FINAL EXPRESS TERMS
FOR
PROPOSED BUILDING STANDARDS
OF THE
CALIFORNIA BUILDING STANDARDS COMMISSION (CBSC)

REGARDING ADOPTION OF THE 2012 UNIFORM PLUMBING CODE (UPC)
WITH PROPOSED AMENDMENTS INTO
THE 2013 CALIFORNIA PLUMBING CODE (CPC)
CALIFORNIA CODE OF REGULATIONS (CCR), TITLE 24, PART 5

LEGEND FOR EXPRESS TERMS

1. Existing California amendments or code language being modified, as well as selected terms set forth in Chapter 2, Definitions are in italics when they appear in the model code text, independent of state amended definitions: All such language appears in *italics*, modified language is underlined.
2. New California amendments: All such language appears *underlined and in italics*. Repealed text: All such language appears in ~~strikeout~~.

The Building Standards Commission (CBSC) proposes to adopt the 2012 edition of the Uniform Plumbing Code (UPC) for codification and effectiveness into the 2013 edition of the California Plumbing Code (CPC) as presented on the following pages, including any necessary amendments. CBSC further proposes to:

- Repeal the 2009 edition of the UPC and the 2010 CPC;
- Repeal amendments to the model code that are no longer necessary, repeal or amend building standards that are not addressed by a model code;
- Relocate or codify existing adopted and necessary amendments to the model code into the format of the model code proposed for adoption, the action of which has no regulatory effect; adopt new necessary amendments to the model code proposed for adoption; and/or
- Adopt new building standards that are not addressed by the model code proposed for adoption

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PART I: REPEALS, ADOPTIONS AND NEW AMENDMENTS

CHAPTER 1
ADMINISTRATION
DIVISION I
CALIFORNIA ADMINISTRATION

CBSC proposes to adopt Division I of Chapter 1 of the 2010 CPC with amendments as follows, and to carry forward exiting amendments as shown in Part II of this document.

. . .

1.1.3.2 State-Regulated Buildings, Structures, and Applications. *The model code, state amendments to the model code, and/or state amendments where there are no relevant model code provisions~~,~~ shall apply to the following buildings, structures, and applications regulated by state agencies ~~as referenced in the Matrix Adoption Tables and~~ as specified in Section~~s~~ 1.2 through 1.14, except where modified by local ordinance pursuant to Section 1.1.8. When adopted by a state agency, the provisions of this code shall be enforced by the appropriate enforcing agency, but only to the extent of authority granted to such agency by the state legislature.*

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1.1.11 Format. *This part fundamentally adopts the International Building Code by reference on a chapter-by-chapter basis. ~~Such adoption is reflected in the Matrix Adoption Table of each chapter of this part. When the Matrix Adoption Tables make no reference to a specific chapter of the International Building Code such chapter of the International Building Code is not adopted as a portion of this code.~~ When a specific chapter of the International Building Code is not printed in the code and is marked "Reserved", such chapter of the International Building Code is not adopted as a portion of this code. When a specific chapter of the International Building Code is marked "Not adopted by the State of California" but appears in the code, it may be available for adoption by local ordinance.*

Note: *Matrix Adoption Tables at the front of each chapter may aid the code user in determining which chapter or sections within a chapter are applicable to buildings under the authority of a specific state agency, but they are not to be considered regulatory.*

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NOTE: *See Part II at the end of this document for existing California Amendments proposed to be carried forward from the 2010 CPC for adoption into 2013 CPC*

CHAPTER 1
ADMINISTRATION
CBSC proposes not to adopt Chapter 1 of the 2012 UPC.

Notation
Authority: Health and Safety Code §18934.5, 18949.6
References: Health and Safety Code §18934.5, 18949.6

CHAPTER 2
DEFINITIONS

CBSC proposes to adopt Chapter 2 of the 2012 UPC with the following amendments.

. . .

205.0 -**C**-

. . .

Complex System. *Gray water systems that discharge over 250 gallons (947 L) per day.*

. . .

206.0 -**D**-

….

Disposal Field. *An intended destination for gray water including but not limited to a mulch basin or receiving landscape feature, gray water leach field, or other approved method of disposal.*

. . .

207.0 -**E**-

. . .

Enforcing Agency *"Enforcing Agency" is the designated department or agency as specified by statute or regulation.*

. . .

209.0 -**G**-

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~~**Gray Water.** Untreated waste water that has not come into contact with toilet waste, kitchen sink waste, dishwasher waste or similarly contaminated sources. Gray water includes waste water from bathtubs, showers, lavatories, clothes washers, and laundry tubs. Also known as grey water, graywater, and greywater.~~

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, but is not limited to, wastewater from bathtubs, showers, bathroom washbasins, clothes washing machines, and laundry tubs, but does not include wastewater from kitchen sinks or dishwashers.

Note*: For the purpose of applying the standards contained in this code, "Graywater" as defined above, has the same meaning as "gray water", "grey water", and "greywater".*

~~**Gray Water Diverter Valve.** A valve that directs gray water to the sanitary drainage system or to a subsurface irrigation system.~~

Gray Water System. *A system designed to collect gray water to be treated on-site for reuse or distribution to an irrigation or disposal field. A gray water system may include, on-site treated nonpotable water devices or equipment, tanks, valves, filters, pumps or other appurtenances along with piping and receiving landscape.*

. . .

211.0 -**I**-

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

. . .

215.0 -**M**-

~~**Mulch Basin.** A subsurface catchment area for gray water that is filled with mulch and of sufficient depth and volume to prevent ponding, surfacing, or runoff.~~

Mulch Basin. *A subsurface type of irrigation or disposal field filled with mulch or other approved permeable material of sufficient depth, length, and width to prevent ponding or runoff. 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.*

….

217.0 **–O–**

~~**On-Site Treated Nonpotable Water.** Nonpotable water, including grey water that has been collected, treated, and intended to be used on-site and is suitable for direct beneficial use.~~

On-Site Treated Nonpotable Water. *Nonpotable water that has been collected, treated, and intended to be used on-site and is suitable for direct beneficial use. Sources for on-site treated nonpotable water include, but are not limited to, gray water; rainwater; stormwater; reclaimed (recycled) water; cooling tower blow-down water; and foundation drainage.*

. . .

220.0 -**R**-

~~**Rainwater.** Natural precipitation that has not been contaminated by use.~~

Rainwater. *Precipitation on any public or private parcel that has not entered an offsite storm drain system or channel, a flood control channel, or any other stream channel, and has not previously been put to beneficial use.*

~~**Rainwater Catchment System.** A system that utilizes the principal of collecting, storing, and using rainwater from a rooftop or other manmade, aboveground collection surface. Also known as a rainwater harvesting system.~~

Rainwater Catchment System. *A facility designed to capture, retain, and store rainwater flowing off a building, parking lot, or any other manmade impervious surface for subsequent onsite use. Rainwater catchment system is also known as "Rainwater Harvesting System" or "Rainwater Capture System."*

Receiving Landscape. *Includes features such as soil, basins, swales, mulch, and plants.*

~~**Reclaimed (Recycled) Water.** Non-potable water provided by a water/wastewater utility that, as a result of tertiary treatment of domestic wastewater, meets requirements of the public health Authority Having Jurisdiction for its intended uses.~~

Reclaimed (Recycled) Water. *Nonpotable water that meets California Department of Public Health statewide uniform criteria for disinfected tertiary recycled water. Reclaimed (recycled) water is also known as "recycled water" or "reclaimed water".*

. . .

221.0 -**S**-

Simple System. *A gray water system serving one-and two-family dwellings, townhouses, or other occupancies with a discharge of 250 gallons (947 L) per day or less. Simple systems exceed a clothes washer system.*]

. . .

222.0 -**T**-

Treated Gray Water. *Non-potable water meeting the definition of "graywater" collected and treated on-site suitable*

for direct beneficial use.

Notation:
Authority: Health and Safety Code Sections 18928, 18930.5, 18941.8
Reference: Health and Safety Code Section18941.8, Water Code Section 14877.1

CHAPTER 3
GENERAL REGULATIONS
CBSC proposes to adopt Chapter 3 of the 2012 UPC without amendments.

Notation
Authority: Health & Safety Code Sections 18928 and 18934.5
Reference(s): Health & Safety Code Sections 18928, 18928.1 and 18934.5

CHAPTER 4
PLUMBING FIXTURES AND FIXTURE FITTINGS
CBSC proposes to adopt Chapter 4 of the 2012 UPC with amendments as follows, and to carry forward exiting amendments as shown in Part II of this document.

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422.0 Minimum Number of Required Fixtures.

422.1 Fixture Count. Plumbing fixtures shall be provided for the type of building occupancy and in the minimum number shown in Table 422.1. The total occupant load and occupancy classification shall be determined in accordance with ~~the building code.~~ *Occupant Load Factor Table A*. Occupancy classification not shown in Table 422.1 shall be considered separately by the Authority Having Jurisdiction.

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TABLE ~~4-1~~ 422.1
MINIMUM PLUMBING FACILITIES
(Entire Table not shown for clarity)

TYPE OF OCCUPANCY[2]	WATER CLOSETS (FIXTURES PER PERSON)[3]	URINALS (FIXTURES PER PERSON)	LAVATORIES (FIXTURES PER PERSON)	BATHTUBS OR SHOWERS (FIXTURES PER PERSON)	DRINKING FOUNTAINS/FACILITIES (FIXTURES PER PERSON)	OTHER
. . .	. . .	. . .	. . .	. . .	. . .	. . .

Notes:

[1] . . .

[3] The total number of required water closets for females shall be not less than the total number of required water closets and urinals for males. *[BSC] This requirement shall not apply when single occupancy toilet facilities are provided for each sex in an A or E occupancy with an occupant load of less than 50. Either*

(a) The required urinal shall be permitted to be omitted or

(b) If installed, the urinal shall not require a second water closet to be provided for the female.

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CHAPTER 5
WATER HEATERS

CBSC proposes to adopt Chapter 5 of the 2012 UPC without amendments.

Notation
Authority: Health & Safety Code Sections 18928 and 18934.5
Reference(s): Health & Safety Code Sections 18928, 18928.1 and 18934.5

CHAPTER 6
WATER SUPPLY AND DISTRIBUTION
CBSC proposes to adopt Chapter 6 of the 2012 UPC and to carry forward existing amendments as shown in Part II of this document.

Notation
Authority: Health & Safety Code Sections 18928 and 18934.5
Reference(s): Health & Safety Code Sections 18928, 18928.1 and 18934.5

CBSC proposes to adopt Chapter 7 SANITARY DRAINAGE, CHAPTER 8 INDIRECT WASTES, CHAPTER 9 VENTS, CHAPTER 10 TRAPS AND INTERCEPTORS, of the 2012 UPC without amendments.

Notation
Authority: Health & Safety Code Sections 18928 and 18934.5
Reference(s): Health & Safety Code Sections 18928, 18928.1 and 18934.5

CHAPTER 11
STORM DRAINAGE
CBSC proposes to adopt Chapter 11 of the 2012 UPC and to carry forward existing amendments as shown in Part II of this document.

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Notation
Authority: Health & Safety Code Sections 18928 and 18934.5
Reference(s): Health & Safety Code Sections 18928, 18928.1 and 18934.5

CHAPTER 12
FUEL PIPING
CBSC proposes to adopt Chapter 12 of the 2012 UPC without amendments.

Notation
Authority: Health & Safety Code Sections 18928 and 18934.5
Reference(s): Health & Safety Code Sections 18928, 18928.1 and 18934.5

CHAPTER 13
HEALTH CARE FACILTIES AND MEDICAL GAS AND VACUUM SYSTEMS
CBSC proposes not to adopt Chapter 13 of the 2012 UPC.

Notation
Authority: Health & Safety Code Sections 18928 and 18934.5
Reference(s): Health & Safety Code Sections 18928, 18928.1 and 18934.5

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CHAPTER 14
REFERENCED STANDARDS

CBSC proposes to adopt Chapter 14 of the 2012 UPC with the following amendments.

1401.0 General.
1401.1 Standards. The standards listed in Table 1401.1 are intended for use in the design, testing, and installation of materials, devices, appliances, and equipment regulated by this code.

TABLE 1401.1
REFERENCED STANDARDS

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCE D SECTIONS
. . .			
NSF 169 – 2009	Special Purpose Food Equipment and Devices	Appliances	301.1.2, 301.2
NSF/ANSI 350 – 2011 [BSC]	*Onsite Residential and Commercial Water Reuse Treatment Systems, as amended** *NSF/ANSI 350, amended sections follow:* **5.6 Electrical components.** Electrical components **. . .**. ~~NFPA 70~~ *The California*	*Miscellaneous*	*1604.10.2*

	Electrical Code shall be followed for all electrical components, system installation, and system operation.		
. . .			

Notation
Authority: Health and Safety Code Sections 18928, 18930.5, 18941.8
Reference: Health and Safety Code Section 18941.8, Water Code Section 14877.1

CHAPTER 15
FIRESTOP PROTECTION

CBSC proposes not to adopt Chapter 15 of the 2012 UPC.

Notation
Authority: Health & Safety Code Sections 18928 and 18934.5
Reference(s): Health & Safety Code Sections 18928, 18928.1 and 18934.5

CHAPTER 16
~~RESERVED~~
ALTERNATE WATER SOURCES FOR NONPOTABLE APPLICATIONS

CBSC proposes to adopt Chapter 16 of the 2012 UPC with the following amendments.

Intent

The provisions of this chapter are intended to:

1. *Conserve water by facilitating greater reuse of laundry, shower, lavatory and similar sources of discharge for irrigation and/or indoor use.*
2. *Reduce the number of non-compliant graywater systems by making legal compliance easily achievable.*
3. *Provide guidance for avoiding potentially unhealthful conditions.*
4. *Provide an alternative way to relieve stress on a private sewage disposal system by diverting the graywater.*

1601.0 General.
1601.1 Applicability. The provisions of this chapter shall apply to the construction, alteration, *discharge, use* and repair of alternate water source systems for nonpotable applications.

1601.1.1 Allowable Use of Alternate Water. Where approved or required by the Authority Having Jurisdiction, alternate water sources *(*[reclaimed (recycled)] water, rainwater, gray water and onsite treated nonpotable *gray* water) shall be permitted to be used in lieu of potable water for the applications identified in this chapter.

~~**1601.2 System Design.** Alternate water source systems in accordance with this chapter shall be designed by a registered or licensed to perform plumbing design work. Components, piping, and fittings used in an alternate water source system shall be listed.~~

1601.2 System Design. *Alternate water source systems complying with this chapter shall be designed by a person who demonstrates competency to design the alternate water source system as required by the Authority Having Jurisdiction Enforcing Agency. The Authority Having Jurisdiction Enforcing Agency may also require plans and specifications to be prepared by a licensed design professional for Complex Systems. Components, piping, and fittings used in any alternate water source system shall be listed.*

~~**Exceptions:**~~

~~(1) A person registered or licensed to perform plumbing design work is not required to design rainwater catchment systems used for irrigation with a maximum storage capacity of 360 gallons (1363 L).~~

~~(2) A person registered or licensed to perform plumbing design work is not required to design rainwater catchment systems for single family dwellings where outlets, piping, and system components are located on the exterior of the building.~~

~~(3) A person registered or licensed to perform plumbing design work is not required to design gray water systems having a maximum discharge capacity of 250 gallons per day (gal/d) (15.77 L/s) for single family and multi-family~~

~~dwellings.~~

~~(4) A person registered or licensed to perform plumbing design work is not required to design an on-site treated nonpotable water system for single family dwellings having a maximum discharge capacity of 250 gal/d (15.77 L/s).~~

1601.3 Permit. It shall be unlawful for a person to construct, install, alter, or cause to be constructed, installed, or altered an alternate water source system in a building or on a premise without first obtaining a permit to do such work ~~from the Authority Having Jurisdiction~~. *Prior to commencing the issuance of permits for indoor gray water systems pursuant to state requirements relating to gray water, a city, county, or other local agency shall seek consultation with the local public health department to ensure that local public health concerns are addressed in local standards or ordinances, or in issuing permits. See California Water Code Section 14877.3.*

Exceptions: *[Reserved for HCD]*

~~(1) A permit is not required for exterior rainwater catchment systems used for outdoor drip and subsurface irrigation with a maximum storage capacity of 360 gallons (1363 L).~~

~~(2) A plumbing permit is not required for rainwater catchment systems for single family dwellings where outlets, piping, and system components are located on the exterior of the building. This does not exempt the need for permits where required for electrical connections, tank supports, or enclosures.~~

1601.4 Component Identification. System components shall be properly identified as to the manufacturer.

1601.5 Maintenance and Inspection. Alternate water source systems and components shall be inspected and maintained in accordance with ~~Section 1601.5.1 through Section 1601.5.3~~ *the manufacturer's recommendations and/or as required by the Enforcing Agency. [BSC] Where no manufacturers recommendations exist, additional recommendations are listed in Table 1601.5.*

~~**1601.5.1 Frequency.** Alternate water source systems and components shall be inspected and maintained in accordance with Table 1601.5 unless more frequent inspection and maintenance is required by the manufacturer.~~

~~**1601.5.2 Maintenance Log.** A maintenance log for gray water, rainwater, and on-site treated nonpotable water systems is required to have a permit in accordance with Section 1601.3 and shall be maintained by the property owner and be available for inspection. The property owner or designated appointee shall ensure that a record of testing, inspection and maintenance in accordance with Table 1601.5 is maintained in the log. The log will indicate the frequency of inspection and maintenance for each system.~~

1601.5.~~3~~ *1* Maintenance Responsibility. The required maintenance and inspection of alternate water source systems shall be the responsibility of the property owner, unless otherwise required by the Authority Having Jurisdiction.

1601.6 Operation and Maintenance Manual. An operation and maintenance manual for gray water, rainwater, and on-site treated water systems required to have a permit in accordance with Section 1601.3 shall be supplied to the building owner by the system designer *or installer*. The operating and maintenance manual shall include the following:

(1) ~~Detailed diagram~~ *Diagrams* of the entire system and the location of system components.

(2) Instructions on operating and maintaining the system.

(3) ~~Details~~ *Instructions* on maintaining the required water quality ~~as determined by the Authority Having Jurisdiction~~ *for on-site treated nonpotable water systems*.

(4) Details on *startup, shutdown, and* deactivating the system for maintenance, repair, or other purposes.

(5) Applicable testing, inspection, and maintenance frequencies in accordance with ~~Table~~ *Section* 1601.5.

(6) A method of contacting the *installer and/or* manufacturer(s).

(7) *Directions to the owner or occupant that the manual shall remain with the building throughout the life cycle of the structure.*

1601.7 Minimum Water Quality Requirements. The minimum water quality for alternate water source systems shall meet the applicable water quality requirements for the intended application as determined by the ~~public health~~ Authority Having Jurisdiction. In the absence of water quality requirements *for on-site nonpotable treated gray water systems*, ~~the EPA/625/R-04/108 contains recommended water reuse guidelines to assist regulatory agencies develop, revise, or expand alternate water source water quality standards~~ *the requirements of NSF/ANSI 350 shall apply.*

Exceptions:

~~(1) Water treatment is not required for rainwater catchment systems used for aboveground irrigation with a maximum storage capacity of 360 gallons (1363 L).~~

~~(2)~~ Water treatment is not required for gray water used for subsurface*/subsoil* irrigation *or a disposal field*.

~~(3) Water treatment is not required for rainwater catchment systems used for subsurface or drip irrigation.~~

TABLE 1601.5 *[BSC]*
***RECOMMENDED* MINIMUM ALTERNATE WATER SOURCE TESTING, INSPECTION~~,~~ AND MAINTENANCE FREQUENCY**

DESCRIPTION	MINIMUM FREQUENCY
Inspect and clean filters and screens, and replace (where necessary).	~~Every 3 months~~ *In accordance with manufacturer's instructions, and/or the Authority Having Jurisdiction, or every 3 months.*
Inspect and verify that disinfection, filters and water quality treatment devices and systems are operational and maintaining minimum water quality requirements as determined by the Authority Having Jurisdiction.	In accordance with manufacturer's instructions, and the Authority Having Jurisdiction.
Inspect pumps and verify operation.	~~After initial installation and every 12 months thereafter~~ *In accordance with manufacturer's instructions, and/or the Authority Having Jurisdiction, or after installation and every 12 months thereafter.*
Inspect valves and verify operation.	~~After initial installation and every 12 months thereafter~~ *In accordance with manufacturer's instructions, and/or Authority Having Jurisdiction, or after installation and every 12 months thereafter..*
Inspect pressure tanks and verify operation.	~~After initial installation and every 12 months thereafter~~. *In accordance with manufacturer's instructions, and/or the Authority Having Jurisdiction, or after installation and every 12 months thereafter..*
Clear debris from and inspect storage tanks, locking devices, and verify operation.	~~After initial installation and every 12 months thereafter.~~ *In accordance with manufacturer's instructions, and/or the Authority Having Jurisdiction, or after installation and every 12 months thereafter..*
Inspect caution labels and marking.	~~After initial installation and every 12 months thereafter.~~ *In accordance with manufacturer's instructions, and/or the Authority Having Jurisdiction, or after installation and every 12 months thereafter..*
Inspect and maintain mulch basins for gray water irrigation systems.	As needed to maintain mulch depth and prevent ponding and runoff.
Cross-connection inspection and test*	~~After initial installation and every 12 months thereafter.~~ *In accordance with this chapter, and/or the Authority Having Jurisdiction, or after installation and every 12 months thereafter.*
*The cross-connection test shall be performed in the presence of the Authority Having Jurisdiction in accordance with the requirements of this chapter, *unless site conditions do not require it. Alternate testing requirements shall be permitted by the Authority Having Jurisdiction*.	

1601.8 Material Compatibility. Alternate water source systems shall be constructed of materials that are compatible with the type of pipe and fitting materials, water treatment, and water conditions in the system.

1601.9 System Controls. Controls for pumps, valves, and other devices that contain mercury that come in contact with alternate water source water supply shall not be permitted.

1602.0 Gray Water Systems.

1602.1 General. The provisions of this section shall apply to the construction, alteration, and repair of gray water systems. *A city, county, or city and county or other local government may adopt, after a public hearing and enactment of an ordinance or resolution, building standards that are more restrictive than the gray water building standards adopted in this code. For additional information, see Health and Safety Code Section 18941.7.*

(A) *All gray water systems shall be designed to allow the user to direct the flow to either the subsoil irrigation or subsurface irrigation field or the building sewer. The means of changing the direction of the gray water shall be clearly labeled and readily accessible to the user.*

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

(C) *Gray water shall not be used in spray irrigation, allowed to pond or runoff and shall not be discharged directly into or reach any storm sewer system or any surface body of water.*

(D) *Human contact with gray water or the soil irrigated by gray water shall be minimized and avoided, except as required to maintain the gray water system. The discharge point of any gray water subsoil irrigation or subsurface irrigation field shall be covered by at least (2) inches (51 mm) of mulch, rock, or soil, or a solid shield to minimize the possibility of human contact.*

(E) *Gray water may be released above the ground surface provided at least two (2) inches (51 mm) of mulch, rock, or soil, or a solid shield covers the release point. Other methods which provide equivalent separation are also acceptable.*

(F) *Gray water shall not contain hazardous chemicals derived from activities such as cleaning car parts, washing greasy or oily rags, or disposing of waste solutions from*

(1) [HCD] home photo labs or similar hobbyist or home occupational activities.

(2) [BSC] photo labs or similar activities.

(G) *Exemption from construction permit requirements of this code shall not be deemed to grant authorization for any gray water system to be installed in a manner that violates other provisions of this code or any other laws or ordinances of the Enforcing Agency.*

(H) *An operation and maintenance manual shall be provided to the owner. Directions shall indicate the manual is to remain with the building throughout the life of the system and indicate that upon change of ownership or occupancy, the new owner or tenant shall be notified the structure contains a gray water system.*

(I) *A gray water system shall not be connected to any potable water system without an air gap, reduced-pressure principle backflow preventer or other physical device which prevents backflow and shall not cause ponding or runoff of gray water.*

1602.1.1 Clothes Washer System. *(Reserved for HCD)*

1602.1.2 Simple System. *Simple systems exceed a clothes washer system and shall comply with the following:*

1. The discharge capacity of a gray water system shall be determined by Section 1602.8. Simple systems have a discharge capacity of 250 gallons (947 L) per day or less.

2. Simple systems shall require a construction permit, unless exempted from a construction permit by the Enforcing Agency. The Enforcing Agency shall consult with the water purveyor for any public water system (as defined in Health and Safety Code, Section 116275) providing drinking water to the dwelling or non-residential structure before allowing an exemption from a construction permit.

3. The design of simple systems shall meet generally accepted gray water system design criteria.

1602.1.3 Complex System. *Any gray water system that is not a clothes washer system or simple system shall comply with the following:*

1. The discharge capacity of a gray water system shall be determined by Section 1602.8. Complex systems have a discharge capacity over 250 gallons (947 L) per day.

2. Complex systems shall require a construction permit, unless exempted from a construction permit by the Enforcing Agency. The Enforcing Agency shall consult with the water purveyor for any public water system(as defined in Health and Safety Code, Section 116275) providing drinking water to the dwelling or non-residential structure before allowing an exemption from a construction permit.

1602.2 System Requirements.

1602.2.1 Discharge. Gray water shall be permitted to be diverted away from a sewer or private sewage disposal system, and discharge to a subsurface irrigation or subsoil irrigation system*, or disposal field*. The gray water shall be permitted to discharge to a mulch basin for ~~single family and multi-family dwellings~~ *residential occupancies*. Gray water shall not be used to irrigate root crops or food crops intended for human consumption that come in contact with soil.

1602.2.2 Surge Capacity. Gray water systems shall be designed to have the capacity to accommodate peak flow rates and distribute the total amount of estimated gray water on a daily basis to a subsurface irrigation field, subsoil irrigation field, *disposal field,* or mulch basin without surfacing, ponding, or runoff. A surge tank is required for systems that are unable to accommodate peak flow rates and distribute the total amount of gray water by gravity drainage. The water discharge for gray water systems shall be determined in accordance with Section 1602.8.1 or Section 1602.8.2.

Exception: *It is not the intent of this section to require that all gray water must be handled by an irrigation field or disposal field. It is acceptable for excess gray water to be diverted to the building sewer through a diverter valve or overflow drain as permitted in this chapter.*

1602.2.3 Diversion. The point of diversion of gray water to the sanitary drainage system shall occur downstream of fixture traps and vent connections through an approved ~~gray water~~ diverter valve. The ~~gray water~~ diverter *valve* shall be installed in ~~an~~ *a readily* accessible location and clearly indicate the direction of flow.

1602.2.4 Backwater Valves. Gray water drains subject to backflow shall be provided with a backwater valve *at the point of connection to the building sewer system,* so located as to be accessible for inspection and

maintenance.

1602.3 Connections to Potable and Reclaimed (Recycled) Water Systems. Gray water systems shall have no ~~direct~~ *unprotected* connection to a potable water supply, on-site treated nonpotable water supply, or ~~reclaimed (~~recycled~~)~~ water systems. Potable, on-site treated ~~nonpotable~~, ~~or reclaimed (~~recycled~~)~~ water *or rainwater* is permitted to be used as makeup water for a non-pressurized storage tank provided the connection is protected by an airgap, *reduced-pressure principle backflow preventer or other physical device which prevents backflow* in accordance with this code.

1602.4 Location. No gray water system or part thereof shall be located on a lot other than the lot that is the site of the building or structure that discharges the gray water, nor shall a gray water system or part thereof be located at a point having less than the minimum distances indicated in Table 1602.4.

***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.*

1602.5 Plot Plan Submission. No permit for a gray water system shall be issued until a plot plan with data satisfactory to the Authority Having Jurisdiction has been submitted and approved.

***Exception:** (Reserved for HCD)*

1602.6 Prohibited Location. Where there is insufficient lot area or inappropriate soil conditions for adequate absorption ~~to prevent the ponding, surfacing, or runoff of the gray water, as determined by the Authority Having Jurisdiction~~, no gray water system shall be permitted. ~~A gray water system is not permitted on a property in a geologically sensitive area as determined by the Authority Having Jurisdiction.~~

1602.7 Drawings and Specifications. The Authority Having Jurisdiction ~~shall~~ *may* require the following information to be included with or in the plot plan before a permit is issued for a gray water system, or at a time during the construction thereof:

(1) Plot plan drawn to scale and completely dimensioned, showing lot lines and structures, direction and approximate slope of surface, location of 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 expansion area or building sewer connecting to the public sewer, and location of the proposed gray water system.

(2) 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 ~~in accordance with the Authority Having Jurisdiction~~.

(3) Details for holding tanks shall include dimensions, structural calculations, bracings, and such other pertinent data as required.

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

Exception*s*:

(1) The Authority Having Jurisdiction shall permit the use of Table 1602. ~~4~~ *10* in lieu of percolation tests.

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

(3) The absence of groundwater in a test hole three (3) vertical feet (915 mm) below the deepest irrigation or disposal point shall be sufficient to satisfy this section unless seasonal high groundwater levels have been documented to rise to within this area.

(5) Distance between the plot and surface waters such as lakes, ponds, rivers or streams, and the slope between the plot and the surface water, where in close proximity.

TABLE 1602.4
LOCATION OF GRAY WATER SYSTEM[7]

MINIMUM HORIZONTAL DISTANCE IN CLEAR REQUIRED FROM	SURGE TANK (feet)	SUBSURFACE AND SUBSOIL IRRIGATION FIELD AND MULCH ~~BED~~ *BASIN* (feet)	*DISPOSAL FIELD*
Building structures[1]	5[2,3,9]	2[3, 8]	*5*
Property line adjoining private property	5	5[8]	*5*
Water supply wells[4]	50	100	*100*
Streams and lakes[4]	50	~~50~~ *100*[5,10]	*100*[5]
Sewage pits or cesspools	5	5	*5*
Sewage disposal field[10]	5	4[6]	*4*[6]
Septic tank	0	5	*5*
On-site domestic water service line	5	~~5~~ *0*	*0*
Pressurized public water main[7]	10	10	*10*

For SI units: 1 foot = 304.8 mm

Notes:

1 ~~Including~~ *Building structures do not include* porches and steps, whether covered or uncovered, breezeways, roofed carports, *roofed porte cocheres,* roofed patios, carports, covered walks, covered driveways, and similar structures or appurtenances.

2 The distance shall be permitted to be reduced to 0 feet for aboveground tanks where first approved by the Authority Having Jurisdiction.

3 ~~Reference to a 45 degree (0.79 rad) angle from foundation.~~*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 six (6) inches (153 mm) for aboveground tanks when first approved by the Enforcing Agency.*

4 Where special hazards are involved, the distance required shall be increased as directed by the Authority Having Jurisdiction.

5 These minimum clear horizontal distances shall apply between the irrigation or disposal field and the ocean mean higher high tide line.

6 Add 2 feet (610 mm) for each additional foot of depth in excess of 1 foot (305 mm) below the bottom of the drain line.

7 For parallel construction or for crossings, approval by the Authority Having Jurisdiction shall be required.

8 The distance shall be permitted to be reduced to 11⁄2 feet (457 mm) for drip and mulch basin irrigation systems.

9 The distance shall be permitted to be reduced to 0 feet for surge tanks of 75 gallons (284 L) or less.

10 ~~Where irrigation or disposal fields are installed in sloping ground, the minimum horizontal distance between a part of the distribution system and the ground surface shall be 15 feet (4572 mm).~~

10 *The minimum horizontal distance may be reduced to 50 feet (15,240 mm) for irrigation fields utilizing gray water which has been filtered prior to entering the distribution piping.*

1602.8 Procedure for Estimating Gray Water Discharge. Gray water systems shall be designed to distribute the total amount of estimated gray water on a daily basis. The water discharge for gray water systems shall be determined in accordance with Section 1602.8.1 or Section 1602.8.2.

Exception: *It is not the intent of this section to require that all gray water must be handled by an irrigation field or disposal field. It is acceptable for excess gray water to be diverted to the building sewer through a diverter valve or overflow drain as permitted in this chapter.*

1602.8.1 Single Family Dwellings and Multi-Family Dwellings. *Reserved for HCD.* ~~The gray water discharge for single family and multi-family dwellings shall be calculated by 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 gray water flows of each occupant shall be calculated as follows:~~

~~Showers, bathtubs 25 gallons (95 L) per day/occupant and lavatories~~

~~Laundry 15 gallons (57 L) per day/occupant~~

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

1602.8.2 Commercial, Industrial, and Institutional Occupancies. ~~The gray water discharge for commercial, industrial, and institutional occupancies shall be calculated by utilizing the procedure in Section 1602.8.1, water use records, or other documentation to estimate gray water discharge.~~ *The Authority Having Jurisdiction may utilize the graywater discharge procedures listed below, water use records, or other documentation to estimate graywater discharge.*

1602.8.2.1 Lavatories. *Daily discharge from lavatories may be determined by the following equation:*

Occupants X lavatory flow rate X 3 *Equation 16-1*

Where:

The number of occupants = square footage of the building divided by the occupant load factor from the California Plumbing Code Chapter 4, Table A.

Lavatory fixture flow rate, new construction = that from the California Green Building Standards (CALGreen) Code Table 5.303.2.3

Lavatory fixture flow rate, existing fixtures = actual flow rate for existing fixtures

3 = average number of uses per person per day

1602.8.2.2 Showers. *Daily gray water discharge from showers may be determined by the following equation:*

Number of daily uses X shower flow rate X 5 minutes *Equation 16-2*

1602.8.2.3 Commercial Clothes Washers. *Daily gray water discharge from commercial clothes washers may be determined by the following equation:*

Cubic feet of capacity X Water Factor X 6 *Equation 16-3*

Where:

Water Factor = gallons per cubic foot

6 = average number of uses per day

Note: *Cubic feet of capacity and Water Factor are contained in product specifications or are available from the washer manufacturer.*

1602.8.3 Daily Discharge. *Gray water systems using tanks shall be designed to minimize the amount of time gray water is held in the tank and shall be sized to distribute the total amount of estimated gray water on a daily basis.*

Exception: *Approved on-site treated nonpotable gray water systems.*

1602.9 Gray Water System Components. Gray water system components shall comply with Section 1602.9.1 through Section 1602.9.7.

1602.9.1 Surge Tanks. Where installed, surge tanks shall be in accordance with the following:

(1) Surge tanks shall be constructed of solid, durable materials not subject to excessive corrosion or decay and shall be watertight. *Above ground surge tanks shall be protected from direct sunlight or shall be constructed of opaque UV resistant materials including but not limited to heavily tinted plastic, fiberglass, lined metal, concrete and wood.* Surge tanks constructed of steel shall be approved by the Authority Having Jurisdiction, provided such tanks are in accordance with approved applicable standards.

(2) Each surge tank shall be vented in accordance with this code. The vent size shall be determined based on the total gray water fixture units as outlined in this code.

(3) Each surge tank shall have an access opening with lockable gasketed covers or approved equivalent to allow for inspection and cleaning.

(4) Each surge tank shall have its rated capacity permanently marked on the unit. In addition, a sign stating ~~GRAYWATER, DANGER—UNSAFE WATER~~ *GRAY WATER SYSTEM, CAUTION – UNSAFE WATER* shall be permanently marked on the holding tank.

(5) Each surge tank shall have an overflow drain. The overflow drains shall have permanent connections to the building drain or building sewer, upstream of septic tanks. The overflow drain shall not be equipped with a shutoff valve.

(6) The overflow drainpipes shall not be less in size than the inlet pipe. Unions or equally effective fittings shall be provided for piping connected to the surge tank.

(7) Surge tank shall be structurally designed to withstand anticipated earth or other loads. Surge tank covers shall be capable of supporting an earth load of not less than 300 pounds per square foot (lb/ft2) (1465 kg/m2) where the tank is designed for underground installation.

(8) Where a surge tank is installed underground, the system shall 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 installed in accordance with this code.

(9) Surge tanks shall be installed on dry, level, well-compacted soil where underground or on a level 3 inch (76 mm) thick concrete slab *or other approved method* where aboveground.

(10) Surge tanks shall be anchored to prevent against overturning where installed aboveground. Underground tanks shall be ballasted, anchored, or otherwise secured, to prevent the tank from floating out of the ground where empty. The combined weight of the tank and hold down system shall meet or exceed the buoyancy forces of the tank.

(11) (Reserved for HCD).

1602.9.2 Gray Water Pipe and Fitting Materials. Aboveground and underground building drainage and vent pipe and fittings for gray water systems shall comply with the requirements for aboveground and underground sanitary building drainage and vent pipe and fittings in this code. These materials shall extend not less than 2 feet (610 mm) outside the building.

1602.9.3 Animals and Insects. *Gray water tank openings shall be protected to prevent the entrance of insects, birds, or rodents into the tank and piping systems. Screens installed on vent pipes, inlets, and overflow pipes shall have an aperture of not greater than 1/16 of an inch (1.6mm) and shall be close fitting.*

~~**1602.9.3 Subsoil Irrigation Field Materials.** Subsoil irrigation field piping 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 gray water into the trench area. Material, construction, and perforation of the pipe shall be in accordance with the appropriate absorption field drainage piping standards and shall be approved by the Authority Having Jurisdiction.~~

1602.9.4 Freeze Protection. *Tanks and piping installed in locations subject to freezing shall be provided with an approved means of freeze protection.*

~~**1602.9.4 Subsurface Irrigation Field and Mulch Basin Supply Line Materials.** Materials for gray water piping outside the building shall be polyethylene or PVC. Drip feeder lines shall be PVC or polyethylene tubing.~~

~~**1602.9.5 Valves.** Valves shall be accessible.~~

~~**1602.9.6 Trap.** Gray water piping discharging into the surge tank or having a direct connection to the sanitary drain or sewer piping shall be downstream of an approved water seal type trap(s). Where no such trap(s) exists, an approved vented running trap shall be installed upstream of the connection to protect the building from possible waste or sewer gases.~~

~~**1602.9.7 Backwater Valve.** A backwater valve shall be installed on gray water drain connections to the sanitary drain or sewer.~~

1602.10 Subsurface Irrigation System Zones. Irrigation or disposal fields shall be permitted to have one or more valved zones. Each zone shall be of a size to receive the gray water anticipated in that zone.

1602.10.1 Required Area of Subsurface Irrigation Fields, Subsoil Irrigation Fields and Mulch Basins. The minimum effective irrigation area of subsurface irrigation fields, subsoil irrigation fields, and mulch basins shall be determined by Table 1602.10 for the type of soil found in the excavation, based upon a calculation of estimated gray water discharge pursuant to Section 1602.8. For a subsoil irrigation field, the area shall be equal to the aggregate length of the perforated pipe sections within the valved zone multiplied by the width of the proposed subsoil irrigation field.

TABLE 1602.10
DESIGN 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

For SI units: 1 square foot = 0.0929 m2, 1 gallon per day = 0.000043 L/s

1602.10.2 Determination of Maximum Absorption Capacity. The irrigation field and mulch basin size shall be based on the maximum absorption capacity of the soil and determined using Table 1602.10. For soils not listed in Table 1602.10, the maximum absorption capacity for the proposed site shall be determined by percolation tests or other method acceptable to the Authority Having Jurisdiction. A gray water system shall not be permitted,

where the percolation test shows the absorption capacity of the soil is unable to accommodate the maximum discharge of the proposed gray water irrigation system.

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

1602.10.3 Groundwater Level. No excavation for an irrigation field, disposal field, or mulch basin shall extend within 3 feet (914 mm) vertical of the highest known seasonal groundwater level, 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.

Note: *The absence of groundwater in a test hole three (3) vertical feet (915 mm) below the deepest irrigation or disposal point shall be sufficient to satisfy this section unless seasonal high groundwater levels have been documented to rise to within this area.*

~~**1602.11 Subsurface and Subsoil Irrigation Field, and Mulch Basin Design and Construction.** Subsurface and subsoil irrigation field, and mulch basin design and construction shall be in accordance with Section 1602.11.1 through Section 1602.11.3. Where a gray water irrigation system design is predicated on soil tests, the subsurface or subsoil irrigation field or mulch basin shall be installed at the same location and depth as the tested area.~~

~~**1602.11.1 Subsurface Irrigation Field.** A subsurface irrigation field shall comply with Section 1602.11.1.1 through Section 1602.11.1.6.~~

~~**1602.11.1.1 Minimum Depth.** Supply piping, including drip feeders, shall be not less than 2 inches (51 mm) below finished grade and covered with mulch or soil.~~

~~**1602.11.1.2 Filter.** Not less than 140 mesh (115 micron) filter with a capacity of 25 gallons per minute (gpm) (1.58 L/s), or equivalent shall be installed. Where a filter backwash is installed, the backwash and flush discharge shall discharge into the building sewer or private sewage disposal system. Filter backwash and flush water shall not be used.~~

~~**TABLE 1602.11**~~
~~**SUBSURFACE IRRIGATION DESIGNCRITERIA FOR SIX TYPICAL SOILS**~~

~~**TYPE OF SOIL**~~	~~**MAXIMUM EMITTER DISCHARGE**~~	~~**MINIMUM NUMBER OF EMITTERS PER GALLON OF ESTIMATED GRAY WATER DSCHARGE PER DAY***~~
	~~**gallon per day**~~	~~**gallon per day**~~
~~Sand~~	~~1.8~~	~~0.6~~
~~Sandy loam~~	~~1.4~~	~~0.7~~
~~Loam~~	~~1.2~~	~~0.9~~
~~Clay loam~~	~~0.9~~	~~1.1~~
~~Silty clay~~	~~0.6~~	~~1.6~~
~~Clay~~	~~0.5~~	~~2.0~~

~~For SI units: 1 gallon per day = 0.000043 L/s~~

~~*The estimated gray water discharge per day shall be determined in accordance with Section 1602.8 of this code.~~

~~**1602.11.1.3 Emitter Size.** Emitters shall be installed in accordance with the manufacturer's installation instructions. Emitters shall have a flow path of not less than 1200 microns (μ) (1200 μm) and shall not have a coefficient of manufacturing variation (Cv) exceeding 7 percent. Irrigation system design shall be such that emitter flow variation shall not exceed 10 percent.~~

~~**1602.11.1.4 Number of Emitters.** The minimum number of emitters and the maximum discharge of each emitter in an irrigation field shall be in accordance with Table 1602.11.~~

~~**1602.11.1.5 Controls.** The system design shall provide user controls, such as valves, switches, timers, and other controllers, to rotate the distribution of gray water between irrigation zones.~~

~~**1602.11.1.6 Maximum Pressure.** Where pressure at the discharge side of the pump exceeds 20 pounds-force per square inch (psi) (138 kPa), a pressure-reducing valve able to maintain downstream pressure not exceeding 20 psi (138 kPa) shall be installed downstream from the pump and before an emission device.~~

~~**1602.11.2 Mulch Basin.** A mulch basin shall comply with Section 1602.11.2.1 through Section 1602.11.2.4.~~ (*Reserved for HCD.)*

~~**1602.11.2.1 Single Family and Multi-Family Dwellings.** The graywater discharge to a mulch basin is limited to single family and multi-family dwellings.~~

~~**1602.11.2.2 Size.** Mulch basins shall be of sufficient size to accommodate peak flow rates and distribute the total amount of estimated graywater on a daily basis without surfacing, ponding or runoff. Mulch basins shall have a depth of not less than 10 inches (254 mm) below finished grade. The mulch basin size shall be based~~

~~on the maximum absorption capacity of the soil and determined using Table 1602.10.~~

~~**1602.11.2.3 Minimum Depth.** Graywater supply piping, including drip feeders, shall be not less than 2 inches (51 mm) below finished grade and covered with mulch.~~

~~**1602.11.2.4 Maintenance.** The mulch basin shall be maintained periodically to retain the required depth and area, and to replenish the required mulch cover.~~

~~**1602.11.3 Subsoil Irrigation Field.** Subsoil irrigation fields shall comply with Section 1602.11.3.1 through Section 1602.11.3.3.~~

~~**1602.11.3.1 Minimum Pipe Size.** Subsoil irrigation field distribution piping shall be not less than 3 inches (80 mm) diameter.~~

~~**1602.11.3.2 Filter Material and Backfill.** Filter material, clean stone, gravel, slag, or similar material acceptable to the Authority Having Jurisdiction, varying in size from ¾ of an inch (19.1 mm) to 2 ½ inches (64 mm) shall be placed in the trench to the depth and grade in accordance with Table 1602.11.3. The perforated section of subsoil irrigation field distribution piping 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 in accordance with Table 1602.11.3. The filter material shall then be covered with 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.~~

~~**1602.11.3.3 Subsoil Irrigation Field Construction.** Subsoil irrigation fields shall be constructed in accordance with Table 1602.11.3. Where necessary on sloping ground to prevent excessive line slopes, irrigation 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.~~

~~**TABLE 1602.11.3**~~
~~**SUBSOIL IRRIGATION FIELD CONSTRUCTION**~~

~~DESCRIPTION~~	~~MINIMUM~~	~~MAXIMUM~~
~~Number of drain lines per valved zone~~	~~1~~	~~-~~
~~Length of each perforated line~~	~~-~~	~~100 feet~~
~~Bottom width of trench~~	~~12 inches~~	~~18 inches~~
~~Spacing of lines, center to center~~	~~4 feet~~	~~-~~
~~Depth of earth cover of lines~~	~~10 inches~~	~~-~~
~~Depth of filter material cover of lines~~	~~2 inches~~	~~-~~
~~Depth of filter material beneath lines~~	~~3 inches~~	~~-~~
~~Grade of perforated lines level~~	~~level~~	~~3 inches per 100 feet~~

~~For SI units: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 inch per foot = 83.3 mm/m~~

1602.11 Irrigation, Disposal Field and Mulch Basin Construction. *Irrigation fields, disposal fields and mulch basins used in gray water systems shall comply with this section. Gray water 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 gray water irrigation or disposal approved by the Enforcing Agency.*

1602.11.1 Mulch Basin. [HCD] *A mulch basin may be used as an irrigation or disposal field. Mulch basins shall be sized in accordance with Table 1602.10 and of sufficient depth, length and width to prevent ponding or runoff during the gray water surge of a clothes washer, bathtub or shower. Mulch must be replenished as required due to decomposition of organic matter. Mulch basins will require periodic maintenance, reshaping or removal of dirt to maintain surge capacity and to accommodate plant growth and prevent ponding or runoff.*

1602.11.2 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 gray water irrigation field:*

(1) Filters used in gray water irrigation systems shall be as specified by the manufacturer's installation instructions for the design flow rate and intended use. 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 gray water.

(2) Emitters shall be designed to resist root intrusion and shall be of a design recommended by the manufacturer for the intended gray water flow and use. 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 1602.11, or through a procedure designated by the Enforcing Agency. Minimum spacing between emitters is in any direction shall be sufficient to prevent surfacing or runoff.

(4) The system design shall provide user controls, such as valves, switches, timers and other controllers, as appropriate, to rotate the distribution of gray water 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 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 two (2) inches (51 mm) of mulch or soil. Drip feeder lines can be poly or flexible PVC tubing and shall be covered to a minimum depth of two (2) inches (51 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 the maximum operating pressure of the installed tubing, emitters, or other components shall be installed downstream from the pump and before any emission device.

(7) When an irrigation system utilizes a pump, and discharges water at a point higher than the pump, a backwater valve shall be installed downstream of the pump to prevent back siphonage of water and soil.

TABLE 1602.11
SUBSURFACE IRRIGATION DESIGN
CRITERIA FOR SIX TYPICAL SOILS

TYPE OF SOIL	MAXIMUM EMITTER DISCHARGE	MINIMUM NUMBER OF EMITTERS PER GALLON OF ESTIMATED GRAY WATER DISCHARGE PER DAY*
	gallon per day	gallon per day
Sand	1.8	0.6
Sandy loam	1.4	0.7
Loam	1.2	0.9
Clay loam	0.9	1.1
Silty clay	0.6	1.6
Clay	0.5	2.0

For SI units: 1 gallon per day = 0.000043 L/s

* The estimated gray water discharge per day shall be determined in accordance with Section 1602.8 of this code.

1602.11.3 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 gray water disposal field:*

(A) Disposal systems shall be not less than three (3) inches (80 mm) in cross sectional dimension and shall be constructed of perforated high-density polyethylene pipe, perforated ABS pipe, perforated PVC pipe, leaching chambers or other approved materials, provided that sufficient openings are available for distribution of the gray water into the trench area. Material, construction, and perforation shall be in compliance with the appropriate absorption fields drainage standards and shall be approved by the Enforcing Agency.

(B) Filter material, clean stone, gravel, slag, or similar filter material acceptable to the Enforcing Agency, varying in size from three-quarter (3/4) inch (19.1 mm) to two and one-half (2-1/2) inches (64 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.

Exception: *Manufactured leaching chambers shall be installed in compliance with the manufacturer's installation instructions.*

(C) Disposal fields shall be constructed in accordance with Table 1602.11.3.

(D) When necessary on sloping ground to prevent excessive line slopes, disposal lines shall be stepped or installed on the contour lines of the slope. The lines between each horizontal leaching section shall be made with approved water-tight joints and installed on natural or unfilled ground.

TABLE 1602.11.3

SUBSOIL IRRIGATION FIELD CONSTRUCTION

DESCRIPTION	MINIMUM	MAXIMUM
Number of drain lines per valved zone[1]	1	-
Length of each perforated line [1]	-	100 feet
Bottom width of trench [1]	12 inches	*24* inches
Spacing of lines, center to center [1]	4 feet	-
Depth of earth cover of lines	10 inches	-
Depth of filter material cover of lines	2 inches	-
Depth of filter material beneath lines [1]	3 inches	-
Grade of perforated lines level	level	3 inches per 100 feet

For SI units: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 inch per foot = 83.3 mm/m

[1] *Manufactured leaching chambers shall be installed in compliance with the manufacturer's installation instructions.*

1602.12 Gray Water System Color and Marking Information. Pressurized gray water distribution systems shall be identified as containing nonpotable water in accordance with Section 601.2 of this code. *Marking shall be at intervals not to exceed 5 feet (1,524mm). Gray water distribution piping upstream of any connection to an irrigation or disposal field or a distribution valve shall be identified with the words "CAUTION: NONPOTABLE GRAY WATER, DO NOT DRINK."*

1602.13 Special Provisions.

1602.13.*1* Other Collection and Distribution Systems. Other collection and distribution systems shall be approved ~~by the local Authority Having Jurisdiction,~~ as allowed by Section 301.2 of this code.

~~**1602.13.1 Higher Requirements.** Nothing contained in this chapter shall be construed to prevent the Authority Having Jurisdiction from requiring compliance with higher requirements than those contained herein, where such higher requirements are essential to maintain a safe and sanitary condition.~~

1602.13.2 Future Connections. *Gray water stub-out plumbing may be allowed for future connection prior to the installation of irrigation lines and landscaping. Stub-out shall be permanently marked "CAUTION: NONPOTABLE GRAY WATER, DO NOT DRINK."*

1602.14 Testing. Building drains and vents for gray water systems shall be tested in accordance with this code. Surge tanks shall be filled with water to the overflow line prior to and during inspection. Seams and joints shall be left exposed, and the tank shall remain watertight. A flow test shall be performed through the system to the point of gray water discharge. Lines and components shall be watertight up to the point of the irrigation perforated and drip lines.

1602.15 Maintenance. Gray water systems and components shall be maintained in accordance with ~~Table~~ *Section* 1601.5.

1603.0 *(Reserved)* ~~Reclaimed (Recycled) Water Systems.~~

~~**1603.1 General.** The provisions of this section shall apply to the installation, construction, alteration, and repair of reclaimed (recycled) water systems intended to supply uses such as water closets, urinals, trap primers for floor drains and floor sinks, aboveground and subsurface irrigation, industrial or commercial cooling or air conditioning and other uses approved by the Authority Having Jurisdiction.~~

~~**1603.2 Permit.** It shall be unlawful for a person to construct, install, alter, or cause to be constructed, installed, or altered a reclaimed (recycled) water system within a building or on a premises without first obtaining a permit to do such work from the Authority Having Jurisdiction.~~

~~**1603.2.1 Plumbing Plan Submission.** No permit for a reclaimed (recycled) water system shall be issued until complete plumbing plans, with data satisfactory to the Authority Having Jurisdiction, have been submitted and approved.~~

~~**1603.3 System Changes.** No changes or connections shall be made to either the reclaimed (recycled) water system or the potable water system within a site containing a reclaimed (recycled) water system without approval by the Authority Having Jurisdiction.~~

~~**1603.4 Connections to Potable or Reclaimed (Recycled) Water Systems.** Reclaimed (recycled) water systems shall have no connection to a potable water supply or alternate water source system. Potable water is permitted to be used as makeup water for a reclaimed (recycled) water storage tank provided the water supply inlet is protected by an airgap or reduced-pressure principle backflow preventer in accordance with this code.~~

~~**1603.5 Initial Cross-Connection Test.** A cross-connection test is required in accordance with Section 1603.11.2. Before the building is occupied or the system is activated, the installer shall perform the initial cross-connection test in the presence of the Authority Having Jurisdiction and other authorities having jurisdiction. The test shall be ruled successful by the Authority Having Jurisdiction before final approval is granted.~~

1603.6 Reclaimed (Recycled) Water System Materials. Reclaimed (recycled) water supply and distribution system materials shall comply with the requirements of this code for potable water supply and distribution systems, unless otherwise provided for in this section.

1603.7 Reclaimed (Recycled) Water System Color and Marking Information. Reclaimed (recycled) water systems shall have a colored background and marking information in accordance with Section 601.2 of this code.

1603.8 Valves. Valves, except fixture supply control valves, shall be equipped with a locking feature.

1603.9 Installation.

1603.9.1 Hose Bibbs. Hose bibbs shall not be allowed on reclaimed (recycled) water piping systems located in areas accessible to the public. Access to reclaimed (recycled) water at points in the system accessible to the public shall be through a quick-disconnect device that differs from those installed on the potable water system. Hose bibbs supplying reclaimed (recycled) water shall be marked with the words: "CAUTION: NONPOTABLE RECLAIMED WATER, DO NOT DRINK," and the symbol in Figure 1603.9.

FIGURE 1603.9

1603.9.2 Required Appurtenances. The reclaimed (recycled) water system and the potable water system within the building shall be provided with the required appurtenances (e.g., valves, air/vacuum relief valves, etc.) to allow for deactivation or drainage as required for a cross-connection test in accordance with Section 1603.11.2.

1603.9.3 Same Trench as Potable Water Pipes. Reclaimed (recycled) water pipes shall be permitted to be run or laid in the same trench as potable water pipes with a 12 inches (305 mm) minimum vertical and horizontal separation where both pipe materials are approved for use within a building. Where piping materials do not meet this requirement the minimum horizontal separation shall be increased to 60 inches (1524 mm). The potable water piping shall be installed at an elevation above the reclaimed (recycled) water piping. Reclaimed (recycled) water pipes laid in the same trench or crossing building sewer or drainage piping shall be installed in accordance with this code for potable water piping.

1603.10 Signs. Rooms and water closet tanks in buildings using reclaimed (recycled) water shall be in accordance with Section 1603.10.1 and Section 1603.10.2.

1603.10.1 Commercial, Industrial, and Institutional Restroom Signs. A sign shall be installed in restrooms in commercial, industrial, and institutional occupancies using reclaimed (recycled) water for water closets, urinals, or both. Each sign shall contain ½ of an inch (12.7 mm) letters of a highly visible color on a contrasting background. The location of the sign(s) shall be such that the sign(s) shall be visible to users. The location of the sign(s) shall be approved by the Authority Having Jurisdiction and shall contain the following text:

TO CONSERVE WATER, THIS BUILDING USES RECLAIMED (RECYCLED) WATER TO FLUSH TOILETS AND URINALS.

1603.10.2 Equipment Room Signs. Each room containing reclaimed (recycled) water equipment shall have a sign posted with the following wording in 1 inch (25.4 mm) letters:

CAUTION: NONPOTABLE RECLAIMED (RECYCLED) WATER, DO NOT DRINK.
DO NOT CONNECT TO DRINKING WATER SYSTEM. NOTICE: CONTACT BUILDING MANAGEMENT BEFORE PERFORMING ANY WORK ON THIS WATER SYSTEM.

1603.11 Inspection and Testing. Reclaimed (recycled) water systems shall be inspected and tested in accordance with Section 1603.11.1 and Section 1603.11.2.

1603.11.1 Supply System Inspection and Test. Reclaimed (recycled) water systems shall be inspected and tested in accordance with this code for testing of potable water piping.

1603.11.2 Annual Cross-Connection Inspection and Testing. An initial and subsequent annual inspection and test shall be performed on both the potable and reclaimed (recycled) water systems. The potable and reclaimed (recycled) water system shall be isolated from each other and independently inspected and tested to ensure there is no cross-connection in accordance with Section 1603.11.2.1 through Section 1603.11.2.4.

1603.11.2.1 Visual System Inspection. Prior to commencing the cross-connection testing, a dual system inspection shall be conducted by the Authority Having Jurisdiction and other authorities having jurisdiction as follows:

(1) Meter locations of the reclaimed (recycled) water and potable water lines shall be checked to verify that no modifications were made, and that no cross-connections are visible.

(2) Pumps and equipment, equipment room signs, and exposed piping in equipment room shall be checked.

(3) Valves shall be checked to ensure that valve lock seals are still in place and intact. Valve control door signs shall be checked to verify that no signs have been removed.

1603.11.2.2 Cross-Connection Test. The procedure for determining cross-connection shall be followed by the applicant in the presence of the Authority Having Jurisdiction and other authorities having jurisdiction to determine whether a cross-connection has occurred as follows:

(1) The potable water system shall be activated and pressurized. The reclaimed (recycled) water system shall be shut down, depressurized, and drained.

(2) The potable water system shall remain pressurized for a minimum period of time specified by the Authority Having Jurisdiction while the reclaimed (recycled) water system is empty. The minimum period the reclaimed (recycled) water system is to remain depressurized shall be determined on a case-by-case basis, taking into account the size and complexity of the potable and reclaimed (recycled) water distribution systems, but in no case shall that period be less than 1 hour.

(3) The drain on the reclaimed (recycled) water system shall be checked for flow during the test and fixtures, potable and reclaimed (recycled), shall be tested and inspected for flow. Flow from a reclaimed (recycled) water system outlet indicates a cross-connection. No flow from a potable water outlet shall indicate that it is connected to the reclaimed (recycled) water system.

(4) The potable water system shall then be depressurized and drained.

(5) The reclaimed (recycled) water system shall then be activated and pressurized.

(6) The reclaimed (recycled) water system shall remain pressurized for a minimum period of time specified by the Authority Having Jurisdiction while the potable water system is empty. The minimum period the potable water system is to remain depressurized shall be determined on a case-by-case basis, but in no case shall that period be less than 1 hour.

(7) Fixtures, potable and reclaimed (recycled), shall be tested and inspected for flow. Flow from a potable water system outlet indicates a cross-connection. No flow from a reclaimed (recycled) water outlet will indicate that it is connected to the potable water system.

(8) The drain on the potable water system shall be checked for flow during the test and at the end of the test.

(9) Where there is no flow detected in the fixtures which would indicate a cross-connection, the potable water system shall be repressurized.

1603.11.2.3 Discovery of Cross-Connection. In the event that a cross-connection is discovered, the following procedure, in the presence of the Authority Having Jurisdiction, shall be activated immediately:

(1) Reclaimed (recycled) water piping to the building shall be shut down at the meter, and the reclaimed (recycled) water riser shall be drained.

(2) Potable water piping to the building shall be shut down at the meter.

(3) The cross-connection shall be uncovered and disconnected.

(4) The building shall be retested following procedures listed in Section 1603.11.2.1 and Section 1603.11.2.2.

(5) The potable water system shall be chlorinated with 50 parts per million (ppm) chlorine for 24 hours.

(6) The potable water system shall be flushed after 24 hours, and a standard bacteriological test shall be performed. Where test results are acceptable, the potable water system shall be permitted to be recharged.

1603.11.2.4 Annual Inspection. An annual inspection of the reclaimed (recycled) water system, following the procedures listed in Section 1603.11.2.1 shall be required. Annual cross-connection testing, following the procedures listed in Section 1603.11.2.2 shall be required by the Authority Having Jurisdiction, unless site conditions do not require it. In no event shall the test occur less than once in 4 years.

Alternate testing requirements shall be permitted by the Authority Having Jurisdiction.

1603.12 Sizing. Reclaimed (recycled) water piping shall be sized in accordance with this code for sizing potable water piping.

1604.0 On-Site Treated Nonpotable *Gray* Water Systems.

1604.1 General. The provisions of this section shall apply to the installation, construction, alteration, and repair of on-site treated nonpotable *gray* water systems intended to supply uses such as water closets, urinals, trap primers for floor drains and floor sinks, above and belowground irrigation, and other uses approved by the Authority Having

Jurisdiction.

Other approved nonpotable water sources including swimming pool backwash operations, air conditioner condensate, rainwater, cooling tower blow-down water, foundation drainage, steam system condensate, fluid cooler discharge water, food steamer discharge water, combination oven discharge water, industrial process water, and fire pump test water may be permitted to be collected for re-use by gray water systems, as approved for the intended application.

1604.2 Plumbing Plan Submission. No permit for an on-site treated nonpotable *gray* water system shall be issued until complete plumbing plans, with data satisfactory to the Authority Having Jurisdiction, have been submitted and approved.

1604.3 System Changes. No changes or connections shall be made to either the on-site treated nonpotable *gray* water system or the potable water system within a site containing an on-site treated nonpotable *gray* water system without approval by the Authority Having Jurisdiction.

1604.4 Connections to Potable or Reclaimed (Recycled) Water Systems. On-site treated nonpotable *gray* water systems shall have no *unprotected* connection to a potable water supply or reclaimed (recycled) water source system. Potable, ~~or~~ reclaimed (recycled) water is permitted to be used as makeup water for a non-pressurized storage tank provided the makeup water supply is protected by an airgap, *reduced-pressure principle backflow preventer or other physical device which prevents backflow* in accordance with this code.

1604.5 Initial Cross-Connection Test. A cross-connection test is required in accordance with Section 1604.12.2. Before the building is occupied or the system is activated, the installer shall perform the initial cross-connection test in the presence of the Authority Having Jurisdiction and other authorities having jurisdiction. The test shall be ruled successful by the Authority Having Jurisdiction before final approval is granted.

1604.6 On-Site Treated Nonpotable *Gray* Water System Materials. On-site treated nonpotable *gray* water supply and distribution system materials shall comply with the requirements of this code for potable water supply and distribution systems, unless otherwise provided for in this section.

1604.7 On-Site Treated Nonpotable *Gray* Water Devices and Systems. Devices or equipment used to treat on-site treated nonpotable *gray* water in order to maintain the minimum water quality requirements determined by the Authority Having Jurisdiction shall be listed or labeled (third-party certified) by a listing agency (accredited conformity assessment body) and approved for the intended application.

1604.8 On-Site Treated Nonpotable *Gray* Water System Color and Marking Information. On-site treated *nonpotable gray* water systems shall have a colored background and marking information in accordance with Section 601.2 of this code.

1604.9 Valves. Valves, except fixture supply control valves, shall be equipped with a locking feature.

1604.10 Design and Installation. The design and installation of on-site treated nonpotable *gray water* systems shall be in accordance with Section 1604.10.1 through Section ~~1604.10.5~~ *1604.10.6.*

1604.10.1 Listing Terms and Installation Instructions. On-site treated nonpotable *gray* water systems shall be installed in accordance with the terms of its listing and the manufacturer's installation instructions.

1604.10.2 Minimum Water Quality. On-site treated nonpotable *gray* water supplied to toilets or urinals or for other uses in which it is sprayed or exposed shall be disinfected. Acceptable disinfection methods shall include chlorination, ultraviolet sterilization, ozone, or other methods as approved by the Authority Having Jurisdiction. The minimum water quality for on-site treated nonpotable *gray* water systems shall meet the applicable water quality requirements for the intended applications as determined by the public health Authority Having Jurisdiction. *In the absence of local water quality requirements for on-site treated nonpotable gray water, Section 1601.7 shall apply.*

1604.10.3 Deactivation and Drainage. The on-site treated nonpotable *gray* water system and the potable water system within the building shall be provided with the required appurtenances (e.g., valves, air/vacuum relief valves, etc.) to allow for deactivation or drainage as required for a cross-connection test in accordance with Section 1604.12.2.

1604.10.4 Near Underground Potable Water Pipe. On-site treated nonpotable *gray* water pipes shall be permitted to be run or laid in the same trench as potable water pipes with a 12 inch (305 mm) minimum vertical and horizontal separation where both pipe materials are approved for use within a building. Where piping materials do not meet this requirement the minimum separation shall be increased to 60 inches (1524 mm). The potable water piping shall be installed at an elevation above the on-site treated nonpotable *gray* water piping.

1604.10.5 Required Filters. A filter permitting the passage of particulates no larger than 100 microns (100 µm) shall be provided for on-site treated nonpotable *gray* water supplied to water closets, urinals, trap primers, and drip irrigation system.

1604.10.6 Disinfection. *Where the intended use of on-site treated non potable gray water requires disinfection and/or other treatment, on-site treated nonpotable gray water shall be disinfected as needed to ensure the required water quality is obtained at the point of use. Where chlorine is used for disinfection or treatment, water*

shall be tested for residual chlorine in accordance with ASTM D 1253.

1604.11 Signs. Signs in buildings using on-site treated nonpotable *gray* water shall comply with Section 1604.11.1 and Section 1604.11.2, *and with the requirements of the California Building Code.*

1604.11.1 Commercial, Industrial, ~~and~~ Institutional, and *Residential* Restroom Signs. A sign shall be installed in restrooms in commercial, industrial, and institutional occupancies*, and shall also be installed in residential common use area restrooms* using on-site treated *nonpotable gray* water for water closets, urinals, or both. ~~Each sign shall contain ½ of an inch (12.7 mm) letters of a highly visible color on a contrasting background. The location of the sign(s) shall be such that the sign(s) shall be visible to users.~~ The location of the sign(s) shall be approved by the Authority Having Jurisdiction and shall contain the following text:

TO CONSERVE WATER, THIS BUILDING USES ON-SITE TREATED NONPOTABLE *GRAY* WATER TO FLUSH TOILETS AND URINALS.

1604.11.2 Equipment Room Signs. Each room containing on-site treated water equipment shall have a sign posted with the following wording in 1 inch (25.4 mm) letters:

CAUTION*:* ON-SITE TREATED NONPOTABLE *GRAY* WATER, DO NOT DRINK. DO NOT CONNECT TO DRINKING WATER SYSTEM. NOTICE: CONTACT BUILDING MANAGEMENT BEFORE PERFORMING ANY WORK ON THIS WATER SYSTEM.

This sign shall be posted in a location that is visible to anyone working on or near on-site treated nonpotable *gray* water equipment.

1604.12 Inspection and Testing. On-site treated nonpotable *gray* water systems shall be inspected and tested in accordance with Section 1604.12.1 and Section 1604.12.2 *and/or as required by the Authority Having Jurisdiction.*

1604.12.1 Supply System Inspection and Test. On-site treated nonpotable *gray* water systems shall be inspected and tested in accordance with this code for testing of potable water piping.

1604.12.2 ~~Annual~~ Cross-Connection Inspection and Testing. An initial ~~and subsequent annual~~ inspection and test shall be performed on both the potable and on-site treated nonpotable *gray* water systems. The potable and on-site treated nonpotable *gray* water system shall be isolated from each other and independently inspected and tested to ensure there is no cross-connection in accordance with Section 1604.12.2.1 through Section 1604.12.2.4.

1604.12.2.1 Visual System Inspection. Prior to commencing the cross-connection testing, a dual system inspection shall be conducted by the Authority Having Jurisdiction and other authorities having jurisdiction as follows:

(1) Pumps and equipment, equipment room signs, and exposed piping in equipment room shall be checked.

(2) Valves shall be checked to ensure that valve lock seals are still in place and intact. Valve control door signs shall be checked to verify that no signs have been removed.

1604.12.2.2 Cross-Connection Test. The procedure for determining cross-connection shall be followed by the applicant in the presence of the Authority Having Jurisdiction and other authorities having jurisdiction to determine whether a cross-connection has occurred as follows:

(1) The potable water system shall be activated and pressurized. The on-site treated nonpotable *gray* water system shall be shut down and completely drained.

(2) The potable water system shall remain pressurized for a minimum period of time specified by the Authority Having Jurisdiction while the on-site treated nonpotable *gray* water system is empty. The minimum period the on-site treated nonpotable *gray* water system is to remain depressurized shall be determined on a case-by-case basis, taking into account the size and complexity of the potable and on-site treated water distribution systems, but in no case shall that period be less than 1 hour.

(3) Fixtures, potable and on-site treated, shall be tested and inspected for flow. Flow from an on-site treated water system outlet indicates a cross-connection. No flow from a potable water outlet shall indicate that it is connected to the on-site treated water system.

(4) The drain on the on-site treated nonpotable *gray* water system shall be checked for flow during the test and at the end of the test.

(5) The potable water system shall then be completely drained.

(6) The on-site treated nonpotable *gray* water system shall then be activated and pressurized.

(7) The on-site treated nonpotable *gray* water system shall remain pressurized for a minimum period of time specified by the Authority Having Jurisdiction while the potable water system is empty. The minimum period the potable water system is to remain depressurized shall be determined on a case-by-case basis, but in no case shall that period be less than 1 hour.

(8) Fixtures, potable and on-site treated nonpotable, shall be tested and inspected

for flow. Flow from a potable water system outlet indicates a cross-connection. No flow from an on-site treated water outlet will indicate that it is connected to the potable water system.

(9) The drain on the potable water system shall be checked for flow during the test and at the end of the test.

(10) Where there is no flow detected in the fixtures which would indicate a cross-connection, the potable water system shall be repressurized.

1604.12.2.3 Discovery of Cross-Connection. In the event that a cross-connection is discovered, the following procedure, in the presence of the Authority Having Jurisdiction, shall be activated immediately:

(1) On-site treated nonpotable *gray* water piping to the building shall be shut down at the meter and the on-site treated water riser shall be drained.

(2) Potable water piping to the building shall be shut down at the meter.

(3) The cross-connection shall be uncovered and disconnected.

(4) The building shall be retested in accordance with procedures listed in Section 1604.12.2.1 and Section 1604.12.2.2.

(5) The potable water system shall be chlorinated with 50 ppm chlorine for 24 hours.

(6) The potable water system shall be flushed after 24 hours, and a standard bacteriological test shall be performed. Where test results are acceptable, the potable water system shall be permitted to be recharged.

~~**1604.12.2.4 Annual Inspection.** An annual inspection of the on-site treated nonpotable water system shall be required accordance with Sections *1601.6,* and 1604.12.2.1. Annual cross-connection testing in accordance with Section 1604.12.2.2 shall be required by the Authority Having Jurisdiction, unless site conditions do not require it. The test shall occur no less than once every 4 years. Alternate testing requirements shall be permitted by the Authority Having Jurisdiction.~~

1604.13 Sizing. On-site treated nonpotable *gray* water piping shall be sized in accordance with Section 610.0 of this code.

Notation:
Authority: Health and Safety Code Sections 18928, 18930.5, 18941.8
Reference: Health and Safety Code Section 18941.8, Water Code Section 14877.1

CHAPTER 17
NONPOTABLE RAINWATER CATCHMENT SYSTEMS
CBSC proposes to adopt Chapter 17 of the 2012 UPC with the following amendments.

1701.0 General.

1701.1 Applicability. The provisions of this chapter shall apply to the installation, construction, alteration, and repair of nonpotable rainwater catchment systems. *In addition, applicable provisions in Chapter 16, Sections 1601.0 through 1601.9 for "Alternate Water Sources For Nonpotable Applications" shall apply to rainwater catchment systems.*

1702.0 Nonpotable Rainwater Catchment Systems.

1702.1 General. The installation, construction, alteration, and repair of rainwater catchments systems intended to supply uses such as water closets, urinals, trap primers for floor drains and floor sinks, irrigation, industrial processes, water features, cooling tower makeup and other uses shall be approved by the Authority Having Jurisdiction.

1702.2.1 Permit. *It shall be unlawful for a person to construct, install, alter, or cause to be constructed, installed, or altered a nonpotable rainwater catchment system in a building or on a premise without first obtaining a permit to do such work from the Authority Having Jurisdiction.*

Exception: *A permit is not required for exterior rainwater catchment systems used for outdoor non-spray irrigation with a maximum storage capacity of 5000 gallons (18 927L) where the tank is supported directly upon grade and the ratio of height to diameter or width does not exceed 2 to 1, and it does not require electrical power or a makeup water supply connection.*

1702.2 Plumbing Plan Submission. No permit for a rainwater catchment system shall be issued until complete plumbing plans, with data satisfactory to the Authority Having Jurisdiction, have been submitted and approved. No changes or connections shall be made to either the rainwater catchment or the potable water system within a site containing a rainwater catchment water system without approval by the Authority Having Jurisdiction.

1702.3 System Changes. No changes or connections shall be made to either the rainwater catchment system or the potable water system within a site containing a rainwater catchment system requiring a permit without approval by the

Authority Having Jurisdiction.

1702.4 Connections to Potable or Reclaimed (Recycled) Water Systems. Rainwater catchment systems shall have no ~~direct~~ *unprotected* connection to a potable water supply or alternate water source system. Potable or reclaimed (recycled) water is permitted to be used as makeup water for a rainwater catchment system provided the potable or reclaimed (recycled) water supply connection is protected by an air gap or reduced-pressure principle backflow preventer in accordance with this code.

1702.5 Initial Cross-Connection Test. Where a portion of a rainwater catchment system is installed within a building, a cross-connection test is required in accordance with Section 1702.11.2. Before the building is occupied or the system is activated, the installer shall perform the initial cross-connection test in the presence of the Authority Having Jurisdiction and other authorities having jurisdiction. The test shall be ruled successful by the Authority Having Jurisdiction before final approval is granted.

1702.6 Sizing. Rainwater catchment system distribution piping for indoor applications shall be sized as outlined in this code for sizing potable water piping. The design and size of rainwater drains, gutters, conductors, and leaders shall comply with Chapter 11 of this code.

1702.7 Rainwater Catchment System Materials. Rainwater catchment system materials shall comply with Section 1702.7.1 through Section 1702.7.4.

1702.7.1 Water Supply and Distribution Materials. Rainwater catchment water supply and distribution materials shall comply with the requirements of this code for potable water supply and distribution systems, unless otherwise provided for in this section.

1702.7.2 Rainwater Catchment System Drainage Materials. Materials used in rainwater catchment drainage systems, including gutters, downspouts, conductors, and leaders shall be in accordance with the requirements of this code for storm drainage.

1702.7.3 Storage Tanks. Rainwater storage tanks shall comply with Section 1702.9.5.

~~**1702.7.4 Collections Surfaces.** The collection surface shall be constructed of a hard, impervious material.~~

1702.8 Rainwater Catchment System Color and Marking Information. Rainwater catchment systems shall have a colored background in accordance with Section 601.2. Rainwater catchment systems shall be marked, in lettering in accordance with Section 601.2, with the words: “CAUTION: NONPOTABLE RAINWATER WATER, DO NOT DRINK.”

1702.9 Design and Installation.

1702.9.1 Outside Hose Bibbs. Outside hose bibbs shall be allowed on rainwater piping systems. Hose bibbs supplying rainwater shall be marked with the words: “CAUTION: NONPOTABLE WATER, DO NOT DRINK” and Figure 1702.9.

Figure 1702.9

1702.9.2 Deactivation and Drainage for Cross-Connection Test. The rainwater catchment system and the potable water system within the building shall be provided with the required appurtenances (e.g., valves, air or vacuum relief valves, etc.) to allow for deactivation or drainage as required for a cross-connection test in accordance with Section 1702.11.2.

~~**1702.9.3 Collection Surfaces.** Rainwater shall be collected from roof surfaces. A rainwater catchment system shall not collect rainwater from:~~

~~(1) Vehicular parking surfaces~~

~~(2) Surface water runoff~~

~~(3) Bodies of standing water~~

1702.9.3 Collection Surfaces. *Rainwater shall be collected from roof surfaces or other impervious manmade, above-ground collection surfaces. Rainwater collected from surface water runoff, vehicular parking surfaces or manmade surfaces at or below grade shall comply with the water quality requirements for on-site treated*

nonpotable gray water in Section 1604.0.

Exception: *Collected rainwater or storm water used exclusively for subsurface landscape irrigation.*

1702.9.3.1 Prohibited Discharges. Overflows and bleed-off pipes from roof-mounted equipment and appliances shall not discharge onto roof surfaces that are intended to collect rainwater.

1702.9.4 Minimum Water Quality. The minimum water quality for harvested rainwater shall meet the applicable water quality requirements for the intended applications as determined by the Authority Having Jurisdiction. ~~No treatment is required for rainwater used for subsurface or non-sprinkled surface irrigation where the maximum storage volume is less than 360 gallons (1363 L)~~. *In the absence of water quality requirements for harvested rainwater Table 1702.9.4 shall apply.*

Exception:
No treatment is required for rainwater used for non-spray irrigation where the maximum storage volume is less than 5000 gallons (18 927L) where the tank is supported directly upon grade and the ratio of height to diameter or width does not exceed 2 to 1.

1702.9.4.1 Disinfection. *Where the initial quality of the collected rainwater requires disinfectionor other treatment or both, the collected rainwater shall be treated as necessary to ensure the required water quality is delivered at the point of use. Where chlorine is used for disinfection or treatment, water shall be tested for residual chlorine in accordance with ASTM D 1253. The levels of residual chlorine shall not exceed the levels allowed for the intended use in accordance with the requirements of the local enforcing agency.*

TABLE 1702.9.4

MINIMUM TREATMENT AND WATER QUALITY FOR RAINWATER

Application	***Minimum Treatment***	***Minimum Water Quality***
Car washing	• *Debris excluder or other approved means in compliance with Section 1702.9.10* • *100 Micron (100 µm) in compliance with Section 1702.9.11 for drip irrigation*	*N/A*
Surface, subsurface and drip irrigation	• *Debris excluder or other approved means in compliance with Section 1702.9.10* • *100 Micron (100 µm) in compliance with Section 1702.9.11 for drip irrigation*	*N/A*
Spray irrigation where the maximum storage volume is less than less than 360 gallons (1363 L	• *Debris excluder or other approved means in compliance with Section 1702.9.10*	*N/A*
Spray irrigation where the maximum storage volume is equal to or greater than 360 gallons (1363 L)	• *Debris excluder or other approved means in compliance with Section 1702.9.10*	• *Escherichia coli: < 100 CFU/100 mL* • *Turbidity: < 10 NTU*
Urinal and water closet flushing, clothes washing, and trap priming	• *Debris excluder or other approved means in compliance with Section 1702.9.10* • *100 Micron (100 µm) in compliance with Section 1702.9.11*	• *Escherichia coli: < 100 CFU/100 mL* • *Turbidity: < 10 NTU*
Ornamental fountains and other water features	• *Debris excluder or other approved means in compliance with Section 1702.9.10*	• *Escherichia coli: < 100 CFU/100 mL* • *Turbidity: < 10 NTU*
Cooling tower make up water	• *Debris excluder or other approved means in compliance with Section 1702.9.10* • *100 Micron (100 µm) in compliance with Section 1702.9.11*	• *Escherichia coli: < 100 CFU/100 mL* • *Turbidity: < 10 NTU*

1702.9.5 Rainwater Storage Tanks. Rainwater storage tanks shall be constructed and installed in accordance with Section 1702.9.5.1 through Section ~~1702.9.5.7~~ *1702.9.5.8*.

1702.9.5.1 Construction. Rainwater storage shall be constructed of solid, durable materials not subject to excessive corrosion or decay and shall be watertight. Storage tanks shall be approved by the Authority Having Jurisdiction, provided such tanks are in accordance with approved applicable standards.

1702.9.5.2 Location. Rainwater storage tanks shall be permitted to be installed above or below grade.

1702.9.5.3 Above Grade. Above grade storage tanks shall be of an opaque material, approved for aboveground use in direct sunlight or shall be shielded from direct sunlight. Tanks shall be installed in an accessible location to allow for inspection and cleaning. The tank shall be installed on a foundation or platform that is constructed to accommodate loads in accordance with the building code.

1702.9.5.4 Below Grade. Rainwater storage tanks installed below grade shall be structurally designed to withstand anticipated earth or other loads. Holding tank covers shall be capable of supporting an earth load of not less than 300 pounds per square foot (lb/ft^2) (1465 kg/m^2) where the tank is designed for underground installation. Below grade rainwater tanks installed underground shall be provided with manholes. *Below-grade storage tanks, located outside of the building, shall be provided with either a manhole not less than 24 inches (610 mm) square or a manhole with an inside diameter of not less than 24 inches (610 mm) Service ports in manhole covers shall be not less than 8 inches (203 mm) in diameter.* The manhole opening shall be located not less than 4 inches (102 mm) above the surrounding grade. The surrounding grade shall be sloped away from the manhole. Underground tanks shall be ballasted, anchored, or otherwise secured, to prevent the tank from floating out of the ground where empty. The combined weight of the tank and hold down system shall meet or exceed the buoyancy force of the tank.

1702.9.5.5 Drainage and Overflow. Rainwater storage tanks shall be provided with a means of draining and cleaning. The overflow drain shall not be equipped with a shutoff valve. The overflow outlet shall discharge in accordance with this code for storm drainage systems. Where discharging to the storm drainage system, the overflow drain *and tank drain* shall be protected from backflow of the storm drainage system by a backwater valve or other approved method. *Backwater valves shall be installed so that access is provided to the working parts for service and repair.*

1702.9.5.5(A) Overflow Outlet Size. The overflow outlet shall be sized to accommodate the flow of the rainwater entering the tank and not less than the aggregate cross-sectional area of inflow pipes.

1702.9.5.6 Opening and Access Protection.

1702.9.5.6(A) Animals and Insects. Rainwater tank openings shall be protected to prevent the entrance of insects, birds, or rodents into the tank *and piping systems. Screens installed on vent pipes, inlets, and overflow pipes shall have an aperture of not greater than 1/16 of an inch (1.6mm) and shall be close fitting*.

1702.9.5.6(B) Human Access. *A minimum of one access opening shall be provided to allow inspection and cleaning.* Rainwater tank *manholes and* access openings ~~exceeding 12 inches (305 mm) in diameter~~ shall be secured ~~to prevent tampering and unintended entry~~ by either a lockable device or other approved method *to prevent unauthorized access.*

1702.9.5.7 Venting. *Rainwater tanks shall be provided with a vent sized in accordance with this code, and based on the size of the tank influent pipe. Tank vent pipes shall not be connected to the sanitary drainage system vents.*

1702.9.5.~~7~~ *8* Marking. Rainwater tanks shall be permanently marked with the capacity and the language: "NONPOTABLE RAINWATER." Where openings are provided to allow a person to enter the tank, the opening shall be marked with the following language: "DANGER-CONFINED SPACE."

1702.9.6 Pumps. Pumps serving rainwater catchment systems shall be listed. Pumps supplying water to water closets, urinals, and trap primers shall be capable of delivering not less than 15 pounds-force per square inch (psi) (103 kPa) residual pressure at the highest and most remote outlet served. Where the water pressure in the rainwater supply system within the building exceeds 80 psi (552 kPa), a pressure reducing valve reducing the pressure to 80 psi (552 kPa) or less to water outlets in the building shall be installed in accordance with this code.

1702.9.7 Roof Drains. Primary and secondary roof drains, conductors, leaders, and gutters shall be designed and installed in accordance with this code.

1702.9.8 Water Quality Devices and Equipment. Devices and equipment used to treat rainwater to maintain the minimum water quality requirements determined by the Authority Having Jurisdiction shall be listed or labeled (third-party certified) by a listing agency (accredited conformity assessment body) and approved for the intended application.

1702.9.9 Freeze Protection. Tanks and piping installed in locations subject to freezing shall be provided with an approved means of freeze protection.

1702.9.10 Debris Removal. The rainwater catchment conveyance system shall be equipped with a debris excluder or

other approved means to prevent the accumulation of leaves, needles, other debris and sediment from entering the storage tank. Devices or methods used to remove debris or sediment shall be accessible and sized and installed in accordance with manufacturer's installation instructions.

1702.9.11 Required Filters. A filter permitting the passage of particulates not larger than 100 microns (100 µm) shall be provided for rainwater supplied to water closets, urinals, trap primers, and drip irrigation systems.

1702.9.12 Roof Gutters. Gutters shall maintain a minimum slope and be sized in accordance with Section 1106.3.

1702.10 Signs. Signs in buildings using rainwater water shall be in accordance with Section 1702.10.1 and Section 1702.10.2. *and shall comply with the California Building Code*.

1702.10.1 Commercial, Industrial, and Institutional *and Residential* Restroom Signs. A sign shall be installed in restrooms in commercial, industrial, and institutional occupancies*, and shall also be installed in residential common use area restrooms* using nonpotable rainwater for water closets, urinals, or both. Each sign shall contain ½ of an inch (12.7 mm) letters of a highly visible color on a contrasting background. The location of the sign(s) shall be such that the sign(s) shall be visible to users. The number and location of the signs shall be approved by the Authority Having Jurisdiction and shall contain the following text:

TO CONSERVE WATER, THIS BUILDING USES RAINWATER TO FLUSH TOILETS AND URINALS.

1702.10.2 Equipment Room Signs. Each equipment room containing nonpotable rainwater equipment shall have a sign posted with the following wording in 1 inch (25.4 mm) letters: CAUTION NONPOTABLE RAINWATER, DO NOT DRINK. DO NOT CONNECT TO DRINKING WATER SYSTEM. NOTICE: CONTACT BUILDING MANAGEMENT BEFORE PERFORMING ANY WORK ON THIS WATER SYSTEM. This sign shall be posted in a location that is visible to anyone working on or near rainwater water equipment.

1702.11 Inspection and Testing. Rainwater catchment systems shall be inspected and tested in accordance with Section 1702.11.1 and Section 1702.11.2.

1702.11.1 Supply System Inspection and Test. Rainwater catchment systems shall be inspected and tested in accordance with the applicable provisions of this code for testing of potable water and storm drainage systems.

1702.11.2 Annual Cross-Connection Inspection and Testing. An initial and subsequent annual inspection and test in accordance with Section 1702.5 shall be performed on both the potable and rainwater catchment water systems. The potable and rainwater catchment water systems shall be isolated from each other and independently inspected and tested to ensure there is no cross-connection in accordance with Section 1702.11.2.1 through Section 1702.11.2.4.

1702.11.2.1 Visual System Inspection. Prior to commencing the cross-connection testing, a dual system inspection shall be conducted by the Authority Having Jurisdiction and other authorities having jurisdiction as follows:

(1) Pumps, equipment, equipment room signs, and exposed piping in an equipment room shall be checked.

1702.11.2.2 Cross-Connection Test. The procedure for determining cross-connection shall be followed by the applicant in the presence of the Authority Having Jurisdiction and other authorities having jurisdiction to determine whether a cross-connection has occurred as follows:

(1) The potable water system shall be activated and pressurized. The rainwater catchment water system shall be shut down and completely drained.

(2) The potable water system shall remain pressurized for a minimum period of time specified by the Authority Having Jurisdiction while the rainwater catchment water system is empty. The minimum period the rainwater catchment water system is to remain depressurized shall be determined on a case-by-case basis, taking into account the size and complexity of the potable and rainwater catchment water distribution systems, but in no case shall that period be less than 1 hour.

(3) Fixtures, potable and rainwater, shall be tested and inspected for flow. Flow from a rainwater catchment water system outlet shall indicate a cross-connection. No flow from a potable water outlet shall indicate that it is connected to the rainwater water system.

(4) The drain on the rainwater catchment water system shall be checked for flow during the test and at the end of the period.

(5) The potable water system shall then be completely drained.

(6) The rainwater catchment water system shall then be activated and pressurized.

(7) The rainwater catchment water system shall remain pressurized for a minimum period of time specified by the Authority Having Jurisdiction while the potable water system is empty. The minimum period the potable water system is to remain depressurized shall be determined on a case-by-case basis, but in no case shall that period be less than 1 hour.

(8) Fixtures, potable and rainwater catchment, shall be tested and inspected for flow. Flow from a potable water system outlet shall indicate a cross-connection. No flow from a rainwater

catchment water outlet shall indicate that it is connected to the potable water system.

(9) The drain on the potable water system shall be checked for flow during the test and at the end of the period.

(10) Where there is no flow detected in the fixtures which would indicate a cross-connection, the potable water system shall be repressurized.

1702.11.2.3 Discovery of Cross-Connection. In the event that a cross-connection is discovered, the following procedure, in the presence of the Authority Having Jurisdiction, shall be activated immediately:

(1) Rainwater catchment water piping to the building shall be shut down at the ~~meter~~ *supply source(s)*, and the rainwater water riser shall be drained.

(2) Potable water piping to the building shall be shut down at the meter.

(3) The cross-connection shall be uncovered and disconnected.

(4) The building shall be retested following procedures listed in Section 1702.11.2.1 and Section 1702.11.2.2.

(5) The potable water system shall be chlorinated with 50 ppm chlorine for 24 hours.

(6) The potable water system shall be flushed after 24 hours, and a standard bacteriological test shall be performed. Where test results are acceptable, the potable water system shall be permitted to be recharged.

~~**1702.11.2.4 Annual Inspection.** An annual inspection of the rainwater catchment water system, following the procedures listed in Section 1702.11.2.1 shall be required. Annual cross-connection testing, following the procedures listed in Section 1702.11.2.2 shall be required by the Authority Having Jurisdiction, unless site conditions do not require it. In no event shall the test occur less than once in 4 years.~~

~~Alternate testing requirements shall be permitted by the Authority Having Jurisdiction.~~

Notation
Authority: Health & Safety Code Sections 18928 and 18934.5
Reference(s): Health & Safety Code Sections 18928, 18928.1 and 18934.5

CBSC proposes to adopt Appendix A, B, D, G, H, J, without amendments

Notation
Authority: Health & Safety Code Sections 18928 and 18934.5
Reference(s): Health & Safety Code Sections 18928, 18928.1 and 18934.5

CBSC proposes to adopt Appendix I of the 2012 UPC and carry forward exiting amendments as shown in Part II of this document.

Notation
Authority: Health & Safety Code Sections 18928 and 18934.5
Reference(s): Health & Safety Code Sections 18928, 18928.1 and 18934.5

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PART II: EXISTING AMENDMENTS CARRIED FORWARD AND NON-SUBSTANTIVE EDITORIAL AND FORMATTING AMENDMENTS

CBSC proposes to bring forward previously existing California Building Standards or amendments, which represent no change in their effect from the 2010 California Plumbing Code. Furthermore, CBSC proposes to codify non-substantive editorial and formatting amendments from the format based upon the 2009 Uniform Plumbing Code to the format of the 2012 Uniform Plumbing Code

CHAPTER 1
ADMINISTRATION
DVISION I
CALIFORNIA ADMINISTRATION

CBSC proposes to carry forward Chapter 1 of the 2010 CPC, Sections 1.1 through 1.2.

1.1.0 General

1.1.1 Title. *These regulations shall be known as the California Plumbing Code, may be cited as such and will be referred to herein as "this code." The California Plumbing Code is Part 5 of twelve parts of the official compilation and publication of the adoption, amendment, and repeal of building regulations to the California Code of Regulations, Title 24, also referred to as the California Building Standards Code. This part incorporates by adoption the 2012 Uniform Plumbing Code of the International Association of Plumbing and Mechanical Officials with necessary California amendments.*

1.1.2 Purpose. *The purpose of this code is to establish the minimum requirements to safeguard the public health, safety and general welfare through structural strength, means of egress facilities, stability, access to persons with disabilities, sanitation, adequate lighting and ventilation, and energy conservation; safety to life and property from fire and other hazards attributed to the built environment; and to provide safety to fire fighters and emergency responders during emergency operations.*

1.1.3 Scope. *The provisions of this code shall apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout the State of California.*

> ***1.1.3.1 Nonstate-Regulated Buildings, Structures, and Applications.*** *Except as modified by local ordinance pursuant to Section 1.1.8, the following standards in the California Code of Regulations, Title 24, Parts 2, 2.5, 3, 4, 5, 6, 9,10 and 11 shall apply to all occupancies and applications not regulated by a state agency.*
> ***. . .***
>
> ***Note:*** *See Preface to distinguish the model code provisions from the California provisions.*
>
> 1. *State-owned buildings, including buildings constructed by the Trustees of the California State University, and to the extent permitted by California laws, buildings designed and constructed by the Regents of the University of California, and regulated by the Building Standards Commission. See Section 1.2 for additional scope provisions.*
>
> 2. *Local detention facilities regulated by the Corrections Standards Authority. See Section 1.3.0 for additional scope provisions.*
>
> 3. *Barbering, cosmetology or electrolysis establishments, acupuncture offices, pharmacies, veterinary facilities, and structural pest control locations regulated by the Department of Consumer Affairs. See Section 1.4.0 for additional scope provisions.*
>
> 4. *Reserved for the California Energy Commission. See Section 1.5.0 for additional scope provisions.*
>
> 5. *Dairies and places of meat inspection regulated by the Department of Food and Agriculture. See Section1.6.0 for additional scope provisions.*
>
> 6. *Organized camps, laboratory animal quarters, public swimming pools, radiation protection, commissaries serving mobile food preparation vehicles, and wild animal quarantine facilities regulated by the Department of Public Health. See Section 1.7.0 for additional scope provisions.*
>
> 7. *Hotels, motels, lodging houses, apartment houses, dwellings, dormitories, condominiums, shelters for homeless persons, congregate residences, employee housing, factory-built housing, and other types of dwellings containing sleeping accommodations with or without common toilets or cooking facilities. See Section 1.8.2.1.1 for additional scope provisions.*
>
> 8. *Accommodations for persons with disabilities in buildings containing newly constructed covered multifamily dwellings, new common use spaces serving existing covered multifamily dwellings, additions to existing buildings where the addition alone meets the definition of "COVERED MULTIFAMILY DWELLINGS," and common-use spaces serving covered multifamily dwellings which are regulated by the Department of Housing and Community Development. See Section 1.8.2.1.2 for additional scope provisions.*
>
> 9. *Permanent buildings and permanent accessory buildings or structures constructed within mobilehome parks and special occupancy parks regulated by the Department of Housing and Community Development. See Section 1.8.2.1.3 for additional scope provisions.*

10. *Accommodations for persons with disabilities regulated by the Division of the State Architect. See Section 1.9.1 for additional scope provisions.*

11. *Public elementary and secondary schools, community college buildings~~,~~ and state-owned or state-leased essential service buildings regulated by the Division of the State Architect. See Section 1.9.2 for additional scope provisions.*

12. *Reserved for the State Historical Building Safety Board with the Division of the State Architect. See Section 1.9.3 for additional scope provisions.*

13. *General acute care hospitals, acute psychiatric hospitals, skilled nursing and/or intermediate care facilities, clinics licensed by the Department of Public Health and correctional treatment centers regulated by the Office of Statewide Health Planning and Development. See Section 1.10.0 for additional scope provisions.*

14. *Applications regulated by the Office of State Fire Marshal include but are not limited to the following in accordance with Section 1.11.0:*

    1. *Buildings or structures used or intended for use as an:*

        1.1. Asylum, jail, prison.

        1.2. Mental hospital, hospital, home for the elderly, children's nursery, children's home or institution, school or any similar occupancy of any capacity.

        1.3. Theater, dancehall, skating rink, auditorium, assembly hall, meeting hall, nightclub, fair building~~,~~ or similar place of assemblage where 50 or more persons may gather together in a building, room or structure for the purpose of amusement, entertainment, instruction, deliberation, worship, drinking or dining, awaiting transportation, or education.

        1.4. Small family day care homes, large family day-care homes, residential facilities and residential facilities for the elderly, residential care facilities.

        1.5. State institutions or other state-owned or state-occupied buildings.

        1.6. High rise structures.

        1.7. Motion picture production studios.

        1.8. Organized camps.

        1.9. Residential structures.

    2. *Tents, awnings or other fabric enclosures used in connection with any occupancy.*

    3. *Fire alarm devices, equipment and systems in connection with any occupancy.*
    4. *Hazardous materials, flammable and combustible liquids.*

    5. *Public school automatic fire detection, alarm~~,~~ and sprinkler systems.*

    6. *Wildland-urban interface fire areas.*

15. *Public libraries constructed and renovated using funds from the California Library Construction and Renovation Bond Act of 1988 and regulated by the State Librarian. See Section 1.12 for additional scope provisions.*

16. *Graywater systems regulated by the Department of Water Resources. See Section 1.13 for additional scope provisions.*

17. *For applications listed in Section 1.9.1 regulated by the Division of the State Architect – Access Compliance, outdoor environments and uses shall be classified according to accessibility uses described in Chapter 11A, 11B and 11C.*

18. *Marine Oil Terminals regulated by the California State Lands Commission. See Section 1.14 for additional scope provisions.*

1.1.4 Appendices. *Provisions contained in the appendices of this code shall not apply unless specifically adopted by a state agency or adopted by a local enforcing agency in compliance with Health and Safety Code Section 18901 et. seq. for Building Standards Law, Health and Safety Code Section 17950 for State Housing Law and Health and Safety Code Section 13869.7 for Fire Protection Districts. See Section 1.1.8 of this code.*

1.1.5 Referenced Codes. *The codes, standards and publications adopted and set forth in this code, including other codes, standards and publications referred to therein are, by title and date of publication, hereby adopted as standard reference documents of this code. When this code does not specifically cover any subject related to building design and construction, recognized architectural or engineering practices shall be employed. The National Fire Codes, standards, and the Fire Protection Handbook of the National Fire Protection Association are permitted to be used as authoritative guides in determining recognized fire prevention engineering practices.*

1.1.6 Nonbuilding Standards, Orders and Regulations. *Requirements contained in the Uniform Plumbing Code or in any other referenced standard, code or document, which are not building standards as defined in Health and Safety Code Section 18909, shall not be construed as part of the provisions of this code. For nonbuilding standards, orders, and regulations, see other titles of the California Code of Regulations.*

1.1.7 Order of Precedence and Use.

1.1.7.1 Differences. *In the event of any differences between these building standards and the standard reference documents, the text of these building standards shall govern.*

1.1.7.2 Specific Provisions. *Where a specific provision varies from a general provision, the specific provision shall apply.*

1.1.7.3 Conflicts. *When the requirements of this code conflict with the requirements of any other part of the California Building Standards Code, Title 24, the most restrictive requirements shall prevail.*

1.1.8 City, County, or City and County Amendments, Additions or Deletions.
The provisions of this code do not limit the authority of city, county, or city and county governments to establish more restrictive and reasonably necessary differences to the provisions contained in this code pursuant to complying with Section 1.1.8.1. The effective date of amendments, additions, or deletions to this code by a city, county, or city and county filed pursuant to Section 1.1.8.1 shall be the date filed. However, in no case shall the amendments, additions or deletions to this code be effective any sooner than the effective date of this code.

Local modifications shall comply with Health and Safety Code Section 18941.5 for Building Standards Law, Health and Safety Code Section 17958 for State Housing Law or Health and Safety Code Section 13869.7 for Fire Protection Districts.

1.1.8.1 Findings and Filings.

1. *The city, county, or city and county shall make express findings for each amendment, addition or deletion based upon climatic, topographical, or geological conditions.*

   Exception: *Hazardous building ordinances and programs mitigating unreinforced masonry buildings.*

2. *The city, county, or city and county shall file the amendments, additions, or deletions expressly marked and identified as to the applicable findings. Cities, counties, cities and counties, and fire departments shall file the amendments, additions or deletions, and the findings with the California Building Standards Commission at 2525 Natomas Park Drive, Suite 130, Sacramento, CA 95833.*

3. *Findings prepared by fire protection districts shall be ratified by the local city, county, or city and county and filed with the California Department of Housing and Community Development, Division of Codes and Standards, P.O. Box 1407, Sacramento, CA 95812-1407 or 1800 3rd Street, Room 260, Sacramento, CA 95811.*

1.1.9 Effective Date of this Code. *Only those standards approved by the California Building Standards Commission that are effective at the time an application for building permit is submitted shall apply to the plans and specifications for, and to the construction performed under, that permit. For the effective dates of the provisions contained in this code, see the History Note page of this code.*

1.1.10 Availability of Codes. *At least one complete copy each of Titles 8, 19, 20, 24, and 25 with all revisions shall be maintained in the office of the building official responsible for the administration and enforcement of this code. Each state department concerned and each city, county or city and county shall have an up-to-date copy of the code available for public inspection, See Health and Safety Code Section 18942 (d)(1) and (2).*

1.1.11 Format. *This part fundamentally adopts the Uniform Mechanical Code by reference on a chapter-by-chapter basis. Such adoption is reflected in the Matrix Adoption Table of each chapter of this part. When the Matrix Adoption Tables make no reference to a specific chapter of the International Building Code such chapter of the International Building Code is not adopted as a portion of this code.*

1.1.12 Validity. *If any chapter, section, subsection, sentence, clause or phrase of this code is for any reason held to be unconstitutional, contrary to statute, exceeding the authority of the state as stipulated by statutes or otherwise inoperative, such decision shall not affect the validity of the remaining portion of this code.*

1.2.0 Building Standards Commission.

1.2.1 *Specific scope of application of the agency responsible for enforcement, the enforcement agency, and the specific authority to adopt and enforce such provisions of this code, unless otherwise stated.*

1. State Buildings for all Occupancies.
Application *– State buildings (all occupancies), including buildings constructed by the Trustees of the California State University and the Regents of the University of California where no state agency has the authority to adopt building standards applicable to such buildings.*
Enforcing Agency *– State or local agency specified by the applicable provisions of law.*
Authority Cited *– Health and Safety Code section 18934.5.*
Reference *– Health and Safety Code, Division 13, Part 2.5, commencing with section 18901.*

2. University of California, California State Universities, and California Community Colleges.
Application *– Standards for lighting for parking lots and primary campus walkways at the University of California, California State Universities, and California Community Colleges.*
Enforcing Agency *– State or local agency specified by the applicable provisions of law.*
Authority Cited *– Government Code section 14617.*
Reference *– Government Code section 14617.*

3. Existing State-Owned Buildings, including those owned by the University of California and by the California State University*– Building seismic retrofit standards including abating falling hazards of structural and nonstructural components and strengthening of building structures. See also Division of the State Architect.*
Enforcing Agency *– State or local agency specified by the applicable provisions of law.*
Authority Cited *– Government Code section 16600*
Reference *– Government Code sections 16600 through 16604*

4. Unreinforced Masonry Bearing Wall Buildings.
Application *– Minimum seismic strengthening standards for buildings specified in Appendix Chapter 1 of the California Code for Building Conservation, except for buildings subject to building standards adopted pursuant to Part 1.5 (commencing with Section 17910)*
Enforcing Agency *– State or local agency specified by the applicable provisions of law.*
Authority Cited *– Health and Safety Code section 18934.6*
Reference *– Health and Safety Code sections 18901 through 18949*

1.2.2 Alternative Materials, Design And Methods Of Construction And Equipment.
The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been approved. An alternative material, design or method of construction shall be approved where the building official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety.

1.2.2.1 Research Reports. *Supporting data, where necessary to assist in the approval of materials or assemblies not specifically provided for in this code, shall consist of valid research reports from approved sources.*

1.2.2.2 Tests. *Whenever there is insufficient evidence of compliance with the provisions of this code, or evidence that a material or method does not conform to the requirements of this code, or in order to*

substantiate claims for alternative materials or methods, the building official shall have the authority to require tests as evidence of compliance to be made at no expense to the jurisdiction. Test methods shall be as specified in this code or by other recognized test standards. In the absence of recognized and accepted test methods, the building official shall approve the testing procedures. Tests shall be performed by an approved agency. Reports of such tests shall be retained by the building official for the period required for retention of public records.

1.2.3 Adopting Agency Identification.
The provisions of this code applicable to buildings identified in this section will be identified in the Matrix Adoption Tables under the acronym BSC.

Notation
Authority: Health and Safety Code §18934.5
References: Health and Safety Code §18934.5

DIVISION II

ADMINISTRATION

(*Chapter 1, Administration of the 2012 UPC has been renamed for clarity to *Division II Administration)

Notation
Authority: Health and Safety Code §18934.5
References: Health and Safety Code §18934.5

Authority: Health & Safety Code Sections 18928 and 18934.5
Reference(s): Health & Safety Code Sections 18928, 18928.1 and 18934.5

CHAPTER 4
PLUMBING FIXTURES AND FIXTURE FITTINGS

TABLE 422.1
Minimum Plumbing Facilities[1]

. . .

(Table 422.1 not shown for clarity) Footnotes follow)

[1] The figures shown are based upon one (1) fixture being the minimum required for the number of persons indicated or any fraction thereof.

. . .

~~18~~ 4 ***[BSC, DSA-AC, DSA-SS, DSA-SS/CC, HCD 1 & HCD 2 & OSHPD 1, 2, 3 & 4]*** *In accordance with Sections 1.8.7 and 301.2, the Authority Having Jurisdiction may approve alternative design criteria when determining the minimum number of plumbing fixtures.*

TABLE A.
OCCUPANT LOAD FACTOR:
[BSC]

Occupancy*, **	***Occupant Load Factor (square feet) (CBC 2001, Table A-29A)***
Group A	15
1. Auditoriums, convention halls, dance floors, lodge rooms, stadiums and casinos (where no fixed seating is provided) (use 1/2 "one-half" the number of fixed seating)	
2. Conference rooms, dining rooms, drinking establishments, exhibit rooms, gymnasiums, lounges, stages and similar uses including restaurants classified as Group B occupancies	30

3. Worship places; principal assembly area, educational and activity unit (where no fixed seating is provided) (use 1/2 "one-half" the number of fixed seating)	30
Group B *Office or public buildings (area accessible to the public)*	200
Group E *Schools for daycare, elementary, secondary*	50
Educational Facilities Other than Group E *Colleges, universities, adult center, etc*	50
Group F *Workshop, foundries and similar establishments*	2,000
Group H *Hazardous materials fabrication and storage*	2,000
Group I *Hospital general use area, Health Care facilities*	200
Group M *Retail or Wholesale stores*	200
Group R *Congregate residence, Group R-1*	200
Group S *Warehouse*	5,000

* *Any uses not specifically listed shall be based on similar uses listed in this table.*

** *For building or space with mixed occupancies, use appropriate occupancy group for each area (for example, a school may have an "A" occupancy for the gymnasium, a "B" occupancy for the office, an "E" occupancy for the classrooms, etc.)*
Accessory areas may be excluded (for example: hallway, restroom, stair enclosure)

Notation
Authority: Health & Safety Code Section 18934.5
Reference(s): Health & Safety Code Sections 18928, 18928.1 and 18934.5

CHAPTER 6
WATER SUPPLY AND DISTRIBUTION

TABLE 604.1
MATERIALS FOR BUILDING SUPPLY AND WATER DISTRIBUTION PIPING AND FITTINGS

Material	Water Distribution Pipe and Fittings		Building Supply Pipe and Fittings	REFERENCED STANDARDS(S) FITTINGS
Asbestos-Cement	X[* 1]	--	ASTM C 296	--
...	...	...	...	...
PE	X[* 1]	--	...	...
...	...	...	...	...
PEX[2 3]	X	X	ASTM F 876, ASTM F 877, CSA B B137.5, AWWA C904[* 1]	...
PEX-AL-PEX[4]	X	X	...	...
PP	X	X	...	...
PVC	X[* 1]	--	...	...
...	...	...	...	...

[* 1] For building supply or cold-water applications.
[2] *When PEX tubing is placed in soil and is used in potable water systems intended to supply drinking water to fixtures*

or appliances, the tubing or piping shall be sleeved with a material approved for potable water use in soil or other material that is impermeable to solvents or petroleum products.

[3] *PEX tubing shall meet or exceed the requirements of ASTM F876-08 or an equivalent or more stringent standard when used in continuously recirculating hot water systems and the PEX tubing is exposed to the hot water 100% of the time.*

[4] ***[For BSC]*** *The use of PEX-AL-PEX in potable water supply systems is not adopted.*

604.13. Water Heater Connections. Flexible metallic water heater connectors or reinforced flexible water heater connectors connecting water heating to the piping system shall be in accordance with the applicable standards referenced in Table 1401.1….

[BSC] PEX-AL-PEX is not adopted for use in potable water supply and distribution systems.

605.11 PEX-AL-PEX Plastic Tubing and Joints. PEX-AL-PEX plastic pipe or tubing and fitting joining methods shall be installed in accordance with the manufacturer's installation instructions and shall comply with Section 605.11.1 and section 605.11.1.1.

[BSC] *PEX-AL-PEX is not adopted for use in potable water supply and distribution systems.*

605.11.1 Mechanical Joints. Mechanical joints between PEX-AL-PEX tubing and fittings shall include mechanical and compression type fittings and insert fittings with a crimping ring...

[BSC] *PEX-AL-PEX is not adopted for use in potable water supply and distribution systems.*

605.11.1.1 Compression Joints. Compression joints shall include compression insert fittings and shall be joined to PEX-AL-PEX pipe through the compression of a split ting or compression nut around the outer circumferences of the pipe, forcing the pipe material into the annular space formed by the ribs on the fitting.

[BSC] *PEX-AL-PEX is not adopted for use in potable water supply and distribution systems.*

Notation
Authority: Health & Safety Code Section 18934.5
Reference(s): Health & Safety Code Sections 18928, 18928.1 and 18934.5

CHAPTER 11
STORM DRAINAGE

1101.3 Material Uses. Rainwater piping placed within the interior ... ABS and PVC DWV piping installations shall be installed in accordance with IS 5~~,~~ *and* IS 9~~,~~ ~~and Chapter 15 "Firestop Protection"~~. **. . .**

Authority: Health & Safety Code Section 18934.5
Reference(s): Health & Safety Code Sections 18928, 18928.1 and 18934.5

APPENDIX I IS 5-2009
ABS BUILDING DRAIN, WASTE, AND VENT PIPE AND FITTINGS

2.2.6 Piping Installed in Fire Resistive Construction. All piping penetrations of fire resistance rated walls, partitions, floors, floor/ceiling assemblies, roof/ceiling assemblies, or shaft enclosures shall be protected in accordance with the requirements of the *California* Building Code *and* IAPMO Installation Standards. ~~and Chapter 15 "Firestop Protection for DWV and Stormwater Applications.~~ [UPC 312.7]

Notation
Authority: Health & Safety Code Section 18934.5
Reference(s): Health & Safety Code Sections 18928, 18928.1 and 18934.5