



# Public Health

## Idaho North Central District



# Complex Septic System Installer Training Class

Public Health – Idaho North Central District

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# Updates to the Technical Guidance Manual

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## Technical Guidance Manual for Individual and Subsurface Sewage Disposal Systems

This document provides guidance on the design, construction, alteration, repair, operation, and maintenance of standard individual and subsurface sewage systems, their components, and alternatives. The manual is updated periodically to adapt to the dynamic and complex nature of small wastewater disposal systems; updates are cited below.

» [Technical Guidance Manual for Individual and Subsurface Sewage Disposal Systems](#) (Last updated: December 2019)  
*Note: This is a large file. If you have difficulty downloading it, try opening it in a different browser or from your hard drive instead of your browser. Right-click on the link, select "Save link as," navigate to the file on your hard drive, and double-click to open.*

- [+ Current Year's Updates to the Manual](#)
- [+ Previous Years' Updates to the Manual](#)

### Technical Guidance Committee

Next Scheduled Meeting Date

Thursday, March 5, 2019, 9:30 a.m.  
DEQ State Office  
Conference Room C  
1410 N. Hilton, Boise  
Agenda and Appendices TBD

[+ Meeting Minutes](#)

### Staff Contacts

On-Site Wastewater Analyst  
Vacant  
DEQ State Office  
Water Quality Division  
1410 N. Hilton  
Boise, ID 83706

### Health District Contacts

For questions regarding a proposed or existing on-site wastewater system permit or inspection, please contact your local public health district.

### DEQ Resources

- » [Idaho Permitted Subsurface Sewage Disposal System Installer List](#)
- » [Subsurface Sewage Disposal Permit Application Supplement for Nondomestic Wastewater](#)
- » [Septic Tank Inspection Procedure](#)
- » [Domestic Wastewater Phosphorus Concentration Report](#)
- » [Service Provider Exam FAQs](#)

### More Information

- [Individual/Subsurface Sewage Disposal Rules](#)
- [Idaho Code Related to Individual and Subsurface Sewage Disposal Systems](#)
- [Rules Governing the Cleaning of Septic Tanks](#)

### Related Pages

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- Waste Mgmt & Remediation
- INL Oversight
- Permitting
- Pollution Prevention
- Assistance & Resources
- Laws, Rules, Etc.

# Complex Systems and Licensing

- Any system currently listed in the TGM.
- Public works contractors may install any central or municipal system while under the supervision of PE licensed in Idaho.

# Complex Systems Not Requiring an Engineer

- ETPS
- Pump-to-gravity pressure distribution
- Two-cell infiltrative system
- Remediation components
- Proprietary wastewater treatment systems\*

# Complex Systems Requiring an Engineer

- At-grade soil absorption system
- Drip distribution system
- Evapotranspiration and evapotranspiration/infiltrative system
- Experimental systems
- Pressurized grey water systems
- Pressurized in-trench sand filter
- Individual lagoon
- Intermittent sand filter
- Large soil absorption systems
- Pressure distribution systems
- Public systems\*
- Recirculating gravel filter
- Sand mound
- Subsurface flow constructed wetland

# Operation & Maintenance

- O&M of complex sewage disposal systems not designed by an engineer is generally found in the TGM or in the design manual provided by the product manufacture.
- All systems designed by an engineer must submit an operations and maintenance manual with the application.
- Some systems require O&M be performed by a service provider, with annual reporting.

# Certified Service Providers

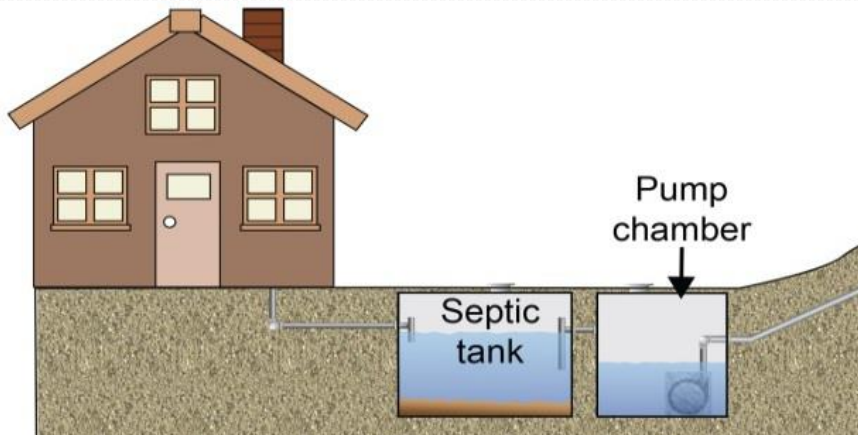
- O&M required by certified service provider for:
  - ETPS
  - Recirculating gravel filters
- Manufacturer-specific training documentation
- \$15,000 bond
- Exam  $\geq 70\%$
- Annual reports
- Refresher Training

# Service Provider Responsibilities

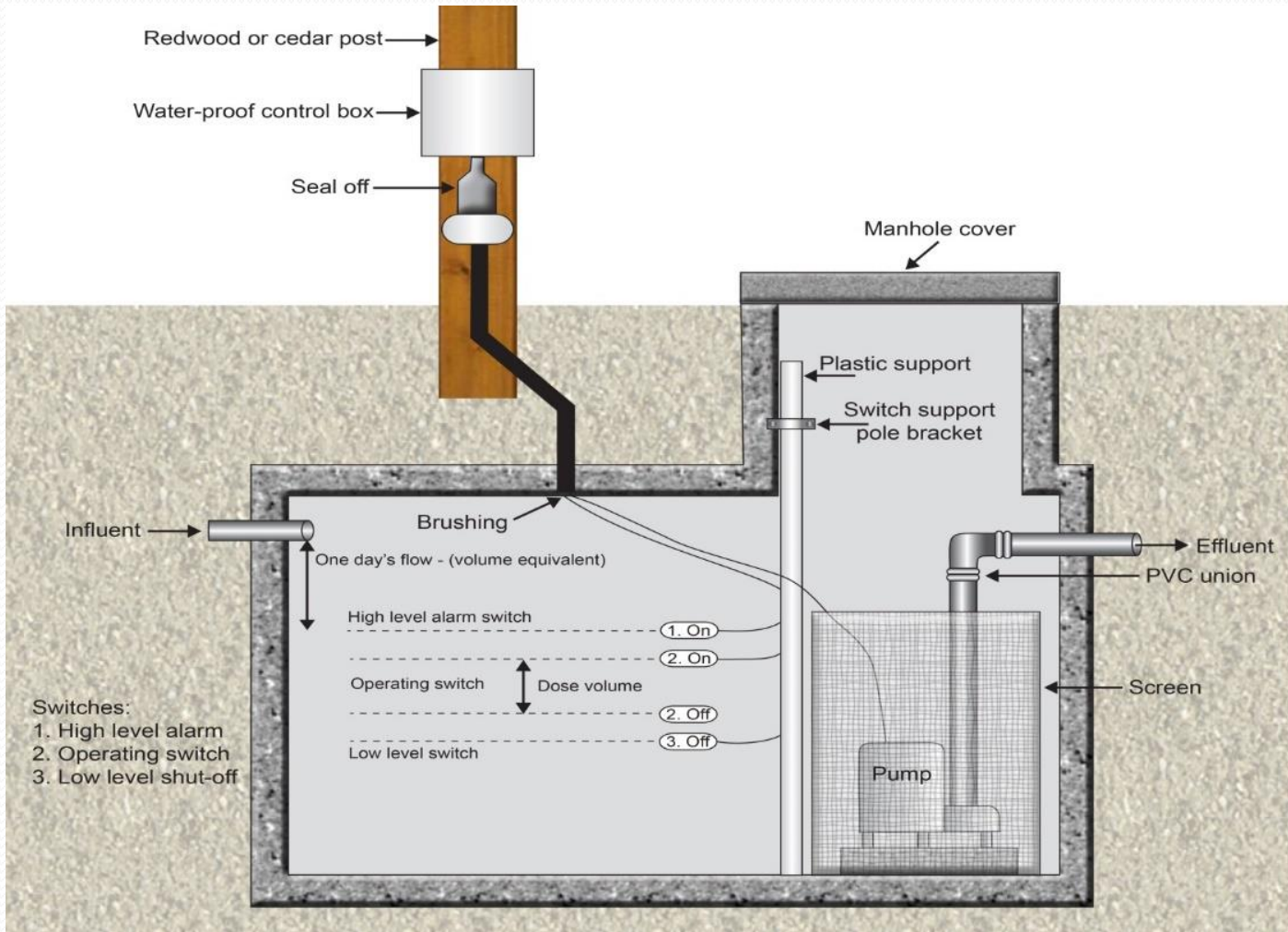




# Pumping Sewage



# Dosing Chambers



# Dosing Chambers



# More on Pumping

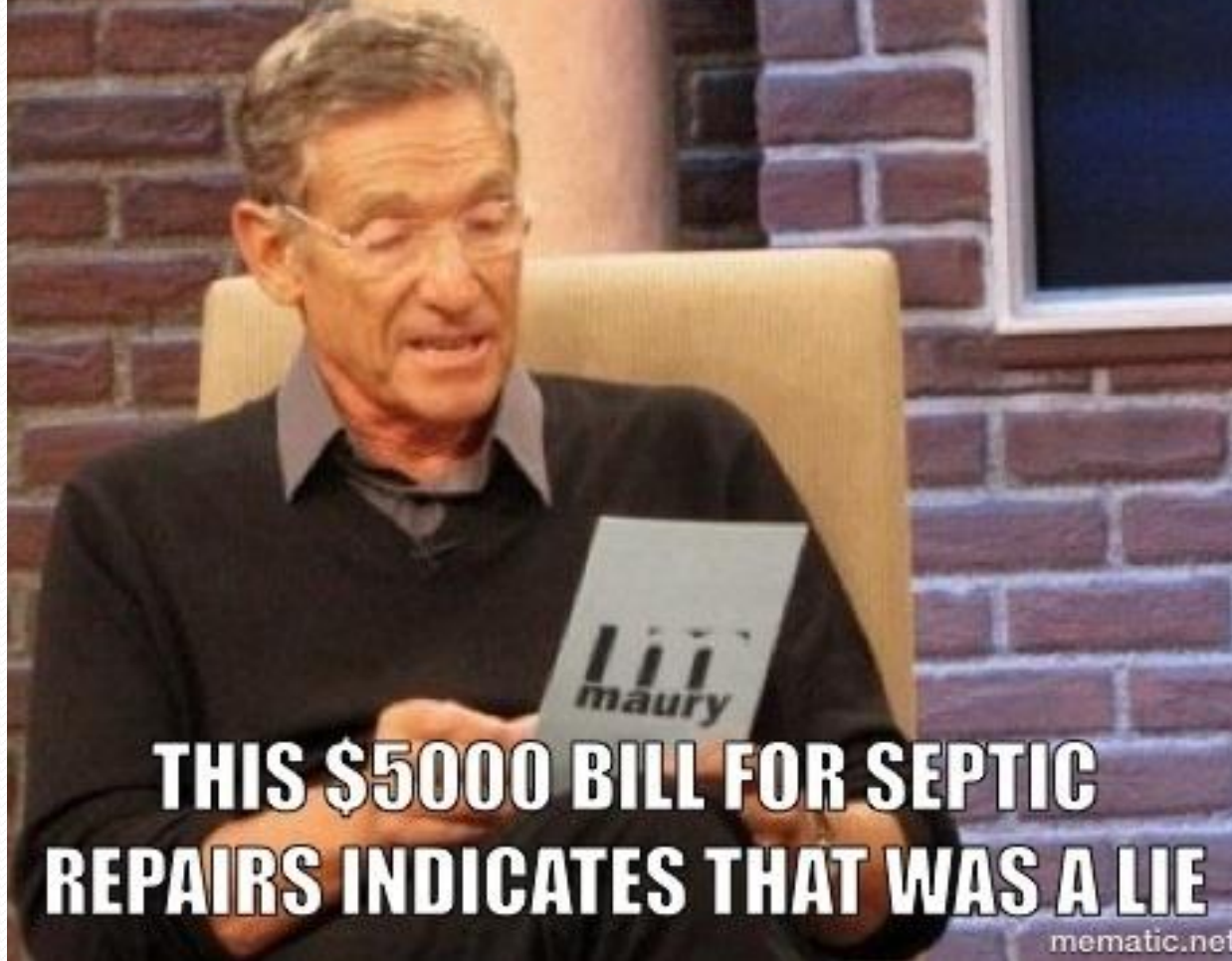
Table 4-18. Gallons per foot of pipe length.

Diameter (inches)	Schedule 40	Class 200	Class 160	Class 125
1	0.045	0.058	0.058	—
1.25	0.078	0.092	0.096	0.098
1.5	0.105	0.120	0.125	0.130
2	0.175	0.189	0.196	0.204
3	0.385	0.417	0.417	0.435
4	0.667	0.667	0.714	0.714
6	1.429	1.429	1.429	1.667

Table 5-13. Pipe materials for specified uses.

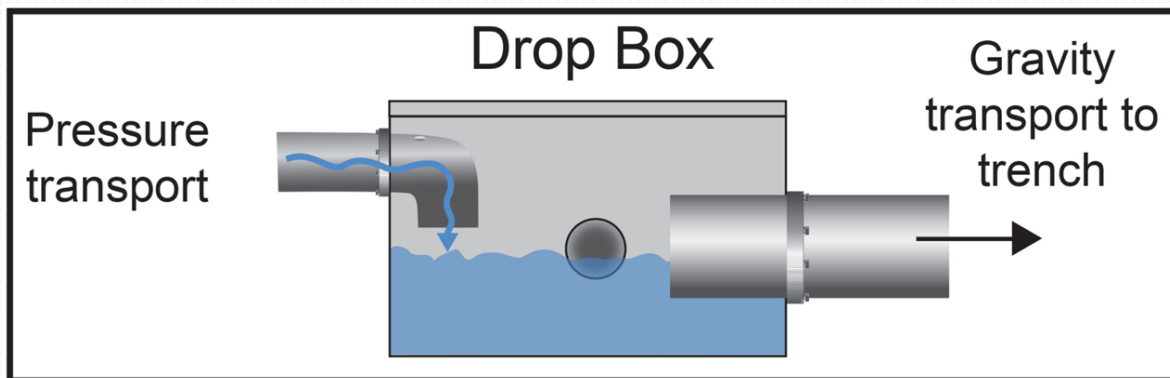
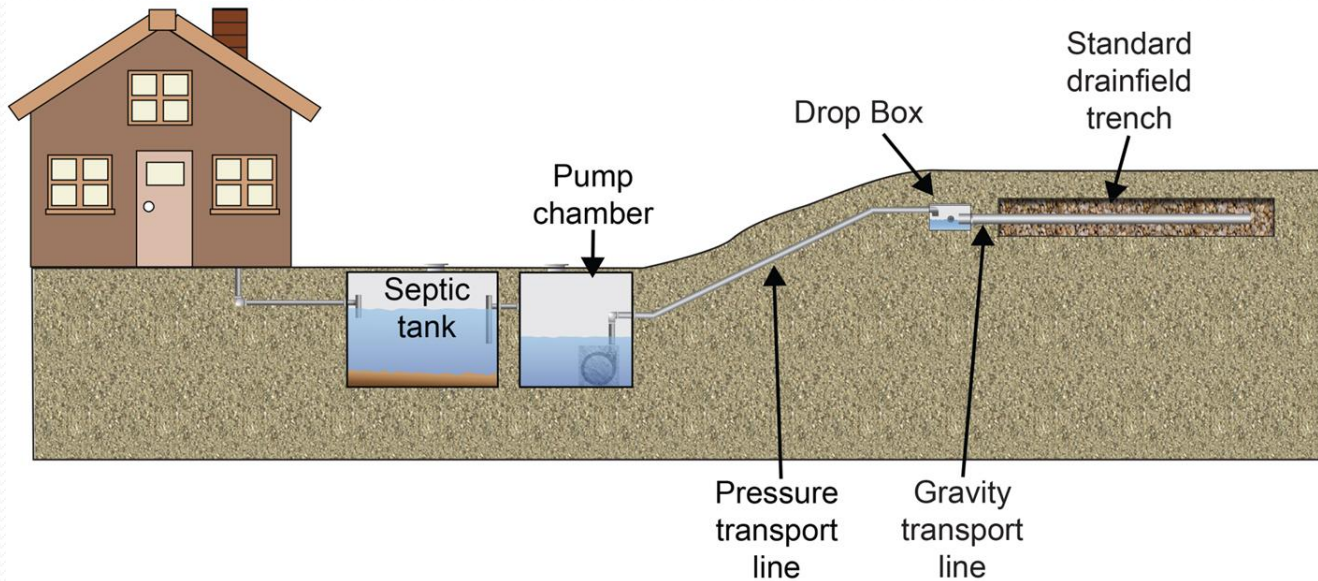
Pipe Material and Specification <sup>a,b</sup>	Function				
	Tank to Dosing Chamber	Tanks to Drainfield <sup>c,d</sup>	Gravity Drainfield <sup>c,d</sup>	Pressure Distribution System	
ABS Sch. 40 <sup>e</sup>	ASTM D2661	X	X	X	X
	ASTM F628	X	X	X	X
PVC Sch. 40	ASTM F891-10	X	X	X	X
PVC	ASTM D3034 <sup>f</sup>	X	X	X	
	ASTM D2729			X	
	ASTM D2241	X	X	X	X
	AWWA C900	X	X	X	X
	ASTM D2665	X	X	X	
	ASTM D1785	X	X	X	X
PE	AWWA C906	X	X	X	X
	ASTM F810 <sup>g</sup>		X	X	
	ASTM F667 <sup>h</sup>			X	

**BABY WIPES BOX  
SAYS "FLUSHABLE"**

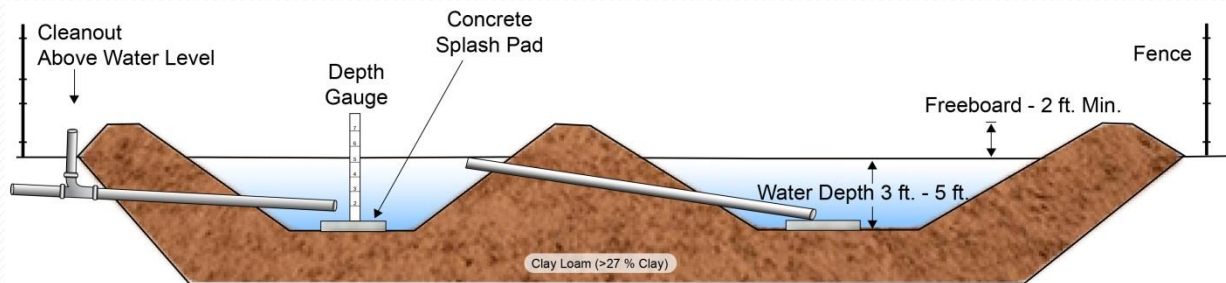
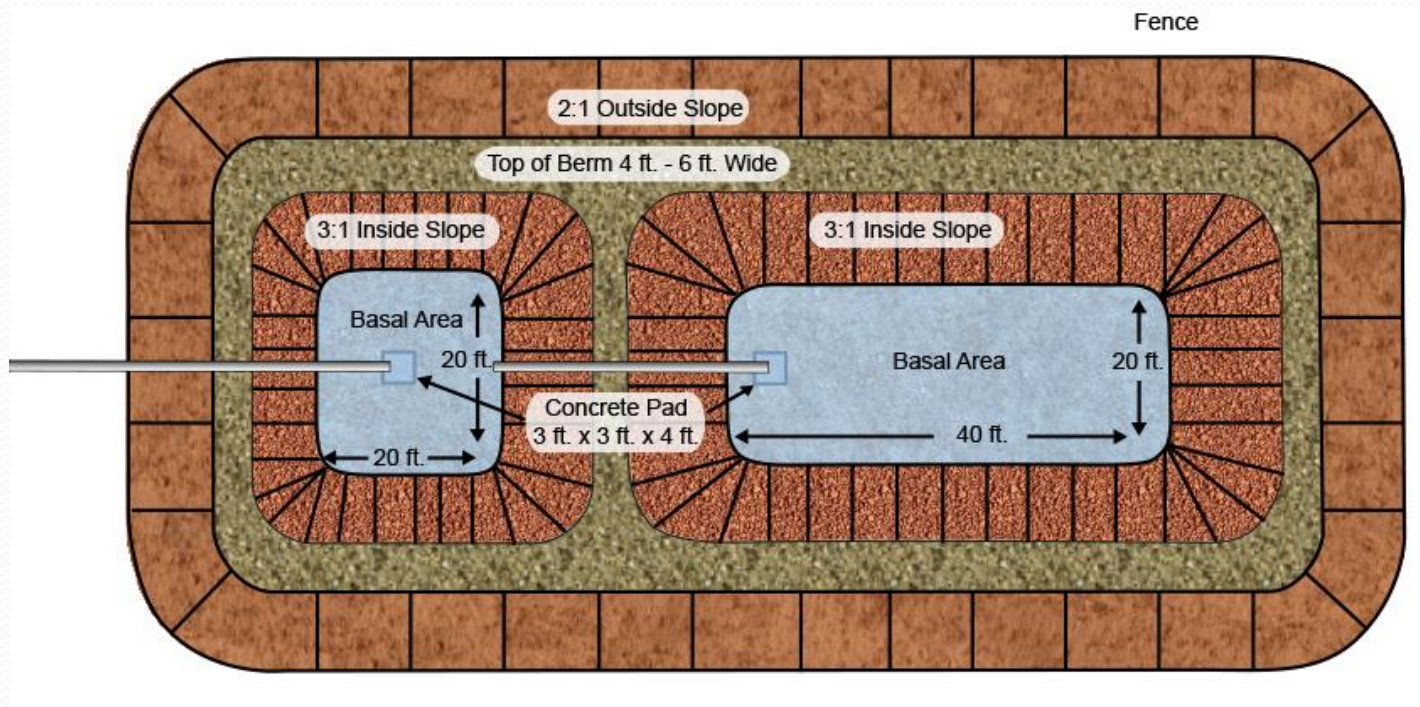


**THIS \$5000 BILL FOR SEPTIC  
REPAIRS INDICATES THAT WAS A LIE**

# Pump-to-Gravity Distribution



# Two-Cell Infiltrative System

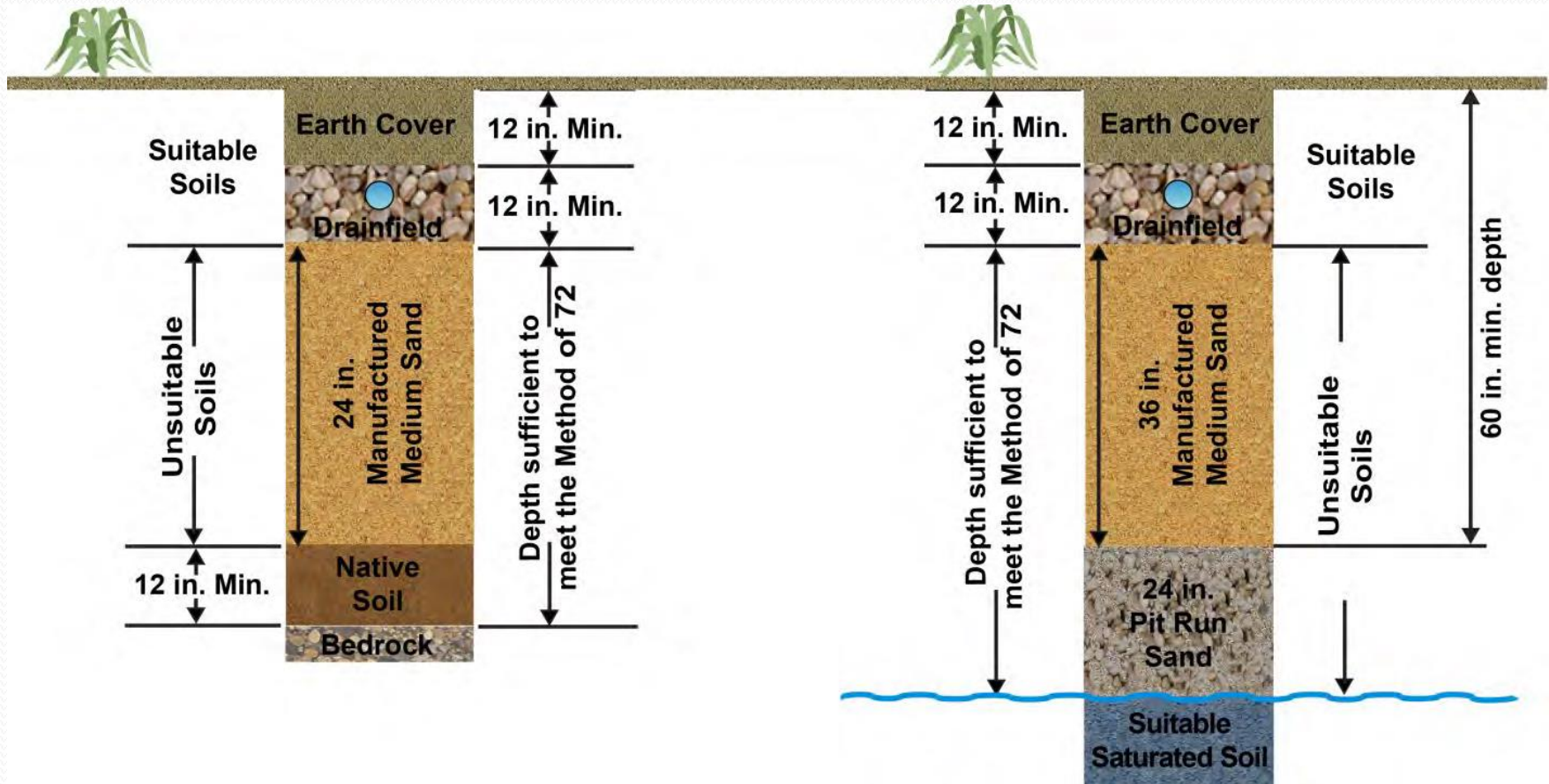


# Two-Cell Infiltrative System

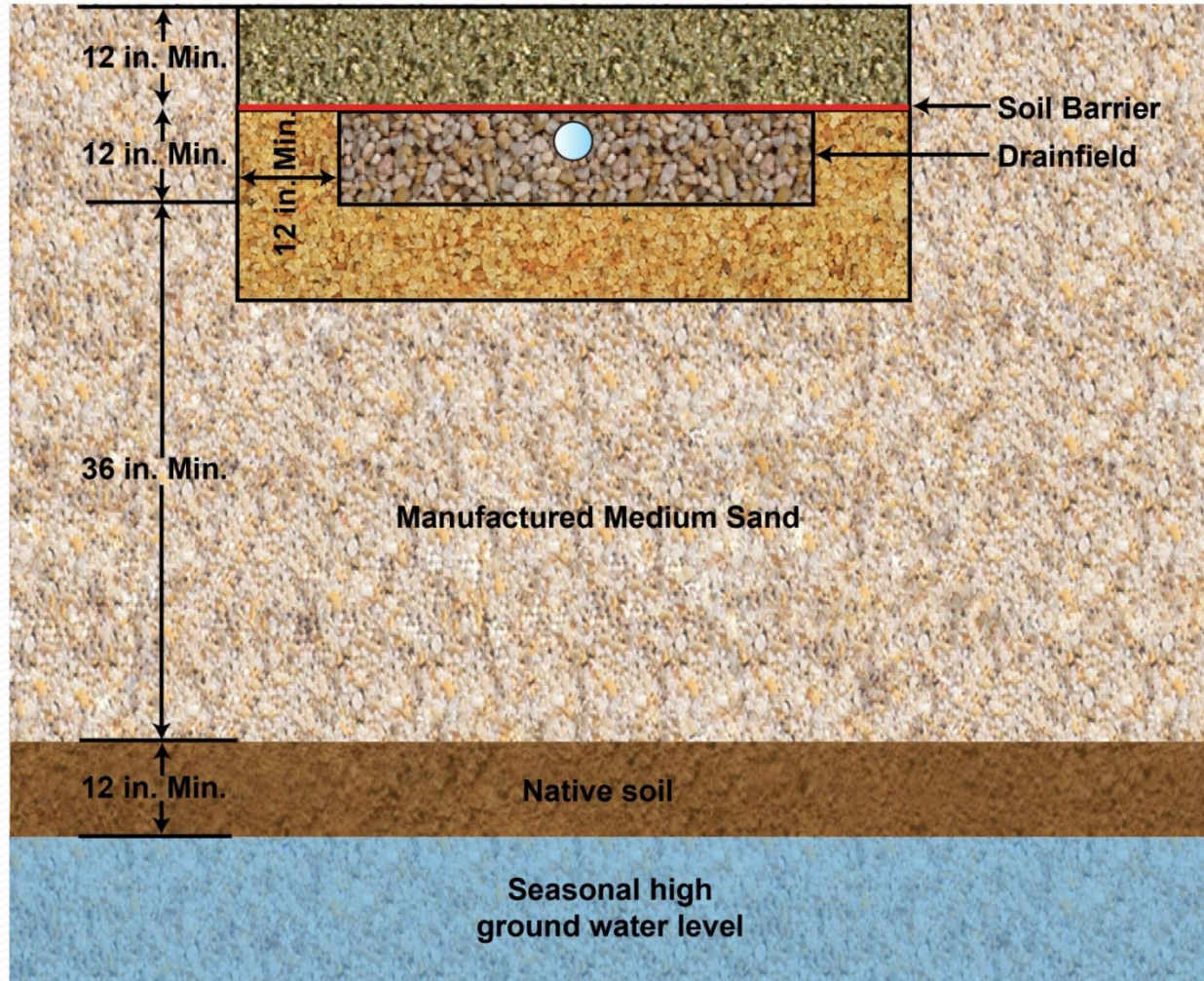




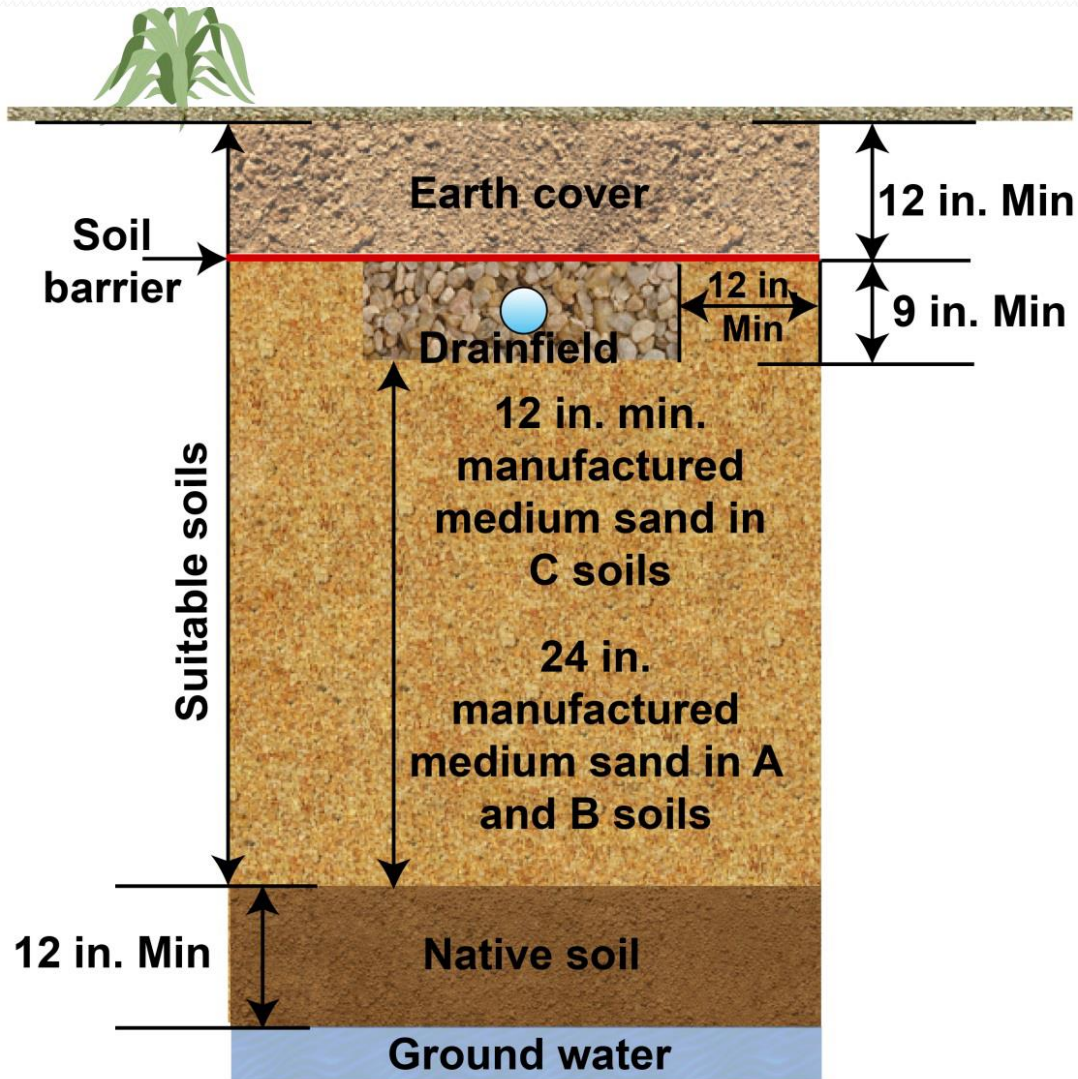
# Pressurized In-trench Sand Filter



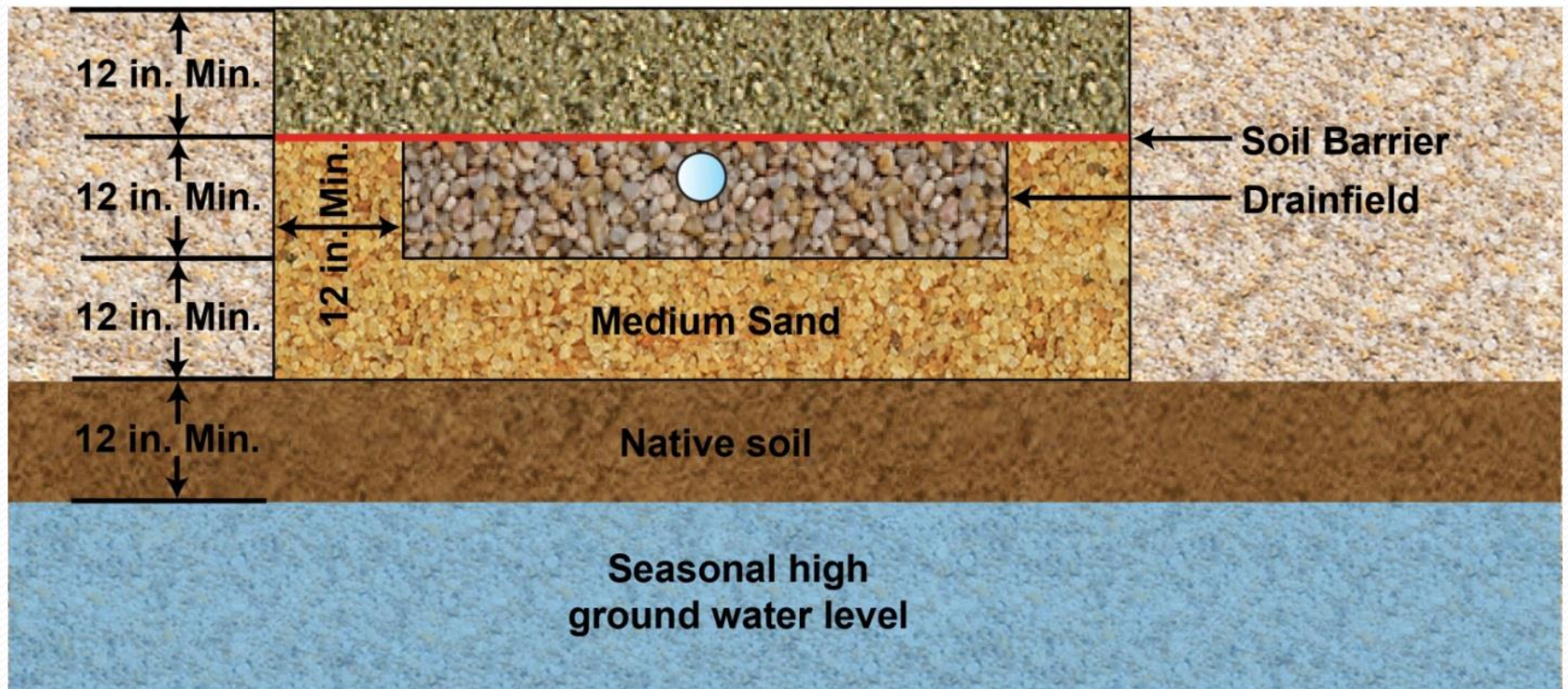
# Enveloped In-trench Sand Filter



# Pressurized Enveloped In-trench Sand Filter

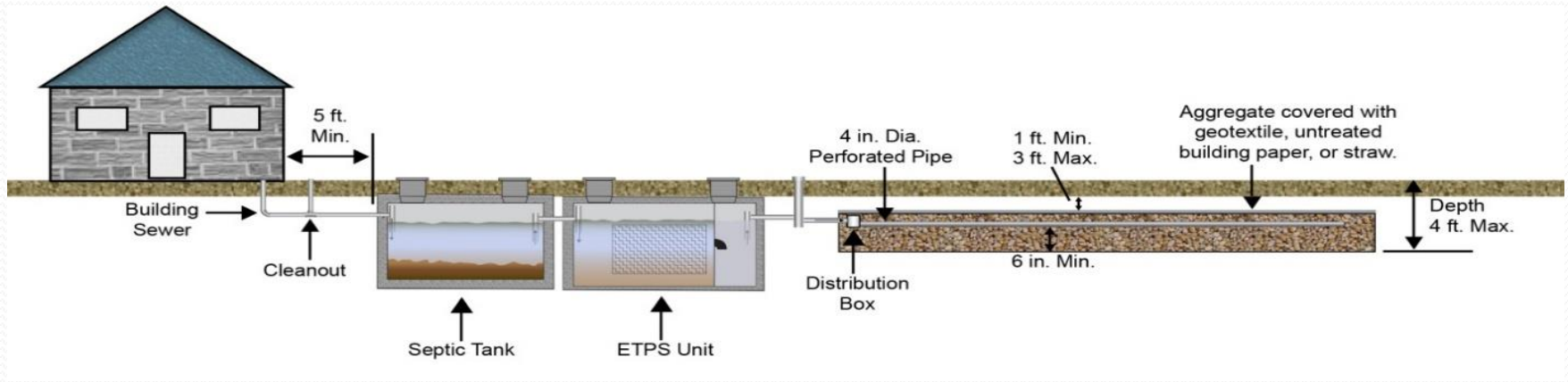


# Pretreated Enveloped In-trench Sand Filter

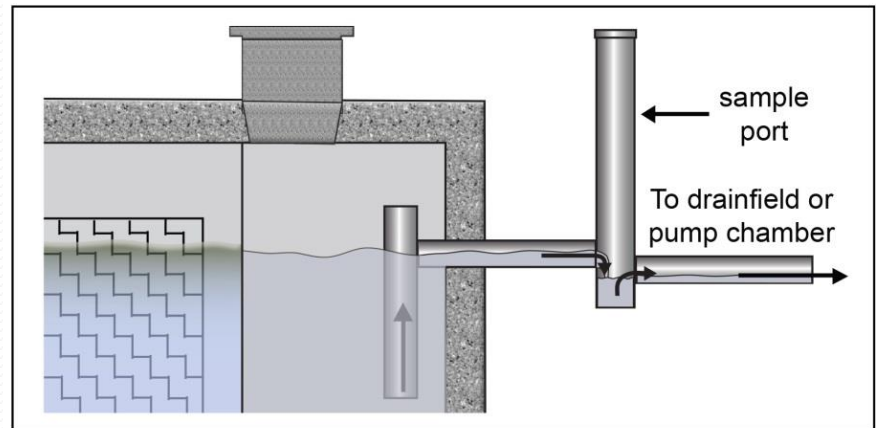




# Extended Treatment Package Systems



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

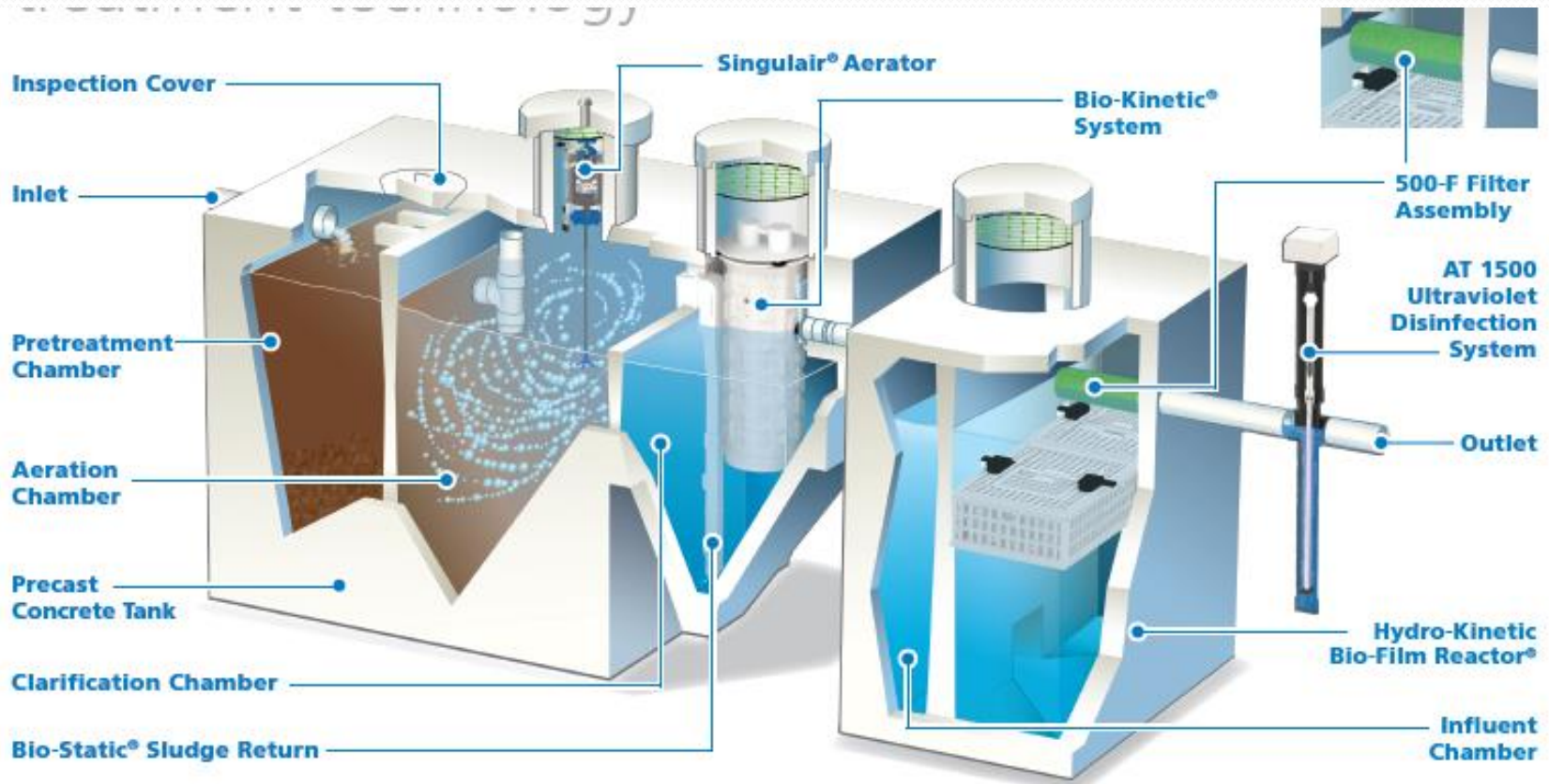


# Common ETPS in Idaho

(1,935 installed as of 2017)

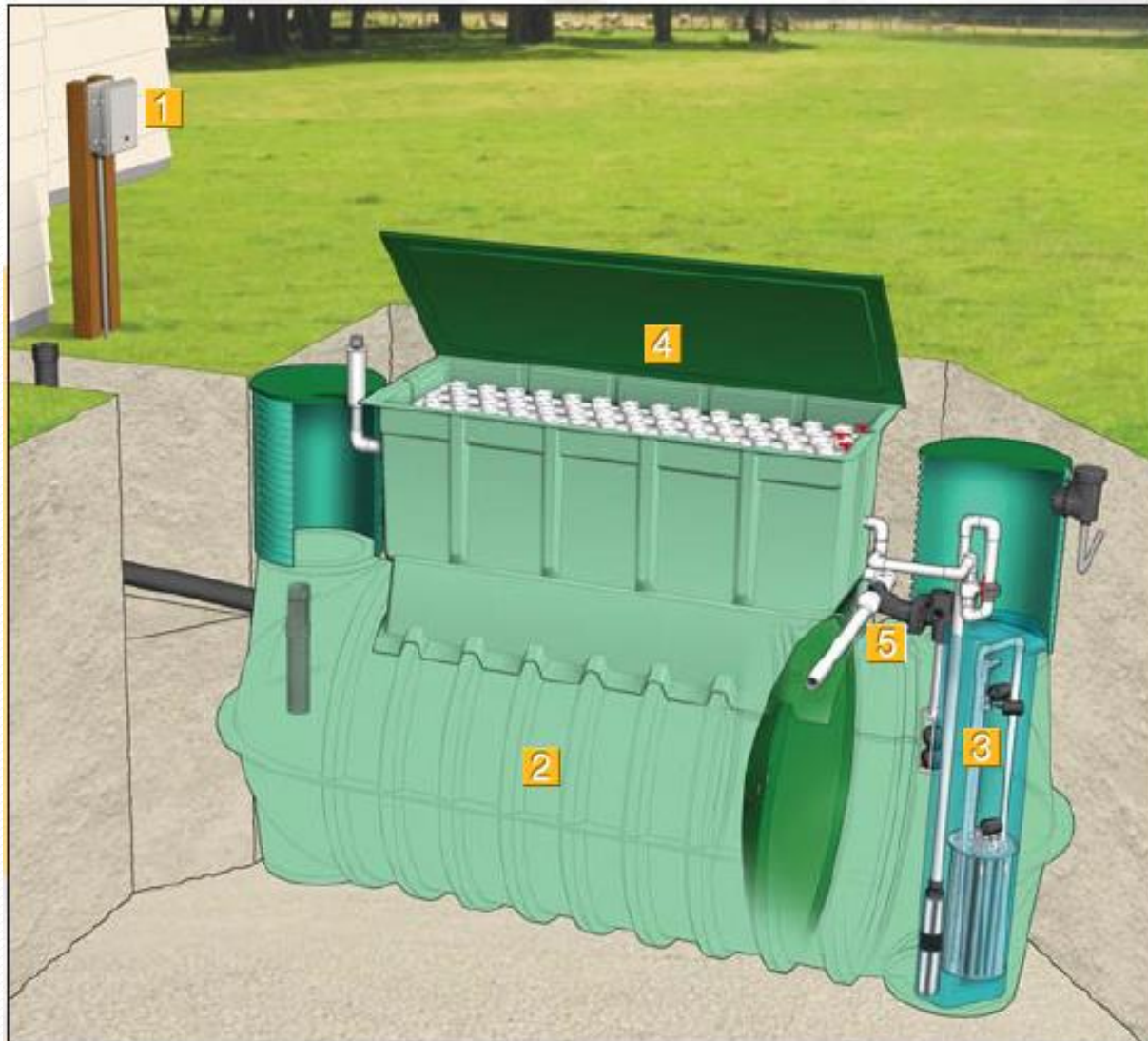


# ETPS Examples

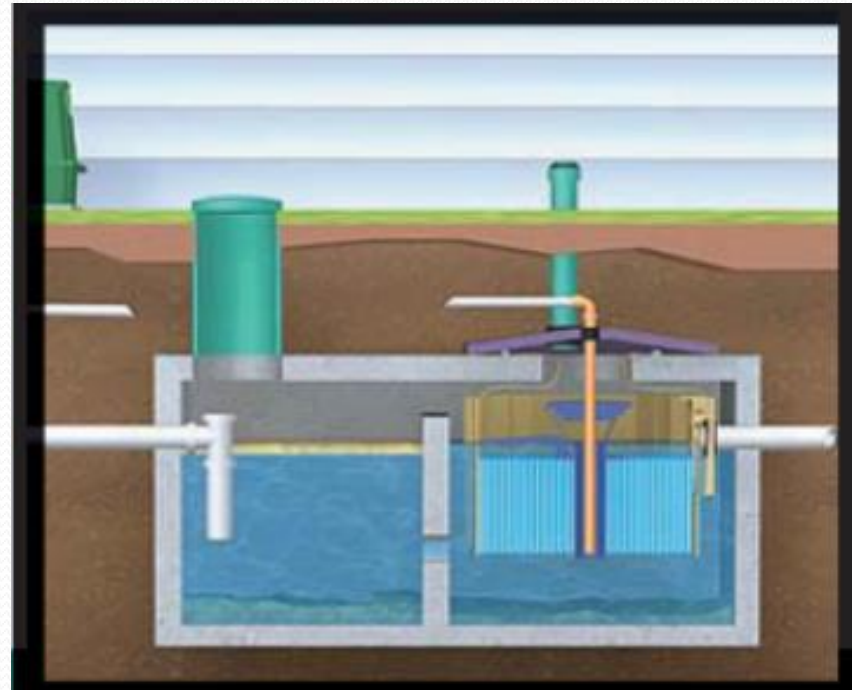
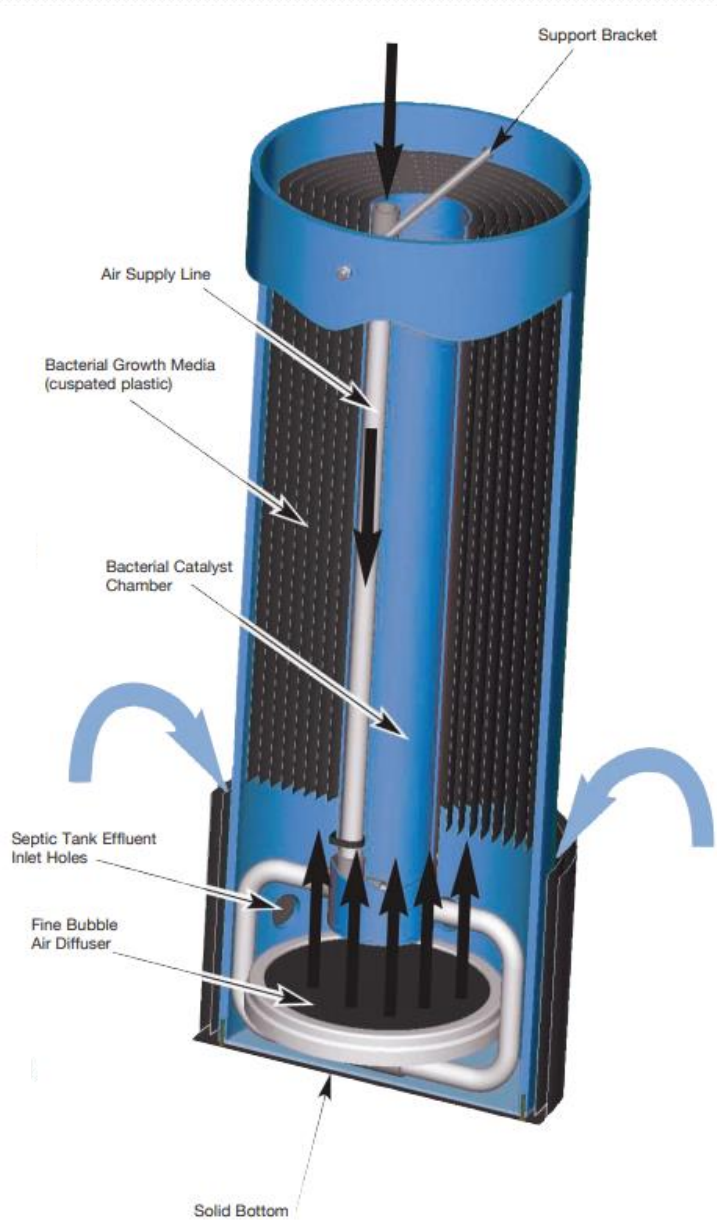




# ETPS Examples



# Remediation Components



# Engineered Systems



# A Note on Engineers

- The engineer must be licensed as a P.E. in Idaho.
- Familiar with wastewater.
- The engineer is responsible for submitting an as-built and O&M at the completion of the project.
- Availability of engineers.

# Pressure Distribution System



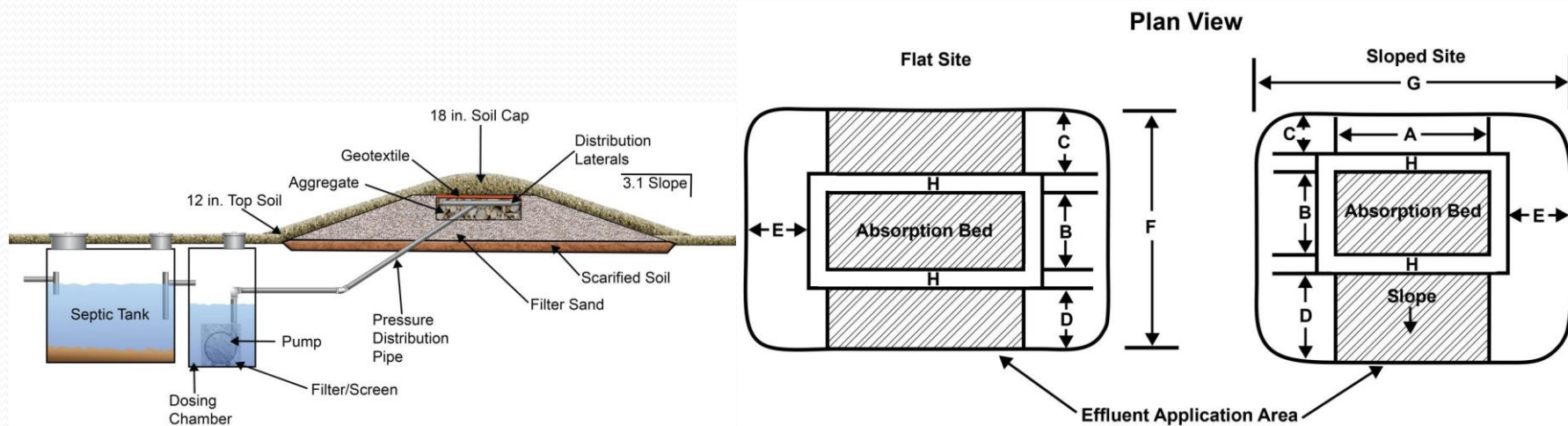
# Pressure Distribution System

Number of Bedrooms	1	2	3	4	5	6
Gallons per day	150	200	250	300	350	400
Total Trench Lengths (feet)						
<i>Soil Group A-1 total feet</i>	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
<i>Soil Group A-2a total feet</i>	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
<i>Soil Group A-2b total feet</i>	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
<i>Soil Group B-1 total feet</i>	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
<i>Soil Group B-2 total feet</i>	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
<i>Soil Group C-1 total feet</i>	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	534
2-ft wide trench	250	333	417	500	548	667
<i>Soil Group C-2 total feet</i>	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	600	a	a
2-ft wide trench	375	500	625	750	a	a

a. Exceeds 1,500 square feet of total trench area. Use an alternative system to reduce the installed square footage of

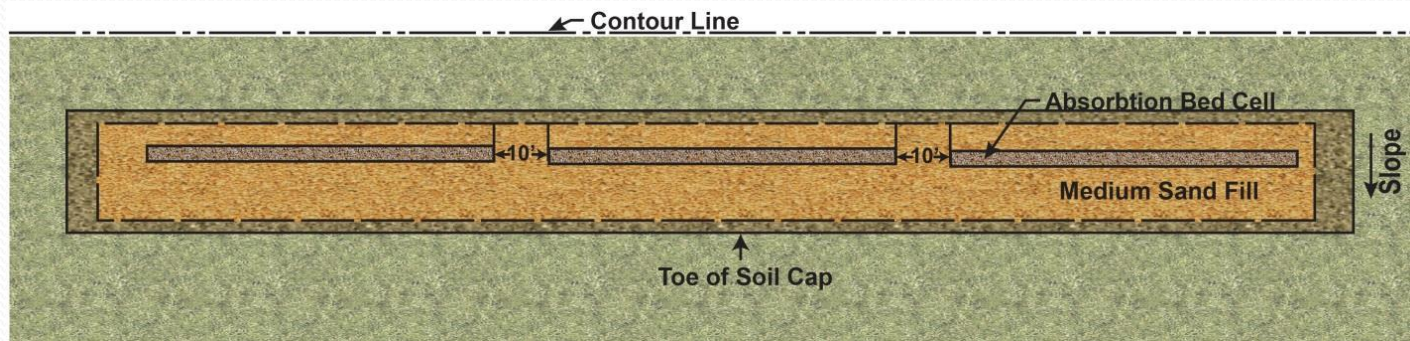
# Sand Mound Systems

- Pressurized distribution is required
- Setback reductions
- Maximum slopes of 20% for A and B soils 12% for C-1 and 6% for C-2
- Sludge in septic tank should be checked annually and pumped at 40%



# Sand Mound Systems

- Cells should be as long and narrow as possible
- Vegetation must be removed, the entire area scarified, then plowed 6 to 8 inches deep before sand is placed.

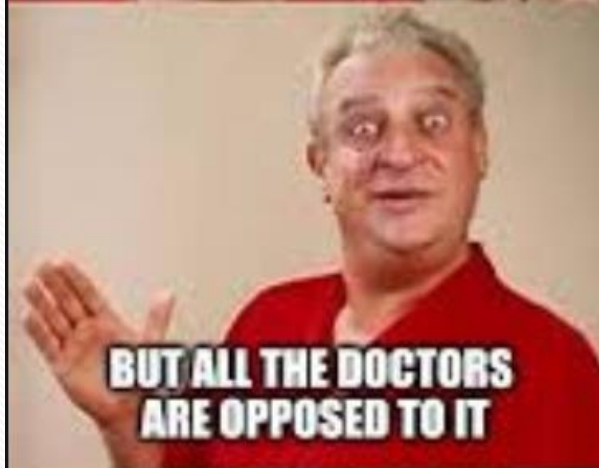




**THIS TOWN NEEDS  
A NEW SEWAGE SYSTEM**



**BUT ALL THE DOCTORS  
ARE OPPOSED TO IT**



**THEY'RE ALL  
ANTI-SEPTIC**



# Pressurized Grey Water Systems

- Grey water plumbing systems must be approved by the Idaho Division of Building Safety
- The number of occupants is used to determine daily flow

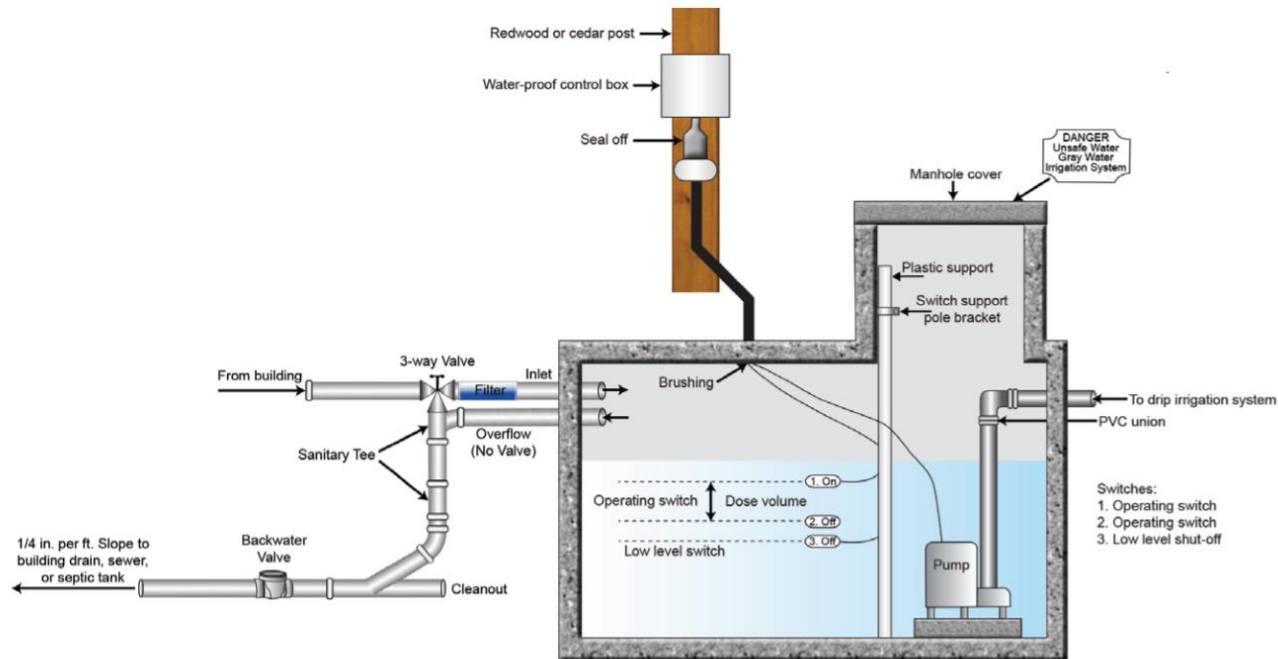


Figure 4-19. Gray water system (single-tank pumped).

# Individual Lagoon

- 200' setback to property line
- Site slope may not exceed 12%
- Not to be placed in areas that freeze for more than 3 months
  - Or where precipitation is greater than evaporation
- 10 acre minimum lot size, variance required from 5 acre to 10
- Lagoon area must be compacted
- Area must be fenced

# Individual Lagoon



# Individual Lagoon

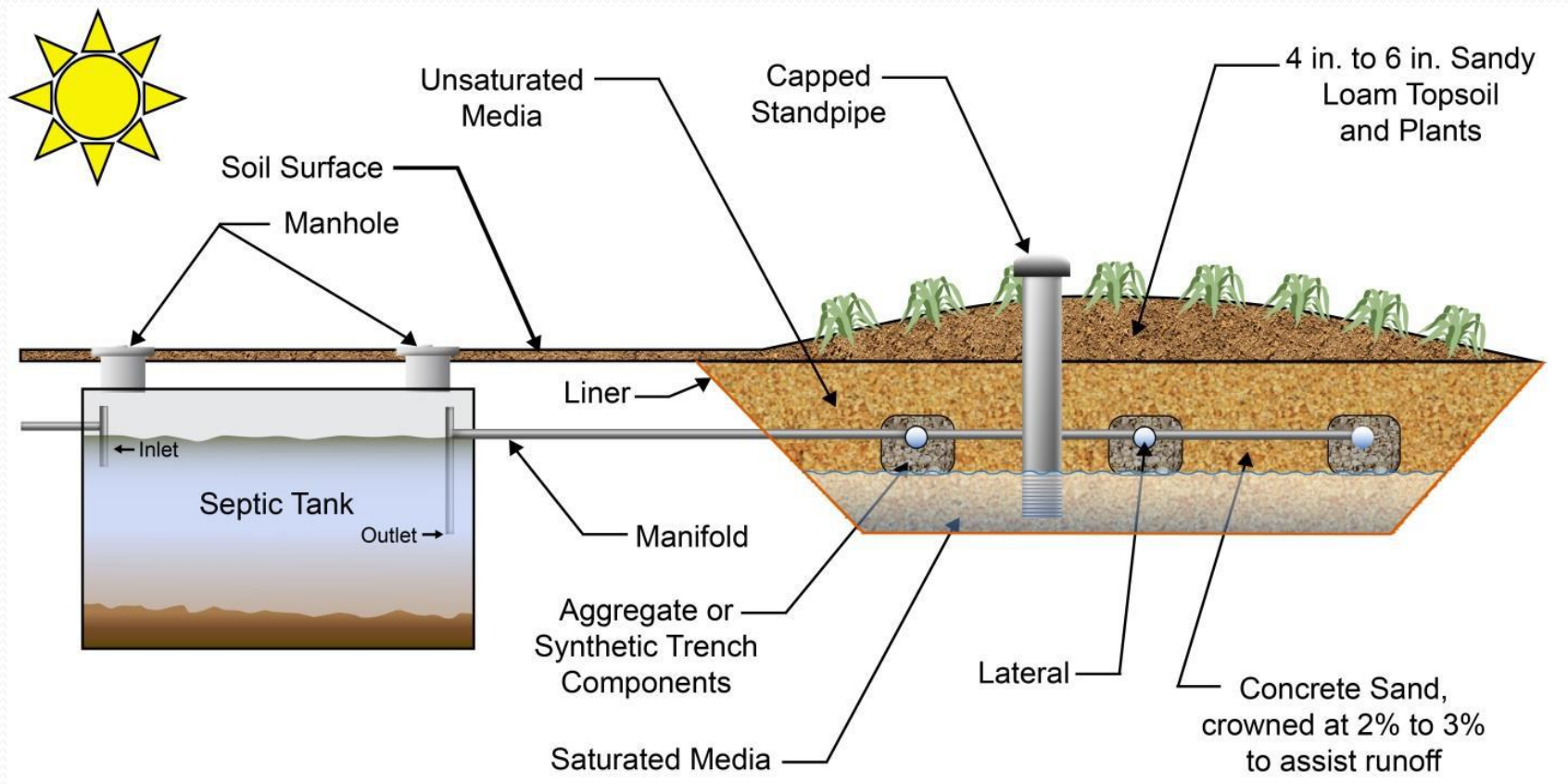


Photo by V. Jedlicka

# Individual Lagoon



# Evapotranspiration & ET/Infiltrative Systems

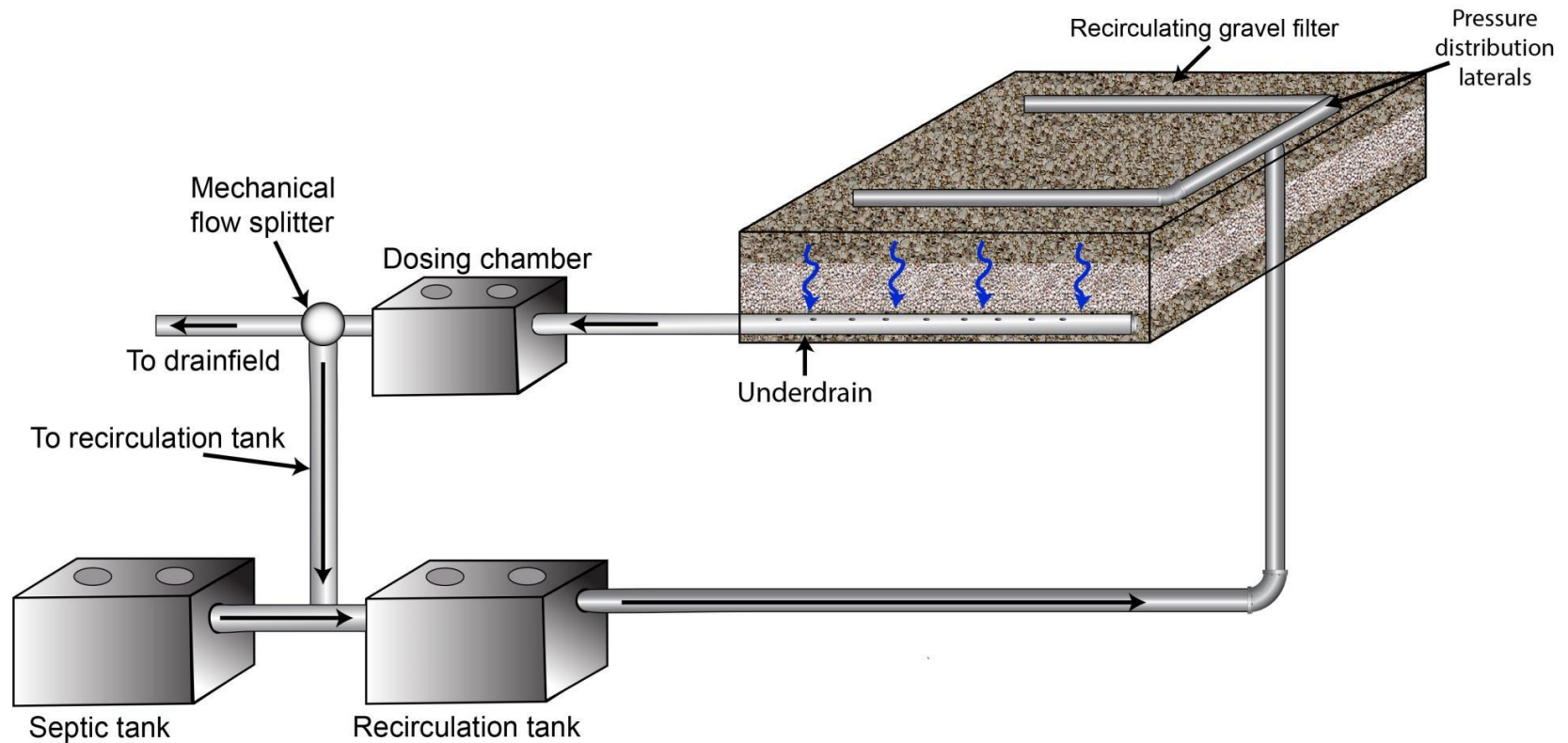


# Evapotranspiration ET/Infiltrative Systems

- Seasonal ground water must not come within 6” of liner
- 100’ setback to wells and surface water
- Site must not be subject to flooding
- High water alarm and standpipes are required
- Distribution laterals must be wrapped with geotextile fabric
  
- The ETI system are similar to ET just put in C type soils with no liner, or a clay based liner.

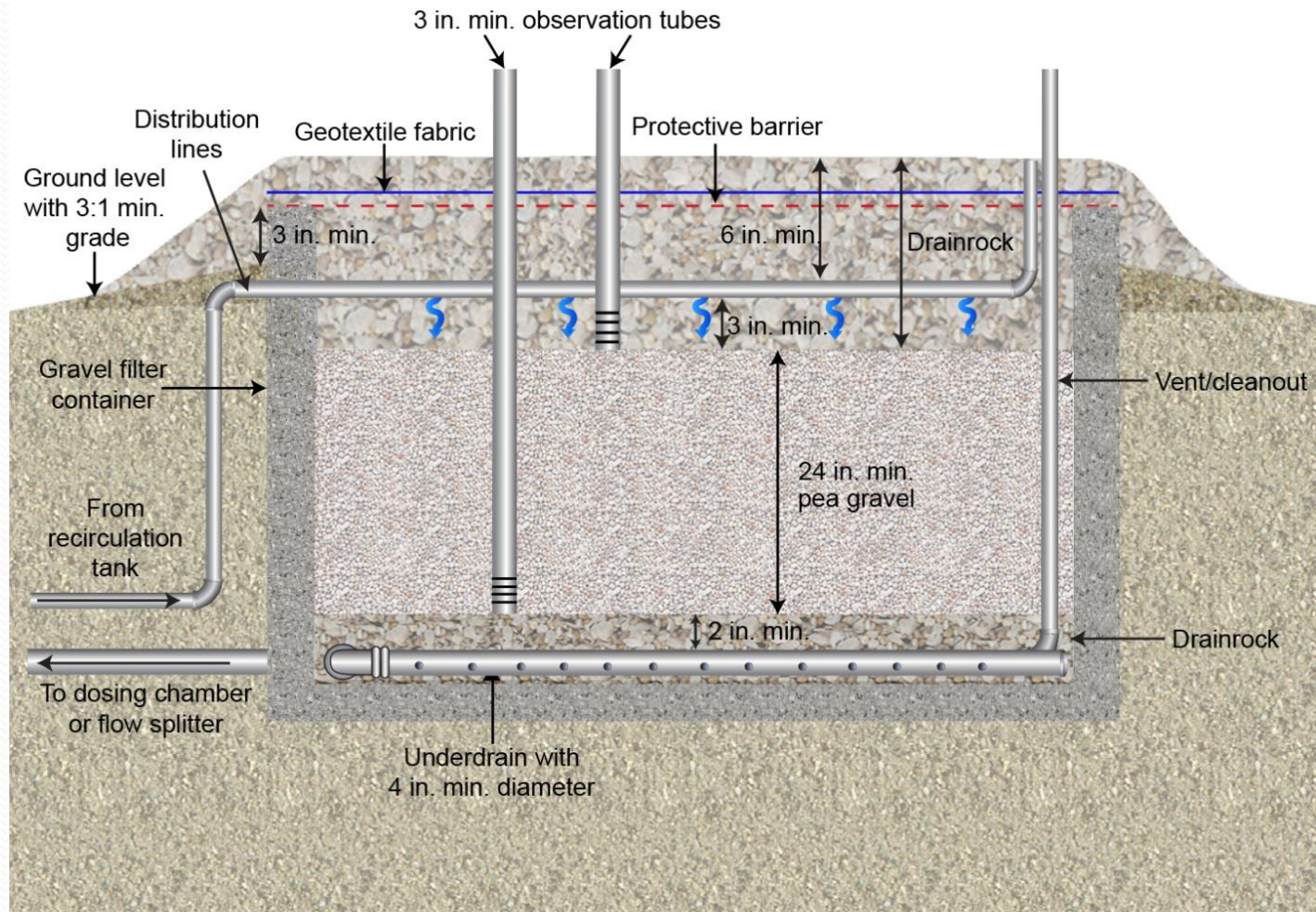


# Recirculating Gravel Filter

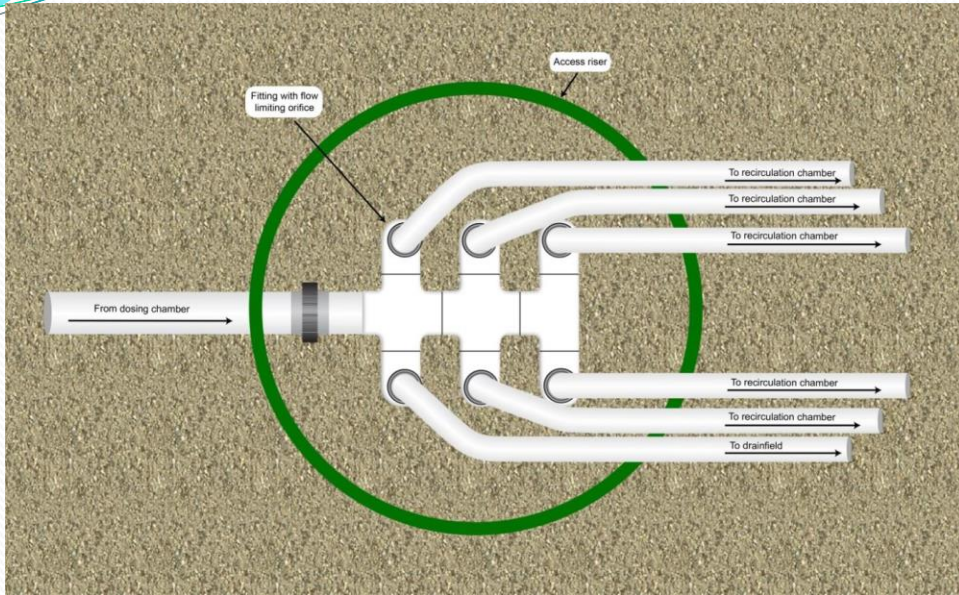


# Recirculating Gravel Filter

## Recirculating Gravel Filter

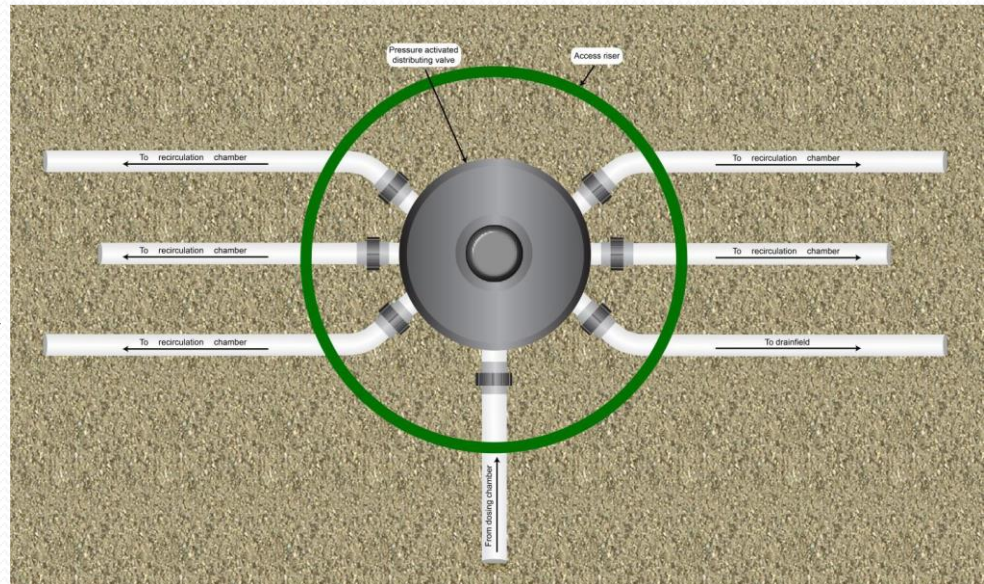


# Recirculating Gravel Filter

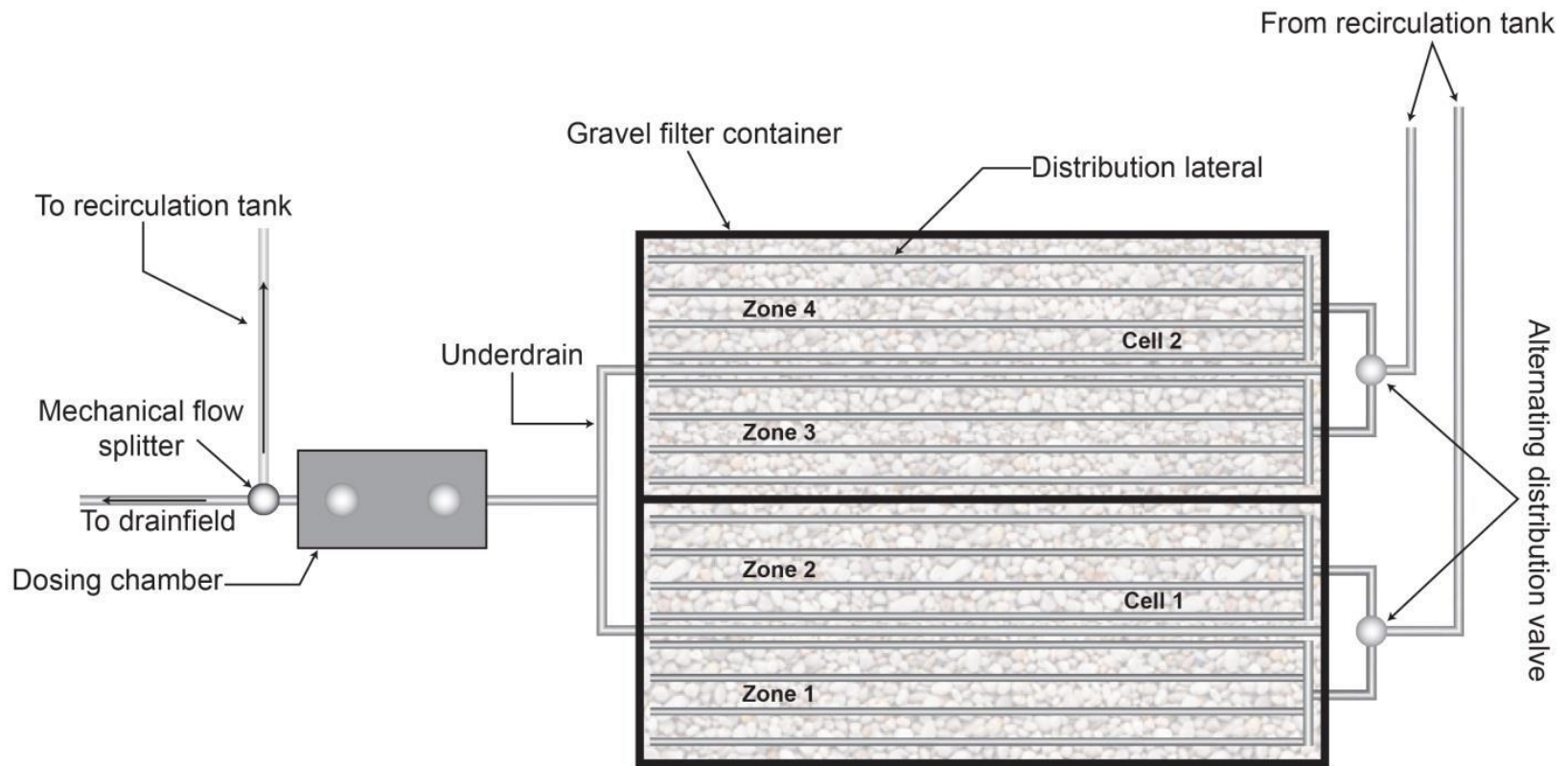


Gravity flow splitter

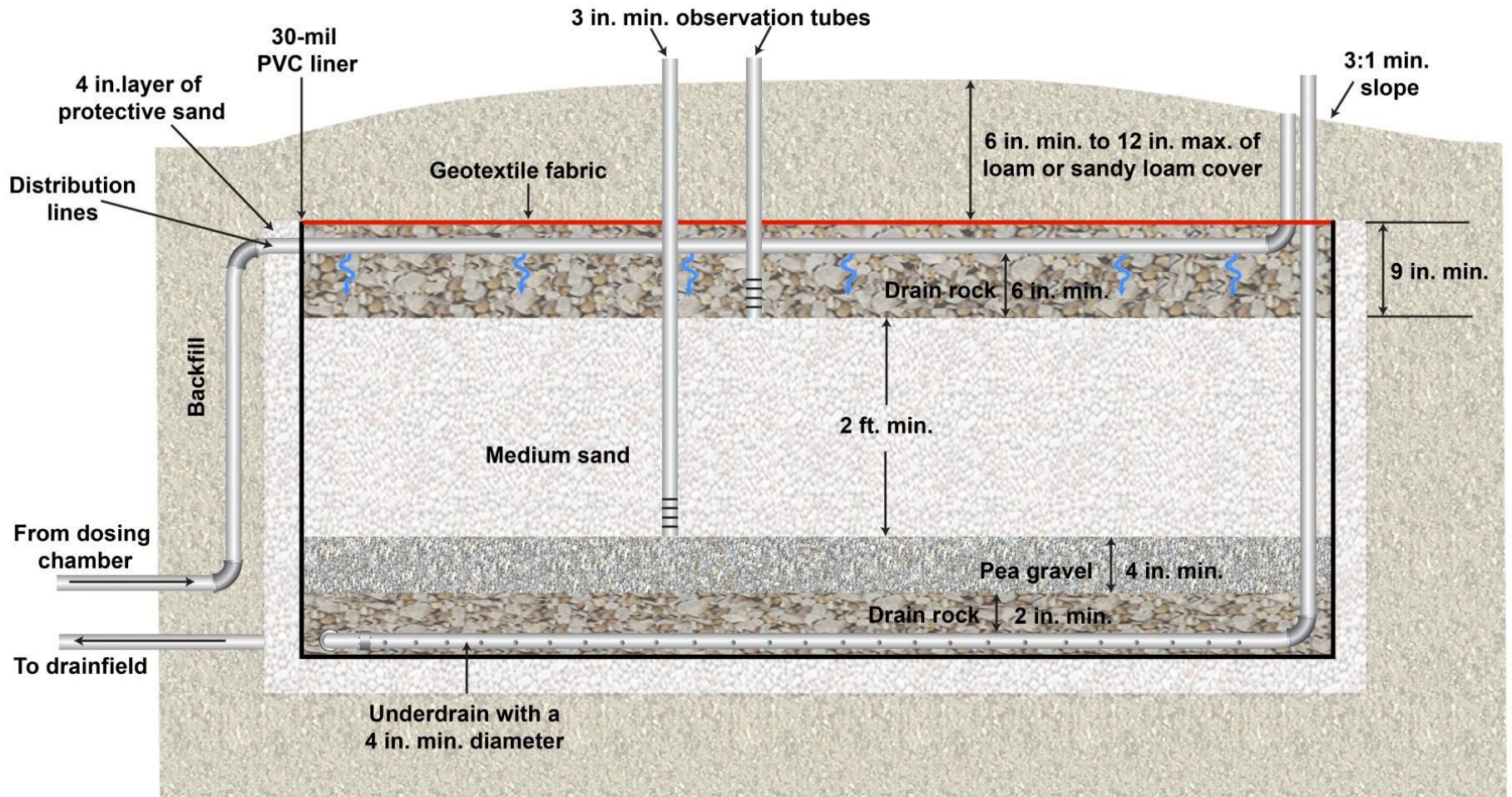
Pressurized splitter valve



# Recirculating Gravel Filter



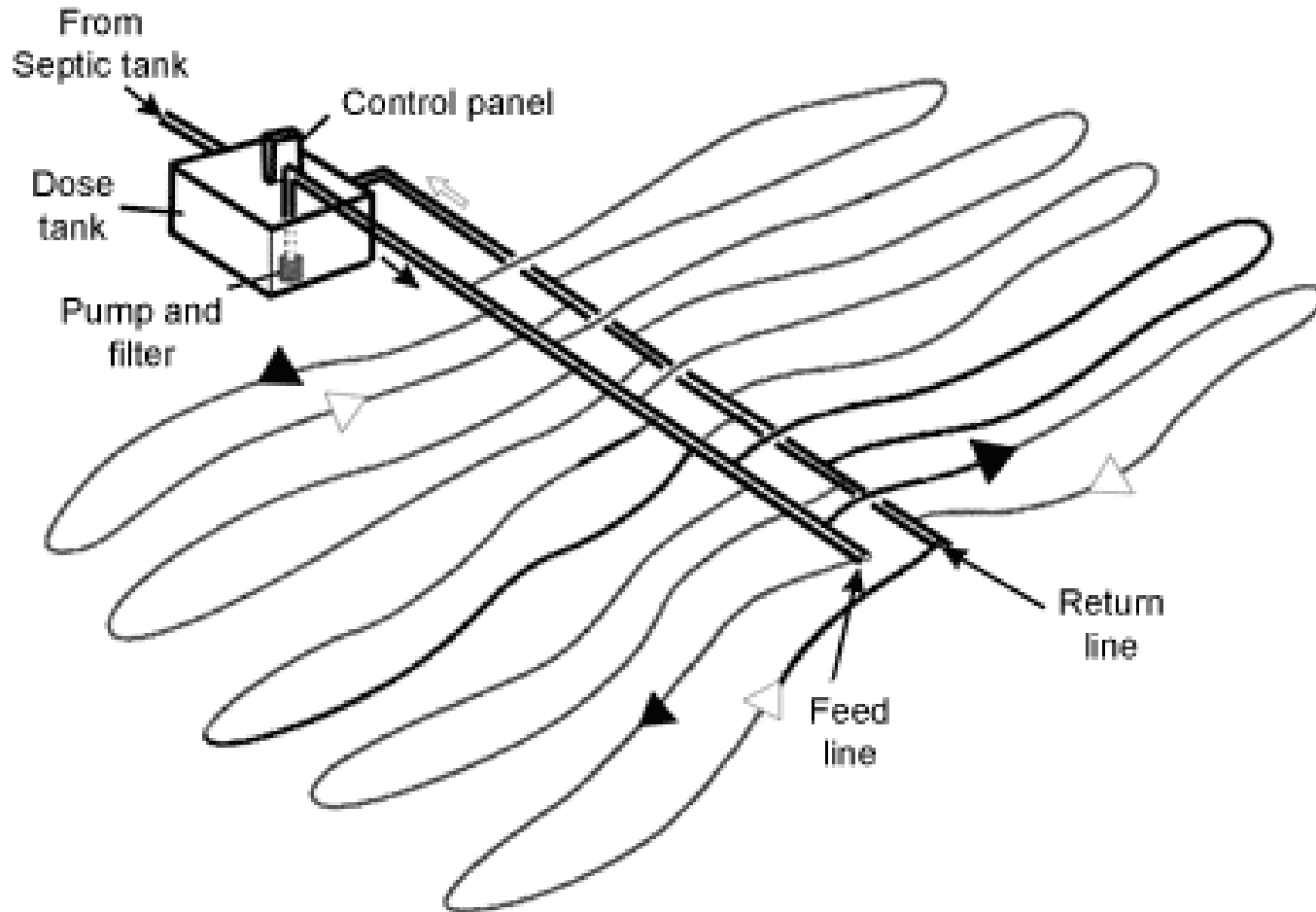
# Intermittent Sand Filter



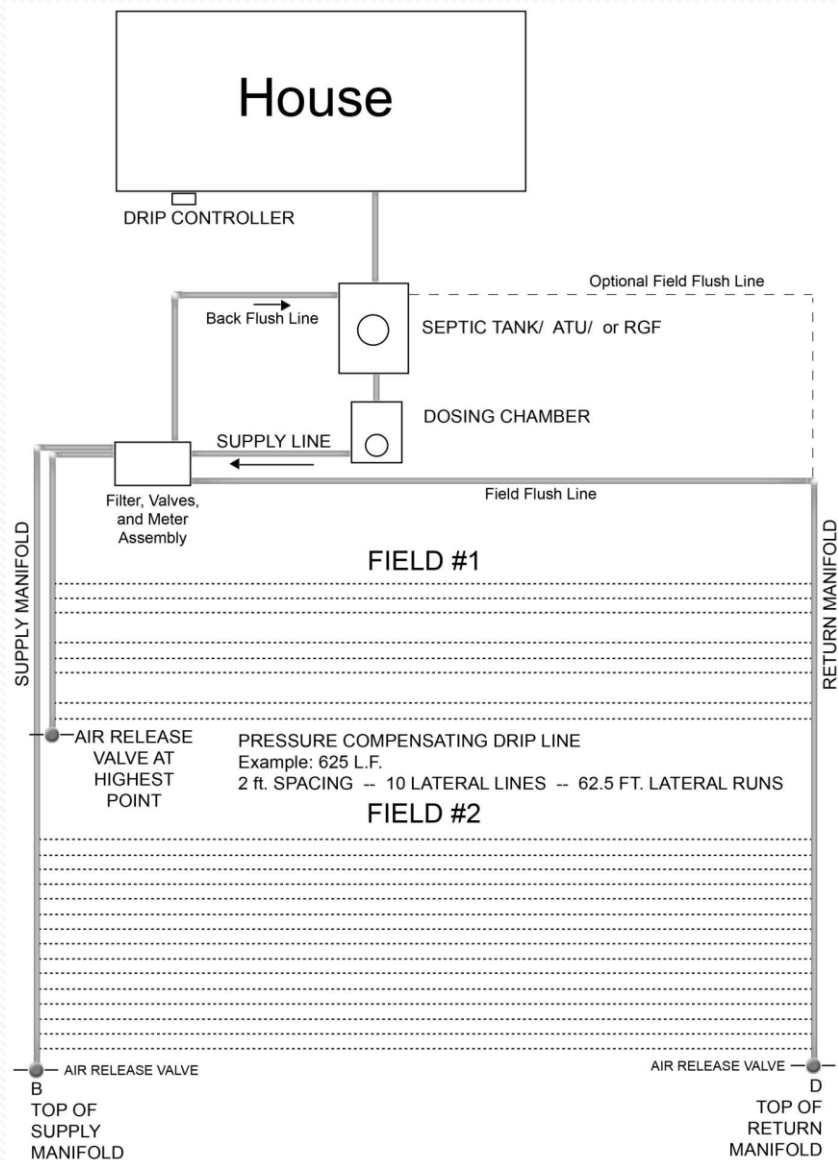
# Drip Distribution System



# Drip Distribution System



# Drip Distribution System

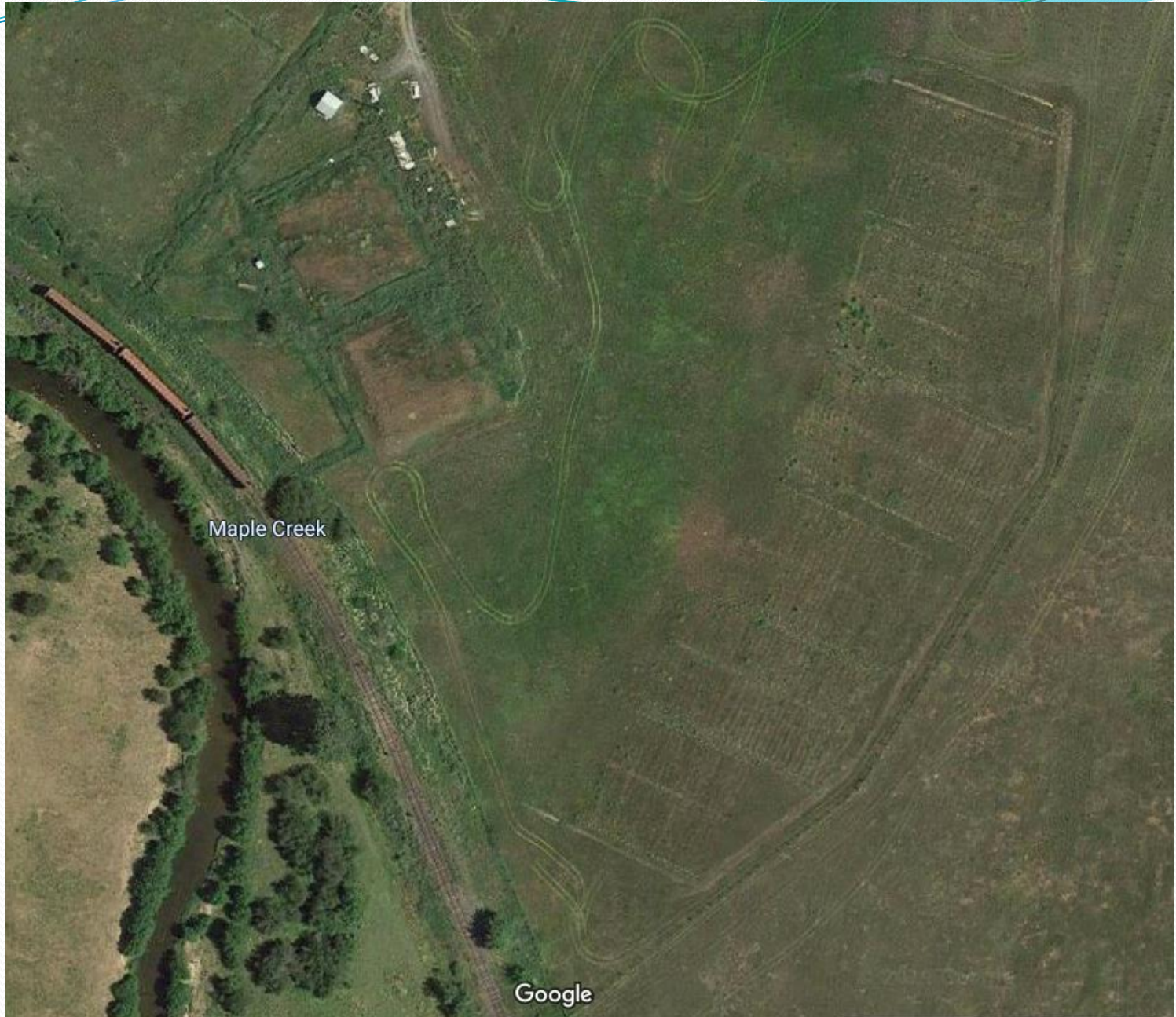




# Large Soil Absorption System

- 2,500 -10,000 GPD.
- Two complete systems constructed with reserve area.
- Design engineer will create an O&M manual.
- Monitoring is required, with an annual report to be filed by January 31 each year

# LSAS



# LSAS

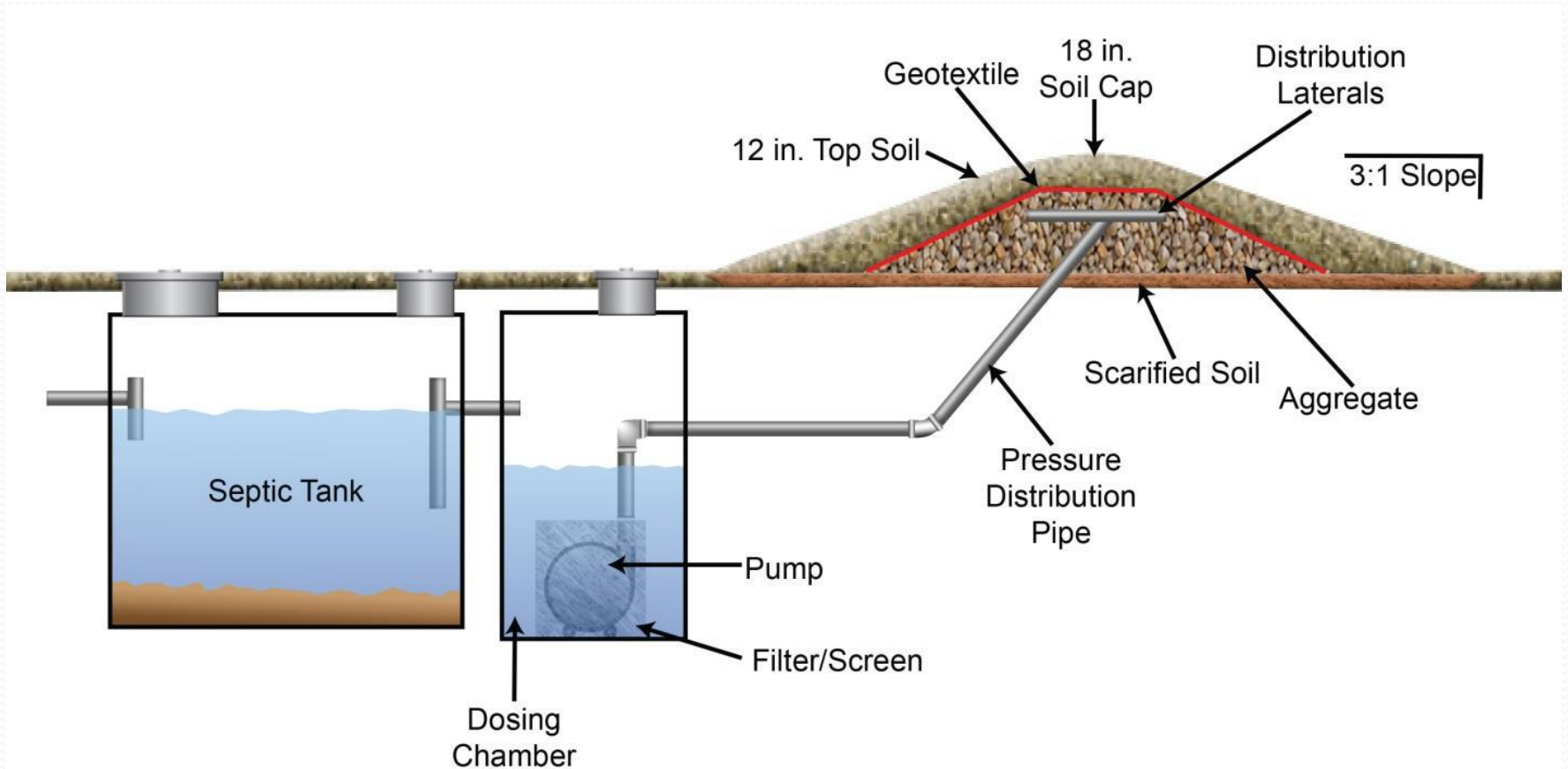


# LSAS

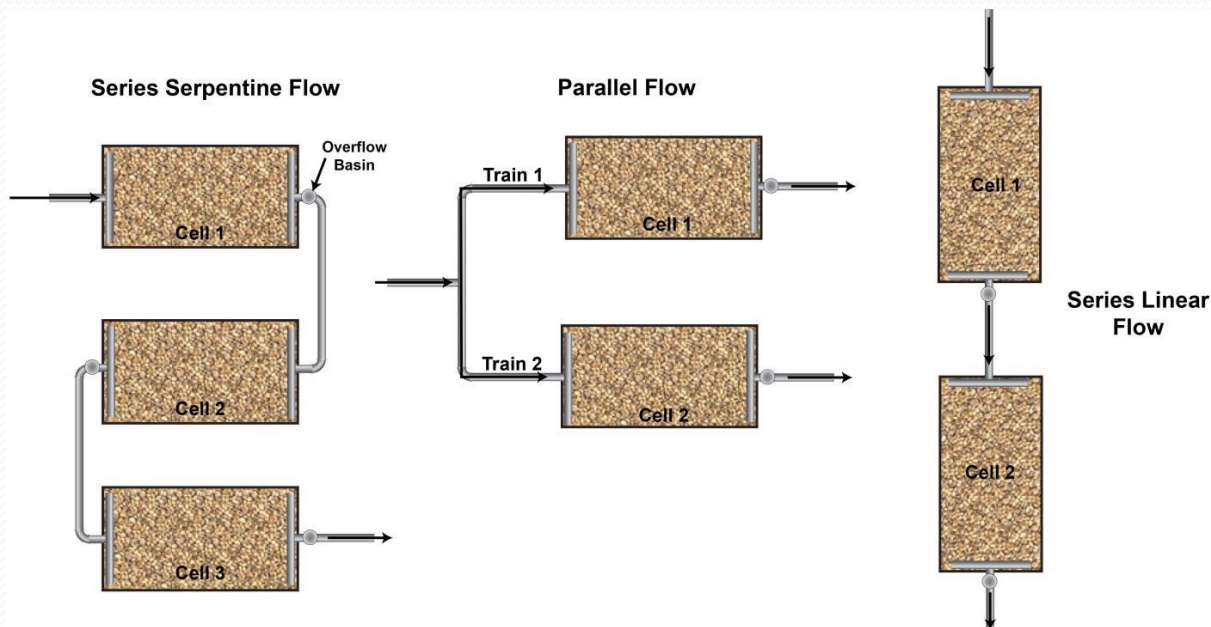
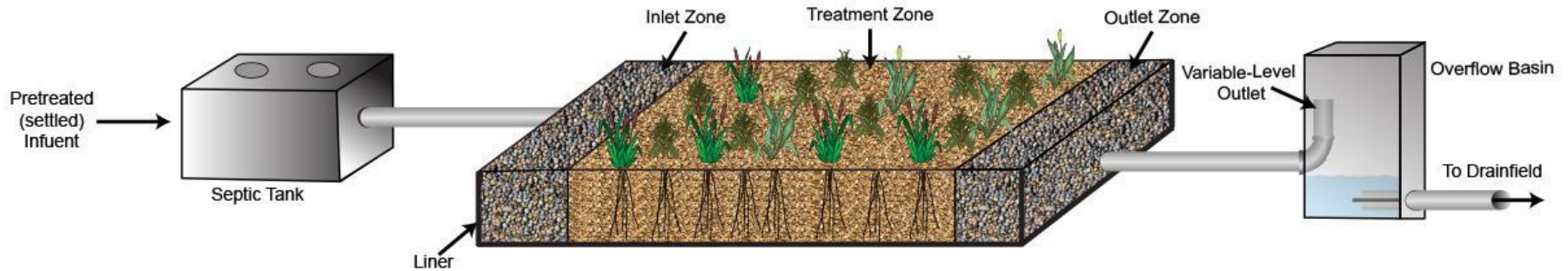
TABLE -- EFFECTIVE SOIL DEPTHS			
Site Conditions	Design	Soil	Group
<b>Limiting Layer</b>	<b>A</b>	<b>B</b>	<b>C</b>
Impermeable Layer	8	8	8
Fractured Bedrock, Fissured Bedrock or Extremely Permeable Material	12	8	6
Normal High Groundwater Level	12	8	6
Seasonal High Groundwater Level	2	2	2

TABLE -- SEPARATION DISTANCES			
Feature of Interest	Design	Soil	Group
	<b>A</b>	<b>B</b>	<b>C</b>
<b>All Domestic Water Supplies</b>			
Sewage Volume - 2,500-5,000 GPD	250	200	150
Sewage Volume - 5,000-10,000 GPD	300	250	200
<b>Property Lines</b>			
Sewage Volume - 2,500-5,000 GPD	50	50	50
Sewage Volume - 5,000-10,000 GPD	75	75	75
<b>Building Foundations - Basements</b>			
Sewage Volume - 2,500-5,000 GPD	50	50	50
Sewage Volume - 5,000-10,000 GPD	75	75	75
<b>Downslope Cut or Scarp</b>			
Impermeable Layer - Below Base	100	50	50
Separation Distance - Between Modules	12	12	12

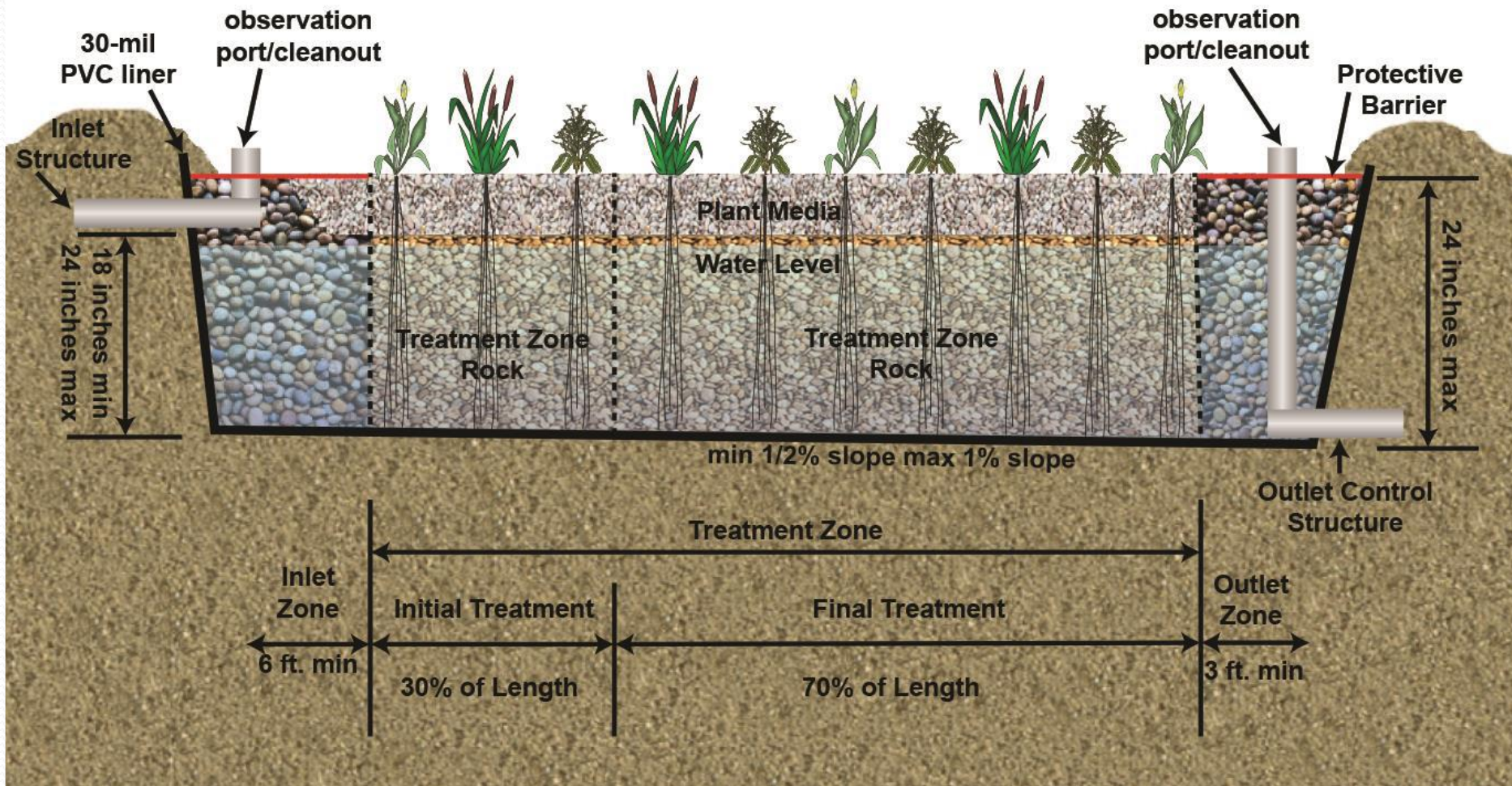
# At-Grade Soil Absorption System



# Subsurface Flow Constructed Wetlands



# Subsurface Flow Constructed Wetlands



# Experimental Systems

- Site must be suitable for a standard or alternative system
- A variance is required
- Operations and Maintenance Manual must be provided with the application. This manual must be approved before a permit will be issued.
- Approval is at the discretion of DEQ



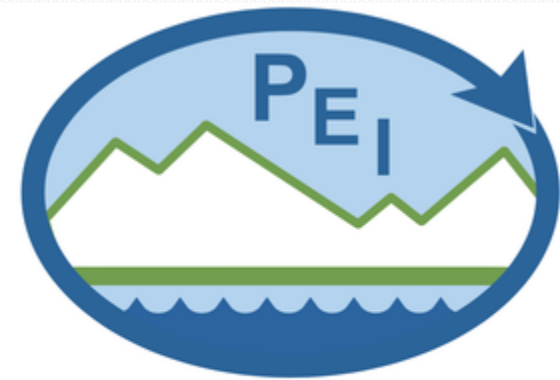
# Experimental Systems



# Proprietary Wastewater Treatment Systems



**INFILTRATOR**<sup>®</sup>  
systems inc.



**Presby Environmental, Inc.**  
An Infiltrator Water Technologies Company

*Lowridge On Site Technologies, LLC.*

# Proprietary Wastewater Treatment Systems



# Proprietary Wastewater Treatment Systems



# Proprietary Wastewater Treatment Systems



Before

After



# Questions?

