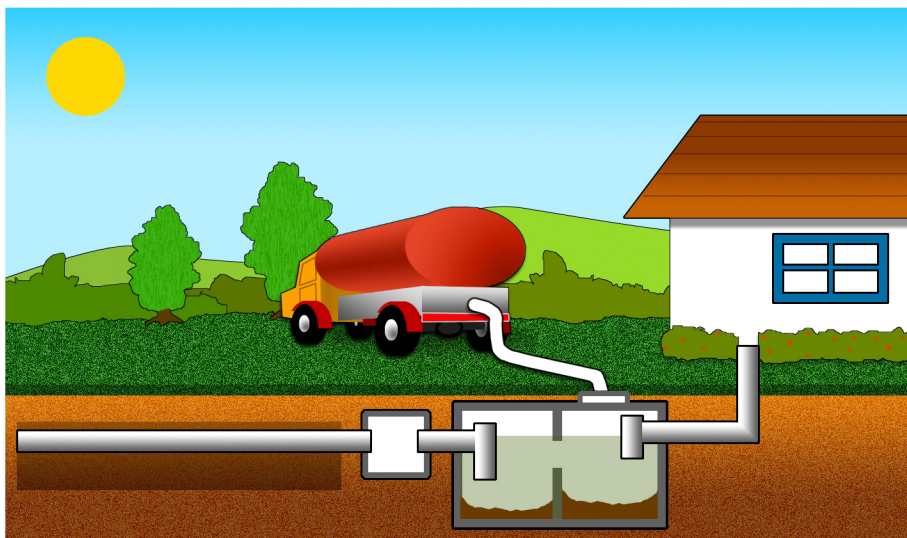


Onsite Wastewater Treatment System Technical Manual



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Disclaimer

This technical manual should only be used as a guide. It is intended to assist applicants for new Onsite Wastewater Treatment Systems (OWTS) and for repair/certification of existing OWTS, to prepare appropriate applications and supporting documents, and to inform OWTS owners of the care and maintenance associated with an OWTS. This manual provides current information and suggestions to facilitate compliance with laws and regulations governing Onsite Wastewater Treatment Systems. The information presented in this manual is not warranted by the Ventura County Environmental Health Division (EHD) to be authoritative or complete. EHD reserves the right to make changes and improvements at any time and without notice. Further, EHD assumes **no** liability for damages, violations of codes, improper installation, system failures, or any other problems associated with Onsite Wastewater Treatment Systems.

This technical manual may be subject to occasional updates and revisions.

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Purpose and Scope:

The purpose of this technical information manual is to provide guidance to owners, designers, and installers of onsite wastewater treatment systems that will facilitate successful applications for the design, upgrade, and repair of onsite wastewater treatment systems, and to describe procedures and standards necessary to adequately protect public health, safety, and water quality.

Section 1: Introduction

The term Onsite Wastewater Treatment System (OWTS), refers to wastewater treatment and disposal systems that treat domestic type wastewater from a structure and return the treated wastewater to the soil environment on the same parcel of land where the wastewater is generated. Returning the wastewater to the environment is referred to as either disposal, or perhaps more accurately “dispersal” of the treated wastewater. Other terms sometimes used to describe an OWTS include Individual Sewage Disposal Systems (ISDS), and Septic system.

Domestic wastewater may contain many types of contaminants, such as harmful (“pathogenic” or disease-causing) bacteria, viruses, Nitrate (a nitrogen compound capable of causing human health risk if ingested in sufficient quantities), and household chemicals. The purpose of an OWTS is to provide treatment of wastewater by removing contaminants through physical, biological, and in some cases chemical means, in a manner that is protective of human health, safety, and the environment.

1.1 Protecting Public Health and Safety

The Environmental Health Division Liquid Waste Program, working in cooperation with the Los Angeles Regional Water Quality Control Board, is responsible for protecting human health, safety, and the environment from the potential adverse health and environmental impacts associated with onsite sewage treatment and disposal. The Liquid Waste Program accomplishes this by carefully reviewing proposals for the installation, upgrading, and repair of OWTS to ensure that site soil and geological conditions are appropriate for onsite wastewater treatment and dispersal; and to ensure that the OWTS is designed to provide an appropriate level of treatment and adequate capacity for the structure(s) it will serve.

The Liquid Waste Program achieves protection of human health and safety through enforcement of objective standards related to site suitability and OWTS

design, and through construction permitting and inspection services to ensure that approved OWTS designs are installed according to approved plans.

1.2 Water Quality Protection

The Liquid Waste Program, working in cooperation with the Los Angeles Regional Water Quality Control Board, enforces OWTS siting restrictions and treatment system design limitations, to ensure that onsite dispersal of wastewater will not result in pollution of groundwater and surface water that can result in degradation of these vital resources.

Where these restrictions may result in a prohibition of onsite wastewater dispersal, the Liquid Waste Program works proactively with other agencies to seek provision of public sewer or other solutions to provide for alternate means of domestic wastewater removal and treatment.

1.3 Regulatory Setting

The Porter-Cologne Water Quality Act, as incorporated into the California Water Code, authorizes the State Water Resources Control Board (SWRCB) and nine Regional Water Quality Control Boards, including the Los Angeles Regional Water Quality Control Board (Regional Board) to regulate water quality in California. The SWRCB and, for most of Ventura County, the Regional Board, are the agencies primarily responsible for protecting the waters of the State, including groundwater, from degradation. The Liquid Waste Program, operating under an interagency agreement with the Regional Board, enforces standards designed to ensure that dispersal of wastewater through OWTS does not cause water quality degradation.

The California Health and Safety Code, Section 17958, requires that the Ventura County Board of Supervisors adopt the most recent addition of the Uniform Plumbing Code, including those sections pertaining to the design and construction of individual sewage disposal systems. These adopted sections, along with additional OWTS requirements specifically related to Ventura County siting and other considerations appear in the Ventura County Building Code (VCBC), Section 102 and Appendix H adopted on 1/9/14. The Liquid Waste Program enforces VCBC standards designed to ensure that human health is not adversely affected by exposure to wastewater.

Together, the Regional Board and VCBC standards, along with other siting and project analysis tools, work to provide for an adequate means of wastewater treatment and dispersal that is protective of human health, safety, and environment.

1.4 General OWTS Descriptions

An Onsite Wastewater Treatment System (OWTS) is a privately owned and maintained sewage disposal system, commonly referred to as a septic system. OWTS are comprised of a sequence of treatment steps, followed by a dispersal system to reintroduce the treated wastewater back into the environment. The following categories describe, in increasing complexity of design and operation, typical types of OWTS.

Conventional Septic Systems

All conventional septic systems consist of two principal parts; a septic tank, and a soil dispersal system. In the septic tank, solids settle to the bottom of the tank where they are slowly “digested” by microscopic organisms that use the solids for food. This digestion results in a reduction of sludge volume, however, periodic removal of the sludge is necessary to insure a well-functioning septic system. Similarly, lighter material, or “floatables” are captured in the septic tank by a skimming effect that occurs in the tank; this floatable material is removed as necessary, along with the sludge.

The remaining clarified wastewater is returned to the soil environment through shallow leach lines or deep seepage pit, where soil microorganisms continue to purify the wastewater. Ultimately, the treated wastewater is used by plants for their water needs, a process called “transpiration”, or it percolates down through the soil, where it recharges the underlying groundwater.

Supplemental Treatment

In some soil environments, such as bedrock, or where groundwater is very close to the ground surface, there may not be enough dry soil (the “vadose zone”) to adequately treat the wastewater to a point where it can recharge the groundwater without causing groundwater pollution. Supplemental Treatment means any OWTS or component of an OWTS, except a septic tank or dosing tank, which performs additional wastewater treatment so that the effluent meets a predetermined performance requirement prior to discharge of effluent into the dispersal field.

For more detailed descriptions of types of onsite wastewater treatment systems, refer to Section 3.

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Section 2: General Requirements

Applications for new onsite wastewater treatment systems (OWTS) and changes to existing systems must be completed and submitted for review to the Environmental Health Division Liquid Waste Program. Once the application has been approved, a permit to construct can be issued. A permit must be obtained before construction can begin.

2.1 Types of Applications

The Environmental Health Division (EHD) reviews proposed OWTS design alterations, and site suitability to ensure that the system will be in compliance with OWTS requirements. Plot plans and floor plans must be submitted with all OWTS applications in order to complete the review for approval (Page 9-2).

2.1.1 New Onsite Wastewater Treatment Systems

An application with the required information must be submitted for review of each new proposed system (Page 9-3).

2.1.2 Full Certification

Full Certification is required when the applicant is proposing to add bedroom equivalents and/or plumbing fixtures. Review of the information will determine if the system is adequately sized for the proposed addition (Page 9-4, and Page 9-5).

2.1.3 Setback Certification

Setback Certifications are required when the applicant is proposing to expand the footprint of an existing structure and/or the addition of other structures that do not contain bedroom equivalents and/or plumbing fixtures. An on-site inspection is required to determine the location of an existing system and related components to insure that the additional construction conforms to applicable setback requirements (Page 9-6, and Page 9-7).

2.1.4 Mini Certification

Mini Certifications are required when the property owner is proposing to expand the footprint of an existing structure and/or the addition of other

structures that do not contain bedroom equivalents and/or plumbing fixtures and the location of an existing system and related components may be determined by reviewing as-built plot plans or other Environmental Health Division records related to the system (Page 9-7).

2.1.5 Repair/Replace/Abandonment

All repairs and alterations of OWTS components must conform to the applicable sections of the Ventura County Building Code. In addition, a Permit to Construct is required in order to repair or alter an existing system. For abandonment of systems, see handout on abandonment procedures (Page 9-8).

2.1.6 Holding Tanks

An application for a new OWTS must be submitted along with specifications outlined in section H-14 of the Ventura County Building Code. Only industrial/commercial waste is permitted to be discharged into a holding tank.

2.2 Installation Procedures

2.2.1 Permit to Construct- Includes Repair/Replacement/Abandonment/New

A Permit to Construct is valid for six months from the date of approval. The property owner or authorized representative may submit a written request to the Environmental Health Division for a six month extension.

2.2.2 Inspection Hotline (telephone)

Inspections may be scheduled or cancelled by calling the OWTS Inspection Hotline 805/477-7136. A request for an inspection must be made 24 hours prior to the desired date. This line is for requesting OWTS inspections only. Reinspection charges may apply in the case of cancellation and rescheduling.

2.2.3 Inspection Procedures

2.2.3.1 No work is to begin until the permit to construct an OWTS has been issued by the Environmental Health Division.

2.2.3.2 A minimum of two construction inspections are required during the course of construction of a typical OWTS.

2.2.3.2.1 For the initial inspection, the excavation for the leach line(s) must be open. The drain rock must also be onsite but not

installed. For seepage pits the drain rock and perforated pipe may be installed. The inspector will observe the general dimensions and setbacks of the system and will observe the soil material for the conformity with the soils report.

2.2.3.2.2 For the second inspection, the pipes and rock must be installed in the leach line or seepage pit excavations, the septic tank installed, and all components of the OWTS connected and ready for service. The inspector will observe all components of the system for the proper materials and installation in compliance with Ventura County standards.

2.2.3.3 A notification listing any items not in compliance with Ventura County standards will be posted at the job site by the EHD inspector. Approval by the inspector is required prior to backfilling of the system unless unsafe conditions could result from leaving the system open. A safe worksite must be maintained at all times as required by California State Law. Anyone who fails to adequately cover or otherwise protect open excavations on the project site is in violation of Section 24400, California Health and Safety Code and is subject to immediate legal action.

2.2.3.4 Owner-builders or contractors are responsible for notifying EHD of inspection requests, and for receipt of all inspection notices.

2.2.3.5 Supplemental systems (mounds, subsurface sand filters) will require additional inspections by both the project engineer and EHD staff.

2.3 Maintenance

After an OWTS has been installed, careful maintenance of the system is necessary to prevent contamination of the surrounding environment. The best way to prevent problems is to have the septic tank system regularly pumped and inspected by a licensed OWTS contractor. Do not make repairs without a proper permit. Do not enter a septic tank; the tank may contain an oxygen-deficient atmosphere; also, toxic gases are produced by the natural treatment processes in septic tanks.

2.3.1 Pumping

Three major factors determine pumping frequencies: size of the septic tank, flow of wastewater, and volume of solids in the wastewater. If the septic tank capacity is too small for the number of people living in the household, then it will need to be pumped more frequently. Also, using a garbage disposal or washing heavily soiled clothes regularly will create extra solid buildup so the system will need to get pumped out more often.

If buildup of solids in the septic tank becomes too high, solids may move into the dispersal tank and obstruct pipes or clog the soil matrix. Typically, septic tanks should be pumped every 2-3 years, or as recommended by a licensed septic tank pumper.

2.3.2 Water Conservation

Overloading the system by using a lot of water in a short time period can reduce the septic tanks' ability to remove pollutants from the wastewater. It may cause wastewater to flow out of the tank before it has time to separate and break down contaminants. Conserve water to prevent overloading the system by using low flush toilets and repairing leaky faucets. Try to space out laundry over several days. Also, divert roof drains, surface water, and sump pumps away from the dispersal field. Flooding the dispersal field with excessive water will prevent the soil from naturally cleansing the wastewater and may contribute to groundwater and/or surface water pollution.

2.3.3 Trash and Hazardous Chemicals

Disposing trash down the drain may decrease the efficiency of the OWTS. Harsh chemicals and hazardous materials can pollute groundwater and can kill the beneficial bacteria that treat wastewater. Using mild cleaners, such as baking soda, to clean bathrooms can prolong the life of the system. The following items should not go down the drain:

Fats, Grease, or Oils	Coffee Grinds	Dental floss
Facial Tissues	Paper Towels	Plastics
Feminine Hygiene Products	Diapers	Latex
Photographic Solutions	Pesticides	Kitty Litter
Paints, Varnishes, or Thinners	Cigarettes	
Harsh household cleaning chemicals (bleach, chlorine, lye)		
Anything that can be thrown away in the trash		

2.3.4 Septic Tank

Do not attempt to clean your septic tank by washing down sides of septic tank when it is pumped. The remaining slime contains bacteria which are needed to digest the incoming wastewater.

2.3.5 Dispersal System

Do not drive vehicles, build, or place heavy equipment over leach lines, sand filters, or mound systems (seepage pits may be paved over). Avoid planting trees in the dispersal area because the roots can cause clogging.

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Section 3: Types of OWTS Approved for use in Ventura County

This section contains general descriptions of typical systems approved for use in Ventura County. Types of systems not listed below may be evaluated on a case-by-case basis based on requirements in the Ventura County Building Code Section H-1(j), found in Section 8 of this manual.

3.1 Conventional Soil Absorption Systems

The conventional system is the most economical and practical way to treat onsite wastewater when adequate lot size and appropriate soil conditions are available. Perforated pipe is installed to distribute the wastewater into the surrounding soil environment. Drain rock is placed around the piping to filter and store the wastewater as it percolates into the soil (Page 9-9).

3.1.1 Leach Line Systems

Leach lines are typically long and narrow. They are generally the disposal system of choice where site conditions meet approved standards (Page 9-10).

3.1.1.1 Leach lines distribute the septic tank effluent into the surrounding soil at a depth generally not more than six feet. This shallow dispersal system provides effluent disposal under aerobic conditions at a maximum distance from underlying bedrock or groundwater.

3.1.1.2 Leach lines must be designed to include a 100% expansion area equal in size to the primary system, for the purpose of adding to and/or repairing the primary system. An onsite wastewater treatment system application will not be approved when there is insufficient lot area or improper soil conditions for adequate sewage dispersal (including a 100% expansion area).

3.1.2 Leaching Chamber Systems

Leaching Chambers distribute the septic tank effluent using graveless plastic chamber systems for the drain field. The chambers are about thirty-six inches wide and require an effective absorption area equal to standard leach lines with 0.70 multiplier and no credit for sidewall areas. This equates to approximately 40% greater linear length than a standard rock filled leach trench.

3.1.3 Leach Bed Systems

Leach beds are created by joining leach line trenches into one large square bed. They are typically wide and require a leaching area at least 1.5 times the infiltrative area required for leach lines.

3.1.4 Seepage Pit Systems

3.1.4.1 Seepage pits are used when soil conditions near the ground surface are unsatisfactory for leach fields or when there is insufficient land area to install a leach field (including a 100% expansion area).

3.1.4.2 Seepage pits consist of a drilled pit filled with drain rock through which the septic tank effluent is distributed via a central perforated pipe extending the full effective depth of the pit. Seepage pits should have a diameter of 4 to 6 feet, and the depth should extend no greater than 60 feet.

3.2 Supplemental Treatment Systems

Supplemental systems may be designed and installed where onsite conditions do not conform to minimum setback requirements to groundwater and/or bedrock. The systems use imported sand as a dispersion/treatment medium. Supplemental treatment systems will be considered only after it has been adequately demonstrated that the character of the soil, geology, or hydrology is unsuitable for a conventional soil absorption system.

3.2.1 Mound Systems

A Mound System is typically used in areas with high groundwater. Mound System components include a lift pump and wet well, pressurized effluent piping, a sand fill mound, a distribution bed composed of gravel filter material and perforated distribution piping, and a cover of topsoil over the top and sloped sides of the mound (Page 9-11).

3.2.2 Subsurface Sand Filtration Systems

A Subsurface Sand Filtration System is used in areas where the character of the soil is fractured rock. Typical subsurface sand filtration systems include effluent piping, a subsurface distribution bed, a sand filtration bed, and a leach line, leaching bed, or seepage pit as the final dispersal field component.

3.2.3 Basal Leach Filter Beds

Filter effluent is dispersed out of the bottom of the filter. Depending on percolation rates, this may result in a substantially larger size of the filter and expansion area to provide a dispersal area 1.5 times the infiltrative surface of a comparable system.

3.2.4 Advanced Treatment Units (ATUs)

An ATU is a type of supplemental treatment used where site conditions or applicable effluent quality standards necessitate additional treatment. Proposed ATUs are evaluated pursuant to H1(j). Examples of ATU technology include mechanical aeration, fixed-film bioreactors, activated sludge, and chemical treatment.

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Section 4: Technical Specifications

Typical onsite wastewater treatment systems have two basic components, a two-compartment septic tank and a dispersal system. There are design requirements and setback requirements in order to protect the surrounding environment (Page 9-12). The type of dispersal system used is based on the system location, soil permeability, depth of groundwater, bedrock formations of concern, slope, and hillside stability.

4.1 Septic Tanks

The septic tank removes many of the solids, oils, greases, and floating debris in the raw wastewater. Solid materials settle in the tank, providing “primary treatment” of wastewater (Page 9-13). The settleable solids remain in the tank, forming a “sludge blanket”, where naturally occurring bacteria break them down.

4.1.1 Septic tanks must be listed and approved by the International Association of Plumbing and Mechanical Officials (IAPMO) or an ANSI accredited testing agency.

4.1.2 Tanks must be watertight, properly vented, constructed of solid, durable materials, and designed to withstand any anticipated weight placed above it. It should be placed on undisturbed or compacted earth.

4.1.3 Tanks must have two compartments divided by a baffle wall, the first compartment equaling about 2/3 of the total volume and the second compartment equaling about 1/3 of the volume. Each compartment must have an access opening and the openings must be secured.

4.1.4 Risers to ground surface should be placed over the tank openings to provide easy access for maintenance. Risers to ground surface are mandatory for tanks installed under paved areas. Tanks under paved areas shall be traffic rated tanks approved by IAPMO or an ANSI accredited testing agency.

4.1.5 The septic tank should be pumped out regularly to remove the solid material, as recommended in Section 2.

4.1.6 The septic tank capacity is calculated by the number of bedroom equivalents and plumbing fixture units (Page 9-19). Use next size up for tank sizes no longer in production.

4.2 Conventional Treatment

4.2.1 Distribution box

Where septic tank effluent must be split between two or more leach lines or seepage pits, a distribution box must be installed to distribute effluent equally into the dispersal system.

4.2.1.1 The distribution box must be set in concrete or if made of concrete it must be set on compacted or undisturbed earth.

4.2.1.2 The pipe from the septic tank must be connected to the inlet port of the distribution box (one inch higher than the outlet ports to the dispersal system).

4.2.1.3 The distribution box shall be level to allow uniform distribution of wastewater into the dispersal system. Water may be poured in the distribution box during construction to ensure equal drainage to the dispersal field.

4.2.1.4 The distribution box shall be made of concrete, a minimum of one inch thick, one foot deep, one foot wide, and one foot in length.

4.2.2 Leach Lines

Leach lines provide horizontal distribution of septic tank effluent (Page 9-14).

4.2.2.1 Leach line trenches shall maintain a 15 foot horizontal setback from daylight (Page 9-15) and artificial fill as well as conform to the setback requirements in the Ventura County Building Code Table UPC Appendix K-1 (Page 9-12).

4.2.2.2 A perforated pipe, SDR35 or approved equivalent, shall extend the length of the trench.

4.2.2.3 The leach line trench shall be filled with $\frac{3}{4}$ to 2 $\frac{1}{2}$ inch clean rock.

4.2.2.4 The leach line trench shall have a maximum width of three feet and a maximum depth of three feet below the drain line.

4.2.2.5 Two inches of drain rock shall cover the drain line.

4.2.2.6 Untreated building paper shall be used to keep soil from filtering down into the drain rock.

4.2.2.7 The square footage of the infiltrative capacity per linear foot shall be based on the length and depth below the drain line as indicated in table on page 9-14.

4.2.2.8 The leach line shall not be paved over, driven over, or parked on by motor vehicles.

4.2.2.9 Leach line dimensions shall be determined by percolation rate and bedroom equivalents (residential). A minimum of 150 square feet of trench bottom shall be provided.

4.2.2.10 The distal end of the drain line must be capped.

4.2.2.11 A minimum 12 inch uncompacted earth fill shall be placed on top of the drain rock. Natural soil or imported fill material should be used for backfilling. No large rocks are to be placed or backfilled onto leach field areas.

4.2.2.12 The drain line and leach line should be level or shall have a maximum fall of 3 inches per 100 feet.

4.2.2.13 Trench orientation should be parallel to surface contours.

4.2.2.14 A minimum of 5 feet must be maintained between the bottom of the leach line trench and the highest historical groundwater level (seasonal or permanent).

4.2.3 Leaching Chambers

The technical requirements for leaching chambers follow the same requirements for leach lines except drain rock and building paper is not used. The square footage of the infiltrative capacity per linear foot is based on bottom trench absorption area with a multiplier of 0.70 and no credit for sidewall areas. This will result in an approximate 40% greater linear length than rock-filled leach line(s).

4.2.4 Leach Beds

Leaching beds follow the same technical requirements as leach lines. Beds are constructed similarly to trenches, but beds are more than three feet wide and may contain multiple lines of distribution piping. Leaching bed require 150% more infiltrative surface area compared to a typical leach line system.

4.2.5 Seepage Pits

4.2.5.1 The diameter of a seepage pit shall be four, five, or six feet.

4.2.5.2 Effective depth of pit shall be not less than 10 feet. Total depth shall not extend more than 60 feet below grade.

4.2.5.3 The seepage pit shall be filled with $\frac{3}{4}$ to 2 $\frac{1}{2}$ inch clean rock.

4.2.5.4 A central effluent distribution perforated pipe, SDR35 or approved equivalent, shall extend the full effective depth of the pit. The bottom of the perforated pipe should be capped (see Page 9-24).

4.2.5.5 The bottom of the pit shall not extend to within 10 feet of any bedrock formations appearing on the Ventura County Bedrock Formations of Concern list or any impermeable material except when part of a sand filtration system.

4.2.5.6 A minimum of 10 feet must be maintained between the bottom of the pit and the highest historical groundwater level (seasonal or permanent).

4.2.5.7 All seepage pit horizontal setbacks shall conform to Ventura County Building Code Table UPC Appendix H-1 (see also Page 9-25).

4.2.5.8 A layer of treated building paper shall be placed between the drain rock and the backfill material. A minimum of 18 inches backfill shall be placed over the rock filled portion of the seepage pit.

4.2.5.9 A minimum of 15 feet distance shall be maintained between the edge of the effective portion of the seepage pit and any ground surface or artificial fill (Page 9-26).

4.2.5.10 Pit capacity shall be equal to the septic tank capacity. Multiple pits may be used to achieve minimum capacity; however, such installations must be parallel flow using a distribution box rather than serial flow.

4.2.5.11 Minimum seepage pit dimensions shall be determined by hydrometer analysis results using the seepage pit soil evaluation chart to determine soil type and soil absorption capacity. A pit performance test may be required (See section 5.2.2).

4.3 Supplemental Treatment

Supplemental Treatment Systems shall conform with Section H-13 of the Ventura County Building Code, found in Section 8 of this manual.

4.3.1 Mounds

4.3.1.1 Percolation rate of the site shall not exceed 60 minutes per inch.

4.3.1.2 The site shall not have slopes steeper than 12%.

4.3.1.3 Site drainage shall be provided so that rainfall/runoff is directed away from the dispersal site. Systems shall not be constructed in areas subject to flooding.

4.3.1.4 Mound systems shall be designed to follow the setback requirements on page 9-12.

4.3.1.5 The distribution bed shall be 100 square feet per bedroom equivalent.

4.3.1.6 The distribution system shall be engineered to provide equal dispersal over the distribution bed.

4.3.1.7 The sand portion shall not be less than one foot in height with a three to one slope.

4.3.1.8 Sand fill material shall conform to the gradation requirement of the Ventura County Building Code Table H-7, found in Section 8 page 8-18 of this manual.

4.3.1.9 Untreated building paper shall be used to keep soil cover from filtering into the distribution system.

4.3.1.10 An earth cover shall be six inches minimum on the side and 12 inches minimum on top.

4.3.1.11 The mound cover shall be planted with rye grass, with hydrophilic plants at the base. An example of a hydrophilic plant is the Juniper Shrub Pfitzer.

4.3.1.12 The wet well shall be equipped with an audio-visual alarm system.

4.3.1.13 A minimum of 2 feet must be maintained between the bottom of the mound and the highest historical groundwater level (seasonal or permanent).

4.3.2 Subsurface Sand Filtration Systems

Typical onsite wastewater treatment systems discharge wastewater through leach lines and/or seepage pits into the underlying soil where additional treatment occurs. Where natural soil is less than five feet thick, a subsurface sand filtration system can function similar to a five foot thick soil layer (Page 9-16).

4.3.2.1 Distribution beds shall be level and located on top of the sand filtration bed.

4.3.2.2 The distribution bed consists of clean rock from $\frac{3}{4}$ to 2 $\frac{1}{2}$ inches in size.

4.3.2.3 Perforated piping shall be used to uniformly distribute effluent over the entire area of the distribution bed.

4.3.2.4 The total thickness of the distribution bed shall be sufficient to provide a minimum of 12 inches of rock below, and at least two inches of rock above all distribution piping within the bed.

4.3.2.5 The size of the distribution bed is determined by the total number of bedroom equivalents (100 sq. ft. per bedroom equivalent).

4.3.2.6 A layer of untreated building paper shall be used between the filter and the cover.

4.3.2.7 The sand filter shall have a minimum one foot earth cover.

4.3.2.8 The sand filtration bed is located beneath the distribution bed. The filter is a layer of sand, minimum five feet thick, with a uniform grain size conforming to Table H-7.

4.3.2.9 A five foot buffer of filter material is required around the perimeter of the distribution bed.

4.3.2.10 When used in conjunction with seepage pits a collection bed consisting of 18 inches of $\frac{3}{4}$ to 2 $\frac{1}{2}$ inch clean rock shall be provided underneath the filter sand.

4.3.2.11 Perforated piping shall be used to collect the sand filter effluent for disposal.

4.3.2.12 Disposal of sewage from a subsurface sand filtration system typically occurs using:

1. Leach line(s) connected to the base of the filtration bed.
2. Seepage pit(s) connected to the base of the filtration bed. Seepage pits may be located inside or outside of the sand filter perimeter.
3. Bottom of filter (see 4.3.3).

4.3.2.13 Sand filter systems must include a primary area and secondary expansion area for the dispersal system.

4.3.2.14 Four inch diameter SDR35 or approved equivalent pipe, perforated where appropriate, should be used throughout the system.

4.3.2.15 A minimum of 15 feet distance shall be maintained between the edge of the effective portion of the sand filter bed and any ground surface or artificial fill (Page 9-16).

4.3.3 Basal Leach Filter Beds

Basal Leach Filter Beds shall conform to all the technical specifications of a typical Subsurface Sand Filtration System except for the following (Page 9-17).

4.3.3.1 No collection bed is provided at the bottom of the filter material, filter effluent is dispersed directly into the underlying fractured rock.

4.3.3.2 The basal (base) area of the filter is sized at 150% of the required absorption capacity based upon percolation testing and bedroom equivalents.

4.3.3.3 The required expansion area is equal to the size of the primary filter system.

4.3.3.4 A minimum of 5 feet must be maintained between the bottom of the filter and the highest historical groundwater level (seasonal or permanent).

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Section 5: Size and Design Criteria and Soil Evaluation

The Environmental Health Division reviews septic system design proposals to determine conformance with applicable codes. A thorough evaluation of each lot where an onsite wastewater treatment system is proposed is conducted to determine soil characteristics and the feasibility of onsite wastewater absorption. This evaluation may include, but is not limited to, percolation testing, grain-size analysis of soil particles, and examination of geology, hydrology, and topography.

5.1 Size and Design Criteria

Septic Tanks must be constructed in conformance with Section H-1 and H-5 of the Ventura County Building Code (VCBC) and be listed and approved by the IAPMO or an ANSI accredited testing agency. The capacity of septic tanks for residential structures is determined by the number of bedroom equivalents and the number of plumbing fixture units. The septic tank capacity for commercial structures is determined by the number of plumbing fixture units (Page 9-18) and Table K-3 of the California Plumbing Code. The minimum septic tank capacity is 1,000 gallons.

5.1.1 Bedroom Equivalents

All rooms with the exception of “core rooms” are considered bedrooms or bedroom equivalents when determining minimum septic tank capacities and dispersal system areas for developments requiring on-site wastewater treatment systems. A core room is defined as a room typically found in a single-family dwelling, generally recognized as being a kitchen, living room, bathroom, utility room, dining room, and family room. A room where at least one-half of the area of a common wall is open and unobstructed is considered to be a family room. A utility room contains clothes washing and drying appliances, space for storage of household supplies, and/or a utility sink (mop sink). Any room that is not identified as a core room, including sleeping rooms, dens, studios, sewing rooms, libraries, studies, offices, lounges, lofts, recreation room, workshop, ... is considered a bedroom or bedroom equivalent. Detailed floor plans must be submitted with applications for new onsite wastewater treatment systems, applications to certify existing systems, and for various land use projects. Bedroom equivalents will be determined using the Bedroom Equivalents Worksheet (Page 9-19).

5.1.2 Plumbing Fixture Units

Different types of plumbing fixtures have different unit values. The unit values correlate to the amount of wastewater the fixture will contribute to the OWTS. The plumbing fixture units are determined by multiplying the number of each fixture by the unit value. Plumbing Fixture Units can be determined using the Fixture Units Worksheet (Page 9-19).

5.1.3 Multiple Structures on Parcel

5.1.3.1 Residential

In addition to the main structure another structure on the property that has nine plumbing fixture units (i.e. sink, toilet, shower or shower/tub combination) or less may be connected to the existing OWTS if it is sized properly. Any newly proposed second dwelling unit requires its own tank, but may connect to the existing sewage drain system (seepage pits, leach fields, etc.) if the drain field is sized properly and is one year or less in age.

5.1.3.2 Nonresidential

Multiple nonresidential structures are allowed to connect more than one building per tank.

5.2 Soil Evaluation

Soil evaluations must be performed before an onsite wastewater treatment system can be installed. All soils reports are required to have been completed within a 12 month period prior to submittal of the application. The type of soil test is determined by the dispersal system. All open excavations on the project site, especially those for seepage pits, must be adequately covered or otherwise protected at all times.

5.2.1 Leach Lines, Leach Beds, Mounds, and Basal Leach Filters

A minimum of 4 percolation tests are required for each proposed dispersal system. The test locations shall be uniformly spaced over the primary and expansion dispersal area. 3 of the tests shall be conducted at a depth corresponding with the bottom of the dispersal system; the remaining test (deep perc) shall be conducted at a depth corresponding to 5 feet below the bottom of the dispersal system.

Exceptions:

- a. Whenever the primary and expansion dispersal areas are separated by more than 20 feet, horizontally, each area shall be subject to at least 4 percolation tests as prescribed above.
- b. The deep perc shall not be required for proposed Mound systems if the highest historical groundwater is less than 5 feet below the ground surface.
- c. Additional percolation tests may be required as deemed necessary to adequately characterize the infiltrative capability of the site.

Procedures to perform a percolation test can be found in Page 9-20.

In addition to the percolation tests an exploratory boring must be done that extends to a minimum depth of five feet below the bottom of the proposed dispersal system. The performance data are to be reported in the Percolation Test Data form (Page 9-22), and the results of the exploratory boring (e.g., characterization of soils/rock encountered, evidence of current or historical groundwater, presence/absence of aquitards or aquicludes) noted. VCBC Table H-6 is used to determine the required absorption area for proposed leach lines and leaching beds (Page 9-23). The percolation rate shall not exceed 60 min/inch.

5.2.2 Seepage Pit

Seepage pits require a minimum of one boring or excavation, extending to a depth 10 feet below the bottom of the proposed seepage pit location. The boring must be inspected and logged in a Seepage Pit Performance Test Data Work Sheet as it is excavated (Page 9-32 and Page 9-33). The soils found in the excavation are to be classified in accordance with VCBC Table K-4. The presence or absence of free water and all soils data are to be recorded on the Soils Identification Report Form (Page 9-29). The results must be confirmed by hydrometer analysis (Page 9-27). Minimum seepage pit dimensions shall be determined by soil absorption capacity (Page 9-31). When hydrometer analysis indicates that 50% or more of effective pit depth is in UPC type III, IV, V soils, a pit performance test shall be conducted. A minimum absorption capacity of .83 gal/ft²/d is required and a maximum rate for sizing is 5 gal/ft²/d (Page 9-28 and Page 9-30).

For design purposes, the lowest performance rate must be used for the entire effective depth when calculating pit capacity for pits that will be

constructed in bedrock formations of concern. Seepage pits must be designed utilizing the more conservative results between hydrometer analyses and pit performance analyses.

5.2.3 Bedrock Formations of Concern

5.2.3.1 If a project is proposed where bedrock formations of concern are identified, the soils engineer must address the presence of these materials (Page 9-34). If bedrock occurs within the vertical setback to a dispersal system (e.g., 5 ft. leach lines, 10 ft. seepage pit), supplemental treatment, usually a sand filter, is necessary.

5.2.3.2 If a project is proposed in a landslide concern area, the soils engineer must address slope stability issues; however, supplemental treatment is generally not necessary.

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Section 6: Qualified Professionals

6.1 Soil Evaluation

The following individuals are qualified to perform the required soil evaluation and testing: California Registered Civil Engineers (CE), California Registered Geologists (RG), and California Registered Environmental Health Specialist (REHS).

6.2 System Design

Due to the potential adverse impacts to public health and the environment from improperly designed or constructed sewage disposal systems, conventional OWTS and supplemental systems (subsurface sand filtration system, mound system) shall be designed by a RG, CE, or REHS. When proposing a repair to an existing OWTS, a design by a registered professional may not be required.

6.3 Inspection

REHS employed by EHD are authorized to conduct all OWTS plan checks and inspections. Supplemental systems shall be inspected by the OWTS design Civil Engineer (CE) or Registered Geologist (RG) or REHS to inspect excavation/installation and provide written statement of installation in conformance with approved design specifications. A sieve analysis of filtration material shall be submitted with CE, RG, or REHS statement.

6.4 Installation

A contractor with a valid "A" (Engineering), "C-36" (Plumbing), or "C-42" (Sanitation Systems) license from the state of California is allowed to install an OWTS.

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Section 7: Frequently Asked Questions

What is meant by a "setback"?

A setback is a specified horizontal or vertical distance between a specified component of an OWTS and another object or limiting requirement.

Are there groundwater setback requirements?

In areas of high groundwater, either suspected or known, the depth of the highest known seasonal or permanent groundwater shall be identified. Leach lines, leaching beds, and basal subsurface sand filters can not be constructed within five feet of the highest known seasonal or permanent groundwater level, nor can seepage pits be installed within ten feet of the highest known seasonal or permanent groundwater level.

How much does it cost to submit an application for an OWTS design review?

The fees charged for processing applications for a new OWTS, certification of an existing OWTS, and a permit to construct an OWTS are established by the Ventura County Board of Supervisors. See ISDS fee schedule handout available at Environmental Health Division (EHD) counter or on the EHD website.

How long does it take to get my OWTS plans approved?

The time required to review an OWTS design is approximately 3 to 4 weeks, and depends on the number of applications that were submitted before your application. Additional time may be required if the application package submitted is incomplete or if there are deficiencies in the information contained in the soil engineering report. Applications for supplemental treatment systems may require additional processing time.

After my OWTS plans are approved what should I do?

After design approval of an Application for New OWTS is received, submit one copy of the approved plans to the Ventura County Building and Safety Division for the issuance

of your building permit. A permit to construct is issued by EHD for installation of the system. A separate fee is required for the construction permit.

When do I need an OWTS construction permit?

OWTS construction permits are required for the construction of any new system or the repair of an existing system. Repair of an existing system includes abandoning an old tank and/or disposal field and installing a new one in its place, or adding additional capacity to an existing system.

Why was my application delayed?

The following are common problems which result in application processing delays:

1. Failure to fill out the application completely.
2. Failure to provide a current soils report.
3. Failure to pay the correct fee for the proposed system.
4. Application filled out with incorrect information.
5. Illegible plot plans or insufficient detail provided.
6. Inadequate lot size for the proposed system.
7. Systems proposed under pavement.
8. Improperly designed systems proposed in bedrock.
9. Failure to provide the owners' address and phone number.
10. Failure to submit sewer availability information.

Can I install my own OWTS?

Yes, an owner-builder can install his/her own OWTS. However, the Environmental Health Division highly recommends hiring a licensed and experienced contractor to do the work. Improper installation of an OWTS can lead to extra costs.

What size OWTS is required for a re-model of an existing house or for a proposed new residence?

Septic tank capacity requirements are based on the number of bedroom equivalents and the number of plumbing fixture units. Disposal field dimensions are based on percolation rates and bedroom equivalents.

What is the proper disposal field rock to use in the construction of an OWTS?

Improper rock is the most common problem noted during OWTS construction inspections by the EHD Liquid Waste Program staff. Use of non-complying rock for leach lines, seepage pits, sand filters, and mounds dramatically increases material and labor costs and results in project delays. It is the installer's responsibility to ensure the proper rock is delivered to the job site. The rock must be inspected and approved by the EHD before installation. A sample of the rock can be provided to the EHD for a preliminary inspection prior to delivery of the full load. Call 805/477-7136 to arrange for a preliminary inspection and to schedule construction inspections. All rock used in OWTS installations must meet the following specifications:

1. Size: $\frac{3}{4}$ inch-2 $\frac{1}{2}$ inch (No smaller than $\frac{3}{4}$ inch and no larger than 2 $\frac{1}{2}$ inch)
2. Clean and free of fines

WARNING: Rock not complying with these specifications will be rejected.

I do not live on a hill, do I still need to find the slope of my property?

The percent surface slope must be identified in all proposed areas.

Can I use a plastic leaching chamber instead of a rock-filled trench for my leach lines?

Yes, IAMPO (International Association of Mechanical and Plumbing Officials) listed plastic leaching chambers are approved for use in Ventura County. The size and type of plastic chamber must be specified in the soils report submitted with an application for a new OWTS. This will require about 40% greater linear length than standard rock filled trench.

Does EHD "certify" septic systems for the purpose of lender approvals during a real estate transaction?

No, the Environmental Health Division only inspects an OWTS when an OWTS Permit to Construct or certification of existing OWTS for an addition/remodel is processed.

I've been told to expose a corner of my septic tank and call for an inspection, why do I need to dig up my septic tank?

During the course of processing a Setback or Full Certification of an OWTS it is often necessary to precisely locate a component of an OWTS. Inspection of the septic tank and/or other component of the OWTS will verify that minimum setback distances are

maintained. If for example you were constructing a swimming pool you might be required to mark off the location of the proposed pool and expose the septic tank for inspection. The inspection will determine if the required minimum 5 ft. horizontal distance between the proposed pool structure and the septic tank is maintained.

Who can pump my septic tank?

Any company permitted by the Ventura County Environmental Health Division to pump septic tanks in the County of Ventura is qualified. Please consult your local telephone directory for more information.

How can I tell if my septic system is failing?

Drainage back-up and slow running drains are typical indicators of a septic system failure. Excess weed or algae growth may indicate that nutrients are leaking from the septic tank. Unpleasant odors, soggy soil, or liquid waste flow over the land surface can indicate failure of the system and the need for repairing, expanding, or replacing the current system.

Can my gray water bypass the septic tank and go directly into the ground or the dispersal system?

Gray water, wastewater that has not been contaminated by sewage, generally comes from sinks, washing machines, and dish washers. Contact Ventura County Building and Safety Division for requirements on gray water systems. Note: No reduction in OWTS capacity is allowed where gray water systems are installed.

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Section 8: Ventura County Building and Safety Code – 2013 (Excerpt)

ARTICLE 7 - AMENDMENTS TO THE CALIFORNIA PLUMBING CODE (CPC)

CHAPTER 1, DIVISION II – SCOPE AND ADMINISTRATION

SECTION 101 – GENERAL

101.4.3 PLUMBING. The provisions of the California Plumbing Code shall apply to the installation, alteration, repair and replacement of plumbing systems, including equipment, appliances, fixtures, fittings and appurtenances, and where connected to a water or sewage system and all aspects of a medical gas system.

101.4.3.1 The provisions of Article 7, Appendix Chapter K, in this Code shall apply to private sewage disposal systems.

SECTION 104 – POWERS AND DUTIES OF THE BUILDING OFFICIAL

104.1 ENFORCEMENT OF CODES. The Building Official is hereby authorized and directed to enforce all the provisions of this Code and of the codes adopted by reference hereby. The decision of the Building Official in enforcing the provisions of this Code or of the codes adopted by reference, or in interpreting the provisions thereof, or in exercising the authority delegated thereby shall be final, subject to appeal as provided in this Code. For such purposes, the Building Official shall have the powers of a law enforcement officer.

The Building Official shall have the power to render interpretations of this Code and to adopt and enforce rules and supplemental regulations to clarify the application of its provisions. Such interpretations, rules and regulations shall be in conformance with the intent and purpose of this Code.

SECTION 105 - PERMITS

105.2 EXEMPTED WORK - PLUMBING: A plumbing permit will not be required for the following:

1. The stopping of leaks in drains, soil, waste or vent piping, provided that should any concealed trap, drainpipe, soil, waste or vent pipe become defective and it becomes necessary to remove and replace all or part thereof with new material,

the same shall be considered as new work, and a permit shall be obtained and inspections made, as provided in this Code.

2. The clearing of stoppages or the repair of leaks in pipes, valves or fixtures, nor for the removal and reinstallation of water closets, or the installation of new water closets on existing drainage connections, providing such repairs or reinstallation do not involve or require the replacement or rearrangement of valves or pipes. If it becomes necessary to remove and replace or rearrange valves, water piping, traps, drainpipe, soil, waste or vent pipes, the same shall be considered as new work, and a permit shall be obtained and inspections made as provided in the code.

CHAPTER 2 – DEFINITIONS

SECTION 200 – AMENDMENTS

See Article 2, Chapter 1 for amendments of general application to this Code. Where there is a conflict between the general amendments and specific ones found herein, the more specific shall apply.

SECTION 221.0 – DEFINITIONS

CESSPOOL. Cesspool means 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 do not include septic tanks as a component of the system.

ONSITE WASTEWATER TREATMENT SYSTEM(S). Onsite Wastewater Treatment System(s), also referred to by the short form OWTS, means 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.

PUBLIC WATER SYSTEM. A Public Water System is 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 public water well is 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 PROFESSIONAL. Means an individual licensed or certified by a State of California agency to design OWTS and practice as professionals for other associated

reports, as allowed under their license or registration. This may include an individual who possesses a registered environmental health specialist certificate or is currently licensed as a professional engineer or professional geologist.

SEEPAGE PIT. A seepage pit is a rock filled excavation which receives the effluent from a septic tank and is so designed as to permit such effluent to seep through the bottom and sides of the pit into the surrounding soil.

SERVICE PROVIDER. Service Provider means a person capable of operating, monitoring, and maintaining an OWTS in accordance to this Code.

SUPPLEMENTAL TREATMENT. Supplemental Treatment means any OWTS or component of an OWTS, except a septic tank or dosing tank, which performs additional wastewater treatment so that the effluent meets a predetermined performance requirement prior to discharge of effluent into the dispersal field.

SECTION 303 – DISPOSAL OF LIQUID WASTE

303.0 DISPOSAL OF LIQUID WASTE. It shall be unlawful for any person to cause, suffer, or permit the disposal of sewage, human excrement, or other liquid wastes, in any place or manner, except through and by means of an approved drainage system, installed and maintained in accordance with the provisions of this code.

EXCEPTION: Limited-density owner-built rural dwellings. A water closet shall not be required when an alternate system is provided and has been approved by the Administrative Authority pursuant to Appendix K, Section H 1(J). Where an alternative to the water closet is installed, a system for the disposal or treatment of Graywater shall be provided to the dwelling. Graywater systems shall be designed according to water availability, use and discharge. The design, use and maintenance standards of such systems shall be the prerogative of the Building Official.

CHAPTER 6 - WATER SUPPLY AND DISTRIBUTION

SECTION 601.0 – RUNNING WATER REQUIRED

601.1 Except where not deemed necessary for safety or sanitation by the Authority Having Jurisdiction, each plumbing fixture shall be provided with an adequate supply of potable running water piped thereto in an approved manner, so arranged as to flush and keep it in a clean and sanitary condition without danger of backflow or cross-connection. Water closets and urinals shall be flushed by means of an approved flush tank or flushometer valve.

EXCEPTIONS:

- (1) Listed fixtures that do not require water for their operation and are not connected to the water supply.
- (2) Where deemed not necessary for safety or sanitation by the Enforcing Agency
- (3) Recycled water or treated Graywater may be allowed as specified in Chapter 16 Part II of this code.

601.1.2 REQUIREMENTS FOR WATER WELLS. When the potable water supply for a structure is to be provided by a well, the well must pass the applicable pump and recovery test specified in the Ventura County Water Works Manual, as amended from time to time, for the purpose of demonstrating that the well is likely to remain an adequate source of potable water throughout the expected useful life of the structure.

EXCEPTIONS: A well shall not be required to pass the pump and recovery test if the structure to be served by it:

1. Is connected to a public water system or a state small water system as defined in Section 116275 of the Health and Safety Code; or
2. Overlies an aquifer that has been determined by the administrative authority to be adequate to meet all existing and projected demands made upon it for potable water without experiencing overdraft; or
3. Overlies an aquifer that may experience over-drafting but that has nonetheless been determined by the administrative authority, based upon a study and report prepared pursuant to the Ventura County Waterworks Manual, to be adequate to meet all existing and projected demands made upon it for potable water throughout the expected useful life of the structure.

This section does not preclude the adoption and imposition of additional or more stringent well test requirements and standards in connection with subdivision approvals, conditional use permits, or other discretionary (as opposed to ministerial) permits.

CHAPTER 7 - SANITARY DRAINAGE

713.0 SEWER REQUIRED

713.4 CONVENTIONAL PRIVATE SEWAGE DISPOSAL SYSTEMS.

- (a) When the applicant seeks to install a new conventional private sewage disposal system, the public sewer may be considered as not being available when such public sewer is located more than two hundred (200) feet from any property line or the sewer service agency has determined that a connection cannot be made.
- (b) When the applicant seeks to repair/replace a conventional private sewage disposal system, the public sewer may be considered as not being available when such public sewer is located more than two hundred (200) feet from any building containing a drainage system or the sewer service agency has determined that a connection cannot be made.

713.4.1 ALTERNATE PRIVATE SEWAGE DISPOSAL SYSTEMS.

- (a) When the applicant seeks to install a new alternate private sewage disposal system, the public sewer may be considered as not being available when such sewer is located more than one half mile (2,640 feet) from any property line or the sewer service agency has determined that a connection cannot be made.
- (b) When the applicant seeks to repair/replace an alternate private sewage disposal system, the public sewer may be considered as not being available when such public sewer is located more than one-half mile (2,640 feet) from any building containing a drainage system or the sewer service agency has determined that a connection cannot be made.

713.7 For the purpose of administering those requirements of Chapter 7 and Appendix H of this Code, pertaining to the approval, permitting and inspection of private sewage disposal systems, the Administrative Authority shall mean the Environmental Health Officer. All other requirements of this Code shall be regulated and enforced by the Building Official.

SECTION 714.0 - DAMAGE TO PUBLIC SEWER OR PRIVATE SEWAGE DISPOSAL SYSTEM

714.6 HOLDING TANKS. A holding tank for industrial/commercial waste shall be installed only when it is permitted by and is in conformance with standards and safeguards established by the Administrative Authority and the Health Officer to prevent anticipated surface or subsurface contamination or pollution, damage to the public

sewer, or other hazardous or nuisance condition. (Holding tanks for all domestic or residential waste shall be prohibited.)

SECTION 721.0 - LOCATION

721.1 LOCATION OF SEWAGE DISPOSAL SYSTEMS. Except as provided in section 721.2 in the UPC, no building sewer or private sewage disposal system, or parts thereof, shall be located in any lot other than the lot which is the site of the building or structure served by such sewer or private sewage disposal system; nor shall any building sewer or private sewage disposal system or part thereof be located at any point having less than the minimum distances indicated in Table UPC Appendix H-1 in this Code. Table 7-7 and Table H-1 in the UPC are hereby deleted in their entirety.

APPENDIX CHAPTER H - PRIVATE SEWAGE DISPOSAL SYSTEM

H 1.0 PRIVATE SEWAGE DISPOSAL: GENERAL REQUIREMENTS

(A). Where permitted by Section 305.2 of the UPC the building sewer may be connected to a private sewage disposal system complying with the provisions of this Code. The type of system shall be determined on the basis of information contained in the soil report concerning location, soil porosity, groundwater, depth of fractured rock or impervious formations, and hillside stability, and shall be designed to receive all sanitary sewage from the property. The system, except as otherwise provided, shall consist of a septic tank with effluent discharging into a subsurface disposal field, into one or more seepage pits, into a combination of subsurface disposal field and seepage pits, into a mound system or into a subsurface sand filtration system, or other Alternative sewage disposal system as approved by the Administrative Authority pursuant to Section H 1.0(J).

(E). SEWAGE DISPOSAL EXPANSION AREA. All private sewage disposal systems shall be so designed that additional seepage pits, subsurface drain fields, mound systems or subsurface sand filtration systems, equivalent to at least 100% of the required original system, may be installed if the original system cannot absorb all the sewage. No division of the lot or erection of structures on the lot shall be made if such division or structure impairs the usefulness of the 100% expansion area.

(H). PRIVATE SEWAGE DISPOSAL RESTRICTIONS. When there is insufficient lot area or improper soil or geological conditions for adequate and safe sewage disposal for the building or land use proposed, and the Administrative Authority so finds, no building permit shall be issued and no private sewage disposal shall be permitted. Where space or soil conditions are critical, no building permit shall be issued until engineering data and test reports satisfactory to the Administrative Authority have been submitted and approved.

(J). APPROVAL OF ALTERNATE SYSTEMS. Alternate sewage disposal systems as defined in this Code may be installed only by special permission of the Administrative Authority which shall be given only if the Administrative Authority is satisfied that the systems will conform to the requirements in this chapter.

(H). Each dwelling unit shall be served by a separate septic tank, which may also be designed to serve accessory structures.

(K). Each dwelling unit shall be served by a separate septic tank, which may also be designed to serve accessory structures.

K 3.0 AREA OF DISPOSAL FIELDS AND SEEPAGE PITS

The minimum effective absorptive area of disposal fields in square feet of trench bottom, and of seepage pits in square feet of sidewall, shall be predicated on the required septic tank capacity in gallons. The required absorption area shall be as set forth in Table UPC Appendix H-6 in this Code for disposal fields, and as set forth in Table H-4 in the UPC for seepage pits. In addition, disposal fields and seepage pits shall conform to the following:

1. When disposal fields are installed, a minimum of one hundred fifty (150) square feet of trench bottom shall be provided for each system exclusive of any hardpan, rock, clay or other impervious formations. Sidewall area in excess of the required twelve (12) inches and not to exceed thirty-six (36) inches below the leach line may be added to the trench bottom area when computing absorption areas. Such increase shall be limited to 50% of the required absorption area.
2. Where leaching beds are permitted in lieu of trenches, the area of each such bed shall be at least 50% greater than the requirement for trenches. Perimeter sidewall area in excess of the required twelve (12) inches and not to exceed thirty-six (36) inches below the leach line may be added to the trench bottom area when computing absorption area.
3. The minimum effective absorption area in any seepage pit shall be calculated as the excavated sidewall area below the inlet exclusive of any hardpan, rock, clay, or other impervious formation. The minimum required area of porous formation shall be provided in one or more seepage pits.
4. No excavation for a leach line or leaching bed shall extend *with/in* five (5) feet of the water table nor to a depth where sewage may contaminate an underground water stratum which may be usable for domestic purposes. The applicant shall supply satisfactory evidence of groundwater depth when required by the Administrative Authority.

5. Plastic leaching chambers shall be sized on bottom absorption area (nominal unit width) in square feet. The required area shall be calculated using Table H-6 in this Code with a 0.70 multiplier.

H 4.0 PERCOLATION TESTS

- (A) Disposal fields and seepage pits shall be sized in accordance with the percolation tests or analyses required by subsection (B) of this Section.
- (B) In order to determine the absorption qualities of soils, the proposed site shall be subjected to percolation tests and/or hydrometer analyses performed under the supervision of a California-registered environmental health specialist, civil engineer, geologist or engineering geologist. Such tests or analyses shall be performed in accordance with standards established by the Administrative Authority.
- (C) Each test shall be made with clear water in an excavation which has been thoroughly soaked prior to the test.
- (D) No subsurface disposal field shall be permitted to serve a building if percolation test rates are greater than sixty (60) minutes per inch.
- (E) No seepage pit shall be permitted to serve a building if the absorption capacity of the soil surrounding the pit is less than 0.83 gal./sq.ft./day.
- (F) Test data shall be submitted on a form provided for that purpose and shall include such information as may reasonably be required by the Administrative Authority to determine the correctness and adequacy of the proposed disposal system.

H 7.0 SEEPAGE PITS

- (A) The capacity of seepage pits shall be based on the quantity of liquid waste discharging thereunto, and on the character and porosity of the surrounding soil as determined by such tests as may be required and shall comply with Sec. UPC Appendix K-3 in this Code.
- (B) Seepage pits may be used where conditions are unsatisfactory for the installation of leach lines or beds. In no case shall seepage pits extend more than sixty (60) feet below the surface of the ground.
- (C) Multiple seepage pit installations shall be connected through an approved distribution box or diversion valve and watertight piping laid on undisturbed or compacted soil.
- (D) Each seepage pit shall be circular in shape and shall have an excavated diameter of not less than four (4) feet. Seepage pits shall be filled with clean rock 3/4 inches to 2½ inches in diameter, free from fines, except when otherwise approved by the Administrative Authority. Effluent shall be conducted to the bottom of the excavation by means of approved perforated pipe extending to the entire depth of the pit. Approval shall be obtained prior to construction for any pit having an excavation diameter greater than six (6) feet.
- (E) Where groundwater is encountered, the bottom of the pit shall be backfilled with clean coarse sand at least ten (10) feet above the ground water encountered. The bottom of the pit shall not extend to within 10 feet of any bedrock formations (except when the pit is part of a subsurface sand filtration system), and shall not extend to within

10 feet of any impermeable soil or rock. For the purposes of this section, impermeable soil or rock shall mean soil or rock exhibiting an absorption rate of less than 0.83 gal/sq.ft./day.

(F) Each seepage pit shall have a minimum sidewall of ten (10) feet below the inlet.

(G) Connections between a septic tank and seepage pits shall be made with approved watertight pipe. Such pipe shall be laid on natural ground or compacted fill.

(H) Rock fill in seepage pits shall be covered with asphalt-treated building paper, and backfilled with a minimum of eighteen (18) inches of earth.

(I) Subsection (i) of Appendix Section H-7 in the UPC is hereby deleted in its entirety.

H 9.0 SUBSURFACE DISPOSAL OF INDUSTRIAL WASTE

The discharge of industrial waste into a soil absorption system shall be prohibited unless specifically approved by the Authority Having Jurisdiction.

H 13.0 ALTERNATE PRIVATE SEWAGE DISPOSAL SYSTEMS

(A) DEFINITION. Alternate private sewage disposal systems are specially-designed, engineered, and approved private sewage disposal systems suitable for use in localities where the Administrative Authority has determined that the presence of shallow groundwater, rock, or adverse soil, geologic, or hydrologic conditions makes the use of conventional sewage disposal systems potentially hazardous to public health. Alternate private sewage disposal systems shall be limited to "mound" systems and "subsurface sand filtration" systems, supplemental treatment systems, or other alternative sewage disposal systems as approved by the Administrative Authority pursuant to Section H 1(J).

(B) GENERAL REQUIREMENTS. Designs for alternate private sewage disposal systems may be accepted for review by the Administrative Authority when it has been adequately demonstrated that the character of the soil, geology, or hydrology of the site is such that a conventional private sewage disposal system will not function in accordance with recognized health and sanitation standards. Such systems shall be designed by a California-registered civil engineer or a California-registered geologist, who shall submit written verification upon completion of an alternate private sewage disposal system that the installation is in conformance with the approved design.

Properties served by alternate private sewage disposal systems shall be located within an approved on-site wastewater management district or equivalent governmental agency capable of providing necessary maintenance and repair services for private sewage disposal systems within its boundaries. Such systems shall conform with all applicable rules and regulations adopted by said district or agency.

The design and construction of alternate private sewage disposal systems shall comply with the requirements of this Section and with other appropriate criteria established by the Administrative Authority.

Component parts of alternate private sewage disposal systems shall comply with the applicable setback requirements in Table UPC Appendix H-1 of this Code. The construction and capacity of septic tanks installed as components of alternate systems shall comply with Section H-5 and Table H-2 in the UPC.

Leach lines, leaching beds, and seepage pits which are components of alternate systems shall comply with the applicable requirements of this Code. No portion of a distribution bed or related filter material which is a component of a mound or subsurface sand filtration system shall be installed under a walkway, parking area, driveway, or similar paved surface.

The sizing of mound or subsurface sand filtration systems shall be based upon the average percolation rate of the natural soil at the location and depth of the proposed system, and the number of bedrooms or plumbing fixture units, in accordance with this Code and other applicable standards for sizing conventional leachlines, leaching beds and seepage pits. No alternate private sewage disposal system shall be permitted where the percolation rate exceeds sixty (60) minutes per inch.

(C) MOUND SYSTEMS. A mound system is an alternate private sewage disposal system which utilizes pressurized piping to deliver effluent from a septic tank into an above-ground gravel distribution bed, from which the effluent percolates and is filtered through mounded sand fill into natural soil. Typical components of such systems include a septic tank, lift pump and wet well, pressurized effluent piping, a sand fill mound, a distribution bed composed of gravel filter material and perforated distribution piping, a cover of topsoil over the top and sloped sides of the mound.

The lift pump and wet well shall be designed to handle peak flow from the septic tank. In no case shall pump capacity be less than twenty (20) gallons per minute nor shall the pump motor be rated at less than one-half horsepower. The pump shall be approved for use in a sewage environment. The liquid holding capacity of the wet well shall be at least 300 gallons for one or two-bedroom dwelling units. An additional 100 gallons capacity shall be provided for each bedroom in excess of two. Equivalent capacity shall be provided for occupancies other than dwellings based on fixture unit calculations as set forth in this Code.

The wet well shall be fitted with automatic high and low level pump controls. Operation of the lift pump shall not cause surges in the liquid level within the tank. An alarm device shall be installed which will provide audio and visual warning signals to occupants of the property in advance of any overflow from the wet well.

Mounds shall not be installed on a slope greater than 12%. The base of the mound shall be located at least two (2) feet above the highest known seasonal groundwater elevation at the site and two (2) feet above fractured bedrock, if any. Fill material comprising the mound shall be clean sand having a uniform grain size distribution within the acceptable range indicated on Table UPC Appendix H-7 of this Code. Conformance with this grain size standard shall be determined by sieve analysis performed on

representative samples taken prior to placement of the fill material onto the mound. The slope of the sides of the mound shall be not steeper than 3 horizontal to 1 vertical.

Distribution beds shall be level and shall be located a minimum of five (5) feet above the highest known seasonal groundwater elevation at the site. Filter material comprising the bed shall be clean gravel varying in size from .75 inch to 2.5 inches. The total thickness of the bed shall be sufficient to provide a minimum of twelve (12) inches of filter material below, and at least two (2) inches of such material above all distribution piping within the bed. Distribution piping shall uniformly distribute effluent over the entire area of the bed. Distribution beds shall be of sufficient size to limit the application rate for effluent to not more than 1.5 gallons per square foot per day.

After filter material has been placed over the piping, the distribution bed shall be covered with untreated building paper, straw, or similar porous material to prevent closure of voids when earth covering is added. Topsoil shall be placed to a depth of at least twelve (12) inches over the top of the distribution bed, and shall be placed on the sloping sides of the mound to a thickness of at least six (6) inches.

(D) SUBSURFACE SAND FILTRATION SYSTEMS. A subsurface sand filtration system is an alternate private sewage disposal system which utilizes gravity to deliver effluent from a septic tank to a subsurface gravel distribution bed, from which the effluent is filtered through a bed of sand to reduce organic matter and pathogenic organisms, and thence percolates into natural soil. Typical components of such systems include a septic tank, effluent piping, a subsurface distribution bed composed of gravel filter material and perforated distribution piping, a sand filtration bed, and a leaching bed, leach lines, or seepage pits.

Distribution beds shall be designed and constructed in a manner similar to that set forth for mound systems in section (c) above, using approved, perforated gravity-flow piping in lieu of pressurized piping. Sand filtration beds shall extend not less than five (5) feet vertically below and five (5) feet horizontally from the edges of any distribution bed. Filtration material shall be clean sand having a uniform grain size distribution within the acceptable range indicated on Table UPC Appendix H-7 of this Code. Conformance with this grain size standard shall be determined by sieve analysis performed on representative samples taken prior to placement of the filtration material into the filter bed excavation.

H 14.0 NONHAZARDOUS LIQUID WASTE TRANSFER FACILITIES

DEFINITION: A NONHAZARDOUS LIQUID WASTE TRANSFER FACILITY is a temporary holding facility for non-hazardous liquid waste from recreational vehicle holding tanks and portable toilets. A Nonhazardous Liquid Waste Transfer Facility consists of a holding tank, liquid waste loading area with washdown equipment, associated piping, and holding tank liquid level alarm system.

1. Holding tank construction shall be consistent with UPC Section H5, with the following exceptions:
 - (a) Baffles are not required
 - (b) Only one access port is required
 - (c) Tanks shall be traffic-rated IAPMO approved

2. All piping, including but not limited to materials, cleanouts, and venting, shall be consistent with UPC sections 715.0 through 720.0, inclusive.

3. Minimum setbacks for holding tanks shall be as follows:

Streams and Watercourses	50 feet
Wells	50 feet
Groundwater	5 feet
Structures	5 feet
Property Line	5 feet
On-Site Domestic Water Line	5 feet
Public Water Main	10 feet

4. Minimum holding tank capacity shall be not less than three times the anticipated daily loading to the holding tank and in no case shall be less than 1,000 gallons.

5. An alarm system constructed of durable, corrosion-resistant material shall be installed on each holding tank. This alarm shall give a conspicuous audio and visual indication whenever the tank becomes two-thirds full.

6. The liquid waste loading area shall consist of an impermeable, easily cleanable area designed and constructed in a manner which prevents the formation of insanitary conditions. A ¾ inch water hose connection shall be installed at the liquid waste loading area to allow connection of a hose for area washdown following holding tank pumping. An approved backflow prevention assembly shall be installed in the water service line to the hose connection. Provisions shall be made to store the washdown hose off the ground. A warning sign shall be posted at the water hose connection reading: DANGER - UNSAFE WATER.

7. Holding tanks shall be pumped by a licensed pumper as needed. Quarterly reports of holding tank pumping shall be submitted to the Ventura County Environmental Health Division by March 30, June 30, September 30, and December 31 of each year.

8. Offer to grant an easement to County Service Area 32 is required. A contractual maintenance agreement with a public utility may also be required.

H 15.0 CLUSTERED SYSTEMS

(A) DEFINITION. Clustered systems are comprised of three or more private sewage disposal systems with soil absorption components located in a common area on a single legal lot.

(B) GENERAL REQUIREMENTS. All components of clustered systems shall comply with all applicable requirements of this Code pertaining to private sewage disposal systems and the following additional requirements:

1. The primary (installed) soil absorption components of the clustered system shall provide 200% of the minimum area calculated for each structure connected to the clustered system pursuant to Section H-3 of this Code.
2. Land area providing for complete replacement of the primary soil absorption components of the clustered system shall be set aside for future expansion, and shall conform to Table UPC Appendix H-1 of this Code.
3.
 - a. For residential structures, each private sewage disposal system comprising the clustered system shall be connected to not more than one dwelling unit within a structure.
 - b. For non-residential structures, each private sewage disposal system comprising a clustered system shall be connected to one or more structures with a combined daily wastewater discharge not to exceed 1,500 gallons.
4. The soil absorption component of each private sewage disposal system within the clustered system shall be located at least sixteen horizontal feet from the soil absorption component of any other private sewage disposal system within the same clustered system.
5. When a clustered system is (or can become) located on land jointly owned by more than one owner of the structures served (e.g., condominium projects), an easement and agreement approved by the Environmental Health Division providing for access to inspect, maintain, and repair/replace the clustered system shall be recorded in the Office of the County Recorder.
6. A monitoring well, constructed and maintained in conformance with procedures adopted by the Administrative Authority, shall be provided in an approved location.
7. All distribution boxes within the clustered system shall be fitted with risers extending to finish grade elevation.

8. The applicant for each clustered system shall provide a signed statement from a California-Certified Engineering Geologist, certifying the following:

- a. The proposed clustered system site is free against the potential hazard from landslide, excessive settlement and slippage.
- b. Incorporation of geotechnical and geologic recommendations in concert with safe construction practices is anticipated to result in a site which is considered geotechnically and geologically suitable for the intended use and will not adversely affect adjoining properties.

TABLE CPC APPENDIX H-1

(Superscript numbers refer to footnotes (1) through (10) on next page)

LOCATION OF SEWAGE DISPOSAL SYSTEMS

Minimum Horizontal Distance in Feet From:	Building Sewer	Septic Tank ⁹	Disposal Field	Seepage Pit	Subsurface Sand Filtration System	Mound System
Building or Structures ¹	2	5	8	8	8	20 ⁷
Property line adjoining private property	Clear ²	5	5	8	8	10
Private water supply well on suction line	50 ³	50	100	150	100 ⁸	100
Streams, lakes, tidal waters or ocean waters	50	50	100	150	100	100
Large Trees	--	10	--	10	10	--
Seepage pits cesspools	--	5	5	12	--	--
Disposal Field	--	5	4 ⁴	5	--	--
On site domestic water service line	1 ⁵	5	5	5	5	5
Distribution Box	--	--	5	5	--	--
Pressure public water main	10 ⁶	10	10	10	10	10
Public water well	50 ³	50	150	200 ¹⁰	150-200 ¹⁰	150
Public water systems' surface water intake point	--	--	200-400 ¹⁰	200-400 ¹⁰	200-400 ¹⁰	200-400 ¹⁰

FOOTNOTES TO TABLE CPC APPENDIX H-1

NOTE: When disposal fields or seepage pits are installed in sloping ground, the minimum horizontal distance between any part of the leaching system and ground surface shall be fifteen (15) feet.

When facilities are located near tidal or ocean waters, the horizontal distance shall be measured from the historically most landward location of the beach at the mean high tide elevation. Structures or facilities shall be constructed in accordance with Federal, State and local laws to prevent erosion of the beaches and movement of the mean high tide closer than the horizontal distances specified above.

- (1) Including porches and steps, whether covered or uncovered, breezeways, roofed port-cocheres, roofed patios, carports, covered walks, covered driveways and similar appurtenances.
- (2) See Section 313.3 of the CPC.
- (3) The distance may be reduced to not less than twenty-five (25) feet when approved metallic piping is installed. Where special hazards are involved, the distance required shall be increased as may be directed by the County Health Officer or the Administrative Authority.
- (4) Plus two (2) feet for each additional foot of depth in excess of one (1) foot below the bottom of the drain line (see Section H6(i) of the CPC).
- (5) See Section 720.0 of the CPC.
- (6) For parallel construction. For crossings, approval by the Administrative Authority is required.
- (7) This distance shall be increased to 30 feet when the system is located upslope of the structure.
- (8) This distance shall be increased to 150 feet when seepage pits are used as a component of the system.
- (9) Includes components of Supplemental Treatment
- (10) Except as provided for in 10 (f) and 10 (g), new or replacement OWTS with minimum horizontal setbacks less than any of the following are not authorized:
 - (a) 150 feet from a public water well where the depth of the effluent dispersal system does not exceed 10 feet in depth.
 - (b) 200 feet from a public water well where the depth of the effluent dispersal system exceeds 10 feet in depth.
 - (c) Where the effluent dispersal system is within 600 feet of a public water well and exceeds 20 feet in depth the horizontal setback required to achieve a two-year travel time for microbiological contaminants shall be evaluated. A qualified professional shall conduct this evaluation. However in no case shall the setback be less than 200 feet.
 - (d) Where the effluent dispersal system is within 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 400 feet from the high water mark of the reservoir, lake or flowing water body.
 - (e) Where the effluent dispersal is located more than 1,200 feet but less than 2,500 feet from a public water systems' surface water intake point, within the catchment area 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 200 feet from the high water mark of the reservoir, lake or flowing water body.
 - (f) For replacement OWTS that do not meet the above 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 permitting authority 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.
 - (g) For new OWTS, installed on parcels of record existing at the time of the effective date of this Policy, that cannot meet the above 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 OWTS Policy and any other mitigation measures prescribed by the Authority Having Jurisdiction.

TABLE UPC APPENDIX H-2
SINGLE FAMILY DWELLINGS

Calculate septic tank capacity by both number of bedrooms and by number of plumbing fixture units. Use the capacity based on plumbing fixture units if greater than capacity based on number of bedrooms.

Number of Bedrooms	Septic Tank Capacity (gallons)	Number of Plumbing Fixture Units	Septic Tank Capacity (gallons)
3 or less	1,000	25 or less	1,000
4	1,200	26-33	1,200
5-6	1,500	34-45	1,500
Additional Bedrooms	Add 150 gallons capacity per bedroom in excess of 6	46-55	2,000
		56-60	2,250
		61-70	2,500
		71-80	2,750
		81-90	3,000
		91-100	3,250
		Over 100	Add 25 gallons capacity per fixture unit in excess of 100

NON-RESIDENTIAL STRUCTURES

Calculate septic tank capacity based solely on number of plumbing fixture units.

Number of Plumbing Fixture Units	Septic Tank Capacity (gallons)
20 or less	1,000
21-25	1,200
26-33	1,500
34-45	2,000
46-55	2,250
56-60	2,500
61-70	2,750
71-80	3,000
81-90	3,250
91-100	3,500
Over 100	Add 25 gallons capacity per plumbing fixture unit in excess of 100

Note: Where tank size is not commercially available for calculated capacity, round up to the next available size.

TABLE UPC APPENDIX H-6

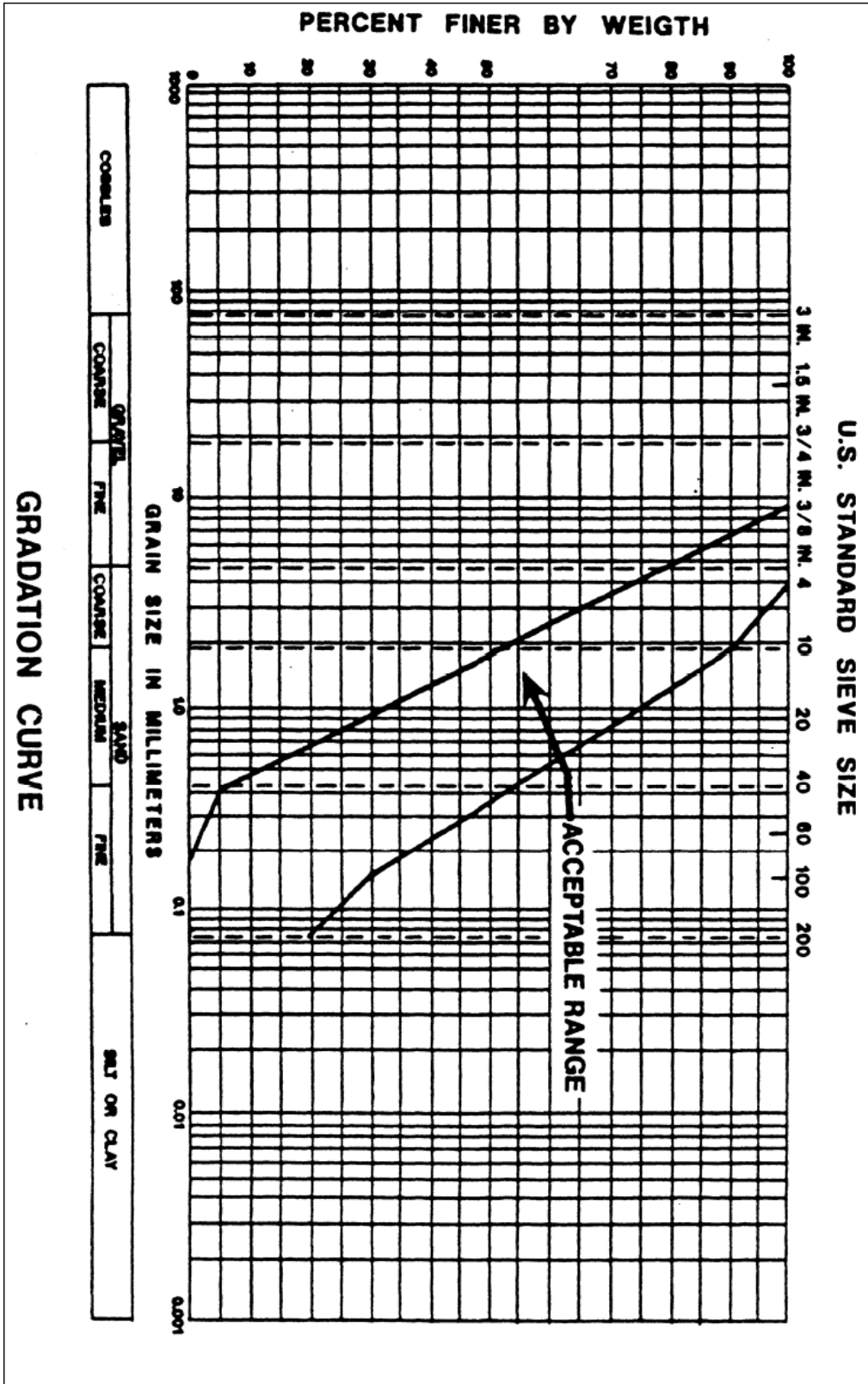
(Letters in parenthesis refer to footnotes below)

ABSORPTION AREA REQUIREMENTS

Percolation Rate (Time in minutes required for water to fall one inch)	Required Absorption Area (Sq. ft. per bedroom using standard leach lines.) See notes (a) through (e) below.
1 or less	75
2	85
3	100
4	115
5	125
10	165
15	190
30	250
45	300
60	330
Over 60	---

- (a) Sufficient usable land area must be available to provide 100% expansion of required absorption area when/if necessary. See Section UPC APPENDIX H-1(d) in this Code.
- (b) Absorption area should be sufficient to accommodate increased future use stemming from the addition of bedrooms or conversion of unfinished spaces to bedroom use, whenever such changes can reasonably be anticipated.
- (c) The absorption area for leach lines and leaching beds is calculated as trench bottom area only except as provided in Section UPC APPENDIX H-3 in this Code. Minimum required area for leaching trenches is 150 sq. ft.
- (d) The above table allows for the connection of domestic food waste units and automatic clothes washing machines without further increase in absorption area.
- (e) Soil having a percolation rate over 60 min/inch is unsuitable for installation of an absorption system.

TABLE UPC APPENDIXH-7



VENTURA COUNTY ENVIRONMENTAL HEALTH DIVISION
OWTS TECHNICAL MANUAL

Date effective: 6/17/15

Supersedes: 2/28/12

Section 9: Appendix

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Plot Plan

A plot plan is required for each proposed onsite wastewater treatment system (OWTS). It is recommended the plot plan be prepared by a Registered Civil Engineer, Registered Geologist, or Registered Environmental Health Specialist. The plot plan shall be to scale (i.e., 1 inch equals 20 feet, 1 inch equals 40 feet, 1 inch equals 50 feet) and shall identify the exact location of the following:

1. All existing and proposed structures including garage(s)
2. Septic tank and related components
3. Distribution box (if required)
4. Primary disposal field or seepage pits and the 100% expansion area
5. Water wells located on the property and adjacent properties within 200 feet of the OWTS
6. Property lines and easements
7. Trees
8. Test holes and borings
9. Lakes or streams (intermittent or live) within 50 feet of the sewage disposal system (100 feet for seepage pits)
10. Public sewer lines within 200 feet of the property
11. All existing water lines, including mains within 10 feet of the property line, and all proposed lines to be installed on the project site
12. Paved areas, including driveways, patios and walkways
13. Rock outcroppings
14. Road cuts with approximate height
15. Contour lines or other indication of slope, grading cut and fill lines
16. Existing OWTS

Procedures for Completing an Application for a New Onsite Wastewater Treatment System

1. Obtain zoning clearance verification from the RMA/Planning Division.
2. Submit a completed application for an Onsite Wastewater Treatment System for each proposed system.
3. Submit a completed RMA/EHD “Bedroom Equivalents and Fixture Unit Worksheet” form.
4. Submit one copy of the floor plan of the structure(s).
5. Submit one copy of the soils engineering report containing percolation data, boring logs, and system design recommendations. Include any other pertinent data including updates to original soils report.
6. Submit three copies of a scaled plot plan depicting the proposed system.
7. If proposing a subsurface sand filtration system, submit Subsurface Filter Bed with Sewage Disposal Pit or Basal Subsurface Filter Bed form.
8. Submit a Certificate of Authorization form if an authorized representative is processing the permit for the owner.
9. Submit the application fee which is determined by the OWTS type and size of the septic tank.

APPLICATION FOR A NEW OWTS FORM



Ventura County Environmental Health Division
 800 S. Victoria Ave., Ventura CA 93009-1730
 TELEPHONE: 805/654-2813 or FAX: 805/654-2480
 Web Site Address: www.ventura.org/envhealth

EHD ON #: _____

Permits Plus OW#: _____

APPLICATION FOR INDIVIDUAL SEWAGE DISPOSAL SYSTEM

APPLICANT INSTRUCTIONS 1. For the proposed structure, submit with this application: a. A Zoning Clearance issued by V.C. Planning Div. for the proposed construction. b. One copy of the floor plan. c. One copy of a soils report. d. Three copies of a plot plan with system design specifications. e. An EHD "Bedroom Equivalent and Fixture Unit Worksheet." f. County Service Area 32 offer to grant easement agreement (Alternative ISDS only). 2. This application expires 180 days from the date fees are received.	FOR OFFICE USE ONLY Recd by _____ Date Recd _____ Amt. Recd _____ Receipt Number _____ Check Number _____
--	---

1. Job address _____
Number - Street - City/Town/Area

2. Assessor's parcel number _____ - 0 - _____ Zone Clearance No.: _____

3. Owner's name _____ 4. Telephone No. () _____ () _____

5. Mailing address _____
Number Street City State Zip

6. Applicant's Name _____ 7. Telephone No. () _____
(if different than owner)

8. Applicant's Mailing Address _____
Number Street City State Zip

9. Residential Development: Main Residence Secondary Residence (explain) _____
 Other (explain) _____
 Total number of bedroom equivalents _____
 Total number of plumbing fixture units _____

Commercial Development: Total number of plumbing fixture units _____
 Total number of employees and visitors _____

10. Water supply: Public: Name of water company _____
 Private

11. Distance from nearest water well: Septic tank _____ feet
 Sewage disposal system _____ feet

12. Distance from springs, lakes, ocean waters, and natural drainage courses: Septic tank _____ feet
 Sewage disposal system _____ feet

13. Type of disposal system: Conventional: Leach Line Seepage Pit Alternative: [see 1.f) above]
 Mound System Subsurface Sand Filter:
 Length _____ ft. x Width _____ ft. = _____ Sq. ft.

14. Size of septic tank _____ gallons

15. Surface slope in area of disposal system _____ percent

16. Leach line installation
 Number of trenches _____ on _____ foot centers Length of each trench _____ feet
 Depth of each trench _____ inches Bottom width of trench _____ inches
 Earth cover over drainline _____ inches Filter material under drain line _____ inches
 Square feet/Lineal feet of trench _____ Absorption area provided _____ square feet

17. Seepage pit installation:
 Number of pits _____ Diameter of each pit _____ feet
 Earth cover over pits _____ feet Total depth of each pit _____ feet
 Absorption area provided _____ square feet Effective depth of each pit _____ feet

18. Signature of applicant or representative _____ Date _____

FOR OFFICE USE ONLY	
Application: <input type="checkbox"/> Approved <input type="checkbox"/> Denied By _____	Date _____
Conditions of Approval: _____	
Installation approved by _____	Date _____

CRC ISDS APPLIC 5/06 DISTRIBUTION: White and Canary - Environmental Health Div. Pink - Building and Safety Div. Goldenrod - Applicant
SEE REVERSE FOR MORE INFORMATION

Procedures for Completing an Application for a Full Certification

1. Obtain zoning clearance verification from the RMA/Planning Division.
2. Submit a completed application for Certification of Existing OWTS.
3. Submit one copy of the Septic Tank Pumping Inspection Report. Each OWTS must be pumped by a licensed septic tank pumper within the last year to show compliance with the Ventura County Building Code.
4. Submit three copies of a scaled plot plan with system design specifications.
5. Submit one copy of the floor plan of the structures depicting all existing and proposed plumbing fixtures and rooms.
6. Submit a completed RMA/EHD "Bedroom Equivalents and Fixture Unit Worksheet" form.
7. Submit a Certificate of Authorization form if an authorized representative is processing the permit for the owner.
8. Submit the application fee for a full certification of an OWTS.

APPLICATION FOR A CERTIFICATION FORM



Ventura County Environmental Health Division
 800 S. Victoria Ave., Ventura CA 93009-1730
 TELEPHONE: 805/654-2813 or FAX: 805/654-2480
 Web Site Address: www.ventura.org/envhealth

EHD ON #: _____
 Permits Plus OW#: _____

CERTIFICATION OF EXISTING INDIVIDUAL SEWAGE DISPOSAL SYSTEM

APPLICANT INSTRUCTIONS: 1. "Setback" Certification Applications require the submittal of the following: a. Zoning clearance verification from RMA/Planning Division b. Three copies of a plot plan with system design specification 2. "Full" Certification Applications require the submittal of the following: a. Zoning clearance verification from RMA/Planning Division b. One copy of the Septic Tank Pumping Inspection Report c. Three copies of a plot plan with system design specifications d. One copy of the floor plan of the structure(s) e. One copy of the RMA/EHD form, "Bedroom Equivalents and Fixture Units Worksheet" 3. This application expires 180 days from the date fees are received. NOTE: 4. Any repair or modification of the existing ISDS must be completed before the ISDS will be certified. NOTE: 5. Additional information may be required depending upon review of above requested information.	SEE REVERSE SIDE FOR FURTHER INFORMATION
1. SITE INFORMATION Street Address _____ City _____ Zip _____ Assessor's Parcel Number _____ - _____ - _____	
2. MAILING INFORMATION <i>Note: if the owner and applicant are not the same, complete all of the information below. If owner and applicant are the same, check here _____.</i> Owner Name _____ Telephone No. _____ / _____ Owner Mailing Street Address, city, zip _____ Applicant Name _____ Telephone No. _____ / _____ Applicant Mailing Street address, city, zip _____	
3. TYPE OF PROJECT AND SQUARE FOOTAGE <i>(check appropriate box and indicate square footage of proposed construction)</i> Project Description: _____ _____ Residential Remodel _____ sq. ft. _____ Commercial/Industrial Remodel _____ sq. ft. _____ Other (Specify) _____ sq. ft.	
4. DESCRIPTION OF STRUCTURE a. Bedroom equivalents* Existing: _____ + Proposed: _____ = Total: _____ * As determined from the attached EHD form, "Bedroom Equivalents and Fixture Units Worksheet" b. Plumbing fixture units* Existing: _____ + Proposed: _____ = Total: _____ * As determined from the attached EHD form, "Bedroom Equivalents and Fixture Units Worksheet"	
5. DISTANCE FROM NEAREST WATER WELL Septic Tank: _____ feet Sewage Disposal System: _____ feet	
6. DISTANCE FROM SPRINGS, STREAMS, OCEAN WATERS AND NATURAL DRAINAGE COURSES: Septic Tank: _____ feet Sewage Disposal System: _____ feet	
7. TYPE OF DISPOSAL SYSTEM Leach Line _____ Seepage Pit _____ Mound _____ Subsurface Sand Filter _____	
8. CAPACITY OF SEPTIC TANK: _____ gallons	
9. READ AND SIGN: I certify under penalty of perjury that the foregoing is true and correct and that the accompanying Septic Tank Pumping Inspection Report is accurate: _____ Signature of Applicant/Authorized Representative _____ Date	
FOR OFFICE USE ONLY	
Received by _____ Date _____ Amount Received _____ Receipt # _____ Check # _____	
TECHNICAL STAFF REVIEW: Meets criteria for Individual Sewage Disposal System _____ Registered Environmental Health Specialist _____ Date	

McKinns/ISDS/Cert Form Front 5 2 06

DISTRIBUTION: White-EHD Canary-Applicant Pink-Building/Safety

SEE REVERSE SIDE FOR FURTHER INFORMATION

Procedures for Completing an Application for a Setback and Mini Certification

Setback and mini certifications are intended for projects that will NOT add plumbing fixture units or bedroom equivalents to the existing structure. Proposed project types include the following:

- patio cover
- spa
- barn or garage with no plumbing
- pond
- sport court
- carport
- pool
- raised deck
- enlarging the footprint of a home
- pop-out bay window
- tennis court

1. Obtain a zoning clearance verification from the RMA/Planning Division.
2. Submit a completed application for Certification of Existing OWTS.
3. Submit three copies of a scaled plot plan with system design specification
4. Submit one copy of the floor plan of the structure(s). Carports, gazebos, ponds, pools, spas, sport court, tennis courts, and similar structures do not require the submission of a floor plan.
5. Submit the application fee for the applicable certification.



Ventura County Building and Safety Division
800 S. Victoria Ave., Ventura CA 93009-1720
TELEPHONE: 805/654-2771 or 805/582-8064
INSPECTIONS: 805/654-2791 or 805/582-8063
Website: www.ventura.org/rma/build_safe

Ventura County Environmental Health Division
800 S. Victoria Ave., Ventura CA 93009-1730
TELEPHONE: 805/654-2802 or 805/662-6520
INSPECTIONS ONLY: 805/477-7136
Website: www.ventura.org/rma/envhealth

SEPTIC TANK ABANDONMENTS

I. INFORMATION YOU SHOULD KNOW REGARDING SEPTIC TANK ABANDONMENTS

A. Environmental Health Division's (EHD) Role:

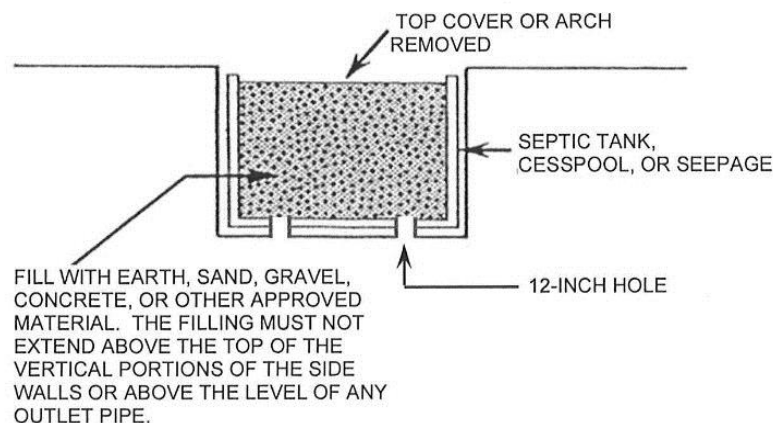
1. When an existing septic tank is abandoned due to the installation of a replacement septic tank, inspection of the abandonment will be covered under the permit issued by EHD to install the replacement tank.
2. When an existing septic tank is abandoned on vacant property for safety reasons, a permit to construct (repair permit) issued by EHD must be obtained.

B. Building and Safety Division's Role:

When a septic tank is abandoned in conjunction with connection to a public sewer, the Building and Safety Division will inspect the septic tank abandonment. In such cases, a plumbing permit issued by the Building and Safety Division must be obtained.

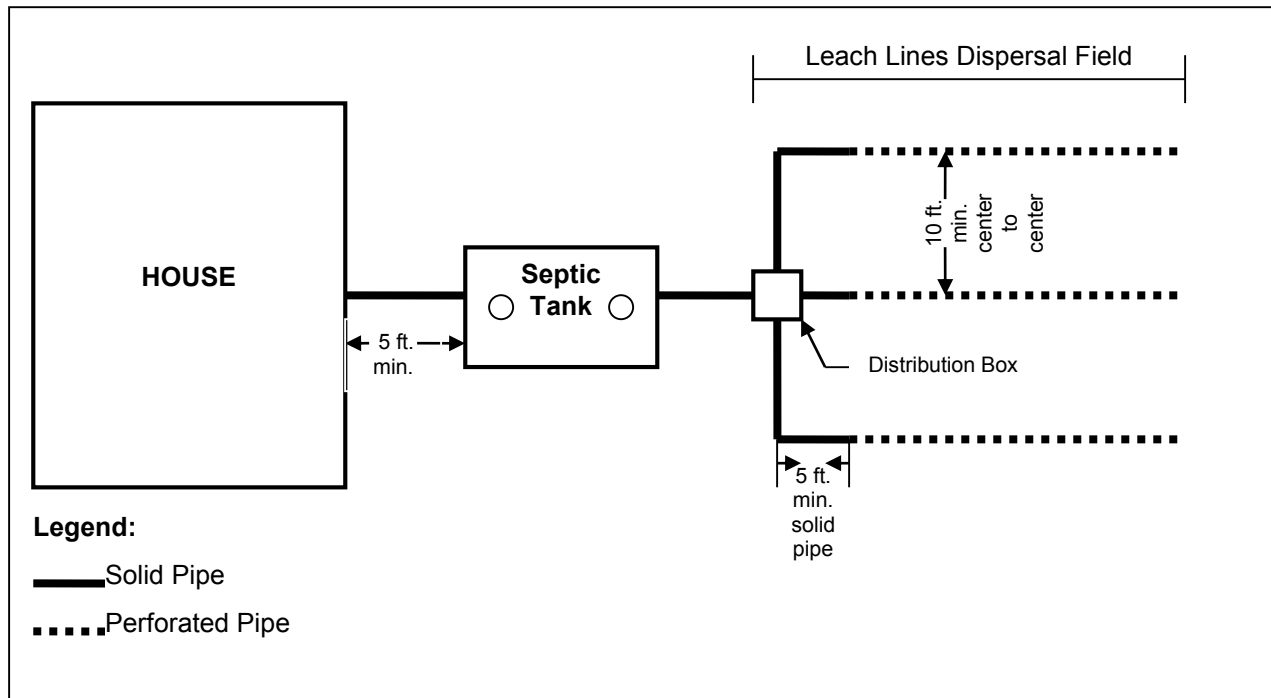
II. PROCEDURES FOR ABANDONING A SEPTIC TANK, CESSPOOL, OR BRICK-LINED SEEPAGE PIT

- Step 1. Completely remove (pump out) all sewage from the septic tank, cesspool, or brick-lined seepage pit. Provide a copy of the pumping receipt to the inspector.
- Step 2. Remove or crush the top cover or arch over the septic tank, cesspool, or brick-lined seepage pit.
- Step 3. Punch a hole at least 12 inches in diameter at the bottom of the septic tank in each compartment.
- Step 4. Fill the septic tank, cesspool, or brick-lined seepage pit with clean earth, sand, gravel, concrete, or other material approved by either the Environmental Health Division or the Building and Safety Division. Do not fill above the top of the vertical portions of the sidewalls or above the level of any outlet pipe. SEE DIAGRAM BELOW
- Step 5. When filling with earth or sand, jet and compact the material to prevent settling.
- Step 6. Inspections: If you are installing a new tank, call EHD at 805/477-7136, 24 hours in advance, for an inspection. If you are connecting to a public sewer system, call the Building and Safety Division at 805-654-2791 to schedule an abandonment and sewer connection inspection.
- Step 7. Fill to grade level only after approval from the EHD or Building and Safety inspector is received.

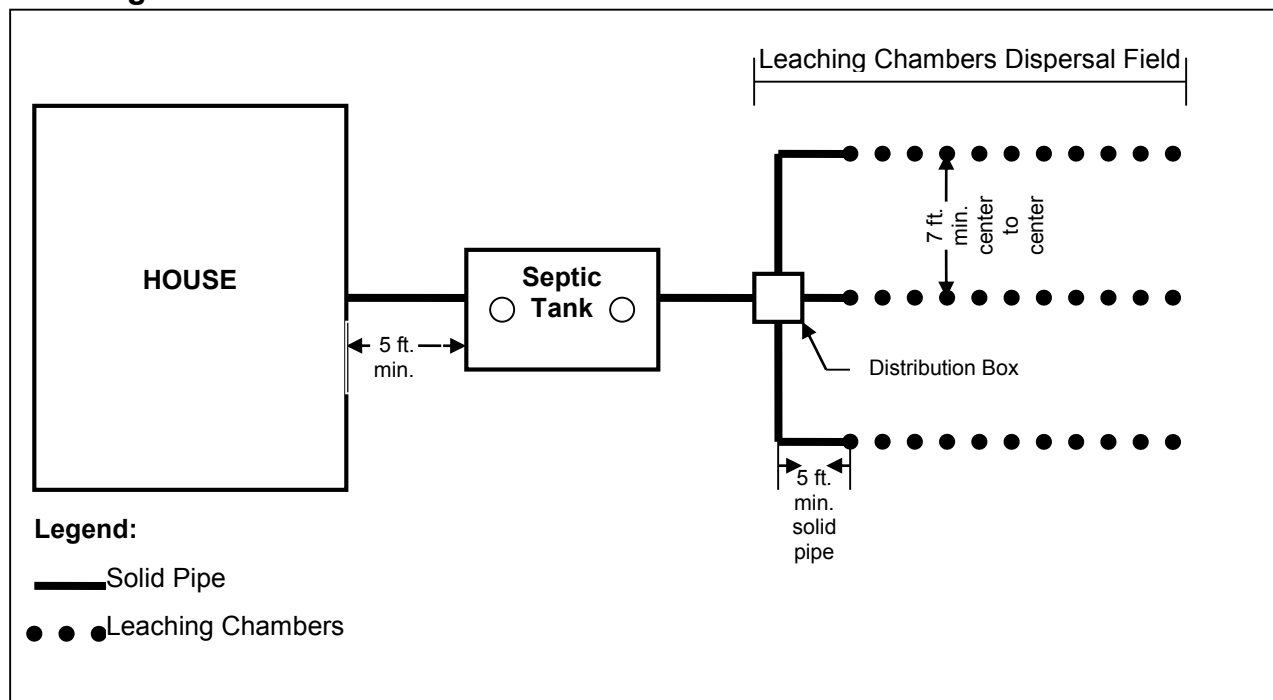


Typical Septic Tank System with Conventional Dispersal Field

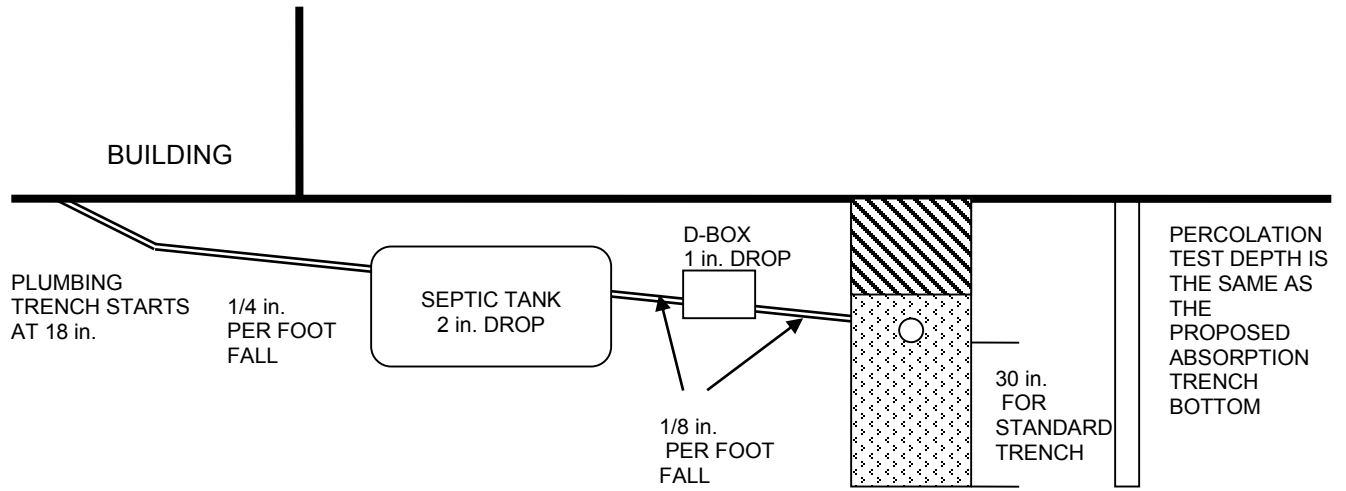
Leach Lines



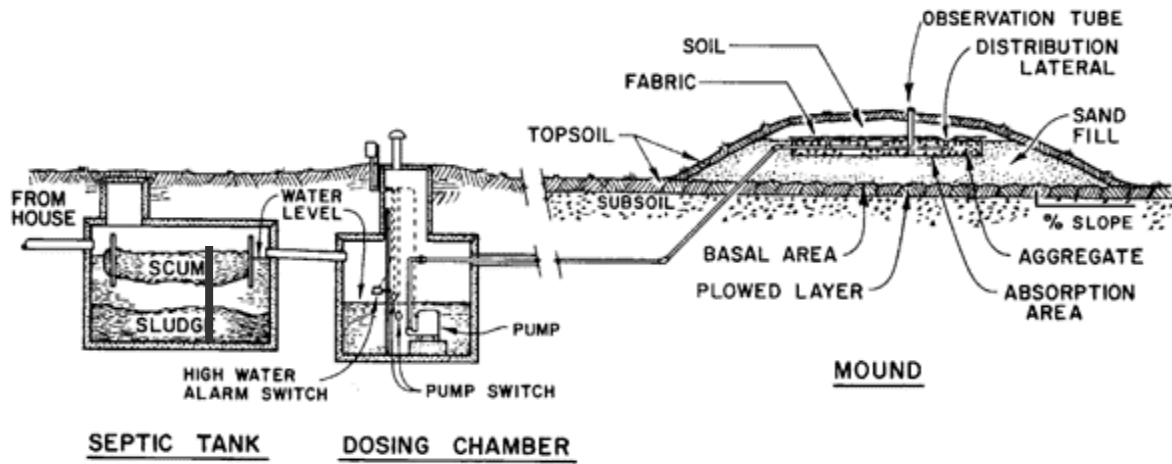
Leaching Chambers



Cross Section of a Septic System with Rock Filled Leach Line



Mound System



Setback Requirement Chart

Minimum Horizontal Distance in Feet From:	Building Sewer	Septic Tank	Disposal Field	Seepage Pit	Subsurface Sand Filtration System	Mound System
Building or Structures ¹	2	5	8	8	8	20 ²
Property line adjoining private property	Clear ³	5	5	8	8	10
Water supply well on suction line	50 ⁴	50	100	150	100 ⁵	100
Streams, lakes, tidal waters or ocean waters	50	50	100	150	100	100
Large Trees	--	10	--	10	10	--
Seepage pits or cesspools	--	5	5	12	--	--
Disposal Field	--	5	4 ⁶	5	--	--
On site domestic water service line	1 ⁷	5	5	5	5	5
Distribution Box	--	--	5	5	--	--
Pressure public water main	10 ⁸	10	10	10	10	10

NOTE: When disposal fields or seepage pits are installed in sloping ground, the minimum horizontal distance between any part of the leaching system and ground surface shall be fifteen (15) feet.

When facilities are located near tidal or ocean waters, the horizontal distance shall be measured from the historically most landward location of the beach at the mean high tide elevation. Structures or facilities shall be constructed in accordance with Federal, State and local laws to prevent erosion of the beaches and movement of the mean high tide closer than the horizontal distances specified above.

¹ Including porches and steps, whether covered or uncovered, breezeways, roofed port-cocheres, roofed patios, carports, covered walks, covered driveways and similar appurtenances.

² This distance shall be increased to 30 feet when the system is located upslope of the structure.

³ See Section 313.3 of the UPC.

⁴ The distance may be reduced to not less than twenty-five (25) feet when approved metallic piping is installed. Where special hazards are involved, the distance required shall be increased as may be directed by the County Health Officer or the Administrative Authority.

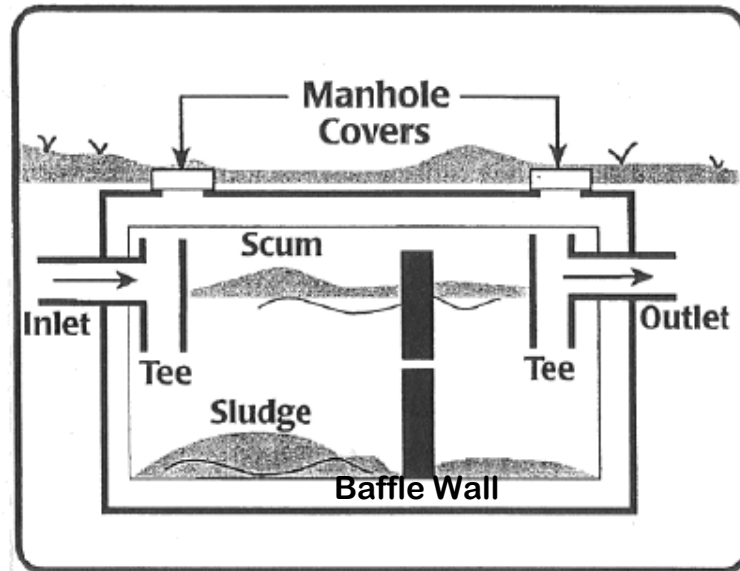
⁵ This distance shall be increased to 150 feet when seepage pits are used as a component of the system.

⁶ Plus two (2) feet for each additional foot of depth in excess of one (1) foot below the bottom of the drain line (see Sec. H6 of the UPC).

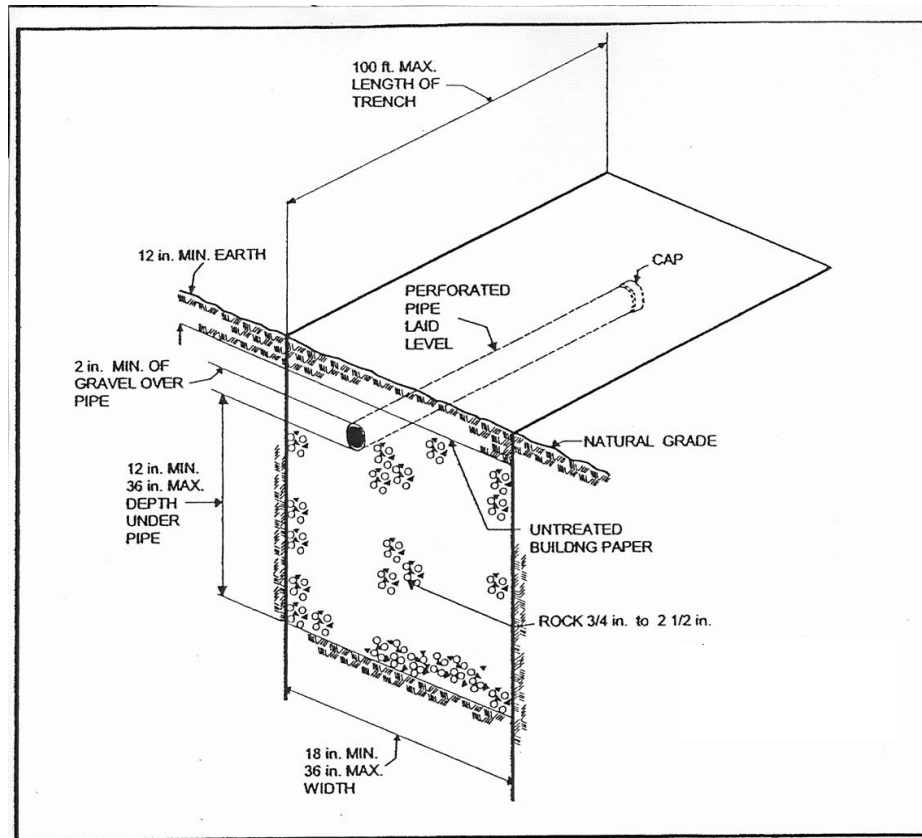
⁷ See Sec. 720.0 of the UPC.

⁸ For parallel construction. For crossings, approval by the Administrative Authority is required.

Cross Section of a Two-Compartment Septic Tank



Typical Leach Lines

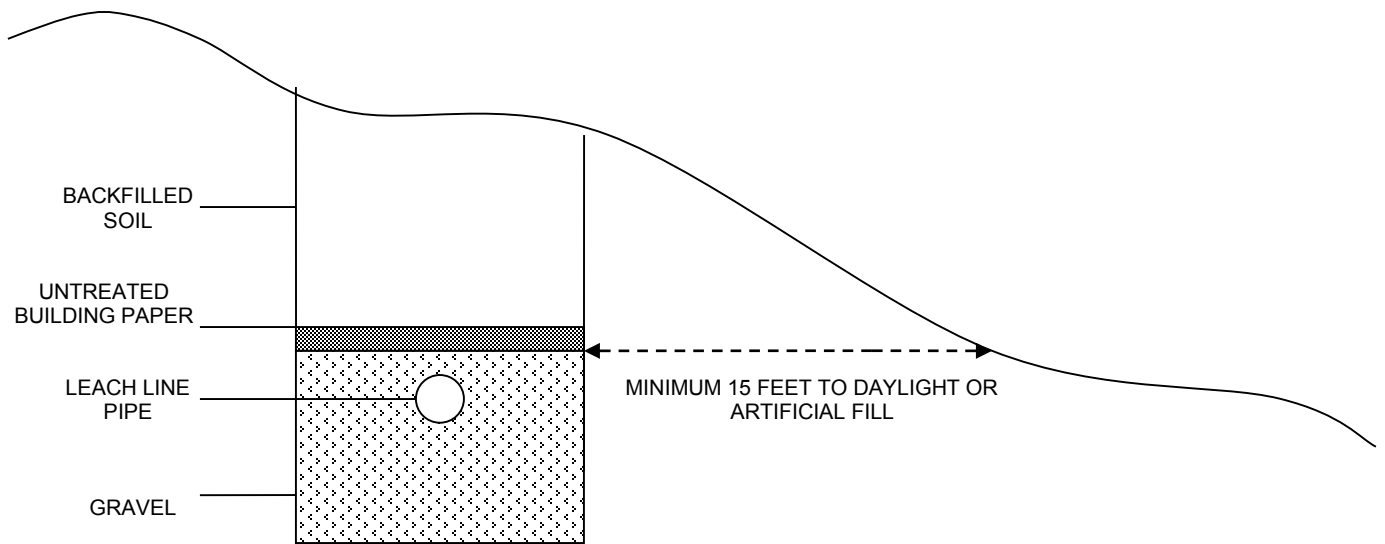


Square Feet Per Lineal Foot Trench Widths and Depths

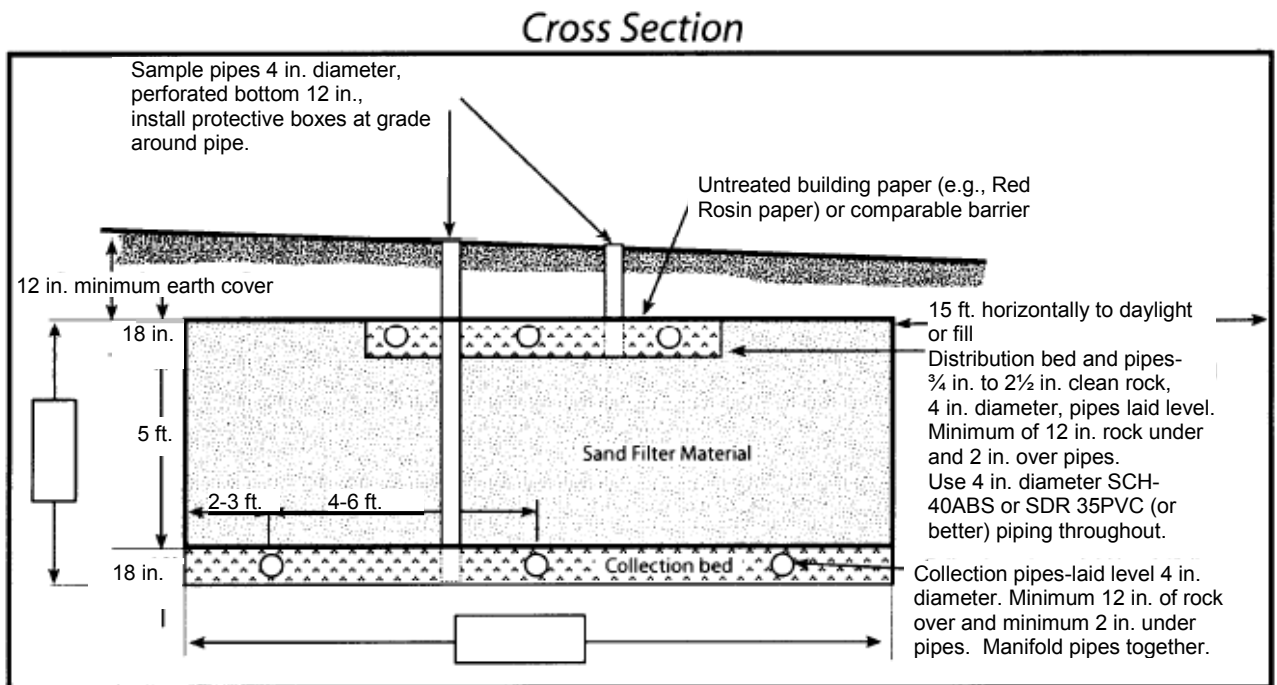
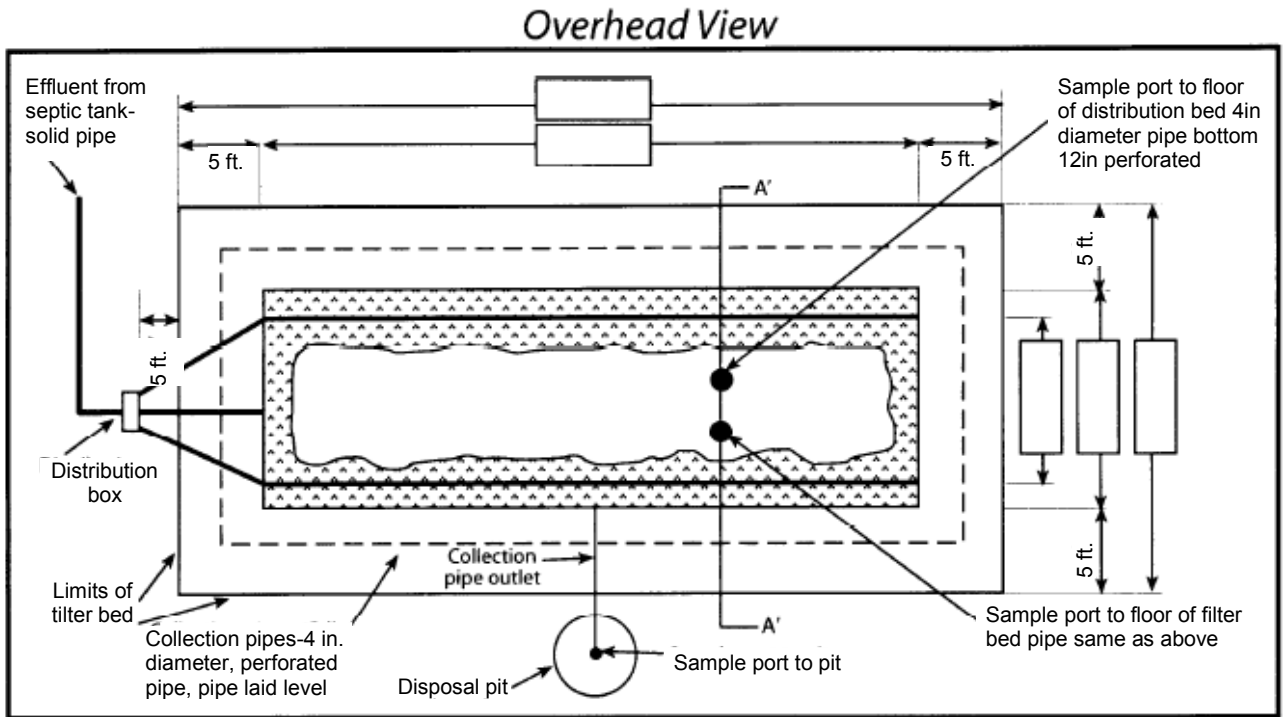
		Width of Trench Bottom			
		18 inches	24 inches	30 inches	36 inches
Depth of Gravel Below Pipe	12 inches	1 ½ Feet ²	2 Feet ²	2 ½ Feet ²	3 Feet ²
	18 inches	2 ½ Feet ²	3 Feet ²	3 ½ Feet ²	4 Feet ²
	24 inches	3 Feet ²	4 Feet ²	4 ½ Feet ²	5 Feet ²
	30 inches	3 Feet ²	4 Feet ²	5 Feet ²	6 Feet ²
	36 inches	3 Feet ²	4 Feet ²	5 Feet ²	6 Feet ²

1. No system may be installed with less than 150 square feet of trench bottom.
2. In large specially designed systems 50% of the required square footage of leaching area must be obtained from trench bottom, and no more than 50% from side walls.
3. Additional footage may be obtained from side walls measured between 12 inches and 36 inches below the pipe.

Leach Line Horizontal Setback from Daylight

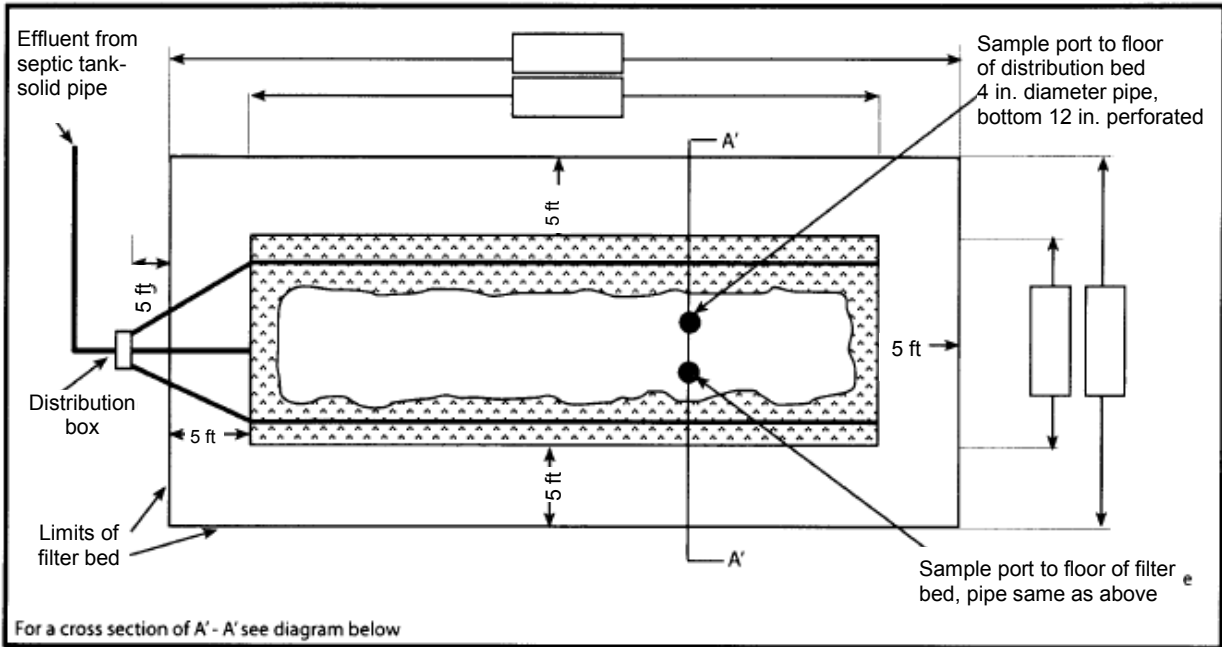


Subsurface Filter Bed with Disposal Pit

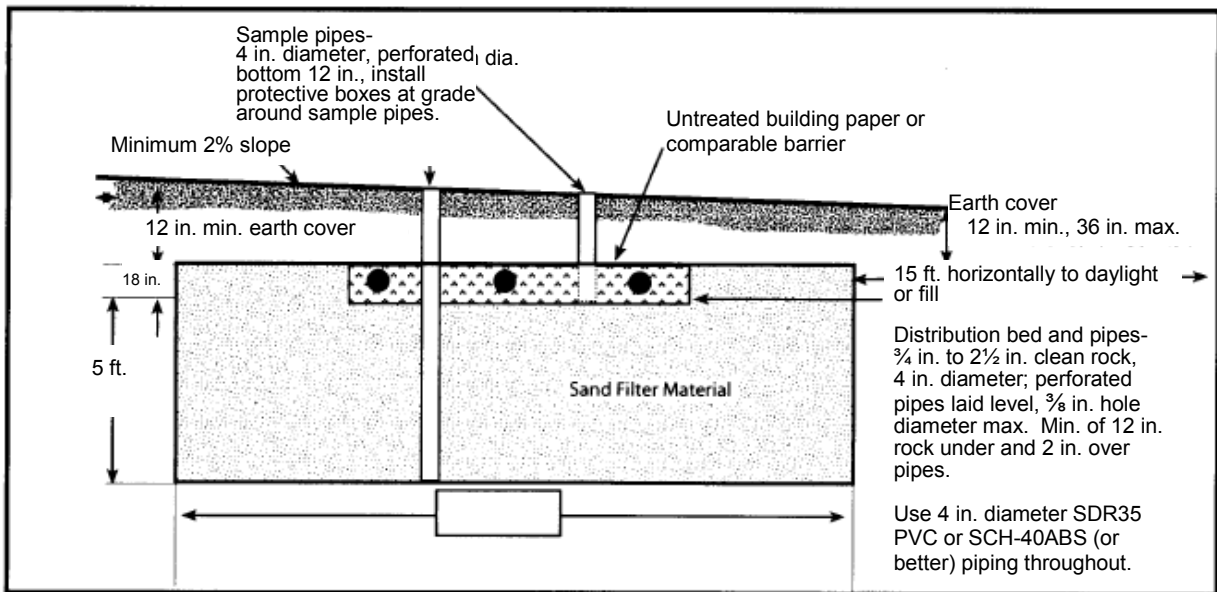


Basal Subsurface Filter Bed

Overhead View



Cross Section of A'-A' shown above



Septic Tank Criteria

SINGLE FAMILY DWELLINGS

Calculate septic tank capacity by both number of bedrooms and by number of plumbing fixture units. Use the capacity based on plumbing fixture units if greater than capacity based on number of bedrooms.

Number of Bedrooms	Septic Tank Capacity (gallons)	Number of Plumbing Fixture Units	Septic Tank Capacity (gallons)
3 or less	1,000	25 or less	1,000
4	1,200	26-33	1,200
5-6	1,500	34-45	1,500
Additional Bedrooms	Add 150 gallons capacity per bedroom in excess of 6	46-55	2,000
		56-60	2,250
		61-70	2,500
		71-80	2,750
		81-90	3,000
		91-100	3,250
		Over 100	Add 25 gallons capacity per fixture unit in excess of 100

NON-RESIDENTIAL STRUCTURES

Calculate septic tank capacity based solely on number of plumbing fixture units.

Number of Plumbing Fixture Units	Septic Tank Capacity (gallons)
20 or less	1,000
21-25	1,200
26-33	1,500
34-45	2,000
46-55	2,250
56-60	2,500
61-70	2,750
71-80	3,000
81-90	3,250
91-100	3,500
Over 100	Add 25 gallons capacity per plumbing fixture unit in excess of 100.

NOTE: Where tank size is not commercial available for calculated capacity, round up to the next available size.

**On-site Wastewater Treatment System (OWTS)
 BEDROOM EQUIVALENTS AND FIXTURE UNITS WORKSHEET**

APPLICANT: Use this worksheet to identify the number of rooms and plumbing fixture units in a structure *before and after your proposed construction is completed*. Complete the information requested below and submit this worksheet to the Environmental Health Division with each OWTS application for a new system or "full" certification of an existing system. For a "new system", only complete the "proposed" column.

Applicant Name _____

Site St. addr., City, Zip _____

Assessor's Parcel Number _____

Bedroom Equivalent Rooms						Core Rooms			Office Use Only	
	Existing	Proposed		Existing	Proposed		Existing	Proposed	Verified by _____	
Bedroom			Work shop			Kitchen			Date _____	
Library			Studio			Living			Comments by reviewer: <i>*A "family room" is defined as "a room with an unobstructed opening into a living room, dining room, or kitchen, or a room where at least 1/2 of the area of the common wall is open and unobstructed".</i>	
Study			Pool Cabaña			Dining				
Office			Recreation			Bath				
Exercise			Other:			Utility				
Game Room						Family				
Den						Garage/ Carport				
Loft										

TOTAL BEDROOM EQUIVALENTS = Existing _____ + Proposed _____ = Total _____

FIXTURE UNITS GUIDE <i>Plumbing fixture units are determined by multiplying the number of each fixture by the unit value.</i>									
Type of Plumbing Fixture	Existing Fixtures	+	Proposed Fixtures	=	Total Fixtures	x	Unit Value	=	Total Fixture Units
Bathtub		+		=		X	2	=	
Clothes Washer/Laundry Tub		+		=		X	2	=	
Tub/Shower Combination		+		=		X	2	=	
Shower		+		=		X	2	=	
Kitchen Sink and/or Dishwasher		+		=		X	2	=	
Bar Sink		+		=		X	1	=	
Flush Toilet		+		=		X	6	=	
Utility Sink		+		=		X	3	=	
Bidet		+		=		X	2	=	
Floor Drains		+		=		X	3	=	
Wash Basin (Lavatory)		+		=		X	1	=	
Other		+		=		X		=	

TOTAL FIXTURE UNITS = Existing _____ + Proposed _____ = Total _____

ja S:\Tech Services\Liquid Waste\OWTS(formerly ISDS) & G:\Admin\Tech Services\Office Forms\Forms\Forms PDF\Fixture Units 9 20 13

Percolation Test Procedures

1. Dig or bore a 12-inch diameter hole to the depth of the proposed absorption trench bottom.
2. After the hole has been excavated, carefully scratch the bottom and sides of the hole. This is to eliminate any smeared or sealed surfaces and provide a natural soil interface into which water may percolate. Remove all loose material from the hole and place two inches of coarse sand or fine gravel in the bottom.
3. The hole should be continuously soaked overnight, which may require the constant addition of water from a make-up reservoir, possible by means of an automatic siphon. This procedure is to insure that the soil is given ample opportunity to swell and to approach the condition it will be in during the wettest season of the year. The soaking must be done with clean water, and the water should be added carefully (to avoid disturbing the sides of the test hole) to a minimum depth of twelve inches over the top of the gravel. The percolation measurements are made 24 hours after the start of the soaking period.

In sandy soils with little or no clay, soaking may not be necessary. If, after filling the hole twice with 12 inches of water, the water seeps completely away in less than ten minutes, the test can proceed immediately.

4. After completion of the necessary pre-saturation period, the percolation rate is determined by one of the following procedures:
 1. Adjust the level of the water in the test hole to a depth 6 inches above the gravel. From a fixed reference point, measure the drop in water level at 30 minute intervals for 4 hours, refilling to 6 inches over the gravel only when the water level is 2 inches or less above the gravel.
 2. If the 6 inches of water completely seeps away in less than 30 minutes, then the measuring interval should be reduced to 10 minutes and the test run for a minimum of one hour.

The drop in water level that occurs during the final time interval is used to calculate the percolation rate in both test procedures. **The maximum percolation rate is 60 minutes per inch.**

NOTE: In both percolation-rate measurement procedures, the drop in water level at each measurement interval throughout the test and the stabilized percolation rate are to be recorded on the Percolation Test Data Form and submitted with the soils report. The percolation rate is considered to be stabilized when the time for two successive measurements vary by less than 10%.

5. The following information must also be submitted with the test data:

1. Date and times of pre-saturation period
2. Date and times tests were conducted
3. Name of person conducting tests.
4. Temperature and weather conditions at time of testing

6. Miscellaneous Notes:

It is possible for significant error to enter into the percolation rate calculation if the change in water depth is not carefully determined. This is of particular concern in soils with low permeability where the accurate measurement of the percolation rate is especially important. Much of the measurement error can be avoided if a float gauge is used.

PERCOLATION TEST DATA

Static headtest: 6 in. water over 2 in. gravel, 24 hr. presoak, 12 in. diameter hole, 4 hr. test period.¹

Job Address: _____ Nearest Cross Street: _____

Owner/Builder: _____ Address: _____

Diameter of Hole: _____ Testing Laboratory: _____

Test Performed By: _____ Parcel #: _____ - _____ - _____

H = Distance from Reference Point to Water Level at Each Observation

ΔH = Drop in Water Level Between Observations

ΔT = Time Interval Between Observations

R = Percolation Rate, Minutes/Inch

Date and Time of Soaking: _____ Weather Conditions: _____

Date and Time of Testing: _____ Temperature (Approximate): _____

TEST HOLE NO. 1 Depth² _____ Stabilized Rate _____ min/inch

TIME	H (inch) *	ΔH	ΔT	R (Minutes/Inch)	REMARKS

TEST HOLE NO. 2 Depth² _____ Stabilized Rate _____ min/inch

TIME	H (inch) *	ΔH	ΔT	R (Minutes/Inch)	REMARKS

TEST HOLE NO. 3 Depth² _____ Stabilized Rate _____ min/inch

TIME	H (inch) *	ΔH	ΔT	R (Minutes/Inch)	REMARKS

JA G:\Admin\Tech Serv\Office Forms\Forms\Perc Test Data 6 18 15 * Note time of refill to 6 in. head. 1 - see Page 9-20, OWTS Manual
2 - Distance from reference point to bottom of hole

Absorption Area Requirements

Percolation Rate (Time in minutes required for water to fall one inch)	Required Absorption Area (Sq. ft. per bedroom using standard leach lines. See notes (a) through (e) below.
1 or less	75
2	85
3	100
4	115
5	125
10	165
15	190
30	250
45	300
60	330
over 60 (e)	---

- (a) Sufficient usable land area must be available to provide 100% expansion of required absorption area when/if necessary. See Sec. UPC APPENDIX H-1(d) in this Code.
- (b) Absorption area should be sufficient to accommodate increased future use stemming from the addition of bedrooms or conversion of unfinished spaces to bedroom use, whenever such changes can be reasonably be anticipated.
- (c) The absorption area for leach lines and leaching beds is calculated as trench bottom area only except as provide in Sec. UPC APPENDIX H-3 in this ordinance. Minimum required area for leaching trenches is 150 sq. ft.
- (d) The above table allows for the connection of domestic food waste units and automatic clothes washing machines without further increase in absorption area.
- (e) Soil having a percolation rate over 60 min/inch is unsuitable for installation of an absorption system.
- (f) Absorption Area requirements for non-residential systems (commercial)

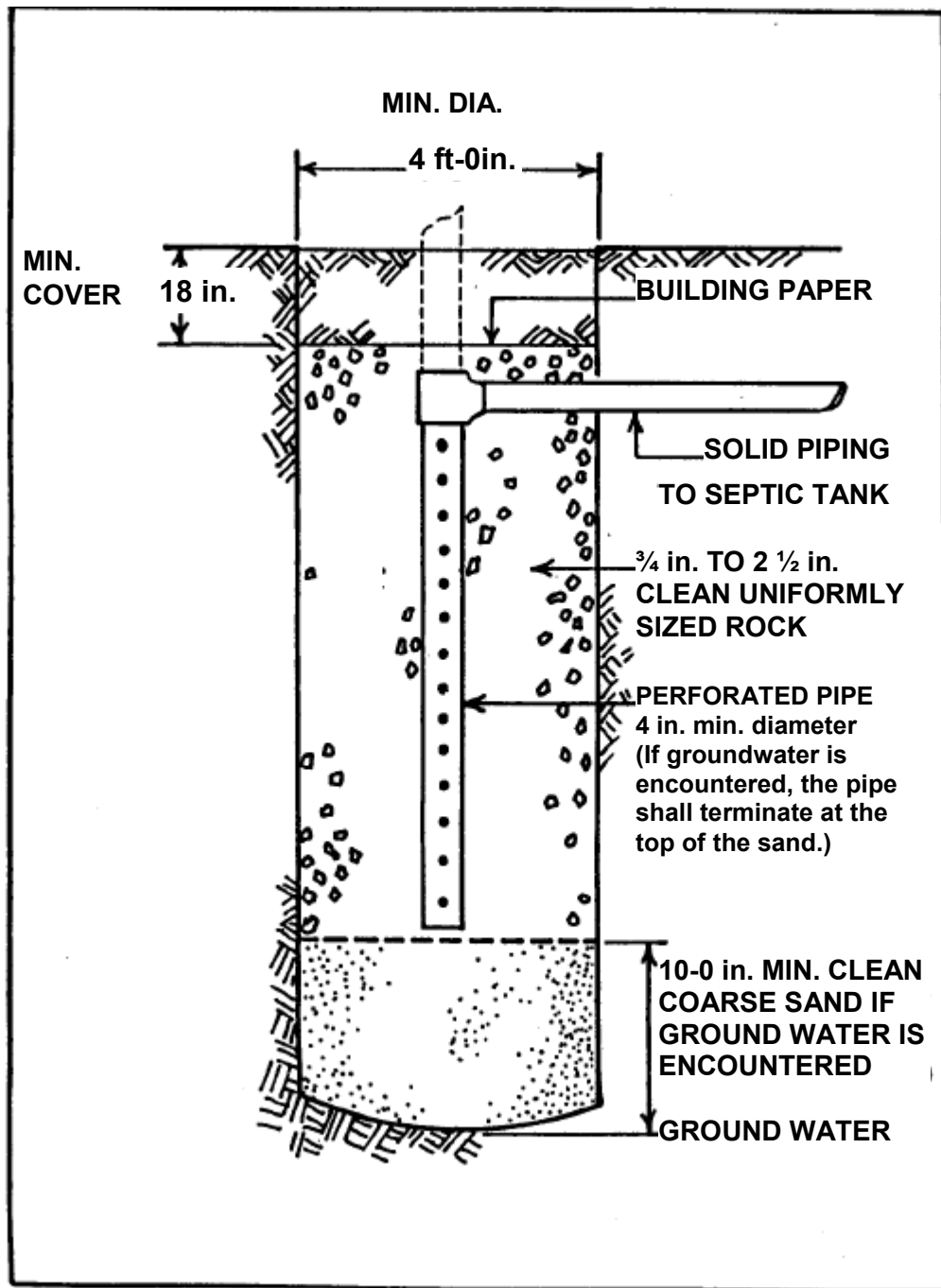
These requirements are based on the Manual of Septic-tank Practice (1967), U.S. Department of Health, Education, and Welfare.

To determine the required absorption area for leach lines the following formula should be used:

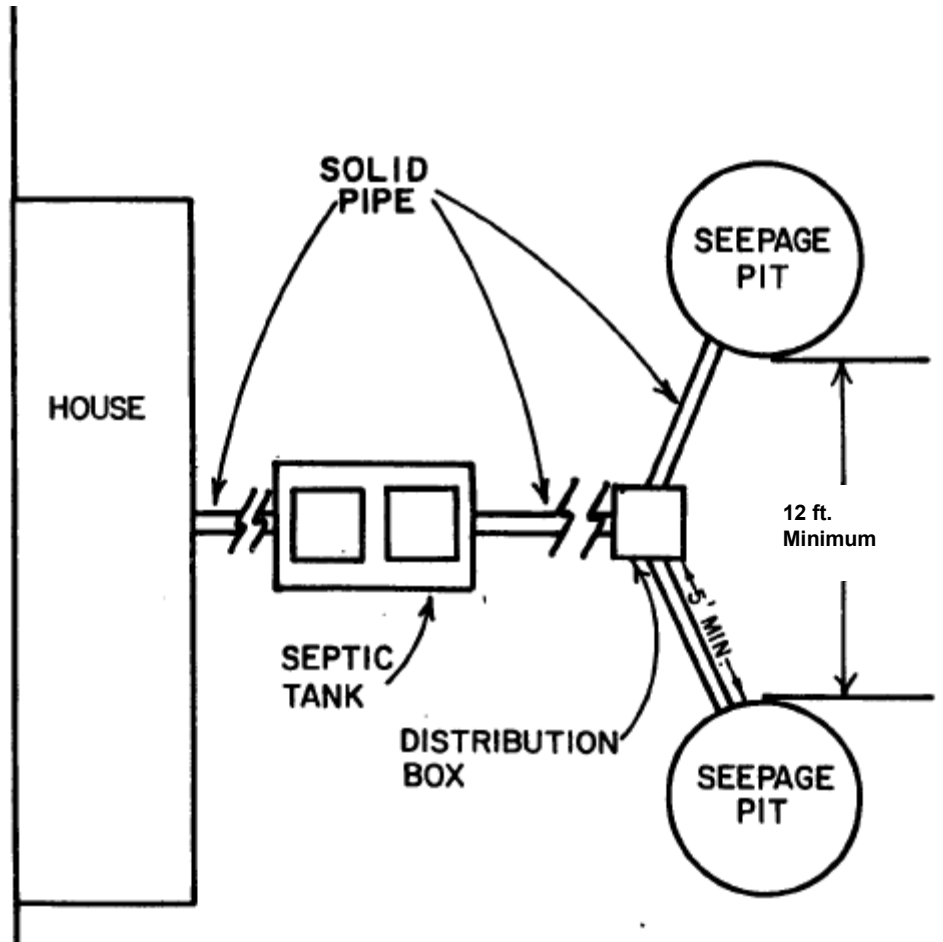
$$\text{Absorption Area (ft}^2\text{)} = \text{Tank Capacity (gallons)} \times \frac{\sqrt{\text{StabilizationRate} \left(\frac{\text{min}}{\text{inch}} \right)}}{5}$$

Stabilization Rate = Slowest stabilized percolation rate for all percolation tests performed, including the deep percolation test identified within the dispersal area. The rate shall not exceed 60 min/inch.

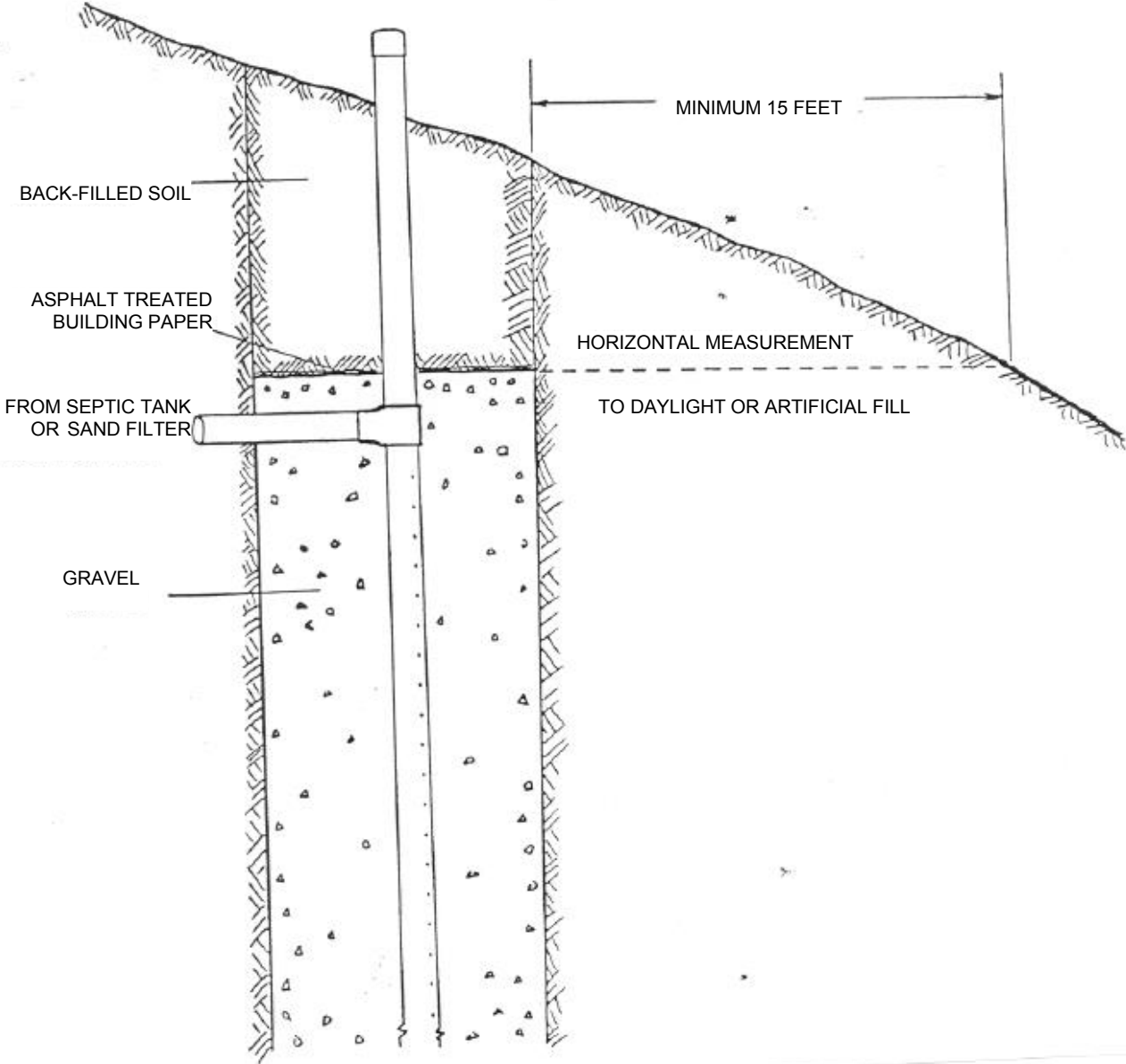
Seepage Pit Design



Seepage Pit Design Plan View



Seepage Pit Horizontal Setback from Daylight



Hydrometer Analysis

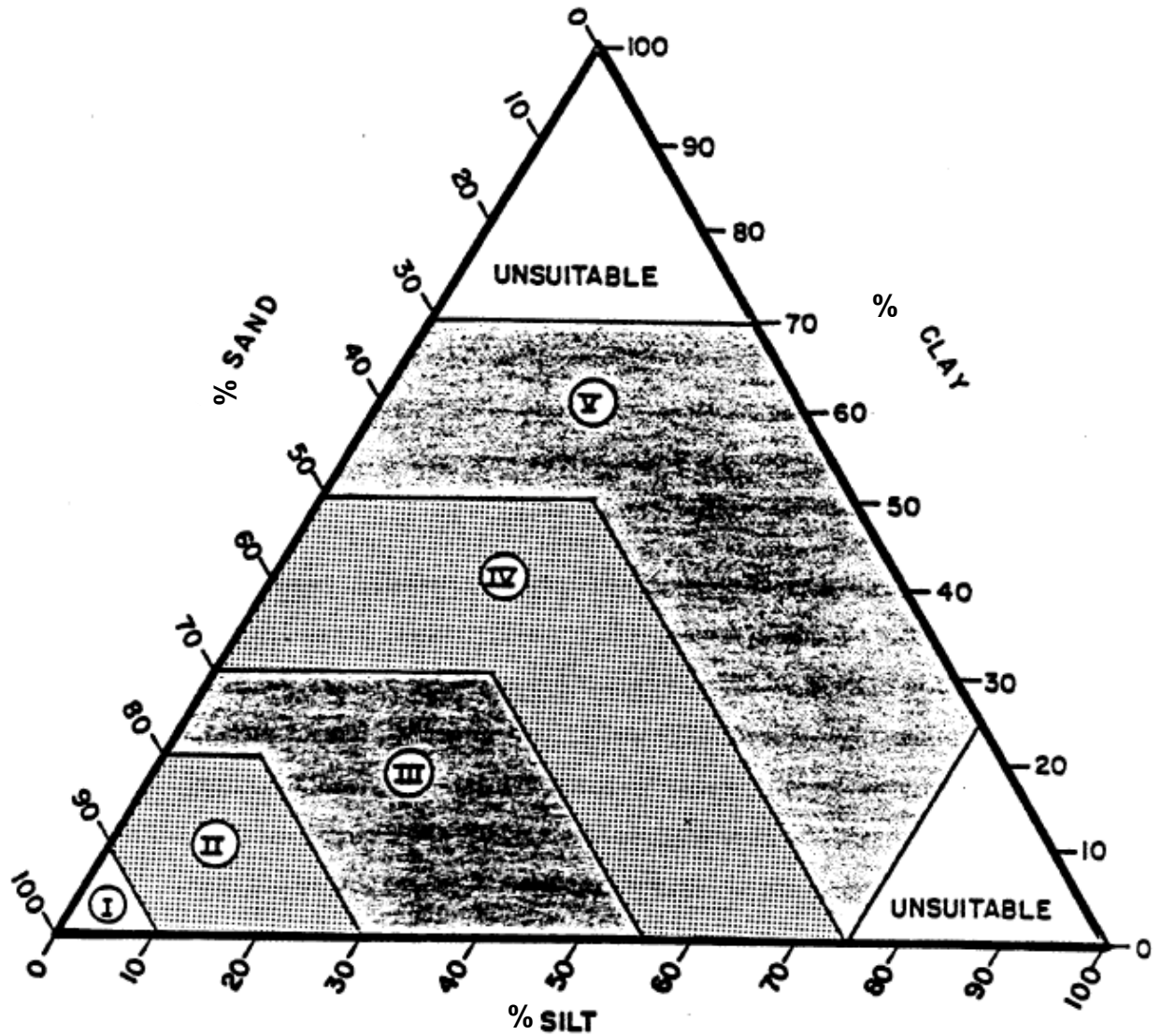
Soil types encountered in the seepage pit test boring are required to be identified by hydrometer analysis. Soil types are to be identified in conformance with the Soil Classification Chart (Page 9-28). The most conservative soil type shall be used when any hydrometer analysis result plotted on the Soil Classification Chart is on the line between two soil types. A pit performance test is required when the hydrometer analysis indicates that 50% or more of the effective pit depth is in UPC type III, IV, or V material (Page 9-30).

Soil samples for hydrometer analysis are to be collected as follows:

1. At the top of the proposed seepage pit (where the perforated pipe and rock fill begins).
2. At five-foot intervals from the top of the proposed seepage pit to the bottom of the pit (where the perforated pipe and rock fill ends).
3. Whenever there is a change in soil type between the five-foot intervals.
4. At a depth 10 feet below the bottom of the proposed seepage pit.

The test bore shall continue not less than 10 feet below the proposed pit depth.

Soil Classification Chart



Soil Types	Soil Absorption Capacity Gals/ft ² /day	Required Leaching Area/100gal(ft ²)	Percolation Rating
I	5	20	Excellent
II	4	25	Good
III	2.5	40	Fair*
IV	1.1	90	Poor*
V	0.83	120	Questionable*

* A pit performance test is required when Soil Types III, IV, and V make up 50% or more of the soil profile.

SOIL IDENTIFICATION REPORT

Location of Property: _____ (Job Address)	Nearest Cross Street: _____
Owner/Builder: _____	Address: _____
Method of Drilling: _____	Drilled by: _____
Date Tested: _____	Weather Conditions: _____

LOG OF BORING NO: _____							
DEPTH (Feet)	SOIL TYPE TABLE 1-4 UPC	MOISTURE CONTENT %	HYDROMETER ANALYSES			SOIL DESCRIPTION	SOIL TYPE CLASSIFICATION <small>(Indicate in the space provided below, the cumulative total, in terms of feet, for each soil type encountered in the boring. If a specific soil type was not encountered, place a "0" in the space next to that soil type.)</small>
			% SAND	% SILT	% CLAY		
0							Total feet of type 1 _____
5							Total feet of type 2 _____
10							Total feet of type 3 _____
15							Total feet of type 4 _____
20							Total feet of type 5 _____
25							
30							
35							
40							
45							
50							
55							
60							
65							
70							

Performance Tests

When the required hydrometer analysis indicates that 50% or more of the proposed seepage pit will be installed in soil types III, IV, and/or V, a falling head performance test is required to verify projected absorption rates.

1. If an exploratory boring is used for the pit performance test, backfill to the effective depth of the proposed seepage pit. To prevent sloughing, a perforated pipe may be inserted down the boring.
2. Presaturate the test boring by filling it to the top of the effective pit depth with clear water, maintaining this head for one hour.
3. No less than 24 hours after presaturation, refill the test boring to the top of the effective pit depth, and then measure the change in time and depth as the water column drops. No less than six measurements shall be taken with data collected for each five-foot section of the test boring and/or each soil type encountered (whichever is more frequent). A convenient time interval may be selected for data collection where a considerable depth of consistent material is being tested, such as may occur in disposal pit testing in bedrock formations.
4. At least 50% of the measurements shall be taken in the lower half of the test boring.
5. A final time and depth measurement shall be taken 24 hours from the start of the performance test.
6. **EXCEPTION:** Certain localized, highly permeable formations, such as the Camarillo Highlands, cannot be readily tested using the falling head technique. It may be demonstrated that the conventional falling head technique cannot be used by:
 1. Calculating the volume of water necessary to fill the test boring.
 2. Introducing this volume of water into the boring.
 3. Observing the depth of water present in the test boring one hour after introducing the water.
 4. If the test boring is completely empty in one hour or less, the following variation of the falling head pit performance test may be used:
 - a. Fill test boring with water.
 - b. Record depth/time measurements every five minutes or at a set time interval until two times the proposed septic tank volume has been absorbed.
 - c. Record depth of water remaining (if any) 24 hours after beginning test.

Calculation of Pit Absorption Rate

- TP = Depth to the top of water
- Δh = Water drop occurring between each time reading
 $\Delta h = TP_n - TP_{n-1}$
- n = Consecutive number in a series corresponding to a data point
- d = Depth of water remaining at end of each time period
 $d = \text{depth of hole} - TP_n$

Have = Average head

$$\text{Have} = \frac{d_{n-1} + d_n}{2}$$

D = Diameter of test hole

7.48 = Gallons of water per cubic foot

ΔET = Time between water drop readings
 $\Delta ET = \text{Time}_n - \text{Time}_{n-1}$

1440 = Number of minutes in 24 hours

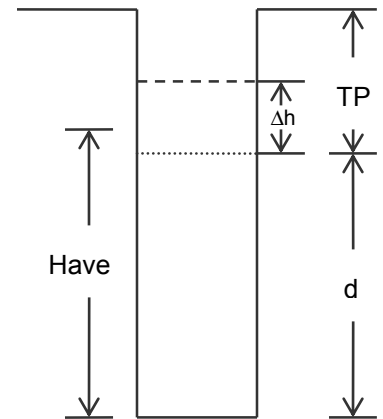
π = Is the ratio of a circle's circumference to its diameter $\pi \approx 3.14$

A = Absorption rate

$$A = \frac{\text{Volume water absorbed (gallons)}}{\text{Absorption area (ft}^2/\text{day)}}$$

$$A = \frac{\pi D^2 \times \Delta h \times 7.48}{4 \left(\pi D \text{ Have} + \frac{\pi D^2}{4} \frac{1440}{\Delta ET} \right)}$$

$$A = \frac{10771.2 \times D \times \Delta h}{(D + 4 \text{ Have}) \Delta ET}$$



Report absorption rate (A) on Seepage Pit Performance Test Data Worksheet.
 Plot absorption rate (A) versus time or versus average head (Have) for a graphical representation.

SEEPAGE PIT PERFORMANCE TEST DATA WORK SHEET

Location _____ Date Tested _____

Test Performed By _____ Depth of Hole _____

Date Presaturated _____ Diameter _____

Time (Min)	Elapsed Time (ET) (Min)	Depth to Top of Water (TP) (Inches)	Water Drop (Δh) (ft)	Depth of Water Left in Hole (d) (ft)	Average Head (Have) (ft)	Absorption Rate (A) gal/ft ² /day	Comments
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

* Appendix 9.31 shows how to calculate the pit absorption rate.

GRAPH OF PIT PERFORMANCE RATES

					Absorption Rate gal/ft ² /day
Time (hours) or Head (ft)					

Bedrock Formation of Concern

FRACTURES	LANDSLIDE
1. Santa Susana	
2. Chico (aka Chatsworth)	
3. Juncal	
4. Matilija	
5. Cozy Dell	
6. Coldwater	
7. Sespe (clay)	Sespe
8. Llaja's	
9. Vaqueros	
10. Rincon	Rincon
11. Topanga	Topanga
12. Conejo	
13. Monterey/Modelo (siltstone)	
14.	San Pedro
15.	Santa Barbara
16. Pico	Pico

Source: Geologic Maps of Ventura County, California, prepared by Thomas W. Dibblee, Jr.

VENTURA COUNTY ENVIRONMENTAL HEALTH DIVISION
OWTS TECHNICAL MANUAL

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Section 10: Glossary

Absorption- The process by which one substance is taken into and included within another substance, such as the absorption of water by soil or nutrients by plants.

Aerobic- Having molecular oxygen as a part of the environment, or growing or occurring only in the presence of molecular oxygen, as in “aerobic organisms.”

Aquifer- A geological formation or structure that stores and/or transmits water, such as to wells and springs.

Bedrock- Is the rock, usually solid, that underlies soil or other unconsolidated material at the ground surface.

Certification- Is an expression of professional opinion that the OWTS, or its components, meet industry standards that are the subject of the certification but do not constitute a warranty or guarantee, either express or implied.

Clay- Is a soil textural class that consists of soil particles <0.002 mm in diameter.

Digestion- The biological decomposition of organic matter in sludge, resulting in partial gasification, liquefaction, and mineralization.

Dispersal System- Is a trench, mound, at-grade, drip irrigation, or a bed system for final wastewater treatment and dispersal.

Domestic Sewage- Wastewater from households, or similar discharges from commercial operations that enters a treatment works or OWTS.

Drainfield- Shallow, covered, excavation made in unsaturated soil into which pretreated wastewater is discharged through distribution piping for application onto soil infiltration surfaces through porous media or manufactured (gravelless) components.

Effluent- Sewage, water, or other liquid, partially or completely treated or in its natural state, flowing out of a septic tank, subsurface wastewater infiltration system, aerobic treatment unit, or other treatment system or system component.

Existing System- Is an installed OWTS that was approved by the applicable local authority.

Failure- Is a condition of an OWTS that threatens public health or water quality by creating a potential for direct or indirect contact between sewage and the public. Examples of failure include:

1. Sewage on the ground surface;
2. Sewage backing up into a structure caused by slow OWTS soil absorption of septic tank effluent;
3. Sewage leaking to ground surface or groundwater and causing pollution or nuisance or posing an immediate health hazard to the environment from a septic tank, pump chamber, holding tank, or collecting system.

Groundwater- Is any subsurface body of water, including perched water. The listed beneficial uses of the State's groundwater is designated by each regional water quality control board and listed in the regional water quality control plan (basin plan).

Holding Tank- Is a watertight receptacle for collecting and holding wastewater.

Hydrometer Analysis- A method whereby the particle-size distribution of a water-sediment mixture is equated to soil density.

Impermeable- Means having a soil permeability or soil percolation rate less than 0.83 gal/ft²/day or greater than 60 minutes/inch, respectively.

Industrial/Commercial Waste- Any and all liquid or waterborne waste from industrial or commercial processes, except domestic sewage.

Percolation- The flow or trickling of a liquid downward through a contact or filtering medium.

Percolation Test- Is a method of testing absorption qualities of the soil.

Permeability- The ability of a porous medium such as soil to transmit fluids or gases.

Permit- Is the written document issued by the Administrative Authority authorizing the permittee to install and operate an OWTS.

Person- Is any individual, firm, association, organization, partnership, business trust, corporation, company, or unit of local government.

Plumbing Fixture- An approved type installed receptacle, device, or appliance which is supplied with water or which receives liquid or liquid-borne wastes and discharges such wastes into the drainage system to which it may be directly or indirectly connected.

Pollution- May include contamination and means an alteration of the quality of the waters of the State by waste to a degree which unreasonably affects either of the following:

1. The waters for beneficial uses, or
2. Facilities that serve these beneficial uses.

Public Health Hazard- Is a condition whereby sufficient types and amounts of biological, chemical, or physical (including radiological) agents are present and likely to cause human illness, disorders, or disability. These include, but are not limited to, pathogenic viruses, bacteria, parasites, toxic chemicals, and radioactive isotopes.

Recharge- Water added to an aquifer; e.g., rainfall that seeps into the ground.

Repair- Is the correction of a component failure, deficiency, or malfunction in an installed OWTS. Repair can include an upgrade or addition to a non-failing OWTS.

Rock- Is any naturally formed aggregate of one or more minerals (e.g., granite, shale, marble); or a body of undifferentiated mineral matter (e.g., obsidian), or of solid organic matter (e.g., coal).

Sand- Is a soil textural class consisting of soil particles between 2.0 and 0.5 mm in diameter.

Sand Filter- A filter of sand used to provide advanced secondary treatment of settled wastewater or septic tank effluent.

Scum- Is the layer of floating solids on the wastewater surface, such as in an OWTS tank.

Septic Tank- A buried, watertight tank designed and constructed to receive and partially treat raw wastewater. The tank separates and retains settleable and floatable solids suspended in the raw wastewater. Settleable solids settle to the bottom to form a sludge layer. Grease and other light materials float to the top to form a scum layer. The removed solids are stored in the tank, where they undergo liquefaction in which organic solids are partially broken down into dissolved fatty acids and gases. Gases generated during liquefaction of the solids are normally vented through the building's plumbing stack vent.

Septic Tank Effluent- Is partially treated wastewater discharged from a septic tank.

Setback- Is a minimum horizontal or vertical distance maintained between an OWTS feature and a potential point of impact or other physical point of reference.

Sewage- Is untreated wastewater from toilets, baths, sinks, lavatories, laundries, and other plumbing fixtures in places of human habitation, employment, or recreation. Sewage does not include industrial-process wastewater or sewage combined with industrial-process wastewater.

Silt- Is a soil textural class consisting of soil particles between 0.05 and 0.002 mm in diameter.

Slope- Is the rate of fall or drop measured in feet per one hundred feet of ground surface, as percent of grade, or other recognized units of measure (such as metric units).

Soil- Is the naturally occurring body of porous mineral and organic materials on the land surface, and is composed of unconsolidated materials above bedrock. Soil is composed of sand-, silt-, and clay-sized particles mixed with varying amounts of larger fragments and organic material.

Soil Permeability- Is the ease with which gases and liquids pass through soil.

Soil Type- Is a subdivision of a soil series based on differences in the texture of a horizon.

Topsoil- The layer of soil moved in agricultural cultivation.

Vadose Zone- An area above the water table where soil pores are not fully saturated, although some water may be present. It is located vertically between the land surface and the water table.

Wastewater- Water-carried human excreta and/or domestic waste from residences, buildings, industrial establishments or other facilities.

Water Quality Standards- A set of enforceable requirements under the Clean Water Act that include classification of receiving waters in accordance with their federal or state designated use(s), use-based water quality criteria that establish measurable limits for specific pollutants, and antidegradation provisions to ensure that water quality is maintained or improved.

Water Table- The level in saturated soil at which the hydraulic pressure is zero.