R18-9-E308. 4.08 General Permit: Wisconsin Mound, Less Than 3000 Gallons Per Day Design Flow

A. A 4.08 General Permit allows a Wisconsin mound receiving wastewater treated to a level equal to or better than that provided by a 4.02 General Permit septic tank.

1. Definition. For purposes of this Section, a "Wisconsin mound" means a disposal technology characterized by:
   a. An above-grade bed system that blends with the land surface into which is dispensed pressure dosed wastewater from a septic tank or other upstream treatment device,
   b. Dispersal of wastewater under unsaturated flow conditions through the engineered media system contained in the mound, and
   c. Wastewater treated by passage through the mound before percolation into the native soil below the mound.
2. An applicant may use a Wisconsin mound if the native soil has excessively high or low permeability, there is little native soil overlying fractured or excessively permeable rock, or a reduction in minimum vertical separation is desired.

B. Performance. An applicant shall design a Wisconsin mound on the basis that treated wastewater released to the native soil meets the following criteria:

1. TSS of 30 milligrams per liter, 30-day arithmetic mean;
2. BOD5 of 30 milligrams per liter, 30-day arithmetic mean;
3. Total nitrogen (as nitrogen) of 53 milligrams per liter, 5-month arithmetic mean; and
4. Total coliform level of 300,000 (Log10 5.5) colony forming units per 100 milliliters, 95th percentile.

C. Notice of Intent to Discharge. In addition to the Notice of Intent to Discharge requirements specified in R18-9-A301(B) and R18-9-A309(B), an applicant shall submit:

1. Specifications for the internal wastewater distribution system media proposed for use in the Wisconsin mound;
2. Two scaled or dimensioned cross sections of the mound (1 of the shortest basal area footprint dimension and one of the lengthwise dimension); and
3. Design calculations following the "Wisconsin Mound Soil Absorption System: Siting, Design, and Construction Manual," published by the University of Wisconsin - Madison, January 1990 Edition. This material is incorporated by reference and does not include any later amendments or editions of the incorporated matter. Copies of the incorporated material are available for inspection at the Department of Environmental Quality and the Office of the Secretary of State, or may be obtained from the University of Wisconsin - Madison, SSWMP, 1525 Observatory Drive, Room 345, Madison, WI 53706.

D. Design requirements. An applicant shall ensure that:

1. Pressure dosed wastewater is delivered into the Wisconsin mound through a pressurized line and secondary distribution lines into an engineered aggregate infiltration bed, or equivalent system, in conformance with R18-9-E304 and the Wisconsin Mound Manual. The applicant shall ensure that the aggregate is washed;
2. Wastewater is distributed in the aggregate infiltration bed and applied to the mound bed inlet surface at the following rates:
   a. Not more than 1.0 gallon per day per square foot of mound bed inlet surface if the mound bed media conforms with the "Standard Specification for Concrete Aggregates," (C 33-99aE1), published by the American Society for Testing and Materials, approved July 10, 1999, and the Wisconsin Mound Manual, except if cinder sand is used that is the appropriate grade with not more than 5% passing a #200 screen. The Standard Specification for Concrete Aggregates," (C 33-99aE1), approved July 10, 1999, is incorporated by reference and does not include any later amendments or editions of the incorporated matter. Copies of the incorporated material are available for inspection at the Department of Environmental Quality and the Office of the Secretary of State, or may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, Conshohocken, PA 19428-2959. The applicant shall:
      i. For cinder sand, ensure that the rate is not more than 0.8 gallons per day per square foot of mound bed inlet surface; and
      ii. Wash media used for the mound bed.
   b. A rate, configuration, or material for the infiltration bed or the mound bed submitted under R18-9-A312(G). The applicant shall ensure that the submittal includes supporting analyses for the design configuration, materials, and loading rates.
3. The aggregate infiltration bed and mound bed is capped by coarser textured soil, such as sand, sandy

loam, or silt loam. Silty clay, clay loam, or clays are prohibited;

4. The cap material is covered by topsoil following the Wisconsin Mound Manual, and the topsoil is capable of supporting vegetation, is not clay, and is graded to drain;
5. The top and bottom surfaces of the aggregate infiltration bed are level and do not exceed 10 feet in width. The applicant shall ensure that:
    a. The minimum depth of the aggregate infiltration bed is nine inches, or
    b. Synthetic filter fabric permeable to water and air and capable of supporting the cap and topsoil load is placed on the top surface of the aggregate infiltration bed.
6. The minimum depth of mound bed media is 12 inches;
7. The maximum allowable side slope of the mound bed, cap material, and topsoil is not more than one vertical to three horizontal;
8. Ports for inspection and monitoring are provided to verify performance, including verification of unsaturated flow within the aggregate infiltration bed. The applicant shall:
    a. Install a vertical PVC pipe and cap with a minimum diameter of four inches as an inspection port, and
    b. Install the pipe with a physical restraint to maintain pipe position.
9. The main pressurized line and secondary distribution lines for the aggregate infiltration bed are equipped at appropriate locations with cleanouts to grade;
10. Setbacks specified in R18-9-A312(C) are observed, except that the applicant shall:
    a. Increase setbacks for the following downslope features at least 30 feet from the toe of the mound system:
        i. Property line,
        ii. Driveway,
        iii. Building,
        iv. Ditch or interceptor drain, or
        v. Any other feature that impedes water movement away from the mound.
    b. Ensure that no upslope natural feature or improvement channels surface water or groundwater to the mound area.
11. The active portion of the basal area of native soil below the mound conforms to the Wisconsin Mound Manual. The applicant shall:
    a. Calculate the absorption of wastewater into the native soil for only the effective basal area;
    b. Apply the soil application rates specified in R18-9-A312(D). The allowable loading rate to the mound bed inlet surface may be increased up to 1.6 times if the wastewater dispersed to the mound is pretreated to reduce the sum of TSS and BOD5 to 60 mg/l or less. The soil application rate may be increased to not more than 0.20 gallons per day per square foot of effective basal area if the following slowly permeable soils underlie the mound:
        i. Sandy clay loam, clay loam, silty clay loam or finer with weak platy structure; or
        ii. Sandy clay loam, clay loam, silty clay loam or silt loam with massive structure.
12. The slope of the native soil at the basal area does not exceed 25%, and a slope stability analysis is performed whenever the basal area or site slope within 50 horizontal feet from the mound system footprint exceeds 15%.

E. Installation. An applicant shall:

1. Prepare native soil for construction of a Wisconsin mound system. The applicant shall:
    a. Mow vegetation and cut down trees in the vicinity of the basal area site to within two inches of the surface;
    b. Leave in place tree stumps and other herbaceous material that excessively alters the soil structure if removed after mowing and cutting;
    c. Plow native soil serving as the basal area footprint along the contours to seven to eight inches depth;
    d. Not substitute rototilling for plowing; and
    e. Begin mound construction immediately after plowing.
2. Place each layer of the bed system to prevent differential settling and promote uniform density; and
3. Use the Wisconsin Mound Manual to guide any other detail of installation. Installation procedures and criteria may vary depending on mound design but shall be at least equivalent to the Wisconsin Mound Manual.

F. Operation and maintenance requirements. In addition to the applicable requirements specified in R18-9-A313, the permittee shall:

1. If an existing mound system shows evidence of overload or hydraulic failure, consider the following measures:
    a. Verification of actual loading and performance of the pretreatment system and verification of the watertightness of the pretreatment and dosing tanks;
    b. Determination of dosing rates and dosing intervals to the aggregate infiltration bed and comparison with the original design to evaluate the presence or absence of saturated conditions in the aggregate infiltration bed;
    c. If the above steps do not indicate an anomalous condition, evaluation of the site and recalculation of the disposal capability to determine if lengthening of the mound is feasible;
    d. Site modifications including, changing surface drainage patterns at upgrade locations and lowering the groundwater level by installing interceptor drains to reduce native soil saturation at shallow levels; and
    e. Increasing the basal area, which is most efficient if the bed length is increased.
2. If the mound needs to be expanded in size, submit a new Notice of Intent to Discharge for this modification; and
3. Specify servicing and waste disposal procedures and task schedules necessary for clearing the main pressurized wastewater line and secondary distribution lines, septic tank effluent filter, pump intake, and controls.

Historical Note

New Section adopted by final rulemaking at 7 A.A.R. 235, effective January 1, 2001 (Supp. 00-4).