

**CHAPTER 33-20-06.1  
MUNICIPAL WASTE LANDFILLS**

Section	
33-20-06.1-01	Applicability
33-20-06.1-02	Performance and Design Criteria
33-20-06.1-03	Closure Criteria

**33-20-06.1-01. Applicability.** The requirements of this chapter and of sections 33-20-01.1-08, 33-20-04.1-02, 33-20-04.1-03, 33-20-04.1-04, 33-20-04.1-05, and 33-20-04.1-09 apply to owners and operators of municipal waste landfills, except that the department may allow alternate performance and design criteria, as specified in subsections 2 and 3 of section 33-20-06.1-02, and it may waive section 33-20-04.1-03 for a municipal waste landfill receiving less than twenty tons [18.2 metric tons] per day based upon factors such as the site's climate, hydrogeology, topography, geology, ground water quality and location, and the type of wastes received. In addition to the requirements of this chapter, municipal solid waste landfills receiving on average more than five hundred tons [455 metric tons] per day shall comply with section 33-20-10-03, subsection 2 of section 33-20-10-04, and section 33-20-10-05.

**History:** Effective December 1, 1992; amended effective October 1, 1994; August 1, 1995.

**General Authority:** NDCC 23-29-04

**Law Implemented:** NDCC 23-29-04

**33-20-06.1-02. Performance and design criteria.** The owner or operator of a municipal waste landfill facility shall comply with these design, construction, and operating standards.

1. Access to the facility must be controlled by lockable gates and a combination of fencing, natural barriers, or artificial barriers. The gates must be locked when an attendant is on duty.
2. Any new or lateral expansion of a municipal waste landfill must be underlain with a hydraulic barrier and leachate removal system capable of collecting and removing leachate and contaminated surface water within the landfill.
  - a. The liner and leachate removal system must be compatible with the waste and leachate.
  - b. The liner and leachate removal system must maintain its integrity for the life of the facility and the postclosure period.
  - c. The leachate removal system must have a collection efficiency of ninety percent or better and be capable of maintaining a hydraulic head of twelve inches [30.5 centimeters] or less above the liner.

- d. The liner must consist of one of the following:
    - (1) A natural soil liner constructed of at least four feet [1.2 meters] of natural soil having a hydraulic conductivity not to exceed  $1 \times 10^{-7}$  centimeters per second; or
    - (2) A composite liner consisting of two components; the upper component must consist of a minimum thirty mil flexible membrane liner, and the lower component must consist of at least a two-foot [61.0-centimeter] layer of compacted soil with a hydraulic conductivity of no more than  $1 \times 10^{-7}$  centimeters per second. Flexible membrane liner components consisting of high density polyethylene must be at least sixty mil thick. The flexible membrane liner component must be installed in direct and uniform contact with the compacted soil component.
  - e. The drainage layer of the leachate removal system must have a hydraulic conductivity of  $1 \times 10^{-3}$  centimeters per second or greater throughout. The drainage layer must have sufficient thickness to provide a transmissivity of  $3.0 \times 10^{-2}$  centimeters squared per second or greater.
  - f. Appropriate measures must be provided as necessary for preparation of the liner subgrade, quality assurance, and quality control testing of the construction of the liner and leachate removal system, and protection and maintenance of the liner and leachate removal system to ensure the integrity of the system.
  - g. An alternative liner and leachate removal system for a landfill site may be approved by the department. The department must consider factors such as the proposed system's ability to control leachate migration, the hydrogeologic characteristics of the site and surrounding land, the climate of the area, or the potential leachate quality.
- 3. The liner and leachate removal system in combination with the final cover must achieve a site efficiency of ninety-five percent or better for rejection or collection of the precipitation that falls on the site.
  - 4. Methane and other gases from waste decomposition may not be allowed to migrate laterally from the landfill so as to endanger structures, environmental resources, or adjacent properties.
    - a. The concentration of methane gas generated by landfills on the facility must not exceed twenty-five percent of the lower explosive limit for methane in structures or appurtenances on the facility.

- b. The concentration of methane gas must not exceed the lower explosive limit for methane at the facility boundary.
  - c. Monitoring of methane gas must be conducted at least quarterly, on a schedule proposed by the owner or operator and approved by the department, to assure that the standards of subdivisions a and b are met. The frequency of monitoring must consider such factors as the facility site conditions, hydrogeologic conditions surrounding the site, or climate of the area.
  - d. If methane gas levels exceed the standards of subdivisions a and b, the owner or operator must:
    - (1) Immediately take action to protect public health;
    - (2) Notify the department within seven days; and
    - (3) Implement remedial measures within sixty days.
5. A certified operator must be on duty while the facility is receiving solid waste. Facilities receiving on average over twenty tons [18.2 metric tons] of municipal waste per day shall have an attendant at or near the entrance to the facility to monitor, accept or reject, measure, and record wastes arriving at the facility.
6. Solid waste must be unloaded at the bottom of the working face of the fill. The waste must then be spread in layers and compacted as densely as practicable. Each layer may not exceed a thickness of two feet [61.0 centimeters] of material after compaction is completed.
7. Household pet animal carcasses may be buried along with other municipal household waste. Larger animal carcasses must be disposed of immediately and must be placed at least four feet [1.2 meters] below grade with at least twelve inches [30.5 centimeters] of cover material directly covering the carcass.
8. The following wastes may not be accepted for disposal in municipal waste landfills unless approved by the department:
- a. Hazardous waste, except in amounts normally in municipal waste;
  - b. Industrial waste, if not addressed in the industrial waste management plan and the permit;
  - c. Lead acid batteries;
  - d. Liquids, except in amounts normally in household waste, unless the liquid is leachate or gas condensate derived from the municipal solid waste landfill and the municipal solid waste landfill, whether it

is a new or existing landfill or a lateral expansion, is designed with a composite liner and leachate collection system as described in this section;

- e. Major appliances;
  - f. Municipal waste incinerator ash;
  - g. Other waste, if the department determines that such waste has toxic or adverse characteristics which can impact public health or environmental resources;
  - h. Pesticide containers which are not empty and have not been triple-rinsed, except those normally in municipal waste;
  - i. Polychlorinated biphenyls (PCB) waste as defined in 40 CFR part 761;
  - j. Raw or digested sewage sludges, lime sludges, grit chamber cleanings, animal manure, septic tank pumpings, bar screenings, and other sludges, if not included in the permit;
  - k. Regulated infectious waste, except in amounts normally in household waste;
  - l. Special waste; and
  - m. Used oil.
9. A uniform compacted layer of six inches [15.2 centimeters] or more of suitable earthen material or other departmentally approved material must be placed on all solid waste by the end of each working day. All cover must be free of trash, garbage, or other similar waste.
10. On all areas where final cover or additional solid waste will not be placed within one month, an additional six inches [15.2 centimeters] or more of compacted, clay-rich earthen material or other departmentally approved material must be placed. This intermediate cover may be removed when disposal operations resume.

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**33-20-06.1-03. Closure criteria.** In addition to sections 33-20-04.1-05 and 33-20-04.1-09, at closure, an owner or operator shall cover an existing unit with a layer of compacted soil material having a thickness of eighteen inches [45.7 centimeters] or more and a hydraulic conductivity of  $1 \times 10^{-7}$  centimeters per second

or less. The compacted layer must be free from cracks and extrusions of solid waste. A second layer of twelve inches [30.5 centimeters] or more of clay-rich soil material suitable for serving as a plant root zone must be placed over the compacted layer. At least six inches [15.2 centimeters] of suitable plant growth material must be placed over the covered landfill and the facility planted with adapted grasses. The total depth of final cover must be three feet [91.4 centimeters] or more, as required to achieve subsection 3 of section 33-20-06.1-02. The requirements of this section may be modified by the department if the permit applicant demonstrates that an alternative design will appropriately limit percolation of liquid into the waste.

1. If the permit applicant wishes to pursue an alternative cover design, one of the following methods shall be used to demonstrate that the alternative cover design will appropriately limit the amount of percolation that may enter the waste:
  - a. Hydrologic modeling;
  - b. Lysimetry or instrumentation using a field-scale test section;
  - c. Comparison of the soil and climatic conditions at the site with the soil and climatic conditions at a site where the department has previously approved the same alternative cover design; or
  - d. Other method approved by the department.
2. To demonstrate that an alternative cover design will appropriately limit percolation of liquid into the waste, the alternative cover design must be shown to limit the average rate of percolation of liquid into wastes to an equal or lower value than the final cover design described in this section, or to an average long-term percolation rate less than 0.2 inches [5.0 millimeters] per year.

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