

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

The meeting was held at the Quonset Development Corporation Annex
95 Cripe Street, North Kingstown, RI

February 15, 2011

Approved Minutes

Present: Noel Berg, Russ Chateaufeuf, Joe Frisella, Susan Licardi, George Loomis, Brian Moore and Tim Stasiunas

Absent: Ken Anderson, Dave Burnham and Dennis Vinhateiro

Others Present: Wes Combs, Clarus' representative and Deb Knauss (DEM)

Call to Order: 8:55 AM

Materials Distributed:

- Draft Agenda for this meeting
- Draft Minutes of 12/1/10 meeting
- Summary of Clarus's Fusion Treatment System application
- Infiltrator's application for their poly tanks

Minutes of December 1, 2010

Deb did not have time to proof the minutes, therefore there were substantive corrections and much of the content required rephrasing and clarification. Additionally, since three members of the committee who were present at the December meeting were absent today they could not comment on the veracity of the minutes. It was agreed that it was not appropriate to vote to accept them, but rather to delay this action until the next meeting so the members absent today can comment and vote.

Other:

Inspection of PSND's: There was additional discussion regarding inspection of PSND's with 2.5-foot on-center spacing that are constructed one trench at a time. George is seeking clarification because he wants to make sure that in training they do not say anything counter to DEM policy or logic from the perspective of DEM staff.

The idea of inspecting PSND's through the inspection ports was considered to be a potentially suitable alternative to a traditional bottom inspection, but it was noted that GeoMat does not have inspection ports, and GeoMat 1200 may be installed using the same 2.5-foot on-center spacing as PSND's.

Clarus's Fusion Treatment System Application Summary Introduction

Wes Combs of Clarus made a presentation explaining the material composition of the Fusion Treatment system tank and its treatment processes. The compression molded fiber reinforced plastic is similar to fiberglass. He explained that the plastic media in the system has been engineered to move freely in the wastewater with the currents produced by the airlift pump and to support the ideal biomass for treatment without overdevelopment and anaerobic conditions nearest the media surface and excessive sloughing. He reported that there are about 2-million Fusion treatment units installed in Japan, where there is a good government O&M program in place. Wes explained the aeration and backwash processes and how the backwash setting although pre-set at the factory, may be field adjusted if necessary. He explained that a determination that adjustment of the backwash setting is necessary is made based on observations of wastewater color, odor and biomass appearance, and abundance. Following such adjustment Clarus advises service providers to return to assess the system's response to the adjustment. Wes explained that the terms backwash and recirculation mean the same thing with respect to Fusion's function and he uses them interchangeably. While backwash is programmed, aeration is continuous. Wes was asked if aeration could be turned off. He reported that it can be.

The installer needs only to set the time of day on the system clock in the control panel; a small watch battery in the panel provides enough energy to retain the factory default settings. When the system and panel are energized, the battery is not in use. The panel contains an audio alarm and a visual alarm light, two air pressure sensors and a timer that monitors backwash. Failure to perform backwash in 24-hours is an alarm condition. There is a float in the tank (an NSF condition) and in back-up conditions the float will activate the alarm.

Although there are four models for which RI approval is sought, he explained that the proportionality of the four chambers in each of the models is the same.

Fusion is designed to be used without a septic tank and NSF tested it without a septic tank, but preceding Fusion with a septic tank will not negatively impact its performance. Fusion is often installed on repairs, after the existing septic tank. These units have taken longer to start up because the septic tank initially reduces the amount of food available to the microbes in the Fusion unit. Start-up is generally 30 to 60-days and is a function of temperature (colder temperatures will increase the time required for the system to start-up). The pumping frequency in KY is anticipated to be about four years and none of the Fusions installed there have required pumping yet.

There is some decomposition of sludge because of the recirculation of aerated wastewater and the consistency of the sludge in the system is thinner than the sludge at the bottom of a septic tank.

Wes explained that there were some high strength influent episodes during the NSF testing and that as a result, NSF offered a complimentary re-test that was only recently completed and the data are not yet available.

To maintain the NSF certification Fusion must be sold with a two-year maintenance contract. Service providers must use a Zoeller maintenance report and following a service call, must return the completed form to the company. Zoeller (Clarus is a Zoeller-affiliated company) maintains a service record database.

Russ asked Wes exactly what they are asking RI to approve. Wes responded that they are seeking a Class 2 alternative technology approval, with a 50% leachfield area reduction. They prefer that an approval not require Fusion to be preceded by a septic tank. Some states have issued approvals without requiring a septic tank, but the counties in these states may have more stringent requirements than the state, so there may be counties in which a septic tank is required.

Russ asked if there have been any approvals issued that do not require a septic tank and allow a 50% leachfield area reduction. Wes stated that he believes the reductions they have been allowed in approvals issued for Fusion have been 30% and 40%, but that this has been because of the States' protocols and not in response to the technology's performance.

Wes explained that the Fusion tank halves are manufactured in Japan and shipped in containers to Kentucky where the unit is assembled. Systems would be shipped from Kentucky, but Clarus is looking for a master distributor in the area that would sell the unit to installers. Clarus will conduct training, review designs prepared by each designer until the designers are comfortable working with Fusion and will come to the first group of installations until the installers are comfortable with the Fusion system.

Russ asked how the system handles peak flow, since it is demand-dosed, rather than time-dosed to the leachfield and explained that with other technologies, we have required them to adjust settings and elevations within their tanks to increase storage and provide better handling of peak flow. Wes reported that the NSF testing which includes stress-testing shows that Fusion handles peak flows well. He explained that detention time in the system can be two-days on the weekend, or one to four days depending on how much water is used.

Russ asked Wes to get back to us with more information on Fusion approvals that include reduced leachfield area and the reductions allowed. It was explained to Wes that RI assesses the suitability of a treatment technology for reduction of the required leachfield area, on the basis of documented treatment performance. We use a formula that provides reduced or adjusted leachfield area, with reduction increasing as BOD and TSS concentrations decrease. This formula is based on research on the effect of waste strength on infiltration. We also consider whether a technology is time-dosed to the leachfield, because this provides better risk management with respect to handling peak flows.

Wes explained that there is an 8-inch difference in elevation between the inlet and outlet and that during intervals of heavy flow, the wastewater will back up in to the unit a bit.

Russ asked what the top five states are in which Fusion is being used, for what kind of uses, and approximately how many are installed in each state. Wes reported that there are about 500 installed in the US. Wisconsin has most of them with Indiana and Kentucky following, and then New York. There are other states with fewer installations than in these four.

Sizing the units according to the OWTS Rules for residential flows was discussed. The table below presents the number of bedrooms and associated design flow that can be accommodated by the three Fusion units for which approval is being sought.

Model	Maximum Design Flow (gpd)	Maximum # Bedrooms using OWTS Rules design flow (design flow in gpd)
ZF-450	450	3 (345)
ZF-600	600	5 (575)
ZF-800	800	6 (690)

Wes told the group that while large capacity Fusion systems are available, they are not seeking approval for them in RI with this application. The units for which this application is seeking approval (ZF-450, 600 and 800) can handle light commercial, with residential-strength waste, for example office buildings.

Telemetry is not included with the system unless it is required; they do have a panel that accommodates telemetry.

Deb asked Wes about a design manual, as there was not one included in the application, but the installation and O&M material were very well-developed. He replied that they do not have a design manual and asked if she could provide him with some design manuals that are in-use, to help him develop one.

The Alabama approval requires an effluent filter. An effluent filter is not integral to the Fusion unit and it cannot be altered by incorporating an integral effluent filter because this would void the NSF certification. The wastewater moves through baffles between each of the chambers and goes through two different kinds of media; these actions prevent solids from being discharged to the leachfield.

Russ asked if the Fusion tank meets the specifications in the DEM OWTS Rules. Although Fusion's structural attributes have been analyzed (using finite element method), quantifying maximum stress and deviation of parts of the tank and its partitions, it was not known if it satisfies specifications in the Rules. Wes will follow-up.

Technology Program Status Report

Russ informed the group that Deb maintains records of technology applications and approvals and that status reports could be provided at these meetings. He asked Deb if she had distributed her table of technologies and notes. She stated that for this first update she did not assume that everyone would want all that detail, except George who might from time to time be approached by a vendor at a trade show. She summarized approval status and total number of technologies in each category. She reported that there are currently:

- 7 expired certifications;
- 4 Expired certifications for which renewal has been applied;
- 3 awaiting listing pending training announcement;
- 2 certifications that need to be written (PercRite and ARC Chamber)
- 1 application that needs to be reviewed (Infiltrator tanks).

Next Meeting

The next meeting was scheduled for March 30th at 8:30 am, pending availability of the QDC Annex.

Adjournment

Motion: George made a motion adjourn.

Second: Susan seconded the motion.

Discussion: There was no discussion

Vote: All present voted in support of adjourning.

The meeting adjourned at 12:15 PM.