

**NORTH CAROLINA DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH
ENVIRONMENTAL HEALTH SECTION
ON-SITE WATER PROTECTION BRANCH**

INNOVATIVE WASTEWATER SYSTEM APPROVAL
--

INNOVATIVE WASTEWATER SYSTEM NO: IWWS 2015-01-R1

Issued To: Orenco Systems, Inc.
814 Airway Avenue
Sutherlin, Oregon 97479
Telephone: (877) 371-3172; Fax: (541) 459-2884
<http://www.orenco.com>

Contact: Nicholas Noble, Government Relations Manager

For: AdvanTex® AX-RT Treatment Systems Models AX20-RT and AX25-RT

Approval Date: April 24, 2015
June 15, 2015 Sampling Revisions

In accordance with General Statute 130A-343, 15A NCAC 18A .1969 and .1970, a proposal by Orenco Systems, Inc. for an approval of subsurface wastewater systems utilizing the AdvanTex AX-RT Treatment systems has been reviewed, and found to meet the standards of an innovative system when all of the following conditions are met:

I. General

A. Scope of this Innovative Approval

1. Design, installation, use, and operation and maintenance guidelines for AdvanTex AX-RT Treatment systems to meet TS-I or TS-II effluent standards pursuant to Rule 15A NCAC 18A .1970. Refer to Rule .1970(a) Table VIII – Effluent Quality Standards for Advanced Pretreatment Systems for treatment performance levels.
2. Operation, maintenance, and monitoring requirements for AdvanTex AX-RT Treatment systems and associated subsurface systems to ensure the treatment performance standards are met.

- B. This Innovative System Approval is applicable to domestic strength sewage systems (non-industrial wastewater) utilizing AdvanTex AX-RT Treatment systems that have a design flow not exceeding 3,000 gallons per day (gpd).

Use of AdvanTex AX-RT Treatment systems for facilities with an influent waste strength that exceeds domestic septic tank quality effluent standards pursuant to Rule 15A NCAC 18A .1970(b) may be proposed by Orenco Systems, Inc. and a North Carolina Professional Engineer to the Department for review and approval on a case-by-case basis, prior to permitting by the local health department (LHD). The system design must include the proposed raw wastewater

strength (BOD₅, COD, TN, TSS, fats, oils and grease, etc.), the expected organic loading rate (in pounds of BOD), and hydraulic loading rate on the pretreatment system, and the calculations, references, and any other needed information to support the proposed design.

- C. Any site utilizing these systems shall have wastewater with sufficient alkalinity to facilitate biological treatment processes. The influent shall not have a pH or toxins that significantly inhibit microbial growth.
- D. Use of AdvanTex AX-RT Treatment systems that have a design flow exceeding 3,000 gpd may be permitted on a case-by-case basis after approval by the Department in accordance with the Large Systems State Review/Approval Process (Rule 15A NCAC 18A .1938).
- E. This Innovative Approval is not applicable for proposed weekly rental homes located in coastal North Carolina. Those properties should utilize an AdvanTex AX20 or AX100 system covered under a separate Innovative approval (IWWS-2004-03-R4).

II. System Description

The AdvanTex AX-RT series uses the same recirculating textile filter technology as the AX20 and AX100 that have been previously approved (IWWS 2004-03-R4), combining the textile filter media and recirculation/processing tank into a single, complete, self-contained multi-compartment unit. The recirculating treatment tank receives filtered effluent from the primary septic tank and is topped with a standard AX20 lid and hinge assembly. Textile media is suspended from the top of the treatment unit, with typically 60% positioned over the recirculation/blend chamber and the remainder (40%) positioned over a final filtrate chamber separated from the recirculation/blend chamber by a baffle wall. Filtrate is either recirculated back to the recirculation-blend chamber through a low-level equalization swing-check valve in the baffle wall, or discharged by controlled-dosing using a discharge pump, or by gravity.

Both the AX20-RT and AX25-RT utilize the same single multi-compartment unit. The AX20-RT has 524 square feet of textile filter media, and the AX25-RT has 624 square feet of media.

III. Siting Criteria

AdvanTex AX-RT Treatment systems and associated drainfields shall be sited and sized in accordance with Rule .1970 for TS-I or TS-II systems. Drip irrigation systems used with AdvanTex AX-RT Treatment systems shall be sited and sized in accordance with the manufacturer-specific drip approval. The AX-RT Treatment systems and associated drainfields shall meet all applicable horizontal setback requirements and be located to prevent surface/subsurface water inflow/infiltration.

IV. System Sizing

The system sizing criteria shall be based upon the long term acceptance rate specified in the appropriate portion of the rules or Innovative and Experimental approval for the type of ground absorption system to be used.

V. Special Site Evaluation

A special site evaluation may be required based on the proposed ground absorption system. Refer to manufacturer specific drip approvals and Rule .1970(p).

VI. Design Criteria

- A. The system consists of a septic tank and an AdvanTex AX-RT fixed-film media treatment system as specified in Table 1 below.

Design Daily Flow (gpd)	Minimum Septic Tank Volume (gallons)	AdvanTex AX-RT
≤ 500	1,000	AX20-RT
501-600	1500	AX25-RT

A single-bulb UV system shall be provided for TS-II systems. AX20-RT TS-II systems may be configured with an integrated UV and pumping chamber. AX25-RT TS-II systems require the UV unit to be installed after the RT unit and a separate approved pump tank. See Attachment A for example drawings of unit configurations.

- All tanks shall be approved by the Department and Orenco Systems, Inc. specifically for the use with AdvanTex Treatment systems. As part of this approval, all tanks (septic and recirculating) will have an inlet sanitary tee that is visible and accessible from the riser opening. The inlet tee shall have an inner diameter not less than 4 inches. An access riser not less than 20 inches in diameter will be provided to access the inlet tee. The top of the riser shall be a minimum of 2 inches above finished grade and water shall be diverted away from the riser as necessary to prevent water from accumulation.
- The septic tank shall be equipped with a Department approved, appropriately sized Orenco effluent filter on the outlet end.
- The recirculating pumps are Orenco 4-inch turbine effluent pumps. Specifications for the pumps that accompany the different configurations are listed in Table 2.

AdvanTex Filter Unit	Number of Recirculation Pumps	Flow Rate (gpm)	Pump Nominal Horse Power	Voltage
AX20-RT	1	15	1/2	115V or 230V
AX25-RT	1	30	1/2	115V or 230V

- The discharge pumps (as applicable with some AX-RT and AX20-RT-UV configurations) are Orenco 4-inch turbine effluent pumps. Pump specifications for the different configurations are listed in Table 3.

Model	Pump	Pump Nominal Flow Rate (gpm)
AX20-RT	Bottom Intake	10, 20, 30, 50
AX20-RT-UV	Bottom Intake	10, 20, 30, 50
AX25-RT	Bottom Intake	10, 20, 30, 50

Possible float settings for AX-RT's with integrated field dosing pumps are listed in Table 4.

Table 4 – AX-RT Float Settings and Dose Volumes			
		AX20-RT or AX25-RT	AX20 RT UV ⁺
On Float*	Off Float*	Dose Vol (gal)	Dose Vol (gal)
35	24	117	49
35	20	159	66
35	18	180	75
35	16	202	84
35	12	244	102
35	10	265	111
35	8	286	119

*Floats measured in inches from bottom of RT

+AX25-RT for TS-II requires UV unit in separate chamber or separate dosing tank.

5. The AdvanTex AX-RT is equipped with a set of vertical geotextile sheets with low-pressure pipe wastewater distribution spin nozzles above the sheets. The low-pressure pipe distribution spin nozzles operate at 4 psi (this measurement is used in lieu of residual head) and are designed to operate at a flow rate of 6 gpm. One air vent for the RT is required, and is located on the pod and ultimately connected to the building sewer.
6. Filtrate from the AdvanTex AX-RT percolates through the geotextile by gravity into either the recirculation tank or the discharge chamber and ultimately through the ultraviolet (UV) disinfection system dependent upon the recirculation tank level.
7. To enhance nitrogen removal a portion of the nitrified wastewater shall be diverted back to the septic tank where conditions are most optimal for denitrification. The daily volume of nitrified wastewater delivered back to the septic tank shall be determined on a case-by-case basis by the designer authorized in writing by Orenco Systems Inc. and shall not exceed 50% of the daily volume pumped to the AdvanTex filters. Diverting wastewater back to the inlet riser of the septic tank shall be accomplished by installing a stub connection at the recirculating pump hose and valve assembly to divert a portion of each dose to the septic tank inlet riser. A flow control disk with appropriately-sized orifice is installed by the manufacturer in a union in the septic tank return line to control the proportion of flow returned to the septic tank. A ball valve followed by an elbow to direct flow down into the tank shall be placed on the return line inside of the septic tank inlet riser. This ball valve allows the denitrification return line to be shut off for any operational reasons.
8. The UV system shall be rated for the appropriate discharge rate from the AdvanTex unit. Audible and visible alarms for bulb failure will be provided.
9. The UV disinfection system (optional for TS-I, required for TS-II) will be one of the following:
 - a. The Orenco UV Unit, or
 - b. Other UV systems specifically approved by the Department and Orenco Systems, Inc.
10. AdvanTex Treatment systems will utilize the TCOM or VeriComm[®] Telemetry Control Panel. The control panel is in a NEMA 4X enclosure, and shall be located within 30 feet and in line of sight of the recirculation tank. Separate control and alarm circuits shall be provided. The Telemetry Control Panel shall be connected to an active phone line capable of dialing a 1-800 number, or be equipped with a wireless bridge connecting it to a wireless internet router, and shall remain active for the life of the Advanced Treatment System. The Operator in Responsible Charge (ORC) of the system authorized in writing by Orenco

- Systems, Inc. must be able to access the panel directly on site and shall be available to the LHD with 24-hour notice in the event that the LHD needs to access the control panel.
11. All access riser hatches shall be secured by approved tamper-resistant stainless steel bolts supplied by the manufacturer. Riser construction, attachment to tanks and security systems shall be pre-approved by the Department in accordance with the Orenco Systems, Inc. approvals for septic tank and pump tank risers, as applicable.
 12. The instructions for anti-floatation in the AdvanTex AX-RT Treatment System Installation Manuals shall be followed. Orenco Systems, Inc. can submit a pre-engineered anti-buoyancy design by a NC Professional Engineer for approval by the Department that could be used instead of site specific anti-buoyancy designs for sites that meet the limitations of the pre-engineered design.
 13. The panel controlling the drainfield dosing pumps shall be provided by Orenco Systems, Inc. and designed to meet the daily, 7-day, and 30-day monitoring requirements of Rule .1970, unless the drainfield panel is provided by a distribution system manufacturer other than Orenco Systems, Inc. The other manufacturer's panel shall meet these same monitoring requirements, and its alternate use for this purpose shall have the written concurrence of Orenco Systems, Inc. and the designer authorized in writing by Orenco Systems, Inc.
 14. A spigot or sampling port shall be placed on the force main from the final dosing tank to provide for effluent sampling. In the event a system is installed using a gravity trench, a sampling basin shall be installed between the final treatment device and the drainfield.
 15. The 7-day and 30-day readings will be stored in the VeriComm control panel records. The ORC authorized in writing by Orenco Systems, Inc. will be able to access this information when they are at the site. The VeriComm panel, TCOMM Telemetry control panel, or approved equal shall be used for pressure manifolds, LPP systems, and drip irrigation systems.
- B. AdvanTex AX-RT Treatment systems shall be designed by a designer authorized in writing by Orenco Systems, Inc. or a North Carolina Professional Engineer. Systems over 1,000 gpd shall be designed by a North Carolina Professional Engineer. The design shall also be reviewed and written recommendation provided by the Orenco Representative for North Carolina or the Orenco NC dealer/distributor.

VII. Installation and Testing

- A. A preconstruction conference shall be required to be attended by the designer authorized in writing by Orenco Systems, Inc., engineer (if applicable), installer authorized in writing by Orenco Systems, Inc., and LHD prior to beginning construction of the AdvanTex AX-RT Treatment system.
- B. All AdvanTex AX-RT Treatment systems shall be installed according to directions provided by Orenco Systems, Inc. Additionally, all AdvanTex AX-RT Treatment systems and components used with, but not manufactured by Orenco Systems, Inc., shall be installed in accordance with all applicable regulations and manufacturer instructions.
- C. All individuals/companies installing AdvanTex AX-RT Treatment systems shall be in possession of all necessary permits and licenses before attempting any portion of a new or repair installation. The company/individual must be a Level IV installer and authorized in writing by Orenco Systems, Inc.
- D. Watertightness of the tanks shall be tested by either of the following protocols: 24-hour

hydrostatic test or a vacuum test.

1. Hydrostatic Test^{1, 2}

- a. Temporarily seal the inlet and outlet pipes.
- b. Fill tank with clean water to a point at least two inches above the pipe connections or the seam between the tank and the riser, whichever is highest.
- c. Measure the water level.
- d. Allow the tank to sit for 24 hours.
- e. Re-measure the water level.
- f. If the water level change is ½-inch or less or one percent of the liquid tank capacity, the tank passes the leak test.
- g. If the water level change is greater than ½-inch, any visible leaks can be repaired and the tank may be topped off with water and allowed to sit for a minimum of one hour.
- h. The tank passes the leak test if there are no visible leaks (flowing water or dripping in a steady stream) and no measureable drop in water level after one hour. Otherwise, the tank fails the leak test.

2. Vacuum Test³

- a. Temporarily seal the inlet and outlet pipes.
- b. A vacuum of four (4) inches of mercury should be pulled on the tank and held for five (5) minutes.
- c. During the testing, the tank manufacturer or their representative can seal the tank if it is found to be leaking.
- d. If the tank is repaired, the vacuum must be brought back up to four inches and held for five minutes.

- E. The distribution of flow to the AdvanTex AX-RT and to the septic tank shall be measured during start-up and set in accordance with the system design with start-up settings recorded.
- F. Specified site preparation steps and construction specifications for the ground absorption system shall be strictly adhered to, including specified depth of trenches in relation to site limiting conditions, cover material specifications (if needed), trench installation method, etc.
- G. The installer authorized in writing by Orenco Systems, Inc., the engineer or designer authorized in writing by Orenco Systems, Inc., and the ORC authorized in writing by Orenco Systems, Inc. shall conduct an inspection/start-up of the AdvanTex AX-RT Treatment system and all associated system components. The LHD personnel will attend and observe the inspection/start-up. During the inspection/start-up to include:
 1. System watertightness testing.
 2. Control panel operation and alarm settings.
 3. Pump model numbers and time clock settings.
 4. Air vent on the pod installed and functional.
 5. Pressure head (PSI) on the AX-RT wastewater distribution system.
 6. Return flow to the septic tank set per design and recorded, when applicable.
 7. Riser hatches have tamperproof bolts, and/or riser lock ring.

¹ Victor D'Amato and Ishwar Devkota, *Development of Prefabricated Septic and Pump Tank Construction and Installation Standards for North Carolina*.

² National Precast Concrete Association, *Best Practices Manual Precast Concrete On-Site Wastewater Tanks*, Second Edition, October 2005, 24.

³ National Precast Concrete Association, *Best Practices Manual Precast Concrete On-Site Wastewater Tanks*, Second Edition, October 2005, 24.

VIII. Operation, Maintenance, Monitoring and Reporting

- A. AdvanTex AX-RT Treatment systems shall be classified, at a minimum, as a Type Va system in accordance with Table V(a) of Rule .1961(b). Management and inspection shall be in accordance with Rules .1961 and .1970.
- B. All Orenco AdvanTex AX-RT Treatment systems require an operation and maintenance agreement between the system owner and Orenco Systems, Inc., its authorized representative, or with an operator authorized in writing by Orenco Systems, Inc. as per Rule .1970. The system shall be inspected according to Rule .1961 by a certified subsurface operator authorized in writing by Orenco Systems Inc. The ORC shall be either an employee of Orenco Systems, Inc. or authorized in writing by Orenco Systems, Inc. to operate and maintain the system. The operator authorized in writing by Orenco Systems, Inc. must have proper equipment and training to access and program VeriComm or TCOM Control panels on site.
- C. All AdvanTex AX-RT Treatment systems shall be maintained according to the latest version of Orenco Systems, Inc.'s O&M Manual.
- D. At each AdvanTex AX-RT Treatment system inspection, the ORC authorized in writing by Orenco Systems, Inc. shall, at a minimum, observe, monitor, and record the following:
 - 1. Wastewater level in all the tanks.
 - 2. Sludge, scum, and grease levels in all tanks.
 - 3. Clogging of effluent filter in Biotube® pump package.
 - 4. Watertightness of tanks, risers and pipe penetrations at the tanks.
 - 5. Operation of pumps, floats, valves, electrical controls, and alarms.
 - 6. Drainfield pump delivery rate (drawdown test), determination of the average pump run time, and drainfield dosing volume.
 - 7. Any structural damage, accessibility issues, adequate ventilation, excess odors, ponding of effluent, insect infestations, vegetative growth over the drainfield, or surfacing of effluent on the drainfield area.
 - 8. Sample of AdvanTex AX-RT Treatment system effluent collected from the sampling point to check for effluent clarity and odor and a sample of influent, as required.
 - 9. Readings from pump cycle counters and run time meters and any water meter readings.
 - 10. Current operational set up for TS-II nitrogen removal enhancement (percent returned to septic tank) and recommendation for modifications (if needed).
 - 11. System operating conditions, from the review of VeriComm or TCOMM stored data for indication of 7-day and 30-day flows and flow variances, clogging of filter distribution system, or other abnormal conditions.
- E. The ORC authorized in writing by Orenco Systems, Inc. shall also conduct additional observations, measurements, monitoring, and maintenance activities as specified in the Operation Permit and as recommended by the manufacturer.
- F. Sampling and Testing
 - 1. All sampling shall be done in accordance with Rule .1970(n)(3) and (5). AdvanTex AX-RT Treatment systems shall be sampled annually (semi-annually for systems with a design flow of 1,501 to 3,000 gpd).
 - 2. TS-II systems influent shall be analyzed for TKN.
 - 3. Effluent for all systems shall be tested for effluent CBOD₅ and NH₄-N and shall be tested in the field for turbidity. Systems specified to meet the TS-II standard shall have the effluent

analyzed for TN (TKN and NO₃-N). Systems specified to meet the TS-II standard with design flows of 1,501 to 3,000 gpd shall also have the effluent analyzed for fecal coliform.

4. Additional sampling of effluent or influent may be determined to be necessary by the ORC authorized in writing by Orenco Systems, Inc. during a system inspection to assist with troubleshooting or to verify system performance.
5. Effluent samples for drip disposal systems or other pressurized dispersal systems shall be collected from a tap on the drainfield forcemain (prior to spin filters for drip systems). The preferred location of the tap is in the pump tank discharge assembly. The sampling shall not commence until at least 30 seconds of continuous discharge through the sample tap has been completed.
6. Influent samples shall be taken from outlet side of the septic tank. Care shall be taken to collect the sample from below the scum layer with as little solids as possible.
7. Adjustments in the monitoring schedule and number of parameters sampled may be proposed by Orenco Systems, Inc. and approved by the Department pursuant to Rule .1970(n)(3)(B) or (C).

G. Notification and Performance of Maintenance and Repairs

1. The ORC authorized in writing by Orenco Systems, Inc. shall alert the LHD, Orenco Systems, Inc., and the system owner within 48 hours of needed maintenance or repair activities including, but not limited to landscaping, tank sealing, tank pumping, pipe or control system repairs, media replacement, and/or adjustments to any other system component.
2. System troubleshooting and needed maintenance shall be provided to maintain the pump delivery rate and average pump run time within 25% of initial measurements conducted during system startup. The ORC authorized in writing by Orenco Systems, Inc. shall notify the system owner, Orenco Systems, Inc., and the LHD whenever the pump delivery rate efficiency or average pump run times are not within 25% of initial measurements conducted prior to system start-up.
3. The septic tank will be pumped as needed upon recommendation of the ORC authorized in writing by Orenco Systems, Inc. and in accordance with the AdvanTex AX-RT Treatment System operation and maintenance instructions. However, at a minimum, the septic tank will be pumped whenever the solids level exceeds 25% of the tank's total liquid working capacity or the scum layer is more than four inches thick.
4. The tanks shall be pumped by a properly permitted septage management firm, and the septage handled in accordance with 15A NCAC 13B .0800.
5. The ORC authorized in writing by Orenco Systems, Inc. shall notify the LHD, Orenco Systems, Inc., and system owner in writing whenever repairs are indicated. All maintenance activities shall be recorded in the ORC reports provided to the system owner, Orenco Systems, Inc. and the LHD.

H. Reporting

1. The ORC authorized in writing by Orenco Systems, Inc. shall provide a completed written report to the system owner, Orenco Systems, Inc., and the LHD within 30 days of each inspection. At a minimum, this report shall specify:
 - a. The date and time of inspection,
 - b. System operating conditions according to Section VII.D, VII.E, and VII.F.
 - c. Results from any laboratory analysis of any influent and effluent samples,
 - d. Maintenance activities performed since the last inspection report,
 - e. An assessment of overall system performance,
 - f. A list of any improvements or maintenance needed,

- g. A determination of whether the system is malfunctioning, and the specific nature of the malfunction,
- h. Any changes made in system settings, based on recommendations of the manufacturer, and
- i. A summary report of data retrieved from the VeriComm or TCOMM panel verifying actual daily, 7-day, and 30-day flows, flow variances, and other operating conditions.

IX. Responsibilities and Permitting Procedures

- A. Prior to the installation of an AdvanTex AX-RT Treatment system at a site, the owner or owner's agent shall file an application at the LHD for the proposed use of this system. After the LHD conducts a soil and site evaluation, the LHD may issue an Improvement Permit or an Authorization to Construct or amend a previously issued Authorization to Construct allowing for the use of an AdvanTex AX-RT Treatment system.
- B. The Improvement Permit and Authorization to Construct shall contain all conditions the site approval is based upon, including the proposed use of the Innovative system. The operation permit will include all conditions as specified in the Improvement Permit and Authorization to Construct.
- C. When a special site evaluation is required pursuant to Rule .1970(p)(1) or a drip approval, as applicable, an evaluation and written, sealed report from a Licensed Soil Scientist regarding the site shall be provided to the LHD. The report shall contain the information specified in Rule .1970(p)(2) and "Requirements for Submittals of Soil Reports and Pretreatment and/or Dispersal System Designs". The LHD may request the assistance of their Regional Soil Scientist in evaluating this report prior to Improvement Permit issuance.
- D. The AdvanTex AX-RT Treatment system shall be designed by one of the following: a designer authorized in writing by Orenco Systems, Inc. or a North Carolina Professional Engineer. Systems over 1,000 gpd or as otherwise required for drip irrigation systems, shall be designed by a Professional Engineer. All design submittals shall be accompanied by a certification letter from Orenco Systems Inc., or its North Carolina authorized representative.
- E. Prior to the issuance of an Authorization to Construct for an AdvanTex AX-RT Treatment system, a design submittal prepared by a designer authorized by Orenco Systems, Inc. or North Carolina Professional Engineer shall be submitted for review and approval by the LHD. The design submittal shall include the information specified in "Requirements for Submittals of Soil Reports and Pretreatment and/or Dispersal System Designs".
- F. It is recommended that local authorized environmental health practitioners attend a design training session offered by the manufacturer/authorized representative prior to permitting the system. Also, at the request of the LHD, a Regional Engineer will review the design.
- G. The designer authorized by Orenco Systems, Inc. shall certify in writing that the system was installed in accordance with the approved design prior to Operation Permit issuance.
- H. A North Carolina Professional Engineer shall certify in writing that a system designed by an engineer was installed in accordance with the approved plans and specifications prior to Operation Permit issuance.

- I. For sites required to be evaluated by a Licensed Soil Scientist or Professional Geologist (see Section V and IX.C), the LHD may specify as a condition on the Improvement Permit and Authorization to Construct that a Licensed Soil Scientist or Professional Geologist oversee critical phases of the drainfield installation and certify in writing that the installation was in accordance with their specified site/installation requirements prior to the Operation Permit issuance.
- J. The ORC authorized in writing by Orenco Systems, Inc. shall be present during the final inspection of the system prior to the issuance of the operation permit. The ORC shall be certified as a NC Subsurface Operator and authorized in writing by Orenco Systems, Inc.
- K. The LHD issues the Operation Permit after the following:
 - 1. Field verification of installation completion;
 - 2. Receipt of written documentation from the designer authorized in writing by Orenco Systems, Inc., or the engineer, as applicable, that the system has been designed, installed, and is operating in accordance with the approved plans; and
 - 3. All necessary legal documents have been completed, including the contract between the system owner and the ORC authorized in writing by Orenco Systems, Inc.
- L. On an annual basis, Orenco Systems Inc., shall provide a report to the On-Site Water Protection Section including the number and location of new system installations during the previous year, and effluent data and operator reports for each operational AdvanTex AX-RT Treatment system installed in North Carolina under this Innovative Approval. Effluent data should be compiled and submitted electronically. If available, a web-based system for data posting of laboratory results should be utilized. These reports shall provide information to the Department based upon the monitoring data and observations made from the Innovative systems installed pursuant to this Approval. This should include an assessment of system performance in relation to the established treatment performance standards; an assessment of physical and chemical properties of the materials used to construct the system, in terms of strength, durability, and chemical resistance to loads and conditions experienced; recommended areas of applicability for the system; and any conditions and limitations related to the use of the system. The report shall also include an updated list of authorized designers, installers, and ORCs.

X. Repair of Systems

The provisions of 15A NCAC 18A .1961 (c) shall govern the use of the AdvanTex AX-RT Treatment system for repairs to existing malfunctioning wastewater systems.

Approved By: _____ Date: _____