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

November 4, 2009

Approved Minutes

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

Absent: Ken Anderson and Dennis Vinhateiro,

Others Present: Deb Knauss (DEM)

Call to Order: 8:40 AM

Materials Distributed:
- Draft Agenda for this meeting
- Draft Minutes of 10/7/09 meeting
- Draft edited SFGD cover letter and draft edited Sand Filter Guidance Document

Minutes of October 7, 2009
The date of the last meeting is incorrectly reported as 8/17/09 on Page 1 under "Materials Distributed" and at the vote summary regarding review of the minutes; the date should be 8/19/09.

On Page 2 under "Galley Suitability", in the fourth sentence, replace "many" with "several".

On Page 3 in the first paragraph at the top of the page, "lots" is misspelled as "lost".

On Page 3 in the discussion under "Draft New PSND Specifications for Addendum to SFGD" it was requested that Deb add to the definition of Category 1 systems the requirement that the system treat to an effluent quality of BOD and TSS concentrations not to exceed 20 mg/l and FOG concentration not to exceed 5 mg/l and that the system itself is time-dosed.

On Page 3 in the same section, paragraph six should begin "***It*** was…" rather than "***I*** was…"

Brian Moore substantiated that the statewide separation distance to the seasonal high water table for PSND use with the new design parameters that are not yet completely incorporated into the Sand Filter Guidance Document for public review and may not yet be used by designers, was agreed upon by the group to be two-feet.

Motion: Dave made a motion to accept the minutes with the necessary edits.
Second: George seconded the motion.
Discussion: There was no discussion.
Vote: All present, who were present at the October 7th meeting voted in favor of the motion.

SeptiTech Request for 50% Reduction of Required Leachfield Area
At the last meeting a vote was taken to allow SeptiTech a 50% reduction of required leachfield area for conventional leachfields and Class I component leachfields, unless the certification specifically prohibits it, provided they use the same controller they use with the denitrification model and if the leachfield is time-dosed. SeptiTech faxed to DEM a letter stating that they will meet these conditions.

Treatment System Reliability and Risk as a Function of System Attributes – Related to Leachfield Area Reduction
George suggested that a risk-based approach to considering reductions allowed for required leachfield area could be set as the minimum conditions for which a reduction would be granted: an advanced treatment system that does not incorporate time-dosing and has no surge storage flow capacity. The greatest reduction allowable for such a system would be 35%. The maximum reduction that could ever be granted for any system, as previously agreed would be 50%. The more modifications a system incorporated that minimized the risk associated with its use, would increase the percent leachfield area reduction for which a system would be eligible. A system with some time-dosing and surge storage capacity, but which relies exclusively on biology for treatment, would be in the mid-range for allowed reduction of leachfield area. A system in which the treated effluent has to pass through the media pile one last time

before it is discharged to the pump basin preceding the leachfield would be eligible for a greater leachfield area reduction, approaching the maximum, or perhaps the maximum of 50%.

George stated that in OWT105, they teach attendees to consider how a treatment system handles peak flow. Is it stored and treated, or passed through without receiving proper treatment?

Aerobic treatment units (ATUs) with a suspended growth biological treatment mechanism have bugs and food in suspension, with treatment dependent on the collision of bugs and food. This is not as efficient a treatment mechanism as attached growth systems, which rather than agitating bugs to keep them in suspension, dependent on collision with food for treatment to occur, attached-growth systems provide a surface on which the bugs remain and deliver the food to them.

Joe requested to move that this be accepted and review what has been approved and come back with a list and begin making necessary modifications. Russ suggested putting this issue on the agenda for discussion at the next meeting. Dave supported this as a good logical policy to provide consistency. George cited as important considerations in the evaluation of treatment reliability and therefore risk associated with a system, is the system time-dosed?; is the leachfield time-dosed?; is the treatment capability 20/20 for BOD/TSS or 30/30? Noel suggested that we need a spread sheet for evaluating these characteristics.

Geoflow

John Buchanan of University of Tennessee submitted comments and recommendations, in response to the list of questions that George sent him for Deb; Deb incorporated these into the certification format she developed for further consideration of the Geoflow application.

There was considerable confusion concerning the proper sizing of the pump tank preceding the Geoflow dripline leachfield. The design manual included with the application does not include sizing direction; rather, it referred the reader to the regulatory requirements of the jurisdiction of the subject system

George attempted telephone contact with a colleague for a quick fix to this problem. A message was left and George agreed to get the answer resolving this to Deb later.

Russ explained that on page 2 at number 1 beneath Design Requirements, it needs to be clear that the treatment technology preceding Geoflow, must actually achieve the stated minimum treated effluent quality of TSS and BOD concentrations not to exceed 30 mg/l each and a FOG concentration not to exceed 5 mg/l.

It was requested that at number 2 beneath Design requirements, that Deb specify pressure compensating emitters.

At number 5 beneath Design Requirements: seasonal high water table separation distance: 3-feet with the water table at 5-feet below original grade to use drip.

Also at number 5 beneath Design Requirements:
In the certification the component requires special installation techniques to prevent freezing, so direct the reader to the winterization process in the design manual.

Add a requirement that all dripline laterals be hydraulically isolated to prevent drainback to lower lines.

There was considerable discussion regarding loaming and seeding and how the soil surface would be stabilized for development and maturation of grass seed on steep slopes. Discussion included description of installation with a vibratory plow which limits disturbance to a narrow cut in the existing surface material. Discussion of this issue, although not related to concern for the establishment of vegetative cover, resulted in limiting grade to 30%.

Invert perimeter needs to be included in the certification.

Draft New PSND Specifications for Addendum to SFGD

Change table 1 on page 9 so that the design flows are correct.

On page 23 “minimum” needs to be added to the first sentence beneath “Trench Spacing and maximum Length”: “A minimum two and one-half (2.5) foot on-center…”

Construction of field with 2-1/2-foot spacing, because of the small backhoe required, will be trench-by-trench: dig, install and cover one trench, then repeat the process for the next trench, rather than excavating all of the trenches at the same time and installing all of the component parts in each trench prior to backfilling. Some discussion of whether to

specify that disturbance of the native soil between the trenches is "prohibited", "prohibited unless authorized by permit", "should be avoided" or some other direction allowing for discretion in the case of encountering rock or other obstruction in a trench, the removal of which results in disruption of the soil in the area between the trenches. There was concern and discussion about how to deal with bottom and cover inspections specified by DEM staff on a construction permit specifying a PSND with 2-1/2-foot spacing, as the inspector would not be able to see all of the trench bottoms, or every trench's component installation prior to cover; Brian stated that DEM is required to se every trench. George stated that even when construction of the PSND is complete that there are two or three inspection ports through which some of the construction can be inspected.

Brian wanted to know what DEM would require if the whole field is stripped out, rather than the single trench construction technique being followed. Russ wanted to know what DEM does now, if this happens on an installation. Brian stated that they are required to fill the excavation with sand to the proper elevation, if it has been excavated to too deep an elevation. Otherwise, they are directed to use the native material to backfill the space between the trenches.

Add a brief statement addressing the importance of natural soil material between the trenches: RIDEM wants it maintained for water and gas movement around the trenches but if site conditions do not allow for the native soil to be maintained, RIDEM will allow for bed-type configuration which may necessitate use of sand if the excavation depth is below the design depth. Discussion of how to specify the sand included
Concrete sand to be installed to provide air movement
Gravel inter-layer if silty material is removed and compressed during construction, specifically when to require and what depth of gravel?

Joe noted that the designer may not know until the installer has begun work, of site-specific conditions that may require bed-type construction and there should be way to call DEM for verbal approval of the alternate construction method in these cases. It was suggested that the designer call the DEM inspector and report the discovery of a condition that was not identified in the soil evaluation phase. Could the inspector respond that he will come out and look at it? Noel suggested that if there are many problems encountered, that perhaps the site is not a PSND candidate, that rather a BSF might be more appropriate.

DEM could allow removal of all the soil in the PSND leachfield area, if soil conditions warrant it; it could be treated as a tolerance issue, and notify DEM.

It was suggested that we consider phrasing the direction similar to: "removal of soil from the area between PSND trenches is prohibited, with relief, if soil conditions necessitate, with approval of DEM".

When backfilling is required following removal of soil from the area in which a PSND is being installed, ASTM C-33 sand shall be specified.

Table – 3 interlayer material is required by Note 4 to be ASTM C-33 sand. Discussion of other potential matrix materials for this purpose resulted in agreement to retain ASTM C-33 sand as the required material for an interlayer where required by note 4: concrete sand is looser than ASTM C-33 which species 5 – 7 % fines passing a 200-mest screen; OWTS gravel; BSF sand (1% fines passing a 200-mesh screen).

PSND Deb "TO DO":

1) Ensure that the SFGD is consistent in proper water table nomenclature, specifically, using seasonal high water table.
2) Consult the Infiltrator certifications for whether they reference the SFGD.
3) Page 24: Beneath "Maintenance" in the first sentence, after "Because sand filter effluent" add "and other RIDEM approved AE treatment system effluent"
4) On Page 2 of cover letter in the section beneath "PSND Systems" edit the sentence referencing groundwater as follows: "DEM will allow a 2-foot design separation distance to <u>seasonal high water table</u> with these systems statewide <u>and a four-foot separation to impervious layer."</u>
5) On Page 21 add four-foot separation to impervious layer.
6) On page 20, add and other advanced treatment systems after sand filters in the paragraph beneath "Sizing PSNDs Receiving Sand Filter….Effluent"

Russ introduced for discussion whether a Category 2 system that is required by its certification to meet TSS and BOD concentrations of 20 mg/l, could be configured in a design plan in such a way as to be eligible for the Category 1 loading rate, by installing a tank before the treatment system and time-dosing to the treatment system, then time dosing a drainfield. George called attention to aerobic treatment units' need for carbon and that they would be carbon-deficient and treatment would suffer if a tank were placed before the treatment unit, so no, they can not be configured

in a design plan in such a manner as to satisfy the conditions of a Category 1 system and therefore be eligible for a Category 1 loading rate.

Joe asked, regarding the galley suitability issue, if with an existing field and a proposed increase in flow, if the galleys could be preceded by a FAST system with the leachfield reduction applied, rather than requiring replacement of the galleys? This is not an acceptable method of addressing the galley suitability; if the galleys did not receive a favorable determination through the SSD process, they would have to be replaced.

Adjournment
Motion: Joe made a motion to adjourn.
Second: George seconded the motion.
Discussion: There was no discussion.
Vote: All present voted in favor of the motion.

Next Meeting
The next meeting to be held at the QDC conference room, the target date, pending conference room availability is December 9, 2009 at 8:30.

The meeting adjourned at 12:22 PM.