



PLUMAS COUNTY

Sewage Disposal System Installation and Procedure Manual

THIS INFORMATION IS PROVIDED BY
PLUMAS COUNTY ENVIRONMENTAL HEALTH



FOR MORE INFORMATION PLEASE CONTACT
ENVIRONMENTAL HEALTH

QUINCY OFFICE:
270 COUNTY HOSPITAL RD. STE 127
QUINCY, CA 95971
PHONE: 530-283-6355
FAX: 530-283-6241
<http://www.countyofplumas.us>

EFFECTIVE
April 2016

TABLE OF CONTENTS

I.	SEWAGE DISPOSAL PERMIT PROCEDURE.....	1
	A. Sewage Disposal System Application:	1
	B. Percolation Testing:.....	1
	C. Site Visit:	1
	D. Permit Issuance:.....	1
	E. Begin Construction:	2
	F. Final Inspection:	2
II.	PERMIT EXPIRATION AND EXTENSIONS.....	3
	A. Application to Construct:.....	3
	B. Permit to Construct:.....	3
III.	BACKGROUND SEWAGE DISPOSAL INFORMATION	3
	A. Soil Absorption Capacity:	3
	B. Why Absorption Fields Fail:.....	4
	C. Additional Information:.....	4
IV.	SITE SUITABILITY REQUIREMENTS	4
	A. Percolation Testing:.....	4
	B. Soil Profile Testing (Mantle Test):	4
	C. Groundwater Monitoring (Piezometer Testing):.....	5
V.	DRAINFIELD SIZING - BEDROOM CRITERIA	5
	A. Habitable rooms:	5
	B. Lofts:	5
	C. Large Rooms:.....	5
	D. Non-Bedroom Features:.....	6
VI.	STANDARD SEPTIC SYSTEM COMPONENTS.....	6
	A. Septic Tank:	6
	B. Drainage System (leachfield):	7
	C. Leachfield Replacement Area:	7
VII.	SYSTEM LOCATION REQUIREMENTS.....	8
VIII.	PUMPED EFFLUENT SYSTEM (STEP) REQUIREMENTS:.....	8
	A. Water Tight Construction:.....	8
	B. Surface Access:	8
	C. Plumbing Installation:	9
	D. Pump Alarm and Control Panel:	9
	E. Internal Pump Septic Tanks:	9
IX.	NON-STANDARD SEPTIC SYSTEMS:.....	9
	A. Engineered Design Systems:	9
	B. Advanced Treatment Systems:	9
X.	DECOMMISSIONING SEPTIC SYSTEMS.....	10
	A. Abandoning Leachfields:	10
	B. Abandoning Septic a Tank:	10
XI.	COMMUNITY SEWER SYSTEMS	10
	A. Converting from On-Site to Community Sewer:.....	10
	B. On-Site Sewage Systems Within Community Sewer Districts:.....	10
XII.	REUSE OF EXISTING SEPTIC SYSTEMS	10
	A. Required Documentation:.....	10
	B. Percolation test data:.....	11
XIII.	GRINDER PUMPS AND GRINDER PUMP VAULTS	11

XIV. GREASE INTERCEPTORS..... 11

APPENDIXES

APPENDIX A: PLOT PLAN DIAGRAM EXAMPLE 12

APPENDIX B: STANDARD LEACHBED DETAIL 13

APPENDIX C: STANDARD GRAVELLESS LEACHBED DETAIL 14

APPENDIX D: STANDARD TERRACED LEACHBED DETAIL 15

APPENDIX E: STANDARD AT-GRADE LEACHBED DETAIL..... 16

APPENDIX F: DEEP TRENCH TERRACED LEACHBED DETAIL..... 17

APPENDIX G: PUMPED EFFLUENT SYSTEM DETAILS 18

APPENDIX H: PERCOLATION RATE TABLE & LEACHBED EXAMPLE..... 19

APPENDIX I: SITE SUITABILITY CONSULTANTS 20

APPENDIX J: PLUMAS COUNTY APPROVED SEPTIC TANKS 21

APPENDIX K: SEWAGE DISPOSAL SYSTEM CONTRACTORS 22



I. SEWAGE DISPOSAL PERMIT PROCEDURE

Please use the following procedure to ensure timely processing of your sewage disposal permit application.

A. Sewage Disposal System Application:

Submit the completed Sewage Disposal System Application, along with a preliminary plot plan drawn to scale on an 8 ½" X 11" sheet, the percolation test data and any soil profile/mantle excavation test data to the Planning and Building Services Agency with the appropriate fee. Following processing by Planning and Building, the application package will be forwarded to Environmental Health.

Note: Septic system permit applications for engineered designs including and not limited to oversized leachfields, elevated mound systems, and Advanced Treatment Units, are charged an additional design review fee over that of a standard septic system.

Septic systems with pump stations require an approved electrical permit from the Planning and Building Services Agency.

The permit application can not be approved if the percolation test and soil profile data (if required) are not already on file or included with the application package.

B. Percolation Testing:

If percolation testing has not been completed or is not on file, it must be conducted before the application can be approved. Additional testing such as soil profile or piezometer monitoring may also be needed before the application can be approved.

C. Site Visit:

An Environmental Health Specialist will conduct a site visit of the property to review the location and size the proposed system.

To facilitate the site visit, please do the following:

1. Ensure the parcel is clearly identified from the roadway showing the name of the owner and the street address.
2. If the parcel is secured please provide access either by unlocking the gate or providing an escort.

D. Permit Issuance:

After the location has been approved and all required testing has been submitted and approved, Environmental Health will issue a permit. This permit is valid for a period of one (1) year from the date of issue. The permit and a copy of the approved plot plan will be mailed to the applicant and/or contractor as requested.

E. Begin Construction:

The permit and approved plot plan list all of the information necessary to construct the system, including the size, configuration, maximum depth of excavation, and special conditions of installation. Construction may commence at this time.

If you have any specific questions or wish to change the designated size, configuration or location, contact Environmental Health at (530) 283-6355 (Quincy) or (530) 258-2536 (Chester) before proceeding.

Re-inspections resulting from violations of regulations or negligence on the part of the person requesting the service shall be billed at the department's hourly rate.

F. Final Inspection:

After installation, but before covering with earth, contact Environmental Health for a Final Inspection, 24 hours notice is recommended.

1. The final inspection can not be conducted without the following:

a) As-Built Information:

As-built information identifying the location and dimensions of the leachbed in relation to the septic tank is required (not required for tank only installations).

b) Perimeter Tracer:

A perimeter tracer (continuous #12 insulated copper building wire or 2 inch wide detectable metallic tape) must be installed from the septic tank to the distribution box(s) and around the perimeter of the leachfield and back to the septic tank.

c) Septic Systems with a Pump:

The pump and alarm systems must be tested as part of the final septic system inspection.

(1) The control/alarm panel must be fixed to a permanent location and wired according to the requirements of the electrical permit.

(a) Existing Construction: The electrical system must be inspected by the Planning and Building Services Agency prior to contacting Environmental Health.

(b) New Construction: The electrical system will be inspected as part of the overall electrical system by the Planning and Building Services Agency.

(2) Electrical Power:

(a) Electrical connections: Must have molded plugs or must be contained within approved electrical boxes

(no open field connections where wire splices are outside of approved junction boxes).

(b) Temporary electrical power: Power connections must meet the following safety requirements:

(i) A plug-cord connection must have a three-wire (grounded) extension cord, and must be connected to a Ground Fault Interrupter (GFI) protected outlet or breaker.

(ii) An electrical generator connection must be properly grounded and have over-current protection.

2. Engineer Designed Septic Systems:

The designing engineer is required to:

a) Inspect the installation;

b) Perform a "squirt test" (if a pumped system); and

c) Provide a signed letter of conformance stating that the system was installed and functions according to their design.

II. PERMIT EXPIRATION AND EXTENSIONS

A. Application to Construct:

Applications for permits are valid for one (1) year from date of receipt. The applicant has one (1) year to submit all supporting documentation, such as percolation test results, piezometer results, etc. to demonstrate compliance with Plumas County Code, Title 6, Chapter 6 for permit issuance.

An application becomes invalid at the end of one (1) year and is not eligible for extension of time.

B. Permit to Construct:

The permit is valid for one (1) year from date of issue. Approximately thirty (30) days prior to the permit expiration date, the applicant should receive written notification from Environmental Health regarding the expiration date of the permit.

If the system is not installed prior to permit expiration, the applicant may request a one time permit renewal for up to one (1) year. The renewal request must be received along with the appropriate fees prior to permit expiration. Should a permit expire before renewal, the permit is declared invalid and a new application and fee are required to complete the project.

III. BACKGROUND SEWAGE DISPOSAL INFORMATION

Excerpts paraphrased from Agriculture Information Bulletin #349.

A. Soil Absorption Capacity:

In planning a on-site sewage disposal system, first find out if the soil can absorb the liquid sewage, the effluent, that flows from the septic tank. Some soils absorb effluent rapidly, others slowly.

How long and how well your sewage disposal system functions depends largely on the absorption capacity of the soil. The effluent must be absorbed and filtered by the soil; otherwise unfiltered sewage may reach the surface or may contaminate ground water. Sewage that reaches the surface has a very bad odor, attracts flies and other insects, and is a public health hazard with a high potential for disease exposure for both humans and animals.

Knowing the absorption capacity of the soil is an important part in determining the size of leachfield your parcel will require. The slower the rate of absorption, the larger the leachfield required. It is possible that if your lot is small and the soil on your lot has a slow rate of absorption, you may need an absorption field larger than your lot can accommodate. Some soils, regardless of the size of the lot, are not suitable for on-site sewage disposal.

B. Why Absorption Fields Fail:

Inspections by engineers have shown that sewage absorption fields fail to work properly mostly because the soils either are poorly drained or are so compact that the absorption rate is very slow.

Poorly drained soils are saturated with water during wet weather; creating a condition where there is no space left for effluent absorption. Leachfields in such soils may function well in dry weather and fail in wet weather. If a soil has a very slow absorption rate, the effluent may rise to the surface even in dry weather.

C. Additional Information:

For more information or to contact the Environmental Health Specialist assigned to your area or to obtain a guide for septic system maintenance, please contact Environmental Health.

IV. SITE SUITABILITY REQUIREMENTS

The applicant must demonstrate suitability of a property for on-site sewage disposal using the services of a California Registered Engineer, Geologist, or Environmental Health Specialist. A list of testing consultants can be found at the end of this booklet.

The demonstration of site suitability will include some or all of the following tests:

A. Percolation Testing:

A percolation test is required on every lot where a septic tank and leach drainage system will be used. Percolation testing must be performed at the depth and location of the proposed drainage system. Percolation test results, in conjunction with projected sewage flows or the number of bedrooms served, determine the absorption area sizing requirements of the drainage system.

B. Soil Profile Testing (Mantle Test):

Soil profile testing, also known as soil mantle testing, may be required on some parcels. This testing is performed by a qualified third party consultant to verify soil depth to impermeable layers or bedrock, and possible indicators of a high groundwater table. Typically, a backhoe

excavation is conducted in the presence of a representative of Environmental Health. Visual observations are often adequate to determine site suitability, but deep percolation or other tests may be required in conjunction with the profile.

C. Groundwater Monitoring (Piezometer Testing):

On parcels where seasonal high groundwater is suspected or known, the property owner or their designated representative must demonstrate adequate separation between the highest seasonal groundwater and the deepest portion of the leachfield. This demonstration usually requires the installation and wet season monitoring of at least one (1) piezometer within the proposed leachfield area. The piezometer be must installed under permit in a location and manner approved by Environmental Health. The wet season monitoring must be conducted by a site suitability consultant. The piezometer must be installed and monitored from November 1 through May 31.

The highest water level will be used to assess the suitability of the parcel for a sewage disposal system. A signed permit application is required for piezometer installation and authorization for monitoring. Please contact Environmental Health for permit applications and more information.

V. DRAINFIELD SIZING - BEDROOM CRITERIA

Sizing of a sewage disposal system depends upon the parcel percolation rate and number of bedrooms in the structure. Leachfields for commercial structures are sized by other criteria. Environmental Health uses the following criteria for determining what is and is not a bedroom for purpose of designing sewage disposal systems:

A. Habitable rooms:

Habitable rooms (at least 70 square feet with minimum natural light and ventilation) with closable doors such as: sewing rooms, dens, offices, studios, game rooms, etc. are considered bedrooms. The presence or absence of a closet does not determine whether a room is potentially a bedroom.

B. Lofts:

Rooms such as lofts are considered bedrooms provided there is some expectation of privacy.

C. Large Rooms:

A single large room that is adaptable to partitioning will be counted as one bedroom for each 100 square feet of floor area.

D. Non-Bedroom Features:

Several of the following features would remove a room from bedroom consideration:

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

In general, any room, for which there is some expectation of privacy and that could be used as a bedroom by current or future residents, will be considered a bedroom for the purposes of sewage disposal design.

Note: Septic system upgrades for remodels with bedroom additions must be completed and receive final approval by Environmental Health before the building permit final inspection by the Planning and Building Services Agency.

VI. STANDARD SEPTIC SYSTEM COMPONENTS

A standard individual sewage disposal system consists of three (3) main components: a septic tank (gravity flow or pumped effluent), a drainage system (leachfield or drain field), and the drainage system replacement area:

A. Septic Tank:

Septic tanks must be constructed as a one piece unit and consist of two (2) compartments. Each tank compartment is fitted with a riser that extends to the ground surface with 20 in minimum access dimension. Access risers and their gas-tight and securable lids shall be constructed of polyethylene, concrete or other equally durable water and corrosion resistant material. The inlet and outlet fittings must be provided with sanitary tees, baffles, or an approved equivalent. Septic tanks must be constructed of reinforced concrete, fiberglass, polyethylene or other equally durable, waterproof and corrosion resistant material. The tank model and manufacturer must be approved by the Director of Environmental Health. A list of approved septic tanks can be in Appendix J.

Minimum septic tank capacities for residential applications include the following:

1 - 3 Bedrooms	1,000 Gallons
4 Bedrooms	1,200 Gallons
5 - 6 Bedrooms	1,500 Gallons

Notes: Tank volumes less than 1,000 gallons are no longer approved.

Tanks with internal pumps must be increased in volume to the next available size to accommodate the displacement of the pump system.

Minimum septic tank capacities for commercial or industrial applications shall be equal to the maximum estimated daily wastewater flows.

B. Drainage System (leachfield):

The drainage system can vary widely in shape, appearance and design, based on site-specific considerations. The purpose of any drainage system, regardless of design, is to adequately treat and safely dispose of the septic tank effluent.

In Plumas County, the preferred standard drainage system design (where site considerations allow) is a shallow leach bed. The leach bed consists of a level, and usually rectangular excavation filled with drainage gravel. A distribution piping system disperses the effluent throughout the bed. For specific installation requirements, please see the attached diagrams.

An alternative to using gravel in the leach bed is the use of gravel less leaching chamber units. Installation details vary by manufacture, so please contact Environmental Health for more information.

Other drainage system options include deep trench, shallow trench, and shallow mound. Each is matched to particular site conditions. In any case, each drainage system must have a 100% replacement area and the leachfield should be installed across any slope to minimize excavation depth as much as possible.

C. Leachfield Replacement Area:

The 100% replacement area is an undeveloped area in the natural state that keeps in place existing trees and vegetation and meets the same size and setback requirements as the leachfield (clear of driveways, out buildings, patios, etc.).

It is advisable to locate the replacement area near to, and down slope of, the primary leachfield to minimize plumbing changes should the future installation of a replacement leachfield become necessary.

VII. SYSTEM LOCATION REQUIREMENTS

In order to safely and effectively treat and dispose of wastewater, septic tanks and drainage systems must be properly positioned on a property.

The following are some important location considerations:

MINIMUM HORIZONTAL SEPARATION DISTANCES IN FEET		
FACILITY	SEPTIC TANK or SEWER LINES	LEACHFIELD
Water Supply Well	50' *	100'
GeoThermal Heat Exchange Well (GHEW)	25'	50'
Perennial Streams or Springs	50'	100' from seasonal high water line
Drainage courses, ephemeral springs	25'	50'
Meadows, wet marshy areas	25'	50'
Lakes, reservoirs, ponds or other surface water impoundments	50'	200' from high water line **
Cut or fill banks	10'	4 x vertical bank height / max 100'
Natural escarpments in excess of 50% slope	10'	4 x vertical bank height / max 100'
Private Property Lines	5'	5' ***
Buildings or structures	5'	8'
Public water supply main	10'	10'
Sewage drain systems	3'	6' ****
Roads, driveways, areas of vehicular traffic, or utility easements	Clear	Clear
*	Distance must be increased to 100' for community water supply wells.	
**	Lake Almanor drainage system separation shall be 100' from high water line.	
***	Distance shall be increased to 50' where wells have not been installed or well sites have not been designated on the subject and adjacent properties.	
****	15' minimum separation required for deep trench disposal systems.	

Vertical separation distances also apply. They include 5 feet between the bottom of the drainage system and highest seasonal groundwater and 4 feet from the bottom of the drainage system to impermeable soil or bedrock.

Drainage systems cannot be installed on slopes in excess of 30 percent. Notwithstanding, benching of steep slope soil is permissible provided the drain fields are installed in the undisturbed soil and the bottom of the finished excavation meets the required vertical separations as noted above.

VIII. PUMPED EFFLUENT SYSTEM (STEP) REQUIREMENTS:

Septic tank effluent pump (STEP) systems are becoming an increasingly popular alternative to gravity delivery systems. With proper installation and maintenance, these systems can provide great flexibility in property development as well as replacement of failing system. Both separate vault and integral pump systems are approved for use in Plumas County.

Regardless of style, all septic tank effluent pumping systems must include the following (refer to Appendix G at the end of this booklet):

A. Water Tight Construction:

To include gaskets and penetration grommets as needed.

B. Surface Access:

Through risers with 20 inch minimum dimensions and gasketed and securable lids.

C. Plumbing Installation:

Shall include all of the following:

1. A pipe union to allow for the removal of the pump;
2. A check valve to stop back flow into the sump; and
3. A ball valve for service and maintenance located within the vault or in an adjacent surface-accessible location.

D. Pump Alarm and Control Panel:

A pump alarm with audible / visual high water level alarm is required. The alarm must be located in an area where the occupants will hear and see the alarm signal (crawl-space installations is not acceptable).

E. Internal Pump Septic Tanks:

Septic tanks with internal pump systems have the following additional requirements:

1. Use a modified design septic tank with an approved integral pump. The baffle penetration must be no more than 4 inches below the elevation of the tank inlet and shall have a sanitary tee attached onto the baffle penetration tube; AND
2. The septic tank must be oversized by one bedroom size to off set the displacement of the pumping equipment. Environmental Health recommends a minimum 1500-gallon capacity tank.

Note: See Appendix G for pumped effluent tank layout details.

IX. NON-STANDARD SEPTIC SYSTEMS:

A. Engineered Design Systems:

Some sites may not be acceptable for a standard on-site sewage disposal system due to site conditions such as; inadequate percolation rates, vertical separation to an impermeable layer; or an elevated seasonal groundwater table. On parcels where these types of conditions exist it may be possible to apply engineering techniques to allow the placement of an engineered on-site sewage disposal system.

The type of engineered system will be determined by the on-site characteristics of the parcel. All plans for engineered design on-site sewage disposal systems must be submitted to Environmental Health for review and approval. The following are qualified to design engineered septic systems: CA Registered Engineer; a CA Registered Geologist, or CA Registered Environmental Health Specialist. Refer to Appendix I for a list of consultants.

Note: Only CA Registered Engineers are qualified to design advanced treatment or pressure dosed septic systems.

B. Advanced Treatment Systems:

Advanced Treatment systems and alternative technologies will be considered on a case-by-case basis, provided such proposals are submitted under wet-stamp by a California Registered Engineer.

All advanced treatment units must have a monitoring and maintenance plan specific to the type of technologies utilized. This monitoring and maintenance plan is due at the time of application submittal.

All monitoring and maintenance shall be performed under contract by a qualified third-party service provider.

All advanced treatment systems shall be operated under a renewable annual permit issued by Plumas County Environmental Health.

X. DECOMMISSIONING SEPTIC SYSTEMS

Currently there is no requirement for a permit to decommission an on-site septic system.

A. Abandoning Leachfields:

The leachfield can be abandoned in place by disconnection from the septic tank effluent line.

B. Abandoning Septic a Tank:

The tank must be disconnected from the soil line and pumped clean of sludge and liquids by a licensed septic pumping company. The tank must be disposed by:

1. Removal as solid waste; OR
2. Abandonment in place by:
 - a) Filling the tank with inert material (sand, gravel, concrete, etc.); OR
 - b) Crushing the tank and ensure all voids in the tank space are filled and filling the pit with inert materials.

XI. COMMUNITY SEWER SYSTEMS

A. Converting from On-Site to Community Sewer:

Converting a parcel from on-site sewage disposal to a community sewer collection system is encouraged whenever possible. In order to ensure public health, Environmental Health requires the following documentation: sewer agency line connection application; sewer agency inspection record; documentation of tank pump out and destruction; and a sewer agency Will-Serve letter.

B. On-Site Sewage Systems Within Community Sewer Districts:

Installing an on-site sewage disposal system within the jurisdictional boundaries of a community sewer agency requires written approval from the sewer agency prior to Environmental Health permit approval.

XII. REUSE OF EXISTING SEPTIC SYSTEMS

In order for Environmental Health to approve the use of an existing septic system for reuse after a home is destroyed or removed and there is no septic system installation documentation, the following information is required:

A. Required Documentation:

Document the following on a plot map that shows:

1. The location, size, and materials used to construct the septic tank and the leachfield;

Note: Locating the leachfield and septic tank to determine the materials used for construction (tank shell, supply and distribution piping, and leach bed) can be accomplished by digging small diameter “pot holes” until the corners of the tank and field are located (where the leach rock ends) and uncovering the distribution box(s), and portions of the piping used within the field for distribution.

2. A designated 100% leachfield replacement area; and
3. The location of proposed or existing home, garage, sheds, driveways, water well(s), surface water drainages, animal enclosures, etc.

B. Percolation test data:

Current soil percolation test results are required in order to ensure the field and replacement area are sufficiently sized for the anticipated flows of the new home. A current percolation test is a one that meets the percolation test requirements as described in the site suitability requirement section above.

XIII. GRINDER PUMPS AND GRINDER PUMP VAULTS

Grinder pumps and grinder pump vaults are not currently subject to permit or inspection by Environmental Health. The Planning and Building Services Agency and/or the local community sewer agency have jurisdiction over the installation and operation these pumps and vaults.

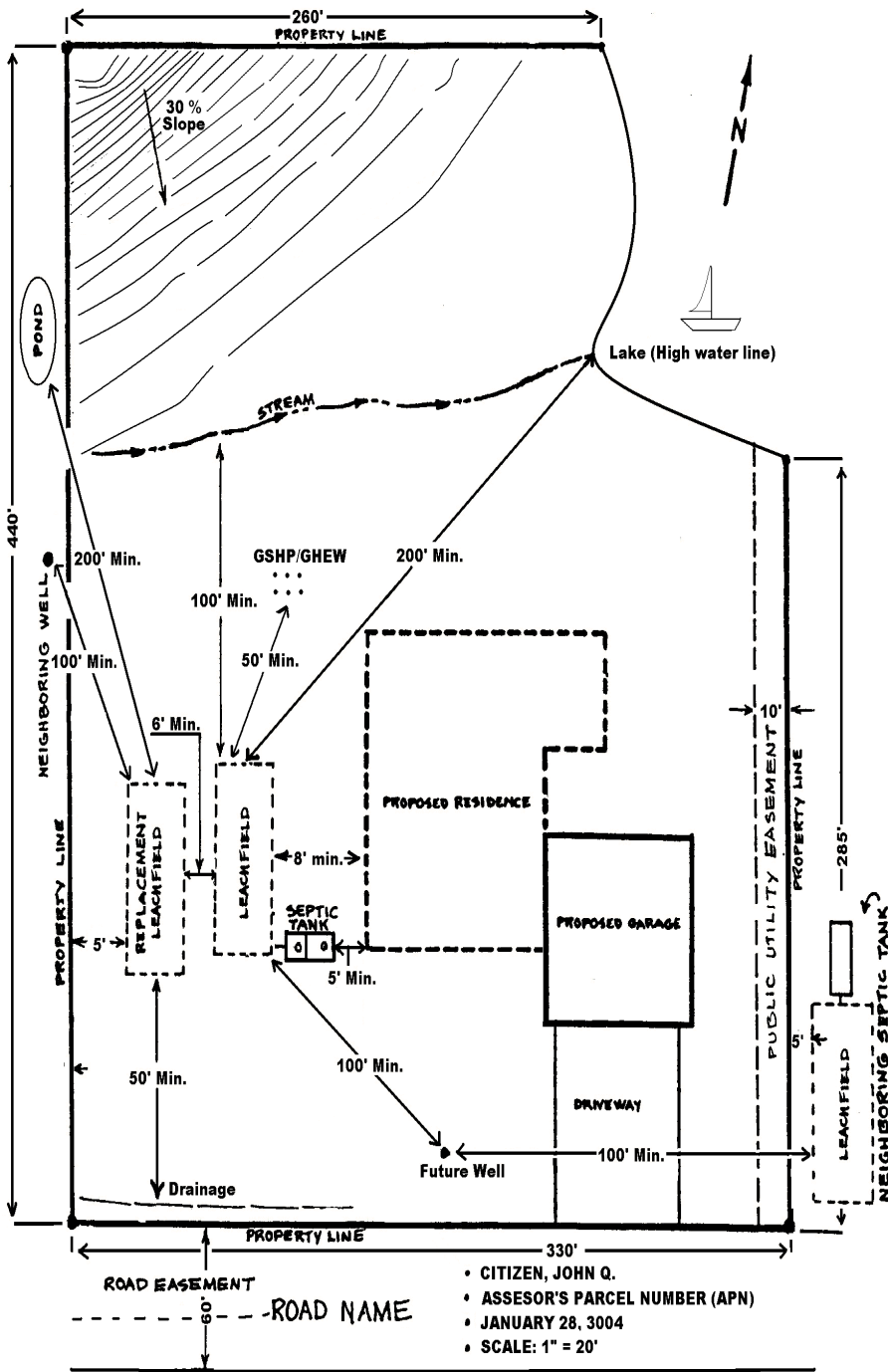
XIV. GREASE INTERCEPTORS

Grease interceptor tanks and/or under sink grease traps are required for facilities such as restaurants that have the potential for imparting grease to the waste water.

The installation of underground grease interceptor tanks are not currently subject to tank permitting requirements by Environmental Health.

In the case of food facilities with on-site septic systems, please consult with Environmental Health for guidance on sizing the grease traps. In the case a facility connected to a community sewer system, please contact the sewer agency for their requirements.

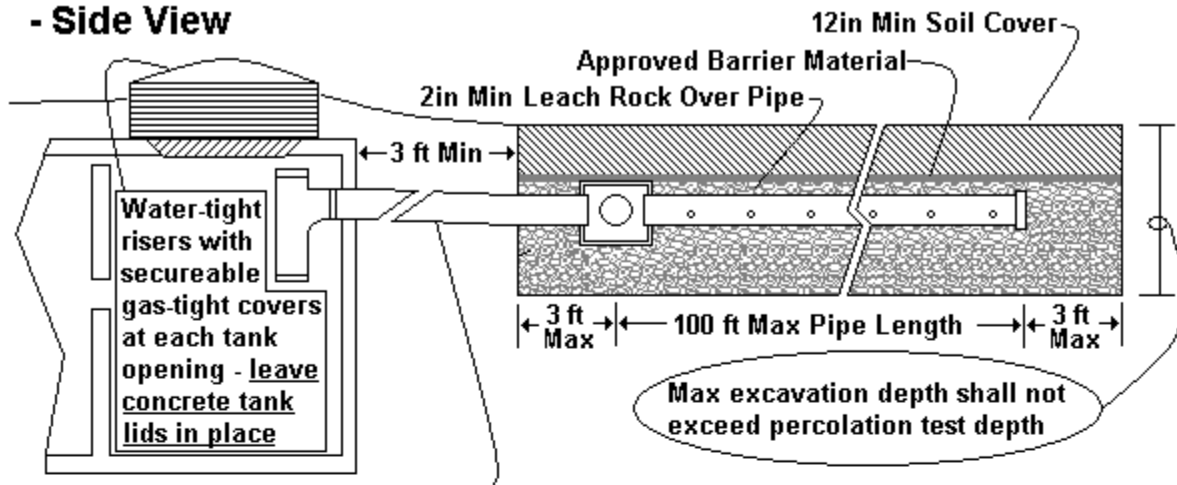
APPENDIX A: PLOT PLAN DIAGRAM EXAMPLE



1. Plot plan to be drawn on 8 1/2" x 11" paper, in ink or otherwise indelible.
2. In the lower right corner: List the parcel owner's name and current mailing address. List the date of the plot map. , Assessor's Parcel Number (APN), address and lot number if applicable
3. Indicate Scale (example 1" = 20')
4. True North Arrow
5. Indicate location of any survey monuments and how property corners/lines can be located by the Environmental Health inspector.
6. Show location(s) of existing and/or proposed well's (within 100 feet of proposed leach area) and any public water supply main (within 10 feet).
7. Show all existing and/or future leach area(s).
8. Show all of the following that are within 200 feet of proposed leach area(s): year-round and seasonal watercourses (streams, springs etc.), drainage, bodies of water, meadows and wet marshy areas.
9. Show all cut or fill banks and natural escarpments in excess of 50% slope within 100 ft of leach area.
10. Show area of current and/or future buildings and structures.
11. Show all roadways, easements, areas of vehicular traffic, driveways and off-street parking.
12. Show location of proposed/current Geothermal Heat Exchange Wells (GHEW).
13. Show locations of all soil profiles, percolation test and piezometers.

APPENDIX B: STANDARD LEACHBED DETAIL

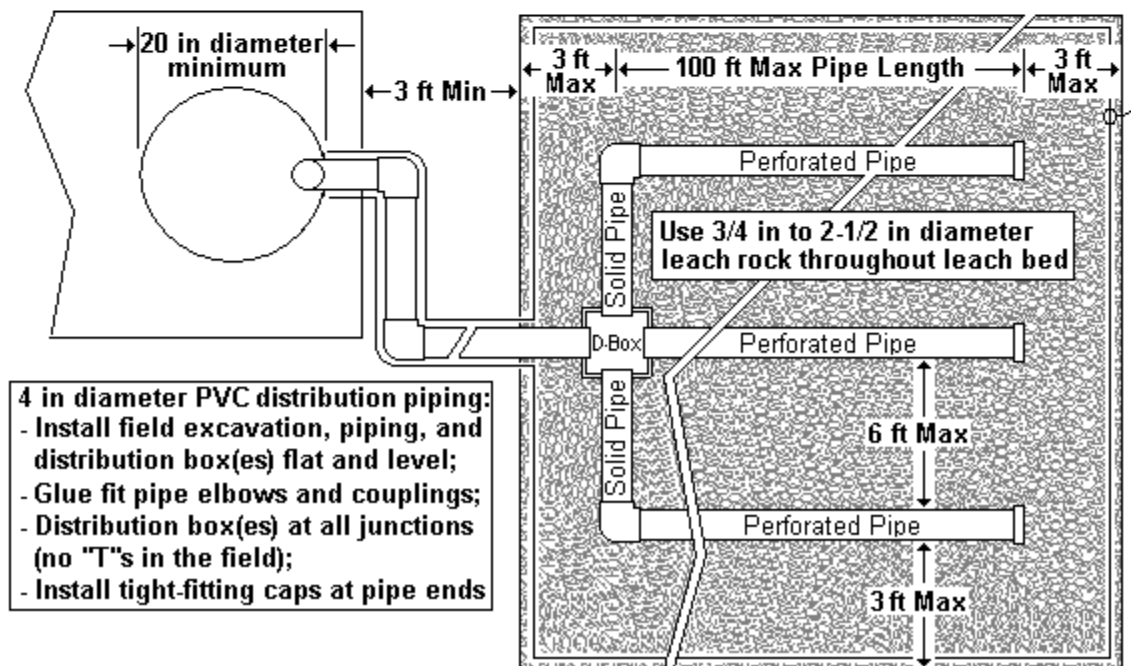
Standard Leachbed - Side View



4 in diameter solid PVC or ABS pipe:

- Slope pipe from tank to distribution box 1/8 in per foot minimum;
- Pipe should be approximately level at penetrations to tank and distribution box

Standard Leachbed - Top View



Field and Pipe Tracer:

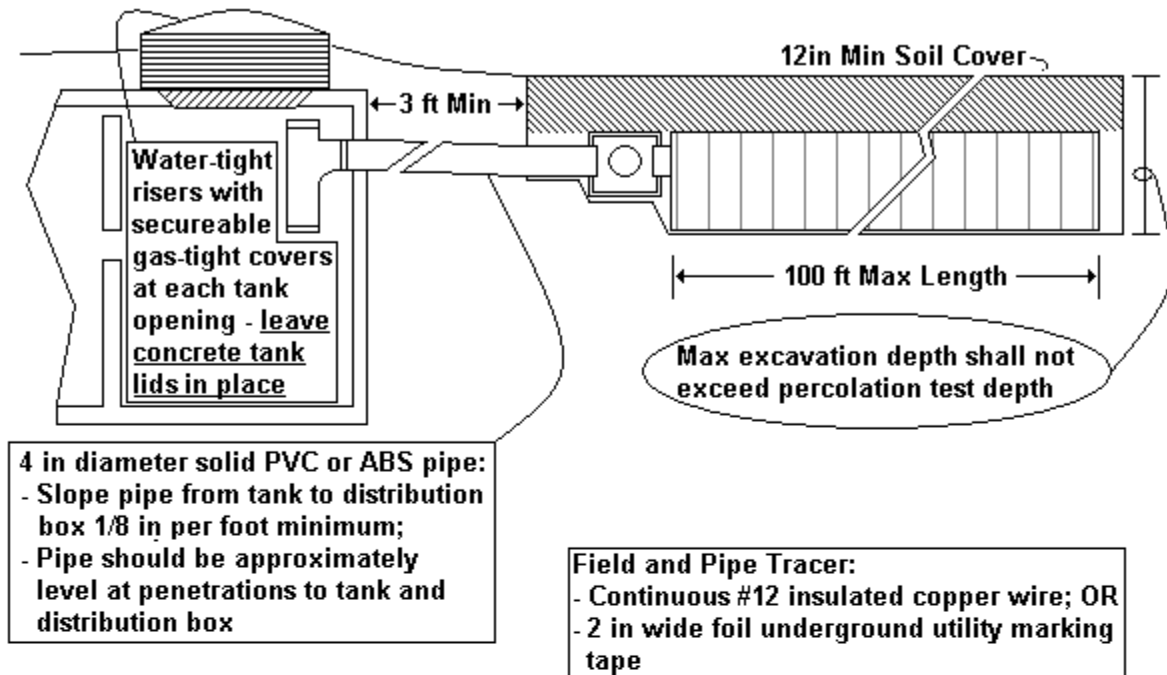
- Continuous #12 insulated copper wire; OR
- 2 in wide foil underground utility marking tape

4 in diameter PVC distribution piping:

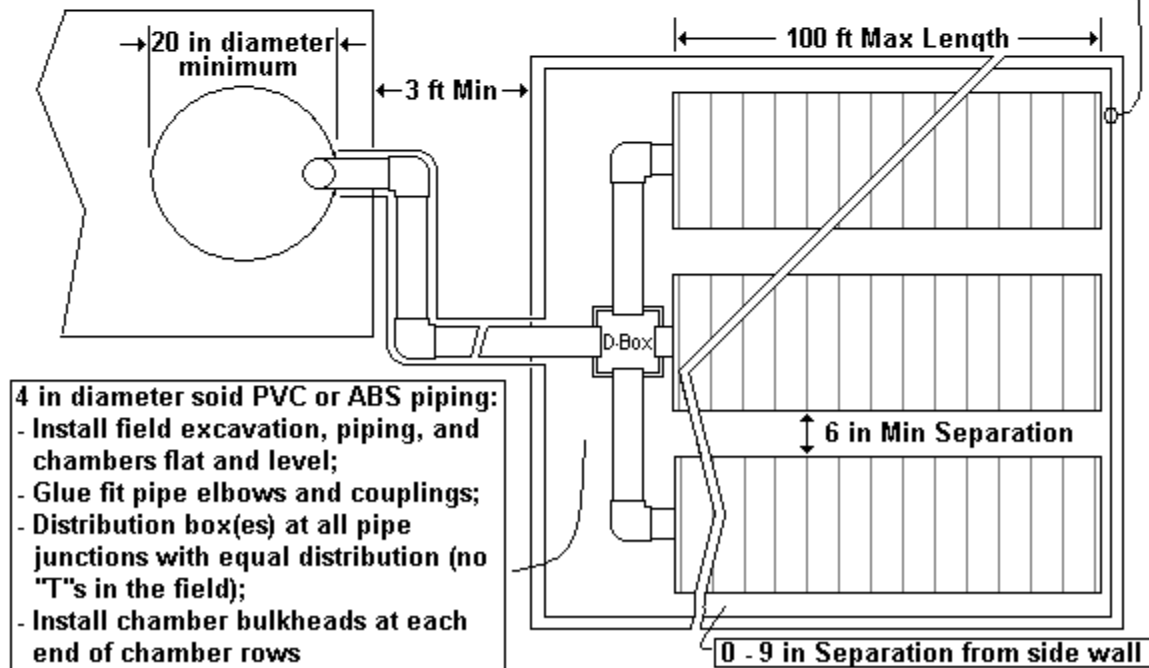
- Install field excavation, piping, and distribution box(es) flat and level;
- Glue fit pipe elbows and couplings;
- Distribution box(es) at all junctions (no "T"s in the field);
- Install tight-fitting caps at pipe ends

APPENDIX C: STANDARD GRAVELLESS LEACHBED DETAIL

Standard Gravelless Leachbed - Side View

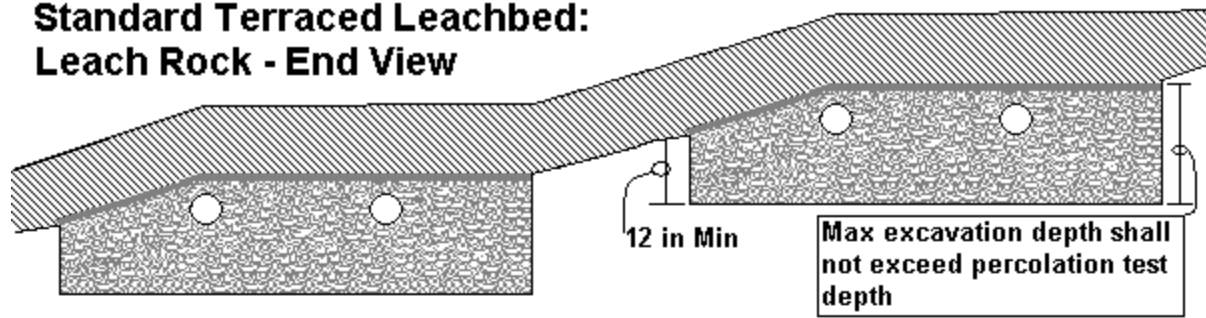


Standard Gravelless Leachbed - Top View

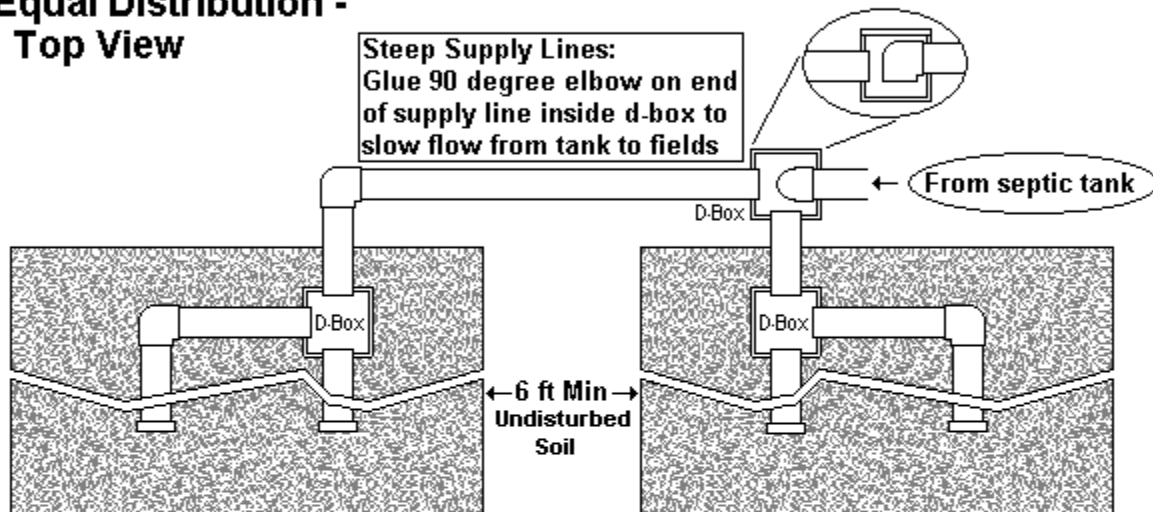


APPENDIX D: STANDARD TERRACED LEACHBED DETAIL

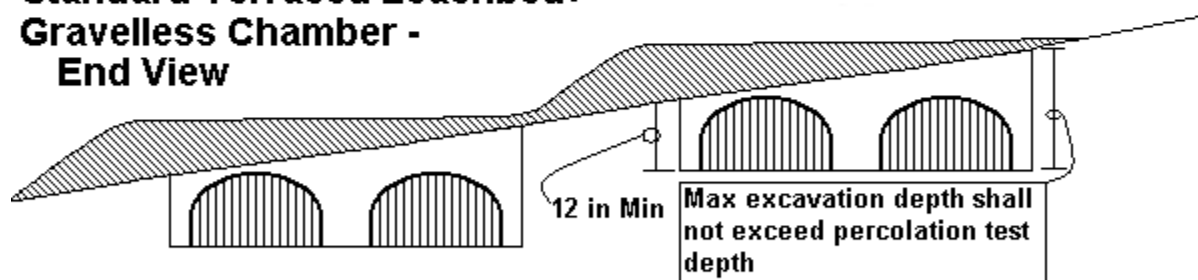
Standard Terraced Leachbed: Leach Rock - End View



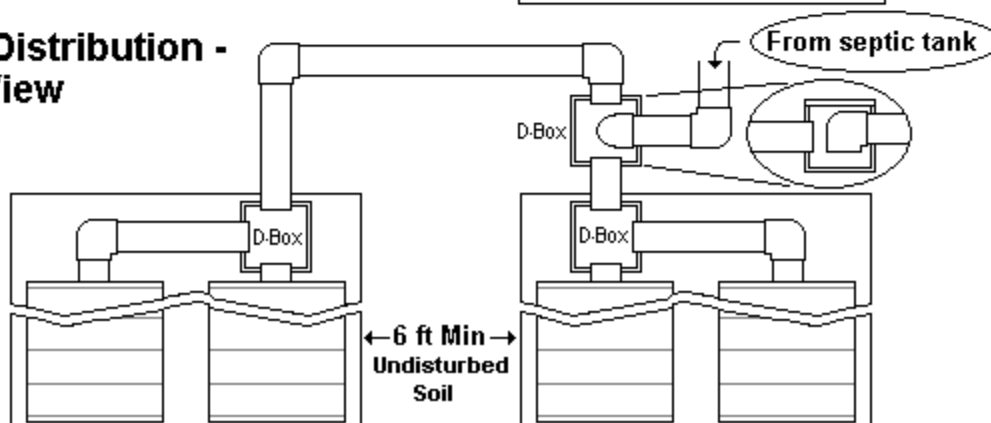
Equal Distribution - Top View



Standard Terraced Leachbed: Gravelless Chamber - End View

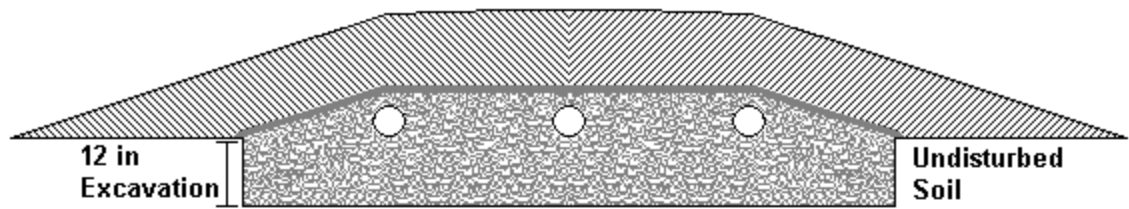


Equal Distribution - Top View

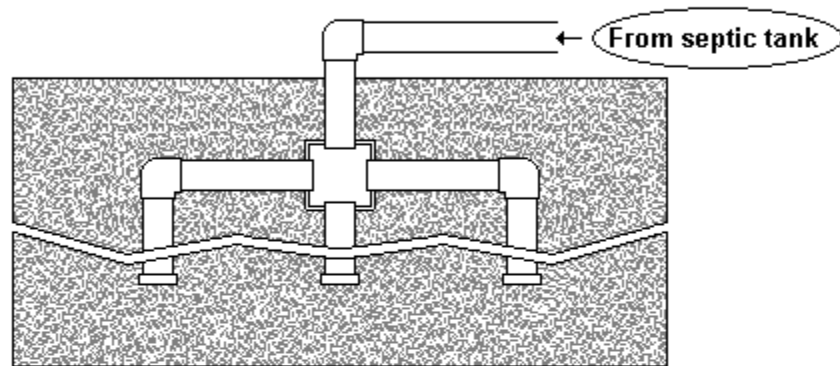


APPENDIX E: STANDARD AT-GRADE LEACHBED DETAIL

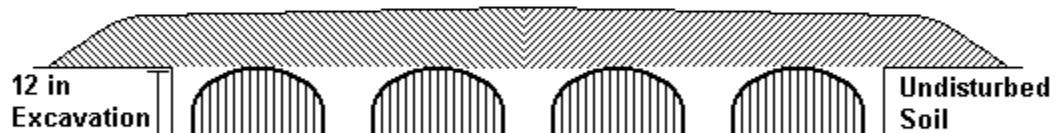
Standard At-Grade Leachbed: Leach Rock - End View



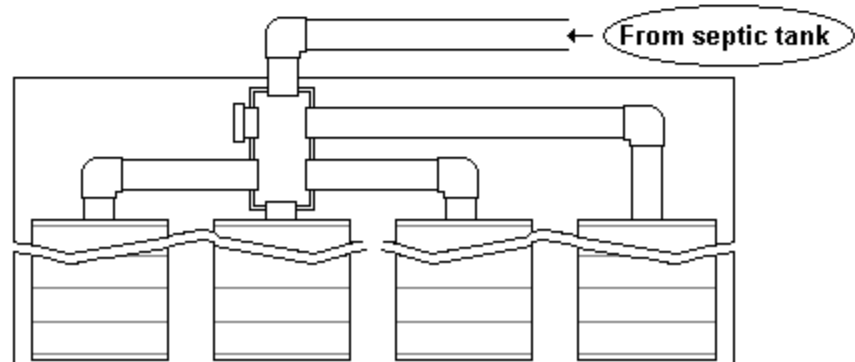
Equal Distribution - Top View



Standard At-Grade Leachbed: Gravelless Chamber - End View

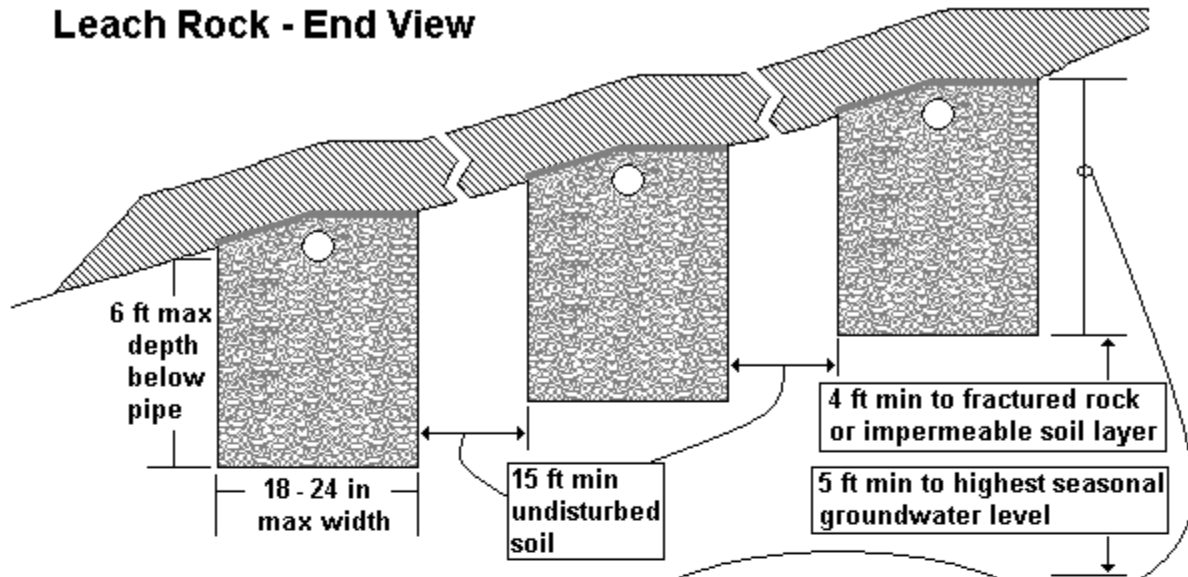


Equal Distribution - Top View

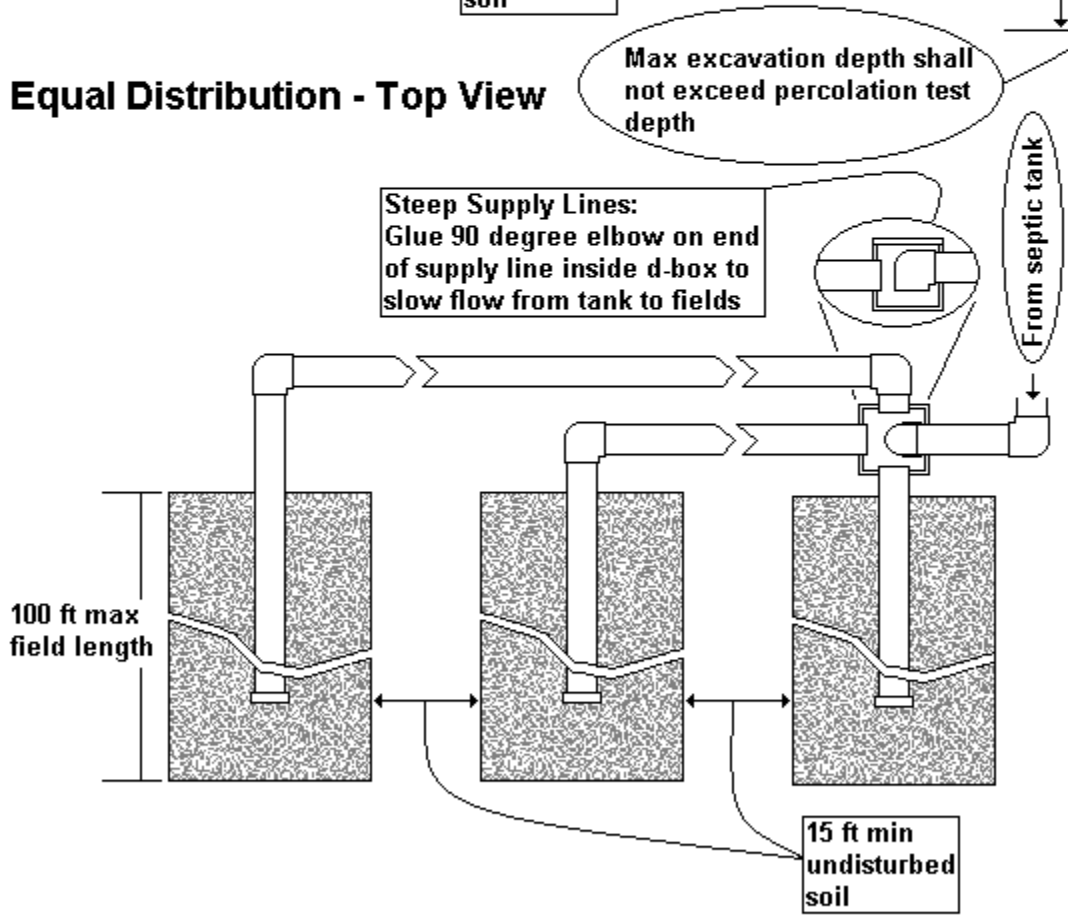


APPENDIX F: DEEP TRENCH TERRACED LEACHBED DETAIL

Deep Terraced Leachbed: Leach Rock - End View

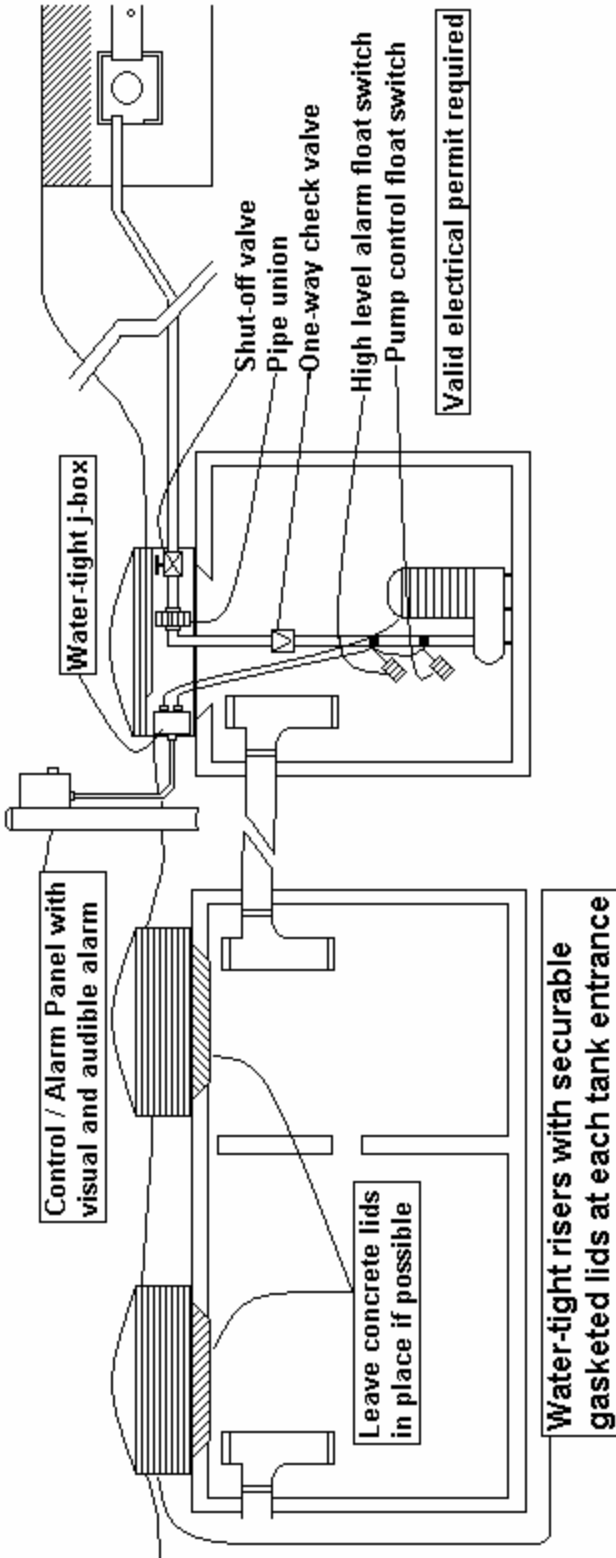


Equal Distribution - Top View

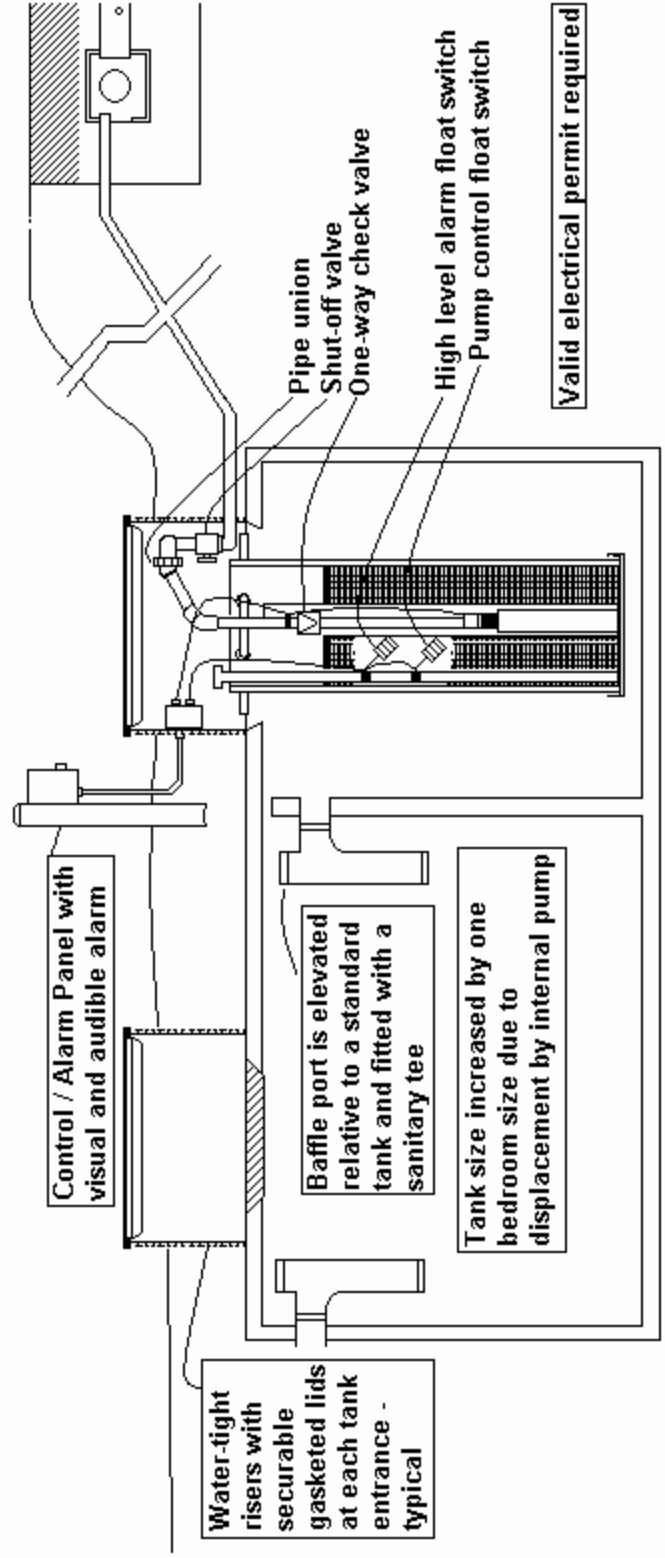


APPENDIX G: PUMPED EFFLUENT SYSTEM DETAILS

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



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



APPENDIX H: PERCOLATION RATE TABLE & LEACHBED EXAMPLE

Percolation values outside the scope of this table require engineered septic designs

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

Example leachfield and septic tank requirements:

A property owner wants to install a three (3) bedroom gravity flow septic system for a single family residence on a gently sloping parcel. The percolation test result is 30 minutes per inch (mpi) at a depth of 32 inches. The parcel has no shallow groundwater or shallow soil issues.

The chart above shows a 30 mpi percolation rate requires 250 square feet (sq ft) per bedroom of leachfield area. The resulting leachfield size for this home would be 250 sq ft x 3 bedrooms = 750 sq ft. Most leachfields are constructed in increments of 6 feet with 12 feet as the most common width: 750 sq ft / 12 ft = 62.5 (rounding up to the next whole foot) = 63 ft. For this example, a 12 ft x 63 ft leachfield is required for the proposed single family residence.

The leachfield must be installed across the slope with a minimum excavation depth (shallowest cut) of 12 inches and a maximum excavation depth (deepest cut) of 32 inches. Should the installer find that the layout of the field can not stay within the 12 inch to 32 inch specifications, he/she could split the field into two (2) fields of 6 ft x 63 ft with a minimum of 6ft separation between leachfield for a total of 750 sq ft of leach area.

Remember there must still be sufficient area available for leachfield replacement!

Bedrooms	Perc Rate	Sq Ft / Bedroom	Total Area Required	Field Dimensions	Minimum Tank Size
1	30	250	250	12 ft x 21 ft	1000 gallon
2	30	250	500	12 ft x 42 ft	1000 gallon
3	30	250	750	12 ft x 63 ft	1000 gallon
4	30	250	1000	12 ft x 84 ft	1200 gallon
5	30	250	1250	12 ft x 104 ft	1500 gallon

APPENDIX I: SITE SUITABILITY CONSULTANTS

Piezometer and Percolation Testing Consultants

REGISTERED ENVIRONMENTAL HEALTH SPECIALISTS

Elizabeth Morgan
P.O. Box 80
Loyalton, CA 96118
(530) 993-4275

Mark L. Jeude
19325 Ridge Rd.
Red Bluff, CA 96080
(530) 529-2625

REGISTERED CIVIL ENGINEERS

AMEC Earth & Env. Inc.
780 Vista Blvd., Ste. 100
Sparks, NV 89434-6656
(775) 331-2375

Cranmer Engineering, Inc.
1188 E. Main Street
Grass Valley, CA 95945
(530) 273-7284

Ralph Koehne
P.O. Box 214
Quincy, CA 95971
(530) 283-0677

Bastian Engineering
P.O. Box 20308
Graeagle, CA 96103
(530) 836-2644

Steve Devin, P.E.
P.O. Box 1782
Quincy, CA 95971
(530) 283-2553

NST Engineering Assoc., Inc.
1475 Riverside Drive
Susanville, CA 96130
(530) 257-5173

Black Eagle Consulting
1345 Capital Blvd., Ste A
Reno, NV 89502-7140
(775) 359-6600

Fred D. Hock
401 Peninsula Drive #3
Lake Almanor, CA 96137
(530) 596-3245

Rolls, Anderson & Rolls
115 Yellowstone Drive
Chico, CA 95973
(530) 895-1422

California Engineering Company
1110 Civic Center Blvd., Ste. 404
Yuba City, CA 95993
(530) 751-0952

Haling & Associates
166 Eaton Road, Ste. B
Chico, CA 95973
(530) 342-6958

Webster Engineering
P.O. Box 749
Quincy, CA 95971
(530) 283-1111

Shaw Engineering
20 Vine St.
Reno NV 89503
(775) 329-5559

Chris Luna
Lake Almanor CA
530-596-4233

REGISTERED GEOLOGISTS

Plumas Geo-Hydrology
P.O. Box 1922
Portola, CA 96122
(530) 836-2208

Western Energy Resources
P.O. Box 1080
Janesville, CA 96114
(530) 253-4152

Advanced Geologic Exploration, Inc.
180 Main St
Chester, Ca 96020
(530) 258-4228

Terracon
1360 Greg St. Ste 111-112
Sparks NV 89431
(775) 351-2400

Advanced HydroGeo
197-Via Mission Drive
Chico, CA 95928
(530) 893-1888

This list is for information only. This Department does not endorse or recommend any specific contractor or business listed above. If you are California licensed in one of the above professions, and would like to be added to this list please, contact our office and we will happy to add your name. Revised 7/10/07

APPENDIX J: PLUMAS COUNTY APPROVED SEPTIC TANKS

APPROVED CONCRETE

Jenson Precast

625 Bergin Way
Sparks, NV 89431
Tel: (800) 648-1134
Fax: 775-359-1038

North Valley Precast

#11 Three Sevens Lane
Chico, CA 95926
Tel: (530) 343-5401
Fax: (530) 343-5046

Merrill and Sons

Precast Concrete
12619 Loma Rica Drive
Grass Valley, CA 95945
Tel: 530-273-4605 or
800-200-4605

Oroville Concrete Products

6900 Lincoln Blvd
Oroville, CA 95965
Tel: (530) 534-7670

APPROVED ALTERNATE CONSTRUCTION

Infiltrator Systems, Inc

IM Series Septic Tanks

4 Business Park Road, Old
Saybrook, Connecticut 06475
Phone: (860) 577-7198
Fax: (860) 577-7793

RMI-D

Division of Rotonics
677 Brighton Blvd. Commerce
City, CO 80239
Tel: (303) 227-9300
Fax: (303) 227-9308

Norwesco, Inc.

4365 Steiner Street
St. Bonifacius, MN 55375-0439
Tel: (612) 446-1945
Fax: (800) 374-237

Snyder Industries, Inc.

602 Industrial Ave
Marked Tree, AR 72365
Tel: 870-358-5112
Fax: 870-358-3140

When ordering a septic tank, please inform the sales representative that this tank is for installation in Plumas County. 2 compartment construction, access risers, and 1,000 gallon minimum capacity will be required.

APPENDIX K: SEWAGE DISPOSAL SYSTEM CONTRACTORS

North County Including Chester ↔ Lake Almanor

Dig It Construction
Chester, CA 96020
(530) 200-0010

Bill Davies
Lake Almanor, CA 96137
(530) 284-6689

Turner Excavating
Lake Almanor, CA 96137
(530) 596-3953

Strand & Sons
Chester, CA 96020
(530) 258-1900

Kevin Lawrence Construction
Chester CA 96020
(530) 258-7700

Mike's Grading & Backhoe
Chester, CA 96020
(530) 596-3557

Almanor Construction Inc
Canyon Dam CA 95923
(530) 284-6566

Greg Lopez Construction
Lake Almanor, CA 96137
(530) 596-4111

Womack Construction
Lake Almanor, CA 96020
(530) 596-3364

Central County Including Quincy ↔ La Porte ↔ Indian Valley

Wilburn Construction
Quincy, CA 95971
(530) 283-2871

Vieira Concrete & Const.
Quincy, CA 95971
(530) 283-3563

Charles Finwick Const.
Quincy, CA 95971
(530) 283-5506

Eric Murray
LaPorte, CA 95981
(530) 675-2977

Kingdon Backhoe Service
Greenville, CA 95947
(530) 284-7320

H & K Backhoe
Greenville, CA 95947
(530) 284-7749

Roberts Truck & Tractor
Greenville, CA 95947
(530) 284-6465

Lambert Const.
Quincy, CA 95971
(530) 283-4456

Sierra Concrete & Excavating
Quincy, CA 95971
(530) 283-3214

John Kuipers Plumbing
Meadow Valley, CA 95956
(530) 283-0320

East County Including Graeagle ↔ Portola

Engel Construction
Graeagle, CA 96103
(530) 836-0243

Hartwig Construction
Clio, CA 96106
(530) 836-0393

McGarr Construction
Portola, CA 96122
(530) 832-5959

T & B Dirtworks
Blairsdon, CA 96103
(530) 836-0288

Midnight Sun Construction
Clio CA 96106
(530) 836-0560

Clark Construction
Portola, CA 96122
(530) 832-0653

Maddalena Excavating
Clio, CA 96103
(530) 836-2758

Pioneer Plumbing
Portola CA, 96122
(530) 836-1625

Rick Giese Construction
Doyle, CA 96109
(530) 827-3260

Double H Contractors
Cromberg, CA 96103
(530) 836-1996

Hinson Construction
Clio CA 96160
(530) 836-4213

Genesis Systems
Graeagle, CA 96103
(530)836-6855

Fochi Logging & Construction
Portola, CA 96122
(530) 832-4372

Acceptable Septic Installation Licenses are: General Engineering "A"=Plumbing Contractor "C-36"-Sanitation System "C-42"

This list is for information only. This Department does not endorse or recommend any specific contractor or business listed above. If you are a contractor and would like to be added to this list please, contact our office and we will happy to add your name.

Revised 5/08