D R A F T

Chapter 16A
NONPOTABLE WATER REUSE SYSTEMS

Part I

This Part is applicable to occupancies under the authority of the Department of Housing and Community Development as specified in Section 1.8.2.1.1 and is intended to:

1) Conserve water by facilitating greater reuse of laundry, shower and lavatory discharge for irrigation.
2) Reduce the number of non-compliant graywater systems by making legal compliance easily achievable.
3) Provide guidance for avoiding potentially unhealthful conditions.

1601*A*.0 Graywater Systems – General.

(A) ~~The provisions of this chapter shall apply to the construction, alteration, and repair of gray water systems for underground landscape irrigation. Gray water installations shall be designed by a person registered or licensed to perform plumbing design work. Except as otherwise provided for in this chapter, the provisions of this code shall be applicable to gray water installation~~ *The provisions of this part shall apply to the construction, alteration, and repair of graywater systems. The graywater system shall not be connected to any potable water system without an air gap or other physical device which prevents backflow and shall not result in the ponding or runoff of graywater. A city, county, or city and 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. For additional information see Health and Safety Code Section 18941.7.*

(B) ~~The system, except as otherwise approved, shall consist of a holding tank or tanks that discharge into subsurface irrigation/disposal fields~~ *The type of system shall be determined by the location, discharge capacity, soil type, and ground water level. The system shall be designed to accept graywater discharged from the building and may include tank(s) and other appurtenances necessary to ensure proper function of the system.*

(C) No graywater system or part thereof shall be located on any lot other than the lot that is the site of the building or structure that discharges the graywater, nor shall any graywater system or part thereof be located at any point having less than the minimum distances indicated in Table 16-1.

Exception: *When there exists a lawfully recorded perpetual and exclusive covenant to an easement appurtenant and right- of-way between adjoining land-owners of two or more contiguous lots to discharge graywater from one lot to an adjoining lot.*

(D) No construction permit for any graywater system shall be issued until a plot plan with appropriate data satisfactory to the Enforcing Agency has been submitted and approved. When there is insufficient lot area or inappropriate soil conditions to *prevent the ponding or run off* of graywater, as determined by the Enforcing Agency, no graywater system shall be permitted.

Exception: *A construction permit shall not be required for a graywater system supplied by a Clothes Washer System and/or a Single Fixture System in compliance with the requirements of Section 1603.1.1.*

~~**(E)** No permit shall be issued for a gray water system on any property in a geologically sensitive area as determined by authority having jurisdiction~~.

~~**(F)** Private sewage disposal systems existing or to be constructed on the premises shall comply with this chapter. In addition, appropriate clearances from the gray water systems shall be maintained as provided in Table 16-1. The capacity of the private sewage disposal system, including required future areas, shall not be decreased or otherwise affected by the existence or proposed installation of a gray water system servicing the premises.~~

(E) *All graywater systems shall be designed to allow the user to direct the flow to either the irrigation/disposal field or the building sewer. The direction control of the graywater shall be clearly labeled and readily accessible to the user.*

(F) *Water used to wash diapers or similarly soiled or infectious garments shall be diverted by the user to the building sewer.*

(G) Graywater shall not be used in spray irrigation, allowed to pond or run off and shall not be discharged directly into or reach any storm sewer system or any body of water.

(H) Human contact with graywater or the soil irrigated by graywater shall be minimized and avoided, except as required to maintain the graywater system. The discharge point of any graywater irrigation or disposal field shall be covered by at least (2) inches (25 mm) of mulch or soil to minimize the possibility of human contact.

(I) Graywater shall not be used to irrigate root crops or edible parts of food crops that touch the soil.

1602*A*.0 Definition*s*.

~~Gray water is untreated waste water that has not come into contact with toilet waste, kitchen sink waste, dishwasher waste or similarly contaminated sources. Gray water includes water from bathtubs, showers, bathroom wash basins, clothes washers and laundry tubs.~~

Clothes Washer System. *A graywater system utilizing only a single domestic clothes washing machine in a one- or two-family dwelling.*

Complex System. *Graywater systems that discharge over 250 gallons per day.*

Disposal Field. *An intended destination for graywater including but not limited to a mulch basin, leach line or other approved method of disposal.*

Graywater. *Pursuant to Health and Safety Code Section 17922.12, "graywater" means untreated wastewater that has not been contaminated by any toilet discharge, has not been affected by infectious, contaminated, or unhealthy bodily wastes, and does not present a threat from contamination by unhealthful processing, manufacturing, or operating wastes. "Graywater" includes wastewater from bathtubs, showers, bathroom washbasins, clothes washing machines, and laundry tubs, but does not include wastewater from kitchen sinks or dishwashers.*

Graywater System. *A system designed to collect graywater and transport it out of the structure for distribution in a Irrigation or Disposal Field. A graywater system may include tanks, valves, filters, pumps or other appurtenances along with piping.*

Irrigation Field. *An intended destination for graywater including but not limited to a drip irrigation system, mulch basin, or other approved method of dispersal for irrigation purposes.*

Mulch. *Organic waste material including but not limited to leaves, prunings, straw, pulled weeds and wood chips. . Mulch shall be permeable enough to allow rapid infiltration of graywater.*

Mulch Basin. *A type of irrigation or disposal field filled with mulch or other approved permeable material of sufficient depth, length and width to prevent ponding or run off. A mulch basin may include a basin around a tree, a trough along a row of plants or other shapes necessary for irrigation or disposal.*

Treated Graywater. *Nonpotable water collected and treated on-site suitable for direct beneficial use. The level of treatment and quality of the treated graywater shall be approved by the Enforcing Agency.*

Simple System. *A graywater system serving a one- or two-family dwelling with a discharge of 250 gallons per day or less. Simple Systems are when you exceed a Clothes Washer System and/or a Single Fixture System.*

Single Fixture System. *A graywater system collecting graywater from one plumbing fixture or a single drain which collects graywater from more than one fixture in a one- or two-family dwelling.*

Treated Graywater. *Nonpotable water that has been collected and treated on-site, and is suitable for direct beneficial use. The level of treatment and quality of the treated graywater shall be approved by the public health Authority Having Jurisdiction.*

1603*A*.0 Permit.

~~It shall be unlawful for any person to construct, install, or alter, or cause to be constructed, installed, or altered any gray water system in a building or on a premises without first obtaining a permit to do such work from the Authority Having Jurisdiction.~~ *A written construction permit shall be obtained from the enforcing*

agency prior to the erection, construction, reconstruction, installation, relocation or alteration of any graywater system that requires a permit.

Exception: *A construction permit shall not be required for a graywater system supplied only by a Clothes Washer System and/or a Single Fixture System in compliance with the requirements of Section 1603.1.1.*

1603A.1 System Requirements. [HCD 1]

1603A.1.1 Clothes Washer System and/or Single Fixture System. *A Clothes Washer System and/or a Single Fixture System in compliance with all of the following is exempt from the construction permit specified in Section 1.8.4.1 and may be installed or altered without a construction permit:*

1. *The location and installation of a graywater irrigation or disposal system has not been restricted or prohibited by local government.*
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 affect other building, plumbing, electrical or mechanical components including structural features, egress, fire-life safety, sanitation or accessibility.*
4. *The graywater shall be contained on the site where it is generated.*
5. *Graywater shall be directed to an irrigation or disposal field.*
6. *Ponding or run off is prohibited and shall be considered a nuisance.*
7. *Graywater may be released above the ground surface provided at least two (2) inches (50.8 mm) of mulch covers the release point or other methods which provide equivalent separation.*
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. Directions shall indicate the manual is to remain with the building throughout the life of the system.*

1603A.1.2 Simple System. *Simple Systems are when you exceed a Clothes Washer System and/or a Single Fixture System and shall comply with the following:*

1. The discharge capacity of a Graywater System shall be determined by Section 1606.0. Simple systems have a discharge capacity of 250 gallons per day or less.

2. Simple systems shall require a construction permit, unless exempted from construction permit by the Enforcing Agency.

3. Simple systems shall meet generally accepted graywater system design criteria.

1603A.1.3 Complex System. *Any graywater system that is not a clothes washer system, single fixture system or simple system shall comply with the following:*

1. The discharge capacity of a Graywater System~~s~~ shall be determined by Section 1606.0. Complex Systems have a discharge capacity over 250 gallons per day.

2. Complex Systems shall require a construction permit, unless exempted from construction permit by the enforcing agency.

3. A complex system shall be designed by a qualified person who can demonstrate competence to the satisfaction of the enforcing agency.

1604*A*.0 Drawings and Specifications.

~~The Authority Having Jurisdiction may require any or all of the following information to be included with or in the plot plan before a permit is issued for a gray water system, or at any time during the construction thereof:~~ *Graywater systems for which a construction permit is required may be subject to submittal of plans and details of the proposed graywater system necessary to ensure compliance with the requirements of this chapter. Identification of the groundwater level and soil absorption qualities at the site shall be included in the plans or provided to the Enforcing Agency.*

Exception: *The Enforcing Agency may waive the requirement for identification of groundwater level and/or soil absorption qualities based on knowledge of local conditions.*

~~**(A)** Plot plan drawn to scale and completely dimensioned, showing lot lines and structures, direction and approximate slope of surface, location of all present or proposed retaining walls, drainage channels, water supply lines, wells, paved areas and structures on the plot, number of bedrooms and plumbing fixtures in each structure, location of private sewage disposal system and 100 percent expansion area or building sewer connecting to the public sewer, and location of the proposed gray water system.~~

~~**(B)** Details of construction necessary to ensure compliance with the requirements of this chapter, together with a full description of the complete installation, including installation methods, construction, and materials as required by the Authority Having Jurisdiction.~~

~~**(C)** A log of soil formations and groundwater level as determined by test holes dug in proximity to any proposed irrigation area, together with a statement of water absorption characteristics of the soil at the proposed site as determined by approved percolation tests.~~

~~**Exception:** The Authority Having Jurisdiction shall be permitted to use Table 16-2 in lieu of percolation tests.~~

1605*A*.0 Inspection and Testing.

(A) Inspection. *A graywater system for which a construction permit is required shall be subject to inspection by the enforcing agency and such construction or work shall remain accessible and exposed for inspection purposes until approved.*

At the time of final inspection, an operation and maintenance manual shall be provided. Directions shall indicate the manual is to remain with the building throughout the life of the system.

~~(1) All applicable provisions of this chapter and of Section 103.5 of this code shall be complied with.~~
~~(2) System components shall be properly identified as to manufacturer.~~
~~(3) Holding tanks shall be installed on dry, level well-compacted soil if underground or on a level three (3) inch (76 mm) concrete slab if above ground.~~
~~(4) Holding tanks shall be anchored against overturning.~~
~~(5) If a design is predicated on soil tests, the irrigation/disposal field shall be installed at the same location and depth as the tested area.~~
~~(6) Installation shall conform with the equipment and installation methods identified in the approved plans.~~

(B) Testing.

(1) Holding tanks shall be filled with water to the overflow line prior to and during inspection. All seams and joints shall be left exposed, and the tank shall remain watertight.
(2) A flow test shall be performed through the system to the point of graywater irrigation/disposal. All lines and components shall be watertight.

1606*A*.0 Procedure for Estimating Graywater Discharge.

(A) Single Family Dwellings and Multi-Family Dwellings. The graywater discharge for single family and multi-family dwellings shall be calculated by *estimates of graywater use based on* water use records, calculations of local daily per person interior water use, or the following procedure:

1. The number of occupants of each dwelling unit shall be calculated as follows:

First Bedroom	2 occupants
Each additional bedroom	1 occupant

2. The estimated graywater flows of each occupant shall be calculated as follows:

Showers, bathtubs and wash basins	25 GPD/occupant
Laundry	15 GPD/occupant

3. The total number of occupants shall be multiplied by the applicable estimated graywater discharge as provided above and the type of fixtures connected to the graywater system.

~~**(B) Commercial, Industrial, and Institutional.** The gray water discharge for commercial, industrial and institutional occupancies shall be calculated by utilizing the procedure in Section 1606.0 (A), water use records, or other documentation to estimate gray water discharge.~~

~~**(C)**~~**(B) Daily Discharge –** All graywater systems *using tanks* shall be designed to *minimize the amount of time graywater is held and* distribute the *graywater completely in a 24 hour period* ~~total amount of estimated gray water on a daily basis~~.

***Exception**: Treated Graywater may be held over 24 hours when approved by the Enforcing Agency.*

1607*A*.0 Required Area of ~~Subsurface~~ Irrigation or Disposal Fields ~~(See Figure 16-5.)~~ ~~Each valved zone shall have a minimum effective irrigation area in square feet as determined by Table 16-2 for the type of soil found in the excavation, based upon a calculation of estimated gray water discharge pursuant to Section 1606.0 of this chapter or the size of the holding tank, whichever is larger. The area of the irrigation/disposal field shall be equal to the aggregate length of the perforated pipe sections within the valved zone multiplied by the width of the proposed irrigation/disposal field. Each proposed gray water system shall include not less than zones isolated by valves, and each zone shall be in compliance with the provisions of the section. No excavation for an irrigation/disposal field shall extend within five (5) vertical feet of the highest known seasonal groundwater, nor to a depth where gray water contaminates the groundwater, or surface water. The applicant shall supply evidence of groundwater depth to the satisfaction of the Authority Having Jurisdiction.~~ *Irrigation or disposal fields may have one or more valved zones. Each zone must be of adequate size to receive the graywater anticipated in that zone. No excavation for an irrigation or disposal field shall extend within three (3) vertical feet of the highest known seasonal groundwater, nor to a depth where graywater contaminates the groundwater, ocean water or surface water, unless authorized by the Enforcing Agency. The applicant shall supply evidence of groundwater depth to the satisfaction of the Enforcing Agency.*

1608*A*.0 Determination of Maximum Absorption Capacity.

(A) Wherever practicable, irrigation/disposal field size shall be computed from Table 16-2.

(B) In order to determine the absorption quantities of questionable soils other than those listed in Table 16-2, the proposed site may be subjected to percolation tests acceptable to the~~ Authority Having Jurisdiction~~ *Enforcing Agency*.

(C) When a percolation test is required, no graywater system shall be permitted if the test shows the absorption capacity of the soil is ~~less than eighty three hundredths (0.83) of a gallon per square foot (33.8 L/m^2) or more than five and twelve-hundredths (5.12) of a gallon per square foot (208.5 L/m^2) of leaching area per twenty four (24) hours~~ *unacceptable to accommodate the intended discharge of the proposed graywater system*.

***Exception:** The Enforcing Agency may waive the requirement for percolation tests based on knowledge of local conditions or accept other testing methods.*

1609*A*.0 ~~Holding~~ Tank Construction. ~~(See Figures 16-1, 16-2, 16-3 and 16-4.)~~

(A) *When system design includes a tank*, ~~plans for all holding tanks shall~~ *specifications for the tank shall be submitted to the* ~~Authority Having Jurisdiction~~ *Enforcing Agency* for approval. Such plans shall show all dimensions~~, structural calculations, bracings,~~ and ~~such~~ other pertinent data ~~as required. A capacity of not less than fifty (50) gallons (189 L) is required.~~

(B) ~~Holding tanks~~ *Tanks* shall be constructed of solid, durable materials not subject to excessive corrosion or decay and shall be watertight.

(C) Each ~~holding~~ tank shall be vented as required by Chapter 9 of this code, ~~and~~ shall ~~have a locking, gasketed~~ *be sealed against vermin and mosquitoes, and have an* access opening ~~or approved equivalent~~ to allow for inspection and cleaning.

(D) Each ~~holding~~ tank shall have its rated capacity permanently marked on the unit. In addition, a sign stating "GRAYWATER IRRIGATION SYSTEM, DANGER — UNSAFE WATER" shall be permanently marked on the holding tank.

(E) Each ~~holding~~ tank ~~installed above ground~~ shall have an *overflow drain* ~~emergency drain separate from that connecting the tank with the irrigation/disposal fields and an overflow drain~~. The ~~emergency and~~ overflow drain~~s~~ shall have a permanent connection~~s~~ to the building drain or building sewer, upstream of septic tanks, if any. The overflow drain shall not be equipped with a shutoff valve.

(F) The overflow ~~and emergency drainpipes~~ *drain* shall not be less in size than the inlet pipe. The vent size shall be determined based on the total graywater fixture units as outlined in Table 7-5 of this code. Unions or equally effective fittings shall be provided for all piping connected to the holding tank.

(G) Each ~~holding~~ tank shall be structurally designed to withstand all anticipated earth or other loads. ~~Holding tank~~ *Tank* covers shall be capable of supporting an earth load of not less than three hundred (300) pounds per square foot (1464.6 kg/m^2) when the tank is ~~designed~~ *used* for underground installation.

(H) ~~If a holding tank is installed underground, the~~ *The overflow* system must be designed so that the tank overflow will gravity drain to the existing sewer line or septic tank. The tank shall be protected against sewer line backflow by a backwater valve.

~~**(I) Materials.**~~

~~(1) Holding tanks shall be steel, protected from corrosion, both externally and internally by an approved coating or other acceptable means; shall meet nationally recognized standards for the intended use; and shall be approved by the Authority Having Jurisdiction.~~

~~(2) Holding tanks constructed of alternate material shall be permitted to be approved by the Authority Having Jurisdiction, provided they comply with approved applicable standards.~~

(I) *An overflow drain and backwater valve is not required on a Clothes Washer System.*

1610*A*.0 Graywater Systems. ~~**(See Figures 16-1, 16-2, 16-3, and 16-4.)**~~
Graywater systems shall comply with Sections 1610.1 through 1610.4.

1610*A*.1 Pipe Materials. Graywater pipe, valves and fittings shall conform to the requirements of Sections 604.0, 605.0 and 606.0.

1610*A*.2 Color and Information. ~~All gray water systems shall have a purple background with black uppercase lettering, with the words "CAUTION: NONPOTABLE WATER, DO NOT DRINK."~~

~~The minimum size of the letters and length of the color field shall conform to Table 6-1. Where used, a colored identification band shall be indicated every twenty (20) feet (6,096 mm) not less than once per room, and shall be visible from the floor level. Marking is not required for pipe manufactured with purple color integral to the pipe and marked with black uppercase lettering to read, "CAUTION: NONPOTABLE WATER, DO NOT DRINK" in intervals not to exceed five (5) feet (1,524 mm). All valves, except fixture supply control valves shall be equipped with a locking feature.~~ *Graywater distribution piping upstream of any connection to an irrigation or disposal field or a distribution valve shall be identified with the words "CAUTION: NONPOTABLE WATER, DO NOT DRINK." Marking shall be at intervals not to exceed five (5) feet (1,524 mm).*

1610*A*.3 Valves. All valves~~, including the three way valve,~~ shall be ~~readily~~ accessible ~~and approved by the Authority Having Jurisdiction~~. A backwater valve installed pursuant to this code shall be provided on all ~~holding~~ tank drain connections to the sanitary drain or sewer piping.

~~**1610.4 Trap.** Gray water piping discharging into the holding tank or having a direct connection to the sanitary drain or sewer piping shall be downstream of an approved liquid seal type trap(s). If no such trap(s) exists, an approved vented running trap shall be installed upstream of the connection to protect the building from any possible waste or sewer gases.~~

1611*A*.0 Irrigation~~/~~ Disposal Field and Mulch Basin Construction. ~~(See Figure 16-5.)~~
Irrigation fields, disposal fields and mulch basins used in graywater systems shall comply with this section. Graywater systems may contain either a irrigation field or a disposal field or a combination of both. This section is not intended to prevent the use of other methods of graywater irrigation or disposal approved by the Enforcing Agency.

1611A.1 Mulch Basin *A mulch basin may be used as an irrigation or disposal field. Mulch basins shall be sized in accordance with Table 16-2 and of sufficient depth, length and width to prevent ponding or run off during the graywater surge of a clothes washer, bathtub or shower. Mulch must be replenished as required due to decomposition of organic matter. Mulch Basin will require periodic maintenance or removal of dirt to prevent ponding or run off.*

1611A.2 Irrigation field. *The provisions of this section are not intended to prevent the use of any appropriate material, appliance, installation, device, design or method of construction. If an alternate design is not available the following provisions may be used as guidance in the design of a graywater irrigation field:*

(1) Minimum 140 mesh (115 micron) filter with a capacity of 25 gallons (94.6 L) per minute, or equivalent, filtration, sized approximately to maintain the filtration rate, shall be used. The filter backwash and flush discharge shall be contained and disposed of into the building sewer system, septic tank or, with approval of the Enforcing Agency, a separate mini-leachfield sized to accept all the backwash and flush discharge water. Filter backwash water and flush water shall not be used for any purpose. Sanitary procedures shall be followed when handling filter backwash and flush discharge or graywater.

(2) Emitters shall have a minimum flow path of 1,200 microns and shall have a coefficient of manufacturing variation (Cv) of no more than 7 percent. Irrigation system design shall be such that emitter flow variation shall not exceed " 10 percent. Emitters shall be recommended by the manufacturer for the intended graywater use and shall resist root intrusion. For emitter ratings, refer to Irrigation Equipment Performance Report, Drip Emitters and Micro-Sprinklers, Center for Irrigation Technology, California State University, 5730 N. Chestnut Avenue, Fresno, California 93740-0018.

(3) Each irrigation zone shall be designed to include no less than the number of emitters specified in Table 16-3, or through a procedure designated by the Enforcing Agency. Minimum spacing between emitters is 14 inches (356 mm) in any direction.

(4) The system design shall provide user controls, such as valves, switches, timers and other controllers, as appropriate, to rotate the distribution of graywater between irrigation zones.

(5) All drip irrigation supply lines shall be polyethylene tubing or PVC Class 200 pipe or better and Schedule 40 fittings. All joints shall be properly solvent-cemented, inspected and pressure tested at 40 psi (276 kPa), and shown to be drip tight for five minutes, before burial. All supply piping shall be covered to a minimum depth of 2 inches (229 mm) of mulch or soil. Drip feeder lines can be poly or flexible PVC tubing and shall be covered to a minimum depth of 2 inches (229 mm) of mulch or soil.

(6) Where pressure at the discharge side of the pump exceeds 20 psi (138 kPa), a pressure-reducing valve able to maintain downstream pressure no greater than 20 psi (138 kPa) shall be installed downstream from the pump and before any emission device.

(7) Each irrigation zone shall include a flush valve/antisiphon valve to prevent back siphonage of water and soil.

1611A.3 Disposal field. *The provisions of this section are not intended to prevent the use of any appropriate material, appliance, installation, device, design or method of construction. If an alternate design is not available the following provisions may be used as guidance in the design of a graywater disposal field:*

(A) Perforated sections shall be not less than three (3) inches (80 mm) in diameter and shall be constructed of perforated high-density polyethylene pipe, perforated ABS pipe, perforated PVC pipe, or other approved materials, provided that sufficient openings are available for distribution of the graywater into the trench area. Material, construction, and perforation of the pipe shall be in compliance with the

appropriate absorption fields drainage piping standards and shall be approved by the ~~Authority Having Jurisdiction~~ *Enforcing Agency*.

(B) Filter material, clean stone, gravel, slag, or similar filter material acceptable to the ~~Authority Having Jurisdiction~~ *Enforcing Agency*, varying in size from three-quarter (3/4) inch (20 mm) to two and one-half (2-1/2) inches (65 mm) shall be placed in the trench to the depth and grade required by this section. The perforated section shall be laid on the filter material in an approved manner. The perforated section shall then be covered with filter material to the minimum depth required by this section. The filter material shall then be covered with untreated building paper, straw, or similar porous material to prevent closure of voids with earth backfill. No earth backfill shall be placed over the filter material cover until after inspection and acceptance.

(C) ~~Irrigation/disposal~~ *Disposal* fields shall be constructed as follows:
(See chart)

	Minimum	Maximum
Number of drain lines per valved zone	1	—
Length of each perforated line	—	100 ft. (30,840 mm)
Bottom width of trench	12 in. (305 mm)	18 in. (457 mm)
Spacing of lines, center to center	4 ft. (1219 mm)	—
Depth of earth cover of lines	10 in. (254 mm)	—
Depth of filter material cover of lines	2 in. (51 mm)	—
Depth of filter material beneath lines	3 in. (76 mm)	—
Grade of perforated lines	level 3 in./100 ft.	2 mm/m

(D) When necessary on sloping ground to prevent excessive line slopes, ~~irrigation/~~disposal lines shall be stepped. The lines between each horizontal leaching section shall be made with approved watertight joints and installed on natural or unfilled ground.

1612*A*.0 Special Provisions

(A) Other collection and distribution systems shall be permitted by the local ~~Authority Having Jurisdiction~~ *Enforcing Agency*, as allowed by Section ~~301.0~~ *1.8.7* of this code.

(B) Nothing contained in this chapter shall be construed to prevent the ~~Authority Having Jurisdiction~~ *Enforcing Agency* from requiring compliance with higher requirements than those contained herein, where such higher requirements are essential to maintain a safe and sanitary condition.

(C) *Graywater stub-out plumbing may be allowed for future connection prior to the installation of irrigation lines and landscaping. Stub-out shall be permanently marked GRAYWATER STUB-OUT, DANGER--- UNSAFE WATER.*

Table 16*A* -1				
Location of Graywater System				
Minimum Horizontal Distance in Clear Required From:	~~Holding~~ Tank		Irrigation/ Disposal Field	
	Feet	(mm)	Feet	(mm)
Building structures[1]	5[2]	(1,524 mm)	2[3] [8]	(610 mm)
Property line adjoining private property	5	(1,524 mm)	5 [9]	(1,524 mm)
Water supply wells[4]	50	(15,240 mm)	100	(30,480 mm)
Streams and lakes[4]	50	(15,240 mm)	50[5]	(15,240 mm)
Sewage pits or cesspools	5	(1,524 mm)	5	(1,524 mm)
Sewage disposal field ~~and 100% expansion area~~	5	(1,524 mm)	4[6]	(1,219 mm)
Septic tank	0	(0)	5	(1,524 mm)
Onsite domestic water service line	5	(1,524 mm)	~~5~~ *0*	(1,524 mm)
Pressurized public water main	10	(3,048 mm)	10[7]	(3,048 mm)

Note: When irrigation/disposal fields are installed in sloping ground, the minimum horizontal distance between any part of the distribution system and the ground surface shall be fifteen (15) feet (4,572 mm).

[1] Including porches and steps, whether covered or uncovered, breezeways, roofed porte cocheres, roofed patios, carports, covered walks, covered driveways, and similar structures or appurtenances.

[2] *Underground tanks shall not be located within a 45 degree angle from the bottom of the foundation, or they shall be designed to address the surcharge imposed by the structure.* The distance may be reduced to zero ~~0 feet~~ *(6) inches (153 mm)* for aboveground tanks when first approved by the ~~Authority Having Jurisdiction~~ *Enforcing Agency*.

[3] Assumes a 45 degree (0.79 rad) angle from foundation.

[4] Where special hazards are involved, the distance required shall be increased as directed by the ~~Authority Having Jurisdiction~~ *Enforcing Agency*.

[5] These minimum clear horizontal distances shall also apply between the irrigation/disposal field and the ocean mean higher hightide line.

[6] Plus two (2) feet (610 mm) for each additional foot of depth in excess of one (1) foot (305 mm) below the bottom of the drain line.

[7] For parallel construction/for crossings, approval by the ~~Authority Having Jurisdiction~~ *Enforcing Agency* shall be required.

[8] *Disposal fields shall be at least (5) feet (1,524 mm) from the foundation or property line.*

[9] *Irrigation fields shall be at least (1.5) feet (458 mm) from the property line.*

TABLE 16*A*-2
Design Criteria of Six Typical Soils

Type of Soil	Minimum square feet of irrigation/leaching area per 100 gallons of estimated gray water discharge per day	Maximum absorption capacity in gallons per square foot of irrigation/leaching area for a 24-hour period
Coarse sand or gravel	20	5.0
Fine sand	25	4.0
Sandy loam	40	2.5
Sandy clay	60	1.7
Clay with considerable sand or gravel	90	1.1
Clay with small amounts of sand or gravel	120	0.8

TABLE 16*A*-2
(Metric) Design Criteria of Six Typical Soils

Type of Soil	Minimum square meters of irrigation/leaching area per liter of estimated graywater discharge per day	Maximum absorption capacity in liters per square meter of irrigation/leaching area for a 24-hour period
Coarse sand or gravel	0.005	203.7
Fine sand	0.006	162.9
Sandy loam	0.010	101.8
Sandy clay	0.015	69.2
Clay with considerable sand or gravel	0.022	44.8
Clay with small amounts of sand or gravel	0.030	32.6

Table 16*A* -3 Subsurface Drip Design Criteria of Six Typical Soils

Type of Soil	Maximum emitter discharge (gal/day)	Minimum number of emitters per gpd of graywater production
1.Sand	1.8	0.6
2.Sandy loam	1.4	0.7
3.Loam	1.2	0.9
4.Clay loam	0.9	1.1
5.Silty clay	0.6	1.6
6.Clay	0.5	2.0

Use the daily graywater flow calculated in Section 1606.0 to determine the number of emitters per line.

1612A.1 Indoor Use of Graywater. [HCD 1]

Graywater shall not be allowed for indoor use, such as flushing toilets and urinals, unless treated by an on-site water treatment system approved by the Enforcing Agency. For the purposes of this section, graywater treated by an on-site water treatment system shall be considered "Treated Graywater" and shall comply with Part II of this chapter and all of the following:

(1) *The treated graywater shall have a separate tank sized to minimize the length of time it is retained.*

(2) *The level of treatment quality of domestic on-site treated water shall be approved by the Enforcing Agency.*

(3) *A maintenance and operation manual for the treatment system shall be kept at the location of the system.*