



MAINE CDC DRINKING WATER PROGRAM

Department of Health & Human Services

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Disposal Area Size Reduction

PURPOSE:

Determining the reduction in size and separation from limiting factor of a disposal field in conjunction with an advanced treatment unit.

SCOPE: All disposal fields using advanced treatment.

ORIGINATOR/OWNER: Dave Braley/Alex Pugh

DEFINITIONS/ACRONYMS: None

RESPONSIBILITIES:

The Subsurface Wastewater Unit administers this policy. A site evaluator or engineer that makes use of this policy needs to reference this policy and demonstrate that their project complies with the details of this policy.

POLICY:

Disposal area sizing adjustments have historically been granted in large part due to the fact that a restrictive biomat develops at a minimal rate, if at all, with low nutrient-high dissolved oxygen effluent. Restrictive biomats have in turn been associated with a significantly reduced long term acceptance rate.

However, the lack of a biomat allows effluent to create localized mounding at the point of introduction, which does not utilize the entire available infiltrative surface. These phenomena can be mitigated by equal distribution, which has been identified as leading to reduced soil moisture rates and longer effluent retention times in soils. ¹ Therefore:

1. Under provisions of Table 4A of the Rules, disposal areas may be reduced in size, i.e., "foot print", by no more than 50 percent (based upon standard sizing criteria of the Subsurface Wastewater Disposal Rules) when septic tank effluent (STE) is treated to reduce the combined five day biochemical oxygen demand (BOD₅) and total suspended solids (TSS) to 30 mg/l or less.
2. Reductions of 51 percent to 75 percent may be allowed only when the following criteria are met:
 - A. The effluent strength for combined BOD₅ and TSS is less than 30 mg/l, as demonstrated by data on the typical operation of the device or process used, and
 - B. Effluent shall be applied to the disposal area via equalized pressure distribution, to compensate for the lack of effluent distribution due to lack of a biomat, and

C. In the event that the reduced size system malfunctions, a full size disposal area shall be installed without delay.

3. Reductions in excess of 75 percent are prohibited.

Separation from Limiting Factor

An area of concern to the Division is the survival and transmission of pathogenic organisms. A mature biomat will remove most bacteria and other microorganisms from primary treated STE.^{2,3} Treating STE with an advanced treatment unit (ATU) alone has not conclusively been shown to significantly reduce the numbers of pathogens, as indicated by fecal coliforms.⁴ Lack of a biomat, therefore, could allow transmission of pathogenic bacteria and other harmful organisms such as protozoans and helminth (parasitic worm) eggs, many of which have significant survival rates in fresh water, ground water and unsaturated soils.⁵ Therefore:

1. The separation between the bottom of the disposal area and bedrock may be reduced from 24 inches to no less than 12 inches, only when an ATU is used in conjunction with ultraviolet or other non-residual disinfection, to reduce pathogens in the effluent.
2. The separation between the bottom of the disposal area and the seasonal high groundwater table in Profile 5 and Profile 6 soils shall be reduced from 24 inches to no less than 12 inches, only when an ATU is used in conjunction with ultraviolet or other non-residual disinfection, to reduce pathogens in the effluent.
3. There shall be no reduced separation between the bottom of the disposal area in the seasonal high groundwater table in Drainage Class E soils, regardless of the Profile.

This policy shall not supersede or abrogate any requirement, warranty, or recommendation of the manufacturer and/or distributor of any proprietary device for treatment or disposal of wastewater as defined in the Rules.

Because installation and owner maintenance has a significant effect on the working order of onsite sewage disposal systems, including their components, the Division makes no representation or guarantee as to the efficiency and/or operation of any specific product or process.

1. U. S. Environmental Protection Agency's *Design Manual: Onsite Wastewater Treatment and Disposal Systems*; page 4-7 & 4-23
2. U. S. Environmental Protection Agency's *Design Manual: Onsite Wastewater Treatment and Disposal Systems*; page 3-33
3. NESC *Pipeline*, Winter 2005, "Drainfield Rehabilitation"
4. NESC *Small Flows Quarterly*, Fall 2000, "A Survey of Home Aerobic Treatment Systems Operating in Six West Virginia Counties"
5. U. S. Environmental Protection Agency's *Design Manual: Onsite Wastewater Treatment and Disposal Systems*; Table 3-21

ASSOCIATED DOCUMENTS:

- 10-144 CMR 241, Subsurface Wastewater Disposal Rules

REVISION LOG:

Section	Page	Revision	Date	Description of Change	Approved by:
		Original	10/10/2012	Original	Alex Pugh