



State of Delaware
Department of Natural Resources & Environmental Control
Division of Water Resources
Ground Water Discharges Section

Innovative and Alternative System Approval

ISSUED TO: Premier Tech Environment Inc.
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FOR: Ecoflo Peat Biofilter System – ST 650 & STB 650

APPROVAL DATE: August 8, 2005
AMENDED DATE: May 30, 2006

In accordance with the Regulations Governing the Design, Installation, and Operation of On-Site Wastewater Treatment and Disposal Systems (Regulations), an application dated August 8, 2005 has been submitted by Premier Tech Environment Inc. for approval of the Ecoflo Peat Biofilter as an Innovative & Alternative On-Site Wastewater Treatment Unit and Disposal System.

Based on the review of the application, the Department hereby grants approval of the use of the Ecoflo Peat Biofilter as an Innovative & Alternative On-Site Wastewater Treatment Unit and Disposal System. The following conditions, limitations, and requirements must be adhered to:

1. Product Description

The Ecoflo Peat Biofilter is an attached growth packed bed filter, which utilizes organic peat fiber as its filtering media. Prior to entering a peat module, sewage first enters into a DNREC approved septic tank equipped with an effluent filter. Effluent from the septic tank is then distributed by gravity, or pumped to a tipping bucket in the peat module. The tipping bucket then distributes the effluent equally on the distribution plates on both sides of the support. The plates include orifices that distribute the effluent over the filtering media. Effluent then percolates down through the media. Once through the media the effluent is either collected and sent to a disposal system, or directly infiltrates onto an aggregate bed.

2. Claim

Approval is based on information submitted by the Manufacturer indicating the specified model will routinely provide effluent quality not exceeding 10 mg/l of BOD₅, 10 mg/l of TSS, and <25,000 colonies/100 ml of fecal coliform bacteria.

3. Approved Ecoflo Peat Biofilter Systems (For purposes of this report a pad shall be synonymous with a bed disposal system.)

- a. Model ST-650 is an open bottom module which utilizes a subsurface gravity pad below the module as a disposal system.
- b. Models STB-650 is a stand alone advanced treatment unit used in conjunction with a trench disposal system or drip irrigation disposal system.
- c. One ST-650 Ecoflo peat module can accommodate up to 480 gallons per day.
- d. Other models for use may be approved by the Department on a case by case basis.

4. Scope of Use

The system may be used for residential waste with flows <2,500 gallons per day. Seek manufacturer's guidance on module requirements.

5. Siting Criteria

- a. Percolation rates are to be based on the most restrictive texture within the upper 60" of soil. See the attached chart for loading rate associated with a percolation rate.
- b. For at-grade systems, the tillage depths are to be 6-8", although slightly deeper depths may be necessary in the case of shallow

thick plow pans or similar restrictive layers within 12” of the surface.

- c. Landscape position is also a necessary consideration. Systems are not to be sited within a closed depression or where water tends to pond during heavy rainfall events.

6. Separation Requirements

- a. A 12” separation distance must be maintained from the limiting zone.
- b. Standard installation = 18-22” limiting zone, 6-8” pad (bed) depth, 10” trench depth.
- c. Surface installation (at-grade systems) = 12” limiting zone, pads only.

7. Design Criteria

- a. The Ecoflo Peat Biofilter may be installed for new and replacement systems as disposal systems, or as an advanced treatment unit followed by a trench disposal system or drip irrigation disposal system.
- b. A septic tank must precede the Ecoflo Peat Biofilter system. The septic tank must incorporate an effluent filter as specified by the manufacturer.
- c. An on-site wastewater treatment and disposal system permit application incorporating an Ecoflo Peat Biofilter shall be designed in accordance with the Regulations, and manufacturer’s specifications. The design shall be completed by a DNREC Class C Design Engineer unless otherwise approved by the Department. The permit application shall include proper unit specifications.
- d. For new construction the attached loading rates shall be utilized to determine the pad or trench disposal system size.
- e. If a drip irrigation system is to follow the Ecoflo Peat Biofilter, their associated loading rates shall be used for disposal system sizing.
- f. The use of a pad or trench for disposal shall be based on site characteristics and the experience of the Design Engineer.
- g. No additional area reductions shall be granted for the use of water saving fixtures or for the use of graveless chambers.
- h. The manufacturer is responsible for providing the Department a list of all local distributors and their associated contact information. This list must be kept current and shall be submitted to the Department on a yearly basis.

8. Installation Procedures

- a. The Ecoflo Peat Biofilter shall be installed by a DNREC Class E System Contractor under the supervision of a manufacturer's representative, or by a DNREC Class E System Contractor who has been certified for unit installation. Proof of certification shall be provided in writing to the Department.
- b. Start up of the system and initial operational checks shall be conducted by the Class E System Contractor (trained by the manufacturer), Design Engineer, and a Ground Water Discharges Section (Large System Branch) representative. If the Class E System Contractor is not certified, a manufacturer's representative shall perform the operational checks of the system at start up. If the manufacturer's representative can not be on site at the time of start up, they must provide final start up approval to the Department in writing.

9. Operation and Maintenance

- a. The Ecoflo Peat Biofilter shall be operated and maintained in accordance with the manufacturer's specifications.
- b. The manufacturer shall comply will all Department mandated requirements as specified in permit conditions. This shall include operation and maintenance requirements.

10. Sampling and Approval

The Department reserves the right to sample any unit at any time.

11. General Conditions

- a. Use of the system for wastes other than residential shall be on a case by case basis.
- b. In the event that the product fails to perform as claimed by the applicant, the use of the unit for new installations shall cease. Use of the unit shall not resume until such time the applicant and the Department have reached an acceptable agreement for resolving the situations.
- c. Any changes that deviate from the specifications as submitted with this approval shall be approved by the Department prior to use.