

Approved Minutes of the Technical Advisory Committee Meeting  
November 20, 2014

**Attendees:** Roger Thompson  
Travis Blodgett  
Craig Heindel  
Pete Sabo  
Chris Russo  
Brian Parker

Mark Bannon  
Gunner McCain  
Peter Boemig  
Ernie Christianson  
Mary Clark  
Rodney Pingree

**Scheduled meetings:**

December 16, 2014 1-4 PM Winooski Con. Rm., National Life – Montpelier  
January 13, 2014 1-4 PM Winooski Con. Rm., National Life – Montpelier

**Agenda:**

Accepted as drafted.

**Minutes:**

Craig noted that the minutes should be dated October 14<sup>th</sup> rather than October 15<sup>th</sup>.

**Innovative/Alternative:**

Brian Parker, Eljen Corp. representative, returned to talk about the Mantis system. The Agency sent a review letter with a few questions that Brian addressed on a point by point basis. Vermont requires pressure distribution in all mound systems. One system currently approved as an Innovative/Alternative system uses a large diameter pipe that depends on ponding in the bottom of the pipe to create an even distribution along its full length, in lieu of small diameter pressurized pipe. Brian believes this creates a precedent for the Mantis approach of using either straight gravity through a 4” diameter pipe, or a small diameter pressurized pipe inside of a larger diameter pipe with 1” holes that allows gravity flow into system’s modules. One concern was that Mantis pipe-in-pipe approach for the pressure distribution system could result in the smaller pipe blocking some of the discharge holes in the larger pipe. Brian displayed a model that showed the difference in pipe size and the size of the discharge holes in the larger pipe would not result in significant blockage. The Agency also asked about the potential for a buildup of biologic material on downward facing orifices in the larger diameter pipe that might not be scoured out by the flow from the smaller pressurized pipe. Because of the 1” diameter discharge holes this does not seem likely to be significant. Brian also responded to concerns that the larger pipe has a channel that fills with effluent and then discharges through 1” diameter holes and that this might result in all of the flow running along the larger pipe to the lowest 1” hole where, at least initially, all of the effluent would discharge. Brian offered some photos and video information to support a claim that equal

distribution does occur with both the gravity and the pipe-in-pipe approach. The photos from the Massachusetts test center appeared to show that after a period of operation effluent was reaching all of the system with staining of the underlying soil for each of the 5 sections in a module. The video showed a discharge from all of the 1" holes in a demonstration system. The TAC asked about the flow rate for the demonstration system as the observed flow seemed to be large compared to what would happen in an actual system. The TAC asked if field installations could be held to the same construction standards used for the demonstration system. The TAC discussed the pipe-in-pipe approach and is still concerned about uneven distribution and suggested possible modification of the system which Brian did not think were workable. There were also questions about testing of the pressure distribution system at the time of construction. The Eljen proposal is to assemble the system and observe the flow from the last orifice in each lateral. If the flow rate from the last orifice is acceptable then it is assumed the system is pressurized correctly. However, this does not address the requirement for showing that the system will have a maximum of 10% difference between any two orifices as required in the Vermont Rules. Brian said that a procedure could be added that would require inspection of the pressurized pipe to ensure proper hole spacing and that the holes are free from burrs caused by the drilling process prior to installation. Brian noted that Vermont Rules only require one orifice per 25 square feet of leachfield and that with the Mantis system consisting of 5' modules there should be little flow variation between modules. Brian said that he believes that the distribution system is equivalent to other systems currently approved in Vermont and should be approved.

Brian responded to a question about other states approval of the pipe-in-pipe distribution system and stated that all of the 26 states that have approved the Eljen GSF (Geotextile Sand Filter) system allow this approach. Connecticut approved an earlier version of the Mantis system and they have been installing them for about 8 years. Brian also responded to a question about passive airflow from the chambers back to atmosphere saying that the construction of the system has a pathway for airflow from the chambers to the roof vent of the plumbing system. When the burial depth exceeds 18" an intake vent is added to the chambers to increase air flow. Brian suggested that Bob Scully of the Connecticut Department of Public Health might be a person to ask about the effectiveness of the pipe-in-pipe approach.

The Agency will consider the information provided by Brian and the TAC's comments and send a review letter to Brian.

Pete Sabo of AK Industries Inc. presented information in support of a request for approval of the Hydro-Action Industries aerobic treatment units. The Indiana company offers a series of systems that can treat from 500 gallons per day to 1,500 gallons per day that can be combined for larger flows if needed. The company also offers pre-treatment tanks and pump/dosing tanks as needed to make a complete system. While the initial application is only for compliance with the Vermont requirements to produce effluent with 30 mg/l or less of BOD and 30 mg/l or less of TSS, the company offers a nitrogen reduction option. The basic system and the nitrogen reduction process have both received NSF certification. The aerobic treatment process includes an activated sludge

approach and test results indicate the levels of less than 5 mg/l of BOD and less than 7 mg/l of TSS can be achieved. The company recommends twice a year maintenance inspections but believes that once per year ensures good operation. Pete noted that the maintenance process is very quick and simple with only simple checks needed for the air injection system. If the injection system is not meeting the flow requirements it is inexpensive and quick to replace the flow nozzles. The TAC encouraged Pete to apply for any options he wished, including the nitrogen reduction system. Even though Vermont does not have a nitrogen reduction requirement at this point, and will not certify the system for the nitrogen reduction, there may be a requirement in the future and in the meantime some designers and homeowners may want to use the technology. The Agency will do a detailed review and send a letter with any questions.

**Rule Review:**

Ernie said that Carl Fuller is working on a draft of the analysis of using 60 gallons per day per person in comparison to the existing rule of 70 gallons per day per person. This will be circulated to the TAC when ready.

Ernie said he is still working on the design flows for campgrounds and hopes to end up with one design flow regardless of how many months per year the campground operates. Ernie circulated a USDA technical paper on water use in Forest Service Campgrounds to the TAC and used this as a basis of the proposed flow numbers in the current draft rules. Roger said that Ernie should talk with the Vermont Campground Owners Association about this proposal as some of the new numbers will be an increase in design flow.

Ernie is also going to look into design flows for front loader washing machines versus top loading to see if there is any basis for using different flows based on the type of machine.

The rules will need to be clear about when designs are based on metered flows for water or wastewater and on how to deal with the 7 day equalization of design flow concepts.

Rodney recommended that Note 2: found in Table 8-1, be copied into Table 8-2 and Table 8-3 for consistency and clarity of rule jurisdiction. Rodney also recommended that Water Vending Service/Machines be added to Table 8-3 (following Veterinary Clinic), because the use of these devices is increasing nationally and they potentially can be a significant impact on a water source which should be considered in the design flows

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**Executive Committee:** Steve Revell, Ernest Christianson, Roger Thompson  
Alternates – Chris Thompson, Spencer Harris, Claude Chevalier, Craig Heindel

**Subcommittees:**

**Hydrogeology**

Craig Heindel, Bill Zabiloski, Mark Bannon, Scott Stewart, Steve Revell, Mary Clark, Roger Thompson, Peter Boemig, Ernie Christianson, Spencer Harris

**Bottomless Sand Filters**

Peter Boemig, Mark Bannon, Cindy Parks, Mary Clark, Denise Johnson-Terk, Craig Heindel, Ernie Christianson

**Seasonal High Water Table Monitoring**

Craig Heindel, Steve Revell, Roger Thompson, Ernie Christianson, Bill Zabiloski, Dan Wilcox, Mary Clark