ALPINE COUNTY ENVIRONMENTAL HEALTH DEPARTMENT

Local Area Management Plan

Onsite Wastewater Treatment Systems

11/7/2016

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Chapter 1

Introduction

The Local Area Management Plan (LAMP) is the required end result of California Assembly Bill 885, which directed the State Water Resources Control Board (SWRCB) to develop uniform, statewide standards for onsite wastewater treatment (OWTS) to be implemented by qualified local agencies. The SWRCB adopted the Water Quality Control Policy for Siting, Design, Operation and Maintenance on Onsite Wastewater Treatment Systems on June 19, 2012 (OWTS Policy) and became effective on May 13, 2013. The OSWTS Policy allows local agencies to approve OWTS, based on a local ordinance and upon approval of the LAMP by the Lahontan Regional Water Quality Control Board (LRWQCB).

Historically, the Water Quality Control Plan for the Lahontan Region (basin plan) has outlined water quality objectives as well as policies and programs to achieve those objectives within Alpine County. The LAMP is intended to replace the basin plan as the instrument for siting OWTS in Alpine County.

Discharges are regulated through the use of Waste Discharge Requirements that act as discharge permits. With regards to the regulation of wastewater in Alpine County, the Lahontan Regional Water Quality Control Board (LRWQCB) and the Central Valley Regional Water Quality Control Board (CVRWQCB) issue discharge permits to the municipalities and special districts that operate wastewater (sewage) treatment plants in the county. In addition, they issue storm water permits to the incorporated cities and to the County as well as permits for the use of recycled water.

The State's regulatory authority extends to individual Onsite Wastewater Treatment Systems (OWTS). Therefore, general guidelines for the siting, design and construction of new OWTS were part of each regional board's basin plan. The SWRCB and the regional boards recognized the advantages and efficiencies of regulation of such systems by local agencies. Consequently, while the regional boards retained primacy over large and some specialized systems, direct regulatory authority for individual OWTS has been delegated to individual counties through Memorandums of Understanding.

Under the tiered approach of the Policy, Tier 1 establishes minimum standards for low risk new or replacement OWTS. Tier 2 allows local agencies to develop customized management programs that address the conditions specific to that jurisdiction. These Local Agency Management Programs (LAMPS) must be approved by the appropriate regional water quality control board. Tier 3 applies special, enhanced standards to both new and existing OWTS located near a water body that has been listed as impaired due to nitrogen or pathogens pursuant to Section 303(d) of the Clean Water Act. Tier 4 applies to systems that have or are failing. Once approved, the standards contained in an approved LAMP supersede the Tier 1 standards.

The purpose of the LAMP is to allow the continued use of onsite wastewater treatment systems (OWTS) within the jurisdiction of Alpine County as well as to expand the local program to permit and regulate

alternative OWTS while protecting water quality and public health. The LAMP also applies to OWTS on federal, and state, to the extent authorized by law or agreement.

The LAMP is designed to protect groundwater sources and surface water bodies from contamination through the proper design, placement, installation, maintenance, and assessment of individual OWTS. This plan develops minimum standards for the treatment and ultimate disposal of sewage though the use of OWTS in Alpine County. The LAMP does not include the following which require individual waste discharge requirements or a waiver of individual waste discharge requirements issued by the RWQCB (see also Chapter 5 Not Allowed LAMP Items).

- Any OWTS with a projected wastewater flow of over 3,500 gallons per day.
- Any OWTS that receives high strength wastewater, unless the waste stream is from a commercial food service facility.
- Any OWTS that receives high strength wastewater from a commercial food service facility with a BOD higher than 900 mg/l or that does not have a properly sized and functioning oil/grease interceptor.
- Any Surface discharge

It is the intent of the Board of Supervisors, in adopting this plan, to ensure that OWTS are constructed, modified, repaired, abandoned, operated, maintained, inspected and serviced in a manner that prevents environmental degradation and protects the health, safety and general welfare of the people of the county. This LAMP conforms to all of the applicable Tier 2 criteria listed in Section 9 of the State Policy including adherence to the "prohibitions" contained in Section 9.4.

The standards for existing and new OWTS are specified in the State Water Resources Control Board's Policy, the California Plumbing Code, Alpine County Code, and in this Alpine County LAMP.

OWTS, including conventional systems, require routine maintenance in order to ensure that they function properly and to extend the life of the system. While this LAMP does not require mandatory maintenance for conventional systems, regular maintenance and reporting conditions will be required for all alternative or special engineered systems.

The provisions of this LAMP will apply to all areas of Alpine County.

While every effort was made to make this a comprehensive plan, it is likely that it will be necessary to modify it in the future for several reasons. Section 9.3.3 of the Policy requires that a jurisdiction complete an evaluation of its monitoring program every five (5) years to determine if water quality is being impacted by OWTS and whether modifications must be made to its LAMP to address any noted water quality impacts. When it has been determined changes are necessary, those changes will be made after consultation with the Lahontan Regional Water Quality Control Board and if changes are substantive, EHD will return to the Alpine County Board of Supervisors for approval.

Chapter 2

Definitions

Alternative OWTS: is a type of OWTS that utilizes a wastewater treatment technology other than a conventional septic tank and/or method of wastewater disposal other than a conventional drainfield trench/bed for the purpose of producing a higher quality effluent and improved performance of siting options for effluent dispersal. Alternative waste disposal systems include, but are not limited to, mound systems, evapotranspiration beds, sand filters and lined evaporation ponds.

At-grade system means an OWTS dispersal system with a discharge point located at the preconstruction grade (ground surface elevation). The discharge from an at-grade system is always subsurface.

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

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

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

Cap/Cap depth: the depth below the natural ground surface to the top of the horizontal or vertical seepage pit system where the infiltrative sidewall surface begins.

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

Chemical toilet: a watertight, portable, self-contained toilet which may contain an environmentally safe bactericide and/or deodorant. A chemical toilet serves the same purpose and has the same meaning as a portable toilet.

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

Cobbles: rock fragments 76 mm or larger using the USDA soil classification systems.

Cut/Slope: any slope greater than 60% or man-made contour that exposes the vertical soil profile. Cuts and slopes require a 4 foot horizontal setback for every 1 foot of vertical height to any dispersal system.

Dispersal system means a leach field, leach bed, mound, , or other type of system for final wastewater treatment and subsurface discharge.

Domestic wastewater means wastewater with a measured strength less than high-strength wastewater and is the type of wastewater normally discharged from, or similar to, that discharged from plumbing fixtures, appliances and other household devices including, but not limited to toilets, bathtubs, showers, laundry facilities, dishwashing facilities, and garbage disposals. Domestic wastewater may include wastewater from commercial buildings such as office buildings, retail stores, and some restaurants, or from industrial facilities where the domestic wastewater is segregated from the industrial wastewater. Domestic wastewater does not include wastewater from industrial processes.

Domestic well: a groundwater well that provides water for human consumption .

Drain field: a system of trenches or beds that distribute treated effluent for subsurface disposal into the soil. A drain field is also known as a "leachfield" or "soil absorption area".

Effective absorptive area means sidewall or bottom area of a disposal field bed, trench or seepage pit, located below the point at which effluent is released from the disposal field piping, and consisting of undisturbed native soil strata having acceptable percolation rates and/or soil texture classifications meeting the requirements of this Manual.

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

Existing OWTS means an OWTS that was constructed and operating prior to the effective date of this Policy, and OWTS for which a construction permit has been issued prior to the effective date of the Policy.

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

Groundwater means water below the land surface that is at or above atmospheric pressure.

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

Holding tank: a watertight receptacle used to collect and store wastewater prior to it being removed from the property by vacuum pump or hauling, or other approved method. The use of holding tanks in Alpine

County may only be allowed if specifically approved by the local enforcement agency, for the abatement of immediate health hazards or for temporary use at certain public facilities.

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

Intermittent Sand Filter: an alternative OWTS using a a bed filter of medium grained sand to treat septic tank effluent to a secondary level. The filter system may be enclosed with a bottom, or bottomless. The wastewater is dosed to the surface of the sand via a pressure distribution system.

Local agency means any subdivision of state government that has responsibility for permitting the installation of and regulating OWTS within its jurisdictional boundaries; typically a county, city, or special district.

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

Mound system means an aboveground dispersal system (covered sand bed with effluent leach field elevated above original ground surface inside) used to enhance soil treatment, dispersal, and absorption of effluent discharged from an OWTS treatment unit such as a septic tank. Mound systems have a subsurface discharge.

New OWTS means an OWTS permitted after the effective date of this Policy.

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

Oil/grease interceptor or "**grease trap**" means a passive interceptor that has a rate of flow exceeding 50 gallons-per-minute and that is located outside a building. Oil/grease interceptors are used for separating and collecting oil and grease from wastewater.

Onsite wastewater treatment system (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 "gray water" systems pursuant to Health and Safety Code Section 17922.12.

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

Permit: a document issued by a local agency that allows the installation and use of an OWTS, or waste discharge requirements or a waiver of waste discharge requirements that authorizes discharges from an OWTS.

Person means any individual, firm, association, organization, partnership, business trust, corporation, company, State agency or department, or unit of local government who is, or that is, subject to this Policy.

Pit-privy (a.k.a. outhouse, pit-toilet) means self-contained waterless toilet used for disposal of non-water carried human waste; consists of a shelter built above a pit in the ground into which human waste falls.

Policy means this Policy for Siting, Design, Operation and Management of OWTS.

Pressure distribution: a method of wastewater dispersal using a pump or automatic dosing siphon and distribution piping used to achieve equal distribution of wastewater within a treatment unit, such as a sand filter, or a dispersal field.

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 ground water well serving a public water system.

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. Depending on the work to be performed and various licensing and registration requirements, this may include an individual who possesses a registered environmental health specialist certificate or is currently licensed as a professional engineer or professional geologist. For the purposes of performing site evaluations, Soil Scientists certified by the Soil Science Society of America are considered qualified professionals. A local agency may modify this definition as part of its Local Agency Management Program.

Regional Water Quality Control Board means the Regional Water Quality Control Boards designated by Water Code Section 13200, which have authority for adopting, implementing, and enforcing water quality control plans (basin plans) which set forth the State's water quality standards and the objectives or criteria necessary to protect the beneficial uses of the waters of the state. The Lahontan and Central Valley RWQCB's have jurisdiction over Alpine County.

Repair is any action that modifies/replaces the existing dispersal system, replaces an existing septic tank, or modifies/replaces a major component of the onsite wastewater treatment system. Repairs require the issuance of a Septic Repair Permit by the Department of Environmental Health (DEH) and must be inspected by DEH staff.

Sand means a soil particle; this term also refers to a type of soil texture. As a soil particle, sand consists of individual rock or mineral particles in soils having diameters ranging from 0.05 to 2.0 millimeters. As a soil

texture, sand is soil that is comprised of 85 percent or more sand particles, with the percentage of silt plus 1.5 times the percentage of clay particles comprising less than 15 percent.

Sanitary Sewer: a system for collecting residential or municipal wastewater and directing the collected wastewater to a treatment works prior to dispersal.

Septage means materials accumulated in septic tanks, cesspools, vault privies, portable toilets, holding tanks, or any other sewage holding apparatus that receives bodily waste or wastewater from plumbing fixtures. Septage does not include sewage sludge from municipal or community sewage treatment plants.

Septic tank: a watertight, covered receptacle designed for primary treatment of wastewater and constructed to receive wastewater discharged from a building sewer, separate solids from the liquid, digest organic matter and store undigested solids, and allow the clarified liquids to discharge for further treatment with final subsurface discharge.

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

Site: the land occupied by the OWTS including any designated reserve areas.

Site evaluation: an assessment of the characteristics of the site sufficient to determine its suitability for an OWTS to meet the requirements of this Policy.

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

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

Waste discharge requirement (**WDR):** an operation and discharge permit issued for the discharge of waste pursuant to Section 13260 of the California Water Code.

Chapter 3

Alpine County OWTS Background (OWTS Policy 9.1 and 9.2)

Geology, Soils and Water Resources

Geology

All of Alpine County is located in the Sierra Nevada Mountain Range geographic province. Bedrock is primarily granitic batholith material. Sierra Nevada region is mostly vegetated by montane pine and fir forests, but extensive areas of steep bare rock also exist. Some significant areas of alpine meadows also exist.

Markleeville receives 19 inches of precipitation per year. Kirkwood and Bear Valley receive more precipitation, mostly in the form of snow.

Soils

Foothills and Mountains. The soils in the foothills and mountains are loamy sands and clays derived from igneous rock.

Alluvial Fans, Flood Plains, Valleys, and Terraces. These soils are deep and range from somewhat excessively well drained to somewhat poorly drained and occur on nearly level to moderately steep slopes. The soils are formed in alluvium derived mostly from igneous rock. The soils have a broad range in permeability, from slow to rapid, depending upon the relative amount of sands, silts and clays, and gravel in the sedimentary deposits. Consequently, the areas include soil types that range from slightly to severely limited for leachfield use.

Surface Waters

Alpine County contains 5 principal watersheds: West Fork Carson River, East Fork Carson River, North Fork Mokelumne River, North Fork Stanislaus River and Middle Fork Stanislaus River. The two forks of the Carson River flow to enclosed basins in Nevada. The Mokelumne and Stanislaus Rivers flow into the San Juaquin River.

Groundwaters

Groundwater supplies a majority of Alpine County's residential, commercial, industrial, and agricultural water. The only identified ground water basin is an upper portion of the Carson Valley Basin. Most groundwater is located within fracture zones of the bedrock, with a few small basins associated with valley and meadow alluvium.

Existing Septic System Practices

Regulatory Framework

In California, all wastewater treatment and disposal systems, including individual septic systems, fall under the overall regulatory authority of the State Water Resources Control Board and the nine California Regional Water Quality Control Boards (Regional Boards). The Regional Board's involvement in regulation of onsite systems most often involves the formation and implementation of basic water protection policies. These are reflected in the individual Regional Board's Basin Plans, generally in the form of guidelines,

criteria and/or prohibitions related to the siting, design, construction and maintenance of onsite systems. The Regional Boards generally delegate regulatory authority for septic systems to counties, cities or special districts, subject to the condition that the local agency commits to enforcing the minimum requirements contained in the Basin Plan policies. The Regional Boards generally elect to retain permitting authority over large and/or commercial or industrial onsite systems.

Alpine County falls within the jurisdiction of the Lahontan Regional Water Quality Control Board (LRWQCB) for the majority of its area, but also within the jurisdiction of the Central Valley Regional Water Quality Control Board (CVRWQCB) in the western portion of the county (west of the ridgeline of the Sierra Nevada Mountains). The Regional Boards have adopted policies and requirements pertaining to onsite systems that are contained within the Water Quality Control Plan for their respective basins, more commonly referred to as the "Basin Plans". The onsite systems element of the Basin Plan sets forth various objectives, guidelines, general principles and recommendations for the use of onsite systems that cover various topics related to siting, design, construction, operation, maintenance and corrective/enforcement actions.

Since about 1970, onsite sewage disposal systems in Alpine County have been regulated by the County Public Health Department, Environmental Health Division.

Alpine County regulations for onsite sewage disposal systems are contained in the 1991 Chapter 13 of the County Code, revised in 2008. These regulations set forth specific requirements related to These regulations set forth specific requirements related to (a) permitting and inspection of onsite systems; (b) septic tank design and construction; (c) disposal field requirements; and (c) servicing, inspection, reporting and upgrade requirements. Additional standards pertaining to system sizing and construction are contained in the California (Uniform) Plumbing Code and the US Manual of Septic Tank Practices, as well as the Basin Plan Guidelines and Memorandums of Understanding. Additional County Code sections dealing with illegal discharges and remedies are included in Chapter 16. Additional requirements for onsite systems in Alpine County may be adopted as part of Community Plans or as project-specific mitigation measures or conditions applied to development proposals.

Septic System Design and Siting Requirements

Most OWTS in Alpine County are conventional systems, consisting of a septic tank connected to leach lines. Leach lines are the preferred method of disposal; leach beds are permissible only where the use of leach lines are not feasible. Cesspools have been prohibited since 1977. There are only a small number of "alternative" systems in the County; these are systems that provide additional treatment . They include mounds, sand filters, and denitrification systems, designed designed to overcome specific soil or groundwater constraints. All alternative systems must be designed and certified by a California Registered Civil Engineer. Due to the complexity of these systems, ongoing maintenance contracts and/or annual operating permits may be required.

The County standard criteria follow the Basin Plan guidelines, and address such factors as (a) soil characteristics and depth; (b) percolation rates; (c) vertical separation to groundwater; (d) maximum

ground slope; (e) setback distances to wells and water features; (f) system sizing; and (g) reserve area for future drain field replacement/expansion.

Land developments and subdivisions consisting of less than one hundred lots may be processed entirely by the health officer. Tentative maps for subdivisions containing one hundred lots or more shall be transmitted to the Regional Board.

Septic System Usage in Alpine County

As of 2010, there are 1,760 housing units in Alpine County compared to 1,514 in 2000 (14 percent increase, or 25 per year). Of this total, over 64 percent are seasonal vacation or second homes that are not occupied year-round and are normally not available for workforce or long-term resident housing. The California Department of Finance reports an estimated 1,774 units in 2014.
There are an estimated 500 served by septic systems, plus an additional unknown parcels within sewer districts that also have septic systems, despite the availability of sewers.

Septic System Information Review

Much of the review was devoted to researching, compiling and reviewing existing information from a variety of sources, including personal experience and permit and complaint files maintained by the County Health Department. This information forms a large part of the basis for assessing the status of septic system practices in the County.

County Records

Permit Files. Since 1970 septic system permit files have been maintained by the Health Department. Prior to 1970, permits were issued by the State Department of Health Services.

A review of permit files indicates over the past 10 years, 96 permits were issued; 67 for new construction, and 29 for modifications, repairs, and abandonment.

Complaint Files. The Health Department maintains records of complaints that are received in regard to various public health or sanitation matters, including OWTS.

Septic Tank Inspection

Surface Water Quality Impacts

There have been no comprehensive water quality sampling studies directed specifically at septic system areas in the County. There have been no areas with suspected or confirmed impacts to surface water from OWTS's.

Groundwater Quality Impacts

Standard criteria for siting and design are intended to prevent adverse impacts on groundwaters from onsite sewage disposal systems. The most important factors are the provision of sufficient depth of unsaturated soil below the leachfield where filtering and breakdown of wastewater constituents can take place. Without adequate separation distance to the water table, groundwater becomes vulnerable to

contamination with pathogenic bacteria and viruses, as well as other wastewater constituents (e.g., nitrogen). Highly permeable soils (e.g., sands and gravels) also provide minimal treatment of the percolating wastewater and normally require greater separation distances to afford proper groundwater protection. Additionally, where there is a high concentration or density of septic systems in a given area (i.e., small lot sizes), groundwater can be degraded from the accumulation of nitrate, chloride and other salts that are not filtered or otherwise removed to a significant extent by percolation through the soil. Adverse effects on groundwater quality from septic systems can show up in the form of degraded or contaminated well water supplies, or potentially as subsurface seepage into streams, lakes, lagoons or ocean waters.

The Septic System evaluation for Alpine County did not include any field investigation or testing of groundwater quality. General knowledge of private and public water system testing throughout the county have not indicated any suspected or known areas of groundwater contamination from OWTS's within the County.

Groundwater Basin Information

Information indicates that groundwater quality is generally adequate tor existing and potential uses in the groundwater basins in the County.

Water System Information

Review of groundwater data for small water system wells show good groundwater quality. None of the systems reported nitrate levels in excess of the drinking water limit of 10 mg/L.

Local Problem Areas

No local problem areas associated with onsite wastewater treatment system impacts have been identified. However, some areas may have unique problems for on-site systems and require special attention in siting and designing OWTS's by a qualified professional.

Projected Onsite Wastewater Demand

Alpine County is the least populated county in the State of California with a population of just under 1,200 residents. Since the County is 96 percent owned by the Federal Government, nearly all development is located in Markleeville, Kirkwood and Bear Valley. These communities are serviced by community sewer districts.

Population growth has been much below state and national averages. Since 2000, Alpine County has had a reduction of .5 percent in its population as of 2014. California has had an increase of 12.39 percent, and the US an increase of 11.61 percent. Alpine County's growth is among the lowest of California Counties.

State law requires that all cities and counties adopt a comprehensive, long-term general plan that outlines physical development of the county or city. The general plan consists of a number of mandated elements that cover a local jurisdiction's entire planning area so that it can adequately address the broad range of issues associated with the city or county's development. One of the mandated elements is the Housing Element.

The Housing Element of the General or Comprehensive Plan guides the determination of housing needs and establishes policy that facilitates the development of housing for all economic segments in the County. The California Department of Housing & Community Development requires that the Housing Element be updated every 8 years.

Using these criteria as a guideline and historical data, this LAMP includes a good faith effort to make a 10 year projection of future OWTS demand. While these are linear projections, the actual numbers could vary significantly as a result of economic conditions and or regulatory changes.

Using data obtained from the Environmental Health Department, during the years from 2006-2015, there were 96 applications to construct OWTS. This equates to an average 10 applications/year. Approximately 70 percent of those were for construction of new systems, resulting in 7 new systems per year.

It is reasonable to assume that permits for approximately 7 new OWTS will be approved in any given year in the future. Furthermore, extrapolating this figure out over a ten year period, it is reasonable to assume that approximately 70 new OWTS will be constructed over the course of the next 10 years. This represents an increase of approximately 14% in the total number of OWTS while the percentage of residents that use an OWTS will remain at about 33%.The increase in the number of OWTS may be offset by properties that connect to sewer as it becomes available and abandon existing onsite systems.

This number is in general conformity with the Housing Element of the County's Comprehensive Plan. According to the 2014 Housing Element and the California Department of Housing and Community Development, for the period 2014 to 2019, Alpine County's housing need allocation is 30 new housing units. This is equivalent to 6 per year. From January 2009 through December 2014, a total of 64 dwelling units were completed within the county.

Chapter 4

Data Collection, Reporting, and Notifications

Reporting to RWQCB (OWTS Policy 3.3 & 9.3.1)

On an annual basis, DEH will collect data for and report in tabular spreadsheet format the following information. A copy of the report will be provided to both the Lahontan and Central Valley RWQCB by February 1.

- The number and location of complaints pertaining to OWTS operation and maintenance, and identification of those which were investigated and how they were resolved;
- The applications and registrations issued as part of the local septic tank cleaning registration program pursuant to Section 117400 et seq. of the California Health and Safety Code;
- The number, location, and description of permits issued for new and replacement OWTS and which Tier the permit is issued.
- The number, location and description of permits issued for OWTS where a variance from the approved LAMP was granted.

The annual report will include a summary of whether any further actions are warranted to protect water quality or public health.

Water Quality Assessment Program (Water Quality Monitoring) (OWTS Policy 9.3.2 & 9.3.3)

In addition, EHD must maintain a water quality assessment program to determine the general operation status of OWTS and to evaluate the impact of OWTS discharges, and assess the extent to which groundwater and local surface water quality may be adversely impacted. The assessment program will include monitoring and analysis of water quality data, review of complaints, failures and OWTS inspections. The water quality data can be obtained from the flowing sources:

a. Random well samples.

b. Well samples taken following construction of a new well.

c. Routine real estate transfer samples.

c. Routine water samples taken by public water systems.

d. Any other sampling data deemed relevant or necessary for the protection of ground/surface water supplies.

A summary of the data shall be submitted on an annual basis on or before February 1st. An evaluation of the monitoring program and an assessment of whether water quality is being impacted by OWTS shall be submitted every 5 years.

Permit Records (OWTS Policy 3.4)

The Alpine County EHD maintains permanent hard copy of all applications and permits for OWTS within the county. These are filed by Assessor's Parcel Number, in a separate folder for each parcel.

Notifications to Owners of Water Systems and SWRCB (OWTS Policy 3.5)

Existing or proposed OWTS in close proximity to public water wells and surface water drinking water supplies may have some potential impact water quality. The owner of the OWTS will be notified under the following conditions.

1. Prior to issuance of a permit to install a new or replaced OWTS that is within a horizontal sanitary setback to the public well; or within 1,200 feet of an intake point for a surface water treatment plant for drinking water, in the drainage catchment in which the intake point is located, or located such that it may impact water quality at the intake point, to allow the water system owner to provide comments to DEH. Notification will be done electronically or in writing by DEH with a copy of the permit application that includes:

    a. A topographical plot plan for the parcel showing the OWTS components, property boundaries, proposed structures, physical address, and name of property owner.

    b. The estimated wastewater flows, intended use of proposed structure generating the wastewater, soil data, and estimated depth to seasonally saturated soils.

    c. An advisement that the public water system owner or SWRCB shall have 15 days from receipt of the permit application to provide recommendations and comments to DEH.

2. Upon discovery of a failing OWTS that is within 150 feet of a public water well, 200 feet of the high water mark of a surface water drinking water supply where the dispersal system is within 1,200 feet of the water system's surface water intake, within the catchment of the drainage and located such that it may impact water quality at the intake point, or 400 feet of the high water mark of a surface water drinking water supply where the dispersal system is between 1,200 and 2,500 feet of the water system's surface water intake, within the catchment of the drainage and located such that it may impact water quality at the intake point. Notification will be done electronically or in writing and will include proposed corrective action that will be taken to mitigate the failure.

Chapter 5

Not Allowed or Authorized in LAMP (OWTS Policy 9.4)

EHD's oversight of OWTS is limited to those systems as defined in this LAMP. Limitations exist for the use of OWTS related to the amount and type of wastewater flows that will be generated, types of systems, availability of public sewer and setbacks to public water supplies. The following are not allowed and can only be approved by the RWQCB.

1. Cesspools of any kind or size.
2. OWTS receiving a projected flow over 10,000 gallons per day.
3. OWTS receiving a projected flow over 3,500 gallons per day must either utilize a supplemental treatment system certified by the NSF or a third party tester as capable of achieving 50 percent total nitrogen reduction when comparing the 30-day average influent to the 30-day average effluent; or submit an evaluation to the County EHD completed by a qualified professional that determines whether or not the discharge from the OWTS will adversely affect groundwater quality.
4. OWTS that utilize any form of effluent disposal that discharges on or above the post installation ground surface such as sprinklers, exposed drip lines, free-surface wetlands, or a pond.
5. Slopes greater than 30 percent without a slope stability report approved by a registered professional.
6. Decreased leaching area for IAPMO certified chamber dispersal systems using a multiplier less than 0.70.
7. OWTS utilizing supplemental treatment without requirements for periodic monitoring or inspections.
8. OWTS dedicated to receiving significant amounts of wastes dumped from RV holding tanks.
9. Separation of the bottom of dispersal system to groundwater less than 2 feet
10. Installation of new or replacement OWTS where a public sewer is available. Public sewer availability is defined as follows:
    a. The property on which the structure is located abuts a public sewer.
    b. The property is within the boundaries of the sewer district or annexation has been approved by the sewer district.
    c. No easements must be obtained to access the sewer line.

A waiver of the connection to sewer can be considered where such sewer is located more than 200 feet from the building or plumbing stub out, the connection fees and construction costs are greater than twice the total cost of the OWTS and an OWTS can be installed that will meet the minimum requirements of this LAMP and not affect groundwater or surface water to a degree that makes it unfit for drinking or other uses.

11. Except as provided for in Item 12 and 13, new or replacement OWTS with minimum horizontal setbacks less than any of the following:

    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 by a qualified professional. 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 system's 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 system is located more than 1,200 feet but less than 2,500 feet from a public water system's 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 200 feet from the high water mark of the reservoir, lake or flowing water body.

12. For replacement OWTS that do not meet the horizontal separation requirements in Item 11 above, the replacement OWTS shall meet the horizontal separation to the greatest extent practicable. In such case, the replacement OWTS shall utilize supplement 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.

13. For new OWTS, installed on parcels of record existing before May 13, 2013 which is the effective date of the State's OWTS Policy, that cannot meet the horizontal separation requirements in Item 10 above, 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's OWTS Policy and any other mitigation measures prescribed by EHD.

Chapter 6

Requirements for Existing OWTS (Tier 0)

Existing Functioning Onsite Wastewater Treatment Systems

Consistent with the criteria outlined in Tier 0 of the State Policy, systems that are functioning properly will not be affected by this LAMP. Nevertheless, regular inspection and maintenance is necessary to ensure that an OWTS continues to operate satisfactorily and to extend the life of the system. OWTS that fail will be repaired consistent with the criteria outlined in Tier 4 of the Policy and Chapter 11 of this LAMP.

Onsite Wastewater Treatment System Repairs/Upgrades

Some repairs/upgrades will not require obtaining a OWTS Permit from EHD. Those include:

- Replacement of piping/plumbing to the tank
- Replacement or repairs to risers
- Replacement of sanitary T's within the tanks

Onsite Wastewater Treatment System Evaluation/Modification

Existing functioning OWTS will be reviewed by EHD when homes are remodeled or expanded in a manner that increases the sewage flow or changes the characteristics of the sewage generated. When a building remodel will increase the flow, the OWTS should be upgraded so that the anticipated new flow can be received and treated reliably. Examples of changes that would indicate an increased flow to the system include the addition of a bedroom, increased population or fixtures.

Additionally, improvements on a property that could potentially intrude upon the physical location of the OWTS and the expansion area for the dispersal system would trigger the need for review.

The determination for the need for a system modification is made as part of an evaluation of the existing system by EHD. As part of the evaluation, EHD reviews the proposed changes or project, any EHD records of the existing system, as well as any additional information/data provided by the applicant. If it is concluded that there is no impact or that the existing system is adequate, no modification is required.

Chapter 7

Onsite Wastewater Treatment System Permitting Process and Siting (OWTS Policy 7.0 and 9.1)

This Chapter describes how OWTS are reviewed and permits issued in Alpine County. The document also summarizes key siting criteria for these systems.

STATE, COUNTY AND CITY ROLES

State / County Coordination

Water Code section 13282, allows Regional Water Quality Control Boards (RWQCB) to authorize a local public agency to issue permits for and to regulate OWTS "to ensure that systems are adequately designed, located, sized, spaced, constructed and maintained." The RWQCB, with jurisdiction over Alpine County authorizes the County of Alpine (County), Environmental Health Department (EHD) to issue certain OWTS permits throughout the county including within incorporated cities. No city within Alpine County is authorized to issue these permits.

The OWTS SWQCB Policy has imposed conditions and restrictions on the County's permit program and the County is authorized to issue permits for conventional OWTS and alternative OWTS with supplemental treatment anywhere in the County. The goal of EHD's OWTS program is to ensure that installed OWTS will last the life of the structure they serve, and not cause any public exposure to surfacing sewage or any contamination of groundwater or surface waters. These requirements are a condition of the State's authorization for the County to issue OWTS permits locally. This LAMP describes in detail how the County ensures that these State-imposed requirements are met.

County EHD / Local Land Use Agency Coordination

County EHD OWTS review procedures provide documents that applicants may need to take to land use agencies to secure other required local permits. County EHD also reviews plans submitted to these agencies to ensure that an OWTS will match up with the project to be constructed. The fundamental point that persons seeking OWTS permits must remember is that the County EHD OWTS permit process and local land use approval and permitting processes are separate processes. While they are coordinated to some extent, a County EHD OWTS permit or related approval is never a substitute for a required local land use or building permit. Similarly, no local land use approval or permit (e.g., approval of a subdivision map or lot split or boundary adjustment, even after preliminary septic system review by EHD), is a substitute for a County EHD OWTS permit, or a guarantee that such a permit can be issued.

SYSTEM DESIGN CONSIDERATIONS

The most common type of OWTS found in Alpine County consists of a septic tank connected to leach lines. Variations of this system may include a septic tank connected to a leach bed. In some applications, the disposal field is at a higher elevation than the building site. In this instance, a pump-system is used to

deliver the sewage to a standard disposal field where it is distributed by gravity flow. All of these examples would be considered a conventional OWTS because no further sewage treatment is performed between the septic tank and the disposal field. In all cases, the sewage effluent is discharged below the ground surface, and is digested by bacteria in unsaturated soil zones for treatment of the sewage underground. These systems are designed to operate in all weather conditions with minimal maintenance, other than periodic septic tank pumping to remove sludge from the septic tank.

In addition to conventional OWTS, the County also allows the use of alternative and/or OWTS with supplemental treatment. These systems are generally used for those sites that cannot support a conventional OWTS due to shallow groundwater or soil depth conditions. Alternative OWTS use different methods of providing additional sewage treatment beyond what is provided by the septic tank to allow for a reduction in the amount of unsaturated soil below the dispersal system. All alternative OWTS must be designed by a Registered Civil Engineer or be certified by the National Sanitation Foundation or other approved third party tester. Due to the complexity of these systems, ongoing maintenance and monitoring are required.

The size and type of OWTS needed for a particular building project will be a function of the following factors:

Soil Permeability:	Permeability determines the degree to which soil can accept sewage discharge over a period of time. Permeability is measured by percolation rate, in minutes per inch (MPI).
Unsaturated Soil Interval:	The distances between the bottom of the OWTS dispersal field and the highest anticipated groundwater level or the shallowest impervious subsurface layer at a site.
Peak Daily Flow:	The anticipated peak sewage flow in gallons per day. In many cases the number of bedrooms for a proposed home is used as an indicator of peak daily flow.
Net Usable Land Area:	The area available that meets all setback requirements to structures, easements, watercourses, or other geologic limiting factors for the design of an OWTS.

Some sites are not acceptable for conventional or alternative OWTS based on low soil permeability, regardless of the unsaturated soil interval available at the site.

All conventional OWTS in Alpine County will require at least five feet of unsaturated soil between the bottom of the disposal trench and the highest anticipated groundwater level. Alternative OWTS will require at least two feet of separation. Depth to groundwater may vary with the amount of rainfall and the geography for many areas in Alpine County. Therefore, the highest anticipated groundwater levels must be

established for any OWTS design in order to meet this separation requirement. Details are provided below in this Chapter.

At sites affected by a shallow impervious layer of bedrock, hardpan, or impermeable soils, a minimum five-foot unsaturated soil interval is required between the bottom of the disposal system and the shallowest impervious layer. Alternative OWTS will require at least two feet.

The net useable land area required for an OWTS will usually depend primarily on soil permeability and peak daily flow. Details on setback requirements and net useable land areas requirements are provided below.

In determining suitability for conventional and/or alternative OWTS, and during future 5-year reviews of this LAMP and possible amendments, the County will also consider:

- Degree of vulnerability to pollution from OWTS due to hydrogeological conditions.
- High Quality waters or other environmental conditions requiring enhanced protection from the effects of OWTS.
- Shallow soils requiring a dispersal system installation that is closer to ground surface than is standard.
- OWTS is located in area with high domestic well usage.
- Dispersal system is located in an area with fractured bedrock.
- Dispersal system is located in an area with poorly drained soils.
- Surface water is vulnerable to pollution from OWTS.
- Surface water within the watershed is listed as impaired for nitrogen or pathogens.
- OWTS is located within an area of high OWTS density.
- A parcel's size and its susceptibility to hydraulic mounding, organic or nitrogen loading, and whether there is sufficient area for OWTS expansion in case of failure.
- Geographic areas that are known to have multiple, existing OWTS predating any adopted standards of design.
- Geographic areas that are known to have multiple, existing OWTS located within either the pertinent setbacks listed below, or a setback that the local agencies finds is appropriate for that area.

None of these conditions significantly apply in Alpine County at this time except as noted in Chapter 3 of this LAMP. Some conditions may occur in limited or isolated circumstances and are evaluated on a case by case basis.

THE PERMIT PROCESS AND SITE EVALUATION

The design and construction of an individual sewage disposal system must conform to the specifications of the Uniform building Code, Uniform Plumbing Code, as well as the State OWTS Policy and this LAMP. Approval of the Environmental Health Department is not a guarantee that the proposed installation will operate successfully, but merely that the system meets the minimum requirements. However, a system properly designed, installed, monitored and maintained should continue to operate throughout the life of the project, while protecting surface water, ground water and the environment.

A completed sewage disposal permit application, including a scale plot plan, must be submitted to the Environmental Health Department for any construction that requires the installation of a new, or the replacement of an existing sewage disposal system. Only after the Environmental Health Department has approved a sewage disposal application can the Building Department issue any permits.

STEPS IN THE PERMITTING PROCESS

1. PERCOLATION TESTS

Percolation tests shall be performed by a registered civil engineer, registered engineering geologist, registered environmental health specialist, or an ARCPACS Certified Professional Soil Scientist with experience in onsite wastewater disposal. In some cases, new percolation tests may be waived if the County certified a prior test during the subdivision or lot split process, and/or existing data indicates adjacent lots have consistent and adequate soil to support the installation of an OWTS. See Appendix I for percolation test procedures.

In all cases, percolation tests should be performed when:

- No previous County EHD approved percolation test was provided for the lot or parcel;
- Grading or other soil disturbance has occurred in the proposed OWTS location;
- The system is being shifted out of a previously tested area; or
- An OWTS other than a system previously considered is being proposed. 2.

2. Soil Profiles

Alpine County typically requires two test trenches to a depth of 10 ft. The purpose of the test trenches is to determine effective soil depth below the bottom of the leach lines and to verify the absence of groundwater or seasonal groundwater within five feet of the bottom of the leachfield. Additional test trenches may be necessary on a site specific basis for reasons that include, but are not limited to the following:

a. Unacceptable depth of effective soil.
b. Presence of groundwater, seasonal groundwater, or mottling
c. Soil conditions are variable or inconsistent

- If groundwater is observed in the soil profiles and/or EHD has reason to believe that groundwater could rise to an unacceptable level which would not meet the minimum separation requirements during the course of a normal rainfall season, a permit will not be issued and monitoring may be required. Monitoring must be conducted during the course of a normal rainfall year when full groundwater recharge has occurred.
- The qualified professional must support their express conclusion that the highest anticipated groundwater elevation will not encroach upon the minimum separation from the bottom of the proposed OWTS. The supporting data shall include, but not be limited to, data on the sites topography, soils, geology, basin studies, hydro geologic studies, and groundwater-monitoring data from the onsite and offsite observation wells through a normal rainfall year. For more information,

see Groundwater Separation Requirements and Procedures for Groundwater Determination later in this Chapter.

3. Submit an application including:

- An application form as provided by the Alpine County Health Department
- A site plan of the proposed sewage disposal system (3 copies) (see Plot Plan requirements below)
- Soils report including percolation tests and soil profiles.
- System design
- The appropriate permit fee

4. Site evaluation by EHD:

In order for the Health Department to properly evaluate the site, the property corners shall be located and flagged prior to the on-site lot evaluation and permit issuance.

If the site meets all requirements for the proposed OWTS, a permit will be issued for installation of the system. The permit is valid for one year after issued.

5. Permit approval: Once the permit is issued, the OWTS can be installed. A Licensed General Engineering Contractor (Class A), General Building Contractor (Class B), Sanitation System Contractor (Specialty Class C42), or Plumbing Contractor (Specialty Class C-36) shall install all new OWTS and replacement OWTS in accordance with California Business and Professions Code Sections 7056, 7057, and 7058 and Article 3, Division 8, Title 16 of the California Code of Regulations (Plumbing Code). A property owner may install his/her own OWTS as an owner/builder. Site specific conditions for the system are attached to the permit.

6 Inspections. A minimum of three inspections are required by EHD.

- Open trench inspection, prior to placement of leach rock or leachlines.
- After leach lines are installed and prior to final cover
- Final inspection with all components operating and final grading complete. Septic tanks or other primary components shall be filled with water to flow line prior to requesting inspection. All seams or joins shall be left exposed (except the bottom) and the tank shall remain watertight. A flow test shall be performed through the system to the point of effluent disposal. All lines and components to leaching area shall be watertight.

7. Building permits: The County Building Department shall not any building permits until the sewage disposal permit has been issued by EHD.

8. Changes in design or location: Any proposed changes in design or location of the septic system location must be approved by EHD prior to commencing any construction of the OWTS.

The responsibility for the satisfactory operation of the sewage disposal system rests with the property owner. The sewage must be kept underground. In the event of a sewage system failure the property owner is solely responsible for the cleanup and repair of the system.

THE PLOT PLAN

A plot plan of the proposed building construction and OWTS is required. This drawing should be prepared using standard engineer's scale. The plot plan shall contain the following information:

- Site Address
- Assessor's Parcel Number
- Vicinity Map, Scale, North arrow
- Property Lines and lot dimensions
- Roads adjoining property
- General slope of the area and direction of fall
- Dimensional outlines and locations of all existing or proposed improvements, including buildings, decks, patios, driveways, walks, water sources, etc.
- Proposed OWTS design detail including location of house sewer outlet, septic tank and leaching field
- Proposed grading with 4:1 setbacks shown along with any impacts to the site and/or adjacent property.
- Location of any existing tree to remain in place which may affect the location of the septic tank or leaching trench.
- All known, recorded easements on or within 20 feet of the property
- Location of all public waterlines on or within 20 feet of property
- Location of any streams, ponds, irrigation ditches, or drainage channels on or within 100 feet of property line.
- Location of all existing or proposed wells, whether in use or abandoned, on or within 100 feet of property.
- Existing sewage disposal systems on or within 100 feet of the property.
- Any large animal enclosures
- Any soils testing information, such as deep soil profile excavations or percolation tests, plotted on the design.

PRIMARY AND RESERVE AREA REQUIREMENTS

All OWTS design proposals, for both new construction and existing structures, must show 100% replacement area for the active OWTS.

SEPTIC TANKS

All conventional OWTS require the use of a septic tank to allow for the removal of solids in the wastewater prior to being discharged to the dispersal field. Alternative OWTS will also require a septic tank unless a settling chamber is a component of the treatment unit. For specific information on the requirements for and sizing of septic tanks, see Chapter 8 of this LAMP.

OWTS DISPERSAL SYSTEMS

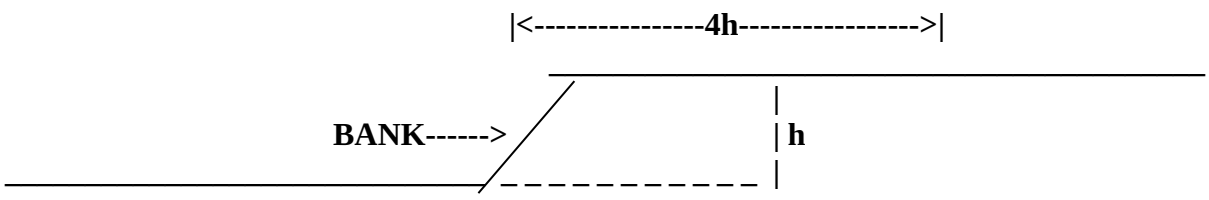
Dispersal systems for conventional OWTS in Alpine County can consist of leach lines or in limited situations, leach beds. The amount and type of disposal field required will be based upon the percolation test data. For specific information on the requirements for sizing and design of dispersal systems, see Chapter 8 of this LAMP.

SETBACKS

Setbacks in plot plans refer to the required spacing in distance from components of the OWTS and to structures, property lines, easements, watercourses, wells, or grading. Specific setback requirements will vary based on the type of system design and site conditions and are specified in the following table.

Lots of less than 15,000 sq. ft. square feet in size and using an individual sewage disposal system and public water supply require special consideration because of their small size and may not be developable. The septic system installation must also comply with the following criteria:

MINIMUM HORIZONAL DISTANCE REQUIRED FROM:	BUILDING SEWER	SEPTIC TANK	LEACH TRENCH
Building or Structure*	2 feet	5 feet.	**8** feet
Property Line			
-with wells	25 feet	50 feet	50 feet
-without wells	clear	5 feet	**5** feet
Private Wells	50 feet	**100** feet	100 feet
Public Wells	100 feet	**150** feet	150 feet
Lake, Reservoir or Wetlands (measured from the high water line)	50feet	**200** feet	200 feet
Perennial Stream	50feet	**100** feet	100 feet
Water Line	1 foot	5 feet	5 feet
Pressure public water main	10 feet	10 feet	10 feet
Unstable land mass or earth slides	100 feet		100 feet
Ephemeral streams	25feet	50 feet	50 feet
Cut Bank	10 feet	25 feet	4 times height
Distribution Box	-----	5feet	5 feet
Large Trees	-----	10feet	10 feet



* Distance requirements shall include porches and steps whether covered or uncovered, breezeways, roofed porte-cocheres, roofed patios, car port, covered walks, covered driveways and similar structures or appurtenances.

NOTES:

1. For parcels created after April 1, 1973, the preceding distance requirements do not apply. Check with the local Health Department for proper distance requirements. Where special hazards are involved, the distance required shall be increased as may be directed by the Health Officer.
2. 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.
3. Where the effluent dispersal system 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 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.

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

- The permitting agency shall provide a copy of the permit application to the owner of the water system of their proposal to install an OWTS within 1,200 feet of an intake point for a surface water treatment. If the owner of the water system cannot be identified, then the permitting agency will notify California Department of Public Health Drinking Water Program.
- The permit application shall include a topographical plot plan for the parcel showing the OWTS components, the property boundaries, proposed structures, physical address, and name of property owner.
- The permit application shall provide the estimated wastewater flows, intended use of proposed structure generating the wastewater, soil data, and estimated depth to seasonally saturated soils.
- The public water system owner shall have 15 days from receipt of the permit application to provide recommendations and comments to the permitting agency.

POTABLE WATER SUPPLY

Prior to approval for occupancy by the building department, a potable water supply will be required by connection to a public water supply or the use of domestic water well. The use of a domestic water well will require proof of potability after the well is drilled. A copy of the Well Laboratory Report that indicates the absence of coliform bacteria will be necessary for proof of potability of a private well. The date of the

test cannot be more than one year old. If a valid test does not exist, the well must be sampled for bacteriological.

OWTS PERMIT ISSUANCE

When all applicable items above have been completed to the satisfaction of EHD, an OWTS installation permit can be issued to the owner/agent or to a contractor with the required license(s) from the EHD. The permit is valid for one year and allows for the inspection of the completed OWTS installation by EHD staff prior to backfilling any portion of the installation. In order to make the OWTS permit processing as smooth and efficient as possible, it is recommended that you maintain a record of all paperwork and project control numbers obtained from each Department.

If an owner submits to the EHD an request for a permit extension for a sewage disposal system while the permit is still valid, the health officer shall grant one extension of the permit, upon payment of the applicable fee, for a period of one year for the sole purpose of allowing the owner to complete construction and obtain final approval of the system.

LOT SIZE REQUIREMENTS

The minimum lot size for the use of a new septic system within an existing subdivision shall have a net area greater than or equal to 15,000 sq. ft. However, those lots granted a waiver by Lahontan RWQCB are exempted from this requirement. Alpine County has a minimum lot size requirement of 1 acre, for new lots proposed to be created with an onsite wastewater treatment systems and served by individual onsite wells. The average density for any subdivision of property made pursuant to the Subdivision Map Act proposing to use OWTS shall not exceed the allowable density values in the table below for a single-family dwelling (SFD), or its equivalent. Where zoning regulations require greater lot sizes, those regulations shall take precedent.

Table 1: AVERAGE ALLOWABLE DENSITIES FOR SUBDIVISION LOTS[1]

Average Annual Rainfall (in/yr)	Allowable Density (acres/SFD unit)
0 – 15	2.5
>15 – 20	2.0
>20 – 25	1.5
>25	1.0

SOIL AND PERCOLATION TEST REQUIREMENTS

Percolation testing shall be performed in accordance with the EHD percolation test procedures found in Appendix I of this LAMP. Backhoe excavations and percolation tests are used to demonstrate that the dispersal site is located in an area of uniform soil and that no conditions exist which could adversely affect the performance of the system or result in groundwater degradation.

1. Leach line systems are limited to soils with percolation rates of 60 minutes per inch or less and more than 1 minute per inch. Percolation rates in excess of 60 minutes per inch and faster than 1 minute per inch are unsuitable for the installation of a conventional OWTS dispersal system and will require the use of an alternative or supplemental treatment system. Conventional systems with

percolation rates of 1 to 5 minutes per inch must have increased depths to groundwater (see groundwater separation requirements below).

2. A minimum of two percolation tests at each leach field location should be performed to represent soil types at the depth of the proposed leach lines.

3. A minimum of two backhoe excavations should extend to a depth of at least 8feet or to impermeable material. There shall be a minimum of 5 feet of natural unsaturated, permeable soil between the bottom of the dispersal system and any impermeable soil layer. A minimum of 2 feet is acceptable for alternative systems or systems using supplemental treatment. See the next section for more information on groundwater separation requirements.

   Leach lines shall not be allowed in fill material, unless that material has been certified by a civil engineer to be appropriate for such use and the placement of fill materials conforms with the EHD Engineered Fill Policy.

4. Leach lines are limited to slopes of 30 percent or less.

Groundwater Separation Requirements for Onsite Wastewater Treatment Systems

Groundwater Separation

This section is to be used for determining groundwater levels when siting and designing onsite wastewater treatment systems (OWTS) with the purpose to:

- Protect the groundwater quality by ensuring proper treatment of the sewage effluent prior to its entering into the groundwater.
- Protect the public health from failing OWTS caused by high groundwater.
- Provide a methodology for the evaluation of potential building sites using OWTS with regards to maintaining minimum groundwater separation requirements with the use of an OWTS.

The Environmental Health Department requires a minimum of five-foot separation between the bottom of a conventional OWTS disposal system and the highest anticipated groundwater level. For OWTS with alternative or supplemental treatment, the required separation can be reduced to two feet. This reduction is allowed due to the level of pretreatment provided by the alternative or supplemental treatment.

The minimum depth to the anticipated highest level of groundwater below the bottom of the leaching trench, and the native soil depth immediately below the leaching trench, shall not be less than prescribed in Table 2.

Table 2: Tier 1 Minimum Depths to Groundwater and Minimum Soil Depth from the Bottom of the Dispersal System

Percolation Rate	Minimum Depth
Faster than 1 MPI Percolation Rate	Alternative or Supplemental Treatment Syst.

1 MPI< Percolation Rate <5 MPI	Twenty (20) feet or Alternative System
5 MPI< Percolation Rate < 60 MPI	Five (5) feet
60 MPI < Percolation Rate <120 MPI	Alternative or Supplemental Treatment Syst.

Groundwater typically fluctuates seasonally depending on local geology and rainfall amounts. Groundwater levels fall in response to drought and well extraction, and rise in response to rainfall and in some cases, increased irrigation, agriculture and residential development.

PROCEDURE FOR GROUNDWATER DETERMINATION FOR DISCRETIONARY PROJECTS

Subdivisions, parcel maps, boundary adjustments are all projects that may require EHD to certify that each lot can support an OWTS that will not violate the RWQCB mandates. To meet this requirement, test soil profile excavations and/or piezometers for monitoring groundwater in conformance with this policy may be installed. Maps showing the location of the soil profile excavations and their logs shall be submitted to EHD. The project engineer, geologist, soil scientist or environmental health specialist (qualified professional) must determine the actual and potential high groundwater levels in the area of the proposed OWTS at the time of submittal for review by EHD.

The qualified professional, must support their expressed conclusion that it is unlikely that seeps or springs would develop as a results of the OWTS and the high historic groundwater elevation will not encroach upon the minimum separation required between the bottom of the proposed OWTS and the highest anticipated groundwater level.

Transient high groundwater conditions (spikes) must be documented thoroughly if encountered. A written discussion by the qualified professional must be submitted to EHD along with groundwater monitoring log(s) for review and concurrence. The discovery of groundwater spikes on a lot will be evaluated on a case-by-case basis.

EHD and/or the RWQCB may require a comprehensive hydro-geologic study. This study shall include but not be limited to; data such as rainfall, projected water use, surface drainage, geologic formations, depth of water table and other relevant data as determined by the registered professional.

EXISTING LOT OWTS DESIGN REVIEW

1. If the site review reveals any evidence of groundwater changes, including but not limited to; plant growth, ponding water, or OWTS failures in the area, additional soil profiles or excavations may be required. EHD staff will specify the depth and the locations of the additional test soil profiles or excavations in consultation with the qualified professional in charge of the project.

2. When groundwater is observed in the soil profiles or excavations and EHD has reason to believe that groundwater could rise to an unacceptable level during the course of a normal rainfall season, monitoring may be required to determine that groundwater will not rise to an elevation that will not provide the minimum separation required from the bottom of the proposed OWTS. Monitoring, if required, must be conducted during the course of an average or above average annual rainfall

year and during the months of the highest anticipated groundwater (April, May, June) (Wet weather testing).

3. When groundwater is not observed in the boring but there is evidence of past high groundwater levels, such as documentation of groundwater rise on adjacent properties, or soil mottling, wet weather testing may be required.

4. The qualified professional conducting the groundwater study must support their express conclusion it is unlikely that seeps or springs would develop as a result of the OWTS and the anticipated high groundwater elevation will not encroach upon the minimum separation required to the bottom of the proposed OWTS. The supporting data shall include, but not be limited to, data on the sites topography, soils, geology, basin studies, hydro-geologic studies, and groundwater-monitoring data from the on-site observation wells through an above normal rainfall year.

TESTING PROCEDURES FOR GROUNDWATER

1. A site evaluation shall determine that adequate soil depth is present in the dispersal area. Soil depth is measured vertically to the point where bedrock, hardpan, impermeable soils, or saturated soils are encountered or an adequate depth has been determined. Soil depth shall be determined through the use of soil profile(s) in the dispersal area and the designated dispersal system replacement area, as viewed in excavations exposing the soil profiles in representative areas, unless the local agency has determined through historical or regional information that a specific site soil profile evaluation is unwarranted.

   The profiles shall be a minimum of 8 feet in depth. Deeper depths may be required depending on site-specific conditions as determined by EHD or the project qualified professional. Site-specific conditions may include, but not be limited to; the proposed depth of the system, local geology, soil types encountered, percolation rates, elevation and terrain, features on site, evidence and/or knowledge of historic ground water levels in the area, and the anticipated fluctuation of the groundwater table in times of normal to above normal annual rainfall.

2. Since groundwater does not always immediately flow into a test boring, EHD requires a minimum of 72 hours pass before an accurate groundwater measurement is taken. The qualified professional and/or the property owner maintain full responsibility for protecting the public from any hazards related to the test soil profile excavations. It is recommended that all test soil profile excavations that encounter groundwater be converted to observation wells so the groundwater conditions can be monitored over time.

3. If the qualified professional does not wish to complete the test soil profile excavations as observation wells, they can cover the test boring, place safeguards around the soil profile excavations to prevent unauthorized access and make an appointment for EHD staff to observe the boring at least 72-hours after the boring has been completed.

4. During periods of below normal average rainfall, or after periods of drought where there has not yet been sufficient ground water recharge, the absence of groundwater in test soil profile excavations in areas where groundwater is suspect may not mean that approval to issue a septic tank permit can be granted. It may be necessary for DEH and the qualified professional to monitor the test soil profile excavations for a sufficient period of time to determine where groundwater will rise to during normal to above normal rainfall.

SPECIAL CONDITIONS

Certain conditions such as building in a flood plain, high ground water, less permeable soils (perc rates slower than 60 MPI), limited parcel size, or excessive rock may necessitate that the septic system be designed by a Registered Civil Engineer. Use of an engineer does not guarantee Environmental Health acceptance or approval of any engineered sewage disposal design submitted. Some existing properties may be unsuitable for the use of individual onsite sewage disposal systems for a variety of reasons.

Chapter 8

Minimum OWTS Design and Construction Standards (Tier 2)

A Licensed General Engineering Contractor (Class A), General Building Contractor (Class B), Sanitation System Contractor (Specialty Class C42), or Plumbing Contractor (Specialty Class C-36) shall install all new OWTS and replacement OWTS in accordance with California Business and Professions Code Sections 7056, 7057, and 7058 and Article 3, Division 8, Title 16 of the California Code of Regulations (Plumbing Code). A property owner may also install his/her own OWTS if the as-built diagram and the installation are inspected and approved by the EHD at a time when the OWTS is in an open condition (not covered by soil and exposed for inspection).

Septic Tanks

All conventional OWTS require the use of a septic tank to allow for the removal of solids in the wastewater prior to being discharged to the dispersal field. Alternative OWTS also require a septic tank unless a settling chamber is a component of the treatment unit. This Chapter will provide the minimum design specifications and requirements for septic tanks.

1. Septic tanks must be certified by the International Association of Plumbing and Mechanical Officials (IAPMO) or stamped and certified by a California registered civil engineer as meeting the industry standards, and their installation shall be according to the manufacturer's instructions.
2. The tank shall be watertight and possess two chambers.
3. Septic tanks shall be certified by the manufacturer to allow for burial without being water filled to allow for routine maintenance or to be used as a holding tank as needed.
4. Septic tanks shall be installed per the manufacturer's instructions.
5. The bottom of the excavation for the tank shall extend into native or compacted soils to eliminate potential settling issues and shall be level.
6. Septic tank location must take into account maintenance and pumping requirements including vehicle access; and distance and elevation lift to pumper truck.
7. All tanks must have an uncapped Inlet tee or a 90 degree elbow fitting, and must extend at least 14 inches below the liquid level.
8. Outlet tees must be uncapped and must extend at least 12 inches below the liquid level.
9. The outlet elevation shall be between 2 and 6 inches lower than the inlet elevation to ensure proper fall without a significant loss of volume.
10. Fall between the outlet of the septic tank and the dispersal field shall be continuous with a minimum fall that ensures the outlet pipe is 4 inches higher than the leach rock or other components used in the dispersal system on a level system. The minimum distance between the septic tank and the leaching trenches shall be 5 feet.

11. Septic tanks with greater than 6 inches of cover must have water tight risers to within 6 inches of finished grade. Risers and lids that are at or above grade must be watertight and lockable or require tools to be opened.
12. Septic tank risers must have a current IAPMO certification or must be reviewed and approved by EHD prior to use. Concrete risers and lids must be constructed of Type V concrete or be protected from corrosion from sewer gases. The interior diameter of the riser shall be a minimum of eighteen (18) inches.
13. Effluent filters must be IAPMO approved if they are to be installed as part of the outlet tee.
14. Septic tanks installed in areas of vehicular traffic must be certified to withstand the proposed loads or have an engineered traffic slab installed to accommodate the proposed loads.
14. Minimum tank size is 1000 gallons.
15. Septic tanks shall be sized according to anticipated wastewater flows from the structure(s). The following standard sizes shall apply:

CAPACITY OF SEPTIC TANKS

Single Family Dwelling: No. of Bedrooms	Multiple Dwelling Units or Apartments, One Bed-room Each	Other Uses; Max. Fixture Unit Served	Minimum Septic Tank Capacity in Gallons
1, 2 or 3		20	1000
4	2 Units	25	1200
5 or 6	3	30	1500
	4	45	2000
	5	55	2250
	6	60	2500
	7	70	2750
	8	80	3000
	9	90	3250
	10	100	3500

Extra bedroom, 150 gallons each
Extra dwelling units over 10, 250 gallons each
Extra fixture units over 100, 25 gallons per fixture unit

16. Minimum slope of the building sewer to the septic tank shall be ¼ inch per foot. A clean out shall be installed within 2 to 5 feet of the house. Additional clean outs shall be required at intervals not to exceed 100 feet.

Leach Line Systems

Leach lines systems are the primary means of effluent dispersal for the majority of OWTS within Alpine County and this Chapter will establish procedures for the design and construction of leach line dispersal systems. The procedures are specific for leach lines, and do not apply to other types of dispersal systems. No system shall be installed on filled ground unless the fill is designed, evaluated, and approved by a Licensed Civil Engineer and conforms to the County's Engineered Fill Policy.

SOIL COVER REQUIREMENTS

1. The maximum soil cover allowed over the top of the infiltrative surface is 48 inches, measured from the top of the leach rock/chamber/etc. to the ground surface.
2. The minimum cover required over the top of the infiltrative surface is 12 inches. Preferred depth of earth cover over leach lines is 18 inches, especially where the soil is subject to deep frost or freezing.
3. Soil cover requirements must also conform to those allowed by the manufacturer of any gravel-less/chamber design.
4. The top of a new leaching trench shall be hand tamped (not by machine) and shall be over filled with 4 to 6 inches of earth to allow for settlement.

DIMENSIONS

1. Leach lines are to be installed according to the permits specifications for location, length, width, and depth.
2. Leach lines are to be spaced at least 10 feet apart, measured center to center.
3. Leach lines shall be installed with a width of no less than 18 inches and no more than 36 inches. Systems utilizing chambers may be sized to no less than 0.70 of that prescribed below.
4. Maximum length of any leach line shall be 100 feet and multiple leach lines in a system should be of equal length.
5. A 100% reserve area shall be required for all leach line systems.

MATERIALS AND CONSTRUCTION CONSIDERATIONS

1. All piping and materials used in leach line systems including gravel-less/chamber systems must have IAPMO approval and must be approved by EHD prior to installation.
2. The standard size of chamber approved for use in Alpine County is twelve (12) inches high and thirty-six (36) inches wide (see Guidelines in Appendix II) .
3. Leach lines that utilize gravel shall be filled with clean, washed leach line rock to a point at least 2 inches above the top of a 4 inch perforated pipe and shall have a minimum of 12 inches of gravel below the pipe. The rock shall be graded at ¾ to 2 ½ inches in size and shall be covered with straw, untreated building paper or a geotextile fabric prior to backfill to prevent the infiltration of soil into the rock. The ends of leach pipes must be capped.

4. Leach lines may not be placed under impermeable surfaces. Leach lines that are later covered by impermeable surfaces may not be considered as viable for purposes of determining primary and reserve area requirements.
5. Leach line trenches shall be installed with the trench bottom and materials used being level. Maximum fall is 2 inches per 100 feet.

LEACH LINES ON STEEP SLOPES

The following requirements must be met for the installation of leach line trenches on slopes exceeding 25 percent without necessitating the grading of terraces. The design parameters are applicable only to slopes exceeding 25 percent and are not intended to be used in any other situation.

1. The maximum slope allowed for leach line trenches is 30 percent.
2. All leach lines on steep slopes shall be installed in 5 foot deep trenches with 12 inches of leach rock below the leach pipe or with approved chambers or other gravel-less system.
3. The design of disposal systems on steep slopes requires the experience and expertise to address conditions relative to soil, slope stability, and subsurface conditions which require professional judgment and technical knowledge. Designs for steep slope systems will only be approved when submitted by a qualified professional registered in the State of California.
4. Soil testing must provide data representative of the entire disposal area and demonstrate that conditions are uniform below the entire disposal area.
5. Design reports must include: a. Cross section(s) hillside soil profile(s). b. Detailed boring logs of all test holes and borings. c. Scaled layouts and profiled designs based on accurate topography. d. Any grading proposed on the site in the disposal area. e. A slope stability report or statement from a qualified professional.
6. Any grading, proposed to create a stable work area for trench installation, may be subject to review by the Alpine County Community Development Agency.

DISTRIBUTION BOXES

Where two or more drain lines are installed, an approved distribution box of sufficient size to receive lateral lines shall be installed at the head of each disposal field. The distribution box outlets shall be level and the inlet shall be at least one inch above the outlets. Distribution boxes shall be designed to insure equal flow and shall be installed on a level concrete slab in natural or compacted soil. Five feet of natural or compact soil shall separate the distribution box from the leach trench.

SIZING

1. Residential leach line systems shall be sized based on the chart located below, which shows the length of leach line as a function of percolation rate and the number of bedrooms for a single-family dwelling.

2. Non-residential leach line systems shall be calculated by a qualified professional using expected peak wastewater flows and safety/surge factor of 2 unless a reduction is allowed by EHD. Application rates shall be as provided in the table below.

3. Conventional systems shall be designed to receive all domestic sewage from the drainage system. No basement, or surface drainage shall be permitted to enter the system.

Square Feet of Required Leach Line

Percolation Rate	Application Rate	2 bdrm (300 gallons)	3 bdrm (400 gallons)	4 bdrm (500 gallons)	5 bdrm (600 gallons)
<1	1.2	Alternative/Supplemental Treatment Systems Only			
1-5*	1.2	250	333	417	500
10	0.8	375	500	625	750
15	0.73	411	548	685	822
20	0.66	454	606	758	909
25	0.59	508	678	847	1017
30	0.53	566	755	943	1132
35	0.48	625	833	1042	1250
40	0.42	714	952	1190	1429
45	0.37	811	1081	1351	1622
50	0.31	968	1290	1613	1935
55	0.26	1154	1538	1923	2308
60	0.2	1500	2000	2500	3000
65	0.18	Alternative/Supplemental Treatment Systems Only			
70	0.17				
75	0.15				
80	0.13				
85	0.12				
90-120	0.1				

* 40 feet to groundwater or Alternative/Supplemental systems

Use of Chambers may use a multiplier of no less than .70 of required square footage.

Square Feet of Required Leach Line Utilizing Chambers

	2 bdrm (300 gallons)	3 bdrm (400 gallons)	4 bdrm (500 gallons)	5 bdrm (600 gallons)
<1	Alternative/Supplemental Treatment Systems			
1 to 5	175	233	292	350
10	263	350	438	525
15	288	384	479	575
20	318	424	530	636
25	356	475	593	712
30	396	528	660	792
35	438	583	729	875
40	500	667	833	1000
45	568	757	946	1135
50	678	903	1129	1355
55	808	1077	1346	1615
60	1050	1400	1750	2100
65	Alternative/Supplemental Treatment Systems			
70				
75				
80				
85				
90-120				

Seepage Beds

1. Seepage beds may be used when lot size and/or setbacks prohibit installation of standard leach lines. Seepage bed construction is similar to standard leach lines except for sizing and spacing of lateral piping.
2. Seepage beds will be sized with 1.5 times the absorption area as for leach lines calculating bottom area only.

3. Distribution piping will be spaced no more than 4 feet apart and will be looped (interconnected) at the far end.

Low Pressure Distribution (Pressure Dosed System)

When site conditions preclude the use of wastewater dispersal by gravity flow, effluent may be distributed to a dispersal field under pressure.

1. The pump chamber or tank shall meet industry accepted standards; have a capacity equal to six hours of peak flow or 375 gallons, whichever is greater.
2. Be equipped with an audible and visible high water alarm.
3. There must be at least six (6) inches of soil cover over the distribution system.

Alternative and/or Supplemental Treatment Systems

Alternative Wastewater Treatment Systems are onsite wastewater systems utilizing dispersal fields consisting of components other than a conventional system designed to address unfavorable site conditions such as high groundwater, impervious soil formations, unacceptable percolation rates, and disposal field size limitations. Examples include, but are not limited to, “mound”, “at grade”, “sand filters”, “evapotranspiration”, “aerobic treatment units (often referred to as “denitrification units”),and “gray water systems”. All Alternative OWTS’s must be designed and installed according to approved standards.

Supplemental Treatment Wastewater Treatment Systems are OWTS that performs additional wastewater treatment so that the effluent meets a predetermined performance requirement prior to discharge of effluent into the dispersal field. They are designed to address conditions in 303 (d) list “Impaired Water Bodies” designated areas (see Tier 3). All Supplemental Treatment systems must be tested and certified by an independent testing organization such as NSF. Part of the testing must include an evaluation of the system’s effectiveness in reducing Total Suspended Solids (TSS), Bio-chemical Oxygen Demand (BOD) and Total Nitrogen (TN).

This Chapter will provide the procedures for the design, construction, operation and maintenance of these systems in Alpine County.

Design Criteria for Alternative and Supplemental OWTS

1. Alternative and supplemental systems may only be authorized for existing parcels and for repairs or replacements where siting and design limitations require a variance.
2. All systems must be designed by a registered civil engineer or qualified professional in conformance with State guidelines.
3. Treated effluent from all STS shall be discharged to a subsurface dispersal system consisting of leach lines, leach beds or pressurized dispersal systems.
4. Sizing for dispersal systems that utilize leach lines or leach beds shall be the same as those used for conventional OWTS.

5. A minimum 2 foot separation between the bottom of the dispersal system to the highest anticipated level of groundwater.
6. A minimum of 2 foot of permeable soil must exist below the bottom of the STS dispersal system.
7. The STS shall be equipped with a visual and audible alarm.
8. The system designer shall provide the property owner with a design, operations, monitoring and maintenance manual fully describing all components of the system and the proper and necessary operations, monitoring and maintenance of all components.
9. The owner shall be provided with an informational operation and maintenance document by the system designer or installer. This document shall provide the homeowner with clear and concise procedures to ensure operation and maintenance of the system.
10. To ensure that the system continues to function properly, it is to be inspected at least annually by a Qualified Inspector. Inspection reports shall be submitted to EHD detailing the findings of the inspection within thirty days. This agreement is to remain in effect for the life of the Alternative or Supplemental Treatment system.

Special Permitting for Alternative and Supplemental Treatment Systems:

1. An application for a permit to construct of an alternative or special design sewage disposal system shall include:
    a. A report by a civil engineer that describes the proposed on-site sewage disposal system and the relevant physical conditions of the site, including all calculations, and
    b. A written certification by the engineer stating: "I hereby certify that the design of the on-site sewage disposal system, based upon inspection of the site, including all tests and analyses, that in my professional judgement, are necessary or appropriate to determine that the system will function properly and treat and dispose of sewage in the manner described."

2. For the purpose of inspecting or monitoring any system, the county may enter any area of any property on which any system exists, without notice, during normal hours of operation, or based on reasonable cause to believe that there exists a condition related to the system that poses an imminent threat to public safety, health or welfare.

3. The county shall have the right to approve any consultants retained by the facility operator in connection with the management or operation of the on-site sewage facility. It is understood and agreed by and between the parties hereto that such right of approval shall in no way lessen, limit or otherwise affect the duties or obligations of the facility operator hereunder or the services to be performed by the county hereunder. Any changes or modifications to facility operator agreements or contracts shall be submitted to the county for review and compliance with the regulations contained herein.

4. Prior to final approval, the property owner shall record at the Alpine County Clerk-Recorder's office, a notice stating that an alternative or supplemental treatment system has been installed on the property. This "Notice to Property Owner" shall run with the land and will serve as constructive

notice to any and all future property owners that the property is served by an alternative or supplemental treatment wastewater treatment system and is therefore subject to a contract for regular maintenance, monitoring and reporting requirements. A copy of the recorded document shall be provided to Environmental Health Department.

Chapter 9

Septic Pumping (OWTS Policy 9.2.6)

All septic tank sludge is required to be transported out of Alpine County to an approved sewage treatment plant. No local sewage treatment plants have the capacity or permits to accept the material within Alpine County. The volume of septage from the county is very limited and all septic pumper companies are from out of county.

In accordance with the California Health and Safety Code, Section 117400 – 117450, registration is required for the operation of a sewage pumping business. A septic pumping registration form must be completed and submitted to EHD. The registration may be revoked for violations of the code.

Pursuant to California Health and Safety Code, Section 117420, all sewage pumping equipment must be inspected and approved by the Alpine County Health Department prior to granting registration of a sewage pumping business. Pumpers are requested to make the necessary arrangements for the inspection of your vehicle and equipment.

The registrant shall submit a quarterly report of septage pumping to the Health Department. The report shall indicate the name and address of the owner or tenant of each premise where a septic tank, chemical toilet, cesspool or seepage pit was pumped, and the treatment plant where the septage was disposed of and by whom.

Standards for sewage pumping businesses and equipment are as outlined on the following inspection form.

ALPINE COUNTY HEALTH DEPARTMENT

Sewage Pumper Equipment and Vehicle Inspection Form

Business Name_____Legal Owner of Truck_____

Business Address_____ Vehicle Lic#/State_____

_____ Trailer Lic#/State_____

Business Phone_____ Truck Make_____ Tonnage_____

Tank Capacity_____ gallons

CHECK APPROPRIATE BOX

Yes	No	
___	___	1. The business name is displayed on each side of the cab and each side of trailer mounted tank in three (3) inches in height and in a contrasting color.
___	___	2. The tank capacity is printed on both sides of the tank in letters three (3) inches in height and in a contrasting color.
___	___	3. Vehicle description, license, business name and address listed above correspond with those on the vehicle examined.
___	___	4. Tank – metal, watertight construction.
___	___	5. Tank – fully enclosed and strong enough for all conditions of operation.
___	___	6. Tank- provided with suitable covers to prevent spillage.
___	___	7. Pump – self-priming, vacuum (if not vacuum, specify_____).
___	___	8. Service hoses and caps for hoses provided.
___	___	9. Adequate storage area for hoses provided.
___	___	10. Hoses in good condition (not worn, leaking or patched). Hoses appear to be cleaned after use.
___	___	11. Discharge nozzle – located to prevent flow or drip onto pumping vehicle.
___	___	12. Discharge nozzle – outlet orifice provided with threaded cap or camlock coupling.
___	___	13. Discharge nozzle protected from accidental damage or breakage.
___	___	14. Septic tank pumper reports are current.
___	___	15. Pumping vehicle equipped with pressurized washdown tank, disinfect cleanup implements.
___	___	16. Overall vehicle – clean sanitary appearance.
___	___	17. Tank is fitted with controls that can only be operated from the ground at the rear of the truck.
___	___	18. If inspected at dumping area, was pH at or above 12 and held for at least 30 minutes. pH_____ holding time_____

Method for adding lime:_____

Comments:_____

_____

_____

I have completed an inspection of the vehicle described and have determined its markings, pumps, tanks, containers, equipment and washdown procedures comply with Alpine County Code and State Health and Safety Code, and therefore, recommend permission be granted to operate said equipment.

_____ _____

Environmental Health Specialist Date

Chapter 10

Impaired Water Bodies (Tier 3)

There are currently no bodies of water within Alpine County identified as impaired pursuant to Section 303(d) of the Clean Water Act.

Onsite Wastewater Treatment Systems in Degraded Basins

If the Water Board identifies a groundwater basin or sub-basin in the County where the use of OWTS is causing or contributing to exceedances of nitrate or pathogen maximum contaminant levels (MCLs), the County will develop an Advanced Groundwater Protection Management Program (AGPMP) in close consultation with and approved by the Water Board. The AGPMP shall provide the same level of protection as the Tier 3 standards in the Policy and may include but not be limited to: supplemental treatment for all new and replacement systems, scheduled inspections, scheduled maintenance, groundwater monitoring, and connection to the public sewer if feasible..

The County will require conformance with current standards, including supplemental treatment standards, to the greatest extent practicable. The requirements for existing systems will be consistent with Tier 4 of the Policy. Supplemental treatment standards will be equivalent to those contained in Tier 3. Variances from the prohibitions specified in sections 9.4.1 – 9.4.9 of the Policy and Chapter 5 of this LAMP, are not allowed in areas covered by an AGPMP .

Advanced Protection Management Plan

The State Policy stipulates that existing, new and replacement OWTS that are located near a water body that has been listed as impaired due to Nitrogen or pathogens pursuant to Section 303(d) of the Clean Water Act may be addressed by a TMDL and its implementation program, by special provisions contained in a Local Agency Management Program or by the specific requirements of Tier 3.

If a water body in the County is designated by the Water Board as “impaired” or significantly degraded as a result of the use of OWTS, Alpine County will develop an Advanced Protection Management Program (APMP) in accordance with the established TMDL. In the absence of an approved TMDL, the APMP will be developed in close consultation with the Regional Water Quality Control Board and may include but not be limited to requirements for supplemental treatment for existing systems and mandatory, routine inspections as determined by the Water Board in order to be consistent with the Policy. In the absence of a TMDL or an APMP approved by the Water Board, the provisions of Tier 3 of the Policy shall apply to OWTS adjacent to water body segments listed in Attachment 2 of the State Policy.

Chapter 11

Repairs and Substandard Systems (Tier 4)

Onsite Wastewater Treatment Systems Requiring Corrective Action

All OWTS have the potential to fail due to age, misuse or improper design and the failure may result in wastewater being discharged to the surface of the ground, or wastewater backing up into plumbing fixtures. These failures will require corrective action to mitigate any risk to public health or contamination of the environment. This Chapter will detail the corrective action that will be required in the event an OWTS fails and enforcement actions that will be taken if the corrective action is not completed within acceptable time frames.

Corrective Action Requirements

1. EHD will complete an investigation within 24 hours to determine the validity of the complaint or other notification of a failing OWTS.

2. Any OWTS that is found to be failing shall have a notice of violation issued to the property owner requiring action to eliminate the immediate health hazard through pumping of the septic tank by a licensed sewage hauler or elimination of wastewater flows to the failing OWTS. The notice of violation will also require a repair to be completed to the OWTS as needed within a reasonable time frame.

3. The proposed repair shall be evaluated by EHD to ensure it meets the minimum design requirements of this LAMP or is in substantial conformance to the greatest extent practicable.

4. Groundwater separation requirements to the bottom of the dispersal system and the highest anticipated groundwater level for repairs shall be as follows:

a. 5 foot for conventional OWTS

b. 2 foot for alternative OWTS with supplemental treatment

c. Less than 2 foot separation cannot be allowed through this LAMP and will require a waste discharge permit through the RWQCB.

5. The repair shall be completed under permit and inspection by EHD.

6. Failure to complete the required corrective action within the time frames given may result in additional enforcement action to eliminate any immediate health hazards.

7. All requirements of this LAMP will be met as practicable.

Substandard Systems

All OWTS within Inyo County that do not meet minimum design requirements of this LAMP shall be deemed substandard. Sites with substandard OWTS shall be prohibited from having future additions or modifications to the property that would potentially increase wastewater flow to the OWTS or decrease the amount of usable area available for the OWTS.

Onsite Wastewater Treatment System Abandonment Standards

Unless properly abandoned, an OWTS that is no longer used may represent a safety hazard. The top and lids of a septic tank deteriorate over time and may collapse resulting in injury. Therefore, these systems are required to be properly abandoned to prevent such accidents.

An existing OWTS or a portion thereof shall be properly abandoned, under the following conditions:

- Upon the discovery of a cesspool
- When the structure is connected to the public sewer or
- When the structure served by the OWTS is demolished unless the owner demonstrates their intention to use the system again.

The abandonment standards for a septic tank include:

- The tank or pit must be pumped to remove all contents.
- A tank may be removed entirely or
- If left in place, the top is removed, the bottom punctured or cracked to allow for drainage and the shell filled with inert material such as clean soil, sand, cement etc.

Standards for abandoning the dispersal field include:

- Leach lines composed of gravel and pipe may be abandoned in place.

APPENDIX I
Percolation Test Procedure

This Appendix is to be used to establish clear direction and methodology for percolation testing in Alpine County. The objective is to determine the area necessary to properly treat and maintain sewage underground; to size the OWTS with adequate infiltration surface area based on an expected hydraulic conductivity of the soil and the rate of loading; and to provide for a system intended to allow for a long-term expectation of satisfactory performance.

All percolation testing for dispersal systems in Alpine County shall be conducted through the use of the following procedures. The test shall be performed by or under the direct supervision of a California registered professional engineer, engineering geologist or registered environmental health specialist (qualified professional), Certified Professional Soil Scientist, with experience in onsite sewage disposal. A copy of the percolation test results are to be submitted with the plot plan to the Environmental Health Department. Soil profiles (8-10 foot deep backhoe excavations) are required to determine the depth and composition of the soil and the distance to ground water. Any deviation shall be authorized only after receiving written approval by EHD.

TEST HOLES

Number of Test Holes

1. A minimum of two test holes are required.
2. Additional test holes may be necessary on a site specific basis for reasons that include, but are not limited to the following:
   a. Unacceptable or failed tests.
   b. Areas of the disposal field requiring defined limits for exclusion.
   c. Soil conditions are variable or inconsistent.
   d. slope exceeds 25%
   e. use of an alternative or supplemental system.

Depth of Testing

1. Test holes shall be representative of the dispersal system installation depth, typically 36 or 48 inches.
2. Conditions which may require testing deeper than leach line depth:
   a. Shallow consolidated rock or impervious soil layers.
   b. Other factors as might be determined by sound geotechnical engineering practices.

Soil Classification

1. All test holes and excavations shall have soil types described according to the American Society for Testing and Materials (ASTM) or the USDA Soil Classification System (Unified).

2. All excavations are to be reported, including any, which encountered groundwater or refusal. Comments about consolidation and friable characteristics are encouraged.

Location of Percolation Test Holes

Test holes shall be representative of the dispersal area demonstrating site conditions throughout the entire sewage disposal system with equal consideration of primary and reserve leach fields.

Drilling of Borings for Test Holes

Diameter of each test hole shall be 6 inches, hand dug or bored. If a backhoe excavation is used, a test hole at 12–14 inches in depth shall be excavated into the bottom of the trench.

Preparation of Test Holes

The sides and bottom of the holes shall be scarified so as to remove the areas that became smeared by the auger or other tool used to develop the hole. All loose material should be removed from the hole. Two inches of fine gravel should be placed in the hole to prevent bottom scoring.

PRESOAKING THE TEST HOLES

Procedure

1. Carefully fill the test hole with 12-14 inches of clear water.
2. Maintain 12-14 inches of clear water for a minimum of four (4) hours. After four hours, allow the water column to drop overnight. (Testing must be done within after the initial four-hour presoak).
3. Overnight Option: If clay soils are present, it is recommended to maintain the 12-14 inch water overnight. A siphon can be used to maintain the supply at a constant level.
4. In highly permeable sandy soils with no clay and/or silt, the presoak procedure may be modified. If, after filling the hole twice with 12-14 inches of clear water, the water seeps completely away in less than 30 minutes, proceed immediately to begin the test. . If the test is done the following day, a presoak will be necessary for at least an hour in order to reestablish a wetted boundary.

Saturation and Swelling

1. Saturation means that the void spaces between soil particles are full of water. This can be accomplished in a short period of time.
2. Swelling is caused by the intrusion of water until the individual soil particles are full of water. This is a slow process, especially in clay-type soil and is the reason for requiring a prolonged soaking.

DETERMINATION OF PERCOLATION RATES

Depending on the soil type and permeability, and the results of the presoak, variations in the procedures used for determining percolation rates can be allowed. Testing shall proceed based on the conditions outlined in the following cases.

Case 1 Procedure

- Water remains overnight in the test hole following the four-hour presoak. (Unless an overnight siphon is used.)

1. Adjust depth of water to 6 inches in the hole.
2. Take two (2) readings at thirty (30) minute intervals and report percolation rate as the slower of the two readings. Until stabilized or for a period of 4 hours.

NOTE: When a minimum amount of water remains due to a damaged hole or silting, the hole may be cleaned out and tested under Case 3, starting with the presoak.

Case 2 Procedure

- Soil with a fast percolation rate is encountered where two columns of 12-14 inches of water percolates in less than 30 minutes for each column during the presoak.

1. Begin test 15-30 hours after presoak.
2. Fill the hole twice with 12-14 inches of water. Observe to see if each column of water seeps away in less than 30 minutes. If so, proceed with the percolation test. If not, go to Case 3.
3. Refill hole to 6 inches above the bottom.
4. Measure from a fixed reference point at ten (10) minute intervals over a period of one (1) hour to the nearest 1/16th inch. Add water at each 10-minute time interval.
5. Continue 10 minute readings as long as necessary to obtain a "stabilized" rate with the last 2 rate readings not varying more than 1/16th inch or for a duration of four (4) hours. The last water level drop will be considered in the percolation rate.

Case 3 Procedure

- No water remains in the test hole 15 -30 hours after the four-hour presoak.

1. Begin test 15-30 hours after presoak.
2. Clean out the silt and mud and add 2 inches of 3/8 inch pea gravel.
3. Adjust water depth to 6 inch above the pea gravel buffer and measure from a fixed reference point at 30 minute intervals to the nearest 1/16th inch. NOTE: It is not necessary to record data points for the first hour as this is an adjustment period and a reestablishment of a wetted boundary.
4. Refill the hole as necessary between readings to maintain a 6-inch column of water over the pea gravel. If a fall of 1 inch or less is recorded, the test can continue without refilling until the next 30 minute reading interval.
5. Continue recording readings at 30 minute intervals for a minimum of four hours.
6. The last water level drop is used to calculate the percolation rate.

<u>CALCULATIONS</u> Calculation Example

The percolation rate is reported in minutes per inch. For example, a 30 minute time interval with a 3/4 inch fall would be as follows:

30 minutes ÷ 3/4 inch = 40 minutes per inch (mpi)

APPENDIX II

COUNTY POLICIES

ALPINE COUNTY HEALTH DEPARTMENT
ENVIRONMENTAL HEALTH SERVICES

CHAMBER LEACHING SYSTEMS POLICY
JANUARY 2004

INTRODUCTION
The following guidelines are recommended for sizing, installing and inspecting chamber leach systems in Alpine County.

APPROVAL FOR USE IN ALPINE COUNTY
The Uniform Plumbing Code recognizes the use of plastic chamber leaching devices. Infiltrator products are approved in 15 states and 24 counties in California. These models include High Capacity, Standard, EQ 36 and EQ 24 Infiltrator Systems and are approved for use in Alpine County with the conditions noted in this policy and on the attached table. A permit must be obtained from the Alpine County Health Department, Environmental Health Division, for their installation as a wastewater leaching device.

SIZING
Attached to this policy is a sizing chart approved for use of four models of Infiltrator leaching chambers. The chart represents the sizing recommended by the Manufacturer with the exception that a 6-15 Minute Per Inch (MPI) percolation rate was combined with the 16-30 MPI range, thus the sizing criteria for 6-30 MPI soils are more conservative. The application rates from the USEPA Design Manual for Onsite Wastewater Treatment and Disposal Systems (DPA 625/1-80-012, table 7-2, p.214) provided the basis for sizing of Infiltrator chambered systems. A peak flow of 150 gallons per day per bedroom was used as estimated residential flows. A comparison of conventional rock filled trenches to Infiltrator chamber leachfields indicates that the amount of disposal area required is approximately equal. The conventional rock filled leach field requirements for a three bedroom house with 6-30 MPI soils would require a total of 138 lineal feet of trench that has 2 ½ feet of rock in an 18 inch wide trench.. The rock filled trenches would require approximately 552 square feet of disposal area. Use of the Infiltrator High Capacity model for the same parcel would require 125 lineal feet of chambers (20 chambers at 6.3 lineal feet per chamber). The Infiltrator system would require approximately 558 square feet of disposal area.

For commercial installation, only the Infiltrator High Capacity model will be permitted. Commercial systems will be designed based on the peak daily flow. The sizing chart indicates the peak gallons per day per chamber for different soil percolation rates.

INSTALLATION
1. All current separations and sanitary setbacks that apply to standard leachrock filled trenches shall apply to the installation and siting of all chamber leaching devices.
2. Slope constraints will be the same as for standard leachrock filled trenches. The maximum slope is 30%.
3. Trenches for the High Capacity and Standard Models shall be placed at least 3 feet edge to edge. The EQ 36 and EQ 24 shall be placed at least 2 feet edge to edge.

4. The manufacturer requires proper placement of native fill in the sidewall area to the top of the chamber slots prior to the placement of final cover. The fill shall be foot compacted into place to provide support and to achieve full strength. Final cover shall be screened of all boulders and rocks greater than 4 inches in diameter.
5. Inspection risers shall be provided at the end of each trench. The inspection pipe shall be secured to the chamber in a manner that prevents its accidental removal and permits soil from entering the chamber.
6. The infiltrator chambers are rated for light vehicular travel. They are not guaranteed for heavy loads such as cement or propane trucks. Sincere there is no way to assure what type of traffic will occur in driveways after installation, Alpine County will not approve the Infiltrator chambers for use in driveways or parking lots.

INSPECTIONS

Construction inspections shall be conducted at the open trench phase and when all units have been physically placed and connected. The installer shall demonstrate to the inspector that trenches are level and prepared (scarified) according to the manufacturer's instructions. Representative sections of each trench shall be left open until inspected. The installer shall read and follow the manufacturer's installation instructions.

CHAMBER LEACHING SIZING REQUIREMENTS

(Total Linear Feet of Trench/Number of Chambers)				
MODEL	**1-5 MPI**	**6-30 MPI**	**31-60 MPI**	**61-120 MPI**
High Capacity				
1 Bedroom	63/10	63/10	63/10	125/20
2 Bedroom	63/10	88/14	113/18	250/40
3 Bedroom	63/10	125/20	169/27	375/60
4 Bedroom	88/14	169/27	225/36	500/80
Additional Bedroom	19/3	44/7	57/9	125/20
Peak GPD/Chamber	42.9	22.2	16.7	7.5
Standard Model				
1 Bedroom	75/12	75/12	75/12	150/24
2 Bedroom	75/12	100/16	138/22	300/48
3 Bedroom	75/12	150/24	200/32	450/72
4 Bedroom	100/16	200/32	269/43	600/96
Additional Bedroom	25/4	50/8	69/11	150/24
Peak GPD/Chamber	37.5	18.8	14.0	6.3
EQ 36				
1 Bedroom	100/12	100/12	100/12	192/23
2 Bedroom	100/12	125/15	175/21	375/45
3 Bedroom	100/12	192/23	250/30	567/68
4 Bedroom	126/15	250/30	334/40	750/90
Additional Bedroom	34/4	67/8	84/10	192/23
Peak GPD/Chamber	40.0	20.0	15.0	6.7
EQ 24				
1 Bedroom	150/18	150/18	150/18	300/36

	2 Bedroom	150/18	200/24	267/32	600/72
	3 Bedroom	150/18	300/36	400/48	900/108
	4 Bedroom	200/24	400/48	634/64	1200/144
	Additional Bedroom	50/6	100/12	134/16	300/36
	Peak GPD/Chamber	25.0	12.0	9.4	4.2

Minimum System Size: 10 Chambers for High Capacity
12 Chambers for Standard
12 Chambers for EQ 36
18 Chambers for EQ 24

ALPINE COUNTY HEALTH DEPARTMENT
ENVIRONMENTAL HEALTH SERVICES

AT GRADE DISPOSAL SYSTEM DESIGN GUIDELINES

Because of the nature of their design, all at-grade designs shall be considered alternative systems until adequate monitoring demonstrates that the concept is valid and reliability can be expected to be on par with conventional or modified conventional systems. Upon reaching consensus on the appropriate design parameters, it is anticipated that at-grade designs can be plan checked in-house, eliminating the time and expense involved in outside reviews. Systems which incorporate other design features, such as engineered fills, etc., shall continue to be referred to an outside consultant for review until such time that sufficient experience and an agreed upon set of design standards is developed for these components.

SITE CRITERIA:

The "site" is all that area intended to function as the disposal bed site, 100% replacement area, and all area within fifty feet downslope of either or both of these areas. The following criteria apply to the "site" as described above.

Slope - Not to exceed 20%.

Soil Depth - Minimum 24" soil depth required.

Depth to Ground Water - Minimum 24" to highest anticipated ground water level. If there is any question about the presence of ground water, monitoring shall be required in compliance with Amador County Ground Water Monitoring Guidelines.

Perc Testing - Required for every design; minimum of three tests at 18" and three at 24".

Perc Rate - 60 mpi or faster at 18 inches. - 90 mpi or faster at 24 inches.

Contour - Convex or flat (simple) OK. No designs on concave slopes.

DESIGN CRITERIA:

Application Rate - not to exceed 0.6 GPD/SF. Basal area for the purpose of determining application rate shall be considered as the length of the distribution lateral(s) multiplies by the length extending downslope from the lateral(s) to the downslope toe of the aggregate bed.

Bed Configuration - Maximize available length of contour (i.e. long, narrow beds preferred). All designs to be justified by Darcy's analysis of the disposal bed site and minimum of fifty feed downslope of the disposal bed. Disposal beds shall be constructed so as to provide a minimum of six vertical inches of aggregated below distribution lateral(s). Effective bed width (distance from lateral(s) to downslope aggregate toe) shall not exceed eight feet.

Distribution Laterals - Pressure dose required with cleanout risders accessible from surface. Cleanout risers shall be fitted with water tight, threaded caps which may be periodically removed for flushing. A sub-grade finish with valves and access risers to accommodate flushing is an acceptable alternative.

Orifices - Minimum 1/8 inch diameter orifices shall be spaced as close together as is feasible. The use of orifice shields is encouraged.

Bed Stacking - Permitted only when absolutely necessary. Must be justified by Darcy's.

Soil Cover - A minimum of 12 inches of soil cover over a siltation barrier of non-woven geotextile fabric is required. The mounded cover shall extend a minimum of five feet upslope and sideslope from the bed and a minimum of fifteen feet downslope from the toe of the aggregate bed. The downslope toe must at no time exceed a 3:1 slope to meet the native grade. All disturbed areas must be seeded, fertilized, and mulched to encourage the growth of an erosion control cover crop.

Ground Water Monitoring Wells - Minimum of one well upslope and two wells downslope of the disposal bed(s). Monitoring wells shall be a minimum of 4 inches diameter with noncemented caps.

Inspection Pipes - Minimum of 2 inspection pipes per bed located at downslope toe of aggregate bed. Inspection pipes shall be so constructed so as not to be easily removed from the disposal bed, shall be 4 inches in diameter, and shall be fitted with non-cemented caps.

CONSTRUCTION CRITERIA:

At-grade disposal beds must not be constructed at times when soil moisture is excessive. Both designer and the Environmental Health Department must agree that the site is ready before construction may begin.

The site must be field staked by the builder and approved by the designer and this department before any construction begins. This is a good time to meet and coordinate flow of the project to ensure that all necessary inspections are called for. At this time materials such as drain rock, geofabric, etc. can be inspected and approved.

The builder then removes any excessive vegetation from the initial disposal bed site and then lays down a 4 to 6 inch thickness of medium concrete sand. A pass is then made on contour ripping this sand into the native soil to a depth of 12 inches. No wheeled equipment should then travel over any area so prepared before placement of protective materials such as drain rock, etc. to protect the prepared soil from compaction. All areas to be overlain by aggregate disposal beds shall be so prepared. All areas to be overlain by the soil cover shall be ripped on contour to minimize any interface between native soil and the cover.

The builder then lays on the drain rock to the depth, width, and length called for by the design. The disposal laterals are drilled and dry-assembled on the disposal bed(s), orifices pointing up. Joints are not cemented until after the pump test is complete.

The pump is run with all end caps removed to flush any debris from the laterals. Caps are then replaced and the pump test is witnessed by the designer and the Environmental Health Department.

Piping is rotated, if necessary, and cemented in place, any necessary orifice shields are installed. Drain rock is added if necessary per design specs. Geofabric applied and soil cover is put in place. All inspection pipes, ground water monitoring wells, and erosion control measures are constructed. A final grading inspection may then be performed by the designer and the Environmental Health Department.

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75 Diamond Valley Road
Markleeville, CA 96120
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Intermittent Sand Filter Design Policy

SITE CRITERIA FOR DISPOSAL FIELDS

1) Useable Soils Depth: Must provide a minimum of 2 feet of useable soils below bottom of disposal trench. This soil must be free of groundwater.
2) Percolation Rate: Permeability is to be established at disposal trench depth, (5 to 90 MPI for design purposes). There must be reasonable permeability at 1 foot below bottom of disposal trench.
3) Slope: 0 to 30 percent.
4) Topography: Avoid depressions, swales and concave slopes.

DESIGN PARAMETERS

1) Daily design wastewater flows are 150 gpd/bedroom. A maximum reduction of 25% may allow for low flow fixture specification.
2) Application rate of effluent to ISF surface is 1.0 gallon per square foot per day.
3) Design is to provide for multiple dosing per day to the ISF. Minimum dose volume should not be less than five times the volume of the effective distribution piping. Maximum dosing should not be greater than 25% of daily design flows
4) A minimum of 6 feet of residual head at the distribution orifice should be maintained. Minimum orifice sizing shall be 1/8th inch in diameter and shall require 1/8th inch screening in the pump tank.
5) General application rates for intermittent sand filter effluent to disposal trenches shall range from .2 gal/day/square foot to 1.0 gal/day/square foot. See Table “C”.
6) Disposal trenches will be designed in compliance with site criteria. Shallow disposal trenches will be sized on bottom area only.

CONSTRUCTION STANDARDS

1) All materials used in intermittent sand filter system construction shall be structurally sound, durable and capable of withstanding normal installation and operation stresses. Component parts subject to malfunction or excessive wear shall be readily accessible for repair and replacement.
2) Septic tanks shall be two compartment, 1200 gallon capacity, monolithic poured concrete. Water and gas tight risers to finished grade are required for both the primary and secondary sides of the septic tank.
3) Pump tanks shall be sized to accommodate two times the daily design flow (if parcel served by public water system) or one times the daily design flow plus 250 gallons (if parcel served by private well or spring) in reserve capacity above the alarm activation level. This is a safety

measure in the event of power outage or pump breakdown. Audio and visual alarms are required to be placed in an approved location.

4) To avoid infiltration and intrusion problems, all tanks located in seasonally high ground water situations, shall be tested for water tightness.
5) Pressurized piping and fittings shall be Schedule 40 PVC.
6) Distribution laterals shall be designed so that each lateral may be flushed and checked for residual head at the distal end.
7) Filter sand shall be clean medium sand with an effective size (D10) of .25 to .50 millimeters in diameter. The uniformity coefficient should be 4 or less.
8) The depth of effective filter sand shall be 30 inches.
9) Drain rock below the filter sand is to be clean, small diameter, rounded rock. Rock associated with and below the distribution laterals is to be similarly clean. (Typically classified as double washed).
10) Intermittent sand filters shall be constructed on stable undisturbed earthen conditions.
11) Approved flexible membrane liners shall have properties which are at least equivalent to 30 mil unreinforced polyvinylchloride. Approved liners shall have factory fabricated "boots" suitable for field bonding. Liners shall be installed so as to preclude punctures and abrasions. Surfaces that are contacted by the liner shall be free of sharp edges, corners, roots, nails, wire and other projections that might puncture, tear, or cut the liner. The bottom of the liner is to be protected by a layer of approximately 4 inches in depth of clean bedding sand raked smooth.
12) A capped monitoring pipe, minimum diameter of 4 inches, shall be installed at the interface of distribution rock and filter sand.
13) Durable filter fabric is required to be placed over the top of the distribution rock with fabric overlapping the sides approximately 6 inches. Final soil covering depth over the ISF unit is to be no less than 12 inches. Maximum soil covering shall not exceed 18 inches. Finish grading to eliminate standing water and infiltration is required.
14) When a pump vault is required to be placed in the ISF, the minimum diameter of the pump vault shall be 21 inches.
15) A functional sampling tap assembly, designed to allow filling of a 12 inch high sample bottle, is required to be installed downstream of all intermittent sand filters. (1/2 inch minimum discharge).

DISPOSAL TRENCHES

1) A minimum soil covering depth of 12 inches is required over the top of the drain rock filter barrier. Borrowed, mounded cover, where required, shall be similar to adjacent native topsoil. Soils shall be worked only during reasonably dry soil conditions. Mounded cover is prohibited on slopes greater than 25 percent.
2) Disposal trench configuration shall comply with design parameters. Disposal trenches less than 12 inches deep into native soils shall be prohibited on slopes greater than 25 percent.
3) Monitoring pipes with a minimum inside diameter of four inches, shall be placed approximately five feet down slope of the near sidewall of the disposal trenches. The number of monitoring pipes and locations required will be determined at the plan check stage and is site specific. Where mounded cover is required; monitoring pipes will be generally required to be placed at

the toe of the mounded cover but not more than ten feet from the near sidewall of the lowest disposal trench.

4) Other methods of ISF effluent disposal will be considered on a case by case, site specific evaluation by the Environmental Health Wastewater Committee.

APPENDIX III

STATE OWTS POLICY