

## CALIFORNIA BUILDING STANDARDS COMMISSION

### DRAFT EXPRESS TERMS for the 2016 CALIFORNIA PLUMBING CODE, PART 5, CALIFORNIA BUILDING STANDARDS CODE, TITLE 24, CALIFORNIA CODE OF REGULATIONS

#### LEGEND FOR DRAFT EXPRESS TERMS

1. Existing California amendments or code language being modified are in italics when they appear in the model code text: All such language appears in *italics*, modified language is underlined.
2. New California amendments: All such language appears underlined and in italics.
3. Repealed text: All such language appears in ~~strikeout~~.
4. *[Information for the reader: All such language is bracketed and in red italics]*

### DRAFT EXPRESS TERMS

#### Statement of specific purpose, problem, rationale and benefits:

The California Building Standards Commission (CBSC) is proposing to add a section to the code that requires the installation of recycled water systems for newly constructed nonresidential buildings. Pursuant to AB 2282 (Gatto, Chapter 606, Statutes of 2014), which added Section 18940.6 to the Health and Safety Code, the legislature mandated that CBSC, along with the Department of Housing and Community Development (HCD), research, develop, and propose for adoption mandatory recycled water infrastructure standards during the 2016 Intervening Code Adoption Cycle. This would result in the installation of dual plumbed systems in new residential and nonresidential construction.

AB 2282 requires the installation of recycled water systems supplied from a municipal source for newly constructed commercial and public buildings and building site landscaped areas within a local jurisdiction that has feasible and cost-efficient access to a water recycling facility, or that have been identified within a planned service area with a specific implementation timeline for recycled water.

CBSC proposes to adopt and amend Chapters 2, 6, and 15. These provisions will aid in the reduction of potable water use. HCD and the Department of Water Resources are also proposing similar amendments this cycle that will align with CBSC.

#### CHAPTER 2 DEFINITIONS

##### 203.0

**Alternate water source.** Nonpotable source of water that includes but is not limited to gray water, on-site treated nonpotable ~~gray~~ water, rainwater, and reclaimed (recycled) water.

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##### 206.0

**Disinfected Tertiary Recycled Water.** *Filtered and subsequently disinfected wastewater that meets the approved method of treatment and minimum level of water quality specified in California Code of Regulations, Title 22, Division 4, Chapter 3 for the purpose of direct beneficial use.*

##### 220.0

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

**Recycled Water Supply System (BSC-CG).** *The system of municipal recycled water supply and distribution pipes and plumbing fixtures and devices for direct beneficial use in buildings and within the property lines of the premises; including associated joints, fittings, connections, devices, receptors,*

valves, backflow prevention devices, and other appurtenances carrying or supplying recycled water in or adjacent to the building or premise.

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**Notation:**

Authority: Health and Safety Code Sections 18928, 18930.5, and 18934.5

Reference: Health and Safety Code Section 18928.1 and 18940.6

**CHAPTER 6  
WATER SUPPLY AND DISTRIBUTION**

**601.2 Hot and Cold Water Required.** Except where not deemed necessary for safety or sanitation by the Authority Having Jurisdiction, each plumbing fixture shall be provided with an adequate supply of potable running water piped thereto in an approved manner, so arranged as to flush and keep it in a clean and sanitary condition without danger of backflow or cross-connection. Water closets and urinals shall be flushed by means of an approved flush tank or flushometer valve.

**Exceptions:**

1. Listed fixtures that do not require water for their operation and are not connected to the water supply.
2. "...".
3. ~~Recycled water may be allowed as specified in Chapter 16A Part II, and on-site treated nonpotable gray water as specified in Chapter 15, Section 1504 of this code. Alternate water sources shall be allowed as specified in Chapter 15 of this code. (BSC-CG)~~
4. *Where a public agency requires a building to use recycled water to flush water closets and urinals in accordance with California Water Code 13554. (BSC-CG)*

In occupancies where plumbing fixtures are installed for private use, hot water shall be required for bathing, washing, laundry, cooking purposes, dishwashing or maintenance. In occupancies where plumbing fixtures are installed for public use, hot water shall be required for bathing and washing purposes. This requirement shall not supersede the requirements for individual temperature control limitations for public lavatories and public and private bidets, bathtubs, whirlpool bathtubs, and shower control valves.

**601.3.3 Alternate Water Sources. (BSC-CG)** ~~Alternate water source systems shall have a purple (Pantone color No. 512, 522C, or equivalent) background with~~ be identified and permanently marked with clearly visible black uppercase lettering on purple background. The identification may be accomplished by labeling piping using purple-colored (Pantone color #512) adhesive Mylar PVC tape affixed along the entire length of the pipe, or using non-metallic pipe manufactured with purple (Pantone color No. 512, 522C, or equivalent) integral to the material. For either material, the tape or pipe shall be installed so the wording is clearly visible and shall be ~~field or factory-~~marked as follows:

- (1) Gray water systems shall be marked in accordance with this section with the words "CAUTION: NONPOTABLE GRAY WATER, DO NOT DRINK" in black letters.
- (2) Reclaimed (recycled) water systems shall be marked in accordance with this section with the words: "CAUTION: ~~NONPOTABLE RECLAIMED (RECYCLED)~~ RECYCLED WATER, DO NOT DRINK" in black letters.
- (3) On-site treated water systems shall be marked in accordance with this section with the words: "CAUTION: ON-SITE TREATED NONPOTABLE WATER, DO NOT DRINK" in black letters.
- (4) Rainwater catchment systems shall be marked in accordance with this section with the words: "CAUTION: NONPOTABLE RAINWATER-WATER, DO NOT DRINK" in black letters

**CHAPTER 15**  
**ALTERNATE WATER SOURCES FOR NONPOTABLE APPLICATIONS**

**Intent**

The provisions of this chapter are intended to:

1. Conserve potable water by facilitating greater reuse of laundry, shower, lavatory and similar sources of water discharge, or by the use of other alternate water sources, where available, for irrigation and/or indoor use.
2. Reduce the number of non-compliant gray water 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 gray-water.

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**1501.3 Permit. (BSC-CG)** 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 its premises 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, city and county or other local agency shall seek consultation with the State Water Resources Control Board and local public health department to ensure that state and local public health concerns are addressed in local standards or ordinances, or in issuing permits. See California Water Code Section 14877.3 for gray water systems and Water Code, Division 7, Chapter 7 Article 7 for Water Reuse.

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**1501.5 Maintenance and Inspection.** Alternate water source systems and components shall be inspected and maintained in accordance with the manufacturer's recommendations and/or as required by the Enforcing Agency.

**Note:**

Reclaimed (recycled) water systems shall be inspected and tested in accordance with Title 22, Division 4, Chapter 3 Article 5, Section 60316.

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**1501.6 Operation and Maintenance Manual.** An operation and maintenance manual for recycled water, gray water and on-site treated water systems required to have a permit in accordance with Sections 1501.3 and 1503.2 shall be supplied to the building owner by the system designer or installer. The operating and maintenance manual shall include the following:

- (1) Diagram(s) of the entire system and the location of system components.
- (2) Instructions on operating and maintaining the system.
- (3) Instructions on maintaining the required water quality 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 Section 1501.5.
- (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.

**1501.7 Minimum Water Quality Requirements. (BSC-CG)** The minimum water quality for alternate water source systems shall meet the applicable water quality requirements for the intended application as determined by the Authority Having Jurisdiction. ~~In the absence of water quality requirements for on-site treated nonpotable gray water systems the requirements of NSF 350 shall apply.~~ See Section 1504.10.2

for minimum water quality requirements for on-site treated nonpotable graywater and Section 1503.14 for reclaimed (recycled) water.

**Exception:**

- (1) Water treatment is not required for gray water used *in a disposal field* or for subsurface or subsoil irrigation.
- (2) Recycled water shall meet minimum water quality requirements pursuant to Section 1503.14

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**1501.10 Commercial, Industrial, 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 reclaimed (recycled) water ~~and~~ *or* on-site treated nonpotable gray water for water closets, urinals, or both. Each sign shall contain 1/2-inch (12.7 mm) letters of a highly visible color on a contrasting background. The location of the sign(s) shall be visible to users and location shall be approved by the Authority Having Jurisdiction and applicable requirements Chapter 11A or 11B as applicable, of the California Building Code. Each sign shall contain the following text:

TO CONSERVE WATER, THIS BUILDING USES RECLAIMED (RECYCLED) WATER OR ON-SITE TREATED NONPOTABLE GRAY WATER TO FLUSH TOILETS AND URINALS.

(1) Tank Type Toilets (BSC-CG) Where tank-type toilets (water closets) are flushed with recycled water, a permanent sign (such as plastic or stainless steel) shall be installed inside and outside of the tank to warn that the recycled water within the tank is not suitable for direct human contact and is not a suitable emergency water supply. The sign shall be labeled: "CAUTION: NONPOTABLE RECLAIMED (RECYCLED) WATER – DO NOT DRINK".

**1501.10.1 Equipment Room Signs.** Each room containing reclaimed (recycled) and on-site treated nonpotable gray water equipment shall have a sign posted in a location that is visible to anyone working on or near reclaimed (recycled) water and/or nonpotable gray water equipment with the following wording in 1 inch (25.4 mm) letters and background of the signs shall be purple:

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

\* \_\_\_\_\_ \* Shall indicate RECLAIMED (RECYCLED) WATER or ON-SITE TREATED NONPOTABLE GRAY WATER accordingly.

**1501.10.2 Outdoor Signs. (BSC-CG)** All outdoor areas accessible to the public or in public right of way, where alternate water sources are used, shall have a sign(s) posted that identifies the type(s) of alternate water used. The sign(s) shall be visible to the public and located in close proximity to the areas where alternate water source is used. The sign(s) shall be in a size no less than 4 inches high by 8 inches wide, that includes the following wording: "CAUTION: NONPOTABLE RECLAIMED (RECYCLED) WATER, DO NOT DRINK", or "CAUTION: NONPOTABLE GRAY WATER, DO NOT DRINK" or "CAUTION: ON-SITE TREATED NONPOTABLE GRAY WATER, DO NOT DRINK", and the symbol in figure 1503.9.

**1501.11 Inspection and Testing.** Alternate water source systems shall be inspected and tested in accordance with Section 1501.11.1 and Section 1501.11.2.

**1501.11.1 Supply System Inspection and Test.** Alternate water source systems shall be inspected and tested in accordance with this code for testing of potable water piping.

**1501.11.2 Cross-Connection Inspection and Testing.** An initial inspection and test shall be performed on both the potable and alternate water source systems. The potable and alternate water source system shall be isolated from each other and independently inspected and tested to ensure there is no cross-connection in accordance with Section 1501.11.2.1 through Section ~~1501.11.2.4~~ 1501.11.2.3.

**1501.11.2.1 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 alternate water source 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 the valve lock seals are still in place and intact. Valve control door signs shall be checked to verify that no signs have been removed.

**1501.11.2.2 Cross-Connection Test.** ~~The procedure for determining cross-connection shall be followed by the applicant~~ A cross-connection test shall be performed pursuant to Section 1501.11.2 and/or in accordance with the Authority Having Jurisdiction. The test shall be conducted in the presence of the Authority Having Jurisdiction ~~and~~ or 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 alternate water source 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 alternate water source system is empty. The minimum period the alternate water source 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 the alternate water source distribution systems, ~~but in no case shall that period be less than 1 hour.~~
- (3) The drain on the alternate water source system shall be checked for flow during the test and fixtures, potable and alternate water source, shall be tested and inspected for flow. Flow from an alternate water source system outlet indicates a cross-connection. No flow from a potable water outlet shall indicate that it is connected to the alternate water source system.
- (4) The potable water system shall then be depressurized and drained.
- (5) The alternate water source system shall then be activated and pressurized. For the initial test, a temporary connection to a potable water supply will be required to test the alternate water source system plumbing. At the conclusion of the test, the temporary connection to the potable water supply shall be disconnected.  
Note: A temporary connection to the potable water supply will be required to have a backflow prevention device in accordance with California Code of Regulations, Title 17 when connecting the potable water system to the gray water or recycled water supply system.
- (6) The alternate water source 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~~ All fixtures, potable and alternate water source, shall be tested and inspected for flow. Flow from a potable water system outlet indicates a cross-connection. No flow from an alternate water source 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 test.
- (9) Where there is no flow detected in the fixtures which would indicate a cross-connection, the potable water system shall be repressurized.

**1501.11.2.3 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) Notify the Authority Having Jurisdiction of the cross connection.
- (4) (2) The alternate water source piping to the building shall be shut down at the meter, and the alternate water source riser shall be drained.
- (2) (3) Potable water piping to the building shall be shut down at the meter.
- (3) (4) The cross-connection shall be uncovered and disconnected.
- (4) (5) The building shall be retested in accordance with Section 1501.11.2.1 and Section 1501.11.2.2.
- (5) (6) The potable water system shall be chlorinated with 50 parts-per-million (ppm) chlorine for 24 hours.
- (6) (7) 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.

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**1502.3 Connections to Potable and Reclaimed (Recycled) Water Systems.** Gray water systems shall have no ~~unprotected~~ connection to a potable water supply, on-site treated nonpotable water supply, or reclaimed (recycled) water systems. Potable, on-site treated nonpotable, 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 preventor, or other physical device which prevents backflow~~ in accordance with this code and Title 17.

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### **1503.0 Reclaimed (Recycled) Water Systems.**

**1503.1 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.

**1503.1.1 Scope. (BSC-CG)** All newly constructed nonresidential buildings, where disinfected tertiary recycled water is available from a municipal source to a nonresidential building site, shall be provided with a potable water supply system and recycled water supply system allowing for use of reclaimed (recycled) water.

- (1) The recycled water plumbing system shall be installed to allow connection to all water closets, urinals, clothes washers, and landscape irrigation systems.

**Exceptions:**

- (1) Service areas in which the only reclaimed (recycled) water is used for potable purposes, or in which net nonpotable deliveries are anticipated to remain level or decrease as a result of the potable reuse project.
- (2) Where access to disinfected tertiary recycled water is not feasible and/or cost-efficient, as determined by the Authority Having Jurisdiction in consultation with the water service authority.
- (3) Potable water supply system is not required for landscape irrigation if the landscape irrigation system is supplied with recycled water.

**1503.2 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

**1503.2.1 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.

**1503.3 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.

**1503.4 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 air gap in accordance with this code *and Title 17*.

**1503.5 Initial Cross-Connection Test.** A cross-connection test is required in accordance with Section 1501.11.2. Before the building is occupied or the system is activated, the installer shall perform ~~the~~ an initial cross-connection test in the presence of the Authority Having Jurisdiction ~~and~~ or other authorities having jurisdiction. The test shall be ruled successful by the Authority Having Jurisdiction before final approval is granted.

**1503.6 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.

**1503.7 Reclaimed (Recycled) Water System Color and Marking Information.** Reclaimed (recycled) water systems shall have a colored background and marking information in accordance with Section 601.3 of this code.

**Note:** Labeling for piping using purple-colored (Pantone color #512) adhesive Mylar PVC tape shall run along the entire length of the pipe or using non-metallic pipe manufactured with purple integral to the material. For either material, the identification system shall be installed so the wording above is clearly visible and permanent.

**1503.8 Valves.** Valves, except fixture supply control valves, shall be equipped with a locking feature.

**1503.9 Hose Bibbs. (BSC-CG)** 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 1503.9.



FIGURE 1503.9

**Question:** *BSC understands that Title 22 allows hose bibbs to be connected to reclaimed (recycled) water systems for nonresidential applications. If so, are any BSC amendments to Section 1503.9 required?*

**1503.10 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~~ testing as required for a cross-connection test in accordance with Section 1501.11.2.

**1503.11 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 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.

**1503.12 Signs.** Signs in rooms and water closet tanks in buildings using reclaimed (recycled) water shall be in accordance with Section 1501.10 and Section 1501.10.1.

**1503.13 Inspection and Testing.** Reclaimed (recycled) water systems shall be inspected and tested in accordance with Sections 1501.11 through 1501.11.2.3 and as required pursuant to Section 60316(a), Title 22, California Code of Regulations and as required by the Authority Having Jurisdiction.

**1503.14 Minimum Water Quality Requirements for Reclaimed (Recycled) Water (BSC-CG).** The minimum water quality for reclaimed (recycled) water shall meet the applicable water quality requirements of California Code Regulations, Title 22, Division 4, Chapter 3 (commencing with Section 60301.230) for disinfected tertiary recycled water and the applicable recycled water use.

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**1504.4 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 air gap, ~~reduced-pressure-principle backflow preventer, or other physical device which prevents backflow~~ in accordance with this code.

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**1504.10.2 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 1501.7~~ the requirements of NSF/ANSI 350 shall apply.

**Exception:**

Water treatment is not required for gray water used *in a disposal field or for subsurface or subsoil irrigation.*

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**Notation:**

Authority: Health and Safety Code Sections 18928, 18930.5, and 18934.5

Reference: Health and Safety Code Section 18928.1 and 18940.6