



State of Vermont

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Department of Forests, Parks and Recreation
Department of Environmental Conservation
State Geologist

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AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

Innovative/Alternative System Approval Pilot Projects per §1-310 of the Wastewater System and Potable Water Supply Rules, effective January 1, 2005

#P-2005-01(Revised 04/12/05)(Revised 05/18/05)

Vendor Information

Eco-Solutions, LLC
P.O. Box 1842
Burlington, VT 05402

Technology Name

Advanced Wetland Treatment
System

Contact

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Technology Type

Aerated Wetland Treatment
System

Expiration Date

March 1, 2007

Approval

The Eco-Solutions Advanced Wetland Treatment System has been determined to meet the criteria of Section §1-310(a) of the Wastewater System and Potable Water Supply Rules (Rules), effective January 1, 2005 and may be used as part of a subsurface wastewater disposal system under the following conditions:

1. Up to twenty-five installations of the Eco-Solutions Advanced Wetland Treatment System may be authorized under this Pilot Project Approval.
2. The treatment units must be designed by a Class I Licensed Designer, as established in Section §1-313(e) of the Rules, as described in the Innovative/Alternative System application package filed with the Agency of Natural Resources (Agency) on August 4, 2004 and October 11, 2004, and with the site-specific installation and operating instructions submitted.
3. The treatment units must be installed and operated as described in the site-specific Innovative/Alternative System application package filed with the Agency.

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4. Unit sizing must be in accord with the technical information submitted with the Innovative/Alternative System application package on August 4, 2004 and October 11, 2004. The sizing shall be based on the calculated design flow per §1-504 of the Rules.
5. This approval is based on treatment only of domestic wastewater of low and moderate strength as specified in §1-519(a)(1)(C) & (D) of the Rules. Systems to treat higher strength wastewater may be approved on a case by case basis.
6. The system may be used for both new and replacement systems.
7. All effluent from an Eco-Solutions Advanced Wetland Treatment System shall be discharged to a filtrate disposal system that conforms to the requirements of §1-520 of the Rules. If the rules are revised during the term of this approval, this approval shall be revised as needed to conform to the revisions.
8. Each application for use shall demonstrate the ability to construct a fully complying replacement system.
9. Detailed operating instructions shall be provided in writing to the owner/operator.
10. The Vendor shall have an inventory of replacement parts available locally or available for delivery within 24 hours.
11. The Vendor shall provide a copy of this approval letter to any landowner who is a prospective purchaser of an Eco-Solutions Advanced Wetland Treatment System prior to the sale of the system and prior to the filing of any application for a site-specific approval by the Agency for the purchaser's property. The application filed with the Agency shall include the landowner's written acknowledgement of this approval letter. Prior to any sale of the property or completion of a sales agreement to sell the property, a copy of the site-specific permit shall be provided to the prospective purchaser. The owner of record shall notify the Vendor of the sale, and provide contact information for the new owner.
12. The owner of a property where an Eco-Solutions Advanced Wetland Treatment System has been installed shall have a valid maintenance contract in force at all times. The minimum length of any contract shall be for a period of two years. A copy of the initial and each succeeding contract shall be submitted to the appropriate Regional Environmental Office of the Agency and to the Vendor. Maintenance shall be performed by, or shall be supervised by, a Vermont Licensed Class 1 Designer, approved by the Vendor or their representative, who shall provide written inspection reports detailing the maintenance performed on the specific system, any problems that have occurred since the previous inspection, any modifications made to the system, the date of the inspection, and any work required to ensure the system operates in compliance with this approval.

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The inspection shall be performed in accord with the manufacturer's Operation and Maintenance requirements submitted as part of the site-specific application package. If at any inspection the effluent is cloudy or pungent smelling a sample shall be collected and tested for BOD and TSS. The results of any testing shall be submitted with the annual inspection report.

13. The first inspection shall be completed no later than 3 months after placing the system in service. The second inspection shall be completed no later than 12 months after placing the system in service. Subsequent inspections shall be completed at least once per year based on the date when the system was first placed in service. More frequent inspections or additional testing, required by the manufacturer to ensure proper functioning of the system, shall be conducted in accordance with the manufacturer's specifications. All reports shall be filed with the appropriate Regional Environmental Office of the Agency, the Vendor and the landowner with the annual inspection report.
14. During the period of pilot use, daily wastewater flow rates shall be recorded at the pump station for the disposal system and the records shall be filed with the appropriate Regional Environmental Office of the Agency, the Vendor and the landowner with the annual inspection report.
15. During the first two years of operation, grab samples shall be collected quarterly between the septic tank and the inlet to the Advanced Wetland Treatment System and at the effluent standpipe of the wetland. The first samples shall be collected during the first inspection required under Condition 13 above. The samples shall be tested for biochemical oxygen demand (BOD₅) and total suspended solids (TSS). All sampling test reports shall be filed with the appropriate Regional Environmental Office of the Agency, the Vendor and the landowner with the annual inspection report.
16. After the first two years of operation, the Designer and the Vendor shall evaluate the sampling test reports and daily flow records and make recommendations to the landowner, with a copy to the appropriate Regional Environmental Office of the Agency. Based on the sampling test reports and the recommendations of the Designer and the Vendor, additional sampling may be required by the Agency.
17. The Vendor shall submit an annual report to the Agency by April 1 of each year containing the following information for the 12 month period ending December 31 of the previous year:
 - A. The number of permitted systems installed in Vermont, including those permitted by the Agency and those permitted by Towns under authority of 24 V.S.A. Chapter 102.
 - B. The address of each installation.

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- C. The name of the owner at the time of installation and any known change in ownership.
 - D. All known problems or failures, with a brief summary of the cause and remedial measures taken.
 - E. Copies of reports from an approved laboratory of all effluent quality testing conducted.
18. This approval is based on information submitted by the Vendor indicating that the specified system will routinely provide effluent with no more than 30 mg/l of BOD₅ and no more than 30 mg/l of TSS.
19. When a project is subject to the Wastewater System and Potable Water Supply Rules, effective January 1, 2005, site-specific permission for the use of this product is required in the form of a Wastewater System and Potable Water Supply Permit.
20. A site-specific permit for the use of this product may be revoked if the unit fails to function properly or if the property owner fails to have a valid contract for the required maintenance and inspection of the unit. In the case of the unit failing to function properly, revocation of the permit will require that the use of the building be discontinued unless another wastewater disposal system is installed based on prior written approval by the Agency.
21. A town that regulates wastewater disposal systems under 24 V.S.A., Chapter 102 and whose ordinance permits, may approve use of an Eco-Solutions Advanced Wetland Treatment System subject to all conditions in this approval. The town shall ensure that the maintenance contract is in effect and that the required maintenance is performed.
22. This approval is not a representation or guarantee of the effectiveness, efficiency or operation of an Eco-Solutions Advanced Wetland Treatment System.

Design and Review Conditions

The following conditions will be used by the Department in reviewing permit applications that include an Eco-Solutions Advanced Wetland Treatment System:

Equipment

- Eco-Solutions Advanced Wetland Treatment System as specified in the site-specific approval.

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Design and Application

- The treatment system shall be installed in accordance with the approved plans and the manufacturer's recommendations. The designer shall assure that the system will properly function in all seasons.
- The designer must assess the structural needs of the system for the specific application site and place the requirements on the design plans.
- The designer must determine the type of backfill required and any necessary placement specifications.
- The designer must assess the ventilation path for the particular application and make any necessary provisions to assure proper flow and control of odor emissions.
- The designer shall consult with the Vendor for proper sizing and include in the design a septic tank effluent filter with easy access for inspection and cleaning.
- The designer must assure routine access to the system as well as the control panel, blower, any pumps, distribution boxes (for sampling), and effluent filters.
- The designer must address flotation issues if the SHWT will be above the bottom of any of the system components.

Installation Inspection

- The treatment system shall be set up under the instruction and guidance of an installer/inspector trained by the Vendor.
- The treatment system shall be inspected by a Licensed Class 1 Designer, approved by the Vendor, after construction of the system and installation of the tank(s) before backfilling, and after backfilling and grading is complete. The inspection shall include checking for an adequate structural foundation to support the system, checking for levelness of the system and tank(s), and inspecting for damage and proper assembly.
- Before backfilling, the system and tankage shall be tested for watertightness by filling the system or tank with water to a point that is above all below grade openings and holding it at a constant level for 24 hours; there shall be no measurable leakage. During the test the entire system and tank(s) shall be inspected for visible leaks. Should the system or tank(s) fail the test they may be repaired and retested. The testing and repairs shall be conducted under the direction and in the presence of the inspecting Licensed Class 1 Designer.

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- The Licensed Class 1 Designer shall inspect all piping for proper installation and watertightness before backfilling.

Start-up

- Start-up of the system and initial operational checks shall be conducted by an installer/inspector trained by the Vendor, who shall submit a report to the owner, the Vendor, and to the inspecting Licensed Class 1 Designer indicating any problems encountered, their resolution, and affirmation that the system is operating as intended.

Operational Maintenance and Inspection

- The owner shall have a valid maintenance contract in force at all times. The minimum length of any contract shall be for a period of two years. A copy of the initial and each succeeding contract shall be submitted to the appropriate Regional Environmental Office of the Agency and to the Vendor. Maintenance shall be performed by, or shall be supervised by, a Vermont Licensed Class 1 Designer, approved by the Vendor, who shall provide written inspection reports detailing the maintenance performed on the specific system, any problems that have occurred since the previous inspection, any modifications made to the system, the date of the inspection, the results of all testing, and any work required to ensure the system operates in compliance with this approval.

The inspection shall be performed in accord with the manufacturers Operation and Maintenance Manual submitted as part of the Innovative/Alternative System site-specific application package. During the first two years of operation, grab samples shall be collected quarterly between the septic tank and the inlet to the Advanced Wetland Treatment System and at the effluent standpipe of the wetland. The first samples shall be collected during the first inspection as required below. The samples shall be tested for biochemical oxygen demand (BOD₅) and total suspended solids (TSS). If at any inspection, after the first two years of operation, the effluent is cloudy or pungent smelling a sample shall be collected and tested for BOD and TSS. The results of all testing shall be submitted to the Agency and to the Vendor, with the annual inspection report.

- During the period of pilot use, daily wastewater flow rates shall be recorded at the pump station for the disposal system and the records shall be filed with the appropriate Regional Environmental Office of the Agency, the Vendor and the landowner with the annual inspection report.
- The first inspection shall be completed no later than 3 months after placing the system in service.

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- The second inspection shall be completed no later than 12 months after placing the system in service.
- Subsequent inspections shall be completed at least once per year based on the date when the system was first placed in service. More frequent inspections or additional testing, required by the manufacturer to ensure proper functioning of the system, shall be conducted in accordance with the Vendor's specifications.
- All reports shall be filed with the appropriate Regional Environmental Office of the Agency, the Vendor, and the landowner with the annual inspection report.

Permitting

- The permit shall run with the land.
- A copy of the site-specific permit shall be provided to any prospective purchaser prior to the sale.
- Each new owner of the property shall inform the appropriate Regional Environmental Office of the Agency, and the Vendor, within 30 days of the transfer of the property and include the name and mailing address of the new owner.

Effective: May 18, 2005

by: Roger Thompson Jr.
Roger Thompson, Jr.
Regional Office Program Manager

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