Plumas County

Local Agency Management Plan (LAMP)

For Onsite Wastewater Treatment Systems

Prepared by Plumas County Environmental Health

Adopted by Plumas County Board of Supervisors

May 3, 2016

PLUMAS COUNTY LOCAL AGENCY MANAGEMENT PLAN
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Completeness Checklist for LAMPs

	GENERAL REQUIREMENTS FOR LAMPs			
OWTS Policy Section	**OWTS Policy Section Summary**	**Region 5 Comments (These do not replace your review of the OWTS Policy. Italics and websites are specific explanations, more detailed than in the Policy.)**	**Relevant LAMP Section**	**Legal Authority/ Code Section**
3.3	Annual Reporting	For Section 3.3 et seq., describe your program for annual reporting to Central Valley Regional Water Quality Control Board (Central Valley Water Board) staff in a tabular spreadsheet format.	Annual Reports	Adopted by Reference, Pending RWQCB Approval; To begin implementation 13 May 2018
3.3.1	Complaints	Include numbers and locations of complaints, related investigations, and means of resolution.	Complaint process	PCC 6-6.18
3.3.2	OWTS Cleaning	Include applications and registrations issued as part of the local cleaning registration pursuant to California Health and Safety Code §117400 et seq.	Septage Receiving	CHSC §117400 et seq.
3.3.3	Permits for New and Replacement OWTS	Include numbers and locations of permits for new and replacement OWTS, and their Tiers.	OWTS Permit Procedure	PCC 6-6.06
3.4	Permanent Records	Describe your program for permanently retaining records, and means of making them available to Central Valley Water Board staff within 10 working days of a written request.	Permanent Records	PCC 6-6.08
3.5	Notifications to Municipal Water Suppliers	Describe your program for notifying public well and water intake owners, and the California Department of Public Health. Notification shall be as soon as practicable, but no later than 72 hours upon discovery of a failing OWTS, as described in Sections 11.1 and 11.2, within setbacks described in Sections 7.5.6 through 7.5.10.	Complaint process	Adopted by Reference, Pending RWQCB Approval; To begin implementation once PCC is modified
9.0	Minimum OWTS Standards	This Section is an introduction; we require no specific LAMP Section citation here.		NA
9.1	Considerations for LAMPs	For Section 9.1 et seq., provide your commitment to evaluate complaints, variances, failures, and inspections in Section 9.3.2 (Water Quality Assessment); and your proposed means of assessment to achieve this Policy's purpose of protecting water quality and human health.	Assessment Considerations	PCC 6-6.05
9.1.1	Degree of vulnerability due to local hydrogeology	*Describe your commitment, and proposed means to identify* hydrogeologically vulnerable areas for Section 9.3.2, *after compiling monitoring data.* Discuss appropriate related siting restrictions and design criteria to protect water quality and public health. Qualified professionals ("Definitions," page 9 in the Policy) should identify hydrogeologically vulnerable areas. *Such professionals, where appropriate during a Water Quality Assessment, should generally consider locally reasonable percolation rates of least permeable relevant soil horizons, best available evidence of seasonally shallowest groundwater (including, but not limited to, soil mottling and gleying, static water levels of nearby wells and springs, and local drainage patterns), threats to receptors (supply wells and surface water), and potential geotechnical issues (including, but not limited to, potentially adverse dips of bedding, foliations, and fractures in bedrock).*	Assessment Considerations	Adopted by Reference, Pending RWQCB Approval; To begin implementation, 13 May 2018

9.1.2	High quality waters and other conditions requiring enhanced protection	Describe special restrictions to meet water quality and public health goals pursuant to all Federal, State, and local plans and orders. *Especially consider appropriate alternatives to those provided in Section 7.8, Allowable Average Density Requirements under Tier 1. See also: State Water Resources Control Board Resolution No. 68-16.*	Assessment Considerations	Adopted by Reference, Pending RWQCB Approval; To begin implementation 13 May 2018
9.1.3	Shallow soils requiring non-standard dispersal systems	*We interpret "shallow" soils generally to mean thin soils overlying bedrock or highest seasonal groundwater. Dependent on threats to receptors, highest seasonal groundwater can locally include perched and intermittent saturated zones, as well as the shallowest local hydraulically unconfined aquifer unit. See Section 8.1.5 for Minimum Depths to Groundwater under Tier 1.* Qualified professionals should make appropriate determinations on the design and construction of non-standard dispersal systems due to shallow soils.	Assessment Considerations	Adopted by Reference, Pending RWQCB Approval; To begin implementation, 13 May 2018
9.1.4	High domestic well usage areas	*Our key potential concerns are nitrate and pathogen transport toward receptor wells, especially in areas with existing OWTS already prone to soft failures (OWTS failures not evident at grade). Appropriate qualified professionals should consider reasonable pollutant flow paths toward domestic wells, at minimum based on; publically available nitrate concentrations in local wells, published technical literature on local wastewater and non-wastewater nitrate sources, well constructions, pumping demands, and vulnerability of wells due to local hydrogeology. For pathogens, qualified professionals should ensure that field methods are sufficient to mitigate the potential for false positives.*	Assessment Considerations	Adopted by Reference, Pending RWQCB Approval; To begin implementation, 13 May 2018
9.1.5	Fractured bedrock	*Where warranted, appropriate qualified professionals should assess permeability trends of water-bearing fractures, and related potential pathways of effluent toward receptors, including but not limited to, domestic wells and surface water. The professionals should also consider potential geotechnical issues. We suggest consideration of fractured bedrock in concert with percolation rates of overlying soils; either very high or low percolation rates might warrant siting restrictions or non-standard dispersal systems. See also State Water Resources Control Board Order WQ 2014-0153-DWQ, Attachment 1, page 1-3, Item A-3.*	Assessment Considerations	Adopted by Reference, Pending RWQCB Approval; To begin implementation, 13 May 2018
9.1.6	Poorly drained soils	*Appropriate qualified professionals should give criteria for determination of representative percolation rates, including but not limited to, general site evaluation, trench logging, pre-soak and measurement methods of percolation tests, and acceptable alternatives for percolation tests.*	Assessment Considerations	Adopted by Reference, Pending RWQCB Approval; to begin implementation 13 May 2018
9.1.7	Vulnerable surface water	*Our key potential concern is eutrophication of fresh surface water. While typically with relatively low mobility in groundwater and recently informally banned in dishwater detergents, phosphate is a common cause. At minimum, describe appropriate qualified professionals who will consider potential pathways of wastewater-sourced phosphate and other nutrients toward potentially threatened nearby surface bodies.*	Assessment Considerations	Adopted by Reference, Pending RWQCB Approval; To begin implementation, 13 May 2018
9.1.8	Impaired water bodies	*Wolf Creek, Nevada County, and Woods Creek, Tuolumne County will require Tier 3 Advanced Protection Management Programs. This applies to Nevada, Placer, and Tuolumne Counties. See Attachment 2 of the OWTS Policy.*	NA	NA
9.1.9	High OWTS density areas	*Where nitrate is an identified chronic issue, at minimum, consider nitrogen loading per area; for example, see Hantzsche and Finnemore (1992), Crites and Tchobanoglous (1998), and more recent publications as appropriate.*	Assessment Considerations	Adopted by Reference, Pending RWQCB Approval; To begin implementation, 13 May 2018

9.1.10	Limits to parcel size	At minimum, consider hydraulic mounding, nitrate and pathogen loading, and sufficiency of potential replacement areas.	Assessment Considerations	Adopted by Reference, Pending RWQCB Approval; To begin implementation, 13 May 2018
9.1.11	Areas with OWTS that predate adopted standards	This refers to areas with known, multiple existing OWTS.	Assessment Considerations	Adopted by Reference, Pending RWQCB Approval; To begin implementation, 13 May 2018
9.1.12	Areas with OWTS either within prescriptive, Tier 1 setbacks, or within setbacks that a Local Agency finds appropriate	This refers to areas with known, multiple existing OWTS.	Assessment Considerations	Adopted by Reference, Pending RWQCB Approval; To begin implementation, 13 May 2018
9.2	Scope of Coverage:	For Section 9.2 et seq., provide details on scope of coverage, for example maximum authorized projected flows, allowable system types, and their related requirements for site evaluation, siting, and design and construction requirements.	LOCAL AUTHORITY	Adopted by Reference, Pending RWQCB Approval; To begin implementation once PCC is modified
9.2.1	Installation and Inspection Permits	Permits generally cover procedures for inspections, maintenance and repair of OWTS, including assurances that such work on failing systems is under permit; see Tier 4.	OWTS Permit Procedure	PCC 6-6.06
9.2.2	Special Provision Areas and Requirements near Impaired Water Bodies	*Wolf Creek, Nevada County, and Woods Creek, Tuolumne County will require Tier 3 Advanced Protection Management Programs. This applies to Nevada, Placer, and Tuolumne Counties. See Attachment 2 of the OWTS Policy.*	NA	NA
9.2.3	LAMP Variance Procedures	Variances for new installations and repairs should be in substantial conformance to the Policy, to the greatest extent practicable. Variances cannot authorize prohibited items in Section 9.4.	Waiver and Variance	Adopted by Reference, Pending RWQCB Approval; To begin implementation once PCC is modified
9.2.4	Qualifications for Persons who Work on OWTS	Qualifications generally cover requirements for education, training, and licensing. *We suggest that Local Agencies review information available from the California Onsite Water Association (COWA), see:* http://www.cowa.org/	Engineered Sewage Disposal Septic Tank Maintenance	PCC 6-6.10(a), (b), and (c)2; PCC 6-613(b); PCC 6-6.14(a) and (e); PCC 6-11.06(d)
9.2.5	Education and Outreach for OWTS Owners	Education and Outreach generally supports owners on locating, operating, and maintaining OWTS. At minimum, ensure that you will require OWTS designers and installers to provide owners with sufficient information to address critical maintenance, repairs, and parts replacements within 48 hours of failure; *see also Tier 4.* Also, provide information to appropriate volunteer groups. *At minimum, we suggest providing this information on your webpage.*	OPERATION AND MAINTENANCE	http://countyofplumas.com/index.aspx?nid=2392

9.2.6	Septage Disposal	Assess existing and proposed disposal locations, and their adequacy.	Septage Receiving	Adopted by Reference, Pending RWQCB Approval; To begin implementation, 13 May 2018
9.2.7	Maintenance Districts and Zones	*These generally refer to Homeowners Associations, special maintenance districts, and similar responsible entities. Requirements for responsible entities should generally reflect the Local Agency's judgment on minimum sizes of subdivisions that could potentially cause environmental impacts. LAMPs should ensure that responsible entities have the financial resources, stability, legal authority, and professional qualifications to operate community OWTS.*	Shared or Community Design	PCC 6-11.08 PCC 6-11.09
9.2.8	Regional Salt and Nutrient Management Plans	Consider development and implementation of, or coordination with, Regional Salt and Nutrient Management Plans; *see also State Board Resolution 2009-0011:* http://www.waterboards.ca.gov/centralvalley/water_issues/salinity/laws_regs_policies/rw_policy_implementation_mem.pdf	NA	NA
9.2.9	Watershed Management Groups	Coordinate with *volunteer well monitoring programs* and similar watershed management groups.	Lake Almanor Water Quality	Adopted by Reference, Pending RWQCB Approval; To begin implementation, 13 May 2018
9.2.10	Proximity of Collection Systems to New or Replacement OWTS	Evaluate proximity of sewer systems to new and replacement OWTS. *See also Section 9.4.9.*	Sanitary sewer connection	PCC 6-6.04
9.2.11	Public Water System Notification prior to permitting OWTS Installation or Repairs	Give your notification procedures to inform public water services of pending OWTS installations and repairs within prescribed setback distances.	Separation distances and setbacks	Proposed Code Change Adopted by Reference, Pending RWQCB Approval; To begin implementation, 13 May 2018
9.2.12	Policies for Dispersal Areas within Setbacks of Public Wells and Surface Water Intakes	Discuss supplemental treatments; see Sections 10.9 and 10.10. A Local Agency can propose alternate criteria; *however we will need rationale in detail.*	Separation distances and setbacks	Proposed Code Change Adopted by Reference, Pending RWQCB Approval; To begin implementation, 13 May 2018
9.2.13	Cesspool Discontinuance and Phase-Out	Provide plans and schedule.	General Design Considerations	PCC 6-6.17(a)
9.3	Minimum Local Agency Management Responsibilities:	For Section 9.3 et seq., discuss minimum responsibilities for LAMP management. Responsibilities should generally cover data compilation, water quality assessment, follow-up on issues, and reporting to the Central Valley Water Board:	Throughout LAMP	Adopted by Reference, Pending RWQCB Approval; To begin implementation, 13 May 2018

9.3.1	Permit Records, OWTS with Variances	Describe your records maintenance; numbers, locations, and descriptions of permits where you have granted variances.	Waiver and Variance	Adopted by Reference, Pending RWQCB Approval; To begin implementation, 13 May 2018
9.3.2	Water Quality Assessment Program:	In the Water Quality Assessment Program, generally focus on areas with characteristics covered in Section 9.1. Include monitoring and analysis of water quality data, complaints, variances, failures, and inspections. Also include appropriate monitoring for nitrate and pathogens; you can use information from other programs. *We are available to provide further guidance on reporting requirements. In the interim, to assist with analyses and evaluation reports (Section 9.3.3), we suggest posting data on appropriate maps; for example consider the following links*: http://www.nrcs.usda.gov/wps/portal/nrcs/site/ca/home/ http://www.cdpr.ca.gov/docs/emon/grndwtr/gwpa_maps.htm http://ngmdb.usgs.gov/maps/mapview/ http://www.conservation.ca.gov/cgs/information/publications/ms/Documents/MS58.pdf http://www.water.ca.gov/groundwater/data_and_monitoring/northern_region/GroundwaterLevel/SacValGWContours/100t400_Wells_Spring-2013.pdf http://www.water.ca.gov/waterdatalibrary/ http://www.waterboards.ca.gov/gama/docs/hva_map_table.pdf http://geotracker.waterboards.ca.gov/gama/ http://msc.fema.gov/portal	WATER QUALITY ASSESSMENT	Adopted by Reference, Pending RWQCB Approval; To begin implementation, 13 May 2018
9.3.2.1	Domestic Well Sampling	*Apply your best professional judgment to ensure that well sampling focuses on hydrogeologically reasonable pollutant (primarily nitrate) flow paths. A qualified professional should generally design an appropriate directed, judgmental, sample (i.e., statistically non-random). Of the links provided, the Geotracker GAMA website might be particularly useful to the professional; at minimum we suggest reviews of available nitrate data in relevant domestic wells, up-gradient, within, and down-gradient of an area of interest. For some instances, for example where a developer proposes a relatively large project, a Local Agency might require a special study to distinguish between wastewater and non-wastewater sourced nitrate. In such cases, we suggest your consideration of requiring focused sampling and analyses, for example of $\delta^{18}O$ and $\delta^{15}N$ of nitrate (Megan Young, USGS, 2014 pers comm), and the artificial sweeteners sucralose and acesulfame-K (Buerge et al 2009, Van Stempvoort et al 2011, and more recent publications as they become available).*	NA	NA
9.3.2.2	Domestic Well Sampling, Routine Real Estate Transfer Related	This applies only if those samples are routinely performed and reported.	NA	NA
9.3.2.3	Water Quality of Public Water Systems	Reviews can be by your agency or another municipality.	Drinking Water Data	Adopted by Reference, Pending RWQCB Approval; To begin implementation, 13 May 2018
9.3.2.4	Domestic Well Sampling, New Well Development	This applies if those data are reported.	NA	NA

9.3.2.5	Beach Water Quality Sampling, H&S Code §115885	*Public beaches include those on freshwater. Note: Does not apply but is similar to Lake Almanor Water Quality Monitoring Program*	Lake Almanor Water Quality	Adopted by Reference, Pending RWQCB Approval; To begin implementation, 13 May 2018
9.3.2.6	Receiving Water Sampling Related to NPDES Permits	This refers to existing data from other monitoring programs.	GeoTracker GAMA	Adopted by Reference, Pending RWQCB Approval; To begin implementation, 13 May 2018
9.3.2.7	Data contained in California Water Quality Assessment Database	This refers to existing data from other monitoring programs.	GeoTracker GAMA	Adopted by Reference, Pending RWQCB Approval; To begin implementation, 13 May 2018
9.3.2.8	Groundwater Sampling Related to Waste Discharge Requirements	This refers to existing data from other monitoring programs.	GeoTracker GAMA	Adopted by Reference, Pending RWQCB Approval; To begin implementation, 13 May 2018
9.3.2.9	Groundwater Sampling Related to GAMA Program	This refers to existing data from other monitoring programs.	GeoTracker GAMA	Adopted by Reference, Pending RWQCB Approval; To begin implementation, 13 May 2018
9.3.3	Annual Status Reports Covering 9.3.1-9.3.2	Reports are due 1 February, annually, beginning one year after a Regional Board approves LAMP. Every fifth year also include an evaluation report. Submit all groundwater monitoring data in Electronic Delivery Format (EDF) for Geotracker; submit all surface water data to CEDEN.	Annual Reporting	Adopted by Reference, Pending RWQCB Approval; To begin implementation, 13 May 2018
9.4	Not Allowed or Authorized in LAMP:	For Section 9.4 et seq., ensure that your LAMP covers prohibitions.	Throughout LAMP	Adopted by Reference, Pending RWQCB Approval; To begin once PCC is amended
9.4.1	Cesspools	Local Agencies cannot authorize cesspools of any kind or size.	General Design Considerations	PCC 6-6.17(a)
9.4.2	Projected Flow greater than10,000 gpd	*Apply professional judgment to further limit projected flows.*	LOCAL AUTHORITY	Proposed Code Change; Adopted by Reference, Pending RWQCB Approval; To begin once PCC is amended

9.4.3	Effluent Discharger Above Post-Installation Ground Surface	For example, Local Agencies cannot authorize effluent disposal using sprinklers, exposed drip lines, free-surface wetlands, and ponds.	Complaint process	PCC 6-6.01(c)
9.4.4	Installation on Slopes greater than 30% without Registered Professional's Report	*See also earlier comments, Section 9.1.1, regarding potential geotechnical concerns.*	Separation distances and setbacks	PCC 6-6.09(b) PCC 6-11.05(a)
9.4.5	Decreased Leaching Area for IAPMO-Certified Dispersal System with Multiplier less than 0.70	IAPMO refers to International Association of Plumbing and Mechanical Officials. *Decreased leaching area refers to alternatives to conventional (stone-and-pipe) dispersal systems; these alternatives require relatively less area. The multiplier, less than 1, allows for a reduction in dispersal field area relative to a conventional system.*	gravel less leaching	PCC 6-6.12(d)3
9.4.6	Supplemental Treatments without Monitoring and Inspection	*Therefore, ensure that the LAMP describes periodic inspection and monitoring for OWTS with supplemental treatments.*	Advanced Treatment	PCC 6-6.14(c), (d) and (e)
9.4.7	Significant Wastes from RV Holding Tanks	*We interpret significant amounts to mean amounts greater than incidental dumping, such that volume, frequency, overall strength, or chemical additives preclude definition as domestic wastewater; see Definitions in OWTS Policy. See also, State Water Resources Control Board Order WQ 2014-0153-DWQ, Attachment B-2.*	LOCAL AUTHORITY	Proposed Code Change; Adopted by Reference, Pending RWQCB Approval; To begin once PCC is amended
9.4.8	Encroachment Above Groundwater	Bottom of OWTS dispersal systems cannot be less than 2 feet above groundwater, or bottom of seepage pits, less than 10 feet above groundwater. *We interpret groundwater to include inter-flow and perched zones, along with the shallowest main unconfined aquifer. Degree of vulnerability to pollution due to hydrogeological conditions, Section 9.1.1, and the Water Quality Assessment, Section 9.3.2., should cover in detail means of assessing seasonally shallowest depth to groundwater.*	Groundwater level testing	PCC 6-6.11(b) PCC 6-6.10(c) PCC 6-11.06(c)
9.4.9	Installations Near Existing Sewers	New and replacement OWTS cannot occur on any lot with available public sewers less than 200 feet from a building or exterior drainage facility (exception; connection fees plus construction costs are greater than 2 times the replacement OWTS costs, and Local Agency determines no impairment to any drinking water.)	Sanitary sewer connection	PCC 6-6.04
9.4.10	Minimum Setbacks:	These setbacks are from public water systems.	Throughout LAMP	NA
9.4.10.1	From Public Supply Wells	If the dispersal system is less than 10' in depth, then the setback must be greater than150' from public water supply well.	Separation distances and setbacks	Proposed Code Change; Adopted by Reference, Pending RWQCB Approval; To begin once PCC is amended
9.4.10.2	From Public Supply Wells	If the dispersal system is greater than10' in depth, then the setback must be greater than 200' from public water supply well.	NA. See Separation distances and setbacks	PCC 6-6.12(d)2
9.4.10.3	From Public Supply Wells, Regarding Pathogens	If the dispersal system is greater than 20' in depth, and less than 600' from public water supply well, then the setback must be greater than the distance for two-year travel time of microbiological contaminants, as determined by qualified professional. In no case shall the setback be less than 200'.	NA. See Separation distances and setbacks	PCC 6-6.12(d)2

9.4.10.4	From Public Surface Water Supplies	If the dispersal system is less than 1,200' from public water system's surface water intake, within its drainage catchment, and potentially threatens an intake, then the setback must be greater than 400' from the high water mark of the surface water body.	Separation distances and setbacks	Proposed Code Change; Adopted by Reference, Pending RWQCB Approval; To begin once PCC is amended
9.4.10.5	From Public Surface Water Supplies	If the dispersal system is greater than1,200,'but less than 2,500,' from public water system's surface water intake, within its drainage catchment, and potentially threatens an intake, then the setback must be greater than 200' from high water mark of surface water body.	Separation distances and setbacks	Proposed Code Change; Adopted by Reference, Pending RWQCB Approval; To begin once PCC is amended
9.4.11	Supplemental Treatments, Replacement OWTS That Do Not Meet Minimum Setback Requirements	Replacement OWTS shall meet minimum horizontal setbacks to the maximum extent practicable.	Waiver and Variance	PCC 6-6.09(f) PCC 6-6.10(d)
9.4.12	Supplemental Treatments, New OWTS That Do Not Meet Minimum Setback Requirements	New OWTS shall meet minimum horizontal setbacks to the maximum extent practicable, and meet requirements for pathogens as specified in Section 10.8., and any other Local Agency's mitigation measures.	Waiver and Variance	PCC 6-6.09(f) PCC 6-6.10(d)
9.5	Technical Support of LAMP	Include adequate detail to ensure that the combination of all proposed criteria will protect water quality and public health sufficiently to warrant the Central Valley Water Board's waiver of Waste Discharge Requirements, pursuant to §13269, California Water Code.	Throughout LAMP	Ongoing; Adopted by Reference, Pending RWQCB Approval; To begin implementation, 13 May 2018
9.6	Regional Water Quality Control Board Consideration of LAMP	Regional Boards shall consider past performance of local programs to protect water quality. *We will generally consider past performance based on our reviews of annual status and evaluation reports; see Section 9.3.3.*	LOCAL AUTHORITY	Ongoing; Adopted by Reference, Pending RWQCB Approval; To begin implementation, 13 May 2018

References:

Hantzsche, N.N. and E.J. Finnemore (1992). Predicting groundwater nitrate-nitrogen impacts. "Groundwater," 30, No. 4, pages 490-499.

Crites, R and G. Tchobanoglous (1998). Small and Decentralized Wastewater Management Systems, McGraw-Hill, ISBN 0-07-289087-8, 1084 pages (see especially pages 919-920).

Young, Megan, USGS Menlo Park, mbyoung@usgs.gov , (650-329-4544)

Buerge, Ignaz J., Hans-Rudolf Buser, Maren Kahle, Markus D. Muller, and Thomas Poiger (2009). Ubiquitous occurrence of the artificial sweetener acesulfame in the aquatic environment: an ideal

chemical marker of domestic wastewater in groundwater. "Environmental Science and Technology," 43" pages 4,381 to 4,385.

Van Stempvoort, Dale R., James W. Roy, Susan J. Brown, and Greg Bickerton (2011). Artificial sweeteners as potential tracers in groundwater in urban environments. "Journal of Hydrology," 401 pages 126 to 133.

Plumas County Local Area Management Plan for Onsight Wastewater Management

INTRODUCTION

This document represents the Local Agency Management Program (LAMP) for oversight of onsite wastewater treatment systems (OWTS) within Plumas County, California. This LAMP has been prepared in accordance with the requirements of the State Water Resources Control Board (SWRCB) Water Quality Control Policy for the Siting, Design, Operation and Maintenance of Onsite Wastewater Treatment Systems, dated June 19, 2012 (Policy). This Policy describes four "Tiers" of onsite wastewater treatment system management. Tier 2 describes the requirements for developing a LAMP which when approved, becomes the standard by which authorized local agencies regulate OWTS. An approved LAMP is equivalent to a "Conditional Waiver of Waste Discharge Requirements" for OWTS within the local agency jurisdiction.

This LAMP has been prepared by Plumas County to obtain approval for OWTS management under Tier 2 of the OWTS policy. As noted in the Policy, responsible local agencies are recognized as the most effective means to manage OWTS on a routine basis. As such, the Policy is intended to allow Plumas County to continue providing local oversight of OWTS through a local program that is an alternative to the Tier 1 standards but still meets the Policy purpose which is to protect water quality and public health.

Plumas County is located in northeastern California in the upper Feather River watershed. The county encompasses 2,613 square miles of land, with a population of 20,007 residents (2010 census). The City of Portola is the only incorporated city within the county. Portola as well as many of the larger and more densely populated communities provide community wastewater disposal. This LAMP only applies in areas of the county not served by wastewater treatment systems operating under waste discharge requirements issued by the Regional Board.

The Plumas County Department of Environmental Health (EH) has been charged with the responsibility for regulating OWTS throughout Plumas County. In order for individual dischargers to qualify for the state's conditional waiver of waste discharge requirements, EH operates its onsite wastewater treatment program under the authority granted by the Central Valley Regional Water Quality Control Board (CVRWQCB) and hereby seeks approval of this LAMP for the entire county.

ADOPTION PROCESS

The OWTS Policy requires counties to submit a LAMP by May 13, 2016. This LAMP primarily describes the existing local wastewater management program, but also identifies areas of

Plumas County Code that will need to be amended and new reporting requirements to satisfy the minimum requirements of the OWTS Policy. These proposed changes will not substantially alter the wastewater treatment program or the way septic systems are installed. Rather, they include items like: increased setbacks to drinking water wells; further notification standards for drinking water intake sources of nearby failing systems; and further defined license and registration requirements of qualified professionals authorized to perform a range of OWTS services. The LAMP also identifies new responsibilities of EH to submit reports to the Regional Water Quality Control Board, both annual reports that summarize permit and inspection activities, and 5-year water quality assessments. Where needed to comply with the OWTS Policy, these changes are identified throughout this LAMP.

Central Valley Regional Water Quality Control Board (CVRWQCB) staff has assisted EH staff to ensure this LAMP satisfies the minimum requirements of the Policy, and includes all mandatory elements. As part of the review and approval process, EH submitted a working draft LAMP to CVRWQCB staff for informal review on March 25, 2016. Deficiencies and potential concerns noted in their March 30, 2016 informal review have been incorporated into this LAMP. This preliminary review was to ensure any significant deviations of local codes from state requirements could be adequately addressed before formal LAMP submittal.

One important issue identified in the preliminary review is the local adoption process. The Policy requires citations for specific legal authority for EH to carry out the roles and responsibilities outlined in the LAMP. In order to satisfy these requirements, this LAMP will need to be adopted by reference into Plumas County Code. Since changes to County Code will be made to ensure consistency with state law, these changes are not growth inducing, and the State Water Resources Control Board prepared an Onsite Wastewater Treatment System Policy Final Substitute Environmental Document dated June 19, 2012, statewide compliance with the California Environmental Quality Act (CEQA) has been ensured.

CVRWQCB is requesting a Resolution from the Plumas County Board of Supervisors confirming their intent to make the specified Code changes contained herein, including adopting this LAMP by reference to County Code. The local code change process can begin after LAMP review and concurrence by CVRWQCB staff. This is anticipated to take approximately 30 days. Once the local ordinance is updated through our local process, EH will submit the revised ordinance, the LAMP, and an interested parties list to CVRWQCB staff. Assuming no outstanding issues, CVRWQCB staff will then separately prepare and publicly notice another tentative Resolution for its Regional Board to consider approving our LAMP as an uncontested item at a regularly scheduled meeting. This entire process must be completed no later than May 2017. Once the LAMP is approved by CVRWQCB, the LAMP provisions of reporting and monitoring will be effective in May 2018.

LOCAL AUTHORITY

Title 6 Chapter 6 of the Plumas County Code is the basis for sewage disposal regulation. It specifies waste disposal requirements for existing lots and parcels throughout Plumas County. It prescribes the system design, location, construction and maintenance standards of OWTS to ensure all wastewater generated is adequately and safely disposed to protect public health and the environment. This code is attached to this LAMP as Appendix A.

Though not currently specified in County Code, this LAMP will apply only to projected wastewater flows up to 10,000 gallons per day. Similarly, this LAMP will not apply to systems which produce high strength wastewater (as defined in the OWTS Policy), or OWTS dedicated to receiving significant amounts of waste from recreational vehicle holding tanks (per Policy Section 9.4.7). After concurrence from the CVRWQCB, Title 6 Chapter 6 of County Code will need to be amended to state these limitations and ensure the local code is consistent with the SWRCB OWTS Policy. Further recommendations to amend County Code for consistency with the OWTS Policy are highlighted throughout this LAMP.

Title 6 Chapter 11 of the Plumas County Code pertains to waste disposal from and water supply to land developments. Among other things, it specifies surface and subsurface testing and suitability requirements for wastewater disposal during the creation of new lots and parcels in Plumas County. This code is attached to this LAMP as Appendix B.

In many specific ways, the requirements for creating a new parcel in Plumas County are more stringent than the requirements for constructing an OWTS on an existing parcel. For instance, Chapter 11 has density requirements, in the form of designated sewage disposal area, for creating new lots or parcels. Depending on site conditions, a new parcel may need to set aside up to 18,000 square feet of area exclusively for wastewater disposal. For existing lots, the area required is simply leachfield and replacement area. Depending on site conditions, this may only require a few hundred square feet. Other examples where the requirements for creating new parcels are more restrictive than building on an existing parcel include suitable depth to groundwater, acceptable percolation rate range, and separation distances. The Chapter 11 requirements have been in place since 2004, so all parcels created since that time have satisfied these higher standards.

Taken together, these codes are the regulatory basis for waste disposal throughout Plumas County. Throughout this LAMP references to a specific Plumas County Code Section will be made. For example, citations to Plumas County Code Title 6 Chapter 11 Section 8 will be referenced as PCC 6-11.08 or simply 6-11.08.

These codes have been effective in protecting groundwater quality and public health in Plumas County for many years as evidence by the lack of impaired water bodies due to OWTS in the

county and the lack of impacted public water supply wells. This past performance of the local program adequately protecting water quality with criteria differing from the Tier 1 standards is strong endorsement of the existing local program and this LAMP and should be considered according to section 9.6 of the OWTS policy.

ADMINISTRATION

OWTS Permit Procedure Overview

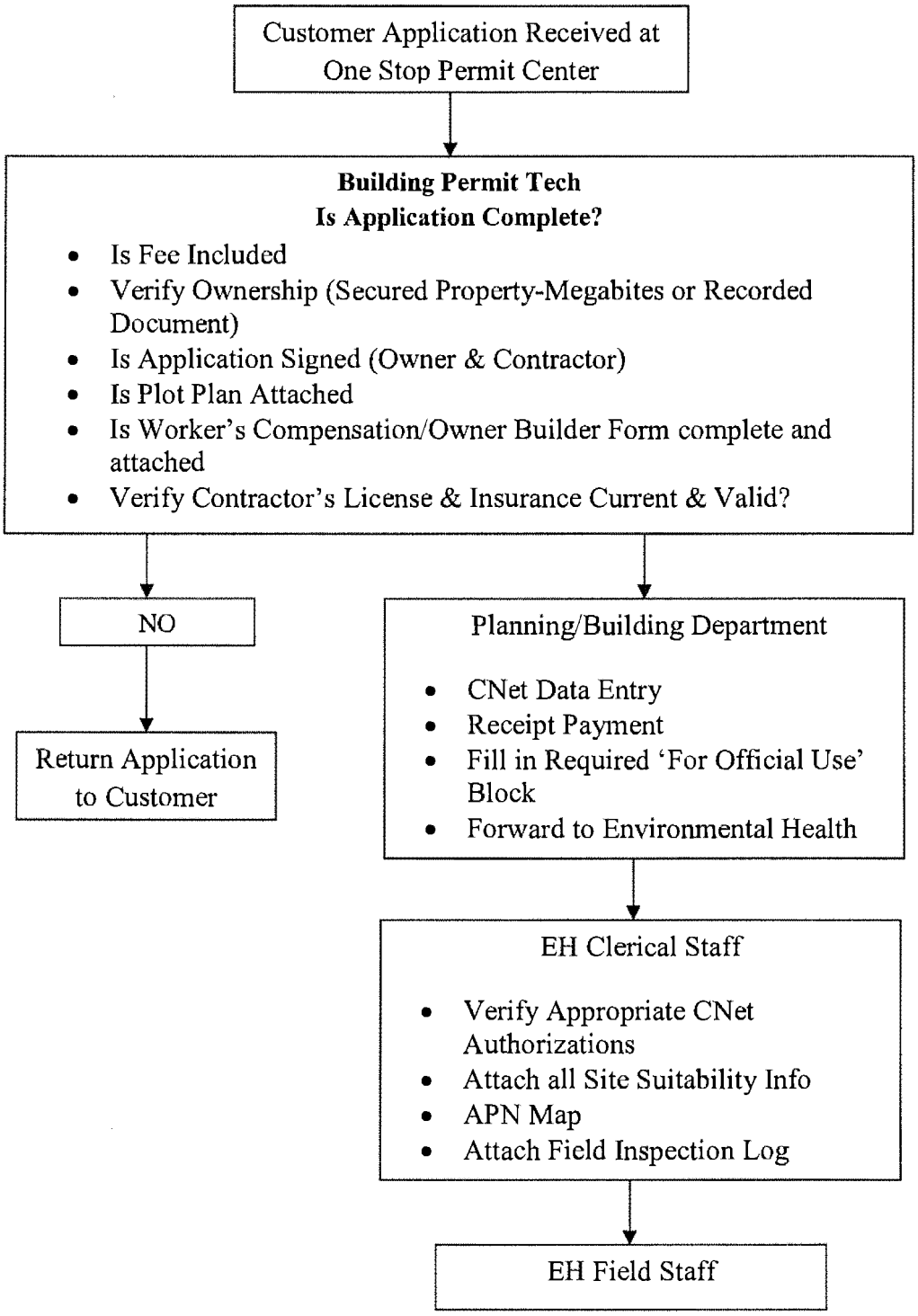
PCC 6-6.06 specifies that no person shall abandon, construct, build, install, repair, or replace any sewage disposal system without first obtaining a valid permit from EH. This includes replacement or repairs to failing systems and is consistent with the requirement of Section 9.2.1 of the OWTS Policy. The enforcement provisions of County Code are found in section 6-6.18 and have proven to be adequate to protect public health and water quality. Upon adoption of this LAMP by the Regional Board, all new or replacement OWTS permitted in accordance with this LAMP will be Tier 2 systems.

OWTS application requirements are found in 6-6.07 and include a completed Sewage Disposal System Application, along with a preliminary plot plan drawn to scale on an 8 ½" X 11" sheet, the percolation test data and any soil profile/mantle excavation test data all submitted to the Planning and Building Services Agency with an appropriate fee. Planning and Building Services will enter this information in the local CNET/Hal database for financial and building permit tracking. Planning and Building Services will also ensure that the contractor of record holds an appropriate license. Currently, only holders of current California State Contractors Licensing Board Class A (General Engineering), Class C42 (Sanitation System) and Class C36 (Plumbing) can be issued a permit to install an OWTS.

Following processing by Planning and Building to ensure property owner information, land use restrictions, valid licensed contractor requirements, and other information is complete and acceptable, the application package is forwarded to Environmental Health. See one-stop flow chart (Figure 1).

FIGURE 1

ONE STOP PERMIT CENTER
FLOW CHART
2015



Once received by EH, clerical staff will combine the application with any additional site suitability data, or other information in the vicinity of the project which may be relevant to onsite waste disposal. Clerical staff will also enter relevant permit information, such as Assessor Parcel Number, physical address, description of work to be performed, and OWTS tier classification into an Excel spreadsheet for permit tracking and reporting. Afterwards, the application is forwarded to the assigned Registered Environmental Health Specialist (REHS) for further processing and field review.

Before going into the field, the assigned REHS performs an office review of the submitted data. After determining the data is acceptable and satisfies the submittal requirements for the proposed project, the REHS will conduct a site visit of the property. On simple projects where a standard OWTS is requested, the site visit may include only the assigned REHS. For more complex projects, the site visit may include the REHS, the contractor, consultant or others. At this time, the REHS confirms whether additional testing or site information is required (as discussed in the Site Suitability Section of this LAMP). If so, arrangements are made to complete this testing before the process moves forward.

If no further testing is required, the proposed project is evaluated to determine compliance with County Code and this LAMP. For sites suitable for a standard OWTS, the design criteria (as discussed in the Design Section of this LAMP) are specified by the field REHS. These specifications are included in the permit to construct issued by Environmental Health. The REHS is also responsible to inspect and ensure the system is installed as designed. All EH activities associated with the OWTS application, permit and inspection process are recorded on the Septic System Field Inspection Log, which becomes a part of the permanent record for that parcel.

For sites requiring engineered design or advanced treatment, the design criteria are specified by a California Registered Engineer, Geologist, or Environmental Health Specialist (generally referred to as the qualified professional or consultant). The role of the field REHS is to confirm the proposed system can satisfy County Code, but they do not design the system in these instances. Instead, the qualified professional's specifications become a condition of the permit to construct the system issued by Environmental Health. In this case, the qualified professional is responsible to ensure the system is constructed as designed with additional oversight provided by the REHS. The Septic System Field Inspection Log is also used for these systems and becomes part of the permanent record for the parcel.

The permit to construct is valid for a period of one (1) year from the date of issue. The permit and a copy of the approved plot plan will be mailed to the applicant and/or contractor as requested. The permit and approved plot plan list all of the information necessary to construct the system, including the size, configuration, maximum depth of excavation, and special

conditions of installation. Construction may begin once the permit is issued. After construction but before any portion of the system is covered or backfilled, final inspection by an REHS is required.

During final inspection, the REHS verifies the system was installed as specified. If installation is found to be contrary to permit conditions or the approved plot plan, corrections must be completed before approval is granted. At this time, written record information or 'as-built' information (PCC 6-6.08) identifying the location and dimensions of the leachfield in relation to the septic tank is also required. After the REHS determines the installation satisfies County Code, the system is approved for cover and may be placed into service.

Permit expiration and extensions

Applications for permit to construct an OWTS are valid for one (1) year from date of receipt. The applicant has one (1) year to submit all supporting documentation, such as percolation test results, piezometer results, etc. to demonstrate compliance with Title 6, Chapter 6 of Plumas County Code. Applications lacking any of this data are considered incomplete. An incomplete application becomes invalid at the end of one (1) year and is not eligible for extension of time.

A permit to construct is valid for one (1) year from date of issue. Approximately thirty (30) days prior to the permit expiration date, the applicant should receive written notification from Environmental Health regarding the expiration date of the permit. If the system cannot be installed prior to permit expiration, the applicant may request a one-time permit renewal for up to one (1) year. The renewal request must be received along with the appropriate fees prior to permit expiration. Should a permit expire before renewal or before the system is installed, the permit is declared invalid and a new application and fee are required to complete the project.

Permanent Records

Once the REHS approves the OWTS, all paperwork associated with the design and installation is scanned and uploaded to the county's permanent database Application Extender (AX). Records in AX can be accessed by APN, permit number, or physical address by any EH staffer. Once in the system, records are immediately available.

EH is working to scan a backlog of paper records and upload them into the AX system. Permanent records are scanned by the county's Records Management Department, and some of this heavy workload has resulted in delays in uploading and accessing the records. EH is working with Records Management to ensure all OWTS records are available within 10 days of request.

Beginning January 2016, Environmental Health began an additional permanent record system with the Geographic Information System Planner to map septic system locations throughout the county. GIS will develop a map layer showing the approximate location of newly installed septic systems. This septic systems layer will include digital links to the plot map, as-built drawing and inspection log. Regulatory staff will have access to the septic system layer and can view and superimpose a variety of other GIS layers along with the septic layer including parcel boundaries, public well locations, roads, and other features of interest. This will enhance Environmental Health's understanding of new septic system locations and densities and will improve OWTS program management.

Complaint process

Anyone witnessing a violation of County Code, including a failing OWTS, improper sewage disposal, illegal or unpermitted installation of a sewage disposal system, or other health and safety concerns is encouraged to report this to Environmental Health. EH accepts complaints (also referred to as requests for service) via email, phone or in person. Once a complaint is received, the assigned field REHS performs an investigation. This may include contacting the responsible party, scheduling a site visit, or taking other actions as needed to investigate the complaint.

Part of this investigation includes determining whether the complaint leads to discovery of an OWTS failure subject to Tier 4 of the OWTS Policy. Any OWTS failure specified in OWTS Policy Section 11.1 or 11.2, including but not limited to pooling effluent, evidence of previous discharges to the ground surface, or structural septic tank failure will be subject to further investigation regarding the location where the failure is occurring. If field REHS determines that the failure is within 150 feet of a public water supply well, or within 2,500 feet of a public water system surface water intake point and located such that it could potentially impact surface water quality at the intake point, the public water supplier and the State Board Division of Drinking Water will be notified. According to OWTS Policy Section 3.5, this notification will be provided within 72 hours of Environmental Health discovering this condition.

Hard copies of the written description of the original complaint, along with the REHS field notes describing what was found, notifications made, and how the issue was resolved are maintained in the Environmental Health offices. A brief summary of the number, location, nature of the complaint and how it was resolved are recorded in tabular format on the Excel database. This summary database will be submitted to the Regional Board as part of the required Annual Report as described in the Annual Reporting section, below.

Waiver and Variance process

Plumas County Code contains provisions for granting waivers of certain OWTS requirements. For instance, subsurface suitability evaluation requirements may be waived by the Director of Environmental Health per 6-6.10(d). Historically, such waivers are uncommon. When granted, waivers are typically issued in response to mitigating a health and safety concern, such as waiving the requirement for seasonal groundwater-level testing when an OWTS is actively failing or posing a threat to water quality or public health. In this case, a highest anticipated groundwater level may be assigned for a site and would become the basis of designing a replacement OWTS in lieu of piezometer testing which can take several months.

As another example, in cases where a replacement OWTS cannot meet current installation requirements, waivers may also be issued provided the setback distance is greater for the replacement system than the failing system, and provided the replacement system meets the requirements to the greatest extent practical. Other mitigating factors are also considered, such as supplemental treatment, off-site disposal options, or other restrictions necessary to protect groundwater quality and public health in accordance with Section 9.4.11 of the OWTS Policy. However, supplemental treatment is not practical or even possible in all cases. Property owners on fixed incomes, with upside down mortgages or when the cost of supplemental treatment approaches total property values may not be able to afford such systems. Enforcement action and potentially vacating such residences is not a viable solution. In these cases, professional judgment and discretion are used to make the most of a bad situation and gain the most water quality and public health improvements that are practical in the current situation. This may include meeting replacement standards to the greatest extent practicable as determined by the Director of Environmental Health.

If a waiver is not appropriate or not granted in a certain case, requests for variances to Plumas County Code may be granted by PCC 6-6.09(f). This section states that the Board of Supervisors, acting as a board of appeal in consultation with the Environmental Health Director, may grant variances. After a public hearing, the Board must find "unusual circumstances" and furthermore must find that the "variance will ensure protection of public health and the environment". These restrictions on the local variance process generally satisfy Section 9.2.3 of the OWTS Policy. However, including a list of specific items for which variances cannot be considered would provide clarity and consistency between County Code and the OWTS Policy. Therefore, after concurrence from the CVRWQCB, Title 6 Chapter 6 of County Code will be amended to state that prohibited items listed in Section 9.4.1 through 9.4.9 of the OWTS Policy cannot be considered for variances to Plumas County Code. Furthermore, the variance of replacement OWTS located with prescribed setbacks to public water wells and surface water

intakes will specifically require advanced treatment as part of the waiver (see Separation distances and setbacks, below).

EH will maintain records of the number, location, and description of permits issued for OWTS where a variance or waiver is granted in accordance with Section 9.3.1 of the OWTS Policy.

Outreach and education

The Liquid Waste page of the Environmental Health website http://countyofplumas.com/index.aspx?nid=2392 is a primary means of public education and outreach. Here a variety of information is available regarding basic OWTS operation and maintenance. This information is updated periodically as conditions and information needs change. The website will also include emergency and after-hours contacts for EH staff to support maintenance, replacement or repair of critical OWTS issues within 48 hours following failure.

A variety of educational handouts and brochures are also available in the EH Office in Quincy, including the Septic System Owner's Manual and the Sewage Disposal Installation and Procedure Manual. Various Homeowners' Associations, Community Services Districts and other entities also provide OWTS education and outreach throughout Plumas County.

Annual Reports

EH will provide annual reports on OWTS program activities to the Central Valley Regional Water Quality Control Board. Unless otherwise requested, reports will be submitted within sixty (60) days of the close of the calendar year. Reports will be submitted in tabular format from the Excel spreadsheet and will include:

- Number and location of complaints pertaining to OWTS operation and maintenance, and a summary of how these issues were resolved, and
- Registrations issued as part of the septic tank cleaning registration program (California Health and Safety Code Section 117400 et seq.), with copies of data on septic tank cleaning locations and septage disposal volumes and locations available upon request; and
- Number, location and description of permits issued for new and replacement OWTS, including the regulatory tier under which they were issued. For the past few years, approximately 100 new and replacement OWTS permits have been issued annually. (See Figure 2 below)

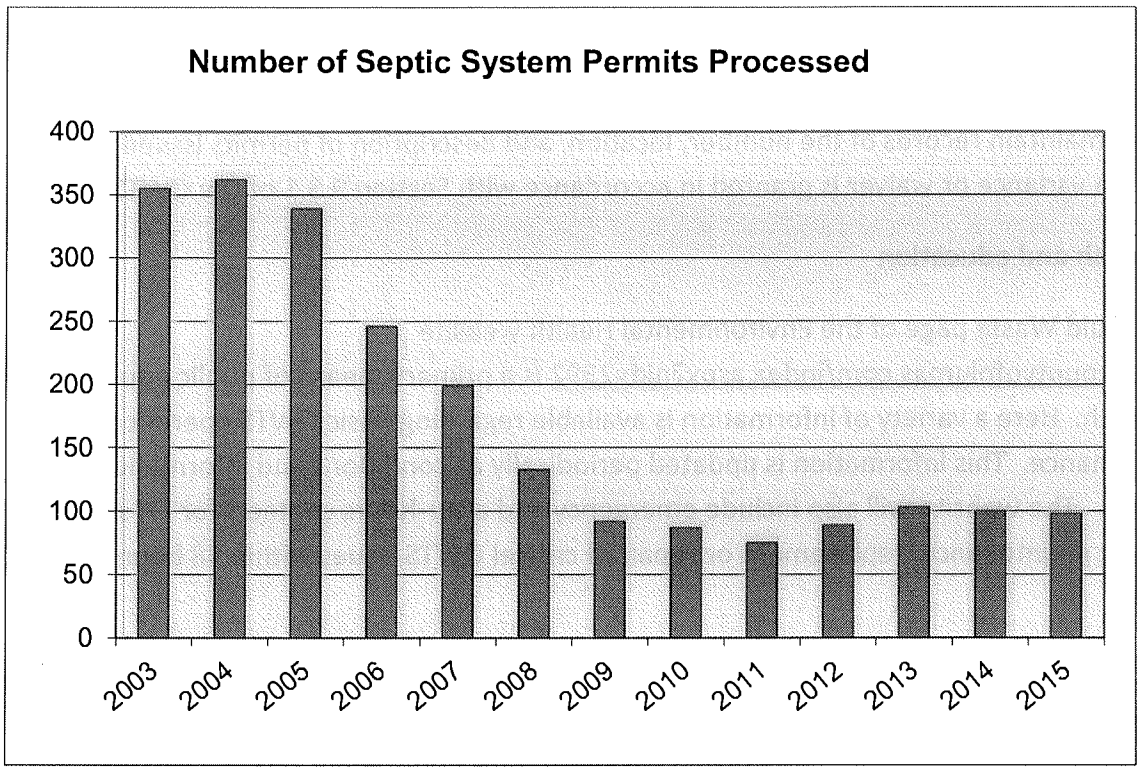


Figure 2

SITE SUITABILITY EVALUATION

In Plumas County Code, site suitability evaluations are broken down into two primary components: surface and subsurface suitability. Surface suitability standards (6-6.09 and 6-11.05) are typically demonstrated through submittal of a plot map. Although prescriptive standards apply to the type and quality of information provided on the plot plan (PPC 6-6.07), this can be completed by the owner, his contractor, or another authorized representative. In any case, surface suitability is confirmed during a site visit by EH Field staff.

Subsurface suitability (6-6.10 and 6-11.06), which includes percolation testing, soil depth evaluation and/or groundwater level testing, requires the services of a California Registered Engineer, Geologist, or Environmental Health Specialist (generally referred to as the consultant) as described later in this section. These classifications meet the definition of a *qualified professional* as described in the OWTS policy. Other qualified professions not specifically mentioned in County Code may also perform a variety of OWTS design, suitability, maintenance or other services provided they meet the registration, certification or licensure requirements of the OWTS Policy. The skills and credentials of such individuals will be evaluated by EH case-by-case.

Sanitary sewer connection

The first site suitability evaluation required for a proposed OWTS is proximity to an approved sanitary sewer. As specified in 6-6.04, connection to approved sanitary public sewer systems is required for structures within two hundred (200) feet of the sewer, provided access through easements or right-of-ways can be obtained and provided the sewer system has the capacity to serve the prospective connection. Structures within 200 feet of an approved sanitary sewer, with a viable means to connect, will not be issued a permit to install an OWTS. This is consistent with Section 9.4.9 of the OWTS Policy.

Separation distances and setbacks

As noted above, prescriptive surface evaluation criteria are found in PCC 6-6.09 (see LAMP Appendix 1). These include appropriate separation distances, slope limitations, 100% replacement area requirements, leach exclusion areas, and flood hazard areas. Generally, these standards are consistent with Section 7 of the OWTS Policy for Tier 1 low risk systems, with a few exceptions.

Current County Code does not specifically address setback distances to public water supply wells. To be consistent with public drinking water standards and to ensure compliance with Section 9.4.10 of the OWTS Policy, a proposed setback of 150 feet from a public water supply well is proposed. Since Plumas County Code limits deep trench disposal systems to no more than 6 feet of infiltrative material beneath the drain pipe (PCC 6-6.12(d)(2), this effectively limits deep OWTS installations to effluent dispersal depths of 10 feet or less. Accordingly, after concurrence from the CVRWQCB, Title 6 Chapter 6 of County Code will need to be amended to include a 150 feet setback from public water wells. Since Plumas County Code does not allow absorption systems deeper than 10 feet, greater separation distances from public water wells need not be specified in Code. This change will ensure the local code is consistent with the SWRCB OWTS Policy.

Similarly, setback distances for surface water intakes for public drinking water are not included in County Code. Below is a listing of surface water intake sites and locations in Plumas County:

System#:	System Name:	City:	SITE NAME	Lat:	Long:
3200172	ASSOCIATIONS OF THOMPSON LAKE	Bucks Lake	Thompson Lake	39.877786°	-121.200710°
3210003	CITY OF PORTOLA	Portola	Lake Davis	39.884208°	-120.476339°
3210005	GRAEAGLE LAND & WATER COMPANY	Graeagle	Gray Eagle Creek	39.754845°	-120.632491°
3200104	GRIZZLY LAKE CSD	Delleker	Lake Davis	39.884208°	-120.476339°

3210001	IVCSD GREENVILLE	Greenville	Round Valley Lake	40.113726°	-120.961881°
3200505	JOHNSVILLE PUD	Johnsville	Spring Raw GWUDI	39.738125°	-120.719165°
3200102	WHITEHAWK RANCH MWC	Clio	McKenzie Creek / West Stream	39.709918°	-120.569638°

Preliminary investigation indicates most of the OWTS within 2,500 feet of these intake points are not within the catchment of the drainage and not located such that they may impact water quality. However, some private property does exist within the area described above, and future OWTS applications may be proposed for these areas. Accordingly, after concurrence from CVRWQCB, Title 6 of Chapter 6 of County Code will be modified to increase the setback from the high water mark of the reservoir, lake or flowing water body to 400 feet if the OWTS is within 1200 feet of a surface water intake, it is located within the drainage catchment, and it is located such that it may impact water quality at the intake point. For OWTS similarly positioned but located within 2500 feet, the setback distance will be 200 feet.

As discussed above, County Code will need to be updated regarding horizontal setbacks for dispersal areas to public water supply wells and surface water intakes. Installation of new systems will be prohibited within these setbacks. It is possible replacement OWTS serving existing facilities would be unable to meet these new setbacks. Instead of a standard waiver for systems that meet the setback to the greatest extent possible, any replacement OWTS installed within the setbacks of a drinking water well or surface water intake will require advanced treatment in order to comply with Section 9.2.12 of the OWTS Policy. This requirement will also include written notification of the public water system prior to EH issuing an installation or repair permit according to Section 9.2.11.

One notable difference in separation distance between Chapter 6 (existing parcels) and Chapter 11 (creation of new parcels) is the separation distance to the high water mark of Lake Almanor. To create a new parcel, the setback distance from a drainage system to high water at Lake Almanor is two hundred (200) feet according to 6-11.05 table 1. For existing lots, 6-6.09 table 1 specifies the separation distance from the drainage system to the high water line of lakes, reservoirs, ponds or other surface water impoundments is two hundred (200) feet, with the exception of Lake Almanor which is one hundred (100) feet.

A few years ago the Central Valley Regional Water Quality Control Board and Plumas County Environmental Health staff researched the history of the exception and the lesser setback distance at Lake Almanor for existing lots. Although no clear written record was found, the

exception may be associated with raising the Pacific Gas and Electric Company's (PG&E) operating level of Lake Almanor in the late 1970's. At that time, the operating level was raised to the current maximum elevation of 4,494 feet above sea level (Environmental Impact Report, Lake Almanor Project, February 1976). This is the maximum lake level that PG&E is authorized through their license with the Federal Energy Regulatory Commission (FERC). Speculation suggests the higher operating level encroached on lakefront private property, and in some cases precluded OWTS installation that would meet the countywide setback of 200 feet and thus it was changed.

Regardless, a few mitigating factors come into play with the reduced OWTS setback at Lake Almanor. First, actual operating levels rarely reach the licensed maximum. In fact, in the thirty-eight years from 1976 to 2013, lake levels exceed 4490 feet only fourteen (14) times, and then only for short durations of time. (http://www.project2105.org/subweb1/lake_elevation/1970-2013_usgs_chart.htm) This clearly limits potential OWTS impacts to surface water. Meanwhile, PG&E retains ownership of all the land below the 4,500 feet elevation level contour. As OWTS installation must be at least five (5) from private property lines, on gently sloping lots this setback can be farther from the high water than 100 feet from the 4494 elevation mark. Finally, PG&E, California Department of Water Resources, and the Lake Almanor Watershed Advisory Group provide routine monitoring of Lake Almanor water quality as further discussed in the Water Quality Assessment portion of this LAMP (www.sierrainstitute.us/lake-almanor-watershed-group-resources/). This comprehensive surface water testing program has not documented any water quality concerns with the reduced setback.

In summary, no adverse water quality impacts have been documented due to OWTS and the reduced setback at Lake Almanor. While this setback distance may differ from the Tier 1 standards of OWTS Policy Section 7.5, it has been effective meeting the OWTS Policy purpose of protecting water quality and public health as provided in Section 9.0. Furthermore, Lake Almanor water quality monitoring is included as part of the county's proposed water quality assessment program described below. Therefore, no change to County Code is proposed for the setback to high water at Lake Almanor.

Percolation testing

A percolation test is required on every lot where a septic tank and drainage system will be used. The consultant (qualified professional) must use percolation testing methods that are consistent with a recognized and published standard, including presoak and testing under stabilized rate conditions. Percolation testing must be performed at the depth and location of the proposed drainage system. EH has record of percolation testing conducted on a number of existing parcels, but if the test was not conducted in the same area or depth as the proposed system, the previous test result will not be valid for the current project. For the creation of new

lots or parcels, rates faster than five (5) minutes per inch or slower than one hundred twenty (120) minutes per inch are unacceptable (6-11.05). Existing parcels where percolation test results exceed one hundred twenty (120) minutes per inch are unacceptable for an OWTS and will not be issued a permit to construct [6-6.11(a)]. These requirements are more restrictive than the OWTS Policy Section 7.4.

Soil Profile Testing

Soil profile testing, also known as soil mantle testing, is required for the creation of new lots and may be required on existing parcels. Typically, a backhoe excavation is conducted in the presence of a representative of Environmental Health and the applicant's consultant to identify hardpan, impermeable soils, saturated soils or bedrock. Visual observations are often adequate to determine site suitability, but deep percolation or other tests may be required in conjunction with the profile excavation. The applicant's consultant must submit a signed, written summary of the findings of the profile or mantle testing that includes appropriate soil descriptions and general observations. For creating new lots, soil depths less than three (3) feet are unacceptable [6-11.06(b)].

For existing lots, the determination whether soil profile testing is required rests with the Plumas County Environmental Health Specialist. Their decision is based on a number of factors including a records search of existing and nearby parcel data; a site visit and observations of surface conditions such as road cuts and outcrops; as well as other factors. If required, the soil profile testing is conducted as specified above. Locations with less than two (2) feet of soil depth to an impermeable layer are not acceptable for an OWTS and will not be issued a permit to construct.

These requirements are consistent with the site evaluation requirements of OWTS Policy Section 7.2.

Groundwater level testing

On parcels where seasonal high groundwater is suspected or known, the property owner or their designated representative must demonstrate adequate separation between the highest seasonal groundwater and the bottom of the drainage field. This determination is also made by the field Environmental Health Specialist and is made based on an historical records search, a site visit, the presence of hydrophilic vegetation, site topography and other information. If direct observation groundwater testing is needed, the installation and wet season monitoring of at least one (1) piezometer within the proposed drainage field area is required. The piezometer must be installed under permit in a location and manner approved by Environmental Health. Alternate designs are considered case-by-case, but a standardized alternative is shown in Figure 2.

FIGURE 3

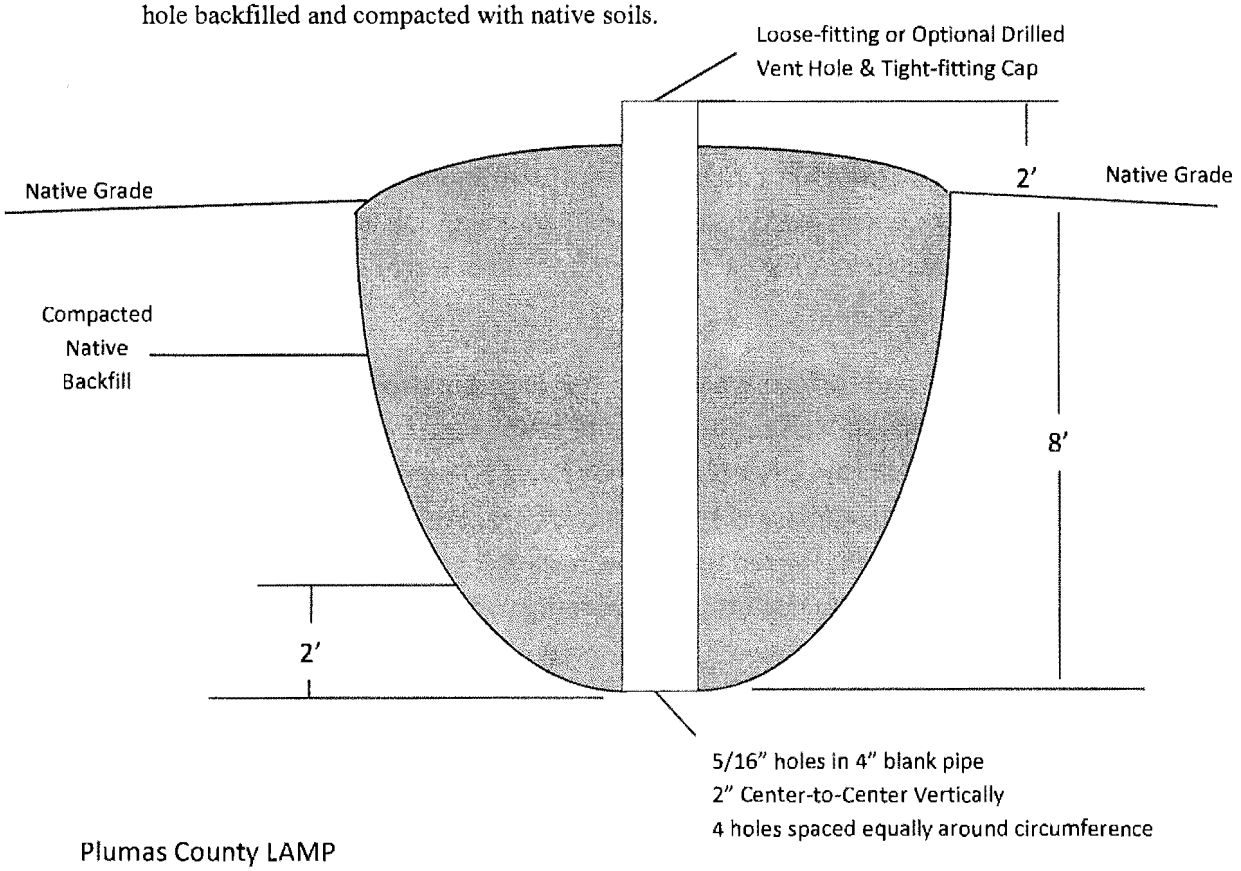
REQUIREMENTS FOR PIEZOMETER INSTALLATION & MONITORING

This Department requires that piezometers be monitored from November 1 through April 30th of the following year or as determined by the Director of Environmental Health. Monitoring must be performed by a California Registered Civil Engineer, Geologist, or Environmental Health Specialist, familiar with such systems. The monitoring must coincide with major events that might affect the water table, such as prolonged periods of rain or significant snow melt.

Prior to the installation of a piezometer the property owner or his designated representative (as described above) must obtain a permit through Environmental Health. Each permit application shall include a plot plan designating the proposed location of each piezometer on an 8 ½ X 11" piece of paper. A permit application must be obtained for each assessor's parcel number where piezometers will be installed. The application fee is good for up to 5 (five) piezometers per parcel, with additional piezometers charged at the Department's hourly rate. Each proposed piezometer shall be clearly marked in the field. A representative of this Department will inspect the parcel and the proposed location of each piezometer before installation. Each piezometer must be located in an area where a leachfield is proposed, and not within any leach exclusion area. The number of piezometers should be adequate to determine acceptable areas for leachfields so as to prevent extending the leachfield approvals through another year. (In the case of piezometers for approval of subdivisions or parcel maps, these tests must be conducted in a year of 75% or greater of annual average rainfall.)

After receiving the approved permit from this Department, the piezometers may be installed in the approved location. This department must be notified in advance of piezometers installation. The approved representative must certify that the installation was conducted in accordance with the design diagram shown below or an approved alternative method, and must submit any groundwater data collected at the end of the monitoring season.

Prior to construction of any leachfield in a piezometer area, the piezometer pipe must be removed and the hole backfilled and compacted with native soils.



The wet season monitoring must be conducted by a qualified professional. The piezometer must be installed and monitored from November 1 through May 31. Direct observation for piezometer measurements are specified in PCC 6-6.10(c)(1). The highest water level recorded is used to assess the suitability of the parcel for an OWTS.

For new lots, piezometer testing is only acceptable in a normal year, which is defined in 6-11.03(j) as a year in which seventy-five percent (75%) or more of the average annual precipitation for the entire year falls before April 15. If the monitoring year is below normal for precipitation, the test results can only be used to rule out areas unacceptable for waste disposal. In that case, the owner can either designate the area as leach exclusion or they can continue monitoring in subsequent years. These requirements are consistent with the groundwater determination Section 7.3 of the OWTS Policy.

For creating new lots, soil depths to groundwater of less than three (3) feet are unacceptable [6-11.06(c)]. Current Code prohibits development on existing lots with seasonal high groundwater levels at less than one and one half (1.5) feet below the existing ground surface when utilizing advanced treatment OWTS. The design criteria, however, requires three (3) feet between the bottom of the dispersal system and groundwater. This is more protective than Section 9.4.8 of the OWTS Policy which limits separation of the bottom of the disposal system to groundwater to no less than two (2) feet.

OWTS DESIGN

General Design Considerations

All OWTS must consist of a septic tank and a subsurface drainage system (leach bed, trench, or gravel-less chamber) per 6-6.12. Cesspools and pit privies are prohibited to construct, use or maintain per 6-6.17. If EH discovers an existing, non-compliant cesspool, it will be destroyed as soon as practically feasible. Sewage holding vaults are permitted but only with special written permit.

Septic tank design, construction and surface access riser requirements are specified in 6-6.12(b). Capacities for septic tanks serving residential applications are based on the number of bedrooms served, with 1,000 gallon capacity acceptable for up to 3 bedrooms; 1,200 gallon capacity acceptable for up to 4 bedrooms; and 1,500 gallons acceptable for up to 6 bedrooms. When septic tank effluent cannot be delivered to the drainage system via gravity-flow piping, a septic tank effluent pumping system may be utilized according to 6-6.12(c). If a pump is required, electrical permit issued by the Building Department may also be required.

Larger residential or commercial applications are based on the maximum estimated daily wastewater flows according to the California Plumbing Code or another generally accepted

reference manual and must be approved by Environmental Health. Estimated sewage flow rates can be based on either the type of occupancy or the fixture units served, whichever is greater. Septic tank sizing is also by the California Plumbing Code. For these larger residential or commercial projects, when daily flows are estimated to be less than 1500 gallons, septic tank size is the daily flow times 1.5. When daily flows are greater than 1500 gallons, the formula is estimated daily flow times .75 plus 1125 gallons equals septic tank size.

As described in 6-11.08, shared wastewater disposal systems, defined as serving two (2) to four (4) lots in a single area, are an acceptable means of sewage disposal. Community systems, discussed in 6-11.09 are where five (5) or more lots are served by a common area. Because of the density of wastewater disposal in a concentrated area, these require review and approval by Environmental Health and the Central Valley Regional Water Quality Control Board.

Although no upper limit for community disposal is specified in County Code, in no case shall this LAMP apply to projected wastewater flows exceeding 10,000 gallons per day for any discharger.

In conjunction with estimated wastewater flows, percolation test results determine the absorption area sizing requirements of the drainage system. For standard residential applications, absorption area requirements are determined by the number of bedrooms served. The Perc Rate Conversion Chart (Figure 3) is used to convert percolation rates into soil absorption requirements (square feet per bedroom). An additional policy (Figure 4) is used to describe characteristics of a bedroom, and what constitutes a bedroom for the purposes of sewage disposal design. In general, any portion of a structure than can be used as a bedroom by the current or future owner is considered a bedroom. This prohibits excessive loading of an OWTS that is inadequately sized for future owners or future wastewater flows.

For larger residential and commercial projects, soil application rate in gallons per square feet per day is calculated as $5/\sqrt{t}$ where t is the percolation rate in minutes per inch per the Manual of Septic Tank Practices. Total absorption area required (in square feet) is calculated by the estimated wastewater flow or septic tank capacity, whichever is greater, divided by the application rate.

Following these general considerations, a site may be placed into one of the following four design categories: suitable for a standard sewage disposal system, suitable for an engineered sewage disposal system, suitable for an advanced treatment system, or not suitable for onsite wastewater disposal.

FIGURE 4

PERC RATE CONVERSION CHART

5 min/in = 125 sq.ft/bdrm	33 min/in = 260 sq.ft/bdrm
6 min/in = 130 sq.ft/bdrm	34 min/in = 265 sq.ft/bdrm
7 min/in = 140 sq.ft/bdrm	35 min/in = 270 sq.ft/bdrm
8 min/in = 150 sq.ft/bdrm	36 min/in = 275 sq.ft/bdrm
9 min/in = 160 sq.ft/bdrm	37 min/in = 275 sq.ft/bdrm
10 min/in = 165 sq.ft/bdrm	38 min/in = 280 sq.ft/bdrm
11 min/in = 170 sq.ft/bdrm	39 min/in = 280 sq.ft/bdrm
12 min/in = 175 sq.ft/bdrm	40 min/in = 285 sq.ft/bdrm
13 min/in = 180 sq.ft/bdrm	41 min/in = 285 sq.ft/bdrm
14 min/in = 185 sq.ft/bdrm	42 min/in = 290 sq.ft/bdrm
15 min/in = 190 sq.ft/bdrm	43 min/in = 290 sq.ft/bdrm
16 min/in = 195 sq.ft/bdrm	44 min/in = 300 sq.ft/bdrm
17 min/in = 200 sq.ft/bdrm	45 min/in = 300 sq.ft/bdrm
18 min/in = 205 sq.ft/bdrm	46 min/in = 300 sq.ft/bdrm
19 min/in = 210 sq.ft/bdrm	47 min/in = 305 sq.ft/bdrm
20 min/in = 215 sq.ft/bdrm	48 min/in = 305 sq.ft/bdrm
21 min/in = 220 sq.ft/bdrm	49 min/in = 310 sq.ft/bdrm
22 min/in = 220 sq.ft/bdrm	50 min/in = 315 sq.ft/bdrm
23 min/in = 225 sq.ft/bdrm	51 min/in = 315 sq.ft/bdrm
24 min/in = 230 sq.ft/bdrm	52 min/in = 320 sq.ft/bdrm
25 min/in = 230 sq.ft/bdrm	53 min/in = 320 sq.ft/bdrm
26 min/in = 235 sq.ft/bdrm	54 min/in = 320 sq.ft/bdrm
27 min/in = 240 sq.ft/bdrm	55 min/in = 325 sq.ft/bdrm
28 min/in = 245 sq.ft/bdrm	56 min/in = 325 sq.ft/bdrm
29 min/in = 245 sq.ft/bdrm	57 min/in = 325 sq.ft/bdrm
30 min/in = 250 sq.ft/bdrm	58 min/in = 330 sq.ft/bdrm
31 min/in = 255 sq.ft/bdrm	59 min/in = 330 sq.ft/bdrm
32 min/in = 255 sq.ft/bdrm	60 min/in = 330 sq.ft/bdrm

FIGURE 5

BEDROOM CRITERIA

Sizing of a sewage disposal system depends upon the number of bedrooms served. Environmental Health shall use the following criteria when reviewing floor plans for determination of number of bedrooms for new residences and residential additions or remodels **for designing sewage disposal systems only**:

1. Sewing rooms, dens, offices, studios, lofts, game rooms, etc. of at least 70 square feet with a standard door as shown on the floor plan are considered a bedroom.
2. A closet, or lack thereof, does not determine whether a room is potentially a bedroom.
3. Rooms on a second story, including lofts, which otherwise consist of habitable room space will be considered a bedroom. A single large upstairs adaptable to partitioning will be counted as one bedroom for each 100 square feet of superficial floor area.

Some features which, in various combinations (generally having only one feature does not preclude use as a bedroom), **may make it unlikely** that a room be used as a bedroom include:

1. A large, arched doorway without a door, which opens onto the entry-way or main activity area.
2. Use of a half wall or railing along at least one side of the room.
3. A conversation pit, which encumbers the floor area.
4. Presence of a fuel-burning water heater or fireplace in a room designated as a family, game room or recreation room.
5. Location in a main activity area of the dwelling.
6. Wet bar in family, game or recreation room.

In general, any room, which could be used as a bedroom by current or future tenants, will be considered a bedroom for the purposes of sewage disposal design.

Important Note:
When planning bedroom additions, any required septic system upgrade must be completed **before** the building permit can be issued.

Not Suitable for Onsite Wastewater Disposal

New construction on undeveloped lots which cannot satisfy all of the setback, percolation or soil depth requirements are not suitable for an OWTS installation. Owners of these lots typically need to explore offsite options. Connecting to a nearby sanitary sewer system has been successful in some cases, particularly if multiple properties would benefit from that connection and can share costs. If an adjoining parcel has adequate usable area, a sewage disposal easement may be negotiated between the property owners, or occasionally a neighbor is interested in selling a portion of their suitable area and a lot line adjustment or parcel merger can be recorded between the parties. In any case, the site conditions at the location of the OWTS dictate the design and construction requirements for the new system and the proposed location must meet County Code and this LAMP. Expansion of existing systems, such as to serve additional bedrooms or other increases in wastewater flow, are treated as new construction and must also meet County Code and this LAMP.

For lots with existing structures that cannot meet all of the current surface and subsurface requirements, the offsite options discussed above may be viable alternatives. If none of these can be utilized, an assessment of the property is made to determine the current septic system location and construction and to evaluate 'best available' options. If the best available option will improve a bad situation but fails to meet the current OWTS requirements, a waiver may be appropriate. For instance, if the separation distance from the existing drainage system to the onsite domestic well is seventy five (75) feet and the replacement drainage system will be ninety (90) feet (rather than the current code requirement of one hundred (100) feet), a waiver can be considered. Waivers are only considered on existing parcels for replacement systems provided the replacement system meets the setbacks to the greatest extent practical. Other mitigating factors are also considered, such as pressure distribution, supplemental treatment, or other enhancements as deemed necessary to protect groundwater quality and public health in accordance with Section 9.4.11 of the OWTS Policy. See also the Waiver and Variance Section of this LAMP.

Another area not suitable for OWTS installation is within the prohibition established by CVRWQCB Order No. 76-129. This includes the Taylorsville area which has subsequently been served by sanitary sewer provided by the Indian Valley Community Services District.

Standard Sewage Disposal Systems

The specifications for a standard OWTS are found in PCC 6-6.12. Standard OWTS typically have good soil depth to groundwater (6 feet or greater), good soil depth to an impermeable layer (5 feet or greater) and can satisfy all the surface suitability criteria and setbacks. As with all OWTS installations, standard sewage disposal systems must consist of pretreatment through a 2-

compartment septic tank. Septic tank design, capacity, construction, and access risers are specified in PCC 6-6.12(b) and are discussed under general design considerations, above. County Code utilizes a prescriptive design for standard sewage disposal systems, and these systems are designed by the staff Environmental Health Specialist, serving as the design professional in accordance with OWTS Policy 8.1.1, as part of the permit process.

As specified in 6-6.12(d), a standard drainage system may consist of one of three designs: a leach bed, a leach trench or gravel-less leaching chambers. A leach bed [6-6.01(d)(1)] consists of a shallow, level, rectangular bed-like soil excavation, leach rock, perforated distribution pipe, barrier material and soil cover. The excavation bottom area is used to calculate the absorptive area of this type of system. At least twelve (12") inches of clean-washed drainage rock (¾" to 2½" diameter) are placed beneath a four-inch diameter perforated distribution pipe, and at least (2") inches cover the pipe, giving a total rock depth of not less than eighteen (18") inches. Perforated pipes are installed a minimum of three (3') feet from the excavation sidewall and a maximum of six (6') feet center to center. Each perforated pipe is fitted with an end cap or plug, all lines are installed level, and all are provided with equal distribution via direct connection to a distribution box or manifold system as needed for multiple perforated lines. Maximum length of each line is 100 feet. The entire leach rock bed area is covered with untreated paper, straw, Geotextile fabric or other suitable material to prevent cover soils from penetrating the leach rock. A minimum of twelve (12") inches of soil is used to cover the bed in a manner which will facilitate surface water run-off. When installed on sloping ground, the bed should be configured and installed so as to parallel slope contour.

A leach trench system [6-6.12(d)(2)] consists of a narrow, deep, trench-like excavation, leach rock or other suitable effluent-dispersing material, perforated distribution pipe, barrier material and soil cover. The excavation sidewall area is used to calculate the absorptive area of this type of system. Up to six (6') feet of clean-washed drainage rock (¾" to 2½" diameter) or equivalent are placed beneath a four-inch diameter perforated pipe, and at least two (2") inches of rock cover the pipe. The perforated pipe is installed in the center of the eighteen (18") to twenty-four-inch wide excavation. Each perforated pipe is fitted with an end cap or plug, all lines are installed level, and all lines are provided with equal distribution via direct connection to a distribution box or manifold system as needed for multiple perforated lines. Maximum length of each perforated line is 100 feet. The trench is covered with untreated paper, straw, Geotextile fabric or other suitable material to prevent cover soils from penetrating the leach rock. A minimum of twelve (12") inches of soil is used to cover the trench in a manner which will facilitate surface water run-off.

A gravel-less leaching system [6-6.12(d)(3)] consists of prefabricated interlocking effluent receiving chambers installed in a shallow, level, rectangular bed-like or narrow trench

excavation. All gravel-less chambers must be UPC/IAPMO approved and certified. The bottom chamber area with a 0.70 multiplier is used to calculate the absorptive area of this type of system. The bottom and sides of the bed or trench excavation are to be raked to eliminate any smearing that has occurred during excavation. All large rocks and debris are to be removed from the excavation prior to installation of the leaching chambers. The first and last leaching chambers are to be fitted with an end plate, all chambers are installed level, and all chambers are provided with equal distribution via direct connection to a distribution box or manifold system as needed for multiple leaching chambers systems. Maximum length of each leaching chamber system is 100 feet. A minimum of twelve (12") inches of soil is used to cover a leaching chamber system in a manner which will facilitate surface water run-off. All gravel-less leaching chamber systems are to be installed per the manufacturer's design.

Engineered Sewage Disposal System Design

The specifications for an engineered OWTS are found in PCC 6-6.13. As with all OWTS installations, engineered sewage disposal systems must consist of pretreatment through a 2-compartment septic tank. Septic tank design, capacity, construction, and access risers are specified in PCC 6-6.12(b) and are discussed under general design considerations, above. County Code requires plans for an engineered OWTS be submitted by a California Registered Civil Engineer, Geologist, or Environmental Health Specialist serving as the qualified professional for the project. Plans are then reviewed and approved by the staff Environmental Health Specialist as part of the permit process.

Sites requiring an engineered OWTS typically are not suitable for a standard system due to one or more limiting design factors. Areas in which the percolation rates are less than five (5) minutes per inch or exceed sixty (60) minutes per inch, where the seasonal high groundwater table is closer than six (6') feet below the existing ground surface, or where an impermeable layer is closer than five (5') feet below the existing ground surface are not suitable for standard sewage disposal systems. Such areas may be suitable for an engineered sewage disposal system provided percolation rates do not exceed 120 minutes per inch, and the depth to seasonal high groundwater or an impermeable strata is not less than three (3') feet below the existing ground surface. Engineered sewage disposal systems must provide, from the bottom of the disposal system, a minimum five (5') feet vertical separation to groundwater and a minimum four (4') feet vertical separation to an impermeable layer unless otherwise specified. Engineered systems must be designed according to the surface suitability standards contained in PCC 6-6.09.

Engineered sewage disposal systems that will be considered by Environmental Health for installation in areas deemed unacceptable for a standard sewage disposal system include:

Elevated mound systems. Elevated mound systems may be applied in areas where vertical separation to groundwater and/or an impermeable strata or bedrock cannot be satisfied for a standard system. For an elevated mound system to be utilized, the minimum vertical separation to groundwater or an impermeable strata cannot be less than three (3') feet below undisturbed ground surface.

Pressure distribution. Pressure distribution leach disposal systems may be applied to areas where vertical separation to groundwater and/or standard percolation rates cannot be obtained. Vertical separation between the bottom of the drainage system and the highest recorded groundwater level through native soil may be reduced to four (4') feet when pressure distribution is utilized. Pressure distribution may also be applied to areas where percolation rates fall between the sixty (60) minutes per inch and 120-minute per inch range.

Shared or Community Design. Per Section 6-11.08 of PCC, shared sewage disposal consists of developments where two (2) to four (4) lots are served by a single waste disposal area. Community disposal consists of five (5) or more lots per 6-11.09. Specific suitability requirements apply for both location and sizing of both types of systems, as well as engineer design requirements. A management agreement detailing the legal responsibility of each individual owner connected to a shared system, including cost share regarding maintenance and operation, must be recorded [PCC 6-11.08(c)]. Pending concurrence from CVRWQCB, Title 6 of Chapter 11 of County Code will be modified to require OWTS management, maintenance and operations through an appropriate legal entity.

Alternate designs. Sewage disposal system technologies and alternative construction methods not specifically referenced in County Code or this LAMP will be considered by Environmental Health on a case by case basis.

Advanced Treatment Sewage Disposal System Design

The specifications for an advanced treatment system are found in PCC 6-6.14. Advanced treatment systems may or may not utilize pretreatment through a conventional 2-compartment septic tank. When required, septic tank design, capacity, construction, and access risers are specified in PCC 6-6.12(b) and are discussed under general design considerations, above. County Code requires plans for an advanced treatment system to be submitted by a California Registered Civil Engineer. Plans are then reviewed and approved by the staff Environmental Health Specialist as part of the permit process. To date, EH has approved only a total or four (4) advanced treatment systems in Plumas County.

Areas deemed unacceptable for standard and engineered sewage disposal as described in this LAMP may be suitable for an advanced treatment system provided: groundwater is no closer than eighteen (18") inches below the existing ground surface; an impermeable layer is not

closer than two (2') feet below the existing ground surface; and percolation rates do not exceed 120 minutes per inch. As previously mentioned, an advanced treatment system design must provide a minimum three (3') feet vertical separation to groundwater or an impermeable layer *which is more protective than Section 9.4.8 of the OWTS Policy of two (2) feet.* Advanced treatment systems must be capable of routinely producing treated effluent with biological oxygen demand (BOD) and total dissolved solids (TDS) concentrations less than thirty (30) milligrams per liter (mg/L) and total coliform concentrations less than 240 MPN/100mL. These standards are comparable to the supplemental treatment standards in Tier 3 of the OWTS Policy. Advanced treatment systems must be designed according to the surface suitability standards contained in Section 6-6.09 of this chapter.

Due to the complexity of advanced treatment systems, proper operation and maintenance of these systems is essential. An Operation and Maintenance Manual must be developed by the system designer and/or manufacturer and provided to the applicant and Environmental Health at time of permit application. This Manual must include diagrams of system components, descriptions of normal system functions, schedules for routine annual maintenance, descriptions on how to correct common operational problems and other items necessary to ensure proper system function.

A monitoring plan shall be developed by the system designer and provided to Environmental Health for approval at time of permit application. The monitoring plan shall specify proposed effluent sampling, constituent analysis and frequency to ensure proper system performance and must be approved by Environmental Health.

A contract with a qualified service provider for specified system maintenance and monitoring shall be in place prior to final inspection and approval for use of any advanced treatment system. The system owner must notify Environmental Health within thirty (30) days of any revision to or cancellation of the service agreement.

Current County Code requires that all advanced treatment systems must also be operated under a renewable annual permit issued by Plumas County Environmental Health. This permit will specify conditions for system operation including maintenance, monitoring, and reporting that will ensure protection of public health and the environment. Administration of this current permit process has been difficult, even with only 4 systems currently installed in the county. With the demonstrated performance record of these systems, EH proposes to change the annual permit requirement to a five (5) year permit cycle, and require a new permit whenever the property is sold. This change will be included in county code updates after concurrence from CVRWQCB.

County Code specifically addresses two advanced treatment technologies as approved designs: intermittent sand filters and aerobic treatment units. Other advanced treatment systems and alternative technologies not specifically referenced in Code will be considered on a case-by-case basis provided such proposals are submitted by a California Registered Civil Engineer, the installation is completed under the direction of the design engineer and provided such proposals satisfy PCC 6-6.01.

Intermittent sand filters (ISF). An intermittent sand filter is an aerobic treatment device installed between the septic tank and the disposal field. An ISF is only considered for use on existing parcels with challenging site conditions not suitable to for standard or engineered systems. All ISFs must be constructed in accordance with Plumas County Environmental Health's Intermittent Sand Filter Design Manual, current Industry Standards, and all the requirements of PPC 6-6.14. A copy of the Guidelines for Advanced Treatment Intermittent Sand Filters Manual is attached as Appendix C.

Aerobic treatment systems (ATU). An aerobic treatment unit may be used to replace failing sewage disposal systems for residential and small commercial facilities, where site conditions are deemed unsuitable for standard or engineered sewage disposal systems. Aerobic Treatment Units may replace a conventional septic tank in some applications, based on the engineer's design. ATUs shall be certified by the National Sanitation Foundation (NSF) pursuant to Standard 40 Class I requirements. Evidence of NSF certification shall be submitted at time of application.

All ATUs shall be installed according to the manufacturer's approved design and specifications under the direction of a California Registered Engineer and must satisfy all the requirements of this LAMP.

OWTS CONSTRUCTION

Copies of the permit to construct an OWTS are sent to the applicant (owner) and the owner's contractor. This permit is written authorization to begin construction.

For a standard OWTS, EH functions as the qualified professional and is available for questions or consultation if needed. Generally, these systems are straightforward and construction can proceed to the point that the system is ready to be covered. Prior to covering, the owner or contractor must call for a final inspection and must prepare an as-built drawing of the system construction and location for the permanent records.

For an engineered or advanced treatment system, all construction activities must be coordinated through the design consultant. The design consultant is required to oversee the installation, operation of pumps, controls, timers, manuals and other operational parameters of

the system. Environmental Health will conduct periodic construction inspections and witness system operations as necessary prior to final approval. Before final approval, EH must receive a copy of a letter of certification from the design consultant stating that the system was installed as designed, a plot map, and a copy of the maintenance and monitoring contract as needed (see advanced treatment systems).

OPERATION AND MAINTENANCE

Environmental Health encourages proper OWTS operation and maintenance through homeowner education. Owners of standard systems can protect themselves from premature OWTS failure by following simple daily care, routine maintenance, and by knowing what to look for as early signs of trouble. The Septic System Owners Guide (Figure 5) is a quick and helpful source available at EH offices and at the EH Liquid Waste website http://countyofplumas.com/index.aspx?nid=2392 The website will also include emergency and after-hours contacts for EH staff to support maintenance, replacement or repair of critical OWTS issues within 48 hours following failure. Also, property owners, realtors, contractors and others routinely contact EH to access the permanent records of septic tank design, construction and locations during regular business hours.

As noted above, advanced treatment systems require a high level of owner operational awareness and maintenance responsibility. All advanced treatment systems require an Operation and Maintenance Manual prepared by the system designer or manufacturer, a monitoring plan, a contract with a qualified service provider, and a permit from EH (PCC 6-6.14). This plan will specify homeowner responsibilities and procedures to ensure maintenance, repair, or replacement of critical items within 48 hours following failure. Emergency contact information for service providers and EH staff will be available on the county website.

Septic Tank Maintenance and Pumping

As discussed in the education and outreach section, all new owners of OWTS are provided with the "Septic System Owners Guide" to educate them on the care and maintenance of their system. This information can also be referenced on the Environmental Health Department website. All OWTS owners are encouraged to inspect their septic tank every 3-5 years, depending on use, and pump as needed. Since Plumas County has a large number of seasonal homes with varying degrees of occupancy which may extend the time between needed septic tank pumping, countywide mandatory pumping intervals are not uniform or applicable.

In addition to voluntary inspections, many property transactions also require OWTS inspection. These are typically required by the buyer, the buyer's agent, or the buyer's lender. While not

regulatory and not enforced by EH, these inspections are effective in further encouraging OWTS education, maintenance and pumping.

Septic tank maintenance is performed by registered professionals as described in the next section. EH provides an optional inspection checklist to help ensure consistent inspections. It walks the professional as well as the homeowner through the important points of proper OWTS performance. http://ca-plumascounty.civicplus.com/DocumentCenter/View/1820

Septage Receiving

Environmental Health registers businesses and individuals who perform septic tank and chemical toilet cleaning in Plumas County per Section 117400 et seq. of the California Health and Safety Code. Their trucks and equipment are subject to annual inspection by EH. Also, per California Health and Safety Code, each operation is required to submit quarterly septage reports showing the locations from where septage is pumped and where it is disposed.

Approximately 2 million gallons of septage per year is collected and disposed within Plumas County. This number has been fairly consistent over the past 10 years. The majority of the septage (90%) is generated through the pumping of residential septic tanks with about 5% from local commercial businesses. The final 5% of septage is generated through the pumping of chemical or vault toilets located at remote recreational facilities and during music festivals and special events held within the county. Environmental Health has not received any reports of industrial septage being generated within the County.

The Plumas Sanitation Dewatering Plant receives up to 90% of the septage generated in Plumas County. This plant has a maximum operating capacity of 20,000 gallons per day of septage and an additional 40,000 gallons of surge storage for any excess daily septage collected. Effluent from the dewatering plant flows via the sanitary sewer to the Grizzly Lake Community Services District (GLCSD) treatment ponds. Dewatered solids are disposed at Lockwood in Nevada in a municipal solid waste landfill. In general, the dewatering process results in 80% effluent and 20% solids by volume. The Plumas Sanitation facility is currently disposing of approximately 1.4 million gallons of effluent per year to GLCSD. The plant appears to have growth potential as the limit for effluent disposal to the GLCSD treatment ponds is currently set at 4 million gallons of effluent per year.

Most of the other septage generated within Plumas County is processed at the Westwood Dewatering Plant located in Lassen County. Minimal septage volumes also go to disposal facilities near Chico, in Butte County and to the Reno/Sparks area of northern Nevada.

The wastewater ponds at the City of Portola will accept septage from Plumas Sanitation on an emergency basis only, such as if the dewatering plant is down. All other wastewater ponds in Plumas County no longer accept septage due to a variety of local concerns.

WATER QUALITY ASSESSMENT PROGRAM

The goal of the water quality assessment program is to determine the general operational status of OWTS, to evaluate the impact of OWTS discharges, and to assess the extent to which groundwater and local surface water may be adversely impacted. The assessment program will include review of complaints, variances, failures, and any information resulting from field inspections as well as monitoring and analysis of water quality data.

Assessment Considerations

As stated in Section 9.3.2 of the OWTS Policy, the focus of the assessment should be areas with characteristics listed under section 9.1. Some of these considerations currently do not apply to Plumas County. For instance, Plumas County does not have any high quality waters or other environmental conditions requiring enhanced protection (9.1.2), nor does it have surface water listed as impaired for nitrogen or pathogens (9.1.8). Similarly, there are no known geographic areas with multiple, existing OWTS predating septic tank and leachfield standard, such as cesspools (9.1.11). Furthermore, there are no known geographic areas susceptible to hydraulic mounding, organic or nitrogen loading, or with insufficient replacement area in case of a failure (9.1.10).

Historic updates and changes to County Code and EH policy have helped to successfully mitigate potential pollution and nuisance conditions of improper onsite wastewater disposal. For instance, Plumas County's land development ordinance, 76-162, was developed in cooperation with the Regional Board and adopted by the Board of Supervisors in 1976. It contained provisions for groundwater protection and density limits for creating new parcels dependent on onsite waste disposal. Regional Board participation and concurrence is documented in major overhauls to this ordinance occurring in 1992 and 2004. Tracing back specifics of the onsite disposal ordinance was more difficult, but the ordinance that was in effect in 1995 contained many specific protective measures still relevant today. These include requirements for three (3) feet separation to fractured bedrock or impermeable strata, maximum percolation rates of 120 minutes per inch, five (5) feet design separation from the bottom of the dispersal system to highest seasonal groundwater for a standard disposal system, and a prohibition on use of cesspools for sewage disposal, as just a few examples.

Collectively, these ordinances have largely prevented high concentrations of OWTS being installed or utilized in areas having various characteristics of concern contained in Section 9.1 of the OWTS Policy. Specifically, no concentrated areas with dispersal systems located in an area with fractured bedrock (9.1.5), dispersal system located in an area with poorly drained soils (9.1.6), and vulnerability to pollution due to hydrogeological conditions (9.1.1) are currently known throughout Plumas County.

Potential areas of concern with OWTS operation may include surface water that is vulnerable from OWTS (9.1.7) and geographic areas known to have OWTS located within pertinent setbacks listed in Section 7.5 of the OWTS Policy (9.1.12). Both of these conditions may apply at Lake Almanor, where the setback distance to high water was reduced to 100 feet as discussed in the Separation Distances and Setbacks section above. While ongoing Lake Almanor water quality monitoring has not detected problems with OWTS placement around the lake, the data source will be included in the assessment program described below.

Other than Lake Almanor, no specific areas of the county suggest the need for localized monitoring and assessment at this time. A regionalized monitoring and assessment program utilizing drinking water quality data in accordance with Section 9.3.2.3 is proposed. This program, as discussed below, would address the remaining countywide OWTS installation and operation considerations of Section 9.1 of the OWTS Policy, namely shallow soils with known dispersal system installation closer to the ground surface than is standard (9.1.3), OWTS usage in areas with high domestic well usage (9.1.4), and OWTS located in an area of high OWTS density (9.1.9).

The drinking water data set is a routinely collected, high quality data set that is representative of groundwater conditions throughout the county, making it a great candidate for OWTS performance appraisal. Also, data available from the statewide GeoTracker GAMA (groundwater ambient monitoring and assessment) program will be utilized. Finally, evaluating ongoing Lake Almanor Water Quality monitoring data for impacts due to OWTS is also proposed. Both monitoring proposals are discussed in more detail below.

During the Year 5 Water Quality Assessment, further evaluation of all of the factors identified in section 9.1 of the OWTS Policy would be appropriate. During this assessment, monitoring gaps and additional monitoring sources can be identified to better assess areas vulnerable to OWTS impacts.

GeoTracker GAMA

The mission of the GeoTracker GAMA program is to provide data, information, and tools to enable the public and decision makers to better assess groundwater quality and quantity. The

GeoTracker GAMA groundwater information system integrates and displays water quality data from various sources on an interactive Google-based map.

Data sources currently include some limited public and private sources, and may eventually include public drinking water data, monitoring data from waste discharge permits issued by the Regional Board, receiving water sampling related to NPDES permits, data collected in California Water Quality Assessment Database and other sources. Analytical tools and reporting features will help EH assess groundwater quality and identify potential groundwater issues throughout Plumas County. Discussions with Regional and State Board staff on feasible means to upload, integrate and compile data using GeoTracker GAMA-secure are ongoing but EH will utilize GeoTracker GAMA to the extent practical. It is anticipated that GeoTracker GAMA-secure may eventually cover Sections 9.3.2.3, and Sections 9.3.2.6 through 9.3.2.9 of the OWTS Policy.

Drinking Water Data Sources

Drinking water data is collected as part of regulatory compliance with the Public Drinking Water Program. EH is certified by the State Water Resources Control Board as a Local Primacy Agency, with delegated authority to implement the smaller public drinking water regulatory program for systems serving 15 or more but less than 200 connections. County-regulated systems utilize groundwater exclusively and all are required to perform routine water quality monitoring and reporting as a condition of their Permit to Operate. The inventory of smaller public drinking water systems includes nearly 100 of these systems across the county. Some of these systems have more than one well source, providing nearly 150 different data points.

Data from larger public systems serving 200 or more connections will also be included in the assessment. Larger systems utilize a combination of surface and groundwater, and many of these communities are served by sanitary sewer, so some of this data will be more beneficial in assessing OWTS performance than others. Nonetheless, these systems will provide an additional 15 to 20 useful data points.

Additionally, EH regulates State Small Water Systems which serve between 5 and 14 connections, and Local Small Water Systems which periodically serve water to the public for special events or other purposes. These are not classified as public drinking water systems under state and federal definition. However, these systems also have ongoing water quality monitoring, reporting requirements and some limited data is also available to EH on a regular and ongoing basis. While not required under Section 9.3.2 of the Policy, these classes of water systems consist of approximately 40 more data collection points countywide, and that data will provide an additional tool to assess OWTS performance.

All told, drinking water systems provide approximately 200 data points across the county to assess OWTS potential impacts to groundwater. At a minimum, this data includes bacteria

(total coliform and, when present, either E.coli or fecal coliform) and nitrates. For some of these systems, general physical, inorganic chemicals, radiological, volatile organic chemicals, synthetic organic chemicals and lead and copper data may also be available. The frequency of data collection will vary by system type, and some data is only collected once while other data may be collected periodically. To the extent that this additional drinking water data helps assess OWTS performance, it will be included in the water quality assessment as much as practicable.

Public drinking water data review as part of the water quality assessment program satisfies Section 9.3.2.3 of the OWTS Policy.

Lake Almanor Water Quality Monitoring

As mentioned above, another proposed assessment tool is the water quality monitoring program for Lake Almanor. The Lake Almanor Watershed Group (LAWG) and Water Quality subcommittee are community-based efforts to ensure that the new Federal Energy Regulatory Commission (FERC) license for Pacific Gas and Electric Company's (PG&E) 2105 hydro-electric project contains provisions that recognize and protect the importance of Lake Almanor. With admin support from the Sierra Institute, http://sierrainstitute.us/water-quality-monitoring/ the monitoring effort is conducted annually and utilizes the guidelines and protocols developed by the California Department of Water Resources and the Central Valley Regional Water Quality Control Board.

The Plumas County Flood Control and Water Conservation District and the Lake Almanor Watershed Group (LAWG), provide oversight for the monitoring effort. While the monitoring includes many parameters, those of primary interest for the assessment program are the nutrients that include nitrate.

The Lake Almanor water quality monitoring results are available annually in the Lake Almanor Water Quality Report located at the Sierra Institute website, www.sierrainstitute.us/lake-almanor-watershed-group-resources/. EH will include the nitrate analysis results for Lake Almanor in the OWTS assessment. EH provides technical advice to the Water Quality subcommittee and may recommend changes to monitoring constituents or locations as needed to assess potential impacts of OWTS to Lake Almanor. While not specifically required in the Policy, this program is similar to the beach water quality program (Section 9.3.2.5) and will be an important part of the water quality assessment program.

Pathogen Monitoring

Drinking water systems routinely monitor for pathogens using total coliform bacteria as a general indicator of drinking water contamination. Samples testing positive for total coliform

are also analyzed for fecal coliform or E coli depending on the laboratory method used. All positive bacteria analysis results are sent immediately to EH for investigation. Results of the investigation are documented and kept in the appropriate water system file and are available for annual review as part of the water quality assessment program. Monthly summary reports of all bacteriological analyses are also sent to EH to help ensure sampling and testing is completed as required, and for historical archive.

As part of the water quality assessment program, EH will review all bacteriological positive results from all drinking water sources, looking for spatial distribution trends or clusters.

Nitrate Monitoring

Most of the drinking water wells in the assessment inventory are monitored annually for nitrate concentrations. The nitrate results are sent by the analytical laboratory to the Water Resources drinking water database entitled "Water Quality Inquiry Replacement (WQIR)" in EDF format. The data is assigned to a unique source and water system specific identification number for archive. Once in WQIR, the nitrate analysis data is available by download or inquiry. The database can be queried in a number of ways, including by system, contaminant, and concentration. Results exceeding the nitrate Maximum Contaminate Level (MCL) in drinking water generate an automatic notification to EH for immediate action.

The nitrate data can be evaluated for trends in concentration and changes over time, by geographical location, and in relation to OWTS density. To date, EH has found no chronic, regional nitrate concentrations exceeding the MCL.

Annual Reporting

EH will submit an annual report to the Central Valley Regional Water Quality Control Board (CVRWQB) summarizing the data collected from the LPA pathogen and nitrate monitoring and the Lake Almanor Water Quality Report nitrate analysis. The annual report will be submitted to the CVRWQCB on or before February 1st in accordance with Section 9.3.3 of the OWTS Policy.

Nitrate data submitted by analytical laboratories on behalf of the water systems is submitted to the SWR WQIR database in EDF format. While Section 9.3.3 of the OWTS Policy states that all groundwater monitoring data generated by the local agency shall be submitted in EDF format for inclusion into the Geotracker database, EH does not have the staffing or resources to extract data from one SWR database and re-enter it into a different SWR database. Alternatively, EH recommends SWR access the data directly in the SDWIS, or develop data transfer protocols for SWR staff to move the data from SDWIS to Geotracker as needed.

EH will investigate submitting surface water monitoring data from the Lake Almanor Water Quality Report to CEDEN in a SWAP comparable format as required by 9.3.3. However, since this is not EH data, it is not clear whether this can be readily accomplished.

Five Year Analysis and Reporting

EH will perform an evaluation of the Water Quality Assessment Program every five (5) years per Section 9.3.3 of the OWTS Policy. The 5 year analysis will assess whether water quality is being impacted by OWTS and will identify any changes in the Plumas County LAMP that will be undertaken to address the identified impacts.

EH is working with GIS Planning to develop a GIS layer of all drinking water system well locations. This layer can then be compared with other existing GIS layers such as parcel boundaries and dwelling locations for spatial representation and analysis of these data. This will allow the nitrate data to be evaluated for trends in concentration and changes over time, by geographical location, and in relation to OWTS density. The spatial representations will also be useful for gap analysis and identifying areas needing additional groundwater monitoring and assessment.

Because EH currently does not have staffing or resources to perform the 5 year analysis of this groundwater assessment data, EH submitted a notice of interest to the county's Integrated Regional Water Management group for grant funding. Decisions on this funding are still pending. If this alternative is not available, Plumas County will need to find another way to secure staffing and resources prior to completing its first 5-year assessment, which is anticipated to be due to SWR in 2023.

Appendix 1: County Code Chapter 6

CHAPTER 6. - SEWAGE DISPOSAL[1]

Footnotes:

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Editor's note—Ord. No. 04-1002, § 2, adopted Apr. 20, 2004, amended Chapter 6 in its entirety to read as herein set out. Former Chapter 6, §§ 6-6.01—6.16 pertained to similar subject matter. See Disposition Table 2.

Sec. 6-6.01. - Scope.

(a) The provisions of this chapter shall apply to all territory of the County.

(b) Every sewage disposal system shall be designed, located, constructed, and maintained to dispose adequately and safely of all the wastewater generated from the structure or facility it is serving.

(c) Every sewage disposal system shall be designed, located, constructed and maintained to prevent discharge of sewage or partially treated sewage, into the structure served, on the ground surface, into surface waters, or in the subjacent groundwater.

(§ 2, Ord. 04-1002, adopted April 20, 2004)

Sec. 6-6.02. - Definitions.

(a) Sewage: Means wastewater flow or drainage containing solid or liquid infectious or putrescible matter. Sewage includes toilet, bath, shower, laundry, lavatory and kitchen-sink wastes. It includes water solutions that contain waste substances dangerous and injurious to human health.

(b) Environmental Health: Shall mean Plumas County Public Health Agency, Environmental Health Division.

(§ 2, Ord. 04-1002, April 20, 2004)

Sec. 6-6.03. - Facilities required.

(a) It shall be unlawful to construct, maintain or use any residence, place of business, or other building, structure or facility where any individual resides, or where people congregate, or are employed, which is not provided with means for sewage disposal approved by the Director of Environmental Health.

(b) It shall be unlawful to occupy or reside upon any private property or any public place for a period of seventeen (17) consecutive days or more unless it is served by a sewage disposal system that meets the requirements of this chapter.

(§ 2, Ord. 04-1002, adopted April 20, 2004)

Sec. 6-6.04. - Public sewer connection.

Every building or structure where persons reside, congregate or are employed which is within 200 feet of an approved public sanitary sewer, provided right-of-way can be obtained, shall be connected to the public sanitary sewer and all private sewage disposal facilities shall be abandoned. This requirement shall not apply until the manager of the public sanitary sewer certifies that adequate capacity exists to serve the building or structure.

(§ 2, Ord. 04-1002, adopted April 20, 2004)

Sec. 6-6.05. - Failing sewage disposal system.

A failing or malfunctioning sewage disposal system shall be repaired, or replaced, or its use shall be discontinued. No person shall maintain or use any septic tank, cesspool, leach line or other drainage system, sewage treatment works, sewer pipes or conduits, or other pipes or conduits for the treatment or disposal of sewage, whereby such facilities overflow any land surface, discharge to any surface waters, or discharge into any structure served.

(§ 2, Ord. 04-1002, adopted April 20, 2004)

Sec. 6-6.06. - Permit required.

(a) No person shall abandon, construct, build, install, repair or replace or allow any other person to abandon, construct, build, install, repair or replace, any sewage disposal system without first obtaining a valid permit for completion of such work from the Environmental Health Department.

(b) It shall be unlawful to construct any building or structure, where an individual or individuals will congregate, reside or be employed, without first obtaining from the Environmental Health a permit for installation of a sewage disposal system, unless the building or structure will be connected to a public sanitary sewer.

(c) It shall be unlawful to rebuild or remodel, or change the use of building or structure in any way that increases sewage, without first obtaining from Environmental Health a permit for installation of a sewage disposal system, unless the building or structure will be connected to a public sanitary sewer. This requirement may be waived by the Director of Environmental Health if it is satisfactorily demonstrated that the existing sewage disposal system, including leachfield replacement area, is adequate to dispose of the sewage generated.

(d) Whenever any work for which a permit is required by this section has been commenced without first obtaining said permit, a special investigation shall be made. An investigation fee, in addition to the permit fee, shall be collected. The investigation fee shall be equal to the amount of the permit fee that would be required by this section if a permit were to be issued.

(§ 2, Ord. 04-1002, adopted April 20, 2004)

Sec. 6-6.07 - Required permit application information.

Applications for a permit to construct an on-site sewage disposal system shall include all applicable site information. A preliminary plot plan, drawn to scale on an 8½" × 11" sheet shall be submitted at time of application and shall include:

(a) Owner's name.

(b) Assessor's Parcel Number and subdivision unit and lot number as applicable.

(c) Indicate scale of plot plan (example 1" = 20').

(d) True north arrow.

(e) Property boundary lines showing accurate configuration and dimension of the parcel. Indicate location of any property monuments and how property corners/lines can be located in the field by the Environmental Health representative;

(f) Show location of all preliminary site information such as percolation test locations, soil profile excavations, etc.

(g) Show location(s) of proposed sewage disposal system(s), and existing systems (if applicable) with appropriate replacement areas.

(h) Show all of the following that are within 200 feet of the proposed sewage disposal system location: existing or proposed water wells, geothermal heat exchange wells, public water mains or laterals; year-round and seasonal water courses and streams; springs, bodies of water, meadows, wet marshy area(s); cut or fill banks, and natural escarpments in excess of fifty (50%) percent slope.

(i) Show area(s) of current and/or future buildings, structures, roadways, easements, areas of vehicular traffic and driveways.

(§ 2, Ord. 04-1002, adopted April 20, 2004)

Sec. 6-6.08. - Record information required.

Once a sewage disposal system is installed, an accurate description of the system location must be submitted to Environmental Health at the time of or prior to the construction inspection. A sewage disposal system shall not be covered or backfilled until the required information is submitted to and approved by Environmental Health. The submitted information shall identify the location of the absorption field or trench in relation to the septic tank.

Distance triangulation shall be recorded from the center of the manhole access risers of the septic tank to each corner of the absorption field or trench. Alternatively, distance triangulation may be performed from the corners of the residence to each corner of the absorption field or trench. This information can be submitted as:

(a) A record plot plan consistent with Section 6-6.07 (a) through (i); or

(b) In a table format approved by Environmental Health.

The submitted plot plan or table must contain sufficient information, as determined by Environmental Health, in order to accurately locate the sewage disposal system once it has been backfilled.

(§ 2, Ord. 04-1002, adopted April 20, 2004)

Sec. 6-6.09. - Surface suitability standards.

All sites proposed for sewage disposal must satisfy the surface suitability standards set forth in this section.

(a) Separation distances. Table No. 1 lists the minimum separation distances for installation of sewage disposal systems.

(b) Slope. No drainage system shall be installed on slopes greater than thirty (30%) percent. Benching of such slopes for disposal system installation may be permitted provided all other installation criteria, including but not limited to, depth to bedrock, groundwater or impermeable soil, and percolation rate can be satisfied.

(c) Replacement area. One hundred (100%) percent drainage system replacement area must also be available which satisfies the location requirements of this section.

(d) Exclusion area. Drainage systems shall not be located in any area designated as leach exclusion on any map or additional information map recorded with the County Recorder unless the conditions which necessitated the exclusion have changed or are outdated as determined by the Director of Environmental Health.

(e) Flood hazard. In an area of special flood hazard identified by the Federal Insurance Administration of the Federal Emergency Management Agency:

(1) All new sanitary sewage disposal system installations proposed in an area identified as a special flood hazard shall be monitored for groundwater. If acceptable groundwater monitoring data is obtained and all applicable on-site sewage disposal system requirements can be met a California Engineer, Geologist or Environmental Health Specialist shall submit sewage disposal plans for review by Environmental Health.

(2) Any replacement sanitary sewage disposal system proposed in an area identified as a special flood hazard shall be designed to minimize or eliminate infiltration of flood waters into the system and discharge from the system into flood waters. A California Registered Civil Engineer, Geologist or Environmental Health Specialist shall submit sewage disposal plans for review by Environmental Health.

(3) On-site sewage disposal systems shall be located to minimize impairment to them or contamination from them during flooding.

(f) Variances. Variances to this section may be granted by the Board of Supervisors or another duly appointed board, acting as a board of appeal in consultation with the Director of Environmental Health. Variances to this section can only be granted upon finding of unusual circumstances and upon finding that the variance will ensure protection of public health and the environment.

Table No. 1
Minimum Separation Distances in Feet

Facility	Septic Tank or Sewer Lines	Drainage System
Water supply well	50*	100
Perennial streams or springs	50	100 from the 10 year high water mark
Drainage courses, ephemeral streams	25	50
Meadows, wet marshy areas	25	50
Lakes, reservoirs, ponds or other surface water impoundments	50	200 from high water line**
Cut or fill banks	10	4 × vertical bank height or a maximum of 100
Natural escarpments in excess of 50% slope	25	4 × vertical bank height or a maximum of 100
Private property lines	5	5***
Buildings or structures	5	8
Public water supply main	10	10

Sewage drain systems	3	6****
Roads, driveways, areas of vehicular traffic, or utility easements	Clear	Clear
Geothermal Heat Exchange Wells	25	50

* Distance must be increased to 100 feet for community water supply wells.

** Lake Almanor drainage system separation shall be 100 feet from high water line.

*** Distance shall be increased to 50 feet where wells have not been installed or well sites have not been designated on the subject and adjacent properties.

**** 15-foot minimum separation required for deep trench disposal systems.

(§ 2, Ord. 04-1002, adopted April 20, 2004)

Sec. 6-6.10. - Subsurface suitability evaluation.

All sites proposed for sewage disposal must be evaluated for suitability on a case-by-case basis. When required, percolation testing, soil profile testing and groundwater level testing shall be in accordance with the provisions of this section.

(a) Percolation testing. A percolation test is required on every lot where a septic system will be used as the means of sewage disposal. Percolation testing must be performed at the depth of the proposed drainage system. Percolation testing must be conducted by a California Registered Civil Engineer, Geologist, or Environmental Health Specialist. Percolation testing procedures shall be performed pursuant to recognized published standard methods. Any customized procedure based upon professional judgment and site conditions must be approved by the Director of Environmental Health. Percolation test data must include at a minimum: the name and license/registration of the professional performing the test, the percolation testing procedure performed and a site map which clearly delineates the scope of the area represented by the test. The submitted percolation data is only valid for the specific area identified on the site map.

(b) Soil depth evaluation: Soil depth evaluation may be required at the discretion of the Environmental Health Director when inadequate soil depth information is available for a particular site or parcel. When required, a soil profile excavation must be performed under the direction of and recorded by a California Civil Engineer, Geologist, or Environmental Health Specialist. When a soil profile reveals signs of an elevated

groundwater table within seven feet of the ground surface, groundwater monitoring will be required according to the provisions of this chapter.

(c) Groundwater level testing: Groundwater level testing shall be required in those areas where site characteristics, soil profile data and/or existing information indicate the potential for an elevated seasonal groundwater table. The depth to groundwater shall be determined by actual measurements of groundwater in observation wells (piezometers) from November 1 to May 31 each year. This testing period may be modified by the Environmental Health Director based on seasonal weather variations and other unusual circumstances in order to assess groundwater conditions during periods of maximum soil moisture content.

(1) Direct observation measurements. Measurements shall be taken as presented below, unless otherwise approved by the Environmental Health Director.

Measurements shall be taken at two-week intervals until seasonal high groundwater starts to recede, and at four-week intervals thereafter, except that weekly observations shall be recorded for any periods when groundwater is less than eight (8') feet below the ground surface.

At least one (1) piezometer shall be included within each proposed disposal area suspected of having groundwater less than seven (7') feet below the ground surface, except where a nearby piezometer shows groundwater contours representative of the proposed disposal area.

(2) Qualifications. All groundwater monitoring shall be performed by a California Registered Engineer, Geologist or Environmental Health Specialist.

(3) Permit required. All groundwater monitoring shall be performed under permit by Environmental Health.

(d) Waivers: Requirements of this section may be waived by the Director of Environmental Health if sufficient information is available to ensure protection of public health and the environment.

(§ 2, Ord. 04-1002, adopted April 20, 2004)

Sec. 6-6.11. - Subsurface suitability standards.

The type of sewage disposal system that is suitable for a particular site is based on the results of the subsurface suitability evaluation as follows:

(a) Percolation. Percolation test results, in conjunction with projected sewage flows or the number of bedrooms served, determine the absorption area sizing requirements of the drainage system. Areas with percolation rates ranging from five (5) minutes per inch to sixty (60) minutes per inch will be considered acceptable for a standard sewage disposal system. Areas with percolation rates faster than five (5) minutes per inch or ranging from sixty-one (61) minutes per inch to 120 minutes per inch will require an

engineer design or alternative treatment system. Areas where percolation rates exceed 120 minutes per inch are unacceptable.

(b) Vertical separation to impermeable layer or bedrock. The minimum vertical separation between the existing ground surface and an impermeable layer or bedrock shall be five (5') feet for all standard sewage disposal systems. This distance may be reduced to not less than three (3') feet when an engineer design or not less than two (2') feet when an alternative treatment system is utilized. Table 2 compares separation distances to an impermeable layer for various system designs.

Table No. 2
Separation Distances for Impermeable Layers

	Distance Between Ground Surface and an Impermeable Layer	Distance Between Bottom of Disposal Area and an Impermeable Layer
Standard System	≥ 5 ft.	4 ft.
Engineered System	3—5 ft.	4 ft.
Advanced Treatment System	2—3 ft.	3 ft.

(c) Vertical separation to groundwater. Minimum vertical separation between the existing ground surface and the highest recorded seasonal groundwater elevation shall be no less than six (6') feet for all standard sewage disposal systems. The minimum vertical separation between the existing ground surface and the highest recorded seasonal groundwater elevation may be reduced to no less than three (3') feet provided an engineered sewage disposal system is utilized. The minimum vertical separation between the existing ground surface and the highest recorded seasonal groundwater elevation may be reduced to no less than eighteen (18") inches provided an advanced treatment system is utilized with appropriate mitigation measures approved by the Central Valley Regional Water Quality Control Board and on file with the Director of

Environmental Health. Table 3 compares separation distances to highest groundwater level for various system designs.

Table No. 3
Separation Distances for Groundwater

	Distance Between Ground Surface and Highest Groundwater Elevation	Distance Between Bottom of Disposal Area and Highest Groundwater Elevation
Standard System	≥ 6 ft.	5 ft.
Engineered System	3—6 ft.	5 ft. for gravity distribution, OR 4 ft. for pressure distribution
Advanced Treatment System	1.5—3 ft.	3 ft.

(§ 2, Ord. 04-1002, adopted April 20, 2004)

Sec. 6-6.12. - Standard sewage disposal systems.

Any proposed standard sewage disposal system shall consist of a septic tank and a drainage system (leach bed, trench or gravel-less chamber) as follows:

(a) Septic tank required. Unless otherwise noted, all sewage disposal systems described in this chapter must consist of a septic tank that satisfies the construction requirements described below.

(b) Septic tank construction. Septic tanks must be constructed as a one piece unit and shall consist of two (2) compartments, with the first compartment being twice the size of the second. Access to each septic tank shall be provided by at least two (2) manholes twenty (20") inches in minimum dimension. One access manhole shall be located over the inlet and one access manhole shall be located over the outlet and brought to grade. Risers shall be constructed of polyethylene, concrete or other

equally durable water and corrosion resistant material. Each riser shall have a securable cover to prevent unauthorized entry and be appropriately sealed to prevent odors from escaping. The inlet and outlet fittings shall be provided with sanitary tees, baffles or the equivalent if satisfactory to the Director of Environmental Health. Septic tanks shall be constructed of reinforced concrete, fiberglass, polyethylene or other equally durable, waterproof and corrosion resistant material. Septic tank construction must be reviewed and approved by the Director of Environmental Health and the County Engineer. Minimum septic tank capacities for residential applications include the following:

1, 2 or 3 bedrooms:	1,000 gallons
4 bedrooms:	1,200 gallons
5 or 6 bedrooms:	1,500 gallons

Minimum septic tank capacities for larger residential, commercial or industrial applications shall be equal to the maximum daily waste water flows according to the California Uniform Plumbing Code and approved by the Environmental Health Director.

(c) Septic tank effluent pumping system. Where the septic tank effluent cannot be delivered to the drainage system via gravity-flow piping, a septic tank effluent pumping system may be utilized. The effluent pump must be installed in a water-tight sewage holding vault which is separate from the septic tank, or in the second compartment of a modified-design septic tank. When using an integral septic tank pump system, the septic tank shall be oversized to account for the volume displaced by the pump and hardware.

Access to an effluent pump shall be provided by a twenty-inch minimum dimension manhole riser. Manhole risers shall be constructed of polyethylene, concrete or other equally durable water and corrosion resistant material. Manhole risers shall have a securable cover to prevent unauthorized entry and be appropriately sealed to prevent odors from escaping. Maintenance of an effluent pump system is to be performed per the manufacturer's specifications. Electrical connections to a sewage pump must be to the satisfaction of the County Building Official.

(d) Drainage systems. A standard drainage system shall provide five (5') feet of separation to highest groundwater elevation and four (4') feet of separation to an impermeable layer. Standard drainage systems consist of one (1) of the following:

(1) Leach bed. A leach bed consists of a shallow, level, rectangular bed-like soil excavation, leachrock, perforated distribution pipe, barrier material and soil cover. The excavation bottom area is used to calculate the absorptive area of this type of

system. At least twelve (12") inches of clean-washed drainage rock (¾" to 2½" diameter) are placed beneath a four-inch diameter perforated distribution pipe, and at least (2") inches cover the pipe, giving a total rock depth of not less than eighteen (18") inches. Perforated pipes are installed a minimum of three (3') feet from the excavation sidewall and a maximum of six (6') feet center to center. Each perforated pipe is fitted with an end cap or plug, all lines are installed level, and all are provided with equal distribution via direct connection to a distribution box or manifold system as needed for multiple perforated lines. Maximum length of each line is 100 feet. The entire leach rock bed area is covered with untreated paper, straw, Geotextile fabric or other suitable material to prevent cover soils from penetrating the leach rock. A minimum of twelve (12") inches of soil is used to cover the bed in a manner which will facilitate surface water run-off. When installed on sloping ground, the bed should be configured and installed so as to parallel slope contour.

(2) Leach trench. A trench system consists of a narrow, deep trench-like excavation, leachrock, perforated distribution pipe, barrier material and soil cover. The excavation sidewall area is used to calculate the absorptive area of this type of system. Up to six (6') feet of cleanwashed drainage rock (¾" to 2½" diameter) are placed beneath a four-inch diameter perforated pipe, and at least two (2") inches of rock cover the pipe. The perforated pipe is installed in the center of the eighteen (18") to twenty-four-inch wide excavation. Each perforated pipe is fitted with an end cap or plug, all lines are installed level, and all lines are provided with equal distribution via direct connection to a distribution box or manifold system as needed for multiple perforated lines. Maximum length of each performed line is 100 feet. The trench is covered with untreated paper, straw, Geotextile fabric or other suitable material to prevent cover soils from penetrating the leach rock. A minimum of twelve (12") inches of soil is used to cover the trench in a manner which will facilitate surface water run-off.

(3) Gravel-less leaching chambers. A gravel-less leaching system consists of prefabricated interlocking effluent receiving chambers installed in a shallow, level, rectangular bed-like or narrow trench excavation. All gravel-less chambers must be UPC/IAPMO approved and certified. The bottom absorption area (nominal chamber unit width) with a 0.70 multiplier is used to calculate the absorptive area of this type of system. The bottom and sides of the bed or trench excavation are to be raked to eliminate any smearing that has occurred during excavation. All large rocks and debris is to be removed from the excavation prior to installation of the leaching chambers. The first and last leaching chambers are to be fitted with an end plate, all chambers are installed level, and all chambers are provided with equal distribution via direct connection to a distribution box or manifold system as needed for multiple leaching chambers systems. Maximum length of each leaching chamber system is 100 feet. A minimum of twelve (12") inches of soil is used to cover a leaching chamber system in a manner which will facilitate surface

water run-off. All gravel-less leaching chamber systems are to be installed per the manufacturer's design.

(4) Serial distribution. Serial distribution is an acceptable alternative to equal distribution. Serial distribution is achieved by the use of a modified distribution box(s) connecting individual leach trenches of the absorption system so that each trench is forced to pond to the full depth of the gravel fill before effluent flows into the succeeding trench. All construction specifications of the disposal trenches are the same as (c)(1), (2) and (3).

(d) Tracer wire. Once a disposal system is installed, a #12 or greater copper wire shall be installed around the perimeter of the disposal system and both ends of the copper wire are to be tied into the outlet manhole access riser. This will allow physical identification of the disposal system by charging the copper wire and utilizing a meter to locate the perimeter of the disposal system.

(§ 2, Ord. 04-1002, adopted April 20, 2004)

Sec. 6-6.13. - Engineered sewage disposal systems.

(a) Design criteria. Areas in which the percolation rates are less than five (5) minutes per inch or exceed sixty (60) minutes per inch, where seasonal high groundwater table is closer than six (6') feet below the existing ground surface, or where an impermeable layer is closer than five (5') feet below the existing ground surface are not suitable for standard sewage disposal systems. Such areas may be suitable for an engineered sewage disposal system provided percolation rates do not exceed 120 minutes per inch, and the depth to seasonal high groundwater or an impermeable strata is not less than three (3') feet below the existing ground surface. Engineered sewage disposal systems must provide, from the bottom of the disposal system, a minimum five (5') feet vertical separation to groundwater and a minimum four (4') feet vertical separation to an impermeable layer unless otherwise specified in this section. Engineered systems must be designed according to the surface suitability standards contained in Section 6-6.09 of this chapter.

(b) Submittal. Plans for an engineered sewage disposal system must be submitted by a California Registered Civil Engineer, Geologist or Environmental Health Specialist for review by Environmental Health.

(c) Approved designs. Engineered sewage disposal systems that will be considered by Environmental Health for application in areas deemed unacceptable for a standard sewage disposal system include:

(1) Elevated mound systems. Elevated mound systems may be applied in areas where vertical separation to groundwater and/or an impermeable strata or bedrock cannot be satisfied for a standard system. For an elevated mound system to be utilized, the minimum vertical separation to groundwater or an impermeable strata cannot be less than three (3') feet below undisturbed ground surface.

(2) Pressure distribution. Pressure distribution leach disposal systems may be applied to areas where vertical separation to groundwater and/or standard percolation rates cannot be obtained. Vertical separation between the bottom of the drainage system and the highest recorded groundwater level through native soil may be reduced to four (4') feet when pressure distribution is utilized. Pressure distribution may also be applied to areas where percolation rates fall between the sixty (60) minutes per inch and 120-minute per inch range.

(d) Alternate designs. Sewage disposal system technologies and alternative construction methods not specifically referenced in this section will be considered by Environmental Health on a case by case basis.

(§ 2, Ord. 04-1002, April 20, 2004)

Sec. 6-6.14. - Advanced treatment systems.

(a) Submittal. Advanced treatment systems and alternative technologies not specifically referenced in this chapter will be considered on a case-by-case basis provided such proposals are submitted by a California Registered Civil Engineer, the installation is completed under the direction of the design engineer and provided such proposals satisfy Section 6-6.01 of this chapter.

(b) Design criteria. Areas deemed unacceptable for standard and engineered sewage disposal as described in this chapter may be suitable for an advanced treatment system provided: groundwater is no closer than eighteen (18") inches below the existing ground surface; an impermeable layer is not closer than two (2') feet below the existing ground surface; and percolation rates do not exceed 120 minutes per inch. An advanced treatment system must provide a minimum three (3') feet vertical separation to groundwater or an impermeable layer unless otherwise specified in this section. Advanced treatment systems must be capable of routinely producing treated effluent with biological oxygen demand (BOD) and total dissolved solids (TDS) concentrations less than thirty (30) milligrams per liter (mg/L) and total coliform concentrations less than 240 MPN/100mL. Advanced treatment systems must be designed according to the surface suitability standards contained in Section 6-6.09 of this chapter.

(c) System operation and maintenance. Due to the complexity of advanced treatment systems, proper operation and maintenance of these systems is essential. An Operation and Maintenance Manual shall be developed by the system designer and/or manufacturer and provided to the applicant and Environmental Health at time of permit application. This Manual shall include diagrams of system components, descriptions of normal system functions, schedules for routine annual maintenance, descriptions on how to correct common operational problems and other items necessary to ensure proper system function.

(d) System performance monitoring. A monitoring plan shall be developed by the system designer and provided to Environmental Health for approval at time of permit application.

The monitoring plan shall specify proposed effluent sampling, constituent analysis and frequency to ensure proper system performance and must be approved by Environmental Health.

(e) Maintenance and monitoring service provider. A contract with a qualified service provider for specified system maintenance and monitoring shall be in place prior to final inspection and approval for use of any advanced treatment system. The system owner must notify Environmental Health within thirty (30) days of any revision to or cancellation of the service agreement.

(f) Annual permit. All advanced treatment systems shall be operated under a renewable annual permit issued by Plumas County Environmental Health. This permit will specify conditions for system operation including maintenance, monitoring, and reporting that will ensure protection of public health and the environment.

(g) Approved designs.

(1) Intermittent sand filters (ISF). An intermittent sand filter may be utilized in areas where the vertical separation between the ground surface and highest seasonal groundwater is at least eighteen (18") inches. All ISFs must be constructed in accordance with Plumas County Environmental Health's Intermittent Sand Filter Design Manual, current Industry Standards, and all the requirements of this chapter.

(2) Aerobic treatment systems (ATU). An aerobic treatment unit may be used to replace failing sewage disposal systems for residential and small commercial facilities, where site conditions are deemed unsuitable for standard or engineered sewage disposal systems. Aerobic Treatment Units may replace a conventional septic tank in some applications, based on the engineer's design. ATUs shall be certified by the National Sanitation Foundation (NSF) pursuant to Standard 40 Class I requirements. Evidence of NSF certification shall be submitted at time of application.

All ATUs shall be installed according to the manufacturer's approved design and specifications under the direction of a California Registered Engineer and must satisfy all the requirements of this section.

(§ 2, Ord. 04-1002, 4-20-2004)

Sec. 6-6.15. - Community sewage disposal systems.

Disposal systems serving multiple structures, residential or commercial, are considered community systems. For systems serving one (1) or two (2) structures, variations of the septic tank-leach bed systems are typically employed. Where the number of structures served is three (3) or more, an engineered sewage disposal system is required. Where the number of structures served is five (5) or more, concurrence from the Central Valley Regional Water Quality Control Board is required.

(§ 2, Ord. 04-1002, adopted April 20, 2004)

Sec. 6-6.16. - Abandonment and reuse of sewage disposal facilities.

(a) Any person permanently discontinuing use of a septic tank, sewage holding vault, pit privy or cesspool shall properly abandon it. Abandonment shall consist of pumping and properly disposing of the contents of each compartment as applicable. Subsequently, each compartment shall be filled with an inert solid material such as sand, gravel or soil.

(b) No septic tank, cesspool, sewage holding vault or pit privy may be considered for refuse at any location other than reinforced concrete septic tanks. Reuse of reinforced concrete septic tanks will be considered only after thorough inspection and written authorization from the Director of Environmental Health.

(§ 2, Ord. 04-1002, 4-20-2004)

Sec. 6-6.17. - Prohibited sewage disposal facilities.

(a) Cesspools. It shall be unlawful to construct, use, or maintain a cesspool as a means for sewage disposal.

(b) Pit privies. It shall be unlawful to construct, use or maintain a pit privy as a means of sewage disposal.

(c) Sewage holding vaults. It shall be unlawful to construct, use, or maintain a sewage holding vault without a special written permit from the director of Environmental Health.

(§ 2, Ord. 04-1002, 4-20-2004)

Sec. 6-6.18. - Violations and enforcement.

(a) A violation of this chapter is an infraction punishable as set forth in Section 1-2.01 of this Code, each day a violation occurs is deemed a separate citable offense. A continuing violation shall constitute a public nuisance to be summarily abated pursuant to Section 1-2.01.

(b) The administration and enforcement of the laws in this chapter shall be the duty of the Director of Environmental Health of Plumas County. The Director may designate employees of Environmental Health and the Department of Code Compliance to be enforcement officers for purposes of premises inspections and issuance of citations. The Director may seek the assistance of any peace officer in carrying out enforcement responsibilities.

(§ 2, Ord. 04-1002, adopted April 20, 2004)

Appendix 2: County Code Chapter 11

CHAPTER 11. - WASTE DISPOSAL FROM AND WATER SUPPLY TO LAND DEVELOPMENTS[4]

Footnotes:

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Editor's note—Ord. No. 04-1002, § 4, adopted Apr. 20, 2004, repealed the former Ch. 11, §§ 6-11.01—6-11.05, and enacted a new Ch. 11 as set out herein. The former Ch. 11 pertained to similar subject matter. See the Disposition of Ordinances, Table 2.

Sec. 6-11.01. - Basis for adoption.

This chapter is adopted in order to implement the "Guidelines for Wastewater Disposal from Land Developments" adopted by the California Regional Water Quality Control Board, Central Valley Region. This chapter also establishes standards for water supply and protection, and provides for the long-term protection of public health, safety and welfare and the environment.

(§ 4, Ord. 04-1002, adopted April 20, 2004)

Sec. 6-11.02. - Scope.

(a) Requirements. The requirements of this chapter shall apply to new developments and land divisions where individual or shared sewage disposal systems are to be used and where individual wells, shared water supplies or State Small Water Systems are to be used. These requirements are applicable to single-family residential, commercial and industrial zoned property and shall supersede any less restrictive requirements of the Uniform Plumbing Code, Manual of Septic Tank Practice, Regional Water Quality Control Board Guidelines or Title 6, Chapter 6 of Plumas County Code.

(b) Data submittal. All the information and test data required by this chapter shall be submitted to the Planning Director as part of the planning and land use application. Testing locations shall also be shown on the tentative map, and marked prominently in the field, if applicable. This includes:

(1) All percolation tests, soil profile and groundwater monitoring data, and location of tests performed,

(2) Location of the designated sewage disposal area for each proposed lot,

(3) Submittal of all quantity and quality data for the proposed water supply,

(4) Location of the water supply source, piping, storage and other infrastructure,

(5) Other data as required to determine project compliance with this chapter.

(§ 4, Ord. 04-1002, adopted April 20, 2004)

Sec. 6-11.03. - Definitions.

(a) Additional information map: Part of the final recorded map. An additional information map shall show specific data to demonstrate compliance with this chapter, including the location of the designated sewage disposal area and the designated well site.

(b) Community sewage disposal system: A system that receives liquid waste from five (5) or more connections. This may include centralized sewers, community leachfields and/or any combinations thereof.

(c) Designated sewage disposal area: Area acceptable for sewage disposal based on slope, soil depth, percolation data and other siting requirements. This area must be designated for the exclusive use of liquid waste disposal.

(d) Development: For the purposes of this chapter, development includes subdivisions, parcel maps, and other land divisions that create new parcels as well as lot line adjustments where sewage disposal or water supply are affected.

(e) Engineered system: A wastewater disposal system designed by a California Registered Professional Civil Engineer.

(f) Final map: The map that is officially recorded by the County Surveyor-Engineer.

(g) Groundwater: Water found at any depth below the ground surface that is capable of flowing into a well or piezometer.

(h) Groundwater level monitoring: The direct observation of groundwater in a piezometer to determine the highest seasonal groundwater level. The monitoring season extends through the rainy season from November 1 to May 31.

(i) Impermeable layer: A layer of soil or rock that does not allow the penetration of water or other liquids. Defined as a percolation rate of 120 minutes per inch or slower.

(j) Normal year: A year in which seventy-five (75%) percent or more of the average annual precipitation for the entire year falls prior to April 15.

(k) Percolation test: A measure of how quickly soil will absorb fluid under saturated conditions, with the units of minutes per inch (mpi).

(l) Piezometer: A perforated pipe installed in the soil to a depth of approximately eight feet below grade for direct observation and measurement of groundwater.

(m) Public water system: A water system that serves fifteen (15) or more connections or regularly serves at least twenty-five (25) individuals daily at least sixty (60) days per year. The California Department of Health Services, Division of Drinking Water provides oversight and permitting for public water systems serving two hundred (200) or more connections

and Environmental Health provides oversight and permitting for public water systems serving less than two hundred (200) connections.

(n) Separation distance: The minimum horizontal distance required between a designated sewage disposal area and any other feature, including wells, seasonal drainages, lakes etc. See Table I.

(o) Shared sewage disposal system: A system that receives liquid waste from two (2) to four (4) connections.

(p) Shared water supply: A drinking water source that serves two (2) to four (4) connections.

(q) Slope: The natural grade of the ground surface measured in percent, or rise over run; the gain in elevation (rise) per horizontal distance (run).

(r) Soil depth: The vertical thickness of soil present between the ground surface and the highest seasonal groundwater level, fractured bedrock and/or an impermeable layer.

(s) Soil profile: A backhoe excavation to examine subsurface features such as: soil types, depth to an impermeable layer and/or to groundwater, soil color, mottling, root zones etc.

(t) State small water system: A water system that serves between five (5) and fourteen (14) connections.

(u) Tentative map: The first map submitted to the Planning Department along with the land division or development application.

(§ 4, Ord. 04-1002, adopted April 20, 2004; § 5, Ord. 05-1027, adopted May 17, 2005; § 8, Ord. 05-1027, adopted May 17, 2005)

Sec. 6-11.04. - Designated sewage disposal area.

For every development and land division utilizing individual sewage disposal, a single sewage disposal area shall be designated on each lot. This area shall be reserved for the exclusive use of disposing of liquid waste and shall not be developed for any other purpose without specific prior approval by Environmental Health. Designated sewage disposal areas shall satisfy the surface and subsurface suitability requirements specified in Sections 6-11.05 and 6-11.06.

(§ 4, Ord. 04-1002, adopted April 20, 2004)

Sec. 6-11.05. - Surface suitability and evaluation.

The designated sewage disposal area shall be located on natural ground with acceptable slope and shall meet all applicable separation distances.

(a) Slope. Natural ground slopes greater than thirty (30%) percent shall be unacceptable.

(b) Separation distances. Designated sewage disposal areas shall meet the separation distances specified in Table I.

Table I: Separation Distances in Feet

Feature	Designated Sewage Disposal Area
Water supply wells	100'
Perennial streams	100' from high water line
Seasonal drainages, marshy meadows, ephemeral streams	50' from edge of channel or meadow
Springs	100'
Cut or fill banks; natural escarpments >50% slope	Four times the vertical bank height as measured from the top of the bank; 100' maximum
Lakes or ponds	200'
Property lines where individual wells are used*	50'
Existing or proposed structures	8'
Vehicular traffic areas and easements	Clear

* This may be reduced to five feet if well sites are designated on every parcel.

(§ 4, Ord. 04-1002, adopted April 20, 2004)

Sec. 6-11.06. - Subsurface suitability and evaluation.

The designated sewage disposal area shall have adequate soil permeability and sufficient soil depth to a limiting layer.

(a) Percolation testing. A minimum of one percolation test per designated sewage disposal area is required. Percolation rates less than five (5) mpi or greater than 120 mpi shall be unacceptable. For designated sewage disposal areas requiring an engineered design per Section 6-11.07(b), additional percolation data may be required to demonstrate consistent soil percolation rates throughout the designated sewage disposal area.

(b) Soil depth to an impermeable layer. Designated sewage disposal areas shall have adequate soil depth from the ground surface to an impermeable layer. A minimum of one soil profile per designated sewage disposal area is required. Soil depth less than three (3') feet from grade to an impermeable layer shall be unacceptable. For designated sewage disposal areas requiring an engineered design per Section 6-11.07(b), additional soil profile data may be required to demonstrate sufficient soil depth throughout the designated sewage disposal area.

(c) Soil depth to groundwater. Designated sewage disposal areas shall have adequate soil depth from the ground surface to the highest seasonal groundwater level. Soil depth less than three (3') feet from existing ground surface to the highest seasonal groundwater level shall be unacceptable. Groundwater monitoring via piezometer shall be required if signs of high groundwater are present, including soil mottling or other signs from the soil profile data, hydrophilic vegetation, certain geological and/or topographical features, or as otherwise determined by the Director of Environmental Health.

(d) Professional required. A California Registered Professional Engineer, Geologist or Environmental Health Specialist shall conduct all percolation testing, soil profile evaluations and groundwater monitoring.

(§ 4, Ord. 04-1002, adopted April 20, 2004; § 8, Ord. 05-1027, adopted May 17, 2005)

Sec. 6-11.07. - Minimum area required.

(a) Sizing. Each designated sewage disposal area shall be sized according to the surface and subsurface characteristics identified in Sections 6-11.05 and 6-11.06. The minimum size of the designated sewage disposal area shall be 4,000 square feet. Additional contiguous square footage shall be added based on the percolation rate(s), slope, soil depth to groundwater and soil depth to an impermeable layer, to a maximum size of 18,000 square feet. See Table II for sizing requirements and specifications. Commercial and industrial zoned parcels may require additional area to accommodate the maximum daily flows from these businesses.

(b) Standard design. Parcels acceptable for a standard sewage disposal system design have percolation values between five (5) to sixty (60) mpi, slope between zero (0) to thirty (30%) percent, soil depth greater than six (6') feet from the existing ground surface to the highest

recorded groundwater table, and soil depth greater than five (5') feet. from the existing ground surface to any impermeable layer. Parcels with soil depth between six (6') to eight (8') feet from the existing ground surface to the highest groundwater table, and/or soil depth five (5') to seven (7') feet from the existing ground surface to an impermeable layer shall record on the Additional Information Map the following restriction: "These parcels require a shallow sewage disposal system, not to exceed a total installation depth of twelve (12) inches below the existing ground surface. Otherwise, an engineered sewage disposal system is required."

(c) Engineered design. Parcels acceptable for an engineered sewage disposal system design have any or all of the following characteristics: percolation values between sixty (61) to 120 mpi, soil depth three (3') to six (6') feet from the existing ground surface to the highest recorded groundwater table, and/or soil depth three (3') to five (5') feet from the existing ground surface to any impermeable layer. Parcels with six (6') feet or less of soil depth from the ground surface to a limiting layer such as groundwater or an impermeable layer shall record on the Additional Information Map the following restriction: "These parcels require an engineered design."

Table II: Sizing Requirements for the Designated Sewage Disposal Area Based on Surface and Subsurface Evaluations

Surface/Subsurface Evaluation	Value	Additional Sq. Ft. Required (use 4,000 sq. ft. as minimum size)
Percolation Data	5—60 mpi	Add 0 sq. ft.
	61—90 mpi	Add 2,000 sq. ft.
	91—120 mpi	Add 4,000 sq. ft.
Slope	0— 20%	Add 0 sq. ft.
	20—30%	Add 2,000 sq. ft.
Separation to Groundwater (from grade)	≥ 8 ft.	Add 0 sq. ft.

	6—8 ft.	Add 2,000 sq. ft.
	3—6 ft.	Add 4,000 sq ft
Separation to an Impermeable Layer (from grade)	≥ 7 ft.	Add 0 sq. ft.
	5—7 ft.	Add 2,000 sq. ft.
	3—5 ft.	Add 4,000 sq. ft.

Sec. 6-11.08 - Shared sewage disposal area.

The requirements stated in this section shall apply to developments where two (2) to four (4) lots are served by a Shared Sewage Disposal Area.

(a) Location and sizing. The Shared Sewage Disposal Area shall meet the surface and subsurface suitability requirements specified in Sections 6-11.05 and 6-11.06. The Shared Sewage Disposal Area shall be sized pursuant to Section 6-11.07 and the resultant area shall then be multiplied by the number of parcels that will be served by the area.

(b) Design. When a Shared Sewage Disposal Area serves two (2) lots, a standard sewage disposal system design is acceptable, provided all other site characteristic are acceptable for a standard design. When a Shared Sewage Disposal Area serves three (3) to four (4) lots, an engineered sewage disposal system design is required.

(c) Management agreement. If applicable, an Additional Information Document shall be recorded concurrently with the final map that details the legal responsibility of each individual owning a parcel that is connected to the Shared Sewage Disposal Area. This document shall identify each parcel and their right to dispose of liquid waste, and specify each parcel owner's obligation to share cost with regards to system maintenance and operation.

(§ 4, Ord. 04-1002, adopted April 20, 2004)

Sec. 6-11.09. - Community sewage disposal system.

New developments and land divisions where five (5) or more lots are served by a community sewage disposal system shall have an engineered system. Community sewage disposal systems shall be reviewed and approved by Environmental Health and the Central Valley Regional Water Quality Control Board.

(§ 4, Ord. 04-1002, adopted April 20, 2004)

Sec. 6-11.10. - Water supply.

New developments and land divisions shall identify the water supply for each lot. The water supply shall be designated as individual wells, a shared water supply, a state small water system or a public water system. Unless otherwise noted, data shall be submitted with the tentative map showing proof of water quality and quantity, and shall demonstrate compliance with all construction and location requirements per Sections 6-11.11, 6-11.12 and 6-11.13.

(§ 4, Ord. 04-1002, adopted April 20, 2004)

Sec. 6-11.11. - Individual wells.

(a) Location. The designated well site on each lot shall be located a minimum of one hundred (100') feet from any designated sewage disposal area or leachfield and fifty (50') feet from any sewer line or septic tank. If the well sites are not designated, each designated sewage disposal area shall be located a minimum of fifty (50') feet from every property line on each lot.

(b) Quantity. Proof of water quantity for the total proposed number of lots shall be based on a minimum of one (1) test well per ten (10) lots or fraction thereof, up to thirty (30) lots. For proposed subdivisions of over thirty (30) lots, the number of test wells for water production shall be as required by the County Surveyor-Engineer and the Environmental Health Director. The stabilized sustained yield for each well shall be at least five (5) gallons per minute during a two-hour test or at least three (3) gallons per minute during an eight-hour test. In lieu of test wells as specified above, a report by a California Registered Professional Civil Engineer or California Registered Professinoal Geologist for water production, including analysis of depth, yield, and quality of a sufficient number of existing wells in the general area, may be considered for acceptance.

(§ 4, Ord. 04-1002, adopted April 20, 2004; § 8, Ord. 05-1027, adopted May 17, 2005)

Sec. 6-11.12. - Shared water supply.

(a) Quality. Proof of water quality shall be demonstrated by a one-time test for total and fecal coliform bacteria. This test shall be performed by a state certified laboratory and shall be completed prior to recording the final map.

(b) Quantity. Proof of water quantity shall be demonstrated per the number of test well(s) as described in Section 6-11.11(b). Each shared water supply must be capable of providing at

least 1,000 gallons per connection per day through a combination of source (sustained yield pump test) and storage.

(c) Design. When a Shared Water Supply serves two (2) lots, no special design is required. When a Shared Water Supply serves three (3) to four (4) lots, a California Registered Professional Civil Engineer shall engineer the water supply source and infrastructure.

(d) Management document. An Additional Information Document shall be recorded concurrently with the final map that details the legal responsibility of each individual owning a parcel that is connected to the Shared Water Supply. This document shall identify each parcel and their right to take water, and specify each parcel owner's obligation to share cost with regards to system maintenance and operation.

(§ 4, Ord. 04-1002, adopted April 20, 2004; § 8, Ord. 05-1027, adopted May 17, 2005)

Sec. 6-11.13. - State small water system.

For developments with a water supply that serves five (5) to fourteen (14) connections, a California Registered Professional Civil Engineer shall engineer the water system source and infrastructure.

(a) Quality. Proof of water quality shall be demonstrated by completion of all required bacteriological and chemical testing. State Small Water Systems shall comply with the quality standards and requirements commencing with Title 22, Section 64211 of the California Code of Regulations.

(b) Quantity. The minimum sustained yield per connection shall be three (3) gallons per minute through a combination of source and storage. A sustained yield of less than three (3) gallons per minute may be considered by the Director of Environmental Health provided the following conditions are met:

(1) The engineer demonstrates that the water usage in the subdivision will not exceed the proposed source and storage capacities.

(2) Water use restrictions may be recorded with the final map as needed to comply with the conditions stated in subsection (1). These restrictions may be placed on nonessential activities, such as certain types of landscaping and gardening, if applicable.

(c) Management entity. A mutual benefit water corporation or similarly approved management entity shall be created pursuant to Title 22, Section 64216 of the California Code of Regulations. This management entity shall record an Additional Information Document concurrently with the final map that details the legal responsibility of the management entity with respect to the maintenance, care, and operation of the State Small Water System. This document shall identify each parcel and their right to take water, and each parcel owner's obligation to share cost with regards to system maintenance and operation.

(d) System construction and permitting. State Small Water Systems shall meet all construction, testing, and permitting standards as required by Title 6 Chapter 9 of the Plumas County Code and Title 22 of the California Code of Regulations.

(§ 4, Ord. 04-1002, adopted April 20, 2004; § 8, Ord. 05-1027, adopted May 17, 2005)

Sec. 6-11.14. - Public water system.

For developments utilizing or planning to utilize at full build-out a public water system with fifteen (15) or more connections or a public water system regularly serving at least twenty-five (25) individuals daily at least sixty (60) days out of the year, the requirements of the California Safe Drinking Water Act, as adopted in Title 6 of Chapter 9 of the Plumas County Code, shall be satisfied. Environmental Health shall have authority over community systems serving less than two hundred (200) connections, and the California Department of Health Services, Division of Drinking Water shall have authority over systems serving two hundred (200) or more connections.

(§ 4, Ord. 04-1002, adopted April 20, 2004; § 6, Ord. 05-1027, adopted May 17, 2005)

Sec. 6-11.15. - Final recording requirements.

(a) Sewage disposal. The Designated Sewage Disposal Area or Shared Sewage Disposal Area shall be recorded on an Additional Information Map. For developments utilizing a Shared Sewage Disposal Area, all applicable easements and Additional Information Document(s) shall be recorded. For developments utilizing a Community Sewage Disposal System, all map recording requirements shall be satisfied as required by the Central Valley Regional Water Quality Control Board and the County Surveyor-Engineer.

(b) Water supply. The Additional Information Map shall record the type of water supply that will serve the development. All applicable information shall be recorded per the type of water supply identified.

(1) Individual wells. The designated well site shall be recorded on the Additional Information Map. If well sites are not designated, the designated sewage disposal area shall be located a minimum of fifty (50') feet off of every property line on the Additional Information Map.

(2) Shared water supply. All quality and quantity testing requirements described in Section 6-11.12(a) and (b) shall be completed prior to recording the final map unless otherwise approved by the Director of Environmental Health. The shared well site shall be recorded on the Additional Information Map. All applicable easements and Additional Information Document(s) shall be recorded pursuant to Section 6-11.12(d).

(3) State small water system. An Additional Information Document pursuant to Section 6-11.13(c) shall be recorded concurrently with the final map. All applicable easements shall be recorded on the Additional Information Map. All improvements related to

constructing and maintaining the State Small Water System (source and infrastructure) shall conform to all requirements of Title 6 Chapter 9 of the Plumas County Code.

(4) Public water system. All improvements related to constructing and maintaining the Public Water System (source and infrastructure) shall conform to all requirements of the California Safe Drinking Water Act. All applicable easements shall be recorded.

(§ 4, Ord. 04-1002, adopted April 20, 2004; § 7, Ord. 05-1027, adopted May 17, 2005)

PLUMAS COUNTY

Guidelines for Advanced Treatment Intermittent Sand Filters

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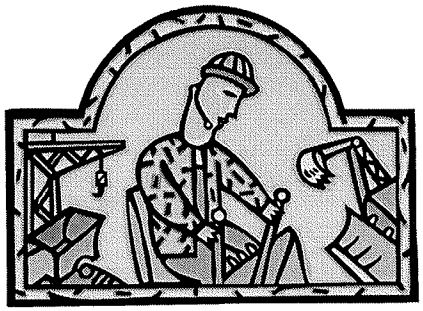
PLUMAS COUNTY ENVIRONMENTAL HEALTH



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I. Introduction

Some areas of Plumas County are unsuitable for the installation of standard on-site sewage disposal systems. These areas may be affected by conditions such as shallow soils over underlying fractured rock (insufficient treatment of effluent), impermeable strata, or elevated seasonal groundwater. Due to the potential for contamination of groundwater and potential hazards to public health, Plumas County Code (PCC) precludes the installation of standard on-site sewage disposal systems where these conditions occur.

Intermittent Sand Filter (ISF) systems can be successfully installed on existing parcels affected by elevated groundwater table or shallow soils.

Note: Advanced treatment systems, sand filters included, are limited to existing lots and are not suitable for land division.

The Purpose of this Guide:

Establish a minimum design and construction standard for ISF systems as advanced treatment in Plumas County.

Promote designs that are based on sound engineering practices and scientific principles and have received prior approval for installation by the Central Valley Regional Water Quality Control Board (CVRWQCB).

Note: Alternative and/or other types of advanced treatment systems that have not received CVRWQCB approval will not be considered for permit approval.

Authority to Evaluate:

In all cases, Plumas County Environmental Health (PCEH) reserves the right to deny deviations from the guidelines that are not supported by the CVRWQCB or would not be in the best interest of Plumas County public health.

Property Owner Requirements:

Maintain the system for the life of the structure or until decommissioned and replaced with a connection to a community sewer system;

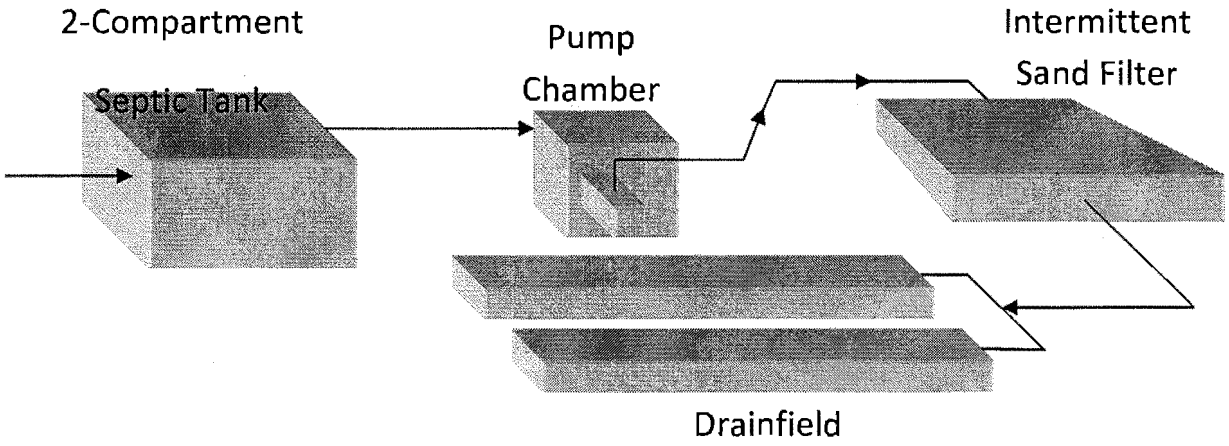
Maintain a contract with a qualified service contractor for routine and emergency system maintenance and monitoring; and

Maintain an annual renewable operating permit from PCEH.

Description of ISF Systems:

In an ISF system, wastewater receives primary treatment in the anaerobic environment of a septic tank, secondary treatment in the aerobic environment of a sand filter, and is disposed in soil where additional biodegradation occurs.

Mechanically, it works like this: A septic tank is equipped with a pump that discharges effluent under pressure to the sand filter. Piping on the surface of the filter distributes effluent uniformly over the surface of the sand bed. The effluent trickles by gravity through the sand, is collected at the bottom of the sand filter, and either by gravity or by pump is transferred to a drainfield for disposal.



Intermittent Sand Filter System – Typical Layout

Applications for ISF Systems

Shallow Groundwater:

In areas where groundwater is recorded less than 3 feet and greater than or equal to 1-1/2 feet below the ground surface, an ISF can be installed to increase the effective groundwater separation to the minimum of 5 feet as required by the CVRWQCB.

Note: Parcels with highest seasonal groundwater at less than 1-1/2 feet (18 inches) below ground surface are not suitable for on-site septic systems.

Shallow Soils:

In areas where soil depth is between 2 to 3 feet to an impermeable layer or areas with fractured bedrock, an ISF can be installed to increase the effective separation to the PCC required minimum of 4 feet.

Note: Parcels with soil depth less than 2 feet (24 inches) are not suitable for on-site septic systems.

Permit Procedure

ISF permit application procedures are similar to those used for other engineer-designed sewage disposal systems:

Engineered Septic System Permit Application:

An engineered sewage disposal system permit application must be completed and submitted to the Plumas County Planning and Building Agency. The completed application will be forwarded internally from Planning and Building to PCEH.

A Complete Application Package Will Include:

Payment of appropriate application fees

Note: An additional operating permit fee is due upon system completion and recurs annually thereafter.

Obtaining a valid electrical permit from the Planning and Building Services Agency for the installation of the electrical circuits required for the system operation and control.

Site suitability information including:

Percolation test data;

Soil profile (mantle) test data;

Seasonal groundwater elevation data;

Any other data that could be used to establish site suitability for both the disposal field and disposal field replacement area

Construction and installation design prepared by a Registered Professional Engineer that includes:

A detailed system design including pump timer and float switch settings;

Site plot plan (including leachfield monitoring wells);

System installation, maintenance, and monitoring procedures; and

Owner's Manual:

The manual must contain the following:

Diagrams of the system components including the locations of effluent sampling points.

Explanation of general system function, operational expectations, owner responsibility, and description of each pump control float position, operation; and alarm control.

Names and telephone numbers of the following:

Environmental Health;

System maintenance and monitoring contractor;

System designer;

System and/or system component manufacturer(s);

System installation contractor

Provide information on "trouble-shooting" common operational problems that might occur. This information should be as detailed and complete as needed to assist the system owner to make accurate decisions about when and how to attempt corrections of operational problems, and when to call for professional assistance.

Include the sand filter and pressure dosed disposal field clear tube water column heights for each distribution line and anticipated change in column height that would indicate the need to clean distribution lines.

Omission of any of the required elements, including but not limited to the designing engineer's wet stamp, will delay processing.

Design Approval / Permit Issuance:

The system design, in combination with the system maintenance and monitoring procedures, site suitability information, plot map, owner manual, and the results of the PCEH site visit will be reviewed for approval or corrections.

Permit Requirements:

The designing engineer is required to:

Oversee the installation of the system including the sand filter, disposal field, and monitoring wells;

Verify the operation of the system including, and not limited to, pumps and controls and documentation of the operational parameters of the sand filter and disposal field "squirt" tests;

At system installation completion:

Write a letter of conformance that certifies the system was installed and functions according to design.

Submit an as-built plot map of the system.

PCEH staff will conduct construction inspections and witness system operations as necessary prior to final approval.

The property owner must enter into a contract with a qualified service contractor for system routine and emergency maintenance and monitoring.

Final System Approval:

System approval is dependent upon completion of the following:

Verification of system construction and witness of the "squirt" tests by the designing engineer, the maintenance and monitoring contractor, and PCEH staff;

Receipt of the letter of certification, operating parameters, and as-built plot map from the designing engineer;

Receipt of a copy of the signed system maintenance and monitoring contract;

Confirmation from Planning and Building that the electrical installation meets with their approval.

Payment of the annual operating permit fee.

Required Site Suitability Characterization:

Soil Analysis:

In order to demonstrate adequate homogeneity of soil conditions the following are required within the boundaries of both the disposal field and the designated replacement area(s):

Two (2) percolation tests performed according to the requirements established in PCC Title 6, Chapter 6, Sec 6-6.10.

Two (2) soil profiles or borings performed in accordance with ASTM D 5921-96, including a particle size analysis in accordance with ASTM D 422-63 if requested by the County or Regional Board staff. Should testing results from the sites differs significantly, additional testing may be required or the site may be determined as unsuitable. Soils testing must show a classification of sandy loam or finer in accordance with the USDA soil texture triangle.

Groundwater depth measurement:

The depth of seasonal groundwater shall be measured by piezometer or other methods as approved by Environmental Health in those areas where site characteristics, soil profile data, and/or existing information indicates the potential for an elevated seasonal groundwater table.

Note: Due to the inherent problems of using redoximorphic features (commonly referred to as mottles), this method is not acceptable for determination of seasonal groundwater levels.

Horizontal Setback Requirements:

TABLE 1
MINIMUM HORIZONTAL SEPARATION DISTANCES IN FEET

FACILITY	SEPTIC TANK or SEWER LINES	LEACHFIELD
Water Supply Well	50' *	100'
GeoThermal Heat Exchange Well (GHEW)	25'	50'
Perennial Streams or Springs	50'	100' from seasonal high water line
Drainage courses, ephemeral springs	25'	50'
Meadows, wet marshy areas	25'	50'
Lakes, reservoirs, ponds or other surface water impoundments	50'	200' from high water line **
Cut or fill banks	10'	4X vertical bank height or a max of 100'
Natural escarpments in excess of 50% slope	10'	4X vertical bank height or a max of 100'
Private Property Lines	5'	5' ***
Buildings or structures	5'	8'
Public water supply main	10'	10'
Sewage drain systems	3'	6' ****
Roads, driveways, areas of vehicular traffic, or utility easements	Clear	Clear

*	Distance must be increased to 100' for community water supply wells.
**	Lake Almanor drainage system separation shall be 100' from high water line.
***	Distance shall be increased to 50' where wells have not been installed or well sites have not been designated on the subject and adjacent properties.
****	15' minimum separation required for deep trench disposal systems.

System Design Standards:

Wastewater Flow Parameters:

Daily wastewater flow design estimates must be consistent with the *Uniform Plumbing Code*, the *Manual of Septic Practice*, or other acceptable reference sources.

The following minimum standards should be used as a guide for the designer on an Intermittent Sand Filter system:

Residential:

The daily design sewage flow rate should be estimated at a minimum of 150 gallons per day per bedroom (gal/day/bedroom).

Non-Residential - Light Commercial:

The daily design flow for usages such as offices, etc. will be considered and reviewed on a case by case basis.

Note: Groups of five (5) or more structures, or single structures with 5 or more units, will require Regional Water Board concurrence and approval prior to permit approval.

Pretreatment:

A properly sized 2-compartment septic tank with water-tight risers and gas-tight securable lid per PCC, Title 6, Chapter 6, Sec 6-6.12.

Refer to Appendix A for septic tank details.

Dosing Tank:

Septic Tank Pumped Effluent System (STEP) with water-tight risers and gas-tight securable lids per PCC, Title 6, Chapter 6, Sec 6-6.12:

Septic tank internal effluent pump – minimum tank size is bedroom count plus one bedroom – recommend a minimum of 1500 gallons.

Standard septic tank with external pump vault – no minimum pump vault size - recommend largest practical for added free-board.

Maximum Recommended Application Rate:

Residential & commercial is 1.2 gallons per day per square foot (12 gpd/ft^2).

Disposal Field:

The size of raised disposal field (leachfield) should be established from the percolation data obtained from a site evaluation and constructed according to PCC, Title 6, Chapter 6, Section 6-6.12.

Disposal Field Monitoring Wells:

In areas where elevated groundwater is the reason for the installation of an ISF system, the disposal field must have a minimum of three (3) shallow monitoring wells (minimum 8ft deep) installed around the perimeter of the disposal field for the purpose of monitoring seasonal groundwater elevations.

Sand Filter Construction and Installation:

Minimum Recommended Filter Surface Area:

Residential: The recommended minimum surface area per bedroom is derived by dividing the design flow estimate of 150 gal/day/bedroom by the maximum recommended loading rate of 1.2 gal/day/square foot.

The minimum recommended surface area is 125 square feet/bedroom.

Commercial: The minimum recommended filter surface area for non-residential / light commercial facilities should be determined by fixture count or other acceptable means of estimating flows from each commercial unit.

Filter Container:

A watertight container usually made with a 30 mil polyvinyl chloride (PVC) liner inside a support structure or another approved container structure. See figure 1 below.

The filter container and/or liner must be visually checked for punctures, rips, tears and seam discontinuities before placement of any backfill or filter materials. All repairs must provide leak-free containment and must be performed per manufacturer specifications.

Filter Underdrain:

The filter underdrain is a system of slotted pipes that collect the filtered effluent from the filter media and transport it to the pumpwell or pump tank for discharge to the disposal field.

Underdrains must be designed with sufficient void storage volume to provide for drainfield dosing and have reserve capacity to maintain an unsaturated filter media condition above the underdrain system.

The collection pipes must be sloped, sized, and slotted sufficiently to allow the filtrate to flow freely to the underdrain storage to the pumpwell or pump vault.

Filter Media Specification and Certification:

Media used in constructing a sand filter must be accompanied with written certification from the supplier that the media conforms to ASTM C-33 as determined by ASTM D136 and ASTM C-117.

Filter media must meet the particle size criteria detailed in the table below or the designing engineer must obtain approval for alternative particle sizing from the CVRWQCB.

TABLE 2
RECOMMENDED PARTICLE SIZE DISTRIBUTION

SIEVE	PARTICLE SIZE	PERCENT PASSING
3/8 in	9.50 mm	100
No. 4	4.75 mm	95 to 100
No. 8	2.36 mm	80 to 100
No. 16	1.18 mm	50 to 85
No. 30	0.60 mm	25 to 60
No. 50	0.30 mm	10 to 30
No. 100	0.15 mm	2 to 10 (prefer <4)
No. 200	0.075 mm	0 to 3 (prefer 0)

Pumpwells and Pump Vaults:

A pumpwell or a pump vault is a water-tight receiver where the filtrate is held for the pumping system that sends the effluent to the disposal field.

The pump well or vault must have a gas-tight and securable lid for access to the pump system. The pump system includes the pump and control float switches, shut-off-valve, a check valve, and a pipe union.

Pumpwells:

Pumpwells may be designed in a variety of ways.

At a minimum they must be constructed of non-corrosive materials such as plastic or other approved materials and have a large enough access for maintenance and removal of internal equipment. The riser and lid must be water-tight, gas-tight, and securable.

The system must be designed to allow the free flow of filtrate from the underdrain system into the holding portion of the pumpwell. The walls must be adequately supported to ensure stability and to ensure that the filter container liner is not damaged.

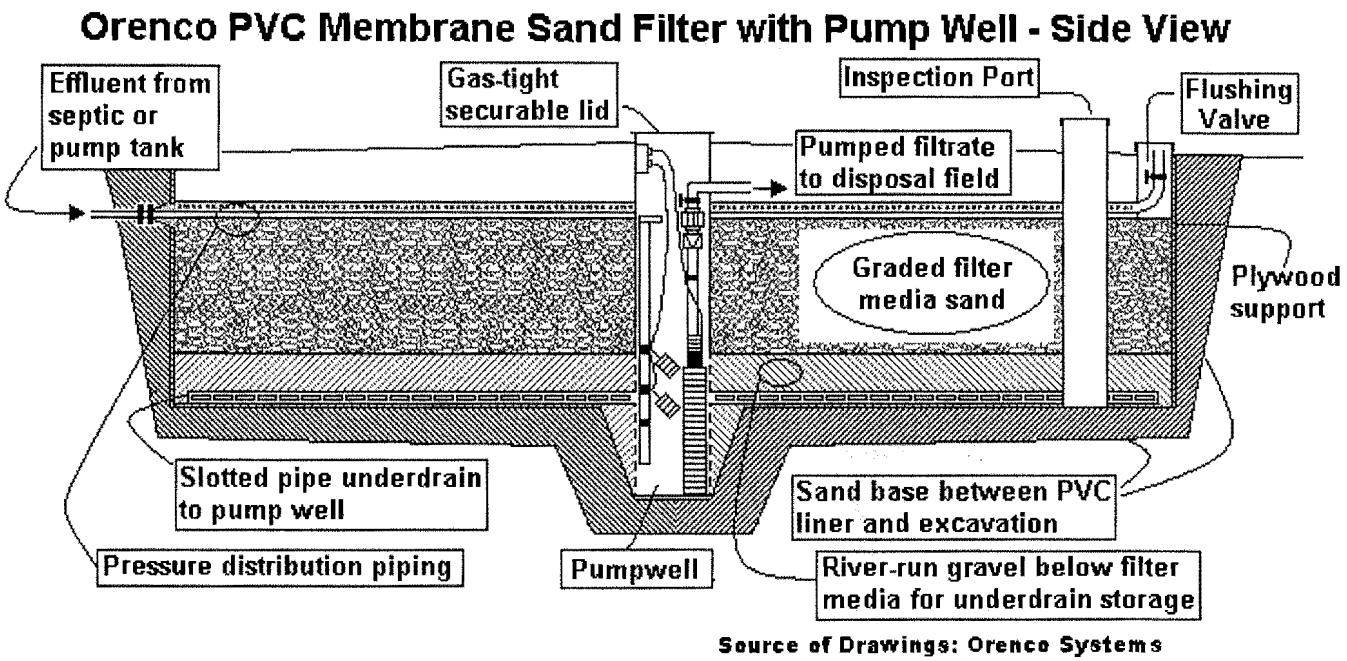


FIGURE 1

Pump Vaults:

Pump vaults must be water-tight, have at least a 20 inch diameter water-tight riser with a securable and gas-tight lid. The vault must be large enough to accommodate the flows from the filter and to properly dose the disposal field.

Pump vaults can be used in several process locations in an ISF system:

To move the effluent from the septic tank to the sand filter (dosing tank); and

To move filtrate liquid from the filter underdrain to the disposal field.

Refer to Appendix A for pump tank details.

Pressure Distribution System:

The operation of the distribution system must be witnessed by both the system design engineer and Environmental Health staff.

Orifices in the distribution laterals must be covered with orifice shields to prevent the orifices from being blocked by rocks or sand resting against the pipe.

A flushing valve in a valve box must be installed at the end of each lateral to permit periodic flushing of the laterals and to install a clear tube manometer for flow testing the line (an increasingly elevated water column over time would indicate clogging distribution lines and/or orifices).

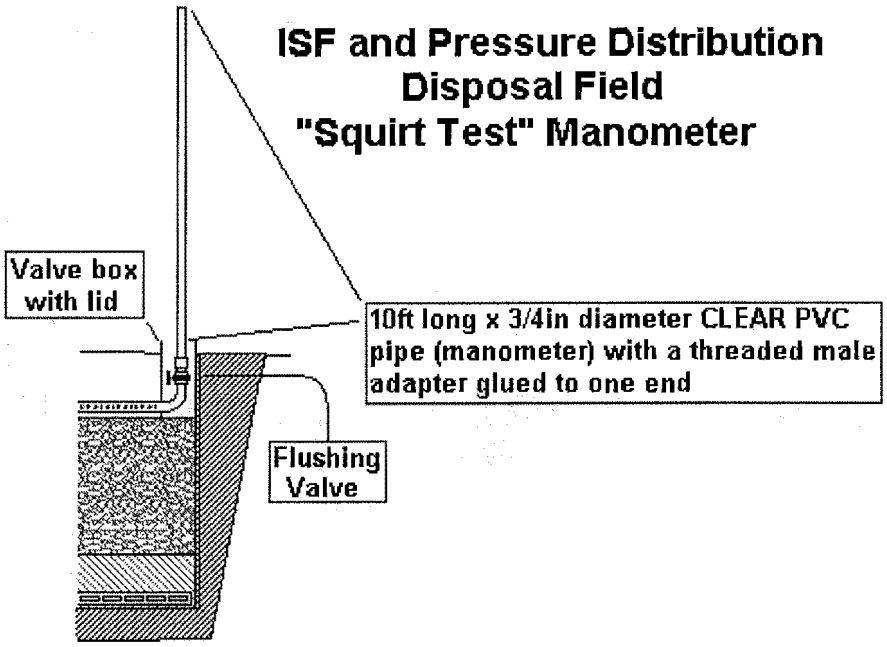


FIGURE 2

Soil Cover:

The soil cover shall be sandy loam or loamy sand sloped to provide drainage away from the filter. Its purpose is to provide insulation against cold winter temperatures, to allow the free movement of air into the sand filter below. A grass cover over the sand filter is beneficial. Trees and deep-rooted plants are to be avoided.

Effluent Pumps and Float Switches:

Pump(s) must be listed devices and selected by a knowledgeable professional according to the hydraulic design calculations provided by the designing engineer.

The float switches and pump assembly should be easily removed for maintenance. All components should be constructed of moisture and corrosion resistant materials.

The high water alarm float must be connected to the pump control panel in such a manner that the high water alarm in the sand filter will disable the pump in the dosing septic tank until the high water alarm is canceled.

Electrical power must be provided via a Ground Fault Interrupter (GFI) circuit. All electrical junction box(s), conduits, cords and cord grips must be approved for wet environments and made from corrosion proof materials. Electrical connections must be installed under an approved electrical permit issued by Planning and Building Service Agency. A final electrical inspection is required before PCEH will approve the ISF system.

Environmental Health Construction Inspections

During the construction of an ISF, inspections must be performed by PCEH staff to verify compliance with the approved plans and County Code. Inspections by this PCEH must be performed at the following phases of construction:

First Construction Inspection:

Filter pit and liner or container placement:

Pit location; and

Bedding material (usually sand).

Filter underdrain and wet well installation:

Plumbing layout; and

Drainage orientation (holes/slots up or down).

Second Construction Inspection:

Sand filter (filter open for inspection):

Type of sand / gravel used;

Distribution plumbing layout, pipe diameter, orientation and placement of orifice holes and orifice shields, and location of flushing valve / test fitting connections.

Disposal field (leachfield is open for inspection):

Field size and plumbing layout;

Gravity flow – equal distribution: depth of gravel, location, orientation of distribution box(es) with no "Tees" in the field, and pipe center to center separations (max at 6ft).

Pressure dosed: distribution manifold plumbing layout (no d-box required and Tee type manifolds are ok), pipe diameter, orientation and placement of orifice holes and orifice shields, and location of flushing valve / test fitting connections.

Septic tank and pump tank visual inspections (tanks are open for inspection):

Sanitary tees in place on all septic (inflow and outflow) and pump tanks used for dosing (inflow only);

Baffles with modified porting for septic tanks with internal pumps;

Risers at all access points for septic and pump tanks.

Refer to Appendix A for septic and pump tank examples

Final Construction and System Operation Inspection:

The following must be witnessed/performed with the installing contractor, designing engineer, and maintenance contractor present:

Alarm panels are mounted to a fixed location and wired per electrical code to a ground-fault-interrupter (GFI) circuit (no open wiring);

Test pumps, alarms, and pressure distribution systems at both the sand filter and disposal field(s);

Establish and record clear tube water column height baselines for each distribution line at the sand filter and any pressure dosed disposal fields for future maintenance reference (Environmental Health does not have the tube necessary to perform these tests). See figure 2 above.

Note: Other inspections may be required if deemed necessary by Environmental Health.

Operation and Maintenance Responsibility:

For the on-site treatment and disposal system to operate properly, its various components need periodic inspection and maintenance. The maintenance is ultimately the responsibility of the homeowner, however, must be performed by an experienced and qualified service provider.

Monitoring and Reporting:

For these systems it is important to monitor both the system performance and any effects that this technology will have on groundwater and surface water.

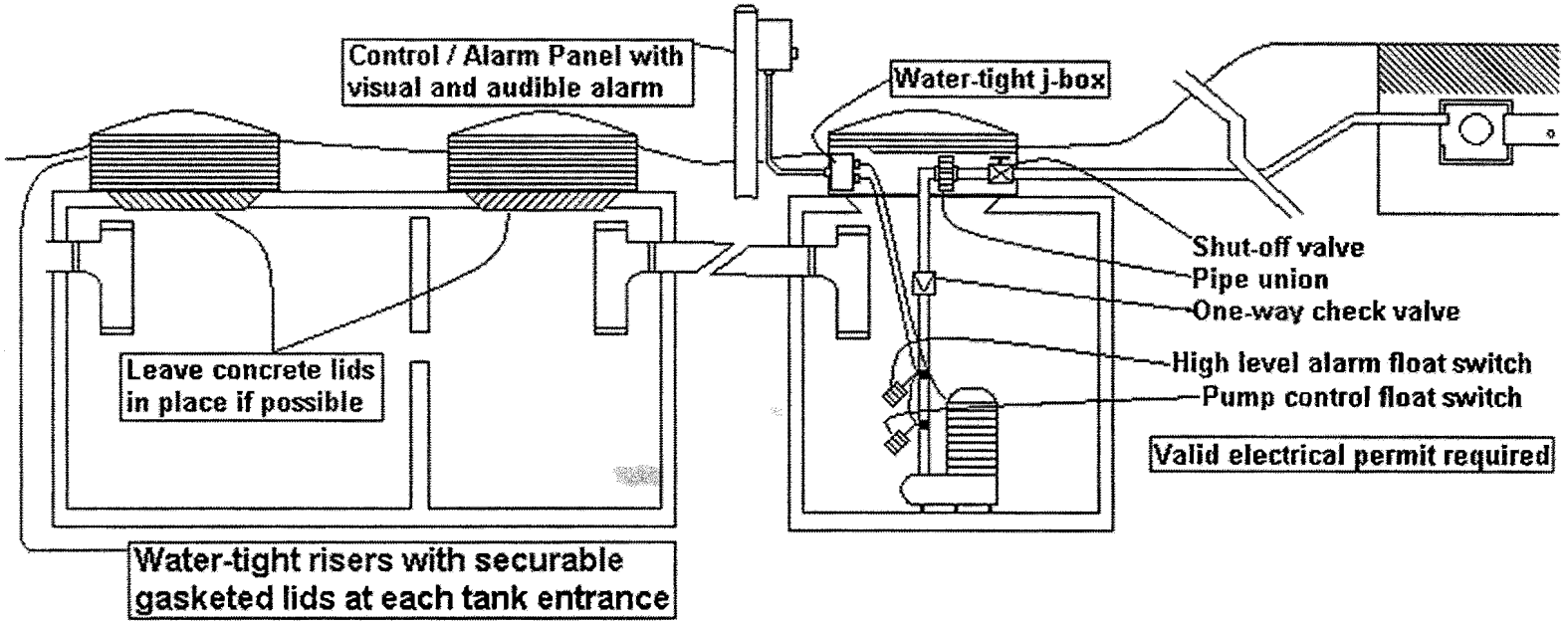
Routine ISF Monitoring:

The Central Valley Regional Water Quality Control Board (CVRWQCB) requires a reasonable random sampling of these systems conducted quarterly for effluent BOD, Total Kjeldahl nitrogen, nitrate, and coliform. Monitoring the quality of the effluent from these systems is currently the responsibility of Environmental Health.

Monitoring Groundwater Levels at Reduced Separation Areas:

In reduced groundwater separation applications (areas where high groundwater table was a factor in installing ISF), the CVRWQCB requires Environmental Health to oversee the monitoring and performance of ISF systems via the groundwater monitoring wells around the perimeter of the ISF. Monitoring these wells is currently the responsibility of Environmental Health.

Septic Tank Effluent Pump (STEP) - External Pump Tank - Side View



Septic Tank Effluent Pump (STEP) - Modifed Tank with Internal Pump - Side View