



WASTE MANAGEMENT PLAN

TALTHEILEI NARROWS, GREAT SLAVE LAKE

EFFECTIVE DATE: MAY 16, 2022

Report Prepared for:

GREAT SLAVE LAKE LODGE

Prepared by:

PLUMMER'S ARCTIC LODGES

Version 1.2

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Great Slave Lake, Northwest Territories

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VERSION CONTROL & REVISIONS

Version	Date	Issue Type	Filename	Description
V1.0	-	Final	Great Slave Lake Lodge – Waste Management Plan	Original Document
V1.1	May 16, 2022	Final	Great Slave Lake Lodge – Waste Management Plan	Re-Formatted Entire Document
V1.2	Nov 18, 2022	Final	Great Slave Lake Lodge – Waste Management Plan	Updated incinerator information Illustration of surface water flow Removal of ash sampling

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1 INTRODUCTION AND PROJECT DETAILS

Great Slave Lake Lodge has prepared this Waste Management Plan in accordance with the Mackenzie Valley Land and Water Board (MVLWB or the Board) Guidelines for Developing a Waste Management Plan (WMP Guidelines). The WMP Guidelines were approved by the MVLWB on March 31, 2011, with the purpose of outlining the Board’s expectations with respect to waste management plans. Great Slave Lake Lodge considers this WMP a living document, which will be updated throughout the life of the Water Licence (WL) as more detailed waste information becomes available.

1.1 Company Name, Location, and Mailing Address

Plummer’s Enterprises – Great Slave Lake Lodge
Mailing Address: 950 Bradford St., Winnipeg, MB, R3H 0N5
Phone: (204) 774-5775 Fax: (204) 783-2320
Email: chuk@plummerslodges.com
Attention: Chuk Coulter, General Manager

1.2 Distribution List

Table 1 – Distribution List

Name	Position
Chuk Coulter	General Manager
Reid Stoyberg	Environmental Consultant
Erica Janes	Regulatory Specialist

1.3 Purpose and Scope

The purpose of this WMP is to ensure appropriate processes are developed and implemented to prevent pollution, including waste management. The scope of this WMP is for the duration of Great Slave Lake Lodge’s activities in the Taltheilei Narrows, Great Slave Lake location.

1.4 Company Environmental Policy

Great Slave Lake Lodge is committed to the concept of sustainable development and the protection of the environment and human health. The company’s environmental, health and safety policy is to:

- protect employees, the public, and the environment.
- fully comply with all applicable legislation, regulations, and authorizations.
- work proactively with federal, territorial, and Aboriginal governments, other relevant organizations, and the general public, on all aspects of environmental protection.
- anticipate future waste control/mitigation requirements and make provisions for them.
- keep employees, contractors, inspectors, Land and Water Board personnel, appropriate governments (Aboriginal, federal, and territorial), and the public informed of any changes at the site or with project activities.

The plan is presented to all staff during their on-site orientation sessions. All employees and contractors are aware of the locations of the plan on the site at Great Slave Lake Lodge. During the orientation meeting, training sessions are scheduled to ensure employees have an understanding of the steps to be undertaken in regard to waste management.

1.5 Project Description

The Taltheilei Narrows, Great Slave Lake location of Great Slave Lake Lodge is used as a camp for a remote fishing lodge. Permits and licences are in place for the company's operation. The camp operates on a seasonal basis with operations occurring from June to September and is shut down for the remainder of the year.

1.6 Site Description

The Lodge is located approximately 146 kilometres east of Yellowknife at the Taltheilei Narrows of Great Slave Lake, at 62°35'43.3"N, 111°31'00.1"W. It is a remote area, with no adjacent communities or inhabitants. In addition to the main camp illustrated in Figure 2, there is one road that connects the camp to a private 5300' gravel airstrip. Lutselk'e is the nearest community approximately 46 km to the southeast. Figure 1 illustrates the Great Slave Lake Lodge site on a 1:50,000 scale.



Figure 1. Site Location Topographic Map. The scale is 1:50,000.



Figure 2. Detailed Site Map.



Figure 3. Summary of Waste Management Facilities

2 REGULATORY REQUIREMENTS

Great Slave Lake Lodge will comply with applicable territorial, provincial and federal laws and regulations concerning the generation and management of waste. Table 2 lists the regulations and guidelines that may be applied or referenced for the management of waste throughout the duration of operations at Great Slave Lake Lodge.

Table 2. Waste Management Regulations and Guidelines

Regulator and Organization	Regulation or Guidelines
Canadian Council of Ministers of the Environment (CCME)	Canadian Environmental Quality Guidelines Canada-Wide Standard for Dioxins and Furans Canada-Wide Standards for Mercury
Environment and Climate Change Canada	Technical Document for Batch Waste Incineration
Government of the Northwest Territories (GNWT)	Guideline for Hazardous Waste Management
Mackenzie Valley Land and Water Board	Guideline for Developing a Waste Management Plan
Transport Canada	Transport of Dangerous Goods Regulations

3 WASTE MANAGEMENT PLANNING

3.1 Types of Waste Management

There are multiple options to consider when managing waste. Figure 1 shows Great Slave Lake Lodge’s most preferred to least preferred waste management options, which are in line with the Board’s WMP Guidelines. Key factors considered when determining the best waste management option for the various wastes generated to include the protection of human health, protection of the environment, and cost-effectiveness.

Waste management can be difficult in the Northwest Territories due to the remoteness of the sites, limited disposal locations, and minimal infrastructure. For these reasons, source reduction, reuse, and recycling/recovery are the most preferred options for waste management. Treatment can be beneficial but bringing the required equipment into remote areas can be difficult. Disposal is the least preferred option due to the potential impact on the environment from shipping and disposal of waste and the associated costs.

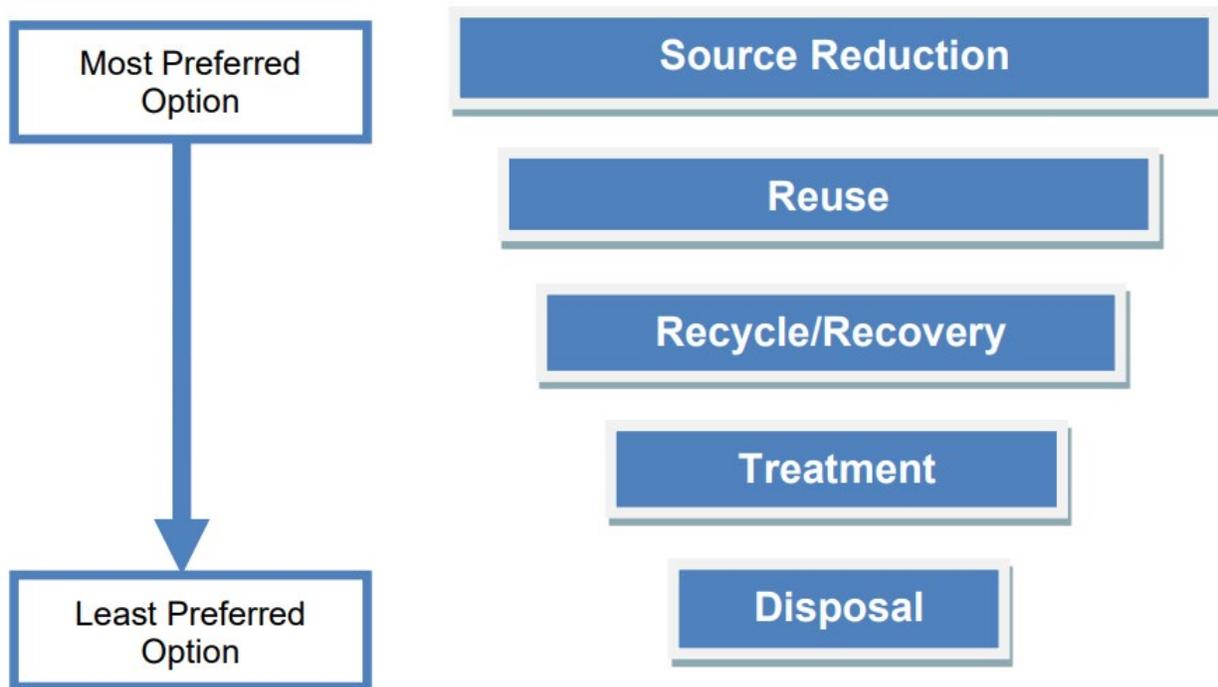


Figure 4. Waste Management Hierarchy

3.2 Source Reduction

Source reduction is achieved by reducing waste generated at its original source. Through source reduction, the volume or toxicity of waste generated is decreased by using alternative materials or processes. Source reduction may be the most effective, proactive, and potentially cost-reducing method of waste management as it reduces the amount of waste requiring management. The WMP Guidelines suggest five ways to accomplish source reduction:

- Material elimination
- Inventory control and management
- Material substitution
- Process modification; and
- Improved housekeeping, maintenance, and/or training.

Great Slave Lake Lodge proposes to undertake source reduction when possible and feasible. Potential benefits of using the source reduction method of waste management are decreased environmental impacts, increased cost savings, and reduction in transportation and disposal costs.

3.3 Reuse

Reuse is achieved when materials are reused for the same purpose or reused for a different function. If the waste product has an alternative application, it may be shipped off-site for reuse in another industry. Where possible, Great Slave Lake lodge will make efforts to reuse materials.

3.4 Recycle and Recovery

Recycle/recovery is the process by which materials otherwise destined for treatment or disposal are collected, processed, and/or remanufactured into the same or different products. Great Slave Lake Lodge makes efforts to ensure that recyclable materials are recycled.

3.5 Treatment

Treatment of waste is a method which reduces the volume, mass and/or toxicity prior to disposal. Common methods of treatment are thermal, physical, chemical, and biological processes. Great Slave Lake Lodge implements Septo Bac to help treat its septic waste.

3.6 Release to the Receiving Environment

Disposal of waste is the least preferred method of waste management due to potential environmental impact, transportation, and associated costs. If more desirable methods of waste disposal are not available or not economically practical, Great Slave Lake Lodge will require waste disposal. Domestic waste, sewage, and incinerator ash are anticipated to be the most common waste streams requiring disposal.

4 SUMMARY OF WASTE MANAGEMENT

Great Slave Lake Lodge is anticipating the following waste streams may be produced during lodge activities:

Table 3. Summary of Waste Management

Waste Stream	Description	Handling and Storage Methods	Treatment and Disposal Options
Organic Domestic Refuse	Food scraps.	Stockpiled daily in small waste bins.	Organic waste is fed to the camp dogs.
Non-Organic Domestic Refuse	Garbage or rubbish.	Stockpiled daily in small and large garbage bins.	Segregated and disposed of at an approved waste landfill facility.
Recyclables	Cans and Bottles	Stockpiled in small and large recycling bins.	Segregated and taken to an approved recycling facility throughout the season.
Sewage	All human excreta and associated products	Stockpiled in two septic tanks.	Treated with Septo Bac. Greywater is pumped to the cobble leach field. Solids are segregated and disposed of in the solid waste disposal area
Used oil, lubricants, hydraulic fluid, and absorbent pads	Petroleum or synthetic oil that has been used, and absorbent materials used for spill clean up	Stockpiled in appropriate containers and stored in a fuel storage area or storage shed.	Used oil and lubricants will be disposed of at an approved waste storage facility with appropriate authorizations.
Empty Fuel Drums	Containers used to store fuels	Stockpiled in the fuel storage area.	If not re-used, transported to approved recycling or waste storage facility.
Scrap Metal	Any metal that may be onsite and cannot be reused.	Stockpiled	Scrap metal will be removed from the site at the end of the operating season and will be taken to an approved waste landfill facility with scrap metal recycling.
12 Volt Batteries	Any dead batteries that cannot be repaired.	Stockpiled.	Transported to Yellowknife to an appropriate waste disposal facility.
Antifreeze (Ethylene Glycol)	All winterizing materials.	Stockpiled in original containers.	Transported to Yellowknife for disposal at an appropriate waste disposal facility.
Combustibles	Paper, cardboard, untreated wood	Stockpiled.	Incinerated.

4.1 Handling and Storage of Waste Streams

Great Slave Lake Lodge will ensure that waste streams are handled and stored safely during lodge activities. Safety Data Sheets (SDSs) for applicable products will be located on-site and accessible to workers and will outline information on safe handling precautions and product-specific information.

Hazardous and non-hazardous waste will be stored in a safe and secure manner and in accordance with the following:

- Regular inspections of the storage and handling procedures will be performed;
- Waste containers will be placed so that each container can be inspected for signs of leaks or deterioration. Leaking or deteriorated containers will be removed and their contents transferred to a sound container;
- An emergency response and spill contingency plan has been developed by Great Slave Lake Lodge and will be accessible to workers;
- The storage facility will be equipped with emergency response equipment appropriate for the type and volume of materials stored within (i.e. spill kit, appropriate type of fire extinguishers etc.);
- Waste containers and packages will be properly labelled according to the appropriate Workplace Hazardous Management Information System (WHMIS), SDS, and/or federal Transportation of Dangerous Goods Regulations;
- Approved containers and storage areas will be structurally capable of withstanding the aggregate weight of all containers within the package;
- Incompatible wastes will be segregated by chemical compatibility to ensure the safety of the public, workers and facility and will be based on the WHMIS and/or SDS for each waste item;
- Appropriately sized containers will be used for collecting and storing the waste. Container and package lids will be secured tightly; and

4.1.1 Sewage Waste

All greywater and solids flow into two septic tanks. The tanks have 500 and 1000-gallon capacities respectively. The liquid wastes are pumped into a cobble leach field using a float pump system that activates based on fluid levels within the septic tanks. The cobble leach field is located 200 feet from the shoreline and approximately 75 feet elevated from the water level. The dimension of the septic field is 15 feet wide by 30 feet long by 8 feet deep (Figure 3). Volume estimates of greywater are approximately 3000 L per day. This calculation is based on the average occupancy of 30 individuals and 100 L per day per person; which is approximately one-third of the Canadian domestic water consumption rate. The tanks are pumped out at the end of each operating year annually or as needed and the solids are transported to the solid waste disposal area on-site.

4.1.2 Combustible Waste

All incineration on-site is done in accordance with the Technical Document for Batch Waste Incineration. Paper, cardboard, and untreated wood are segregated and burned in the incinerator (Figure 5). By eliminating food waste and plastics from the incinerator, concerns about mercury, dioxins and furans are mitigated. Once per year, approximately 3 m³ of ash is deposited into the solid waste disposal area.



Figure 5. Great Slave Lake Lodge Incinerator. The dimensions are 8'x8'.

4.1.3 Solid Waste Disposal Area

The solid waste disposal area is located on the west side of the runway (Figure 3). This is the location where appropriate solid waste is disposed of in mid-September. The dimension of the site is approximately 20 feet wide by 30 feet long by 12 feet deep. The site is built on top of a ridge comprised of a gravel and clay mix. The location is approximately 400 feet from the shoreline of Great Slave Lake and is set at an elevation of 150 feet above water level.

On average Great Slave Lake Lodge annually produces approximately 6700 lb. of solid waste (Based on 4.5 lb. per day, per person). However, through incineration, food waste segregation and recycling, the only waste that will enter the solid waste disposal site is approved incinerator ash and sewage waste solids. Annually, approximately 3 m³ of incinerator ash is deposited into the solid waste disposal area.

4.2 Hazardous Waste Management

In regards to hazardous waste generated by lodge activities, Great Slave Lake Lodge will ensure the following is completed:

- Hazardous waste will be classified, labelled and stored properly;

- Ensure the proper disposal of hazardous waste by an acceptable method;
- Ensure workers are trained in the management of hazardous waste, including emergency response in the event of a discharge, and are equipped with appropriate PPE; and
- Comply with all other regulatory requirements for hazardous waste management, including transportation, occupational health and public health requirements.

4.3 Transportation of Hazardous Waste

Hazardous waste transported off-site for recycling or disposal will be packaged and transported in accordance with the specifications provided in the Northwest Territories Guideline for General Management of Hazardous Waste in the NT, the NT Transportation of Dangerous Goods Regulations, and the Interprovincial Movement of Hazardous Waste Regulations to meet specific requirements for packaging and labelling dependent on the mode of transportation.

Only personnel or contractors trained, certified and competent in the above regulations for the shipment of hazardous waste can prepare the waste for transportation and can complete designated shipping documents. Great Slave Lake Lodge is a registered generator of hazardous waste with the GNWT, Environment and Natural Resources.

The Transportation of Dangerous Goods Regulations requires that a completed waste manifest form accompany shipments of hazardous waste. In the NT, a Movement Document supplied by the Department of Environment and Natural Resources qualifies as a hazardous waste manifest form and is recognized by other provincial agencies. If hazardous wastes are to be transported off-site, Great Slave Lake Lodge will:

- Ensure a waste manifest form/Movement Document is properly completed and accompanies the shipment; and
- Ensure the waste is transported by a registered hazardous waste carrier to a registered receiver.

4.4 Waste Management Plan Review and Update

This Waste Management Plan will be reviewed annually prior to the beginning of each summer fishing season. It will also be reviewed as and when required in between those periods either due to issues recognized by those operating the lodge, by the Water License Inspector, or by a change in regulations, license conditions, etc.