

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

The meeting was held at the South Kingstown Town Hall

October 7, 2009

Approved

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

Absent: none

Others Present: Deb Knauss (DEM)

Call to Order: 8:40 AM

Materials Distributed:

- Draft Agenda for this meeting
- Draft Minutes of 8/19/09 meeting
- Draft edited SFGD cover letter and draft edited Sand Filter Guidance Document
- SeptiTech letter to Deb and spreadsheet evaluating data RE: requested leachfield reduction increase

Minutes of August 19, 2009

Edit:

Page 1, beneath "**Time Dosing of Category 2 (non-time dosed) Treatment Systems**" second paragraph, second sentence: edit as follows: "...pressure-dosing will be through the first few holes in the gravity distribution line."

Discussion:

There was considerable agreement that there was discussion at the last meeting that was not reported in the draft minutes concerning PSND separation to the water table. Generally, it was believed that the group agreed that separation to the water table would be 2-foot statewide, with no additional separation required in Critical Resource Areas. This was an important consideration because of the group's agreement that use of PSNDs should be encouraged over BSFs, because they provide better treatment. Deb could not recall the outcome of the discussion; she reported what she was able to re-create based on her handwritten notes. It was requested that Deb ask Brian Moore of his recollection of the outcome of this discussion.

Edit:

Joe clarified that he did not become an "agent" of Knight Treatment Systems, but rather "qualified" to design and perform O&M.

Motion: Joe made a motion to accept the minutes with the necessary edits.

Second: Ken seconded the motion.

Discussion: There was no discussion.

Vote: All present, who were present at the August 17th meeting voted in favor of the motion; Dave, who was not present at the 8/19/09 meeting abstained.

SeptiTech Request for 50% Reduction of Required Leachfield Area

Deb distributed the letter and data submitted by SeptiTech in support of their request for a required leachfield area reduction of 50% and her spreadsheet evaluating some of the data using the Laak formula. The current SeptiTech Class 2 waste strength reduction approval provides for a leachfield area reduction of 40%. She explained that the spreadsheet evaluated these data using 345 gpd (3 BR home) and a Category 3 soil (loading rate of 0.70 g/sf/day). For the installations entered to the spreadsheet, the maximum TSS & BOD (regardless of whether these were reported for the same observation, to get an indication of worst-case performance) and the average TSS & BOD as reported by SeptiTech, were evaluated using Laak's formula:

$$(\text{Adjusted Area} = \text{Area}_{(\text{hydraulic loading})} \times [(\text{BOD5} + \text{TSS}) / 250]^{1/3}.$$

The final column in the spreadsheet reports the percent reduction in leachfield area as a function of the TSS & BOD concentrations (for both maximum and averages). Most of the data covered over two years for each installation and appeared pretty consistent, so Deb did not enter every installation's data. The data considered, supported a 50% reduction in required leachfield area, as all of the installations' average TSS & BOD concentrations resulting leachfield reduction were a minimum of 50%.

Susan asked if averages are usually evaluated for consideration of the leachfield reduction issue. Russ responded that while averages are primarily applied in these evaluations, because we accept that there is a performance range based on activities in the home, but that we do look at the maximums to consider the frequency and magnitude of these events. In this case, the maximums are not indicative of unreliable performance and can be tolerated. He likened this to acceptable performance of wastewater treatment facilities that are allowed discharge excursions beyond the permit limits.

George noted that leachfield reduction is, in addition to wastewater strength, based on hydraulics. Important considerations are: does the technology in question have the surge storage capacity, is it time-dosed and what is the risk of the system not being able to keep up with the treatment requirements based on flow and burping untreated effluent into a leachfield of reduced size? George recommended that a technology that is not time-dosed receive no more than a 35% leachfield area reduction. The other matter of socially-dosed systems is the issue of people turning them off. SeptiTech is time-dosed, but George asked Deb to verify that they will be using the same controller and telemetry when the technology is used for wastewater strength reduction as the controller that is used with the technology for nitrogen removal. If the same controller is to be used and with pressure dosing required, he supports the 50% reduction in required leachfield area.

Joe asked if we need to consider mounding as part of this issue. George stated that with soil categories 1 through 6 and 3 to 4 bedroom residential applications, mounding would not be expected to be a problem. However in soil categories 7, 8, and 9 it becomes more likely that mounding could occur, but time-dosing will protect against this. Also, it is advisable that the leachfield be designed for the long axis to run parallel to the contour.

Ken asked about the difference between CBOD, COD, BOD, concerned that the Laak formula may be being applied incorrectly, as it considers BOD and we were provided CBOD data by SeptiTech. The material Deb provided included the definitions of these parameters, from the Consortium of Institutes for Decentralized Wastewater Treatment and George explained that COD is a more thorough digestion process and the analysis is performed over a couple of hours rather than five days. Russ's recollection is that BOD and CBOD do not differ significantly from each other when run for the same sample.

Motion: Joe made a motion to conditionally approve a 50% reduction of required leachfield area for SeptiTech, provided that the same controller with telemetry, as the one used with the nitrogen removal SeptiTech model will be used in all cases and that treated effluent will be pressure-dosed.

Second: Dennis and Noel seconded the motion.

Discussion: Dave emphasized the importance of Deb verifying with SeptiTech which controller will be used and the non-negotiable requirement that the same controller as the denite unit be used, as well as timed-pressure dosing in order to receive the 50% reduction in required leachfield area.

Ken asked from which component in the treatment train the samples were taken for the analyses that we were provided, the d-box or the pump chamber. Deb stated that although SeptiTech provided contact information for more information concerning the MA data provided, she had not performed this analysis until late Wednesday and that she had not thought it necessary to contact anyone concerning these data, but offered to do so if there was concern about this. No one requested that she obtain more detailed information from MA concerning the sample collection protocol.

George emphasized that no reduction in required leachfield area may be applied to approved alternative leachfields, this only applies to conventional leachfields. He also emphasized that the loading rate Deb considered applied in the Laak equation is from the Rules as required for use in design of conventional leachfields. It was asked if we could expect a push for reductions greater than 50%, but it was recalled that the TRC had previously agreed that 50% would be the maximum reduction of leachfield area because of the risk of systems burping.

Concern was expressed about SeptiTech having surge storage. George explained that the second tank (the processing tank) also houses the discharge pump that doses the drainfield and it is in this tank that surge capacity is provided.

Vote: All in favor

Joe left at about 10:00.

Galley Suitability

Under the new Rules galleys are prohibited except in rare repair situations. There have been situations since the 2008 Rules went into effect where a homeowner wants to add a bedroom to a home that had galleys installed under a repair permit in the recent past. In these cases, designers have proposed adding a flow diffuser. Russ reported that there have been several of these cases and the program has been requiring that the galleys be abandoned.

There was discussion of whether abandonment would be required for an overdesigned system, which would accommodate the proposed additional bedroom. Russ stated that in this case, the galleys would be allowed to remain in service. Russ explained that the alteration application standard requires compliance with the Rules; there is no provision for relief as with repair applications and DEM has acknowledged that galleys are substandard, which is why DEM is requiring they be taken out of service in cases where the system was not over-designed. George offered a scenario for consideration: a location outside the critical resource areas with a deep water table contrasted with Boone Lake where lots are small and the soils are sandy and gravelly, where the risk of the water resource intercepting effluent is much greater. Similarly, based on risk, it could be argued that galleys could be allowed to remain in service, with appropriate accommodation of proposed increase of flow by an extension of the leachfield, in North Charlestown where there is 5-acre zoning and the water table is deep. Galley-suitability scenarios in these cases could be ranked based on risk, for example if a "5" is scored (or whatever the index) it triggers removal. Russ responded that the process employed by DEM for risk-based considerations is the variance process.

There was discussion about the costs of removing galleys, which include in addition to the waste disposal fee for the stone and galleys, removal, and transportation costs. It was estimated that the disposal fee is \$62 per ton and a dump truck load is about 20 ton. A four-galley field would incorporate about 40 ton of stone and soil. We may need a specific procedure addressing removal or reuse of stone as this represents considerable expense and loss of resources.

There was discussion about the prevalence of bedroom additions being necessitated by elder parents moving in with adult children and adult children returning to their parents' home. In these situations, we should be in a position to help and if the risk on that site is low and the system is working, it would be helpful for the permitting requirements to allow a minor modification to the leachfield, even if the existing leachfield is galleys, to accommodate flow from one additional bedroom. Alteration applications incorporate a system suitability determination (SSD), to consider septic tank volume, field type and size, soils location of wells and consider the proposed increase of flow and the impact of this increased flow to the system and the impact of the system to the environment.

Russ suggested that there may be a way to create a limited opportunity for galley field expansion as George summarized earlier, for incorporation into the upcoming Rule revision.

Draft New PSND Specifications for Addendum to SFGD

The process for adoption of the revised document, in the interest of obtaining public input, will be to notice the design and installation community of the opportunity to discuss the proposed edits at a TRC meeting, possibly a December meeting. The draft will be posted for public review.

There was discussion about footnote 4 in Table 3 and it was decided that the note should be moved to the "Soil Texture" cell at the top of the table.

There was discussion about the definition of Category 1 (BOD and TSS concentrations of no greater than 20 mg/l each in the treated effluent, FOG concentration not to exceed 5 mg/l and time-dosing incorporated into the treatment system itself) and Category 2 systems (BOD and TSS concentrations in treated effluent not to exceed 30 mg/l each and FOG concentration not to exceed 5 mg/l, these systems do not incorporate time-dosing) and the issue of storage capacity; there is no storage capacity in the treatment unit itself of a system categorized as Category 2. There was a lack of easy and certain comprehensive recall of which systems are Category 1 and which are Category 2. It was suggested that a note be added to the approved technology list specifying the designation of each system. Deb expressed her intention to do so, as she had recently been through the exercise of having to identify the Category of a system in response to a question from Permitting. Russ stated that we can not change certifications without notifying the Vendors. Deb did not think that placing the Category notation in the technology summaries in the list represented a change to the certifications, as the Category is a function of the attributes of the system. Noting each system as Category 1 or 2 in the list would make it easier for designers to know when designing systems incorporating BSFs and PSNDs which loading rates apply. It was suggested that Deb add a foot note to the approved technology list specifying that for purposes of designing BSFs and PSNDs the following systems are Category 1 and Category 2, and list them accordingly.

There was discussion concerning whether a Category 2 system that is required to meet the same treatment standard as a Category 1 system (BOD and TSS concentrations of no greater than 20 mg/l each in the treated effluent and FOG concentration not to exceed 5 mg/l), is specified in a design plan incorporating a pump vault, discharge pump and time dosing the leachfield, could it be sized using the Category 1 loading rates. There was disagreement on this question, but Russ recalled that they could.

Since the definitions of Category 1 and 2 systems in the SFGD glossary state "Any advanced treatment unit that is **time dosed** according to the specifications of this guide...", Deb needs to verify that the specifications in the guide are consistent with the specifications for Category 1 and 2 systems.

It was suggested that as we go forward that technology certifications should specify the system Category.

There was discussion regarding the water table separation as specified in the draft. Some of the group remembered that they had agreed to a two-foot separation to groundwater statewide, but Deb drafted it in the SFGD transmittal letter as “DEM will allow a 2 foot design separation distance to groundwater with these systems; in Critical Resource Areas, DEM will allow a 1 foot reduction in separation distance”. Although Deb could not recall the decision regarding the two-foot water table separation distance statewide, careful reading of her minutes supports it: in the second sentence under “PSND Draft Edits” on page 3: “George suggested that we may get a fight from people looking for a 1-foot separation to the water table in areas other than critical resource areas.” However the group agreed that she should ask Brian Moore if he recalls that the group agreed on a two-foot separation to groundwater statewide.

There was not enough time to complete item 1 under old business (Draft New PSND Specifications for Addendum to SFGD), so the group will resume discussion of this and the remaining agenda items at the next meeting.

Before ending the meeting Russ suggested that we try holding our next meeting at the Quonset Development Corporation’s (QDC) conference room. Deb will check with QDC regarding availability of the room and use the internet-based scheduling tool Doodle to schedule the next meeting, and the group decided to try to target November 4th.

Adjournment

Motion: Dennis made a motion to adjourn.

Second: Ken seconded the motion.

Discussion: There was no discussion.

Vote: All present voted in favor of the motion.

Next Meeting

The next meeting will be scheduled using Doodle and is planned to be held at the QDC conference room, the target date, pending conference room availability is November 4, 2009 at 8:30.

The meeting adjourned at 12:00 PM.