

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

The meeting was held at the South Kingstown Town Hall

April 2, 2009

Approved

Present: Ken Anderson, Noel Berg, Dave Burnham, Russ Chateaneuf, Joe Frisella, George Loomis, Susan Licardi, Tim Stasiunas and Dennis Vinhateiro

Others Present: Mike Raimondi (Scituate Surveys, Inc.) and Deb Knauss (DEM)

Call to Order: 8:50 AM

Russ asked if anyone wanted to add anything to the draft agenda. George asked if we could add discussion of the PSND.

Materials Distributed:

- Draft Agenda for this meeting
- Draft Minutes of 2/20/09 meeting
- Loading rates from states where Geoflow is approved
- Draft memo from New England Onsite Wastewater Training Center at URI with two attachments, addressing PSND sizing as addendum to the 2000 Sand Filter Guidance Document

Minutes of February 20, 2009

Necessary edits noted below:

Page 1, second sentence in the last paragraph, letters “from”. In the sentence beginning “DEM may ask the legislature....” Insert “will” as follows: “...DEM will go forward.”

Page 3, beneath **Geoflow**, first sentence, edit as indicated below:

“There was discussion of effluent quality requirement and the group agreed that **advanced treatment to at least ~~30:30~~ 30/30 BOD/TSS** is the minimum effluent quality they would consider for dispersal by Geoflow.”

Page 3, **Geoflow**, beneath paragraph 5, second sentence edit as indicated: “...robustness and ability to reliably produce ~~30:30~~ 30:30 TSS/BOD effluent.”.

On the last page, paragraph 3, second line, edit to read as follows:

“Need to determine **maximum grade** on which Geoflow would be allowed: consider 30%. Also set an **upper limit for FOG concentration**: consider residential upper limit of 25 mg/L; anything higher suggests other than residential use.”

Motion: Dennis made a motion to accept the minutes with the noted corrections.

Second: Ken seconded the motion.

Discussion: There was no discussion.

Vote: All who were present at the February 20th meeting voted in favor of the motion; Noel abstained.

Clarification of Reviewers of Geoflow Sizing and Other Issues

George clarified that there are other names that should be identified as people from whom review of RI proposed Geoflow sizing and other issues should be sought. He asked that the minutes of today’s meeting add the following two names to the one name that Deb recorded in the minutes of the February 20th meeting: Dave Lindbo of NC State University and Bruce Lesikar of TX A&M.

Performance of Innovative Alternative Onsite Septic Systems for the Removal of Nitrogen in Barnstable County, Massachusetts 1999-2007

Discussion of the implications of the data which report 69% of single family systems (206 of 297) and 56% of multi-family systems (39 of 70) have a median TN concentration of 19 mg/L or less, included:

- Biological systems do not function at peak performance 100% of the time
- These systems do not have full-time staff monitoring performance and tweaking as necessary
- Water use and other practices within homes vary and will influence system performance
- Use of a TN concentration is not indicative of the actual nitrogen loading from a residence
- Lacking influent constituent data, constituent removal cannot be determined with certainty

There was discussion regarding RI's not requiring monitoring of every AE system installed. Previously this seemed appropriate: since approved technologies' performance data substantiated the treatment claim, there was an expectation that installed systems would treat to their required effluent quality.

It was suggested that sampling be performed on 20 of each system type installed in RI, look at water use and effluent concentrations and evaluate that sample for a relationship between management and performance.

Tim reported that Orenco is requiring TSS, temperature and pH data be collected at each service call. This is transmitted to their mainframe computer.

It was also noted that while seasonally used homes' systems may not run at peak performance for the short duration they are in use, their annual nutrient loading is less than that of homes occupied year-round.

AE systems that are followed by conventional gravity flow leachfields will not afford the opportunity to evaluate flow out of the system to adjust the recirculation ratio to improve treatment performance so the system will meet 19 mg/L.

There needs to be training for service providers that includes the implications of the data they record: an example being, the relationship of dissolved oxygen to nitrification and denitrification in the system.

We could require vendors to tell us what data O&M providers are recording.

How is an O&M provider to know that a system is providing the required level of treatment? George noted that at the Training Center they teach what conditions are necessary for nitrification and for denitrification, so that if these are observed to be out of range, the practitioner knows that these conversions are not occurring and will know that adjustment to the recirculation ratio should be made. They also teach proper sampling technique and chain of custody protocols.

It was suggested that DEM request of vendors their protocol for O&M activities and their guidance for how the O&M provider establishes whether or not a system is providing the required level of treatment, including direction for bringing the system into compliance with its treatment objective, when it is found to be under performing.

Tim was recently given by one of his O&M clients, a letter from DEM signed by Deb Knauss citing that Wastewater Treatment Services, Inc. reported cancellation of the O&M contract for the FAST system at their home; Tim's company was not listed as one of the authorized service providers. He noted that he is unaware of any O&M provider training events for the FAST system having been held (as a side note he reported that they are not offering O&M on A/E leachfields, as they are required to do) and asked why passing the INSP 200 test is not enough to authorize one to perform O&M on A/E systems. Russ stated that we wanted a connection with the company and therefore required vendor training and authorization. George said that some people do not see the value of attending INSP 200, because without vendor approval, they are not able to perform O&M; their perspective is that attending this class and passing the test gets them nothing.

It was suggested that DEM send a letter to the A/E treatment system vendors who are not in compliance with the performance data submission requirement requesting them to submit these data on the three representative systems.

Russ stated that as a result of this discussion DEM would more carefully identify in the certifications issued, what activities are required of an O&M provider.

Siegmund Environmental Services, Inc. (SESI) Singulair Nitrogen Removal Application

A printed pdf of the letter from SESI dated 3/10/09, replying to DEM's letter (4/24/08), on which Deb's notes are incorporated, was distributed. There was a considerable amount of discussion concerning the TN removal claim as stated in this letter.

- 1) If as stated, septic tank effluent TN concentration is assumed to be 38 mg/L and the average treated effluent TN concentration is 17.5 mg/L, the percent removed is 54, rather than 46 percent, as stated in the letter.
- 2) The letter further states that "Ongoing sampling of systems installed in Massachusetts show an average of a 71% reduction of TN. In the interest of expediting the approval process, we hereby state that the Singulair will remove 60% of the total influent TN." It is also stated that this claim is supported by additional testing data accumulated in 2008 as part of SESI's required monitoring of systems in Cape Cod and that it may be reviewed through the Barnstable County Department of Health and Environment or the Carmody database.

The group was curious about this additional data, which the letter states was provided as a spreadsheet. Deb replied that it was not submitted in a format that identified which installations for which the data are reported are those which had been incorporated into the Singulair nitrogen removal application that was reviewed by the TRC, which made it difficult to establish which installations satisfied the minimum two-year consecutive data requirement of the Rules. She stated that she did not contact Hollister to request that the data be so-formatted and resubmitted as the data

in the application demonstrated that the systems were denitrifying to 19 mg/l TN treated effluent and unless the TRC wanted additional data, she did not think it was necessary.

The group agreed that rather than clarifying the treatment claim issue, the letter seems to be stating that the treatment claim is 60% TN removal and that substantiation of this is provided in data that was collected after the application submission was prepared. The application will have to be resubmitted with the TN removal claim clearly stated and clearly substantiated by data meeting the requirements in the Rule.

There was discussion of the issues relating to the SESI adaptation of the Norweco product for purposes of nitrogen removal and the issue of SESI's obligation to limit modifications to the equipment to those which will not compromise the NSF certification of the Norweco product. This is unique in RI experience and cause for uncertainty about which entity warrants what, exactly. It was requested that all applicable warranties be provided by SESI.

The explanation provided for the electrical system was found to be confusing. A waterproof splice box and NEMA 4X control panel is required, neither of which is stated. Clarification of the purpose NEMA 6P rating of the aerator electrical connector was requested.

It was not clear to the group how the risers are to be rendered watertight; it was thought that the process described would not be sufficient. It was requested that a clear request be made of SESI to include in the re-submission, a detailed diagram of all system features required to be watertight, including splice boxes, with explanation of how watertightness will be provided for, for each system feature.

The group wanted to see the drawing the letter stated was attached, which depicted the 90 degree elbow added to the inlet tee. Deb stated that it did not come through with the e-mail but that she expected that the concept was understood and did not feel it necessary to request the drawing. The group asked that this be clearly requested to be depicted in the tank details incorporated into the re-submitted application.

There was discussion of how long a system could be unused before the pump failed. There was concern that with no float valve and no associated low-water alarm or automatic shut-off, the system would lose water by evaporation through the vents and the pump eventually fail. The re-submission needs to incorporate direction for systems that will be seasonally used and for intermittent and various interval non-use, as during vacation. It was suggested that an alarm and automatic shut-off could be wired-in to prevent the concern associated with low water due to no flow into the system.

Geoflow Sizing

Deb distributed and attempted to explain her effort to develop a table to compare drip line sizing for various states.

Errors and Omissions Insurance and CI-I designers' likelihood of holding such coverage

Joe Frisella submitted on behalf of Mike Raimondi who had to leave the meeting and asked Deb to read the following: "The public and environment would be better served if all designers Class I to Class IV be required to carry E&O insurance. Money would be more available to rectify poorly or incorrectly designed systems".

It was suggested that an insurance professional be invited to attend the next meeting to discuss this issue. The group agreed and three names were readily provided as potential invitees.

PSND Sizing

George distributed a draft memo and two sheets of attachments. The purpose of the attachments is to provide a visual comparison of PSNDs sized as described in the draft memo, compared to the size of BSFs, all considerations being held constant (design flow, effluent quality out of the house/building, pre-treatment system, receiving soil and loading rate); the foot print of the two leaching options should be similar when all factors are the same.

Discussion followed concerning the capacity of soil to hold phosphorus and the advantage of PSNDs over BSFs for nutrient removal. The PSND delivers effluent beneath grass, and therefore provides for plant uptake of residual nutrients. George reminded the group of the work by Mark Stolt and Steven Holden that reported additional approximate 30 – 70% N removal and nearly complete P-retention, where a BSF provides no additional N removal. Iron, calcium and manganese precipitate phosphorus, therefore delivering the effluent higher in the profile into more weathered soils and the root zone provides for better treatment. This material will be placed on the draft agenda for the next meeting.

The group agreed on April 30, 2009 at 8:30 in the SKTH Council Chambers, for the next meeting, pending availability of the room.

The meeting adjourned at 12:40 PM.