GLENN COUNTY
HEALTH & HUMAN SERVICES AGENCY
DEPARTMENT OF ENVIRONMENTAL HEALTH

ONSITE WASTEWATER TREATMENT SYSTEMS REGULATIONS

GLENN COUNTY
ADMINISTRATIVE CODE
CHAPTER 20.06

May 13, 2018

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DIVISION I. DEFINITIONS

20.06.001 GENERAL DEFINITION

Areas of Environmental Concern: Geographical areas designated by Resolution of the Board of Supervisors where additional protective measures are appropriate.

Authorized Agent: A person or persons authorized by the property owner to act on the property owner's behalf on matters pertaining to application for permits and services.

Average annual rainfall: The average of the annual amount of precipitation for a location over a year as measured by the nearest National Weather Service station for the preceding three (3) decades. For example the data set used to make a determination in 2012 would be the data from 1981 to 2010.

Basin Plan: The same as "water quality control plan" as defined in Division 7 (commencing with Section 13000) of the Water Code. Basin Plans are adopted by each Regional Water Board, approved by the State Water Board and the Office of Administrative Law, and identify surface water and groundwater bodies within each Region's boundaries and establish, for each, its respective beneficial uses and water quality objectives. Copies are available from the Regional Water Boards, electronically at each Regional Water Boards website, or at the State Water Board's Plans and Policies web page (http://www.waterboards.ca.gov/plans_policies/).

Bedrock: The rock, usually solid, that underlies soil or other unconsolidated, surficial material.

Building Sewer: The solid pipe beginning from the foundation and running to the septic tank.

CEDEN: The California Environmental Data Exchange Network and information about it is available at the State Water Boards website or http://www.ceden.org/index.shtml.

Cesspool: An excavation in the ground receiving domestic wastewater, designed to retain the organic matter and solids, while allowing the liquids to seep into the soil. Cesspools differ from seepage pits because cesspool systems do not have septic tanks and are not authorized under these regulations. The term cesspool does not include pit-privies and out-houses.

Clay: Is a soil particle; the term also refers to a type of soil texture. As a soil particle, clay consists of individual rock or mineral particles in soils having diameters <0.002 mm. As a soil texture, clay is the soil material that is comprised of forty (40%) percent or more clay particles, not more than forty-five (45%) percent sand and not more than forty (40%) percent silt particles using the USDA soil classification system.

Cobbles: Rock fragments seventy-six (76) mm or larger using the USDA soil classification systems.

Color: The moist color of the soil based on Munsell soil color charts.

Commercial Project: any project other than those defined as residential. For the purposes of this Chapter, the definition of a commercial project shall not include agricultural storage buildings and primitive type picnic grounds, campsites, or recreation areas.

Community Wastewater Treatment System: any OWTS serving two (2) or more residences, parcels, or commercial sources by any method, except a system serving a primary and secondary dwelling sharing facilities on the same lot or parcel.

Dispersal System: A leachfield, mound, subsurface drip field and infiltration bed, or other type of system for final wastewater treatment and subsurface discharge.

Domestic Wastewater: wastewater with a measured strength less then high-strength wastewater and is the type of wastewater normally discharged from, or similar to, that discharged from plumbing fixtures, appliances and other household devices including, but not limited to toilets, bathtubs, showers, laundry facilities, dishwashing facilities, and garbage disposals. Domestic wastewater may include wastewater from commercial buildings such as office buildings, retail stores, and some restaurants or from industrial facilities where the domestic wastewater is segregated from the industrial wastewater. Domestic wastewater may include incidental RV holding tank dumping but does not include wastewater consisting of a significant portion of RV holding tank wastewater such as at RV dump stations. Domestic wastewater does not include wastewater from industrial processes.

Dump Station: A facility intended to receive the discharge of wastewater from a holding tank installed on a recreational vehicle. A dump station does not include a full hook-up sewer connection similar to those used at a recreational vehicle park.

Domestic Well: A groundwater well that provides water for human consumption and is not regulated by the California Department of Public Health.

Earthen Material: A substance composed of the earth's crust (i.e. soil and rock).

Effluent: Sewage, water, or other liquid, partially or completely treated or in its natural state, flowing out of a septic tank, aerobic treatment unit, dispersal system, or other OWTS component.

Effluent Distribution Pipe: The perforated pipe used to distribute effluent into the soil absorption trench.

Effluent Sewer: The solid pipe from the discharge side of the septic tank to the beginning of the soil absorption trench.

Electronic Deliverable Format or EDF: The data standard adopted by the State Water Board for submittal of groundwater quality monitoring data to the State Water Board's internet-accessible database system Geotracker (http://geotracker.waterboards.ca.gov/).

Environmental Health Director: The Health and Human Services Agency, Environmental Health Department, Director.

Escherichia Coli: A group of bacteria predominantly inhabiting the intestines of humans or other warm-blooded animals, but also occasionally found elsewhere. Used as an indicator of human fecal contamination.

Existing OWTS: An OWTS that was constructed and operating prior to the effective date of this chapter, and OWTS for which a construction permit has been issued prior to the effective date of the chapter (See SWRCB OWTS Policy).

Failing Wastewater System: Any OWTS that:

1. Discharges untreated wastewater directly into the ground in a subsurface pit or perforated vessel (cesspools); or

2. Discharges untreated or inadequately treated wastewater or septic tank effluent directly or indirectly onto the ground surface, into a dwelling, or into surface or groundwater; or

3. Lacks an unsaturated vertical soil separation between the bottom of the soil absorption system and ground water or restrictive layers; or

4. Is not operated in compliance with permit requirements for operation and maintenance as specified in this Chapter and the OWTS Regulations; or

5. Has been retrofitted with unapproved components or been modified from the original approved design; or

6. Does not meet effluent quality standards as specified in the approved OWTS design.

Flowing Water Body: A body of running water flowing over the earth in a natural water course, where the movement of the water is readily discernible or if water is not present it is apparent from review of the geology that when present it does flow, such as in an ephemeral drainage, creek, stream, or river.

Groundwater: Zones of soil saturation which include perched water tables, shallow regional groundwater tables or aquifers, or zones that are seasonally, periodically, or permanently saturated.

High Strength Wastewater: Wastewater having a 30-day average concentration of biochemical oxygen demand (BOD) greater than 300 milligrams-per-liter (mg/L) or of total suspended solids (TSS) greater than 330 mg/L or a fats, oil, and grease (FOG) concentration greater than 100 mg/L prior to the septic tank or other OWTS treatment component.

High Water Level: The apparent ten-year high water mark of any stream, river or drainage.

IAPMO: The International Association of Plumbing and Mechanical Officials.

Impaired Water Bodies: Those surface water bodies or segments thereof that are identified on a list approved first by the State Water Board and then approved by US EPA pursuant to Section 303(d) of the federal Clean Water Act.

Intermittent Stream: A water course that flows only in direct response to rainfall and is at all times above the water table. Intermittent streams generally flow no more than five days after the last rainfall event.

Local Enforcement Agency or LEA: The Health and Human Services Agency, Environmental Health Department, which is designated as such by the Board of Supervisors.

Major Repair: Either: (1) for a dispersal system, repairs required for an OWTS dispersal system due to surfacing wastewater effluent from the dispersal field and/or wastewater backed up into plumbing fixtures because the dispersal system is not able to percolate the design flow of wastewater associated with the structure served, or (2) for a septic tank, repairs required to the tank for a compartment baffle failure or tank structural integrity failure such that either wastewater is exfiltrating or groundwater is infiltrating (See SWRCB OWTS Policy).

Mottling: A soil condition that results from oxidizing or reducing minerals due to soil moisture changes from saturated to unsaturated over time. Mottling is characterized by spots or blotches of different colors or shades of color (grays and reds) interspersed within the dominant color as described by the USDA soil classification system. This soil condition can be indicative of historic seasonal high groundwater level, but the lack of this condition may not demonstrate the absence of groundwater.

Mound System: An above ground dispersal system (covered sand bed with effluent leachfield elevated above original ground surface) used to enhance soil treatment, dispersal, and absorption of effluent discharged from an OWTS treatment unit such as a septic tank.

New OWTS: An OWTS permitted after the effective date of this Policy (See SWRCB OWTS Policy).

NSF: NSF International (a.k.a. National Sanitation Foundation), a not for profit, non-governmental organization that develops health and safety standards and performs product certification.

Oil/grease interceptor: A passive interceptor that has a rate of flow exceeding fifty (50) gallons-per-minute and that is located outside a building. Oil/grease interceptors are used for separating and collecting oil and grease from wastewater.

Onsite wastewater treatment system or OWTS: Individual disposal systems, community collection and disposal systems, and alternative collection and disposal systems that use subsurface disposal. The short form of the term may be singular or plural. OWTS do not include "graywater" systems pursuant to Health and Safety Code Section 17922.12.

Onsite Wastewater Treatment System Policy or OWTS Policy: The State Water Resources Control Boards water quality control policy for siting, design, operation, and maintenance of onsite wastewater treatment systems.

Operation and Maintenance (O&M) Service Provider: Unless pre-empted by State law, statues, or regulations the following are authorized as O&M Service providers: Any person who completes the California Onsite Water Association (COWA) sponsored National Association of Wastewater Transporters (NAWT) Operations and Maintenance Service Provider Training Program, Part 1 & 2. O&M Service Providers must show proof of certification from NAWT that they have successfully completed the training and are currently certified by NAWT as an O&M Service Provider for OWTS.

Owner: The legal owner of a parcel of land into which an OWTS has or will be installed.

Percolation Test: A method of testing water absorption of the soil. The test is conducted with clean water and test results can be used to establish the dispersal system design.

Perennial Stream: Any stream which is fed in whole or in part by groundwater or other long term sources.

Pollutant: Any substance that alters water quality of the waters of the State to a degree that it may potentially affect the beneficial uses of water, as listed in a Basin Plan.

Professional Contractor: Unless pre-empted by State law, statutes, or regulations the following professionals are authorized as Professional Contractors: Licensed General Engineering Contractor (Class A), General Building Contractor (Class B), Sanitation System Contractor (Specialty Class C-

42) and Plumbing Contractor (Specialty Class C-36). Licensed General Engineering Contractors, General Building Contractors, Sanitation System Contractors and Plumbing Contractors must show proof of licensing in the State of California.

Projected flows or daily flows: Wastewater flows into the OWTS determined in accordance with any of the applicable methods for determining average daily flow in the USEPA Onsite Wastewater Treatment System Manual, 2002, or for Tier 2 in accordance with an approved Local Agency Management Program.

Public Water System: A water system regulated by the California Department of Public Health or a Local Primacy Agency pursuant to Chapter 12, Part 4, California Safe Drinking Water Act, Section 116275 (h) of the California Health and Safety Code.

Public Water Well: A ground water well serving a public water system. A spring which is not subject to the California Surface Water Treatment Rule (SWTR), CCR, Title 22, sections 64650 through 64666 is a public well.

Qualified Professionals: Unless pre-empted by State law, statutes, or regulations the following registered and/or licensed professionals are authorized as Qualified Professionals: Professional Engineer, Professional Geologist, Registered Environmental Health Specialist, and Soil Scientists, certified by the Soil Science Society of America. Professional Engineers, Professional Geologists and Registered Environmental Health Specialists must show proof of registration or licensing in the State of California. Soil Scientists must show proof of certification in any State in the U.S.

Regional Water Quality Control Board (RWQCB): Any of the Regional Water Quality Control Boards designated by Water Code Section 13200.

Replacement OWTS: an OWTS that has its treatment capacity expanded or its dispersal system replaced or added onto, after the effective date of this Policy (See SWRCB OWTS Policy).

Rock: A naturally occurring solid aggregate of one (1) or more mineral or mineraloids.

Restrictive layer: a nearly continuous layer that has one (1) or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment.

Sand: A soil particle; this term also refers to a type of soil texture. As a soil particle, sand consists of individual rock or mineral particles in soils having diameters ranging from 0.05 to 2.0 millimeters. As a soil texture, sand is soil that is comprised of 85 percent or more sand particles, with the percentage of silt plus 1.5 times the percentage of clay particles comprising less than 15 percent.

Seepage pit: A drilled or dug excavation, three (3) to six (6) feet in diameter, either lined or gravel filled, that receives the effluent discharge from a septic tank or other OWTS treatment unit for dispersal and is not authorized under these regulations.

Septage: Partially treated sludge from wastewater that accumulates in a septic tank over time.

Septic tank: A watertight, covered receptacle designed for primary treatment of wastewater and constructed to:

1. Receive wastewater discharged from a building;

2. Separate settleable and floating solids from the liquid;

3. Digest organic matter by anaerobic bacterial action;

4. Store digested solids; and

5. Clarify wastewater for further treatment with final subsurface discharge.

Sewage Disposal Area: means the location of the OWTS and, where applicable, a reserve dispersal area capable of disposing one-hundred (100%) percent of the design flow from all sources the OWTS is intended to serve.

Silt: A soil particle; this term also refers to a type of soil texture. As a soil particle, silt consists of individual rock or mineral particles in soils having diameters ranging from between 0.05 and 0.002 mm. As a soil texture, silt is soil that is comprised as approximately eighty (80%) percent or more silt particles and not more than twelve (12) percent clay particles using the USDA soil classification system.

Single-Family Dwelling Unit: means a structure that is usually occupied by just one household or family.

Site Evaluation: An assessment of the characteristics of the site sufficient to determine its suitability for an OWTS which will meet the requirements of the OWTS Regulations.

Soil: The naturally occurring body of porous mineral and organic materials on the land surface, which is composed of unconsolidated materials, including sand-sized, silt-sized, and clay-sized particles mixed with varying amounts of larger fragments and organic material. The various combinations of particles differentiate specific soil textures identified in the soil textural triangle developed by the United States Department of Agriculture (USDA) as found in Soil Survey Staff, USDA; Soil Survey Manual, Handbook 18, U.S. Government Printing Office, Washington, DC, 1993, p. 138. For the purposes of the OWTS Regulations, soil shall contain earthen material of particles smaller than 0.08 inches (2 mm) in size.

Soil Structure: The arrangement of primary soil particles into compound particles, peds, or clusters that are separated by natural planes of weakness from adjoining aggregates.

Soil Texture: The soil class that describes the relative amount of sand, clay, silt and combinations thereof as defined by the classes of the soil textural triangle developed by the USDA (referenced above).

State Water Board (SWRCB): is the State Water Resources Control Board

Supplemental treatment: Any OWTS or component of an OWTS, except a septic tank or dosing tank, that performs additional wastewater treatment so that the effluent meets a predetermined performance requirement prior to discharge of effluent into the dispersal field.

SWAMP: means Surface Water Ambient Monitoring Program, more information is available at: http://www.waterboards.ca.gov/water_issues/programs/swamp/

Soil Absorption Area: The soil area immediately adjacent to the proposed soil absorption trench sidewall which is to be in contact with effluent.

Soil Absorption Trench: The excavation containing the aggregate, effluent distribution pipe,

straw, building paper or approved materials, and cover material used for effluent disposal through the soil absorption area.

Soil Depth: The combined thickness of adjacent soil layers that comply with the standards for effluent disposal in this chapter. Soil depth is measured vertically to bedrock, hardpan, an impermeable soil layer, gravel or saturated soil.

Soil Horizon: A layer of soil or soil material approximately parallel to the land surface and differing from adjacent related layers in physical, chemical, and biological properties or characteristics such as color, structure, texture, consistency, pH, etc.

Soil Mottles: Irregularly marked soil with spots of different colors that vary in number and size. Mottling in soil usually indicates poor aeration and lack of drainage. Mottling may be used to estimate the highest extent of saturated soil. Coarse textured soil, sand and gravel may not show mottling even when subject to saturated conditions.

Soil Saturation: Soil with all voids and pores filled with water.

Standard OWTS: Standard onsite wastewater treatment system means a dispersal system that has adequate soil and site conditions to support a system that uses a septic tank and gravity to disperse effluent throughout the dispersal field, and in which no pretreatment device is utilize. This term includes systems that use a pump to transport effluent received from the septic tank to a dispersal field where the effluent is then dispersed by gravity into an approved dispersal system, placed in an area with surface and subsurface features that comply with these regulations.

Telemetric: The ability to automatically measure and transmit OWTS data by wire, radio, or other means.

TMDL: is the acronym for "total maximum daily load." Section 303(d) (1) of the Clean Water Act requires each State to establish a TMDL for each impaired water body to address the pollutant(s) causing the impairment. In California, TMDLs are usually adopted as Basin Plan amendments and contain implementation plans detailing how water quality standards will be attained.

Total Coliform: A group of bacteria consisting of several genera belonging to the family Enterobacteriaceae, which includes Escherichia coli bacteria.

USDA: means the U.S. Department of Agriculture.

Waste Discharge Requirement or WDR: An operation and discharge permit issued for the discharge of waste pursuant to Section 13260 of the California Water Code.

Wet Weather: The wet weather test period shall begin as soon after January 1 as one half the average annual rainfall has occurred and shall continue until April 15. Unusual weather conditions may cause the wet weather testing period to be shortened or extended.

DIVISION II. APPLICATION FOR PERMIT

20.06.002 APPLICATION

A. Application Required: Application for a permit to install all or part of an onsite wastewater treatment system (OWTS) shall be made by the owner.

B. Application Fees: Shall be paid to the Local Enforcement Agency (LEA) as established by the Glenn County Code, at the time of submission of application and in advance of the requested or required service.

C. Content of Application: An application for a permit shall be made on forms provided by the LEA. All portions of the application form shall be completed and legible. The complete application shall be accompanied by but not limited to the following information:

1. A Scaled Plot Plan.

2. Design Plans and Specifications

3. Soil Testing Data.

D. Scaled Plot Plan: Shall include but not be limited to the following:

1. Location of all existing and proposed structures and hard surfaces such as patios, decks, walkways, driveways and swimming pools.

2. Location of all easements on the property.

3. Location of street accessing the property.

4. Location of the structure in relation to all property lines.

5. Location and connection of all existing OWTS on property.

6. Direction and percent slope of the ground indicated by arrows.

7. For properties with slopes, the plot plan shall indicate the original grade and include an elevation drawing showing the finished grade and location of the structure and the proposed OWTS.

8. Location of water wells, monitoring wells or water sources within two hundred (200) feet of the OWTS and replacement area.

9. Location of all water courses or bodies within two hundred (200) feet of the OWTS and replacement area.

10. Location of cuts, embankments and unstable landforms within one hundred (100) feet of the OWTS and replacement area.

11. Location of public and community water wells within two hundred (200) feet of the proposed OWTS and replacement areas.

12. Location, design and replacement area of the proposed OWTS.

13. The location and depth of all underground utility trenches and underground storage tanks.

14. All proposed grading or fill on the site.

15. Soil test data locations.

16. North arrow.

E. Design Plans and Specifications: For all installations, plans shall be drawn to scale between one (1) inch equals twenty (20) feet and one (1) inch equals forty (40) feet in the development area. The plans shall include, but not be limited to, the locations and size of septic tanks, pump tanks and dispersal fields. Specifications shall include but not be limited to the types of pumps and controls, dose volume, elevation differences (vertical lift), static head loss, pipe friction loss, pump performance curve, pump model, pump manufacturer, tanks, pipe type, pipe size and pipe length, where applicable. Design Plans and Specifications shall include all pertinent information necessary to review and determine if the proposed OWTS conforms to the OWTS Regulations and county code.

F. Soil Test Data: All soil test data shall be submitted in a form approved by the LEA indicating soil profiles, permeability and percolation test data. Data shall include locations of all percolation holes, test holes and monitoring wells from a reference point. All soil test data reports shall bear the signature of the Qualified Professional. The Qualified Professional shall meet the requirements established these OWTS Regulations.

20.06.003 INSPECTIONS

A. All OWTS installations shall be inspected by the LEA and where applicable, the Qualified Professional who designed the OWTS.

B. No portion of the OWTS shall be covered without inspection and approval by the LEA unless authorized to do so by said LEA.

C. The owner or contractor shall contact the LEA at least one (1) business day in advance to schedule all required construction inspections. Notification must include the assessor's parcel number, site address, contractor's name and phone number. Failure to provide sufficient notice may result in a delay of required inspections.

D. A copy of the approved permit shall be on-site at the time of inspection.

E. Required Construction Inspections: The required inspection stages for the installation of an OWTS will vary with the type and complexity of the OWTS installed. The following inspections shall be required unless the owner or contractor demonstrates good cause for not requiring a particular inspection:

1. Inspection of the sewer line starting from the cleanout two (2) feet outside the building to the connection to the septic tank.

2. Septic tank, pump tank and all related connections and components including but not limited to, dosing tanks, pumps, floats, alarms, lids and filter assembly.

3. Inspection of transmission piping from the septic tank to the dispersal field.

4. Inspection of the dispersal field including, but not limited to, rock and trench material, pipe material or chamber system, level of trench bottom and pipe or chamber system, monitoring wells, distribution box level and function, spacing, squirt test, filter fabric and soil cover.

F. Final approval of the construction permit shall be granted only after the LEA has completed all necessary inspections, the OWTS has been installed in conformance with the OWTS Regulations, County Code, all permit requirements, an accurate "As-Built" drawing of the OWTS has been submitted to the LEA and where applicable a signed letter from the Qualified Professional has been submitted.

DIVISION III. SITE EVALUATION REQUIREMENTS

20.06.004 QUALIFIED PROFESSIONALS

A. Persons performing site evaluations shall possess one of the following licenses, registrations or certifications and shall demonstrate to the LEA that the licensed, registered or certified person has reasonable knowledge and experience with OWTS and site evaluation procedures.

Professional Engineer
Professional Geologist
Registered Environmental Health Specialist
Soil Scientists, certified by the Soil Science Society of America

Professional Engineers, Professional Geologists and Registered Environmental Health Specialists must show proof of registration or licensing in the State of California. Soil Scientists must show proof of certification in any State in the U.S.

20.06.005 SITE EVALUATION PROCEDURES

A. Site Evaluation: A site evaluation shall include, but not be limited to, description of soil conditions, characteristics, permeability, depth to zones of soil saturation, depth to groundwater, depth to impermeable material, direction and % slope, topography, type of vegetation, root depth, all setback requirements, and the potential for flooding.

B. Soil Excavations: Excavations shall be sufficient in number (at least one (1) in the proposed primary and replacement area) and adequately spaced to encompass and represent the soil conditions of the entire area of the proposed primary and replacement areas. Excavations shall extend vertically to the point where bedrock, hardpan, impermeable soils, or saturated soils are encountered or an adequate depth has been determined by the LEA. Excavations shall be of sufficient dimension to be accessible for direct observation of the excavation walls. All samples for evaluation and analysis shall be obtained from the sidewalls of the soil excavations, except that soil samples from below five (5) feet shall be collected from a backhoe bucket or spoils pile.

In addition to the field texture analysis, a percolation test or a hydrometer test and bulk density test performed by a laboratory approved by the LEA may be required to confirm soil classifications.

C. Soil Excavation Profile Description: Soil profile descriptions shall be written for all excavations and submitted to the LEA. All depth measurements shall be from the undisturbed ground surface. The thickness in inches of the different soil horizons observed shall be indicated. Soil horizons shall be described using the Munsell soil color charts. Field texture analysis shall be conducted as follows using a format similar to that in (Appendix A).

1. Field Texture Analysis: Soil texture shall be described using the field soil classification method in (Appendix A & B), by a Qualified Professional. Soil samples shall be taken from each soil horizon between the top of the proposed effluent pipe to a minimum of five (5) feet below the proposed trench bottom, depending on the depth to groundwater. Samples must then be worked through a No. 10 Sieve (2 mm). The soil which passes through the No. 10 (2 mm) Sieve is then moistened and worked so as to determine the sand/silt/clay components as described in (Appendix A), then properly named in accordance with the U. S. Department of Agriculture Soil Triangle (Diagram D-3).

Samples must consist of no more than fifty (50%) percent coarse fragments (grain size two (2) mm or larger) to be considered soil.

2. Soil Structure: Soil structure shall be described as to how the primary sand, silt, and clay particles are grouped together into aggregates or peds. The principal forms of soil structure are platy (laminated), prismatic (vertical axis of aggregates longer than horizontal), columnar (prisms with rounded tops), blocky (angular or sub-angular), and granular. Structureless soils are 1) single grain (each grain by itself, as in dune sand), 2) massive (the particles adhering together without any regular cleavage, as in many claypans and hardpans).

3. Consistence: The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are:

a. Loose: Non-coherent; will not hold together in a mass.

b. Friable: When moist, crushes easily under gentle to moderate pressure between thumb and forefinger and can be pressed together in a lump.

c. Firm: When moist, it crushes under moderate pressure between the thumb and forefinger, but resistance is distinctly noticeable.

d. Plastic: When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a wire when rolled between thumb and forefinger.

e. Sticky: When wet, adheres to other material; tends to stretch somewhat and pull apart rather than pull free from other material.

f. Hard: When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

g. Soft: When dry, breaks into powder or individual grains under very slight pressure.

h. Cemented: Hard and brittle; little affected by moistening. A weakly cemented mass is brittle and hard but can easily be broken with a hammer. An indurated mass is very strongly cemented and brittle, does not soften under prolonged wetting, and a sharp blow with a hammer is required to break it.

4. Soil Color: The Munsell soil color chart shall be the descriptive tool utilized to determine the background soil color.

5. Soil Pores: Soil pores shall be described by size and abundance.

6. Roots: The size, abundance, depth and location of roots and root channels shall be described.

7. Soil Mottles: Zones of seasonal or periodic soil saturation shall be estimated at the highest level of soil mottles (Except frozen soils and soils with rapid permeability).

8. Observed Groundwater: The depth to groundwater, if present, shall be reported. Observed groundwater shall be reported at the level groundwater reaches in the soil excavation, and at the highest level of sidewall seepage into the excavation. Measurements shall be made from ground surface. Soil above the water level in the excavation shall be checked for conditions associated with saturation, except for those soils subjected to freezing conditions and rapidly permeable soils (Leaching Class 1 & 2) in which case only actual observation shall be acceptable.

9. Restrictive Layers: The depth to any restrictive layer, if present, shall be reported. Measurements shall be made from ground surface.

20.06.006 PERCOLATION TESTING

A. Percolation Tests and Procedures: At least three (3) percolation tests in the primary and replacement soil absorption areas shall be conducted. The holes shall be spaced uniformly in the soil horizons proposed for the dispersal area. A total minimum of six (6) percolation tests shall be required where the replacement area is not contiguous with the sewage disposal area. Percolation tests shall be conducted only under saturated soil conditions.

1. Percolation Test Hole: The test hole shall be dug or bored. It shall have vertical sides and a diameter of six (6) inches. The bottom and sides of the hole shall be carefully scratched with a sharp-pointed instrument to expose the natural soil. All loose material shall be removed from the hole and the bottom shall be covered with two (2) inches of pea gravel. A four (4) inch diameter perforated pipe shall be centered in the hole and surrounded by pea gravel.

2. Test Procedure: It is important to distinguish between saturation and swelling of the soil. Saturation means that the void spaces between soil particles are full of water. This can be accomplished in a short period of time. Swelling is caused by intrusion of water into the individual soil particles. This is a slow process, especially in clay soil, and is the reason for the prolonged soaking period.

The hole shall be carefully filled with clear water and a minimum water depth of twelve (12) inches shall be maintained above the bottom of the hole for a four (4) hour period, twenty-four (24) hours prior to testing, by refilling whenever necessary or by use of an automatic siphon. The presoak is to be continued until the soil around the test hole is both saturated and swelled. The water level shall be adjusted to six (6) inches above the pea gravel from a fixed reference point. The water level shall be measured at thirty (30) minute intervals for a minimum period of four (4)

hours. The hole shall be filled with clear water to a point not more than six (6) inches above the pea gravel after each reading. If the first six (6) inches of water seeps away in less than thirty (30) minutes, the time interval between measurements shall be reduced to ten (10) minutes and the test run for two (2) hours. The percolation rate shall be the last three (3) readings where the successive water level drops do not vary more than one-eighth (1/8) inch from each other unless there is evidence that this does not represent the stabilized percolation rate.

3. Percolation data used to confirm soil classifications shall be determined from (Table T-3).

4. Percolation rate measurement instruments and gauges shall be approved by the LEA prior to testing.

5. A correction factor shall be used when determining the percolation rate. The correction factor method shall be approved by the LEA.

6. The twenty-four (24) hour presoak period may be eliminated in wet weather conditions.

7. Percolation tests in class four (4) or five (5) soils must be conducted in wet weather conditions unless the applicant can demonstrate to the satisfaction of the LEA that the tested soil is completely saturated and swelled. At a minimum, the presoak period must be extended to forty-eight (48) hours for dry weather tests of class four (4) or five (5) soil.

8. Tests which percolate faster than five (5) minutes per inch shall not be used in calculating dispersal system design.

20.06.007 HYDROMETER TESTING

A. Hydrometer Sampling Method: A laboratory approved by the LEA shall perform hydrometer and bulk density testing. Soil samples shall be taken at each soil layer between the top of the effluent pipe and five (5) feet below the soil absorption trench bottom. To take a soil sample, a blunt knife or trowel can be used to remove soil from the desired layer of the soil profile. The soil samples are required to be between one (1) to two (2) pounds and shall be in the form of undisturbed soil aggregates. The soil samples shall be put in plastic bags during transportation to a laboratory for testing by the hydrometer method. A leaching class shall be determined by plotting the hydrometer sample(s) results on the soil triangle (Appendix C) using the following procedure:

1. Plot texture on triangle based on percent sand, silt, and clay as determined by hydrometer analysis.
2. Adjust for coarse fragments by moving the plotted point in the sand direction an additional two (2%) percent for each ten (10%) percent (by volume) of fragments greater than two (2) mm in diameter.

3. Adjust for compactness of soil by moving the plotted point in the clay direction an additional fifteen (15%) percent for soils having a bulk density greater than 1.7 gm/cc. For soils falling in sand, loamy sand, or sandy loam, classification bulk density analysis will generally not affect suitability and analysis is not necessary.

20.06.008 GROUNDWATER MONITORING

Groundwater shall be defined as the highest seasonal level of the water table in the soil. Groundwater levels shall be estimated by the extent of soil mottling features observed in the soil profile, by direct observation of stabilized groundwater levels or other methods, such as historical records, acceptable to the LEA. Where a conflict in the above methods of examination exists, the direct observation method indicating the highest groundwater level shall govern.

A. Monitoring Groundwater Levels: The Qualified Professional may provide documentation that soil mottling or other color patterns at a particular dispersal area are not an indication of high groundwater levels. Documentation shall be made by directly observing the groundwater level at a time of the year when the maximum groundwater elevation occurs due to precipitation, snow melt, or irrigation. The period for testing high groundwater shall be determined by the LEA.

B. Artificial Drainage: Dispersal areas which are to be monitored shall be checked for groundwater intercept drains, drainage tiles, and open ditches which could have altered naturally high groundwater levels. Where such factors are involved, information on the location, design, ownership, and maintenance responsibilities for such drainage shall be provided. Documentation shall be provided to show that the drainage network has an adequate outlet and will be maintained and tested to ensure it will not drain the proposed OWTS.

C. Groundwater Monitoring Well Installation: Wells sufficient in number and adequately spaced to encompass and represent the entire primary and replacement area shall extend to a depth of at least five (5) feet below the depth of the proposed soil absorption trench. However, with layered mottled soil over permeable unmottled soil, at least one well shall terminate within the mottled layer. The monitoring well shall be a perforated pipe below the surface seal in the bore hole. The pipe size shall be a minimum of four (4) inches. The bore hole shall be two (2) inches larger than the pipe (see Diagram D-9).

D. Groundwater Observations: Observations shall be made during maximum groundwater elevation, such as the wet weather or flood irrigation period. At least three (3) separate sets of monitoring data shall be collected within ten (10) days of the maximum groundwater elevation. If water is present above the depth required in (Table T-2), at two (2) observations or if the groundwater rises above the bottom of the proposed dispersal area, the proposed dispersal area shall be considered unacceptable.

E. Groundwater Observation Well Abandonment: Except when required by the LEA, all groundwater observation wells shall be properly abandoned. Abandonment shall be accomplished by removing the casing and backfilling with clean native material.

20.06.009 VERIFICATION

A. The Qualified Professional shall notify the LEA a minimum of twenty-four (24) hours prior to conducting soil tests or collecting groundwater monitoring data. A Registered Environmental Health Specialist may be present during testing and data collection.

B. All information collected during the site evaluation process, including but not limited to, soil profile descriptions, soil permeability, percolation tests, hydrometer testing, depth to soil mottles, depth to high groundwater, groundwater monitoring, soil textures, structure, impermeable layers, and % slope shall be submitted to the LEA and may be subject to verification by the LEA.

DIVISION IV. SITE REQUIREMENTS

20.06.010 OWTS LOCATION

A. OWTS Area: The surface grade of all OWTS shall be located at a point lower than the surface grade of any water well, spring, body of water or flowing body of water on the same or adjoining property. When this is not possible, the OWTS shall be located so that surface water drainage from the dispersal field is not directed toward a water well, spring, body of water or flowing body of water. Surface water shall be diverted away from all OWTS. Dispersal fields in paved or compacted areas, such as parking lots, driveways and under structures are prohibited. OWTS shall be located an adequate distance from trees, bushes and shrubs to prevent root intrusion. All areas disturbed during the construction of the OWTS shall be stabilized and revegetated prior to the first wet weather season after installation.

B. OWTS MINIMUM SETBACKS: OWTS shall be located with a minimum distance between various elements as indicated in (Table T-1), unless otherwise specified in these regulations.

1. Where the effluent dispersal system is within twelve-hundred (1,200) feet from a public water systems' surface water intake point, within the catchment of the drainage, and located such that it may impact water quality at the intake point such as upstream of the intake point for flowing water bodies, the dispersal system shall be no less than four-hundred (400) feet from the high water mark of the reservoir, lake or flowing water body.

2. Where the effluent dispersal system is located more than twelve-hundred (1,200) feet but less than twenty-five-hundred (2,500) feet from a public water systems' surface water intake point, within the catchment of the drainage, and located such that it may impact water quality at the intake point such as upstream of the intake point for flowing water bodies, the dispersal system shall be no less than two-hundred (200) feet from the high water mark of the reservoir, lake or flowing water body.

3. Prior to issuing a permit to install an OWTS the LEA shall determine if the OWTS is within twelve-hundred (1,200) feet of an intake point for a surface water treatment plant for drinking water, is in the drainage catchment in which the intake point is located, and located such that it may impact water quality at the intake point such as being upstream of the intake point for a flowing water body. If the OWTS is within twelve-hundred (1,200) feet of an intake point for a surface water treatment plant for drinking water, is in the drainage catchment in which the intake point is located, and is located such that it may impact water quality at the intake point:

a. The LEA shall provide a copy of the permit application to the owner of the water system of their proposal to install an OWTS within twelve-hundred (1,200) feet of an intake point for a surface water treatment. If the owner of the water system cannot be identified, then the LEA will notify the California State Water Resource Control Board, Drinking Water Program.

b. The permit application shall include a topographical plot plan for the parcel showing the OWTS components, the property boundaries, proposed structures, physical address, and name of the property owner.

c. The permit application shall provide the estimated wastewater flows, intended use of proposed structure generating the wastewater, soil data, and estimated depth to seasonally saturated soils.

d. The public water system owner shall have fifteen (15) days from receipt of the permit application to provide recommendations and comments to the LEA.

4. For replacement OWTS that do not meet the above public water system horizontal separation requirements, the replacement OWTS shall meet the horizontal separation to the greatest extent practicable. In such case, the replacement OWTS shall utilize supplemental treatment and other mitigation measures, unless the LEA finds that there is no indication that the previous system is adversely affecting the public water source, and there is limited potential that the replacement system could impact the water source based on topography, soil depth, soil texture, and groundwater separation.

5. For new OWTS, installed on parcels of record existing at the time of the effective date of these regulations, that cannot meet the above public water system horizontal separation requirements, the OWTS shall meet the horizontal separation to the greatest extent practicable and shall utilize supplemental treatment for pathogens as specified in (section 10.8) of the State Water Resources Control Board OWTS Policy and any other mitigation measures prescribed by the LEA.

C. Replacement OWTS Area: On each parcel of land being created or initially developed, a minimum one-hundred (100%) percent, sufficiently usable area of suitable soils, as determined by the LEA for replacement OWTS, shall be set aside and maintained for OWTS repair or replacement. The setback distances in (Table T-1) and all requirements of the primary OWTS area shall apply to the replacement OWTS area.

D. Undisturbed Site: The approved OWTS area shall not be disturbed to the extent that it becomes unsuitable for sewage disposal, including but no limit to, soil structure, stability and drainage. The approved OWTS area and replacement OWTS area shall not be used for construction of buildings, paved areas, parking areas, swimming pools, or any other use that may adversely affect its use for sewage disposal.

E. Crossing Property Lines:

1. New OWTS are prohibited from crossing property lines.

2. A recorded utility easement and covenant against conflicting uses, on a form approved by the LEA, is required whenever an existing OWTS requires repair or replacement and crosses a property line separating properties under different ownership. The easement must accommodate all parts of the OWTS, including setbacks, which lie beyond the property line, and must allow entry to install, maintain and repair the OWTS.

3. When any part of a repair or replacement OWTS crosses a property line separating properties under the same ownership, the owner shall cause said lots or parcels to be reverted or merged into one parcel. Application for the reverted or merged parcel shall be submitted, approved and recorded with the appropriated county or city department.

F. Slopes: Standard gravity OWTS shall not be located on land having a slope greater than twenty-five (25%) percent. Alternative OWTS shall not be located on land having a slope greater the thirty (30%) percent unless a slope stability report approved by a Qualified Professional and the LEA is submitted. Areas with slopes exceeding thirty (30%) percent shall not be graded or reshaped to provide an acceptable area for an OWTS.

G. Minimum Trench Spacing on Slopes:

% Slope	Minimum Horizontal Separation
0-5%	**Five (6) Feet**
6-10%	**Eight (8) Feet**
11-20%	**Twelve (10) Feet**
21-30%	**Sixteen (12) Feet**

20.06.011 OWTS DESIGN FLOW

A. General: Effluent from septic tanks shall be disposed of by soil absorption. OWTS receiving a projected daily flow of fifteen-hundred (1,500) gallons per day or less shall be designed in accordance with these regulations. OWTS receiving projected daily flows greater than fifteen-hundred (1,500) gallons per day and less than ten-thousand (10,000) gallons per day shall be designed in accordance with these regulations, specifically (Division VII). OWTS receiving projected daily flows greater than ten-thousand (10,000) gallons per day are not covered by these regulations and will be regulated separately by the Regional Water Quality Control Board.

B. Projected Daily Flows: The dispersal system shall be based on soil characteristics and shall be calculated using application rates provided in (Table T-2). Projected daily flow from single-family dwellings shall be calculated at two-hundred (240) gallons per day for one (1) and two (2) bedrooms, three-hundred-sixty (360) gallons per day for three (3) bedrooms, and sixty (60) gallons per day for each bedroom in excess of three (3). Projected daily flows for structures other than single-family dwellings shall be calculated using the flows in (Table T-6) or the most current version of the EPA OWTS Manual.

The LEA may approve metered water use data, or other supporting data in lieu of the estimated flows set forth in (Table T-6) or the most current version of the EPA OWTS Manual, on a case-by-case basis. Daily flows shall be calculated using peak flow days and by a method approved by the LEA. However, in no case shall a dispersal system be designed with flows less than one-hundred (100) gallons per day.

20.06.012 VERTICAL SEPARATION

A. Depth to Groundwater and Vertical Separation from Restrictive Layers: Soil depth is measured vertically to the point where bedrock, hardpan, impermeable soils or saturated soils are encountered.

1. The minimum separation between the bottom of the dispersal field and a restrictive layer shall be based on the soil classifications in (Table T-2).

2. Depth to the highest level of groundwater and vertical separation from restrictive layers shall not be less than two (2) feet.

3. Effluent dispersal fields shall not exceed a depth of ten (10) feet below ground surface.

20.06.013 MIMIMUM PARCEL SIZE

A. Newly Created Parcels: No parcel or subdivision map shall be recorded, and no OWTS shall be approved for newly created parcels unless all the proposed parcels, which rely on OWTS, have an LEA approved site evaluation, that meets the parcel area requirements shown in (Table T-4) for each residential dwelling, or each residential dwelling equivalent, in the case of non-residential development.

20.06.014 INSTALLATION OF GROUNDWATER INTERCEPTOR DRAINS

A. Groundwater Interceptor Drain: Interceptor drains are trenches filled with gravel and drainage pipe, or other drainage techniques approved by the LEA, installed below ground up-slope from the dispersal field for the purpose of intercepting, diverting and/or discharging perched groundwater away from the dispersal field. The goal is to eliminate completely or significantly lower the perched groundwater in the area of the dispersal field to accommodate a specific OWTS design.

B. Requirements: Groundwater interceptor drains may be allowed by the LEA when all of the following conditions are met:

1. A site investigation conducted by a Qualified Professional confirms groundwater to be perched on bedrock, hardpan or a restrictive layer at the same depths as the proposed dispersal field.

2. The natural slope of the dispersal area being used for soil absorption trenches is between five (5%) percent and twenty-five (25%) percent.

3. The groundwater intercept drain extends from the ground surface and into the bedrock, hardpan or restrictive layer.

4. The groundwater intercept drain is located at least twenty (20) feet up-gradient, twenty-five (25) feet laterally from the proposed dispersal field and fifty (50) feet down-gradient from any OWTS and replacement area.

5. Monitoring wells may be required between the interceptor drain and the dispersal field or other appropriate location to monitor groundwater levels.

20.06.015 GENERAL

A. Cesspools and Seepage Pits: Cesspools and seepage pits of any kind or size are prohibited. Failing cesspools and seepage pits shall be destroyed within thirty (30) days of discovery, by methods approved by the LEA and replaced with an approved OWTS.

B. Installation: All materials used in the construction, alteration or repair of an OWTS shall be installed by a Professional Contractor or competent owner and handled so as to avoid damage or degradation.

C. Chemical Restoration of a Sewage Disposal System: No products or procedures for chemical restoration of OWTS shall be used unless approved by the LEA.

DIVISION V. MATERIALS

20.06.016 PIPING AND COMPONENTS

A. Minimum Standards: Materials including, but not limited to, cleanouts, distribution boxes, pipe, joints, fittings, valves, pumps, controls, and alarms shall conform to the standards cited in the most recent edition of the Uniform Plumbing Code published by IAPMO and California Electrical Code adopted by Glenn County, which shall be considered minimum standards when used in the construction, installation, alteration or repair of OWTS or parts thereof unless superseded by these OWTS Regulations.

B. Building Sewer Pipe: shall be Schedule forty (40) PVC, Schedule forty (40) ABS solid wall pipe or other materials approved by the LEA with a minimum diameter of three (3) inches and with not less than one-fourth (1/4) inch fall per lineal foot. Where four (4) inch through six (6) inch pipe is used the minimum pipe slope shall have no less than one-eighth (1/8) inch fall per lineal foot. The maximum angle for building sewer elbows shall be no more than forty-five degrees (45°).

C. Effluent Sewer Pipe:

1. Gravity Systems: shall be Schedule forty (40) PVC, Schedule forty (40) ABS solid wall pipe or other materials approved by the LEA with a minimum diameter of three (3) inches and with not less than one-fourth (1/4) inch fall per lineal foot. Where four (4) inch through six (6) inch pipe is used the minimum pipe slope shall have no less than one-eighth (1/8) inch fall per lineal foot. The top of the effluent sewer pipe shall be a minimum of eight (8) inches below the finished grade.

2. Pressurized Distribution Systems: piping between the pump and the lateral valve shall be Schedule forty (40) PVC, Schedule forty (40) ABS solid wall pipe or other materials approved by the LEA with a minimum diameter of one (1) inch and adequately sized for the design flow.

D. Joining Pipes and Fittings: joining methods for pipes and fittings shall be installed in accordance with the manufacturer's installation instructions. Where different sizes of pipes and fittings are to be connected, the proper size increasers or reducers or reducing fittings shall be used between the two (2) sizes.

E. Sewer and Water Pipe Location and Depth: Gravity sewer lines and pressure sewer lines shall not be located within the same trench as a private water line. Sewer lines shall be installed in a separate trench and maintain a five (5) foot horizontal separation from all water lines. The LEA may approve, on a case-by-case basis, a private water line crossing a gravity sewer line, if the private water line is installed a minimum of one (1) foot above the gravity sewer line. The separation distance between public water lines and sewer lines shall be as prescribed by the California Code of Regulations, Title 22 Waterworks Standards.

F. Sewer and Effluent Piping Support: Building sewer and effluent piping shall be laid on a firm bed throughout the entire length, and any such piping laid in made or filled-in ground shall be laid on a bed of approved materials and shall be adequately supported to the satisfaction of the LEA.

G. Cleanouts: Cleanouts shall be placed outside the building at the lower end of the building drain and extend to grade. Additional building sewer cleanouts shall be installed at a minimum of every one-hundred (100) feet and extend to grade. Each cleanout shall be installed with a watertight and gastight cap. Each cleanout for building sewers shall be installed so that it opens to allow cleaning in all directions. Cleanouts installed under concrete or asphalt paving shall be made accessible by yard boxes or extending it flush with the paving and have adequate protection.

H. Building Sewer Test: When required, building sewers shall be tested by plugging the end of the sewer at the point of connection to the septic tank and completely filing the building sewer with water from lowest to the highest point thereof, or by such other test as may be prescribed by the LEA. The building sewer shall be watertight at all points.

I. Distribution Box: Distribution boxes must be constructed of concrete or other materials acceptable to the LEA. Distribution boxes must be designed to accommodate the necessary distribution laterals and expected flows. Distribution boxes must be installed for equal distribution to the dispersal field trenches. Each distribution box inlet pipe shall have a ninety (90°) degree elbow extending down at least one (1) inch below the invert of the outlet pipes or other method approved by the LEA. All distribution boxes shall be installed on level bedding material and be secured by a method approved by the LEA.

J. Diversion Valves: Diversion valves, check valves and gate or ball valves must be constructed of durable material and be of a design approved by the LEA. They must be corrosion resistant, watertight, and designed to accommodate the inlet and outlet pipes. Each diversion valve must have a positive stop and be located in a plastic or concrete box at ground level with "sewer" marked on the lid or within the sump in an accessible area.

20.06.017 TANKS AND COMPONENTS

A. Tank Approval: All septic tanks, holding tanks, dosing tanks and grease interceptors must have a current International Association of Plumbing and Mechanical Officials (IAPMO) approval listing or be stamped and certified by a California registered civil engineer as meeting the industry standards. Each tank shall be permanently marked with the manufacturer's name and/or trademark, and the nominal working volume. Permanent markings shall be adequately protected from corrosion so as to remain permanent and readable over the life of the tank.

B. Installation: All tanks shall be watertight and located with a minimum distance between various elements as indicated in (Table T-1). All tanks shall be installed on level, compacted, stable, approved material and in accordance with the manufacturer's instructions. Installation depth of all tanks shall be no greater than the manufacturer's specifications. The manufacturer's specification sheet, installation instructions and warranty information shall be submitted to the LEA. The installation of more than four tanks in series is prohibited. Installation of tanks in parallel is prohibited.

C. High seasonal groundwater Installation: In high seasonal groundwater areas, determined by the LEA, all tanks shall be watertight and made non-buoyant according to the manufacturer's recommendations or other methods approved by the LEA.

D. Tank Venting: All tanks shall be vented and conform to the standards citied in the most recent edition of the Uniform Plumbing Code by IAPMO.

E. Tank Access: Each compartment of all tanks shall be provided by a minimum twenty (20) inch diameter opening or equivalent. Access openings shall be located to provide visual inspection, maintenance and/or repair of sanitary tees, effluent filters, baffles, and pump assemblies without entering the tank.

F. Tank Risers: All tank access openings shall have risers, the tops of which shall be set at finished grade. Access openings at grade or above shall be locked or secured to prevent unauthorized access. Risers shall be installed in one continuous piece without seams. Traffic rated tanks shall have traffic rated risers and lids installed flush with the finished grade. All risers shall be securely attached by means of a watertight collar and/or other sealant material applied according to the manufacturer's instructions and approved by the LEA. All risers shall be fitted with gastight, watertight, vermin proof, securely fastened covers that are removable. All covers shall be of durable construction, manufactured specifically for their intended use, and approved by LEA.

G. Inlets/Outlets/Sanitary Tees: The invert of the inlet of all tanks shall be a minimum of two (2) inches higher than the invert of the outlet. All inlets and outlets of tanks shall be fitted with sanitary tees. The inlet shall be no less than three (3) inches and have an internal diameter equivalent to the inlet piping. The outlet shall be no less than four (4) inches and have an internal diameter equivalent to the outlet piping. The inlet and outlet sanitary tees shall extend a minimum of four (4) inches above the working liquid level and the lower end of all sanitary tees shall extend a minimum of eighteen (18) inches below the working liquid level.

H. Effluent Filters: All effluent discharged from new tank(s) and repaired or replacement system tank(s) shall pass through an effluent filter to prevent solids in excess of three-sixteenths (3/16) of an inch in diameter from passing to the dispersal system. The effluent filter shall be sized based upon the type of facility, either residential or commercial and the estimated peak daily flow. All effluent filters shall be located in the outlet compartment of the septic tank, to be easily inspected, cleaned and maintained. For multiple tank configurations, only the last tank shall be required to be equipped with an effluent filter. All effluent filters shall be appropriately sized, manufactured for their specific use, and approved by the LEA.

I. Watertight Test: All tanks, inlet and outlet connections, risers and riser covers shall be completely watertight. The LEA may require a watertight test to be performed on any new tank and/or any existing tank being repaired. When required, tank(s) shall be filled with water to two (2) inches above the tank and riser connection and left for twenty-four (24) hours. After twenty-four (24) hours the tank(s) shall be refilled to two (2) inches above the tank and riser connection. If there is no measurable loss for one (1) hour, the tank is considered watertight. The watertight test shall be conducted by the qualified professional that designed the OWTS. Watertight test certification shall be submitted by the qualified professional in written form prior to the LEA granting final approval of the OWTS. Where there is no qualified professional the LEA may inspect the tank(s) for water tightness.

J. Septic Tank Capacity (Diagram D-10): The minimum septic tank liquid capacity for single-family dwellings shall be in accordance with (Table T-5). All other building classifications which do not exceed fifteen-hundred (1,500) gallons of sewage flow per day shall be three (3) times the estimated sewage flows in (Table T-6) or the most recent version of the EPA OWTS Manual. The minimum liquid capacity shall be one-thousand (1,000) gallons. When the required capacity is to be provided by more than one (1) tank, the minimum capacity of any one (1) tank shall be one-thousand (1,000) gallons.

K. Holding Tanks and Capacity: Holding tanks may be allowed by the LEA for non-residential and non-commercial projects (duck clubs, primitive type picnic grounds, campsites or recreational areas) where the site is unsuitable for an OWTS and public sewer is unavailable. Holding tanks which do not exceed one-thousand-five-hundred (1,500) gallons of sewage flow per day shall be three (3) times the estimated sewage flows in (Table T-6) or the most recent version of the EPA OWTS Manual and shall be

a minimum of two-thousand (2,000) gallons. Holding tanks and all components shall be located to be accessible for repairs, maintenance, pumping and cleaning. Holding tanks shall be equipped with an audio and visual alarm. The high level alarm shall be set at seventy-five-percent (75%) of the tank capacity. A written contract between the owner and LEA shall be required and approved by the LEA. In addition, a written contract between the owner and a licensed septic tank pumper shall be submitted to the LEA for approval annually.

L. Maintenance: Septic tanks and other treatment tanks shall be cleaned at minimum whenever the sludge and/or scum occupies one-third (1/3) of the tank's liquid capacity.

M. Septage: All septage shall be disposed of at a location approved by the LEA.

N. Sump/Pump Tank Capacity (Diagram D-11): Sump/Pump tanks shall be sized to provide emergency reserve storage capacity of at least one (1) day's peak daily flow measured in gallons per day above the high level alarm. Emergency reserve storage is the capacity of the tank as measured between the high level alarm and invert of the inlet. The minimum liquid level in all sump/pump tanks shall be set no lower than what is necessary to provide the minimum required emergency storage plus dosing volume. Sump/ tanks and pump systems shall be selected which will optimize the use of the tank volume during operation and not compress the clear liquid zone. The minimum liquid level shall be kept as high as practical to minimize the exposed interior surface of the tank to corrosive gases and stress from exterior hydrostatic and earth pressures.

1. The minimum sump/pump tank capacity shall be five-hundred (500) gallons.

2. Sump/pump tanks installed to serve non-dwelling units (bathrooms in barns, shops or garages for example) must have a minimum capacity of one-hundred (100) gallons.

O. Grease Interceptors:

1. Grease interceptors are required at all facilities connected to an OWTS that provide foodservice and/or food preparation that produce wastewater containing floatable oil, wax, fats or a grease concentration as determined by the LEA

2. Grease interceptors must have a current International Association of Plumbing and Mechanical Officials (IAPMO) approval listing. Each tank shall be permanently marked with the manufacturer's name and/or trademark, and the nominal working volume. Permanent markings shall be adequately protected from corrosion so as to remain permanent and readable over the life of the tank. The product shall also bear the Uniform Plumbing Code (UPC) certification mark.

3. Grease interceptors shall be sized and conform to the standards cited in the most recent edition of the Uniform Plumbing Code published by IAPMO adopted by Glenn County, which shall be considered minimum standards when used in the construction, installation, alteration or repair of grease interceptors or parts thereof unless superseded by these OWTS Regulations.

4. Grease interceptors shall be cleaned regularly so as to ensure efficient operation. Only licensed septic and/or grease-pumping companies currently permitted by the LEA may pump grease interceptors.

5. Written receipts of all grease interceptor and grease trap pumping and maintenance events shall be kept onsite and made available upon request by the LEA. The receipt shall indicate: the name and address of the company performing the work, the date the work was performed, and the volume of grease removed. Receipts shall be retained onsite for a period of three (3) years.

P. Tank Destruction and Removal

1. The LEA must issue a permit prior to any tank being destroyed or removed.

2. All inlet and outlet plumbing must be disconnected from the tank and capped or reconnected to an approved OWTS or public sewage system if applicable.

3. The tank must be pumped empty by a permitted septic pumper and a copy of the receipt submitted to the LEA.

4. The tank lid shall be completely broken and several holes made in the tank bottom.

5. If the tank is to be removed it shall be completely removed from the excavation and the pieces shall be taken to a sanitary landfill or appropriate facility for recycling. A copy of the disposal receipt shall be provided to the LEA upon request.

6. Hydrated lime or chlorine shall be spread over the entire area.

7. After inspection by the LEA, the tank or excavation shall be completely filled with soil, sand, gravel, concrete or other material approved by the LEA.

20.06.018 PUMPS AND COMPONENTS

A. Pump Systems: The pump or suspended pump assembly shall be installed in accordance with the manufacturer's requirements and shall be located no less than eight (8) inches above the tank bottom. Pumps shall be rated for wastewater use and shall be appropriately sized so that the pump does not operate near its shut-off head.

1. When appropriate, pumps shall be fitted with anti-siphon and check valves. Mechanical floats or timers shall control each pump.

2. All pump systems shall be equipped with a high level alarm float. Setting the "off" float arbitrarily low to maximize emergency storage capacity is discouraged. The off float shall not be set as to expose any portion of the pump.

3. Pumps may be seated on a level and stable platform of poured concrete or cement block or placed in suspended pump assemblies. The pump intake port shall be placed in the clear liquid zone.

4. Suspended pump assemblies shall be held in place with PVC or other non-corrosive brackets inside the tank riser.

5. Package Assemblies need not rest on the tank bottom or platform unless specified by the manufacturer.

6. The pump discharge should not exceed a rate that causes the pump to stir the liquid or solids in the tank.

7. Pumps installed to serve non-dwelling units (bathrooms in barns, shops or garages for example) shall be rated as a solids handling pump and be able to pass two (2) inch solids. The pump and alarm shall be hardwired.

8. In lieu of providing emergency reserve storage capacity equal to one (1) day's peak flow, a dual pump system may be installed where the alternate pump becomes operational automatically if the primary pump fails. Dual pump systems may be required for commercial systems.

B. Pump Controls and Alarms: All pumps shall be connected to, and operated from, control panel assemblies manufactured specifically for their intended use and approved by the LEA. An electrical permit from the appropriate department shall be required for installation.

1. All pump controls and alarms shall be contained in an exterior rated, water proof, non-corrosive, tamper proof control panel box. Control panels in areas accessible to the public shall be locked to prevent unauthorized access.

2. All control panels shall be equipped with a visible and audible alarm. The control panel, visible and audible alarm shall be mounted and sufficiently located to see and hear the alarm and be easily accessible for service and inspection. The control panel shall have a fused disconnect and motor protection switch.

3. Separate electrical circuits shall be provided for the pump controls and the alarm float.

4. Each pump shall be controlled either by a mechanical float or timer assembly.

5. Each pump shall have a non-resettable dose counter and/or elapsed time meter included in the control panel. For systems in the monitoring program a flow meter must be installed in the system in addition to a dose counter.

6. The conduits entering pump control and service panels shall be sealed against gas vapor and moisture with silicone or other method or material approved by the National Electrical Manufacturers Association (NEMA).

DIVISION VI. STANDARD OWTS

20.06.019 DOMESTIC WASTEWATER STRENGTH

A. Wastewater Strength: Domestic strength wastewater is wastewater having a thirty (30) day average concentration of the following concentrations prior to the septic tank or other OWTS treatment component:

1. Total suspended solids (TSS) less than or equal to 330 ppm

2. Biochemical Oxygen Demand (BOD) less than or equal to 300 ppm

3. Total Nitrogen as Nitrogen less than or equal to 100 ppm

4. Fats, oil and grease (FOG) less than or equal to 100 ppm

B. Unless otherwise demonstrated by a Qualified Professional, recreational vehicle holding tank wastes, when discharged in a concentrated and undiluted volume, such as at a commercial RV dump station, shall be considered high strength waste.

C. High Strength Wastewater: shall have supplemental pretreatment to sufficiently lower the wastewater strength to the level of that commonly found in domestic residential septic tank effluent before being discharged into an alternative OWTS.

20.06.020 INSTALLATION OF STANDARD SOIL ABSORPTION TRENCH

A. Standard Soil Absorption Trenches: Soil absorption trenches shall be at least eighteen (18) inches and no more than thirty-six (36) inches in width. Soil absorption trenches shall be spaced a minimum of six (6) feet apart, sidewall to sidewall. Soil absorption trenches shall have at least twelve (12) inches of soil cover. The absorption area of the standard soil absorption trench shall be calculated from the bottom area of the trench.

B. Deep Soil Absorption Trenches: Soil absorption trenches deeper than the standard trench may be utilized when the provisions of these regulations are met.

The absorption area of the deep trenches shall be calculated as the total sidewall and bottom area below the standard soil absorption trench. The first twelve (12) inches of sidewall below the effluent dispersal pipe shall not be used in the calculation. A maximum of four (4) square-feet of infiltrative area per linear foot of trench is allowed to be used as the infiltrative surface.

The separation between soil absorption trenches shall be six (6) feet plus one (1) foot for every additional six (6) inches of absorption trench below the standard absorption trench.

D. Excavation and Construction: The bottom of a soil absorption trench shall be level (0-2 inches/100 lineal feet). Soil absorption trenches shall not be excavated when the soil is frozen or so wet that soil material rolled between the hands will form a soil wire. All smeared or compacted soil surfaces in the dispersal area or bottom of the trench shall be scarified to the depth of smearing or compaction and the loose material removed.

E. Aggregate and Backfill: Twelve (12) inches of aggregate (washed and free of fines), ranging in size from three-quarter (3/4) to two-and-one-half (2 ½) inches shall be laid into the trench below the effluent dispersal pipe elevation. The aggregate shall be evenly distributed and level. A minimum of two (2) inches of aggregate shall be placed over the top of the effluent dispersal pipe. The aggregate shall be covered with filter fabric, untreated building paper or other approved materials and covered with a minimum of twelve (12) inches of soil backfill. The soil backfill shall be a loamy material approved by the LEA and mounded over the soil absorption trench (Diagram D-1).

F. Effluent Dispersal Piping: Shall be Schedule forty (40) PVC, Schedule forty (40) ABS perforated pipe or other pipe material approved by the LEA with a minimum diameter of three (3) inches. The perforated pipe shall be centered in the trench and all orifices in the perforated pipe shall be facing down. The perforated pipe shall be installed level with a maximum tolerance of three (3) inches per one-hundred (100) feet. When the required soil absorption trench exceeds one-hundred (100) feet the dispersal system shall be divided into trenches of approximately equal length and served by one or more distribution boxes.

DIVISION VII. HIGH FLOW OWTS

20.06.021 GENERAL REQUIREMENTS:

A. Scope: Systems generating estimated sewage flows in excess of fifteen-hundred (1,500) gallons and less than ten-thousand (10,000) gallons per day for the purposes of these regulations are considered high flow OWTS and shall comply to these OWTS Regulations, except as required by this division. High Flow OWTS shall be designed by a Qualified Professional and approved by the LEA.

B. Septic Tank Size: The minimum septic tank shall be two-thousand-two-hundred-fifty (2,250) gallons. With flows greater than fifteen-hundred (1,500) gallons per day, the minimum effective tank capacity shall equal one-thousand-one-hundred-twenty-five (1,125) gallons plus seventy-five (75%) percent of the daily sewage flow (V= 1,125 + .75Q) where V is the net volume of the tank in gallons and Q is the daily sewage flow in gallons. If garbage grinders are used, 20% additional volume for extra sludge shall be provided. Sewage flows used to calculate septic tank size shall be the estimated flows in (Table T-6) or the most recent version of the EPA OWTS Manual.

C. Soil Testing: Soil testing for soil classification determination shall be provided as follows:

1. One (1) test hole in the dispersal area and one (1) test hole in the replacement area shall be provided for each seven-hundred-fifty (750) gallons per day of estimated daily sewage flow or fraction thereof.

2. One (1) percolation test in the dispersal area and one (1) percolation test in the replacement area for each two-hundred-fifty (250) gallons per day of estimated sewage flow or fraction thereof.

3. Testing shall be done uniformly in the proposed dispersal area and replacement area.

D. Monitoring Wells: Monitoring wells shall be required. The location, number and depth of the monitoring wells shall be determined by, but not limited to, site characteristics, soil classifications, depth to ground water and surface water bodies. The location, number and depth of the monitoring wells shall be approved by the LEA.

DIVISION VIII. ALTERNATIVE OWTS

20.06.022 GENERAL REQUIREMENTS:

When the site requirements of these regulations cannot be met for a standard OWTS, including but not limited to, soil permeability, depth to groundwater, vertical separation to impermeable layers or parcel size an alternative OWTS may be allowed.

A. Alternative OWTS shall be designed in accordance and comply with these regulations and the county code where applicable.

B. Alternative OWTS shall be designed by a Qualified Professional, installed by a Professional Contractor and approved by the LEA.

C. Standardized Alternative Designs: Standardized alternative designs are available to the property owner and Qualified Professional (Diagram D-2 to D-13). All standardized alternative designs shall incorporate the standard drawings and system requirements specified for that design. Site specific components and designs (e.g. pump size, piping size) shall be submitted to the LEA for review and approval.

20.06.023 CONSTRUCTION STANDARDS:

A. The Qualified Professional shall inspect the site and weather conditions prior to construction of the system. The Qualified professional must verify dry and acceptable soil and weather conditions for construction, and decide if conditions are suitable to begin construction.

B. The Qualified Professional shall verify with the Professional Contractor the proper staking of the OWTS prior to any construction. The OWTS details, configuration, location, contour, percolation area, expansion area, etc., shall be verified.

C. The Qualified Professional or Professional Contractor shall notify the LEA at least one (1) business day prior to when construction is to begin and certify that the soil conditions are acceptable for construction purposes and that the staking of the system has been accomplished.

D. Interim and final inspections by the Qualified Professional and LEA are required prior to covering any elements of the system. The Professional Contractor is responsible for notifying the LEA at least one (1) business day prior to any required inspections.

E. A final letter from the Qualified Professional shall state that all construction has been completed, approved and is in conformance with these regulations and all specifications. Minor changes in the installation shall be noted on the as-built plans and submitted with the letter.

20.06.024 DISPERSAL FIELD:

A. General: Pressure dosed systems are used in many alternative OWTS to distribute sewage evenly over the entire dispersal field.

B. Design and Installation:

1. Maximum distribution pipe length (lateral) shall be one-hundred (100) feet.

2. Discharge perforations may range in size from one-eighth (1/8) to five-sixteenths (5/16) inches in diameter.

3. Minimum discharge head at the discharge orifices according to perforation size shall be as follows:

- 1/8” and 3/16” diameter holes – 5 feet of head

- 1/4” and 5/16” diameter holes – 2 feet of head

4. The septic tank shall be fitted with an effluent filter one-eighth (1/8) inch mesh and the pump system fitted with an effluent screen one-eighth (1/8) inch mesh to minimize solids accumulation or clogging in the pressure distribution system. The screen or filter shall have at least twelve (12) square feet of surface area.

5. The pump dose volume shall be set at approximately twenty (20) gallons per bedroom or one-sixth (1/6) the estimated daily flow to provide multiple daily doses to the dispersal field. For large pressurized systems the pump dose volume shall be at least three (3) times the total pipe volume of the system.

6. Discharge orifices shall be spaced no more than forty-eight (48) inches on center.

7. Dispersal pipe (laterals) shall be a minimum of one (1) inch to a maximum of two (2) inch in diameter.

8. Qualified Professionals shall calculate the total dynamic Head Loss on the entire distribution system. This includes the vertical differences, length of entire piping system, loss through all valves, tees, elbows and appurtenances. Head loss shall be termed in feet of head. Flow rates shall be determined from orifice discharge equations or charts.

9. The distribution system shall be fitted with a balancing valve at the beginning of each lateral and a purge valve or removable threaded cap at the end of each lateral. All valves and threaded caps shall be encased in plastic or concrete control boxes. Wooden boxes are not allowed. All boxes shall allow enough room for maintenance, including adequate room to install stand pipes onto the end of the purge valves so as to readjust the flow, if needed (Diagram D-13).

10. The separation between the effluent sewer and the effluent distribution pipe shall be two (2) feet. The cross section of the effluent sewer and the beginning of the gravel portion of the soil absorption trench shall be stepped so as to prevent seepage of effluent between soil absorption trenches.

11. The pressure distribution system shall be tested and balanced to within ten (10%) of the required rise. The distribution pipe shall be inverted during testing so that the rise through each orifice is as follows:

- 1/8 and 3/16 inch holes – 5 foot rise

- 1/4 and 5/16 inch holes – 2 foot rise

12. Inspection wells shall be four (4) inch diameter plastic pipe and fitted with a wrench-tight cap or pipe plug and a bottom cap. Perforations shall consist of hacksaw slots at one (1) inch spacing. A "tee" and six (6) inch-long stub section of pipe (or equivalent method) shall be used to stabilize the inspection well.

C. Maintenance:

1. Ground cover shall be developed and maintained over the soil cover of alternative OWTS. This may include the seeding, planting, and maintenance of appropriate vegetation.

2. Property owners are responsible for preventing disturbance to the soil cover. This includes preventing animals, vehicles, structures, etc., from adversely impacting the soil cover.

3. Property owners shall prevent the overuse (hydraulic overloading) of an alternative OWTS.

4. Occasionally, the pressurized dispersal lines may have to be cleaned. This involves purging of the pressurized lines by a competent and knowledgeable individual.

5. The property owner is responsible for the proper use and functions of all components of the alternative OWTS, including the electrical systems, the alarm system, the dose counter and the proper adjustment and operation of the floats and pumping system.

20.06.025 FILTER TRENCH SYSTEM (DIAGRAM D-2 THRU D-5):

A. General: The filter trench system is intended for use in coarse textured alluvial soils (leaching class one (1) and two (2)) at least forty (40%) percent of the soil shall pass the number four (#4) sieve and the water table shall remain at least five (5) feet below ground surface.

B. Siting Requirements: All siting requirements for standard OWTS in these regulations shall apply to Filter Trench systems except as modified by the requirements shown in (Table T-7 & T-8) pertaining to soil type, depth to groundwater, and water well setback. Siting requirements for Filter Trench systems are based on determination of soil properties (percentage of fines) and depth to seasonally high groundwater. Percolation testing is not required and is not a factor in system siting or design; it is assumed that, because of the coarse soils, percolation rates are rapid and not a limiting factor in system sizing. The siting criteria relating system design type (I, II or III) to soils, groundwater depth and well setbacks are intended to produce combinations of treatment processes and natural site factors to achieve the objective of providing "adequate filtration" of sewage effluent to protect public health and water quality.

C. Design and Installation: Cross-section details of Filter Trench systems are provided in (Diagram D-2 through Diagram D-5).

1. Pretreatment: Effluent discharged to Filter Trench systems shall, at a minimum, have received primary treatment through a septic tank, sized and installed in accordance with applicable sections of these Regulations.

2. Effluent Distribution: The method of effluent distribution for Filter Trench systems shall be as follows:

- Type I System – Gravity flow

- Type II system – Pressure Distribution

- Type III System – Pressure Distribution

Pressure distribution, as required for Type II and Type III systems, shall be designed in accordance with the applicable provisions in these OWTS Regulations.

3. Trench Width: Trench widths shall be as follows:

- Type I System – 24"

- Type II System – 18" minimum, 48'' maximum

- Type III System – 18’’ minimum, 48” maximum

4. Trench Length: Maximum trench length shall be one-hundred (100) feet.

5. Trench Depth: Overall trench depth, as measured from native grade, shall be five (5) feet for Filter Trench systems. This depth may be reduced to four (4) feet where raised cover-fill is incorporated in to the system design.

6. Trench Spacing: Minimum spacing between trenches for filter Trench systems shall be ten (10) feet, center-to-center or end-to-end.

7. Absorption Area: The wastewater absorption area for purposes of system sizing shall be trench bottom area.

8. Wastewater Application Rate: The maximum wastewater application rate for system sizing shall be as follows:

- Type I System - 1.0 gpd/ft.

- Type II System - 1.0 gpd/ft.

- Type III System - 0.5 gpd/ft.

9. Trench Filter Material: Trench filter material for Type I, II and III systems shall consist of successive layers (starting at trench bottom) of sandy textured soil fill, medium to coarse sand and drain rock.

a. Soil Fill:

- Material: Soil fill shall consist of loamy sand or sandy loam, corresponding with Leaching Class 2 (Table T-2)

- Depth: Depth of soil fill shall be twelve (12) inches.

- Installation: Soil fill shall be dry when placed in the trench. Installation steps shall be as follows:

1) An initial nine to ten (9-10) inch layer of soil shall be placed in the bottom of the trench and hand tamped; then the surface of the soil fill shall be scarified by raking;

2) The balance of the soil, approximately two to three (2—3) inch layer, shall be placed and spread evenly over the length and width of the trench;

3) A two to three (2—3) inch layer of sand fill (see specifications below) shall be placed and evenly spread over the soil fill;

4) The sand and soil layers shall be mixed by hand-raking to form a sand-soil transition zone.

b. Sand Fill:

1) Sand fill shall consist of a medium to coarse sand which meets the following gradation specifications:

Sieve Size	Percent Passing
3/8"	100
#4	90—100
#10	62—100
#16	45—82
#30	25—55
#50	5—20
#60	0—10
#100	0—4

2) Depth of sand fill shall be twenty-four (24) inches for all filter trench systems. This depth shall include the two to three (2-3) inches of sand mixed in the sand-soil transition zone.

c. Drain Rock:

1) Material: Two types of drain rock shall be used in Filter Trench systems:

- 3/8" to 5/8" Pea Gravel, free of fines.

- Standard 3/4" to 2½" drain rock (crushed, washed or rounded).

2) Depth: Depth of respective drain rock materials for Filter Trench systems shall be as follows:

- Type I system (Part pea gravel/part standard drain rock)

+ 3" of pea gravel below pipe (in contact with sand)
+ 4" of standard drain rock below pipe
+ 2" of standard drain rock over top of pipe
+ 12" total rock depth

- Type II and III System (all pea gravel)

+ 8" of pea gravel below pipe invert
+ 2" of pea gravel over top of pipe
+ 12" total rock depth

10. Silt Barrier: The drain rock and distribution piping shall be covered in its entirety with a geotextile ("filter fabric") silt barrier. Filter fabric shall be polyester, nylon or polypropylene, or any combination thereof, shall be suitable for underdrain applications. Filter fabric shall be non-woven, shall not act as a wicking agent and shall be permeable. Filter fabric shall be handled and installed in accordance with manufacturer's recommendations. Borders of fabric shall be overlapped twelve to eighteen (12 – 18) inches. Any torn or damaged sections of fabric shall be covered with additional pieces of filter fabric sufficient to meet the above overlapping requirements.

11. Soil Backfill: Soil backfill over the drain rock and filter fabric shall be a minimum of twelve (12) inches. Additionally, soil shall be mounded over the trench above finished grade to allow for

settlement. The mounded cover shall be compacted by wheel rolling to achieve a final mounded height of nine (9) inches over finished grade.

12. Raised Soil Cover-fill: Where soil cover-fill is utilized, the absorption quality of the fill imported to cover the dispersal field trenches shall be equal to soil classification two (2), three (3) or four (4).

13. Inspection Wells: Two (2) inspection wells shall be installed in each individual trench section of Filter Trench systems, as follows:

- One inspection well shall extend from finished grade to the rock-sand interface. It shall be perforated in the rock zone only.

- One inspection well shall extend from finished grade to the sand-soil interface. It shall be perforated in the sand-soil zone only.

20.06.026 SHALLOW SAND TRENCH (DIAMGRAM D-6)

A. General: This system is intended for use on slopes less than twenty (20%) percent where percolation rates are faster than two-hundred-forty (240) MPI and the highest extent to the water table and restrictive layers is no less than four (4) feet below ground surface.

B. Siting Criteria: The site shall meet all applicable requirements of these regulations except as follows:

1. Percolation Rates: Shallow Sand Trench systems may be used in soils having an average percolation rate of sixty-one to two-hundred-forty (61 to 240) MPI, as determined by percolation testing at a depth of twenty-four (24) inches. Percolation testing shall be conducted during wet weather conditions or with an extended pre-soak period to reasonably simulate wet weather conditions.

2. Depth to Groundwater: The minimum depth to seasonally high groundwater, below trench bottom, shall be three (3) feet. For these purposes, "trench bottom" shall be considered to be the bottom of the drain rock.

3. The original site slope shall not exceed twenty (20%) percent.

C. Designs and Installation:

1. Pretreatment: Effluent discharged to Shallow Sand Trench systems shall, at a minimum, have received primary treatment through a septic tank, sized and installed in accordance with applicable sections of these OWTS Regulations.

2. Effluent Distribution: Pressure distribution shall be used for Shallow Sand Trench systems. Pressure distribution shall be designed in accordance with the applicable provisions of these OWTS Regulations.

3. Trench Width: Trench width shall be twenty-four (24") inches.

4. Trench Depth: Overall trench depth as measured from native grade shall be twenty-four (24") inches from the top of the trenches.

5. Trench Spacing: Minimum spacing between Shallow Sand Trenches shall be ten (10) feet, center-to-center or end-to-end.

6. Absorption Area: The wastewater absorption area, for purposes of system sizing, shall be the sand bottom and sidewall area, totaling four (4) ft. /lineal foot.

7. Wastewater application Rate: The maximum wastewater application rate for system sizing shall be as follows:

Percolation Rate (MPI)	Wastewater Application Rate (gpd/ft)
61 – 120	0.2
121 – 240	0.2 – 0.1 (straight-line graded scale)

8. Trench Filter Materials:

a. Sand Fill

- Material: Sand fill consists of medium to coarse, which meets the following gradation specifications:

Sieve Size	Percent Passing
3/8"	100
#4	90—100
#10	62—100
#16	45—82
#30	25—55
#50	5—20
#60	0—10
#100	0—4

- Depth: Depth of sand fill shall be twelve (12) inches.

b. Drain Rock

- Material: Drain rock shall consist of 3/8" to 5/8" pea gravel, free of fines.

- Depth: Drain rock depth shall be as follows:

+ 8" of pea gravel below pipe invert
+ 2" of pea gravel over top of pipe
+ 11 – 12" total rock depth (depth dependent on diameter of distribution piping)

9. Raised Soil Cover-fill: The absorption trenches shall be covered in their entirety with a geotextile ("filter fabric") silt barrier. Filter fabric shall be polyester, nylon or polypropylene, or any combination thereof, and shall be suitable for underdrain applications. Filter fabric shall be non-woven, shall not act as a wicking agent and shall be permeable. Filter fabric shall be handled and installed in accordance with manufacturer's recommendations. Borders of fabric shall be

overlapped twelve to eighteen (12 to 18) inches. Any torn or damaged sections of fabric shall be covered with additional pieces of filter fabric sufficient to meet the above overlapping requirement.

10. Inspection Wells: Two inspection wells shall be installed in each individual trench of Shallow Sand Trench systems, as follows:

a. One inspection well shall extend from finished grade to the rock-sand interface. It shall be perforated in the rock-sand zone only.

b. One inspection well shall extend from finished grade to the sand-soil interface. It shall be perforated in the sand-soil only.

20.06.027 MOUND DISPOSAL SYSTEMS (DIAGRAM D-7):

Only mound designs corresponding to those developed by the Small Scale Waste Management Project, University of Wisconsin, Madison, or the "Guidelines for Mound Systems" published by the California State Water Resources Control Board will be accepted for review and approved for installation. Alternative designs may be accepted and approved by the LEA if they are equivalent in form and function to the accepted published designs.

A. General: The mound disposal system is intended for those site conditions in which adequate separation from the bottom of the dispersal system to high ground water or other natural restrictive or confining layers is not available.

B. Siting Criteria: The site shall meet all the requirements set forth in these regulations.

1. Depth to Groundwater: The minimum depth to high ground water, below the absorption area, shall be not less than two (2) feet. For these purposes, "absorption area" shall mean the bottom of the filter media.

2. Vertical Separation to Restrictive Layer: The minimum depth to any restrictive layer, below the absorption area, shall be at least two (2) feet. For these purposes, "absorption area" shall mean the bottom of the filter media.

3. The maximum allowable slope for the dispersal field shall not exceed twenty (20%) percent.

4. The mound shall be protected from runoff by using the natural geography or utilizing engineering controls.

5. The mound shall be located, preferentially, on an elevated portion of land where exposure to sun and wind and where evaporation and transpiration are maximized.

C. Designs and Installation:

1. The mound disposal system shall be designed by a "Qualified Professional".
Pressure distribution with timed dosing shall be required for a mound disposal system.

2. The filter media shall be course sand or sand that meets the ASTM C-33 specification.

3. The mound disposal system shall adhere to the design principle of being "long and narrow". If the site does not permit this design another type of OWTS shall be used.

4. The gravel bed shall be sized with an application rate not to exceed one (1.0) gpd/ft² and have a width no greater than ten (10) feet.
5. The system absorption area size shall be based on the receiving soil application rate (Table T-2).

6. On a sloping site the mound shall be installed parallel to the ground contours.

7. A mound disposal system shall have a minimum of two (2) monitoring ports. One port shall extend down through the filter media to the soil absorption interface and the second shall extend down to the gravel filter media interface.

20.06.028 SUBSURFACE DRIP SYSTEMS:

This system is designed for use when the site conditions are such that there is high ground water or a high restrictive layer and where extreme spatial limitations exist on-site. Wastewater is dispersed uniformly over a large area by using numerous emitters installed at a shallow depth and very small doses.

A. Siting Requirements: The site shall meet all applicable requirements of these OWTS Regulations and will require pressure distribution.

B. Design and Installation: All subsurface drip systems shall be designed by a Qualified Professional, be approved by the LEA before installation and installed by a Professional Contractor with training or experience in the installation of subsurface drip systems. Installation of the subsurface drip systems shall be in accordance with all approved designs, manufacturer recommendations and the following additional requirements:

1. The minimum depth of all drip lines shall be six (6) inches.

2. All subsurface drip systems shall require, at a minimum, pre-treatment in the form of a properly sized septic tank and a filter one-sixteenth (1/16) inch mesh or finer.

3. All driplines shall be marked or color coded to identify that each line contains non-potable water from a sewage source.

4. The subsurface drip system must have a controller capable of timed dosing, automated line flushing (minimum 0.5 ft/sec velocity) and filter backwashing and be pressure compensating for sloping sites.

5. All subsurface drip systems shall be designed with a bypass line to facilitate field flushing.

6. All subsurface drip systems shall be designed with air relief valves placed at the highest point on both supply and return manifolds.

7. All subsurface drip systems must be designed to accept domestic wastewater strength effluent.

8. All subsurface drip systems must also include a USDA-approved "root growth inhibitor" incorporated into the drip lines to prevent root intrusion.

20.06.029 GRAVEL-LESS CHAMBERS:

Gravel-less chambers shall meet all applicable portions of these OWTS Regulations, be installed according to the manufacturer's instructions and the following standards:

A. Gravel-less chambers shall maintain the integrity of the trench or bed. The material used and its manufacturer-prescribed installation procedures, must be able to withstand the physical forces of the soil sidewalls, soil backfill and the weight of equipment used in backfilling.

B. Gravel-less chambers shall only be used in dispersal systems that utilize pressure distribution.

C. Gravel-less chambers shall not be used in soil classification one (1) or two (2).

D. The absorption area of a chambered system shall be calculated as the total open or louvered sidewall and bottom area of the chamber. The first six (6) inches of the open or louvered sidewall area shall not be used in this computation.

E. The maximum allowable absorption area reduction when using gravel-less chambers shall not be more than twenty (20%) percent. This reduction can vary depending on make, model and size differences between gravel-less chambers. Soil type and texture may also change the allowable reduction for gravel-less products. Gravel-less chamber absorption area reductions shall be calculated and approved by the LEA on a case-by-case basis.

F. Absorption area reductions may not be used for the purposes of replacement area sizing. The size of the replacement area shall be at least one-hundred (100%) percent of what would be required if not using gravel-less chamber technology.

G. The LEA shall approve each brand and model of gravel-less chambers before installation. The LEA shall prepare and maintain installation guidelines for each brand and model approved.

20.06.030 SINGLE PASS SAND FILTER (DIAGRAM D-8):

Only single pass sand filter designs that correspond to the "Single Pass Sand Filters for On-Site Treatment of Domestic Wastes" developed at the University of Wisconsin, Madison will be accepted for review and approved for installation. Alternative designs may be accepted and approved by the LEA if they are equivalent in form and function to the accepted published designs.

A. General: A single pass sand filter is a system used for additional primary treatment of waste water by filtration through a filter material within a water tight vessel. Single pass sand filters may be utilized when soil separation is not adequate or where higher treatment of the wastewater must be achieved before being discharged into the soil.

B. Siting Criteria: The site shall meet all the requirements set forth in these OWTS Regulations:

1. The minimum horizontal setbacks for a sand filter shall be the same as required for a septic tank, dependent on site characteristics and soil classifications.

2. If cover soil is used it must be capable of maintaining vegetative growth while allowing aeration in the sand filter. Decorative rock may be used in lieu of cover soil.

3. Sand filters must not be installed on slopes that exceed twenty (20%) percent.

C. Designs, Installation and Material:

1. Pre-treatment: Effluent received by the single pass sand filter must have received, at a minimum, primary treatment through a septic tank and be equivalent to domestic wastewater strength.

2. The design flow for a single pass sand filter shall be consistent with (Table T-2, T-6) and the most recent edition of the EPA OWTS Manual.

3. The filter surface area of the bed shall be sized at an application rate not to exceed one (1.0) gallons/day/ft^2.

4. The single pass sand filter configuration is determined by dividing the design flow by the application rate.

5. The sand filter media must be contained in a concrete vessel or, at a minimum, a membrane liner of at least thirty-three (33) mm thickness that is protected from punctures by a non-treated plywood/wafer-board box.

6. The depth of the filter media shall be a minimum of twenty-four (24) inches.

7. Filter media in a single pass sand filter must meet an ASTM C-33 specification or be clean coarse sand without fines.

8. Wastewater shall be distributed across the filter media using pressure distribution that is consistent with design standards in these OWTS Regulations.

9. Timed dosing is a requirement of a single pass sand filter and shall be dosed at the following minimum frequencies to prevent hydraulically overloading the filter media:

Media Type	Minimum Dose Frequency
Coarse Sand (no fines)	18 time per day
ASTM C-33	4 times per day

10. For a single pass sand filter to function properly its various components need periodic operation and maintenance. Monitoring and maintenance shall be the responsibility of the homeowner and should problems arise, regular operation and maintenance records may be required to be submitted.

DIVISION IX. SUPPLEMENTAL TREATMENT SYSTEMS

20.06.031 GENERAL REQUIREMENTS:

Supplemental treatment systems are designed to provide additional enhanced wastewater treatment as a standalone OWTS or in conjunction with an alternative OWTS. Supplemental treatment may be achieved by using the following approved standards and will require operation and maintenance and regular reporting.

A. Availability of Use: When soil and site conditions are such that the requirements for an OWTS specified in (Sections 20.06.10, 20.06.12, 20.06.13 and 20.06.019) cannot be met, an alternative OWTS with supplemental treatment may be used.

B. Design Standards: Supplemental treatment systems must be designed by a Qualified Professional and approved by the LEA prior to installation. Installation of the supplemental treatment system shall be done by a Professional Contractor, in accordance with all approved designs, the manufacturer recommendations and the following minimum performance standards:

1. 30-day average BOD concentration will not exceed 30 milligrams per liter (mg/L), or alternately, a carbonaceous BOD (CBOD) in excess of 25 mg/L.

2. 30-day average TSS concentration will not exceed 30 mg/L.

3. 30-day average TN concentration will not exceed 10 mg/L as nitrogen.

C. Construction Standards: The construction standards for all supplemental treatment systems shall be consistent with these OWTS Regulations.

20.06.032 DISINFECTION SYSTEMS:

A disinfection system is intended to provide enhanced treatment by utilizing ultra violet radiation (UV), chlorination, ozonation or other industry accepted methods to achieve a higher quality effluent prior to being discharged to the dispersal field.

A. Siting Requirements: All siting requirements for standard and alternative OWTS in these regulations shall apply to any disinfection system.

B. Design and Installation: All disinfection systems shall be designed by a Qualified Professional and approved by the LEA prior to installation. Installation of the disinfection system shall be done by a Professional Contractor, in accordance with all approved designs, the manufacturer recommendations and the following minimum performance standards:

1. Ten (10) MPN (Most Probable Number) per one-hundred (100) ml prior to discharge into the dispersal field where the soils exhibit percolation rates of one to ten (1-10) minutes per inch or where the soil texture is sandy or gravelly.

2. One-thousand (1,000) MPN (Most Probable Number) per one-hundred (100) ml prior to discharge into the dispersal field where the soils exhibit percolation rates greater than ten (10) minutes per inch or consist of a soil texture other than sand.

20.06.033 PROPRIETARY SYSTEMS:

A proprietary system provides additional enhanced primary treatment by processing wastewater effluent through filters or membranes with or without aeration. A proprietary system may be used when limiting site conditions are present and all other OWTS are not feasible or impractical.

A. Siting Requirements: The site shall meet all applicable requirements of these OWTS Regulations and will require pressure distribution.

B. Design and Installation: All proprietary systems shall be designed by a Qualified Professional, be NSF/ANSI and Standard 40 certified, approved by the LEA prior to installation and installed by a Professional Contractor. Installation of any proprietary system shall be in accordance with all approved designs and any manufacturer recommendations.

DIVISION X. MONITORING AND REPORTING

20.06.034 REPORTING REQUIREMENTS

A. Annual Report

1. The LEA will prepare and submit an annual report to the Central Valley Regional Water Quality Control Board no later than February 1 for the preceding year beginning one (1) year after Regional Board approval of the LAMP.

2. The annual report will include:

a. A statement that all on-site wastewater systems referenced in the report are classified Tier two (2).
b. Certified Septage Pumpers: Applications and registrations issued as part of the local cleaning registration pursuant to California Health and Safety Code §117400 et seq.
c. New and Repaired or Replaced On-Site Wastewater Systems: Numbers and locations of permits.
d. Complaints: Numbers and locations of complaints, related investigations, and means of resolution.
e. Variances: Number and description of variances to the OWTS Regulations, the rationale for the variation, and the mitigating measures to assure the variance will be as protective of public health as the requirements in these regulations.
f. Summary of any changes adopted by the Glenn County Board of Supervisors to these regulations or code.

g. Nitrate levels from well water quality monitoring. Glenn County Environmental Health will maintain a water quality assessment program that consists of obtaining nitrate concentrations for water quality data, from the following sources:

1) Regulated state small water systems (SSWS) and public water systems less than 200 service connections.

2) Wells within Glenn County that are monitored as part of the Statewide Geotracker GAMA-secure program.

3) Monitoring wells from permitted facilities and domestic wells, only if routinely sampled.

B. Five Year Report

1. The five (5) year report will include:

a. Evaluation of nitrates found in regulated state small water systems.
b. Evaluation of water quality data from public water systems up to 200 service connections.
c. Wells within Glenn County that are monitored as part of the Statewide Geotracker GAMA-secure program.
d. Monitoring wells from permitted facilities and domestic wells, only if routinely sampled.

C. Report Format

1. Groundwater monitoring data will be submitted in tabular spreadsheet format and meet the minimum requirements of the Central Valley Regional Water Quality Control Board.

20.06.035 RECORD RETENTION AND AVILABILITY

A. All Environmental Health records will be maintained in tabular spreadsheet format and with Assessor Parcel Number files indefinitely. They will be made available to Central Valley Regional Water Quality Control Board staff within ten (10) working days, upon a written request.

20.06.036 WATER SUPPLIER NOTIFICATION

A. The LEA will notify public well and water intake owners, and the Central Valley Regional Water Quality Control Board as soon as practicable, but no later than Seventy-two (72) hours upon discovery of a failing OWTS within the setbacks specified in (Table T-1) of the OWTS Regulations.

B. The LEA will notify public water services of pending OWTS installations and repairs within the prescribed set-backs specified in (Table T-1) of the OWTS Regulations.

C. The above notifications will be made by telephone and/or in writing.

DIVISION XI. EDUCATION AND OUTREACH

20.06.037 LEA RESPONSIBILITIES

A. The LEA shall provide informational material, for standard systems, to the OWTS owner about how to locate, operate and maintain their OWTS. The informational material shall be provided at the time of a new, replacement or repair installation.

B. The LEA shall provide informational material on the departments website, including but not limited to, operation and maintenance information, Qualified Professional list, Professional Contractor list and O & M Service Provider list.

20.06.038 QUALIFIED PROFESSIONAL RESPONSIBILITIES

A. The Qualified Professional shall provide informational material to the OWTS owner and the LEA for archival purposes. The information shall be updated by the Qualified Professional when the system is repaired or replaced. The informational material shall include but not be limited to the following:

1. Diagrams of the system and system components.

2. Accurate, fully dimensioned as-built of the system.

3. Explanation of general system function, operational expectations and owner responsibility.

4. Routine maintenance schedule.

5. Names and telephone numbers of the Qualified Professional, Professional Contractor and O & M Service Provider.

6. List of proprietary system components, including manufacturer name and model number

7. Information on “troubleshooting” common operational problems that might occur with that specific system.

TABLE T-1
MINIMUM SETBACK DISTANCES

The setbacks shown in the following table shall apply to all onsite wastewater treatment systems unless otherwise specified in these regulations.

Distance Required From:	Dispersal Field	Septic Tanks, Pump Tanks
Septic Tank **Dispersal Area (Replacement Area)**	**5'** **10'**	**5'** **5'**
Public Water Wells **Water Wells** **Monitoring Wells**	**150'** **100'** **100'**	**150'** **100'** **100'**
Springs, Streams, Rivers or other Flowing Surface Water Bodies[3]	**100'**	**100'**
Lakes, Ponds, Wetlands, Vernal Pools or other surface Water Bodies[3]	**200'**	**200'**
Unstable Land Mass or Areas Subject to Earth Slides[4]	**100'**	**100'**
Cut banks, Escarpments and Steep[2] Slopes in Excess of 2.5'	**4 X the height of the bank, to a maximum of 50'**	
Foundation Lines of any Structure Including Garages, Out-Buildings and In-Ground Swimming Pools	**5'**	**5'**
Water Line/Box	**5'**	**5'**
Subsurface Water Cistern (Permanent Structure)	**100'**	**100'**
Lot Lines and Public Easements	**10'**	**10'**
Drainage/Irrigation Ditch[1] or Rice Field	**50'**	**50'**
Interceptor/Curtain Drains: **Up Gradient of System** **Down Gradient of System** **Laterally of System**	 **20'** **50'** **50'**	 **20'** **50'** **50'**

[1] Ten (10) foot minimum setback required with impervious lining.

[2] The height (in feet) of the cut, escarpment or slope as measured from the toe of the cut or vertically to the projection of the natural ground slope.

[3] As measured from the high water mark.

[4] Other distances may be allowed, if recommended by a geotechnical report prepared by a Qualified Professional.

If a setback is not specified in this table, the most recent edition of the Uniform Plumbing Code adopted by the Board of Supervisors shall apply.

Additional setbacks and distances may be required by the LEA for Community or High Flow OWTS.

TABLE T-2
SOIL CLASSIFICATION, APPLICATION RATE AND MINIMUM DEPTH TO RESTRICTIVE LAYERS

USEPA Textural Classification	Soil Classification	Application Rate (GPD/ft²)	Minimum Depth to Restrictive Layer	
(Source: USEPA Onsite Wastewater Treatment Systems Manual, February 2002)		Soil Structure Weak to Strong	Standard System	Alternative System[3]
Sand	1	0.4 to 1.0	Prohibited	2 ft. for creation of new parcels 2 ft. to groundwater and other restrictive layers. (i.e. impermeable or excessively drained soil, rock or other limiting features.)
Loamy Sand, Sandy Loam	2	0.2 to 1.0	20 ft.	
Loam, Sandy Clay Loam	3	0.2 to 0.8	8 ft.	
Clay Loam, Silt Loam	4	0.2 to 0.6	5 ft.	
Sandy Clay, Silty Clay Loam [1,2]	5	0.2 to 0.4	5 ft.	
Clay, Silty Clay, Silt [1,2]	6	0.1 to 0.2	Prohibited	

[1] May be subject to percolation testing in addition to soil texture analysis

[2] Clays must be non-expansive

[3] Alternative systems with supplemental treatment may be utilized for lots not meeting the minimum parcel size requirements or high strength wastewater.

TABLE T-3

SOIL CLASSICICATION FOR STABILIZED PERCOLATION RATES

Soil Classification	Stabilized Percolation Rate in minutes per inch (MPI)
1	Less than or equal to 1 MPI
2	2 MPI to 5 MPI
3	6 MPI to 30 MPI
4	31 MPI to 60 MPI
5	61 MPI to 120 MPI
6	Greater than 120 MPI

TABLE T-4
MINIMUM PARCEL SIZE FOR NEW PARCELS WITH OWTS

Type of Water Supply	Soil Classification (defined by Table 2)					
	1	2	3	4	5	6
Public	**2 acres[1] (80,000 ft²)**	**2 acres[1] (80,000 ft²)**	**1 acres (40,000 ft²)**	**1 acres (40,000 ft²)**	**1 acres (40,000 ft²)**	**1 acres (40,000 ft²)**
Individual Well	**2 acres[1] (80,000 ft²)**	**2 acres[1] (80,000 ft²)**	**1 acres (40,000 ft²)**	**1 acres (40,000 ft²)**	**2 acres (80,000 ft²)**	**2 acres (80,000 ft²)**

Excessively Permeable Soils (E.P.S) minimum parcel size may be reduced to one and a half (1.5) acres when utilizing an OWTS with supplemental treatment.

TABLE T-5
MINIMUM SEPTIC TANK CAPACITY FOR SINGLE FAMILY DWELLINGS

Number of Bedrooms	Septic Tank Gallons
1 and 2	**1,200**
3 and 4	**1,200**
5 and 6	**1,500**
Each additional bedroom	**150**

OWTS receiving projected daily flows greater than one-thousand-five-hundred (1,500) gallons per day and less than ten-thousand (10,000) gallons per day shall be designed in accordance with (Division VII) and these OWTS regulations.

TABLE T-6
MINIMUM DAILY FLOWS

Building Classification	Units	(G.P.D.) per unit
Assembly hall (no kitchen)	person	5
Assembly hall (w/kitchen)*	person	10
Bar and cocktail lounge*	patron space	25
Beauty salon	station	150
Bowling alley	bowling lane	75
Camp (day use only)	person	10
Camping area, overnight (central facilities)	person	25
Church (no kitchen) *	person	5
Church (w/kitchen) *	person	10
Condominium	bedroom	120
Dining hall	meal served	10
Drive-in theater	car space	5
Employees (all buildings)**	person	15
Hospital	bed space	250
Hotel/motel and tourist rooming house	room	100
Kennels and animal hospital	run	50
Labor camp (central bathhouse)	employee	25
Laundromat	machine	1000
Medical office	doctor	400
Dental office	doctor	500
Mobile home park	site	250
Multi-unit residential	bedroom	150
Nursing or group home	bed space	100
Outdoor sports facility (toilet waste only)	person	3
Park (showers and toilets)	person	25
Park (toilet waste only)	person	10
Restaurant (multiple service)	seating space	40
Restaurant (single service)	customer	2
Retail food market	square foot	.05
Retail store public toilet	toilet/urinal	150
RV park (w/water and sewer hook-ups)	space	100
School	student	15
School (w/meals add)	student	3
School (w/showers add)	student	10
Swimming pool bathhouse	person	10
Tent camp	camping space	50

1. Minimum sewage flow for any structure classification shall be One-hundred (10 gallons per day.

2. Structure occupancies not classified shall base their sewage flows on one year's actual water use of a similar occupancy or the most current version of the EPA OWTS Manual.

***** Based on the maximum occupancy permitted by the Fire Marshall.

****** Excluding medical and dental office building

Table T-7
Filter Trench – Water Well Setbacks
Related to Soils and Groundwater Conditions

Soil Conditions[1]	Depth to Groundwater (feet)[2]	Filter Trench System Type		
		Type I Gravity-Flow at Normal Loading[3]	Type II Pressure-Dosed at Normal Loading[3]	Type III Pressure-Dosed at Low Loading[4]
Very Coarse Gravelly Soil <5% Fines[5]	4 to 5	N/A	200 feet	150 feet
	> 5 to 10	200 feet	150 feet	100 feet
	> 10	150 feet	100 feet	100 feet
Coarse Sandy Soil 5 to 15% Fines[5]	4 to 5	200 feet	150 feet	100 feet
	> 5 to 10	150 feet	100 feet	100 feet
	> 10	100 feet	100 feet	100 feet

[1] Applies to the predominant soils found between trench bottom and the water table. To be considered "soil", the material must be well graded and at least forty (40%) percent of the material must pass the #4 (5 mm) sieve.

[2] As measured from the bottom of the drain rock within the Filter Trench.

[3] Normal Loading Rate = 1.0 gpd/ft^2 (bottom area)

[4] Low Loading Rate = 0.5 gpd/ft^2 (bottom area)

[5] Fines are defined as the soil particles passing the #200 sieve; percent (%) fines is determined relative to the amount of material passing the #4 sieve. This may be determined by volume or by weight.

N/A: Not Allowed

Table T-8
Alternative OWTS
Filter Trench System
Design Elements

	Bedrooms	# of Laterals	Length of Laterals (ft.)	Height of Squirt (ft.)	Orifice Size (inches)	Orifices per Lateral	Orifice Spacing (inches)	Width of Trench (ft.)
Type I Gravity-Fed (Normal Loading)	**2** **3** **4**	**2** **3** **3**	**75** **75** **88**	**-** **-** **-**	**-** **-** **-**	**-** **-** **-**	**-** **-** **-**	**2** **2** **2**
Type II Pressure-Dosed (Normal Loading)	**2** **3** **4**	**1** **2** **2**	**100** **75** **88**	**2.5** **5** **5**	**3/16** **1/8** **1/8**	**26** **20** **23**	**46½** **46** **46½**	**3** **3** **3**
Type III Pressure-Dosed (Low Loading)	**2** **3** **4**	**2** **3** **4**	**100** **100** **88**	**5** **5** **5**	**1/8** **1/8** **1/8**	**26** **26** **23**	**46½** **46** **46½**	**3** **3** **3**

For Type I systems:

1. The distribution piping shall be constructed of three (3) or four (4) inch diameter PVC perforated sewer and drain pipe.

For Type II and Type III systems:

1. The piping between the pump and the lateral valve shall be a minimum of two (2) inch diameter schedule forty (40) PVC. The pipe run between the pump check valve and the lateral balancing valve should minimize flow restricting angles and bends and must not exceed seventy-five (75) feet.
2. Lateral piping shall be constructed of one and a quarter (1 ¼) inch diameter schedule forty (40) PVC.
3. All lateral valves shall be checked for elevation and shall be constructed a minimum of half (0.5) foot above the check valve, the manifold shall be constructed below this grade line for its entire length.
4. All piping shall be schedule forty (40) PVC.
5. Orifices shall be drilled using the specified drill bit in a true and plumb manner using care not to ream or otherwise oversize the hole beyond the specified size.
Note: Alternative piping design/layouts are acceptable, shall be designed by a Qualified Professional and submitted to the LEA for approval.

Diagram D-1

Standard Soil Absorption Trench

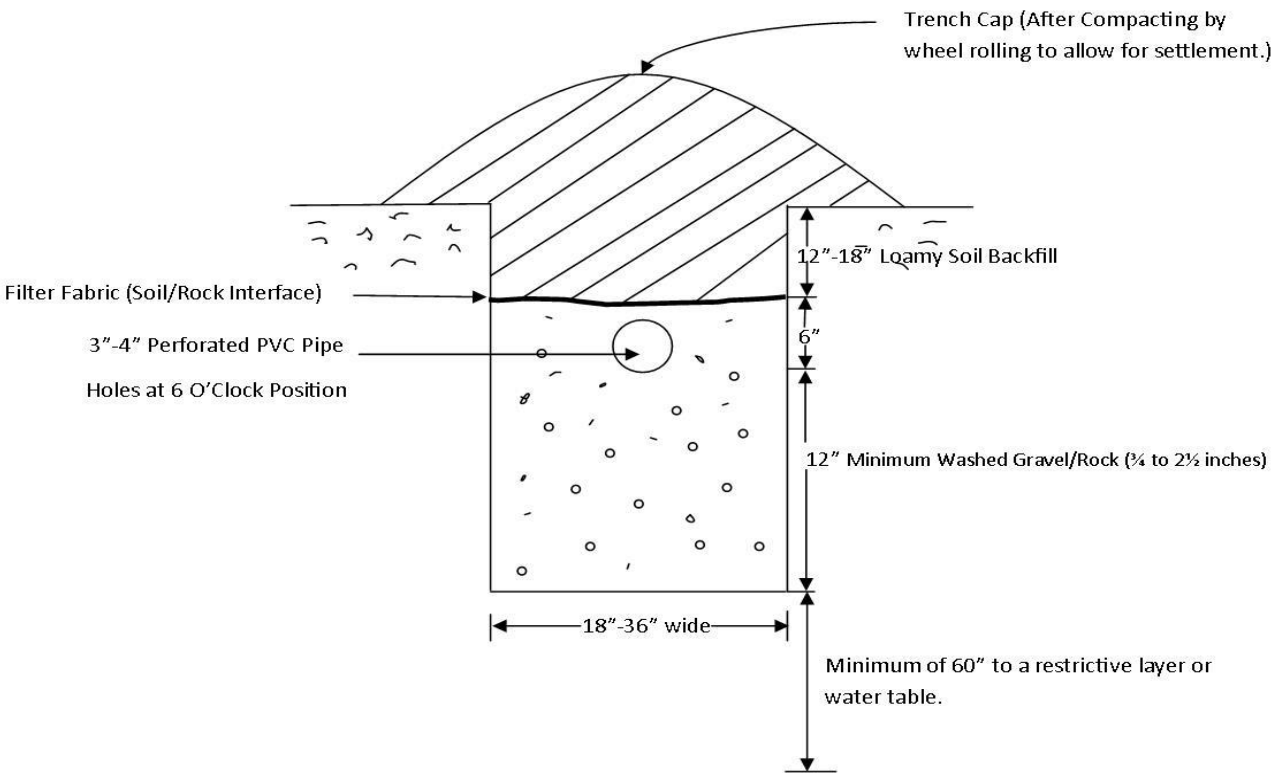


Diagram D-2
Filter Trench Detail
Type 1

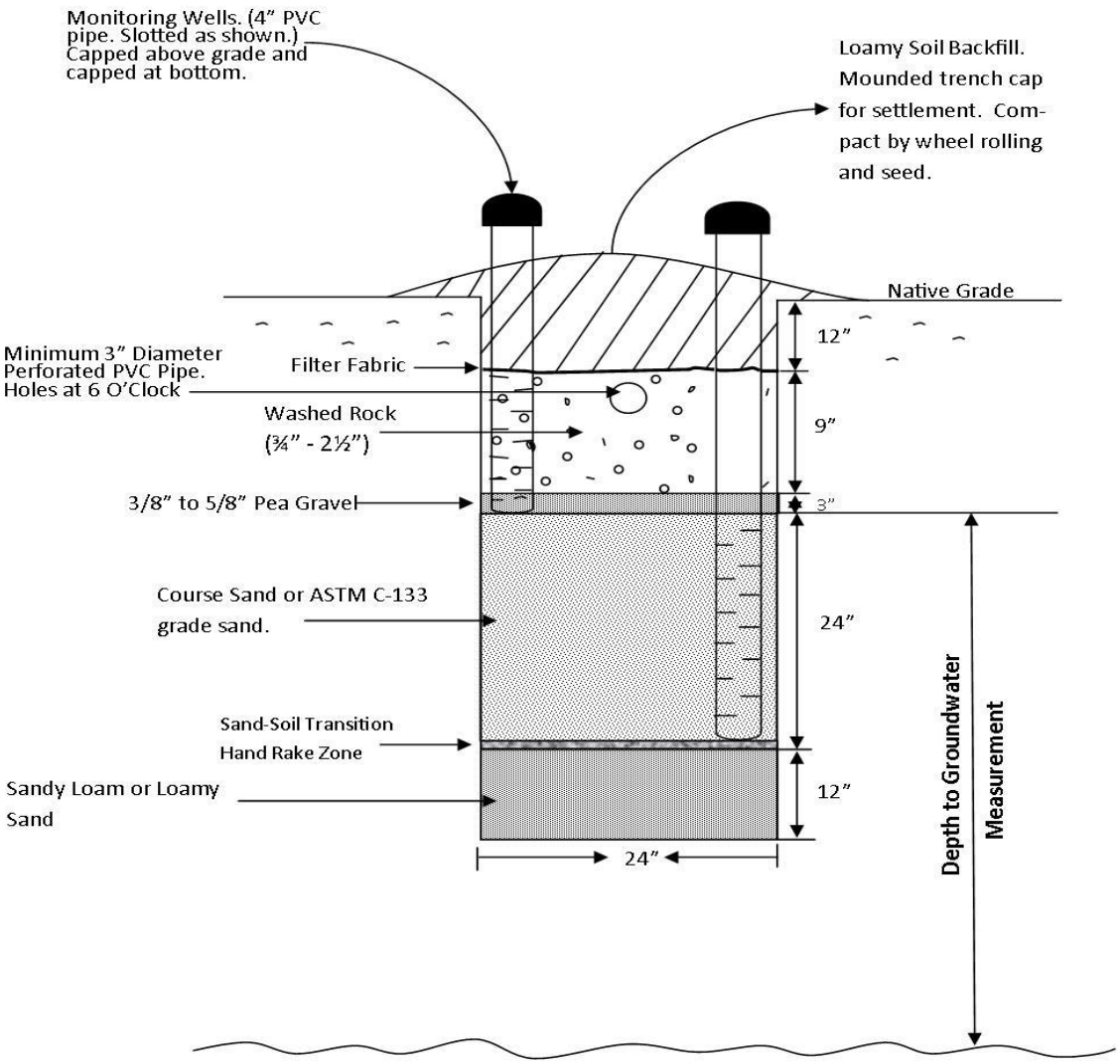


Diagram D-3
Filter Trench Detail
Type 1
with cover fill

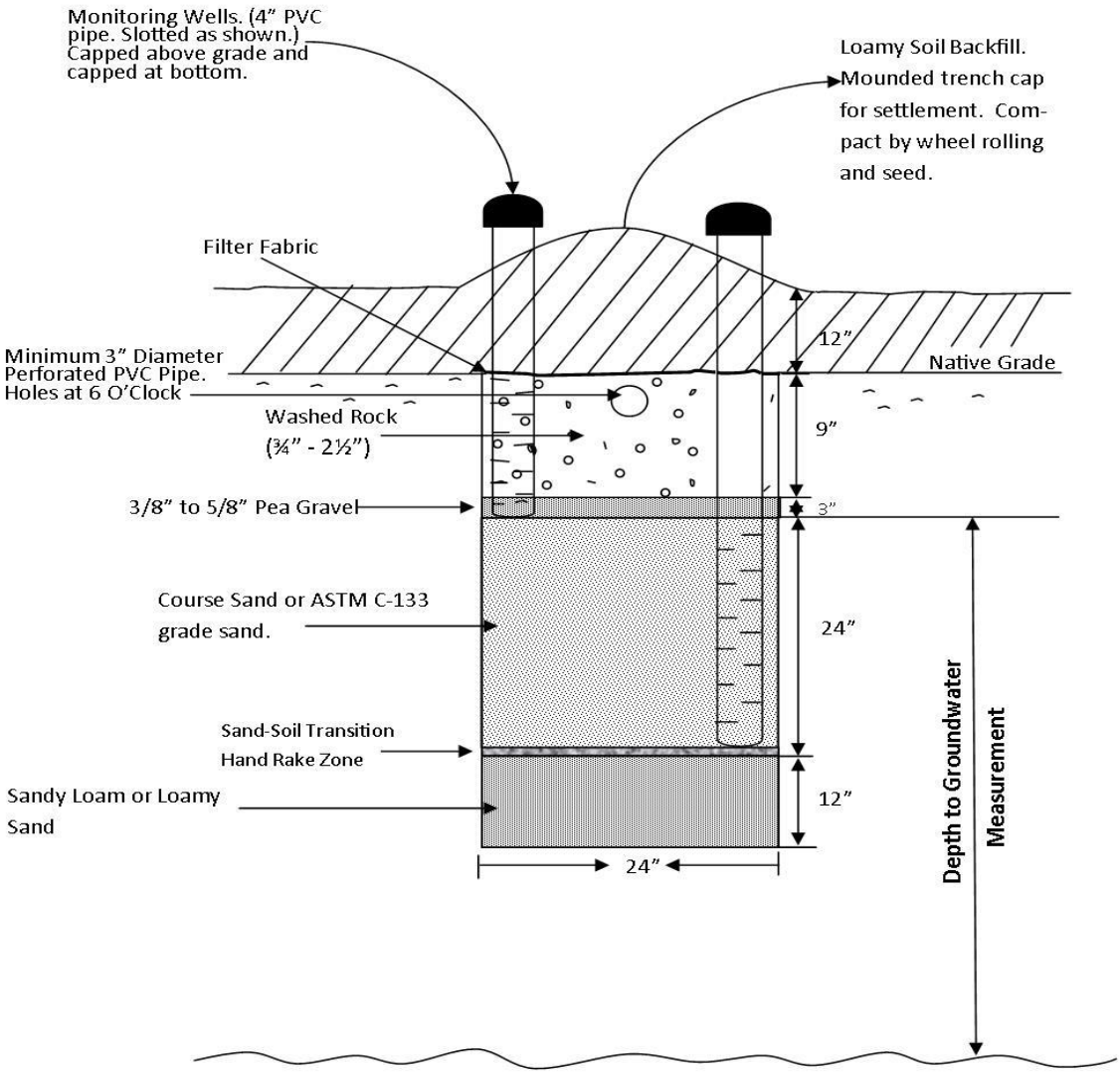


Diagram D-4
Filter Trench Detail
Type II and III

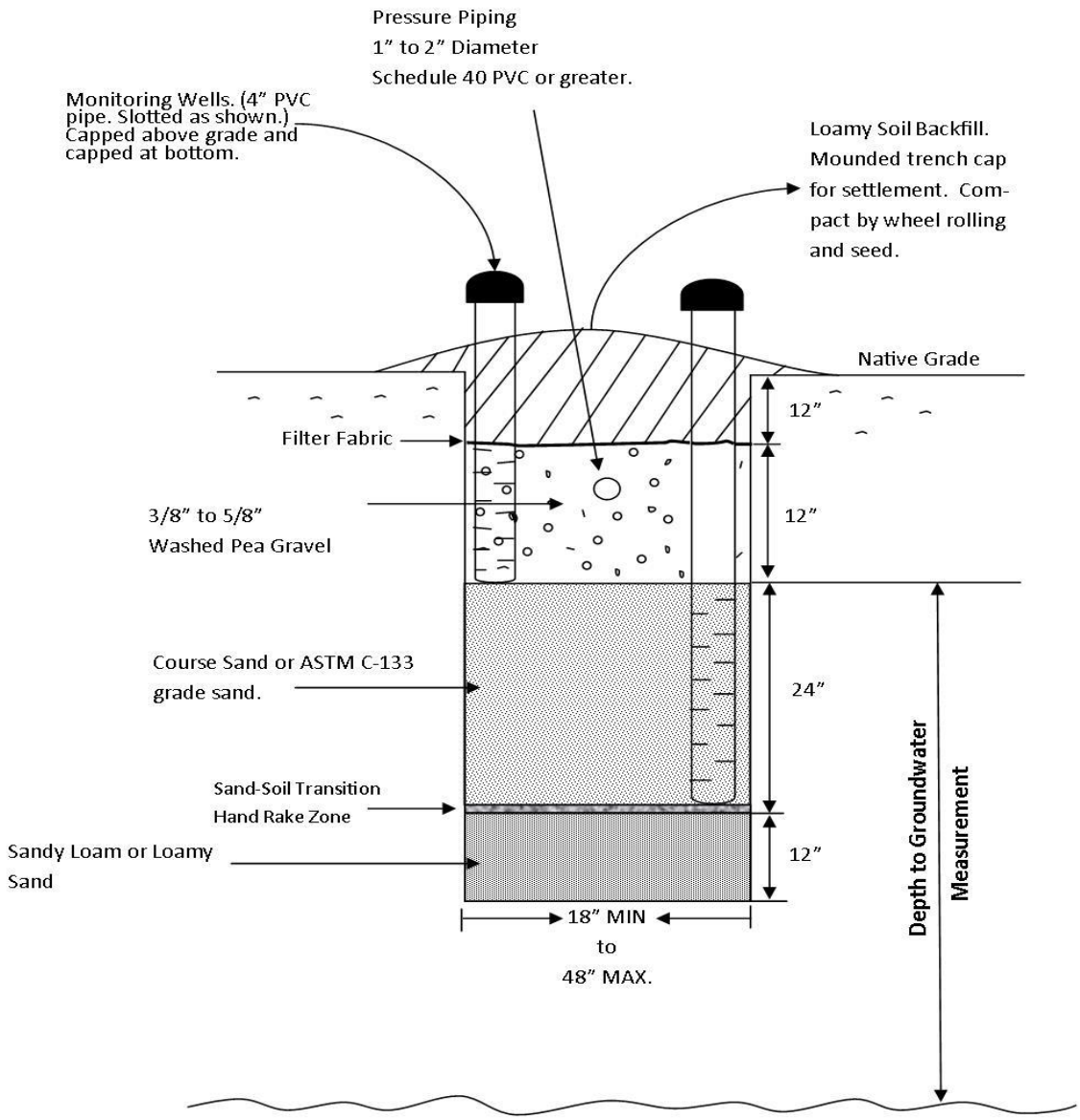


Diagram D-5
Filter Trench Detail
Type II and III
with cover fill

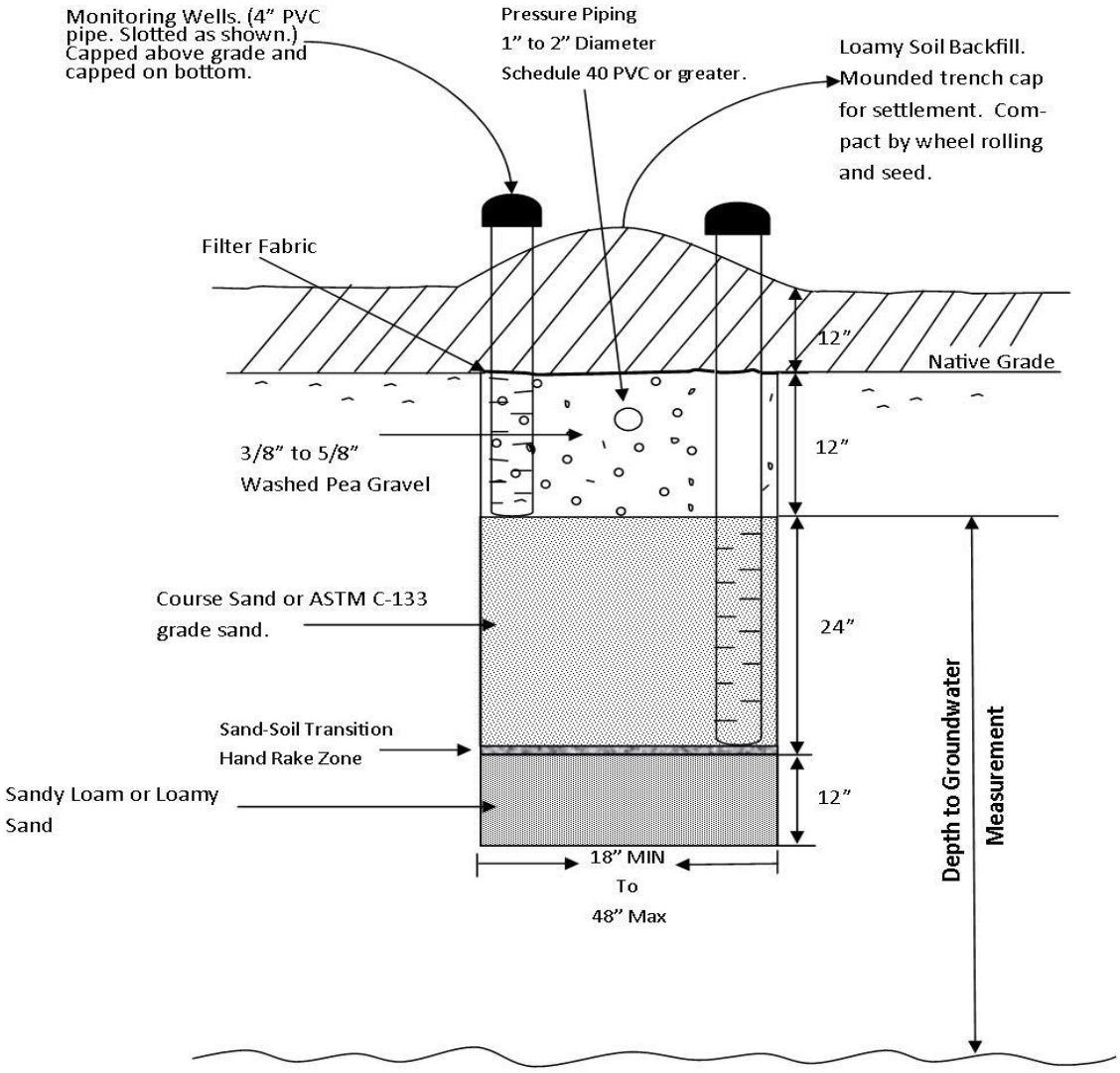


Diagram D-6
Shallow Sand Trench

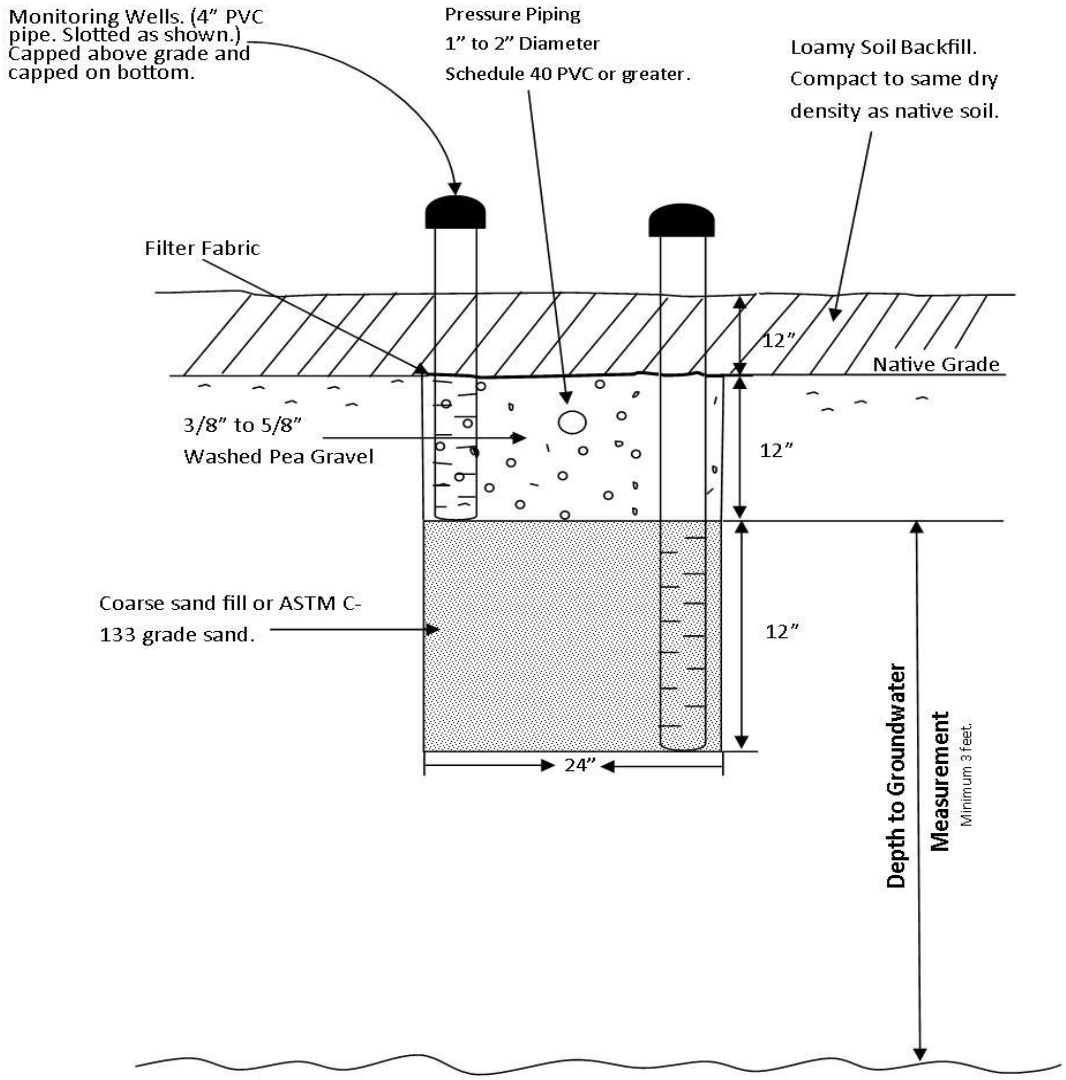


Diagram D-14

Mound Disposal System

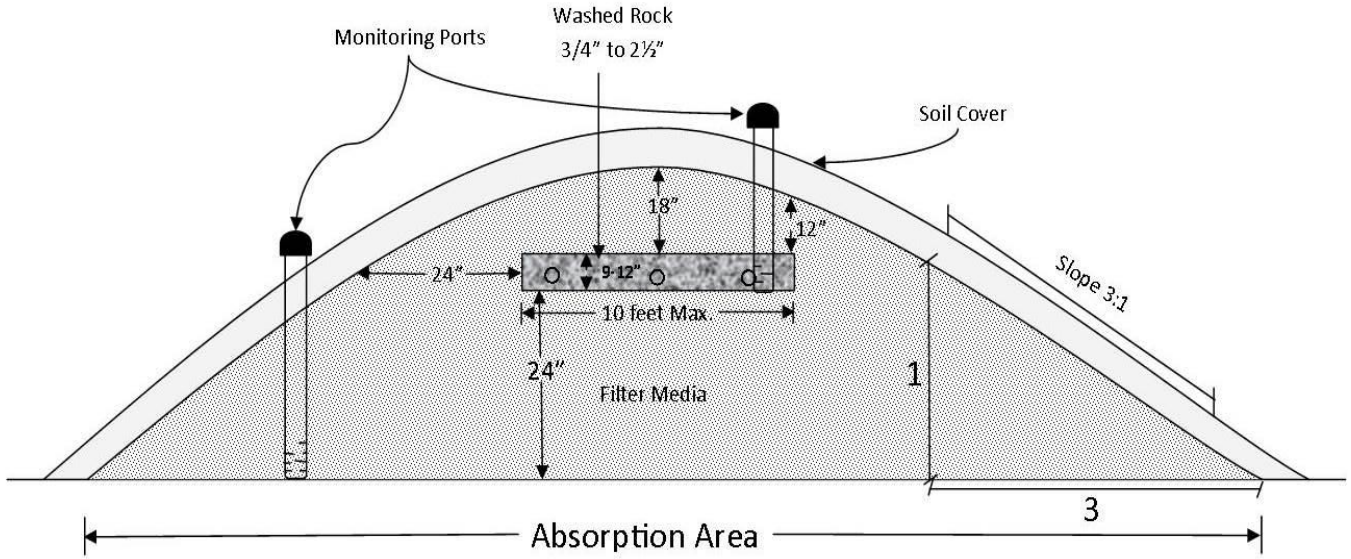


Diagram D-8

Single Pass Sand Filter

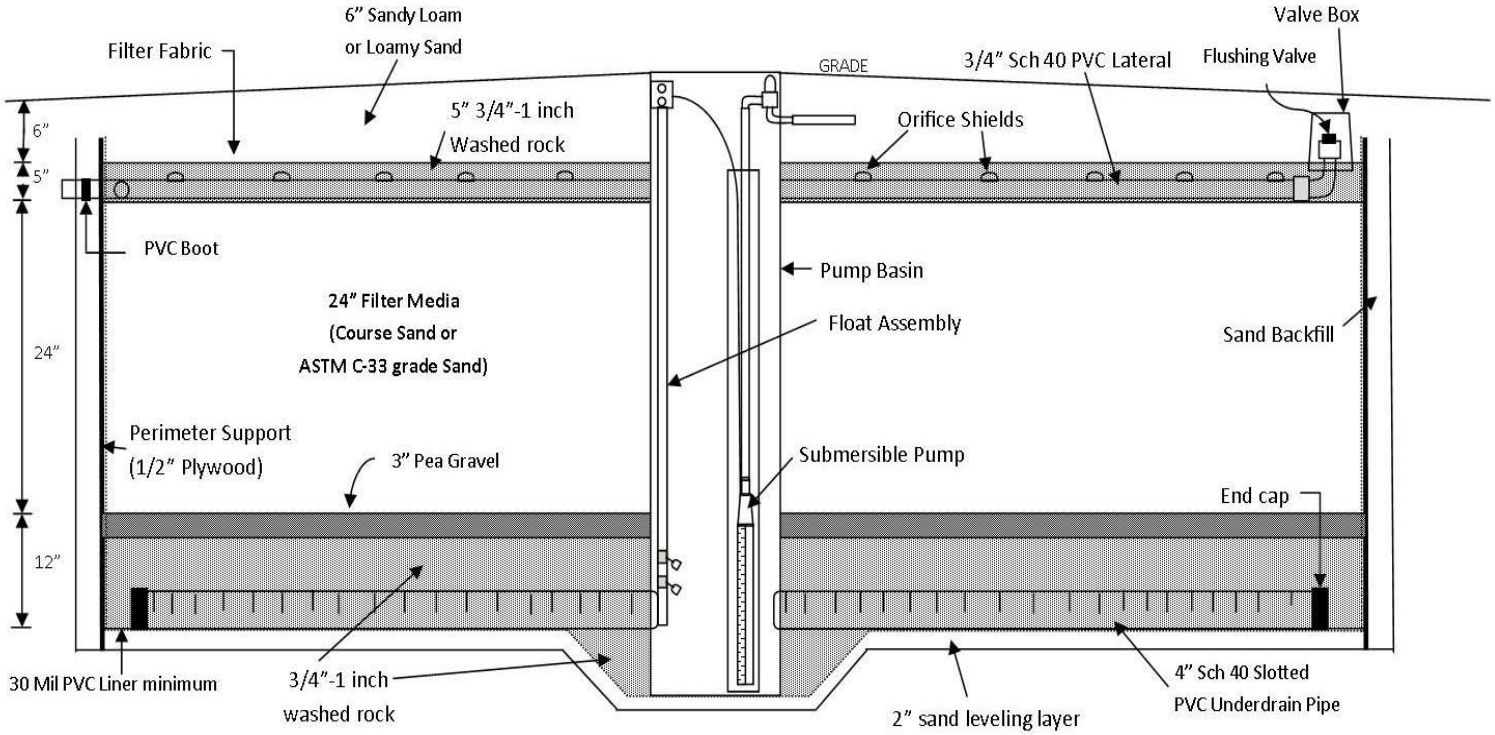


Diagram D-9
Monitoring Well Design

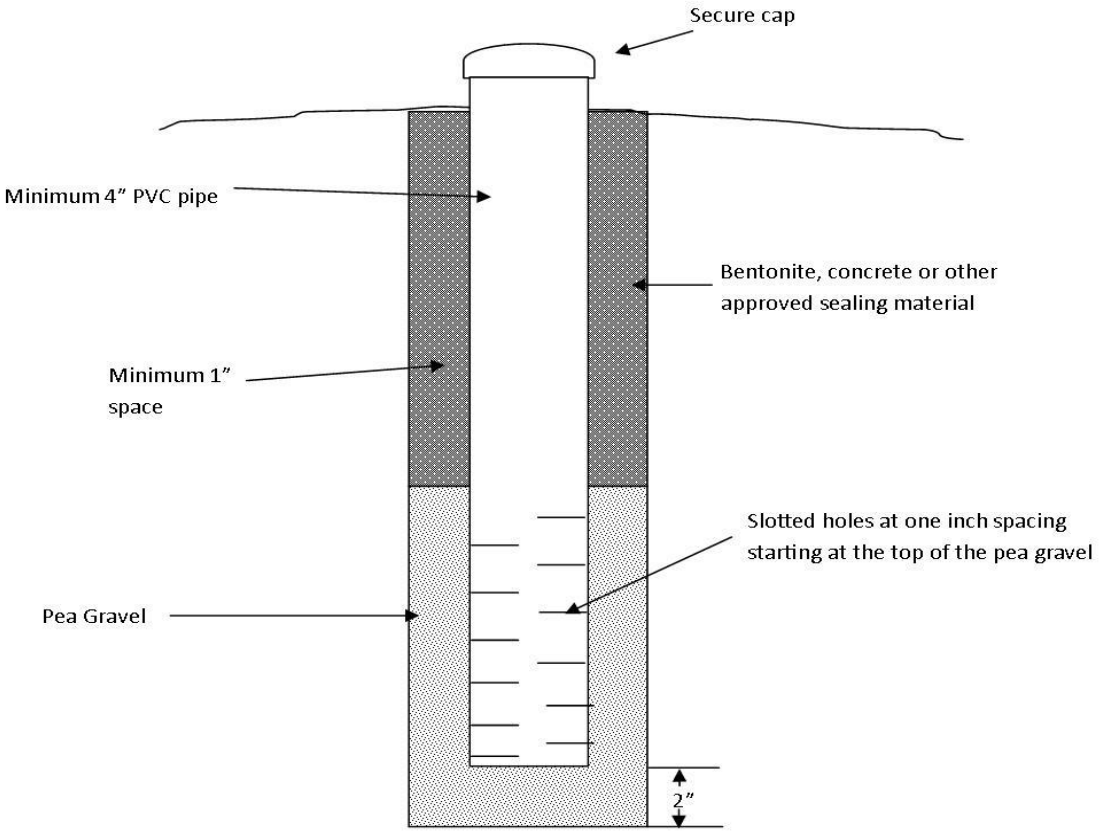


Diagram D-10
Septic Tank

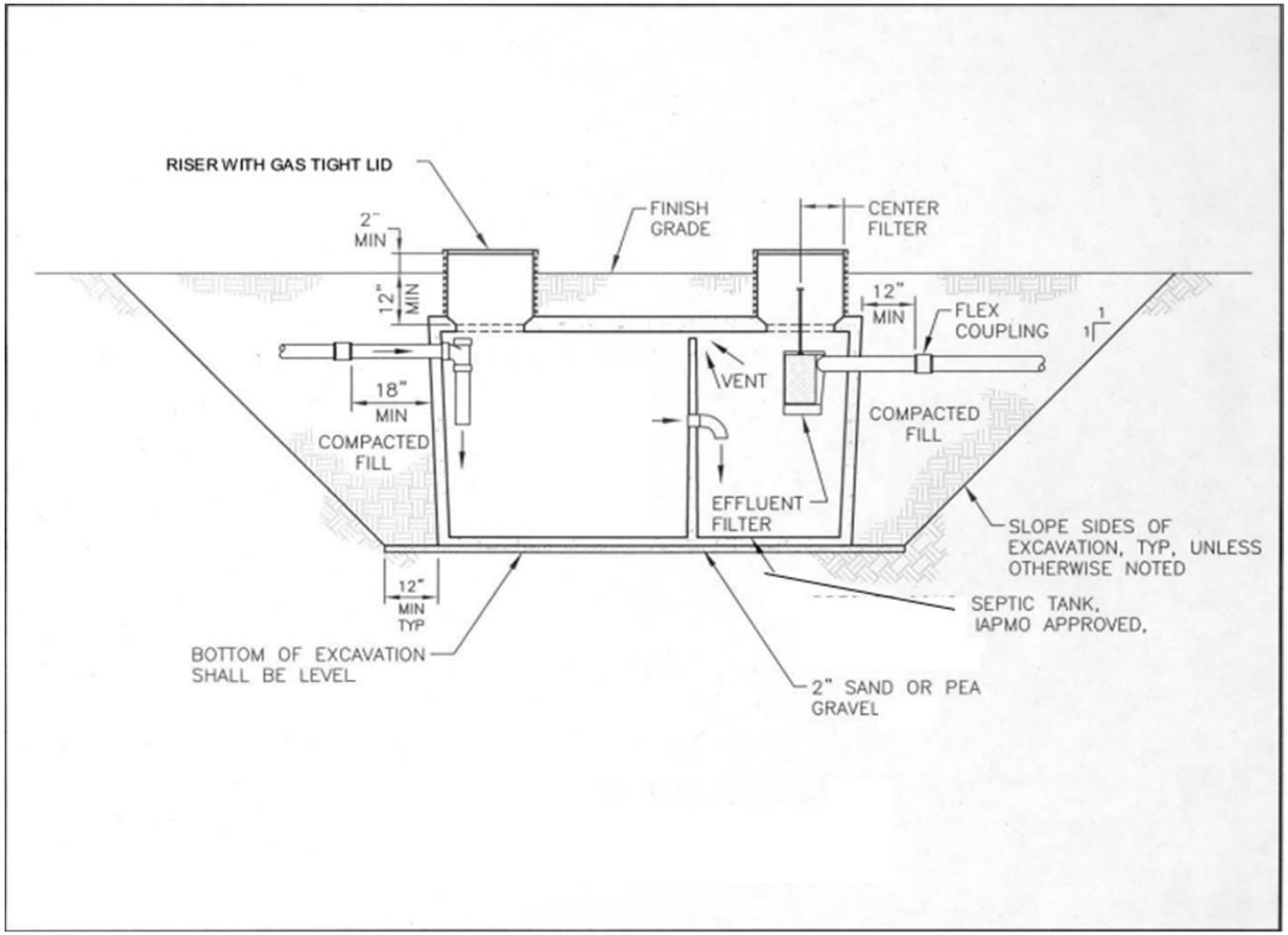


Diagram D-11
Sump/Pump Tank

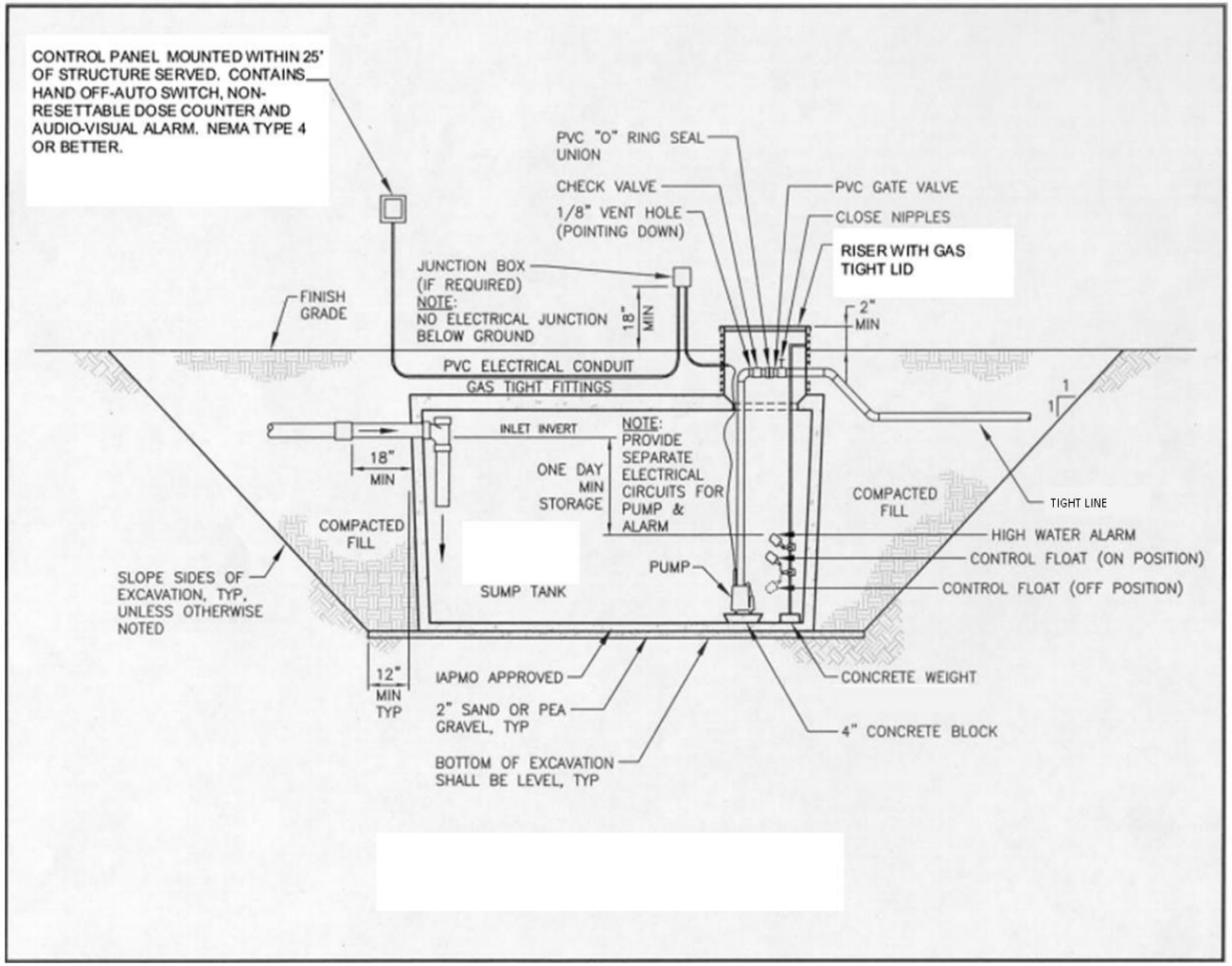
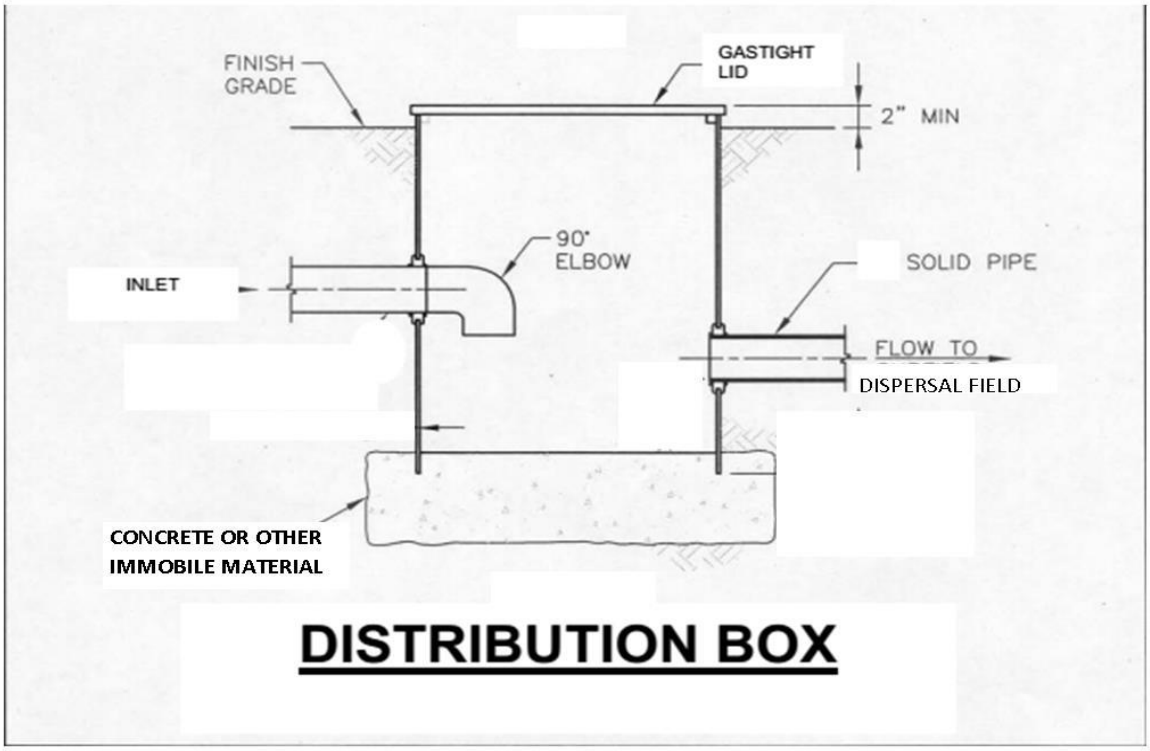


Diagram D-12
Distribution Box Design



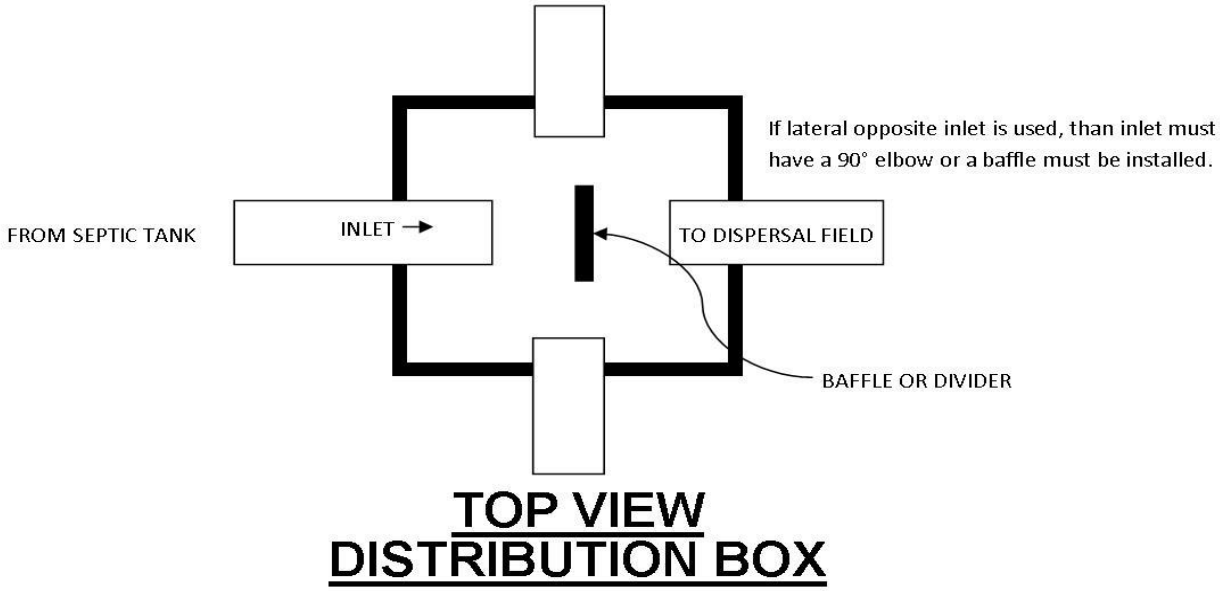
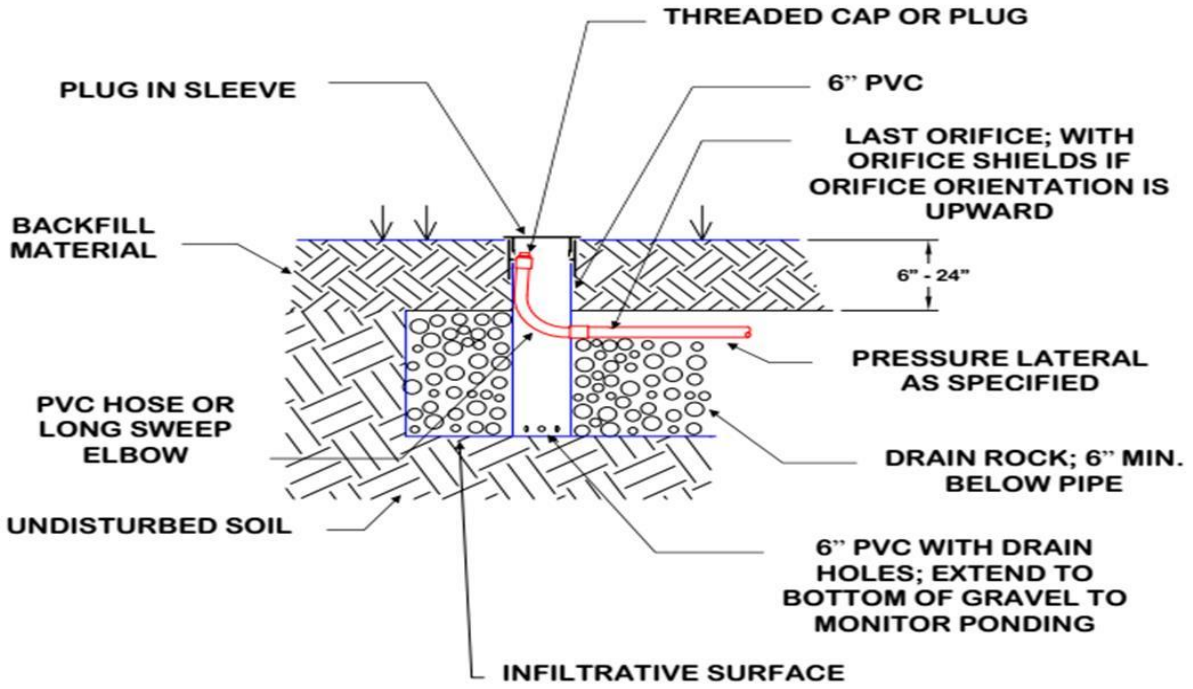
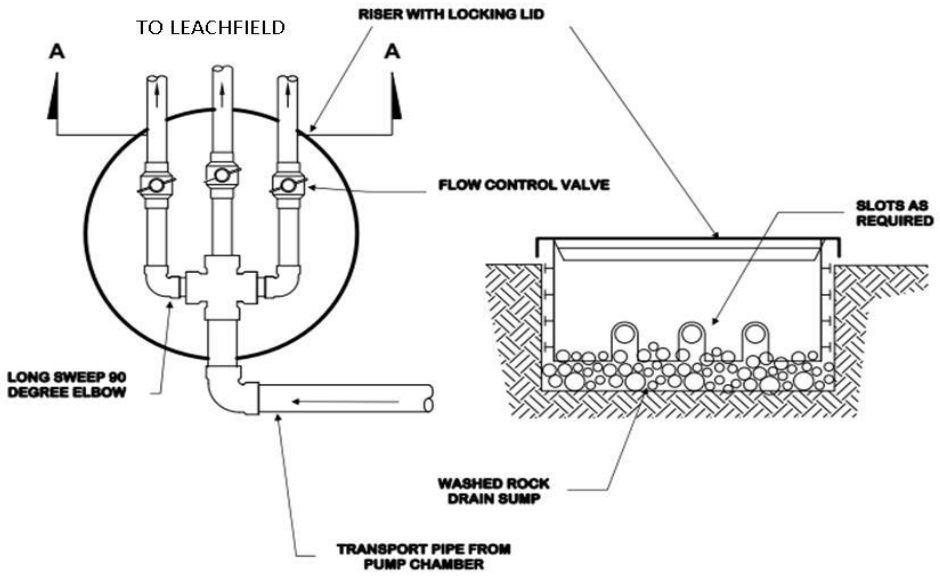


Diagram D-13
Pressure Distribution System Components



Cleanout/Monitoring Port and Lateral End Detail



Control Box and Valve Detail

APPENDIX A
SOIL CLASSIFICATIONS

Sand or Loamy Sand: Dry - loose, single grained. Gritty, no or very weak clods. Moist – gritty, forms easily crumbled ball; does not ribbon. Wet – lacks stickiness; may show faint clay stainings (loamy sand especially). Individual grains can be both seen and felt under all moisture conditions.

Sandy Loam: Dry – clods break easily. Moist – moderately gritty to gritty; forms ball that stands careful handling; ribbons very poorly. Wet – definitely stains fingers; may have faint smoothness or stickiness, but grittiness dominates. Individual grains can be seen and felt under nearly all conditions.

Loam: This is the most difficult texture to place since characteristics of sand, silt, and clay are present but none predominates. Suggests other textures. Dry – clods slightly difficult to break; somewhat gritty. Moist – forms firm ball; ribbons poorly; may show poor fingerprint. Wet – gritty, smooth, and sticky all at the same time; stains fingers.

Silt or Silt Loam: Dry – clods moderately difficult to break and ruptures suddenly to a floury powder that clings to fingers; shows fingerprint. Moist – has smooth, slick, velvety, or buttery feel; forms firm ball, may ribbon slightly before breaking; shows good fingerprint. Wet – smooth with some stickiness from clay; stains fingers. Grittiness of sand is well masked by other separates. (Texture most likely silt loam, there are few silt soils.)

Sandy Clay Loam: Dry – clods break with some difficulty. Moist – forms firm ball that dries moderately hard; forms one-half inch ribbons that hardly sustain own weight; may show poor to good fingerprint. Wet – grittiness of sand and stickiness of clay about equal, masking smoothness of silt; stains fingers.

Clay Loam: Dry – clods break with difficulty. Moist – forms firm ball that dries moderately hard; ribbons fairly well, but ribbons support own weight; shows fair to good fingerprint. Wet – moderately sticky with stickiness dominating over grittiness and smoothness; stains fingers.

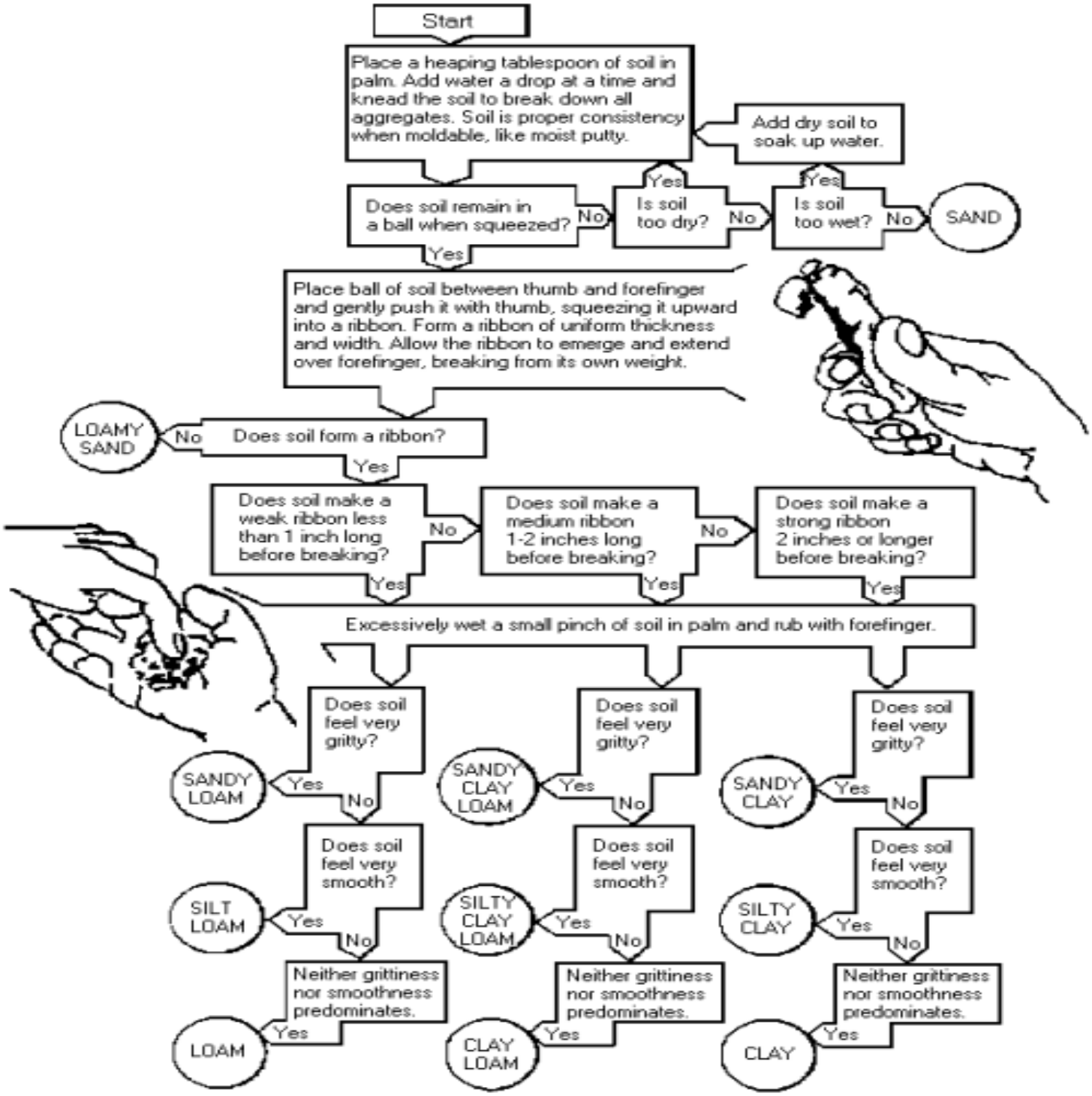
Silty Clay Loam: Resembles silt loam with more stickiness of clay. Dry – clods break with difficulty. Moist – shows a good fingerprint; forms a firm ball drying moderately hard; ribbons one-half inch that can be fairly thin. Wet – stains fingers; has sticky-smooth feel with little grittiness of sand.

Sandy Clay: Dry – often cloddy; clods broken down only with extreme pressure. Moist – forms very firm ball, drying quite hard; shows fingerprints; squeezes to thin, long, somewhat gritty ribbon. Wet – stains fingers; clouds water; usually quite sticky and plastic, but has some grittiness present.

Silty Clay: Dry – often cloddy; clods broken down only with extreme pressure. Moist – forms very firm ball becoming quite hard on drying; shows fingerprint; squeezes out to a thin, long smooth ribbon. Wet – stains fingers; clouds water; stickiness dominates over smoothness; grittiness is virtually absent.

Clay: Dry – clods often cannot be broken even with extreme pressure. Moist – forms firm, easily molded ball, drying very hard; squeezes out to a very thin ribbon two-three inches long. Wet – stains fingers; clouds water; usually very sticky with stickiness masking both smoothness and grittiness; wets slowly.

APPENDIX B
TEXTURE – BY – FEEL ANALYSIS



APPENDIX C
SOIL TRIANGLE