

FREMONT COUNTY ENVIRONMENTAL HEALTH DEPARTMENT

615 MACON AVENUE, ROOM 212
CAÑON CITY, COLORADO 81212

OFFICE: (719) 276-7460

FAX: (719) 275 -7538

INDIVIDUAL SEWAGE DISPOSAL SYSTEMS INFORMATION

This information sheet contains general information on the installation of a standard septic tank and absorption field, for residential use only (household waste water from toilets, sinks, tubs, showers, clothes washers, dishwashers, etc., only). There are other types of systems that may be appropriate under certain circumstances, which are not addressed in this handout. The information contained within this handout is a brief overview, if more specific information is required, it may be necessary for you to obtain a copy of the actual county regulations, FREMONT COUNTY INDIVIDUAL SEWAGE DISPOSAL SYSTEM REGULATIONS which are available through the Fremont County Building Department.

Prior to the construction, installation or repair of any individual sewage disposal system in Fremont County, *a permit must be obtained by the homeowner or contractor*. Please keep in mind that routine maintenance of the system, such as having the septic tank pumped on a regular basis, does not require a permit.

Once the permit has been approved and issued, and when construction has been completed (*but before anything is covered!*) an inspection by the County Inspector is required. A minimum of 24 hours advance notice is required to schedule an inspection, weekends and holidays are not included.

When you call for a final inspection, the entire system should be installed, but nothing should be backfilled. The building sewer (the pipe from the house to the septic tank) should be exposed, the entire top of the septic tank should be exposed, the pipe between the septic tank and the absorption area should be exposed, and the absorption area should be exposed (for a gravel and perforated pipe absorption field, all gravel should be in place, including the 2-inches of gravel over the top of the perforated pipe absorption field, all gravel should be in place, including the 2-inches of gravel over the top of the perforated pipe, the County Inspector may expose sections of the pipe to check for level, and may expose fittings in the absorption area to determine the pipe layout).

Approval of a Fremont County Individual Sewage Disposal Permit does not guarantee or assure that the proposed use is permitted within the zone district for the property, nor does it guarantee or assure that any proposed building complies with applicable land use requirements for the zone district, such as setbacks, height restriction, or other similar issues. You have the responsibility and obligation to verify and confirm that all proposed uses are allowed in the zone district and conform to the requirements of the zone district for the property.

TO SCHEDULE AN INSPECTION CALL: 719/276-7460

PERMIT APPLICATION REQUIREMENTS AND PROCEDURES:

1. In order to apply for a permit to install or repair a septic system, a current soil percolation test report (PERC TEST) is required from a Colorado Registered Professional Engineer of your choice.
2. If you are applying for a permit to replace a septic tank only, a PERC TEST is not normally required.
3. Once the PERC TEST has been completed, bring it to the office, and the application form will be filled out by the Secretary. Keep in mind that if you apply for a septic permit in conjunction with a building permit, the procedure is to wait until the building permit has also been approved, so that the septic permit and the building permit are issued at the same time.
4. The current septic permit fees are \$90.00 for a new installation permit, \$30.00 for a repair permit and \$30.00 for the renewal of a permit. At the discretion of the County Inspector, a \$30.00 re-inspection fee may be charge.
5. Once a permit has been issued, the permit is valid for one (1) year from the issue date. If the installation has not been inspected and approved by the expiration date, the permit will have to be renewed (\$30.00 renewal fee) and an updated PERC TEST from the engineer will be required.
6. Any changes in the plans or specifications of the original permit will invalidate the permit unless written approval is obtained from the Department.
7. If the applicant's property is located within a municipal or sanitation district, and if sewer lines exist within 400 feet of the applicant's property, a permit to construct, repair or replace a system will be denied. If the applicant's property is not located within a municipal or sanitation district, but sewer lines exist within 400 feet of the applicant's property, a septic permit will be issued only if the applicant has made application to the municipal or sanitation district and that application has been denied by the municipal or sanitation district. Written documentation from the municipal or sanitation district must be provided to verify that application was made and denied by the district.
8. A homeowner may install his or her own septic system on his or her own property. If a septic contractor is hired, that contractor is required to be licensed through this Department. A current list of contractors licensed to install septic systems in Fremont County is available at this office. For information on becoming licensed in Fremont County to install septic systems, please contact this Department.
9. Any person installing a septic system, repairing or altering a septic system, must have a copy of the approved septic permit and a copy of the engineer's PERC TEST, at the time of installation. The conditions and information on the SEPTIC PERMIT take precedence over the conditions and information on the PERC TEST. Two (2) copies of the septic permit are issued, one (1) copy if designated for the owner and one (1) copy is designated for the installer. *The Septic Permit, PERC TEST, final approval and sketch, should be kept as part of your permanent homeowner's file, along with records of when the tank is pumped.*

ABSORPTION TRENCHES CONSTRUCTED WITH GRAVEL AND PERFORATED PIPE:

Absorption trenches must be at least 24-inches wide and not more than 36-inches wide. The maximum depth of excavation for the trench or trenches is determined by the SOIL PROFILE that is included as part of the PERC TEST. However, under normal conditions it is typical to excavate the trenches between 24" and 36" in depth.

The area of the absorption trench is calculated by multiplying the width of the trench (in feet) by the length of the trench (in feet). The bottom of the trench and the perforated distribution pipe shall be level.

The perforated distribution pipe shall be placed the entire length of the trench and shall be surrounded by clean graded gravel or rock which may range in size for ½ to 2½ inches. There must be at least 6-inches of gravel under the perforated pipe, and at least 2-inches of gravel above the top of the perforated pipe, for a total of at least 12-inches of gravel.

The perforated distribution pipe must be at least 4-inches in diameter and must meet ASTM Standard 2729. The maximum length of any one trench is 100-feet, and the terminal ends of the perforated pipe must be capped or air vented (air venting the ends of the pipe is not commonly done).

If more than one (1) trench is installed, at least 6-feet of undisturbed earth must be left between parallel trenches.

After the gravel or rock and perforated pipe are installed, and following an approved final inspection by the County Inspector, a layer of *pervious* material, such as straw, hay, untreated building paper, etc., shall be placed over the gravel or rock before the trench or trenches are backfilled. Roofing felt (tar paper), plastic, or similar *impervious* materials shall not be used.

A final cover of soil suitable for vegetation, at least 10-inches deep, shall be placed from the top of the straw, hay or similar pervious material, to the finished surface grade of the trenches. Final cover shall be graded to deflect runoff water away from the disposal area.

Machine tamping, rolling or hydraulic compaction of the final cover is not permitted. However, hand tamping may be allowed where necessary to stabilize the soil and to prevent erosion or the intrusion of extraneous water.

Refer to the sketches included in this handout for additional information.

ABSORPTION BEDS CONSTRUCTED WITH GRAVEL AND PERFORATED PIPE:

Absorption beds must be of sufficient length and width to provide the required absorption area (the width of the bed (in feet) multiplied by the length of the bed (in feet)). The maximum depth of excavation for the bed is determined by the SOIL PROFILE that is included as part of the PERC TEST. However, under normal conditions, it is typical to excavate the bed between 24" and 36" in depth. The bottom of the bed and the perforated distribution pipe shall be level.

The perforated pipe shall be placed to within 3-feet of each sidewall of the bed and shall be surrounded by clean graded gravel or rock which may range in size from ½ to 2½ inches. There must be at least 6-inches of gravel under the perforated pipe and at least 2-inches of gravel above the top of the perforated pipe, for a total of at least 12-inches of gravel.

The perforated distribution pipe must be at least 4-inches in diameter and must meet ASTM Standard 2729. The terminal ends of the perforated pipe must be looped or air vented (air venting the ends of the pipe is not commonly done).

The separating distance between parallel distribution lines in an absorption bed shall not exceed 6-feet from center-of-pipe to center-of-pipe. After the gravel or rock and perforated pipe are installed, and following an approved final inspection by the County Inspector, a layer of *pervious* material, such as straw, hay, untreated building paper, etc., shall be placed over the gravel or rock before the bed is backfilled. Roofing felt (tar paper), plastic, or similar *impervious* materials shall not be used.

A final cover of soil suitable for vegetation, at least 10-inches deep, shall be placed from the top of the straw, hay, or similar pervious material, to the finished surface grade of the bed. Final cover shall be graded to deflect runoff water away from the disposal area.

Machine tamping, rolling or hydraulic compaction of the final cover is not permitted. However, hand tamping may be allowed where necessary to stabilize the soil and to prevent erosion or intrusion of extraneous water.

Refer to sketches included in this handout for additional information.

SERIAL DISTRIBUTION SYSTEMS:

A serial distribution system may be used in all situations where a soil absorption system is permitted and shall be used where the ground slope does not allow the suitable installation of a single level absorption field. Serial distribution systems may be installed using absorption trenches, as well as absorption beds.

The bottom of each separate absorption field and its distribution line shall be level.

A minimum of 10-inches of cover is required over the gravel fill (or over the leaching chamber).

The absorption field shall follow approximately the ground surface contours so that variation in the depth of the absorption field is kept to a minimum.

At least 6-feet of undisturbed earth must be left between adjacent absorption fields, and between the septic tank and the nearest absorption field.

Adjacent absorption fields must be connected with a relief line or a drop-box arrangement such that each absorption field fills to capacity with effluent before flowing to the next absorption field.

Refer to the sketches included in this handout for additional information.

GRAVEL-LESS SOIL ABSORPTION SYSTEMS:

Gravelless soil absorption systems can *generally* be used in any installation where gravel and perforated pipe would be suitable. Installation requirements are the same as for absorption trenches and absorption beds. Commonly available brand names of gravel-less absorption systems include INFILTRATORS and BioDiffusers. There are other products available which may be used, provided that product has been approved for use by the Colorado Department of Public Health & Environment, and has been reviewed and approved by the county.

All gravel-less soil absorption must be installed according to the manufacturer's requirements and must comply with all requirements of **FREMONT COUNTY INDIVIDUAL SEWAGE DISPOSAL SYSTEM REGULATIONS**.

Generally speaking, the installation of a gravel-less soil absorption system is one of many options that you have for the construction of your absorption field. In some instances, your engineer may either specifically require a gravel-less system, or may specifically require a gravel and perforated pipe system.

Gravel-less soil absorption systems allow a significant reduction in the area of the absorption trench or absorption bed. Please contact the County Inspector for information on the sizing of an absorption trench or absorption bed if you decide to use a gravel-less soil absorption system.

Refer to sketches included in this handout for additional information.

A final cover of soil suitable for vegetation, at least 10-inches deep, shall be placed from the top of the straw, hay, or similar pervious material, to the finished surface grade of the bed. Final cover shall be graded to deflect runoff water away from the disposal area.

Machine tamping, rolling or hydraulic compaction of the final cover is not permitted. However, hand tamping may be allowed where necessary to stabilize the soil and to prevent erosion or intrusion of extraneous water.

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The bottom of each separate absorption field and its distribution line shall be level.

A minimum of 10-inches of cover is required over the gravel fill (or over the leaching chamber).

The absorption field shall follow approximately the ground surface contours so that variation in the depth of the absorption field is kept to a minimum.

At least 6-feet of undisturbed earth must be left between adjacent absorption fields, and between the septic tank and the nearest absorption field.

Adjacent absorption fields must be connected with a relief line or a drop-box arrangement such that each absorption field fills to capacity with effluent before flowing to the next absorption field.

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Refer to sketches included in this handout for additional information.

SEPTIC TANK DESIGN AND INSTALLATION:

In Fremont County, septic tanks are sized for 30-hour detention.

For residential systems, the size of the tank is based on the maximum potential number of bedrooms.*

NUMBER OF BEDROOMS	MINIMUM TANK SIZE
TWO (2) & THREE (3)	1000 GALLONS
FOUR (4)	1250 GALLONS
FIVE (5)	1500 GALLONS
SIX (6)	1750 GALLONS
Each additional bedroom requires an additional 250 gallons capacity.	

* In general, any room which meets the definition a bedroom must be counted as a bedroom. For example, floor plans frequently designate rooms as a "den", "study", "hobby room", etc., but if these rooms have a closet and a window or windows to the outside (in other words, the rooms meets the building code definition of a bedroom), it must be counted as a "potential bedroom".

The septic tank must be installed perfectly level.

At the time of final inspection by the County Inspector, the top of the septic tank must be uncovered so that the name of the manufacturer of the tank is visible, the size (in gallons) of the tank is visible, and so the lids can be removed, if necessary, to inspect the interior of the tank.

No more than 8-inches of cover is allowed over the top of the septic tank (so that both tank lids are easily accessible when the tank is pumped). If the tank excavation is deep enough to require more than 8-inches of cover over the top of the tank, *risers must be installed on each lid*, and the tops of the risers must be within 8-inches of the ground surface. Risers are commonly available from the company where the septic tank is purchased. If required, the risers should be installed at the time of final inspection.

PIPE REQUIREMENTS:

As noted before, *all perforated pipe* used in absorption trenches or absorption beds, must meet ASTM Standard 2729.

All solid pipe used anywhere in the system must meet ASTM Standard 3034, SDR35, or equivalent. SCHEDULE 40 pipe is approved for use. The use of cast iron pipe is prohibited.

The minimum fall for the building sewer (the pipe from the house to the septic tank) is 1/8 or to 1/4 inch per foot drop. If the fall for this line is significantly greater than 1/4 inch per foot drop, it may be recommended that the building sewer be installed with a series of "drop-downs", rather than a straight run to the tank.

Bends in the building sewer must be limited to 45-degree bends or long-sweep 90-degree bends.

As least 1 cleanout is recommended in the building sewer, however, a cleanout is *required* if the building sewer is 100 feet or long (1 cleanout for every 100 feet of building sewer).

Refer to sketches included in this handout for additional information.

OTHER IMPORTANT INFORMATION:

Please refer to the TABLE OF MINIMUM HORIZONTAL DISTANCES at the end of this handout.

It is required maintenance to have your septic tank pumped, by a licensed septic tank pumper, on a regular basis. The frequency depends on many factors, but every five (5) years is probably a good average. The number of people in your home, the use of a garbage disposal, and other factors, may necessitate having the tank pumped more frequently. *If you are having problems with your absorption field, having the tank pumped will do nothing more than give you temporary relief. Having the septic tank pumped will not remedy a failing leachfield.*

Once your absorption field has been installed, inspected, approved and covered, the site must be protected from all vehicular traffic, off-site drainage and livestock. If your property is located in an area where irrigation water is available, there must be no irrigation water on or near the septic tank or the absorption area.

During excavation for the septic tank or absorption field, if you encounter conditions that are unsatisfactory, or conditions that are different from those shown on the PERC TEST, such as groundwater or bedrock, you must discontinue excavation and immediately contact your engineer. *A minimum of 4-feet of suitable soil is required between the bottom of the absorption field, and bedrock or maximum seasonal groundwater table.*

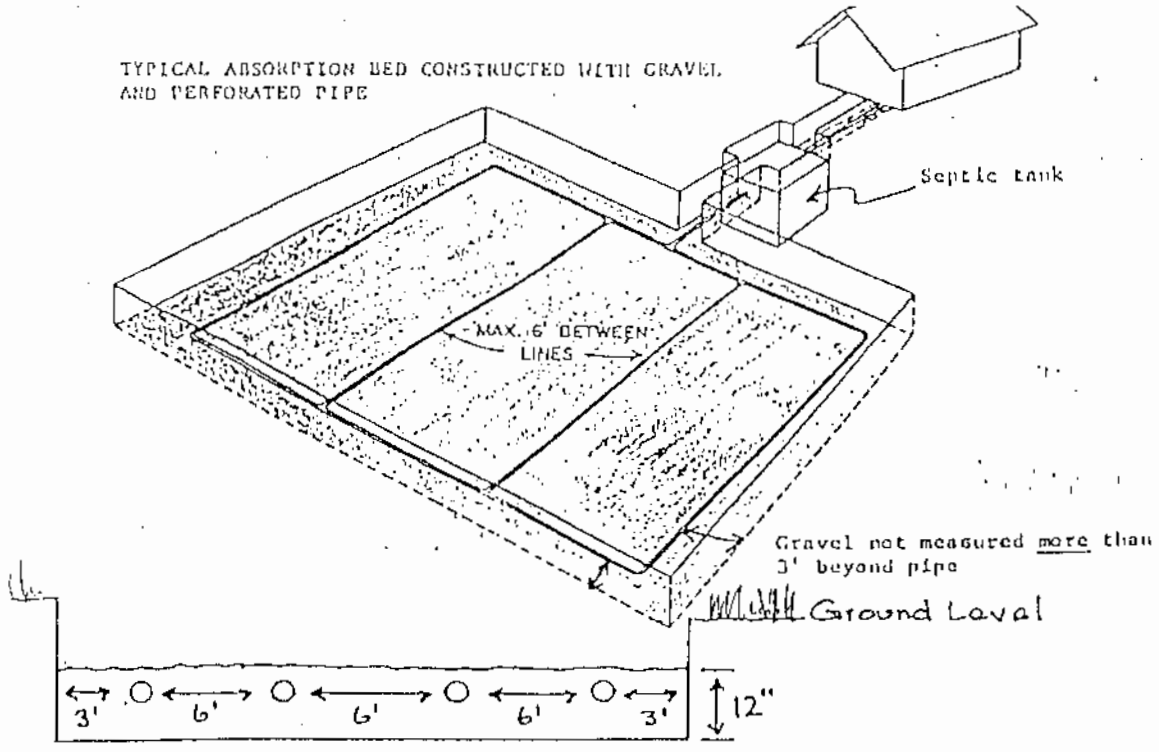
As noted previously, the maximum depth of excavation for the absorption area is determined by the soil profile provided by the engineer on the PERC TEST. For example, if the soil profile indicates suitable soil down to 8-feet below the surface, the *maximum* depth of excavation for any area of the absorption field may be no deeper than 4-feet below the ground surface, regardless of the slope of the ground. If the soil profile indicates suitable soil down to 6-feet below surface, the *maximum* depth of excavation for any area of the absorption field may be no deeper than 2-feet below the ground surface, regardless of the slope of the ground. If you excavate the absorption area deeper than the soil profile allows, the engineer must approve the deeper excavation and verify suitable soil, or the absorption area may have to be reinstalled to the proper depth.

You are required to construct the absorption field in the specific location where the PERC TEST was conducted, or in the specific location noted on the PERC TEST. You may not arbitrarily move the location of the absorption field. If the location of the absorption field is moved to a different location, a written approval from the engineer may be required.

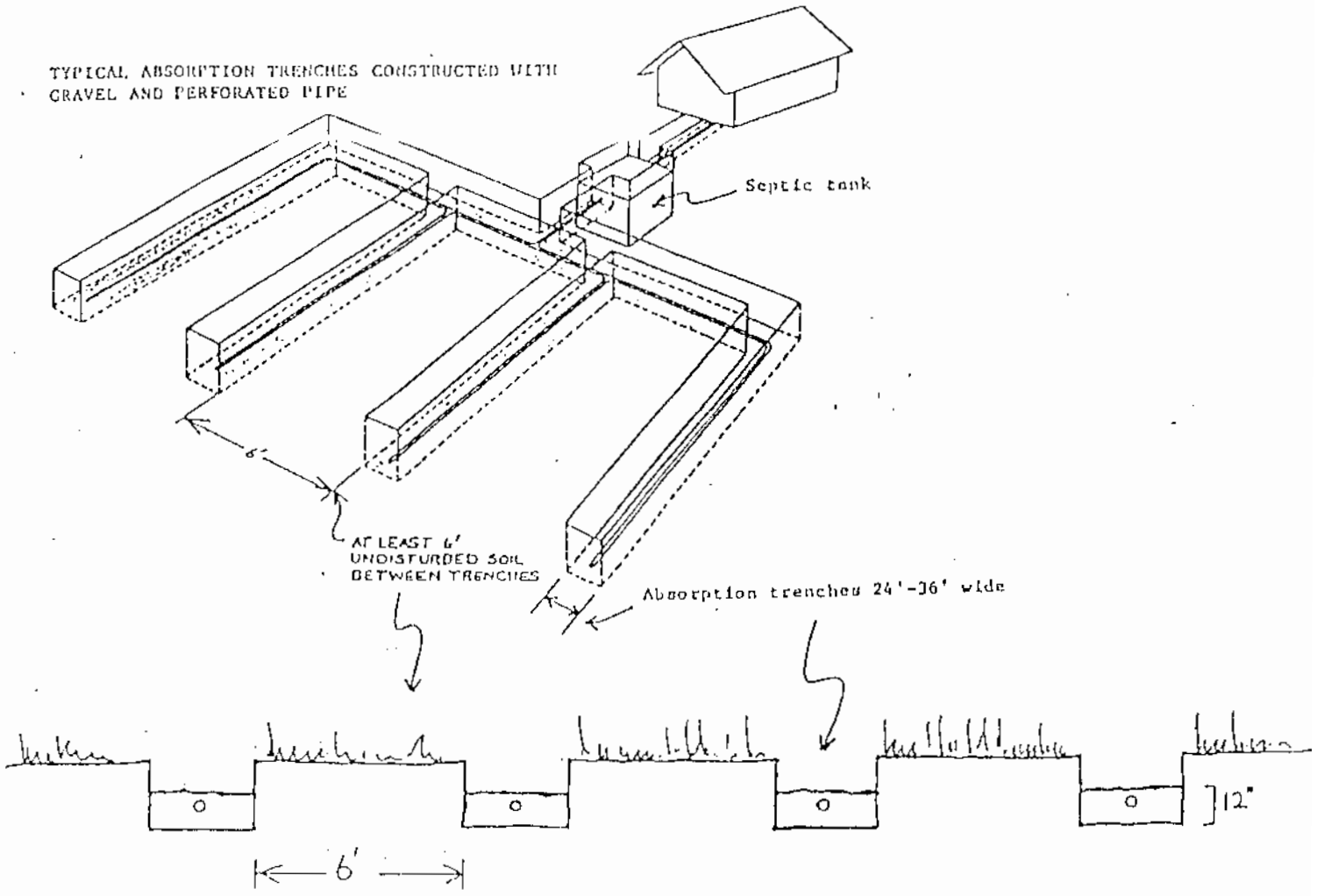
***IF YOU HAVE ANY QUESTIONS PLEASE CONTACT
THE COUNTY INSPECTOR AT:***

(719) 276-7460

TYPICAL ABSORPTION BED CONSTRUCTED WITH GRAVEL AND PERFORATED PIPE

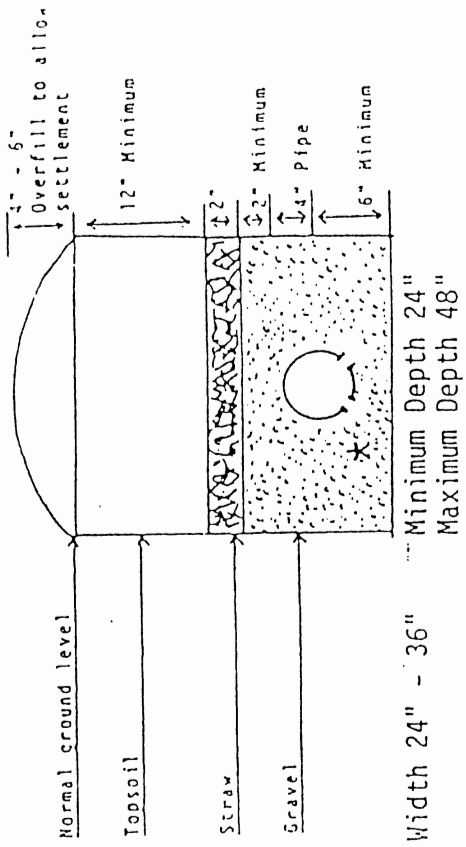


TYPICAL ABSORPTION TRENCHES CONSTRUCTED WITH GRAVEL AND PERFORATED PIPE



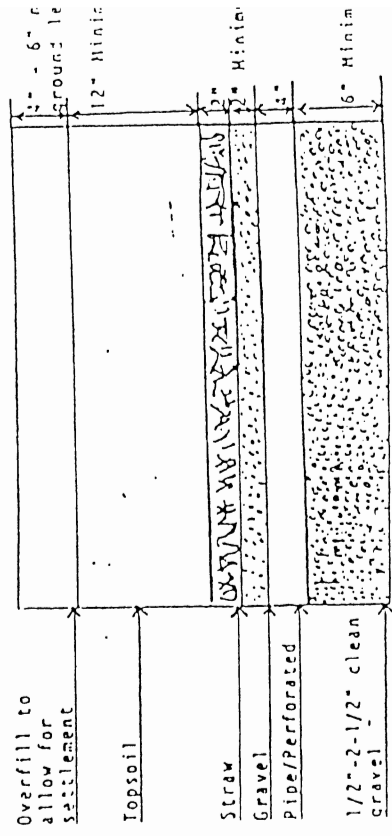
TYPICAL ABSORPTION AREA

CROSS-SECTION OF TYPICAL ABSORPTION TRENCH

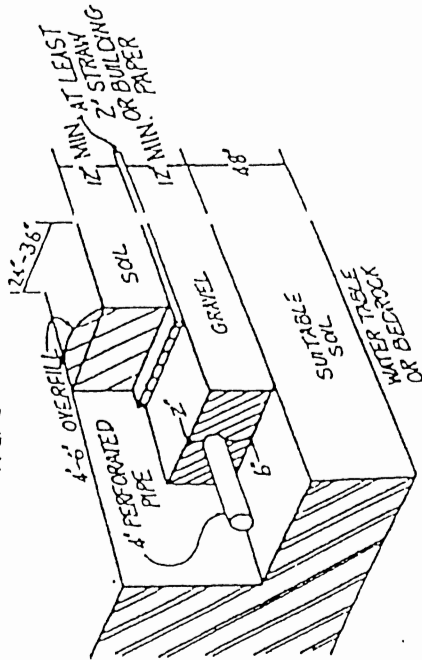


* Note orientation of parallel rows of perforations on distribution pipe

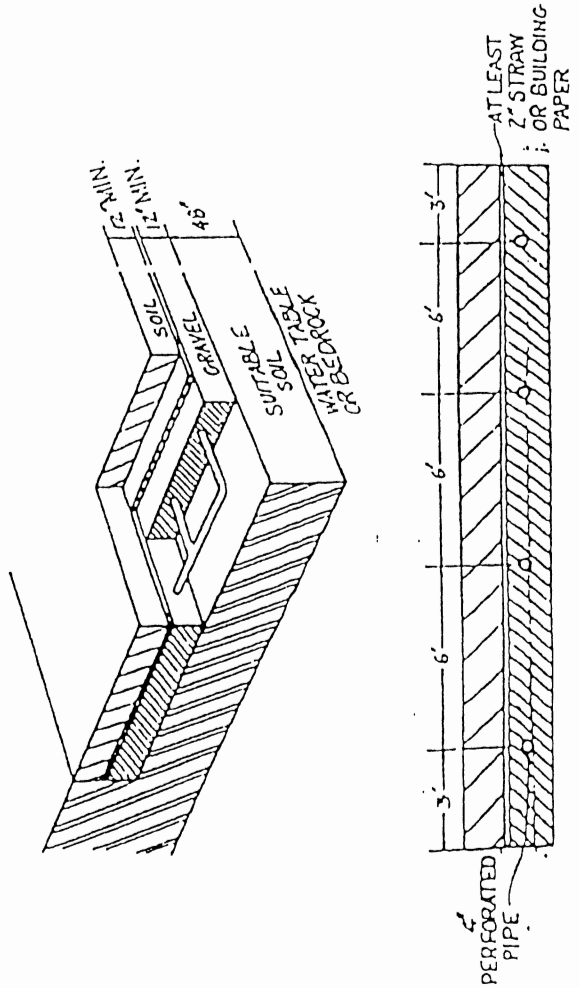
LONGITUDINAL SECTION OF TYPICAL ABSORPTION AREA

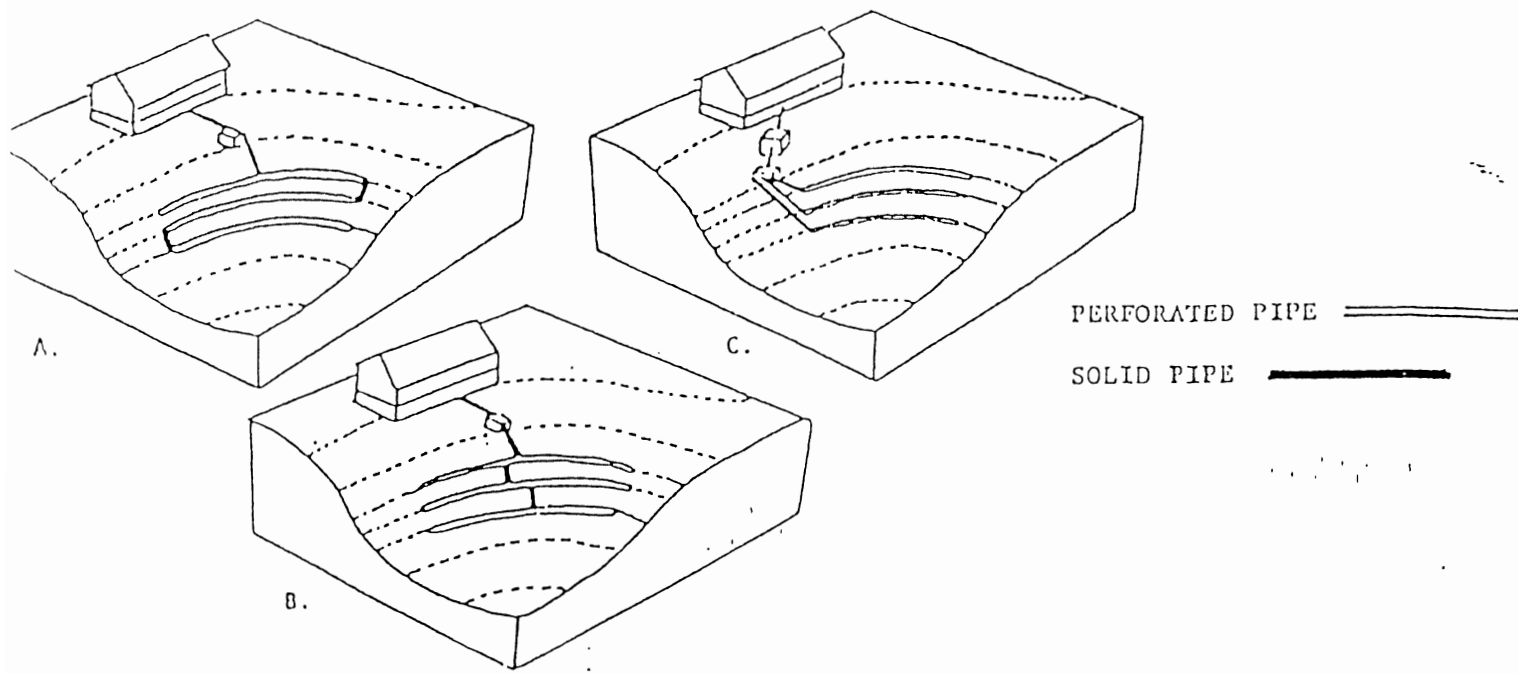


TYPICAL ABSORPTION TRENCH



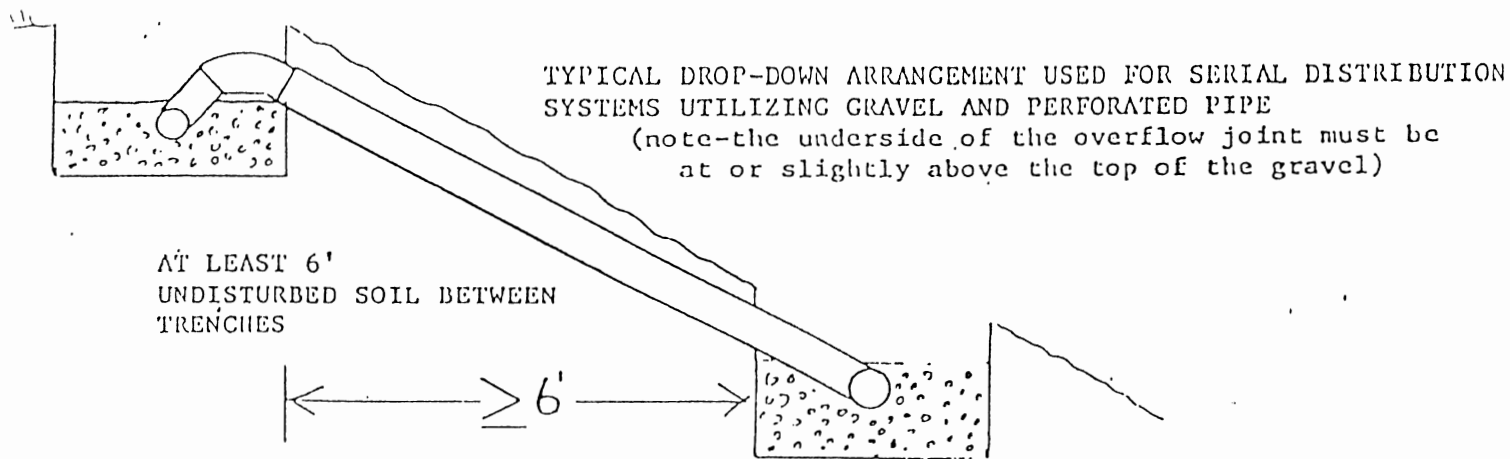
TYPICAL SEEPAGE BED





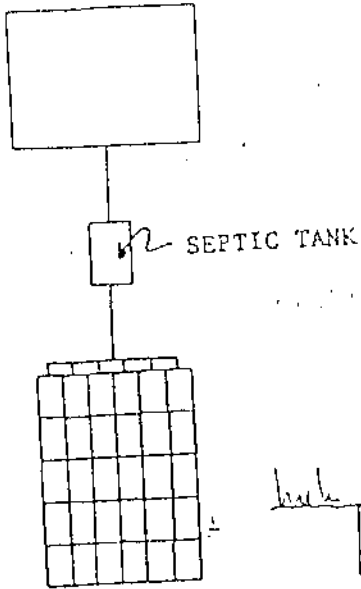
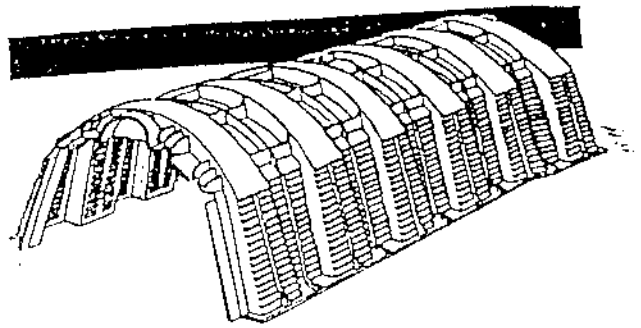
TYPICAL SERIAL DISTRIBUTION SYSTEMS

figure C. utilizes a "distribution box"

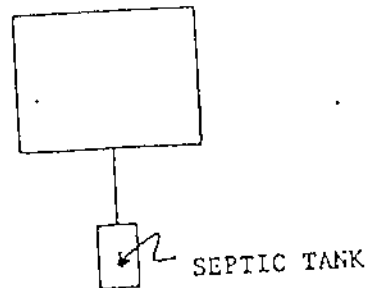


DROP-DOWN CONSTRUCTION MAY VARY WITH THE USE OF CHAMBERS. CHECK THE MANUFACTURER'S SPECIFICATIONS FOR EACH BRAND OF CHAMBER.

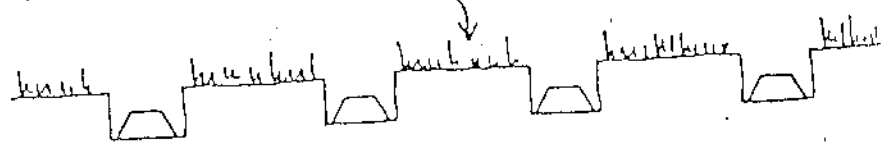
TYPICAL ABSORPTION BED CONSTRUCTED WITH CHAMBERS



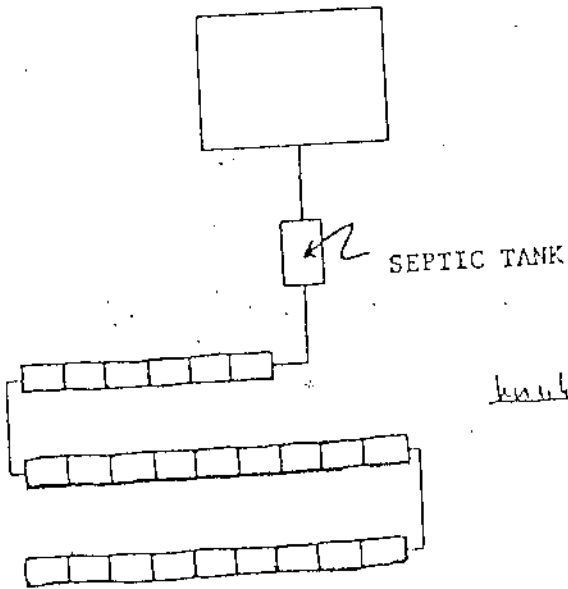
TYPICAL ABSORPTION TRENCHES CONSTRUCTED WITH CHAMBERS



AT LEAST 6' UNDISTURBED SOIL BETWEEN TRENCHES



TRENCHES EXCAVATED WIDE ENOUGH TO INSTALL CHAMBERS



BUILDING SEWER CONNECTIONS TO THE SEPTIC TANK

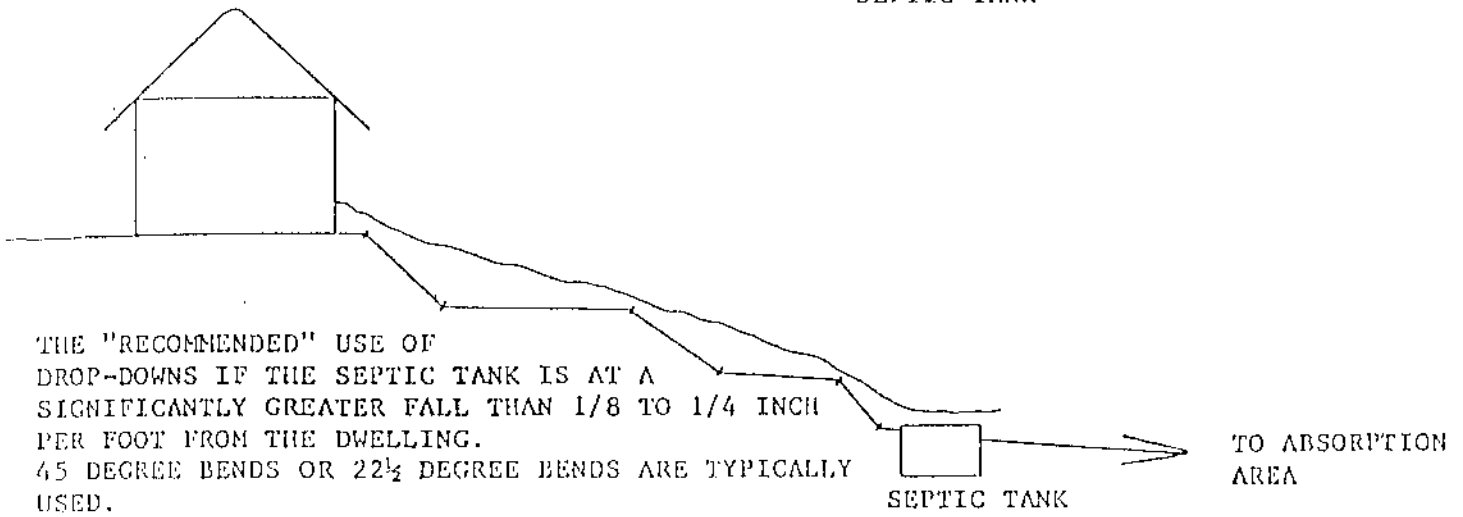
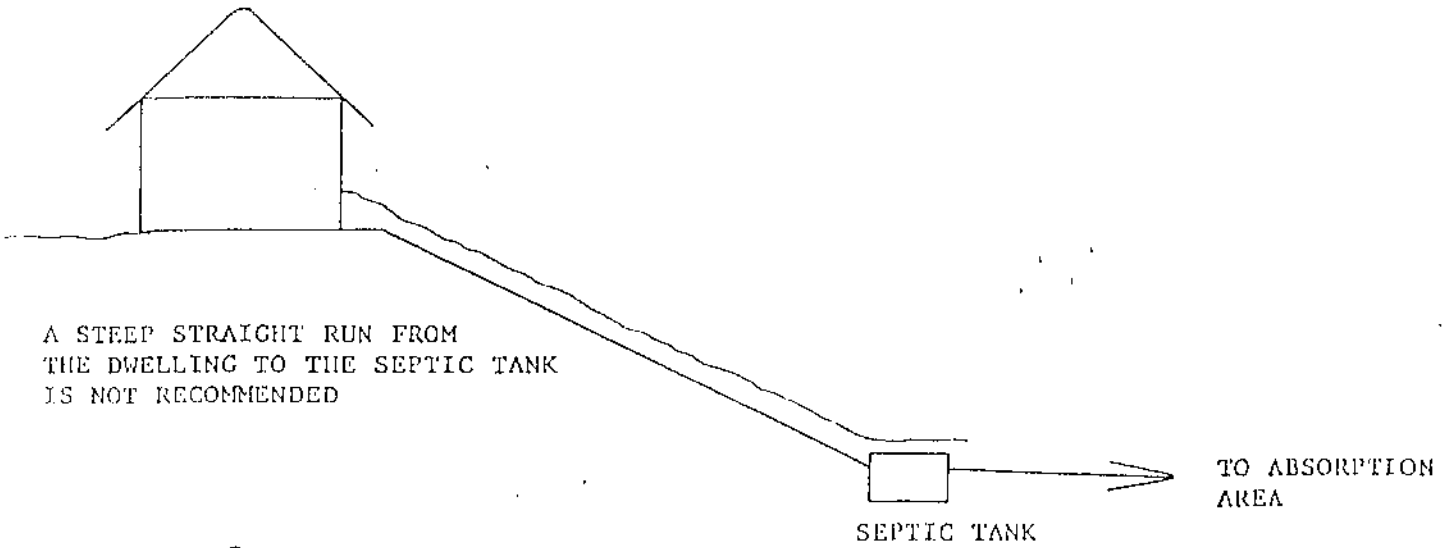


TABLE OF MINIMUM HORIZONTAL DISTANCES IN FEET BETWEEN COMPONENTS OF A SEWAGE DISPOSAL SYSTEM INSTALLED AFTER NOVEMBER 15, 1973, PERTAINING TO PHYSICAL FEATURES

Component	Spring, Wells, Suction Lines	Potable Water Supply Line	Potable Water Supply Cistern	Dwelling Occupied Building	Proposed Lined or Irrigation Ditch	Subsoil Drains, Intermittent Irrigation Lateral	Lake, Water Course, Irrigation Ditch or Stream	Dry Gulches	Septic Tank
Dispersal System Utilizing Aerosol Methods	(3) 100	(4)(2) 10	50	125	10	0	(3) 25	(2) 10	10
Soopage Pit or Silt Trench	(3) 100	(4)(2) 50	25	20	25	10	(3) 50	(2) 25	6
Absorption Trench, Soopage Bed, Sand Filter, Sub-surface Dispersal System, or Orwell	(2) 100	(4)(2) 25	25	20	10	10	(2) 50	(2) 25	6
Unlined Sand Filter in soil with a Percolation Rate slower than 60 Minutes per Inch	100	(4)(2) 25	25	15	10	10	25	15	10
Unlined or Partially Lined Evapotranspiration System Wastewater Pond, or Surface Disposal System Other than Aerosol	100	(4)(2) 25	25	15	10	10	25	15	10
Lined Sand Filter	60	(4)10(2)	25	15	10	10	25	10	5
Lined Evapotranspiration Field or Lined Wastewater Pond	60	(4)10(2)	25	15	10	10	25	10	5
Pit Privy or Vault Privy	50	(4)10(2)	25	15	10	10	25	10	--
Septic Tanks, Treatment Plants, Dosing Tanks, Vaults	(2) 50	(4)(2) 10	25	(1) 5	10	10	50	10	--
Building Sewer or Effluent Lines	(2)(4) 50	(4)(2) 10	(4) 25	0	(2)(4) 10	(4) 10	(2)(4) 50	(2)(4) 10	--

NOTE: The minimum distances shown above shall be maintained between the system components and the physical features described. Where soil, geological or other conditions warrant, greater distances may be required by the local board of health or by the Water Quality Control Commission pursuant to C.R.S. 25-8-206. In accordance with the authority prescribed by law and rules and regulations implemented of said section. Components which are not water tight should not extend into areas of the root system of nearby trees. For repair or upgrading of existing systems where the size of lot precludes adherence to these distances, repaired facility shall not be closer to water supply components than the existing facilities.

- (1) Distance shown shall not apply to treatment plants or effluent lines where recycling is permitted.
- (2) Crossings or encroachments may be permitted at the points as noted above provided that the water conveyance pipe is encased for a minimum distance of ten (10) feet on each side of the crossing. A length of pipe shall be used with a minimum schedule 40 rating of sufficient diameter to easily slide over and completely encase the water conveyance. Rigid and caps of at least schedule 40 rating must be glued or secured in a watertight fashion to the ends of the encasement pipe. A hole of sufficient size to accommodate the pipe shall be drilled in the lowermost section of the rigid cap so that the conveyance pipe rests on the bottom of the encasement pipe. The area in which the pipe passes through the caps shall be sealed with an approved underground sealant compatible with the piping used.
- (3) Add a feet additional distance for each 100 gallons per day of design flow over 1000 gallons per day as specified in the table.
- (4) Encroachments may be permitted provided the water or wastewater conveyance pipe is encased as in (2) above, as specified in the table.

Table of Minimum Horizontal Distances in Feet Between Components of a Sewage Disposal System Installed After November 15, 1973
Pertinent Physical Features

	Spring, Wells, Suction Lines	Potable Water Supply Line	Potable Water Supply Cistern	Dwelling Occupied Building	Property Lines Piped or Lined Irrigation Ditch	Subsoil Drains, Intermittent Irrigation Lateral	Lake, Water Course Irrigation Ditch or Stream	Dry Gulches	Septic Tank
Dispersal System Utilizing Aerosol Methods	(3) 100	(4)(2) 10	50	125	10	0	(3) 25	(3) 10	10
Seepage Pit or Slit Trench	(3) 100	(4)(2) 50	25	20	25	10	(3) 50	(3) 25	6
Absorption Trench, Seepage Bed, Sand Filter, Sub-surface Dispersal System, or Dry well	(3) 100	(4)(2) 25	25	20	10	10	(3) 50	(3) 25	6
Unlined Sand Filter in Soil with a Percolation Rate Slower than 60 Minutes per Inch	100	(4)(2) 25	25	15	10	10	25	15	10
Unlined or Partially Lined Evapotranspiration System Wastewater Pond, or Surface Disposal	100	(4)(2) 25	25	15	10	10	25	15	10
Lined Sand Filter	60	(4) 10 (2)	25	15	10	10	25	10	5
Lined Evapotranspiration Field or Lined Wastewater Pond	60	(4) 10 (2)	25	15	10	10	25	10	5
Pit privy or Vault Privy	50	(4) 10 (2)	25	15	10	10	25	10	---
Septic Tanks, Treatment Plants, Dosing Tanks, Vaults	(2) 50	(4)(2) 10	25	(1) 5	10	10	50	10	---
Building Sewer or Effluent Lines	(2)(4) 50	(4)(2) 10	(4) 25	0	(2)(4) 10	(4) 10	(2)(4) 50	(2)(4) 10	---

Note: The minimum distances shown above shall be maintained between the system components and the physical features described. Where soil, geological or other conditions warrant, greater distances may be required by the local board of health or by the Water Quality Control Commission pursuant to C.R.S. 25-8-206 in accordance with the authority prescribed by law and rules and regulations implementing of said section. Components which are not water tight should not extend into areas of the root system of nearby trees. For repair or upgrading of existing systems where the size of lot precludes adherence to these distances, repaired facility shall not be closer to water supply components than the existing facilities

(1) Distance shown shall not apply to treatment plants or effluent lines where recycling is permitted.

(2) Crossings or encroachments may be permitted at the points as noted above provided that the water conveyance pipe is encased for a minimum distance of ten (10) feet on each side of the crossing. A length of pipe shall be used with a minimum Schedule 40 rating of sufficient diameter to easily slide over and completely encase the water conveyance. Ridged end caps of at least Schedule 40 rating must be glued or secured in a watertight fashion to the ends of the encasement pipe. A hole of sufficient size to accommodate the pipe shall be drilled in the lowermost section of the ridged cap so that the conveyance pipe rests on the bottom of the encasement pipe. The area in which the pipe passes through the endcaps shall be sealed with an approved underground sealant compatible with the piping used.

(3) Add 8 feet additional distance for each 100 gallons per day of design flow over 1000 gallons per day as specified in the table.

(4) Encroachments may be permitted provided the water or wastewater conveyance pipe is encased as in (2) above, specified in the table.