced storage yard. The entrance to the yard, as well as each container, will bear placards indicating the waste categories and emergency telephone numbers.

Non-hazardous solid waste, such as contaminated soils, may be stored outdoors in waste wranglers that have been palletted and secured with strapping.

During the winter months, the yard will be cleared of snow to maintain access to the storage containers.

3.5 PACKAGING AND LABELLING

Stored hazardous waste will be packaged in appropriate containers. The selection of the appropriate containers helps to prevent leaks and spills that may result in human exposure or environmental release during the handling, storage and transport of materials. Therefore, containers must be:

- Made of materials compatible with the hazardous waste;
- Filled at, or below, the maximum capacity specified by the manufacturer;
- In good condition (i.e., no excessive denting, corrosion, or wear);
- Able to withstand normal handling (i.e., to prevent spills);
- Approved for transport.

Examples of appropriate containers for hazardous waste storage and transport are listed in Table 2.

TABLE 2: Hazardous Waste Containers

Type of Waste	Container
Small propane and butane tanks	<ul style="list-style-type: none"> • Open top steel or plastic drums (45 or 75 Imp. gal.) with ventilation; • Waste wrangler (1 yd³)
Aerosol cans	<ul style="list-style-type: none"> • Open top steel or plastic drums (45 or 75 Imp. gal.) with ventilation; • Waste wrangler (1 yd³).
Small batteries	<ul style="list-style-type: none"> • Open top plastic pail with lid (5 Imp. gal.).
Paint cans	<ul style="list-style-type: none"> • Open top steel or plastic drums (45 or 75 Imp. gal.); • Waste wrangler (1 yd³).
Fluorescent tubes and light bulbs	Intact tubes: <ul style="list-style-type: none"> • Cardboard drum; • Original cardboard box;

Type of Waste	Container
	Crushed tubes and bulbs : <ul style="list-style-type: none"> • Open top plastic pail with lid (5 Imp. gal.); • Open top steel or plastic drums (45 or 75 Imp. gal.).
Cooking oil	<ul style="list-style-type: none"> • Closed top steel drums (45 Imp. gal.); • Open top plastic pail with lid and gasket (5 Imp. gal.).
Waste oil, waste antifreeze, oily water	<ul style="list-style-type: none"> • Closed top steel drums (45 Imp. gal.); • HDPE tote tanks on steel pallets (1000 L).
Flammable liquids	<ul style="list-style-type: none"> • Closed top steel drums (45 Imp. gal.).
Petroleum hydrocarbon contaminated soils	<ul style="list-style-type: none"> • Waste wrangler (1 yd³).
Vehicle batteries	<ul style="list-style-type: none"> • Waste battery wrangler (0.5 yd³).
Oil filters, other oily solids	<ul style="list-style-type: none"> • Open top steel drums (45 or 75 Imp. gal.); • Waste wrangler (1 yd³).
Gas cylinders	<ul style="list-style-type: none"> • No additional container required; however, all cylinders must have protective caps over the valves and must be secured in such a way as to remain upright at all times.

Upon reception, hazardous waste containers will be identified with a waste tracking code that includes the client ID, product type, date received, and a sequential number. If waste materials are received in inappropriate containers, they will be repackaged in compliance with the TDGR. Containers will then be properly marked and labelled in accordance with the TDGR (i.e., Proper shipping name, hazard class, label and UN number).

3.6 TRANSPORTATION

The next step in the hazardous waste management process is transportation. The transport of hazardous waste from the storage site to the southern disposal facilities will be carried out in accordance with the TDG and IMDG Regulations, as well as the *Interprovincial Movement of Hazardous Waste Regulations*. Compliance with these Regulations will reduce potential hazards to humans and the environment during the handling and transport of hazardous waste.

It should be noted that not all types of hazardous waste are regulated while in transport. As all transportation will be down within Canadian Territorial Waters and only within Canada, once on land, Canadian TDG Regulations define regulated materials that are regulated for transport and how they need to be packaged and labelled.

The main transportation requirements of the TDG Regulations are:

1. Packaging;
2. Labelling and marking of containers and road vehicles;
3. Shipping document.

Containers and packaging used for transport will be the same as those used for storage, as described in Table 2, above.

The requirements for the labelling and marking of hazardous waste regulated for transport are:

- Proper shipping name written on the container or the hazardous waste label
- UN number written on the container or the hazardous waste label
- Hazard class label(s) affixed to the container
- Hazard class placards affixed to the road vehicle

Waste items identified as non-TDG regulated do not have a UN number or hazard class.

The shipping documents for hazardous waste shipped off-site will include the following information:

- Proper shipping name;
- UN number;
- Hazard class(es);
- Packing group (PG) number;
- Flashpoint (for Class 3 products);
- Marine pollutant (for applicable products).

Other information required on shipping documents include:

- Name and address of the shipper;
- Date of the shipment;
- Number of containers, and total quantity (kg or L);
- 24-hour telephone number where the shipper can be reached.

3.7 DISPOSAL

Hazardous waste will be transported for disposal on the next available ship. The storage period for materials could be up to 9 months if storage occurs over the winter. Hazardous waste shipped out of Iqaluit will be transported by road to an authorized waste disposal facility in southern Quebec once it has arrived at the port and is ready for pick-up.

3.8 REGISTER AND RECORD-KEEPING

Hazardous waste generators are required to create, provide and maintain the records that track waste from generation to ultimate disposal. The purpose of obtaining, maintaining and preserving these documents is to ensure that waste is properly managed and regulatory compliance requirements are met. The information and documentation is also useful in determining, and avoiding, potential liability issues through the transporter or disposal facility. Contrary to minimum regulatory requirements, permanently maintaining the required records and documentation is a prudent management practice. Registers are required to maintain an inventory of the waste to be disposed and who had access to it, and who was responsible for handling it at each step.

Inspections of the facility and stored waste will be performed and recorded in the registers a minimum of once each week.

Records will be maintained and indicate the types and quantities of waste being stored along with the date, type and quantity of hazardous waste brought into or removed from the facility.

A copy of the register will be kept on-site for a period of 2 years.

4. TRAINING

Appropriate training will be provided to ensure that workers involved in hazardous waste handling, storage, and transport understand regulatory requirements and methods to minimize the hazards and risks associated with the management of hazardous waste.

This training may include:

- WHMIS - GHS;
- Transportation of Dangerous Goods (TDG and IMDG);
- Handling, packaging, and storage of hazardous waste;
- Emergency response procedures;
- Instruction in the use of fire extinguishers;
- HAZWOPER.

Federal and territorial legislation requires employers to provide WHMIS training to employees who work with controlled products (i.e., hazardous products and waste).

The Transportation of Dangerous Goods Regulations (Part 6 - Training) states that:

“A person who handles, offers for transport or transports dangerous goods must

- a) be adequately trained and hold a training certificate in accordance with this Part; or*
- b) perform those activities in the presence and under the direct supervision of a person who is adequately trained and who holds a training certificate in accordance with this Part.”*

Dangerous goods include hazardous waste. This training is required for workers responsible for the pre-transportation packaging and labelling, road transport, and completion of paperwork completion of hazardous waste. TDG training must be updated every 3 years.

Operation- and site-specific training may be developed and delivered to employees to ensure that hazardous waste is effectively and safely managed. Employees who have not received appropriate training will not work in unsupervised positions until they have completed the training requirements to do so.

5. EMERGENCY RESPONSE AND SPILL REPORTING

Risks associated with the handling of hazardous waste include releases (i.e., spills and leaks) and fire (or explosion), and are referred to as events. A spill contingency plan will be filed with the Ministry, as required by the *Spill Contingency Planning and Reporting Regulations*.

The spill contingency plan specific to the waste transfer station facilities and operations will be designed to institute methods to prevent hazardous waste events, and to safely and effectively respond to such events. Namely, keeping a minimum quantity of hazardous waste in storage, for a minimum length of time, will reduce the likelihood and magnitude of events.

The maximum volume of liquid in a single container will be 1,000 L (tote tank) for non-regulated waste (used oil and antifreeze) and 205 L for regulated waste (flammable liquids). The spill of such volumes of liquid would be relatively easy to manage. Releases of solid hazardous waste are not usually problematic and are easily recovered.

Spills of hazardous waste will be managed internally by trained waste transfer station workers. In case of fire or explosion involving hazardous waste, the fire department will be immediately called to intervene. Emergency telephone numbers are listed in Table 3.

TABLE 3: Emergency Telephone Numbers

Department	Contact Person	E-mail	Telephone
GN-DOE	Alex Brisco	mbrisco@gov.nu.ca	867 975-7726
Fire Department (General)	-	-	867 979-5655
Fire Department (Emergency)	-	-	867 979-4422
RCMP - Iqaluit	-	-	867 979-0123
Ambulance	-	-	867 979-4422

These emergency telephone numbers will be posted in prominent locations at the waste transfer station.

The waste transfer station will be equipped with:

- Telephone, mobile phone or radio capable of summoning emergency assistance;
- Portable fire extinguishers;
- Spill control equipment (i.e., spill kit).

This equipment will be kept at fixed locations to ensure availability in case of emergency. All personnel will be informed of the exact location and the appropriate use of this emergency equipment.

The Regulations state that:

“The owner or person in charge, of management or control of contaminants at the time a spill occurs shall immediately report the spill where the spill is of an amount equal to or greater than the amount set out in Schedule B.”

In the event of a hazardous waste spill, the site supervisor will immediately report the event to the NWT/Nunavut Spill Report Line at 867 920-8130.