

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

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

November 19, 2014

Approved Minutes

*Present:* Brian Moore, Noel Berg, Jim Boyd, Susan Licardi, George Loomis, Tim Stasiunas and Dennis Vinhateiro

*Absent:* Nikki Andrews, and David Dow

*Others Present:* Dan Ottenheimer and Rob Sarmanian (Oakson, distributor of Perc-Rite Drip Dispersal System) and Deb Knauss (DEM)

Call to Order: 8:47 AM

Materials Distributed:

- Draft Agenda for this meeting
- Draft Minutes of 8/26/14 meeting

**Review of Draft Minutes of August 26, 2014**

There were no comments or corrections.

**Motion:** Noel made a motion to approve the minutes as provided.

**Second:** Dennis seconded the motion

**Discussion:** There was no discussion.

**Vote:** All present, except Susan, who had not attended the August meeting, voted in favor of the motion.

**Eco Toilet article from ecoRI News October 25, 2013**

George had suggested that we review the article and briefly discuss the value and potential future use of urine-diverting toilets in RI. These toilets have been used in other countries for many years to recover nutrients. In RI these toilets could be used to address nutrient issues and have potential applicability in areas that are now, or will in the future be unsuitable for OWTS options currently in use (storm-vulnerable shorelines...). These toilets had appeal in Falmouth, Massachusetts where the estimated cost of sewerage was \$30,000 per home, but one-third to half this for an eco-toilet. A pilot program was developed ("by unanimous vote, Town Meeting voters set aside \$500,000 for a pilot and demonstration program") to test installation of eco-toilets in the homes of volunteer homeowners. At the time the article was published, 160 people had expressed interest, five eco-toilets had been fully installed, three homeowners were seeking permits from the Board of Health and five more had agreed to participate in the program and have one of these toilets installed in their home.

**Perc-Rite Design/Installation Parameters**

Introductions of the TRC and Oakson (distributor of Perc-Rite Drip Dispersal System) representatives Dan Ottenheimer and Rob Sarmanian were made and Brian summarized the details of the first Perc-Rite application that was recently installed in RI. It is a large system (15,000 gpd), installed on a site with a high watertable and poor soils. The site was vegetated by significant overgrowth when the soil evaluation was performed. When the overgrowth was cut back for installation of the system, the extremely uneven surface of the site was revealed and it prevented the tubing from being installed according to the terms of the RI approval (consistent depth of 12-inches). Installation of this system and installation and use of Perc-Rite in other states since the RI approval was issued in January 2012, highlighted some of the elements of the RI approval that are too restrictive for real-world application. This prompted Dan to approach DEM with a proposal to revise three elements of the approval to better accommodate use of Perc-Rite in RI. Dan prepared and submitted a proposal for revising the approval to Deb, who forwarded it to the TRC prior to the meeting.

Since it has been nearly three years since the TRC considered the application for Perc-Rite, Dan summarized the components of the system and their function. He thinks Perc-Rite has not been specified in designs in RI because the loading rates for both treated effluent and septic tank effluent are lower than necessary and result in a field with a greater foot print than a pipe and stone trench (by a factor of approximately two to five). Current loading rates and installation at a depth of 12-inches with separation between lines of tubing at 2-feet on center do not result in a design that takes advantage of the benefits of drip dispersal. Dan explained that the approvals issued by Massachusetts and Vermont and the pending approval in CT specify use of the loading rate appropriate for the soil that will be receiving the effluent, the same as any other system.

Jim asked if the Rhode Island Perc-Rite approval was one of the first in New England and if it was developed on the basis of information that was provided to the TRC at the time. Dan acknowledged that the loading rates, installation depth, spacing and all the other design parameters were proposed by the manufacturer in the application to RIDEM. He explained that the Massachusetts approval has been revised since it was initially issued to better accommodate real-world conditions, and provide for better designs and easier installation.

There was some discussion of the current RI loading rate, loading rates proposed by Oakson and those used in Massachusetts and Vermont. It was decided that the proposed loading rates (for treated effluent: the same as those used for pressurized leachfields and for septic tank effluent: the same as Rule 32 in the OWTS Rules for conventional trenches) are appropriate and acceptable.

Dan's proposal on spacing between lines of tubing is a reduction from two-feet on center, to no closer than 1-foot on center.

Rob explained that they need to meet a minimum square-foot leaching area and that run time and flow rate are considered in the determination of square feet of area required. A four hundred square-foot leachfield area is the standard minimum allowed by Oakson in their design guidance\*; this makes design easy because the designer doesn't need to make any decisions about pump sizing (for small systems). \*The Massachusetts minimum used to be 400 square-feet, but they waived this in their revised approval, requiring that a designer proposing a leachfield smaller than 400 square-feet contact Oakson to consult on the design. A 400 square foot leachfield will have about 200 emitters and a flow rate of about 2 gallons per minute. The pump shouldn't run continuously, so tubing can be added to reduce pump run time.

Dan explained that shallow installation depth in a cold climate doesn't introduce the risk of freezing because the tubing drains after every pump cycle. The risk point is the force main to the drip fields. About 10 years ago, a couple of installations had freezing problems. These were repaired, the installation conditions were carefully considered and all the components that breach the frost line are now insulated. There are hundreds of installations at a six-inch depth, many of which are in Northern Maine, New Hampshire, Vermont and some as far North as 30-miles North of Saskatoon, Saskatchewan, Canada.

George asked if they could help us understand installation on contour and into grade and to explain the pressure compensating emitters used, as contrasted with non-pressure compensating emitters. Dan explained that Perc-Rite tubing is manufactured with pressure compensating emitters only. These emitters provide uniform distribution regardless of the pressure within the tubing even over long distances and changes in elevation.

Installation is easy with a vibratory plow. A spool of tubing is mounted on the unit which cuts the soil with a blade and pulls the tubing in at the depth of the blade. If there is fill, or an existing field, then this soil material is removed, septic gravel is installed and the tubing placed on top of the gravel, held in place with wickets and backfilled. There was discussion of this practice and it was understood that although this is not typical installation practice for this proprietary pressurized drainfield, it will require DEM approval, but not a variance. The tubing is always installed parallel to the contour (marked with spray painted marks) to within about an inch of the contour; there should be no anomalous deep or shallow areas of soil cover.

Brian asked what kind of flexibility they need to accommodate installation in stony or channery soils. Rob explained that if they hit rocks, they remove them, if possible and backfill with state-approved septic gravel. If a rock can't be removed, they go around it, leaving a foot of separation between the tubing lines and the rock. If a tree is the obstacle, they stop the plow and re-start on the other side of the tree and go over the root with a length of flexible tubing (without emitters), and connect this with drip tubing on the other side of the obstacle. He explained that there is no risk of root intrusion into the emitters when installation is near trees because the pressure of the effluent leaving the emitters prevents root hair intrusion. Brian wanted to know how much flexibility the approval needs to provide and still maintain a good minimum separation from trees, because something needs to be specified. Dan stated that in Massachusetts there is a requirement for a five-foot over-dig on all systems, but that this is waived for Perc-Rite, allowing Perc-Rite be installed right next to a tree. Rob added that there is no evidence of tree roots pushing the tubing out of the ground and that homeowners select Perc-Rite to preserve their landscapes.

Brian asked if RI's tight soils might present a problem for installation by pulling the tubing using a vibratory plow. Dan explained that an alternative option is using a trencher rather than a vibratory plow and that every couple of years there is a site that requires placing the tubing on the surface and placing approved soil material over it.

Brian asked if there are soil characteristics that might be identified in a soil evaluation that would disqualify a site for drip dispersal. Dan said that the RI soil categories and descriptions are pretty detailed and sophisticated, so there is good information to consider during design that would prevent installation issues. With the variety of installation techniques available, there really isn't a soil that is definitively not suitable. In response to questions about local rental availability of the types of equipment required for installation, Rob explained that Oakson may recommend that an irrigation company be hired to do the installation, because they are skilled at using the equipment and installation will be completed faster and cost less than the installer renting the equipment and taking longer to do the installation.

Someone from Oakson is at every installation regardless of size. If it is the first installation for an installer, the Oakson representative will stay all day.

George noted that one of the pictures in the proposal prepared by Oakson, with the tubing placed on top of the soil, looks like "bed" construction, which is prohibited by the RIDEM OWTS Rules. Would this type of installation require a variance? Brian explained that there would be no variance required because this is a proprietary product.

George suggested for the revised approval: utilize vibratory plow for minimum site disturbance and preservation of native soils wherever possible, and adding if documented site conditions prevent this method of installation, other approved alternatives such

as trenching, or other as applicable, may be used as appropriate. He noted that there are compaction issues with excavating from a site, and this should be used only as a last resort.

Jim suggested that this language in the approval could state that the preferred method is in the guidance manual, with approved alternative methods provided if the preferred method is documented to not be feasible.

Jim stated that based on the presentation and discussion, he thinks that the requested revisions to the approval are fair and could be accommodated.

**Motion:** Jim made a motion to support revision of the approval for Perc-Rite allowing the requested reduction of spacing to no less than 1-foot on center between lines of tubing, flexibility to install the tubing at a depth range of six to 24-inches and to allow the loading rates requested for septic tank effluent (the same as specified in Rule 32 for conventional trenches) and for treated effluent (the same as specified in the guidance for pressurized drainfields).

**Second:** Dennis seconded the motion.

**Discussion:** There was no discussion.

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

Brian stated when the draft revision has been reviewed and approved by Oakson, they can make the applicable revisions to their manuals for winter training.

### **Monitoring of AdvanTex AX-RTs and Singulair TNTs**

There were 26 of 50 AX-RTs approved for N-removal as of November 10. There are 40 RTs installed, 14 of which are installed in areas not requiring N-removal, but which may be enrolled in the monitoring protocol. They have decided on a laboratory, and eight installations have been identified for sampling, but no sampling has been performed. They missed the sampling window for the 2014 summer season and will have to begin summer seasonal sampling next summer with new installations.

Brian explained that after 50 approvals are issued for N-removal, these systems may still be used for BOD & TSS reduction, just not in N-sensitive areas until all the required monitoring has been completed and performance is verified to meet the RIDEM treatment standard.

There have been 50 Singulair TNT approvals for N-removal issued, so there will be no new N-removal TNT applications accepted from November 11 on, until the required monitoring is completed and the performance is verified to meet the RIDEM treatment standard. Brian said that five TNTs had been sampled, all of which were identified as seasonal with these initial samples taken at the end of August, so they don't meet the requirements of the protocol for seasonal sampling and they will therefore have to perform seasonal sampling next year on new seasonal installations. He summarized the results, none of which was meeting the N-removal standard.

### **AE Program Update**

Nitrex the two start-up installations continue to be monitored, neither of which is yet treating to 20 mg/L Nitrex BOD.

Hydro-Kinetic Model 600 FEU (Norweco) Hydro-Kinetic is on the list of approved technologies (added September 8<sup>th</sup>). Training has not yet been scheduled.

Bio-Microbics Application for BioBarrier mbr –N-removal NSF 245 TRC vote to approve 5/18/14. When the manuals are approved, this "Standard 245" N-removal system will be added to the list of approved technologies and Bio-Microbics may schedule training. Deb explained that she had communicated with Jim Bell about needing to provide details for the distinct pre-tank configuration option and she had been waiting for hand drawn examples for purposes of helping Bio-Microbics place them correctly in the manuals. Bio-Microbics however has reconsidered this option and will contact her when they have details available on locally available tanks and then the manuals will be completed. This system is subject to the monitoring protocol for N-removal systems.

### **Narragansett Bay Estuary Program Grant**

The New England Onsite Wastewater Treatment Program has been awarded a grant from the Narragansett Bay Estuary Program to evaluate the treatment of up to 50 installed systems in the Narragansett Bay watershed and develop a protocol for the use of reliable and easy to use field tests for service providers to use to get an idea of whether required treatment performance is being achieved by a system.

### **Next Meeting and Adjournment**

The group selected January 27, 2015 as the best date for the next TRC meeting. Deb will send an email to the group to verify availability for this date.

**Motion:** Noel made a motion to adjourn.

**Second:** Dennis seconded the motion.

**Discussion:** There was no discussion.

**Vote:** All present voted in favor of the motion; the meeting adjourned at 11:27.