

**MENDOCINO COUNTY
ONSITE WASTEWATER
TREATMENT SYSTEMS (OWTS)
TECHNICAL STANDARDS**

**PART I SITE EVALUATION, SEPTIC FIELD AND
SEPTIC TANK REQUIREMENTS**

**PART II DESIGN, CONSTRUCTION AND
INSTALLATION OF STANDARD SEWAGE
TREATMENT SYSTEMS**

**PART III DESIGN, CONSTRUCTION AND
INSTALLATION OF NON-STANDARD
WASTE TREATMENT SYSTEMS**

TABLE OF CONTENTS

INTRODUCTION.....4

PART 1 – SITE EVALUATIONS.....5

 1.1 Soils Profiles
 1.2 Soil Testing
 1.3 Septic Tank Sizing
 1.4 Sizing Criteria
 1.5 New Use of Existing Systems

PART 2 – DESIGN.....15

 2.1 Report Format
 2.2 Standard OWTS
 2.3 Non-Standard OWTS
 2.4 Waiver Guidelines.....

PART 3 – CONSTRUCTION & INSTALLATION.....27

 3.1 Permit Process
 3.2 General Construction Requirements
 3.3 Compliance With Plans.....
 3.4 Greywater Systems.....

PART 4 – POLICIES.....52

 4.1 Second Residential Unit Guidelines.....
 4.2 Repair Guidelines.....
 4.3 Family Care Units
 4.4 Bedroom Addition Policy.....
 4.5 Offsite Easement Policy
 4.6 Linear Loading Rate
 4.7 Groundwater Intercept Drains.....

APPENDICIES

 Appendix A – Soil Textural Triangle77

 Appendix B – EPA OWT Manual Flow Estimates

 Appendix C – Trench & Tank Drawings.....

 Appendix D – Required Setbacks.....

 Appendix E – Sample Vicinity Map.....

Appendix F – Standard Details.....

Appendix G – Inland Water Testing.....

Appendix H – Linear Loading Rates

TABLES

Table 1 - Water Quantity Report Form.....

Table 2 - Pump Meter Data

Table 3 - Disposal Trench Liquid Levels

Table 4 - Monitoring Well Water Levels.....

INTRODUCITON

The North Coast is one of the fastest growing areas of California, with widespread and increasing dependence on on-site systems for sewage treatment and disposal. Due to ever-increasing costs, the ultimate construction of sewerage systems in developing areas can no longer be relied upon as a future solution to sewage disposal needs. More and more, on-site systems must be viewed as permanent means for waste treatment and disposal, capable of functioning properly for the life of the structure(s) served. The preponderance of adverse physical conditions throughout the North Coast Region necessitates careful evaluation of site suitability and design parameters for every on-site wastewater disposal system. These policies set forth county-wide criteria and guidelines to protect water quality and to preclude health hazards and nuisance conditions arising from the subsurface discharge of waste from on-site waste treatment and disposal systems.

On-site waste treatment and disposal systems can be an excellent sanitation device in rural and rural-urban areas. However, in areas where population densities are generally high and the availability of land is limited, on-site systems are not desirable. On-site waste treatment and disposal systems should not be permitted if adequate community sewerage systems are available or feasible.

Water conservation practices may protect present and future beneficial uses and public health, and may prevent nuisance and prolong the effective life of on-site wastewater treatment and disposal systems. However, water conservation practices do not reduce the need to size on-site systems as set forth in this policy.

Soil characteristics play a dominant role in the suitability of a site for subsurface sewage disposal. Increased emphasis on determining and utilizing soils information will improve site suitability evaluations.

The installation of many on-site disposal systems within a given area may result in hydraulic interference between systems and adverse cumulative impacts on the quality of ground and surface waters. Physical solutions or limitations on waste load densities for land developments and other facilities may be necessary to avert such eventualities.

New technologies for on-site waste treatment and disposal continue to evolve. Means should be promoted to allow for timely and orderly consideration of promising alternative methods of waste treatment and disposal. Where alternative methods demonstrate enhanced performance, consideration may be given for utilization of different site criteria.

The following site criteria are considered necessary for the protection of water quality and the prevention of health hazards and nuisance conditions arising from the on-site discharge of wastes from residential and small commercial establishments. Waiver of individual criterion may be made in accordance policy. Systems resulting in large wastewater loads may require additional criteria will require review by the Regional Water Board on a case by case basis.

PART 1 – SITE EVALUATIONS

1.1 Soils Profiles

1.2 Soil Testing

1.3 Septic Tank Sizing

1.4 Sizing Criteria

1.5 New Use of Existing Systems

PART 1 – SITE EVALUATION

Site evaluations are necessary for the protection of water quality and the prevention of health hazards and nuisance conditions arising from on-site discharge from residential and small commercial establishments.

TESTING IS REQUIRED FOR A SEPTIC PERMIT

Prior to constructing a house, all parcels must be tested for suitability for installation of an on-site sewage system (septic system). The site evaluation, commonly called the “perc” test is required before a permit can be issued to construct a system.

Check first to see if your property has been tested. If it was created after 1979, the parcel may have been tested already, and the results will be on file with the Environmental Health Division. In this case, a permit can usually be issued without further testing upon submission of a scaled plot plan and required fees; provided the system will be installed in the area originally tested.

QUALIFIED INDIVIDUALS MUST DO THE TESTING

If your parcel has not been tested, you will need to hire a qualified site evaluator to perform the testing on your property. These individuals are Registered Environmental Health Specialists, Civil Engineers, Geologist, or Certified Professional Soil Scientists. A list of local qualified site evaluators is available at the Environmental Health Division. Those individuals with acceptable certification who do not appear on our current list must be approved by the Environmental Health Division in advance and must notify us of the date of the tests.

1.1 SOIL PROFILES

THE SITE EVALUATION PROCEDURE

There are two methods of testing your soil for permeability: laboratory texture analysis and the soil percolation test in the field. The site consultant may choose to do both procedures, if necessary. Regardless of the method of permeability testing, soil inspection pits and detailed descriptions of the soil strata are required and form the basic data for issuance of an on-site sewage system permit.

INSTRUCTIONS FOR SOIL PROFILE REPORTS

1. Soil profiles may only be interpreted by qualified individuals.
2. To perform the soil profile report, excavate two (2) soil profile trenches. One hole is excavated in the proposed initial leach field area, the other in the proposed

reserve area. If the soil profile trenches are dissimilar, additional trenches must be excavated to resolve discrepancies. The trenches are excavated to a depth of 5 (five) feet and gently sloping so ladders are not needed. Then, while observing from the surface of the ground, an additional 3 (three) feet is excavated on one end to eight (8) feet total. This soil can be inspected as it is excavated.

SAFETY REGULATIONS PROHIBIT INDIVIDUALS ENTERING UN-SHORED EXCAVATIONS GREATER THAN 5 (FIVE) FEET IN DEPTH.

3. The smeared soil surface of the soil profile trench is picked off with a sharp instrument in order to expose the characteristics of the natural soil layering.

3.1 Make a preliminary determination of the depth of each soil layer or strata.

3.2 Within each strata or layer make the following determinations:
(See Chapter 3 of the Soil Survey Manual for detailed information on the proper method of soil description)

1. Horizon depth range
2. Background soil color using the Munsell Color Chart
3. Abundance, size and distinctness of mottles
4. Gravel content by volume
5. Soil texture (USDA, Soil Conservation Service Classification)
6. Strength and grade of soil structure
7. Soil consistence for dry, moist and wet regimes
8. Abundance and size of roots
9. Abundance and size of pores
10. Boundary distinctness

3.3 Review and revise preliminary soil strata.

4. The following conditions should also be noted on the report:

4.1 Impermeable layers such as claypans, hardpans, cementation.

4.2 Depth to bedrock, fractured rock, or other parent material.

4.3 Water seepage. If water seepage is encountered, the hole should be left open to observe static water level, record depth to the static level.

5. No soil description is useful unless the exact location is known. Record on a plot plan the locations of soil profile trenches triangulated from permanent landmarks or an identifying property corners.

SOIL INSPECTION PITS

Augured test holes are an acceptable alternative to the soil profile, if the Environmental Health Specialist or Regional Water Quality Control Board determines the following:

- (a) The use of a backhoe is not possible because of steep slope or access problems.
- (b) It is necessary only to verify conditions expected on the basis of a soils survey or prior soils testing, or it is being done in conjunction with geologic investigations.

Where this method is used, a minimum of six (6) augured soil inspection holes are required. Three (3) in the proposed absorption area and an additional three (3) auger holes in the 100% reserve area.

1.2 SOIL TESTING

Texture analysis and/or percolation testing shall be performed as described below.

SOIL TEXTURE ANALYSIS

Samples of each significant soil strata shall be extracted for analysis from each inspection pit in the proposed absorption area or reserve area. A sample shall be provided from a depth of 3 feet below the proposed trench bottom demonstrating adequate soil beneath the absorption field. This soil will be laboratory tested for percentage of silt, sand, and clay content. (*Please refer to **INSTRUCTIONS FOR SOIL PROFILE REPORT** above.*)

PROCEDURES FOR CONDUCTING PERCOLATION TESTS

1. Test holes shall be located in an area that complies with the Environmental Health Division's site criteria. Test holes alongside roads or in areas where leach lines cannot be installed will not be accepted.
2. Dig, or bore a hole 4 to 14 inches in diameter to the depth of the soil strata to be tested. Carefully scarify the sides of the hole to remove smeared soil, exposing a natural soil surface. Remove all loose material from the hole and place a section of perforated pipe in the hole and fill the annular space with fine gravel. Percolation rate adjustment factors for the addition of a gravel pack and/or smaller hole size must be employed to adjust observed results back to the Ryon Standard Percolation Test (12 inch square or 14 inch round hole with no gravel pack.) The observed percolation rate in MPI is multiplied by

the adjustment factor to obtain the adjusted percolation rate.

The adjustment factor (AF) can be calculated as follows: (drainable voids = 35%)

$$AF = d_h^2 \div d_p^2 + 0.35(d_h^2 - d_p^2) \text{ and see table below}$$

TABLE OF TYPICAL VALUES

d_p	d_h	AF
4	6	1.57
4	8	1.95
4	10	2.20
4	12	2.37
3	5	1.71
3	6	1.95
3	8	2.27
3	10	2.45
3	12	2.56

Percolation tests are to be performed at the depth of the proposed trench bottom. If percolation tests are the only measure of permeability being used in the evaluation, then percolation tests may also need to be performed at a depth of 3 feet below the proposed trench bottom demonstrating adequate permeable soil depth beneath trench bottom. These deeper tests can be accomplished in the bottom of a backhoe excavation.

3. In order to approximate soil conditions under saturated conditions, it is necessary to presoak the percolation test hole by repeatedly filling the hole with water over a 24 hour period immediately preceding the test, unless tests are performed during wet weather as defined by the Environmental Health Division.

4. Measurement:

4.1 If water is remaining in the percolation test hole 6 hours after the last addition of presoak water, add or remove water to a depth of six (6) inches. From a fixed reference point measure the drop in water level over a 60 minute period. The drop in this 60 minute period is the percolation rate.

4.2 If no water is remaining in the percolation test hole 6 hours after the last addition of presoak water, add water to a depth of six (6) inches. From a fixed reference point measure the drop in water level hourly for at least four (4) hours, adding water each time to bring the level back up to a depth of six (6) inches. The testing periods must be continued until a stabilized percolation rate (i.e. Three consecutive trial periods with rates within 10% of each other) is reached. Test results are reported in minutes per inch.

4.3 If no water is remaining after the first 60 minutes of the testing described in 4.2

above, add water to a depth of six (6) inches. From a fixed reference point measure the drop in water level at regular intervals of time (e.g., 10, 15, 30 minute intervals), adding water each time to bring the level back up to a depth of six (6) inches. The testing periods must be continued until a stabilized percolation rate (i.e. three consecutive trial periods with rates within 10% of each other) is reached. Test results are reported in minutes per inch.

All test holes must be dry within 24 hours of beginning measurements. Final approval of a site for an individual sewage disposal system depends on several factors, and not solely on a percolation test result. Final determination of the suitability of the particular site will be made by the Environmental Health Division.

*(Please see attached **Percolation Test Data** form located in the Appendices.)*

1.3 SIZING CRITERIA

LEACH FIELD SIZING FOR SINGLE FAMILY HOMES

Total flow rate for single family homes is estimated from the number of bedrooms, not from current occupancy or from the number of bathrooms. Each bedroom will be assumed to generate an average of 150 gallons per day. Minimum sizing is for a one (1) bedroom single family residence.

The leach line lengths are based on (1) the total flow rate of the project, (2) the soil permeability, and (3) the number of square feet of absorption surface per linear foot of trench. Thus a standard two (2) foot wide trench with one (1) foot of gravel below the leach pipe would be credited with one (1) square foot on each side of the trench (2 SF) and the two (2) foot width of the bottom (2 SF) for a total of 4 SF per linear foot of trench.

A typical calculation would appear like this:

Trench = # BRMS x Gal./Day/BRM ÷ Soil Application Rate ÷ Absorption Area per Length

Trench length = 3 BRMS x 150 G/D/BRM ÷ 0.45 G/D/SF ÷ 4 SF/LF

Trench length = 250 LF of standard leach trench

SIZING LIST OF TYPICAL LEACH LINE LENGTH

Zone 1 Linear footage of leach lines for sand to loamy sand.
Application rate of 1.2 gal/SF

NUMBER OF BEDROOMS	TRENCH LENGTH
1	30
2	62
3	95
4	125

Zone 2A Linear footage of leach lines for loamy sand to sandy loam.
Application rate of 0.85 gal/SF

NUMBER OF BEDROOMS	TRENCH LENGTH
1	44
2	88
3	132
4	176

Zone 2B Linear footage of leach lines for sandy loam.
Application rate of 0.65 gal/SF

NUMBER OF BEDROOMS	TRENCH LENGTH
1	58
2	115
3	173
4	230

Zone 2C Linear footage of leach lines for loam to sandy clay loam.
Application rate of 0.45 gal/SF

NUMBER OF BEDROOMS	TRENCH LENGTH
1	83
2	166
3	250
4	333

Zone 3. All zone 3 soils require percolation testing, and may require wet weather testing. Zone 3 soils have high clay content. Dependent on the type of clay and expansion characteristics, a Zone 3 soil may be suitable for an on-site septic system if the percolation results and other site factors are acceptable. An application rate of 0.2 gal/SF may be used for sizing the leach trench length.

Zone 4. Unacceptable for conventional on-site sewage systems. A percolation rate of less than 1 inch per hour is not acceptable for a standard system. Wet weather percolation testing should be considered for installation of an alternative system. A rate of 120 MPI is acceptable for an alternative system, provided other site requirements can be met.

WATER USE AND SEWAGE FLOW ESTIMATES

The following table is to be used when estimating water flow rates. Use of estimates other than these must be submitted with well-documented supporting data.

TYPE OF ESTABLISHMENT	GPD/UNIT
<u>Residential:</u>	
Single Family Dwellings	
–Each bedroom	150/bedroom
Apartments (no laundry)	
–First bedroom	120/bedroom
–All added bedrooms	60/bedroom
Mobile Homes	
–Park	250/space
–Individual	150/bedroom
<u>Temporary Quarters:</u>	
RV Campgrounds	
–Unplumbed sites	50/site
–Plumbed sites	100/site
Motel/Hotel/Inn/Bed & Breakfast and other visitor-serving facilities	
Base Rate	80/room*
Add: kitchenette	20/room
served breakfast (guests)	20/room
other served meals	see food service
laundry	40/room
in-room spa	80/room
outside water use	case-by-case basis

* A room is considered an area used for sleeping (two people per area) (e.g. a bedroom or loft.)

Public Establishments:

Boarding School	75/student
Day School	15/student
Hospital	250/bed
Institutions (other than hospitals)	125/bed
Public Swimming Pools w/ bathhouses pool	30/person, max capacity of

Churches	
–Without Kitchen Facilities	5/sanctuary seat
–With Kitchen Facilities	7/sanctuary seat

Food Service:

Full Service, Franchise	
–Without bar	2.9/SF of dining area
–With bar	3.4/SF of dining & bar area

Full Service, Non-Franchise	
–Without bar	2.1/SF of dining area
–With bar	2.6/SF of dining & bar area

Single Service, Franchise	2.1/SF of prep area
Single Service, Non-Franchise	1.5/SF of prep area

Meat Market/Department	1.5/SF of work area
------------------------	---------------------

Bakery	1.0/SF of work area
--------	---------------------

Grocery Store	0.2/SF of display area
---------------	------------------------

Tavern	
–Bar area	6.7/linear ft of bar
–Patron area	1.4/SF of patron area

Commercial:

Hair Salon	50/stall
Office	0.15/SF of work area
Retail Store	0.15/SF of display area
Laundry, Self-Service	400/machine

Industrial:

Case–by–Case Basis

1.4 NEW USE OF OLD UNKNOWN EXISTING SYSTEMS

Continued use of an existing unknown system can be made similar to the existing permitted use that has occurred provided no apparent public health or environmental hazards have resulted from such use, per inspection by a qualified site evaluator. If the previous building burned down or was demolished or removed within the last 12 months, this will be considered existing use for purposes of this policy.

Alternately, the property owner may retain a qualified individual to perform the discovery and documentation work to the satisfaction of Environmental Health.

The discovery and documentation shall include as a minimum:

1. The septic tank location, size, material, and general condition.
2. The leach field location and condition, number of trenches and length and depth of each trench shall be determined and shown on a scale site plan drawing. Leach field may be located with either electronic equipment (less impact) and/or by actual excavation. Excavation to determine trench dimensions shall be required.
3. Soil conditions in the area of the leach field shall also be determined by backhoe excavation (or alternately by soil auger boring if labor is provided). Field texture estimates and all other significant characteristics shall be reported on the *Mendocino County Soil Profile Description* form.
4. The EH staff shall analyze the suitability of the existing system dimensions, condition and design for the proposed new use, using the Mendocino County LAMP as the standard. This determination shall be documented to the file using the *Mendocino County Site Evaluation Report Format for On-Site Sewage Systems*, excepting the laboratory analysis.
5. An area sufficient for 100% replacement of the sewage system shall be identified by backhoe excavation (or alternately by soil auger boring if labor is provided) and shown on the scale site plan drawing. Field texture estimates and all other significant characteristics shall be reported on the *Mendocino County Soil Profile Description* form.

If the EH staff analysis determines the existing sewage system is not suitable for the proposed new use then a new system shall be designed per the Mendocino County LAMP. A Site Evaluation Report shall be prepared by a qualified individual and submitted to DEH for review and approval, similar to any other new project on an unimproved parcel.

PART 2 – DESIGN

2.1 Report Format

2.2 Standard OWTS

2.3 Non-Standard OWTS

2.4 Waiver Guidelines

PART 2 – DESIGN

2.1 SEPTIC TANK SIZING

One or two bedrooms:	Minimum 750 gallon, two-compartment tank
Three bedrooms:	Minimum 1000 gallon, two-compartment tank
Four bedrooms:	Minimum 1200 gallon, two-compartment tank
Five bedrooms:	Minimum 1500 gallon, two-compartment tank
Multiple units or shared: project	Tank size to be determined by daily flow rate from project

2.2 STANDARD OWTS

A standard sewage system means a method of on-site sewage treatment which includes a treatment unit and a gravity absorption field.

2.3 NON-STANDARD OWTS

Non-Standard systems are used on sites which may not meet the standard criteria of the site evaluation process. Non-Standard systems have specific advantages which can overcome some site constraints. Installation must be according to the designer's plan and the Non-Standard System Program. On-going monitoring, an Operational Permit and a Recorded Notice on the property deed are required of all Non-Standard systems. Copies of the program are available for copy cost at the Environmental Health Division.

NON-STANDARD SEWAGE SYSTEM INSPECTIONS

It is the policy of the Environmental Health Division to discontinue the routine practice of requiring the designer to inspect and certify the construction of typical residential non-standard sewage systems.

Designers may continue to inspect if they choose but it will no longer be a requirement of Environmental Health forcing such redundant inspections.

Exceptions will occur where, due to the innovative, atypical design or the extended size of the project, Environmental Health may require the designer to inspect the construction and certify that the construction is in compliance with the plans and specifications. In those instances, Environmental Health will contact the designer and discuss the potential need for the designer's involvement. If the decision is that designer's inspections are necessary, then the designer's inspection items and the associated schedule will be required and attached as a condition or requirement of the permit.

OPERATING PERMITS FOR EXISTING SEWAGE SYSTEMS

Intent and Benefit

This policy describes when an operating permit might be required for existing systems with high strength waste flows or large flows greater than 1,500 gpd. The placement of the system within the Operational Permit program for continued monitoring of flows and system performance assures public health protection and may also be a way of allowing facility expansion without the capital expense of additional sewage system construction until it proves necessary.

Background Information

The Mendocino County ordinance regulating on site waste water systems allows DEH to issue an operational permit for all non-standard sewage systems. Those systems with high-strength waste flows or flows greater than 1,500 gpd are considered non-standard sewage systems.

Existing systems such as these are not sought out to be included into the Operational Permit program. However if an expansion of a facility is requested, then the Environmental Health Specialist (EHS) may consider placing an existing sewage system within the Operational Permit program with or without expanding the sewage system.

Statement of Problem

Sewage systems with flows greater than 1500 gpd and high strength waste have a greater potential for endangering the environment and public health and therefore are deserving of greater oversight by the Division.

Occasionally an applicant proposing a project makes an argument that it is not necessary to add sewage system capacity to an existing sewage system since the actual flows will not amount to the Divisions per-unit estimates. In some cases the applicant is also proposing flows of increased waste strength above that of domestic sewage for which most systems are designed.

NOTE: High strength waste flows differ from residential strength waste flows in that they:

1. originate from non-residential uses; and,
2. have one or more characteristics listed in Table 4-3 of *Design Manual, Onsite Wastewater Treatment and Disposal Design*, USEPA, October 1980, page 56, that is higher in concentration than listed as typical for residential wastewater.

The project proponent has the responsibility to demonstrate that waste flow strength from non-residential uses is not high strength.

Policy Implementation

In these instances staff will consider offering the applicant the option of participating in the Operating Permit program with the commensurate monitoring inspections instead of adding sewage system capacity to meet the estimated needs of the proposed project.

System modifications will need to be made if the system is not already equipped, such as inspection risers at ends of trenches and water or effluent meters, so that the system can be monitored.

In some instances the expansion of the sewage system and inclusion in the Operational Permit program may be required by the EHS to assure the protection of the environment and the public health.

An area sized for the estimated flow must be identified and reserved for a replacement sewage system should the existing system experience overloading.

An Environmental Health Specialist Senior in the Land Use Program and/or the Land Use Program Manager must concur with the issuance of the Operational Permit.

2.4 REPORT FORMAT

After site evaluation testing has been completed, all of the data must be put together into a Site Evaluation Report submitted to the Environmental Health Division for review.

SITE EVALUATION REPORT REVIEW

Every Site Evaluation Report shall be thoroughly reviewed by the EHS for site criteria consistent with the Mendocino County LAMP. Each report's design shall also be analyzed for its appropriateness for the reported site criteria. The system shall be reviewed to determine if it was properly designed according to recognized design guidelines for the particular system type.

A complete Site Evaluation Report includes:

1. Data Summary & Certification Sheet completely filled out.
2. Certification Statement signed and stamped by site evaluator.
3. Vicinity Map is adequate with mileage and landmarks.
4. Plot Plan shows entire property with location of sewage systems, well, proposed, house site, driveway, north arrow and other landmarks.
5. Detailed Site Plan at scale of 1" = 50' or less showing test pit locations, slope, setbacks, north arrow and landmarks.
6. Detailed Profile Descriptions for each test pit with graphic depiction of soil and trench depth.
7. Complete Variance request, if required.
8. Lab Data for primary & replacement areas including texture, density, slake test and % gravel.
9. Perc tests if required by Zone 3 lab tests.
10. Design Calculations for Non-Standard systems.
11. X-sectional and Plan views of system and component details.
12. Pump and Control Panel specifications & pump performance curve.
13. Pump Chamber X-section and float setting elevations.

If these items are present, then the SER can be accepted as COMPLETE.

*(Please see attached **Site Evaluation Report forms** located in the Appendices section.)*

EXPIRATIONS FOR SITE EVALUATION REPORTS

Prior to issuance of the sewage permit, all previously approved* site evaluation reports older than 5 years shall be referred back for a letter of acknowledgement from the qualified Site Evaluator. The evaluator should determine that the design is still the most appropriate for the site given the soil conditions at the site and any changes which may have occurred. The site evaluator may opt to upgrade the overall sewage system design at their discretion. If the site evaluator is no longer available, the Environmental Health Division's staff should conduct a site visit to confirm that site conditions have not changed significantly and that the soil description was accurately reported. In some cases, conditions may make it necessary to request a completely new Site Evaluation Report.

* “Approved” means a letter, completed soils form that indicates soils work approved, a pre-2001 sewage permit that is completely filled out without a signature or initials at the location of the signature box.

When the revised site evaluation report includes substantial changes of the sewage system design or additional soil tests that must be reviewed by Environmental Health a review fee shall be charged. No fee shall be charged for revisions in which only updated construction standards have been added or changed.

Once the letter of acknowledgment or revised Site Evaluation Report is received and approved, Environmental Health will process the permit application.

PLOT PLAN REQUIREMENTS

A scaled plot plan must be submitted with the site evaluation report and show the following:

- a. Slope of terrain.
- b. Location of all soil tests.
- c. Property lines.
- d. Location of all ponds, creeks, wells, springs, drainage ditches, swales, or other water sources within 100 feet of the primary septic system and replacement area.
- e. Cut banks, sharp breaks in slope, or fill areas.
- f. Retaining walls, curtain drains, French drains.
- g. Structures, including primary home, garage, sheds, barns, mobile homes, caretakers' homes, agricultural housing, guest cottages, shops, business buildings, Second Residential Units, Family Care Units, travel trailers, and detached bedrooms.
- h. Attachments to the home, such as concrete patios or decks.
- i. Swimming pools, spas, portable pools, or hot tubs.
- j. Roads, driveways, and parking areas.
Underground water, power, cable, gas, or other utilities.
Easements and Utility lines (right of way, power, sewer, water, gas, etc.)
- k. North Arrow and Scale

On larger parcels, it may be necessary to also submit an overall parcel map showing a detail inset for the area of the scaled plot plan, which includes all of the above items.

ASSESSOR'S PARCEL NUMBER AND COUNTY ADDRESS NEEDED

The site evaluation report must include the Assessor's Parcel Number (APN) and your approved county address. The address can be obtained by calling Building

and Planning Services at (707) 234-6650, and must be provided in order for your site evaluation report to be processed.

SITE INSPECTION OF PROPERTY

An Environmental Health Specialist may make a site inspection of your property prior to issuing your septic system permit. A Vicinity Map with adequate accurate mileage and directions for locating the property must be provided in the Site Evaluation Report.

2.5 VARIANCE GUIDELINES

INTRODUCTION

The County of Mendocino has adopted regulations which implement the policy of the North Coast Regional Water Quality Control Board with respect to on-site waste treatment and disposal practices. The regulations and the policy are designed to protect water quality and preclude health hazards and nuisance conditions arising from the discharge of wastes from individual waste treatment and disposal systems. It is recognized, however, that situations will arise which will justify less stringent requirements. Consequently, provision is made for the issuance of variances of site suitability criteria and site evaluation methods when public health will not be endangered nor water quality impaired as a result.

PROVISIONS

- A. Variances may be granted by the County Health Officer for individual cases or for defined geographical areas.
- B. In evaluating variance situations primary consideration will be given to the prevention of health hazards, nuisances and impairment of beneficial uses of waters of the state.
- C. Variances are not intended to be issued indiscriminately, but rather with careful review and consideration.
- D. Variances will be considered only if no other reasonable alternative exists on the property in question.
- E. The type of discharge situation in question (i.e., land division, commercial facility, existing lot, repair system) shall be a consideration in determining the propriety of granting a variance.
- F. Copies of all approved variance requests will be submitted to the North Coast Regional Water Quality Control Board.

BASES FOR VARIANCES

A. SITE CRITERIA

1. Natural ground slope in all areas to be used for effluent disposal shall not be greater than 30 percent. All soils to be utilized for effluent disposal shall be stable.
2. Ground Slope in excess of specified limits may be permitted if:
 - a. Other standard site criteria are met and a report by a qualified geologist or engineer substantiates that slope stability problems are not likely to result; or
 - b. Other standard site criteria are met and are substantiated by a qualified site evaluator's report considering such factors as: slope stability, soil depth, permeability, and texture, fracture zones, springs and seeps, and, direct experience in similar circumstances.

3. SOIL DEPTH

Soil depth is measured vertically to the point where bedrock, hardpan, impermeable soils or saturated soils are encountered. The minimum soil depth immediately below the leaching trench shall be three feet. Lesser soil depths may be granted only as a waiver or for alternative systems. Soil depth requirements may be waived from three feet to no less than two feet on slopes less than 20% or from five feet to three feet on 20–30% slopes if:

- a. Other standard criteria are met and soils fall within Zone 2 (or Zone 3 with passing wet weather percolation tests) on the Soil Suitability Chart (individual residence only), and
- b. Substantiated by a qualified site evaluator's report considering such factors as: soil depth, permeability, texture, fracture zones, springs and seeps, and, direct experience in similar circumstances; or
- c. Approved under the Alternative Systems Program.

4. DEPTH TO GROUNDWATER

Minimum depth to the anticipated highest level of groundwater below the bottom of the leaching trench shall be determined from Figure 4-1.

- a. Required depths to groundwater in excess of five feet may be waived if an underlying impermeable soil stratum (Zone 4 or a percolation rate of slower than 120 MPI) precludes direct travel of effluent to the water table. (Three feet of soil containing 15% fines (or a percolation rate slower than 5 MPI) or Zone 3 soil would also meet this requirement).
- b. Minimum depth to groundwater may be waived from five feet to no less than

two feet if:

- i. Other standard criteria are met, public water exists and/or private wells are required to have an approved annular seal, density of development in the immediate area is such that groundwater mounding or other cumulative water quality impacts are unlikely, springs and seeps are nowhere apparent near the site in question, direct experience with other installations in similar circumstances indicates no problem, and
- ii. Substantiated by a qualified site evaluator's report considering such factors as soil depth, permeability, texture, fractured rock, springs and seeps, development density, pertinent research findings, and, direct experience in similar circumstances; or
- iii. Approved under the Alternative Systems Program.

5. PERCOLATION RATES

Percolation test results in the effluent disposal area shall not be less than one inch per 60 minutes (60 MPI) for conventional leaching trenches. Percolation rates of less than one inch per 60 minutes (60 MPI) may be granted as a waiver or for alternative systems.

6. SETBACK DISTANCES

Minimum setback distances for various features of individual waste treatment and disposal systems shall be as shown below in Table 4-1.

Waiver of horizontal setback distances may be permitted as follows:

- a. Setback from perennial streams may be reduced from 100 feet to no less than 50 feet, and setback from ephemeral streams may be reduced from 50 feet to no less than 25 feet, if:
 - i. Other standard criteria are met and water quality impairment or health hazards are judged unlikely to occur and
 - ii. Substantiated by a qualified site evaluator's report considering such factors as: soil depth and filtering capabilities, fractured rock, springs and seeps, ground slope, flow characteristics of the stream, pertinent research findings and direct experience in similar circumstances.
- b. Where the 10-year flood level is not established or readily identifiable, setback distances from perennial streams may be measured from the edge of the watercourse during normal winter flow conditions.

- c. Minor variance in setback requirements (up to 10 % may be permitted as a practical consideration without engineering analysis.)
- d. Variance in setback requirements from wells may be permitted to no less than 75 feet if:

All other standard criteria are met and water quality impairment or health hazards are judged unlikely to occur as substantiated by a qualified site evaluator's analysis considering such factors as: soil depth and filtering capabilities, fractured rock, springs and seeps, ground slope, flow characteristics of the stream, pertinent research findings, and direct experience in similar circumstances.

- e. The setback for an intercept drain from a property line may be reduced from 25 feet to no less than 10 feet if:
 - i. Substantiated by a qualified site evaluator's report considering such factors as: soil depth and filtering capabilities, fractured rock, springs and seeps, ground slope, pertinent research findings and experience in similar circumstances and
 - ii. The location of the intercept drain is unlikely to impair water quality or create a health hazard. (The granting of a variance of setback for an intercept drain does not preclude approval of another variance of site criteria).

7. REPLACEMENT AREA

An adequate replacement area equivalent to and separate from the initial effluent disposal area shall be reserved at the time of site approval. The replacement system area shall not be disturbed to the extent that it is no long suitable for wastewater disposal. The replacement system area shall not be used for the following: construction of buildings, parking lots or parking areas, driveways, swimming pools, or any other use that may adversely affect the replacement area.

The specified 100 percent replacement area may be waived in the following circumstances:

- a. Where the use is to be temporary with guaranteed replacement by public sewerage; or
- b. For existing lots, created before adoption of the 1979 Basin Plan requirements (August 16, 1979), under the following requirements:
 - i. Other standard criteria are met and the lot has been thoroughly tested, and
 - ii. 150% of the primary and replacement leach fields are installed as a dual,

alternating system. A dual, alternating system is defined as an effluent disposal system consisting of two complete standard drain fields connected by an accessible diversion valve and intended for alternating use on an annual or semiannual basis.

Note: the required replacement area cannot be waived for Non-Standard systems, lots created after August 16, 1979, commercial developments, second residential units, and land development in excess of three (3) bedrooms per parcel or design wastewater flows greater than 450 gallons per day. Nor shall the allowed reduction exceed 25%.

8. CUMULATIVE EFFECTS – No variances permitted.

B. SITE EVALUATION METHODS

1. General Site Features

2. Soil Profiles

- a. The number of soil profile excavations (or augured test holes) on individual parcels may be reduced where sufficient prior on-site testing has been conducted to establish the nature of soil conditions (i.e., depth and mottling.)
- b. For land divisions the required two profiles per site may be reduced to one if topography, vegetation and other surface features and/or prior experience indicate consistent 2A or 2B soil conditions over large areas.
- c. More than the specified two excavations per site may be required for large systems serving multiple dwelling units, commercial or industrial facilities.

3. Depth to Groundwater

- a. Water well data may be used for estimation of groundwater levels where
 - i. The well(s) are within the same geologic and soil formations as the proposed disposal site;
 - ii. There is no cause to suspect perched groundwater conditions;
- b. Areas for which soil mottling is not an appropriate measure of groundwater levels include, but are not limited to:
 - i. Coastal dunes
 - ii. River alluvium
 - iii. Soils of volcanic origin. (To be specified by geographical area as

time permits)

iv. Sand and loamy sand

4. Percolation Suitability

Determination of the need for wet weather percolation testing on the basis of clay content (Zone 3) may be waived in lieu of the following procedures:

- i. Soil exhibits low shrink–swell potential as substantiated in a qualified site evaluator’s report considering such factors as: soil color, soil structure, soil consistence, bulk density analysis, clay mineralogy, and other pertinent information. A low shrink swell shall be defined as having a Plasticity Index of less than 20, ASTM D 4318-843.

5. Wet Weather Criteria

The period for wet weather percolation testing may be extended according to yearly rainfall patterns and upon the recommendation of the Health Department.

C. PROCEDURES FOR ISSUANCE OF VARIANCES

The guidelines above shall serve as the bases for granting individual and geographical area variances. For individual cases, the presentation of the specified information or evidence shall be largely the responsibility of the individual applicant. In the case of geographical areas, variance justification may be initiated and conducted by the Health Department or qualified site evaluators. Identification of geographical areas granted variances shall be appended to this document.

For the repair of failing systems, variances of site criteria and evaluation methods may be made by the Health Officer as necessary to eliminate or preclude hazards to public health and water quality. The preceding guidelines shall be followed to the extent practicable to achieve this objective. Variances involving facilities (a) with more than 10,000 GPD or (b) operating under waste discharge requirements adopted by the Regional Board shall be reviewed jointly by the Health Department and the Regional Board.

(Applicant procedures section to be completed by Health Department.)

PART 3 – CONSTRUCTION & INSTALLATION

3.1 General Construction Requirements

3.2 Permit Process

3.3 Compliance With Plans

3.4 Greywater Systems

3.1 PERMIT PROCESS

APPLYING FOR YOUR PERMIT

The Site Evaluation Report must be submitted to the Environmental Health Division in order to obtain a permit. The site evaluator must submit two (2) signed and stamped copies of the site evaluation report with the current review fee as established by the Mendocino County Board of Supervisors. The report must include all tests conducted, including failing soil tests and their location. One area, or two separate areas, large enough for the initial and reserve absorption fields must be acceptable for an on-site sewage system permit in order for a permit to be issued. The report should include a current telephone number and address for the applicant.

The review time by the Environmental Health Division is approximately 5–10 working days. You will be notified by letter whether the soil report is acceptable, or if additional information is required. You may apply for a permit in person or by mail. Do not send any money until you have been notified that your permit is ready. Permit fees will be accepted only for approved Site Evaluations Reports. Please check with the Environmental Health Division for the current permit fee amount as established by the County Board of Supervisors.

You may apply for the permit as an Owner–Builder. If you do so, you will be responsible for Worker's Compensation for any employees whom you hire. Or you can hire a licensed contractor to apply for the permit and install your septic system for you. Beware of unlicensed persons who offer to "rent" you their backhoe, or work for you on an hourly basis. You may still be liable if they are injured while working on your property. Please read the handout, *"Before You Sign Your Sewage System Permit"* for further information, or contact the California State Contractors License Board.

Approval of your site for an on-site sewage system permit does not constitute approval by Building and Planning Services for your project. You are encouraged to seek the services of these departments to ascertain whether your project meets building, planning, or other criteria beyond the control of the Environmental Health Division.

If you do not want to apply for a permit, your site evaluation report will remain on file. Submission of the report is not an indefinite approval of future ability to obtain a permit. Only by applying for the permit and paying the fees can you vest a right to build a sewage system.

PERMIT RENEWAL

Your permit is good for two (2) years from the date of issuance. Permits may be renewed annually upon timely payment of the renewal fee to the Environmental Health Division. There is currently no limitation on the number of times a septic permit can be renewed. No approvals will be granted for systems installed under an expired permit. The renewal is good for one (1) year and must be renewed while still current. It is the responsibility of

the applicant to renew the permit. The Environmental Health Division may not notify you of the need to renew. Once the septic system is installed and approved, no further renewal is necessary.

SEWAGE SYSTEM REPAIR PERMITS

Septic System Repair permits may or may not require soils testing. The Environmental Health Division has the option of issuing a repair permit without soils testing, if the site conditions and other factors indicate that such testing is not necessary. For sites which necessitate soil testing or where the necessary repair design is complex, the property owner may need to hire a qualified site evaluator to test the soil and/or design the repair system.

SEPTIC SYSTEMS INSTALLED WITHOUT PERMITS

Systems installed without permits or the approval of the Environmental Health Division violates Section 16.08 of the Mendocino County Code. The minimum penalty for installation prior to obtaining a permit is payment of an additional inspection fee equal to the permit fee. You may also be subject to legal action, if you install your system without a permit. You may endanger your own health or the health of others, and degrade surface or ground water with an improperly designed, constructed, or installed system. You will be required to hire a site evaluator to conduct soil testing and evaluate the design of the unpermitted system. It is possible the unpermitted system may have to be abandoned and a system conforming to these regulations installed in its place.

OCCUPATION OF LAND WITHOUT AN APPROVED SEWAGE SYSTEM

The Mendocino County Code does not allow someone to occupy land without the installation of an approved sewage system. You can camp on your land for a maximum of 60 days in any six-month period without obtaining a septic permit, but you must not discharge any wastes to the surface of the ground. You may not utilize a chemical toilet, portable toilet, or holding tank in place of an approved septic system for occupancy of a parcel for purposes other than camping.

SECOND RESIDENTIAL UNITS AND OTHER ACCESSORY STRUCTURES

Second Residential Units of any type (and any structures with plumbing) require approval of the Environmental Health Division. Second Residential Units usually require a separate septic system to be installed. Please contact Environmental Health for specific information on requirements for approval of such units. As well as Proof of Water test if public water is not available.

BUILDING PERMITS

Building Permits are cleared through the Environmental Health Division. This clearance may require a site inspection prior to approval. Adding an additional bedroom to an

existing house (with no expansion of the leach field) may be allowed, if we have a permit on file and it is currently operating properly. Additional leach trench may be required if the system is marginally operating. Identification of a 100% replacement area may also be required.

Construction is not allowed on top of the septic tank, leach lines, or potential reserve area. You should locate your septic system before constructing driveways, sidewalks, and decks because you may damage the system and have unnecessary future expenses, when improvements have to be removed to inspect, pump, or make repairs to your system.

EASEMENT REQUIREMENTS FOR A SEWAGE SYSTEM

All parts of a sewage system must be located on the same legal parcel as the building or structure they serve. The only exception to this is a recorded easement (or Covenants, Conditions, and Restrictions for existing lots) for the exclusive installation and maintenance of the sewage system and future replacement area. This document is binding on all future owners, and a conformed copy must be filed with the Environmental Health Division.

COMMERCIAL UNITS

All commercial projects, including, but not limited to, office buildings, mobile home parks, multiple family residences, restaurants, laundromats, organized camps, etc., must submit a scaled plot plan of the proposed project. The report must indicate the uses of all structures (including plumbing), and show evidence of adequate area for an initial soil absorption area and replacement area. All commercial projects require a site evaluation report to determine the nature and size of the sewage system, based on current North Coast Regional Water Quality Control Board Basin Plan requirements. In addition, sewage systems treating more than 1500 gallons per day may require approval of the Regional Water Quality Control Board and may be required to complete a cumulative impact study, including calculations for groundwater mounding, flow of nitrates, denitrification, deep percolation rates, and background nitrate rates.

MOBILE HOME PARKS

Mobile Home Parks utilizing on-site must obtain approval from the State of California, Department of Housing and Community Development, Division of Codes and Standards.

LAND DIVISIONS AND MINOR SUBDIVISIONS

Land divisions are subject to the procedures outlined in the current edition of our Land Division Regulations, FORM #26.09.

UNIFORM PLUMBING CODE, APPENDIX K

The Uniform Plumbing Code (UPC) Appendix K - "Private Sewage Disposal Systems",

as locally amended, is effective in Mendocino County. All construction standards and materials are based on UPC requirements.

3.2 GENERAL CONSTRUCTION REQUIREMENTS

SETBACK REQUIREMENTS -- See attached drawing: "Required Setbacks".

1. For buildings, foundations, or structures, including porches, steps, breeze-ways, patios, carports, walkways, driveways, and other similar structures or appurtenances, the setback is five (5) feet to the septic tank and eight (8) feet to the leach field. Property line setback is five (5) feet.
2. For wells, whether used for domestic or irrigation purposes, and whether used or unused, the setback is 50 feet from septic tank and 100 feet from a leach field.
3. For streams which run continuously or a major portion of the year, the setback is 100 feet, as measured from the Flood Hazard Zone on a stream where a Federal Emergency Management Agency (FEMA) study has been made.
4. For seasonal/intermittent streams and drains, the setback is 50 feet and is measured from the edge of the watercourse. If the stream has been mapped in a FEMA Flood Hazard Zone study, then the 100 feet setback to the applies whether the stream is considered seasonal, intermittent, or continuously flowing.
5. For ocean, lakes, ponds, reservoirs, springs or spring developments, the setback is 100 feet. For the ocean, the setback is from mean high tide.
6. For cliffs, cut banks, sharp breaks in slope, the setback is 25 feet. If groundwater or soil depth beneath the trench is less than five (5) feet, then a 50 foot setback is required.
7. A sewage system may not be installed on a slope steeper than 30%, unless the site qualifies for a variance.
8. Distribution box setback is five (5) feet from the septic tank.
9. Ground water intercept drains (also known as curtain or French Drains) must be sited no less than 15 feet up gradient and 50 feet laterally from any absorption field, and 25 feet from any property line.
10. A variance of setback requirements may be allowed, if other criteria meet the Mendocino County LAMP, and in the opinion of the Environmental Health Division, the public health is not compromised.

SEPTIC TANK INSTALLATION – See attached Septic Tank drawing

- a. The tank shall be set level and as shallow as possible on undisturbed earth or compacted aggregate.
- b. The house is connected to the large chamber (2/3 of the tank). This is called the inlet or solids side of the tank. The tank should be setback at least 5 feet from the foundation and it could be 50 feet or more from the house, though cleanouts may be needed at that distance.
- c. The center baffle should be properly installed with an approved vent connecting the large chamber to the small chamber.
- d. The tank shall be watertight. All tanks must be engineered and meet adopted Uniform Plumbing Code requirements. This includes poured-in-place, precast, plastic or fiberglass tanks.
- e. The inlet sanitary tee (also called inlet baffle) should be installed and grouted in place. The grout should be free of cracks and adequate to support the pipes and not allow rotation or movement. Application of waterproofing materials over grout joints is recommended. Non-shrink grout or mortar should always be used.
- f. The outlet of the septic tank shall be fitted with an approved outlet filter in lieu of the traditional sanitary tee. *See attached septic tank drawing.*
- g. The excavation for the septic tank shall be clean, free of large rock, and level before placement of tank.
- h. The size of tank shall be verified by manufacturer's stamp on the tank. The tank must be one which meets the Uniform Plumbing Code.
- i. Fiberglass and polyethylene tanks should be installed per the manufacturer's specifications. This usually requires bedding the tank in sand or small aggregate. Check with the Environmental Health Division for approval of the tank manufacturer prior to installation.
- j. It is required that risers be installed over the septic tank access hatches before it is buried. In this way the tank can be easily located in an emergency and for regular pumping maintenance at about a ten (10) year interval depending on family size or use. Such risers must be watertight, bonded to the septic tank, and not allow surface or groundwater to run into the septic tank.

SEWAGE TRANSMISSION LINE FROM STRUCTURE TO SEPTIC TANK

- a. Must be three (3) or four (4) inches in diameter, ABS Schedule 40.
- b. The sewage line should be installed with a pitch (fall) of no less than 1/4 inches per one (1) foot of line. Lines with too little or too much pitch may plug with waste materials.
- c. The sewage line should not be longer than 50 feet. And it is best to avoid bends in the pipe if possible. Any bends in excess of 30 degrees should have a clean-out installed.

EFFLUENT TRANSMISSION LINE FROM SEPTIC TANK TO DISTRIBUTION BOX

- a. Must be two (2), three (3), or four (4) inches in diameter, Schedule 40 ABS, Schedule 40 PVC or SDR 35 PVC. Drain pipe (or similar belled pipe with no-glued or rubber ring-tight joints) may not be used from the tank to the first distribution box.
- b. The effluent transmission line might use the hole which is slightly higher in the box than the outlet hole piping going to the absorption field (approximately two (2) inches.)

DISTRIBUTION BOX INSTALLATION

- a. Distribution boxes should be placed level on undisturbed native soil or embedded in the aggregate of the soil absorption trench.
- b. Concrete or plastic distribution boxes may be used. Plastic boxes **MUST** be installed according to the manufacturers' recommendations.
- c. All the pipes must be grouted securely in the precast holes of the box with non-shrink grout. Extra holes may not be punched out to accommodate more pipes. Use of waterproofing materials on the outside of the grout is recommended. Plastic boxes may have other sealing methods.
- d. Water should be present at the site during time of inspection, so that the distribution of flow can be tested. Equal Distribution is normally used. Other methods of distributing water may be designed by the site evaluator. If these are specified in the site evaluation report or on the permit, they must be used. If there are any questions about distribution, call the Environmental Health Division before you begin construction.

LEACH LINES AND PIPING

- a. Approved pipe materials for use in the sewage system are listed in the current version of the Uniform Plumbing Code, Section Two, Table A.
- b. Gravel is to be installed under the pipe in the amount specified on the permit. Gravel depth of up to two (2) feet can be verified with a gravel rod. For gravel depths greater than two (2) feet, one of the following verifications can be used:
 1. Purchase receipts.
 2. Amount of rock below the pipe should be exposed at the ends of the lines at a 45 degree slope, so the amount of rock can be visibly determined.
 3. Stakes may be embedded in the gravel at 40 foot intervals, so that they may be vertically pulled out to verify the amount of rock under the pipe.
- c. The bottom of the leach trench should be level and approximately uniform in depth. Leach lines must follow land surface contours. The leach pipe should be placed with holes 135 degrees from the crown, and with a fall of no more than one (1) inch per 30 feet. Smear or compacted material must be removed from the side wall below the invert elevation by hand raking to the trench sides to a depth of one (1) inch.
- d. Leach lines should be no longer than 100 feet and equal in length. Distribution can be from the end or the mid-point of the trench. The total length of the leach lines and the amount of gravel required is determined by the number of bedrooms in the home and the results of the soil evaluation.
- e. The minimum lateral separation of undisturbed earth between leach trenches is four (4) feet when using 12 inches of gravel under the pipe. This increases to six (6) feet for 24 inches of gravel, and eight (8) for 36 inches of gravel. On slopes greater than 20%, the leach lines must be installed with a minimum separation of eight (8) feet of undisturbed earth between trenches.
- f. A transit or builder's level should be used to layout and install the septic system. A builder's level should also be available at the site during the final inspection to check fall on the drain pipe.
- g. The trenches are normally 24-36 inches wide, but no wider than 36 inches. Anything wider than 36 inches is considered a seepage bed.
- h. Drain rock used in the lines should be clean (washed), 1 ½ inch nominal size (¾ inches–2 ½ inches), river gravel or approved crushed rock. Smaller sized material, if appropriate, may be specified by the site evaluator. At least 12 inches of drain rock is required under the leach line and two (2) inches over the pipe. Greater depths may be specified by the site evaluator if soil conditions are suitable. No more than 36 inches of rock may be used under the pipe.

- i. Heavy, brown (Kraft) paper, straw, filter fabric or other approved material must be placed over the drain rock prior to soil backfill to prevent infiltration of soil into the washed gravel of the trench. Do not use roofing felt, tar paper, plastic or other non-breathable materials.

INSPECTION RISERS IN ABSORPTION TRENCHES

Inspection risers, constructed of ABS plastic, are required to extend to the bottom of the trench at the end of each leach line and connect to the drain pipe with a Tee fitting. Such wells are necessary to monitor the water level in the trenches. *See the attached Typical Trench drawing.*

DRY WEATHER CONSTRUCTION

Construction of the sewage absorption system should be during dry weather. The rainy season shall be avoided. Work may be performed no earlier than May 1 and no later in the year than November 1 without prior written approval from the Environmental Health Division. Extra work may have to be performed in order to construct in moist soil conditions.

FINISHED CONSTRUCTION DRAWINGS

An "as-built" drawing should be prepared by the installer, if there are any changes from the site evaluator's site plan. No deviations from the site evaluation plan should be made without prior written approval of both the Environmental Health Division and the design consultant.

SPECIAL PUMP SYSTEMS

Pump systems shall be installed according to the site consultant's design. Electrical connections require an electrical permit from the county Building Department, in addition to the septic permit.

NON-STANDARD SYSTEMS

Non-Standard systems require installation by individuals with the appropriate experience, qualifications, and equipment. Check with your site consultant for a recommendation.

JOB SITE PLANS AND SPECIFICATIONS

A copy of the site evaluation report must be on the job site for the installer of the sewage system. The design and plans shall be followed. If there are any problems or if you have a question, you should contact the site evaluator, and the Environmental Health Division before construction begins.

3.4 COMPLIANCE WITH PLANS

System installers who do not comply with the plans and specifications shall be delivered a Legal Notice to correct the violation by the inspecting Environmental Health Officer. The system shall not be approved and a hold shall be placed on the occupancy of the residence or structure under construction until such time as the installer has made the correction.

Failure to make the necessary corrections within a reasonable amount of time shall result in the posting of a Notice of Violation at the installation site and sent by certified mail to the sewage system installer's place of business. A copy of the Notice of Violation shall also be sent to the property owner informing the owner of the violation. Should the sewage system installer fail to make the corrections by the specified date in the Notice of Violation, an Order to Abate shall be issued and sent by certified mail to the sewage system installer's place of business and a referral shall be made to County Counsel to initiate legal action.

Notwithstanding the above, some minor modifications that the sewage system installer may make that shall be considered equivalent are:

- Clean washed leach rock may be river aggregate, or quarried rock, or lava rock
- Distribution box may be concrete or plastic

Some of the equipment specifications that remain under the purview of the qualified professional designer are:

- Secondary treatment process, proprietary manufacturer, & model
- Man-made aggregates or plastic chambers in lieu of leach rock
- Piping size & material
- Septic tank size & material
- Valve box size & material
- Effluent filter type, size & material
- Check valve type, size & material
- Pump manufacturer & model
- Dispersal field layout & configuration

3.5 GRAYWATER SYSTEMS

CALIFORNIA SYSTEM REQUIREMENTS FOR CLOTHES WASHER SYSTEMS

Under the 2010 California Plumbing Code (California Code of Regulations, Title 24, Part 5, Chapter 16A), a Clothes Washer System in a one–or two–family dwelling does not require a permit as long as the installer follows the 12 minimum requirements outlined below:

1. If required*, notification has been provided to the Enforcing Agency regarding the proposed location and installation of graywater irrigation or disposal system.

Note: A city, county, or other local government may, after a public hearing and enactment of an ordinance or resolution, further restrict or prohibit the use of graywater systems.

* Required by Mendocino County Environmental Health Division

2. The design shall allow the user to direct the flow to the irrigation or disposal field or the building sewer. The direction control of the graywater shall be clearly labeled and readily accessible to the user.
3. The installation, change, alteration or repair of the system does not include a potable water connection or a pump and does not affect other building, plumbing, electrical or mechanical components including structural features, egress, fire-life safety, sanitation, potable water supply piping or accessibility.
4. The graywater shall be contained on the site where it is generated.
5. Graywater shall be directed to and contained within an irrigation or disposal field.
6. Ponding or runoff is prohibited and shall be considered a nuisance.
7. Graywater may be released above the ground surface provided at least two (2) inches (51 mm) of mulch, rock, or soil, or a solid shield covers the release point. Other methods which provide equivalent separation are also acceptable.
8. Graywater systems shall be designed to minimize contact with humans and domestic pets.
9. Water used to wash diapers or similarly soiled or infectious garments shall not be used and shall be diverted to the building sewer.
10. Graywater shall not contain hazardous chemicals derived from activities such as

cleaning car parts, washing greasy or oily rags, or disposing of waste solutions from home photo labs or similar hobbyist or home occupational activities.

11. Exemption from construction permit requirements of this code shall not be deemed to grant authorization for any graywater system to be installed in a manner that violates other provisions of this code or any other laws or ordinances of the Enforcing Agency.
12. An operation and maintenance manual shall be provided. The manual is to remain with the building throughout the life of the system and indicate that upon change of ownership or occupancy, the new owner or tenant shall be notified that the structure contains a graywater system.

Mendocino County
**Graywater System
Guidelines**
for Outdoor Irrigation



Community Health Services Branch • Division of Environmental Health
860 N Bush St, Ukiah • (707) 234-6625
120 W. Fir St, Fort Bragg • (707) 961-2714
www.co.mendocino.ca.us/hhsa/chs/eh/

Introduction

A Graywater System **cannot replace** a septic system or city sewer connection.

Overview of Guide

Why send your laundry wash water to a sewage treatment plant when you can use it to water plants and trees in your yard instead? Certain types of wastewater are clean enough for outdoor subsurface irrigation. That's why many Californians use their laundry and shower water to keep their landscapes green, even during times of drought.

The *Mendocino County Graywater System Guidelines for Outdoor Irrigation* is an educational resource for homeowners and professionals who want to install residential graywater systems for subsurface outdoor irrigation. In this guide, you'll learn about the benefits of graywater, when and where to use it, and when a permit is required.

The guide provides methods for designing and installing a clothes washer system (also known as a laundry-to-landscape system). The methods described in this guide may not be the only procedures for designing and installing systems that meet current requirements. Each homeowner's circumstances are different; you must ensure that a graywater system on your property is designed and installed safely, is consistent with applicable code requirements, and is operated in a manner that causes no harm or damage to yourself or neighbors. If at any time you have doubts about installing a graywater system, please consult a qualified Site Evaluator or plumber.

What is Graywater?

- Graywater is water from clothes washing machines, showers, bathtubs, and bathroom sinks. It is water that contains some soap but is clean enough to water plants.
- Water from toilets, kitchen sinks, dishwashers and wash water from diapers is not considered graywater in California.
- Graywater is not the same as recycled water, which is highly treated wastewater that is used in applications such as irrigation and toilet flushing.

Benefits of Graywater

Reusing graywater is an important water saving practice. Benefits of using graywater instead of potable water for irrigation include:

- Decreases potable water use by 16 to 40 percent, depending on the site (Cohen 2009).
- Decreases water and wastewater utility bills.

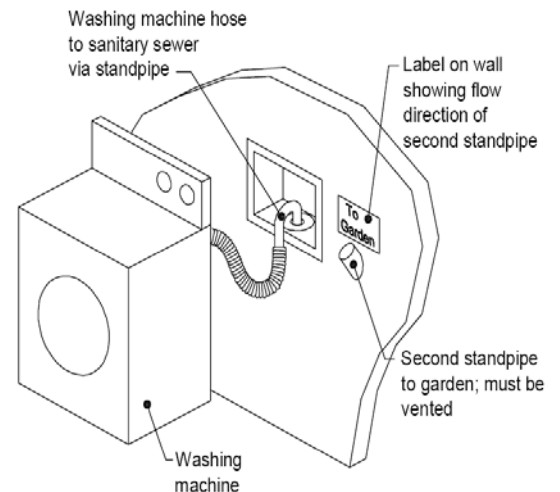


Figure 1: Typical clothes washer system.

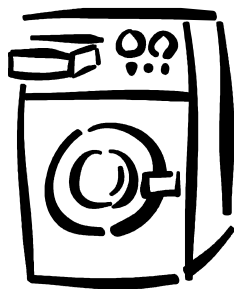
- Provides an alternate source of irrigation water while reserving treated potable water for high-quality water needs like drinking and showering.

Graywater Basics

Graywater is a unique source of water and must be used differently from potable water and rainwater. These are some basic guidelines for residential graywater systems:

- **Do not store graywater more than 24 hours.** If you store graywater, the nutrients in it start to break down and create bad odors.
- **Minimize contact with graywater.** Graywater can contain pathogens. All systems should be designed so that water absorbs into the ground and is not accessible to people or animals.
- **Do not use graywater for irrigating food crops** such as root vegetables or edible parts of food crops that touch the soil.
- **Disperse graywater into the ground** and cover irrigation field with at least 2” of mulch, soil, rock or other approved material.
- **Keep your system as simple as possible.** Avoid pumps and filters that need maintenance. Simple systems last longer, require less maintenance, use less energy and cost less.
- **Install a valve at a convenient location** to allow for easy switching between the graywater system and the sewer system.
- **Do not allow water to pond or run off your property.** Ponding graywater can provide opportunities for mosquitoes to breed and human contact. Your graywater system must be located entirely on your property, and cannot runoff to other properties.
- **Match the amount of graywater directed to your plants with their irrigation needs.** You need to know how fast water absorbs into your soil to properly design your system.

Another Benefit of using graywater – it connects us to our water supply! Understanding where our water comes from and where it goes helps us become conscious of our water usage.



Laundry



to



Landscape

Graywater Regulations

Graywater use is legal in California. In August 2009 California's graywater regulations changed, allowing for lower-cost graywater systems to be installed legally, including some without the need for a permit. A permit is not required for *Clothes Washer Systems* (laundry-to-landscape) that meet the conditions listed in the next section, "When a Permit Is Not Required." For information on systems that do require permits, see "When a Permit Is Required." California regulations for residential graywater systems can be found in Chapter 16A of the California Plumbing Code.

When a Permit Is Not Required

You can install a graywater system **without** a permit if you meet **all** of the following requirements:

- Graywater comes from the washing machine only.
- Graywater system does not alter the household plumbing (graywater is accessed from the hose of the machine, not by cutting into the plumbing).
- Graywater system is for one- or two-family dwelling.
- Graywater system follows 12 guidelines set forth in the California Plumbing Code (see the guidance document titled "California Regulations for Residential Graywater Systems).
- A plot plan of your clothes washer system has been submitted and approved by the Mendocino County Division of Environmental Health.

When a Permit Is Required

You **need** a permit from the Mendocino County Division of Environmental Health for a graywater system that includes **one or more** of the following conditions:

- Graywater system collects water from showers, sinks, or baths.
- Graywater system alters the plumbing. If you cut into the drainage plumbing to access the graywater, you must obtain a permit from the Building Department.
- Graywater system is installed in a building that is not a one- or two-family dwelling.
- Graywater system includes a pump (other than the washing machine's internal pump) or a tank.

References

California Graywater Code: http://www.hcd.ca.gov/codes/shl/2007CPC_Graywater_Complete_2-2-10.pdf.
Cohen, Yorem, 2009. *Graywater—A potential source of water*. UCLA Institute for the Environment.
Available at <http://www.ioe.ucla.edu/reportcard/article.asp?parentid=4870>.

Developing a Graywater System

Graywater systems can range from very simple to very complex. Follow these steps to create a well-functioning and safe system.

1. **Start with water conservation!** Saving water is the low cost and environmentally friendly place to begin. You may find that your landscape doesn't need the amount of water you've been giving it. There are also easy ways to greatly reduce the amount of water used in your household.
2. **Determine which fixtures in your home are candidates for graywater capture.** Clothes washing machines are the easiest place to begin, and a graywater system using only water from a clothes washer does not require a permit. If your machine is in a room with an exterior wall, it is usually simple to direct a pipe outside. If your machine is in an interior room, you will need to run the pipe outside through a crawl space or basement.

★ Adding other acceptable fixtures to your graywater system such as the shower, bathtub or the bathroom sink will require a permit from Environmental Health.

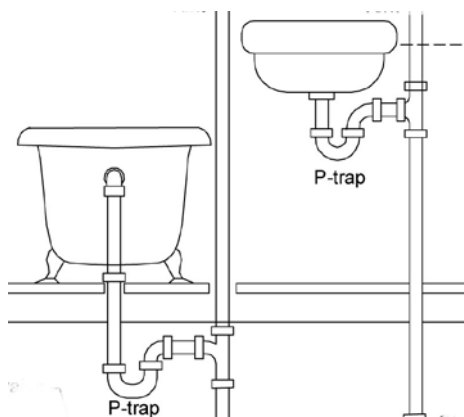
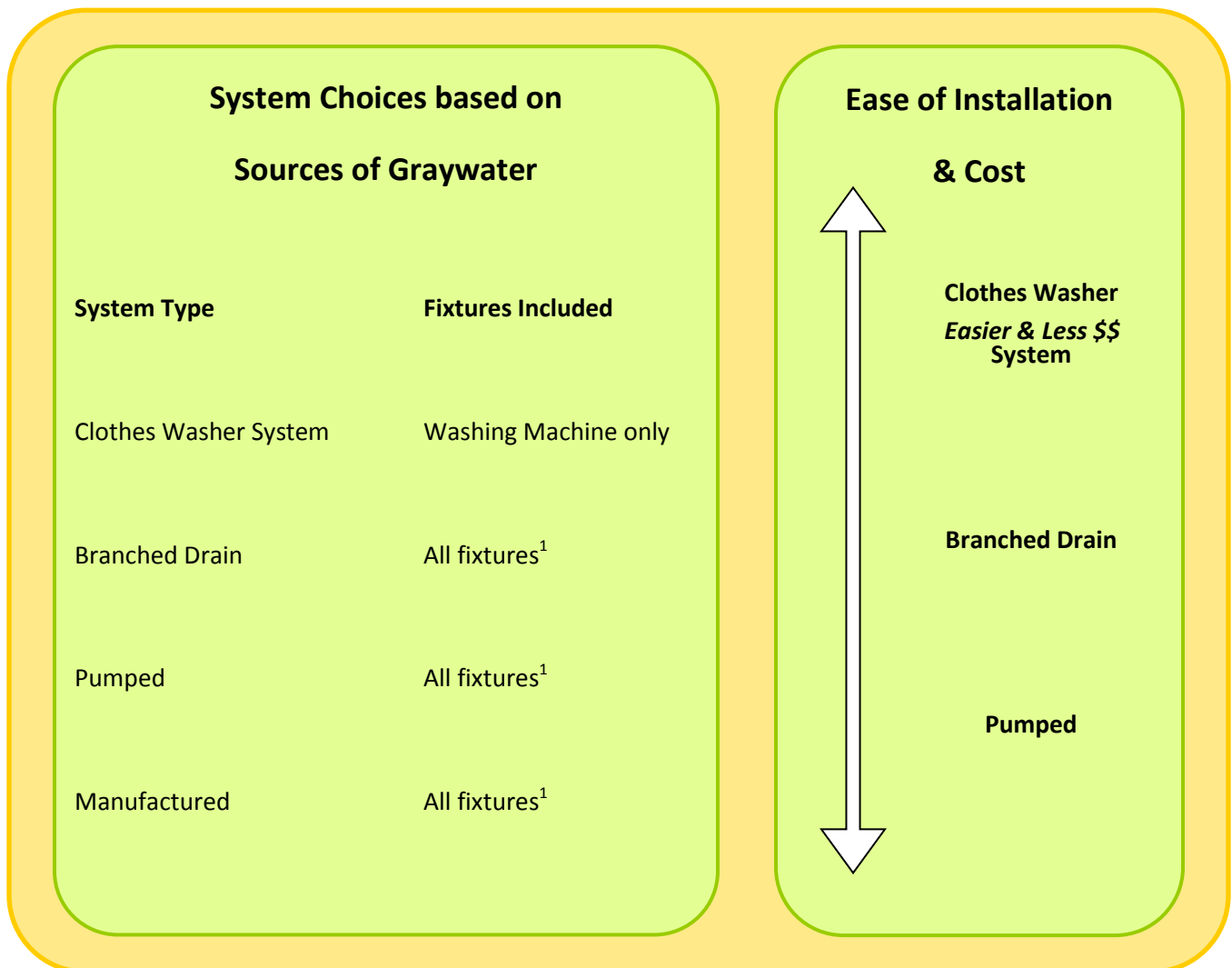


Figure 2: Typical "p-trap" under a bathtub, shower or sink.

Find the shower drain pipe by going under the shower to look for a "p-trap". Run hot water in the shower and feel which pipe heats up. *Make sure you do not tap into the toilet drain!* A plumber can help reroute shower pipes if needed. If your shower is on the second story and the pipes run inside the wall, the drain is probably combined with the toilet drain in the floor, making the shower graywater *inaccessible* without a major remodel.

3. **Decide which type of Graywater System is best for you.** Review Figure 3 on the next page for information on costs and system choices. If you choose to include fixtures other than a clothes washing machine (permit required) contact a qualified Site Evaluator to design your system and skip to #8 on the next page.
4. **Estimate the quantity of graywater produced** by your chosen source(s) using the *Estimating Graywater Flows* section on page 8 of this manual.
5. **Determine your soil type** by conducting a *soil ribbon test* (see pg. 9) and/or sending soils for a laboratory analysis (lab analysis is required if your system needs a permit).
6. **Determine the size of your graywater *Irrigation Field*** using your estimated graywater flow and soil type

7. **Submit a plot plan to the Mendocino County Environmental Health Division.** Even though a permit is not required for a *Clothes Washer System*, you are still required to submit a plot plan and details about the system to Environmental Health.
8. **Install your system.** Once your plans are reviewed and approved, and a permit is issued by Mendocino County Environmental Health (if applicable), find an installer or install the system yourself.
9. **Remember to label the system** including the 3-way valve and all above-ground graywater pipes.
10. **Operate & Maintain your system.** An Operations & Maintenance manual must stay with the property for the life of the system. See the guidance document titled "Sample Operation & Maintenance Manual."



SIZING Your Graywater System

There are three steps for sizing your graywater system. It is important to follow these steps so that you can design a system that has a properly sized *irrigation field*. Remember, California state law requires that graywater irrigation systems never cause ponding or runoff.

- STEP 1:** **Estimate your graywater flows.** When designing your *Clothes Washer System*, there are two different methods for estimating your graywater flows: the California Code Method and the Irrigation Calculation Method. Both methods are explained on the next page. Permitted graywater systems that incorporate fixtures other than your clothes washer are required to use the California Code Method.
- STEP 2:** **Estimate the soil absorption capacity of your soils** using a laboratory analysis (required for permitted systems) or a *soil ribbon test* explained on page 9.
- STEP 3:** **Calculate the size of your *irrigation field*.** Use your estimated graywater flows from Step 1 and your soil absorption calculations from Step 2 to determine the necessary size of your irrigation field (see page 10).
- STEP 4:** **Record findings of Steps 1 to 3** in the Operations & Maintenance Manual for your system. Be sure to show your calculations when recording your findings.

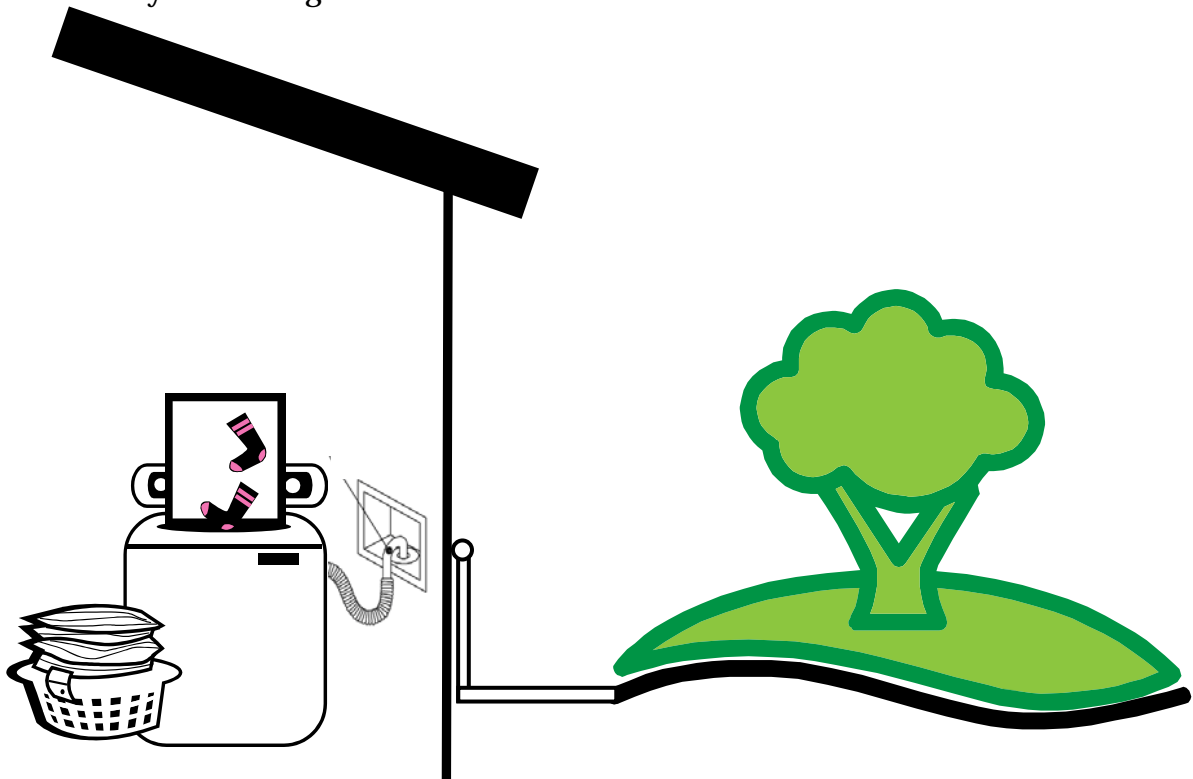


Figure 4: Clothes Washer System leading from washing machine to mulch basin.

Sizing your Graywater System

STEP 1: Estimate your Graywater Flows

California Code Method

(Based on CCR Title 24, Part 5, Chapter 16A)

For the CA Code Method, calculate the number of occupants using the following calculation, not the number of people actually living in your home.

Number of Occupants:

2 occupants in the First Bedroom

1 occupant in Each Additional Bedroom

Graywater flow per occupant:

15 gallons per day per occupant (gpd/occupant) for a washing machine

Total Estimated Graywater Flow:

Number of Occupants x Graywater flow per occupant = Total Estimated Graywater Flow

Example: 3 Bedroom Home

Number of Occupants = 4

Graywater flow per occupant = 15 gpd/occupant

Total Estimated Graywater Flow = 4 occupants x 15gpd/occupant = **60 gpd**

Irrigation Calculation Method

Irrigation calculations are important to make for all systems as they help ensure your plants will not get over or under-watered. This method can be used in place of the CA Code Method above for Clothes Washer Systems only.

Washing Machine (weekly flow)

20 gallons/load* x 3 loads per week = **60 gallons per week**

Washing Machine (daily flow)

20 gallons/load* x 3 load(s) per day = **60 gallons per day**

* See your machine specifications to determine how many gallons are used per load. The numbers used here are for example only.

Performing these calculations for your specific household fixtures yields the most accurate estimate of the amount of graywater available for your plants, but does not consider future changes. Volumes can vary if the size or habits of your household change over time, or if a new owner moves in. If you sometimes do five loads of laundry in one day, rather than spread them out over the week, consider this when you design and operate your system.

Irrigation during
Vacation

Going on a trip? Most graywater systems only irrigate when you are home using the laundry or other fixtures. If you go on vacation, make plans to keep your plants watered and healthy!

Sizing your Graywater System

STEP 2: Estimating the Absorption Capacity of Your Soils

Understanding the ability of your soil to absorb water is critical for designing your graywater system and sizing your landscape *irrigation field*. The irrigation field must be sized to allow the graywater to soak into the soil without ponding or runoff.

Different types of soil absorb water at different rates. Sandy soils absorb water more quickly than clay soils. To learn the basics about the soils in your yard, conduct a simple *soil ribbon test* by following the flow chart below.

Soil Ribbon Test



Figure 5. Prepare soil for the ribbon test by moistening and kneading.

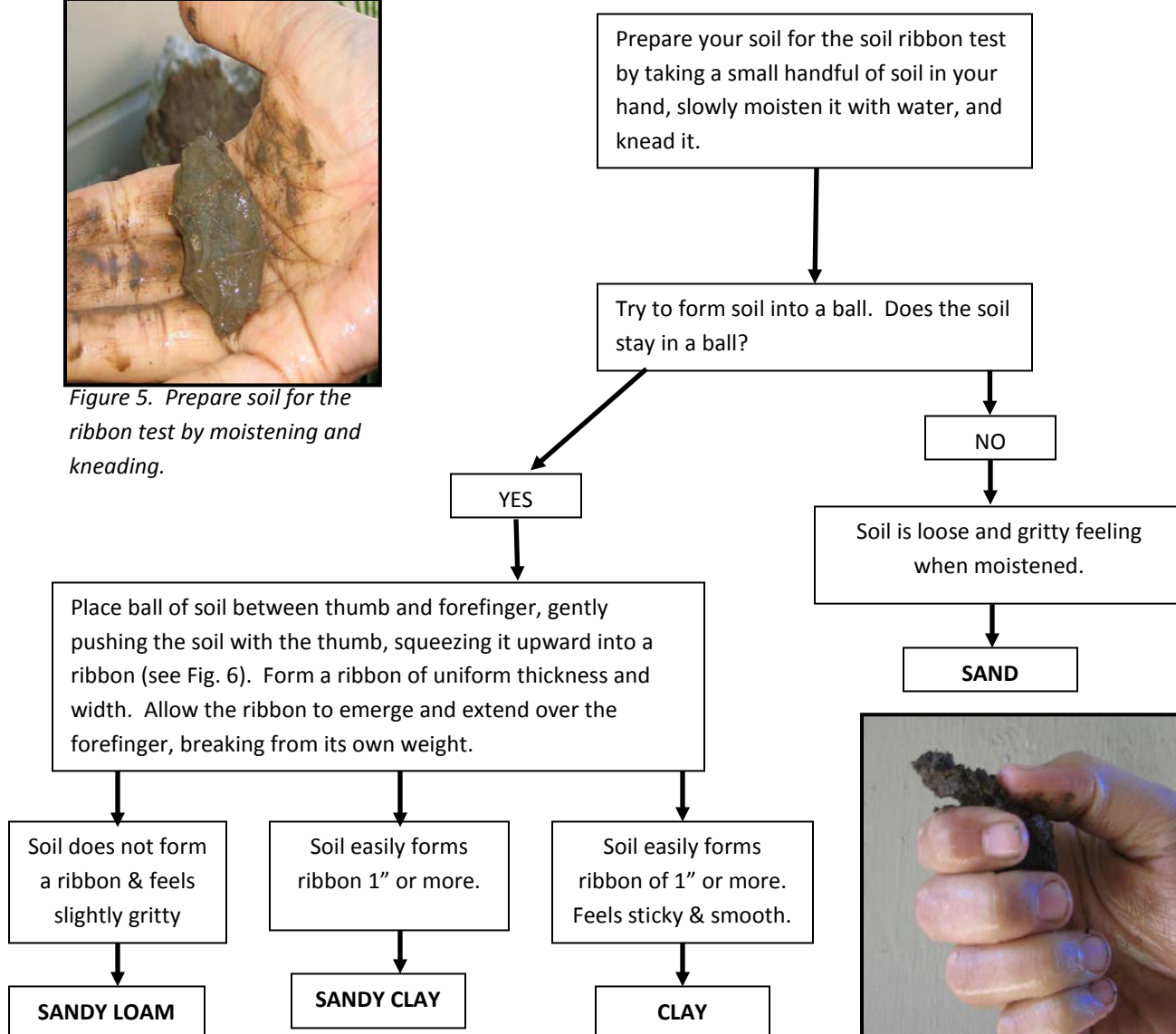


Figure 6. Squeeze soil, pushing upward into a ribbon with thumb.

Drainage Test (Optional)

If you plan to use graywater to irrigate sections of your yard that you already irrigate, you may not need to conduct the drainage test. The test will provide information about how well water absorbs in a particular location. Deeper soils can differ from surface soils, and hardscape (such as an old cement patio) might be buried under your yard. If you are unsure how water absorbs into the soil, a drainage test can help identify appropriate locations for irrigating with graywater. Remember, ponding and runoff of graywater is never allowed. If ponding or runoff occurs, you will need to redesign your system.

1. Dig a hole, approximately one foot deep, in the area where you plan to irrigate with graywater. Insert a ruler or stick marked with inches into the hole.
2. Fill the hole with water and let it soak in. Repeat this several times so that the surrounding soil is saturated when you take your reading.
3. Fill the hole with water again; this time record how long it takes for the water level to go down a few inches. If it drains approximately one inch per hour or faster, you have adequate drainage for irrigating the area with graywater.
4. If it takes longer than two hours for the water level to go down one inch, or the hole doesn't drain all day, don't use graywater to irrigate this area. Try another location to see if the drainage is better. If you irrigate an area that does not have adequate drainage, you could have ponding and runoff. Plants could also be damaged by water-logged soil, so make sure to irrigate only well-drained soils, or amend your soil by adding compost to improve drainage.

Once you know how many gallons per day your home produces, have identified your soil type, and know that water drains well in the area you wish to irrigate, calculate the irrigation area needed to ensure proper drainage of graywater.

Sizing your Graywater System

STEP 3: Calculating your *Irrigation Field Area*

To calculate your *irrigation field* area, you will need the Estimated Graywater Flow per day (gpd) calculated in Step 1 and the soil type determined in Step 2.

Find your soil type in Table 1 to the right and use the area indicated for your soil type. Multiply the gpd by the area to obtain the minimum area for your irrigation field. Note: your irrigation field can be larger than the calculated area, but not smaller.

Soil Type	Area (ft ²) per Gallon of Graywater (gpd)
Sand	.25
Sandy Loam	.4
Sandy Clay	.6
Clay	.9

Example: Total Estimated Graywater Flow per day = 60 gpd

Soil Type = Sand

Irrigation Field Area = 60 gpd x .25 ft² / gpd = **15 ft²**

Protecting Groundwater

Graywater must be discharged a minimum of three feet above the groundwater table. If you don't know how deep the groundwater is beneath your property, you can check by digging a hole three feet deep. If no water enters the hole, then it is safe to irrigate the area with graywater. If water enters the hole, the groundwater table is too shallow, and graywater may not be used for irrigation. If you dig a hole to check the depth to groundwater, do so during the irrigation season, as this is the time you'll be using graywater. During the rainy months, with any signs of ponding or runoff from rainfall, or in places where the groundwater table rises, all graywater systems must be shut off.

Setback Requirements: Where Not to Put Your Graywater

Your graywater system should irrigate plants without causing problems for you or your neighbors. A setback is a required distance between your graywater system and specific landmarks. The purpose of setbacks is to avoid potential problems caused by nearby land uses. For example, you will need to keep graywater a certain distance from your house to avoid damaging its foundation, from your neighbor's yard to maintain good neighborly relations, and from creeks to prevent contamination of freshwater. Table 2 lists setback requirements in Mendocino.

Table 2. Required Setbacks for Graywater Systems in Mendocino County

Minimum Horizontal Distance from	Irrigation Field (ft)	Storage Tank (ft)
Building structures (not including porches, steps, covered walkways, patios, driveway)	2	5
Private property lines	1.5	5
Water supply wells	100	50
Streams and lakes	100	50

References

Alameda County Waste Management Authority and Alameda County Source Reduction and Recycling Board, 2010. Bay-Friendly Gardening. Available at <http://www.stopwaste.org/home/index.asp?page=8>.

Thein, S.J., 1979. A Flow Diagram for Teaching Texture by Feel Analysis. Journal of Agronomic Education, 8:54-55.

PART 4 – POLICIES

- 4.1 Second Residential Unit Guidelines
- 4.2 Repair Guidelines
- 4.3 Family Care Units
- 4.4 Bedroom Addition Policy
- 4.5 Offsite Easement Policy
- 4.6 Linear Loading Rate
- 4.7 Groundwater Intercept Drains

PART 4 – POLICIES

4.1 SECOND RESIDENTIAL UNITS

Septic

1. A Second Residential Unit that contains only one bedroom, is no larger than 1,000 square feet, and meets the requirements of the Mendocino County planning and building codes may be connected to an existing septic system if the following conditions are met.
 - a. The existing permitted septic system must meet applicable state and county requirements for onsite waste disposal.
 - b. If the property owner or county Environmental Health office cannot provide official documentation that the existing septic system meets applicable state and county requirements for onsite waste disposal systems, then the property owner shall hire a Qualified Site Evaluator to determine whether the existing septic system meets those conditions for approval.
 - c. The property owner shall hire a Qualified Site Evaluator to identify a replacement area that meets applicable requirements and is sized to serve the total number of bedrooms originally in the primary residence plus the total number of bedrooms in the new second residence.
2. A Second Residential Unit that contains more than one bedroom and meets the requirements of the Mendocino County planning and building codes may be connected to an existing septic system if the following conditions are met.
 - a. The property owner must obtain the proper building permits to convert one or more bedrooms in existing structure into other space so that the total combined number of bedrooms in the primary and second residence equal no more than one bedroom greater than the original permitted septic capacity.

Note: Necessary changes to existing bedrooms may include conversion of doors into open archways, the removal or conversion of closets into open shelving or other structures, or other modifications.

- b. The property owner must also meet conditions 1 a–c, as applicable. The new replacement area must be sized to serve the total number of bedrooms originally in

the primary residence, including any that have been removed or converted to facilitate permitting the second residential unit, plus the total number of bedrooms in the second residence.

3. If the property is located within a service district, the property owner must provide written approval from the service district specifically authorizing the connection of a Second Residential Unit.

Water

4. If the source of drinking water is a well or spring, the property owner shall hire a qualified person to determine whether the well or spring meets the county proof of water requirements for a second residential unit.
5. If the property is located within a service district, the property owner must provide written approval from the service district specifically authorizing the connection of a second residential unit.

Second Residential Units, including travel trailers and recreational vehicles, must comply with all requirements of Mendocino County planning and building codes.

4.2 REPAIR GUIDELINES

IMPLEMENTATION

A failure analysis shall be performed to document the problem and establish the probable cause of the failure. If the cause is a collapsed or disconnected pipe the applicant is advised of the cause and that no repair permit is required. If the septic tank is determined to be the cause of the problem, advise the applicant to obtain a permit for the septic tank replacement. The abandonment of a functioning field in order to expand a structures footprint shall not constitute a repair.

When it is determined that the leach field is in failure, a site evaluation investigation shall be conducted to identify a replacement primary leach field area of acceptable soil conditions. A site investigation might rely on a backhoe test trench or three hand augers in combination with previous personal experience in the immediate area.

The Mendocino County LAMP critical criteria, depth to groundwater or impervious layer below the infiltrative surface, may be reduced from the minimum of 24 inches on a case-by-case basis. It is the intention that the purposed repair design will be more protective of groundwater and neighboring parcels than the existing system.

If a replacement area was already specified in a Site Evaluation Report for the property, then the EHS or QSE should conduct a site visit to verify soil conditions as reported and determine that the site has not changed significantly to preclude the use of the designated area. The location and/or design of the replacement area may have to be modified based on the EHS's or QSE's findings. If possible a 100% future replacement field shall be identified utilizing either test pits or three hand augers. This future replacement leach field design shall utilize standard design criteria.

Leach field sizing shall be based on 0.50 gals per sq. ft. per day (utilizing sidewall and bottom area) for sites that pre-date the inception of the Basin Plan Policy. For properties with Site Evaluation Reports completed after the inception of the Basin Plan Policy, either the sizing specified in the Report or, alternately, the most current Basin Plan sizing criteria may be used.

Upon the adoption of the Russian River TMDL additional site criteria may be required at sites identified by the NCRWQCB to be near an impaired water body. Such requirements shall be set forth in the Tier 3 Advanced Protection Management Program for Impaired Areas of the Mendocino County LAMP.

4.3 FAMILY CARE UNITS

Environmental Health Division will continue its policy of allowing a temporary FCU to temporarily utilize the existing sewage system of the existing original residence where the proposed FCU is clearly temporary in nature, such as a camp trailer, motor home, or RV of any kind.

Where the FCU proposal is the construction/installation of a permanent structure, a Site Evaluation Report (SER) and letter of "willingness and ability" from the water supply district shall be required. Any structure that requires a building permit is considered a permanent structure for the purposes of this policy. Once the SER is reviewed and approved and an adequate water supply demonstrated, Environmental Health's staff may approve the Administrative Permit for the FCU.

Environmental Health may grant an exception to the requirement for additional septic system capacity for very small permanent one bedroom FCUs equal to or less than 640 square feet in size.

4.4 BEDROOM ADDITION POLICY

The EHO may approve an additional bedroom(s) or 10% increase in flow from a commercial establishment if it can be found that the increased use of the disposal system will not exceed its reasonable capacity and one of the following:

1. That the disposal system was based on a Site Evaluation Report completed in accordance with the requirements of the WQCB Basin Plan Policy and identifies an available replacement area capable of accommodating the proposed increase of use.

OR

2. That the Soil Conservation Service Soil Survey of Mendocino County Table 11 – Sanitary Facilities indicates slight limitation for septic tank systems and there is an available replacement area capable of accommodating the proposed increase of use.

OR

3. That adequate soil conditions, consistent as nearly as possible with the current WQCB Basin Plan Policy for Waste Water Disposal, exist on the property, as determined by the EHO or a Qualified Private Site Evaluator (QPSE), and there is an available replacement area capable of accommodating the proposed increase of use.

REQUIRE QPSE ONLY FOR CRITICAL CONDITIONS

The EHO should consider the requirement of a QPSE only for critically limiting conditions such as: high strength commercial waste, large volume flows, large increase in flows, severe soil and/or groundwater conditions, or sites requiring alternative/experimental systems.

The key question for the EHO to ask is: will a QPSE provide additional critical information, beyond our capacity and which is vital for a successful design?

If yes, then the property owner should be required to hire a QPSE to identify a replacement area consistent as nearly as possible with the current WQCB Basin Plan Policy for Waste Water Disposal.

BEDROOM DEFINITION

A bedroom, for purposes of sizing on-site sewage systems, shall be defined as: any room designated by applicant as a “bedroom”; other rooms, such as sewing rooms, dens, offices, studios, lofts, game rooms, etc. may also be considered as bedrooms.

Rooms having one or more of the following features may not be considered by the Health Officer to constitute a bedroom:

1. A large (6–8 feet opening) arched frameless doorway without a door which opens into the entry way or a main activity area.
2. Use of a half wall or railing along at least one side of the room.
3. If the space is 70 square feet or less.

Notwithstanding the above provisions, the minimum number of bedrooms for any dwelling shall be no less than the following:

Gross Floor Area	No. of Bedrooms
0 – 1500 SF	1
1501 – 2100 SF	2
2101 – 3000 SF	3
Over 3001 SF	4

4.5 OFFSITE EASEMENT POLICY

It is the preferred position of the Environmental Health Division to have private sewage disposal systems located entirely within the boundary of the lot which is the site of the building or structure served by such private sewage disposal system to the extent practical.

Prior to approval of a sewage disposal easement, applicants should be advised to attempt a boundary line adjustment or parcel merger.

The use of off-site easements for sewage disposal in conjunction with the creation of new parcels through the subdivision process is generally discouraged and will be considered only in appropriate circumstances where the applicant can demonstrate to the satisfaction of the County of Mendocino that the sewage disposal system will not negatively impact natural resources and be properly maintained and monitored to minimize the risk of damage.

Authority

1. California Plumbing Code, Appendix K, incorporated in Mendocino Code, Section 16.08.130
2. California Health and Safety Code, Sections 17922 and 17958
3. Mendocino County General Plan
4. Government Code Section 66412(d)
5. Mendocino County, County Counsel's opinion #07-199, March 20 & October 10, 2007
6. Mendocino County, County Counsel's opinion #09-0993, September 10, 2009
7. Mendocino County Code, Chapter 17
8. Mendocino County Code, Chapter 20.532
9. Mendocino County Code, Chapter 20.016

Procedure – Boundary Line Adjustment

1. Property Located in Coastal Zone

A proposed boundary line adjustment (BLA) must be approved by the Coastal Permit Administrator (CPA) pursuant to Mendocino County Code section 20.532.015. A decision of the CPA may be appealed to the Board of Supervisors or the Coastal Commission.

Boundary line adjustments will not be considered to allow development for lots recognized by a Certificate of Compliance, land patent, or other instrument that may establish the lands as legally separate unless currently developed or able to be developed in the lands existing configuration.

2. Property Located Outside Coastal Zone

A proposed BLA in which the parcels are in conformance with the minimum applicable lot size for sewer and water under the standard of the General Plan may be processed by application to the Subdivision Committee (staff level). Reduction of the number of parcels to permit resulting configuration to be self-contained for sewer and water may also be considered at the staff level.

Boundary line adjustments will not be considered to allow development for lots recognized by a Certificate of Compliance, land patent, or other instrument that may establish the lands as legally separate unless currently developed or able to be developed in the lands existing configuration.

Procedure – Sewage Disposal Easements for Existing Parcels

Off-site sewage disposal easements will be considered for parcels that are:

1. Already developed with a residential, commercial, industrial, or institutional use type as defined in Mendocino County Code Chapter 20.016.
2. Vacant parcels 6000 square feet or larger that can meet contemporary zoning standards related to building setbacks under the Zoning Ordinance and which will meet DEH standards if an offsite sewage easement is permitted, so long as the parcel is left in its existing configuration.

Procedure – Sewage Disposal Easements for New Subdivisions of Property

1. All septic system designs will comply with state LAMP requirements.

2. The Division of Environmental Health will consult with Planning & Building Services at the Subdivision Committee and that recommendation will be considered by the Planning Commission for action.

Procedure – Sewage Disposal Easement Requirements

This section identifies the requirements for establishing a sewage disposal easement.

1. The sewage disposal system or part thereof shall be located on an abutting lot of the site of the building or structure served by such sewage disposal system. Roads shall not be considered as a separation in defining an abutting lot.
2. Easements shall be recorded with the County Clerk Recorder's Office. This shall include:
 - a. A non-exclusive easement grant deed conveying the easement from the record owners of the burden parcel to the owners of the parcel to be developed.
 - b. A full legal description of the easement area prepared by a Licensed Land Surveyor or Registered Civil Engineer licensed to survey.
 - c. All appurtenant easements for access, pipelines, drainage, etc., shall be conveyed in the easement grant deed.
 - d. The following Conditions and Restrictions shall be recorded on the deed:

The use of the area of the leach field easement by the grantor shall be restricted from uses which are incompatible with proper leach field operation. This shall include structures, grazing livestock, vehicular parking, road ways, drainage courses, wells or other uses which would disrupt the leach field.
3. Leach field easements shall be separate and distinct from one another, unless a maintenance entity is established in accordance with County policy regarding the creation of community leach fields.
4. A Record of Survey map will be required, and the easement corners and angle points shall be identified by a Licensed Land Surveyor or Registered Civil Engineer licensed to survey. Additional six foot steel fence posts may be required to clearly identify the location of the septic easement.
5. Septic systems that require a sewage disposal easement shall be placed in the county's non-standard septic system program. Standard septic systems with easements in close proximity to the structure served shall not be placed in the non-standard septic system program for monitoring and maintenance.
6. Each sewage disposal easement shall provide sufficient area so that all activities necessary for the installation, maintenance and monitoring of the leach fields and transmission line may

occur solely within the area of that easement. In some cases, the easement may require additional space to allow access for necessary construction equipment.

7. The following setback, sizing and construction requirements shall apply to all sewage disposal easements:
 - a. A minimum 20-foot perimeter shall be required around each leach field area of sewage disposal easement. For the purposes of this requirement, the leach field shall be deemed to include any cover soil that extends beyond infiltrative surfaces.
 - b. Single transmission line corridors that are less than 100 feet in length and which are not used to provide equipment access shall be a minimum of 12 feet in width. A transmission line and an associated return line shall be treated as a single line for the purposes of this and all following requirements.
 - c. Single transmission line corridors that are greater than 100 feet in length, contain multiple transmission lines, or are used to provide equipment access shall be a minimum of 20 feet in width.
 - d. A tracing wire with ends that are protected and easily located shall be required for each transmission line.
 - e. If multiple transmission lines are placed within the same transmission line easement, transmission lines shall not cross over other transmission lines. Each line shall be situated within the allotted easement area to facilitate the safe installation and future maintenance of individual lines.
 - f. A minimum 20-foot wide easement corridor shall be required to ensure equipment access to the disposal area. Environmental Health may require additional width where the access corridor contains corners, bends, large trees, rock outcroppings or any other obstacle.
 - g. If equipment access is provided via a transmission line corridor, the transmission line shall be installed in a manner that will protect it from being damaged by the movement of equipment and materials.
 - h. The owner whose property is served by a septic easement shall be responsible for maintaining that easement, including the repair of required borders or boundary markers and the removal of vegetation for fire suppression.
 - i. The minimum widths of 20 feet referred to in paragraphs 7a, 7c and 7f, above may be modified to widths of no less than 12 feet if the applicant can demonstrate to Environmental Health that this is adequate, based on constraints such as slope of the ground, the vegetative cover, and the type of system proposed.

APPENDIX A

Summary of Boundary Line Adjustment and Septic Easement Approval Processes

I. Boundary Line Adjustments

1. Are the parcels in the Coastal Zone?

If yes, then go to Question 2.

If no, then go to Question 4.

2. Are the parcels recognized by Certificates of Compliance?

If yes, then go to Question 3.

If no, then Coastal Permit Administrator (CPA) must review for approval. A decision of the CPA may be appealed to the Coastal Commission or the Board of Supervisors.

3. Are the parcels, in their existing configurations, either currently developed or able to be developed?

If yes, then Coastal Permit Administrator must review for approval. A decision of the CPA may be appealed to the Coastal Commission or the Board of Supervisors.

If no, then the applicant will be informed that policy does not permit a BLA; however, applicant may request review by the CPA. A decision of the CPA may be appealed to the Coastal Commission or the Board of Supervisors.

4. Do the parcels currently conform with minimum lot size requirements?

If yes, then staff will review for approval. A denial by staff may be appealed to the Planning Commission.

If no, then go to Question 5.

5. Are undersized parcels being merged to create a single parcel that will be self-contained for sewer and water?

If yes, then staff will review for approval. A denial by staff may be appealed to the Planning Commission.

If no, then go to Question 6.

6. Are the parcels, in their existing configurations, either currently developed or able to be developed?

If yes, then Planning Commission must review for approval. A decision of the Planning Commission may be appealed to the Board of Supervisors.

If no, then the applicant will be informed by staff that policy does not permit a BLA. However, applicant may request review by the Planning Commission. A decision of the Planning Commission may be appealed to the Board of Supervisors.

II. Septic Easements

1. Is easement needed to serve existing developed parcel?

If yes, then staff can review for approval.

If no, then go to Question 2.

2. Is easement needed to serve new parcels created by a proposed subdivision?

If yes, then Planning Commission must review for approval.

If no, then go to Question 3.

3. Is easement needed to serve a vacant parcel that meets contemporary zoning standards and building setbacks, and will that parcel meet DEH standards if an offsite septic easement is permitted?

If yes, then staff can review for approval or refer to the Planning Commission.

REGULATORY BACKGROUND: There are numerous statutory and policy considerations when attempting to address this issue. Unfortunately, some of the directives contain ambiguities or appear to conflict with one another. In the following section identifies some of the laws, regulations and policies which should be considered. In some entries, phrases are highlighted in **bold type** to accentuate sections that may be germane to this discussion.

I. The Use of Off-site Septic Easements

- California Plumbing Code, Appendix K, Section G (incorporated in Mendocino County Code at section 16.08.130) states:
 - No private sewage disposal system, or part thereof, shall be located in any lot other than the lot that is the site of the building or structure served by such private sewage disposal system, nor shall any private sewage disposal system or part thereof be located at any point having less than the minimum distances indicated in Table K-1.
 - Nothing contained in this code shall be construed to prohibit the use of all or part of an abutting lot to provide additional space for a private sewage disposal system or part thereof when proper cause, transfer of ownership, or change of boundary not in violation of other requirements has been first established to the satisfaction of the authority having jurisdiction.

NOTE: This section is confusing, to a degree, in that it provides an exception to the stated general prohibition against the use of sewage disposal easements.

II. The Creation of Boundary Line Adjustments.

- Mendocino County Code Section 17-17.5 states, in part:
 - "Boundary line adjustment" means the transfer of property by deed to a respective owner or owners of contiguous property for the purpose of adjusting a boundary line and **not for the purpose of creating an additional lot or parcel.**
- Subdivision Map Act Section 66412(d) regulates boundary line adjustments. It states:
 - A lot line adjustment between four or fewer existing adjoining parcels, where the land taken from one parcel is added to an adjoining parcel, and where **a greater number of parcels than originally existed is not thereby created**, if the lot line adjustment is approved by the local agency, or advisory agency. A local agency or advisory agency shall limit its review and approval to a determination of whether or not the parcels resulting from the lot line adjustment will conform to the local general plan, any applicable specific plan, any applicable coastal plan, and zoning and building ordinances. An advisory agency or local agency shall not impose conditions or exactions on its approval of a lot line adjustment except to conform to the local general plan, any applicable specific plan, any applicable coastal plan, and zoning and building ordinances, to require the prepayment of real property taxes prior to the approval of the lot line adjustment, or to facilitate the relocation of existing utilities, infrastructure, or easements.
- The California Environmental Quality Act provides for a categorical exemption to boundary, or lot line, adjustments, but qualifies the exemption as follows:
 - Section 15305. Minor Alterations in Land use Limitations.
 - Class 5 consists of minor alterations in land use limitations in areas with an average slope of less than 20%, **which do not result in any changes in land use or density**, including but not limited to:
 - **Minor lot line adjustments**, side yard, and set back variances not resulting in the creation of any new parcel;
 - Issuance of minor encroachment permits;
 - Reversion to acreage in accordance with the Subdivision Map Act.

NOTE: There is no definition of what a “minor lot line adjustment” is, nor is an alternative “major” lot line adjustment discussed.
- Mendocino County Code Section 20.532.015(D) states:

- Coastal Development Standard Permit. **A coastal development standard permit must be secured for** any other activity not specified above which is defined as a development in Section 20.308.035(D), including, but not limited to, land divisions, **lot line adjustments** and any other entitlement for use.
- The General Plan contains the following Development Element Policies:
 - Policy DE-31: **Legally created parcels (including certificates of compliance)** that do **not** comply with development requirements **shall only be developed conditional to the satisfaction of basic requirements for health, safety, access and orderly development.**
 - Policy DE-32: Allow development of legal nonconforming lots, structures and uses that are consistent with General Plan, environmental and community objectives and seek the discontinuance of those which are not consistent. The following standards shall apply:
 - **Legal nonconforming lots may be developed, subject to current development standards,** legal nonconforming structures may be used, and legal nonconforming uses may continue when basic health and safety are provided.
 - Discontinued or destroyed legal nonconforming uses and structures must be reestablished within a reasonable time, as established in the Development Code, or future uses must conform to applicable regulations.
- LCP Policy 3.8-7 states:
 - Land divisions and subdivisions creating new parcels or building sites or other proposed development, **including lot line adjustments,** mergers and issuance of conditional certificates of compliance **shall be approved only** where a community sewage disposal system with available capacity exists and is obligated to provide service or **where a satisfactory site for a sewage system exists.** Leach field approval shall require satisfactory completion of a site evaluation on the site of each proposed septic system. A leach field shall not be located where the natural grade exceeds 30 percent slope or where there is less than 5 feet of soil below the trench if natural grade exceeds 20 percent slope. This septic system policy is consistent with the Minimum Guidelines for the Control of Individual Wastewater Treatment and Disposal Systems adopted by the Regional Water Quality Control Board on April 17, 1979.
- The County's Division of Land Regulations (Chapter 17 of the County Code) states as its purpose:
 - This Chapter is enacted **for the purpose of promoting the public health,** safety, convenience, and general welfare in accordance with the general plan of the County of Mendocino, **including** but not limited to **the elimination of:**

- (A) The creation of **lots of inadequate size and poor design**;
- (B) The **creation of building sites in areas where topography, flooding, or other factors will prevent safe, orderly, and beneficial land development**;
- (C) The creation of roads of improper width, alignment, grade, and improvements;
- (D) **Hazards to life or property from sewage effluent** or inadequate drainage;
- (E) The lowering of property values and the loss of opportunity for satisfactory overall development of neighborhoods caused by successive, uncontrolled and haphazard land divisions;
- (F) The excessive cost to taxpayers of Mendocino County for providing services within the Subdivision.

4.6 LINEAR LOADING RATE (IN SHALLOW SOIL ON > 20% SLOPE)

This policy is consistent with the US EPA Onsite Wastewater Treatment Systems Manual Section 4.4.6 “*Geometry, orientation, and configuration of the infiltration surface*”.

Long narrow trenches on the slope contour are highly recommended and the reader is cautioned against exceeding the maximum contour loading though no quantitative data are presented.

For purposes of this policy the most recent Wisconsin At-Grade Design Manual shall be used as a source of quantitative data for Linear Load Rate (LLR). LLR shall mean the sum of the hydraulic loadings to one or more lines per each unit of contour length. Design Principles are discussed on pages 5 through 7 of the Manual and represented on Figure 3, a copy of which is attached to this policy. The Basin Plan criteria as shown below shall be used to provide definition for the 4 different soil profile conditions of Figure 3 of the At Grade Design Manual.

Criteria for granting approval for soil depth <3 feet on slopes >20%:

- A. Trench Systems:
 - 1. Pressure distribution shall be required and;
 - 2. Linear loading rates consistent with the At-Grade Design Manual and;
 - 3. Cross sectional details specifying how the trenches are to be constructed.

- B. Drip Emitter Systems:
 - 1. Pressure Compensating emitters shall be required and;
 - 2. Linear loading rates consistent with the At-Grade Design Manual and;
 - 3. Cross sectional details specifying on-center spacing of drip laterals.

- C. Linear Loading Rates from the At-Grade Design Manual (Fig. 3.) shall be defined consistent with the LAMP as follows:
 - 1. Impermeable Soil Layer = >120 MPI and LLR = 4 gpd/lf
 - 2. Semi-permeable Soil Layer = >60 and <120 MPI and LLR = 6 gpd/lf
 - 3. Water Table = >5 and <60 MPI and LLR = 8 gpd/lf
 - 4. Creviced Bedrock = >1 and <5 MPI and LLR =10gpd/lf

Sites that cannot meet these criteria may be considered if a Slope Stability Study is completed by a qualified geo-technical engineer to the satisfaction of the Environmental Health Division.

4.7 GROUNDWATER INTERCEPT DRAINS

Implementation

A) TESTING

A good groundwater intercept drain design will depend on adequate testing. In order to reasonably assure the drain will key into the impermeable layer along the alignment, it is the policy of DEH to require 3 test profiles. One at each of the two ends and a third at the mid-point of the gravel filled portion of the intercept drain alignment. This can be accomplished with either a backhoe or hand auger. The depth to the impermeable soil layer shall be reported in the SER.

B) DESIGN

Certain design factors are important to the initial and continued satisfactory operation of the groundwater intercept drain.

1. It is the policy of DEH to require that the bottom of the drain extend a minimum of 1 foot into the impermeable layer or down to the soil/rock interface of hard bedrock. This is to assure that the invert of the drainpipe is at or below the impermeable layer.
2. The drain pipe shall be a minimum of 3 inch rigid perforated drain pipe on a minimum grade of 0.25% (3 inches per 100ft) and placed on a minimum 3 inch gravel base (maximum 6 inch gravel base). This is to insure the pipe is not imbedded or crushed into the trench bottom reducing its carrying capacity.
3. The GID trench width may be 12 inches or less and gravel may be 1 ½" or ¾" size.
4. The perforated drainpipe shall have screw capped clean-outs brought up to natural grade at the two ends and the mid point, if the mid-point is the high point and outlets on both sides. Clean-outs insure that continuity can always be checked, maintenance performed and the line flushed as needed.
5. The outlet shall be covered with a screen or perforated pipe that has maximum of ¼ inch openings. This is to assure that rodents or other animals do not block the drain with their nests. Outlets are encouraged at both ends of the GID. The proposed drain discharge point shall not adversely impact down-slope sewage systems or other neighboring improvements.
6. GID drawings shall be provided showing scaled cross-sectional and plan views.
7. Groundwater monitoring well(s) shall be installed down-slope of the GID to monitor the GID effectiveness.

C) INSPECTIONS

DEH inspection of the groundwater intercept drain shall include the following critical control points as a minimum. Alternately, a qualified professional designer may inspect and certify to DEH these same critical control points as a minimum.

OPEN TRENCH

1. The length of the open trench (prior to the placement of the drain rock) shall be inspected for the presence of the impermeable layer being keyed into and the depth of the drain per design. This may require phased inspections and close coordination between EH staff and the contractor. The minimum slope (0.25%) of the trench bottom shall be verified at this time with an eye level, or builder's level or laser level.
2. Do not enter the trench if greater than 5' deep or if it appears unstable in anyway.
3. The type of drainpipe used, gravel bedding and filter fabric or other specified materials shall be checked for compliance with the specifications.

FILLED TRENCH

4. The presence and proper location of clean-outs shall be checked in addition to the final lift of the gravel fill to the specified elevation.
5. The presence of a proper rodent screen shall be checked at the time of final inspection.
6. The presence of ground water monitoring wells installed to the depth of the impervious layer on the down-slope side of the GID shall be verified.

D) ALTERNATE OPERATIONAL DEMONSTRATION

A GID may be approved without DEH (or a qualified professional designer) inspection if it can:
1) be demonstrated to the satisfaction of DEH to have effectively lowered ground water to Basin Plan LAMP criteria, and demonstrated compliant through groundwater monitoring at the two ends of the most distant proposed trench location and 2) be shown that the installation of cleanouts, screened outlets and monitoring wells are consistent with this policy.