RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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Alternative/Experimental OWTS Technology Program

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Technology Name & Model Numbers:
AdvanTex®-AX 20, AX 100 Treatment Systems
(Configured in Mode 3)

Technology Type:
Nitrogen Reducing System
Class II Technology Approval

Certification Dates:
Issued: January 26, 2006
Expires: December 31, 2007
Renewed: April 22, 2009
Expires: April 22, 2011

CERTIFICATION

The RI Department of Environmental Management (RIDEM) has reviewed the application for renewal of the Class II Innovative/Alternative (A/E) Technology approval for nitrogen removal for the AdvanTex® AX treatment system hereafter referred to as the "System". The System is a packed bed filter, inside a waterproof container installed after a two-compartment septic tank and prior to a leachfield. Untreated wastewater enters the primary compartment of the two-compartment septic tank where it receives primary treatment. Following primary treatment, effluent passes through to the secondary compartment of the septic tank, which functions as a recirculation-blend tank, where effluent having received primary treatment is blended with wastewater which has been processed through the System. Based upon information contained in the application submitted by Orenco Systems, Inc. hereafter referred to as the "Vendor", the RIDEM hereby renews the System's placement on the RIDEM Alternative/Experimental Technology List. Design, installation, and operation of the System shall be in accordance with the following terms and conditions:

30% post-consumer fiber

I. Design Requirements

A. General

1. All commercial AdvanTex® AX designs shall be reviewed by and deemed acceptable to the Vendor prior to submittal to the RIDEM.

2. A two-compartment septic/processing tank, or two septic tanks in series, may be used; the tank or tanks must conform to the requirements of the OWTS Rules.

3. a.) Designs incorporating this System and a conventional leachfield, or alternative leachfield with a RIDEM Class I "component" approval shall be allowed a 50% reduction in the required leachfield size, except that deep leaching chambers and any other conventional leachfields using more than one foot of stone below, shall be prohibited with or without the reduction.

   b.) Each applicant proposing a reduced leachfield area shall demonstrate that sufficient land area is available on the lot to permit installation of a full size leachfield. The full size leachfield shall meet all applicable OWTS setback requirements. (This is not a requirement that an entire "replacement" field be available, only that enough additional land area be available to increase the "reduced" leachfield area to standard size if ever necessary.)

4. In the Salt Pond and Narrow River Critical Resource Areas the System may utilize a conventional or approved alternative leachfield, in accordance with RIDEM policy.

5. Effluent from the System may be discharged to a pressure-dosed shallow-narrow drainfield provided the latter is designed in accordance with the Vendor's Design and Installation Manual and complies with related guidance and Rules issued by the RIDEM. A one-foot reduction in the required design groundwater separation distance is allowed when the System is used in conjunction with a pressure-dosed shallow-narrow drainfield.

6. No system where design flow exceeds 900 gpd shall utilize a bottomless sand filter (BSF) as the final means of disposal without technical studies to address the possible adverse effects as indicated in the BSF guidance document issued by the RIDEM.

7. Effluent from the system must be capable of meeting Class 1 National Sanitation Foundation (NSF) Standard 40.

8. All Systems shall be equipped with an hour meter and a visible and audible pump/power failure warning indicator, mounted on a NEMA approved cabinet located exterior to the building.

9. System tanks, dosing chambers, pumping chambers, and riser assemblies shall be field-tested for water tightness.

10. Each System installation shall meet all other applicable OWTS Rules and receive prior approval by the RIDEM pursuant to the Rules in effect at the time of application.

11. Design and installation shall be in strict conformance with the approved System design and installation manual. The design shall be prepared by a RIDEM Licensed Designer and the installation shall be performed by a RIDEM Licensed Installer each of whom has received training and is authorized in writing by the Vendor to perform the applicable work on the System.

12. Training

a) The Vendor shall hold two training seminars for RIDEM Licensed Designers, Installers and Service Providers before the expiration or renewal of this certification. The first shall be held within the first six (6) months of the date of this certification.

b) The Vendor shall notify the RIDEM of the date and time of each training seminar and submit to the RIDEM a detailed agenda, material to be distributed to attendees and a list of presenters specifying their credentials at least six weeks in advance of the date of the scheduled seminar. Any public announcement or solicitations must be coordinated with this office.

c) Following the seminar, the Vendor is required to provide each attendee who successfully completes the training with documentation of having done so.

d) Following each training seminar, a list of those who have satisfactorily completed the training shall be submitted to the RIDEM; electronic submission is encouraged.

B. Nitrogen Reducing Provisions

1. The System configured in Mode 3, is recognized as nitrogen reducing. Total nitrogen concentration in the effluent as measured at the D-Box shall not exceed 19 mg/l.

2. The System is recognized for nitrogen reduction for all uses and design flows, with the following provisions for proposed use at schools and for other uses which generate high strength wastewater, including restaurants.
   a.) The application shall be reviewed on a case-by-case basis by the RIDEM, for acceptability.
   b.) At a minimum the RIDEM will require sampling and testing of the wastewater (or an estimate / projection of wastewater characteristics for applications for new construction), an assessment by the vendor of the wastewater characteristics and a certification by the Vendor that the system as designed can meet treatment objectives.

II. General Requirements

1. This Class II approval shall be effective until the expiration date indicated above.

2. If the Vendor wishes to extend this Class II Approval beyond its expiration date, they shall apply for and obtain a renewal of this approval. The Vendor shall submit a renewal application along with the appropriate renewal fee as denoted in the Fee Schedule of the OWTS Rules at least 90 days in advance of the expiration date of the approval.

3. The Vendor shall notify the RIDEM at least 30 days prior to any proposed transfer of ownership of the System technology. Notification shall include the name and address of the new owner and a written agreement between the existing and new owner specifying a date for transfer of ownership, responsibility, and liability for the technology. All provisions of this approval shall be applicable to any new owners.

4. The Vendor shall provide any purchaser of the System with a copy of this approval letter prior to the sale of the system.

III. Operation and Maintenance (O&M) Requirements

1. The RIDEM approved O&M Manual shall be provided to the Owner/Operator.

2. Systems shall be maintained according to the manufacturer's specifications.

3. For seasonally used Systems, the Vendor shall provide specifications for protection of the System and the biological component from freezing, and conditions under which power to the System may be turned off.

4. The Vendor must offer for sale a minimum two-year service contract that must include, as an option, service to all A/E components of the treatment train in addition to the System.

5. The Applicant/Owner shall record copies of the OWTS construction permit issued by RIDEM and the initially executed O&M contract(s) for the System, and all other A/E components in the treatment train, in the land evidence records of the applicable city or town prior to the RIDEM issuing the Certificate of Conformance for each installation.

6. a.) The owner shall retain a public or private maintenance entity (Service provider) for the life of the system and all other A/E components of the treatment train.
   b.) The trained service provider shall have the capability of performing maintenance on the approved leachfield and shall offer to perform such maintenance if requested by the owner.
   c.) Properly trained homeowners may perform O&M on their own systems; training must have been received for all components of the treatment train on which a homeowner whishes to perform O&M.

7. No O&M agreement with a maintenance entity shall be for less than 2 years.

8. The Service provider or homeowner providing O&M on his or her own system per number 6. b.) above shall:
   a.) Receive training as approved by the Vendor
   b.) Be available to perform required preventative maintenance, perform repairs, respond to System emergency situations and conduct performance monitoring when required by this certification or by permit.
   c.) Perform an inspection of the treatment System at least quarterly for design flows of 2,000 gpd or more, and at least twice annually for smaller design flows.
   d.) Report to the Vendor, all inspections and maintenance calls conducted and all problems or failures observed with a summary of the cause and remedial measures taken.
   e.) Homeowners performing maintenance on their own systems must report to the RIDEM and to the Vendor all inspections and maintenance activities conducted and all problems or failures observed with a summary of the cause and remedial measures taken.

9. The Vendor shall provide to the RIDEM a list of trained Service Providers as part of the annual reporting requirement. The names of at least two qualified Service Providers shall be maintained on the list at all times.

10. The Vendor shall have an inventory of System replacement parts available locally.

11. The Vendor shall maintain capacity, either directly or through authorized distributors, to deliver the System to all holders of Rhode Island construction permits on which it is specified.

IV. Reporting Requirements

1. The Vendor shall submit an annual report to the RIDEM, by the anniversary of this certification each year, containing the following information for the previous 12 month period: the number of systems installed in RI, the address of each installation and name of the owner and RIDEM permit number, the dates of inspections and maintenance calls conducted for each installation, and all known problems or failures experienced, with a brief summary of the cause and remedial measures taken and the names of and contact information for trained Service Providers. Electronic submission is encouraged.

2. For single-family homes, the Vendor shall continue to monitor the treatment performance of the three representative installations of the System in Rhode Island; the RIDEM may extend this requirement. Grab samples shall be taken from the d-box or pump chamber prior to the leachfield, as appropriate. Each of the systems shall be monitored at least four times a year for a minimum of two years; the RIDEM may extend this requirement. Two samples shall be taken in the summer months and two in the winter months; seasonally used Systems shall be monitored once at the beginning and once at the end of the season during which they are used. At a minimum the following parameters shall be monitored: BOD5, TSS, pH, TKN, nitrate, nitrite, ammonia, alkalinity and fecal coliform. This information shall be included in the annual report submitted to the RIDEM as directed by item 1 above. Sampling requirements may be extended or sampling frequency for a System may be reduced at the discretion of the RIDEM after an additional two years' data have been evaluated.

   If, at any time, the information gathered from the monitoring indicates that a System's performance is not in compliance with the terms of this certification, measures shall be taken to correct the System's treatment of the wastewater, and additional sampling and analysis shall be conducted. The System shall be re-sampled as necessary until the System is operating in compliance with this certification. The Service provider shall submit to the RIDEM and to the Vendor, an explanation of the measures taken to correct the System's performance and the laboratory analyses for each sampling event. This information shall be submitted as soon as it is available after each re-sampling event; electronic submission is encouraged. This information shall be included in the annual report submitted to the RIDEM by the anniversary of this certification every year. Performance monitoring of the three representative samples may be terminated if the Vendor's written request at the two-year conclusion of this Certification is approved by the RIDEM.

3. For any System with a design flow of 2,000 gpd or more, the Service provider shall monitor the treatment performance of the system. Grab samples shall be taken from the d-box or pump chamber prior to the leachfield and water use since the last sampling event shall be recorded. The System shall be monitored at least four times a year. Two samples shall be taken in the summer months and two in the winter months. At a minimum the following parameters shall be monitored: BOD5, TSS, pH, TKN, nitrate, nitrite, ammonia, alkalinity and fecal coliform. This information shall be provided to the RIDEM and to the Vendor. The Vendor shall include this information in the annual report submitted to the RIDEM as directed by item 1 above.

   If, at any time, the information gathered from the monitoring indicates that a System's performance is not in compliance with the terms of this certification, measures shall be taken to correct the System's treatment of the wastewater, and additional sampling and analysis shall be conducted. The System shall be re-sampled as necessary until the System is operating in compliance with this certification. The Service provider shall submit to the RIDEM and to the Vendor, an explanation of the measures taken to correct the System's performance and the

laboratory analyses for each sampling event. This information shall be submitted as soon as it is available after each re-sampling event. Electronic submission is encouraged.

4. The Service provider shall report any termination or non-renewal of maintenance agreements to the RIDEM, the Vendor and to the local wastewater management authority should one exist for that area. Electronic notification is encouraged.

V. Rights of the RIDEM

1. The RIDEM may suspend, modify or revoke this approval for cause, including but not limited to: non-compliance with any of the conditions or provisions of this approval, misrepresentation or failure to disclose fully all relevant data, or receipt of new information indicating that the use of the System is contrary to the public interest, public health or the environment.

2. This approval does not represent an endorsement of the System by the RIDEM. This letter of approval may be reproduced only in its entirety.

Russell J. Chateauneuf, P.E.
Chief of Groundwater and Wetlands Protection

Issuance Date: 4/22/09