



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

Innovative and Alternative System Approval

ISSUED TO: Ecological Tanks, Inc.
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FOR: Aqua Aire AA500-35R Aerobic Treatment Unit

APPROVAL DATE: 4/19/2011

In accordance with the Regulations Governing the Design, Installation, and Operation of On-Site Wastewater Treatment and Disposal Systems (Regulations), an application dated August 10, 2010, has been submitted by Ecological Tanks, Inc., for approval of the Aqua Aire advanced treatment unit 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 Aqua Aire advanced treatment unit (AA500-35R model) as an Innovative & Alternative On-Site Wastewater Treatment Unit subject to the conditions, limitations, and requirements set forth herein:

1. Product Description

The Aqua Aire unit utilizes an extended aeration, activated sludge process to achieve treatment. Wastewater first enters the pretreatment compartment of the plant, which has a minimum hydraulic capacity of 350 gallons. Wastewater moves from the pretreatment compartment by gravity flow through a PVC inlet to

the center aeration mixing zone. Aeration is provided by an aerator that operates continuously and releases air near the bottom of the chamber through two fine air diffusers. From the aeration compartment, the wastewater passes by hydraulic displacement to the clarifier through a slot in the bottom wall of the dividing the clarifier and aeration compartment. The quiescent design of the clarifier allows gravity settling of the solids. The bottom wall of the outlet in the clarifier is sloped to help direct settled solids back toward the opening of the two chambers. The hydraulic roll created by the aeration system in the aeration chamber helps draw settled solids from the bottom of the clarifier back into the aeration chamber. Discharge of clarified effluent occurs through a submerged tee assembly located below the clarifier surface to prevent discharges of solids that may float on the surface of the clarifier.

The AA500-35R model has a rated treatment capacity of 500 gallons per day. **The tank must be DNREC approved. The concrete tank utilized must be top seam.**

2. Claim

Approval is based on information submitted by the Manufacturer indicating the specified model will routinely provide effluent quality not exceeding 30 mg/l of BOD₅, 30 mg/l of TSS, and 20 mg/l of Total Nitrogen (TN) assuming influent loading does not exceed the treatment capabilities of the units.

This unit has been certified under NSF Standard 40 NSF 245 standards.

3. Use and Design Criteria

- a. The Aqua Aire unit may be installed for new and replacement systems with conventional and innovative and alternative disposal systems.
- b. An on-site wastewater treatment and disposal system permit application incorporating an Aqua Aire unit 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.
- c. The designer must assure that all access risers and observation/sampling ports have above grade access. The design also must ensure that the control panel and blower are accessible.
- d. The Aqua Aire unit shall not be installed within areas subject to traffic loads unless specially designed on a case by case basis in accordance with the Regulations and in accordance with manufacturer's specifications.
- e. 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.

4. Installation Procedures

- a. The Aqua Aire 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. The blower must be installed on a factory base and enclosure and located no more than 100 feet from the tank
- 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.

5. Operation and Maintenance

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

6. Sampling and Approval

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

7. 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 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.