



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

### **Innovative and Alternative System Approval**

**ISSUED TO:** Hoot Aerobic Systems, Inc.  
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**FROM:** Hilary Moore – Environmental Engineer  
Ground Water Discharges Section

**FOR:** H-Series Hoot System  
H-500, H-600, H-750, and H-1000

**APPROVAL DATE:** July 7, 2008

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In accordance with the Regulations Governing the Design, Installation, and Operation of On-Site Wastewater Treatment and Disposal Systems (Regulations), an application dated December 3, 2007, has been submitted by Hoot Aerobic Systems Inc., for approval of the H-Series advanced treatment system as an Innovative & Alternative On-Site Wastewater Treatment Unit.

Based on the review of the application, the Department hereby grants approval of the use of the H-500, H-600, H-750 and H-1000 Hoot Series advanced treatment systems. Approval is subject to the conditions, limitations, and requirements set forth herein:

#### **1. Product Description and Components**

The H-Series Hoot advanced treatment system is an activated sludge plant that is comprised of three components: pretreatment tank; aeration chamber; and a final clarifier. The pretreatment tank aids in the aerobic decomposition of the influent and provides storage area for non biodegradables. The tank contains approximately the volume of one day flow. A mid level baffled crossover is provided to allow the liquid effluent to enter into the aeration chamber. By means of a blower, oxygen is introduced to mix the organics of the sewage with the bacterial populations. Movement of sewage in the aeration chamber causes the

activated sludge that settled in the final clarifier to be reintroduced into the aeration chamber. As the solids settle out in the final clarifier, a clear odorless effluent is produced.

The system may also incorporate a pump tank.

See Table 1, below for the model numbers associated with flow rates.

**Table 1: Required Models with Flow**

Design flow (gallons per day)	Hoot System Model Numbers
≤ 500	H-500
501-600	H-600
601-750	H-750
751-1000 (900)	H-1000

## 2. Claim

Approval is based on information submitted by the Manufacturer indicating the specified models will routinely provide effluent quality not exceeding: 30 mg/l of BOD<sub>5</sub>; 30 mg/l of TSS; and 20 mg/L TN or a 50% reduction (assuming influent loading does not exceed the treatment capabilities of the units).

## 3. Flow

The approval is based on flows not exceeding 1,000 gallons per day. Flows greater than 1,000 gallons per day but less than 2,500 gallons per day may be permitted on a case by case basis in accordance with the manufacturer's recommendations.

Approval is applicable for domestic strength effluent only. All commercial applications must seek prior Department and Hoot Systems approval.

## 4. Use and Design Criteria

- a. The Hoot advanced treatment system may be installed for new and replacement systems with conventional and innovative and alternative disposal systems.
- b. The Hoot advanced treatment system should not be used for seasonal occupancy.
- c. An on-site wastewater treatment and disposal system permit application incorporating a Hoot advanced treatment system shall be designed in accordance with the Regulations, and Hoot System's specifications. The design shall be completed by a DNREC Class C Design Engineer

- d. The designer must assure that the system has above grade access. The design also must ensure that the control panel is not located in an enclosed structure and is accessible, preferably near the system.
- e. Should the Hoot advanced treatment unit incorporate a pump tank; all requirements as established in the Regulations shall be met for dosing chamber sizing and set up.
- f. The Hoot advanced treatment system shall not be installed within areas subject to traffic loads unless specifically designed on a case by case basis in accordance with the Regulations.
- g. The blower shall run continuously for the Hoot advanced treatment system, unless otherwise directed by the manufacturer. Should this change be necessary documentation outlining changes and reasoning shall be submitted to the Department.

## **5. Installation Procedures**

- a. The Hoot advanced treatment unit 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. Installation shall be in accordance with the DNREC approved permit, and the Hoot System's H-A Installation Manual.
- c. 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.

## **6. Operation and Maintenance**

- a. The Hoot advanced treatment unit shall be operated and maintained in accordance with the manufacturer's specifications.
- b. The manufacturer or manufacturer's representative shall comply will all Department mandated operation and maintenance requirements as

specified in permit conditions. This shall include operation and maintenance requirements.

- c. The Hoot advanced treatment unit shall be inspected at a minimum of once every 6 months by a certified service provider.
- d. The service provider shall be a Class E System Contractor, or Class H System Inspector who has been certified by the manufacturer on the Hoot advanced treatment system.
- e. Hoot Systems Inc. is responsible for providing the Department with service provider training requirements, and a list of all certified service providers. This list must be kept current and shall be submitted to the Department on a yearly basis
- f. The Hoot advanced treatment unit shall be maintained according to the Hoot-A-H Installers Manual as published by Hoot Systems.

## **7. Sampling and Approval**

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

## **8. 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, and it is found that the system is installed and working as designed, and there is no toxicity in the waste; the use of the units for new installations shall cease. Use of the units 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.
- d. Hoot systems Inc. is responsible for supplying the Department with tank cross-section details once approved with correct nomenclature.
- e. The manufacturer is responsible for providing the Department with 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.