Technical Guidance Committee Meeting

Minutes

Thursday, July 18, 2013

Department of Environmental Quality
Conference Room C
1410 N. Hilton
Boise, Idaho

TGC ATTENDEES:

Tyler Fortunati, R.E.H.S., On-Site Wastewater Coordinator, DEQ
Joe Canning, P.E., B&A Engineers
Bob Erickson, Senior Environmental Health Specialist, South Central Public Health District
David Loper, Environmental Health Director, Southwest District Health Department
Michael Reno, Environmental Health Supervisor, Central District Health Department
George Miles, P.E., Advanced Wastewater Engineering, Inc. (via telephone and GoToMeeting)

GUESTS:

Chas Ariss, P.E., Wastewater Engineering Manager, DEQ
Kellye Eager, Environmental Health Director, Eastern Idaho Public Health Department
Ryan Spiers, Alternative Wastewater Systems, LLC
Janette Young, Administrative Assistant, DEQ

CALL TO ORDER/ROLL CALL:

Meeting called to order at 9:15 a.m.
Committee members and guests introduced themselves.

MEETING MINUTES:

April 18, 2013 Draft TGC Meeting Minutes: Review, Amend, or Approve

The minutes were reviewed and no amendments were proposed. No public comment was received on the minutes.

Motion: Joe Canning moved to accept minutes as presented.

Second: Michael Reno.

Voice Vote: Motion carried unanimously.

Minutes will post as final. See DEQ website and **Appendix A**.

OPEN PUBLIC COMMENT PERIOD: This section of the meeting is open to the public to present information to the TGC that is not on the agenda. The TGC is not taking action on the information presented.

No public comments were submitted during the allotted agenda timeframe.

ETPS SUBCOMMITTEE UPDATE:

Tyler Fortunati presented an update to TGC on what the ETPS Subcommittee has discussed and produced to date. The ETPS Subcommittee voted to move the recommended changes to the ETPS program to the TGC. The TGC will hold a special meeting on August 8th, 2013 at the DEQ State Office with GoTo Meeting access and conference bridge call available. The draft agenda for this meeting is posted online at: http://www.deq.idaho.gov/media/1009356-agenda_080813.pdf

REVIEW OF SOLIDO ETPS PRODUCT:

Discussion on the review of an ETPS product called SOLIDO. This product has not undergone NSF Standard 40 testing. It has undergone PIA testing for approval of TSS and $CBOD_5$ (PIA website can be viewed at http://www.pia-gmbh.com/). The manufacturer was given time to present information on the SOLIDO product but did not call in. The committee is not comfortable approving a system that has not undergone NSF Standard 40 testing.

Motion: Michael Reno moved that the TGC not approve the SOLIDO system unless it successfully passes NSF Standard 40 testing.

Second: George Miles.

Voice Vote: Motion carried unanimously.

PRESENTATION OF DRAINFIELD TO SURFACE WATER SETBACK DETERMINATION GUIDANCE AND MODEL:

Tyler informed the TGC that the presentation of Drainfield to Surface Water Setback Determination Guidance and Model has been moved to the August 8th, 2013 meeting. The guidance is still under review with the Attorney General's office. Tyler explained that the Attorney General has stated that in order to utilize the guidance an applicant would have to apply for a variance. The draft guidance will be distributed to the TGC members prior to the meeting.

OLD BUSINESS/ FINAL REVIEW:

Chapter 7 O& M Content

This TGM Section was posted for public comment. There were no public comments received on this section.

Motion: Bob Erickson moved that the TGC recommend final approval to Chapter 7 and the movement of Operation and Maintenance information into Section 4 under the respective systems as amended.

Second: Michael Reno.

Voice Vote: Motion carried unanimously.

Section will post to TGM as final. See DEQ website and **Appendix B**.

4.6 Composting Toilet

This section was posted for public comment. There were no public comments received on this section. Tyler Fortunati reviewed changes and additions to this section. There was discussion regarding the allowable non-human wastes that can be disposed of in these types of systems. Additional clarification was added regarding non-human wastes.

Motion: David Loper moved that the TGC recommend final approval to DEQ of Section 4.6 as amended.

Second: Bob Erickson.

Voice Vote: Motion carried unanimously.

Section will post to TGM as final. See DEQ website and **Appendix C**.

Chapter 3 Edits to Sections 3.1, 3.2.1, 3.2.2, and 3.2.4

This section was posted for public comment. There were no public comments received on this section. Bob Erickson asked that figure 3-1 be amended to add the 5 foot setback to the property line from the drainfield. Joe Canning asked that the drainfield label and arrow be moved over in figure 3-2. Tyler Fortunati stated that both changes would be made on the final document.

Motion: David Loper moved that the TGC recommend final approval to DEQ of Sections 3.1, 3.2.1, 3.2.2, and 3.2.4 as amended.

Second: Michael Reno.

Voice Vote: Motion carried unanimously.

All changes to Chapter 3 will post to TGM as final. See DEQ website and **Appendix D**.

Chapter 2 Edits to Sections 2.6.3 and 2.7.2

This section was posted for public comment. There were no public comments received on this section.

Motion: Bob Erickson moved that the TGC recommend final approval to DEQ of Sections 2.6.3 and 2.7.2 as amended.

Second: Joe Canning.

Voice Vote: Motion carried unanimously.

All changes to Chapter 2 will post to TGM as final. See DEQ website and **Appendix E**.

Chapter 1 Edits to Sections 1.1, 1.2, and 1.3 and Creation of Section 1.4

This section was posted for public comment. There were no public comments received on this section. Discussion was held regarding ETPS technologies and the approval process. Mike Reno would like to see a stricter standard for initial approval of ETPS units in the State of Idaho so the existing problem of failing technologies does not become a bigger issue than it already is. Mike Reno would like to move away from statistical analysis for setting performance standards for ETPS units and move to a performance based approval system utilizing systems already installed in other states. Tyler Fortunati discussed NSF Standard 360 that is based on field performance and grab sampling. Tyler Fortunati stated that this standard is relatively new and no ETPS technologies have undergone testing under this standard. Mike Reno asked that Tyler Fortunati distribute that standard to the TGC for their review and consideration. Tyler Fortunati stated that the standard would be distributed prior to the meeting on August 8th.

Motion: Michael Reno moved that the TGC recommend final approval to DEQ of Sections 1.1, 1.2, 1.3, and 1.4 as amended with the exception to table section 1.4.4.2 regarding ETPS product approvals until the August 8th, 2013 meeting.

Second: Joe Canning.

Voice Vote: Motion carried unanimously.

Sections 1.1, 1.2, 1.3, and 1.4 (with the exception of subsection 1.4.2.2 which is tabled until the August 8th meeting) will post to TGM as final. See DEQ website and **Appendix F**.

10:40 a.m. Break

10:50 a.m. Meeting resumed.

4.1 General Requirements

This section was posted for public comment. There were no public comments received on this section. Discussion was held regarding when an engineer should be required for grey water systems. The TGC's consensus on this issue is that an engineer should only be required if the grey water system has some form of pressurization included in the design.

Motion: Joe Canning moved that the TGC recommend final approval to DEQ of Section 4.1 as amended.

Second: David Loper.

Voice Vote: Motion carried unanimously.

Section will post to TGM as final. See DEQ website and **Appendix G**.

NEW BUSINESS/ DRAFT REVIEW

3.2.5 and 3.2.6 Equal Distribution and Serial Distribution

Tyler Fortunati presented information on the public health district that had submitted public comments regarding failure rates of equal and serial distribution designs on slopes. The public comments are not backed by quantitative data but were stated to be based off of 25 years of observation and experience with failed systems on sloped sites. Joe Canning expressed his view that the best way to achieve serial distribution was through system pressurization. Discussion was held regarding different distribution designs on sloped sites using both serial and equal distribution.

Motion: David Loper moved that the TGC recommend preliminary approval to DEQ of Sections 3.2.5 and 3.2.6 as amended.

Second: Bob Erickson.

Voice Vote: Motion passed with a 4 Ayes and 1 Nay.

Section will post for public comment see **Appendix H** and provide public comment to Tyler Fortunati at 208-373-0140 or by email at tyler.fortunati@deq.idaho.gov.

4.3 Vested Rights and Nonconforming Uses

Tyler Fortunati and David Loper participated in a meeting on July 17th, 2013 with DEQ's Water Quality Division Administrator and the Health District Environmental Health (EH) Directors. The Health District EH Directors accepted the proposed revision to this section of the TGM with a couple clarifications. The first clarification regards a subsurface sewage disposal system that is not approved (previously written as unapproved) which was clarified to be any system, regardless of installation date, that has not had a subsurface sewage disposal system permit issued for it. The second clarification is that an abandoned system is any system where the wastewater generating structure has been removed, regardless of the circumstance surrounding the structures removal. These amendments were made to the proposed revisions.

Motion: Michael Reno moved that the TGC recommend preliminary approval to DEQ of Section 4.3 as amended.

Second: Joe Canning.

Voice Vote: Motion carried unanimously.

Section will post for public comment see **Appendix I** and provide public comment to Tyler Fortunati at 208-373-0140 or by email at tyler.fortunati@deq.idaho.gov.

4.4 Easement

Discussion was held on the proposed revision to this section of the TGM. Discussion regarded the requirement of having an attorney prepare the easement and allowing the applicant and the second party to the easement prepare the easement themselves. Discussion also revolved around the requirement of surveying the easement before a permit is issued, after a system is installed, or whether to require a survey at all. Discussion was also held on the restrictions on easements regarding multiple transport pipes being placed in a single trench. David Loper stated that he would like to review this practice with the Health District Environmental Health Directors. Tyler Fortunati stated that he would also provide the section to the Attorney General's office for their review and comments.

Motion: Michael Reno moved that the TGC table Section 4.4 until reviewed by the Attorney General's office.

Second: Bob Erickson.

Voice Vote: Motion carried unanimously.

Section 4.4 was tabled see **Appendix J**.

The meeting was adjourned for Lunch.
Lunch 12:10 p.m. – 1:25 p.m.

2.5 Ground Water Level

Discussion was held regarding the use of low chroma mottles to determine the seasonal normal and high ground water levels. David Loper asked that the restriction on only utilizing low chroma mottles for replacement systems be removed. David Loper advocated that these are an adequate way to determine ground water levels when done in conjunction with the issuance of a restrictive permit for new construction that is protective of the ground water. David Loper also stated that the applicant can be provided with the option to monitor ground water to ease the requirements of the permit while they construct. Tyler Fortunati stated that he has observed several test holes where low chroma mottles are not present but ground water is and that relying on low chroma mottles alone is not fully protective of the ground water. Tyler Fortunati stated that Idaho Code §39-102.3.a states that the State of Idaho's ground water policy is to prevent contamination of ground water from any source to the maximum extent practical. Ground water monitoring ensures that this is done, where low chroma mottles and estimating water levels does not. Tyler Fortunati stated that if a permit is issued for a subsurface sewage disposal system and it does not meet the separation distances as required by IDAPA 58.01.03.008.02.c then the permit issuer is directly violating the subsurface sewage disposal rules. Tyler Fortunati stated that low chroma mottles are more appropriate for replacement systems when there is not an allowance for a full season of ground water monitoring due to a public health issue. David Loper still advocated for the removal of the requirement to only use low chroma mottles for the estimation of ground water levels on replacement systems only with the compromise that the statement regarding ground water monitoring being the preferred method of determining ground water levels be left in place.

Joe Canning stated he would like to see a recommendation on when ground water monitoring records would not be accepted due to low snow pack. Michael Reno stressed that care should be taken when NRCS data indicate that snow levels are below 75% of normal snow-water equivalent. The TGC developed section 2.5.5 in response to this request.

Bob Erickson recommended changing the ground water monitoring period for seasonal runoff and spring rain events from February 15th through June 15th to February 15th through June 30th.

Joe Canning discussed Figure 2-4 Temporary ground water monitoring well design, and recommended adding emphasis of mounded soil sloping away from the top of the well. This should be done to help reduce the chance of surface runoff accumulating around the temporary monitoring well and moving down the side of the casing which gives a false reading of ground water levels. Tyler Fortunati stated that he would have this amendment added to the figure.

Motion: Joe Canning moved that the TGC recommend preliminary approval to Section 2.5 as amended and post for public comment.

Second: Michael Reno.

Voice Vote: Motion carried unanimously.

Section will post for public comment see **Appendix K** and provide public comment to Tyler Fortunati at 208-373-0140 or by email at tyler.fortunati@deq.idaho.gov.

3.3 Wastewater Flows

Michael Reno asked that the inclusion of the non-domestic wastewater application checklist be added to section 3.3.1 and 3.3.2.

Motion: Michael Reno moved that the TGC recommend preliminary approval to Section 3.3 as amended and post for public comment.

Second: Joe Canning.

Voice Vote: Motion carried unanimously.

Section will post for public comment see **Appendix L** and provide public comment to Tyler Fortunati at 208-373-0140 or by email at tyler.fortunati@deq.idaho.gov.

2:50 p.m. Break

3:00 p.m. Meeting resumed.

4.25 Sand Mound

Tyler Fortunati presented the suggested changes to this section regarding slope correction factors, which was in the TGC parking lot. All of the proposed changes are directly from the Wisconsin Mound Manual and are consistent with its recommendations.

Discussion was held regarding the spacing of laterals within the absorption bed. Recommended lateral spacing was added to the design requirements. Discussion was held regarding the diversion of surface runoff around the mound on sloped sites. It was recommended that this consideration be made by the design engineer.

Tyler Fortunati explained that he added a two foot perimeter of level medium sand out from the top of the absorption bed. This is a mound manual recommendation and was included into the checklist calculations for disposal area sizing.

Tyler Fortunati stated that the Wisconsin Mound Manual utilizes a linear loading rate for the disposal area sizing on sand mounds. Idaho’s sizing requirements based off of soil design subgroups does not appear to correspond to the linear loading rates used in the mound manual. Tyler Fortunati included the slope correction factors directly out of the mound manual as requested. These correction factors dramatically increase the downslope length of the mound with increasing slope percentages. The TGC requested that the slope correction factors remain in place.

Motion: Michael Reno moved that the TGC recommend preliminary approval to Section 4.25 as amended and post for public comment.

Second: Bob Erickson.

Voice Vote: Motion carried unanimously.

Section will post for public comment see **Appendix M** and provide public comment to Tyler Fortunati at 208-373-0140 or by email at tyler.fortunati@deq.idaho.gov.

2.2.3 The Method of 72 to Determine Effective Soil Depths to Porous Layers and Ground Water

Tyler Fortunati introduced this section as another tool that health district staff can use to determine effective soil depths when soil profiles are variable and do not meet the depths provided in the subsurface rules or TGM. The Method of 72 is used to determine effective soil depths to porous layers and ground water. The treatment units assigned to each soil design subgroup are consistent with the separation depths required in the TGC and subsurface rules. To find an effective soil depth the total soil profile below the drainfield must equate to 72 treatment units.

Discussion was held on how the Method of 72 compares to the percentage method used by some of the Health Districts. Bob Erickson requested an analysis of how the Method of 72 compares to the percentage method. The percentage method uses the total depth present compared to what is required for separation for that soil design subgroup.

Action Item: Compare the Method of 72 and the percentage method to determine how the two systems compare for use in variable soil profiles.

Motion: David Loper moved that the TGC recommend preliminary approval to Section 2.2.3 The Method of 72 to Determine Effective Soil Depths to Porous Layers and Ground Water as amended and post for public comment.

Second: Michael Reno.

Voice Vote: Motion carried unanimously.

Section will post for public comment see **Appendix N** and provide public comment to Tyler Fortunati at 208-373-0140 or by email at tyler.fortunati@deq.idaho.gov.

4.24 In-Trench Sand Filter

Tyler Fortunati held discussion with DEQ's Water Quality Division Administrator regarding the requirement of a complex installer license for in-trench sand filters due to the way that IDAPA 58.01.03.006.01.b is written. The Wastewater Program's interpretation of this rule is that pressurized in-trench sand filters require a complex installer where gravity flow in-trench sand filters require a basic installer permit. Based on IDAPA 58.01.03.004.09 DEQ feels it would be appropriate in this instance for the TGC to define the need for a complex and basic installer permit following the guidelines described above.

This section was rewritten to be in line with Method of 72 and remove what appeared to be inconsistencies in separation distance requirements.

Discussion was held regarding pressurized systems and whether to reduce vertical setbacks if the system is pressurized. Joe Canning would like to see the pressurized design placed back into this section. Tyler Fortunati stated that in its current form it appeared to give reduced separation in porous soils and when the biomat forms on the medium sand the effluent could flow through the more porous soils with inadequate treatment based upon the subsurface rules. Joe Canning requested that a modified design be proposed to include envelopment of the drainfield with pressurization to keep the reduced separation distance. Tyler Fortunati stated that he would include the proposal for the next review.

David Loper would like to review these changes more closely and see the modified proposal before moving forward with preliminary approval.

Motion: Bob Erickson moved that the TGC table Section 4.24 until the October 31, 2013 meeting.

Second: David Loper.

Voice Vote: Motion carried unanimously.

Section 4.24 was tabled see **Appendix O**.

<u>NEXT MEETING:</u>

The next regular TGC meeting is scheduled to be on October 31, 2013, 9:15 a.m. – 4:30 p.m. at the DEQ State Office building. A special meeting for the TGC regarding changes proposed by the ETPS Subcommittee will be held August 8, 2013 9:15 a.m. – 4:30 p.m. at the DEQ State Office building.

Motion: David Loper moved to adjourn the meeting.

Second: Michael Reno.

Voice Vote: Motion carried unanimously.

The meeting adjourned at 4:10 p.m.

<u>TGC Parking Lot</u>. This is a list of issues requested to be considered by the TGC.

- 4.20 Pressure Distribution System
  - Low Pressure Wastewater Handling System Guidance update
- Develop Operation and Maintenance requirements for section 4.22 Recirculating Gravel Filter and 4.28 Two-Cell Infiltrative System

- 4.7 Drip Distribution System
    - Adjust typical system components to minimum in section 4.7.1

Appendix A

Technical Guidance Committee Meeting

Draft Minutes

Thursday, April 18, 2013

Department of Environmental Quality
Conference Room F
1410 N. Hilton
Boise, Idaho

TGC ATTENDEES:

Tyler Fortunati, R.E.H.S., On-Site Wastewater Coordinator, DEQ
Joe Canning, P.E., B&A Engineers
Bob Erickson, R.E.H.S., Senior Environmental Health Specialist, South Central Public Health District
David Loper, R.E.H.S., Environmental Health Director, Southwest District Health Department
Michael Reno, R.E.H.S., Environmental Health Supervisor, Central District Health Department

GUESTS:

Chas Ariss, P.E., Wastewater Program Engineering Manager, DEQ
PaRee Godsill, Everlasting Extended Treatment, Inc.
Janette Young, Administrative Assistant, DEQ

CALL TO ORDER/ROLL CALL:

Meeting called to order at 9:15 a.m.
Committee members and guests introduced themselves.

MEETING MINUTES:

January 30, 2013 Draft TGC Meeting Minutes: Review, Amend, or Approve

The minutes were reviewed and one amendment was made to the motion on section 3.2 Equal Distribution and Serial Distribution to correct the section of the TGM that the written motion referred to.

Motion: Joe Canning moved to accept minutes as presented and amended.

Second: Michael Reno.

Voice Vote: Motion carried unanimously.

Minutes will post as final. See DEQ website and **Appendix A**.

OPEN PUBLIC COMMENT PERIOD: This section of the meeting is open to the public to present information to the TGC that is not on the agenda. The TGC is not taking action on the information presented.

The following written comments were submitted to Idaho DEQ for consideration:

- In the RV Dump section the term holding tank should be adjusted to storage tank, thus removing the use of the term in two different sections of the TGM.
- Section 4.20.3.5 In-Tank Pumps allow for a maximum dose of 120 gallons at a rate up to 30 GPM. In the proposed pump to drop box section the pump rate is restricted to 10 GPM, and there is also an additional restriction for effluent velocity between 2 & 4 fps. This will dictate the diameter of the pipe. At 30 GPM a 2 inch pipe flows at 3.1 fps and a 1 inch pipe flows at 12.2 fps. At 10 GPM a 2 inch pipe flows at 1 fps and a 1 inch pipe flows at 4.1 fps. Will this cause a problem?
- Seepage Pits
    - There should be a minimum piping requirement when a distribution network is utilized so it does not crush in deep installations.
    - There should be an allowance for single point discharge in conjunction with seepage rings.
- Sand mound section has soil description issues. The word loam should be added after each description.
- Engineering requirements for pump to drop box systems is an unnecessary hardship on homeowners and does not benefit public health.
- Some rural counties in northern Idaho have a majority of land located within a 100 year floodplain. Limiting RV Dump Stations to non-floodplain areas will leave no options for the parks and campgrounds that the county often approves regardless of health district comments. The health district suggests that an alternative could be to require tanks to be pumped and filled with water at the end of each season.
- Recommend making access to distribution box lids mandatory instead of voluntary.
- The health district has seen more premature failures associated with distribution box installation and the associated trench distribution than with serial distribution. It is not recommended that this change be made.

ETPS SUBCOMMITTEE UPDATE:

Tyler Fortunati presented an update to TGC on what the ETPS Subcommittee has discussed and produced to date and requested input from the TGC on further direction they would like to see regarding the subcommittee. Tyler Fortunati stated that DEQ plans to present all the changes proposed by the ETPS subcommittee at one time for the TGC to review. Currently the proposed changes are waiting for the Attorney General's office to review. Once reviewed and commented on by the AG the ETPS subcommittee will hold another meeting for review of the materials and address any changes recommended by the AG's office. Once the ETPS subcommittee reviews and makes any necessary changes the recommendations for revision will be presented to the TGC for review, revision, and approval. Tyler Fortunati reminded the TGC members that the ETPS subcommittee minutes are available on the DEQ website for their review.

OLD BUSINESS/ FINAL REVIEW:

5.9 Pipe Materials for Specified Uses

This TGM section was posted for public comment. There were no public comments received on this section.

Motion: Bob Erickson moved that the TGC recommend final approval to DEQ of Section 5.9 Pipe Materials for Specified Uses as rewritten.

Second: Joe Canning.

Voice Vote: Motion carried unanimously.

Section will post to TGM as final. See DEQ website and **Appendix B**.

4.21 RV Dump Station

This TGM section was posted for public comment. DEQ received the following written public comments:

- Some rural counties in northern Idaho have a majority of land located within a 100 year floodplain. Limiting RV Dump Stations to non-floodplain areas will leave no options for the parks and campgrounds that the county often approves regardless of health district comments. The health district suggests that an alternative could be to require tanks to be pumped and filled with water at the end of each season.
- In the RV Dump section the term holding tank should be adjusted to storage tank, thus removing the use of the term in two different sections of the TGM.

The Committee amended this section to state floodway instead of floodplain. The Committee also agreed to change any tank language to 'RV dump station tank' where appropriate.

Motion: Michael Reno moved that the TGC recommend final approval to DEQ of Section 4.21 RV Dump Station as rewritten.

Second: Bob Erickson

Voice Vote: Motion carried unanimously.
Section will post to TGM as final. See DEQ website and **Appendix C**.

4.15 Holding Tank

This TGM section was posted for public comment. There were no public comments received on this section.

The committee amended this section to state that emergency holding tanks may not be located in a floodway instead of a floodplain.

Motion: David Loper moved that the TGC recommend final approval to DEQ of Section 4.15 Emergency Holding Tank as rewritten.

Second: Bob Erickson

Voice Vote: Motion carried unanimously.

Section will post to TGM as final. See DEQ website and **Appendix D.**

4.26 Seepage Pit

This TGM section was posted for public comment. DEQ received the following written public comments:

- There should be a minimum piping requirement when a distribution network is utilized so it does not crush in deep installations.
- There should be an allowance of single point discharge in conjunction with seepage rings.

The committee added the allowance for the use of structural blocks in pit construction requirements to incorporate both concrete and cinder blocks in seepage pit construction if desired.

Motion: Joe Canning moved that the TGC recommend final approval to DEQ of Section 4.26 Seepage Pit/Bed as rewritten.

Second: Michael Reno.

Voice Vote: Motion carried unanimously.

Section will post to TGM as final. See DEQ website and **Appendix E.**

4.20.3.6 Pump to Drop-Box

This TGM section was posted for public comment. DEQ received the following written public comment:

- Engineering requirements for pump to drop box systems is an unnecessary hardship on homeowners and does not benefit public health.
- Section 4.20.3.5 In-Tank Pumps allow for a maximum dose of 120 gallons at a rate up to 30 GPM. In the proposed pump to drop box section the pump rate is restricted to 10 GPM, and there is also an additional restriction for effluent velocity between 2 & 4 fps. This will dictate the diameter of the pipe. At 30 GPM a 2 inch pipe flows at 3.1 fps and a 1 inch pipe flows at 12.2 fps. At 10 GPM a 2 inch pipe flows at 1 fps and a 1 inch pipe flows at 4.1 fps. Will this cause a problem?

The Committee removed the requirements that pumps should be sized to effectively deliver a maximum dose of 120 gallons with a maximum pump rate of 10 GPM and that effluent velocity in the pressure transport line should be between 2-4 feet per second. The recommendation for use of an engineer in pump to drop-box design was amended to elevation gains of greater than 100 feet and lengths of greater than 500 feet.

Motion: David Loper moved that the TGC recommend final approval to DEQ of Section 4.20.3.6 Pump to Drop-Box as rewritten.

Second: Michael Reno.

Voice Vote: Motion carried with 3 Ayes and 1 Nay.

Section will post to TGM as final. See DEQ website and **Appendix F.**

3.2.5 and 3.2.6 Equal Distribution and Serial Distribution

The Committee discussed the importance of properly bedding the distribution box to prevent heaving and settling. Discussed that in general, equal distribution is best suited for flat to gently sloping sites, and in general, serial distribution is well suited for sloped sites.

Action Item:

- The Committee requested additional figures be developed for these two sections to better convey equal distribution.
- The Committee requests that DEQ obtain the failure data from the health district submitting the public comment regarding equal and serial distribution systems.

Motion: Bob Erickson moved that the TGC table Section 3.2.5 Equal Distribution and 3.2.6 Serial Distribution pending completion of additional diagrams and failure data from the health district.

Second: Michael Reno.

Voice Vote: Motion carried unanimously. See **Appendix F** and provide public comment to Tyler Fortunati at 208-373-0140 or by email at tyler.fortunati@deq.idaho.gov.

10:00 a.m. Break

10:15 a.m. Meeting resumed.

NEW BUSINESS/ DRAFT REVIEW

Chapter 7 O&M Content

Tyler Fortunati proposed moving the operating and maintenance requirements of specific systems from Chapter 7 to their respective system sections in Chapters 4 and to retitle Chapter 7 Complaint Investigation and Enforcement. The following changes would result:

- Eliminate 7.1 Extended Treatment Package System Operation and Maintenance
  - It is felt this is adequately covered in section 4.10
- Move Section 7.2 Lagoon Operation and Maintenance to subsection 4.17.6
- Move Section 7.3 Sand Filter Operation and Maintenance to subsection 4.23.6
- Move Section 7.4 Sand Mound Operation and Maintenance to subsection 4.25.6
- Chapter 7 is retitled to Complaint Investigation and Enforcement

Tyler Fortunati proposed that Section 7.1 Open Sewage Complaint Investigation Protocol, Item 7 be amended from 7 days to obtain a replacement permit to 15 days. This aligns the acquisition of a permit with Idaho Code 39-108 and the allowance of an individual issued a Notice of Violation 15 days to schedule a compliance conference.

This provides an alleged violator 15 days to either schedule the compliance conference or obtain a replacement permit for the failed septic system.

Action Item:

- The Committee requests that DEQ develop system specific Operation and Maintenance requirements for section 4.22 Recirculating Gravel Filter and section 4.28 Two-Cell Infiltrative System.

Motion: Michael Reno moved that the TGC recommend preliminary approval of moving the Operation and Maintenance sections from Chapter 7 to Chapter 4 and the amendment to proposed section 7.1 as discussed, and that DEQ issue the revised sections for public comment.

Second: Joe Canning.

Voice Vote: Motion carried unanimously. See **Appendix H** and provide public comment to Tyler Fortunati at 208-373-0140 or by email at tyler.fortunati@deq.idaho.gov.

4.6 Composting Toilet

Tyler Fortunati presented changes and additions to this section. The removal of the condition of approval for composting toilets being applicable wherever pit privies are applicable was made. A new subsection regarding compost disposal allowances was added to the section.

Motion: Michael Reno moved that the TGC recommend preliminary approval of Section 4.6 Composting Toilets and that DEQ issue the revised Section 4.6 Composting Toilets for public comment.

Second: Joe Canning.

Voice Vote: Motion carried unanimously. See **Appendix I** and provide public comment to Tyler Fortunati at 208-373-0140 or by email at tyler.fortunati@deq.idaho.gov.

The meeting was adjourned for Lunch.
Lunch 11:54 a.m. – 1:05 p.m.

Chapter 3 Content

The Committee made several recommendations for amendments to figures 3-1, 3-2, and 3-3. These were incorporated as action items for the next meeting.

The proposed amendments to the subsections of chapter 3 were presented.

Action Item:

- Amend figures 3-1, 3-2, and 3-3 as follows:

- 3-1: Amend the Soil Design Class to Soil Design Group
- 3-1 and 3-2: Move the discharge pipe to the center of the U-shaped drain field
- 3-1 and 3-2: Change Seasonal Drainage to Temporary Surface Water
- 3-1 and 3-2: Change Downslope Cut/Slope to Downslope Cut/Scarp
- 3-1 and 3-2: Adjust trenches so they are not connected at top
- 3-1: Work on adjusting the scarp setbacks
- 3-2: Move 5 foot minimum from the side of the septic tank, not through drainfield
- 3-1: Add designation of 6 foot minimum from the side of the drain field and replacement area
- 3-3: Make one of the access lids to the septic tank larger than the other
- 3-3: Remove 2 foot minimum from above the drain field
- 3-3: Add to the 1 foot minimum cover, a 3 foot max cover limit

Motion: Joe Canning moved that the TGC recommend preliminary approval of Chapter 3 revisions and that DEQ issue the revised sections of Chapter 3 for public comment.

Second: David Loper.

Voice Vote: Motion carried unanimously. See **Appendix J** and provide public comment to Tyler Fortunati at 208-373-0140 or by email at tyler.fortunati@deq.idaho.gov.

Chapter 2 Content

Revisions to section 2.6.3 and 2.7.2 were presented.

Motion: Michael Reno moved that the TGC recommend preliminary approval of the Chapter 2 revisions and that DEQ issue the revised sections of Chapter 2 for public comment.

Second: David Loper.

Voice Vote: Motion carried unanimously. See **Appendix K** and provide public comment to Tyler Fortunati at 208-373-0140 or by email at tyler.fortunati@deq.idaho.gov.

Chapter 1 Content

The revisions to chapter 1 and addition of section 1.4 were presented and reviewed by the Committee. Amendments were made to the health district representation make-up of the TGC. All other amendments and additions were accepted without modification from what was presented.

Motion: Joe Canning moved that the TGC recommend preliminary approval of Chapter 1 revisions as shown in Appendix L for public comment.

Second: Michael Reno.

Voice Vote: Motion carried unanimously. See **Appendix L** and provide public comment to Tyler Fortunati at 208-373-0140 or by email at tyler.fortunati@deq.idaho.gov.

4.1 General Requirements

Amendments to section 4.1 of the TGM were presented.

Action Item:

- Confirm with DEQ's Water Quality Division Administrator on what options are available for removing gravity flow In-Trench Sand Filters from the list of systems that require a complex installer permit (i.e., name change to system, etc.).

Motion: Bob Erickson moved that the TGC recommend preliminary approval of Chapter 4.1 General Requirements revisions as shown in Appendix M for public comment.

Second: Michael Reno.

Voice Vote: Motion carried unanimously. See **Appendix M** and provide public comment to Tyler Fortunati at 208-373-0140 or by email at tyler.fortunati@deq.idaho.gov.

4.3 Vested Rights and Non-conforming Uses

Discussion was held on what constitutes an abandoned system and how it is evaluated on a case by case basis. There was not consensus on when a permit should be issued for an unapproved system. This revision will be tabled pending further investigation of health district practices and DEQ input.

Action Item:

- David Loper will work with the Environmental Health Directors Working Group to determine the current health district practices regarding abandoned systems.
- Tyler Fortunati will obtain input on abandoned systems from the Water Quality Division Administrator and possibly the Attorney General's office.

Motion: David Loper moved that the TGC table Section 4.3 Vested Rights and Non-conforming Uses pending input from EHDWG and DEQ.

Second: Michael Reno.

Voice Vote: Motion carried unanimously. See **Appendix N** and provide public comment to Tyler Fortunati at 208-373-0140 or by email at tyler.fortunati@deq.idaho.gov.

TGC Policy #2000-1 and #2000-2 Policies

Bob Erickson introduced TGC Policy #2000-1 and #2000-2 that were a part of the TGM at some time in the past. Tyler Fortunati stated that the policies had not been a part of the TGM since at least 2006. The policies appeared to be an actual part of the manual based upon page numbers and revision dates of May 14, 2001. The Committee agreed that Policy #2000-1 was covered under section 4.10 of the TGM and was not necessary. The Committee agreed that Policy #2000-2 requirements for installer classes are covered under the subsurface rules and that both basic and complex installer tests were revised in 2012 with a decision by DEQ that both tests could be taken as open book tests. There was no knowledge from the current Committee members as to whether either policy had been officially rescinded by the TGC.

Motion: Michael Reno moved that the TGC formally rescind Policies #2000-1 and #2000-2 from the Technical Guidance Manual and Technical Guidance Committee.

Second: Joe Canning.

Voice Vote: Motion carried unanimously. See **Appendix O** and provide public comment to Tyler Fortunati at 208-373-0140 or by email at tyler.fortunati@deq.idaho.gov.

NEXT MEETING:

The next committee meeting is scheduled to be on July 18, 2013, 9:15 a.m. – 4:30 p.m. at the DEQ State Office building.

Motion: Bob Erickson moved to adjourn the meeting.

Second: David Loper.

Voice Vote: Motion carried unanimously.

The meeting adjourned at 3:30 p.m.

TGC Parking Lot.
This is a running list of issues requested to be prepared and presented by the TGC.

- Sand Mound slope correction factors
- 4.20 Pressure Distribution System
    - Low Pressure Wastewater Handling System Guidance update

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List of Appendices:

Appendix A:
January 30, 2013 TGC Minutes
Status: Final
Appendix B:
5.9 Pipe Materials for Specified Uses
Status Final
Appendix C:
4.21 Recreational Vehicle Dump Station
Status: Final
Appendix D:
4.15 Emergency Holding Tank
Status: Final
Appendix E:
4.26 Seepage Pit/Bed
Status: Final
Appendix F:
4.20 Pressure Distribution System: 4.20.3.6 Pump to Drop Box
Status: Final
Appendix G:
3.2.5 and 3.2.6 Equal Distribution and Serial Distribution
Status: Tabled
Appendix H:
Chapter 7 O&M Content
Status: Preliminary approval- posted for public comment
Appendix I:
4.6 Composting Toilet
Status: Preliminary approval- posted for public comment
Appendix J:
Chapter 3
Status: Preliminary approval- posted for public comment
Appendix K:
Chapter 2
Status: Preliminary approval- posted for public comment
Appendix L:
Chapter 1
Status: Preliminary approval- posted for public comment
Appendix M:
4.1 General Requirements
Status: Preliminary approval- posted for public comment
Appendix N:
4.3 Vested Rights and Nonconforming Uses

Status: Tabled

Appendix O:

Technical Guidance Committee Policies #2000-1 and #2000-2

Status: Policies rescinded

Appendix B

Chapter 7. ~~Operation and Maintenance Guidance for Alternative Systems~~Complaint Investigation and Enforcement

~~7.1 Extended Treatment Package System Operation and Maintenance~~

~~Revision: April 24, 2000~~

~~Operation and maintenance tasks must follow those recommended by the manufacturer.~~

~~7.2 Lagoon Operation and Maintenance~~

~~The lagoon must be kept filled with at least 2 feet of liquid. A supply of makeup water shall be available. If the water comes from a well or domestic water supply, an approved backflow prevention device must be installed between the water source and the discharge to the lagoon.~~

~~Embankments must be stable and maintained to avoid breach, overflow, aesthetic nuisance, or disturbance to the lagoon operation. Permanent vegetation shall be maintained on the top and outer slopes of the embankment except where a foot or vehicle path is in use. Grasses should be mowed.~~

~~Weeds and other vegetation must not be allowed to grow in the lagoon.~~

~~Duckweed or other floating aquatic weeds must be physically removed when the vegetation obscures the surface of the liquid.~~

~~The fence and all gates must be maintained to exclude animals, children, and other unwanted intrusion.~~

~~7.3 Sand Filter Operation and Maintenance~~

~~Operations and maintenance tasks for sand filters should be specified on the permit.~~

~~Conventional sand filters, or sand filters of comparable operation and maintenance are the responsibility of the system owner.~~

~~Permits may not be issued for a sand filter that, in the judgment of the Director, would require operation and maintenance significantly greater than conventional sand filters, unless operation and maintenance arrangements for system O&M meeting the Director's approval are secured. Filters with special approvals should be inspected every 12 months and checked for necessary corrective maintenance.~~

The owner of any sand filter system must provide the Department written verification that the system's septic tank has been pumped annually from the date of installation by an approved septic tank pumping business.

The service start date shall be assumed as the installation date.

The owner must provide the Director with certification of tank pumping within 2 months of the date required for pumping.

7.4 Sand Mound Operation and Maintenance

The Director may require that a management entity be responsible for sand mound operation and maintenance. Such independent management is particularly important for large systems, i.e., systems with more than nine connections or more than 2,500 gallons of sewage per day. Refer to section 4.2 for guidelines on Nonprofit Corporations for Managing Small or Subsurface Wastewater Flow Systems.

The Director may require that operation and maintenance records, including results of ground water and system test results, are submitted annually.

Alarm systems should be inspected monthly for proper operation.

Sludge depth in the septic tank should be checked annually and the tank shall be pumped when the sludge exceeds 40% of the liquid depth.

The mound must be maintained free of vehicular traffic, livestock, and other compaction or disruptive activity. The toe area of the mound is extremely sensitive to compaction and must particularly be protected. Maintenance of grasses and shallow-rooted perennials on the mound is recommended.

7.57.1 Open Sewage Complaint Investigation Protocol

Revision: September 12, 2008April 18, 2013

Record pPertinent information must be recorded from the complainant to conductso an initial investigation can be conducted (i.e., name, address, and phone number of property owner and complainant and the nature of the complaint). Health district staff will investigate open sewage complaints stemming from subsurface sewage disposal systems. DEQ will investigate open sewage complaints regarding public wastewater treatment systems (e.g., collection, pumping, treatment, etc.).

Gather the following equipment and prepare for investigation:

- Camera
- Dye (tablets or liquid)
- Notify laboratory of possibility for coliform density tests
- Sample bottles, whirl packs, sterilized equipment, and laboratory sample forms.

- Ice chest and ice
- Disposable gloves

Go to the property, notify owners of the complaint, and conduct a complaint investigation. If the complaint is unfounded, notify the complainant of findings. If the open sewage complaint is valid:

1. Take pictures of any open sewage or evidence of wastewater.
2. Dye trace household plumbing if necessary to identify wastewater discharge location.
3. Collect samples of sewage.
4. Collect samples of surface water if directly discharged to water.
5. Place samples in ice chest and transport to laboratory.
6. Post primary and secondary contact recreational waters with open sewage notice until water sample results can be obtained.
7. Issue Notice of Violation (NOV) directly to property owner or send notice via certified mail. Establish time frames for obtaining a replacement system permit (~~7~~ 15 days), for system installation (30 days) and any corrective actions necessary to mitigate the public health hazard of the open sewage (items 8 and 9, immediate action).
8. ~~7.~~ ~~Carbon c~~Copy the county prosecutor with the NOV letter.
9. ~~8.~~ Require the septic tank(s) to be pumped on a daily basis, if necessary, with documentation sent to the health district office.
10. ~~9.~~ Require open sewage to be covered with soil. If property owner is unable to cover sewage with soil require the property owner to spread lime on top of open sewage.
11. ~~10.~~ Track property owner activity regarding compliance with NOV and any issued permit.
12. ~~11.~~ If the property owner fails to comply with the NOV file a complaint with the county prosecutor and ask the prosecutor to issue a citation against the property owner. Prepare case for court hearing.
13. ~~12.~~ Follow court's judgment, or hearing findings.

4.10.2 Operation, Maintenance, and Monitoring Conditions for Approval

Procedures relating to operation, maintenance, and monitoring are required by IDAPA 58.01.03 (section 8.1) or may be required as a condition of issuing a permit, per IDAPA 58.01.03.005.14 (section 8.1) to ensure protection of public health and the environment. Operation and maintenance tasks must follow those recommended by the manufacturer.

4.17.6 Operation and Maintenance

1. The lagoon must be kept filled with at least 2 feet of liquid.
2. A supply of makeup water shall be available.
3. If the water comes from a well or domestic water supply, an approved backflow prevention device must be installed between the water source and the discharge to the lagoon.
4. Embankments must be stable and maintained to avoid breach, overflow, aesthetic nuisance, or disturbance to the lagoon operation.
5. Permanent vegetation shall be maintained on the top and outer slopes of the embankment except where a foot or vehicle path is in use. Grasses should be mowed.
6. Weeds and other vegetation must not be allowed to grow in the lagoon.
7. Duckweed or other floating aquatic weeds must be physically removed when the vegetation obscures the surface of the liquid.
8. The fence and all gates must be maintained to exclude animals, children, and other unwanted intrusion.

4.23.6 Operation and Maintenance

1. Operations and maintenance tasks for sand filters should be specified in an operation and maintenance manual referred to on the permit.
2. Conventional sand filters, or sand filters of comparable operation and maintenance are the responsibility of the system owner.
3. Permits may not be issued for a sand filter that, in the judgment of the Director, would require operation and maintenance significantly greater than conventional sand filters, unless operation and maintenance arrangements for system O&M meeting the Director's approval are secured.
4. Filters with special approvals should be inspected every 12 months and checked for necessary corrective maintenance.
5. ~~1.~~ Sludge depth in the septic tank should be checked annually and the tank shall be pumped when the sludge exceeds 40% of the liquid depth.

6. ~~The owner of any sand filter system must provide the Department written verification that the system's septic tank has been pumped annually from the date of installation by an approved septic tank pumping business.~~
7. ~~The service start date shall be assumed as the installation date.~~
8. ~~The owner must provide the Director with certification of tank pumping within 2 months of the date required for pumping.~~

4.25.6 Operation and Maintenance

1. The Director may require that a management entity be responsible for sand mound operation and maintenance. Such independent management is particularly important for large systems (i.e., systems with more than nine connections or more than 2,500 gallons of sewage per day). Refer to section 4.2 for guidelines on Nonprofit Corporations for Managing Small or Subsurface Wastewater Flow Systems.
2. The Director may require that operation and maintenance records, including results of ground water and system test results, are submitted annually.
3. Alarm systems should be inspected monthly for proper operation.
4. Sludge depth in the septic tank should be checked annually and the tank shall be pumped when the sludge exceeds 40% of the liquid depth.
5. The mound must be maintained free of vehicular traffic, livestock, and other compaction or disruptive activity.
6. The toe area of the mound is extremely sensitive to compaction and must particularly be protected.
7. Maintenance of grasses and shallow-rooted perennials on the mound is recommended.

Appendix C

4.6 Composting Toilet

Revision: April ~~21~~18, ~~2000~~2013

4.6.1 Description

Composting toilets are those within ~~the~~ a dwelling that store and treat non-water-carried human urine and feces and small amounts of household garbage by bacterial decomposition. The resultant product is compost.

4.6.2 Approval Conditions

1. Water under pressure shall not serve the dwelling unless a public sewer or another acceptable method of on-site disposal is available.

~~2. Composting toilets may be applicable wherever pit privies are applicable.~~

~~3.~~2. Units are restricted to the disposal of human feces, urine, and small quantities of household garbage. Household garbage should be limited to the manufacturer's recommendations. Chemicals, pharmaceuticals, and non-biodegradable products (e.g., plastics, etc.) should not be disposed of in a composting toilet.

4.6.3 Design

1. All materials used in toilet construction must be durable and easily cleanable. Styrene rubber, polyvinyl chloride (PVC), and fiberglass are examples of acceptable materials.
2. Design must demonstrate adequate resistance to internal and external stresses.
3. All mechanical and electrical components should be designed to operate safely and be capable of providing continuous service under reasonably foreseen conditions such as extreme temperatures and humidity.
4. Toilet unit must be capable of accommodating full- or part-time use.
5. Continuous positive ventilation of the storage or treatment chamber must be provided to the outside.
   a. Ventilation components should be independent of other household ventilation systems.
   b. Venting connections must not be made to room vents or to chimneys.
   ~~a.~~c. All vents must be designed to prevent flies and other insects from entering the treatment chamber.

4.6.4 Compost Disposal

1. Compost material produced by a composting toilet may be utilized as a soil amendment additive.
2. Compost material used as a soil additive should be incorporated into the native soil immediately after application.
3. Sewage products should be allowed to compost to the point that they are not identifiable as human waste prior to use as a soil additive.
4. It is recommended that non-degraded waste products either be transferred to a second compost container prior to use as a soil additive for further breakdown or disposed of in an approved landfill.
5. Composted toilet waste should not be used as a soil additive for edible fruit or vegetable plants.

Note: Toilets, as plumbing fixtures, are regulated by the Idaho Division of Building Safety, State Plumbing Bureau. Current plumbing code prohibits the use of composting toilets without the permission of the health district. Proof of permission will be provided through a permit issued by the health district.

Appendix D

Chapter 3. Standard Subsurface Disposal System Components

3.1 Dimensional Requirements

Revision: April 18, 2013~~06~~

Figure 3-1 shows the major ~~dimensional~~ horizontal separation distance requirements for a standard drainfield. Figure 3-2 shows the major ~~dimensional~~ horizontal separation distance requirements for a septic tank.

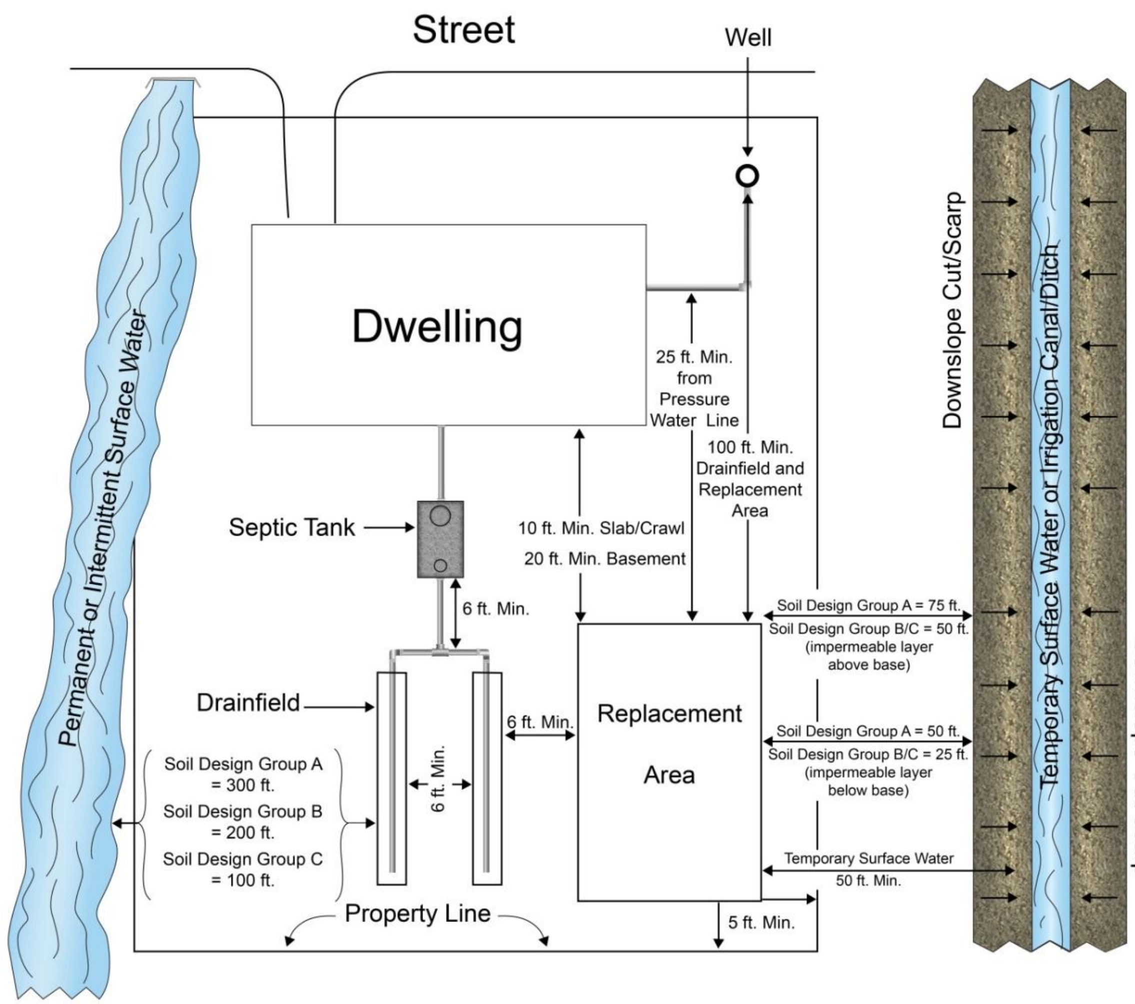

Figure 3-1. ~~Dimensional~~ Horizontal separation distance requirements for a standard drainfield (IDAPA 58.01.03.008.02.d and 58.01.03.008.04).

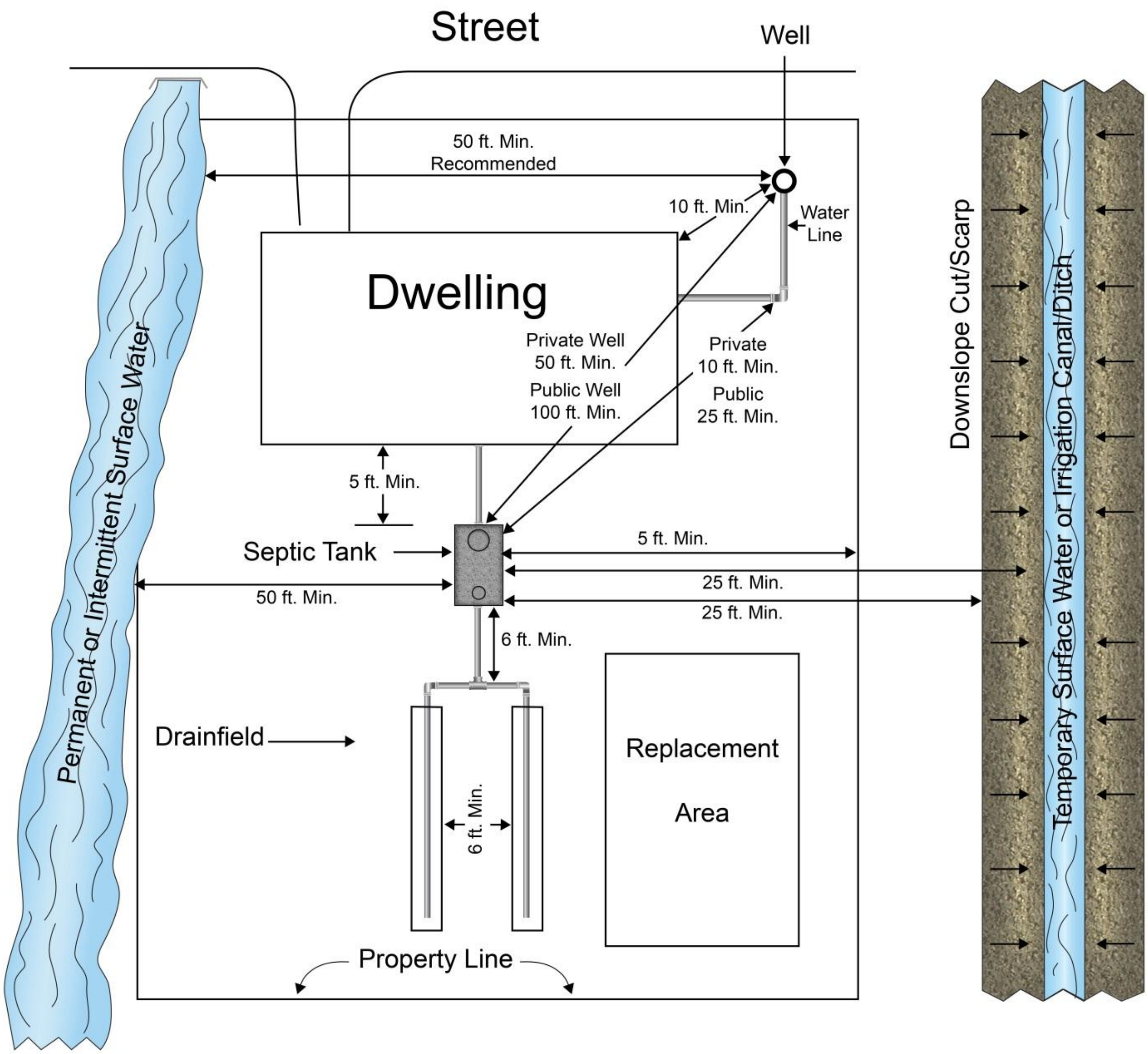

Figure 3-2. ~~Dimensional~~ Horizontal separation distance requirements for a septic tank (IDAPA 58.01.03.007.17).

1. ~~Distance~~ Minimum separation distance of 20 feet is required between~~from~~ a drainfield ~~to~~and a dwelling with a basement ~~is 20 feet~~ (IDAPA 58.01.03.008.02.d). If the basement is a daylight style basement and the drainfield installation depth is below the daylight portion of the basement the minimum separation distance can be reduced to 10 feet.

2. Minimum separation distance of 6 feet is required between absorption trenches and from installed trenches or beds to the replacement area ~~(IDAPA 58.01.03.008.04)~~. Separation distance must be through undisturbed soils (IDAPA 58.01.03.008.04).

3. ~~Distance~~ Minimum separation distance of 6 feet is required ~~from~~between the septic tank ~~to~~and the drainfield ~~is 6 feet (IDAPA 58.01.03.008.04)~~. Separation distance must be through undisturbed soils (IDAPA 58.01.03.008.04).

4. Minimum separation distance of 50 feet is required between an ~~building sewer~~effluent line and a septic tank to~~and~~ a domestic well ~~is 50 feet~~ (IDAPA 58.01.03.007.17 and 58.01.03.007.22).

Figure 3-3 shows a cross-sectional view of a standard drainfield, along with trench dimensional installation requirements.

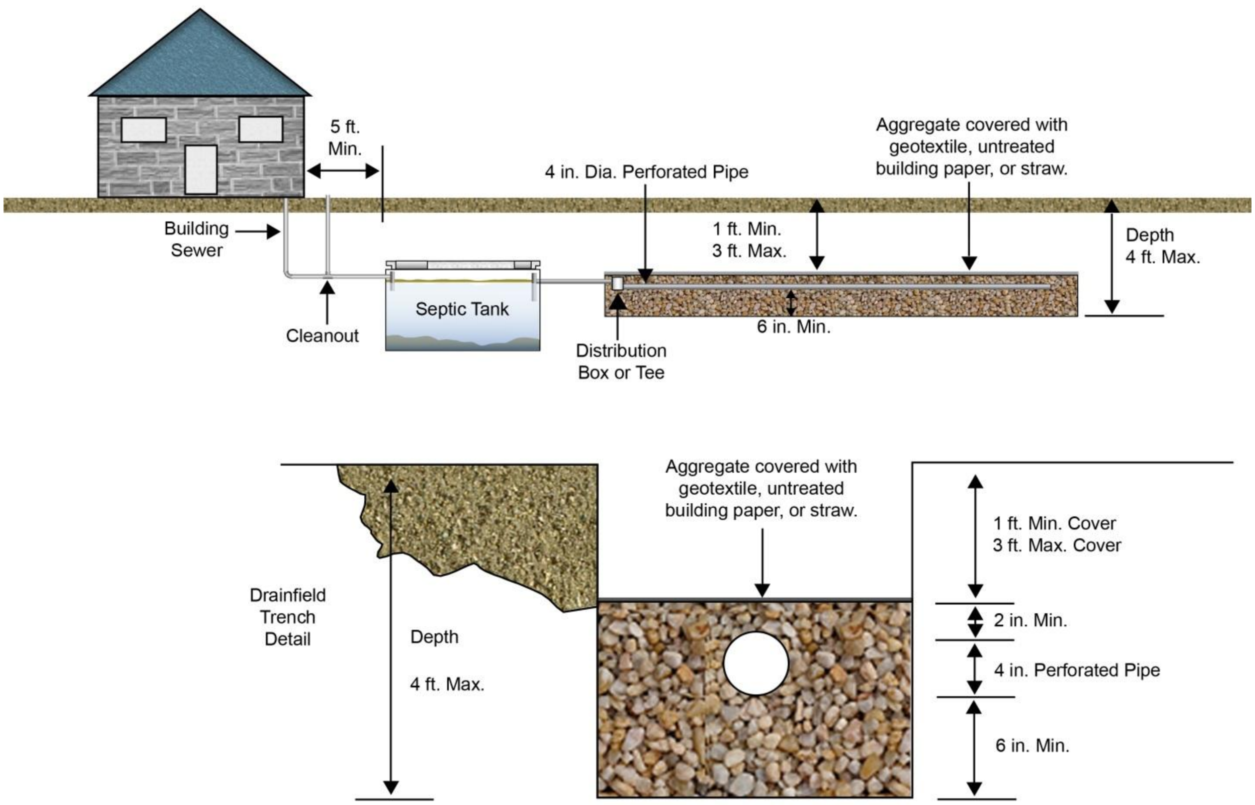

Figure 3-3. Cross-sectional view of a standard drainfield and trench dimensional installation requirements.

3.2 Components of Standard Systems

Revision: ~~July 3~~April 18, 201~~2~~3

3.2.1 Interceptors (Clarifiers) and Grease Traps

Interceptors (clarifiers) and grease traps are specifically designed devices installed to separate and retain materials, such as greases and oils, from sewage. They are usually installed between the discharging fixture, such as a sink or slaughter pad, and the ~~wastewater treatment device~~septic tank. ~~Interceptors (clarifiers) and grease traps may also be referred to as pretreatment devices.~~ Interceptor (clarifier) and grease trap volumes are not substitutes for minimum septic tank capacities.

Design and installation of these devices is under the jurisdiction of the Idaho Division of Building Safety, Plumbing Bureau, or a local administrative authority. These devices or additional pretreatment devices may be required for commercial or industrial establishments, such as food service businesses, car washes, slaughter houses, or others who discharge substances in the wastewater that would be detrimental to the sewage disposal system. Pretreatment device effectiveness is substantiated by monitoring the effluent and reporting the operation and maintenance performed.

Any person applying to discharge nondomestic wastewater to a subsurface sewage disposal system shall be required to provide wastewater strength characterization and sufficient information to the Director, documenting that the wastewater will not adversely affect the waters of Idaho. Commercial establishments with wastewater strengths exceeding normal domestic wastewater strength, as depicted in Table 3-1, are required to pretreat the wastewater down to normal domestic wastewater strengths.

Information on these devices is found in the Uniform Plumbing Code, 2000 Edition, Chapter 10 and Appendix H. Plans and specifications for these devices must be approved by the Idaho Division of Building Safety- Plumbing Bureau, or local administrative plumbing authority.

Table 3-1. Constituent mass loadings and concentrations in typical residential wastewater.[a]
(Revision: January 30, 2009)

Constituent	Parameter	
	Mass Loading (grams/person/day)	**Concentration (mg/L)**[b]
Total solids (TS)	115–200	500–880
Volatile solids	65–85	280–375
Total suspended solids (TSS)	35–75	155–330
Volatile suspended solids	25–60	110–265
Five-day biological oxygen demand (BOD_5)	35–65	155–286
Chemical oxygen demand (COD)	115–150	500–660
Total nitrogen (TN)	6–17	26–75
Ammonia (NH_4+)	1–3	4–13
Nitrite (NO_2-N) and nitrate (NO_3)	< 1	< 1
Total phosphorus (TP)	1–2	6–12
Fats, oil, and grease	12–18	70–105
Volatile organic compounds (VOC)	0.02–0.07	0.1–0.3
Surfactants	2–4	9–18
Total coliforms (TC)[c]	—	10^8–10^{10}
Fecal coliforms (FC)[c]	—	10^6–10^8

Source: United States Environmental Protection Agency, *Onsite Wastewater Treatment and Disposal Systems Manual*, 2002, (EPA/625R-00-008), Table 3-7, page 3-11.
a. For typical residential dwellings equipped with standard water-using fixtures and appliances.
b. Milligrams per liter (mg/L); assumed water use of 60 gallons/person/day (227 liters/person/day).
c. Concentrations presented in Most Probable Number (MPN) of organisms per 100 milliliters.

3.2.2 Building Sewer

The design and installation of a building sewer is under the jurisdiction of the Idaho Division of Building Safety- Plumbing Bureau, or a local administrative authority. The state or local authority must approve any plans involving the construction or installation of a building sewer. Contact the Plumbing Bureau for all guidance, permitting, and inspection requirements related to the building sewer portion of your project. Plumbing Bureau jurisdiction relates to all building sewer components from household fixtures up to the inlet of the septic tank.

Information provided here is advisory only and intended for planning purposes.

1. Building sewers must run at a uniform slope of not less than one-fourth inch per foot toward the point of discharge.
2. Building sewer piping should be laid on a firm, stable bed throughout its entire length.

3. Building sewers must be installed a minimum of 12 inches below the surface of the finished grade.

4. Cleanouts shall be placed:

   a. Inside the building near the connection between the building drain and building sewer, or

   b. Outside the building at the lower end of a building drain and extended to grade, and

   c. At intervals of up to 100 feet in straight runs, and

   d. At every change in alignment or grade in excess of 22.5 degrees, except that no cleanout will be required for one 45 degree change of direction or one 45 degree offset.

3.2.4 Drainfields

Whether it is a trench or a bed, the drainfield should not be constructed when the soil is near or wetter than its optimum moisture (IDAPA 58.01.03.008.06). At optimum moisture, a soil will compact to its maximum ability and thus reduce its capability to transmit water. This ability to compact and restrict flow is particularly true of finer soils, such as silt loams and clay loams. It is not as critical in sands or sandy loams.

If it is entirely unavoidable to excavate the drainfield when the soil is wetter than its optimum moisture content, then the ~~sides~~trench sidewalls and trench bottom in the excavated drainfield should be raked to relieve any compaction. Backhoe buckets and teeth can effectively smear both trench sidewalls and trench bottoms. Therefore, raking should be done manually with a strong iron garden rake after all excavation with a backhoe is complete and before the drainrock is put in place.

Drainrock should be checked for cleanliness before it is placed in the trenches. Long transportation time may generate additional fines. If drainrock is found to be unsuitably dirty when it arrives at the site, it can often be cleaned in the truck by tipping the truck bed slightly and washing the rock with a strong stream of water.

Trenches do not have to be constructed straight. It is always preferable to follow the contour of the land. The drainfield must not be installed in floodways, at slope bases, in concave slopes, or depressions. Drainfield areas shall be constructed to allow for surface drainage and to prevent ponding of water over the drainfield.

Table 3-2 gives the lengths of trenches in the seven soil subgroups (A-2 has two application rates; see section 2.3, Table 2-10).

Drainfields larger than 1,500 ft^2 trench area bottom are prohibited from being constructed as a standard (gravity) drainfield (IDAPA 58.01.03.008.04). Drainfields exceeding 1,500 ft^2 in total trench bottom area must be pressure-dosed (section 4.20).

Table 3-2. Area requirements and total trench lengths for standard subsurface sewage disposal systems.

Number of Bedrooms	1	2	3	4	5	6
Gallons per day	**150**	**200**	**250**	**300**	**350**	**400**
			Total Trench Lengths (feet)			
Soil Group A-1 total feet	125	167	208	250	292	333
3-ft wide trench	42	56	69	83	97	111
2.5-ft wide trench	50	67	83	100	117	133
2-ft wide trench	63	83	104	125	146	167
Soil Group A-2a total feet	150	200	250	300	350	400
3-ft wide trench	50	67	83	100	117	133
2.5-ft wide trench	60	80	100	120	140	160
2-ft wide trench	75	100	125	150	175	200
Soil Group A-2b total feet	200	267	333	400	467	533
3-ft wide trench	67	89	111	133	156	178
2.5-ft wide trench	80	107	133	160	187	213
2-ft wide trench	100	133	167	200	233	267
Soil Group B-1 total feet	250	333	417	500	583	667
3-ft wide trench	83	111	139	167	194	222
2.5-ft wide trench	100	133	167	200	233	267
2-ft wide trench	125	167	208	250	292	333
Soil Group B-2 total feet	333	444	556	667	778	889
3-ft wide trench	111	148	185	222	259	296
2.5-ft wide trench	133	178	222	267	311	356
2-ft wide trench	167	222	278	333	389	444
Soil Group C-1 total feet	500	667	833	1,000	1,167	1,333
3-ft wide trench	167	222	278	333	389	444
2.5-ft wide trench	200	267	333	400	467	~~a~~534
2-ft wide trench	250	333	417	500	~~a~~548	~~a~~667
Soil Group C-2 total feet	750	1,000	1,250	1,500	1,750	2,000
3-ft wide trench	250	333	417	500	a	a
2.5-ft wide trench	300	400	500	~~a~~600	a	a
2-ft wide trench	375	500	~~a~~625	~~a~~750	a	a

a. Exceeds ~~500 feet of trench length or~~ 1,500 square feet of total trench area. Use an alternative system ~~or request a variance~~to reduce the installed square footage of trench area below 1,500 square feet or install a pressure-dosed system.

Appendix E

2.6.3 Approval Conditions

Table 2-11 shows drainfield setbacks from cutoff trenches based on percent slope. In Table 2-11, each split cell shows the drainfield depth requirement in the upper left and the minimum setback distance in the lower right. Effective soil depths for drainfields must meet requirements in Table 2-6 and Table 2-7.

Table 2-11. Setbacks of drainfield from cutoff trench based on percent slope.

Slope (%)	Depth of Cutoff Trench (feet)							
	3	4	5	6	7	8	9	10
5	0.5 - 3 / 50	1.5 - 4 / 50	2.5 - 4 / 50	3.5 - 4 / 50	4 / 61	4 / 81.5	4 / 100	4 / 120
10	0 - 3 / 30.5	0 - 4 / 40.5	0 - 4 / 50	1 - 4 / 50	2 - 4 / 50	3 - 4 / 50	4 / 50	4 / 61
15	0 - 3 / 18	0 - 4 / 25	0 - 4 / 32	0 - 4 / 39	0 - 4 / 45	0.5 - 4 / 50	1.5 - 4 / 50	2.5 - 4 / 50
20	0 - 3 / 14	0 - 4 / 19.5	0 - 4 / 24.5	0 - 4 / 29.5	0 - 4 / 34.5	0 - 4 / 39.5	0 - 4 / 44.5	0 - 4 / 50
25	0 - 3 / 11.5	0 - 4 / 16	0 - 4 / 19.5	0 - 4 / 23.5	0 - 4 / 27.5	0 - 4 / 31.5	0 - 4 / 35	0 - 4 / 39.5
30-45	0 - 3 / 9.5	0 - 4 / 13	0 - 4 / 16.5	0 - 4 / 19.5	0 - 4 / 23	0 - 4 / 26.5	0 - 4 / 30	0 - 4 / 33

Note: Split cells show drainfield installation depth requirements in the upper left and minimum setback distance in the lower right.

Each split cell in Table 2-11 shows the installation depth required to maintain the drainfield below the level of the cutoff trench. Drainfield setback distances are a function of slope. As the slope increases, the separation distance is reduced. The risk of septic tank effluent being intercepted by the cutoff trench decreases as the slope increases, which enables reduced setbacks at higher slopes.

2.7.2 Additional Application Information Requirement

Applicants proposing systems above a suspected unstable landform are required to provide supplemental information on the subsurface sewage disposal application as required in the "Individual/Subsurface Sewage Disposal Rules" (IDAPA 58.01.03.005.04.o), see section 8.1. The septic tank and drainfield shall not be installed on an unstable landform, where operation of the subsurface sewage disposal system may be adversely affected or where effluent discharged to the subsurface will contribute to the unstable nature of the downslope landform.

~~Application for a~~A permit shall be denied for a subsurface sewage disposal system application ~~with~~ where any portion of the system must be installed on an unstable landform~~shall have the permit denied~~. Locating subsurface sewage disposal systems on unstable landforms will result in adverse system operation, performance, and effluent treatment.

Appendix F

1.1 Technical Guidance Committee

Revision: September 12April 18, 201308

To provide the latest information for this manual, the Technical Guidance Committee was established by the Board of Environmental Quality (IDAPA 58.01.03.004.07). The committee includes three environmental health specialists from Idaho health districts, a member of the Idaho Department of Environmental Quality (DEQ), a professional engineer licensed in the State of Idaho, and a permitted septic system installer. The preferred composition of environmental health specialists provided by the Idaho health districts is an Environmental Health Director, Environmental Health Supervisor, and Senior Environmental Health Specialist. All appointments are for three year terms, except for the DEQ appointment which shall be permanently held by DEQ's On-Site Wastewater Coordinator or equivalent. All sections of the TGM have been reviewed and approved by the TGC prior to inclusion herein (IDAPA 58.01.03.004.08).

1.2 Individual and Subsurface Sewage Disposal Coordinator

Revision: September 12April 18, 201308

DEQ provides an individual subsurface sewage disposal coordinator (On-Site Wastewater Coordinator) to assist in updating and maintaining the TGM in a timely manner, advise the TGC on the latest state-of-the-art on-site subsurface disposal methodologies and products, track changes in laws, and provide approvals for new subsurface sewage disposal products/components, Operation and Maintenance Entities, and any other subsurface sewage disposal related issue. The coordinator also assists inprovides continued continuing education and technical support ofto those involved in subsurface sewage disposal system design, approval, installation, and operation and maintenance, as well as the general public. In addition, the coordinator will provide periodic subsurface program audits of Idaho's health districts for assistance in developing and ensuring statewide consistency in the individual subsurface sewage disposal program delivery.

1.3 Disclaimer

Revision: September 12April 18, 201308

The inclusion of a new alternative system technology in this manual does not imply that such technology will be approved for use. The TGM is provided solely for guidance if a particular alternative's implementation is desired.

Product listings do not constitute endorsement. Products not listed may be approved by the Director (IDAPA 58.01.03.009) if, after review, the product(s) are found to meet the regulatory intent of IDAPA 58.01.03. Product approval shall follow the process outlined in section 1.4 of this manual.

1.4 Product Approval

Revision: April 18, 2013

All commercially manufactured wastewater components must be approved by the Director prior to installation in a subsurface sewage disposal system (IDAPA 58.01.03.009.01). Plans, specifications, and any associated third party data (e.g., NSF standards, EPA ETV testing, etc.) for commercially manufactured wastewater components must be submitted to DEQ's On-Site Wastewater Coordinator for approval. Plans and specifications required to be submitted for product approval includes (IDAPA 58.01.03.009.02):

- Detailed construction drawings
- Capacities (i.e., volume and/or flow)
- Structural calculations
- List of product materials
- Evidence of stability and durability
- Manufacturer's installation requirements
- Operation and Maintenance instructions
- Any other information deemed necessary by the Director

Product submissions should be made by the product's manufacturer or an associated distributor. Products may be disapproved if the product is not in compliance or may not consistently function in compliance with the IDAPA 58.01.03 rules (IDAPA 58.01.03.009.04). Manufacturers or distributors will be notified in writing of product approval or disapproval. If a product is approved the Director reserves the right to specify circumstances under which the component must be installed, used, operated, or maintained (IDAPA 58.01.03.009.03). Products approved for installation in subsurface sewage disposal systems can be found in Chapter 5 of this document.

1.4.1 Director Policy on Product Approvals

The Director's policy on product approvals dictates that all approvals for subsurface sewage disposal products must be recommended to DEQ by the Technical Guidance Committee (TGC) in accordance with their given duties (IDAPA 58.01.03.004.08) and in compliance with the rules (IDAPA 58.01.03). The TGC may develop product approval policies that shall be included within Chapter 1 of the Technical Guidance Manual (TGM). The TGC may delegate product review and approval to DEQ for specific products.

1.4.2 Technical Guidance Committee Product Approval Policies

Unless otherwise listed within this subsection of Chapter 1 of the TGM all submissions for product approvals shall follow the process outlined in subsection 1.4.

1.4.2.1 Septic Tank Approvals

All submissions for septic tank approvals shall be submitted to the DEQ On-Site Wastewater Coordinator and reviewed by DEQ's Wastewater Program Lead Engineer. Approvals shall be issued by DEQ and do not need to undergo TGC review.

1.4.2.2 Extended Treatment Package System Approvals

Approvals for Extended Treatment Package Systems (ETPS) shall be submitted to the DEQ On-Site Wastewater Coordinator and reviewed by DEQ. ETPS units seeking approval for reduction of Total Suspended Solids (TSS) and Carbonaceous Biological Oxygen Demand ($CBOD_5$) will need to submit National Sanitation Foundation (NSF) Standard 40 approvals, reports, and associated data. ETPS units seeking approval for reduction of Total Nitrogen (TN) will need to submit NSF Standard 245 approvals, reports, and associated data. Any additional third party standards evaluated for the ETPS unit will also need to be submitted including approvals, disapprovals, reports, and associated data.

DEQ will issue ETPS product approval in conjunction with associated reduction levels for TSS, $CBOD_5$, and TN. Reduction levels will be determined through statistical analysis of the data included in the third party standards. Third party reports average reduction values will not be accepted to establish system performance approvals. The third party data will be statistically evaluated to determine a resulting value that corresponds to the 90% confidence limit. The resulting value that corresponds to the 90% confidence limit will be used as the system's performance limit.

ETPS units that have not undergone third party testing and wish to be approved for reduction in TSS and $CBOD_5$ must submit testing data on installations from States with similar climates to Idaho. The testing results submitted must be for ETPS units of the exact same make and model as is requested for approval in Idaho. Data must be submitted on a minimum of 30 units and the units must have been installed and operational for a period of 3 years prior to data submission. All maintenance and effluent testing records obtained over this period must be submitted for review. Effluent testing results submitted must be for TSS and $CBOD_5$ and come from a testing program that requires annual maintenance and annual effluent testing for each constituent at a minimum. Non-third party data for TN will not be accepted.

To obtain approval for TN reduction without third party data, or to lower reduction levels from initial approval for any constituent, the manufacturer of the ETPS unit or their representative must submit data from their ETPS units installed in Idaho. Any data submitted must be specific to a particular ETPS make and model. Data submission must include information on 20 installations with a minimum of 2 full years of operational data on each system. All maintenance and effluent testing records obtained over this period must be submitted for review. For adjustment in reduction levels of effluent constituents to be approved the data must show that 90% of the installed units have successfully maintained effluent reduction levels at or below the desired reduction approval level.

ETPS approval for manufacturer technology that has undergone NSF or EPA third party testing shall be submitted to, reviewed, and approved by DEQ following the process within this section. ETPS approval for manufacturer technology that has undergone third party testing evaluation that is not NSF or EPA, have not undergone third party evaluation, or are submitting testing data from other states, shall submit the necessary information to DEQ for distribution to the TGC for recommendation on approval.

ETPS units must have an Operation and Maintenance Entity setup for the particular manufacturer's products as described in section 4.2 of the TGM prior to any permits being issued for system installation. The Operation and Maintenance Entity must be capable of fulfilling the requirements of section 4.2 and 4.10 of the TGM prior to approval.

1.4.2.3 All Other Product Approvals

All other wastewater products intended for installation in a subsurface sewage disposal system shall follow the process outlined in section 1.4 of this manual. If a product has been evaluated and meets a standard developed by NSF the product may be reviewed and approved for use by DEQ without TGC recommendation. For products that have not undergone NSF testing and certification the necessary materials as described in section 1.4 of this manual must be submitted to DEQ for review by the TGC for approval recommendation.

Appendix G

4.1 General Requirements

Revision: May 15, 2000April 18, 2013

All rules pertaining to standard subsurface sewage disposal systems shall be applicable, except as modified in this section for each alternative.

All alternative systems shall be approved for specific site use by the health districts in a manner consistent with the individual district's policy for use ofguidance provided within this manual for each alternative systems.

Requirements for each site-specific alternative shall be contained in the permit.

The designer of alternative *public* systems must be a professional engineer (PE) licensed in the State of Idaho and experienced in the alternative system's design. The designer of alternative *private* systems, other than those listed below, may be required to be either a PE or an environmental health specialist (REHS/RS).; both The PE must be licensed in the State of Idaho and the REHS/RS must be registered with the National Environmental Health Association, and both should be experienced in the alternative system's design. The designer of the following complex alternative *private* systems must be a PE licensed in the State of Idaho unless otherwise allowed within the specific system's guidance:

- Drip Distribution System
- Evapotranspiration and Evapotranspiration/Infiltrative System
- Experimental System
- Grey Water System (if pressurized)
- Individual Lagoon
- Pressure Distribution System
- Recirculating Gravel Filter
- Intermittent Sand Filter
- Sand Mound
- Two-Cell Infiltrative System

Appendix H

3.2.5 Equal Distribution

In equal distribution wastewater effluent is distributed to all trenches within the subsurface sewage disposal system thus providing the opportunity for utilization of the entire infiltrative surface of the disposal system. Equal distribution is the preferred method of wastewater discharge to any subsurface sewage disposal system on flat or slightly sloped site. The best way to accomplish this is through pressurization of the drainfield (see section 4.20). When gravity flow is utilized for wastewater discharge to the subsurface system equal distribution to each subsurface disposal trench can be accomplished through the use of a piping header or distribution box.

3.2.5.1 Piping Header

With a piping header system wastewater is conveyed to each disposal trench through the use of a network of solid piping. The discharge line from the septic tank should be split through the use of a T pipe fitting. The T should be offset equally from the distribution trenches. One-directional sweeping cleanouts should not be used in place of a bi-directional T. The T pipe fitting should be installed on a solid surface in a level position. It is recommended that the piping header only be utilized in installations involving two trenches. See figure 3-3 for an overhead view of this distribution setup.

3.2.5.2 Distribution Box

Distribution boxes (d-box) are used to divide wastewater effluent evenly among multiple subsurface distribution lines. D-boxes are typically made of concrete or wastewater grade plastics and are watertight with a single inlet set at a higher elevation in the box than the outlets. Outlets should be constructed at equal elevations to one another. The d-box should be constructed with an access lid. Access lids are recommended to be made accessible from grade. Distribution boxes should be installed level on a sound footing (e.g., properly bedded to prevent settling and heaving).

There are several devices available for installation on the distribution lines leaving the d-box to ensure that each line is receiving equal amounts of effluent if the piping or d-box becomes un-level. It is recommended that leveling devices be installed on the effluent lines leaving the distribution box at time of initial installation. Distribution boxes are highly recommended for situations where there are more than two trenches installed and gravity flow is desired. See figure 3-3 for an overhead view of this distribution setup on a level site. Figure 3-4 provides an overhead view of a distribution box setup on a sloped site.

Upon installation it is important that the distribution box is checked for level installation on all sides. It is also highly recommended that outlet lines from the d-box be checked for level installation within the d-box to one another. This is especially important when trenches are installed at different elevations from each other and the distribution box. Flow should be induced within the d-box, from a point prior to the d-box, after installation and prior to final cover to verify that each outlet line will receive effluent at similar flow rates. If flow rates differ it is recommended that effluent outlet lines and/or flow equalization devices be adjusted and the flow rates retested after adjustment.

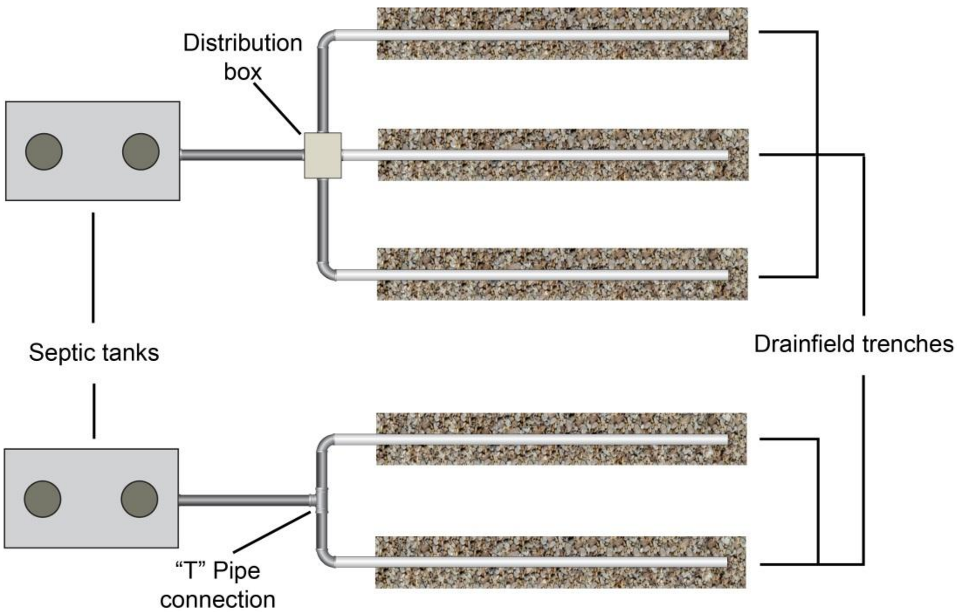

Figure 3-3. Overhead view of equal distribution methods for level sites.

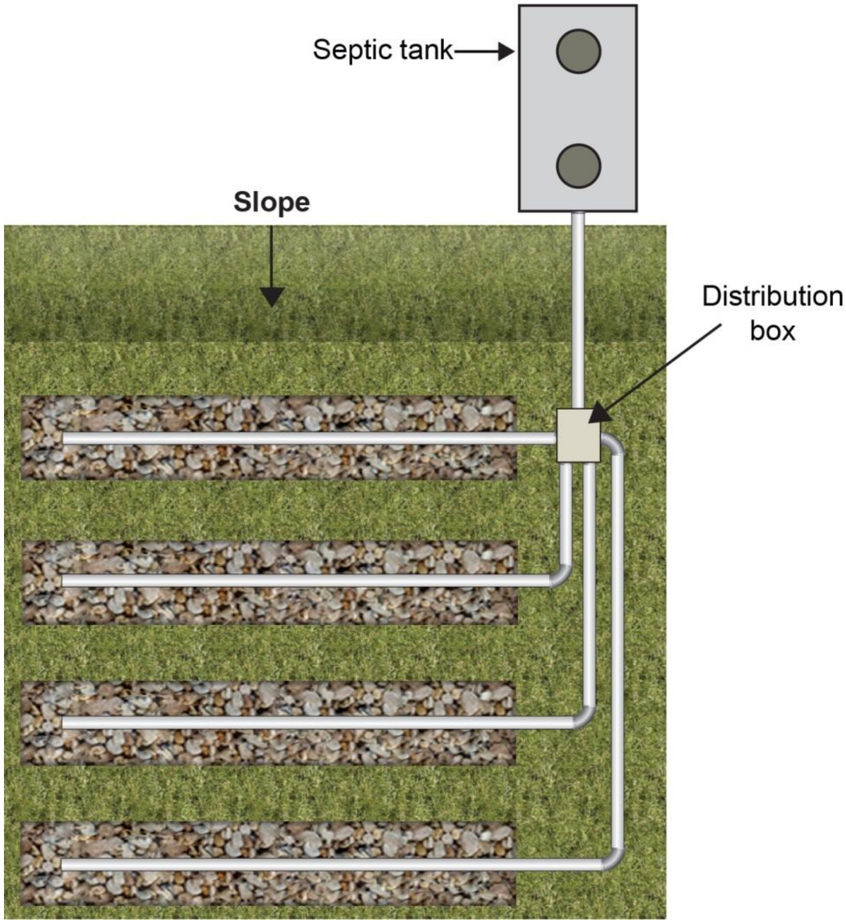

Figure 3-4. Overhead view of a distribution box layout on a sloped site.

3.2.6 Serial Distribution

~~Due to continuous ponding over the infiltrative surface serial distribution trenches suffer hydraulic failure more rapidly and progressively because the infiltrative surface cannot regenerate its infiltrative capacity. With this in mind serial distribution should only be used where equal distribution is not achievable.~~ ~~On sloped ground, it is preferable to use serial~~ Serial distribution~~, that is, distribution~~ functions so that each trench ~~in order~~ is ~~completely filled~~ loaded and completely flooded with effluent before effluent flows to the next ~~lower~~ trench in series. Serial distribution is typically utilized on sites with slopes in excess of 20%. In this distribution method it is not necessary to construct trenches at the same length but each trench must maintain a level installation by following a slope contour. ~~To maintain trenches between 2 to 4 feet below ground, it may be essential to use this kind of distribution.~~Serial distribution is accomplished either by installing relief lines or drop boxes between successive trenches. It is strongly recommended that serial distribution be accomplished through the use of drop boxes due to control and access aspects to the system.

3.2.6.1 Relief Lines

Relief lines are overflow lines that connect one trench to the adjacent lower trench in series. Relief lines are constructed of solid-wall piping and may be placed at opposite ends of successive trenches or anywhere within the trench line. If relief lines are installed in the middle of trenches successive relief lines should be offset by a minimum of 5 feet to avoid short circuiting the distribution system. Care must be exercised in excavating the ~~connecting~~relief line between trenches. Bleeding of effluent down this excavation is a common cause of surfacing effluent in serial distribution systems. The excavation of the connecting trench to the next downslope trench should be just deep enough to accept the solid connector pipe. See figure 3-5 for an overhead view of a relief line installation system network. See figure 3-6 for a cutaway view of relief line connection between trenches.

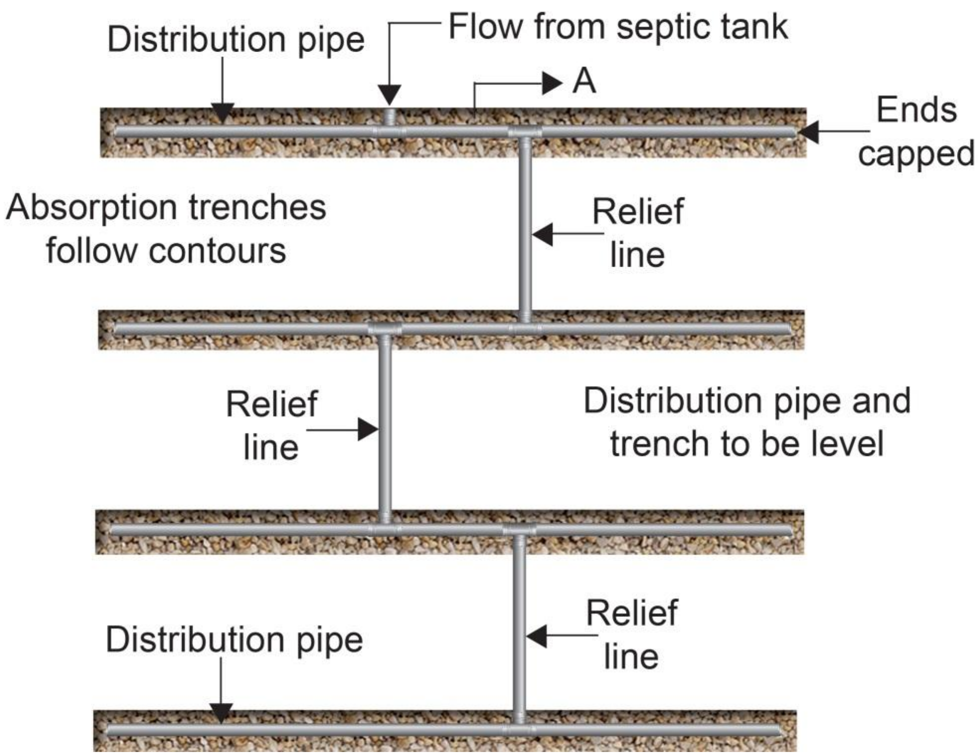

Figure 3-5. Overhead view of a relief line system network.

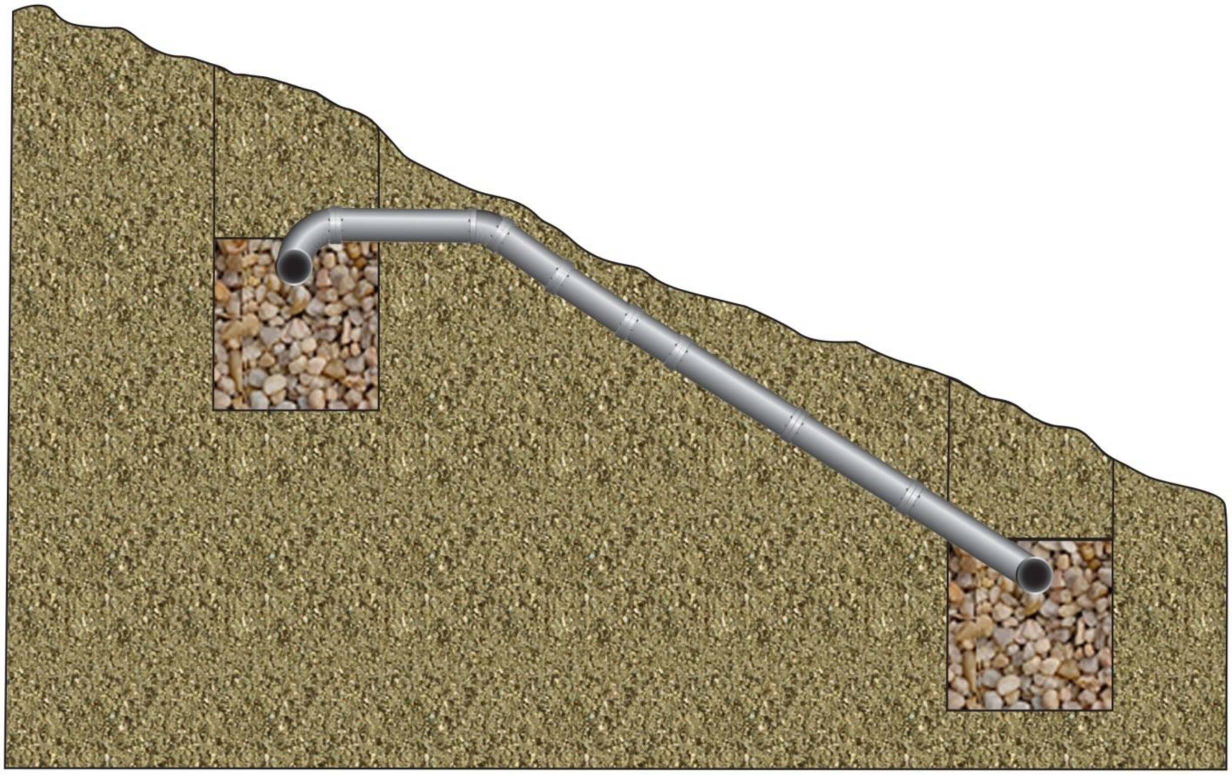

Figure 3-6. Side view of relief line installation between trenches.

3.2.6.2 Drop Boxes

Serial distribution may also be accomplished through the use of drop boxes. This method is commonly referred to as sequential distribution. Distribution boxes should not be substituted for drop boxes in this system design. The drop boxes are constructed so that each trench is completely flooded before the effluent flow runs to the next downslope trench in series. ~~Care must be exercised in excavating the connecting line between trenches. Bleeding of effluent down this excavation is a common cause of surfacing effluent in serial distribution systems. The excavation of the connecting trench to the next downslope trench should be just deep enough to accept the solid connector pipe.~~ The drop box consists of an inlet and outlet set at the same height that should be a minimum of 2 inches from the bottom of these ports to the top of the outlet ports for the trench at this location. There are typically two outlet ports to the disposal trench on opposite sides of the drop box to allow the trench to be extended on either side of the drop box. The trench outlets from the drop box should be set level with the distribution pipes in the disposal trench connected to the drop box. Solid-wall pipe should be used between drop boxes. ~~Figure 3-3~~ Figure 3-7 shows the detail of a drop box and the associated distribution system. Figure 3-8 shows an overhead view of drop box installation utilizing multiple trenches with one drop box.

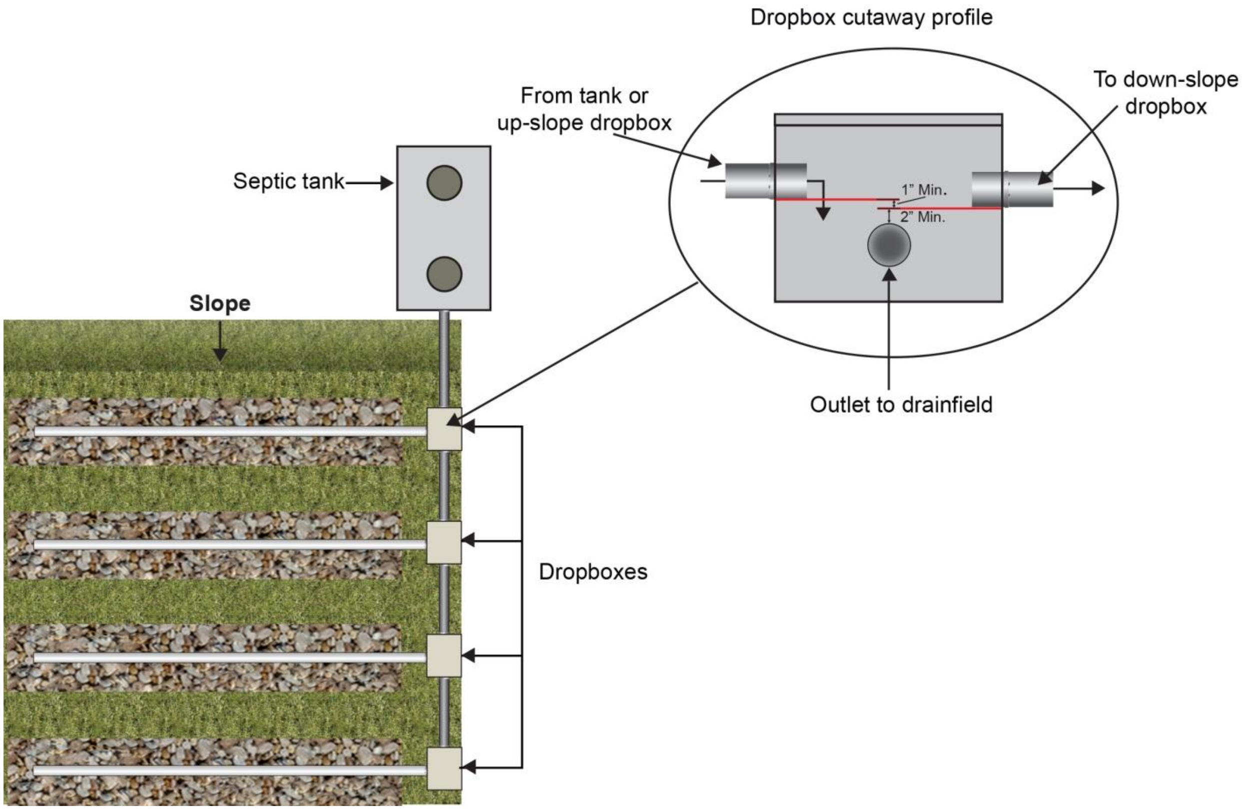

Figure 3-~~3~~7. Drop box and sequential distribution details.

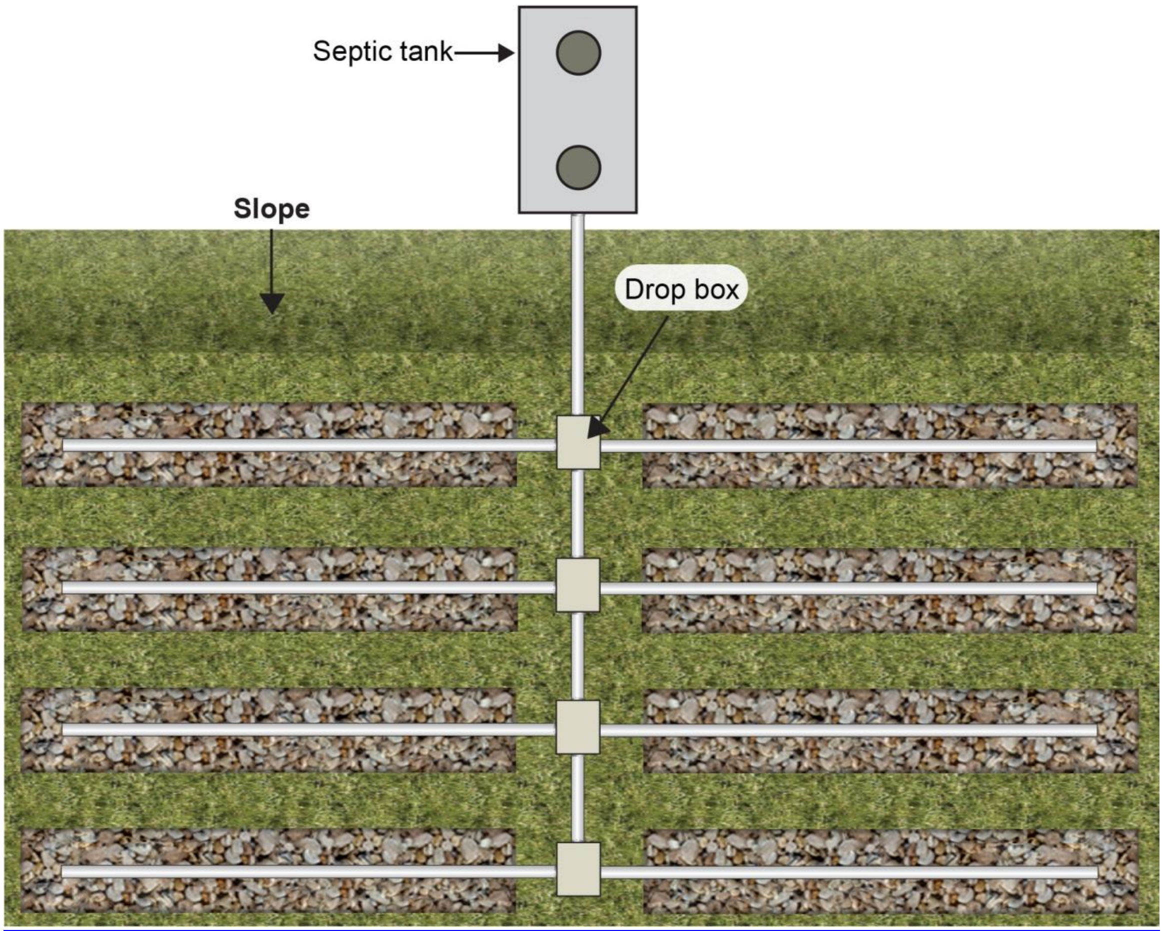

Figure 3-8. Overhead view of drop box installation utilizing multiple trenches with sequential distribution.

Appendix I

4.3 Vested Rights and Nonconforming Uses

Revision: May 15April 18, 20130000

Failed system: Repair or replacement of an existing system.

1. Dwelling or structure unit served by the system must not be altered, remodeled, or otherwise changed, so as to result in increased wastewater flows (IDAPA 58.01.03.004.04).

2. Reason for failure should be determined if possible.

3. If failure is due to age, the system may be repaired or replaced with a similar system that shall be constructed as close as possible to current dimensional and setback requirements for standard systems (IDAPA 58.01.03.008.12).

4. If failure has occurred in less than 10 years and is due to increased wastewater flows or poor site characteristics, an alternative or larger system must be constructed as close as possible to current dimensional and setback requirements for alternative systems (IDAPA 58.01.03.008.12).

3.5. System replacement must follow the requirements of the subsurface program directive memorandum entitled “Failing Subsurface Sewage Disposal System” issued by DEQ on July 26, 1993.

Additions or alterations: Changes to an existing structure or dwelling, such as remodeling.

1. Addition or alteration will not cause the existing system to become unsafe or overloaded (IDAPA 58.01.03.004.04).

4.2. Enough reserve area for both the original and additional system shall be preserved (IDAPA 58.01.03.004.06).

5. Addition or alteration will not be additional or new dwelling units.

6.3. Wastewater flow will not be significantly increased (IDAPA 58.01.03.004.04). Significant increases shall be considered to be any increase in wastewater flow that exceeds the design flow of the system.

4. Area reserved for replacement cannot be used for the addition (IDAPA 58.01.03.004.06).

5. A subsurface sewage disposal permit may be required for system enlargement or adjustments based upon the addition or alteration plan.

   a. A permit may be required due to possible impacts on separation distances from the addition or alteration to the existing subsurface sewage disposal system or due to additional wastewater flows from the addition or alteration that exceeds the original design flow of the system.

b. Permit issuance shall be required in conformance with the subsurface program directive entitled “Permit Requirements for Increased Flows at Single Family Dwellings” issued by DEQ on April 15, 2010.

Abandoned system: An abandoned system is considered to be a system that has not received wastewater flows or blackwaste for 1 year or more due to the removal of a wastewater generating structure from the system. (IDAPA 58.01.03.003.01)

1. An abandoned system may be used if the system was originally permitted and approved and, wastewater or blackwaste characteristics are similar to former waste strengths and flow rate received by the system and,
2. The system was originally permitted and approved and,Wastewater flows and blackwaste characteristics are similar to the system’s original permit requirements for waste strength and flow rate received by the system and,
3. The site is inspected and approved.
4. If the system is not an approved an unapproved system (i.e., no issuance of previous subsurface sewage disposal permit regardless of installation date), it must be:
    a. Uuncovered by a permitted installer or the property owner (IDAPA 58.01.03.011.02) and,
        i. Uncovering includes exposure of the septic tank, effluent piping, and the front and back ends of each subsurface disposal trench.
    b. Ppumped by a permitted septic tank pumper and, and
    c. Iinspected by the health district while uncovered (IDAPA 58.01.03.011.02) and,.
    d. The system must Must meet all current requirements, including the issuing issuance of a permit (IDAPA 58.01.03.005.01).
        i. If the system does not meet all current requirements it must be brought into compliance with the current requirements prior to use according to the issued permit requirements.
        i.ii. If the system, or any portion thereof, cannot be brought into compliance with the current requirement the system or portion of the system not in compliance must be abandoned and replaced in compliance with the current requirements and in accordance with the issued permit.

Appendix J

4.4 Easement

Revision: ~~April 21~~July 18, 201300~~00~~

The health district will consider allowing the installation of a ~~private, individual~~ subsurface sewage disposal system on ~~an adjoining~~ another property (e.g., lot, parcel, etc.) ~~owned by a second property owner~~. However, this option should be considered a last resort for use only when other practical solutions for subsurface sewage disposal are not available on the applicant's property. The placement of an individual subsurface sewage disposal system on another property requires that an easement be in place prior to subsurface sewage disposal permit issuance. Easements are required anytime a subsurface sewage disposal system is proposed on another property regardless of property ownership. Easements will need to be obtained for each property, other than the wastewater generating parcel that the application is submitted for, that any portion of the subsurface sewage disposal system is proposed to be installed upon. The following ~~is guidance and guidelines~~provides guidance for approval of an easement to construct an individual subsurface sewage disposal system:

1. The entire s~~S~~ite (i.e., the area for both the primary and replacement drainfield) for the proposed easement area must be reviewed by the health district for approval prior to recording and surveying of the easement and issuance of the permit..

2. Site must meet all requirements of the "Individual/Subsurface Sewage Disposal Rules" (IDAPA 58.01.03) (section 8.1), including but not limited to soils, setbacks, slope, and sufficient area for the ~~original~~ primary and replacement drainfields~~, and slope~~.

3. The easement is to be professionally prepared by an attorney and recorded in the county ~~courthouse~~ of local jurisdiction, or a written agreement prepared from the grantor granting an easement to the grantee, both of which will be surveyed and recorded after the system is installed. ~~A copy of the easement is to be made available to the local health district and attached to the sewage disposal permit before final permit approval.~~

    a. ~~A~~The easement shall include a survey~~, including monumenting the corners~~ of the entire easement area~~, of the proposed easement site shall be made~~ to supply an accurate legal description of the easement~~ and enable the health district to properly evaluate the site.~~

    ~~a.~~b. The entire easement area shall be monumented at all corners to identify the area of system placement prior to permit issuance and the monuments should be identified on the easement survey.

4. The easement shall be signed by all individuals or entities listed on the deed or title for each impacted property.

5. A copy of the easement is to be provided to the local health district prior to permit issuance.

~~3.~~6. A copy of the recorded easement and survey is to be provided to the local health district prior to final permit approval.

~~4.~~7. The attorney shall include in the written easement the following items:

   a. Easement shall be in perpetuity or until the system is abandoned by the grantee.

   b. Grantor is to be protected with enforceable provisions that will require the owner of the system to make repairs as needed.

   c. Grantee is to have access to the system to make repairs or perform routine maintenance.

   d. Grantee must have ability to restrict any use of the easement area that may have an adverse effect on the system functioning properly.

~~5.~~8. ~~A survey, including monumenting the corners, of the proposed easement site shall be made to supply an accurate legal description of the easement and enable the health district to properly evaluate the site~~.

4.4.1 Easement Restrictions

1. Effluent transport pipes for separate properties should not occupy the same trench within an easement.
2. If easements for drainfields under separate ownership result in more than 2,500 gallons per day of effluent being disposed of on the same property then the drainfield(s) must be designed as a Large Soil Absorption System and undergo a Nutrient-Pathogen Evaluation.

Appendix K

2.5 Ground Water Level

Revision: ~~June 5, 2000~~July 18, 2013

2.5.1 Description

Ground water is any water in the State of Idaho which occurs beneath the surface of the earth in a saturated geological formation of rock or soil (IDAPA 58.01.03.003.14). Ground water may be present near the ground surface at normal and seasonal high levels. Seasonal high ground water level is the highest elevation of ground water that is maintained or exceeded for a continuous period of one week per year (IDAPA 58.01.03.003.15.a). Normal high ground water level is the highest elevation of ground water that is maintained or exceeded for a continuous period of six weeks per year (IDAPA 58.01.03.003.15.b).

Subsurface sewage disposal systems and septic tanks must maintain vertical separation distances from the ground water to the bottom of the drainfield (IDAPA 58.01.03.008.02.c) and top of the septic tank (IDAPA 58.01.03.007.17). Ground water may be present year-round or seasonally. Permanent (year-round) ground water levels may fluctuate throughout the year or remain fairly constant. Seasonal ground water levels can fluctuate greatly and are typically affected by runoff or irrigation practices. To ensure separation distances as required by IDAPA 58.01.03 to permanent or seasonal ground water levels are met, determining the normal and seasonal high ground water levels is important.

High ground water levels may be established by the presence of low chroma mottles, historic records, or actual ground water monitoring (IDAPA 58.01.03.003.15). It is recommended and preferred that actual ground water monitoring be performed prior to the issuance of a subsurface sewage disposal permit if the proposed site of a new system is suspected to be effected by ground water levels. This provides insurance that adequate separation distances are maintained from subsurface sewage disposal systems and ground water as required by IDAPA 58.01.03.008.02.c and fulfills the intent of the State of Idaho's ground water policy as outlined in Idaho Code §39-102.3.a to prevent contamination of ground water from any source to the maximum extent practical.

In situations where a repair permit must be issued to replace a failing subsurface sewage disposal system it would be appropriate to utilize historic records or the presence of low chroma mottles to establish the normal and seasonal high ground water levels.

The following subsections provide guidance on when and how to utilize low chroma mottles, historic records, and how to perform and interpret actual ground water monitoring.

2.5.2~~1~~ ~~From the Static Water Level~~Ground Water Monitoring

Ground water monitoring is the preferred method of determining ground water levels. Over a period of time, ground water levels can be established by recording elevation changes in the ground water's surface, observed through a ~~hole~~ permanent or temporary well.~~:~~

2.5.2.1 Monitoring Wells

During preliminary site investigations prior to subsurface sewage disposal permit issuance temporary monitoring wells are the most common type of monitoring well utilized. If continual ground water monitoring is required as a condition of the subsurface sewage disposal installation permit (e.g., Large Soil Absorptions Systems) then permanent monitoring wells are recommended to be installed after permit issuance. The recommended installation and design of both of these well types are provided below.

2.5.2.1.1 Permanent Monitoring Wells

It is recommended that permanent monitoring wells be installed by a professional well driller and that the Idaho Department of Water Resources be consulted to determine the need for a well permit and any required construction standards. Permanent wells should be cased, with perforations in the casing throughout the anticipated zone of saturation. An idealized permanent monitoring well for observing ground water of less than 18 feet deep is shown in Figure 2-3. If a permanent well will be used for water quality monitoring, then it should be:

6. ~~Newly excavated holes or installed wells should be left undisturbed for 24 hours before observing and recording the ground water's surface elevation.~~

~~Permanent wells should be cased, with perforations in the casing throughout the anticipated zone of saturation. An idealized monitoring well for observing ground water of less than 18 feet deep is shown in Figure 2-3.~~

~~If a permanent well will be used for water quality monitoring, then it should be:~~

1. Purged or otherwise developed to eliminate installation contamination and silt buildup.
2. Provided with a ground water seal at the annular space between the casing and natural ground to prevent surface water from entering the ground water along the casing's exterior.

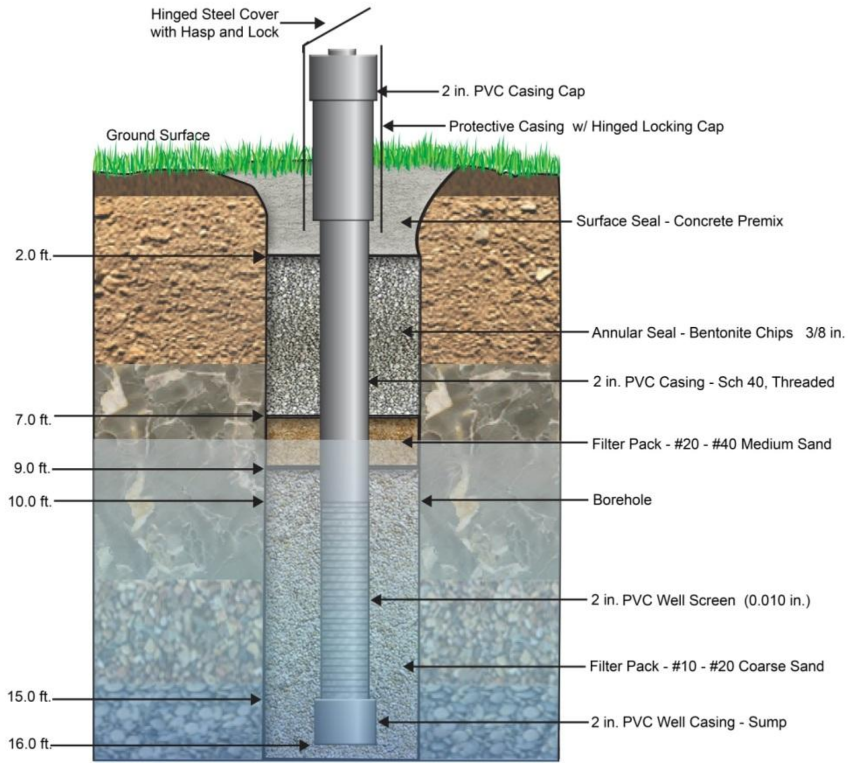

Figure 2-3. Shallow ground water monitoring well design.

2.5.2.1.2 Temporary Monitoring Wells

Temporary monitoring wells are typically installed at the same time that test pits are excavated and evaluated. Monitoring wells are either placed in the excavated test pit or are placed in a separate hole near the test pit created by an auger. Temporary monitoring wells placed by auger should be no further than 10 feet from the evaluated test pit. More than one temporary monitoring well may be necessary at each site and are highly recommended. Each monitoring well should have an evaluated test pit associated with its placement.

Temporary monitoring wells are typically constructed of perforated or solid plastic pipe at least 1 inch in diameter. Solid plastic pipe should be manually perforated with holes or slits that extend up the pipe through the expected zone of saturation. Temporary monitoring wells should extend 10 feet below ground or to a known limiting layer less than 10 feet deep. Temporary monitoring wells placed to evaluate spring runoff influenced seasonal ground water should be extended above grade high enough to be found through snow pack during the early monitoring period. Removable caps are recommended to be placed on the top of each monitoring well. The bottom end of the monitoring well should not be capped. Geotextile fabric or a filter cloth/sock should be used to wrap the plastic pipe from the bottom of the pipe to a point above the perforations. When backfilling soil around the temporary monitoring well care should be taken to mound fill soil around the well so that a depression does not form in the ground's surface around the mound that will collect surface runoff and artificially raise the ground water level within the monitoring pipe. An idealized temporary monitoring well for observing ground water of less than 18 feet deep is shown in Figure 2-4.

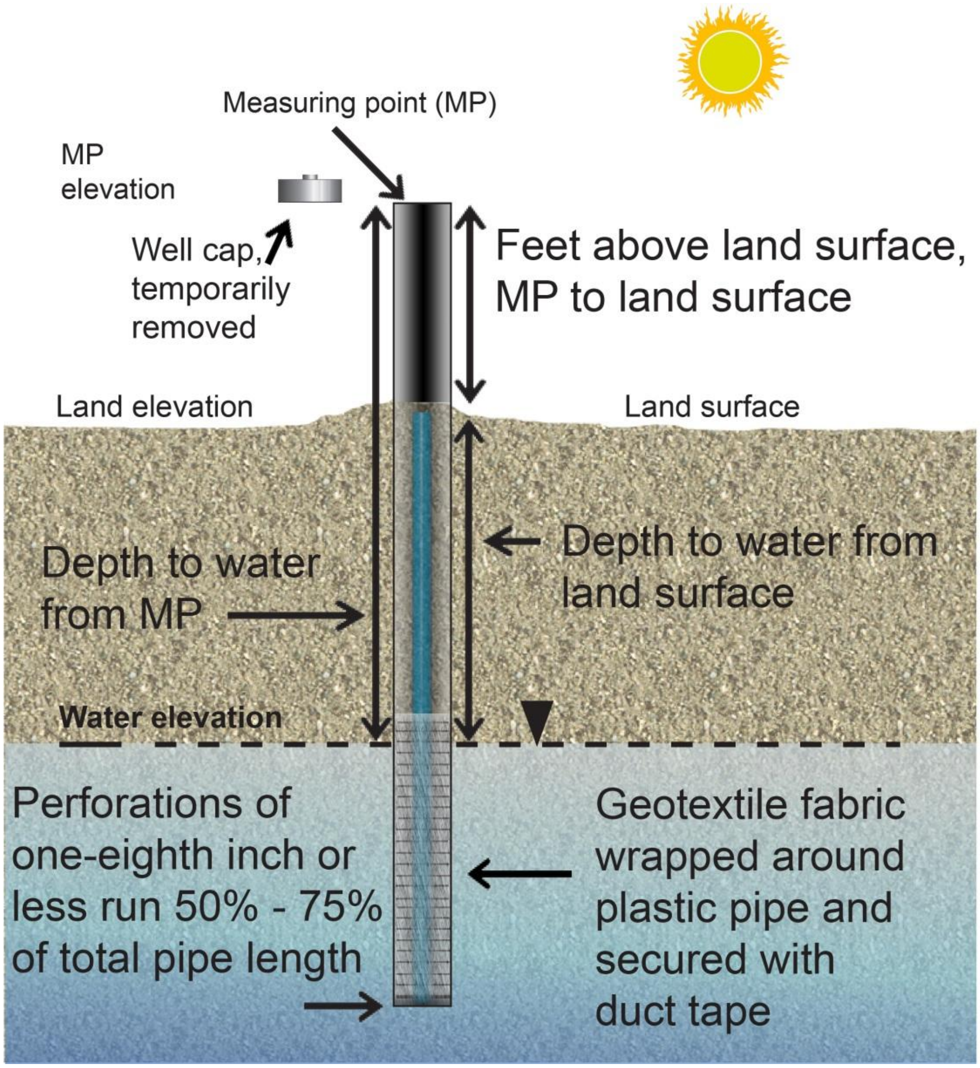

Figure 2-4. Temporary ground water monitoring well design.

2.5.2.2 Measuring the Seasonal Ground Water Level from a Monitoring Well

Seasonal ground water is typically influenced by seasonal runoff of snowmelt, spring rain events, and irrigation practices. The timeframe that these influences affect a property may vary due to location, climate, or agricultural practices. Due to this variability monitoring timeframes required prior to subsurface sewage disposal permit issuance may vary from permit to permit. Typical timeframes for monitoring based upon ground water influences are as follows:

1. Seasonal runoff and spring rain events

a. February 15th through June 30th

2. Irrigation

a. April 15th through October 31st

Monitoring periods may overlap if all of these influences are expected to impact seasonal ground water levels at a proposed subsurface sewage disposal site. Monitoring should be performed by the applicant on a weekly basis over the determined monitoring period. Concurrent monitoring at a proposed subsurface sewage disposal site should also be performed by the health district on a monthly basis for verification of ground water levels obtained by the applicant. The monthly verification by the health district also allows for the evaluation of any potential temporary or intermittent surface waters that may exist on the site.

Prior to recording ground water levels from a newly installed permanent or temporary monitoring well, the well should be left undisturbed for 24 hours before observing and recording the ground water's surface elevation. To record the ground water level a standardized location on the top rim of the monitoring well should be marketed for the purpose of obtaining ground water measurements from. The following equipment should be utilized to obtain the ground water level below grade:

- A measuring tape that will fit inside the monitoring well
- Carpenter's chalk to coat the initial length of the measuring tape
- Ground water monitoring table that includes the following information:
    - Height of the monitoring well above the native soil surface
    - Total depth of the monitoring well from the top rim to its termination point below ground level
    - Date and time for each measurement
    - Location for recording ground water level from top rim of monitoring well
    - Location for recording the total depth of wetted chalk (indicates how far below the ground water level the measuring tape was inserted)
    - Location for recording the water level below ground surface (ground water level measurement minus the wetted chalk depth minus the height of the monitoring well above the native soil surface)
    - Location for date specific notes (i.e., weather, well conditions, recorder, etc.)

The following steps should be taken at each monitoring well to obtain the ground water level:

1. Coat the initial foot or two of the measuring tape with carpenter's chalk

2. Lower the measuring tape down the monitoring well with the tape against the identified measuring point on the top rim of the monitoring well
    a. This should occur at a rapid rate so it can be heard when the measuring tape encounters the top of the ground water level
3. Once it is verified that the tape has either encountered the top of the ground water level or the bottom of a dry monitoring well record the value on the measuring tape that is identified at the measuring point on the top rim of the monitoring well
4. Slowly remove the measuring tape from the monitoring well and obtain the total wetted chalk measurement
5. Determine the ground water depth below native ground level be subtracting the wetted chalk measurement and height of the monitoring well above native ground from the measurement obtained in step 3.

Care should be taken not to insert items of large diameter into the ground water through the monitoring well to obtain ground water level measurements. This may cause water displacement and artificially raise the ground water level. Ground water monitoring should continue throughout or past the expected monitoring period until it is determined that the seasonal and normal high peaks have occurred and will not be exceeded.

2.5.2.3 Determining Seasonal and Normal High Ground Water Levels

Seasonal and normal high ground water levels can be determined once the weekly monitoring for the designated monitoring period is completed. The seasonal high ground water level is the weekly measurement that is the highest level recorded during the monitoring period. The highest level is the measurement that equates to the shallowest depth from the native ground level to the ground water level.

The normal high ground water level is the highest elevation of ground water that is maintained or exceeded for a continuous period of six weeks per year. This determination may include the seasonal high ground water level week, but may fall outside of the seasonal high peak. The determination is demonstrated in Table 2-11 and Table 2-12.

Monitoring Week	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Ground Water Level (inches below native grade)	69	62	65	53	46	40	47	66	72

Table 2-11. Determination of seasonal ground water levels where the seasonal high ground water level and normal high ground water level occur within the same six week block of time.

In Table 2-11 the seasonal high ground water level occurs within the six week block of time that defines the normal high ground water level. The seasonal high occurs in week 6 and is 40 inches below native grade. The six week block of time that defines the normal high ground water level occurs from week 2 through 7. During this time the lowest ground water level recorded from native grade occurs on week 3 so the normal high ground water level is 65 inches below native grade.

Monitoring Week	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Ground Water Level (inches below native grade)	23	24	19	23	21	22	25	16	20

Table 2-12. Determination of seasonal ground water levels where the seasonal high ground water level occurs outside the six week block of time that determines the normal high ground water level.

In Table 2-12 the seasonal high ground water level occurs outside of the six week block of time that defines the normal high ground water level. The seasonal high occurs in week 8 asnd is 16 inches below native grade. The six week block of time that defines the normal high ground water level occurs from week 1 through 6. During this time the lowest ground water level recorded from native grade occurs on week 2 so the normal high ground water level is 24 inches below native grade.

2.5.32 ~~From Soil Condition~~Low Chroma Mottles

If the static ground water level cannot be determined through ground water monitoring due to the time of year the soil profile is observed, but its presence at some time in the year is suspected, its level can be predicted by looking for the presence of the following soil conditions:

1. Reddish-brown or brown soil horizons with grey mottles that have a chroma of two or less and red or yellowish-red mottles.
2. Grey soil horizons that have a chroma of two or less, or grey soil horizons with red, yellowish-red, or brown mottles.
3. Dark-colored, highly organic soil horizons.
4. Soil profiles with soluble salt concentrations at or near the ground surface.

~~Exercise c~~Care should be exercised in interpreting soil conditions as an indicator of high ground water. Mottling may be the artifact of past ground water from geologic time. Some soils do not readily indicate mottling, especially those with high ferric (Fe^{+++}) iron content and in areas with newly-established water tables or where the brown color is from iron bacteria. ~~Figure 2-3 shows the typical design of a shallow ground water monitoring well.~~

2.5.4 Historical Records

Historical records are another method that may be used to determine seasonal and normal high ground water levels for a proposed subsurface sewage disposal system. Historical records should be those that evaluate unconfined aquifers or perched seasonal water tables. Well drilling records may not be suitable in all circumstances and must be evaluated on a case by case basis if available. Historical records should be composed of ground water monitoring data as described in section 2.5.2 to be used for determination of ground water levels at a proposed site.

All historical records available for properties immediately surrounding the applicant's property should be utilized in the determination of ground water levels. Other records from nearby properties should also be evaluated in order to gain an understanding of ground water levels for the immediate area with an emphasis placed on records for properties closest to the applicant's property. A conservative approach should be utilized in this evaluation and the most restrictive ground water level record within those historical records should be used for permit issuance.

2.5.5 Low Water Years

Care should be taken when reviewing ground water monitoring records related to spring runoff during low water years. Snow-water equivalents of less than 75% of normal would be considered an extremely low water year. Ground water monitoring performed during these years may need to be repeated due to below normal ground water levels. Information regarding snow-water equivalent reading is available through NRCS.

Appendix L

3.3 Wastewater Flows

Revision: July 18, 2013

Assigning wastewater flow projections to a proposed subsurface sewage disposal system is necessary to adequately design the system and is required as part of the permit application by IDAPA 58.01.03.005.04.j. The term *wastewater flow* refers to the amount of wastewater a structure will generate in gallons per day. These flow estimates provide the basis for determining the minimum septic tank volume and subsurface disposal system sizing (IDAPA 58.01.03.007.07.b and 58.01.03.008.03.a). For most proposed projects IDAPA 58.01.03.007.08 is used for providing the quantitative daily wastewater flow estimates necessary to design the proposed subsurface sewage disposal system.

Due to the limited number of commercial/industrial establishments and flow scenarios provided in IDAPA 58.01.03.007.08 not all proposed commercial or industrial projects will be capable of proposing daily wastewater flows based off of this rule. IDAPA 58.01.03.005.04.d provides the applicant the allowance to propose wastewater flows through other appropriate measures to adequately size the subsurface sewage disposal facility. Daily wastewater flow projections may be provided from other sources when a proposed commercial or industrial project is not covered by IDAPA 58.01.03.007.08, or when an applicant feels that the daily wastewater flow projections for a commercial or industrial facility provided in IDAPA 58.01.03.007.08 are higher or lower than actual daily peak wastewater use for similar facilities.

Other appropriate measures for daily wastewater flow estimation as described in IDAPA 58.01.03.005.04.d must include the nature and quantity of wastewater the system will receive. Adequate documentation must be submitted with the permit application detailing the basis for the estimate of the quantity of wastewater and its nature (IDAPA 58.01.03.005.04.j). Included in the adequate documentation should be a description of the commercial or industrial facility's proposed operation, referred to as a Letter of Intended Use. Letter of Intended Use requirements are described in section 3.3.1. Appropriate measures and documentation for the provision of empirical wastewater flow data that is not provided in IDAPA 58.01.03.007.08 is described in section 3.3.2.

3.3.1 Letter of Intended Use

As part of the permit application the applicant must provide information regarding the type of establishment served (IDAPA 58.01.03.005.04.c), the nature and quantity of wastewater the system will receive (IDAPA 58.01.03.005.04.j), and provide documentation that substantiates that the proposed system will comply with IDAPA 58.01.03 (IDAPA 58.01.03.005.04.o). This information should be included in a Letter of Intended Use that contains the following minimum requirements:

- A description of the commercial/industrial processes that are occurring within the facility

- The type of business that is to be discharging to the subsurface sewage disposal system and the processes involved in its operations.
- The maximum number of employees and customers within the facility at any given time now or in the future if expansion is to occur later.
- The estimated daily wastewater flow that may be produced by the domestic, commercial, and industrial uses occurring within the facility.
  - Estimated daily wastewater flow projections must either be supported by IDAPA 58.01.03.007.08 or follow the guidance regarding empirical wastewater flow data as provided in section 3.3.2.

- A completed copy of the non-domestic wastewater application checklist
  - The characteristics of the non-domestic wastewater should be supported with adequate documentation.

3.3.2 Empirical Wastewater Flow Data

Empirical wastewater flow data is collected from similar facilities as the one proposed in the subsurface sewage disposal permit application. The wastewater flow data is typically collected from facilities that are connected to a public water system or other water source that is capable of providing water meter data for daily, weekly, or monthly water use by the facility. The daily wastewater flow is estimated based upon the usage of the potable water being used by the facility as determined by the water meter data. It is often necessary to convert the data that is able to be obtained into gallons per day as most utilities and public water systems do not meter water by the gallon. The volume of water provided in a water usage history should be verified for the correct meter units.

Evaluated facilities should be located within the State of Idaho if possible, but may be from any region within the State. Unique facilities that may not be found elsewhere in the State may utilize similar facilities from other States. Facilities should be able to be compared to the proposed facility and be able to assign a daily wastewater flow estimate on a per unit basis. Units may include employees, meals, visitors, or any other quantifiable unit applicable to the proposed facility. If the proposed facility will produce non-domestic wastewater (i.e., wastewater from sources other than hand sinks, toilets, showers/bathtubs, non-commercial kitchens, and washing machines), then the wastewater data must also include the characterization of the proposed commercial or industrial wastewater to be discharged to the subsurface sewage disposal system in addition to the daily wastewater flow data.

The time of year that water usage data is collected and evaluated should be representative of the proposed facility's peak usage timeframe. If possible, it is recommended that water consumption devoid of irrigation flows be provided. This may be accomplished by locating facilities that do not have landscaping to irrigate or by eliminating the irrigation season from the evaluation. Eliminating the irrigation season from the water data evaluation should only be used for facilities that do not have their peak facility use occur over this timeframe. Water usage data that does not include the irrigation season typically occurs from November through February.

Adequate documentation of daily wastewater flows may vary on a case-by-case basis. The following list of water usage data will be considered adequate for most circumstances:

- Water usage data from a minimum of three facilities of similar operation should be provided for review.
    - The facilities should be connected to a public or private water system for which monthly water use records are kept that can be readily converted to average gallons per day flows.
        - Water usage data should be provided in writing by the water system operator.
    - Statistics should be provided on each facility's operation that are pertinent to the wastewater flow estimation (e.g., number of employees, number of children attending a childcare, number of meals served per day for restaurants, occupancy per day of a hotel or RV park, etc.).
        - Statistical data for each facility should be provided in writing by the facility providing the data.
- Water usage data should occur over an adequate timeframe to provide data that is applicable to the design flows for subsurface sewage disposal permit issuance.
- Wastewater characterization for non-domestic wastewater sources (including the non-domestic wastewater application checklist found on DEQ's website).
- Other facility specific data the Director feels is reasonable and necessary for daily wastewater flow estimation evaluation.

The Director shall evaluate the data provided and average the daily wastewater flow projections from each facility to determine an acceptable flow. If the Director determines that any data provided is inadequate for assessment, the facility the data applies to will not be included in the evaluation process. The provision of empirical wastewater flow data in lieu of utilizing the wastewater flows provided in IDAPA 58.01.03.007.08 does not guarantee that the daily wastewater flow projection will be less than what is provided by IDAPA 58.01.03.007.08.

Appendix M

4.25 Sand Mound

Revision: ~~October 23~~July 18, 201~~2~~3

4.25.1 Description

A sand mound is a soil absorption facility consisting of a septic tank, ~~pumping~~ dosing chamber ~~or dosing siphon and chamber~~, mound ~~fill~~ constructed of ~~selected~~ medium sand, ~~with~~ a pressurized small-diameter pipe distribution system, ~~cap,~~ and topsoil cap. ~~Figure 4-26~~ Figure 4-27 provides a diagram of a sand mound.

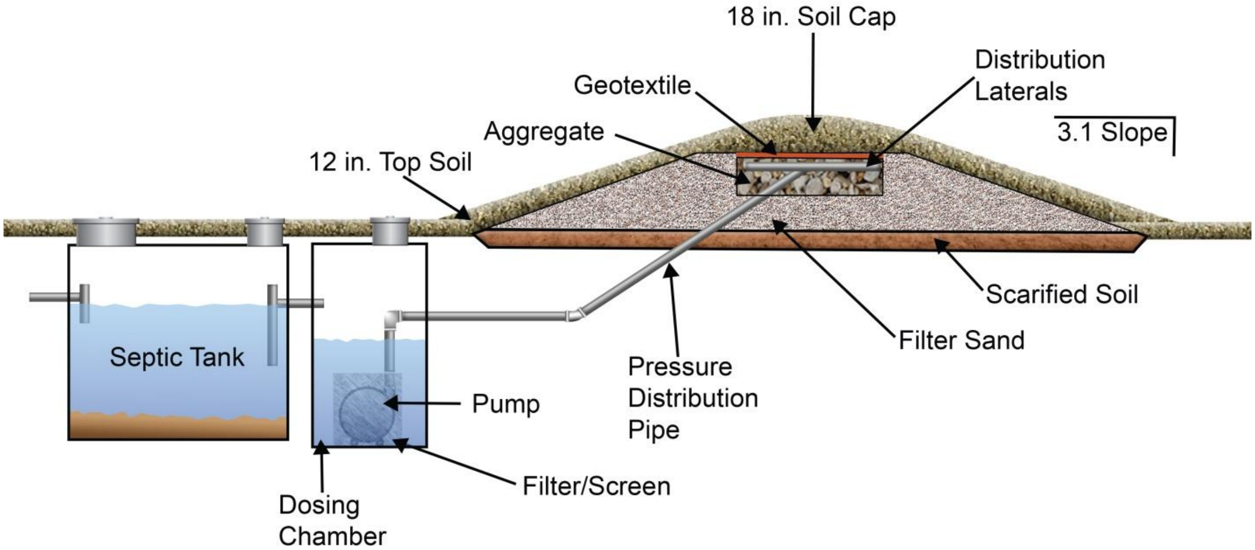

Figure 4-~~26~~27. Cross sectional view of sand mound.

4.25.2 Approval Conditions

1. Effective soil depth to limiting layers may vary depending upon thickness of filter sand beneath the absorption bed:

   a. If 12 inches of filter sand is placed beneath the absorption bed, then Table 4-21 lists the minimum depth of natural soil to the limiting layer.

   b. If 24 inches of filter sand is placed beneath the absorption bed, and the dosing recommendations in section 4.25.4 are met, then Table 4-19 in Section 4.23 "Intermittent Sand Filter," identifies the effective soil depth to limiting layers.

~~2. For soil textural classifications of sandy clay, silty clay, clay, or coarser-textured soils with percolation rates from 60 to 120 minutes/inch, the minimum depth of natural soil to the limiting layer shall conform to soil design group C.~~

~~3.~~2. Table 4-22 shows the maximum slope of natural ground, listed by soil design group.

4.3. Sand mound must not be installed in flood ways, areas with large trees and boulders, in concave slopes, at slope bases, or in depressions.

5.4. Minimum pretreatment of sewage before disposal to the mound must be a septic tank sized according to IDAPA 58.01.03.007.07.

5. The maximum daily wastewater flow must be equal to or less than 1,500 GPD.

6. Design flow must be 1.5 times the wastewater flow.

Table 4-21. Minimum depth of natural soil to limiting layer.

Soil Design Group	Extremely Impermeable Layer (feet)	Extremely Permeable Layer (feet)	Normal High Ground Water (feet)
A, B	3	3	3
C	3	2	2

Table 4-22. Maximum slope of natural ground.

Design Group	A	B	C-1	C-2
Slope (%)	20	20	12	6

4.25.3 Design

1. Absorption Bed bed design:

   a. Only absorption beds may be used. The maximum absorption bed disposal area should be 2,250 ft^2 (A x B). Beds in commercial or large systems should be a maximum of 15 feet wide (B ≤ 15 feet), and beds for individual dwellings a maximum of 10 feet wide (B ≤ 10 feet). Beds should be as long and narrow as practical, particularly on sloped ground, to minimize basal loading. It is recommended that beds be less than 10 feet wide if site conditions will allow.

   b. Application rate of effluent in the sand bed should be calculated at 1.0 gallon/ft^2 (sand HAR = 1.0 gallon/ft^2).

   c. Absorption beds for commercial establishments that discharge other than normal strength domestic waste should be sized at 0.5 gallon/ft^2 or 40 pounds BOD/acre/day, whichever is greater.

   d.c. Absorption bed must be filled with 9 inches of clean drainrock, 6 inches of which must be below the pressurized distribution pipes.

d. Drainrock portion of the sand moundThe absorption bed drainrock must be covered with a geotextile after installation and testing of the pressure distribution system.

e. Two observation ports should be installed extending from the drainrock/medium sand interface through the soil cap at approximately the ¼ and ¾ points along the absorption bed. The observation ports should contain perforations in the side of the pipe extending up 4 inches from the bottom of the port. Observation ports must be capped.

f. Absorption bed disposal area or dimensions may not be reduced through the use of extra drainrock, pretreatment, or gravelless drainfield products.

e.g. Pressurized laterals within the absorption bed should not be further than 24 inches from the absorption bed sidewall and should not be spaced farther than 48 inches between each lateral within the absorption bed.

2. Medium Sand sand fill design:

a. Filter Mound sand fill must conform to ASTM C-33, with less than 2% passing the #200 sievethe medium sand definition provided in section 2.1.4 of this manual. A manufactured sand is recommended.

b. Minimum depth of medium sand below the absorption bed shall be 1 foot.

c. Medium sand fill shall extend out a minimum of 24 inches level from the top edge of the absorption bed on all sides (medium sand fill absorption perimeter), and then uniformly slope as determined by the mound dimensions and the slope limitations as described in 4.25.3.2.f.

d. Flat sites: The effective area will be A x (C+B+D+2(H)).

e. Sloped sites: The effective area will be A x (B+D+H).

Equation 4-16 shows the calculation for the absorption bed area.

$$\frac{\text{Design Flow (GPD)}}{\text{Soil Application Rate }\left(\text{GPD}/\text{ft}^2\right)}$$

Equation 4-16. Effluent application area.

f. Slope of all sides must be 3 horizontal to 1 vertical (3:1) or flatter.

f.g. Sand fill area must be as long and narrow as practical, with plan view dimension G exceeding dimension F (Figure 4-287).

g.h. Slope correction factors as provided in Table 4-23 shall be used to determine the downslope width of the medium sand fill for sloped sites.

Table 4-23. Down slope correction factors for sloped sites.

Slope (%)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Correction Factor	1.03	1.06	1.10	1.14	1.18	1.22	1.27	1.32	1.38	1.44	1.51	1.57	1.64	1.72	1.82	1.92	2.04	2.17	2.33	2.50

Figure 4-27 can be used with Table 4-23 (sand mound design checklist) for flat and sloped sites.

3. Soil cap design:

   a. Sand mound must be covered with a minimum topsoil depth of 12 inches. The soil cap at the center of the mound must be crowned to 18 inches to promote runoff.

   ~~h.~~b. Topsoil and soil cap must be a sandy loam, loam~~y sand~~, or silt loam. Soils meeting the soil design group classifications of A and C shall not be used for the topsoil and soil cap cover.

   c. Mound should be protected to prevent damage caused by vehicular, livestock, or excessive pedestrian traffic. The toe of the mound must be protected from compaction.

   ~~i.~~d. Mounds on slopes should have design considerations taking surface runoff diversion into account.

   e. ~~Sand fill area must be as long and narrow as practical, with plan view dimension G exceeding dimension F (Figure 4-27).~~

4.25.4 Dosing Recommendations

1. Timed dosing should be utilized.
   a. Surge capacity should be considered to be incorporated into the dosing chamber.
2. Dose frequency should be short.
3. Distribution piping orifices should be closely spaced.
   a. Recommended spacing is 4 – 6 ft^2 of disposal area per orifice.

~~1.~~4. Dosing volume should be roughly 5 times the volume of the lateral pipe volume, but should not exceed 20% of the design volume.

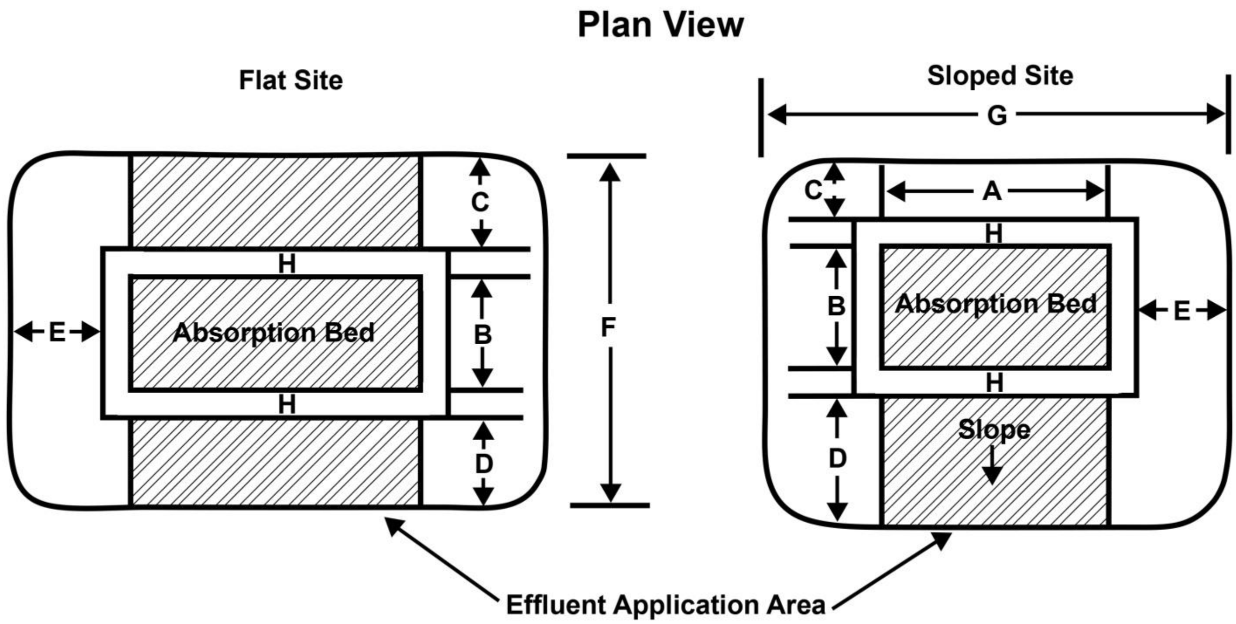

Figure 4-2~~8~~7. Design illustrations for sand mound installation on flat and sloped sites (use with sand mound design checklist).

Table 4-243. Sample Example sand mound design checklist.

	Sand Mound Design Checklist **(Example for a three-bedroom house on soil design subgroup B-2 soils, flat site, 12 inch medium sand fill depth below absorption bed)**	
1	Determine soil application rate (AR) (Example: B-2 soil)	AR = GPD/ft^2 (Example: 0.45 GPD/ft^2)
2	Determine daily flow rate (DFR) (Example: 250 GPD x 1.5 safety factor)	DFR = GPD x 1.5 (Example: 375 GPD)
	Absorption Bed Design	
3	$Area = \frac{Daily\_Flow\_Rate\_GPD(\#2)}{Sand\_Application\_Rate\_{GPD}/_{ft^2}\left(1.0\_{GPD}/_{ft^2}\right)}$	Area = ft^2 (Example: 375 ft²)
4	Width (B): $Width\_(B) = \sqrt{\frac{Area\_(\#3) \times Soil\_AR\_(\#1)}{Sand\_Application\_Rate\_\left(1.0\,GPD/_{ft^2}\right)}}$ Maximum bed width: Commercial = 15 feet Residential = 10 feet *Beds may be designed narrower than determined by this equation if desired. Beds are recommended to be as long and narrow as site conditions allow.* Example: $Width\_(B) = \sqrt{\frac{(\#3 \times \#1)}{1.0\,GPD/_{ft^2}}} \approx 13\,ft$	Width (B) = feet (Example: 13 feet or 10 feet max) (Example: use 10 feet)
5	Length (A): $Length\_(A) = Area\_(\#3)/Width\_(\#4)$ (Example: 375 ft²/10 feet)	(A) feet (Example: 37.5 feet)
	Sand Mound Design	
6	Total area (TA): $TA = DFR\_(\#2)/soil\_AR\_(\#1)$ (Example: 375 gallon/0.45 gallon/ft^2)	TA = ft^2 (Example: 833 ft²)
7	Medium sand fill absorption bed perimeter area (SFAP): Flat Site: SFAP = 2 x [2 feet x length (#5)] Sloped Site: SFAP = 2 feet x length (#5) (Example: 2 x [2 feet x 37.5 feet])	SFAP = ft^2 (Example: 150 ft^2)

87	Effluent application area (EAA) = Total area–(bed area + SFAP): EAA = TA (#6) – [Area (#3) + SFAP (#7)] = (Example: 833 ft² – [375 ft² + 150 ft²] = 458 308 ft²)	EAA = ft² (Example: 458 308 ft²)
98	Flat site perimeter (C,D): 0.5 x [EAA (#78)/length (#5)] *Perimeter width must meet or exceed dimension meeting a 3:1 slope*	(C) = (D) = feet (5.25 feet minimum for 3:1 slope in 12 in. mound, 8.25 feet minimum for 3:1 slope in 24 in. mound)
	(Example: 0.5 x [458 308 ft²/37.5 feet] = 64.1 feet)	(Example: 64.1 feet, use default of 5.25 to meet minimum slope)
109	Sloped site: Downslope length (D) = [EAA (#78)/length (#5)] x DCF *Downslope width must meet or exceed the dimension meeting a 3:1 slope based on down slope height of the medium sand fill absorption bed permimeter* (Example: D = [458 383 ft²/37.5 feet] x 1.0 = 1210.2 feet)	(D) = feet (Example: 1210.2 feet)
110	Sloped site: Upslope (C) = (Bed depth + max. sand depth) x 3 *Upslope width must meet or exceed the dimension meeting a 3:1 slope based on upslope height of the medium sand fill absorption bed permimeter* (Example: C = [0.75 feet + 1.0 foot] x [3] = 5.25 feet)	(C) = feet (Example: 5.25 feet)
121	End slope (E) = (Bed depth + max. sand depth) x 3 *End slope width must meet or exceed dimension meeting a 3:1 slope based on the height of the medium sand fill absorption bed permimeter at the absorption bed ends* (Example: [0.75 feet + 1.0 feet] x [3] = 5.25 feet)	(E) = feet (Example: 5.25 feet)
132	Total width (F) = B + C + D + 2(H) (Flat site example: 10 feet + 6.1 feet + 6.1 feet = 22.2 feet) ~~(Sloped site example: 10 feet + 5.25 feet + 12.2 feet = 27.45 feet)~~	(F) = feet (Example: 22.2 feet) ~~(Example: 27.45 feet)~~
143	Total length (G) = A+(2 x E) + 2(H) (G > F) (Example: [G] = 37.5 feet + [2 x 5.25 feet] = 48 feet)	(G) = feet (Example: 48 feet)

	~~**Finished Mound Dimensions**~~	
~~14~~	~~Sand mound length + 6 feet min. (G + 6)~~ ~~(Example: 48 feet + 6 feet = 54 feet)~~	~~(G+6) = feet~~ ~~(Example: 54 feet)~~
~~15~~	~~Sand mound width + 6 feet min. (F + 6)~~ ~~(Flat site example: 22.2 feet + 6 feet = 28.2 feet)~~ ~~(Sloped site example: 27.45 feet + 6 feet = 33.45 feet)~~	~~(F+6) = feet~~ ~~(Example: 28.2 feet)~~ ~~(Example: 33.45 feet)~~

Note: gallons per day per square foot (GPD/ft^2), downslope correction factor (DCF)

4.25.4 Construction

1. Pressure line from the dosing chamber should be installed first ~~and should be located upslope of the mound~~. The pressure line should slope down to the pump so that the pressure line will drain between discharges. If the sand mound is located downslope of the pump chamber, consider using anti-seep collars on the trench. ~~If a pump is to be used, the pressure line should slope down to the pump so that the pressure line will drain between discharges.~~

2. Grass~~,~~ and shrubs~~, and trees~~ must be cut close to ground surface and removed from the mound site.

   a. If extremely heavy vegetation or organic mat exists, these materials should be removed before scarification and replaced with filter sand (typically 3 or 4 inches of filter sand is added~~.~~).

   b. Larger than two inch caliper trees and large boulders are not to be removed. Trees should be cut as close to ground level as possible and the stumps left in place. If stumps or boulders occupy a significant area in the mound placement area, additional area should be calculated into the total basal area of the mound to compensate for the lost infiltrative area.

~~2.~~3. When the soil is dry, and site vegetation has been cut or removed the ground in the basal placement area of the sand ~~fill~~ mound should ~~then~~ be scarified or ripped to a depth of 6–8 inches. Scarification/ripping is important to provide vertical windows in the soil. ~~Tree stumps are not to be removed. If stumps are numerous, additional area should be calculated into the total sand area to compensate for the lost area.~~

~~3.~~4. Sand fill will then be placed and shaped before it freezes or rains. No vehicles with pneumatic tires should be permitted on the sand or ~~plowed~~ scarified area to prevent the soils from being compacted. For sloped sites, all work ~~is~~ should be done from the upslope side of the mound placement area if possible.

~~4.~~5. Absorption bed will be shaped and filled with clean drainrock.

~~5.~~6. Two observation ports should then be installed extending from the drainrock/medium sand interface through the soil cap at approximately the ¼ and ¾ points along the absorption bed. The observation ports should contain perforations in the side of the pipe extending up 4 inches from the bottom of the port. Observation ports must be capped.

~~6.~~7. After leveling the drainrock, the low-pressure distribution system manifold and laterals will be installed. The system should be tested for uniformity of distribution.

~~7.~~8. Geotextile must be placed over the absorption bed and backfilled with 12 inches of soil on the sides and shoulders, and 18 inches of soil on the top center. Soil types must be sandy loam, loam~~y sand~~, or silt loam.

~~8.~~9. Typical lawn grasses ~~and~~ or other appropriate low-profile vegetation should be established on the mound cap as soon as possible, preferably before the system is put into operation. Do not plant trees or shrubs on the mound, or within the mature rooting radius of the tree or shrub. Trees with roots that aggressively seek water ~~must~~ should be planted at least 50 feet from the mound (~~e.g~~i.e., poplar, willow, cottonwood, maple, elm, etc.).

~~9. A standpipe must be installed within the bed, down to the fill sand, so that ponding water can be measured periodically.~~

4.25.5 Inspections

1. Site inspections ~~must be made by the Director before, during, and after construction~~shall be conducted by the Director at the following minimum intervals (IDAPA 58.01.03.011.01):~~.~~

    a. Pre-construction

        i. Recommended that pre-construction conference be conducted with the property owner, Director, design engineer, and complex installer present

    b. During construction as needed

        i. Scarification, pressure line installation, medium sand mound construction, absorption bed construction, pressure distribution piping

    c. After construction

        i. Pump drawdown/alarm check, pressure test of distribution network, soil cap material and placement

2. The dDesigner engineer or owner must certify that the system has been installed according to the approved plans and provide as-built plans for the sand mound construction (IDAPA 58.01.03.005.15).

Table 4-243 is a sample sand mound design checklist, and Table 4-254 is a blank checklist for sand mound design.

Table 4-254. Sand mound design checklist.

	Sand Mound Design Checklist	
1	Determine soil application rate (AR)	AR = ________GPD/ft^2
2	Determine daily flow rate (DFR) *DFR = GPD x 1.5*	DFR = ________GPD
	Absorption Bed Design	
3	$Area = \dfrac{Daily\_Flow\_Rate\_GPD(\#2)}{Sand\_Application\_Rate\_{}^{GPD}/_{ft^2}\left(1.0\_{}^{GPD}/_{ft^2}\right)}$	Area = ________ft^2
4	Width (B): $Width\_(B) = \sqrt{\dfrac{Area\_(\#3) \times Soil\_AR\_(\#1)}{Sand\_Application\_Rate\_\left(1.0\,{}^{GPD}/_{ft^2}\right)}}$ Maximum bed width: Commercial = 15 feet Residential = 10 feet	Width (B) = ________ft
5	Length (A): $Length\_(A) = Area\_(\#3)/Width\_(\#4)$	(A) ________ft
	Sand Mound Design	
6	Total area (TA): $EAA = DFR\_(\#2)/soil\_AR\_(\#1)$	TA = ________ft^2
7	Medium sand fill perimeter area (SFAP) Flat site: SFAP = 2 x [2 feet x length (#5)] Sloped site: SFAP = 2 feet x length (#5)	SFAP = ________ft^2
78	Effluent application area (EAA) = Total area – (Bed area + SFAP): EAA = TA (#6) – [Area (#3) + SFAP (#7)]	EAA = ________ft^2
89	Flat site perimeter (C,D): 0.5 x [EAA (#78)/length (#5)] (5.25 feet minimum)	(C) = (D) = ________ft
910	Sloped site: Downslope length (D) = [EAA (#78)/length (#5)] x DCF	(D) = ________ft
1011	Sloped site: Upslope (C) = (Bed depth + max. sand depth) x 3	(C) = ________ft
1112	End slope (E) = (Bed depth + max. sand depth) x 3	(E) = ________ft
1213	Total width (F) = B + C + D + 2(H)	(F) = ________ft
1314	Total length (G) = A+(2 x E) + 2(H) (G > F)	(G) = ________ft
	Finished Mound Dimensions	

14	Sand mound length + 6 feet min. (G + 6)	(G+6) = ________ft
15	Sand mound width + 6 feet min. (F + 6)	(F+6) = ________ft

Note: gallons per day per square foot (GPD/ft^2), downslope correction factor (DCF)

Appendix N

2.2.3 The Method of 72 to Determine Effective Soil Depths to Porous Layers and Ground Water

Often times effective soil depths as required by IDAPA 58.01.03.008.02.c are not achievable due to various site conditions. In response to this issue section 2.2.1 provides guidance for reducing separation distances to limiting layers based upon soil design subgroups. In some situations this guidance does not go far enough to address these site limitations, nor does it provide guidance on how to approach separation distances to limiting layers when the soil profile is variable and does not meet the minimum effective soil depths as described in IDAPA 58.01.03.008.02 or table 2-6, or when the In-trench Sand Filter system design is utilized. To provide further guidance in these situations the Technical Guidance Committee has developed the Method of 72.

The Method of 72 is based upon assigning treatment units to soil design subgroups. Treatment units assigned to soil design subgroups are extrapolated from the effective soil depths required by IDAPA 58.01.03.008.02.c. Based on this rule it can be determined that 72 treatment units are necessary from the drainfield-soil interface to the porous layer/ground water to ensure adequate treatment of effluent by the soil. Table 2-7 provides the treatment units assigned to each soil design subgroup.

Table 2-7. Treatment units assigned to each soil design subgroup per foot and per inch. (*Medium sand receives an additional 6 treatment units for the sand-native soil interface)

Soil Design Subgroup	A-1 / Medium Sand*	A-2	B-1	B-2	C-1	C-2
Treatment Units Per 12 Inches of Soil	12	14.4	18	24	24	28.8
Treatment Units Per Inch of Soil	1	1.2	1.5	2	2	2.4

2.2.3.1 Native Soil Profiles and the Method of 72

When the soil profile contains multiple suitable layers, but no layer is thick enough to meet the separation guidance provided in IDAPA 58.01.03.008.02.c or table 2-6, an individual may utilize the Method of 72 to determine the suitable separation distance for the proposed drainfield site. The following example is based off of the soil profile identified in figure 2-3.

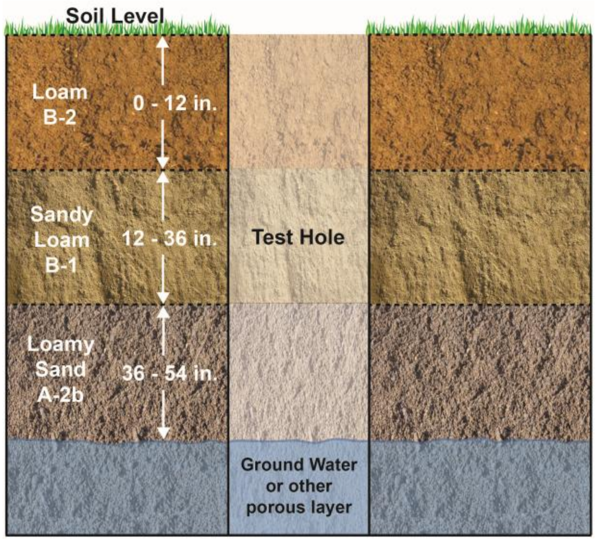

Figure 2-3. Test hole profile utilized in example 1.

Example 1:

Based upon the soil profile in figure 2-3 and the treatment units from table 2-7 the following treatment unit equivalent would be ascribed:

Treatment Units = 24 + 36 + 21.6 = 81.6

Since this is the treatment unit equivalent from grade to the porous layer or normal high ground water level the installation depth must still be determined. In this particular instance the soil profile has 9.6 treatment units more than the minimum necessary to be considered suitable for a standard alternative drainfield. To determine installation depth utilize the upper layer of the soil profile where the system will be installed and determine the treatment units per inch of soil. Once the treatment units per inch are known the depth of allowable installation can be determined.

24 treatment units / 12 inches of B-2 soil = 2 treatment units per inch

Installation depth = 9.6 excess treatment units / 2 treatment units per inch
Installation depth = 4.8 inches

In this example a standard basic alternative system can be permitted. The system design would be a capping fill trench with a maximum installation depth of 4.5 inches below grade.

2.2.3.2 In-Trench Sand Filters and the Method of 72

The Method of 72 may also be used in determining the necessary depth of medium sand required for installation between a drainfield and the native soils overlying a porous limiting layer or normal high ground water. In this application an additional 6 treatment units are allotted for the medium sand and native soil interface. Medium sand is classified under the A-1 soil design subgroup providing 12 treatment units per foot of medium sand. Treatment units for native soils are provided in table 2-7. The following example is based off of the soil profile identified in figure 2-4.

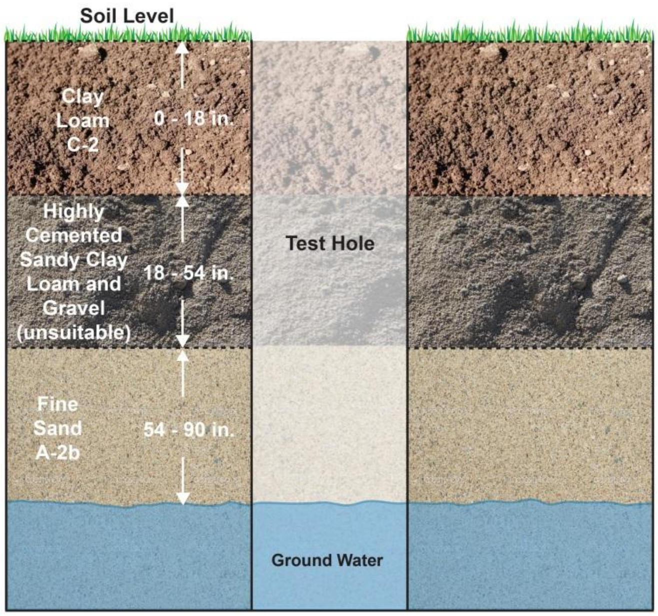

Figure 2-4. Test hole profile utilized in example 2.

Example 2:

In this example the site soils must be excavated down to 54 inches to access suitable soils. This leaves 36 inches of A-2b soils, providing 43.2 treatment units. An additional 6 treatment units is then added for the medium sand – native soil interface, for a total of 49.2 treatment units. The amount of medium sand required to be backfilled prior to system installation would be determined as follows:

Remaining treatment units = 72 – 49.2 = 22.8

Depth of medium sand required = 22.8 treatment units remaining / 1 treatment unit per inch

Depth of medium sand required = 23 inches

Thus the medium sand would be backfilled to a depth of 31 inches below grade. The drainfield would then be installed on top of the leveled medium sand.

Note: Regardless of soil profile and treatment units necessary, drainfields must be installed no deeper than 48 inches below grade per IDAPA 58.01.03.008.04.

Appendix O

4.24 In-Trench Sand Filter

Revision: ~~May 1, 2000~~July 18, 2013

4.24.1 Description

An in-trench sand filter is a standard trench or bed system receiving effluent by either gravity or low-pressure flow, under which is placed a filter of medium sand meeting the definitions provided in section 2.1.4. ~~An acceptable modification~~The standard design is typically used to excavate through impermeable or unsuitable soil layers down to ~~more~~ permeable or suitable soils. The standard design may also ~~and~~ have~~place~~ clean pit run sand and gravel placed between the medium sand and more permeable soils or ground water as long as minimum medium sand depths are utilized. A modified design to the standard in-trench sand filter is known as the enveloped in-trench sand filter. Enveloped in-trench sand filters consist of a disposal trench with medium sand placed below and to the sides of the drainrock and are utilized for sites with native soils consisting of very coarse sand. A complex installer's permit is needed to install pressurized in-trench sand filters and enveloped in-trench sand filters. A basic installer's permit may be used to install gravity flow in-trench sand filters that are not preceded by any complex alternative system components.

4.24.2 Approval Conditions

1. Except as specified herein, the system must meet the dimensional and construction requirements of a standard trench, bed, or pressure distribution system.

2. The in-trench sand filter or any of its modifications may be used over very porous strata, coarse sand and gravel, or ground water.

3. The standard in-trench sand filter system ~~is~~ shall be sized ~~according to~~based on the native receiving soils at the medium sand, or pit run, and native soil interface ~~or at 1.2 gallons/ft^2, whichever is less.~~.

4. Standard in-trench sand filters must maintain a 12 inch minimum depth of suitable native soil below the filter above a porous or non-porous limiting layer.

5. Standard in-trench sand filters must maintain a minimum separation distance of 12 inches from the bottom of the drainfield to the seasonal high ground water level.

6. Standard in-trench sand filters must maintain a separation distance from the bottom of the drainfield and the normal high ground water level that is capable of meeting the Method of 72 as described in section 2.2.3.2.

   a. Approval condition 6 may be waived if the standard in-trench sand filter is preceded by an alternative pretreatment system (e.g., extended treatment package system, intermittent sand filter, or recirculating gravel filter) as long as the bottom of the drainfield still meets the minimum separation distances of the applicable alternative pretreatment system.

7. If the enveloped in-trench sand filter modification is used the following conditions must be met:

   a. Enveloped in-trench sand filters may only be installed in unsuitable native soils consisting of coarse sand or very coarse sand.

      i. Unsuitable native site soils shall be evaluated and certified to not be any larger than the diameter of very coarse sand as described in Table 2-1.

   b. Enveloped in-trench sand filters installed in unsuitable soils (e.g., coarse sand and very coarse sand) as described in Table 2-1 and Table 2-9 must be preceded by an alternative pretreatment system (e.g., extended treatment package system, intermittent sand filter, or recirculating gravel filter).

   c. The system shall be sized at 1.7 gallons/ft^2.

   d. Enveloped in-trench sand filters must maintain a minimum of 12 inches above the seasonal high water level from the bottom of the enveloped sand filter.

   a.e. Enveloped in-trench sand filters may not be used in Large Soil Absorption System designs.

4.24.3 Design and Construction

3.8. Filter Medium sand used in filter construction must conform to the gradation requirements of ASTM C-33 (less than 2% may pass a #200 sieve)as described in section 2.1.4.

9. Pit run backfill material, if used, is to meet a soil design subgroup A-1 soil classification.

   a. Pit run backfill material may only be used if the minimum medium sand fill depths are met.

4.10. The following mMinimum filter medium sand depths must be usedare dependent upon site specific soil profiles. The following site specific conditions outline the minimum sand filter depths:

   a. Gravity flow system = 4 feetExcavation through an impermeable/unsuitable soil layer to access suitable soils and seasonal ground water or a porous limiting layer is not present.

      i. No minimum medium sand depth.

ii. Pit run material may not be installed until medium sand has been installed to a depth of 8 feet below grade.

b. ~~Pressure distribution = 2 feet in design group C soils~~
~~3 feet in design group A and B soils~~Excavation through an impermeable/unsuitable soil layer to access suitable soils and seasonal ground water or a porous limiting layer is present.

i. The minimum medium sand depth is dependent upon meeting the Method of 72 as outlined in section 2.2.3.2.

ii. Pit run material may not be installed until the Method of 72 as described in section 2.2.3.2 is met.

c. Native site soils consist of very coarse sand

i. The filter sand shall envelop the drainrock so that at least 1 foot of medium sand is between the drainrock and the native soils as shown in Figure 4-25.

~~5. When the native soils are design subgroup A-1 or coarser, the filter sand shall envelop the drainrock so that at least 1 foot of filter sand is between it and the native soils, as shown in Figure 4-25.~~

~~6. The seasonal or normal ground water must not come within 12 inches of the bottom of the sand filter.~~

Figure 4-25 shows two ~~types~~ scenarios for use of in-trench sand filters. Figure 4-26 provides an example of an enveloped in-trench sand filter installed in coarse native soil.

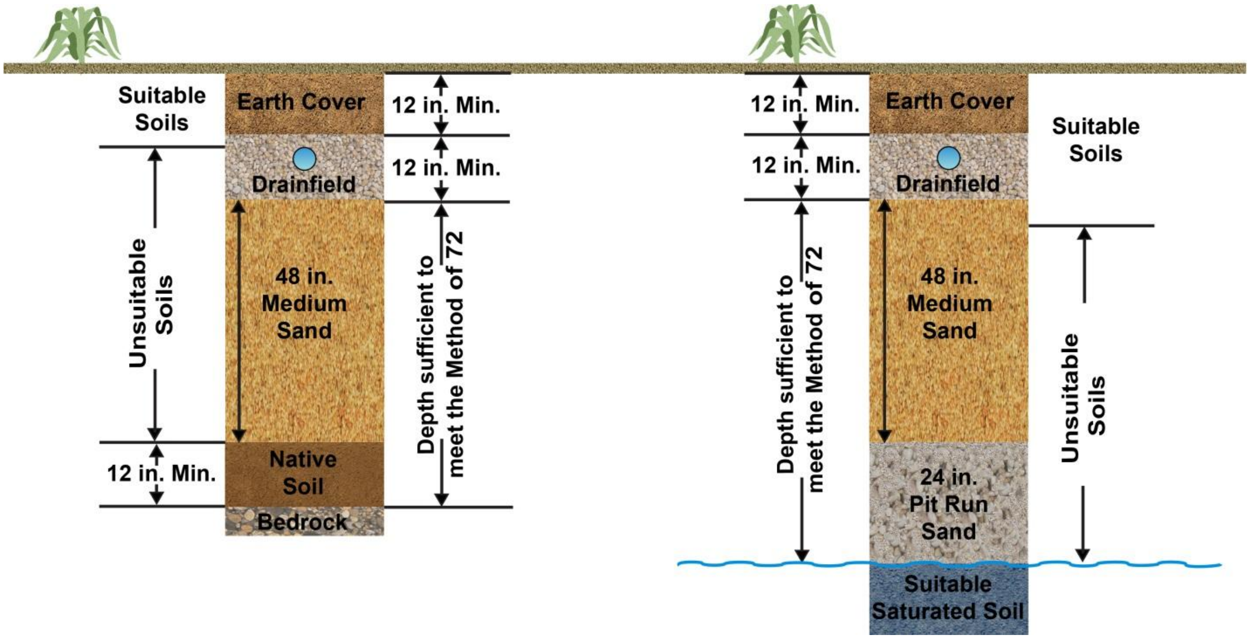

Figure 4-25. In-trench sand filter accessing suitable soils through an unsuitable soil layer.

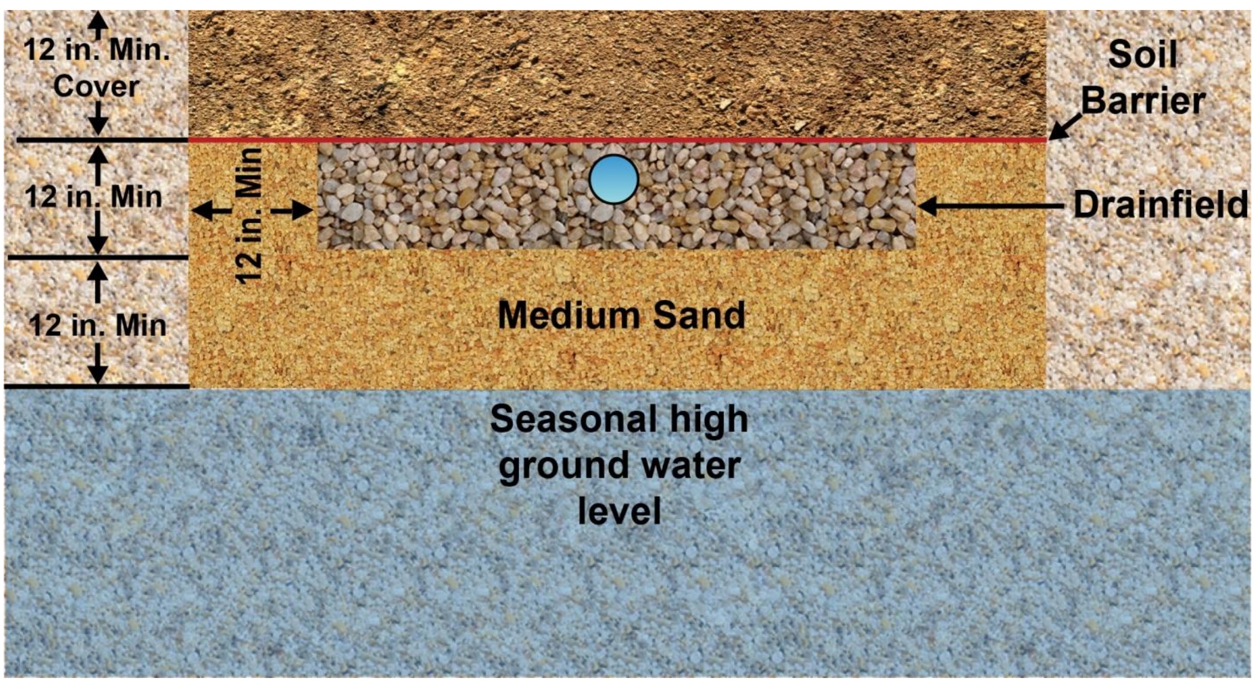

Figure 4-26. Enveloped in-trench sand filter for installation in coarse native soils (i.e., ~~A 1~~coarse or very coarse~~r~~ sand).