

**WAC 173-351-500 Closure and post-closure care.** (1) Closure criteria.

(a) Owners or operators of all MSWLF must install a final cover system that is designed to minimize infiltration and erosion.

(i) The final cover system must be designed and constructed to:

(A) Have a permeability less than or equal to the permeability of any bottom liner system and natural subsoils present, and minimize infiltration through the closed MSWLF by the use of an anti-infiltration layer that contains a composite layer as defined in (a)(i)(B) of this subsection;

(B) For the purpose of this section, "composite layer" means a system consisting of two components; the upper component must consist of a minimum of 30 mil (0.76 mm) thickness of geomembrane (60 mils (1.5 mm) for high density polyethylene geomembranes). The lower component must consist of at least a two-foot (60 cm) layer of compacted soil with a hydraulic conductivity of no more than  $1 \times 10^{-5}$  cm/sec. The geomembrane must be installed in direct and uniform contact with the compacted soil component;

(C) Minimize erosion of the final cover by use of an anti-erosion layer that contains a minimum of a one-foot (30 cm) layer of earthen material of which at least six inches (15 cm) of the uppermost layer is capable of sustaining native plant growth; and

(D) Address anticipated settlement (with a goal of achieving no less than two to five percent slopes after settlement), drainage and/or the need for drainage layers, gas generation and/or the need for gas layers, freeze-thaw, desiccation and stability and mechanical strength of the design.

(ii) The jurisdictional health department, with the written concurrence of the department, may approve an alternative final cover design equivalent to that specified in (a)(i) of this subsection that includes:

(A) An anti-infiltration layer that has a permeability less than or equal to the permeability of any bottom liner system and natural subsoils present, and achieves an equivalent reduction in infiltration as an anti-infiltration layer with a permeability no greater than  $1 \times 10^{-5}$  cm/sec containing at least two feet (60 cm) of earthen material;

(B) An anti-erosion layer that provides equivalent protection from wind and water erosion as a layer that contains a minimum of one foot (30 cm) of earthen material of which at least six inches (15 cm) of the uppermost layer is capable of sustaining native plant growth; and

(C) The additional design features of (a)(i)(D) of this subsection.

(b) The owner or operator must prepare a written closure plan that describes the steps necessary to close all MSWLF units at any point during its active life. The closure plan must be submitted to and approved by the jurisdictional health department during the permit process of WAC 173-351-700 or through the permit modification process of WAC 173-351-720(6) and must include the following information:

(i) A description of the final cover, designed in accordance with (a) of this subsection and the methods and procedures to be used to install the cover;

(ii) An estimate of the largest area of the MSWLF unit or all MSWLF units ever requiring a final cover as required under (a) of this subsection at any time during the active life;

- (iii) An estimate of the maximum inventory of wastes ever on-site over the active life of the facility; and
  - (iv) A schedule for completing all activities necessary to satisfy the closure criteria in this subsection including sequencing of each MSWLF unit and the use of intermediate cover.
- (c) The owner or operator of existing MSWLF units must no later than November 26, 1993:
- (i) Prepare a closure plan;
  - (ii) Place the closure plan in the operating record; and
  - (iii) Notify the jurisdictional health department that (c) (i) and (ii) of this subsection have occurred.
- (d) One hundred eighty days (but no sooner than November 26, 1993) prior to beginning closure activities of each MSWLF unit or all MSWLF units as specified in (e) of this subsection, the owner or operator must:
- (i) Notify the jurisdictional health department and the financial assurance trustee and/or insurer of the intent to close the MSWLF unit or all MSWLF units according to the approved closure plan; and
  - (ii) Submit final engineering closure plans for review, comment, and approval by the jurisdictional health department.
- (e) The owner or operator must begin closure activities of each MSWLF unit or all MSWLF units in accordance with the closure plan no later than thirty days after the date on which the MSWLF unit or all MSWLF units receives the known final receipt of wastes. If the MSWLF unit or all MSWLF units has remaining capacity and there is a reasonable likelihood that the MSWLF unit or all MSWLF units will receive additional wastes, the owner or operator must begin closure activities no later than one year after the most recent receipt of wastes. Extensions beyond the one-year deadline for beginning closure may be granted by the jurisdictional health department if the owner or operator demonstrates during the permit process of WAC 173-351-700 or through the permit modification process of WAC 173-351-720(6) that the MSWLF unit or all MSWLF units has the capacity to receive additional waste and the owner or operator has taken and will continue to take all steps including the application of intermediate cover necessary to prevent threats to human health and the environment from the unclosed MSWLF unit or all MSWLF units.
- (f) The owner or operator of all MSWLF units must complete closure activities of each MSWLF unit or all MSWLF units in accordance with the closure plan within one hundred eighty days following the beginning of closure as specified in (e) of this subsection. Extensions of the closure period may be granted by the jurisdictional health department if the owner or operator demonstrates that closure will, of necessity, take longer than one hundred eighty days and he/she has taken and will continue to take all steps to prevent threats to human health and the environment from the unclosed MSWLF unit.
- (g) Following closure of each MSWLF unit or all MSWLF units, the owner or operator must submit to the jurisdictional health department a certification or declaration of construction signed by an independent registered professional engineer verifying that closure has been completed in accordance with the approved final engineering plans and the closure plan.
- (h) Environmental covenant. Following closure of all MSWLF units, the owner or operator must file an environmental covenant conforming to the procedures and requirements of chapter 64.70 RCW, Uniform Environmental Covenants Act. Unless waived in writing by the department,

the environmental covenant shall be in a form approved by the department and include at a minimum the following provisions:

(i) State that the document is an environmental covenant executed pursuant to chapter 64.70 RCW;

(ii) Contain a legally sufficient description of the real property subject to the covenant;

(iii) Designate the department, or other person approved by the department, as the holder of the covenant;

(iv) Be signed by the department, every holder, and, unless waived by the department, every owner of a fee simple interest in the real property subject to the covenant;

(v) Identify the name and location of the administrative record for the property subject to the environmental covenant;

(vi) Describe with specificity the activity or use limitations on the real property subject to the covenant. At a minimum, this shall prohibit uses and activities that:

(A) Threatens the integrity of any cover, waste containment, stormwater control, gas, leachate, public access control, or environmental monitoring systems;

(B) May interfere with the operation and maintenance, monitoring, or other measures necessary to assure the integrity of the MSWLF unit and continued protection of human health and the environment; and

(C) May result in the release of solid waste constituents or otherwise exacerbate exposures.

(i) Grant the department and the jurisdictional health department the right to enter the property at reasonable times for the purpose of evaluating compliance with the environmental covenant, including the right to take samples.

(2) Post-closure care requirements.

(a) Following closure of each MSWLF unit or all MSWLF units, the owner or operator must conduct post-closure care. Post-closure care must be conducted for thirty years or as long as necessary for the landfill to become functionally stable. A landfill is functionally stable when it does not present a threat to human health or the environment at the point of exposure for humans or environmental receptors. The point of exposure is identified as the closest location at which a receptor could be exposed to contaminants and receive a dose by a credible pathway from the MSWLF unit. Potential threats to human health or the environment are assessed by considering leachate quality and quantity, landfill gas production rate and composition, cover system integrity, and groundwater quality. The post-closure care period may be adjusted as provided under (b) of this subsection. Post-closure care must consist of at least the following:

(i) Maintaining the integrity and effectiveness of any final cover, including making repairs to the cover as necessary to correct the effects of settlement, subsidence, erosion, maintaining the vegetative cover (including cutting of vegetation when needed) or other events, and preventing run-on and runoff from eroding or otherwise damaging the final cover;

(ii) Maintaining and operating the leachate collection system in accordance with the requirements in WAC 173-351-300 if applicable. The jurisdictional health department may recommend to the department and the department under its authority in chapter 90.48 RCW, the Water Pollution Control Act, may allow the owner or operator to stop managing leachate if the owner or operator demonstrates that leachate no longer poses a threat to human health and the environment;

(iii) Monitoring the groundwater in accordance with the requirements of WAC 173-351-400 and maintaining the groundwater monitoring system; and

(iv) Maintaining and operating the gas monitoring system in accordance with the requirements of WAC 173-351-200(4).

(b) The length of the post-closure care period may be:

(i) Decreased by the jurisdictional health department if the owner or operator demonstrates that the reduced period is sufficient to protect human health and the environment and this demonstration is approved by the jurisdictional health department; or

(ii) Increased by the jurisdictional health department if the jurisdictional health department determines that the lengthened period is necessary to protect human health and the environment;

(iii) The jurisdictional health department and owner or operator will consider at least the following factors when determining when a landfill unit is functionally stable or whether to decrease or increase the post-closure care period:

(A) Leachate. Leachate production and quality must be such that maintenance and operation of the leachate collection system can be ceased beyond the post-closure care period without posing a threat to human health or the environment.

(B) Landfill gas. Landfill gas production and composition must be such that maintenance and operation of the gas collection system can be ceased beyond the post-closure care period while meeting the criteria in WAC 173-351-200 (4)(a)(i) through (iii) and not pose a threat to human health or the environment from methane or nonmethane compounds.

(C) Settlement and cover integrity. The cover system must attain geotechnical stability for slope and settlement. Vegetation and other erosion controls must prevent exposing waste or otherwise threaten integrity of the cover system. The cover system must stabilize such that no additional care is required beyond the post-closure care period to ensure its integrity from settlement or erosion.

(D) Groundwater quality. Groundwater quality must remain in compliance with the protection standards established in WAC 173-351-440(8) at the relevant point of compliance.

(c) The owner or operator of all MSWLF units must prepare and submit a written post-closure plan to the jurisdictional health department through the permit process of WAC 173-351-700 or through the permit modification process of WAC 173-351-720(6) that includes the following information. Owners or operators must prepare and submit modifications to existing post-closure plans to incorporate the criteria in (b)(iii) of this subsection or environmental covenants in subsection (1)(h) of this section by November 1, 2013.

(i) A description of the monitoring and maintenance activities required in (a) of this subsection for each MSWLF unit or all MSWLF units, and the frequency at which these activities will be performed;

(ii) A description of the monitoring performed and an estimate of the time required following closure of each MSWLF unit or all MSWLF units to meet the criteria in (b)(iii) of this subsection;

(iii) Name, address, and telephone number of the person or office to contact about the facility during the post-closure period; and

(iv) A description of the planned uses of the property during the post-closure period and activity or use limitations placed on the real property by the environmental covenant (1)(h) of this section. Post-closure use of the property must not disturb the integrity of the final cover, liner(s), or any other components of the containment sys-

tem, or the function of the monitoring or control systems unless necessary to comply with the requirements of this regulation. The jurisdictional health department may approve any other disturbance if the owner or operator demonstrates that disturbance of the final cover, liner or other component of the containment system, including any removal of waste, will not increase the potential threat to human health or the environment.

(d) Following completion of the post-closure care period for each MSWLF unit or all MSWLF units, the owner or operator must submit to the jurisdictional health department a certification or declaration of construction signed by an independent licensed professional engineer verifying that post-closure has been completed in accordance with the post-closure plan.

[Statutory Authority: RCW 70.95.020(3), 70.95.060(1), and 70.95.260(1), (6). WSR 12-23-009 (Order 07-15), § 173-351-500, filed 11/8/12, effective 12/9/12. Statutory Authority: Chapter 70.95 RCW and 40 C.F.R. 258. WSR 93-22-016, § 173-351-500, filed 10/26/93, effective 11/26/93.]