

## Requirements for Commercial Dumps

The *Solid Waste Regulations* under the *Environment Act* require a permit to operate a dump for the disposal of any amount of non-hazardous solid waste generated by a commercial activity or to operate a dump for the disposal of non-hazardous solid waste for commercial purposes. Commercial dump permits are typically required by remote camp operations that dispose of all or some of their waste (including ash) onsite. A permit is also required by any other commercial operation that buries waste onsite.

This guidance document describes the requirements for siting, construction, operation and closure of commercial dumps to ensure that the risk to the environment and human health is minimized. Because there are many different types of commercial operations in Yukon that generate different types and amounts of solid waste, the requirements for commercial dumps depend on the particular operation in question. This guidance document also describes the requirements for incineration and open burning of waste, regardless of whether the resulting ash is buried onsite or transported offsite for final disposal.

In case of any discrepancy or inconsistency between this guidance document and a permit or the relevant regulations, the permit and regulations shall prevail.

For general guidance and best management practices on solid waste management, please refer to the [Solid Waste Management for Northern and Remote Communities, Planning and Technical Guidance Document \(2017\)](#).

### **Burial of Solid Waste and/or Construction and Demolition Waste**

Most commercial dump permit holders generate and dispose of mixed waste. This may include food waste, cardboard and other paper-based waste, and plastics and packaging, as well as construction and demolition (C&D) waste.

Some requirements for this type of commercial dump vary depending on the size of the waste disposal area. The requirements outlined in this section are minimum requirements of the Environmental Programs Branch for commercial dumps. Additional requirements for this type of facility may exist under other federal or territorial legislation.

### **Siting**

A commercial dump must be sited in a location that meets all of the following requirements:

- a. The boundaries of the dump must be more than 100 m away from the highest observed water level of any surface water body for cells with area less than or equal to 50 m<sup>2</sup> and 300 m away from the highest observed water level of any surface water body for cells with areas greater than 50 m<sup>2</sup>. (Note, that for existing facilities established in accordance with a different requirement at the time, the facility must

be in compliance with the original setback until any new cells are constructed. New cells must meet the appropriate setback as listed above);

- b. The boundaries of the dump must be greater than 300 m away from a drinking water well or the determined capture zone of a drinking water well;
- c. The boundaries of the dump must be greater than 100 m away from of an unstable area, such as a fault line or an area subject to slides or avalanches, or within any distance where an unstable area puts the dump at risk; and
- d. The dump must not be located within a 100-year floodplain.
- e. If a dump is to be constructed over permafrost, the applicant must demonstrate that no suitable alternative location exists. Facilities on permafrost must be sited on thaw-stable permafrost and designed to minimize ground thaw and facilitate redevelopment of permafrost after closure. Ground temperature monitoring must be undertaken to ensure that the surrounding ground is unaffected. Please contact the Environmental Programs Branch for the siting requirements, if no permafrost-free suitable location has been identified.

Additional siting recommendation:

- a. Locate the dump site away and upgradient from any constructed ponds such as tailings ponds, leaching ponds or stormwater management ponds.

## **Construction**

The commercial dump must be constructed such that the base of any cell (including trenches) used for the burial of solid waste (including ash) is at least three meters from the highest observed groundwater level. Best practices to determine depth to groundwater include installation of monitoring wells. However, in lieu of this, borehole drilling (without well installation), test pitting or surface geophysical methods may be considered. Applicants should analyze available local and regional groundwater level data, topography of the site and distances to surface water bodies to make estimates of groundwater depth.

At the time of construction, organic overburden must be removed from each cell location, stockpiled, and retained for the life of the cell for use in restoration and revegetation during cell closure. The location where the cell is constructed must have a slope of 6% or less.

The base liners for the commercial dumps are not required but are encouraged as a best management practice to prevent transport of contaminants from the waste to groundwater. The liner could consist of one of the following:

- a. A 1-metre thick layer of soil with maximum hydraulic conductivity of  $1 \times 10^{-7}$  cm/s;
- b. A composite liner comprised of soil compacted to 0.6 metres with maximum hydraulic conductivity of  $1 \times 10^{-7}$  cm/s overlaid by an impermeable flexible membrane liner with a

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minimum thickness of 60 mil (thousands of an inch), a geotextile, and a 0.3 metres of protective cushion layer; or

- c. A double liner consisting of two impermeable flexible membrane liners each with minimum of thickness of 60 mil (thousands of an inch).

## Operation

1. Any exposed waste placed in the cell shall be covered with soil or other comparable material to a depth of 0.1 metres after every 0.5 metres of solid waste is deposited. This requirement does not apply between November 15 and April 15 if local source of cover material is not available.
2. All putrescible waste storage and disposal areas are required to be located within an electric exclusion fences and gates to prevent dangerous wildlife entering the encompassed area of the site. The fence needs to be electrified during prescribed times of the year, typically between March 15 and November 15. All gates need to be closed and secured when not in use by authorized personnel. Please refer to the [Electric Fencing guidance document](#) for information on installation and operation.
3. The dump operator is required to keep records at the site and may be asked by an inspector to produce relevant records. The records may include information on the type and amount of the waste placed in the waste cells, intermediate cover placement, open burning and incineration, construction, maintenance and repair of any landfill component, electric fencing, and waste cell closure.

## Closure

Cells that are no longer being used for the disposal of solid waste must be properly capped and contoured to prevent wildlife attractants and windblown litter. Where available, clay or silt should be used for capping, as these materials are less permeable and will limit the amount of surface water that comes into contact with the buried waste. In general, finer textured soils are less permeable. For proper waste cell closure, one of the following three cover options should be selected based on the size of the waste cell. Any option may be selected for cells equal to or less than 50 m<sup>2</sup>. For cells greater than 50 m<sup>2</sup>, only options 2 and 3 are suitable.

**Option 1:** The cover material placed on top of the waste needs to be compacted with heavy machinery to a final depth of one metre. Cover material with the lowest permeability available to the dump operator should be used.

**Option 2:** The cover material needs to be compacted to a final depth of 0.6 m with a maximum hydraulic conductivity of  $1 \times 10^{-6}$  cm/s when compacted to 95% of Standard Proctor.

**Option 3:** A geomembrane can be used as a cover material. Prior to placement of the geomembrane, the waste must be covered with a minimum of 0.3 m of fill material. The geomembrane liner must be a

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low-density polyethylene (LDPE) flexible membrane with a minimum thickness of 40 mil (40 thousandths of an inch). After placement of the liner, a layer of soil with a minimum thickness of 0.45 metres must be placed over the liner to facilitate the drainage of water away from the landfill cell. The liner system must be installed in accordance with the manufacturer's specifications. For waste cells greater than 50 m<sup>2</sup>, the liner system must be installed by a qualified person.

After being placed on top the waste, the cover material needs to be compacted and the surface of the cell must be contoured (smoothed over). This helps direct surface water away from the buried waste, protecting the cap from erosion and minimizing the infiltration of water into the cell.

Berms, ditches or other measures must be constructed to divert surface water from flowing over the closed cell. Once capped and contoured, the area must be left in a condition conducive to re-vegetation. This requires providing adequate natural seed or root stock (including replacing the organic overburden that was removed and stockpiled during construction) and providing an adequate topsoil layer. It is recommended that a minimum of 150 mm of topsoil be used to assist with revegetation.

## **Burial of Other Types of Solid Waste**

Some operations dispose of a specific waste stream that may be subject to different requirements than those described above, such as the burial of animal slaughter waste. If your operation is not described in this guidance document, please contact the Environmental Programs Branch for the siting, construction, operation and closure requirements.

## **Incineration and Open Burning of Solid Waste**

Many operations choose to incinerate or open burn their solid waste to reduce the volume of waste and/or reduce animal attractants. Incineration is defined as using equipment where the air intake and combustion temperature can be controlled, allowing for a higher-temperature burn that produces less pollution. Open-burning (burning without using an incinerator) is less efficient and produces much more air pollution. Therefore, incineration is preferred over open burning, but both produce harmful air emissions and should only be considered when an operator needs to reduce animal attractants.

If open burning is permitted, the permit may impose restrictions on the materials that can be open burned, such as prohibiting burning of treated or painted wood or plastic waste. Other conditions may specify location of the burning area and measures required to ensure full combustion.

For incineration, it is required to choose an incinerator that is designed to incinerate the type of waste you are producing. The incinerator must be designed to minimize the release of pollutants during the incineration process. In accordance with the [Canada Technical Document for Batch Waste Incineration](#) (2010), it is recommended that any operation that incinerates 26 tonnes (26,000 kg) or greater of solid waste annually use a dual-chambered incinerator. The gases in the secondary chamber must reach a temperature of 1000°C with a residence time of one second or a temperature of 850°C with a residence time of two seconds, unless an alternate combination has been approved by the

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Environmental Programs Branch. For operations incinerating less than 26 tonnes of solid waste annually, a single-chambered incinerator is acceptable, although double-chambered incinerators are encouraged.

Ash from burning or incinerating solid waste is typically considered solid waste and must be disposed of according to the terms of the solid waste permit. Ash should be cooled to ambient temperature before burial to not create risk of underground fires.

Ash determined to be special waste or to exceed the Yukon Contaminated Sites Regulation soil standard for any contaminant for industrial land use must not be disposed of in a dump or landfill. A sample of ash collected after burning a representative or worst-case type of waste can be submitted for the Toxicity Characteristic Leaching Procedure (TCLP) laboratory analysis for all parameters with existing standards (Table 1, Schedule 4 of B.C. Reg. 63/88 Hazardous Waste Regulation).

Periodic emissions monitoring may be required if a facility operates an incinerator. The emissions from the incinerator may not contain contaminants in excess of the following concentrations derived from the Canada-Wide Standards for the noted contaminants:

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| 20 µg mercury/ Rm <sup>3</sup> air   | 80 pg I-TEQ dioxins and furans/ Rm <sup>3</sup> air   |
| 50 mg hydrogen chloride/ Rm <sup>3</sup> air   | 50 mg particles/ Rm <sup>3</sup> air (for incinerators with rated capacity less than 1 tonne per hour)                |
| 57 mg carbon monoxide/ Rm <sup>3</sup> air (4-hour average)  | 20 mg particles/ Rm <sup>3</sup> air (for incinerators with rated capacity equal to or greater than 1 tonne per hour) |
| To enable comparison to these standards, sample results must be corrected to 11% oxygen content and 0% moisture content and expressed in terms of reference cubic metres (Rm <sup>3</sup> , which is one cubic metre of air at a temperature of 25°C and a pressure of 101.3 kPa). |   |

**For more information on the Environment Act, please contact:**

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