Methodology to Indicate Changes to
R-14-03, Second 15-Day Public Availability

The proposed changes that are the subject of this notice are indicated as follows:

- **Deletions from the proposed text presented during the first 15-day public comment period are indicated by a shaded double strike-through (~~strike-through~~).**

- **Additions to the proposed text presented during the first 15-day public comment period are indicated by a shaded double underline (underline).**

CHAPTER 15

~~**ARTICLE 2**~~

~~Section 64417. Siting Requirements~~

~~(a) A person operating a public water system shall notify the Department prior to making any financial commitment for or initiation of construction of a new public water system or increasing the capacity of an existing public water system. To the extent practicable, no part of a new or expanded facility shall be:~~

~~(1) Subject to pollution or contamination from any point or nonpoint sources.~~

~~(2) Subject to a significant risk from natural disasters which could cause a breakdown of the pubic water system or a portion thereof.~~

~~(3) Within the flood plain of a 100-year flood or lower than any recorded high tide, except for intake structures.~~

NOTE: ~~Authority: Sections 208 and 4010.1(h), Health and Safety Code. Reference: Sections 4010.1 (o), 4012, 4013 and 4019, Health and Safety Code.~~

CHAPTER 16

~~ARTICLE 1~~

~~Section 64555. Definitions~~

~~(a) "Asphalt Institute Standard" means a standard or specification issued by the Asphalt Institute.~~

~~(b) "ASTM Standard" means a standard issued by the American Society for Testing and Materials (ASTM).~~

~~(c) "AWWA Standard" means a standard adopted by the American Water Works Association (AWWA).~~

~~(d) "Federal Specification" means a standard approved by the United States General Services Agency for use by federal agencies.~~

~~(e) "Flat Rate Water System" means a public water system where water deliveries to at least 50 percent of the service connections are not metered.~~

~~(f) "Metered Water System" means a public water system that is not a flat rate water system.~~

NOTE: ~~Authority: Sections 208 and 4010.1(h), Health and Safety Code. Reference: Sections 4010.1 (o), 4012, 4013 and 4019, Health and Safety Code.~~

~~ARTICLE 2. GENERAL REQUIREMENTS~~

~~Section 64560. Basic Design~~

~~(a) Additions to or changes in distribution systems shall be designed and constructed to:~~

~~(1) Be free of structural and sanitary hazards.~~

~~(2) Protect the quality of the water delivered to users at all times.~~

~~(3) Protect the distribution system against contamination by backflow.~~

~~(4) Provide adequate size and capacity to meet the requirements of Sections 64562 and 64566.~~

~~(5) Withstand, with ample safety factors, the physical stresses imposed during normal operation.~~

~~(6) Minimize the effects of events such as power supply, equipment, and structural failures, earthquakes, fires, floods and sabotage that are reasonably foreseeable.~~

~~(7) Protect against unauthorized entry and/or vandalism.~~

~~(8) Protect against adverse effects in areas subject to freezing weather.~~

NOTE: ~~Authority: Sections 208 and 4010.1(h), Health and Safety Code. Reference: Sections 4010.1 (o), 4012, 4013 and 4019, Health and Safety Code.~~

~~Section 64562. Quantity of Supply~~

~~(a) Sufficient water shall be available from the water sources and distribution reservoirs to supply adequately, dependably and safely the total requirements of all users under maximum demand conditions before agreement is made to permit additional service connections to a system.~~

~~(b)To ascertain this, first determine the total capacity of the existing source by procedures prescribed in section 64563 and determine the total storage volume of the existing distribution reservoirs. Then determine the needed source capacity and the needed storage volume by procedures prescribed in Section 64564. The total available source capacity shall not be less than the needed source capacity.~~

~~(c) The requirements of this section shall apply to an entire public water system and to each pressure zone within a public water system.~~

~~(1) Requirements for an entire public water system shall be determined for the total source capacity, total storage volume and the total number of service connections.~~

~~(2) Requirements for a particular pressure zone shall be determined from the total water supply available from the water sources and interzonal transfers directly supplying the zone, from the total storage volume within the zone and from the number of service connections within the zone.~~

NOTE: ~~Authority: Sections 208 and 4010.1(h), Health and Safety Code. Reference: Sections 4010.1 (o), 4012, 4013 and 4019, Health and Safety Code.~~

~~Section 64564. Procedures for Determining Needed Source Capacity and Needed Storage Volume~~

~~(a) Whenever possible, needed source capacity and needed storage volume shall be determined from existing water use records of the water system.~~

~~The records used shall clearly indicate total source capacity, total storage volume and maximum day demand of previous years.~~

~~The existing records of the water system may be supplemented as needed by the records of a similar water system acceptable to either the Department or a qualified registered engineer.~~

~~(b) When the existing records of the water system are inadequate to determine these values and no records of a similar water system can be found to supplement the existing records, the maximum day demand, the needed source capacity and the needed storage volume for typical residential and general commercial areas (without provisions for fire flow) shall be determined as follows:~~

~~(1) Determine the maximum day demand (Q[o]) from Chart 1 or Chart 2.~~

~~(2) When the total capacity of the existing sources equals the maximum day demand (Q[o]), the needed storage volume (V[o]) to meet peak demand during the day shall be determined from Chart 3 or Chart 4.~~

~~(3) When the total storage volume of the existing reservoirs (V) is less than the needed storage volume (V[o]), the existing sources shall be supplemented so that the needed source capacity (Q) is met. For a metered water system, Q = Q[o] (2.5-1.5V/V[o]) or for a flat rate water system, Q = Q[o] (2-V/V[o]).~~

~~(c) The needed source capacity and needed storage volume determined under (b) may be modified, with the approval of the Department, to reflect local conditions such as climate, community type and kinds of users. Unless the Department's written approval is obtained, the needed source capacity shall not be less than the maximum day demand.~~

~~(d) The data used and the calculation made by the water supplier to determine whether sufficient water is available to accommodate additions to the systems must be kept and are subject to the Department review and approval at its discretion.~~

NOTE: ~~Authority: Sections 208 and 4010.1(h), Health and Safety Code. Reference: Sections 4010.1 (o), 4012, 4013 and 4019, Health and Safety Code.~~

~~Section 64566. System Pressure~~

~~(a) Changes in distribution systems shall be designed to maintain an operating pressure at all service connections of not less than 20 pounds per square inch gauge (psig) (140 kiloPascals gauge (kPag) under the following demand conditions:~~

~~(1) User maximum hour demand.~~
~~(2) User average day demand plus design fire flow.~~

~~(b) In a public water system supplying users at widely varying elevations, a water supplier may furnish a service to a user which does not comply with (a) if the user is fully advised of the conditions under which minimum service may be expected and the user's agreement is secured in writing. This waiver shall be applicable only to individual service connections.~~

~~(c) Water mains shall be designed to have at least five psig (35 kPag) pressure throughout any buried length of the main except when the main is removed from service for repairs or maintenance. This requirement shall not apply to short lengths of water main near reservoir inlets and outlets provided;~~

~~(1) The water main is on premises owned, leased or controlled by the water supplier; or~~
~~(2) The prior review and written approval the of the Department is obtained.~~

NOTE: ~~Authority: Sections 208 and 4010.1(h), Health and Safety Code. Reference: Sections 4010.1 (o), 4012, 4013 and 4019, Health and Safety Code.~~

~~Section 64568. Conditions for Adding Service Connections~~
~~A new service connection may be added to a distribution system only if the water system will comply with Section 64562 after the new service connection is added and adding the new service connection will not cause pressure at an existing service connection to be reduced below the standards set in Section 64566.~~

NOTE: ~~Authority: Sections 208 and 4010.1(h), Health and Safety Code. Reference: Sections 4010.1 (o), 4012, 4013 and 4019, Health and Safety Code.~~

~~Section 64570. Internal Combustion Engines~~

~~(a) Where water cooling jackets for internal combustion engines are connected to water mains, the jacket shall be designed so that the water pressure inside the water main at the cooling jacket will at all times be greater than the engine coolant pressure.~~

~~(b) Backflow protection of the public water system shall be provided wherever makeup water is supplied to the cooling system of an internal combustion engine.~~

NOTE: ~~Authority: Sections 208 and 4010.1(h), Health and Safety Code. Reference: Sections 4010.1 (o), 4012, 4013 and 4019, Health and Safety Code.~~

~~ARTICLE 3. DISTRIBUTION RESERVOIRS~~

~~Section 64600. Basic Design of Distribution Reservoirs~~

~~(a) Distribution reservoirs shall be covered.~~

~~(b) Vents, overflows, drain outlets and other reservoir openings shall be located and constructed to protect the water stored in the reservoir from contamination. Vents and overflows shall be screened. Vents shall not open upward. Overflows shall be large enough to dispose of reservoir overflow rates equal to the maximum reservoir filling rate~~

~~(c)Provisions shall be made to facilitate removal of floating material from the free water surface and for dewatering the reservoir.~~

~~(d) Outlets shall be designed and constructed to minimize movement of sediment from the reservoir floor to the distribution system water mains.~~

~~(e) Provisions shall be made for isolating reservoirs and appurtenant facilities from the distribution system without causing violation of Section 64566.~~

~~(f) Unless the Department's approval is obtained, distribution reservoir sites shall not be used for nonwater works purposes that would:~~

~~(1) Result in unrestricted public access.~~

~~(2) Create a contamination hazard.~~

~~(g) Reservoirs shall be disinfected and sampled for bacteriological quality in accordance with the procedures described in "Methods for Disinfecting Tanks and Reservoirs," American Water Works Association Journal, 71(1):49-50 (January 1979).~~

NOTE: ~~Authority: Sections 208 and 4010.1(h), Health and Safety Code. Reference: Sections 4010.1 (o), 4012, 4013 and 4019, Health and Safety Code.~~

~~Section 64602. Subsurface Distribution Reservoirs~~

~~(a) Subsurface distribution reservoirs shall be lined and shall be located:~~

~~(1) Above maximum anticipated ground water level.~~

~~(2) At least 50 feet (15 meters) from the nearest sewer and at least 150 feet (45 meters) from all other sewerage facilities.~~

~~(b) The land adjacent to a subsurface distribution reservoir shall be graded to route surface water away from the reservoir.~~

NOTE: ~~Authority: Sections 208 and 4010.1(h), Health and Safety Code. Reference: Sections 4010.1 (o), 4012, 4013 and 4019, Health and Safety Code.~~

~~Section 64604. Corrosion Protection~~
~~Paints or other protective coatings shall comply with AWWA Standard D102-78.~~

NOTE: ~~Authority: Sections 208 and 4010.1(h), Health and Safety Code.~~
~~Reference: Sections 4010.1 (o), 4012, 4013 and 4019, Health and Safety Code.~~

~~ARTICLE 4. PUMPING STATIONS~~

~~Section 64612. Water Sealed Pumps~~

~~Seal water for water sealed pumps shall meet the water quality requirements of the Domestic Water Quality and Monitoring Regulations, Title 22, California Administrative Code., Chapter 15. Adequate drainage shall be provided for disposal of used seal water.~~

NOTE: ~~Authority: Sections 208 and 4010.1(h), Health and Safety Code. Reference: Sections 4010.1 (o), 4012, 4013 and 4019, Health and Safety Code.~~

~~ARTICLE 5. WATER MAINS AND APPURTENANCES~~

~~Section 64622. Water Main Materials~~

~~(a) Water main materials shall meet the applicable standards listed in Table I.~~

~~(b) Cast iron and ductile iron pipe shall be cement mortar lined in accordance with AWWA Standard C104/A21.4-80.~~

~~(c) Steel pipe shall be protected from internal and external corrosion. Table II lists various acceptable protective coatings and linings with appropriate standards.~~

~~Table 1~~
~~Material Standards~~

~~Pipe Material~~	~~Standard~~
~~Asbestos - Cement~~	~~AWWA C400-80 or C402-77~~
~~Cast Iron~~	~~AWWA C106-75~~
~~Ductile Iron~~	~~AWWA C151/A21.51-81~~
~~Steel~~	~~AWWA C200-80~~
~~Copper~~	~~AWWA C800-66~~
~~Concrete~~	~~AWWA C300-82, C301-79, C302-74, or C303-78~~
~~Polybutylene~~	~~AWWA C902-78~~
~~Polyethylene~~	~~AWWA C901-78~~
~~Polyvinyl Chloride~~	~~AWWA C900-81~~
~~Glass Reinforced Thermosetting Resin~~	~~AWWA C950-81~~

~~Table II~~
~~Steel Pipe Coatings and Linings~~

~~Type of Coating or Lining~~	~~Standard~~
~~Cement Mortar Coating or Lining~~	~~AWWA C205-80 or Federal Specification SS-P-385a~~
~~Coat Tar Coating, Lining or Wrapping~~	~~AWWA C203-78~~
~~Asphalt Mastic Coating~~	~~Asphalt Institute M-2 CS-96~~
~~Extruded Plastic Coating~~	~~Federal Specification L-C-530B (1972)~~
~~Rubber-Alkyd Paint Coating~~	~~AWWA C204-75~~
~~Cold-Applied Tape Coating~~	~~AWWA C209-76~~
~~Coal Tar-Epoxy Coating~~	~~AWWA C210-78~~
~~Asphalt Coating and Wrapping~~	~~Standard Specifications for Public Works Construction (1973), Section 207-10.4.4~~

NOTE: ~~Authority: Sections 208 and 4010.1(h), Health and Safety Code. Reference: Sections 4010.1 (o), 4012, 4013 and 4019, Health and Safety Code.~~

~~Section 64624. Water Main Selection and Installation~~

~~(a) Steel pipe shall be selected and installed in accordance with American Water Works Association (AWWA) Manual M-11 (1964), "Steel Pipe-Design and Installation." The design shall comply with Sections 6.1 and 6.2 of the manual, except that the minimum design pressure shall be at least the maximum anticipated system pressure, but in no case less than 150 psig (1,030 kPag).~~

~~(b) Asbestos-cement, cast iron and ductile iron pipe shall be selected and installed in accordance with the standards listed in Table III.~~

~~(c) Polyvinyl chloride pipe shall be selected and installed in accordance with Appendix A of AWWA Standard C900-81.~~

~~(d) Polybutylene pipe shall be selected and installed in accordance with Appendix A of AWWA Standard C902-81~~

~~(e) Polyethylene pipe shall be selected and installed in accordance with Appendix A of AWWA Standard C901-81.~~

~~(f) Plastic pipe shall not be used in areas subject to contamination by petroleum distillates.~~

~~Table III~~
~~Pipe Selection and Installation Standards~~

~~Type of Pipe~~	~~Standards~~
~~Asbestos-Cement~~	~~AWWA C401-83, C403-78 and C603-78~~
~~Cast Iron~~	~~AWWA C600-82~~
~~Ductile Iron~~	~~AWWA C150/A21.5-81 and C600-82~~

NOTE: ~~Authority: Sections 208 and 4010.1(h), Health and Safety Code. Reference: Sections 4010.1 (o), 4012, 4013 and 4019, Health and Safety Code.~~

~~Section 64626. Layout of Water Mains~~

~~(a) Water mains should be laid out only in segmented grids and loops and should be located within streets. Dead-end water mains shall be installed only if:~~

~~(1) Looping or gridding is impractical due to topography, geology, pressure zone boundaries, unavailability of easements or locations of users; or~~

~~(2) The main is to be extended in the near future and the planned extension will eliminate the dead-end conditions.~~

NOTE: ~~Authority: Sections 208 and 4010.1(h), Health and Safety Code. Reference: Sections 4010.1 (o), 4012, 4013 and 4019, Health and Safety Code.~~

~~Section 64628. Minimum Water Main Diameter and Length of Run~~

~~(a) Water mains shall have a nominal inside diameter of at least four inches (100 mm).~~

~~(b) Dead-end water mains exceeding 1,000 feet (300 meters) in length shall be constructed of pipe with a nominal inside diameter of at least 6 inches (150mm).~~

~~(c) Dead-end water mains exceeding 2,000 feet (600 meters) in length shall be constructed of pipe with a nominal inside diameter of at least 8 inches (200 mm).~~

~~(d) The requirements of (a), (b) and (c) shall not apply to water main installations meeting one of the following criteria:~~

~~(1) The installation is designed under the direction of a qualified registered engineer to meet the requirements of Section 64566.~~

~~(2) The installation is approved by the Department prior to construction.~~

NOTE: ~~Authority: Sections 208 and 4010.1(h), Health and Safety Code. Reference: Sections 4010.1 (o), 4012, 4013 and 4019, Health and Safety Code.~~

~~Section 64630. Water Main Installation~~

~~(a) Water mains shall be installed below the frost line or shall otherwise be protected to prevent freezing.~~

~~(b) Water mains shall not have less than 30 inches (0.75 meters) of cover over the top of the pipe except where necessary to avoid underground obstructions or rocky conditions.~~

~~(c) Water mains shall be installed at least:~~

~~(1) Ten feet (3 meters) horizontally from and 1 foot (0.3 meters) higher than sanitary sewers located parallel to the main.~~

~~(2) One foot (0.3 meters) higher than sanitary sewers crossing the main.~~

~~(3) Ten feet (3 meters), and preferably 25 feet (7.5 meters), horizontally from sewage leach fields, cesspools, seepage pits and septic tanks.~~

~~(d) Separation distances specified in (c) shall be measured from the nearest edges of the facilities.~~

~~(e) Where the requirements of (c) and (d) cannot be met due to topography, inadequate right-of-way or easements or conflicts with other provisions of these regulations, lesser separation is permissible if:~~

~~(1) The water main and the sewer are located as far apart as feasible within the conditions listed above.~~

~~(2) The water main and the sewer are not installed within the same trench.~~

~~(3) The water main is appropriately constructed to prevent contamination of the water in the main by sewer leakage.~~

~~(f) Water mains shall be disinfected according to AWWA Standard C601-81 before being place in service.~~

~~(g) Installation of water mains near the following sources of potential contamination shall be subject to written approval by the Department on a case-by-case basis:~~

~~(1) Storage ponds or land disposal sites for waste water or industrial process water containing toxic materials or pathogenic organisms.~~

~~(2) Solid waste disposal sites.~~

~~(3) Facilities such as storage tanks and pipelines where malfunction of the facility would subject the water in the main to toxic or pathogenic contamination.~~

NOTE: ~~Authority: Sections 208 and 4010.1(h), Health and Safety Code. Reference: Sections 4010.1 (o), 4012, 4013 and 4019, Health and Safety Code.~~

~~Section 64632. Water Main Valve Locations~~

~~Sufficient valves shall be provided on water mains to minimize inconvenience and sanitary hazards during repairs. In general, valves on water mains of 12 inches (300 meters) can be isolated by valve closures.~~

NOTE: ~~Authority: Sections 208 and 4010.1(h), Health and Safety Code. Reference: Sections 4010.1 (o), 4012, 4013 and 4019, Health and Safety Code.~~

~~Section 64634. Water Main Valve Construction Standards~~

~~(a) Water main valves of the types listed in Table IV shall conform to the standards shown in Table IV.~~

~~(b) A valve box shall be installed over each valve stem to aid in locating and operating the valve.~~

~~Table IV~~
~~Water Main Valve Construction Standards~~

~~Type of Valve~~	~~Construction Standard~~
~~Gate Valve~~	~~AWWA C550-80~~
~~Butterfly Valve~~	~~AWWA C504-80~~
~~Ball Valve~~	~~AWWA C507-73~~
~~Swing Check Valve~~	~~AWWA C508-82~~

NOTE: ~~Authority: Sections 208 and 4010.1(h), Health and Safety Code. Reference: Sections 4010.1 (o), 4012, 4013 and 4019, Health and Safety Code.~~

~~Section 64636. Air and Vacuum Relief and Air Release Valves~~

~~(a) Vent openings for air and vacuum relief and air release valves shall be:~~

~~(1) Extended at least one foot (0.3 meters) above grade and above maximum recorded high water.~~

~~(2) Provided with a screened, downward facing vent opening.~~

~~(b) Where the requirements of (a) (1) cannot be practicably met, vent openings may be located in a subsurface chamber or pit under the following conditions:~~

~~(1) The pit is adequately drained.~~

~~(2) The pit drain is not connected by pipe or other closed conduit to a sewer or storm drain without an air gap separation.~~

NOTE: ~~Authority: Sections 208 and 4010.1(h), Health and Safety Code. Reference: Sections 4010.1 (o), 4012, 4013 and 4019, Health and Safety Code.~~

~~Section 64638. Water Main Joints~~

~~Joints and appurtenances shall safely withstand the same working pressures for which the water main is designed. Jute shall not be used as a backup gasket material.~~

NOTE: ~~Authority: Sections 208 and 4010.1(h), Health and Safety Code. Reference: Sections 4010.1 (o), 4012, 4013 and 4019, Health and Safety Code.~~

~~Section 64640. Fire Hydrants~~
~~Fire hydrant laterals shall be provided with shutoff valves.~~

NOTE: ~~Authority: Sections 208 and 4010.1(h), Health and Safety Code.~~
~~Reference: Sections 4010.1 (o), 4012, 4013 and 4019, Health and Safety Code.~~

~~Section 64642. Flushing Valves and Blowoffs~~

~~(a) A flushing valve or blowoff shall be installed at the end of each dead-end water main where stagnant conditions are likely to develop.~~

~~(b) Flushing valves and blowoffs shall be capable of establishing the minimum continuous flushing flow in the main indicated by Table V.~~

~~(c) Flushing valves and blowoffs shall not discharge to a sewer without an air gap separation.~~

~~Table V~~
~~Minimum Water Main Flushing Flow~~

~~Normal Inside Diameter~~		~~Minimum Flushing Flow~~	
~~Inches~~	~~Millimeters~~	~~Gallons/Minute~~	~~Liters/Second~~
~~2~~	~~50~~	~~25~~	~~1.5~~
~~3~~	~~75~~	~~50~~	~~3.4~~
~~4~~	~~100~~	~~100~~	~~6.3~~
~~6~~	~~150~~	~~225~~	~~14~~
~~8~~	~~200~~	~~400~~	~~25~~
~~10~~	~~250~~	~~600~~	~~38~~

NOTE: ~~Authority: Sections 208 and 4010.1(h), Health and Safety Code. Reference: Sections 4010.1 (o), 4012, 4013 and 4019, Health and Safety Code.~~

~~Section 64644. Service Connection Pipe~~

~~Service connection pipe and fittings shall be designed for cold water working pressures of not less than 150 psig (1,030 kPag). Copper tubing shall be commercial designation type K or L. Plastic tubing and fittings shall be products tested and certified as suitable for use in potable water piping systems by the National Sanitation Foundation Testing Laboratory, the Canadian Standards Association Testing Laboratory or another testing agency acceptable to the Department.~~

NOTE: ~~Authority: Sections 208 and 4010.1(h), Health and Safety Code. Reference: Sections 4010.1 (o), 4012, 4013 and 4019, Health and Safety Code.~~

ARTICLE 1. DEFINITIONS

Section 64551.10 Distribution Reservoir.

"Distribution reservoir" means any tank or other structure located within or connected to the distribution system and used to store treated/finished drinking water.

NOTE: Authority: Section 116375 Health and Safety Code.
Reference: Sections 116275 Health and Safety Code.

Section 64551.20 Distribution System.

"Distribution system" means all physical parts of the water system, including, but not limited to: Pipes, valves, pumping stations, storage tanks or reservoirs, and user service lines, that are located between the water treatment plant, or the source if there is no treatment, and the consumer's service connection.

NOTE: Authority: Section 116375, Health and Safety Code.
Reference: Sections 116275 Health and Safety Code.

Section 64551.30. Maximum Day Demand (MDD).

"Maximum day demand (MDD)" means the amount of water utilized by consumers during the highest day of use (midnight to midnight), excluding fire flow, as determined pursuant to Section 64554.

NOTE: Authority: Section 116375 Health and Safety Code.
Reference: Sections 116275 Health and Safety Code.

Section 64551.35. Peak Hour Demand (PHD).

"Peak hour demand (PHD)" means the amount of water utilized by consumers during the highest hour of use during the maximum day, excluding fire flow, as determined pursuant to Section 64554.

NOTE: Authority: Section 116375 Health and Safety Code.
Reference: Sections 116275 Health and Safety Code.

Section 64551.40. Source Capacity.

"Source capacity" means the total amount of water supply available, expressed as a flow, from all active sources permitted for use by the water system, including approved surface water, groundwater, and purchased water.

NOTE: Authority: Section 116375 Health and Safety Code.
Reference: Sections 116275 Health and Safety Code.

Section 64551.60 User Service Line.

"User service line" means the pipe, tubing, and fittings connecting a water main to an individual water meter or service connection.

NOTE: Authority: Section 116375 Health and Safety Code.
Reference: Sections 116275 Health and Safety Code.

Section 64551.70 Water Main.

"Water main" means any pipeline, except for user service lines, within the distribution system.

NOTE: Authority: Section 116375 Health and Safety Code.
Reference: Sections 116275 Health and Safety Code.

ARTICLE 1.5. WAIVERS AND ALTERNATIVES

Section 64551.100. Waivers and Alternatives.

(a) The requirements in 64552(b), 64575, and 64577 may be waived by the Department for noncommunity water systems based on the Department's review of the system's location, annual water production, operations, nature of the population served, and storage facilities.

(b) A water system that proposes to use an alternative to a requirement in this chapter shall:

(1) Demonstrate to the Department that the proposed alternative would provide at least the same level of protection to public health; and

(2) Obtain written approval from the Department prior to implementation of the alternative.

NOTE: Authority: Section 116375, Health and Safety Code.
Reference: Sections 116275 and 116535, Health and Safety Code.

ARTICLE 2. PERMIT REQUIREMENTS

Section 64552. Initial Permit for Public Water System.

(a) Each public water system applying for an initial domestic public water system permit shall submit an application that includes:

(1) A map and description of the entire existing and proposed service area, showing:

(A) The location of each water source, as well as wells that are abandoned, out-of-service, destroyed, standby, or inactive (not physically connected to the water system), together with:

1. Any valid water rights owned by the system for surface water sources, including information on any limitations or restrictions of those rights;

2. For a groundwater aquifer, the groundwater levels and drawdown patterns;

3. Permits or approvals for groundwater extraction if pumping from an adjudicated groundwater basin;

4. Existing and planned source pumping capability and distribution storage capacity for the system as a whole and for each pressure zone;

5. The calculated sustained well yields of existing wells if groundwater sources are used;

6. Permits for any waters proposed for use to offset potable water demand; and

(B) Treatment facilities and pumping plants;

(C) Distribution system piping, pressure zones, hydropneumatic tanks, and reservoirs;

(D) Valves, sample taps, and other system appurtenances;

(E) Recycled water and sewage systems;

(F) Conveyance facilities;

(G) Any flood plains in the projected service area; and

(H) The 100 year flood or highest recorded flood level, whichever is higher.

(2) The population, and number and type of residential, commercial, agricultural, and industrial service connections, in the system's projected service area;

(3) Design drawings of proposed facilities drawn to scale, showing location, size, and construction material;

(4) As-built drawings of existing facilities, drawn to scale, showing location, size, construction materials, and year of installation of any water main or other facility that has already been constructed;

(5) The estimated MDD and PHD with the methods, assumptions, and calculations used for the estimations;

(6) A source water assessment and description of each source of water proposed for use to meet the estimated MDD and information demonstrating that the sources are adequate to do so, such as, but not limited to, well pump tests, the capacities of all pumping facilities, and the hydraulic capacity of surface water treatment facilities,

(A) If the system plans to use surface water, the system shall demonstrate that it holds a valid water right to that amount of water including any allowable reductions or limitations on its availability, as stated in the water rights contract;

(B) If groundwater is to be used, the system shall demonstrate that the groundwater aquifer is sufficient, or in the case of adjudicated groundwater basins, that approval has been obtained to allow that amount of sustained withdrawal including any allowable reductions or limitations on its availability, as stated in the water rights contract;

(C) If purchased water is to be used, the system shall provide contracted amount and the hydraulic capacity at each turnout and any allowable reductions or limitations on its availability, as stated in the purchased water contract; and

(7) Information that demonstrates how the system proposes to reliably meet four hours of PHD using, but not limited to, available source capacity and distribution reservoirs.

(b) The information in subsection (a) shall be prepared by a professional civil engineer registered in the State of California with experience in water supply engineering.

NOTE: Authority: Section 116375 Health and Safety Code.
Reference: Sections 116275 and 116555, Health and Safety Code.

Section 64554. New and Existing Source Capacity.

(a) At all times, a public water system's water source(s) shall have the capacity to meet the system's maximum day demand (MDD). MDD shall be determined pursuant to subsection (b).

(1) For systems with 1,000 or more service connections, the system shall be able to meet four hours of peak hourly demand (PHD) with source capacity, storage capacity, and/or emergency source connections.

(2) For systems with less than 1,000 service connections, the system shall have storage capacity equal to or greater than MDD, unless the system can demonstrate that it has an additional source of supply or has an emergency source connection that can meet the MDD requirement.

(3) Both the MDD and PHD requirements shall be met in the system as a whole and in each individual pressure zone.

(b) A system shall estimate MDD and PHD for the water system as a whole (total source capacity and number of service connections) and for each pressure zone within the system (total water supply available from the water sources and interzonal transfers directly supplying the zone and number of service connections within the zone), as follows:

(1) If daily water usage data are available, identify the day with the highest usage during the past ten years to obtain MDD; determine the average hourly flow during MDD and multiply by a peaking factor of at least 1.5 to obtain the PHD.

(2) If no daily water usage data are available and monthly water usage data are available:

(A) Identify the month with the highest water usage (maximum month) during at least the most recent ten years of operation or, if the system has been operating for less than ten years, during its period of operation;

(B) To calculate average daily usage during maximum month, divide the total water usage during the maximum month by the number of days in that month; and

(C) To calculate the MDD, multiply the average daily usage by a peaking factor that is a minimum of 1.5; and

(D) To calculate the PHD, determine the average hourly flow during MDD and multiply by a peaking factor that is a minimum of 1.5.

(3) If only annual water usage data are available:

(A) Identify the year with the highest water usage during at least the most recent ten years of operation or, if the system has been operating for less than ten years, during its years of operation;

(B) To calculate the average daily use, divide the total annual water usage for the year with the highest use by 365 days; and

(C) To calculate the MDD, multiply the average daily usage by a peaking factor of 2.25.

(D) To calculate the PHD, determine the average hourly flow during MDD and multiply by a peaking factor that is a minimum of 1.5.

(4) If no water usage data are available, utilize records from a system that is similar in size, elevation, climate, demography, residential property size, and metering to determine the average water usage per service connection. From the average water usage

per service connection, calculate the average daily demand and follow the steps in paragraph (3) to calculate the MDD and PHD.

(c) Community water systems using only groundwater shall have a minimum of two approved sources before being granted an initial permit The system shall be capable of meeting MDD with the highest-capacity source off line.

(d) A public water system shall determine the total capacity of its groundwater sources by summing the capacity of its individual active sources. If a source is influenced by concurrent operation of another source, the total capacity shall be reduced to account for such influence. Where the capacity of a source varies seasonally, it shall be determined at the time of MDD.

(e) The capacity of a well shall be determined from pumping data existing prior to [*insert effective date of regulation*] or in accordance with subsection (f) or (g). Prior to conducting a well capacity test pursuant to subsection (g), a system shall submit the ~~following~~ information listed below to the Department for review and approval~~:~~. For well capacity tests conducted pursuant to subsection (f), the information shall be submitted to the Department if requested by the Department.

(1) The name and qualifications of the person who will be conducting the test;

(2) The proposed test's pump discharge rate, based on the design rate determined during well development and/or a step-drawdown test.

(3) A copy of a United States Geological Survey 7 ½-minute topographic map of the site at a scale of 1:24,000 or larger (1 inch equals 2,000 feet or 1 inch equals less than 2,000 feet) or, if necessary, a site sketch at a scale providing more detail, that clearly indicates;

(A) The well discharge location(s) during the test, and

(B) The location of surface waters, water staff gauges, and other production wells within a radius of 1000 feet;

(4) A well construction drawing, geologic log, and electric log, if available;

(5) Dates of well completion and well development, if known;

(6) Specifications for the pump that will be used for the test and the depth at which it will draw water from the well;

(7) A description of the methods and equipment that will be used to measure and maintain a constant pumping rate;

(8) A description of the water level measurement method and measurement schedule;

(9) For wells located in or having an influence on the aquifer from which the new well will draw water, a~~A~~ description of ~~how many of~~ the ~~system's other~~ wells' ~~will be operated while the new well is being tested and the anticipated~~ operating schedules ~~of the other wells, as well as~~ and the estimated amount of groundwater to be extracted, while the new well is tested and~~;~~ during normal operations prior to and after the new well is in operation;

(10) A description of the surface waters, water staff gauges, and production wells shown in (3)(B);

(11) A description of how the well discharge will be managed to ensure the discharge doesn't interfere with the test;

(12) A description of how the initial volume of water in the well's casing, or bore hole if there is no casing at the time, will be addressed to ensure it has no impact on the test results; and

(13) A written description of the aquifer's annual recharge.

(f) To determine the capacity of a well drilled in alluvial soils when there is no existing data to determine the capacity, a water system shall complete a constant discharge (pumping rate) well capacity test and determine the capacity as follows:

(1) Take an initial water level measurement (static water level) and then pump the well continuously for a minimum of eight hours, maintaining the pump discharge rate proposed in subsection (e)(2);

(2) While pumping the well, take measurements of the water level drawdown and pump discharge rates for a minimum of eight hours at a frequency no less than every hour;

(3) Plot the drawdown data versus the time data on semi-logarithmic graph paper, with the time intervals on the horizontal logarithm axis and the drawdown data on the vertical axis;

(4) Steady-state is indicated if the last four hours of drawdown measurements and the elapsed time yield a straight line in the plot developed pursuant to subsection (3). If steady-state is not achieved, the pump discharge rate shall be continued for a longer period of time or adjusted, with paragraphs (2) and (3) above repeated, until steady-state is achieved.

(5) Discontinue pumping and take measurements of the water level drawdown no less frequently than every 15 minutes for the first two hours and every hour thereafter for at least six hours or until the test is complete; and

(6) To complete the test, the well shall demonstrate that, within a length of time not exceeding the duration of the pumping time of the pump test, the water level has recovered to within two feet of the static water level measured at the beginning of the test or to a minimum of ninety-five percent of the total drawdown measured during the test, whichever is more stringent.

(7) The capacity of the well shall be the pump discharge rate determined by a completed test.

(g) The capacity of a well whose primary production is from a bedrock formation, such that the water produced is yielded by secondary permeability features (e.g. fractures or cracks), shall be determined pursuant to either paragraph (1) or (2) below.

(1) The public water system shall submit a report, for Department review and approval, proposing a well capacity based on well tests and the evaluation and management of the aquifer from which the well draws water. The report shall be prepared and signed by a California registered geologist with at least three years of experience with groundwater hydrology, a California licensed engineer with at least five years of experience with groundwater hydrology, or a California certified hydrogeologist. Acceptance of the proposed well capacity by the Department shall, at a minimum, be

based on the Department's review and approval of the following information presented in the report in support of the proposed well capacity:

(A) The rationale for the selected well test method and the results;

(B) The geological environment of the well;

(C) The historical use of the aquifer;

(D) Data from monitoring of other local wells;

(E) A description of the health risks of contaminants identified in a Source Water Assessment, as defined in section 63000.84 of Title 22, and the likelihood of such contaminants being present in the well's discharge;

(F) Impacts on the quantity and quality of the groundwater;

(G) How adjustments were made to the estimated capacity based on drawdown, length of the well test, results of the wells test, discharge options, and seasonal variations and expected use of the well; and

(H) The well test(s) results and capacity analysis.

(2) During the months of August, September, or October, conduct either a 72-hour well capacity test or a 10-day well capacity test, and determine the well capacity using the following procedures:

(A) Procedures for a 72 hour well capacity test:

1. For the purpose of obtaining an accurate static water level value, at least twelve hours before initiating step 2, pump the well at the pump discharge rate proposed in subsection (e)(2) for no more than two hours, then discontinue pumping;

2. Measure and record the static water level and then pump the well continuously for a minimum of 72 hours starting at the pump discharge rate proposed in (e)(2);

3. Measure and record water drawdown levels and pump discharge rate:

A. Every thirty minutes during the first four hours of pumping,

B. Every hour for the next four hours, and

C. Every four hours thereafter until the water drawdown level is constant for at least the last four remaining measurements, and;

4. Plot the drawdown and pump discharge rate data versus time data on semi-logarithmic graph paper, with the time intervals on the horizontal logarithmic axis and the drawdown and pump discharge rate data on the vertical axis.

(B) Procedures for a 10 day well capacity test:

1. For the purpose of obtaining an accurate static water level value, at least twelve hours before initiating step 2, pump the well at the pump discharge rate proposed in subsection (e)(2) for no more than two hours, then discontinue pumping;

2. Measure and record the static water level and then pump the well continuously for a minimum of 10 days starting at the pump discharge rate proposed in (e)(2);

3. Measure and record water drawdown levels and pumping rate:

A. Every thirty minutes during the first four hours of pumping,

B. Every hour for the next four hours,

C. Every eight hours for the remainder of the first four days,

D. Every 24 hours for the next five days, and

E. Every four hours thereafter until the water drawdown level is constant for at least the last four remaining measurements, and;

4. Plot the drawdown and pump discharge rate data versus time data on semi-logarithmic graph paper, with the time intervals on the horizontal logarithmic axis and the drawdown and pump discharge rate data on the vertical axis.

(C) To complete either the 72-hour or 10-day well capacity test the well shall demonstrate that, within a length of time not exceeding the duration of the pumping time of the pump test, the water level has recovered to within two feet of the static water level measured at the beginning of the well capacity test or to a minimum of ninety-five percent of the total drawdown measured during the test, whichever is more stringent. If the well recovery does not meet these criteria, the well capacity cannot be determined pursuant to subsection (g)(2) using the proposed pump rate. To demonstrate meeting the recovery criteria, the following water level data in the well shall be measured, recorded, and compared with the criteria:

1. Every 30 minutes during the first four hours after pumping stops,

2. Hourly for the next eight hours, and

3. Every 12 hours until either the water level in the well recovers to within two feet of the static water level measured at the beginning of the well capacity test or to a at least ninety-five percent of the total drawdown measured during the test, which ever occurs first.

(D) Following completion of a 72-hour or 10-day well capacity test, the well shall be assigned a capacity no more than:

1. For a 72-hour test, 25 percent of the pumping rate at the end of a completed test's pumping.

2. For a 10-day test, 50 percent of the pumping rate at the end a completed test's pumping.

(h) The public water system shall submit a report to the Department that includes all data and observations associated with a well capacity test conducted pursuant to subsection (f) or (g), as well as the estimated capacity determination methods and calculations. The data collected during pumping and recovery phases of the well capacity tests shall be submitted in an electronic spreadsheet format in both tabular and graphic ~~Excel®~~ files.

(i) An ~~The well capacity~~ assigned ~~on the basis of a~~ well capacity ~~test carried out pursuant to subsection (f), (g)(1), or (g)(2)~~ may be revised by the Department if ~~subsequent~~ pumping data collected during normal operations indicates that the assigned well capacity ~~test results were~~ was not representative of the actual well capacity.

(j) If directed by the Department to do so, based on adverse conditions that may lead or may have led to a regional aquifer's inability to meet a water system's demand on such an aquifer, the water system shall submit a report to the Department that includes regional aquifer recharge estimates and a water balance analysis. The report shall be prepared and signed by a California registered geologist with at least three years of experience with groundwater hydrology, a California licensed engineer with at least five years of experience with groundwater hydrology, or a California certified hydrogeologist.

(k) The source capacity of a surface water supply or a spring shall be the lowest anticipated daily yield based on adequately supported and documented data.

(l) The source capacity of a purchased water connection between two public water systems shall be included in the total source capacity of the purchaser if the purchaser has sufficient storage or standby source capacity to meet user requirements during reasonable foreseeable shutdowns by the supplier.

NOTE: Authority: Section 116375, Health and Safety Code.
Reference: Sections 116275, 116540, and 116555, Health and Safety Code.

Section 64556. Permit Amendments.

(a) An application for an amended permit shall be submitted to the Department prior to any of the following:

(1) Addition of a new distribution reservoir (100,000 gallon capacity or greater) to the distribution system;

(2) Modification or extension of an existing distribution system using an alternative to the requirements in this chapter;

(3) Modification of the water supply by:

A. Adding a new source;

B. Changing the status of an existing source (e.g., active to standby); or

C. Changing or altering a source, such that the quantity or quality of supply could be affected;

(4) Any addition or change in treatment, including:

A. Design capacity; or

B. Process;

(5) Expansion of the existing service area (by 20% or more of the number of service connections specified in the most recent permit or permit amendment);

(6) Consolidation with one or more other water systems;

(7) Change in regulatory jurisdiction;

(8) Change in type of public water system;

(9) Obtaining a water quality standard exemption from the Department;

(10) Obtaining a secondary standard waiver from the Department;

(11) Proposal for modifications of existing recreational uses on a water supply reservoir;

(12) Request for a hand washing exclusion by a transient noncommunity water system, pursuant to section 116282 of the Health and Safety Code; or

(13) Proposal for offsetting domestic water needs with an unapproved water supply.~~; or~~

~~(14) Change in system ownership.~~

(b) A water system shall submit an application to the Department if it has been notified by the Department that changes to the water system require an amended permit based on the Department's review of system operations, source type and capacity, geographical location, system size, and distribution system complexity.

(c) Except as set forth in subsections(a) and (b) any modifications or extensions to an existing distribution system may be made without applying for and receiving an amended domestic water supply permit provided the modifications comply with all of the requirements of this chapter.

NOTE: Authority: Section 116375 Health and Safety Code.
Reference: Sections 116275 and 116535 Health and Safety Code.

Section 64558. Source Capacity Planning Study.

(a) If directed by the Department to do so based on its determination that there is an existing or potential problem with the system's source capacity or a proposed expansion pursuant to section 64556(a)(5), a water system shall submit a Source Capacity Planning Study (Study) containing the following information:

(1) The anticipated growth of the water system over a projected period of at least ten years in terms of the population and number and type of residential, commercial, and industrial service connections to be served by the water system.

(2) Estimates of the amount of water needed to meet the total annual demand and the MDD over the projected ten-year growth period (projected system demand). Methods, assumptions, and calculations used to estimate the projected system demand shall be included.

(3) A map and description of the entire existing and proposed service area, showing:

(A) The location of each water source, including wells that are abandoned, out-of-service, destroyed, standby, or inactive;

1. Any valid water rights owned by the system for surface water sources, including information on any limitations or restrictions of those rights;

2. For a groundwater aquifer, the groundwater levels and drawdown patterns;

3. Permits or approvals for groundwater extraction if pumping from an adjudicated groundwater basin;

4. Existing and planned source pumping capability and distribution storage capacity for the system as a whole and for each pressure zone;

5. The calculated sustained well yields of existing wells if groundwater sources are used;

6. Permits, if required, for any waters proposed for use to offset potable water demand; and

7. A Source Water Assessment for each potable water source.

(B) Distribution system piping, pressure zones, hydropneumatic tanks, and reservoirs;

(C) Valves, sample taps, flow meters, unmetered service connections, and other system appurtenances;

(D) Conveyance facilities;

(E) Any flood plains in the projected service area; and

(F) The 100 year flood or highest recorded flood level, whichever is higher.

(b) If directed by the Department to do so based on its determination that a study is out of date, a water system shall update and submit the Study to the Department.

(c) Water systems that have submitted an Urban Water Management Plan to the Department of Water Resources pursuant to Water Code Part 2.6 commencing with section 10610, may submit a copy of that report in lieu of some or all of the requirements of subsection (a) to the extent such information is included in the plan.

NOTE: Authority: Section 116375 Health and Safety Code.

Reference: Sections 116275 and 116555, Health and Safety Code.

ARTICLE 3. WATER SOURCES

Section 64560. New Well Siting, Construction, and Permit Application.

(a) To receive a new or amended domestic water supply permit for a proposed well, the water system shall provide the following information to the Department in the technical report as part of its permit application:

(1) A source water assessment as defined in Section 63000.84 for the proposed site;

(2) Documentation demonstrating that a well site control zone with a 50-foot radius around the site can be established for protecting the source from vandalism, tampering, or other threats at the site by water system ownership, easement, zoning, lease, or an alternative approach approved by the Department based on its potential effectiveness in providing protection of the source from contamination;

(3) Design plans and specifications for the well; and

(4) Documentation required for compliance with the California Environmental Quality Act (CEQA).

(b) After the Department has provided written or oral approval of the initial permit amendment application and the water system has constructed the well, the water system shall submit the following additional materials for its permit application:

(1) A copy of the well construction permit if required by the county or local agency;

(2) Department of Water Resources well completion report;

(3) A copy of any pump tests required by the Department;

(4) Results of all required water quality analyses; and

(5) As-built plans.

(c) Each new public water supply well shall:

(1) As a minimum, be constructed in accordance with the community water system well requirements in California Department of Water Resources Bulletins 74-81 and 74-90;

(2) Be constructed in accordance with American Water Works Association (AWWA) Standard A100-06 (Water Wells);

(3) Be installed such that:

(A) All equipment is accessible for operation, maintenance, and removal;

(B) Protection is provided against flooding;

(C) The wellhead terminates a minimum of 18 inches above the finished grade;

(D) Wellhead and electrical controls are not installed in vaults;

(E) The well is equipped with:

1. Fittings and electrical connections to enable chlorination facilities to be readily installed;

2. A non-threaded down-turned sampling tap located on the discharge line between the wellhead and the check valve. Sampling taps used for obtaining samples for bacteriological analysis shall not have a screen, aerator, or other such appurtenance;

(F) Provisions are made to allow the well to be pumped to waste with a waste discharge line that is protected against backflow.

NOTE: Authority: Section 116375 Health and Safety Code.
Reference: Sections 116275, 116530, and 116535 Health and Safety Code.

Section 64560.5. Well Destruction.

Destruction of a public drinking water supply well shall be in accordance with the California Department of Water Resources Bulletins 74-81 and 74-90.

NOTE: Authority: Section 116375 Health and Safety Code.
Reference: Sections 116275 and 116535 Health and Safety Code.

Section 64561. Source Flow Meters.

Each water system shall:

(a) Except for inactive sources, install a flow meter at a location between each water source and the entry point to the distribution system;

(b) Meter the quantity of water flow from each source, and record the total monthly production each month.

NOTE: Authority: Section 116375 Health and Safety Code.
Reference: Sections 116275 and 116555, Health and Safety Code.

Section 64563. Procedures for Determining Source Capacity

(a) The source capacity of a well shall be based on the sustained yield of the well or pump output, whichever is less.

(1) Sustained yield of a well shall be determined from a pump test or from historical records.

(2) The conditions of a pump test used to determine sustained yield of a well shall be acceptable to the Department and shall include:

(A) Constant rate of water discharge from the well during the pump test

(B) Continuation of the pump test until at least four consecutive measurements of water level drawdown in the well and the elapsed time since the beginning of the pump test yield a straight line when the drawdown is plotted against the logarithm of the elapsed time.

(b) The source capacity of a surface water supply or a spring shall be the lowest anticipated daily yield based on adequately supported and documented data.

(c) The source capacity of a purchased water connection between two public water systems shall be included in the total source capacity of the purchaser if the purchaser has sufficient storage or standby source capacity to meet user requirements during reasonable foreseeable shutdowns by the supplier.

(d) Where the capacity of a source varies seasonally, the source capacity shall be the capacity at the time of maximum day demand.

NOTE: Authority: Sections 208 and 4010.1(h), 100275 and 116275(h), Health and Safety Code.
Reference: Sections 4010.1 (o), 4012, 4013 and 4019 116275(o), 116530, and 116535, Health and Safety Code.

ARTICLE 4. MATERIALS AND INSTALLATION OF WATER MAINS AND APPURTENANCES

Section 64570. Materials and Installation.

(a) All newly installed water mains shall comply with the materials and installation standards of the American Water Works Association pursuant to tables 64570-A and 64570-B.

Table 64570-A
Materials Standards for Water Mains

Type of Material	*Diameter of Main*	*Applicable Standard*
PVC	4 in. through 12 in.	C900-97
PVC	14 in. through 48 in.	C905-97
Polyethylene (HDPE)	4 in. through 63 in.	C906-99
Fiberglass	All sizes	C950-01
Ductile Iron	All sizes	C150/A21.50-02
Ductile Iron, Centrifugally cast	All sizes	C151/A21.51-02
Steel	6 inches and larger	C200-97
Copper	All sizes	C800-05
Concrete		
Reinforced steel-cylinder	All sizes	C300-04
Prestressed steel-cylinder	All sizes	C301-99, C304-99
Reinforced noncylinder	All sizes	C302-04
Bar wrapped/steel cylinder	All sizes	C303-02
PVC, Molecularly oriented polyvinyl chloride – All sizes		C909-02

Table 64570-B
Installation Standards for Water Mains

Type of Installation	*Applicable Standard*

Steel Pipe-Design and Installation	M-11 (2004)
Ductile-Iron Water Mains and Their Appurtenances	C600-05
Underground Installation of PVC Pressure Pipe and Fittings	C605-05
Concrete Pressure Pipe	M9(1995)

(b) Water mains shall:

(1) Be installed below the frost line or be otherwise protected to prevent freezing; and

(2) Be protected against crushing under loads that could pass above the installation.

NOTE: Authority: Section 116375 Health and Safety Code.
Reference: Sections 116275 and 116535 Health and Safety Code.

Section 64572. Water Main Separation.

(a) New water mains and new supply lines shall not be installed in the same trench as, and shall be at least 10 feet horizontally from and one foot vertically above, any parallel pipeline conveying:

(1) Untreated sewage,
(2) Primary or secondary treated sewage,
(3) Disinfected secondary-2.2 recycled water (defined in section 60301.220),
(4) Disinfected secondary-23 recycled water (defined in section 60301.225), and
(5) Hazardous fluids such as fuels, industrial wastes, and wastewater sludge.

(b) New water mains and new supply lines shall be installed at least 4 feet horizontally from, and one foot vertically above, any parallel pipeline conveying:

(1) Disinfected tertiary recycled water (defined in section 60301.230), and
(2) Storm drainage.

(c) New supply lines conveying raw water to be treated for drinking purposes shall be installed at least 4 feet horizontally from, and one foot vertically below, any water main.

(d) If crossing a pipeline conveying a fluid listed in subsection (a) or (b), a new water main shall be constructed ~~perpendicular~~no less than 45-degrees to and at least one foot above that pipeline. No connection joints shall be made in the water main within eight horizontal feet of the fluid pipeline.

(e) The vertical separation specified in subsections (a), (b), and (c) is required only when the horizontal distance between a water main and pipeline is less than ten feet ~~or less~~.

(f) New water mains shall not be installed within 100 horizontal feet of the nearest edge of any sanitary landfill, wastewater disposal pond, or hazardous waste disposal site, or within 25 horizontal feet of the nearest edge of any cesspool, septic tank, sewage leach field, seepage pit, underground hazardous material storage tank, or groundwater recharge project site.

(g) The minimum separation distances set forth in this section shall be measured from the nearest outside edge of each pipe barrel.

(h) With Department approval, newly installed water mains may be exempt from the separation distances in this section, except subsection (f), if the newly installed main is:

(1) less than 1320 linear feet,
(2) replacing an existing main, installed in the same location, and ~~is~~ has a diameter no greater than six inches more than ~~of~~ the diameter of ~~same size as~~ the main it is replacing, and
(3) installed in a manner that minimizes the potential for contamination, including, but not limited to:
    (A) sleeving the newly installed main, or

(B) utilizing upgraded piping material

NOTE: Authority: Section 116375 Health and Safety Code.
Reference: Section 116275 Health and Safety Code.

Section 64573. Minimum Water Main Size for Community Water Systems.

Newly installed water mains in a community water system shall have a nominal diameter of at least four inches.

NOTE: Authority: Section 116375 Health and Safety Code.
Reference: Sections 116275 Health and Safety Code.

Section 64575. Flushing.

(a) A flushing valve or blowoff shall be provided at the end of each newly installed dead-end water main. Fire hydrants meeting the criteria of this section may be considered flushing valves.

(b) Flushing valves and blowoffs shall not discharge to a sanitary sewer without an air gap separation between the sewer and the valve or blowoff.

(c) The flushing velocity in the main shall not be less than 2.5 ft/s unless it is determined that conditions do not permit the required flow to be discharged to waste.

(d) Newly installed flushing valves and blowoffs shall be designed to maintain the minimum continuous flushing flows as indicated below to produce a minimum velocity of 2.5ft/s in commonly used sizes of pipe.

Table 64575-A. Minimum Flushing Flows for Different Size Water Mains.

Nominal Main Size *Diameter (inches)*	**Minimum Flushing Flow** *(gallons per minute)*
2	25
3	50
4	100
6	225
8	400
10	600
12	900
14	1200
16	1600

NOTE: Authority: Section 116375 Health and Safety Code.
Reference: Sections 116275 and 116535 Health and Safety Code.

Section 64576. Air-Release, Air Vacuum, and Combination Valves.

Each new air-release, air vacuum, or combination valve, and any such valve installed to replace an existing valve shall be:

(a) Installed such that its vent opening is above grade, ~~and~~ above the calculated 100-year flood water level, ~~or~~and, if recorded data are available, above the highest recorded water level;

(b) Readily accessible for inspection, maintenance and replacement;

(c) Constructed and designed to prevent exposure to rainwater or runoff, vandalism, and birds, insects, rodents, or other animals;

(d) Fitted with a downward-facing screened vent or a domed and screened cap; and

(e) Installed pursuant to American Water Works Association Standard C-512-04 and Manual M51 (2001).

NOTE: Authority: Section 116375 Health and Safety Code.
Reference: Sections 116275 and 116535 Health and Safety Code.

Section 64577. Isolation Valves.

As a minimum, isolation valves shall be installed on all new water mains within the distribution system as follows:

(a) No farther than 1,320 linear feet apart on all mains having a diameter of 12 inches or less.

(b) At each tee or crossing connection between mains that have a diameter of 12 inches or less, within 100 feet of the tee or crossing connection with the primary main.

(c) Between the water main and each fire hydrant served by the main.

NOTE: Authority: Section 116375 Health and Safety Code.
Reference: Sections 116275 and 116535 Health and Safety Code.

Section 64578. Water Main Valve Construction.

Newly installed valves constructed on water mains shall comply with the following:

(a) A valve box shall be installed over each buried valve stem to aid in locating and operating the valve.

(b) For valves buried in trenches greater than five feet below the finished grade, either a valve stem riser to permit the use of a normal key or a notation on valve records indicating that a long key will be required shall be provided.

NOTE: Authority: Section 116375 Health and Safety Code.
Reference: Sections 116275 and 116535 Health and Safety Code.

ARTICLE 5. DISINFECTION REQUIREMENTS

Section 64580. Disinfection of New or Repaired Mains.

Prior to use, newly installed water mains, or water mains that have been taken out of service for maintenance or repair, shall be disinfected and sampled for bacteriological quality in accordance with American Water Works Association Standard C651-05. Samples from new mains shall be negative for coliform bacteria prior to the new main(s) being placed into service. ~~Repaired mains may be placed into service prior to receipt of bacteriological sampling results if a pressure of 20 psi or more was maintained throughout the repair.~~

NOTE: Authority: Section 116375 Health and Safety Code.
Reference: Sections 116275 and 116535 Health and Safety Code.

Section 64582. Disinfection of Reservoirs.

A newly-installed distribution reservoir or distribution reservoir that has been taken out of service for repair or inspection shall be disinfected and sampled for bacteriological quality in accordance with the American Water Works Association Standard C652-02. If the results of the bacteriological sampling are positive for coliform bacteria, the reservoir shall be resampled for bacteriological quality and the test results shall be submitted to the Department for review and approval before the reservoir is placed into service.

NOTE: Authority: Section 116375 Health and Safety Code.
Reference: Sections 116275 and 116535 Health and Safety Code.

Section 64583. Disinfection of Wells.

A new or repaired well, or a well that has not been in operation for more than three months shall be sampled for bacteriological quality prior to use. If the results of the bacteriological sampling are positive for coliform bacteria, the well shall be disinfected in accordance with the American Water Works Association C654-03, and resampled for bacteriological quality and the test results shall be submitted to the Department for review and approval before the well is placed into service.

NOTE: Authority: Section 116375 Health and Safety Code.
Reference: Sections 116275 and 116535 Health and Safety Code.

ARTICLE 6. DISTRIBUTION RESERVOIRS

Section 64585. Design and Construction.

(a) Each distribution reservoir shall meet the following:

(1) Any reservoir coatings or linings shall be installed in accordance with manufacturer's instructions;

(2) Vents and other openings shall be constructed and designed to prevent the entry of rainwater or runoff, and birds, insects, rodents, or other animals; ~~and~~

(3) At least one sampling tap shall be available to enable representative sampling of the water in the reservoir that will be entering the distribution system; the tap shall be protected against freezing, if necessary~~.~~; and

(4) A reservoir shall not be designed, constructed, or used for any activity that creates a contamination hazard.

(b) The water supplier shall submit to the Department for review the design drawings and specifications for each proposed distribution reservoir prior to its construction. Each new distribution reservoir shall be:

(1) If it is a tank, constructed in accordance with American Water Works Association (AWWA) standards as follows: AWWA D-100-05 (Welded Steel Tanks for Water Storage), D-102-03 (Coating Steel Water-Storage Tanks), D-103-97 (Factory-Coated Bolted Steel Tanks for Water Storage), D-110-04 (Wire-and Strand-Wound, Circular, Prestressed Concrete Water Tanks), and D-120-02 (Thermosetting Fiberglass-Reinforced Plastic Tanks);

(2) Constructed of an impervious material that prevents the movement of water into or out of the reservoir;

(3) Covered with

(A) A rigid structural roof made of impervious material that prevents the movement of water or other liquids into or out of the reservoir; or

(B) A floating cover designed, constructed, and maintained in conformance with the AWWA California-Nevada Section's "Reservoir Floating Cover Guidelines" (April 1999), AWWA Manual M25 (2000), and AWWA D130-02 (Flexible-Membrane Materials for Potable Water Applications).

(4) Equipped with at least one separate inlet and outlet (internal or external), and designed to minimize short-circuiting and stagnation of the water flow through the reservoir;

(5) Equipped with drainage facilities that allow the tank to be drained and all residual sediment removed, and an overflow device. The reservoir drainage facilities and overflow device shall not be connected directly to a sewer or storm drain and shall be free of cross-connections;

(6) Equipped with controls to maintain and monitor reservoir water levels;

(7) Equipped to prevent access by unauthorized persons;

(8) Designed to allow authorized access and adequate lighting of reservoir interior for inspections, cleaning or repair;

(9) Equipped with isolation valves, and designed and operated ~~a by-pass line sized~~ to allow continued distribution of water when ~~to enable~~ the reservoir is ~~to be~~ removed from service. The isolation valves shall be located within 100 feet of the

reservoir. For a reservoir used to meet CT requirements of chapter 17 (Surface Water Treatment), ~~the~~ bypass lines shall be blind-flanged closed during normal operations;

(10) Designed and constructed to prevent the entry of surface runoff, subsurface flow, or drainage into the reservoir;

(11) Designed to prevent corrosion of the interior walls of the reservoir;

(12) For a subsurface reservoir,

(A) Protected against flooding (both reservoir and vents);

(B) Equipped with underdrain facilities to divert any water in proximity to the reservoir away from the reservoir;

(C) Sited a minimum of 50 feet horizontally from a sanitary sewer and 100 feet horizontally from any other waste facilities and any force main;

(D) Constructed so as to have the reservoir bottom located above the highest anticipated groundwater level, based on a site investigation that includes actual measurements of the groundwater level during peak rainfall periods; extraction wells shall not be used to influence the highest anticipated groundwater level;

(E) Provided with a minimum of two groundwater level monitoring wells drilled to a depth at least 20 feet below the reservoir bottom and sited within 100 feet and on opposite sides (upgradient and downgradient) of the reservoir; and

(F) If the roof is to be buried and have a function (e.g., recreation, landscape, parking) in addition to covering the reservoir:

1. Designed and constructed pursuant to AWWA D-110-04 (Wire-Strand-Wound, Circular, Prestressed Concrete Water Tanks);

2. Equipped with an impervious connection, such as a pvc waterstop, between the wall and buried roof; and

3. Watertight, sloped for drainage and coated with a damp proofing material.

NOTE: Authority: Section 116375 Health and Safety Code.
Reference: Sections 116275 and 116535 Health and Safety Code.

ARTICLE ~~1~~ 7. ADDITIVES ~~REQUIREMENTS~~

Section 64590. ~~64700~~. Direct Additives.

~~(a)~~No chemical or product shall be added to drinking water by a water supplier ~~as part of the treatment process after January 1, 1994~~ unless the chemical or product ~~has been tested and~~ is certified as meeting the specifications of NSF International/American National Standard Institute~~/NSF International National Sanitation Foundation Standard 60~~, (NSF/ANSI~~/NSF~~) 60- 2005~~, as amended October, 1988~~ (Drinking Water Treatment Chemicals—Health Effects) or more recent version of NSF/ANSI~~/NSF~~ 60. Certification shall be from an ANSI accredited product certification organization whose certification system includes, as a minimum, the following criteria for ensuring the chemical or product meets NSF/ANSI~~/NSF~~ Standard 60. ~~This requirement shall be met under testing conducted by a product certification organization accredited for this purpose by the American National Standards Institute.~~

(a) Annual product testing,
(b) Annual facility inspections,
(c) Annual quality assurance and quality control review,
(d) Annual manufacturing practice reviews, and
(e) Annual chemical stock inspections.

~~(b)Any contract for the purchase of chemicals or products which was signed by a public water system and which was effective prior to January 1, 1994 shall be exempt from the provisions of subsection (a) until January 1, 1995.~~

NOTE: Authority cited: Section 116375 ~~4023.3~~, Health and Safety Code. Reference: Sections 116275 and 116550 ~~4021~~, Health and Safety Code.

Section 64591. Indirect Additives.

(a) Except as provided in Section 64593 or where a more stringent statutory requirement exists, after [Insert the effective date of regulation], a water system shall not use any chemical, material, lubricant, or product in the production, treatment or distribution of drinking water that will result in its contact with the drinking water including process media (carbon, sand), protective materials (coatings, linings, liners), joining and sealing materials (solvent cements, welding materials, gaskets, lubricating oils), pipes and related products (pipes, tanks, fittings), and mechanical devices used in treatment/transmission/distribution systems (valves, chlorinators, separation membranes) that has not been tested and certified as meeting the specifications of NSF International/American National Standard Institute~~/NSF International~~ (NSF/ANSI~~/NSF~~) 61-2005 / Addendum 1.0-2006 (Drinking Water System Components—Health Effects) or a more recent version of NSF/ANSI~~/NSF~~ 61. This requirement shall be met under testing conducted by a product certification organization accredited for this purpose by the American National Standards Institute.

(b) If a treatment chemical is generated on site,

(1) No equipment used in the generation process shall be in contact with a drinking water, or a chemical to be applied to drinking water, after [Insert the effective date of regulation], unless the equipment has been tested and certified as meeting the specifications of NSF International/American National Standard Institute~~/NSF International~~ (NSF/ANSI~~/NSF~~) Standard 61-2005/Addendum 1.0-2006 (Drinking Water System Components—Health Effects) or a more recent version of NSF/ANSI~~/NSF~~ 61. This requirement shall be met under testing conducted by a product certification organization accredited for this purpose by the American National Standards Institute; and

(2) No input chemical used in the generation process shall be in contact with a drinking water after [Insert the effective date of regulation] unless the chemical meets the requirements of section 64590.

(c) Any chemical used to clean on-line or off-line drinking water treatment facilities that may subsequently come into contact with drinking water to be distributed to the public shall meet the requirements of section 64590.

(d) Any contract for the purchase of chemicals, materials, or products that was signed by a public water system and effective prior to [Insert the effective date of regulation] shall be exempt from the provisions of subsections (a) and (b) until [Insert the date ~~six~~twelve months following the effective date of regulation].

NOTE: Authority cited: Section 116375 ~~4023.3~~, Health and Safety Code. Reference: Sections 116275 and 116535 ~~4021~~, Health and Safety Code.

Section 64593. ~~64710~~. ~~Exception.~~ Use of Uncertified Chemicals, Materials or Products.

(a) A water supplier may use a chemical, material or product that has not been certified pursuant to ~~Section 64700 or Section 64705~~sections 64590 or 64591 if the chemical, material or product is in the process of being tested and certified and there are no certified alternatives.

(b) Prior to use of an uncertified chemical, material or product, the water supplier shall provide the Department with an explanation of the need for the chemical, material or product; the date that the chemical, material or product was submitted for testing; the name of the accredited product certification organization conducting the testing; and a statement that certified alternatives are not available.

(c) Unless directed otherwise by the Department to ensure a pure and wholesome drinking water supply, a water supplier may use the following chemicals, materials, or products that have not been and are not in the process of being certified pursuant to section 64590 or 64591:

(1) a material or product previously approved by the Department for use or installation on or before [Insert the effective date of the regulation];

(2) a material or product constructed of components meeting the requirements of sections 64590 and 64591;

(3) chemical by-products necessary for meeting drinking water standards, such as sodium hypochlorite for disinfection, generated by chemicals certified pursuant to section 64590 or 64591; and

(4) atmospheric air and small parts, such as probes, sensors, wires, nuts, bolts, and tubing for which there are no certified alternatives.

NOTE: Authority cited: Section ~~4023.3~~ 116375, Health and Safety Code. Reference: Sections 116275 and 116535 ~~4021~~, Health and Safety Code.

ARTICLE 8. DISTRIBUTION SYSTEM OPERATION

Section 64600. Water System Operations and Maintenance Plan.

(a) If directed by the Department to do so based on an identified deficiency in the system's operations, a water system shall develop and submit a Water System Operations and Maintenance Plan (Plan); the water system shall include those elements in the following list that are deemed by the Department to be relevant to the deficiency:

(1) The operations and maintenance schedule for each unit process for each treatment plant that treats an approved surface water;

(2) The operations and maintenance schedule for each groundwater source and unit process;

(3) The schedule and procedure for flushing dead end mains, and the procedures for disposal of the flushed water including dechlorination;

(4) The schedule for routine inspection of reservoirs, and the procedures for cleaning reservoirs;

(5) The schedule and procedures for inspecting, repairing, and replacing water mains;

(6) The plan and procedures for responding to water supply emergencies;

(7) The plan and procedures for responding to consumer complaints;

(8) The schedule and procedures for testing backflow prevention assemblies;

(9) The schedule and procedures for routine exercising of water main valves;

(10) The schedule and program for maintenance and calibration of source flow meters and other online instruments used to determine the quality or quantity of water;

(11) The qualifications and training of operating personnel;

(12) The program for ~~biofilm~~ control of biological organisms on the interior walls of ~~in~~ water mains; and

(13) For an underground reservoir with a buried roof designed for a function in addition to covering the reservoir, a comprehensive routine inspection and monitoring plan to ensure that there is no contamination of the reservoir as a result of that additional function.

(b) Each water system that has prepared a Plan pursuant to subsection (a) shall operate in accordance with its Department-approved Plan.

(c) Each water system that has prepared a Plan pursuant to subsection (a) shall update the Plan at least once every five years and, in addition, following any change in the method of treatment or any other modification to the system requiring a change in the systems operations and maintenance.

NOTE: Authority: Section 116375 Health and Safety Code.
Reference: Sections 116275 and 116535 Health and Safety Code.

Section 64602. Minimum Pressure.

(a) Each distribution system shall be operated in a manner to assure that the minimum operating pressure in the water main at the user service line connection throughout the distribution system is not less than 20 pounds per square inch at all times.

(b) Each new distribution system that expands the existing system service connections by more than 20 percent or that may otherwise adversely affect the distribution system pressure shall be designed to provide a minimum operating pressure throughout the new distribution system of not less than 40 pounds per square inch at all times excluding fire flow.

NOTE: Authority: Section 116375, Health and Safety Code.
Reference: Sections 116275, 116535 and 116555, Health and Safety Code.

Section 64604. Preparation and Maintenance of Records.

(a) Each public water system subject to this chapter shall prepare:

(1) "As built" plans, maps, and drawings of all new water system facilities including updated information for all existing facilities in the same location or connected to the new facilities. The plans, maps, and drawings shall be clear and legible and shall include the location, size, construction material, and year of installation of each new water main or other facility.

(2) A schematic drawing or map showing the location of each water source, treatment facility, pumping plant, reservoir, water main and isolation valve.

(b) The plans, drawings, and maps prepared pursuant to subsection (a) shall be updated as changes occur, and maintained until replaced or superseded by updated plans or drawings. The most current plans, drawings, and maps shall be available for Department review.

(c) Results of laboratory analyses of samples taken pursuant to sections 64580, 64582, and 64583, records of flushing of mains; and records of reservoir inspections and cleaning shall be maintained for at least three years.

NOTE: Authority: Section 116375, Health and Safety Code.
Reference: Sections 116275, 116450 and 116535, Health and Safety Code.

~~CHAPTER 18. DRINKING WATER ADDITIVES~~

CHAPTER 17

ARTICLE 2. TREATMENT REQUIREMENTS, WATERSHED PROTECTION REQUIREMENTS, AND PERFORMANCE STANDARDS

Section 64654. Disinfection.

(a) All approved surface water utilized by a supplier shall be provided with continuous disinfection treatment sufficient to insure that the total treatment process provides inactivation of Giardia cysts and viruses, in conjunction with the removals obtained through filtration, to meet the reduction requirements specified in section 64652(a).

(b) Disinfection treatment shall comply with the following performance standards:

(1) Water delivered to the distribution system shall not contain a disinfectant residual of less than 0.2 mg/l for more than four hours in any 24 hour period.

(2) The residual disinfectant concentrations of samples collected from the distribution system shall be detectable in at least 95 percent of the samples taken each month, during each and every two consecutive months that the system serves water to the public, except as provided in subsection (c). At any sample point in the distribution system, the presence of heterotrophic plate count (HPC) at concentrations less than or equal to 500 colony forming units per milliliter shall be considered equivalent to a detectable disinfectant residual.

(c) Paragraph (b)(2) shall not apply to suppliers serving fewer than 500 persons provided:

(1) The system is in compliance with 17 CCR sections 7583 through 7605, and with 22 CCR sections ~~64566~~64602, ~~and 64630~~64570(b); 64572, and 64580, and

(2) The supplier has no means for having a sample transported and analyzed for HPC by a certified laboratory under the appropriate time and temperature conditions and

(3) the supplier is providing adequate disinfection in the distribution system.

(d) No exemptions from the requirement in paragraph (b)(1) are permitted.

Note: Authority cited: Sections 100275 and 116375, Health and Safety Code. Reference: Sections 116270, 116275, 116365, 116375, 116385, 116390, 116400, 116525, 116530, 116535, 116540, 116550, 116555, 116625, 116735 and 116750, Health and Safety Code.

ARTICLE 4. DESIGN STANDARDS

Section 64658. New Treatment Plants.

(a) Suppliers which propose to construct new filtration and disinfection treatment facilities or to modify or make additions to existing treatment facilities which require permit approval from the Department pursuant to Health and Safety Code sections 4011 through 4016 shall submit an engineering report to the Department describing how the proposed new treatment facilities will be designed to comply with the treatment, design, performance and reliability provisions required pursuant to this chapter. Modifications requiring permit approval include those that have a significant effect on plant performance, change the plant design rating or capacity, or change a major treatment process.

(b) All new filtration and disinfection facilities shall be designed and constructed to comply with the following criteria:

(1) Achieve an average daily effluent turbidity goal of 0.2 NTU when using conventional, direct, and diatomaceous earth filtration plants.

(2) Be free of structural and sanitary hazards.

(3) Protect against contamination by backflow.

(4) Meet the capacity and pressure requirements prescribed in 22 CCR sections ~~64562~~64554 and ~~64566~~64602.

(5) Provide flow measuring and recording equipment.

(6) Take into consideration the effects of events such as earthquakes, fires, floods, freezing, and sabotage that are reasonably foreseeable.

(7) Provide reasonable access for inspection, maintenance, and monitoring of all unit processes.

(8) Provide for filter-to-waste for each filter unit or addition of coagulant chemicals to the water used for backwashing.

(9) Provide backwash rates and surface or subsurface wash facilities using air, water or a combination thereof to clean the filter after use to its original condition.

(10) Provide solids removal treatment for filter backwash water if it is recycled into the treatment process. Recycled backwash water shall be returned to the headworks of the treatment plant.

(11) Provide for the future addition of pretreatment facilities in the design of direct filtration, slow sand, or diatomaceous earth filtration plants.

(12) Provide disinfection equipment sized for the full range of flow conditions expected and capable of feeding accurately at all flow rates.

(13) Provide for treatment plant operation without frequent shutdowns and startups or rapid changes in filtration rates.

(c) Whenever a coagulation process is used, the process selection shall be based on pilot plant or laboratory scale (jar test) or equivalent results that demonstrate effectiveness of the coagulant chemicals over the full range of water quality conditions expected.

Note: Authority cited: Sections ~~208~~100275 and ~~4023.3~~116375, Health and Safety Code. Reference: Sections ~~4010~~116270, ~~4010.1~~116275, ~~4011~~116525, ~~4012~~116530, ~~4013~~116535, ~~4014~~116540, ~~4016~~116550, ~~4023.1~~116365, ~~4023.3~~116360, ~~4024~~116385, ~~4025~~116390, ~~4026.4~~116400, ~~4031~~116535 and ~~4039~~116735, Health and Safety Code.