

The  
**ALTERNATIVE/EXPERIMENTAL WASTEWATER TREATMENT TECHNOLOGIES**  
**TECHNICAL REVIEW COMMITTEE (TRC)**

The meeting was held at  
95 Cripe Street, North Kingstown, RI

January 11, 2013

Approved Minutes

*Present:* Noel Berg, Russ Chateaufneuf, Susan Licardi, George Loomis, Tim Stasiunas

*Absent:* Ken Anderson, Nikki Andrews, David Dow and Dennis Vinhateiro

*Others Present:* Peter Ogle (Charlestown Wastewater Management Commission), Matt Dowling (Charlestown Wastewater Management Program), Blake Johnson (Orengo Systems, Inc.), Bob Johnson (Atlantic Solutions, Inc., Orengo Systems, Inc. distributor), Rick Pezza (Green Wastewater Solutions, Inc., Orengo Systems, Inc. distributor) and Deb Knauss (DEM)

*Others Present via Conference Call:* Jason Churchill (Orengo Systems, Inc.), Dennis Fogg and Don Prince (Presby Environmental, Inc. [PEI])

Call to Order: 8:50 AM

Materials Distributed:

- Draft Agenda for this meeting
- Draft Minutes of 11/30/12 meeting
- Email from Joshua Flatley (Maryland Department of Environment [MDE]) and attached details of AX20RT which were submitted for approval for use in the Bay Restoration Fund program and the NSF Standard 40 listing for AX20 RT
- MDE AX20 RT Bay Restoration Fund data
- Draft Class Two Component Approval for Presby Environmental, Inc.'s (PEI) Advanced Enviro-Septic (AES), to help conceptualize use of AES in RI, according to RI design parameters, and a comparison of AES leachfield in trench configuration using the same loading considerations that apply to Eljen (the most similar leaching component approved in RI.)
- Draft monitoring requirements for N-removal technologies approved under 37.4.2 (B)(i) and (ii), with comments from URI

**Review of Draft Minutes of November 30, 2012**

- Page 3, in the fourth paragraph beneath the section on the discussion of Norweco, Inc.'s Singlair TNT, in the second sentence, replace "form", with "from": "...sample should be drawn from..."
- Page 3, in the same paragraph as above, in the following sentence: edit: "should be collected before the end of August."
- Page 3, in the first sentence of the paragraph beginning "George reiterated the difficulty of...": revise the rest of the sentence: "...sampling error ~~that~~ can result if ~~a tiny bit of dislodged organic/solid material~~ is collected with an influent sample, since prior to lab analysis of the sample it is shaken and the tiny bit of solid material will result in an inaccurate result for that sample."
- Page 3, in the fifth paragraph of the same section, correct the spelling of SeptiTech, incorrectly spelled with a "c" on the end.
- Page 3, same paragraph: "Composite samples ~~get~~ provide some information especially with..."
- Page 3, same paragraph, next sentence: "However, when a composite sampler is used, ~~that~~ the cover
- Page 3, same paragraph: "...rainwater ~~will~~ may enter the system..."
- Page 4, first complete paragraph at the top of the page: "There was discussion..."
- Page 4, first complete paragraph at the top of the page: "...elapsed time meter and cycle ~~run times~~ counters."
- Page 4, fourth paragraph edit as indicated: "Russ: if testing shows non-conformance, the system should continue to be tested until results show that it has come into compliance, ~~but that~~ and although the data indicating non-compliance will be collected, it will not be used in calculating conformance with standards if the re-sample after operational corrections are made, but rather the re-sample that demonstrates compliance."
- Page 4, second paragraph from the bottom of the section: "David asked how easy it is to..."

**Motion:** Tim made a motion to approve the minutes with the corrections noted.

**Second:** Susan seconded the motion.

**Discussion:** There was no discussion.

**Vote:** All present were in attendance at the meeting November 30th and voted in favor of the motion.

**Orengo Systems, Inc. AXRT Series (AdvanTex)**

This nitrogen removal technology application was submitted under Rule 37.4.2 (B) (ii), which is one of the new provisions of the OWTS Rules effective date 7/9/12. This rule provides for a nitrogen removal technology to be considered for Class Two approval based on an approval received in another state where the climate is similar to or colder than Rhode Island's and the technology review criteria is substantially equivalent to RIDEM's Class One or Class Two. Substantially equivalent review means the other jurisdiction has a minimum nitrogen reduction standard of fifty percent (50%) reduction in total

nitrogen concentration and a maximum effluent total nitrogen concentration of nineteen (19) milligrams per liter and the review process evaluates performance data with respect to a technology performance claim made by the vendor. Orenco Systems, Inc. is using the approval received from Maryland Department of Environment (MDE) to support their application to RI. RIDEM looked at USDA hardiness zone maps and concluded that there is some overlap of the temperature conditions in Maryland and RI, so we have no concern about the subject application fulfilling that component of the Rule.

Russ explained that there are two issues with this application being submitted under this specific provision that need to be considered.

- 1) The MDE N-removal standard is not 19 mg/L. It is higher than this because their N-removal standard assumes an influent TN concentration of 60 mg/L and requires removal of 50%, which allows a TN concentration in treated effluent of 30 mg/L. The MDE standard previously included an assumed influent TN concentration of 40 mg/L, but based on their own observations of influent strength while sampling under the Bay Restoration Program, and also review of literature published in recent years, they concluded that typical residential wastewater strength is more accurately represented by an assumed influent TN concentration of 60 mg/L. Therefore there is some concern that the standard of the state in which the approval was received doesn't fulfill the requirement of the RIDEM rule under which the application was submitted, although the RT data from MDE looks good, with an average of 14.6 mg/L TN and a mean of 14.75 mg/L TN, for 46 samples.
- 2) We believe that the RTs installed in MD have the recirculation pump located in the first chamber of the unit, not at the end (second chamber) as in the RT configuration for which approval is sought in RI. RIDEM asked MDE staff for the configuration approved there. Based on the date on the detail provided in the reply email and the sample collection dates for the RT, it appears that the configuration approved in MD is the same under consideration in RI. However, the vendor has said that this is not the case. We will ask Jason Churchill (Orenco Systems, Inc.) about the MD data and the configuration of the tanks for which the data are reported.

Russ suggested that it may be better to consider the RT under the two-year's of data element of the RIDEM OWTS Rules [the original Class Two provision under Rule 37.4.2 (A) (i), (ii) and (iii)] since we have two years of data for the system from MDE. This may be an easier route than trying to sort through the date of the standard change in MD relative to the date that the RT application was submitted to MDE.

Russ asked if the TRC had other issues that need to be considered; nothing was added.

Jason Churchill joined the meeting via telephone conference and Blake Johnson (Orenco Systems, Inc.) operated the visual component of their presentation. Russ explained to Jason the two key issues explained above: Maryland's N-removal standard no longer being the same as RI's and also the confusion about the configuration of the RTs approved by MD and installed there.

Jason expressed surprise about the first point about the MD N-removal standard; he was not aware of the change made to the MD standard. He added that although the standard is no longer the same as RI, the performance data show that the systems installed in MD meet the RI performance requirement of 19 mg/L TN. Russ read the Rule and explained that at the time that it was written, we believed that MD had a standard similar to RI's and that we recently learned that it had been changed, although we don't yet know the exact date that the new N-removal standard was implemented. He suggested that perhaps the RT could be considered under the old RIDEM provision for Class Two technology applications (two years of data). Jason agreed that we need to find out the date the new standard was implemented in MD and think about how this applies in this case of RI review of the RT.

Jason explained that with respect to the second issue of configuration of RTs installed in MD, for which data are reported, that the recirculation pump is indeed in the first compartment of the RT tank, while it is in the second compartment of the RT in the configuration for which approval is sought in RI. He explained that the recirculation pump was moved in response to recommendations from service technicians: they reported to Orenco Systems, Inc., that to service the "recirc pump" in the first compartment, they had to remove some of the media sheets and it would be more efficient if the "recirc pump" was contained in the second compartment with the discharge pump (in models that are pump-discharged) where it may be accessed without removing media sheets. So Orenco Systems, Inc. responded by moving the media sheets farther toward the inlet end and relocating the recirculation pump into a vault in the second compartment of the RT unit. He explained that while this modification was implemented to improve serviceability, and not to enhance performance, they have observed that the reconfigured RTs do perform a bit better than the original configuration. He explained that the tank volumes are the same; hydraulically nothing has changed; only the location of the pump and the media sheets were changed. For N-removal, the filtrate is recirculated back to the septic tank inlet in the RT, as it is in the AX. Jason explained that the system responds to high volumes of influent as well as intervals of low use and no use when the water level in the RT tank is low. He emphasized the treatment performance of the RT and also how this unit is an easy install; it is installed shallower than the AX20 and well-suited to repairs where an existing septic tank might remain in place. The RT can be placed in a truck and carried to the excavation in the yard.

George asked about seasonal use and intermittent flow and how the system accommodates these conditions. Bob explained that this is handled by the control panel, which senses flow and responds to no influent by adjusting recirculation. Any float change will result in the system reverting to the original settings.

Russ asked Jason if an RT were to be installed in MD today, would it be the new configuration? Jason thought that this would be the case and Bob Johnson agreed.

Russ explained to Jason that while he has stated that the RT approved in MD is the original configuration, the cut sheet they provided depicts the recirculation pump in the second compartment. So, even if the date on the cut sheet is not correct, it appears that at some point, MD accepted a change of the recirculation pump location. Jason directed our attention to the design criteria the RT application folder. During this discussion, it was clarified that the recirculation pump is located within a sealed housing in the second compartment and the means by which it is hydraulically connected to the first chamber. Also explained, was the volumetric equivalence of water recirculated in the RT and in the AX20 with which everyone is more familiar. There was some confusion and discussion about the differences between the drawing MD provided (with a date that preceded the sample collection dates of nearly all of the performance data for the MD RTs). Deb had emailed Jason about this, but the MDE website url that she provided was not available when he attempted to view it.

Ten-minutes into the half-hour recovery time scheduled between the scheduled end of the RT discussion and the scheduled phone-in time for the next applicant, Russ summarized the discussion and the three actions that need to be completed:

- 1) Orenco Systems, Inc. is requested to get a clear picture of what happened in Maryland with regard to which configuration is approved, when it was submitted there for approval and what configuration is installed there for which MD data have been provided to RI.
- 2) Orenco Systems, Inc. is requested to obtain information on when the N-removal standard was changed by MDE.
- 3) There is a possibility of RI considering the RT under the original Class Two approval criteria, which requires two-years of performance data, with two-years of RT data (even with a mix of the two configurations) to consider. Russ asked them to think about this.

Russ asked Jason if he had any questions or if there was anything that he would like to add. There was nothing additional and the phone call with Jason and discussion of the RT application ended.

#### **Presby Environmental, Inc. (PEI) Application for Advanced Enviro-Septic (AES) for TSS & BOD Reduction**

Dennis Fogg was connected to the conference call telephone and he informed that group that he is joined by Don Prince, who was also in attendance at the August 24, 2012 TRC meeting at which PEI made a presentation on AES. Russ explained to Dennis and Don, that the TRC had been provided the same Class Two component draft certification that he was provided via email. Although an approval has not been issued for AES, consideration of proposed terms of use in the format of a draft approval has been helpful in the past.

Dennis explained that he is uncertain of the order of events and process of technology review and the development of design and installation manuals. He thought that manual development played a significant part of the technology review and approval process. Russ explained that while draft design and installation manuals' content are considered in the review process, they are finalized after an approval is issued and before training for designers and installers may be held.

Dennis asked if bed configuration of AES, as requested in their application would be allowed: the draft certification specifies trench configuration and the example leachfield layout attached to it, is a trench layout. Russ explained that we patterned the trench configuration on the approval conditions that apply to the other similar leachfield technology used in RI. The resulting AES leachfield, while not as small as it would be using the bed configuration proposed in the application, is still smaller than conventional leachfields used in RI. Dennis noticed that the trench spacing of three-feet on center specified in the leachfield layout is different than the four and one-half-foot on center spacing, specified in the draft certification. Russ explained the mistake was made in the text of the draft certification and it should be corrected there to read "four and one-half-foot on center spacing".

The hydraulic loading rate proposed for AES of 2.33 square-feet per linear foot of pipe, results in leachfield sizes that are smaller than pipe and stone fields. The unit configuration is different than pipe and stone, that is why we are able to reduce the leachfield size, but we are not comfortable accommodating field sizes as small as those requested in the application material.

Dennis Fogg stated that it seems like the RI proposed sizing is based on hydrologic concerns. In New Hampshire, the vast majority of this product's installations are bed configuration and smaller than the proposed RI trench layout. There have been no hydrologic issues with these installations. He asked if bed configuration is out of consideration. Russ responded yes, we will not consider bed configuration; based on the RIDEM Rules and the scientific bases under which the Rules were written. While we recognize AES functions differently than typical drainfields, by providing treatment, this treatment is happening in the drainfield, rather than before it, with the drainfield providing additional treatment. So we developed a design consideration that matches our Rules, which includes the separation distance to groundwater of 3-feet between the

bottom of the pipe and the groundwater. He added that some areas of the state require 4-foot separation to groundwater for protection of drinking water and around critical resource areas, like the salt ponds on the South coast.

Dennis Fogg asked what quality of effluent from a system is required to allow for a reduction in the required separation to groundwater. Russ replied that BOD, TSS and FOG concentrations and the method of discharge from the system are considered (time-dosed or demand-dosed) and AES is demand dosed and receiving septic tank effluent.

Dennis asked if the NSF standard 40 certification weighs in on the RI decision making process. Russ stated that it weighs into sizing with 6-inches of sand and an acknowledgement that there is some BOD and TSS reduction; the data provided from Canada and the US and the track record with this technology are being taken into consideration.

Dennis wanted to know if we could consider a field design with small bed/trenches of 2 pipes per bed/trench. Russ stated that we didn't think we can approved this configuration without increasing the size of the leachfield. He doesn't think we could easily work this into our Rules and that it would confuse the design community.

Dennis asked if they could design some systems in a bed and monitor them to our satisfaction and could that be used to justify a bed configuration? Russ stated that it would be difficult to design a protocol for this to be accommodated and it would be a very involved process. He doesn't think it is something that we'd want to pursue, but that with new research, if they presented compelling information about bed configuration we would consider it, but he doesn't want beds installed in RI as a test.

Tim asked if bed configuration would be allowed in repairs, if space is tight. Deb believed, based on discussion with Permitting staff, that this would be allowed. Russ stated that we'd talk with Permitting about repairs and what allowances might be made under a repair permit for a lot with space constraints.

Russ explained to Dennis that we propose to strike the language in the proposed draft certification about maintenance. He added that we will prepare a revised draft certification for TRC and PEI's review. It is after an approval certification is issued that we move to development of RI design and installation manuals and then training.

Russ asked Dennis if he had any additional questions. He did not. George stated that their pipe (AES and ES) is used extensively in New Hampshire, Vermont and in Maine. Russ stated that they have a good track record in New England and he hopes that they will accept our approval.

It was requested that any provisions that apply to Eljen and other technologies and those that are in the Rules, apply to an approval issued for AES as well and that it would be good to have some kind of statement on maximum FOG.

**Motion:** Tim made a motion that the TRC recommend that DEM move forward on a Class Two leachfield component approval with the understanding that we develop with an advisory on maximum influent waste strength that includes a FOG concentration.

**Second:** Susan seconded the motion.

**Vote:** All present voted in favor of the motion.

#### **Other:**

**Nitrex Update:** Nothing new on Nitrex. They are still working on workarounds and there hasn't been enough data generated to support a decision on a protocol yet.

**Norweco, Inc's TNT and the draft additional monitoring requirements:** DEM has received some feedback from George Loomis and Jose Amador at URI. There was some discussion at the last meeting of a testing protocol for technologies approved under the new Class Two N-removal application options in the July 2012 OWTS Rules. Russ distributed the draft with URI's comments to the TRC. At the last TRC meeting, we discussed whether we should go forward with the additional monitoring requirements for the TNT before we resolve the nitrogen removal standard (whether to change assumed influent and required treated effluent TN concentrations). Since Norweco, Inc. applied under the current, this is the standard that applied during consideration of their application. If we change the standard, Russ doesn't think that we are doing Norweco, Inc. a disservice, since the standard would be changing to assume a higher TN concentration in the influent and the required TN concentration in the treated effluent would be higher than it is under the current standard. This would not place them at any disadvantage.

Russ explained that DEM will have discussions with MASS DEP staff about the N-removal standard for N-removal systems and asked if anyone has any comments or concerns. George stated that the 2012 study from Wakulla County Florida had some good information on septic tank effluent. Their data showed that it was in the 60 – 65 mg/L range and that they used 60 mg/L for purposes of calculating percent reduction of TN. They also noticed that all aerobic treatment systems (those with no media) could meet the percent reduction, but not the concentration.

#### **Next Meeting and Adjournment**

The next meeting was scheduled for February 14, 2013 pending availability of a meeting venue; no other issues were introduced for it.

12:06 PM adjournment.