GOVERNMENT OF NEWFOUNDLAND AND LABRADOR
Department of Environment and Conservation

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GUIDANCE DOCUMENT

Title: **Environmental Standards for Labrador Landfills**

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Environmental Standards
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1.0 PURPOSE

The goal of modern waste management is to minimize the quantity of municipal solid waste disposed to landfill thereby significantly reducing any adverse environmental impact associated. Segregation and appropriate storage of waste materials are also necessary to facilitate reuse, and the implementation of composting and recycling programs.

This document sets out the Department of Environment and Conservation's standard for solid waste landfills in Labrador.

The standard may also be applied to small communities located in insular Newfoundland, where waste diversion strategies have been implemented, but access is restricted for part of the year; until such time that waste material can be fully diverted to a modern regional waste management facility.

2.0 BACKGROUND

There has been considerable growth in Western Labrador (Labrador City and Wabush) related to the development of mining projects in recent years; and an increased population related to the development of the Lower Churchill (Muskrat Falls) development in the Happy Valley Goose Bay and Churchill Falls area is anticipated. By comparison, many of the outlying areas in Southern Labrador and along the North Coast are much smaller.

With respect to insular Newfoundland, a community may be considered under this document if road access or another form of transportation is restricted for part of the year. In such a case it may not be possible, or safe, or it may be financially prohibitive to transport waste material or recyclables for disposal elsewhere on a regular basis. Due to these difficulties, hazardous waste in particular, may not be removed from the solid waste stream and can therefore present a long term environmental and public health and safety hazard.

While larger towns have more access to transportation, the implementation of recycling programs still requires resource managers, storage facilities and financing mechanisms to be successful. The cold northern climate also affects waste management efforts everywhere in Labrador, with higher costs associated with storage/ infrastructure development and operations over the course of the calendar year. Snow and ice conditions, and inclement weather can affect access and transportation to remote communities for many months of the year.

The environmental standards for siting and operating of a non-containment landfill in Labrador are contingent upon supporting waste management practices including: segregation and removal of hazardous household waste for proper disposal; separation of suitable organic material for composting, and expansion of recycling and reuse programs. Enhanced waste management education is also necessary for the success of waste management programs.

Once hazardous materials, recyclables and compostable organic material are removed, the volume and nature of residual waste for landfilling is substantially improved. The residual to be landfilled would compose a significantly reduced volume of inert waste material which could be disposed in an unlined landfill at a suitable location.

Implementation of sustainable waste management practices will reduce the public health and safety risks, and any adverse environmental impacts associated with landfilling residual waste material. The adverse environmental impacts associated with poorly managed waste material may include: odour or impaired air quality; unsightly and unsanitary conditions; litter, attracting bears or other large carnivores, nuisance vectors and rodents; potentially toxic leachate and surface water run-off; contamination due to petroleum hydrocarbon or other hazardous materials spills, explosions and fire. Planning to maximize the safe, and efficient use of

property dedicated to waste management will also significantly reduce landfill closure costs and allow for productive future use of the site.

Effective operations management and good housekeeping practices are required, in addition to properly trained staff and current operations management plans, and environmental health and safety contingency plans.

3.0 LEGISLATION AND APPROVALS

The legislative authority for the establishment, development and operation of a waste management system is provided through the *Environmental Protection Act,* Parts IV, V and XI (specifically sections 16, 78 and 83). Other legislation that may apply to the construction and operation of a landfill include the following:

Other related Provincial legislation

- *Regulations* under the *Environmental Protection Act SNL 2002 cE-14.2. and*
- *Water Resources Act, 2004 and Regulations*
- *Occupational Health and Safety Act (O.C. 96-478) and Regulations*
- *Municipalities Act* , 1999 *and Regulations*
- *Public Health Act, Sanitation Regulations*

Federal legislation

- *Canadian Environmental Protection Act and Regulations*
- *Transportation of Dangerous Goods Act and Regulations*
- *Fisheries Act*
- National Fire Code
- *Explosives Act*
- *Nuclear Safety and Control Act*

Canadian Council of Ministers of the Environment (CCME) Guidelines (for soil, sediment, and water quality) as specifically referenced in the Terms and Conditions of Certificates of Approval to Construct/Operate a Waste Management System, as issued by the Department, are enforceable under the Environmental Protection Act.

Certificate of Approval Process

The characteristics of northern communities and their landfilling requirements will vary considerably, therefore site-specific information will be required by the Department. Factors to be taken into consideration include geographic location, population demographics, means and frequency of transportation and operational resources i.e. funding (tax base), equipment and personnel.

However, once a waste management plan is in place, and an appropriate location for a landfill has been determined, the Department may issue a Certificate of Approval for a specified operating period.

Conditions of an approval will address the requirements and/or recommendations regarding waste minimization, segregation and diversion, and the safe and secure operation of the site.

Applicable financial assurances including pollution abatement insurance and automotive insurance policies would need to be in place for all operators contracted to construct and to support the operations of site.

In some cases there may be environmental monitoring and reporting requirements and provision for inspections by the Department.

4.0 SITING REQUIREMENTS FOR LABRADOR LANDFILLS - TABLE 1

Feature	Requirements
Site location and plan	An accurate description of the facilities/equipment, and GPS location coordinates shall be required. Waste management areas shall be sized and designed to safely handle the anticipated volume to be received, processed, stored, and shipped out (i.e. throughput) for disposal, for the maximum time delay between shipments. All systems, components and features shall be technically sound, and demonstrated to meet Departmental environmental standards in terms of structure and performance.
Residential Areas	In remote areas, for populations <5000, landfills shall be located at least 1 km and downwind from the nearest residence. For populations > 5000, landfills shall be located at least 1.6 km from the nearest residence and consideration shall be given to reducing visibility.
Environmentally sensitive areas	Waste storage/management facilities and landfills shall not be sited in environmentally sensitive areas (flood plains, parks, nature reserves, areas where there may be endangered species of plants or animals, wildlife migration corridors, wetlands, etc).
Access road for waste management/storage/landfill.	Access roads shall not be located in environmentally sensitive areas. They shall be constructed and maintained consistent with current Resource Road Construction Environmental Guidelines and Design Criteria. Access at or to the remote location shall be removed and/or restricted when activity at the site is curtailed or terminated.
Hydrogeology and soil conditions	Landfills or waste storage areas shall be sited in an areas of low to medium soil permeability (hydraulic conductivity of 1×10^{-6} cm/s), and shall be at least 1.5 m above the seasonal high groundwater table. Areas where there is a reasonable depth of native soils and no useful groundwater resources are preferred locations. Where permeability requirement cannot be achieved under natural conditions, some consideration will be given to variances, with justification by the proponent. Containment, sloping and drainage shall be designed to reduce run-on and accumulations of surface water (pooling); and any run-off from the site shall be directed so as to minimize adverse environmental impact.
Waterbodies	Landfills or waste storage for recycling, shall be a minimum of 100 m distance from the High Water Mark of a significant waterbody as defined under the Water Resources Act or assessed by the Department.
Prevailing wind direction	Landfills, composting areas, and hazardous material storage areas shall always be located predominately down- wind of residential and work areas.
Unstable Area	No landfills shall be constructed or waste material stored within 100 metres of an unstable area
Fire Break	Distance(s) to be approved in consultation with the Fire Commissioner's Office.

4.0 SUMMARY OF LABRADOR LANDFILL OPERATIONS REQUIREMENTS - TABLE 2

Size of community	Waste Diversion					Construction and Demolition Debris	Operations mgmt. and EH&S plan	Backfilling/ Covering of waste	Environmental monitoring
			recyclables						
	HHW	composting	metals	plastics	paper				
<1000	✔	O	✔	O	O	reuse where possible; may be used for landfill cover; may be used in compost. may be landfilled	site signage required	monthly in summer	unlikely to be required
1000-5000	✔	✔	✔	O	O		site signage required and municipal plan must address	bi-weekly in summer	site-specific monitoring may be required
5000-10,000	✔	✔	✔	✔	✔		site signage required and site specific O/M and EHS plans required.	weekly in summer	site-specific monitoring may be required

Waste management records shall be maintained over the course of at least two years.

Staff must be trained in proper health, safety and waste handling/ management.

✔ required* O optional

Legislative notes:

1. *Waste Diversion* and *Waste Management Regulations* are in place, and stewardship programs have been established for beverage containers, used oil and electronics. These remain in effect for all areas of NL.
2. The *Environmental Control Water and Sewer Regulations, 2003* apply to all surface water discharges from the site.
3. Variations may be considered with justification. *

5.0 RESTRICTED WASTE MATERIAL

The following is a list of wastes for which the appropriate disposal option shall be specifically approved/ approved with restrictions by the Department. Some of these wastes categories may be approved for recycling, composting, or thermal treatment.

Biomedical waste shall be appropriately contained for shipment to an approved disposal facility. Biomedicial waste shall NOT be landfilled.

Bulk liquids or semi-solid sludges containing free liquid shall be appropriately contained and stored for removal to a proper disposal facility. Dewatering and local treatment such as composting may be approved by the Department.

Construction and Demolition Debris (C & D) may be segregated from the waste stream and directed to the appropriate location for reuse and recycling where possible. C & D debris can also be shredded and used on the landfill for cover material. Attention to any fire hazard that may be created is necessary, particularly during dry summer months. In some cases clean wood waste and landscaping debris may be directed to composting.

Electronic Waste It is recommended that used electronic equipment and devices that are intact and uncompromised be collected in a secure storage area, for regular removal to recycling where a program exists. Landfill disposal will remain an option for residents until a local recycling program has been established. Electronic waste such as communications equipment and computers/ monitors, that have been damaged, or dismantled to potentially expose hazardous constituents, is considered to be hazardous waste for regulatory purposes, and should be managed through a HHW program. Recycling is required for commercial quantities of electronic waste.

Equipment containing regulated substances (refrigeration, air conditioning and fire extinguishing equipment) shall not be disposed of at a waste disposal site without first having the regulated substance recovered by a person approved under the Halocarbon Regulations and shall be labelled "Halocarbon Free". Training of individuals and equipment to conduct this removal may be required. Special arrangements on an annual basis may be possible.

Explosives are separately regulated under the *Explosives Act* by Natural Resources Canada.

Fuel storage tanks (commercial or residential) shall not be accepted at a waste disposal site without confirmation that the tanks have been purged of product, tank bottom sludge and vapour. The tank must also be cut in half or sufficient openings cut in the tank to prevent the accumulation of vapour and to accommodate visual inspection.These actions are essential to reduce the potential for vapour pressure to increase in an enclosed tank whereby an explosion may accidentally occur. If municipalities, transfer stations or regions would like to develop a fuel storage tank management program, the Department shall be contacted to amend or issue an approval.

Hazardous waste dangerous goods and regulated hazardous waste shall not be landfilled. A designated holding and inspection area to facilitate proper handling of wastes which are suspected to contain hazardous materials is required. Where there exists any doubt regarding the properties of a given waste, consultation with Service NL is required prior to disposal Municipal landfills in this province are not permitted to accept hazardous waste materials other than Household Hazardous Waste for storage at depots approved by the Department. These HHW depots or areas shall be an enclosed structure, fenced, locked, and underlain by an impermeable surface, have adequate ventilation and a means to contain any spills before reaching the receiving environment. The handling and transportation of hazardous waste materials, to licensed final treatment or disposal facilities shall be conducted by a licensed transporter.

Industrial/commercial. Institutional waste shall only be accepted with prior approval from the GSC and Regional Service Board.

International waste is to be considered as "special waste".

Organic waste Organic and compostable waste, which may include various special waste types, shall be diverted wherever possible to an appropriate composting facility/operation. Containers shall be wildlife (bear) proof, and storage shall be placed at a reasonable distance from the community to minimize potential for wildlife encounters.

Petroleum based products – The storage of petroleum based products; and hazardous materials including chemicals and solvents; shall be in approved containers, and on an impermeable surface with 100% secondary containment. Materials such as oil filters that may be contaminated with petroleum based products shall be allowed to fully drain prior to appropriate disposal.

A stewardship program is currently in place. Storage shall be as prescribed by volume in the *Used Oil Storage Regulations, 2002* (as may be amended from time to time). Appropriate reuse is permitted to reduce volumes. The Department of Environment and Conservation should be contacted for further information.

Radioactive (70 becquerel/g) and low–level radioactive materials (NORMs): Radioactive waste is separately regulated by the Canadian Nuclear Safety Commission and shall not be accepted at any landfill. A separate permit is required from the Department of Environment and Conservation for the handling and management of low- level radioactive materials

Raw sewage/septic sludge Service NL shall be contacted regarding options and permitting requirements to manage sewage disposal.

Recyclable metals may be stored at a designated location on-site in an organized and safe manner. All environmentally hazardous materials shall be safely removed and appropriately contained/stored prior to stockpiling the metal. Access to this area shall be controlled by gating/fencing and monitored.

White metal such as freezers, refrigerators and stoves may be appropriately stockpiled in a separate area. Special arrangements may be made with metal recyclers to arrange for bulk transport a recycling operation on a yearly or longer basis.

Special waste Viable alternatives including landfilling shall be determined by the Department. The handling and disposal guidelines, and technical recommendations of regulatory agencies, shall be adhered in all cases. The specific on-site location of landfilling shall be permanently marked and recorded to allow retrieval should corrective or further management of the waste be required at a future time.

Used Tires Acceptance of automotive tires included in the Used Tire Recycling Program, for temporary storage would require approval from the Department and tires must meet MMSB specifications: whole, clean tires with rims removed.

Off the road tires (OTR) or all-terrain (ATV) tires, can be defined as tires used on rolling stock equipment used in the agricultural, forestry, industrial/construction and mining industries. These tires are not collected under the Used Tire Recycling Program by MMSB. If not approved for specific recycling applications, they may be landfilled.

6.0 ENVIRONMENTAL MANAGEMENT, HEALTH AND SAFETY

Employees and volunteers shall be trained to identify and safely handle hazardous and unacceptable materials. Maintaining the appropriate level of training/certification will help ensure material is properly stored for treatment/ packaging for shipment to approved recycling or final disposal facilities.

The site manager and/or any persons employed to work on the site, shall have up to date training and practice on the implementation of the Environmental Emergency Health and Safety Contingency Plan, and the use of appropriate Personal Protective Equipment Emergency response equipment shall be conveniently located and clearly marked.

Vector Control

Waste shall be contained so as not to attract or lead to the propagation of disease carrying vectors. Waste storage and landfill areas shall be sited and constructed to avoid any issues with standing water. Should a problem develop with potential disease and nuisance vectors (e.g. mosquitoes/flies/rodents) details shall be provided to the Department.

The *Pesticides Control Regulations, 2003* apply, and an approval, advance notification and signage are required if chemicals are to be used at the camp or worksite. Worker exposure shall be avoided.

7.0 DECOMMISSIONING

Factors to be considered include final waste removal, site cleanup, repair and rehabilitation, and removal or securing of infrastructure, equipment and access. Controls/contingencies for nuisance including wind-blown debris, litter, rodents, other vectors and illegal dumping may also be required. The owner/operator shall notify and receive approval in writing from the Department at least 180 days in advance of the site ceasing operation.

As part of the decommissioning plan the proponent shall provide as built drawings for all remaining facilities, components and installations. An up to date and accurate plot plan, including geographic positioning system coordinates for site features shall also be provided. A final inspection by the Department may be required.

8.0 REFERENCES:

Arktis Solutions Inc. 2011, Report on Current State of Solid Waste Management and Facilities in Nunavut and Cost Benefit Analysis of Selected Solid Waste Management Approaches. Government of Nunavut-Community and Government Services Project #2010-27.

Steel, A., Andrews, M. and A. Coombes. 2011. Consolidated Best Practices of, and Recommendations Related to Landfills in Limited Access Communities of Newfoundland and Labrador. Faculty of Engineering and Applied Science and The Harris Ctr, Memorial University.