

Technical Guidance Committee

Meeting Minutes

Thursday, December 7, 2017

*9:30 a.m. – 2:30 p.m.**

**Conference Room C
Department of Environmental Quality
1410 North Hilton
Boise, ID**

TGC ATTENDEES:

James Craft – Onsite Wastewater Coordinator, DEQ, (TGC Chairman)
Mike Reno – REHS, Environmental Health Supervisor, CDHD
Jason Peppin – REHS, Senior Environmental Health Specialist, PHD
Kellye Eager – REHS, Director of Environmental Health, EIPH
Joe Canning – P.E., B&A Engineers Inc.

GUESTS:

Lisa O’Hara – DEQ, Office of Attorney General
Larry Waters – P.E., Wastewater Program Engineering Manager, DEQ
Whitney Rowley – Administrative Assistant, DEQ
PaRee Godsill – Everlasting Extended Treatment, ECP, Norweco
Norm Semanko – Parsons Behle & Latimer Attorney representing Presby Environmental, Inc.
Keith Taylor – Taylor Morgan
David Lowe – Lowridge Onsite Technologies (via telephone)
Dick Bachelder – Infiltrator Water Technologies
Dale Atkinson – Atkinson-Jet Septic
Allen Worst – R.C. Worst & Company, Inc. (via telephone)
Lee Rashkin – Presby Environmental, Inc. (via telephone)
Fred Vengrouski – Presby Plastics, Inc. (via telephone)
Ashley Garrison – Presby (via telephone)
Jason Henderson – Geomatrix, LLC

CALL TO ORDER/ROLL CALL:

Meeting is called to order at 9:33am.
Committee members and guests introduced themselves.

OPEN PUBLIC COMMENT PERIOD:

9:34 AM James Craft opened the meeting for public comments. No public comments were given at this time.

MEETING MINUTES:

APPENDIX A:

9:35 AM **September 7, 2017, Draft TGC Meeting Minutes: Review, Amend, or Approve**

James Craft stated two revisions were requested by Fred Vengrouski's and are dictated as JC1 and JC2 in Appendix A. Kellye Eager asked if the JC1 comment was actually made. James Craft asked Dick Bachelder (sitting in the audience) for comment and Dick Bachelder commented that it was most likely said, but it was a misstatement and has no problem with it being in the minutes.

Norm Semanko (via telephone) expressed appreciation on capturing the discussions well in the previous minutes. Specifically well captured was Mike Reno's response to comments on the ATL discussion, as well as the discussion regarding the comment letter submitted by Gerald Williams. Norm Semanko asked if those two previous discussions would be discussed later on today. James Craft said the Gerald Williams letter would be discussed later.

Allen Worst (via telephone) commented on removing "not" from the minutes discussion on the LOWeFLOW in two places. James changed the minutes to reflect Allen Worst's request.

Motion: Joe Canning moved to finalize June 8, 2017, TGC Meeting minutes as amended.

Second: Mike Reno

Voice Vote: Motion carried unanimously. Minutes will be posted to DEQ's website as final.

APPENDIX B:

9:42 AM **Technical Guidance Manual (TGM) Section 4.8.2. Approval Conditions**

James Craft mentioned no other changes were submitted and no public comments were received in regards to section 4.8.2 Approval Conditions.

Motion: Kellye Eager moved to finalize approval of TGM Section 4.8.2 Approval Conditions.

Second: Jason Peppin

Voice Vote: Motion carried unanimously. Section 4.8.2 Approval Conditions will be updated in the TGM and posted to DEQ’s website within 30 days.

After the vote: Allen Worst commented via telephone that a letter from Jason Peppin does not reflect the finalized language. Jason Peppin clarified what was said in his letter. Mike Reno mentioned in the past Barry Burnell sent a letter out saying that ETPS products total nitrogen approval for 27 or 27.9 mg/L are the same. Mike Reno and James Craft clarified that approved ETPS at anything less than 27 mg/L total nitrogen require sampling. Jason appreciated the clarification to ensure consistency. Kellye Eager mentioned that the table shows the less than (“<”) symbol and suggested to match the previous language for consistency. James Craft made a note in the text of TGM Section 5.13 Total Nitrogen Reduction Approvals to change the “<” to “less than” to reflect the discussion.

APPENDIX C:

9:48 AM Infiltrator ATL Design and Installation Manual

James Craft invited Dick Bachelder to join the committee members at the table. Jason Peppin asked to start with Infiltrator’s responses submitted. Dick Bachelder said, “For this meeting he tried to address the 31 open items from last meeting. First, the issue with the length of sand extensions on page 3 the 12 inches was taken care of throughout.” Second, the NSF/ANSI Standard 40 – Infiltrator ATL-450- Pressure Distribution letter dated November 30, 2017 at the end of the packet was discussed amongst TGC members.

Dick Bachelder said, “We are open to input on language making sure lateral distribution is introduced correctly and end caps are cut correctly for the lateral.” Joe Canning asked if the hole at the end was at the bottom and Dick Bachelder confirmed it was. James Craft stated the orifice holes need to point up. Dick Bachelder confirmed they would add language to ensure holes in the lateral distribution are pointed up and the hole at the end cap is at the bottom.

Joe Canning asked if they were going to put in sweeps for pressure testing. Dick Bachelder, “Now we go into the definition as what pressure distribution is for the states and we would refer to the TGM.” Joe Canning commented that the lateral piping would be incased in a 4 inch pipe (ATL bundle) and that you cannot visually verify the pressure test. Mike Reno and Joe Canning commented on the pressure testing procedures. Dick Bachelder asked for more clarification on the discussion. TGC members further explained pressure testing in the field and the need for sweeps. Jason Peppin would send Dick Bachelder addition language and information to be incorporated in the manual.

James Craft asked Dick Bachelder to include the section titles after TGM section numbers due to section numbers having the possibility to change during TGM revisions.

Joe Canning asked Dick Bachelder about the dosing the system with 25% of the daily design flow. Dick Bachelder mentioned it was a maximal, they try to limit at 25%

because of capacity of the proprietary product. Joe Canning discussed that in a pressure distribution system it has 4, 5, or 6 doses a day. Joe Canning said, "I would say max volume is 1/5 (20%)." Dick Bachelder will revise the manual and change to 20% of the daily design flow.

Dick Bachelder said, "On page 4 for item 19 a paragraph was added about distribution boxes and that he would add the title to this TGM section 3.2.5.2 as well." Jason Peppin questioned using the word 'shall' in relation to a distribution box; the language being limiting. Jason Peppin commented that in his district they have seen problems with that being the only option, specifically on a slope system. Jason Peppin proposed 'is recommended' instead of shall. Dick Bachelder agreed to make the change.

Dick Bachelder mentioned a table on vertical separation was added in the manual. James Craft noted that the table reference of 4-18 should be corrected to TGM Table 4-19 Recirculating gravel filter vertical separation to limiting layers (feet). All items from Infiltrator's letter had been discussed and Dick Bachelder suggested to now go through the manual page by page.

Jason Peppin asked Dick Bachelder for clarification on questions about the loading rate. Jason Peppin stated, "The discussion on a three bedroom application numbers, as bed numbers go up that loading rate number goes smaller. As far as soil types A and B the system would be oversized and that C soil types would be conservative. Jason Peppin stated he liked this approach.

Dick Bachelder took time at this point to remind everyone about the difference in the ATL specification as compared to other products and that approval includes 12 inches of sand. He mentions they built-in a significant safety factor in regards to the treatment perspective. Dick Bachelder continues, "Systems aren't by nature competitive in trench application, other systems in the field might be more affordable in trench applications. It is the footprint piece that drives these." Mike Reno states, "It is the limiting layers which would drive these." Dick Bachelder said, "These are pretty much maintenance free if you take care of the septic tank."

Lee Rashkin (via telephone) commented on minimal pipe length. Lee Rashkin states, "Presby requested approval at 30 linear feet per bedroom. We were denied on that approval. Presby is testing at a more aggressive rate 3 gallons per foot, and they had to follow what other states did. It seems like 50 feet per bedroom is based off our Presby's data, not other states. Tyler Fortunati (DEQ former On-Site Wastewater Coordinator) asked to change it to 50 linear feet... I don't believe Infiltrator has that type of support for their request." Dick Bachelder replies to Lee Rashkin's comment, "We do not have other approval at 50 feet per bedroom. I am a fan of what has happened in the past. I am about fairness. If that is something that the committee is wanting and there is validity behind that, we are okay with that. As far as field data, we have provided DEQ with testing done in late spring. It is up to the TGC to see if that is robust enough. ETPS provisional protocol is complex enough. We think the proprietary wastewater treatment product approval is appropriate for the ATL

system.” Mike Reno and James Craft mentioned we do not do things a lot of other states do.

Joe Canning commented on how the manual reads and recommended putting the table listing the application rates in the introduction to the system. Dick Bachelder agreed it was a good suggestion and will move the table for soil loading rates under system sizing. Kellye Eager asked where the soil rates came from and Jason Peppin clarified.

Dick Bachelder handed out a study titled “Results of a Pilot Protocol for the Evaluation of Fabric-Wrapped Leaching/Treatment Technology” by the Massachusetts Alternative Septic System Test Center dated February 2011 to the TGC members. Dick Bachelder discussed it was a study on Advanced Drainage System (ADS) products called EZ Flow and they were looking at different ways of testing percolate from the trench. He shared the product construction and installation of this study and highlighted results from a table from the study in the letter to the TGC. Dick Bachelder read a couple paragraphs on page 16 from the Discussion and Conclusions section. Dick Bachelder commented what ADS learned from this study of comparing two different systems, was that the sand was doing the treatment work. Dick Bachelder continued to read on page 17, stating, “There are two plausible hypotheses to explain the statistical similarity between the fabric-wrapped and the pipe-in-stone systems. Either the twelve inches of stone aggregate in the pipe-in-stone systems has treatment equivalent to the fabric-wrapped pipe itself, or the six inches of ASTM C33 sand common to both systems accounts for the majority of the treatment in both cases.” Dick Bachelder said, “I ask you to strongly consider that when putting any system against the ETPS approval protocol.”

Lee Rashkin commented, “Based on that logic if someone brought you a 6 inch pipe...you would approve it based on that the sand does all the work and the lack of accumulation. Ultimately we have known the sand does treatment but longevity of system testing needs to happen. Presby was required to provide performance data. As to fairness and consistency done before, the same should happen now.” Mike Reno asked if lysimeter data was provided. Lee Rashkin continues to comment, “I have to respectfully disagree, our performance results are exceptional and that is why we have 10 years of patents and experience.”

Dick Bachelder commented that the Infiltrator ATL approval is with 12 inches and not 6 inches of sand. Dick Bachelder expressed it is an unnecessary cost and burden for an applicant to show in-field results.” James Craft comments, “I don’t have any reason to decline the approval request based on the testing and field data Infiltrator submitted under confidentially.”

More discussion occurred between TGC members, Dick Bachelder and Lee Rashkin about the previous comments and how Tyler Fortunati accepted Presby’s approval. It was decided that James Craft would review how Tyler Fortunati accepted the Presby system. Jason Peppin asked if what was submitted for Presby fell into the provisional lines. James Craft said, “These are two different products, I don’t know how we can compare them.” Dick Bachelder said, “The other manufacture was approved in a Canadian province for monitoring. There isn’t TSS and CBOD₅ data that is in a sand

filter. One of our obligations here is to represent people in Idaho who pay for these systems. It is unreasonable to be compared to ETPS system parameters.” Mike Reno said, “These do differ from traditional sand filter designs Idaho has approved, I can’t recall when we looked at Presby if it was under ETPS process or the single sand filter process.”

TGM Section 1.4.2.4 Proprietary Wastewater Treatment Product Approval Policy was put on the screen for TGC members to read and review. Jason Peppin mentions it also talks about single sand filters above this section. James Craft said, “For TSS and CBOD₅, I don’t think it is necessary to go through three full years of operational data for evaluation.” Mike Reno said, “We wrote this section for Presby approval because they didn’t fit into the box.” Lee Rashkin mentioned, “Presby was asked for performance data in the field or 2 years testing.” James Craft said, “Right, but here we are imposing additional sand requirements. We are not going under the provisional approval route; we are going under proprietary approval.” Lee Rashkin comments, “I respectfully disagree with that for what we had to do. Dick Bachelder said, “It is difficult for a manufacture to invest money in order to create a market, Infiltrator knows that as well.” Mike Reno said, “I think that proprietary approval process we have now, we have to follow that process for products submitted now.” Lee Rashkin replied, “I strongly encourage maintaining consistency.” James Craft said, “I am following the rules stated in the TGM.” Lee Rashkin said, “I have letters from DEQ requiring that from us. I don’t know how DEQ could only require that from us.”

The TGC decided to move on to page 3 where James Craft asked for an editing change to be made to “IDAPA”. On page 5 under system configuration James Craft asked, “What is the minimum ATL for 1 bedroom; sometimes we have a rare situation like this.” Dick Bachelder said, “It is a minimum of 100ft.” Jason Peppin said, “That makes sense to me as far as tying it to standards and testing numbers from larger bedrooms.” Kellye Eager stated, “I think you need to decide if going on 50 or changing to the 70.” Mike, Jason, and James agreed to stay at 50. Kellye Eager said, “As long as it is very clear that we are going by your manual.”

Dick Bachelder said Infiltrator would be willing to go to 70 feet per bedroom as it was NSF tested and certified.

James Craft asked Dick Bachelder for a clearer trench configuration diagram on page 7. Dick Bachelder explains the difference between the two system diagrams and placement of sand. Mike Reno mentions on page 7 the plan view does not match the six foot wide trench. Dick Bachelder agreed and said it was a single plan. He also said he would enhance the resolution on the plan view diagrams on pages 7 and 8.

On page 9 James Craft clarifies a few system design requirements and then asks that the example on page 12 round up the ATL conduit length to 90 feet because the ATL conduit cannot be cut and comes in 10 foot lengths. Dick Bachelder agreed that was a good pick up and will adjust this on the design examples.

On page 13 discussions occurred for option III. Jason Peppin said it was very site specific. Mike Reno said the field personnel can figure that out.

Joe Canning asked, "If there was any cover material over the sand." James Craft said the manual talks about a cover. Dick Bachelder said, "Our system stops at the sand then we go back to the manual." Mike Reno clarified, "So your system doesn't have sand on top of pipe, the other system has 3 inches, just for clarification." Dick said, "Right."

Dick Bachelder explains why the system was tested without venting. He said yes to Joe Canning's question asking if you can you put these in a serial installation. Joe Canning asked, "Is serial installation on a hillside or a flat. I am worried about bypass coming out of the top of the pipe and short circuiting the sand, particularly in A-soil types." Dick Bachelder said, "How high do you raise it is the question, are you loading conduit to the max and creating head as you go up the slope? It is a design system call or a health district call; not Infiltrator's call?" Jason Peppin stated, "Part of the problem is DEQ is not requiring a designer requirement and that health districts do not go into this amount of depth analysis on the design." Dick Bachelder said, "What I am hearing is that you are looking for manufacturer support to lower variables. I propose to leave the piece on installation instructions as-is, but in the front of the manual add a section for this and reference page 25." He proposed language to add and the TGC members agreed.

Mike Reno asked, "Has the use of these types of systems in the cap and fill systems been resolved?" James Craft said, "It has not, it is in progress of being resolved." Dick Bachelder adds, "Infiltrator supports requiring an engineer to design these systems." Lee Rashkin replied, "Presby wouldn't support that. Dick Bachelder's letter says the systems are simple..." Dick replies, "Design is anything but simple." Lee Rashkin said, "In the letter on the second page you state the systems could not be more simple." Dick Bachelder said, "I will send a note to James regarding that change."

James Craft said, "Any other comments on the manual. I think we need to see a revised manual with the edits discussed today." Joe Canning asked James Craft if a field performance report was submitted. James Craft stated, "DEQ has received a confidential report." Dick Bachelder said, "I think the TGC members should see that." James Craft said, "Internally I reviewed it and saw that it was good. I need to check with distribution policy before sending that out to TGC." Lee Rashkin commented on the September 15th letter from DEQ saying, "Presby was not granted six inches of sand approval, but the 12 inch approval. We were denied that approval. The data submitted by Presby needs to be looked at." Dick Bachelder replied, "There is nothing in the TGM that says an applicant has to follow a previous applicant. I would respectfully propose a motion to approve the Infiltrator manual with the revised edits." Jason Peppin comments, "Presby is referencing the letter in 2015 but TGC didn't have this TGM section until 2016."

Norm Semanko said, "There were several discussions in the last meeting minutes regarding that. (Norm Semanko reviewed/read the letter) It sounds like James did that." James Craft said, "Yes that was done internally." Mike Reno comments, "The level at which it needs to be required for approval was discussed that it is the current section of the TGM." Dick Bachelder said, "The first person in is deeply vetted, yes."

You, the TGC, went as far as creating another section in the TGM anticipating other applicants.” Mike Reno said, “Regarding to the first unit and the amount of being vetted and other systems after that in the past, it is a process. I agree the first system is deeply vetted. TGC did not have the means to adequately vet the Presby system so additional sections were given to fit Presby in.” Lee Rashkin comments on the detail of vetting Presby went through before approval. Mike Reno replied, “We have the template now as far as the proprietary sections for products that come in now. We have to use that.” Dick Bachelder said, “I would appreciate motion for approval process for the Infiltrator manual with the edits today.”

Lee Rashkin said, “You are comparing 50 linear feet with Presby’s 50 linear feet.” Mike Reno said, “We are basing 50 linear feet with loading rates based on NSF testing.” Lee Rashkin said, “I don’t believe you are.” Dick Bachelder said, “Jason just articulated we are not basing this product on any other system’s product. What no one can say is how long these things will last. That is not what the NSF Standard 40 test for.” Lee Rashkin said, “I don’t know where 50 feet comes from unless basing it under our product.” Dick Bachelder commented, “It is math.” Lee Rashkin asked for explanation on how the math was done. Dick Bachelder said, “Our application is not predicated on anyone else’s use.” Lee Rashkin said, “Where did the 50 feet and 12 inches come from then?” Dick Bachelder said, “50 feet is math, 12 inches is from the TGM.” Mike Reno restates comment. Lee Rashkin said, “We have letters from DEQ. It is all predicated based on our field history.” James Craft said, “I don’t have a reason to change from 50 to 70.” Lee Rashkin said, “There is no field data for that, by Dick’s statement there isn’t data for 50 feet anywhere in the world.” Mike Reno reads TGC policy in section 1.4.2.4. Proprietary Wastewater Treatment Product Approval Policy. Lee Rashkin said, “I believe DEQ would be in a tough position based on the letters they sent us.” Mike Reno said, “Whether it was 50 feet or 30 feet it would still have to meet soil application rates. If you want to resubmit under these conditions you are more than welcome to do that and we would look at it.” Lee Rashkin said, “I take a bigger issue with that on a DEQ level. I object on a level of maintaining consistency.” Mike Reno said, “This policy was not in place when your product was put up for approval. We created this policy so we could be consistent in going forward. If you think your product will benefit from this policy for 30 feet then resubmit it.” Jason Peppin stated, “We are still tying it to soil rates.” Mike Reno and James Craft said this was a preliminary approval not a final approval based on edits discussed today pending a revised design manual. Dick Bachelder said, “James I will provide a draft to you with changes.” James said he would review it and send it to TGC for review as well.

Motion: Mike Reno moved to approve for preliminary approval based on edits today and submitted manual for final draft.

Second: Jason Peppin

Voice Vote: Motion carried unanimously. James will distribute the revised Infiltrator Design and Installation manual draft to TGC.

11:40 AM **James Craft called for a 10 minute break**

11:50 AM Meeting resumed

APPENDIX D:

11:50 AM OSCAR LOWeFLOW Treatment System Design Manual for Idaho

James Craft asked for any general comments on the LOWeFLOW. Dave Lowe said, “At the last meeting the OSCAR LOWeFLOW was submitted as one. Now they are separated and we are requesting two separate approvals.” Jason Peppin asked, “Is the request for approval as a provisional ETPS system.” James Craft asks for TGC guidance as for what approval the OSCAR system would be considered as. Jason Peppin and Kellye Eager suggested that it be put in the manual what approval it was seeking.

James Craft started with a question on page 3 of the LOWeFLOW manual. He asks about the first paragraph and a sentence that seemed to be cut off. Dave Lowe said, “Grammatically we can write that differently. It is a carryover from the previous section.” TGC and Dave Lowe discussed the disposal method and agreed it should be timed dosed specifically to Idaho. Also that it could say timed dosed or gravity fed. Dave Lowe and James Craft discussed they could work together and make those edits based on the comments today and proposed edits. James Craft continued with another edit on page 3 in the Drip Tubing Network Layout section with the 4:1 ratio versus the TGM recommendations. Dave Lowe said, “It is a matter of changing the default timer settings. It was tested at 4:1, so we used that.” Joe Canning said, “I guess we need to discuss if we need to do that. I look at it like a black box section. It tested at 4:1, leave it at that.” Dave Lowe and James Craft agreed.

Mike Reno asked a question based on the tank section numbers and the TGM guidelines for a 500 gallon tank. Mike Reno suggests referencing Idaho rules there. Joe Canning asked, “For a smaller home is it harder to go below 1000 gallons?” Dave Lowe stated, “From our standpoint we would always want the minimum to be 1000 gallons. We could put an asterisk by that number and reference the Idaho state minimum tank size.”

Dave asked the TGC, “Does it make sense for emergency storage? I can clarify that for Idaho.” Mike Reno said, “Idaho’s tank size requirement is twice the daily flow.” Mike Reno said, “The discharge tank would be like a pump chamber and would be twice the daily flow. The recirculating tank is whatever you specify. The clarifier tank is required at twice the daily flow.” Dave Lowe asks what the flow would be for a four bedroom home. Mike stated, “It is a 600 gallon tank.” Dave Lowe replied, “I have no problem doing that.”

Joe Canning asked questions on Figure 1 on page 2 and why it did not show the discharge tank like it is shown on Figure 2. Dave said, “We did put ‘ discharge tank not shown’ in the Figure 1 description. I can make both the same if needed. I am happy to make one figure and combine those two for clarity.” Jason Peppin asked, “In a gravity situation would a third tank be involved?” Joe Canning asked, “What volume of tank are we looking for here.” Dave Lowe said, “I will make a figure or a

statement to make it clearer as for permitting in gravity applications as Jason suggested.”

Dave Lowe was able to clarify a question Joe Canning had regarding filter sizing and number calculations on page 3. Joe Canning asked, “Is the 500 gallons per day flow due to coil limits?” Dave Lowe said, “Washington state requirements is 480 gallons per day for a four bedroom so we upsized it to 500 gallons. It was to our advantage to minimize critical mass. We are comfortable with the 500 gallons per day minimum for applications.” Joe Canning commented, “Is testing valid for flow not by the size/number of bedrooms?” Dave Lowe replied, “We don’t mention bedroom size numbers in the manual only flows, so if the TGM changes for bedroom sizes I am covered.”

James Craft asked for any other comments. James Craft said “We are not seeking a nitrate reduction on this,” in reply to Mike Reno’s question. Kellye Eager asked, “Is there a sample plan requirements for these?” James Craft said, “We have it at the very end of the packet. Since the first round of sampling was at the end of the monitoring year I ask that you send the health departments and DEQ a copy of the testing results data.”

Dave Lowe mentioned Terry Tucker (third party effluent sampler) agreed to do the sampling and asked about the chain of custody rules from the lab to the requested recipients of the data results. James Craft said, “The lab would send you the report and you could email it to us, the lab doesn’t need to send three verified copies.” Dave Lowe clarified, “The locals want the maintenance report and data in the annual reports.” James Craft agreed and he would like to look at it as well to help keep track of the timeline for the provisional approval process.

James Craft added that in the sampling TGM section 1.9.2 Managed Monitoring it needed to have the title name (items g and 6-c). Mike Reno noted that number ‘5’ was also needed at the top of this section. Kellye Eager also noted other number and lettering sequence issues. James Craft said he would make those edits with Dave Lowe.

Kellye Eager asked a question in the section starting with “procedure to correct failing effluent sample...” She said, “Regarding the 2 consecutive samples, it is stricter than what we require in the TGM.” James Craft said, “Our requirements are a minimum of one sample per monitoring period. It is up to you, Dave, what you do with the number of samples above that.” Dave Lowe said, “If TGC is satisfied with one sample I can go down to that.” James Craft agreed and noted the TGC would certainly accept more data points.

Mike Reno read from the TGM 1.4.2.2.2 General ETPS Approval regarding the general ETPS approval to answer a question from Dave Lowe. James Craft said, “We would need 3 full monitoring periods.” Dave Lowe said, “I may need to pull a paragraph out here for less confusion. I will go ahead and do that. I will add page numbers as well.”

Joe Canning asked, “How does it do for nitrate reduction?” Dave Lowe said, “That is our next step we would be looking at in the future.” James Craft asked for any other comments.

Motion: Mike Reno moved to approve for preliminary approval with edits noted today during this meeting and treatment plan as well for provisional approval.

Second: Joe Canning

Voice Vote: Motion carried unanimously. The LOWeFLOW installation manual and sampling plan are preapproved for preliminary ETPS approval.

12:36 PM **Lunch Break (1 hour)**

1:33 PM **Meeting Resumed**

James Craft asked if the LOWeFLOW O&M manual would need approval. Mike Reno stated he did not think we have approved these manuals before. James Craft said he would work with Dave on a question in this O&M manual.

OSCAR Treatment System Manual:

James Craft said, “I understand Dave is seeking provisional approval on this.” Dave Lowe said, “The title page really should say ‘A Disposal System’ supporting a treatment system. The effluent of 40mg/L CBOD₅ and 45 mg/L TSS 45 is what we would be going for. We just completed testing using septic tank effluent we just don’t have the results yet.” Jason Peppin mentioned that this would then be a disposal only. James Craft said, “I am not sure what the process would be for an alternative design on a disposal drip system. How do we approach the product for use in Idaho?” Mike Reno said, “Everything here shows it as an above ground disposal. Drip requirements are 6-8 inches below grade. So this is not a treatment, definitely as disposal type system.” Jason Peppin also agreed. Kellye Eager then asked, “Do we have an idea of how others got approved?” Mike Reno said, “It is 2 square foot area of disposal, but buried. This is shown above ground and does not meet our requirement there.”

Dave Lowe said, “I can come back with NSF testing data and submit as a treatment unit at-grade or above-ground. Would that change how you could approve that? It would be both a treatment and disposal unit. We are waiting for the lab to get results in. We could come back at the March meeting with a new proposal.” Mike Reno asked what quality of effluent was used in testing. Dave replied, “Septic tank 100 mg/L CBOD, 75 mg/L TSS for final treatment of disposal.” Joe Canning asked, “Is the only pretreatment the septic tank.” Dave said, “Yes.” Joe continued, “I don’t know where you head with this and keep it at an above ground system.” Dave said, “I guess past experience in Washington State for the past 2 years.” Mike Reno said, “I guess it depends if sand does the treatment or an intermittent sand filter.” Jason Peppin states, “Under the proprietary wastewater section in the TGM it might not fit.” Dave Lowe said, “I will have data to share in a couple months.” Mike Reno commented, “In September we were looking at one unit and the OSCAR being the disposal unit, now the OSCAR being separated doesn’t make sense in how to look at it.”

Joe Canning said, "A bunch of coils as a system would take up a large square foot footprint. The application and effect to nature soils is important." Dave Lowe said, "There are 2 application rates, 1) tubing to the sand and 2) the sand to the soil. Looking at soil type in the TGM it is 300 gallons per day system in A-2 or C-1 soil types. Same system but the sand basal area is larger to compensate for the receiving area." Jason Peppin said, "So you end up in finer texture areas where you would add more coils?" Dave Lowe replied, "What we would do is add more coils based on design flow." Joe Canning asked about elevated systems in testing, such as mounds. Dave Lowe replied, "We built the OSCAR on top of pea gravel and had collection in the under drain," he continued to explain more. Joe Canning said, "In extreme situations there are different application rates for native soils and sand. Is there a separation requirement for coils?" Dave said, "Yes." Joe Canning continued, "It looks like a cap and fill system above grade and just commenting on the effect on nature soils."

Dave Lowe asked, "If we left the LOWeFLOW and OSCAR combined would that change how you review it?" Mike Reno and Joe Canning said, "I don't think it would." Dave Lowe asked, "What the TGC was feeling at this point? Do we wait for the NSF data or are we back at the same place as of now?" James Craft said, "With NSF testing would it be treatment along with disposal?" Joe Canning said, "I don't think treatment would be a question, just how the TGM would qualify disposal." Mike Reno said, "The basal area would have to meet soil distribution rates." Dave Lowe said, "I will do more homework to identify the dots to be connected here. The concerns of infiltration rates into soils, they had the same questions in Washington State. We used different criteria to approve the OSCAR." Dave Lowe confirmed Joe Canning's question that when testing was done it was just the sand. Joe Canning said, "My gut indication is to put at least 3 inches into the native soil." Dave Lowe commented, "Yep, I would call it raking and end up with a series of micro furrows and sand on top of that." Jason Peppin recommend Dave Lowe to look at the TGM to review our sand mound sections." Dave Lowe said, "I do have information and videos on our website that might be helpful to committee members." Joe Canning asked about 1:1 slope ratio and had concerns about the interim before stabilizing with vegetation.

Jason Peppin asked, "What slope limit is this in Washington State?" Dave Lowe said, "20% on mounds, a steeper slope with more sand fill." Joe Canning comments, "I am interested in seeing the size of these. I am not sure they can compete against our sand mounds. It is more an economic question."

Dave Lowe responds, "I am not able to answer your questions on TGM and request to table this till next meeting with results on data and what we are seeking for approval.

Motion: Mike Reno moved to table the review until the next meeting

Second: Joe Canning

Voice Vote: Motion carried unanimously. The review of the OSCAR is tabled till next meeting in order to meet the TGM requirements.

2:06 PM **Gerald R. Williams Engineering Letter dated June 6, 2017**

James Craft read the following statement:

An action item from the last TGC meeting on September 7, 2017 was for DEQ to check with the engineering board on whether engineering lines were being crossed when designing a drainfield with the Presby AES system. DEQ contacted and discussed the topic with James Szatkowski, Deputy Director State of Idaho, Board of Licensure for Professional Engineers and Professional Land Surveyors.

James Szatkowski states in his email “Based on your TGM and TGC’s interpretation of what is involved in the use of this product, I personally would agree that an engineer is not required. “The TGM does not require a license professional engineer for this particular design. Inspections are required by the local health district prior to covering up the system to ensure proper installation of the Presby AES system. Some of the alternative or large systems are required to be designed by an Idaho professional engineer. Generally the criteria that require professional engineering design is if the system is experimental, requires the use a pump or is a large soil absorption system.”

James Craft reiterated comments made by Joe Canning, Mike Reno, and Kellye Eager during the September 7, 2017 TGC meeting generally agreeing that engineering was not required. Given the comments made by TGC and considering Presby’s response letter addressing the concerns outline in Mr. Williams letter, James Craft recommended to the committee to not impose additional engineering requirements to the Presby AES system when installed in Idaho.

Motion: Joe Canning motioned for the chairman’s recommendation.

Second: Kellye Eager

Voice Vote: Motion carried unanimously.

2:10 PM **SSD Program Update**

- a. Public outreach letter to notify property owners about service provider list:**
James Craft mentioned the letter was sent out and we had many letters returned to the state office. Those were distributed to the districts to update and resend. Mike Reno said, “Out of the sent letters that came back we updated those and around 250 of those letters came back again. We got it all figured out, fixed addresses and sent out again.”
- b. Service Provider list status:**
James Craft showed the most current list of all the service providers. More service providers were added to the list since the initial mail out of the public outreach letter.

Jason Peppin asked, “Regarding the Service Provider list, with our specific endorsement (i.e. Delta), are they put on the list if they as the provider are currently not working with approved manufactures, even though Delta Whitewater units are currently suspended and not on our approved list?” Mike Reno suggested, “They could be put on the list but leave the manufacture column blank for now.” James Craft asked Jason Peppin to send the list of names to be added to the list.

c. Complex Installer seat replacement. Jason Holms’ appointment expires Jan 2018:

James Craft said, “Jason Holmes appointment as an installer on the TGC board expires January 18th. We are looking for a replacement and asking for those interested to send a letter of interest to DEQ for review and consideration. Ideally we would like all districts to be represented. Right now districts 2, 3, 5 and 6 are not represented. A tentative closing date for a letter of interest would be by February 28, 2018.” Mike Reno said, “My recommendation would be to get anyone we can get to be a long-term active participant.” Jason Peppin asked, “What about an installer who covers multiple areas.” James Craft said that would be acceptable.

d. ETPS Annual Reporting Recommendation:

James Craft shared his PowerPoint presentation on OnlineRME – Management tool for tracking ETPS and Service Providers



Service Provider Annual Reporting Issues

- ▶ No standardized annual report
- ▶ Actual service reporting is spotty
- ▶ Lots of letter-writing and phone calls when reports are pass due
- ▶ Owners don't know what they're getting for the \$\$

Buried in Paperwork

1800 systems x 1 inspection x 2 pages per inspection =

Ongoing Issues

Handwritten note: "I got a writing thing!"

- ▶ Handwriting not always readable
- ▶ Sometimes unclear what passed
- ▶ Manual data entry
- ▶ Lack of automation
- ▶ Mailing addresses not current
- ▶ Lots of individual letter notifications
- ▶ Time intensive review

What Do We Need?

Stakeholder input:

- ▶ Paperless (or as near as we can get)
- ▶ Automated, as much as possible
- ▶ Customized reports for each type of ETPS
- ▶ Adaptable to new technology
- ▶ Easy to understand, easy to use
- ▶ Provide useful information to all users
- ▶ Issue upcoming work reports, warnings letters, NOVs.
- ▶ Accessible from the field
- ▶ Low cost

- ▶ Environmental Management for ETPS and Service Providers
- ▶ Main interaction is via the website
- ▶ Cloud based and can be accessed via any internet connection
- ▶ OnlineRME uses a linked server connection to pass property and inspection data back and forth.
- ▶ Used in neighboring counties in Washington, Oregon, & Montana

onlineRME RESPONSIBLE MANAGEMENT ENTITY

Site Information
 SITE NAME: Black, Steve
 SITE ADDRESS: 9904 NE KITSAP ST, Bainbridge Island WA
 OWNER: BLACK STEVE & KLEONNER ANNETTE
 MANAGER:

GENERAL SYSTEM TYPE: Whitewater to UV to Pump to Gravity
 MAX SITE FLOW: 360 (GPO)

Date	Report Type	Type	Status	Company	Report	Email Report
08/23/17	OSS Inspection	INTERMITTENT	OK	Big Sky O&M, LLC		
02/21/17	OSS Inspection	ROUTINE	OK	Big Sky O&M, LLC		
08/16/16	OSS Inspection	ROUTINE	OK	Big Sky O&M, LLC		
02/26/16	OSS Inspection	ROUTINE	OK	Big Sky O&M, LLC		
09/16/15	OSS Inspection	INTERMITTENT	OK	Big Sky O&M, LLC		
03/03/15	OSS Inspection	ROUTINE	Deficient	Big Sky O&M, LLC		
06/29/14	OSS Inspection	INTERMITTENT	Deficient	Big Sky O&M, LLC		
05/15/14	OSS Inspection	FOLLOW UP	OK	Big Sky O&M, LLC		
02/26/14	OSS Inspection	ROUTINE	Deficient	Big Sky O&M, LLC		
08/28/13	OSS Inspection	INTERMITTENT	Deficient	Big Sky O&M, LLC		
02/20/13	OSS Inspection	ROUTINE	Deficient	Big Sky O&M, LLC		

System can retrieve/link information and documents from other databases

onlineRME RESPONSIBLE MANAGEMENT ENTITY

Site Information
 SITE NAME: Black, Steve
 SITE ADDRESS: 9904 NE KITSAP ST, Bainbridge Island WA
 OWNER: BLACK STEVE & KLEONNER ANNETTE
 MANAGER:

Map This Site View Scanned Images

onlineRME RESPONSIBLE MANAGEMENT ENTITY

Work Activity Onsite Sewage System Inspections

You are currently viewing the list of Deficient inspections. Yellow highlights property being tracked.

Viewing: OSS Inspection Assigned To: Unassigned

Submitted	Ins Date	Insch	Priority	TaskID	Assigned Staff	Assigned Status	City	Report	Email Report	Scanner	Permissions
10/27/17	10/26/17	5364 CALA WOODS LN NE	1129231122005				Bainbridge Island	OK			
10/24/17	10/20/17	4474 COTTONWOOD DR SE	02230208001				Port Orchard	OK			
10/19/17	10/18/17	2493 NE DENNY ST	0124910692009				Bremerton	OK			
10/12/17	10/11/17	8728 NW NICHOLS ST	2620010719001				Bremerton	OK			
10/13/17	10/09/17	2225 STEAMBOAT LOOP E	5524002030008				Port Orchard	OK			
10/12/17	10/10/17	15838 Point Monroe Dr NE	4150002030703				Bainbridge Island	OK			
09/19/17	09/18/17	38360 STATE HWY 3 NE	2327510333004				Pousoy	OK			
09/19/17	09/18/17	22184 PANORAMA PL NE	5473002030004				Pousoy	OK			
09/19/17	09/18/17	3900 LAWRENCE DR SE	4100003060003				Port Orchard	OK			
09/19/17	09/18/17	7505 NHAUG TRLE NE	7035002040002				Bremerton	OK			
09/19/17	09/18/17	350 TRIMITY PL W	2024012040005				Bremerton	OK			

Here is where all of the reports come in and they are prioritized based upon what you want to see. Critical violations at the top - think surfacing effluent. That way you can see what needs to be fixed first.

Custom Checklist for Each System

- All questions that are deficient can be identified as critical, PASS, FAIL - that is a custom setup.
- 600 question bank to customize
- Manufacturer specific questions that are for each proprietary technology
- Add other custom questions

Currently viewing the Locked reports. These reports are no longer editable.

PROPERTY INFORMATION
 Daberkow, Brian & Shanna
 Location: 5364 CALA WOODS LN NE, Bainbridge Island
 Tax ID: 1129231122005
 Use: Residential, (3 units)
 System Design Flow: 360
 GENERAL SYSTEM TYPE: NW - Norwest to Gravity
 ON ID: 23561780

ON-SITE WASTEWATER TREATMENT SYSTEM INSPECTION REPORT
 Inspected: 10/26/2017 - Inspection Type: ROUTINE - Corrected Status: No corrections made
 Company: NORTHWEST SEPTIC OPERATION & MAINTENANCE
 Work Performed By: Rich Vittoe
 Submitted: 10/27/2017 by: Gene Park

COMMENTS & GENERAL INSPECTION NOTES
 Deficiencies noted: deficiencies must be corrected to ensure proper longevity of the Onsite Sewage System.
 Only only find 2 of 6 Observation points in the draft.

GENERAL SITE & SYSTEM CONDITIONS
 The General Site and System Conditions were: Fully Inspected
 Components accessible for service: NO - Deficient
 All required service performed (if no - specify omitted inspection items in notes): YES
 Buffering effluent from any component (including mound seepage): NO
 Components exposed to be inspected - no visual issues: YES
 Improper encroachment (structures/impervious surfaces, cover or settling problems observed): NO
 Structures connected to onsite sewage system occupied: FNO applies to premises: YES
 All floor slab security retained upon departure: NO - Deficient
 Inspection comments appear to link in good physical condition: YES

ON-SITE SEWAGE SYSTEM INSPECTION DETAIL

Service Providers and regulators can make notes about phone calls, letters sent. Items entered by the HD/DEQ would be public record. Items entered by the Service Provider other than notes to regulator are viewable by only the Service Provider.

onlineRME RESPONSIBLE MANAGEMENT ENTITY

Site Information
 SITE NAME: Daberkow, Brian & Shanna
 SITE ADDRESS: 5364 CALA WOODS LN NE, E
 OWNER: DABERKOW BRIAN & SHANNA
 MANAGER:

Uploads

Other Activities

onlineRME[®]
environmental risk management experts

Dashboard | Site Search | Contract Activity | Work Activity | Reports & Exports | Calendar | Application Manager

At A Glance

Current Contracts	Cancelled Contracts	Deficient OSS Reports	Deficient Pump Reports	Notifications
800	217	206	800	2

Service Status Administer Groups

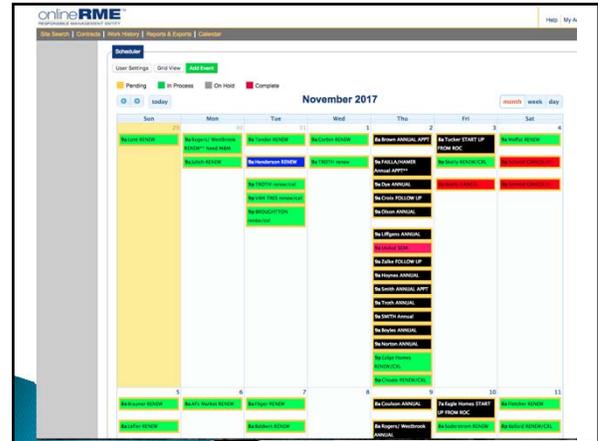
GSS Inspections | Pump Inspections | OSS Sampling

Group Name	Inventory	Current			Past Due		
		Due Soon	Due	+30 Days	+60 Days	+90 Days	
ATU (All Distribution Types)	3362	458	247	99	34	26	
ATU to Gravity	2262	266	181	55	12	11	
ATU to Pressure	1100	192	120	32	11	15	
ATU to Drip	303	72	32	11	5	6	
Sand Filter (All Distribution Types)	493	34	12	5	1	3	
Sand Filter to Gravity	318	23	8	4	1	4	
Sand Filter to Pressure	175	10	11	1	0	0	
Sand Filter to Drip	55	8	5	0	0	0	
Clendon	1309	120	65	12	3	20	

Service Results Administer Groups

GSS Inspections | Pump Inspections

Group Name	Last Routine			Last Inspection		
	OK	Deficient	Failed	OK	Deficient	Failed
ATU (All Distribution Types)	1512	374	5	2122	576	0
ATU to Gravity	653	88	14	6153	1072	13
ATU to Pressure	2720	661	12	2408	1285	28
ATU to Drip	3651	1123	21	8306	2426	16
Sand Filter (All Distribution Types)	375	58	0	622	64	0
Sand Filter to Gravity	3028	827	14	5983	805	18
Sand Filter to Pressure	2285	580	11	5436	1614	36
Sand Filter to Drip	5612	1056	19	8114	2183	50
Clendon	1029	151	54	1126	158	15



Low Cost

- ▶ \$3.00 per submission of annual report, pumping or sampling event.
- ▶ Follow-up fees for inspections are waived if there is a paid report submitted within the last 6 months.
- ▶ Want to encourage reporting.
- ▶ There are no other fees. No setup fees, no support fees, no customization fees.
- ▶ Customize Customize Customize

Questions or Comments?

Mike Reno asked, "Who types the address in? We need information to give to our IT department in order for it to be okay for someone to access our database." James Craft said, "You can set up user rights for different areas." Mike Reno asked about submitting sample data. James Craft said, "It can be scanned and put in a report." Mike Reno said, "We require everything to come in by mail to avoid fraud; it cannot be hand delivered. Would this still count under that rule in order to comply with prosecutable law for false reports submitted by hand delivery?" James Craft said he would check on that through the AG's office.

Keith Taylor asked, "Can an electronic version be sent where it automatically uploads?" James said, "Yes". Keith Taylor commented he liked that. Mike Reno said, "I like it that all reports are consistent." Kellye Eager suggested we look at this at a future meeting where we could present it our directors.

All members of the TGC would like a copy of the presentation sent to them to take to their IT departments and check on requirements to access their databases.

Joe Canning asked, "Does the software check a submittal to see if there are errors?" He notes that service providers could change often. Jason Pepping states, "This would help resolve issues and manage reports from multiple service providers." Joe Canning clarifies that the responsibility of submitting the annual reports is on the land owners. James Craft said, "Yes, and the service provider would then go in and enter in the report." Mike Reno clarified that the home owner could not go in later to change the information and then resubmit it. James said, "That was correct."

NEXT MEETING:

2:41 PM Scheduling Next TGC Meeting

James Craft scheduled the next committee meeting for March 15th at 8:30 AM to 1:30 PM depending on the number of agenda items. Meeting start time can be tentative due to flight schedules. It will be held at the Idaho Department of Environmental Quality's state office.

Keith Taylor asked, "As a service provider, when we see something that has been negligent, maybe from a previous inspection from another provider, what is the process for reporting that?" Mike Reno said, "If the homeowner refuses to fix the negligent action then report it to the health department."

Motion: Mike Reno motioned to adjourn meeting.

Second: Kellye Eager

Voice vote: Motion passed unanimously.

2:46 PM Meeting adjourned.

List of Appendices

Appendix A – TGC Meeting Minutes from September 7, 2017

Appendix B – TGM Section 4.8.2 Approval Conditions

Appendix C – Infiltrator ATL Design and Installation Manual (revised Nov 20, 2017)

Appendix D – OSCAR & LOWeFLOW Treatment System Design Manuals for Idaho and
Sampling Plan (revised January 2018)

Appendix A

TGC Meeting Minutes from September 7, 2017

Technical Guidance Committee Meeting

Agenda

Thursday, September 7, 2017

*9:30 a.m. – 2:30 p.m.**

**Conference Room C
Department of Environmental Quality
1410 North Hilton
Boise, ID**

TGC ATTENDEES:

James Craft – Onsite Wastewater Coordinator, DEQ, (TGC Chairman)
Mike Reno – REHS, Environmental Health Supervisor, CDHD
Jason Peppin – REHS, Senior Environmental Health Specialist, PHD
Kellye Eager – REHS, Director of Environmental Health, EIPH
Joe Canning – B&A Engineers Inc.

GUESTS:

Lisa O'Hara – DEQ, Office of Attorney General
Larry Waters – PE, Wastewater Program Engineering Manager, DEQ
Whitney Rowley – Administrative Assistant, DEQ
PaRee Godsill – Everlasting Extended Treatment, ECP, Norweco
Norm Semanko – Parsons Behle & Latimer Attorney representing Presby Environmental, Inc.
Keith Taylor – Taylor Morgan
David Lowe – Lowridge
Dick Bachelder – Infiltrator Water Technologies
Dale Atkinson – Atkinson-Jet Septic
Tim Wright – Southwest District Health
Lisa Bahr – Southwest District Health
Allen Worst – R.C. Worst & Company, Inc.
Lee Rashkin – Presby Environmental, Inc. (via telephone)
Fred Vengrouski – Presby Plastics, Inc. (via telephone)
Sheryl Ervin – Bio-Microbics (via telephone)

CALL TO ORDER/ROLL CALL:

Meeting is called to order at 9:30.
Committee members and guests introduced themselves.

OPEN PUBLIC COMMENT PERIOD:

9:32 AM James Craft opened the meeting for public comments.

James Craft mentioned Allen Worst had requested to give public comment about the nitrogen policy. James Craft asked if Allen Worst's comment could wait until later in the meeting as it may be related to another discussion item on the agenda. Allen Worst agreed to give comment later when his issue was addressed.

James Craft mentioned Norm Semanko had also requested to give public comment regarding items on the agenda. Norm Semanko from the audience wanted to clarify if the recently submitted Presby letters would be read into the minutes at the 11:00 and 2:00 agenda times. James Craft asked that a representative from Presby read the letters into the minutes during those noted agenda times.

Norm Semanko had a second comment regarding Presby receiving notice in the TGC meeting agenda from a non DEQ member and wondered if this was standard procedure. James Craft apologized for any mix up in communication about the notice regarding the change in agenda items and said next time official notice will come from DEQ and not from outside third party.

MEETING MINUTES

APPENDIX A

9:37 AM **June 8, 2017 Draft TGC Meeting Minutes: Review, Amend, or Approve**

James Craft asked for any comments on the previous meeting minutes. No public comments were given.

Motion: Mike Reno moved to approve the June 8, 2017 TGC Meeting minutes as they stand.

Second: Kellye Eager

Voice Vote: Motion carried unanimously. Minutes will be posted to DEQ's website as final.

9:38 AM **Attorney General's Office Presentation on the Idaho Ethics in Government Act & Open Meeting Law**

Lisa O'Hara gave a presentation from the Deputy Attorney General's office at DEQ. She said, "We are here to assist DEQ and the TGC, as well as provide continuing education on any upcoming issues." After the presentation Lisa O'Hara reminded those in attendance the Attorney General's office is here to assist TGC members. Lisa O'Hara welcomed TGC members to visit the Attorney General's office on the second floor of the DEQ state office building.

Idaho's Ethics in Government and Open Meeting Laws

Lisa O'Hara
Deputy Attorney General,
Department of Environmental Quality
September 7, 2017

Ethics in Government Act

Idaho Code § 74-401, *et seq.*

- What is the purpose of the Act?
 - To protect the integrity of government.
 - To assure independence, impartiality, & honesty of public officials.
 - To inform citizens of the existence of personal interests which may present a conflict of interest.
- Who does the Act apply to?
 - "All public officials" including...
 - Any person holding public office of a governmental entity by formal appointment.
(This includes TGC Members)

- What does the Act prohibit?
 - A public official from taking official action *or* making a formal decision or recommendation,
 - where he has a *conflict of interest*,
 - **and** has failed to disclose that conflict as required under the law.

- What is a "conflict of interest"?
 - Any action/decision/recommendation,
 - in capacity as a public official,
 - that would be to the **private pecuniary benefit**,
 - of the public official, a member of his household, or a business that he (or household member) is associated with.

- What should a public official do if he believes he has a potential or actual conflict of interest?
 - DISCLOSE the conflict:
 - (1) Written statement describing matter to be acted on *and* the nature of potential conflict;
 - (2) provide the statement to appointing authority (the Director).
 - May seek legal advice from independent counsel or AG's office prior to disclosing.
 - Disclosing the conflict does not affect his ability to determine quorum or debate/vote on matter.
 - Recusal is an option but not required.

Open Meeting Law

Idaho Code § 74-201, *et seq.*

- Idaho's Open Meeting Law applies to:
 - A meeting,
 - of a governing body of a public agency,
 - to *make a decision or deliberate toward a decision* on any matter.

- **Meeting defined**
 - Convening of a governing body to make a *decision or deliberate* toward a *decision*.
 - Deliberation is the *receipt or exchange of information or opinion* relating to a matter pending before the agency for decision.
 - *Excludes* informal or impromptu discussions of a general nature not related to a matter pending before the agency.
 - But *includes any* receipt of information related to a decision.
 - Decision is any determination, action, vote or final disposition on which a vote is required and a quorum is present.
 - Whenever there is a quorum of a governing body meeting to deliberate or make a decisions, even if informal or social in nature, the open meeting law applies

- **Governing Body defined**
 - Members of any public agency
 - which consists of 2 or more members
 - "with the authority to make decisions for or *recommendations* to a public agency."
 - This includes advisory committees, boards, and commissions.
 - "Public agency" includes subagencies created by statute, ordinance, or legislative act.

- What does the Open Meeting Law require?
 - Meeting Notice (5 or more days in advance) and Agenda Notice (at least 48 hours in advance).
 - Held in a place that does NOT discriminate on the basis of race, creed, color, sex, age or national origin.
 - Taking, and posting, of written minutes.

APPENDIX B

9:45 AM **Technical Guidance Manual Section 4.19.3.4 Dosing Chamber**

- Review for final approval

James Craft stated no public comments were received, and that DEQ made a few adjustments to the section to eliminate repeated sentences. In addition, there were some minor formatting changes within the section. Mike Reno asked for clarification on why the TGC member's handouts had red track changes instead of the colors seen on the digital version shown on the screen. James Craft said that was a printing issue from a different user accessing the file.

Motion: Mike Reno motioned for final approval.

Second: Kellye Eager

Voice Vote: Motion carried unanimously. Section 4.19.3.4 Dosing Chamber will be updated in the Technical Guidance Manual and posted on the DEQ website within 30 days.

APPENDIX C

9:49 AM **Discussion on draft changes to TGM Section 4.8.2. Approval Conditions**

- TGC to discuss proposed changes to condition number 4 for ETPS annual effluent monitoring and reporting requirements that do not agree with other sections in the TGM.

James Craft commented, “There is confusion coming from the health districts about the ETPS annual reports and the required effluent testing needed for the reports to meet the requirements in TGM section 4.8.2. The discrepancy comes from TGM section 5.13, Table 5.14 regarding products installed for reduction of total nitrogen <27 mg/L and subject to effluent testing (TGM section 4.8). James Craft asked for the committee member’s thoughts and if we needed to change this section to clear up the discrepancy. Kellye Eager said, “We need to.” James asks Allen Worst if this related to his public comment.

Allen Worst said his comment request regards nitrogen policies and subdivision approvals with 16 mg/L ETPS. Allen Worst states, “There have been various discussions about the responsibility of DEQ and equipment providers. Is this sensible to approve at that low of a total nitrogen limit, consistently given the nature of the nitrogen process?”

James Craft led the discussion of what and when to sample, what should be in the TGM as far as requirements, and what do we want to see in annual reports when submitting sample results.

Mike Reno agreed with the proposed changes made to section 4.8.2 and said that it would clear up the confusion. Jason Peppin recommended changing the text in a way that tied it to permitting, allowing more clarity for permit conditions on a specific sites. Jason Peppin said, “We have quite a few areas where the site alone requires an ETPS unit.” James Craft made changes to Section 4.8.2 to include “or as specified in permit conditions” in regards to if ETPS effluent testing is required or not under permit conditions.

In referring to Allen Worst’s comment, Joe Canning asked about NP studies and said, “Consultants put down and use a target number they are trying to meet, and that this puts an unreasonable burden on a septic system, I think that is getting more towards Allen Worst’s question.” Allen Worst said, “If staff could plug in a number, DEQ needs to have better education on what they need/can enter. It is a lot easier to have effluent limitations set at 20 mg/L than 16 mg/L. It can make a big difference.” Discussion continued on re-running nitrogen models and the problem with who paid for that type of work.

Motion: Mike Reno moved for preliminary approval for Section 4.8.2 as amended.

Second: Jason Peppin

Voice Vote: Motion carried unanimously. Section 4.8.2 Approval Conditions to be posted for 30-day public comment period.

APPENDIX E

10:00 AM Product Review: Infiltrator ATL Design and Installation Manual

- Discuss feedback from Infiltrator based on DEQ's recommendations and requests to modify installation manual.

James Craft mentioned DEQ did receive public comments from Presby. The revised Infiltrator ATL manual was discussed by TGC along with specific comments raised in Infiltrator's response letter to the DEQ initial review and comment letter sent on June 9, 2017:

DEQ Letter Review #11, Infiltrator ATL Design Manual Page 8 Bed Configuration:

James Craft said, "The concern here is the maximum separation distance from the ATL conduit row to edge of trench." Dick Bachelder was invited to sit with the TGC members for further discussion.

James Craft, Mike Reno and Dick Bachelder began discussing the concern about maximum separation spacing and referred to the diagram on page 9. There was confusion on the interchanging of terms "trench" and "bed" being used. Mike Reno cleared up the confusion saying anything wider than 6 feet is a bed.

Dick Bachelder stated he agreed with Mike Reno. Dick Bachelder stated, "There are two issues, a storage capacity issue, which is a real issue, and a spacing issue. Dick Bachelder commented about DEQ's comment regarding spacing from edge of bed to ATL conduit not be limited to 18 inches. Mike Reno said, "The Rules and Guidance on absorption beds say 1-3 feet. James states, "Okay so that is consistent with the rule." Mike Reno and Dick Bachelder agreed, "Yes".

DEQ Letter Review #13, Infiltrator ATL Design Manual Page 4 Effluent Distribution:

James Craft said, "The Infiltrator manual makes reference to hooking up to a pressure distribution but it was not tested under these conditions."

Dick Bachelder said, "The ATL conduit is approved for pressure but not tested anywhere under pressure." Dick Bachelder asked for a reason from DEQ on why the use of pressure pipe is not allowed. James Craft responded that because the ATL conduit was not tested under pressure during NSF 40 testing. Dick Bachelder described the ATL conduit as a 12" diameter bundle made with 4" diameter drainage pipe with holes at 360 degrees. The holes are drilled to engineered specifications. Infiltrator is not seeing a downside to putting a pressurized pipe in the ATL bundle. Dick Bachelder commented it would be expensive to retest the ATL system under pressure.

Mike Reno asked Dick Bachelder if Infiltrator puts effluent out under pressure, would you lose any treatment capability in the bundle. Dick Bachelder replied, “Good question, chances of a blast coming out of the bundle are pretty limited as well as the impact you are suggesting. We don’t see that occurring.” Joe Canning was concerned that pressurizing the ATL bundle is a deviation from NSF test. Dick Bachelder commented that Joe Canning had vast professional experience and asked him for potential negative impacts. Dick Bachelder said, “The bottom of the system sand is written as NSF standard, and claims about where actual treatment of effluent happens is subject to debate.”

Mike Reno said, “We have held standards to NSF testing at this point and could not allow product approval without it.” Dick Bachelder said, “Infiltrator will concede temporarily and ask NSF if they would be willing to certify the results when the ATL conduit is pressurized.” Mike Reno said, “We rely on NSF testing. If NSF submits something in writing to DEQ, we could allow pressure application.” James Craft told Dick Bachelder, “If NSF were to certify pressurizing the ATL conduit, more detail is needed on how a pressurized system would be installed.” Mike Reno commented that orientation of emitters would need to be up instead of down. Joe Canning mentioned finding a typo on page 9, and asked for a diagram clarification on page 8. James Craft said the diagram was crossed out, and Dick Bachelder said the typo has been fixed.

DEQ Letter Review #19, Infiltrator ATL Design Manual Page 8 Bed Configuration-Plan View:

James said, “Is the ATL pipe designed so that one pipe is filled with effluent before going to the next pipe? I want to have a blurb in the manual about having a distribution box to make sure the flow is distributed evenly throughout the system.” Mike Reno said, “Do we require a distribution box on anything else with just two pipes? I don’t think we require it for anything else.” James Craft asked TGC members on whether or not the ATL installation manual needed to include instructions about installing a distribution box. Dick Bachelder said, “My response is, and I feel strongly about this. The ATL system is nothing unique. I am trying to keep the manual to 24 pages. We are willing to consider complying with the request but want to understand why.” James Craft said, “It is a concern with even distribution of effluent between ATL conduits.” Dick Bachelder said, “We agree with the concern, we do not have to do this in other states. We are just reinforcing what you do in your TGM. All drawings include a distribution box. What do you want to say and I will put it in the manual.” Mike Reno said, “Say distribution box is recommended for installation.” Jason Peppin commented the TGC required the Presby AES system to have a distribution box. Dick Bachelder said he will send a revised draft of the installation manual to the TGC for further review with the TGM reference for a distribution box. Kellye Eager cited the TGM reference, 3.2.5.2 for Distribution box for Dick Bachelder.

Infiltrator ATL Design Manual Page 4 Sand Extensions:

James Craft asked for a clarification on the end of ATL conduit pipe spacing requirement for system sand and whether it is maximum or minimum 12 inches. Dick Bachelder commented there should be no more than 12 inches at the end of the ATL conduit. More

discussion involved leaving the spacing at 12 inches because that is how the ATL bundle was NSF tested.

DEQ Letter Review #20, Infiltrator ATL Design Manual Page 8 Bed Configuration:

Dick Bachelder asked TGC for clarification on DEQ's comment #20. Mike Reno suggested referencing the TGM section on vertical separation distances to limiting layers. Dick Bachelder said, "The manual references this TGM section by adding a paragraph on page 4." James Craft commented that he appreciates Infiltrator keeping the manual simple and easy to read. Joe Canning cautioned when referencing TGM sections as the TGM is often updated and sections numbers change. This may lead to changing the ATL design manual for every TGM change. Dick Bachelder suggested saying, "Use current TGM edition" in the requirements of the ATL installation manual and that the specific language will be worked out with James Craft.

Jason Peppin commented that the ATL installation manual does not reference the minimal installation depth. Dick Bachelder inquired if this installation depth is in reference to the capping fill application. Dick Bachelder commented that the capping fill application is Idaho specific and that he has never heard of that term before coming to Idaho. Other states use terms like "mound". Dick Bachelder asked for clarification on where the vertical separation is measured from. Mike Reno said, "It is measured from the base of the system sand. Dick Bachelder asked the TGC to make sure that Infiltrator is treated fairly as other competitive systems. Mike Reno replied that it was a fair request. Mike Reno also talked about the above-grade capping fill requirements for a pipe to be 3 inches below native grade. This is a current design issue with DEQ that is yet to be resolved. Dick Bachelder said, "ATL systems are going in above-grade all around the country."

DEQ Letter Review #21, Infiltrator ATL Design Manual Page 9 Notes: Number 3:

James Craft said venting will need to be addressed for pressurized systems. Dick Bachelder agreed.

DEQ Letter Review #25, Infiltrator ATL Design Manual Page 13 Design Example:

Dick Bachelder said Infiltrator values the term "system sand" in the diagram. Mike Reno suggested not changing the diagram and make reference to medium sand. Joe Canning said the installation manual makes reference to the term "system sand" and specifies the sand material by making reference to the TGM.

DEQ Letter Review #29, Infiltrator ATL Design Manual Page 24

The interpretation of the diagram showing the raised connection was discussed. Dick Bachelder said, "The objective is to fill the ATL conduit before moving to the next row. The second diagram of the raised connection will need to be revised to reflect this objective." Dick Bachelder further explained from a manufacturing perspective we want to maximize first row but not fill it chock-full. Mostly we are concerned about air, for the aerobic conditions." Joe Canning asked how the ATL was tested. Dick Bachelder said, "It

was never intended to maximize effluent in the conduit line. Experience is air is a good thing. We won't use serial distribution unless on a slope." James Craft asked for examples of where serial configuration was used on the ATL system and if there was any field data to support it. Dick Bachelder replied that Infiltrator has longevity information for the ATL system but that is a couple years old. Dick Bachelder would share that data with DEQ but is not confident in what we will learn with those longevity studies. Dick Bachelder said, "Yes the ATL systems are working, to answer the question. I can get data on field experience."

Dick Bachelder stated that ATL was tested with NSF using a vent – a pipe connected to the distal end of each row was manifolded into a four inch vent pipe.

James asked the TGC if this is the data they want to see. Mike Reno and Joe Canning asked, "Is this hydraulic or treatment data?" Dick Bachelder said, "It's hydraulic."

Mike Reno said, "We don't make distinctions in anything else with parallel or serial systems." Joe Canning said, "What is the difference between that and a sand trench, nothing, other than it is NSF tested." Jason asked if all configurations for Presby been considered and tested for NSF as well? Fred Vengrouski with Presby commented (via telephone), "We did provide a considerable amount of comprehensive data to support configurations along with NSF data. We provided serial and parallel data." Mike Reno asked James Craft to look further into the Infiltrator data.

10:55AM Meeting break.

11:05AM Meeting Resumed

James Craft asked for any additional comments on DEQ's review and comment letter. No additional comments were given.

Note: Lunch Break was delayed until after the Oscar LOWeFLOW agenda item.

11:06 AM Presby Letter September 6, 2017 read into minutes

Norm Semanko, attorney representing Presby, read the Presby letter from Lee Rashkin dated September 6, 2017 into the minutes.



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September 6, 2017

VIA EMAIL

James Craft, Onsite Wastewater Coordinator, DEQ
Chairman, Technical Guidance Committee
Idaho DEQ State Office; Water Quality Division
1410 N. Hilton
Boise, ID 83706
james.craft@deq.idaho.gov

RE: Comments on Infiltrator Water Technologies' Request for Approval for Use
ATL (Advanced Treatment Leachfield) System

Dear Mr. Craft:

Please consider and read the following comments into the minutes at the September 7, 2017 Idaho TGC meeting regarding Infiltrator Water Technologies' (Infiltrator) continuing efforts to seek approval for their ATL product in Idaho.

Below is a summary of our concerns with Infiltrator's Request for Approval of the ATL System. Please also take into consideration the concerns we have raised previously in writing and at TGC meetings.

Technical Inadequacies

Infiltrator's request for approval and accompanying Design and Installation Manual reflect design parameters that have never been tested and deviate from its NSF Standard 40 certified models. The ATL System has never been tested in the configurations that are being requested for approval in Idaho.

(Norm Semanko commented, "You have discussed some of that today.")

The Infiltrator ATL System has only one NSF certified model that reflects their three-bedroom configuration. Infiltrator has never undergone an NSF engineered review to certify flow rates other than for a three-bedroom house.

Product Amount / Loading Rates

(Norm Semanko commented, "You might look at #16 in June 9th letter.")

The Infiltrator ATL System is not tested or proven to work at 50 linear feet per bedroom. ATL's NSF Standard 40 certification is for 70 linear feet per bedroom and all state approvals for the ATL system require 70 feet per bedroom.

(Norm Semanko commented, "I would like to emphasize Presby was tested and approved at 50 feet. It is not

appropriate to tie what Presby did to Infiltrator. Not sure how numbers got put in the letter.”)

Absence of Field Data

Since Infiltrator does not have the extensive field data and additional testing previously required of similar products in Idaho, ATL should go through the provisional approval process. During our submittal process, informed parties insisted, and DEQ required, a minimum field data threshold of multiple systems for a significant length of time to be consistent with technology new to Idaho. *(Norm Semanko commented, “You have touched on that today.”)* Specifically, R.C. Worst, in its letter to the TGC dated February 3, 2016, stated that:

We feel it would be inconsistent and irresponsible for the committee to approve loading rate and soil separation reductions for a technology with no proven track record in the State. In order to maintain reasonable consistency, it would be our recommendation to require 30 systems and 3 years testing to maintain performance validation methods currently required of other technologies.

(Norm Semanko commented, “The standard was met and surpassed by Presby. We ask that DEQ treat people the same and consistent between products and go under the same rigor.”)

Unproven Technology

The ATL product has little field history and virtually no established track-record in the onsite septic market. During the May 18, 2016 TGC committee meeting Dick Bachelder personally stated that when their ATL product was tested with 6 inches of sand beneath the pipe and loaded at 2.1 gallons per linear foot the product exceeded NSF 40 performance standards but that **he could not verify how long their ATL product would last at that loading rate**. This statement alone should support the Idaho DEQ requirement for Infiltrator to provide field data for ATL to go through the provisional approval process.

Conclusion

We feel that, if DEQ considers this application, it must be in accordance with NSF Standard 40 Certified models, with pipe amounts used with other approvals, in parallel distribution, and must undergo the provisional approval process of obtaining field data. Given that ATL is a recent introduction to the marketplace, it would be impossible for them to have the field data that TGC has required of other innovative technology.

(Norm Semanko starts reading here, and skips the above paragraph.)

DEQ has an obligation to supervise the actions of the TGC to foster a policy of open, and as a result honest, government. *(Norm Semanko commented, “I appreciate the Deputy Attorney General’s office review on that today.”)* To be consistent with requirements imposed on competing technology, and to avoid an arbitrary and capricious review, any approval of the ATL System must require:

- Only NSF-certified configurations (3 bedroom systems, in parallel distribution);
- A minimum of 70 linear feet per bedroom to be consistent with its NSF testing and other state approvals;
- Substantial field data to be able to circumvent the performance validation methods currently required for other technology; and
- Storage capacity calculations.

Sincerely,

A handwritten signature in black ink, appearing to read "Lee Rashkin". The signature is fluid and cursive, with a long horizontal stroke at the end.

Lee Rashkin
Vice President

CC: Attorney Semanko, Parsons Behle
Tyler Fortunati, REHS, IPDES Compliance, Inspection, and Enforcement Lead, DEQ
Barry Burnell, Water Quality Division Administrator, DEQ

(Norm Semanko commented, "Regarding data, I know what was submitted and requests DEQ provide guidance as to not share trade secrets." Lee Rashkin via telephone commented, "Regarding the serial and parallel comments, we went through an extensive review process. We had to substantiate our manuals, this doesn't relate to other technologies. The infiltrator comment is not appropriate. NSF testing venting should be included. Referencing Presby without substantiating their own merit is inappropriate.")

James Craft asked TGC members for any comments on the Presby letter.

Mike Reno said, “A proprietary wastewater treatment product manual may undergo the same approval process. ATL needs to be held to the same standards as Presby and require the same level of confidence in testing for ATL.” James Craft asked, “Still go with proprietary route but consider provisional testing?” Mike Reno replied, “Whatever Tyler required Presby to submit to circumvent that provisional process, we need to require the same.” James followed with, “DEQ will internally review that data.” Lee Rashkin (via telephone) said, “Our system was NSF certified with 6 inches of system sand, however Presby AES system utilizes 12 inches of system sand, because that is what we were able to provide significant data for.”

Dick Bachelder commented that he is fearful of term “same” because of the wide interpretation, and that Infiltrator does not have the same data as the competitor. Dick Bachelder asked to clarify what is meant by “same”. Mike Reno replied, “I want to restate that as the same level of information. The framework of comparison is from the TGM, not another application. That is not fair and not right.” TGC members agreed.

Dick Bachelder summarized and commented that venting needs to be looked at on its own merits. The loading rate at ATL tested 2.2 gallons of linear foot conduit of pipe. Protocol is 150 gal/day loading rate. We used 210 feet. (He explained how they came up with 2.178 gallons and that they round to 2.2 gallons). In each bedroom we are calling for an additional 50 ft. The comment posed concerning longevity was addressed by Dick Bachelder, “I don’t know how long these are going to last, I don’t know anyone who knows how long they will last. I will bring field data, but that will not tell you how it will last 30 years from now.”

Mike Reno suggested TGC table this review until field data that is forth coming arrives and DEQ evaluates that with TGM requirements for approval. Dick Bachelder said, “I will offer to submit an addendum and a revised copy of the installation manual and will see you in December to wrap it up.”

Motion: Joe Canning moved to table the Infiltrator manual review until DEQ reviews additional information sent by Dick Bachelder.

Second: Kellye Eager

Voice Vote: Motion carried unanimously. TGC will revisit the Infiltrator product manual review after DEQ reviews additional information.

APPENDIX D

11:28 AM Product Review continued: Presentation by Dave Lowe of OSCAR LOWeFLOW Treatment System Design Manual for Idaho

- Dave Lowe from Lowridge Onsite Technologies, LLC is seeking pre-approval as a proprietary wastewater treatment product. Additional comments noted on slides.



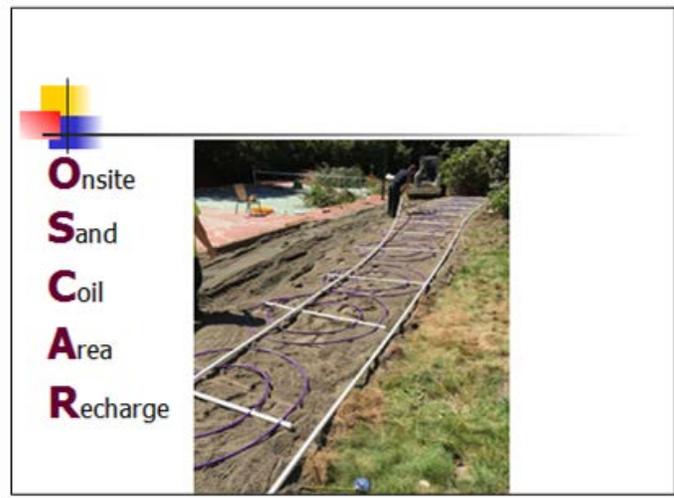
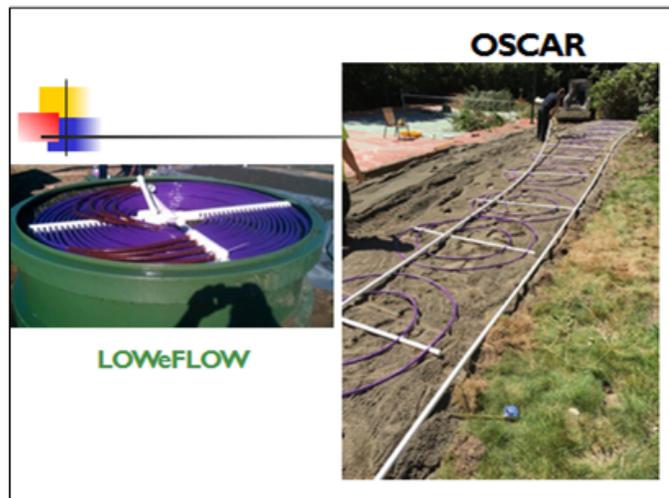
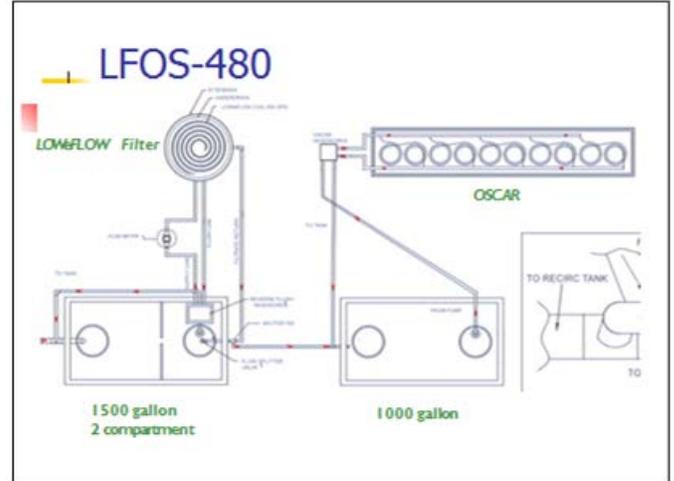
Seeking Approval

- Proprietary wastewater treatment product
- LOWeFLOW = recirculating filter
- OSCAR = single pass bottomless ISF

Dave Lowe said, "Understand manuals are in draft form today."

Outline

- What is OSCAR-LOWeFLOW?
- Treatment capability- NSF
- With time allowing, other.



Dave Lowe said, "LOWeFLOW has 400 feet of tubing. Oscar coils are single pass, 50 gal per day criteria, 5' by 5' system. 100 gal per day criteria 7' by 7' sqft. It is same but with a bigger foot print.."

What is OSCAR?

Proprietary Technology:

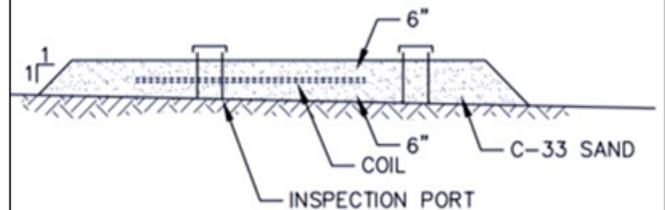
- Treatment unit (fecal coliform)
- Final disposal component

Two Components of OSCAR

- 1. Pre-assembled drip coils
Each coil =
50 or 100 gpd
- 2. ASTM C-33 sand
6" depth under coil



OSCAR Side View



Dave Lowe said, the coil is not elegant but functional, and the bracket is to keep it in its shape.

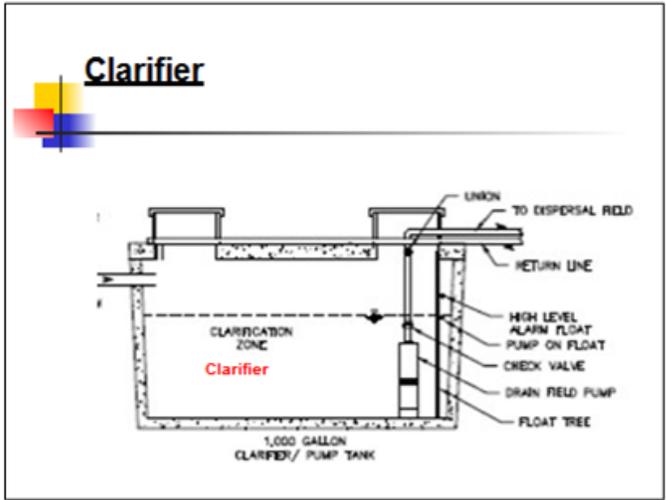
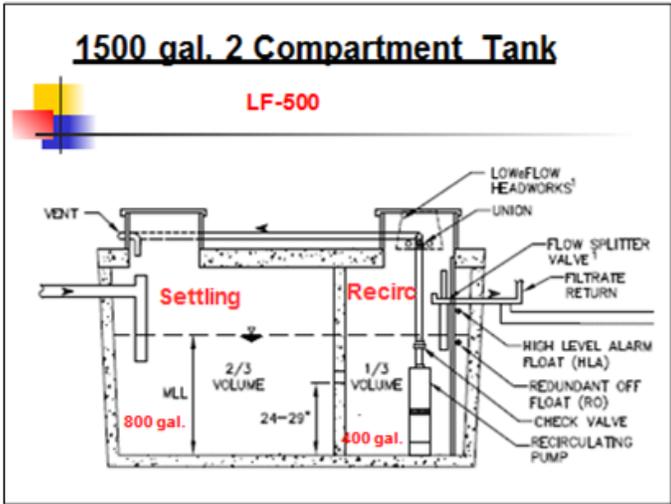
LOWeFLOW



Tank Functions

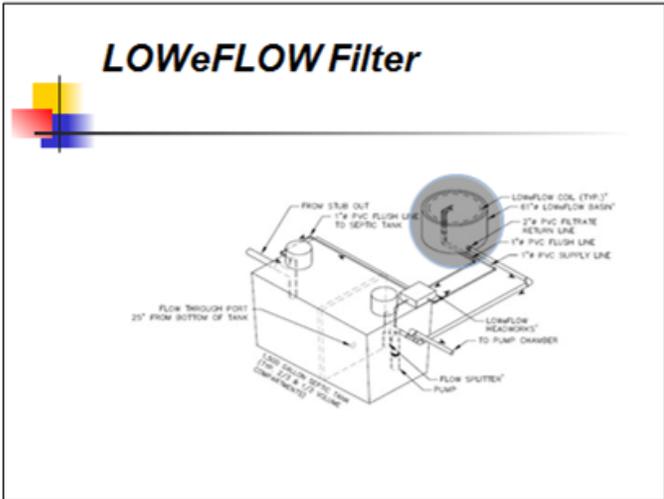
- Settling (septic)
- Recirculation
- Clarification
- Dosing (discharge)

Dave Lowe said, "LOWeFLOW is an organic removal treatment unit"

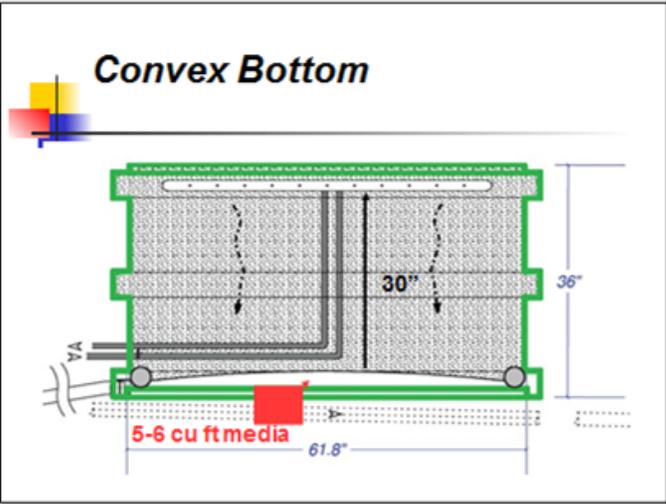


Dave Lowe mentions, "looking for a 4:1 ratio"

Dave Lowe mentioned, "Emergency storage is configured in other tank."



- ### Filter Basin and Coil
- 500 gpd poly basin
 - LF-500 Coil
 - Media: Growstone: recycled glass



Dave Lowe mentioned they use synthetic media exclusively now, and this media is similar to a pumice stone.

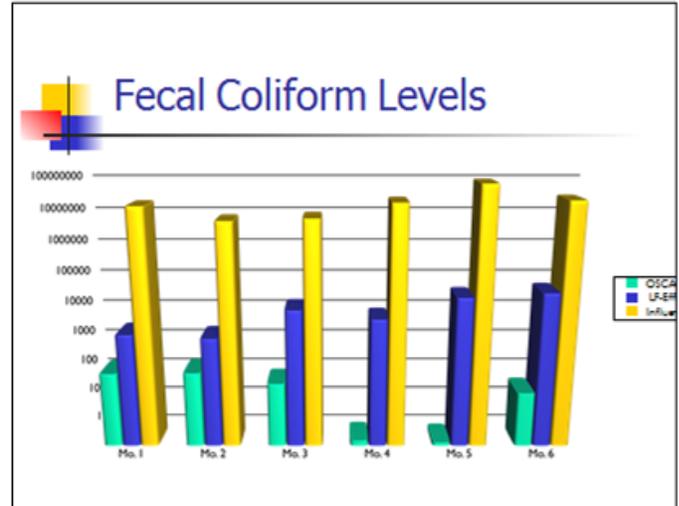
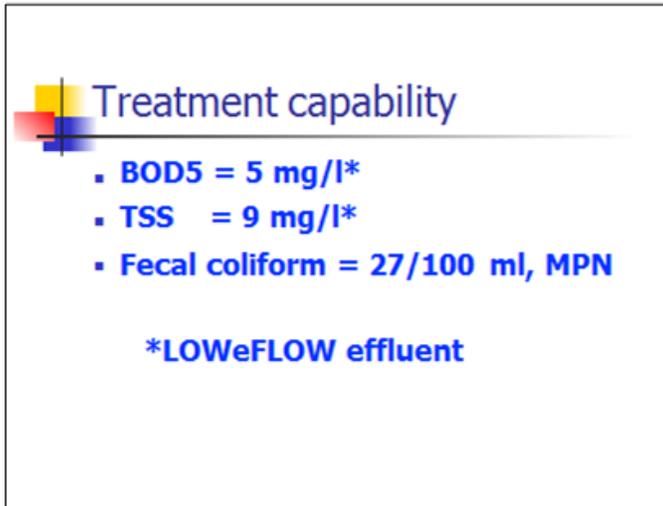
Dave Lowe talked about the bottom of the mold. He said, "Originally the mold was made for easy stacking and for efficient shipping but that gave it a loose bottom. So they made changes to a convex shape to have flow off to the outer edges and fix the loose bottom. Liquid leaves through one outlet via a welded port." Mike Reno asked how many gallons a day the LOWeFLOW filter was designed for, and Dave Lowe said it is 500 gal/day.



Dave Lowe mentions it is normal to have the wet marks showing.



Dave Lowe said, "There is only sand on top of this. The grass is growing on liquid and nutrient from effluent out of the Oscars. I see this as good growth pattern after one year. You could run a riding lawn mover over this site, as far as firmness of the ground."



Discussion after the presentation:

Dave Lowe mentioned there were two NSF reports and provided additional report details regarding, treatment capability, testing parameters and results.

Dave Lowe also mentioned in regards to fecal coliform levels there was a 6 month spike on the NSF report graph because of the 4 stress tests. The last test was during vacation mode, so the system was shut down for a week or so. Dave Lowe explained when effluent is put back in after vacation mode it will cause that spike and that you need to keep the bacteria fed to avoid a spike.

Mike Reno asked, “Was the LOWeFLOW meant to be without the Oscar component? Or did the Oscar component test add to the LOWeFLOW design? Was this design just for treating fecal coliform?” Dave Lowe answered, “Yes, the Oscar uses sand versus a UV lamp to reduce fecal coliform.”

James Craft asked a question regarding the NSF report saying it is not an NSF certified treatment system because Lowridge has not been audited by NSF and the alarm panel has not been evaluated for compliance to Standard 40. Dave Lowe said, they opted not to do that and Washington State does not require a NSF certification process. Washington relies on the NSF data. LOWeFLOW could pursue the NSF audit by using a sub-panel for the alarm on the system along with paying fees. James Craft stated the system needs to meet NSF standards/approval according to TGM.

Mike Reno asked a question regarding what size of rock was tested and if it was 3/8 inch. Dave Lowe said, “Yes, 3/8 inch. It is a nightmare to try and get consistent 3/8 wash rock material from the pit.” Dave Lowe discussed finding silts when using 3/4 inch concrete aggregate. Dave Lowe said, “They have gone back and forth on media

issues with states and we have one more month of testing. Data will be available after the testing. Dave Lowe mentioned NSF is validating rock without additional testing.

Kellye Eager inquired if the Growstone media used in the system was hard to come by. Dave Lowe said the Growstone is readily available through the distributor and comes in two large bags as part of the kit for the installer. Kellye asked, "How often does the Growstone need to be changed?" Dave Lowe said, "It should be never, but not more often than any other media. The longest LOWeFLOW in service was done in 2012 on a 4-plex residential building and the effluent was reported clear. Dave Lowe said there is more experience longevity wise with the LOWeFLOW than the Oscar, but with the Oscar that is the least of his concerns.

Mike Reno asked Dave Lowe what he was proposing for approval. Dave Lowe said, "He wants approval as one complete unit today, the Oscar with the LOWeFLOW."

Mike Reno said, "There is an issue with the septic tank portion. A thousand gallon septic tank is the requirement for Idaho. To get approved in Idaho the system might have to put in a septic tank prior to install." Dave Lowe used the LFOS-480 PowerPoint presentation to discuss the comment and said, "We would have to separate the 1500 gallon tank into a 1000 gallon and 500 gallon tank." Dave Lowe mentioned the cost is lower with one tank, and that he would push for this arrangement. James Craft mentioned that tanks used in Idaho must be an approved tank listed in the TGM. Dave Lowe agreed and stated the installation manual can specify that requirement.

Mike Reno asked Dave Lowe for any field testing data. Dave Lowe said there is no field testing data. Mike Reno explained that based on DEQ's policy, lacking field testing data requires going through the provisional approval process. Mike Reno gave explanation on the ETPS general and provisional approval process. James Craft added that Dave Lowe would need to develop a QAPP and have a 3rd party submit and conduct sampling. Dave Lowe asked if fecal coliform levels are an issue for Idaho. Mike Reno said it was not, and the TGC led more discussion on the process of approval. Dave Lowe is thinking about seeking two different approvals and explains why using a diagram. Discussion amongst TGC members and Dave Lowe occurred about terms and soil differences in Washington State versus Idaho. James Craft added that Dave Lowe would need to get 90 data points, 30 systems tested each year.

Allen Worst commented from the audience and asked the TGC why LOWeFLOW is considered under the proprietary category. Allen Worst pointed out a discrepancy on why the Orenco Advantex system was considered under the proprietary category. Allen Worst stated to put both LOWeFLOW and Advantex in proprietary or both as extended treatment package system. Mike Reno explained that the mechanical components in the LOWeFLOW system make it proprietary. Dave Lowe said, "We

are not in any disagreement with Allen Worst's comments and we want to be considered for proprietary approval. Mike Reno thanked Allen Worst for bringing that up. Joe Canning and Dave Lowe clarified questions on a diagram regarding flow and discussed the need for operations and maintenance to ensure the system functions properly.

Dave Lowe explained the process for certifying installers under his company. Dave Lowe said that certified professionals are listed under his website and provides training videos for the installers. Dave Lowe further explained the field training component for installers. Dave Lowe said that once the installers finish the electrical work, he visits the site to do start up procedures with the installers. Mike Reno discussed Idaho's installer requirements. Dave Lowe reassured TGC that Dave Lowe conducts his training and also tells the installers that it does not preclude them from local requirements.

Mike Reno recommended tabling this discussion until DEQ receives and reviews the required data from Dave Lowe. Joe Canning agreed. Dave Lowe asked the TGC to clarify what the actions items were for the approval process. The TGC collectively summarized the following 1. Have the NSF data, 2. Submit the field test data, 3. Have a new design showing exactly what is requesting to be approved; i.e., LOWeFLOW with or without the OSCAR, 4. Design manual criteria, 5. Your manual specific to Idaho, not Washington, using Idaho loading rates, 6. Label diagrams and figures in the manual. Dave Lowe agreed on the action items needed to continue the approval process.

Motion: Joe Canning motioned to keep Mike Reno's previous suggestion and table this topic until submitted data is received.

Second: Jason Peppin

Voice Vote: Motion carried unanimously. TGC to table further review of the Lowridge OSCAR LOWeFLOW product until the requested information is sent to TGC and DEQ.

12:30 PM Meeting adjourned for a 1 hour lunch break

1:30 PM Meeting resumed

APPENDIX F

1:30 PM **Old Business**

Gerald R. Williams Engineering Letter dated June 6, 2017

- TGC discussed Mr. Williams' request to have Presby AES systems engineered.

James Craft requested Norm Semanko to read Presby's comment letter dated 9-7-2017 into the minutes. Norm Semanko read the letter.

James Craft asked for any comments to the Mr. Williams' letter. Mike Reno commented, "The statement, 'AES systems is the only solution,' is incorrect." Mike Reno explained there are other systems and options. Designing the drainfield system is the same process no matter what type system is installed. The Presby AES system design installation manual allowed the pipe to be installed 9 inches above natural grade, which is more similar to mound than capping fill system. The issues with the Presby AES system are based on application use and how the design manual has been approved for these applications.

Joe Canning stated the drainfield is different; it is a matter of proper bookkeeping when designing. Joe Canning does not believe engineering is necessary. Kellye Eager agreed with Joe Canning and mentioned some installing complications with the Presby AES system is no different than in other systems. Kellye Eager said her health district staff have inspected system installations and are pleased with the outcome. Kellye Eager said her district has not seen any issues with Presby AES system from not being engineered.

Action: Mike Reno asked DEQ to check with the engineering board to determine if designing the Presby AES in above-grade capping fill applications would be crossing any engineering lines.

James Craft said DEQ would verify with the engineering board if any engineering is required when the Presby AES is used in above grade applications and will report back in a future TGC meeting.



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Technical Guidance Committee
Department of Environmental Quality
1410 North Hilton
Boise, ID 83706

RE: PEI Response to Gerald Williams, P.E. "Recommendation for AES Systems to be Engineered"

Dear Committee Members,

I am Don Prince, Technical Advisor here at Presby Environmental. Commenting on behalf of Presby Environmental, Inc. (PEI), I appreciate the opportunity to respond to the comments by Gerald R. Williams, P.E. concerning his "Recommendation for AES Systems to be engineered" that were read into the record of the Technical Guidance Committee meeting on June 8, 2017.

Mr. Williams states he has designed a number of Presby Advanced Enviro-Septic (AES) systems and, from his experience, speaks highly of the technology. However, it is our opinion that his request to the TGC to require Presby AES systems to be engineered is problematic. This is based on both the reasons he has given as justification, and, more importantly, the conflict of interest that is presented by the potential loss of business to his firm with any expansion in the amount of systems not required to be engineered. It is understandable that Mr. Williams see a threat to his business and is looking for ways to minimize the impact.

It is well-known that the introduction of new technology inevitably causes some level of disruption to the status quo of the marketplace. This disruption may cause long-standing practices to be re-examined and adjusted as needed with the potential to lose business in one sector and gain in others. The consumer, who foots the bill for everything, drives the move for better, more efficient technology and the approval process ensures new technologies do not pose a threat to public health or mislead consumers with inferior performance.

Mr. Williams has given a number of reasons for justifying that any septic system designed with the Presby Advanced Enviro-Septic technology require the services of an engineer. I would like to quickly respond to them here:

- Mr. Williams says the AES system is expensive and therefore would only be used for "extreme environmental conditions". With well over 20 years of experience, this has not been the case in other markets. When starting out in a particular market, sometimes challenging conditions will drive a designer/installer to try a new technology. However, familiarity, reliability and ease of construction combine to drive designers/installers to use our technology for all types of systems. The Presby AES system is actually a very economical, third-party certified, secondary treatment system. Educated consumers gladly pay a little more when they understand the reliability that is realized by a system that treats the wastewater before releasing it to the native soils.
- Mr. Williams counts manual pages to demonstrate the complexity of the Presby AES technology. This is not a valid means of comparison. The Presby AES technology is far from complex and uses many of the very same skills and design concepts from the well-known conventional technology, including septic tank primary treatment, gravity distribution and even the same pump system as conventional, if needed to gain elevation. To assert this technology is as complex as a sand mound with pressure distribution is not accurate and we wholeheartedly disagree with that assertion.



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- Mr. Williams argues Vertical Design, Contractor Coordination and Timing issues will be insurmountable without the involvement of an Engineer on projects which utilizes Presby AES technology. Again, with well over 20 years of experience in other markets, the vast majority of which do not require an Engineer to be involved in the design process, we have found that contractors quickly adjust to changes in the marketplace to coordinate effectively. To insinuate that hand-holding by an engineer is required to avoid the scenarios outlined in his letter undermines the credibility of the contractors he is referring to, especially in view of the fact that this coordination is routinely accomplished in other parts of the country.
- Lastly, Mr. Williams asserts that for “environmentally tough conditions”, all options should require an engineered system. The Presby AES system is the only solution for these sites which is not required to be engineered and the dilemma this creates for his business losing clients when informed of the AES option. This assertion clearly illustrates the conflict of interest that exists with Mr. Williams lobbying for changes to the way an approved technology is used in the State of Idaho. I cannot speak to the deliberations of the TGC, but given the thoroughness of the approval process, consideration of “environmentally tough conditions” seemed to be a central component of the approval process by the TGC.

It is not our intention to denigrate the engineering profession; we respect and value it highly. Most engineers find our technology to be a useful tool in their toolbox. However, when an innovative technology and thorough approval offer increased simplicity, value and reliability to the Idaho homeowner without compromising public health, disrupting the status quo should be a secondary consideration.

Sincerely,

Donald Prince, Technical Advisor

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APPENDIX G

1:36 PM **Dale Atkinson Letter dated January 20, 2017**

- TGC discussed Mr. Atkinson's request for policy regarding septic tank pumping requirements.

James Craft asked Dale Atkinson since he was present in the meeting if he would like to give his comments regarding his submitted letter.

Dale Atkinson said, "I have been frustrated for fifteen years, to be held responsible for septic systems I do service for. Homeowners are not following my recommendations, nothing is being done about it, and I am tired of it. Something needs to be put in place that pumping needs to be done."

James Crafts explained to Dale Atkinson that DEQ provides recommendations in several places to have tanks pumped every 3-5 years. Recommendation is on the DEQ website and in guidance from EPA's website along with informational brochures. James Craft asked how districts would be able to enforce and manage when a septic tank needs pumping. It is not realistic to hire a whole 'police' force to enforce that policy. Dale Atkinson said, "Recommendations don't work, it needs to be a requirement." James Craft asked Dale for recommendations on how that would be enforced. Dale Atkinson said, "You could check on it when the house is sold, check when the tank is pumped, and check when the septic system fails. It is impractical to hire an army of policeman to enforce it."

James Craft said, "The service provider model is designed to check septic tanks as part of the operation, maintenance, and monitoring (OMM) for ETPS systems and would be documented on annual reports. The service provider checks the septic system to determine when pumping is required. Not pumping the septic tank can lead to drainfield failure. James Craft read examples from the TGM and afterwards stated, "If the property or system owner doesn't keep up with OMM, they would have consequences of a failed septic system." Mike Reno, Kellye Eager and Jason Peppin gave instructions about permitting and information given to the septic system owners, but they all agreed they cannot force the owner to read what they are given. Jason Peppin said, "Mainly permits are to instruct, we just do not have any authority as a Health Department to enforce." James Craft commented on the variability in situations on whether or not a septic tank needed pumping. I think there is plenty of guidance for recommendations on when to pump a septic tank. Dale Atkinson asked, "What happens when they don't pump?" James Craft said, "That would be a case by case basis for the Health Department to consider."

James asked for any further comments from the TGC. No comments were given. The discussion was ended at this time. TGC decided not to change existing rules or provide further policies or guidance.

1:50 PM **SSD Program Update**

- **DEQ webpage updated to reflect new rule change for ETPS**

James Craft said to refer to DEQ's website when people call in with questions.

- **Service Provider list development**

James Craft showed the current service provider list and said he will mail out another letter with a hard copy of the list; recognizing not everyone has access to the internet.

- **Public outreach letter to notify property owners about service provider list**

Mike Reno asked if DEQ would need another updated address list. James Craft said he would send out another request for districts to return an updated ETPS mailing list.

Allen Worst from the audience commented, "I took the test and passed it, do I need a certificate, or are there no provisions for those long time providers to be grandfathered." James Craft said, "The certificate needs to be provided from the manufacturer."

Sheryl Ervin with Biomicrobics asks to give comment via telephone. Sheryl Ervin said, "As far as de-certifying a service provider, what is the process for that? Do we send an email to you stating the reason?" James Craft said, "Every year we rely on the manufacturer's certification. If for any reason the manufacturer does not certify a service provider, then yes a letter stating the manufacturer's reason is appropriate and I will pass that on to the health districts to make all aware."

- **Service Provider FAQ and Study Guide**

James Craft said you can find the frequently asked questions (FAQ) and study guide about service providers on the DEQ website with links to resources. Jason Peppin thanked James Craft for adding the links, stating it is very helpful. Kellye Eager asked, "Do we know how long it is taking someone to pass the test? TGC discussed test taking time limits and agreed it should be limited to 2 hours."

Mike Reno asked, "Are non-licensed employees allowed to work under a certified licensed installer or does it have to be the certified installer to do the work." James Craft said, "Whether the certified installer is onsite or not, it is the laborers/technicians who are installing without certification. I think it would be okay to have laborers perform service provider duties, but the responsibility comes back to the lead service provider." Jason Peppin said, "That is the only way it seems practical to get to all systems checked all over the state."

Sheryl Ervin (via telephone) asked for more clarification, "I have a question with reporting, if house is vacant for various reasons, how are they to report to the state for systems not currently in use? Do they need to hire a service provider to do that?"

Mike Reno said, “Typically the service provider would provide that explanation to us in writing that the house is vacant.” Sheryl Ervin said they had a site with a RV on it. Mike Reno instructed Sheryl Ervin to contact your local health department.

Keith Taylor from the audience asked to give public comment. Keith Taylor said, “I am a complex installer and have been working my way into this business.” Keith Taylor said, “I am concerned with the response to the certified installers having other hires working under them comment. Is it possible to make that complete 100% law? Keith Taylor explained to TGC that companies like these have multiple turn over employees and wondered if this is better than having one trained person. Keith Taylor mentioned he got involved in this service provider business because he has an extended treatment package system at his house. Keith Taylor expressed how end users will feel with a different guy coming out to their site every time and claimed a non-certified installer will not know as much as the actual certified installer. As homeowners that could be a big conflict as to who actually does the work and whether that work is of the same quality or not. Keith Taylor said he would be frustrated if his or his neighbors’ ground water was contaminated due to lesser quality work.

Allen Worst commented, “We had a situation like this and I can see that happening with the service provider model.” Keith Taylor mentioned there is no one monitoring qualifications of installers/laborers who do not have certifications. James Craft asked Keith Taylor what he would recommend, Keith replied, “I would like to see an auditing process. There are several competing plumbing companies charging lower prices, \$99, it doesn’t give us a chance. I am a concerned homeowner and installer and have run my own plumbing company. I am not an expert in this, but am putting a lot of energy in getting into this and doing it right. There is a lot of turnover with in those businesses.” Mike Reno said, “We don’t have funds as a health district to audit service providers and all their work.” Keith Taylor said, “As a homeowner maybe there should be something in place making sure systems are serviced properly. State and community water quality are suffering.”

Sheryl Ervin (via telephone) said, “If you have someone who is on the service providers list as a certified complex installer and they switched companies after getting on the list. I see issues with tracking this and verifying certification under the new company. If they leave one company due to problems with cutting corners and go start new at another company, how would we track and prevent that?”

Mike Reno recommended a resolution to Sheryl Ervin’s comment that the certified complex installer’s permit can state that those employees under him will need to meet the manufactures certification. Sheryl Ervin liked Mike Reno’s recommendation. James Craft asked how the districts would track these employees. Sheryl Ervin said, “I would love to hear other solutions, more than it is okay for the complex installer to have sub installers under him have manufacturing training as well.” Mike Reno said, “A service provider complex installer needs to have training as a requirement to work under the licensed complex installer.”

Jason Peppin expressed concern on how the health districts would track training for the complex installers. Sheryl Ervin said, “When annual reports are submitted, they could submit a list of technicians/installers who are part of the contract.” Mike Reno said, “Complex installers annually provide certificates, that service provider would also provide certificates then for those under him.” Kellye Eager recommended that health districts need to explain this tracking issue to the complex installers during the renewal process and further guidance in the TGM may be needed. Mike Reno mentioned homeowners and TGC would feel a lot more comfortable if there was a process for tracking and verifying installer training certificates. Mike Reno referred to James Craft to help figure out that process.

Keith Taylor from the audience expressed he would like a way to verify if a service provider is trained for when they coming to my door to fix the system. James Craft said the service provider list is available on DEQ’s website and showed the audience where to find the list. Jason Peppin added the service provider model is structured so that it is the responsibility of the home owner to find and contract with a service provider. Sheryl Ervin (via telephone) provided a scenario about different service providers coming to a property from the same company and how there is no way to guarantee if the other person is a certified service provider.

Keith Taylor reiterated his concerns with the service provider model and said based on his experience, the industry pushes heavy on marketing, and he sees a potential for abuse. James Craft said TGC and DEQ will take all of this discussion into consideration as we tweak the service provider model.

- **Proclamation for Septic Week September 18-22, 2017**

James Craft briefly read the proclamation from Governor Otter and said the proclamation will be posted on DEQ’s website. James Craft will send a link to the health districts to make them aware.

- **SSD Program Audits at Districts ongoing July – Nov 2017**

James Craft said he is conducting subsurface sewage disposal program audits at each district and may give a summary of the audit at a later TGC meeting.

NEXT MEETING:

2:25 PM Scheduling Next TGC Meeting

James Craft scheduled the next committee meeting for December 7th at 9:30 AM to 2:30 PM depending on the number of agenda items. It will be held at the Idaho Department of Environmental Quality’s state office. James Craft proposed to have the meeting adjourned

Motion: Mike Reno motioned to adjourn meeting.

Second: Kellye Eager

Voice vote: Motion passed unanimously.

2:27 PM Meeting adjourned.

List of Appendices

Appendix A – TGC Meeting Minutes from June 8, 2017

Appendix B – TGM Section 4.19.3.4. Dosing Chamber

Appendix C – TGM Section 4.8.2 Approval Conditions

Appendix D – OSCAR LOWeFLOW Treatment System Design Manual for Idaho

Appendix E – Infiltrator ATL Design and Installation Manual (revised)

Appendix F – Gerald R. Williams Engineering Letter dated June 6, 2017

Appendix G – Dale Atkinson Letter dated January 20, 2017

*Begin and end time will be observed. Agenda items and their allotted times may vary dependent upon the amount of interest and participation for each item.

** Agenda appendices are color coded to track changes. **Blue text indicates changes that were made in previous Technical Guidance Committee (TGC) meetings. Red text indicates changes that are newly proposed for this TGC meeting. All green text indicates text that was moved from one area of a section to the new area.** All text with strikethrough markings regardless of color is either proposed to be deleted from the guidance or moved to another location within that section.

The call in number is (208) 373-0101 Bridge # 1 (9:30 AM – 2:30 PM)

To Join a Conference Call

1) Auto-Attendant Transfer Option

Conference Call Auto-Attendant Number:

- Extension 0101: Inside DEQ phone system
- (208) 373-0101: Outside callers

Participants call auto-attendant number and are then prompted to enter their pre-arranged conference call bridge number and in this case press the number **1**. Once the bridge number has been entered, callers are automatically connected to their conference call.

Notification

As participants are added to a conference call, an audible chime is heard by participants already connected to the call. If the conference is in progress when the chime is sounded, it is advisable to acknowledge the new participant and ask who has joined the call. This will ensure that the new caller has gained access to the proper call.

WebEx Instructions

To Join WebEx

This will allow users joining the meeting via online video conference to view the same computer material that the subcommittee members are seeing at the meeting location. To hear audio users will still need to call the conference call number above from their telephone. Login information is below.

1) Visit the Website Below

- <https://idahodeq.webex.com/idahodeq/j.php?MTID=m30f552f9aebaa0d6e8c4f0713e6e4482>
- Enter the username: WebExIDEQ
- Enter the password: TGCM0907

Audio connection: To phone in please call into Bridge #1 by dialing # (208) 373-0101 Opt 1.

Appendix B

TGM Section 4.8.2 Approval Conditions

4.8.2 Approval Conditions

1. A service provider will be available to provide managed system OMM as described in section 1.9.1 and 1.9.2 (IDAPA 58.01.03.005.14). The OMM is to be performed by an approved service provider (IDAPA 58.01.03.006.06). Approval of the service provider will be made by the Director before permit issuance. Approvable entities may include, but are not limited to, the following:
 - a. Municipal wastewater treatment departments
 - b. Water or sewer districts
 - c. Licensed complex installer with a service provider certification
A service provider contract should be entered into between the property owner and the service provider, as a necessary condition for issuing an installation permit (IDAPA 58.01.03.005.04.k).
2. ETPSs may be used for properties without an approved service provider **only under all of the following conditions**:
 - a. The site is acceptable for a standard system. All separation distances from ground water, surface water, and limiting layers shall be met.
 - b. Enough land is available, and suitable, for two full-size drainfields. One complete full-size drainfield shall be installed.
3. Final effluent disposal through subsurface discharge will meet the following criteria:
 - a. If an 85% reduction or better in CBOD₅ and TSS can be achieved, the effluent may be discharged to a drainfield satisfying Section 4.21.5 “Drainfield Trenches” application rate criteria and vertical setback requirements.
 - 1) Otherwise, the effluent must be discharged to a standard drainfield, sized as directed in IDAPA 58.01.03.008 (section 7.1), and meet the required effective soil depth for standard drainfields as directed in IDAPA 58.01.03.008.02.
 - 2) Additional drainfield-sizing reduction granted for use of gravelless trench products is not allowed.
 - b. The 85% reduction will be accepted as being met if the effluent exhibits a quantitative value obtained from laboratory analysis not to exceed 40 mg/L (40 ppm) CBOD₅ and 45 mg/L (45 ppm) TSS.
 - c. TN reduction may be required for ETPS units located in an area of concern as determined through an NP evaluation. Permit-specific TN reduction levels will be determined through the NP evaluation. Results for TN are determined through the addition of TKN and nitrate-nitrite nitrogen (TN = TKN + [NO₃+NO₂-N]). TN reduction will be accepted as being met if the effluent exhibits a quantitative value obtained from laboratory analysis not to exceed the TN level stipulated on the subsurface sewage disposal permit.
4. Annual effluent monitoring for CBOD₅, TSS, and TN (if seeking approval for TN reduction) is required for ETPS models listed under provisional use (Table 5-3), or as specified in permit conditions. Annual effluent monitoring of TN is only required for ETPS models listed under general use (Table 5-4) that treat TN to less than 27 mg/L. and

~~reporting is required for all ETPS units that discharge to a reduced size drainfield, to a drainfield with a reduced separation distance to limiting layers, and/or to a drainfield located in an environmentally sensitive area (area of concern). All ETPS models are subject to meet the applicable monitoring requirements in section 1.9.2 and reporting requirements of section 1.9.3. Monitoring shall meet the requirements of section 1.9.2. Reporting shall meet the requirements of section 1.9.3.~~

5. The ETPS will be preceded by an appropriately sized septic tank.
 - a. The septic tank may be either a separate septic tank, a volume integral with the system's package, or a combination of internal clarifier volume coupled with an external tank.
 - b. The septic tank shall provide the minimum tank capacity for residential facilities as specified in IDAPA 58.01.03.007.07.a, or for nonresidential facilities, a minimum of 2 days of hydraulic residence time (HRT) as stipulated in IDAPA 58.01.03.007.07.b.
 - c. Timed dosing from the clarifier to the aerobic treatment unit is preferred and highly recommended to maintain a constant source of nutrients for the system's aerobic microbes.

Appendix C

Infiltrator ATL Design and Installation Manual (revised Nov 20, 2017)



INFILTRATOR®
water technologies

November 21, 2017

Mr. James Craft, On-Site Wastewater Coordinator
Idaho Department of Environmental Quality
Water Quality Division
1410 N. Hilton Street
Boise, ID 83706

Re: Infiltrator ATL System
Request for Approval for Use

Dear James,

On behalf of Infiltrator Water Technologies (Infiltrator), I write to follow up on the discussion that took place at the meeting of the Technical Guidance Committee (TGC) on September 7, 2017.

As a result of our first discussion of the ATL System with the TGC at its meeting in May, you had provided Infiltrator with a letter dated June 9, 2017 which listed 32 items that needed to be addressed. I submitted a response to each item in an email dated August 18, 2017, and the group walked through the letter item-by-item on September 7. From Infiltrator's perspective, the following items were either accommodated by Infiltrator through revisions made to the *Design and Installation Manual for the ATL System in Idaho* (Manual), or agreed upon as settled: numbers 1-10, 12, 14-18, 22-24, 26-28, and 30-32. As for the remaining items, please consider the comments on an item-by-item basis below (with reference to page number in the Manual):

Item #11; Page 3:

Words "a maximum of" have been deleted from the final sentence of the subsection titled "Sand Extensions".

Also, the text in the section titled "Notes" following the trench and bed design instructions (pages 9 & 15) has been revised by deleting the word "within".

Item #13; Page 4:

Pressure distribution. New language is included to provide guidance on use of a pressure distribution system in an ATL System design.

Item #13; Pressure distribution

A letter from NSF verifying use of pressure distribution with the ATL System will be forwarded under separate cover.

Item #19; Page 4:

Distribution boxes. New language has been added to underscore the requirement for use of a d-box with the ATL System. Instructions with respect to requirements on inlet and outlet elevations are included as well.

Item #20; Page 4:

We have added a vertical separation distance table as requested.

We have added the words "the current edition of" to call outs referencing the TGM where appropriate (pages 3 x2 and 4 x2).

Infiltrator would also like to take this opportunity to respectfully provide comment on several of the statements made and/or concerns articulated by the representative of Presby Environmental, Inc. at the meeting in September, and ask the members of the TGC to consider these in their continuing review of our request for approval of the ATL System as a proprietary wastewater treatment product (PWTP) per Section 1.4.2.4 of the TGM.

"Tested with three bedrooms, should only be allowed to be used at this daily flow rate"
NSF/ANSI 40 testing is prescriptive and all listings and certifications to NSF/ANSI 40 are scalable. No manufacturer is, or clearly should be, required to test every model they plan to produce and market to this (or any) standard. This concept is not applied to other Idaho Department of Environmental Quality-approved NSF/ANSI 40-certified products that include a tank with treatment equipment, nor is it applied to other approved PWTPs, and should therefore not be applied to the ATL System.

"Tested at 70 linear feet of conduit per bedroom; should be required to provide 70 linear feet per bedroom in Idaho"
NSF/ANSI 40 testing is prescriptive. The protocol specifies and requires a daily design flow of 450 gallons, which is based upon a three-bedroom residence with a daily design flow of 150 gallons per bedroom.

The ATL System was in fact tested under the NSF/ANSI 40 protocol with 210 linear feet of ATL conduit, which represents 70 linear feet of conduit per 150-gallon-per-day flow increment. This equates to a conduit loading rate of 2.14 gallons of effluent per day per linear foot of ATL conduit ($150 \text{ gal} \div 70 \text{ lf} = 2.14 \text{ gal/lf}$). Infiltrator's design specifications for minimum length of ATL conduit required in Idaho (and in all jurisdictions for that matter) reflect a conservative application rate of 2.2 gallons per linear foot of conduit based upon the daily design flows detailed in the TGM.

"The applicant has provided no field data"

"Infiltrator should not be able to sidestep the standard"

"Should be provisionally approved as it is technology new to Idaho"

Infiltrator's interpretation of Section 1.4.2.4 of the TGM is that a demonstration of adequate field performance is not required in order to garner approval as PWTP. However, at the request of the TGC, Infiltrator has submitted field performance data on the ATL System for its review and consideration.

Infiltrator respectfully submits that approval of the ATL System as a PWTP is totally appropriate in this instance. Please consider:

- Section 1.4.2.4 (PWTP approval) states that a PWTP "**may** (emphasis added) be required to undergo the same two-level approval process as ETPSs depending on the system design and effluent reduction approvals sought."

System design: the design of these sand-lined systems could not be more simple. Effluent is loaded to the ATL conduit at a loading rate consistent with that which was used for NSF/ANSI 40 certification, and the system sand footprint is sized based on the DEQ's secondary effluent hydraulic loading rates.

Effluent reductions: Effluent reductions in these sand-lined systems are limited to TSS and CBOD₅. No nitrogen or other contaminant reductions are claimed, and no conditions of use related to such claims are being requested.

- All approved PWTs must be installed by a permitted complex installer.

This requirement ensures proper installation of sand-lined systems. (Note: Infiltrator supports the concept that sand-lined systems approved for use as PWTs in Idaho should be designed by professional engineers. Such a condition, obviously, would have to be uniformly applied to all sand-lined systems.)

It is Infiltrator's contention that the common component in all sand-lined systems – the tightly specified sand – is almost entirely responsible for achieving the excellent effluent treatment results that have been verified through standardized testing. The results on TSS and CBOD₅ reductions at the bottom of the system sand under NSF/ANSI 40 certification testing are nearly equivalent from one system to another. Infiltrator is not aware of publicly available test results showing the efficacy of TSS and CBOD₅ treatment by the proprietary media itself. Or, in other words, the effluent quality achieved before passing through the layer of system sand.

In support of this assertion we submit a copy of a report titled “Results of a Pilot Protocol for the Evaluation of Fabric-Wrapped Leaching/Treatment Technology”. Briefly stated, researchers at the Massachusetts Alternative Septic System Test Center (MASSTC) created a draft protocol to assess the performance of a proprietary fabric-wrapped-pipe-in-sand system. Actual testing included not only the proprietary fabric-wrapped pipe system but pipe-in-stone trenches encased in sand as well. The report includes results on a number of parameters, and states “Data indicate that there were no significant differences in percolate collected at the lower vertical boundary of fabric-wrapped pipe and pipe-in-stone systems for the parameters of interest.”

The section titled “Discussion and Conclusions” states in part (page 16):

“...some vendors of these systems contend that there is significant treatment as influent passes from the inner wall of the pipe to the outer layer of the surrounding fabric. This latter treatment component is not documented in peer reviewed literature...”

“There are two plausible hypotheses to explain the statistical similarity between the fabric-wrapped and the pipe-in-stone systems. Either the twelve inches of stone aggregate in the pipe-in-stone systems has treatment equivalent to the fabric-wrapped pipe itself, or the six inches of ASTM C33 sand common to both systems accounts for the majority of the treatment in both cases.”

Infiltrator has compiled the effluent treatment results of the pipe-in-stone system from the report, which we find very compelling:

Parameter	Pipe and Stone (mg/L)
TSS	3.4
BOD	3.6
ph	6.9

We urge TGC members to read the entire report.

Infiltrator further submits that provisional ETPS approval as described in Section 1.4.2.2.1 of the TGM is not appropriate in this case.

- provisional ETPS approval requires "annual operation, maintenance, monitoring, and reporting".

No sand-lined systems, including the ATL System, require operation and maintenance, monitoring, or reporting. All are NSF/ANSI 40 certified and listed, and the results with respect to TSS and CBOD₅ reductions are consistently in the range of 10 mg/L, well below the 30 mg/L threshold in NSF/ANSI 40.

- Provisional ETPS approval requires the manufacturer to "submit a quality assurance project plan to document how sampling and analysis will occur".

Again, no sand-lined systems, including the ATL System, require operation and maintenance, monitoring, or reporting. In addition, Infiltrator again points out that effluent reductions in these sand-lined systems are limited to TSS and CBOD₅. No nitrogen or other contaminant reductions are claimed, and no conditions of use related to such effluent-treatment claims are being requested.

"Dick Bachelder says he doesn't know how long the system will last"

Conceded. In fact, I also stated that I do not know how long any system will last. I respectfully submit that the same applies for a stone-and-pipe or chamber drainfield; concrete, fiberglass, or thermoplastic septic tank; or control panel.

On behalf of Infiltrator I extend our sincere appreciation to you and the members of the TGC for your continuing attention to our request to allow the ATL System to be used as a PWTP in Idaho.

Sincerely,



Dick Bachelder
Senior Regulatory Specialist
Infiltrator Water Technologies

cc: Mr. Dave Lentz, P.E., Infiltrator Water Technologies
Mr. Jay Holman, Infiltrator Water Technologies



INFILTRATOR®
water technologies

Design and Installation Manual for the Infiltrator ATL™ System in Idaho



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The purpose of this manual is to provide the minimum specifications for design and installation of the Infiltrator ATL (Advanced Treatment Leachfield) System in the State of Idaho. All local ordinances, requirements, and procedures must be followed. Each revised version of this manual supersedes the previous version.

The systems presented in this document are common configurations and are provided for illustrative purposes. They are not intended to restrict the use of other configurations.

For more detailed design and installation information, please contact Infiltrator at 1-800-221-4436.

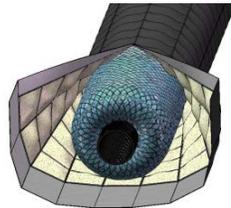


INTRODUCTION

The Infiltrator ATL System

The Infiltrator ATL System (ATL System) is a patent-pending, proprietary system consisting of six components. Upon entering the ATL System, septic tank effluent progresses through each component as follows:

- nominally 12-inch-diameter conduit
 - 4-inch-diameter pipe
 - large-diameter synthetic aggregate
 - coarse geotextile
 - small-diameter synthetic aggregate
 - fine geotextile
- 12-inch depth specified system sand



System Sand

“System sand” is the term used to describe the specified sand material that is placed between, beside and below and the ATL conduits. Acceptable system sand shall be material that conforms with the description of “medium sand” as specified in Section 3.2.8.1.2 of the Technical Guidance Manual.

The following minimum system sand dimensions are required for all ATL System configurations:

- 12 inches below the ATL conduit rows;
- 12 inches between adjacent ATL conduit rows;
- 12 inches beside (outside) any ATL conduit row with no adjacent ATL conduit row; and
- 12 inches extending beyond both ends of the ATL conduit rows.

There is no minimum requirement for system sand on top of the conduit rows

SYSTEM CONFIGURATIONS

The ATL System is certified by NSF International as complying with NSF/ANSI Standard 40 for the production of Class I effluent. As a result of this certification, the ATL System is approved for use in the State of Idaho as a Proprietary Wastewater Treatment Product (PWTP) by the Water Quality Division of the Idaho Department of Environmental Quality (DEQ) in accordance with Section 1.4.2.4 of the Technical Guidance Manual (TGM). The DEQ approval allows for design and installation of the ATL System in the State of Idaho in accordance with the specifications and instructions in this manual. If design, installation, operation, or maintenance specifications are not specifically addressed in this manual, relevant requirements in the [current edition of the](#) TGM shall be applicable.

This Manual is intended to provide system design, installation, and use information to the users in Idaho, including system designers, local health officials, system installers, and system owners. Illustrations presented in this manual are common configurations and are not intended to restrict the use of other configurations.

Daily Design Flows

Daily design flows shall be in accordance with IDAPA 58.01.03.007.08.

System Sizing

The minimum area in square feet of bottom surface required for use of the ATL System is specified in Table 2 on page 10 of this Manual. The areas presented in this table are calculated utilizing the daily design flows in IDAPA 58.01.03 and the loading rates specified in Table 4-19 in section 4.21.5 of the [current edition of the](#) TGM, which are used with systems which produce secondary biological treatment effluent.

Trench Systems

Minimum trench width is 3 feet. Maximum trench width is 6 feet. Minimum center-to-center spacing of the ATL conduit rows in trench configuration is 2.0 feet. Maximum center-to-center spacing of the ATL conduit rows in trench configuration is 3.0 feet.

The total area of the trench configuration cannot exceed 1,500 square feet. (IDADAP 58.01.03.008.04)

Bed Systems

Beds systems are only allowed when trench systems cannot be designed within the constraints of the site. Beds may not be utilized on any site which include slopes greater than 8%. All absorption beds must be approved to be used by the permitting Idaho Public Health District prior to design or installation.

Minimum center-to-center spacing of the ATL conduit rows is 2.0 feet. Maximum center-to-center spacing of ATL conduit rows within the bed is 3 feet.

Sand Extensions

“Sand extension” is the term used to describe the system sand placed on the outside aspect of the outermost ATL conduit row(s), and on each end of the ATL conduit row(s). Sand extensions along the side aspect of the outermost ATL conduit row(s) must be a minimum of 12-inches wide and a maximum of 3 feet wide. Sand extensions on each end of the ATL conduit row(s) shall be ~~a maximum of~~ 12 inches long.

SYSTEM CONFIGURATIONS

Effluent Distribution

The ATL System can accommodate all methods of effluent distribution, including gravity, pump-to-gravity, serial, and pressure distribution.

Pressure Distribution

If pressure distribution is used with the ATL System, all aspect of the pressure distribution system shall be designed and installed in accordance with Section 4.19 of the current edition of the TGM. Lateral piping within the pressure distribution shall be placed within the 4-inch diameter distribution pipe in the ATL conduit row. The direction to which the small diameter orifices within the lateral pipes are directed is not critical.

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Dosed Systems

If effluent is pumped to the ATL System, the maximum volume per cycle shall be 1/4 of the daily design flow.

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Distribution Boxes

A distribution box shall be used to separate flows equally between multiple trenches or separate beds. The distribution box shall meet all requirements of Section 3.2.5.2 of the current edition of the TGM. The inlet port from the septic tank to the distribution box shall be higher than the outlet ports to allow for proper drainage to the ATL conduit rows.

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Fill and Cover Materials

All cover and fill materials must conform to the requirements of the current edition of the TGM.

DEQ requires covering the drainfield with topsoil with a minimum of 12 inches and maximum of 36 inches (IDAPA 58.01.03.008.04 and TGM 3.2.7.2 Soil Cover). A geotextile barrier shall be placed between the uppermost sand layer and ATL conduit row and topsoil prior to backfilling.

Minimum Separation Distances

Horizontal separation distances (setbacks) shall meet the requirements of the TGM, and shall be measured from the outside aspect of the system sand.

Vertical separation distances shall meet the specifications detailed in Table 4-18 of the current edition of the TGM, and Table 1 below. Vertical separation distances shall be measured from the bottom of the 12-inch layer of system sand below the conduit rows. The bottom of the installed system sand shall be a minimum of 12 inches from the seasonal and normal high water table.

<u>Limiting Layer</u>	<u>Flow < 2,500 GPD</u> <u>All Soil Types</u>	<u>Flow > 2,500 GPD</u> <u>All Soil Types</u>
<u>Impermeable layer</u>	<u>2</u>	<u>4</u>
<u>Fractured rock or very porous layer</u>	<u>1</u>	<u>2</u>
<u>Normal high ground water</u>	<u>1</u>	<u>2</u>
<u>Seasonal high ground water</u>	<u>1</u>	<u>2</u>

Table 1: ATL System vertical separation to limiting layers (feet)

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Minimum Conduit Lengths

SYSTEM CONFIGURATIONS

The minimum design length of ATL conduit in residential applications is 100 linear feet, based upon the minimum sizing requirement of 200 GPD for residential and commercial systems. Each additional bedroom requires an additional 50 linear feet of ATL conduit. For commercial applications, ATL conduit length shall be calculated at 2 GPD/lf. All wastewater discharging to a subsurface system must be pre-treated to domestic strength effluent prior to discharge to the field.

Number of Bedrooms	Minimum ATL conduit Length (ft)
2	100
3	150
4	200
5	250
Each Additional	50

Table 42: Minimum ATL conduit lengths

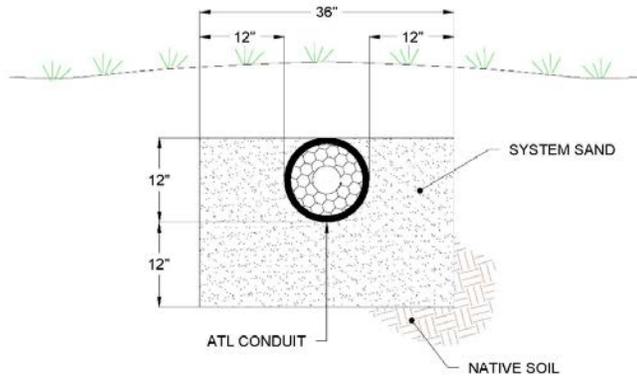
Individual ATL conduits shall not be cut or modified.

Minimum System Size

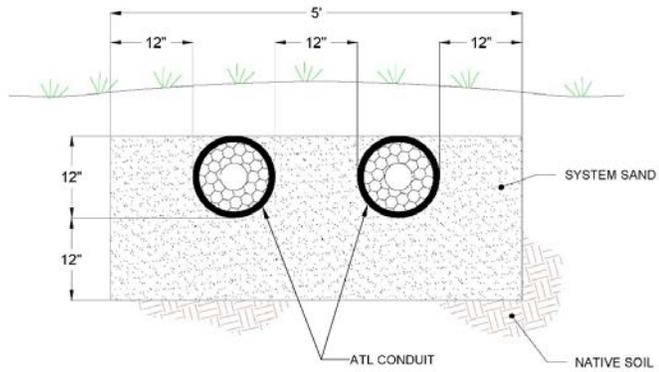
Each ATL System in a residential application shall be comprised of trench or bed bottom area and linear feet of ATL conduit to meet the design requirements for a 3-bedroom home in the system design soil group.

SYSTEM CONFIGURATIONS

3-Foot Wide Trench

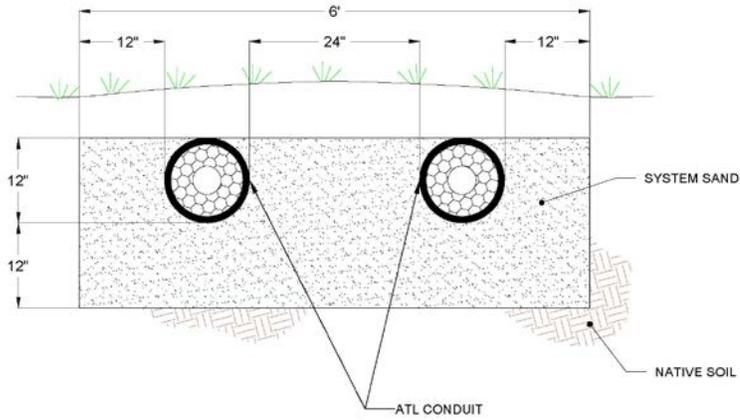


5-Foot-Wide Trench

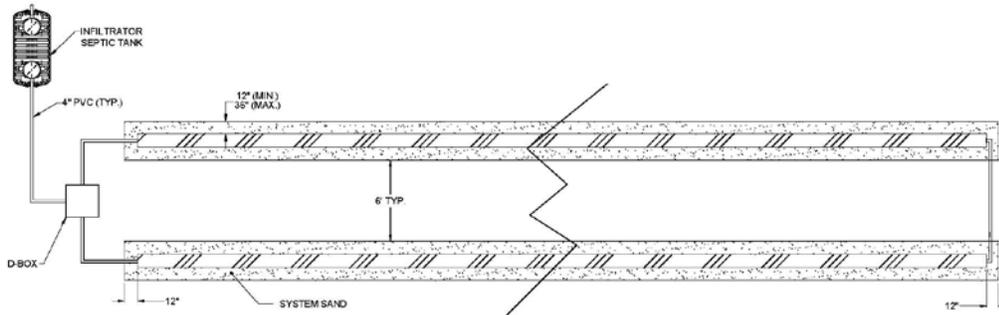


SYSTEM CONFIGURATIONS

6-Foot-Wide Trench

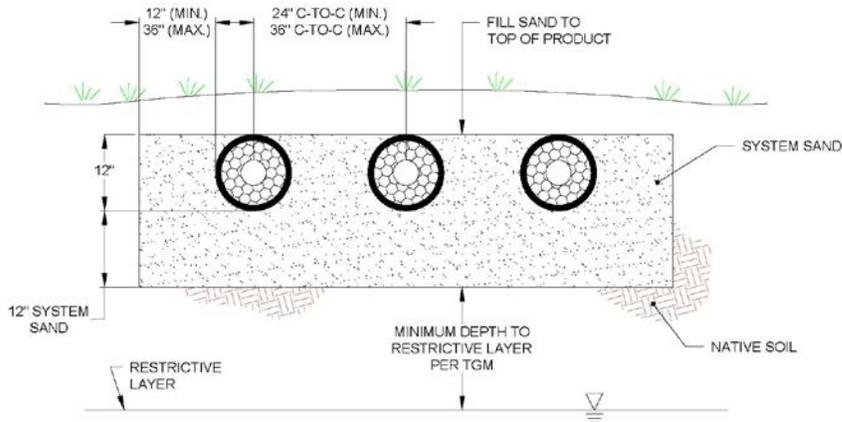


Trench Configuration – Plan View



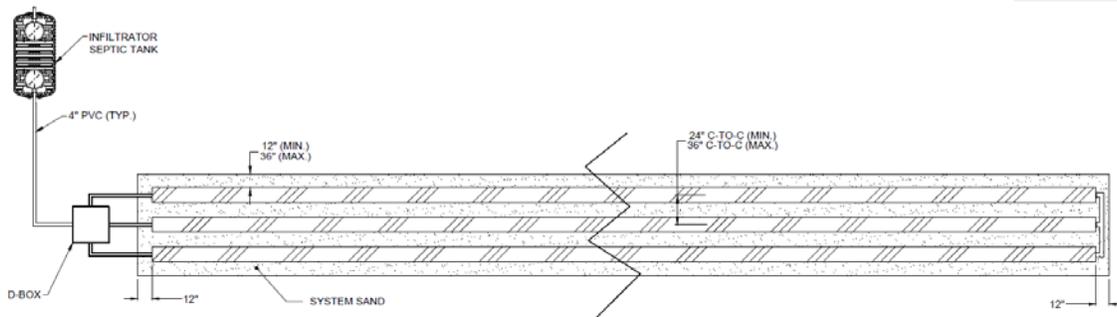
SYSTEM CONFIGURATIONS

Bed Configuration



Comment [BD1]: To DEQ/GC: Call out for vertical separation distance revised as requested.

Bed Configuration – Plan View



NOTES:

1. Drawings are not to scale.
2. Number and length of conduits per design.
3. Venting is not required but is optional at the discretion of the designer.
4. Pumping is not required unless gravity flow cannot be achieved.
5. Observation ports are optional, per design.
6. The ATL System is intended for use in non-traffic applications.

DESIGN EXAMPLE

TRENCH SYSTEM

Designing the ATL System in Idaho in trench configuration is a five-step process.

1. Determine the minimum total ATL conduit length required
2. Determine the minimum area in square feet of bottom surface required
3. Select a trench width
 - a. minimum 3 feet; maximum 6 feet
4. Calculate the total trench length required
5. Modify design trench length and/or width as necessary

Step 1: Determine the minimum total ATL conduit length required

Use Table 12 to determine the minimum length of ATL conduit per bedroom required:

Number of Bedrooms	Minimum Total ATL Conduit Length (ft)
2	100
3	150
4	200
5	250
Each Additional	50

Table 12: Minimum total ATL conduit length

Step 2: Determine the minimum area in square feet of bottom surface required (ft²)

Based upon the soil type determined in the site investigation, reference Table 23 below to determine the minimum area in square feet of bottom surface required.

Bedrooms	Minimum Area of Bottom Surface Required (sq ft)						
	Application Rate (GPD/sq ft) / Soil Design Subgroup						
	1.7 / A-1	1.2 / A-2a	1.0 / A-2b	0.8 / B-1	0.6 / B-2	0.4 / C-1	0.3 / C-2
3	148	209	250	313	417	625	834
4	177	250	300	375	500	750	1000
5	206	292	350	438	584	875	1167
Each Additional	30	42	50	63	84	125	167

Table 23: Minimum area of bottom surface required (ft²)

Step 3: Select a trench width

Individual trenches shall be a minimum of 3-feet wide and a maximum of 6-feet wide. The system should be designed as long and narrow as site conditions allow.

Divide the minimum area in square feet of bottom surface required by the minimum length of ATL conduit per bedroom required to get guidance on an appropriate trench width for the ATL System.

Step 4: Calculate the total trench length required

Divide the minimum area in square feet of bottom surface required as determined in Step 2 by the trench width selected in Step 3 to calculate the total trench length required.

DESIGN EXAMPLE

Step 5: Modify design trench length and width as necessary

The design trench width or length may be modified in order to maximize the relationship between the total ATL conduit length required and the minimum area in square feet of bottom surface required, while meeting the following trench design requirements:

NOTES:

1. *Minimum trench length is 30 ft; maximum trench length is 100 ft.*
 - a. *If the total trench length required is less than 30 ft, either:*
 - i. *increase the length of the trench to 30 ft; or*
 - ii. *decrease the selected width of the trench (Step 3) to increase the length to beyond 30 ft.*
 - b. *If the total trench length required is greater than 100 ft; either:*
 - i. *divide the trench into multiple trenches; or*
 - ii. *increase the selected width of the trench (Step 3) to decrease the length to less than 100 ft.*
2. *ATL conduits come in 10-foot lengths; all trench-length calculations shall be rounded up to the nearest 10-foot increment.*
3. *ATL conduit rows must extend to ~~within~~ 12 inches of each end of the trench.*
 - a. *Final trench lengths will include the 12-inch- to 36-inch-wide sand extensions on each end of the trench.*
4. *The system should be designed as long and narrow as site conditions allow.*

DESIGN EXAMPLE

The following sample system design calculations are intended to illustrate the methodology for designing the ATL System. The sample system design calculations are provided in the step-by-step format described above.

Example I.

System sample specifications:

- 4-bedroom home
- Soil: B-2; 0.6 gal/ft²/day hydraulic application rate

Step 1: Determine the minimum total ATL conduit length required

Referencing Table 12, the minimum total length of ATL conduit required is 200 ft.

Number of Bedrooms	Minimum Total ATL Conduit Length (ft)
2	100
3	150
4	200
5	250
Each Additional	50

Table 12: Minimum total ATL conduit length

Step 2: Determine the minimum area in square feet of bottom surface required (ft²)

Referencing Table 23, the minimum area in square feet of bottom surface required is 500 sf.

Bedrooms	Minimum Area of Bottom Surface Required (sq ft)						
	Application Rate (GPD/sq ft) / Soil Design Subgroup						
	1.7 / A-1	1.2 / A-2a	1.0 / A-2b	0.8 / B-1	0.6 / B-2	0.4 / C-1	0.3 / C-2
3	148	209	250	313	417	625	834
4	177	250	300	375	500	750	1000
5	206	292	350	438	584	875	1167
Each Additional	30	42	50	63	84	125	167

Table 23: Minimum area of bottom surface required (ft²)

Step 3: Select a trench width

500 sf (minimum area in square feet of bottom surface required – Step 2) divided by 200 ft (minimum length of ATL conduit per bedroom required – Step 1) = 2.5 ft.

Select 3 ft.

Step 4: Calculate the total trench length required

500 sf (minimum area in square feet of bottom surface required - Step 2) divided by 3 ft (trench width selected - Step 3) = 166.7 ft (total trench length required).

Step 5: Modify design trench length and width as necessary

Utilizing a 3-ft-wide trench, 166.7 linear feet (lf) of trench will require use of 170 lf of ATL conduit.

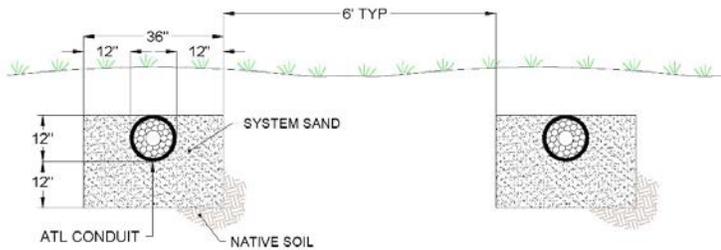
DESIGN EXAMPLE

Design: Two 3-foot-wide trenches, each 87 feet in length (85 feet of ATL conduit and 2 feet of sand extension, 1 foot on each end).

Check that (1) minimum total length of ATL conduit and (2) minimum area in square feet of bottom surface requirements are met:

2 rows of ATL conduit X 85 feet = 170 lf of ATL conduit.
 166.7 lf required. Minimum total length of ATL conduit requirement is met.

87 lf of trench X 3-ft-wide trench = 261 sf X 2 trenches = 522 sf.
 500 sf required. Minimum area in square feet of bottom surface requirement is met.



Example II.

System sample specifications:

- 3-bedroom home
- Soil: C-1; 0.4 gal/ft²/day hydraulic application rate

Step 1: Determine the minimum total ATL conduit length required

Referencing Table 12, the minimum total length of ATL conduit required is 150 ft.

Number of Bedrooms	Minimum Total ATL Conduit Length (ft)
2	100
3	150
4	200
5	250
Each Additional	50

Table 12: Minimum total ATL conduit length

DESIGN EXAMPLE

Step 2: Determine the minimum area in square feet of bottom surface required (ft²)

Referencing Table 23, the minimum area in square feet of bottom surface required is 625 sf.

Bedrooms	Minimum Area of Bottom Surface Required (sq ft)						
	Application Rate (GPD/sq ft) / Soil Design Subgroup						
	1.7 / A-1	1.2 / A-2a	1.0 / A-2b	0.8 / B-1	0.6 / B-2	0.4 / C-1	0.3 / C-2
3	148	209	250	313	417	625	834
4	177	250	300	375	500	750	1000
5	206	292	350	438	584	875	1167
Each Additional	30	42	50	63	84	125	167

Table 23: Minimum area of bottom surface required (ft²)

Step 3: Select a trench width

625 sf (minimum area in square feet of bottom surface required – Step 2) divided by 150 ft (minimum length of ATL conduit per bedroom required – Step 1) = 4.17 ft.

Select 5 ft.

Step 4: Calculate the total trench length required

625 sf (minimum area in square feet of bottom surface required - Step 2) divided by 5 ft (trench width selected - Step 3) = 125 ft (total trench length required).

Step 5: Modify design trench length and width as necessary

Utilizing a 5-ft-wide trench with 2 rows of ATL conduit, 125 linear feet (lf) of trench will require use of 250 lf of ATL conduit. However, only 150 lf is required. Therefore a 5-ft-wide trench width may not be the best option.

Option II: Modify the selected trench width from 5ft to 6 ft.

625 sf (minimum area in square feet of bottom surface required - Step 2) divided by 6 ft (modified trench width) = 104.2 ft (total trench length required). 104.2 ft of trench with 2 rows of ATL conduit will require use of 208 lf of ATL conduit. This is a better option than the 5-ft-wide trench.

Option III: Consider a 3ft-wide trench.

625 sf (minimum area in square feet of bottom surface required - Step 2) divided by 3 ft (modified trench width) = 208 ft (total trench length required). This will require use of 208 lf of ATL conduit. Again, a better option than the 5-ft-wide trench.

Footprint analysis:

Option II: 104 lf of 6-ft-wide trench

Divide into 2 trenches, each 57 ft long (55 ft of ATL conduit + 1 ft of system sand on each end).

Separation by rule is 6 ft between trenches.

Final footprint is 18 ft X 57 ft – requiring use of 220 lf of ATL conduit

DESIGN EXAMPLE

Option III: 208 lf of 3-ft-wide trench

Divide into 3 trenches, each 72 ft long (70 ft of ATL conduit + 1 ft of system sand on each end).

Separation by rule is 6 ft between trenches.

Final footprint is 21 ft X 72 ft – requiring use of 210 lf of ATL conduit

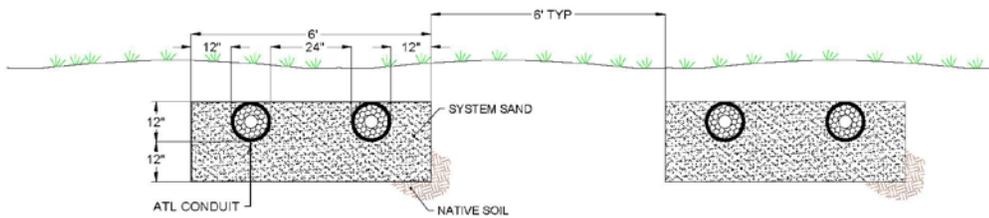
Option II – 6-ft-wide trench – is preferred.

Check that (1) minimum total length of ATL conduit and (2) minimum area in square feet of bottom surface requirements are met:

2 rows of ATL conduit in each trench X 55 ft/trench = 110 lf X 2 trenches = 210 lf of ATL conduit.
150 lf required. Minimum total length of ATL conduit requirement is met.

57 lf of trench X 6-ft-wide trench X 2 trenches = 684 sf.

625 sf required. Minimum area in square feet of bottom surface requirement is met.



DESIGN EXAMPLE

BED SYSTEM

Designing the ATL System in Idaho in trench configuration is a five-step process.

1. Determine the minimum total ATL conduit length required
2. Determine the minimum area in square feet of bottom surface required
3. Select an ATL conduit row length
 - a. ATL conduit rows within the bed must be of equal length.
4. Calculate the required bed width
5. Modify design bed dimensions as necessary

Step 1: Determine the minimum total ATL conduit length required

Use Table 12 to determine the minimum length of ATL conduit per bedroom required:

Number of Bedrooms	Minimum Total ATL Conduit Length (ft)
2	100
3	150
4	200
5	250
Each Additional	50

Table 12: Minimum total ATL conduit length

Step 2: Determine the minimum area in square feet of bottom surface required (ft²)

Based upon the soil type determined in the site investigation, reference Table 23 below to determine the minimum area in square feet of bottom surface required.

Bedrooms	Minimum Area of Bottom Surface Required (sq ft)						
	Application Rate (GPD/sq ft) / Soil Design Subgroup						
	1.7 / A-1	1.2 / A-2a	1.0 / A-2b	0.8 / B-1	0.6 / B-2	0.4 / C-1	0.3 / C-2
3	148	209	250	313	417	625	834
4	177	250	300	375	500	750	1000
5	206	292	350	438	584	875	1167
Each Additional	30	42	50	63	84	125	167

Table 23: Minimum area of bottom surface required (ft²)

Step 3: Select an ATL conduit row length

Select an appropriate length of the ATL conduit rows based upon the minimum length of ATL conduit required and site considerations. Long and narrow systems are recommended.

Divide the minimum area in square feet of bottom surface required by the ATL conduit row length selected to determine the number of ATL conduit rows. Each ATL conduit row within the bed must be of equal length.

Step 4: Calculate the required bed width

Divide the minimum area in square feet of bottom surface required as determined in Step 2 by the ATL conduit row length selected in Step 3 to calculate the approximate required bed width.

DESIGN EXAMPLE

Step 5: Modify design bed dimensions as necessary

The ATL conduit rows must be appropriately placed on the bottom area. In some instances the design bed width and/or length may have to be modified.

In all ATL System bed designs, the following requirements must be met:

NOTES:

1. Minimum ATL conduit row length is 30 ft; maximum ATL conduit row length is 100 ft.
 - a. If the total ATL design bed length is greater than 100 ft, either:
 - i. the number of ATL conduit rows must be increased in order to reduce the length of each individual row to less than 100 feet; or
 - ii. the bed must be divided the into multiple beds.
2. Individual ATL conduit rows must be separated by a minimum of 12-inches of system sand, with a maximum center-to-center spacing of 3 feet.
3. ATL conduits come in 10-foot lengths; all ATL row lengths in a given bed shall be in 10-foot increments.
4. ATL conduit rows must extend to ~~within a maximum of 36~~12 inches of each end of the trench.
 - a. Final bed length will include the 12-inch- to 36-inch-wide sand extensions on each end of the ATL conduit rows.
5. The outermost ATL conduit rows must be no greater than 36 inches from the edge of the bed.
6. The system should be designed as long and narrow as site conditions allow.

The following sample system design calculations are intended to illustrate the methodology for designing the ATL System in a bed configuration. The sample system design calculations are provided in the step-by-step format described above.

Example I.

System sample specifications:

- 4-bedroom home
- Soil: B-2; 0.6 gal/ft²/day hydraulic application rate

Step 1: Determine the minimum total ATL conduit length required

Referencing Table 42, the minimum total length of ATL conduit required is 200 ft.

Number of Bedrooms	Minimum Total ATL Conduit Length (ft)
2	100
3	150
4	200
5	250
Each Additional	50

Table 42: Minimum total ATL conduit length

DESIGN EXAMPLE

Step 2: Determine the minimum area in square feet of bottom surface required (ft²)

Referencing Table 23, the minimum area in square feet of bottom surface required is 500 sf.

Bedrooms	Minimum Area of Bottom Surface Required (sq ft)						
	Application Rate (GPD/sq ft) / Soil Design Subgroup						
	1.7 / A-1	1.2 / A-2a	1.0 / A-2b	0.8 / B-1	0.6 / B-2	0.4 / C-1	0.3 / C-2
3	148	209	250	313	417	625	834
4	177	250	300	375	500	750	1000
5	206	292	350	438	584	875	1167
Each Additional	30	42	50	63	84	125	167

Table 23: Minimum area of bottom surface required (ft²)

Step 3: Select an ATL conduit row length

200 ft (minimum length of ATL conduit per bedroom required – Step 1) ÷ 4 = 50ft.

Initial design shall include 4 rows of ATL conduit at 50 linear feet each. Add minimum sand extension on each end of 12 inches to create 52-foot-long bed length.

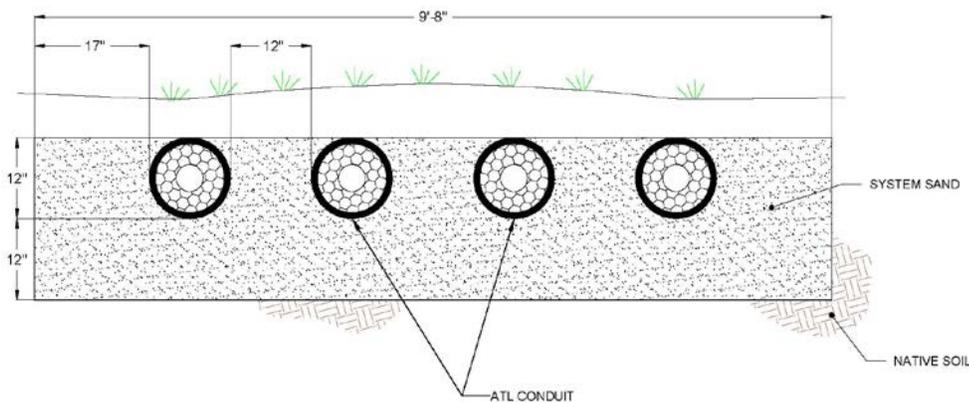
Step 4: Calculate the Calculate the required bed width

500 sf (minimum area in square feet of bottom surface required - Step 2) ÷ 52 ft (length of ATL conduit rows selected - Step 3) = 9.61 ft (width of bed required).

Step 5: Modify design trench length and width as necessary

Rounding off the bed width of 9.61 ft (as determined in Step 4) to 9.7 ft, initial calculations result in a bed length of 52 ft and a bed width of 9.7 feet. This results in 504.4 ft² of bottom surface, which meets the minimum are in square feet of bottom surface requirement of 500 ft² (Step 2).

The 4 ATL conduit rows may be placed on the 9.7-ft-wide bottom area, with 12 inches of system sand between each of the 4 rows, resulting in 17 in-wide system sand extensions (9.7 ft – 7 ft = 2.7 ft ÷ 2 extensions = 1.35 ft, or 16.2 in – rounded up to 17 in) on each side.



INFORMATION FOR SYSTEM OWNERS

Basic rules of onsite sewage treatment system use and care apply to the ATL System. System owners shall operate the system in accordance with the procedures and specifications described in the TGM, all local regulations, and the following:

System Use and Abuse

Your ATL System is intended for use with residential-strength wastewater within the design daily flow volume. To ensure long-term function of your system:

- Keep daily wastewater flow within design parameters.
- Do not connect the rainwater management system to the ATL System.
- Direct water from the rainwater management system away from the ATL System.
- Solvents, paint, pharmaceuticals, aggressive cleaning products, and non-biodegradable items should not enter the ATL System.
- Solids, such as but not limited to, cigarette butts, diapers, feminine hygiene products, cat litter, and paper towels should not be introduced into the ATL system.
- Introduce only normal residential wastewater into the system
- Maintain leak-free household plumbing fixtures, such as faucets and toilets.
- Do not utilize a garbage grinder.
- The ATL System is intended for use in non-traffic applications.

Operation and Maintenance

Your ATL System has no specific operating instructions. Proper use of the system as noted above is the primary operating concern.

Maintenance of the ATL System includes the following:

- If the septic tank has an effluent filter, it should be cleaned by a qualified professional on an annual basis.
- The septic tank should be pumped on a regular basis and, if concrete, checked for leaks and cracks. The interval for septic tank pumping varies depending upon use. Check with a qualified professional or your local health department for the appropriate pumping interval.
- If present, the alarm system should be tested annually by a qualified professional to ensure that it is functional.

If at any time you have concerns about the use, operation, or maintenance of your ATL System, contact the Infiltrator's Technical Services Department at 1-800-221-4436.

System Start-up

There are no specific requirements for placing the ATL System into service. If the system has an alarm, a qualified professional should, after system use has been initiated, test the alarm to ensure it is functional.

Intermittent Use

The ATL System is designed for intermittent use, and requires no special attention if it is to be placed out of use for extended periods of time.

INFORMATION FOR SYSTEM OWNERS

Trouble Shooting

In the event that any of the following indicators arise, contact a qualified professional.

- Wastewater back-up into the dwelling
- Persistent septic odor
- Unusually wet area atop and/or around the system
- “Breakout” of effluent along the side of a slope or other landscape feature

Repair

A qualified professional shall be contacted when there are indications of malfunction with the ATL System. When visiting the site, the qualified professional should, at a minimum, do the following:

- Assess the present condition of the ATL System and the surrounding area
- Research the history of use, including:
 - water volume use
 - contaminants
- Evaluate the site for groundwater intrusion
- Inspect the septic tank
- Inspect the conduit rows
- Check faucet and toilet function

Upon completion of the site visit, the qualified onsite wastewater system professional should contact the Infiltrator’s Technical Services Department with the inspection report.

INSTALLATION INSTRUCTIONS

These installation instructions are for the ATL System in Idaho. ATL Systems may only be installed according to this manual, IDAPA 58.01.03, and any other local regulations.

If unsure of the installation requirements for a site, contact the qualified professional responsible for the design. If unsure of the use of the ATL System, contact Infiltrator. A permit which includes the soil evaluation and the design of the onsite system must be filed with and accepted by the local health department before installation.

Before You Begin

Materials and Equipment Needed

- | | |
|---|---|
| <input type="checkbox"/> conduits | <input type="checkbox"/> Observation port and cap per design |
| <input type="checkbox"/> System sand | <input type="checkbox"/> Endcaps |
| <input type="checkbox"/> PVC pipe and couplings | <input type="checkbox"/> 4-in internal corrugated pipe couplers |
| <input type="checkbox"/> Backhoe | <input type="checkbox"/> Tape measure |
| <input type="checkbox"/> Laser or transit | |
| <input type="checkbox"/> Shovel and rake | |

Common practices shall apply to the installation of the ATL System. These include, but are not limited to:

- avoid soil compaction on the infiltrative surface area, including all areas downslope of a sloped system; and
 - install the conduits and system sand on the same day that the system footprint is excavated/exposed.
- The use of tracked vehicles for material installation is preferred.

Excavating and Preparing the Site

NOTE: The ATL System may not be installed during periods when the soil is sufficiently wet to exceed its plastic limit, as this causes machinery to smear the soil.

1. Stake out the locations of tank(s), pipes, conduit rows, and corners of the system to be scarified/excavated, per design. Set the elevations as shown on the approved plan.
[NOTE: The proper elevation of solid PVC header line going to each conduit row should be determined to ensure compliance with the required system bottom depth as shown on

the approved permit. This height may vary dependent on system height and configuration used.]

2. Install sedimentation and erosion control measures.
[NOTE: The installation of temporary drainage swales/berms (surface diversions) may be necessary to protect the site during rainfall events.]
3. Excavate the trench or bed area per design.
4. Rake the trench or bed bottom and sides if smearing has occurred during excavation. Remove large stones and cut off protruding roots, fill voids with compacted system sand.
[NOTE: Smearing does not occur in sandy soils, so raking is not necessary. In fine textured soils (silts and clays), avoid walking on the excavation bottom to prevent compaction and loss of soil structure.]
5. Verify that the trench or bed area is at the proper slope from side-to-side and from end-to-end using a transit or laser.

Installing the System

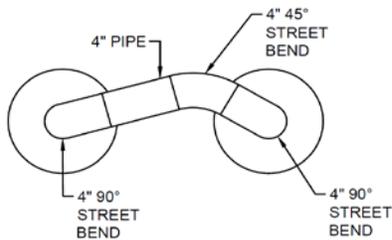
1. Install the system sand over the entire ATL System trench or bed area as per design. System sand should be leveled and stabilized prior to introduction of the conduits. The installer should retain records verifying that system sand meets the specifications for medium sand in Section 3.2.8.1.2 of the TGM.
2. Remove plastic stretch wrap from conduits.
3. Place conduits on the surface of the system sand with the white stripe/seam in the 12 o'clock position, arranged in the configuration shown on the system design. Using the provided 4-in-diameter internal pipe couplings, connect the conduits end-to-end to create rows of the required length.
4. Conduits shall be installed level. A laser level or transit is recommended to ensure proper alignment.
5. Conduit rows shall be:
 - installed on a level plane with one another;

INSTALLATION INSTRUCTIONS

- be installed parallel to any contours;
- be separated by a minimum of 12 in of system sand; and
- be installed with the white stripe/seam oriented in the 12 o'clock position.

NOTE: Individual ATL conduits shall not be cut or modified.

6. In serial distribution applications, use of a raised connection is recommended. One example of a raised connection is shown below:



7. Install a cap on the end of each conduit row that is not connected with piping.
8. Once the conduit is placed on the surface of the system sand and distribution piping is connected to the conduits per design, additional system sand shall be ladled beside and between, and to the top, of each of the conduit rows. System sand shall also be installed on each side and at each end of the backfilled conduit rows, per the design. This additional system sand shall be stabilized. Where possible, all machine work should be done from the uphill side of the infiltration area to reduce possible compaction of the receiving soil area.

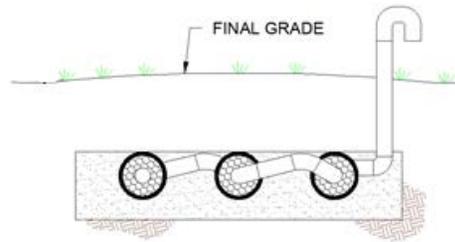
Installing Vents

NOTE: If design of the ATL System includes venting, the following instructions are provided.

For gravity systems:

1. A low vent is installed through an offset adapter at the end of each section, bed, or

- attached to a vent manifold, with a minimum 3-ft pipe extending above final grade.
2. The internal house plumbing and roof vent act as the high vent for the system.



For pressurized and pump-to-gravity systems:

1. A low vent is installed through an offset adapter at the end of each section, bed, or attached to a vent manifold, with a minimum 3-ft pipe extending above final grade.
2. A high vent must maintain a minimum 10-ft vertical separation from the low vent, and may be installed in one of the following locations:
 - directly at the d-box; or
 - located remotely (along a nearby tree line, or other less conspicuous spot).

NOTE: In pump-to-gravity applications, the internal house plumbing and roof vent may act as the system's high vent. To accomplish this, a minimum 3-inch diameter pipe must be installed between the d-box and septic tank to bypass the small diameter pressure distribution main.

Installing Observation/Monitoring Ports

If observation or monitoring ports are specified in the system design:

1. Cut a 6-inch PVC pipe to the desired length, ensuring the pipe will extend a minimum of 6 inches above final grade.
2. Drill a minimum of ten 1/4" to 1/2" holes within 1/2 to 6 inches of the bottom of the pipe, and wrap the bottom end of the pipe in filter fabric.
3. Install the monitoring pipe at the appropriate location, based on site conditions, and

INSTALLATION INSTRUCTIONS

ensure the bottom of the pipe is at the bottom of the system sand footprint (at the system sand/native soil interface).

4. Install a removable, water-tight, secure cover cap.

Covering the System

NOTE: Before backfilling, the system shall be inspected as required in the TGM and in compliance with all local ordinances and procedures.

1. Material placed around the system sand and atop the conduits may be additional system sand or material which meets the requirements of the TGM.
2. Backfill the trench(es) or bed by pushing material over the ATL System. Cover

material shall be a minimum of 12 inches and a maximum of 36 inches deep. It is best to mound several extra inches of soil over the finish grade to allow for settling. This also ensures that runoff is diverted away from the system.

[NOTE: Do not drive over the system while backfilling in sand.]

3. After the system is covered, the site should be seeded or sodded. Ensure that sand-based sod, and not clay-based sod, is used to mitigate the potential for erosion.

NOTE: If the system is for new home construction, it is important to leave marking stakes along the boundary of the system. This will notify contractors of the system location so they will not cross it with equipment or vehicles.

WARRANTY

INFILTRATOR WATER TECHNOLOGIES, LLC ("Infiltrator") **ATL SYSTEM STANDARD LIMITED WARRANTY**

- (a) The structural integrity of the Infiltrator ATL System conduits manufactured by Infiltrator (collectively referred to as "Units"), when installed and operated in a leachfield of an onsite septic system in accordance with Infiltrator's installation instructions, is warranted to the original purchaser ("Holder") against defective materials and workmanship for one year from the date upon which Letter of Certification is issued for the septic system containing the Units provided, however, that if a septic permit is not required for the septic system by applicable law, the one (1) year warranty period will begin upon the date that installation of the septic system commences. In order to exercise its warranty rights, Holder must notify Infiltrator in writing at its corporate headquarters in Old Saybrook, Connecticut within fifteen (15) days of the alleged defect. Infiltrator will supply replacement Units for those Units determined by Infiltrator to be defective and covered by this Limited Warranty. Infiltrator's liability specifically excludes the cost of removal and/or installation of the Units.
- (b) **THE LIMITED WARRANTY AND REMEDIES IN SUBPARAGRAPH (a) ARE EXCLUSIVE. THERE ARE NO OTHER WARRANTIES WITH RESPECT TO THE UNITS, INCLUDING NO IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**
- (c) This Limited Warranty shall be void if any part of the ATL System components is manufactured by anyone other than Infiltrator. The Limited Warranty does not extend to incidental, consequential, special or indirect damages. Infiltrator shall not be liable for penalties or liquidated damages, including loss of production and profits, labor and materials, overhead costs, or other losses or expenses incurred by the Holder or any third party. Specifically excluded from Limited Warranty coverage are damage to the Units due to ordinary wear and tear, alteration, accident, misuse, abuse or neglect of the Units; the Units being subjected to vehicle traffic or other conditions which are not permitted by the installation instructions; failure to maintain the minimum ground covers set forth in the installation instructions; the placement of improper materials into the system containing the Units; failure of the Units or the septic system due to improper siting or improper sizing, excessive water usage, improper grease disposal, or improper operation; or any other event not caused by Infiltrator. This Limited Warranty shall be void if the Holder fails to comply with all of the terms set forth in this Limited Warranty.

Further, in no event shall Infiltrator be responsible for any loss or damage to the Holder, the Units, or any third party resulting from installation or shipment, or from any product liability claims of Holder or any third party. For this Limited Warranty to apply, the Units must be installed in accordance with all site conditions required by state and local codes; all other applicable laws; and Infiltrator's installation instructions.

- (d) No representative of Infiltrator has the authority to change this Limited Warranty in any manner whatsoever, or to extend this Limited Warranty. No warranty applies to any party other than the original Holder.

* * * * *

The above represents the standard Limited Warranty offered by Infiltrator. A limited number of states and counties have different warranty requirements. Any purchaser of Units should contact Infiltrator's corporate headquarters in Old Saybrook, Connecticut, prior to such purchase, to obtain a copy of the applicable warranty, and should carefully read that warranty prior to the purchase of Units.



P.O. Box 768 • Old Saybrook, CT 06475
800-221-4436

Appendix D

OSCAR LOWeFLOW Treatment System Design Manual for Idaho and
Sampling Plan (revised January 2018)

LOWeFLOW™ Treatment System

Design Manual

Idaho

January 2018

Manufactured by:

Lowridge Onsite Technologies

PO Box 1179

Lake Stevens, WA 98258

877 476-8823

info@lowridgetech.com



Introduction:

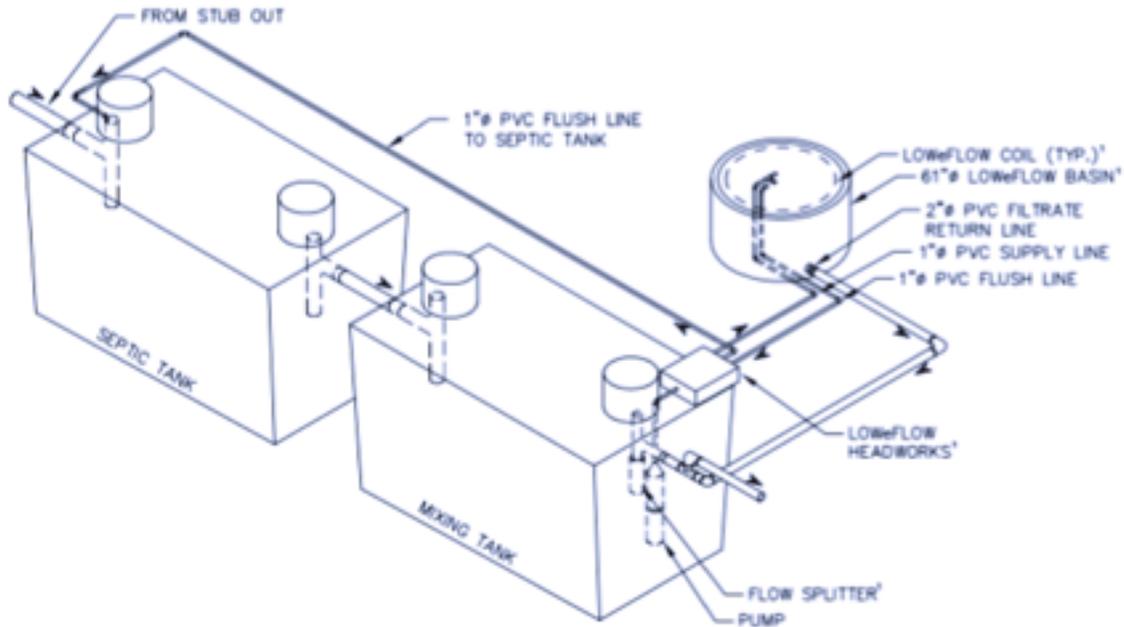


Figure 1. Septic tank, recirc tank, and *LOWeFLOW* filter. Discharge tank not shown.

LOWeFLOW[™] Treatment Unit

The *LOWeFLOW*[™] treatment unit is comprised of the *LOWeFLOW*[™] recirculation filter, a septic tank, recirculation tank, discharge/clarification tank, headworks, and control equipment.

Wastewater is collected in a standard septic tank where gross solids are settled out and primary treatment occurs. Septic tank effluent flows from the septic tank into the recirculation tank. Liquid in the recirculation tank is mixed with treated filtrate from the *LOWeFLOW*[™] filter. The mixed liquid is dosed to a drip tubing network called a *Coil* in the top of the *LOWeFLOW*[™] filter. Treated filtrate trickles down through the media and is collected in the underdrain. From there it flows from the *LOWeFLOW*[™] filter back to the recirculation tank through the split flow tee. The position of the splitter valve determines the flow path of the filtrate. When the liquid level in the recirculation tank is high enough to seat the splitter valve, all of the filtrate passes to the discharge/clarification tank, otherwise, all or a portion of the returning filtrate returns to the recirculation tank.

Expected treatment level from the *LOWeFLOW* unit is 5 mg/l biological oxidation demand (BOD₅), and 9 mg/l total suspended solids (TSS).

Effluent from the discharge tank is timed dosed for final dispersal: pressure distribution, sub-surface drip, OSCAR dispersal, mound,....

Design Criteria

There are four segments to the *LOWeFLOW*[™] Treatment unit design: filter sizing, number of *Coils*, tanks, and pump/control equipment. The standard residential *LOWeFLOW*[™] unit (*LF-500*) is a 500 gpd kit with some field assembly required (for parts list see appendix C). For system design flows greater than 500 gpd see appendix “B”.

Filter sizing:

A standard residential 500 gpd unit is sized based on 25 gpd/sq. ft. or 20 sq. ft. The media for the *LOWeFLOW*[™] filter shall be *Growstone, LFGS-30*. The depth of the media required between the tubing and underdrain is 30”. There is an additional 3” of media covering the drip tube and 3” deep layer of media for the underdrain. The over-all height of the *LOWeFLOW*[™] filter is 36”. Child proofing mesh, included in the standard packages, must be placed over the coils prior to final cover of media.

Drip Tubing Network Layout:

The tubing used in the *LOWeFLOW*[™] treatment unit is custom Netafim Bioline[™], 0.42 gph emitters, manufactured to *Lowridge’s* specifications. Each residential *LOWeFLOW*[™] unit is equipped with four (4) 100 foot laterals configured in a pre-assembled *Coil* containing 800 emitters, 40 emitters per sq. ft. For design flows of greater than 500 gpd see appendix B for details.

The *LOWeFLOW*[™] unit is intended to be operated at a 4:1 recirculation ratio or greater. See appendix D for details on timer settings.

Tanks:

All tanks must be approved by Idaho Department of Environmental Quality as wastewater containment vessels. Minimum liquid volumes for a 500 gpd design flow are:

- Settling (septic) tank 1000 gallons
- Recirculation tank 500 gallons (plus emergency storage)
- Clarification volume 250 gallon

The standard tank arrangement is a 1,000 gallon septic tank, 1,000 gallon recirculation tank, and a 1,000 gallon clarifier/discharge tank.

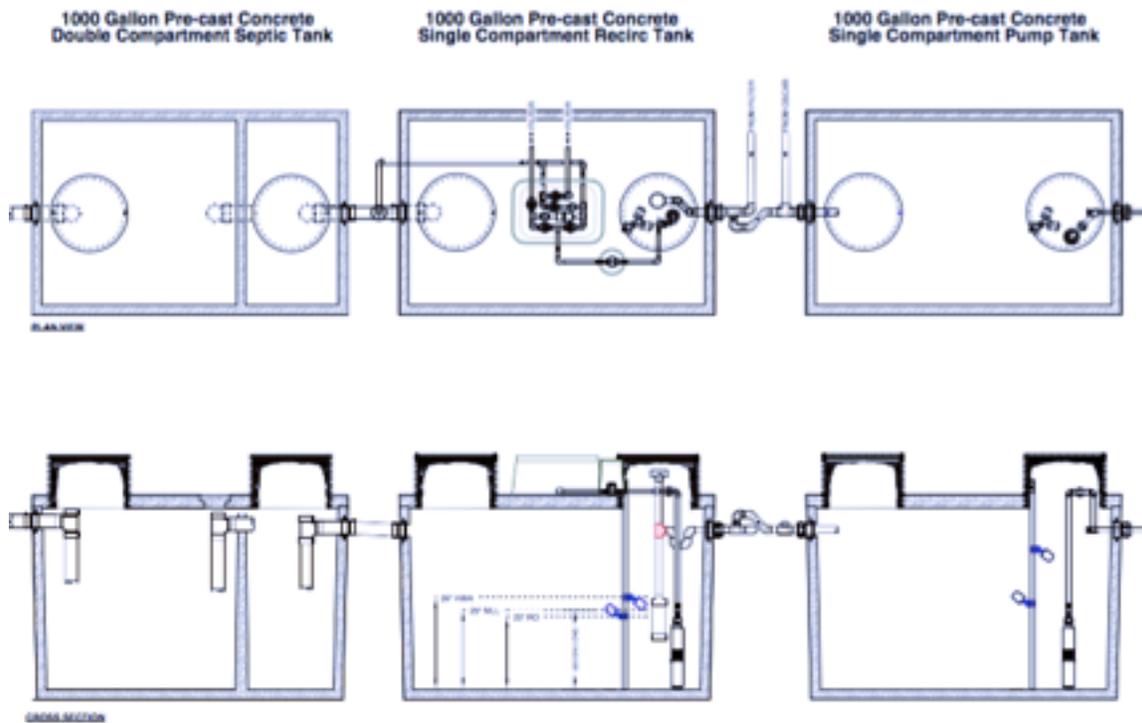


Figure 2. three 1,000 gallon tanks, reverse flush headworks for *LOWeFLOW*, splitter valve, splitter tee, floats, and pump locations.

Clarifier: The *LOWeFLOW*[™] system must incorporate at least 250 gallons of clarifying capacity for a 500 gpd design flow. Clarification capacity is the minimum liquid in the discharge tank to submerge the discharge pump. The discharge pump is 22" tall. A standard 1,000 gallon pump tank (minimum requirement) has a volume of 20 g/inch. (Check with the tank manufacturer for exact figures). When the pump is submerged, there are 440 gallons of minimum volume in the tank. This volume is in excess of the 250 gallons needed for the clarification volume.

Emergency storage for the clarification/pump chamber is achieved in the recirculation tank through the control panel. When a high level condition occurs in the clarifier/discharge tank the recirculation pump is overridden off and no flow will progress from the recirc tank to the clarifier/discharge tank until the high level condition in the clarifier/discharge tank is correct.

Pumps/Control Equipment

The *LOWeFLOW*[™] Treatment system incorporates a recirculating pump which has two functions: dose the *LOWeFLOW*[™] filter and flush the *Coil* and disc filter.

The standard control panel used in most residential application is the *LF2P-RF-OS* which will accommodate the recirculation/flush pump, a discharge pump, and the *LOWeFLOW™* headworks. A high level alarm in the discharge tank overrides off the recirculation pump. Emergency storage for pump failure is only needed in the recirculation tank.

Appendix A

Media:

LOWeFLOW

Growstone, LFGS-30. Two tote bags per each 500 gpd basin.

Appendix B:

Design flow greater than 500 gpd.

Design parameters:

Tanks, minimum liquid volumes:

Settling tank	200% of design flow
Recirc. Tank	80% of design flow + emergency storage
Clarifier capacity	50% of design flow
Filter basin:	1-LFB-500 per each 500 gpd design flow
<i>Coil</i>	1-LF-500 per each 500 gpd design flow
Child proofing mesh	

For flows over 500 gpd additional *LOWeFLOW™ Coils* can be added in increments of 500 gpd. All system designs over 500 gpd are considered “custom” and will require some design assistance from *Lowridge Onsite Technologies*.

Appendix C:

Parts list for standard residential, 500 gpd kit:

- *LOWeFLOW™* basin & *Coil* (with child proofing mesh)
- Headworks: disc filter, solenoid valves, pressure gauges
- Splitter valve
- Splitter tee
- Recirculation pump: 1/2 hp, 30 gpm turbine pump
- *LF2P-RF-OS* Control panel
- Floats for recirculation and discharge pumps
- King fittings: allows piping network to drain
- 2 bags of LFGS-30 media

Appendix D:

Timer Settings for Recirculation:

The goal is to achieve a recirculation ratio of 4:1 of the average daily flow. The table below gives the timer settings for a variety of average daily flows. Note that the “ON” time is always **30 seconds**. The standard 500 gpd *Coil* has an estimated flow rate of 5.5 gpm. Actual flow may vary, slightly.

<u>Ave. Daily Flow</u>	<u>Recirc. Flow rate</u>	<u>“ON” Time</u>	<u>“OFF” Time</u>
100 gpd	400 gpd	30 seconds	9.5 min
150	600	“	6.0
200	800	“	4.5
250*	1000	“	3.5
300	1200	“	3.0
350	1400	“	2.5
400	1600	“	2.0
500	2000	30 seconds	1.5 min

*Factory default setting.

Appendix E: *LOWeFLOW* cover options.

There are a couple of different cover options in addition to the recommended child proof mess. One option is a small deck.

- The LFB-500 poly basin can be fitted with a wood or synthetic wood frame on the top lip. A protective deck can then be attached to the frame. The deck must have deck boards with 1/8” to 1/4” spacing for proper air ventilation. The deck is bolted to the frame with four bolts for future removal.
- The *LOWeFLOW* can be planted with small rooted plant like perry winkle. The roots need to have all the soil washed off and planted in the center of the coil.

**LOWeFLOW™ Treatment System O& M and
Troubleshooting Manual
January 2018, Idaho**

US Patent 8,889,007

Manufactured by:

Lowridge Onsite Technologies

PO Box 1179

Lake Stevens, WA 98258

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- Parameter Setting Instructions

Start-up Procedures

System Description

The *LOWeFLOW*[™] treatment system is comprised of the *LOWeFLOW*[™] recirculation filter, a septic tank, recirculation/mixing tank, headworks, and control equipment.

Wastewater is collected in a standard septic tank where gross solids are settled out and primary treatment occurs. Septic tank effluent flows from the septic tank into the recirculation tank. Liquid in the recirculation tank is mixed with treated filtrate from the *LOWeFLOW*[™] filter. The mixed liquid is dosed to a drip tubing network called a *Coil* in the top of the *LOWeFLOW*[™] filter.

Treated filtrate from the *LOWeFLOW*[™] filter flows back to the recirculation tank through the split flow tee. The position of the splitter valve determines the flow path of the filtrate. When the liquid level in the recirculation tank is high enough to seat the splitter valve, all of the filtrate passes into the discharge tank, otherwise, all or a portion of the returning filtrate returns to the recirculation tank.

Liquid in the discharge/clarifier tank is timed dosed for final dispersal.

Performance expectations

The typical performance of the *LOWeFLOW*[™] system produces final effluent quality that is clear, odorless, or a slight musty smell. The *OSCAR-LOWeFLOW*[™] system meets Class I wastewater treatment standards set forth in NSF/ANSI standard 40. Testing performance during NSF testing was:

CBOD
<5

TSS
<9

Parts list

Recirculation tank:

- *LOWeFLOW™* splitter valve (*Lowridge Onsite Technologies, LLC*)
- *LOWeFLOW™* recirculation pump (Flint and Walling 20 gpm turbine pump)
- Floats switches, normally open (SJ Rhombus)
- Control panel (***LF2P-RF-OS***, *Lowridge Onsite Technologies, LLC*)

Headworks:

- Housing
- 3/4" *Netafim™* disc filter, 120 mesh, 130 micron (part number 25A45-120)
- 5- 1" 24 volt solenoid valves, model number 61ET1PBI-BC (made by *DOROT*)
- 1-1" 24 volt solenoid valve, V04010DGT003C015, normally open.
- 3-Pressure gauges: 0-100 psi oil filled

LOWeFLOW™ filter:

- Containment vessel: polyethylene
- *Coil: Netafim Bioline™*, 0.42 gph emitters (part number 08WRAM.4-06V500).
- Media: *Growstone FLGS-30*

LOWeFLOW™ Media:

Growstone FLGS-30

Basic Tools and Equipment

Cordless drill motor & misc. bits
Philips and flat head screwdrivers
Multi test meter
DO test kit (recommend ampoule type)
Litmus paper
Shovel
Channel locks
Pipe cutter
Pipe saw
Glue
Water hose and nozzle
Extension cord
Wire cutters
Wire strippers
Turkey baister
Sump pump w/adapter to garden hose
Rubbing alcohol
Dielectric grease

Spare Parts

3/4" disc filter cartridge, 120 mesh, 130 micron
1" normally closed two- way solenoid valve, Netafim™
Normally open float switches
Splice box screws
Riser lid bolts
Wire nuts for 12 gauge and 16 gauge wire

Maintenance Schedule:

The first **inspection** should be conducted at 6 months after installation. Then at 12 month intervals.

Six month inspection: At six months after installation the inspection is cursory in nature. Components to be checked and observations recorded are: Headworks pressure, recirculation flow, forward flow, and effluent clarity.

Annual inspections: All components listed for the six month inspection plus all other items listed on the O&M inspection check list.

Routine Procedures

The most important aspects of operation and maintenance of onsite systems are the accurate observation of system performance and the complete recording of the observations. Incomplete or inaccurate data will lead to false conclusions and the corresponding maintenance activities could be un-necessary and costly. In a majority of cases, monitoring visits will result in a confirmation that the system is functioning as intended. Other than routine, preventative maintenance, very little should be required to keep the system functioning properly. In the few instances where something is actually wrong with the system and significant corrective action is needed, proper diagnosis starts with correct observation. To insure no component of the system is skipped, follow the flow of wastewater: septic tank, recirculation tank, headworks, *LOWeFLOW*[™] filter, discharge tank, disposal field. For details of how to perform the specific operations mentioned below, see appendices.

Septic tank:

Observations:

- Measure sludge and scum layers
- Odor: the contents should have a strong, musty odor, but not putrid.
- Color: scum layer should be earth tones, i.e., dark brown.

Maintenance

- When 33% to 50% of the tank is filled with solids, have the tank pumped.

Field testing procedures (recommended, not required):

- DO
- Temperature
- pH

Recirculation tank:

Observations:

- Measure sludge level.
- Check clarity of liquid: should be fairly clear with a slight to no musty smell.
- Check float switches: properly attached and functional.
- Remove splitter, sample incoming filtrate: clear and odorless. Measure flow.
- Check voltage and amperage of recirculation pump

Maintenance:

- When 6" of sludge accumulates, pump the tank.
- Check inside splice box and remove any accumulated condensation.

Field testing procedures (recommended, not required):

- DO
- Temperature
- pH
- Turbidity

Headworks:

Observations:

- Check and record pressure gauge readings.
- Check proper operation of flushing sequence.
- Measure flow

Maintenance:

- Clean disc filter.

LOWeFLOW™ filter:

Observations:

- Check surface of media: dry, no odor or ponding. Media under tubing should be moist.

Maintenance:

- Remove any vegetation growing in media

Discharge tank:

Observations:

- Measure sludge level.
- Check clarity of liquid: should be clear with a slight to no musty smell.
- Check float switches: properly attached and function.
- Check voltage and amperage of discharge pump

Maintenance:

- When 6" of sludge accumulates, pump the tank.
- Check inside splice box and remove any accumulated condensation.

Field testing procedures (recommended, not required):

- DO
- Temperature
- pH
- Turbidity

Trouble Shooting

This section will outline the common problems that may arise. There will follow a detailed description of how to diagnose the critical internal components. For further information contact *Lowridge Onsite Technologies, LLC, 877-476-8823*.

Problem:

High Level in recirc tank

Possible causes:

Recirc pump failure
High level in discharge tank
Splitter valve failed or missing
Float switch short
Ground water infiltration

Solutions:

Repair or replace
Correct discharge issue
Replace or repair splitter valve
Replace float
Fix leak

No flow through the *Coil*.

Dosing pump doesn't run.
Valves 1 or 2 don't open

Repair or replace pump
Repair or replace valve(s)

	Disc filter plugged Emitters plugged	Clean or replace disc cartridge Chlorine wash or replace
Liquid surfacing on <i>LOWeFLOW</i>	Underdrain plugged Incorrect media Biological overload	Unplug underdrain Replace media Identify and correct overloading
Poor effluent quality	Low recirculation ratio Biological overloading Hydraulic overloading Disinfection and cleaning	Change timer settings Identify and correct loading Check water usage in house Modify or discontinue practice
Disc filter clogging	Flush sequence failed Tanks need servicing	Restore flushing sequence Pump tanks

High Level in Recirculation Tank:

There are a number of causes for a high level in the recirculation tank: recirculation pump failure, high level in discharge tank, splitter valve malfunction, float switch short, and leaky tanks.

Pump failure: Check all circuit breakers to insure power is available for pump. If the recirculation pump has failed the control panel will continue to cycle. The motor contactor (M1) for the recirculation pump will periodically engage and dis-engage: the motor contactor will make a banging noise and the center of the face will depress when engaged. While the motor contactor is engaged, check the pump voltage at the control panel and then in the splice box. If voltage is good in the splice box, check wire nut connections. If pump does not run, replace pump.

Override OFF: The **LF2P-RF-OS** control panel series is designed to over-ride OFF the recirculation pump whenever a high level alarm condition exists for any other pump in the system. If this condition exists, check for high level in the other pump chambers within the system. If high levels exist, pull the floats so the top float hangs down for 5 minutes. The recirculation pump should cycle. If the recirculation pump cycles, then correct problem in the secondary pump chamber.

Splitter valve: Check the splitter valve. If it was not replaced after the last service a high level condition may occur. If the pump cycles and splitter is in place, pull the splitter and inspect for possible damage. Repair or replace as needed.

Failed float switch: If all other indicators test negative (no high water conditions and pumps work) a float switch may be shorting out. Use a clamp type amp meter to measure possible amperage on

float switch leads inside the control panel. The float that registers current is shorting out and needs to be replaced.

Leaky tanks: If alarms are occurring during periods of rain fall, the tanks maybe leaking. Connections at the riser/tank connects, pipe connection to tanks, and protrusions through risers could be leaking. Inspect and seal as needed.

No Flow Through *Coil*:

Pump doesn't work: See section on "**High Level Alarms**".

Valves #1 and #2 Don't Open: See "**Disc Filter Clogging**" section.

Disc Filter Clogged: "**Disc Filter Clogging**" section.

Emitter Clogged: Flush *Coil* into septic tank with chlorine solution or replace *Coil*.

Liquid Surfacing on *LOWeFLOW*:

Underdrain Plugged: The underdrain could be plugged for three reasons: the wrong media was installed during installation, the system has been biologically overloaded, and/or there is ground water infiltration into the system. The correction is to: 1. Identify why the underdrain clogged and 2. Remove the media and clean the underdrain, 3. repair the infiltration.

Wrong Media: Refer to the media specifications in "**Parts List**".

Biological Overloading: Examples of the causes of biological overloading can be one or a combination of the following: heavy use of medications by the residence of the house, heavy use of disinfectants and cleaners, certain cooking habits (heavy use of cooking oils and fats), heavy use of oil based soaps and lotions. This list is not inclusive!

Besides the liquid surfacing on top of the media, symptoms of biological overloading are heavy slimes covering the gravel media. These slimes can be black or a very light color depending on the cause of the overload.

Effluent samples must be sent to a certified laboratory for analysis: **biological oxidation demand (BOD)**, total suspended solids (TSS), and fats, oils and grease (FOG).

A professional should be consulted to determine what the cause of the over load is before lasting corrective action can be taken.

Poor Effluent Quality:

Normal effluent quality will be clear and odorless. There may be a slight color tint and a very slight musty smell. There are two places within the system where sampling can occur: 1. Remove the splitter valve and sample from the falling stream of effluent, and 2. at the inlet of the discharge tank from the falling stream of effluent. Use a clean sampling bottle obtained for an analytical laboratory for this use. If the effluent has a cloudy appearance and/or a septic smell:

- Retention time in recirculation tank may be too low
- Recirculation ratio may be too low
- Disc filter may be clogging
- The septic tank may need to be serviced.
- Excessive organic concentrations in the septic tank effluent.

The retention time of the recirculation tank can be affected by a number of causes: excessive water use or the splitter valve could have been set too low. Review water use records to determine if the design parameters of the system are being exceeded.

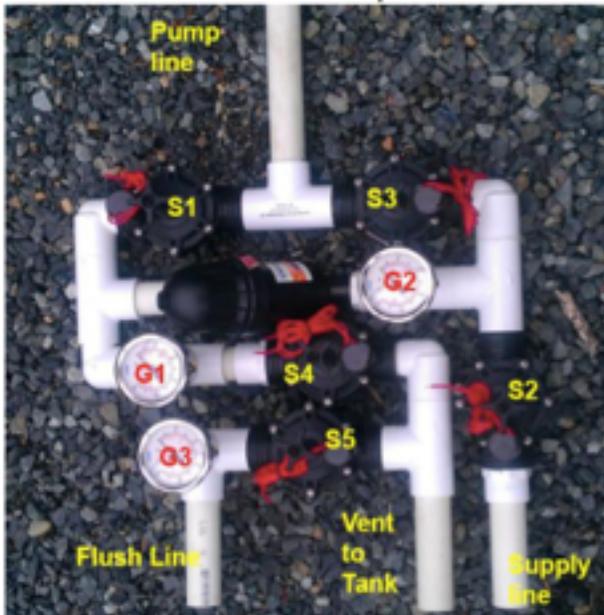
The recirculation ratio between the recirculation flow rate through the *LOWeFLOW*[™] filter and the forward flow rates should be around 4:1. A plugged disc filter can significantly reduce the recirculation flow through the *LOWeFLOW*[™] filter thereby reducing the recirculation ratio.

To determine if the disc filter is plugged, review the pressure gauge readings. The pressure gauges should read between 45-50 psi. There should be no more than 1-2 psi differential between gauges #1 and #2. A pressure drop between #1 and #2 indicates the disc filter is plugging and restricting flow to the *Coil*. If so, conduct a manual flush of the disc filter. If the pressures are not corrected then disassemble and replace disc cartridge with a clean unit. The disc filter could be plugging for a variety of reasons.

- If the septic tank has not been serviced adequately, excessive solids may carry-over from the septic to the recirculation tank.
- Inappropriate wastewater habits in the house may cause a biological upset in the septic tank resulting in higher organic concentrations in the septic tank effluent.
- The Headworks valves malfunction and do not properly flush the disc filter or *Coil*.

Headworks Diagnostics:

To trouble shoot the headworks, refer to the following illustration and Appendix B:



Diagnostic check of reverse flush headworks:

Position all toggle switches inside the control panel to "OFF" mode.
Position pump 1 and valves 1 & 2 in "HAND" mode.

Pump runs but no pressure on any gauges. While pump is running manually open S1. If pressures on all three pressure gauges begin to rise, the solenoid for S1 needs replacing or solenoid is not being energized (possible bad wire connection). Check voltage at panel between V1 and VN, and in the headworks at the corresponding wire connections. If voltage is good (24-27 volts) the solenoid is bad.

Pump runs and gauges G1 and G2 register pressure and G3 is "0". Manually open S2. If the readings on G3 begin to rise, the solenoid for S2 needs replacing or solenoid is not being energized (or wire connection is bad). Check voltage at panel between V2 and VN, and in the headworks at the corresponding wire connections. If voltage is good (24-27 volts) solenoid is bad.

Pump runs and all gauges read the same pressure (more than 0 psi). Emitters are plugged.

Pump runs and G1 registers pressure and G2 and G3 read 0 psi (or significantly less than G1). The disc filter is plugged. Further diagnostic work is needed to determine why filter is not functioning (see below).

Disc Filter Flush Diagnostics: Open inlet of septic tank. Position pump #1 and valves 3 & 4 in "HAND" mode (all other toggles in OFF). G2 will have a higher reading than G1, and G3 will be zero and water will be entering into the inlet of the septic tank at a rapid rate. If not, follow the diagnostic steps:

Pump running with no pressure and no flow into septic tank inlet. Manually open S3. If pressure on G2 and G1 rise and water flows into septic tank inlet, S3 needs replacing or is not getting energized (possible bad wire connection). If pressures rise with no water flowing into septic tank inlet, manually open S4. If pressures drop and water flows into septic tank, both S3 and S4 are bad or both are not getting energized. Check voltage at panel between V2 and VN, and in the headworks at the corresponding wire connections. If voltage is good (24-27 volts) one or more solenoids are bad.

Coil Flush Cycle Diagnosis: Position pump #1, valves 1 & 2, and 5 in "HAND" position.

Pump runs, pressures on all gauges are close to identical and no flow into septic tank inlet. Manually open S5. If pressure on G2 and G3 drop and water flows into septic tank inlet, S5 solenoid is bad or valve is not being energized (or has a bad wiring connection). Check voltage at panel between V3 and VN, and in the headworks at the corresponding wire connections. If voltage is good (24-27 volts) solenoid is bad.

At completion of the diagnostic steps position all toggle switches in the "AUTO" position.

Appendices

Measuring *Coil* Dose Discharge Rate:

Position all Toggle switches in the "OFF" position. Switch pump 1, valves 1 & 2 to "HAND" and allow pump to run for a minute. While pump is running, measure flow for 1 minute on the flow meter. Flow for one 500 **god** coil should be between 5 and 5.5 gpm.

Reposition all toggle switches to the "AUTO" position.

Panel Operations

The *LF2P-RF-OS* control panels are 110 volt universal panels for single family *LOWeFLOW*[™] systems. It has the capacity to operate three major outputs: recirculation pump, discharge pump, and the "Reverse Flush" headworks. All logic is controlled by an Siemens LOGO . The pump operation options are as follows:

- Recirc. Pump (Pump #1): is operated in a time-dose mode. Pump #1 pressurizes the *Coil* and back-flushes the disc filter and forward flushes the *Coils*. The LOGO allows the operator to determine the number of dose cycles before the disc filter flush and *Coil* flush cycles. This pump has a redundant off float switch that will shut off Pump #1 if the liquid level falls below the minimum liquid level.

- Discharge Pump (Pump #3): the discharge pump time-dosed. The bottom float switch will operate as the "Timer On". The high level alarm float will override Pump#1 off.

The timers have the following factory default settings:

- Recirculation-pump dosing: 3.5 minutes off, 30 seconds on. (V1_OFF, V1_ON)
- Disc filter flush: after pre-set number of dose cycles have completed, the disc filter flush "ON" cycle runs for 15 seconds. (V2_ON).
- *Coil* flush: after Disc filter flush is completed, the *Coil* flushes for 2 minutes (V1V3_ON).
- Discharge pump: 3 minutes and 38 seconds OFF and 22 seconds ON.

Parameter Setting Instruction: See instruction inside panel.

Start Up Procedures:

Start Up Procedures:

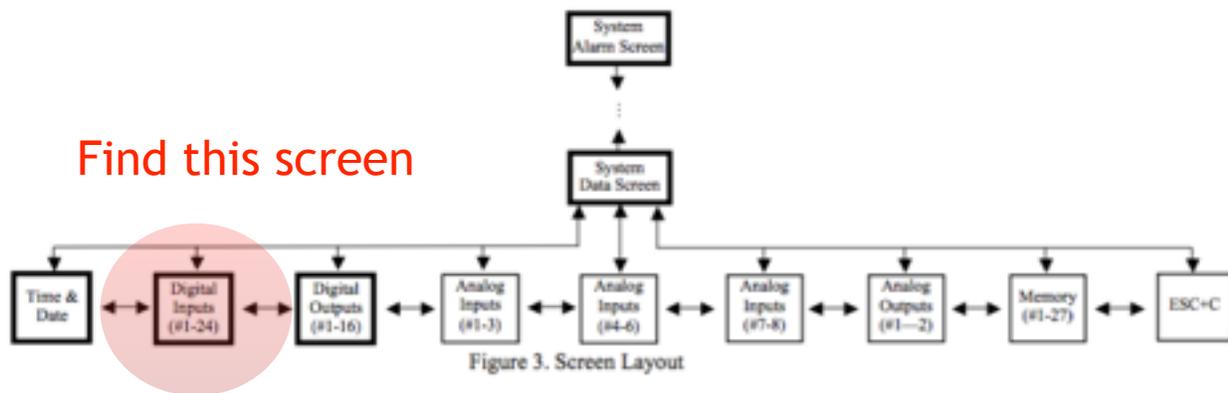
Prior to conducting any of the following procedures, inspect the wiring to insure the system is correctly wired. Pull all the float trees from the tanks and place across the tank openings so all the floats hang down. Now power up the system and turn all the breakers to the "ON" position and all of the toggle switches in the off position. Ensure there is enough water in tanks to conduct pump tests.

a. Test floats:

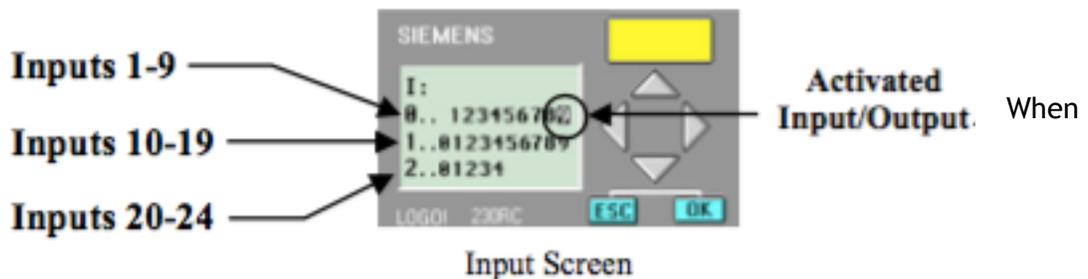
On the Seimens Logo scroll to the input screen as shown here:

Screen Navigation:

The screens are arranged in the order shown in Figure 3 below. To move between screens, use the four arrow keys. The screens of interest are shown in bold. Additional built-in screens will be present, but do not contain useful information.



The actual screen will look like this:



lifting the floats check this screen to determine if the floats are wired into the correct position. When the floats are lifted a corresponding digit will be back lit. The input values are as follows:

- 1 = bottom recirc tank float
- 2 = top recirc tank float
- 3 = bottom discharge tank float
- 4 = top discharge tank float.

Test recirculation floats:

Lift top float. Input indicator “2” will back light and the alarm should sound and the beacon should illuminate.

Lift bottom float. Input indicator “1” will back light.

Test the discharge floats:

Lift top float. Input indicator “4” will back light and the alarm should sound and the beacon should illuminate.

Lift bottom float. Input indicator “3” will back light.

Place floats back into tanks.

b. Test pumps and valves:

Recirculation/Flush pump and valves:

Place valve 1 & 2 toggle switch and pump 1 toggle switch to HAND position. Pump should dose and all three pressure gauges should stabilize. No water should be flowing into septic tank.

Place valve 3 & 4 toggle switch to HAND and valves 1 & 2 toggle switch to OFF, pump #1 in HAND. Pump should run, pressures should change: gauge 2 highest pressure, gauge 1 less than 2, and gauge 3 should indicate 0 psi. Water should be flowing into septic tank very rapidly.

Place valves 1 & 2 and valve 5 in HAND position and valves 3 & 4 in OFF position, and pump 1 in HAND. Pressure on gauge 1 should indicate the highest pressure, gauge 2 less than 1, and gauge three should indicate between 1-3 psi and water should be flowing into septic tank at a moderate rate.

Position all toggle switches in the OFF position.

Discharge pump: Energize the discharge pump by switching the Pump #3 toggle switch to HAND.

Timer Settings for Recirculation Pump

The goal is to achieve a recirculation ratio of 4:1 of the average daily flow. The table below gives the timer settings for a variety of average daily flows. Note that the "ON" time is always **30 seconds**. The standard 500 gpd *Coil* has an estimated dose volume of approximately 2.5 gal/dose. Actual flow may vary.

<u>Ave. Daily Flow</u>	<u>Recirc. Flow rate</u>	<u>"ON" Time</u>	<u>"OFF" Time</u>
100 gpd	400 gpd	30 seconds	9.5 min
150	600	"	6.0
200	800	"	4.5
250	1000	"	3.5
300	1200	"	3.0
350	1400	"	2.5
400	1600	"	2.0
500	2000	30 seconds	1.5 min

OSCAR Treatment System
Design Manual
Idaho
January 2018

Manufactured by:

Lowridge Onsite Technologies
PO Box 1179
Lake Stevens, WA 98258
877 476-8823
info@lowridgetech.com



Introduction:

The *OSCAR* (Onsite Sand Coil Area Recharge) is an at-grade onsite sewage dispersal component issued with treated effluent. The *OSCAR* is comprised of a 6" layer of C-33 sand media and a series of custom manufactured Netafim Bioline drip tubing coils. The sand media is placed on a prepared soil surface. *OSCAR* coils are then placed on the sand media and then covered with another 6" of sand media. No other cover material is needed. To control erosion or inadvertent disturbance from children or animals the sand can be covered with jute mat or cover with a shallow layer of mineral soil. Another option is to spread straw over final cover until vegetative cover takes hold: plant grass seed or other ground cover as soon as possible. See appendix F for more details.

The sand/soil interface is the discharge point of the treated wastewater. Vertical separation is measured from the original soil surface prior to preparation and the restrictive layer. If enough soil depth is present, the basal area can be excavated to lower the profile of the *OSCAR*.

Design:

Each *OSCAR* coil is designed to treat and dispose of 50 or 100 gpd of treated effluent, depending on soil depth and *OSCAR* coil model specified.

There are two models of *OSCAR* coils: OS-50 and OS-100. The OS-50 coils form a 5' diameter coil, rated at 50 gpd. The OS-100 coils form a 7' diameter coil, rated at 100 gpd. Tables III and IV dictate the overall minimum "shoulder" length for the corresponding design flow for each coil model. See appendix G for details of OS-100 foot print and specifications.

An *OSCAR* has two (2) sizing criteria: *hydraulic layout* and *basal area*. The hydraulic layout criterion includes the number of coils and how they are to be connected. The basal area refers to the overall foot print of the *OSCAR* sand/soil interface.

Hydraulic Layout: Coils are arranged in laterals. Each lateral is a single coil or a group of coils linked in series between the supply and flush manifolds. The *OSCAR* coils are timed dosed and flushed manually.

The standard single family residence *OSCAR* layouts have design flows between 150 to 500 gpd. A 30 gpm, 110 volt, turbine pump (AY Mc Donald pump model 22050E2AJ or equivalent) and a *Lowridge Onsite* Technologies headworks (model HWN-.7-man) are required for the standard designs. This pump will perform in a large majority of design applications. The *OSCAR* must be timed dosed. See "Timer Settings" for details.

Table I depicts the number of OS-50 coils and laterals required for a given design flow using the AY McDonald pump. Table II depicts the number of OS-100 coils and laterals required for a given design flow using the same pump.

The criteria in these tables ***must be*** followed. If a deviation is required, contact *Lowridge* for assistance.

The tables also indicate how much excess head, under the pump curve, is available for supply line elevation lift and friction loss. All manifolds, supply and flush lines are assumed to be 1” sch 40 PVC. The designer must calculate the total dynamic head (TDH) for the *OSCAR* supply line. Use the flow rate indicated under the heading “Flush GPM” in Table I or II for the corresponding design flow and coil model to calculate the friction loss of the supply line. If the calculated TDH is greater than the “Excess TDH” value in Table I or II, call *Lowridge* for assistance. TDH is calculated by adding the friction loss of the supply line to the elevation lift from liquid level in pump tank to the *OSCAR* coils. Use the following Hazen-Williams formula to calculate friction loss. Always use the Flush Flow Rate valves when calculating friction loss.

$$f = L (Q/K)^{1.85}$$

- F= friction loss through pipe in feet of head
- L= length of supply line in feet
- Q= Flush GPM
- K=47.8 (1” sch 40 PVC pipe)

TABLE I: Hydraulic Layout OS-50 coils

Design Flow	Total Coils	# of Lats.	Coils per lat.	Dose GPM	Flush GPM	Excess TDH
250	5	5	1	1.75	12.0	50'
300	6	3	2	2.1	12.0	50'
400	8	4	2	2.8	12.0	50'
450	9	3	3	3.15	12.0	50'
500	10	5	2	3.5	12.0	50'

TABLE II: Hydraulic Layout OS-100 coils

Design Flow	Total Coils	# of Lats.	Coils per lat.	Dose GPM	Flush GPM	Excess TDH
300	3	3	1	2.1	12.0	50'
400	4	4	1	2.8	12.0	50'
500	5	5	1	3.5	12.0	50'

TABLE III: Minimum Shoulder Lengths OS-50

Design Flow	Minimum Shoulder Length
250	28'
300	33.5'
400	44.5'
450	50'
500	55.5'

The dimensions in Table III represent the minimum required length of the outer shoulder which include coils, spacing between coils, and shoulders. These lengths can be extended to match site conditions. Minimum shoulder spacing is 6". See illustration below for example of shoulder length.

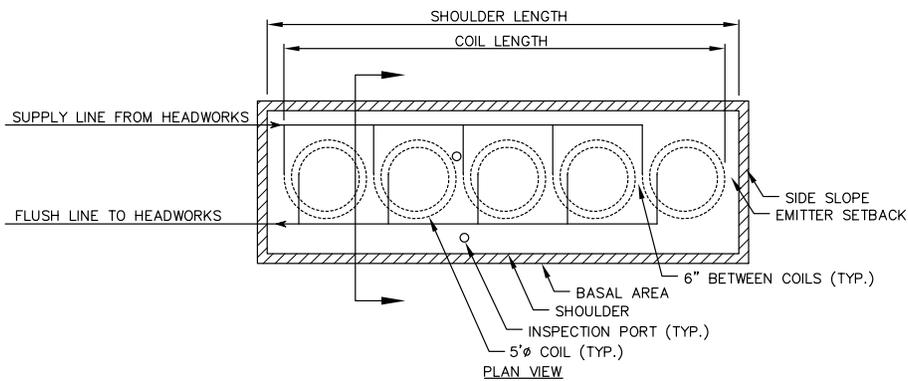


Illustration I

TABLE IV: Minimum Shoulder Lengths OS-100

Design Flow	Minimum Shoulder Length
225	21' 3"
300	21' 3"
400	28' 4"
450	35' 6"
500	35' 6"

The dimensions in Table IV represent the minimum required length of the shoulder which include coils, spacing between coils, and shoulder. These lengths can be extended to match site conditions. Minimum shoulder spacing is 6". See illustration below for example of shoulder length.

Basal Area:

The basal area is comprised of the total area where the sand media is in contact with the receiving soil. The minimum required basal area is calculated by dividing the design flow rate by the soil loading rate specified in rule. A 3 bedroom design equals 300 gpd design flow rate.

Example, Soil type B-1 at 250 gpd.

$$250 \text{ gpd} \div 0.6 \text{ gpd/ft}^2 = 417 \text{ sq. ft.}$$

Combining Hydraulic Layout and Basal Area Requirements:

To combine the coil layout and the basal area, start with the coil layout. Refer to Tables III or IV for minimum shoulder lengths. On flat sites, the coils should be placed in the center of the basal area. The coils will be arranged in a single line, although the line can be curved to match site contours. Also, no emitter shall be placed within 6" of the sand media shoulder.

On sloping sites the coils will be placed parallel to the contour and one edge of the coils must be placed within 12" of the upslope basal boundary. There must be at least 6" separation between sand shoulder and an emitter. With the OS-50 coils there must be at least 6" between the drip tubing in different coils. With the OS-100 coils there must be 12" spacing between the drip tubing in different coils. Side slopes of the sand media is at least a 1 to 1 slope.

The following are examples of an *OSCAR* design with OS-50 coils.

FLAT SITE (OS-50)

Example: (refer to Illustration I and Table III).

250 gpd design flow, soil type B-1 (0.6 gpd/ft²), flat site

Basal area required = daily design flow ÷ soil loading rate

$$\underline{417 \text{ sq. ft.}} = 250 \text{ gpd} \div 0.6 \text{ gpd/ft}^2$$

Minimum shoulder length (see Table III) is 28'.

Minimum side slopes at 1 : 1 slope @ 6" (2 x 6" = 1') = 1'

Minimum basal length= shoulder length + side slopes
 $28' + 1' = 29'$

Basal area width = required basal area ÷ minimum basal length
 $= 417 \text{ sq. ft.} \div 29' = 14.37' \text{ or } 15'$

Basal area dimensions for soil type 4 = 29' long x 15' wide.

SLOPING SITE (OS-50)

When calculating the required basal area for a sloping site the same process is used as a flat site except for one criterion. The side slope value must include the increased sand depth due to the sloping site. In order to keep the coils level on a sloping site, additional sand must be placed under the downslope side of the coil. The greater the sand height, the greater the side slope. To calculate the additional sand depth use the following formula:

Diameter of coil x % slope of site

In the illustration above the 20% slope needs an additional 12" of sand to maintain a level coil network.

$$60'' \text{ (diameter of coil)} \times 20\% = 12''$$

The additional 12” of sand needs to be added to the minimum required sand of 6” to equate to the 18” of sand on the downslope side of the coil.

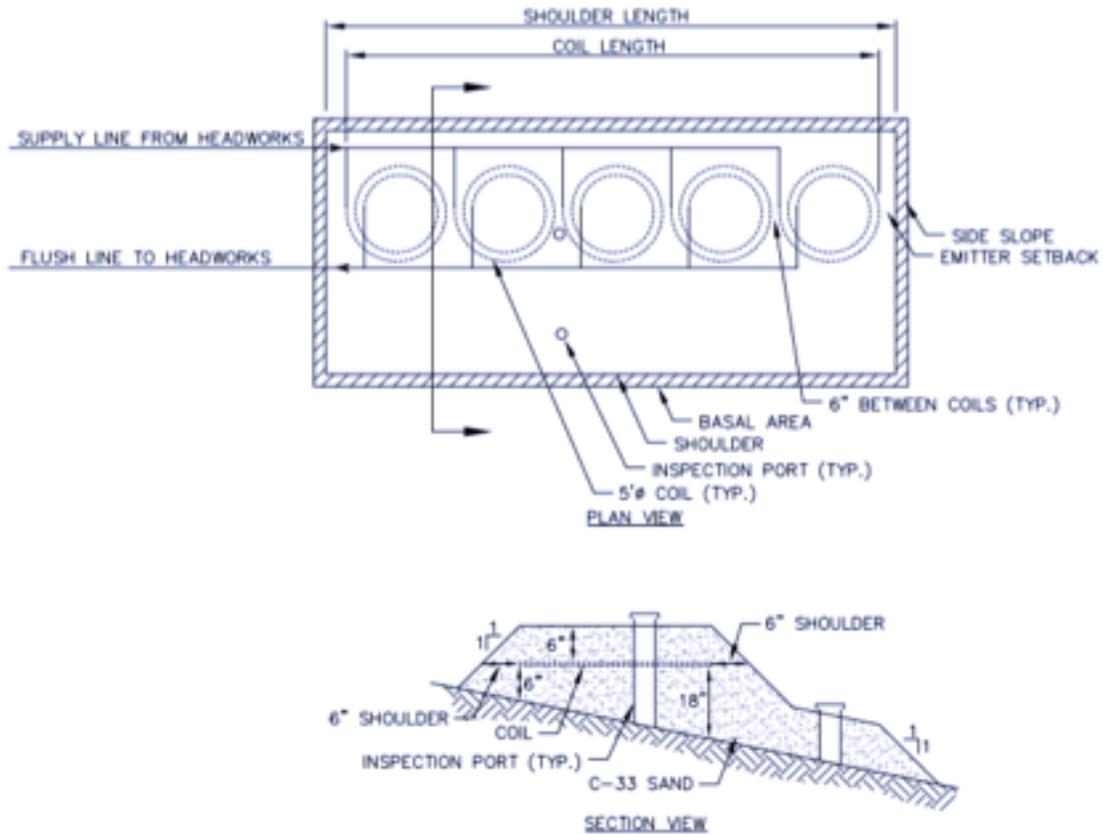


Illustration II.

Example: (refer to illustration II, not to scale)

250 gpd design flow, soil B-1 (0.6 gpd/ft²), sloping site

Basal area required = daily design flow ÷ soil loading rate

$$417 \text{ sq. ft.} = 250 \text{ gpd} \div 0.6 \text{ gpd/ft}^2$$

Minimum shoulder length (see Table III) is 28'.

Minimum side slopes at 1 : 1 slope @ 18” (18” x 2) = 3'

Minimum basal area length = shoulder length + side slopes
28' + 3' = 31'

Basal area width = required basal area ÷ minimum basal length

$$417 \text{ sq. ft.} \div 31' = 13.45' \text{ or } 14'$$

Minimum basal area dimensions for soil type 4 = 31' long x 14' wide.

Timer Settings:

The *OSCAR* system must be timed dosed. Timer settings for the *OSCAR* are short and very frequent (3 minutes and 38 seconds off and 22 seconds on). Because the supply line will drain between doses the “on” times will need to be increased to compensate for the drain back volume.

The timer settings for the *OSCAR* can be changed for two reason:

1. The *OSCAR* is installed down slope from the discharge tank. The timer settings may need to be modified to avoid over dosing the *OSCAR* and a vacuum breaker must be installed on the supply line inside the pump chamber to prevent siphoning. Pump down hill to the *OSCAR* should be the last option and is not recommended. Call *Lowridge* for assistance in changing timer settings.
2. In colder climates where the supply line needs to drain between doses, the “on time” will need to be increased to compensate for filling the supply line prior to each dose. Add more time to the “on” time equal to the amount of time it takes to pressurize the headworks.

Appendix A

Media:

ASTM C-33 sand media.

Appendix B:

Headworks: HWN-.7-man

- ¾” Arkal disc filter, mesh, 130 micron
- ¾” Arad flow meter
- Three oil filled pressure gauges
- One ball valve

Appendix C:

OSCAR Parts list.

Each OSCAR unit will include:

- OS-50 or OS-100 Coils
- PVC fittings and drip tubing adapters
- HWN-.7-man, manual headworks
- Solid ½” poly tubing for connections
- Tank adapter w/cold weather drain

Appendix D:

OSCAR coil Connections



Illustration III: Manifolds and supply lines are 1” Sch 40 PVC



Illustration IV: Manifold and blank tech line adapter and connection.



Illustration V: Blank tech liner and Bioline connection with internal coupling

Appendix E: OS-50 & OS-100 Coil Detail.

OS-50: The OS-50 OSCAR coil is made with 25' of custom Netafim Bioline with 0.42 gph emitters @ 6" spacing (50 emitters), an average of 2 emitters per sq. ft. Each pre-assembled coil has a minimum area of 25 sq. ft. (5' x 5'). There must be a minimum of 6" spacing between each coil and a minimum of 6" spacing between any coil and the shoulder edge. Table III contains the minimum shoulder length for a given design flow. The "shoulder length" is the total minimum distance from the outside shoulder edge of the first coil to the opposite end shoulder of the last coil. This dimension includes all the coils, coil spacing, and shoulder spacing on each end.

OS-100: The OS-100 OSCAR coil is made with 50' of custom Netafim Bioline with 0.42 gph emitters @ 6" spacing (100 emitters), an average of 2 emitters per sq. ft. Each coil has a minimum area of 50 sq. ft. (85" x 85"). The actual coil diameter is 73". The coil bracket is 85" long. When the coil brackets are aligned end to end the minimum coil spacing is automatically achieved. There must be a 12" minimum spacing between the tubing of differing OS-100 coils and a 6" spacing between any tubing and the shoulder edge. Table IV contains the minimum shoulder length for a given design flow. The "shoulder length" is the total minimum distance from the outside shoulder edge of the first coil to the opposite end shoulder of the last coil. This dimension includes all the coils, coil spacing, and shoulder spacing on each end. See illustration below.

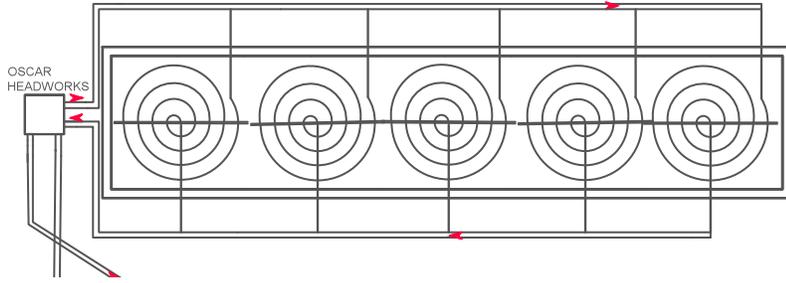


Illustration VI: 500 gpd with OS-100 coils:

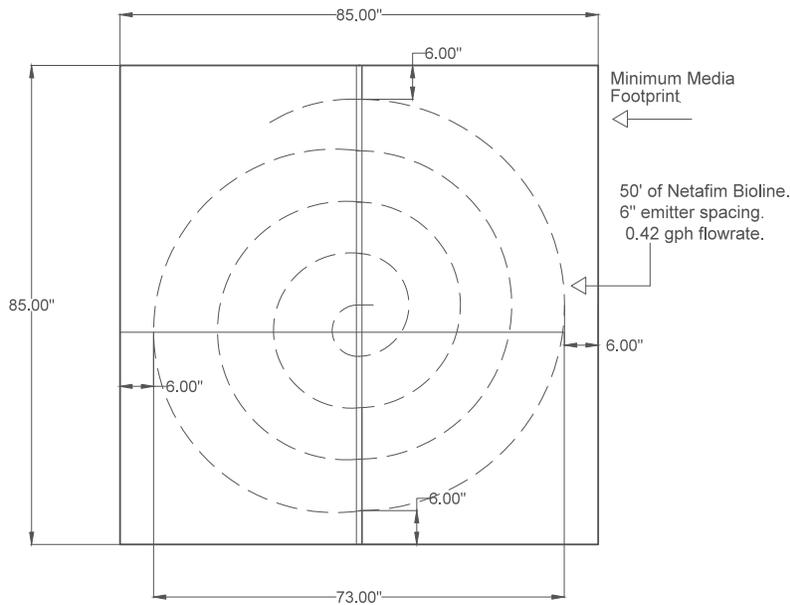


Illustration VII: OS-100 detail. The OS-100 OSCAR coil contains 100- 0.42 gph Netafim emitters in a 50 sq. ft. foot print. Emitter concentration is 2 emitters per sq. ft. Design flow for each OS-100 is 100 gpd.

Appendix F: OSCAR Cover Options.

There may be a desire to cover the OSCAR with something additional to the specified ASTM C-33 sand. Options include:

- landscaping jute mat held down with staples with grass seed or ground cover plantings
- a thin layer of mineral soil low in organic content (<10% organics)

Do Not Cover Sand with:

- organic mix (manufactured top soil from compost)
- filter fabric

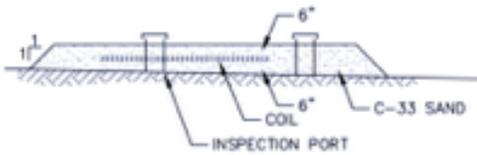
The intent is not to have too much additional cover over the final sand layer. Placing too much cover will inhibit plant root growth. Because the sand is in effect sub-surfaced irrigated, grass and other ground cover will grow rapidly, forming a firm protective cover over the OSCAR. At the end of the first growing season the sand layer is as firm a soil to walk on.



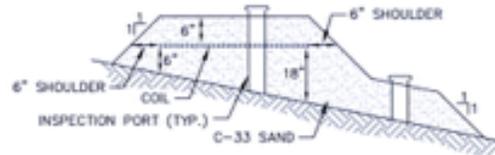
One growing season over an OSCAR covered with sand only. The media is firm enough to mow the grass with a riding lawn mower.

Appendix G:

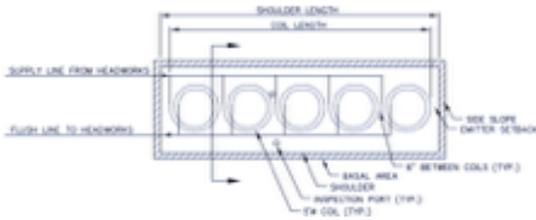
Sample OSCAR layouts:



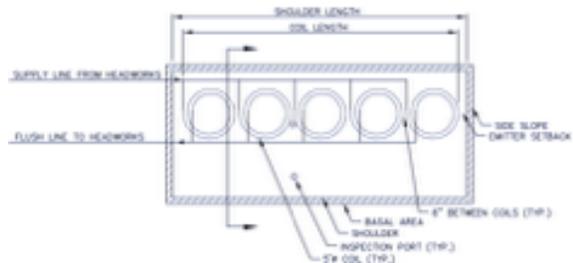
Cross section flat site



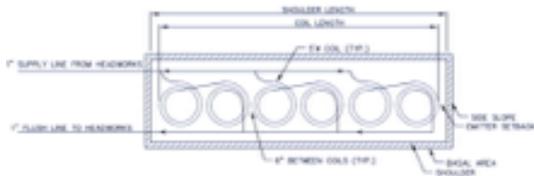
Cross section sloping site



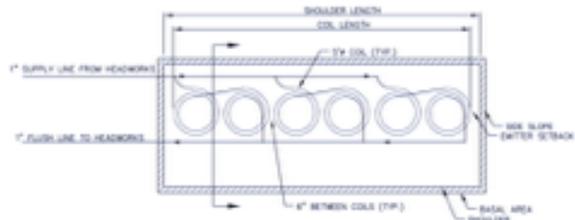
OS-250-50 flat site



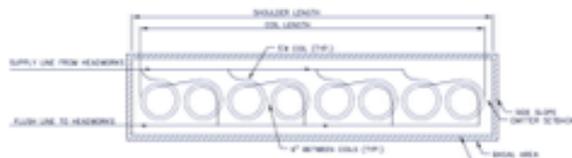
OS-250-50 sloping site



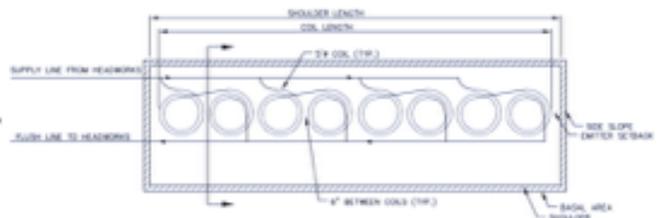
OS-300-50 top view flat site



OS-300-50 top view sloping site



OS-400-50 top view flat site



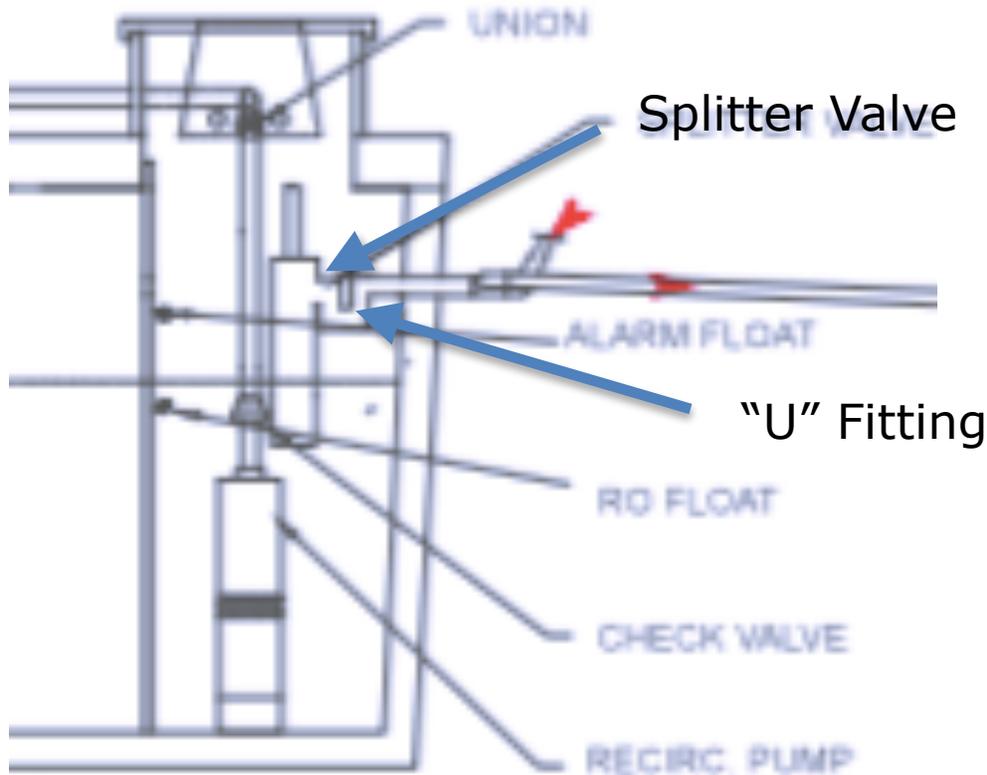
OS-400-50 top view sloping site



November 8, 2017

Sampling instructions for Idaho DEQ provisional approval of the *LOWeFLOW* system. All costs associated with collecting and laboratory analysis of samples shall be Lowridge's responsibility to pay.

Sampling of the *LOWeFLOW* system should be conducted by catching a falling stream of water from the "U" fitting inside the recirculation tank. To accomplish that, remove the splitter valve from the "U" fitting and temporarily install a 2" PVC pipe and tee to create a falling stream.



Recirculation Tank



"U" Fitting

Splitter Valve



"U" Fitting



Temporary "Tee"

Falling Stream



The intention is to collect 90 samples from 30 systems within a three year period. Lowridge would preferably like to pull 90 samples within the first year from as many units (up to 30) as possible. We would like the option to collect from fewer units more frequently, if needed. For instance, if 20 units were installed we could pull 4 to 5 samples from each unit to make 90 samples.

Samples must be pulled by a third party qualified as a wastewater treatment system operator. Terry Tucker (208) 859-8826, 2 Rainbow Ridge, Garden Valley, ID 83622, has agreed to provide sampling services. Monitoring samples provided to a laboratory will analytically quantify that the treatment system is operating in compliance if samples do not exceed:

- a. 40 mg/l CBOD5 (Standard method SM 5210 B)
- b. 45 mg/l TSS (Standard method SM 2540 D)

Each sample report must be accompanied with a chain of custody. Each sample will have a chain-of-custody form, identifying:

- a. the sample's source (street address or installation permit number), date and time of collection, and the person's name who collected the sample.
- b. Chain-of-custody form shall specify the laboratory analysis to be performed on the sample.
- c. Sample storage and transport will take place in appropriate containers under appropriate temperature control.

Sampling procedure must be as follows:

1. Remove splitter valve from "U" fitting.
2. Place temporary "Tee" on "U" fitting.
3. Let one recirculation dose cycle prior to collecting sample.
4. Collect sample on second dose cycle after temporary tee was installed.
5. After sample is collected, remove temporary "Tee" and replace Splitter valve.

The timer settings for the recirculation pump are factory set for 3:30 (minutes: seconds) off and 30 seconds on. Timer settings are not to be changed for sampling. Samples are to be pulled from the normal timer dosing sequence. Always let one dose cycle pass before pulling the first sample.



LOWRIDGE ON SITE TECHNOLOGIES, LLC.

Samples are to be delivered to laboratory within prescribed time frames as outlined in standard methods. Analysis to be conducted for carbonaceous/biological oxidation demand five day test (CBOD5) and total suspended solids (TSS).

Sample results and chain of custodies are to **sent to:**

Dave Lowe

dave@lowridgetech.com

or

Lowridge Onsite Technologies, LLC

PO Box 1179

Lake Stevens, WA 98258

Procedure to correct failing effluent samples:

If sample quality comes back failing, a determination must be made as to why the treatment is not being met. Several simple items to verify are:

1. Recirculation ratio. Must be at least 4:1 or more
2. Proper backflushing of disc filter and forward flushing of *LOWeFLOW* coils. Proper backflushing is evident when pressures on gauges 1 & 2 are the same (about 50 psi) and gauge 3 indicates a pressure of 40 to 42 psi.
3. Excess accumulation of solids in the recirc and/or septic tank.
4. Bottom float switch in the recirc tank set too high causing the pump to stop cycling.

Depending on what the deficiency, a correcting action should be initiated within a week of discovering a bad sample. After a correction is made, sampling should commence in 2-3 weeks. **One sample per month should be pulled until 2 consecutive samples meet standards.**

Maintenance records should include, at a minimum, the following and steps outlined in the *LOWeFLOW* O&M manual.



LOWRIDGE ON SITE TECHNOLOGIES, LLC.

Records for each O&M visit shall be kept and should include the following information for the primary maintenance visit:

- a. Date and time.
- b. Observation for objectionable odors.
- c. Observation for surfacing of effluent from the system or drainfield.
- d. Notation as to whether the system was pumped since the last O&M visit including the portions of the system pumped, pumping date, and volume.
- e. Sludge depth and scum layer thickness in the system's tanks and/or treatment unit.
- f. If responding to an alarm event, provide the cause of the alarm and any maintenance necessary to address the alarm situation.
- g. Field testing results for any system effluent quality indicators included in the system's approved sampling plan (if required) or as recommended in section 1.9.2(2).
- h. Record of any cleaning and lubrication.
- i. Notation of any adjustments to control settings or equipment.
- j. Test results for pumps, switches, alarms, and blowers.
- k. Notation of any equipment or component failures.
- l. Equipment or component replacement including the reason for replacement.
- Recommendations** for future service or maintenance and the reason for the recommendations.
- n. Any maintenance occurring after the primary maintenance visit should only record and address the reason for the visit and the associated activities that occur.

6. Include annual reporting requirements: The annual reporting period is from July 1 of the preceding year through June 30 of the reporting year.

Annual report for each property owner shall include these items:

- a. A copy of the maintenance records for the reporting period as required under TGM Section 1.9.1.
- b. A copy of all laboratory records for effluent sampling as described in TGM Section 1.9.2.
- c. A copy of each chain-of-custody form associated with each effluent sample as described in TGM Section 1.9.2.



LOWRIDGE ON SITE TECHNOLOGIES, LLC.

The annual report shall be submitted to the local health district by the property owner, or service provider on behalf of the property owner no later than July 31 of each year for the preceding 12-month period.

The annual report shall be submitted to the local health district that issued the subsurface sewage disposal permit for the treatment system.