CROSS-CONNECTION CONTROL PLAN

SANTA CLARITA VALLEY WATER AGENCY

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1.0 Definitions

Air Gap Separation or "AG": A physical separation between the free-flowing discharge end of a potable water supply pipeline and an open or non-pressure receiving vessel. An approved air gap shall be at least twice the diameter of the supply pipe, measured vertically above the overflow rim of the receiving vessel, in no case less than 1 inch (2.54 cm).

Agency, SCVWA, or Water Supplier: The Santa Clarita Valley Water Agency, the public water system serving the Santa Clarita Valley. These terms are used interchangeably throughout this Plan.

Approved Backflow Prevention Assembly: Backflow prevention assemblies approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California, or by ASSE International Standards and marked with 1YT.

Approved Water Supply: A water supply whose potability is approved by the State Water Board or the Health Agency, including the potable water distribution system supplied by SCVWA.

Auxiliary Water Supply: Any water supply on or available to the premises other than the approved water supply. These auxiliary waters may include water from another purveyor's water supply that has not been approved, or any natural source such as a well, spring, river, stream, or harbor, which may be objectionable and constitute an unacceptable water source.

Backflow: The undesirable reversal of flow of water or mixtures of water and other liquids, gases or other substance into the distribution pipes of the potable supply of water from any source or sources. The two types of backflows are backpressure and back siphonage.

> ***Backpressure*:** Any elevation of pressure in the downstream piping system (by pump, elevation of piping, steam pressure, air pressure, etc.) above the supply pressure at the point of consideration, which would cause or tend to cause a reversal of the normal direction of flow.
>
> ***Backsiphonage*:** A form of backflow due to a reduction in system pressure, which causes a sub-atmospheric pressure to exist in the water system.

Backflow prevention assembly or "BPA": A mechanical assembly designed and constructed to prevent backflow, such that while in-line it can be maintained and its ability to prevent backflow, as designed, can be field tested, inspected and evaluated.

Backflow prevention assembly tester: A person who is certified as a backflow prevention assembly tester by a State Water Board-recognized organization per Article 4 of the State Water Resources Control Board's Cross Connection Control Policy Handbook.

Community water system means a public water system that serves at least 15 service connections used by yearlong residents or regularly serves at least 25 yearlong residents of the area served by the system.

Contact hour: Not less than 50 minutes of a continuing education course.

Continuing education course: A presentation or training that transmits information related to cross-connection control programs and backflow prevention and protection.

Connection: The point of connection of a user's piping to the water supplier's facilities.

Contamination: A degradation of the quality of the potable water by any foreign substance

which creates a hazard to public health, or which may impair the usefulness or quality of the water.

Cross-Connection: Any actual or potential connection or structural arrangement between a public or consumer's potable water system, and any other source or system through which it is possible to introduce into any part of the potable system any used water, industrial fluid, gas, or substance other than the intended potable water with which the system is supplied.

An ***indirect cross-connection*** is a cross-connection that is subject to back siphonage only.
A ***direct cross-connection*** is a cross-connection that is subject to both back siphonage and backpressure.

Cross-connection Control Plan or "CCCP": is a document used to implement a program which reduces the hazard of contamination of the public water system by identifying actual and potential cross-connections and taking action to protect the system from these hazards. This is accomplished by installing backflow prevention assemblies where hazards are identified; or ensuring that water-using equipment on the premises is installed in accordance with plumbing code requirements and good practice.

Cross-Connection Control Policy Handbook or "CCCPH": Standards for backflow protection and cross-connection control contained in a policy handbook adopted by the State Board pursuant to section 116407 of the Health and Safety Code.

"Cross-connection control specialist" A person who is certified as a cross-connection control specialist by a State Water Board recognized organization per Article 4 of the State Water Resources Control Board Cross Connection Control Policy Handbook.

Distribution system has the same meaning as defined in section 63750.50 of CCR, Title 22, Division 4, Chapter 2.

Double-check detector backflow prevention assembly or "DCDA": A double check valve backflow prevention assembly that includes a bypass (around the second check), having an approved double check valve assembly and a water meter accurately registering flow rates up to two gallons per minute—visually showing a registration for all rates of flow. This type of assembly may only be used to isolate low hazard cross-connections. See Diagram 2, Appendix C.

Double check detector backflow prevention assembly – Type II or "DCDA-II": A double check valve backflow prevention assembly that includes a bypass around the second check, with the bypass having a single check valve and a water meter accurately registering flow rates up to two gallons per minute and visually showing a registration for all rates of flow. This type of assembly may only be used to isolate low hazard cross-connections. See Diagram 2, Appendix C.

Double check valve backflow prevention assembly or "DC": An assembly consisting of two independently acting internally-loaded check valves, with tightly closing shut-off valves located at each end of the assembly (upstream and downstream of the two check valves) and fitted with test cocks that enable accurate field testing of the assembly. This type of assembly may only be used to isolate low hazard cross-connections. See Diagram 3, Appendix C.

Existing public water system or "existing PWS": A public water system initially permitted on or before July 1, 2024, as a public water system by the State Water Board.

Hazard Assessment: An evaluation of a user's premises designed to evaluate the types and

degrees of hazard at a user's premises.

Health Agency: Los Angeles County Department of Public Health (LACDPH), also known as LA County Health Department, or the local health agency with respect to a small water system.

High hazard cross-connection: A cross-connection that poses a threat to the potability or safety of the public water supply. Materials entering the public water supply through a high hazard cross-connection are contaminants or health hazards. See Appendix D for some examples.

Low hazard cross-connection: A cross-connection that has been found to not pose a threat to the potability or safety of the public water supply but may adversely affect the aesthetic quality of the potable water supply. Materials entering the public water supply through a low hazard cross-connection are pollutants or non-health hazards.

New public water system or "new PWS": A public water system permitted after July 1, 2024, as a public water system by the State Water Board. A new public water system includes a public water system receiving a new permit because of a change in ownership.

Noncommunity water system: A public water system that is not a community water system.

Non-potable water: Water that is not approved for human consumption but may have other uses (e.g., landscape irrigation, toilet and urinal flushing, and industrial processes).

Nontransient noncommunity water system: A public water system that is not a community water system and that regularly serves at least 25 of the same people over six months per year.

Pollution: An impairment of the quality of the water to a degree, which does not create an actual hazard to public health, but which adversely affects such waters for domestic use.

Potable Water: Water that is approved and safe for human consumption (drinking).

Potable Water Distribution System: Any publicly or privately owned water system operated as a public utility under a valid health permit to supply water for domestic purposes. This system will include all sources, facilities and appurtenances between the source and the point of delivery.

Premise: Any and all areas on a customer's property that are served or have the potential to be served by the public water system.

Premises containment: Protection of a public water system's distribution system from backflow from a user's premises through the installation of one or more air gaps or BPAs, installed as close as practical to the user's service connection, in a manner that isolates the water user's water supply from the public water system's distribution system.

Pressure vacuum breaker backsiphonage prevention assembly or "PVB": An assembly with an independently acting internally-loaded check valve and an independently-acting loaded air inlet valve located on the discharge side of the check valve; with test cocks and tightly closing shutoff valves located at each end of the assembly that enable accurate field testing of the assembly. This type of assembly may only be used for protection from backsiphonage and is not to be used to protect from backpressure. See Diagram 4, Appendix C.

Public water system or "PWS": The same meaning as defined in section 116275(h) of the California Health and Safety Code.

Recycled Water: Wastewater that has undergone Title 22 tertiary treatment and is suitable for

uses other than potable use.

Reduced pressure principle backflow prevention assembly or "RP": An assembly with two independently acting internally-loaded check valves, with a hydraulically operating mechanically independent differential-pressure relief valve located between the check valves and below the upstream check valve. The assembly shall have shut-off valves located upstream and downstream of the two check-valves, and test cocks to enable accurate field testing of the assembly. See Diagram 5, Appendix C.

Reduced pressure principle detector backflow prevention assembly or "RPDA": An assembly that includes a bypass with a water meter and reduced principle backflow prevention assembly, with the bypass's water meter accurately registering flow rates up to two gallons per minute and visually shows a registration for all rates of flow.

Reduced pressure principle detector backflow prevention assembly – Type II or "RPDA-II": A reduced pressure principle backflow prevention assembly that includes a bypass around the second check, with the bypass having a single check valve and a water meter accurately registering flow rates up to two gallons per minute and visually showing a registration for all rates of flow. See Diagram 7, Appendix C.

Spill-resistant pressure vacuum breaker backsiphonage prevention assembly or "SVB": An assembly with an independently acting internally-loaded check valve and an independently-acting loaded air inlet valve located on the discharge side of the check valve; with shutoff valves at each end and a test cock and bleed/vent port, to enable accurate field testing of the assembly. This type of assembly may only be used for protection from back siphonage and is not to be used to protect from backpressure. See Diagram 8, Appendix C.

State Water Board or "SWRCB": Unless otherwise specified, means the State Water Resources Control Board or the local primacy agency having been delegated the authority to enforce the requirements of the CCCPH by the State Water Resources Control Board.

Swivel-Ell: A reduced pressure principle backflow prevention assembly combined with a changeover piping configuration (swivel-ell connection) designed and constructed pursuant to this Plan. See design and construction criteria, as well as Diagrams 9a and 9b, Appendix C.

Transient noncommunity water system: A noncommunity water system that does not regularly serve at least 25 of the same people over six months per year.

User premises: means the property under the ownership or control of a water user and is served, or is readily capable of being served, with water via a service connection with a public water system.

User's service connection: Either the point where a water user's piping is connected to a water system or the point in a water system where the approved water supply can be protected from backflow using an air gap or backflow prevention assembly.

User Supervisor: A person designated by a water user to oversee a water use site and responsible for the avoidance of cross-connections.

Water User: Any person or entity obtaining water from an approved water supply system.

2.0 Purpose

In cooperation with the State Water Resources Control Board, the Santa Clarita Valley Water Agency's (Agency, or SCVWA) goal is to ensure the distribution of a safe and potable water supply to all customers. A component for achieving this goal is the SCVWA Cross- Connection Control Plan (CCCP). The Agency's original CCCP was adopted pursuant to the requirements set forth in the State of California Administrative Code Title 17, Sections 7583 through 7605. This CCCP was subsequently updated to comply with the requirements set forth in the Cross-Connection Control Policy Handbook (CCCPH) Standards and Principles for California's Public Water Systems, which was adopted on December 19, 2023, and took effect on July 1, 2024. The purpose of the SCVWA's Cross-Connection Control Plan is to:

a. Prevent the occurrence of backflow into the Agency's distribution system in order to protect customers from contamination or pollution from any on-site hazards. To ensure that properly installed and maintained backflow prevention assemblies (BPA), devices or methods provide adequate protection against the threat posed by many conditions typically found on a user's premise.

b. The use of approved BPAs ensures that the appropriate performance of the assembly was conducted. It is important and required by the CCCPH to select and properly install an approved BPA that is capable of protecting the distribution system from the hazard identified.

The Agency requires the installation of backflow prevention assemblies to all new commercial and industrial establishments, whether or not they currently store or use harmful contaminates. This is to protect the potable water distribution system from any future change within the premise.

Additionally, all existing establishments without previous backflow protection will be required to install backflow prevention assemblies at the service connection through a priority-based process set by the Agency. Establishments with automatic fire sprinkler systems currently utilizing problematic single-check detector assemblies will require an upgrade to an approved backflow prevention assembly.

3.0 Responsibility

SCVWA shall be responsible for the protection of the potable water distribution system from contamination or pollution that may result from backflow of contaminants or pollutants through the water service connection.

4.0 Scope

SCVWA shall protect the potable water distribution system from contamination by implementing a Cross-Connection Control Plan. For the purpose of satisfying the requirements of the CCCPH, the Agency operates the CCCP under the following procedures and documentation, which outlines how SCVWA will maintain compliance with the CCCPH. The CCCP includes:

a. A description of the process, personnel and timeframes from completing initial and ongoing hazard assessments.

b. A description of the legal authority to implement corrective actions in the event a water user fails to comply in a timely manner with the provisions of the SCVWA

CCCP.

c. A description of the process and timeframes for ensuring each BPA is inspected and field tested, and each AG is inspected at a frequency no less than annually.

d. A description of the process and timeframe for ensuring each non-testable backflow preventer owned by SCVWA is installed and maintained according to the California Plumbing Code.

e. A description of the process for ensuring individuals field testing and inspecting BPAs are certified backflow prevention assembly testers by a SWRCB recognized organization, provide field test kit or gage equipment accuracy verification and provide BPA field test reports.

f. The adoption of operating rules or ordinances to implement the Cross-Connection Control Plan.

g. The conducting of hazard assessments to identify water user premises where cross-connections are likely to occur.

h. The provision of backflow protection by the water user at the user's connection.

i. The provisions of at least one person trained in cross-connection control to carry out the CCCP.

j. The establishment of a procedure or system for testing backflow prevention assemblies.

k. The maintenance of records of locations, tests, and repairs of backflow prevention assemblies.

5.0 Operations Rules or Ordinances

SCVWA Board of Directors have adopted a Resolution to implement this CCCP. It authorizes SCVWA to have the legal authority to implement corrective actions in the event a water user fails to comply in a timely manner with the provisions regarding installation, field testing or maintenance of BPAs. The corrective actions include:

a. Deny or discontinue water service.
b. Install, inspect, field test, and/or maintain a BPA at a water user's premises, or
c. Otherwise address in a timely manner a failure to comply with the cross-connection control program.

6.0 Cross-Connection Control Program Coordinator

SCVWA has identified the Senior Recycled Water Coordinator as the individual responsible for the development, reporting, tracking, and other administrative duties of the Agency's CCCP. Staff in this position are required to possess and maintain the following certifications and attend these specialized training courses:

a. D3 Water Distribution Operator
b. T2 Water Treatment Operator
c. Cross-Connection Control Specialist certified by a SWRCB recognized organization
d. Backflow Prevention Assembly Tester certified by a SWRCB-recognized organization
e. USC Cross Connection Control Program Specialist Training Certificate
f. Los Angeles County Sanitation Districts Site Supervisor Training Certificate

7.0 Hazard Assessment

SCVWA shall conduct initial hazard assessments of the water user premises within the service area. The hazard assessment shall include the following:

a. The existence of cross-connections. This includes a review of all active water meters and physical points of connection to the public water system located on the premises. The assessment must identify every meter or point of connection that does not have appropriate backflow protection and state the type of backflow prevention assembly required to be installed.
b. The type and use of materials handled and present, or likely to be, on the user premises.
c. The degree of piping system complexity and accessibility
d. Access to auxiliary water supplies, pumping systems, or pressure systems.
e. Distribution system conditions that increase the likelihood of a backflow event (e.g., hydraulic gradient differences impacted by main breaks and high-water demand situations, multiple service connections that may result in flow-through conditions, etc.)
f. User premises accessibility
g. Any previous backflow incidents on the user premises
h. The requirements and information provided in the CCCPH.

Each hazard assessment must identify the degree of hazard to the distribution system as either a:

(1) High Hazard Cross-Connection
(2) Low Hazard Cross-Connection
(3) No Hazard

A list of example hazards is provided in Appendix D. The hazard assessment must determine whether an existing BPA, if any, provides adequate protection based on the degree of hazard. Hazard assessments completed prior to the adoption of the CCCPH may be considered as an initial hazard assessment provided that such hazard assessments and associated backflow protection provide consistent protection with the CCCPH and SCVWA CCCP.

In addition to the initial Hazard Assessment, subsequent hazard assessments must also be performed under the following criteria:

(1) When a user premises changes account holder, excluding single-family residences
(2) Any new or reconnected user premises
(3) When evidence exists of changes in the activities or materials on a user's premises
(4) If a backflow from a user's premises occurs
(5) Periodic hazard assessments will be conducted in accordance with the CCCPH, on a schedule established by SCVWA according to the degree of hazard identified at each user premises, which schedule will be confirmed as part of the annual CCCP review described in Section 17.0
(6) If the State Water Board requests a hazard assessment of a user's premises
(7) When SCVWA concludes an existing hazard assessment may no longer accurately represent the degree of hazard

The SCVWA Senior Recycled Water Coordinator will review or conduct each initial and follow-up hazard assessment and make a written finding that, in their judgement based on cross-connection control principles, SCVWA's hazard assessment properly identified all hazards at the time of the assessment, the appropriate degree of hazards, and the corresponding backflow protection.

8.0 Required Backflow Prevention

In accordance with this Plan, SCVWA requires that the distribution system is protected from identified hazards through the proper installation, continued operation and field testing of an approved BPA. The BPA installed must be no less protective than that which is commensurate with the degree of hazard at a user premises as described herein or based on the results of the hazard assessment.

High hazard cross-connections require the use of an AG or RP, unless:

a. SCVWA receives approval from the State Water Board, and the proposed alternative does not increase the level of risk to protection of public health.
b. Internal protection in lieu of containment when premises containment is not feasible requires approval by the State Water Board.

https://fccchr.usc.edu/listSCVWA requires backflow prevention assemblies be approved by either the Standards found in Chapter 10 of the Manual of Cross-Connection Control, Tenth Edition, published by the USC Foundation for Cross-Connection Control & Hydraulic Research or the Standards of ASSE International current as of 2022 and must have the 1YT mark.

When a DC is required or referenced, a DCDA or DCDA-II type of assembly may be substituted if appropriate. When an RP is required or referenced, an RPDA or RPDA-II type of assembly may be substituted. The BPA installed will be no less protective than that which is

commensurate with the degree of hazard at a user premises based on the results of the hazard assessment.

Following State Water Board review and approval, SCVWA may propose the following:

1. An alternative method of premises containment in lieu of a required AG provided that the proposed alternative would not increase the level of risk to protection of public health.

2. Internal protection in lieu of containment when premise's containment is not feasible.

    a. Approval of in-lieu internal protection is contingent upon a formal premises hazard assessment and an evaluation by the Senior Cross-Connection Specialist, determining that the internal assembly provides sufficient premises containment.

3. A swivel-ell instead of an AG, for premises containment protection when temporarily substituting tertiary recycled water use areas with potable water if the following criteria are met:

    a. Design and construction related requirements adheres to the criteria specified in Appendix C.

    b. Inspections are performed and documented at least every 12 months to confirm ongoing compliance.

    c. The RP used in conjunction with the swivel-ell is field tested and functioning properly.

    d. Immediately upon each switchover to potable water use, a visual inspection of the RP must be completed.

    e. Within 72 hours of each switchover to potable water use, a field test must be completed.

    f. At least every 12 weeks the use site is supplied with potable water.

Whenever a swivel-ell is used, a legally binding agreement will be created, prior to operation, between SCVWA and the entity requesting the swivel-ell.

Currently unprotected service lines, including but not limited to Fire Protection Systems, shall be protected with no less than DC protection by July 1, 2034, or as otherwise stated below.

1. A high hazard cross-connection fire protection system, including but not limited to fire protection systems that utilize chemical addition or an auxiliary water supply must have no less than RP protection.

2. Existing fire protection systems must have a minimum of DC protection by July 1, 2034, unless SCVWA receives approval by the State Water Board under one of the following proposals:

    a. An alternative date is requested, or

    b. An alternative method of backflow protection that provides at least the same level of protection to public health.

3. Low hazard fire protection systems do not require a BPA if the following criteria are satisfied:

    a. The user has only one service connection;

    b. A single service line onto the user premises exists that subsequently splits on the property for domestic flow and fire system protection flow, such that the fire protection system may be isolated from the rest of the user premises;

    c. A single water industry standard, water meter is provided to measure combined domestic flow and fire protection system flow;

    d. The fire protection system is constructed of piping materials certified as meeting NSF/ANSI Standard 61; and

    e. The fire protection system's piping is looped within the structure and is connected to one or more routinely used fixtures (such as a water closet) to prevent stagnant water.

4. The following actions will result for customers with existing fire protection services that do not upgrade their device (when required) by July 1, 2034:

    a. A $200 per month penalty will be applied starting on month three after the compliance due date.

    b. The domestic service associated with the fire service will be shut off after month six of the compliance due date.

    c. After 12 months of non-compliance, SCVWA will upgrade the single check and invoice the customer for the actual cost.

9.0 Construction of Backflow Method /Backflow Prevention Assemblies

a. Air Gap Separation – An air gap separation (AG) shall be at least twice the diameter of the supply pipe, measured vertically above the overflow rim of the receiving vessel to the supply pipe; however, in no case shall this separation be less than 1 inch (2.54 cm). In addition, each AG shall meet the requirements in Appendix B.

b. Each replaced or newly installed PVB, SVB, DC and RP for protection of the SCVWA distribution system must be approved through both laboratory and field evaluation tests performed in accordance with at least one of the following or subsequent editions of the following:

- Standards found in Chapter 10 of the *Manual of Cross-Connection Control, Tenth Edition*, published by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research; or

- Certification requirements for BPAs in the Standards of ASSE International current as of 2022 that include ASSE 1015-2021 for the DC, ASSE 1048-2021 for the DCDA & DCDA-II, ASSE 1013-2021 for the RP, and ASSE 1047-2021 for the RPDA & RPDA-II and must

have the 1 YT mark.

10.0 Location and Installation Criteria of Backflow Prevention

a. Air Gap Separation – Each air gap separation shall comply with the following criteria unless an alternate location or configuration is approved by SCVWA. Any new air gap installation must be reviewed and approved by the State Water Board prior to installation. An air gap must be accessible for field testing, inspection and maintenance.

- The receiving water container must be located on the water user's premises at the water user's service connection.
- All piping between the water user's service connection and the discharge location of the receiving water container must be above finished grade and be accessible for visual inspection.

b. Reduced Pressure Principle Backflow Prevention Device – RPs must be installed such that the lowest point of an assembly is a minimum of twelve (12) inches above grade and a maximum of thirty-six (36) inches above finished grade. Unless an alternative is approved by SCVWA. If an RP is installed after the adoption of this Plan, it must have a minimum side clearance of twelve (12) inches, except that a minimum side clearance of twenty-four (24) inches must be provided on the side of the assembly that contains the test cocks. Alternate clearances must be approved by SCVWA and provide adequate clearance for field testing and maintenance.

c. Double-Check Valve Backflow Prevention Assembly – Except where Table 1 in Section 15.0 expressly permits a DC, a DC installed or replaced after the adoption of this Plan shall be installed as an RP as stated above. Below ground installation can be considered if approved by SCVWA and no alternative options are available. If a DC is installed after the adoption of this Plan, it must have a minimum side clearance of twelve (12) inches, except that a minimum side clearance of twenty-four (24) inches must be provided on the side of the assembly that contains the test cocks. Alternate clearances must be approved by SCVWA and provide adequate clearance for field testing and maintenance.

d. Pressure Vacuum and Spill-Resistant Vacuum Breakers – A PVB or SVB must be installed a minimum of twelve (12) inches above all downstream piping and outlets. SVBs may not be used for premises containment. PVBs may only be used for roadway right of way irrigation systems as premises containment where there is no potential for backpressure.

All BPAs must be located as practical to the water user's service connection unless one or more alternative locations have been approved by SCVWA.

11.0 Local Entity Coordination

SCVWA will coordinate with Los Angeles County Department of Public Health in order to ensure hazard assessments can be performed, appropriate backflow protection is provided and provide assistance in the investigation of backflow incidents. In addition, SCVWA will coordinate with Los Angeles County Fire Department when there are issues or incidents with any fire system equipped with a BPA. It is also imperative that SCVWA staff works with each BPA owner, their maintenance staff and plumbing contractors to ensure the required cross-connection protection is provided, operated and maintained in accordance with this Plan.

For new construction, the SCVWA Engineering Department will ensure that the backflow prevention assemblies required by this Plan are identified during plan review and are installed, inspected, and tested before being placed in service, consistent with the location and installation criteria in Section 10.0. For remodels, SCVWA will coordinate with the City of Santa Clarita so that any backflow prevention assembly required as a result of the remodel is identified during the City's permit review and is installed, inspected, and tested before the service is returned to service. For premises located in unincorporated Los Angeles County, SCVWA will coordinate with the Los Angeles County Department of Public Works so that any backflow prevention assembly required for new construction or a remodel is identified during permit review and is installed, inspected, and tested before the service is placed in or returned to service.

For dual-plumbed recycled water sites within its service area, SCVWA will coordinate with the Los Angeles County Sanitation Districts and LACDPH so that each site receives an annual inspection and a cross-connection test at least once every four years in accordance with CCR, Title 22, Section 60316. Cross-connection testing will be performed by a certified cross-connection control specialist, and the results will be provided to LACDPH and retained by SCVWA.
SCVWA will maintain current points of contact for each entity identified in this section and will confirm those contacts as part of the annual CCCP review described in Section 17.0.

12.0 Public Outreach and Education

SCVWA's Communications Department provides educational material and public outreach material related to cross-connection control in a variety of formats. In addition to traditional outreach through the local media, the Communications Department has developed a webpage to educate customers on cross-connection control, which will be updated in accordance with the Plan. The Agency will also share information through its social media channels and an e-newsletter directly with customers. Through the Agency's employee education program, staff also will include a session on the CCCP to keep employees informed.

SCVWA will provide cross-connection control outreach to its customers at least annually, and the cross-connection control webpage will be reviewed and updated at least annually in connection with the CCCP review described in Section 17.0.

In addition, SCVWA will provide written notice at least annually to each customer whose premises are served through a backflow prevention assembly. The notice will identify the assembly or assemblies of record for the premises, state the customer's obligation to have each assembly tested by a certified tester as described in Section 16.0, and explain how test reports are to be submitted to SCVWA.

SCVWA will retain records of the outreach materials distributed and the notices issued and will summarize its outreach activities as part of the annual CCCP review.

13.0 Type of Protection Required

The type of protection that shall be provided in order to prevent backflow into the potable water distribution system shall be commensurate with the degree of hazard that exists based on the initial and follow-up hazard assessments on the water user's premise. SCVWA will ensure that each BPA is installed and maintained properly and is field tested on an annual basis. The type of protective device that may be required (listed in an increasing level of protection) includes:

a. Double-check valve backflow prevention assembly – (DC)

b. Pressure vacuum breaker backsiphonage prevention assembly - (PVB)

c. Reduced pressure principle backflow prevention assembly -(RP)

d. Air Gap separation – (AG)

If appropriate, an approved DCDA, DCDA-II, RPDA or RPDA-II type of assembly may be substituted for a respective DC or RP. The BPA installed will be no less protective than that which is commensurate the degree of hazard at a user premises and at all times shall be an AG or RP for high hazard cross-connections. Table 1 on the next page illustrates various degrees of hazard and the minimum type of backflow protection required. Situations not covered in Table 1 shall be evaluated on a case-by-case basis, and the appropriate backflow protection shall be determined by SCVWA. Water users may choose a higher level of protection than required by SCVWA. Additional examples of High Hazard Cross-Connection Control Premises are listed in Appendix D.

14.0 Backflow Incident Response, Reporting and Notification

SCVWA is dedicated to ensuring backflow incidents are kept to a minimum. However, in the event a backflow incident and suspected incident occurs, SCVWA will follow the defined procedures below:

a. Complaints or reports of changes in water quality are maintained by the SCVWA Water Quality Department. Each complaint or report in changes to water quality will be reviewed by the defined Cross-Connection Control Program Coordinator and determined if additional investigation is required
b. If it is determined that additional investigation is warranted, water quality sampling and pressure recording will be utilized to determine if a backflow incident has occurred
c. Documentation of the additional investigation, response and follow-up activities will be recorded
d. If any known or suspected incident of backflow occurs, SCVWA will contact the State Water Board and Los Angeles County Department of Public Health within 24 hours of the determination. If required by the State Water Board, SCVWA will issue a Tier 1 public notification pursuant to CCR, Title 22, Section 64463.1
e. If required by the State Water Board, SCVWA will submit, by a date specified by the State Water Board, a written incident report describing the details and affected area of the backflow incident, the actions taken in response to the backflow incident, and the follow up actions to prevent future backflow incidents.
f. The Cross-Connection Control Program Coordinator is responsible for determining whether a known or suspected backflow incident has occurred. The 24-hour notification period described in item (d) above begins when that determination is made, and the date and time of the determination will be recorded in the incident documentation.
g. Upon determining that a backflow incident has occurred, the Cross-Connection Control Program Coordinator will immediately notify the manager of the SCVWA Water Quality Department and SCVWA executive management, or their designees, who will direct sampling, containment, isolation of the affected service, and any customer notification required under item (d) above.
h. Corrective and follow-up actions identified through an incident investigation will be assigned to a responsible position with a completion date and will be completed within 90 days of the determination, unless a different date is specified by the State Water Board. The status of any open corrective actions will be reported as part of the annual CCCP review described in Section 17.0.

An example of a Backflow Incident Report Form is provided in Appendix F. All the information identified in this sample form is required to be contained in the report.

15.0 Table 1 Degree of Hazard

TYPE OF BACKFLOW PROTECTION REQUIRED

AG – Air-gap separation
DC – Double-check valve backflow prevention assembly
RP – Reduced pressure principle backflow prevention assembly

Degree of Hazard	Minimum Type of Backflow Prevention
(A) Sewage and Hazardous Substances	
(1) Premises with wastewater pumping and/or treatment plants with no interconnection to the potable water system. This does not include single-family residences that have a sewage lift pump. An RP may be provided in lieu of an AG if approved by the Los Angeles County Department of Public Health (LACDPH) and SCVWA.	**AG**
(2) Premises where hazardous substances are handled in any manner in which substances may enter the potable water system. This does not include single-family residences that have a sewage lift pump. An RP may be provided in lieu of an AG if approved by LACDPH and SCVWA.	**AG**
(3) Premises where there are irrigation systems into which fertilizers, herbicides or pesticides are or can be injected.	**RP**
(B) Auxiliary Water Supplies	
(1) Premises where there is an unapproved auxiliary water supply that is interconnected with the public water system. An alternate method of premises containment may be provided in lieu of an AG only following State Water Board review and approval under CCCPH Section 3.2.2(c).	**AG**
(2) Premises where there is an unapproved auxiliary water supply and there are no interconnections with the public water system. An RP may be provided in lieu of an AG if approved by LACDPH and SCVWA. .	**AG**
(C) Recycled Water	
(1) Premises where the potable water system is used to supplement the recycled water supply.	**AG**
(2) Premises where recycled water is used, other than as allowed in paragraph C-3, and there is no interconnection with the potable water system.	**RP**

Degree of Hazard – cont'd	Minimum Type of Backflow Prevention
(3) Residences using recycled water for landscape irrigation as part of an approved dual-plumbed use area established pursuant to sections 60313 through 60316, unless the recycled water supplier obtains approval of SCVWA or LACDPH. If the water supplier is also the supplier of the recycled water, it must utilize an alternative backflow protection plan that includes an annual inspection of the recycled water and potable water systems and a cross-connection shutdown test of those systems at least once every four years pursuant to subsection 60316(a).	**RP**
(D) Fire Protection Systems (Dedicated Fire Protection Service Line)	
(1) Premises where the fire system is directly supplied from the potable water distribution system and there is an unapproved auxiliary water supply on or to the premises (not interconnected).	**DC**
(2) Premises where the fire system is supplied from the potable water distribution system and interconnected with an unapproved auxiliary water supply. An RP may be provided in lieu of an AG if approved by LACDPH and SCVWA.	**AG**
(3) Premises where the fire system is supplied from the potable water distribution system and utilizes either elevated storage tanks or fire pumps that take suction from private reservoirs or tanks.	**DC**
(4) Premises where the fire system is supplied from the potable water distribution system and where recycled water is used in a separate piping system within the same building.	**DC**
(E) Dockside Watering Points and Marine Facilities	
(1) Pier hydrants for supplying water to vessels for any purpose.	**RP**
(2) Premises where there are marine facilities.	**RP**
(3) Premises where entry is restricted so that inspections for cross-connections cannot be made with sufficient frequency or at sufficiently short notice to assure that they do not exist.	**RP**
(4) Premises where there is a repeated history of cross-connections being established or re-established.	**RP**

16.0 Testing and Maintenance of Backflow Prevention Assemblies

a. SCVWA shall ensure that adequate maintenance and periodic testing are provided by the water user to ensure their proper operation.

b. Backflow prevention assemblies shall be tested by persons who possess a backflow tester certification by an organization recognized by the State Water Board. Beginning July 1, 2027, pursuant to Article 4 of the State Water Board's CCCPH, backflow prevention assembly testers and cross-connection control specialists must be certified by a certifying organization that is accredited by the American National Standards Institute (ANSI) and approved by the State Water Board.

c. As of July 1, 2025, SCVWA accepts all State Water Board-recognized backflow prevention assembly tester (BPAT) certifications, including those issued by ABPA, ASSE, and AWWA, issued under CCCPH Section 3.4.1(e), for both meter service protection (MSP) assemblies and internal assemblies.

d. Starting July 1, 2026, Los Angeles County BPAT certification is accepted for internal assemblies only and is no longer accepted for meter service protection assemblies. Backflow prevention assemblies shall be tested at least annually or more frequently if determined to be necessary by SCVWA or LACDPH. When BPAs are found to be defective, they shall be repaired or replaced in accordance with the provisions of this Plan.

e. Backflow prevention assemblies shall be tested immediately after they are installed, relocated or repaired, and are not to be placed into service unless they are functioning as required.

f. Service of water to any premise(s) found to be in violation of this Cross-Connection Control Plan shall be discontinued by SCVWA after written notice of the violation. This complies with the State Water 's CCCPH.

g. SCVWA reserves the right to verify the accuracy and validity of any backflow prevention assembly test results submitted to the Agency. When test results are determined to be questionable, incomplete, inaccurate, or otherwise inconsistent with applicable testing requirements, SCV Water may require additional testing or retesting of the assembly.

h. SCVWA may require a certified backflow prevention assembly tester to perform testing in the presence of authorized Agency personnel to verify proper testing procedures and the accuracy of reported results.

i. SCVWA reserves the right to reject test results or refuse to accept future test reports from testers who fail to demonstrate proper testing procedures, submit inaccurate or falsified test information, or otherwise fail to comply with applicable testing requirements.

j. A non-compliance fee of $200 per month will be charged to customers for each backflow device found to be in violation of this Cross-Connection Control Plan. Once a device is brought back into compliance, then the fee will no longer be charged. If the device continues to be in violation of this Cross-Connection Control

Plan, the service line for the device or the domestic service for the location/customer will be shut off. Once the device comes into compliance the service line for the device or the domestic service for the location/customer will be restored.

k. SCVWA shall notify the water user when testing is needed of backflow prevention assemblies. The notice shall contain the date when the test must be completed.

l. Reports of testing and maintenance shall be maintained by SCVWA for a minimum of three years.

17.0 CCCP Review

The CCCP will be reviewed annually. Any substantive revisions will be submitted to the State Water Board for review.

The most recent annual review was completed in October 2026. That review resulted in revisions to Section 16.0 reflecting the backflow prevention assembly tester and cross-connection control specialist certification requirements of Article 4 of the CCCPH, and SCVWA's schedule for accepting State Water Board-approved BPAT certifications.

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Appendix

Appendix A: Assembly Bill 1671 (2017, Chapter 533) and Assembly Bill 1180 (2019, Chapter 455).
Appendix B: ASME A112.1.2-2012(R2017) Table 1, Minimum Air Gaps for Generally used Plumbing Fixtures, page 4
Appendix C: Backflow Prevention Assembly Diagrams
Appendix D: High Hazard Premises
Appendix E: General Range of Knowledge for Cross-Connection Control Specialists
Appendix F: Example Backflow Incident Reporting Form
Appendix G: Related Statutes and Regulations

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Appendix A

Assembly Bill 1671 (2017, Chapter 533)
Assembly Bill 1180 (2019, Chapter 455)

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STATE OF CALIFORNIA
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Assembly Bill No. 1671

CHAPTER 533

An act to amend Section 116810 of, and to add Sections 116407 and 116555.5 to, the Health and Safety Code, relating to drinking water.

[Approved by Governor October 6, 2017. Filed with Secretary of State October 6, 2017.]

LEGISLATIVE COUNSEL'S DIGEST

AB 1671, Caballero. Backflow protection and cross-connection controls: standards.

(1) Existing law, the California Safe Drinking Water Act, requires the State Water Resources Control Board to administer provisions relating to the regulation of drinking water to protect public health, including, but not limited to, conducting research, studies, and demonstration projects relating to the provision of a dependable, safe supply of drinking water, enforcing the federal Safe Drinking Water Act, adopting regulations, and conducting studies and investigations to assess the quality of private domestic water wells. Existing law makes certain violations of the act a misdemeanor.

Existing law requires any person who owns a public water system to ensure that the system does certain things, including, but not limited to, that it will not be subject to backflow under normal operating conditions. Existing law, to ensure that testing and maintenance of backflow prevention devices are performed by persons qualified to do testing and maintenance, authorizes local health officers to maintain programs for certification of backflow prevention device testers and requires the certification program to be consistent with backflow protection regulations adopted by the state board. A violation of these provisions, or an order by a local health officer pursuant to these provisions, is a misdemeanor.

This bill would require a public water system to implement a cross-connection control program that complies with, and would require the certification program to be consistent with, applicable regulations and the standards described in (2).

(2) Existing regulations establish standards for a backflow prevention device and cross-connection control.

This bill, on or before January 1, 2020, would require the state board to adopt standards for backflow protection and cross-connection control and would authorize the state board to do so through the adoption of a policy handbook, as specified. By authorizing the state board to adopt standards, the violation of which would be a crime, the bill would create a new crime and impose a state-mandated local program.

(3) The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement.

This bill would provide that no reimbursement is required by this act for a specified reason.

The people of the State of California do enact as follows:

SECTION 1. Section 116407 is added to the Health and Safety Code, to read:

116407. (a) On or before January 1, 2020, the state board shall adopt standards for backflow protection and cross-connection control.

(b) The state board may implement subdivision (a) through the adoption of a policy handbook that is not subject to the requirements of Chapter 3.5 (commencing with Section 11340) of Part 1 of Division 3 of Title 2 of the Government Code. The policy handbook shall include standards for backflow protection and cross-connection control. In developing the standards and any amendments to those standards, the state board shall consult with state and local agencies and other persons whom the state board has identified as having expertise in the subject of backflow protection and cross-connection control. The state board shall hold at least two public hearings before adopting the policy handbook. The policy handbook shall be posted on the board's Internet Web site.

(c) (1) Upon the effective date of a policy handbook adopted by the state board pursuant to subdivision (b), the regulations set forth in Article 1 (commencing with Section 7583) and Article 2 (commencing with Section 7601) of Group 4 of Subchapter 1 of Chapter 5 of Division 1 of Title 17 of the California Code of Regulations shall become inoperative, and, 90 days thereafter, are repealed, unless the state board makes a determination not to repeal a specific regulation.

(2) If the state board determines not to repeal a specific regulation pursuant to paragraph (1), the state board shall provide to the Office of Administrative Law and the Secretary of State written notice of its determination, including identification of the specific regulation that is not repealed. That regulation, upon the provision of that written notice to the Office of Administrative Law and the Secretary of State, shall become operative.

SEC. 2. Section 116555.5 is added to the Health and Safety Code, to read:

116555.5. A public water system shall implement a cross-connection control program that complies with applicable regulations and with standards adopted by the board pursuant to Section 116407.

SEC. 3. Section 116810 of the Health and Safety Code is amended to read:

116810. To ensure that testing and maintenance of backflow prevention devices are performed by persons qualified to do testing and maintenance,

local health officers may maintain programs for certification of backflow prevention device testers. The local health officer may suspend, revoke, or refuse to renew the certificate of a tester, if, after a hearing before the local health officer or his or her designee, the local health officer or his or her designee finds that the tester has practiced fraud or deception or has displayed gross negligence or misconduct in the performance of his or her duties as a certified backflow prevention device tester. The local health officer may collect fees from certified testers to offset the cost of the certification program provided pursuant to this section. The certification standards shall be consistent with standards adopted by the state board pursuant to Section 116407 and any other applicable backflow protection regulations.

SEC. 4. No reimbursement is required by this act pursuant to Section 6 of Article XIII B of the California Constitution because the only costs that may be incurred by a local agency or school district will be incurred because this act creates a new crime or infraction, eliminates a crime or infraction, or changes the penalty for a crime or infraction, within the meaning of Section 17556 of the Government Code, or changes the definition of a crime within the meaning of Section 6 of Article XIII B of the California Constitution.

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STATE OF CALIFORNIA
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Assembly Bill No. 1180

CHAPTER 455

An act to amend Section 116407 of the Health and Safety Code, and to add Section 13521.2 to the Water Code, relating to water.

[Approved by Governor October 2, 2019. Filed with Secretary of State October 2, 2019.]

LEGISLATIVE COUNSEL'S DIGEST

AB 1180, Friedman. Water: recycled water.

(1) Existing law, the California Safe Drinking Water Act, requires the State Water Resources Control Board to administer provisions relating to the regulation of drinking water to protect public health. Existing law requires, on or before January 1, 2020, the state board to adopt standards for backflow protection and cross-connection control through the adoption of a policy handbook, as specified.

This bill would require that handbook to include provisions for the use of a swivel or changeover device to supply potable water to a dual-plumbed system during an interruption in recycled water service.

(2) Existing law requires the state board to establish uniform statewide recycling criteria for each varying type of use of recycled water where the use involves the protection of public health.

This bill would require the state board, on or before January 1, 2023, as specified, to update the uniform statewide criteria for nonpotable recycled water uses.

The people of the State of California do enact as follows:

SECTION 1. The Legislature finds and declares all of the following:

(a) On December 11, 2018, the State Water Resources Control Board unanimously adopted an amendment to the policy for water quality control for recycled water, which included a goal to increase the use of recycled water in the state from 714,000 acre-feet per year in 2015 to 1,500,000 acre-feet per year by 2020 and 2,500,000 acre-feet per year by 2030.

(b) Section 13521 of the Water Code requires the state board to establish uniform statewide recycling criteria for each varying type of use of recycled water where the use involves the protection of public health.

(c) The regulations establishing the uniform statewide criteria for recycled water uses are set forth in Chapter 3 (commencing with Section 60301.050) of Division 4 of Title 22 of the California Code of Regulations. The regulations that pertain to nonpotable recycled water uses have not been updated since 2000.

(d) The regulations relating to backflow protection and cross-connection control for recycled water are set forth in Article 1 (commencing with Section 7583) and Article 2 (commencing with Section 7601) of Group 4 of Subchapter 1 of Chapter 5 of Division 1 of Title 17 of the California Code of Regulations. These regulations have not been updated since 1987.

(e) Section 1 of Chapter 533 of the Statutes of 2017 (Assembly Bill 1671 of the 2017–18 Regular Session) requires, on or before January 1, 2020, the state board to adopt backflow protection and cross-connection control standards and authorizes their implementation through a policy handbook.

(f) In order to maximize the amount of recycled water California can safely use for beneficial purposes, it is necessary to update the uniform statewide criteria for nonpotable recycled water uses and specify certain associated backflow protection and cross-connection control provisions.

SEC. 2. Section 116407 of the Health and Safety Code is amended to read:

116407. (a) On or before January 1, 2020, the state board shall adopt standards for backflow protection and cross-connection control.

(b) (1) The state board may implement subdivision (a) through the adoption of a policy handbook that is not subject to the requirements of Chapter 3.5 (commencing with Section 11340) of Part 1 of Division 3 of Title 2 of the Government Code. The policy handbook shall include standards for backflow protection and cross-connection control. In developing the standards and any amendments to those standards, the state board shall consult with state and local agencies and other persons whom the state board has identified as having expertise in the subject of backflow protection and cross-connection control. The state board shall hold at least two public hearings before adopting the policy handbook. The policy handbook shall be posted on the board's internet website.

(2) (A) The policy handbook described in this subdivision shall include provisions for the use of a swivel or changeover device to supply potable water to a dual-plumbed system during an interruption in recycled water service.

(B) The use of a swivel or changeover device shall be consistent with any notification and backflow protection provisions contained in the policy handbook.

(c) (1) Upon the effective date of a policy handbook adopted by the state board pursuant to subdivision (b), the regulations set forth in Article 1 (commencing with Section 7583) and Article 2 (commencing with Section 7601) of Group 4 of Subchapter 1 of Chapter 5 of Division 1 of Title 17 of the California Code of Regulations shall become inoperative, and, 90 days thereafter, are repealed, unless the state board makes a determination not to repeal a specific regulation.

(2) If the state board determines not to repeal a specific regulation pursuant to paragraph (1), the state board shall provide to the Office of Administrative Law and the Secretary of State written notice of its determination, including identification of the specific regulation that is not repealed. That regulation, upon the provision of that written notice to the

Office of Administrative Law and the Secretary of State, shall become operative.

SEC. 3. Section 13521.2 is added to the Water Code, to read:

13521.2. (a) On or before January 1, 2023, the state board shall update the uniform statewide criteria for nonpotable recycled water uses established in Chapter 3 (commencing with Section 60301.050) of Division 4 of Title 22 of the California Code of Regulations. The deadline imposed by this section is mandatory only if the Legislature has appropriated sufficient funds, as determined by the executive director of the state board, in the annual Budget Act or otherwise to cover the state board's costs associated with the performance of the duties imposed by this section.

(b) For purposes of the update to the uniform statewide criteria for nonpotable recycled water uses described in subdivision (a), the state board shall adopt a regulation that incorporates by reference the criteria and applicable backflow protection provisions, including the provisions for the use of a swivel or changeover device for dual-plumbed systems, that are contained in the most recently adopted version of the policy handbook adopted pursuant to Section 116407 of the Health and Safety Code and any future versions of the policy handbook.

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Appendix B

ASME A112.1.2-2012(R2017) Table 1, Minimum Air Gaps for Generally used Plumbing Fixtures, page 4

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Appendix B
ASME A112.1.2-2012(R2017) Table 1, Minimum Air Gaps for Generally used Plumbing Fixtures,[1] page 4

TABLE 1
Minimum Air Gaps for Generally used Plumbing Fixtures[4]

FIXTURES	WHERE NOT AFFECTED BY SIDEWALLS[1] (inches)	WHERE AFFECTED BY SIDEWALLS[2] (inches)
Effective opening[3] not greater than ½ of an inch in diameter	1	1 1/2
Effective openings[3] not greater than ¾ of an inch in diameter	1 1/2	2 1/4
Effective openings[3] not greater than 1 inch in diameter	2	3
Effective openings[3] greater than 1 inch in diameter	Two times the diameter of effective opening	Three times the diameter of effective opening

For SI units: 1 inch = 25.4 mm

Notes:

[1] Sidewalls, ribs, or similar obstructions do not affect air gaps where spaced from the inside edge of the spout opening at a distance exceeding three times the diameter of the effective opening for a single wall, or at a distance exceeding four times the effective opening for two intersecting walls.

[2] Vertical walls, ribs, or similar obstructions extending from the water surface to or above the horizontal plane of the spout opening other than specified in Footnote 1 above. The effect of three or more such vertical walls or ribs has not been determined. In such cases, the air gap shall be measured from the top of the wall.

[3] The effective opening shall be the minimum cross-sectional area at the seat of the control valve or the supply pipe or tubing that feeds the device or outlet. Where two or more lines supply one outlet, the effective opening shall be the sum of the cross-sectional areas of the individual supply lines or the area of the single outlet, whichever is smaller.

[4] Air gaps less than 1 inch (25.4 mm) shall be approved as a permanent part of a listed assembly that has been tested under actual backflow conditions with vacuums of 0 to 25 inches of mercury (85 kPa).

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Appendix C

Backflow Prevention Assembly Diagrams

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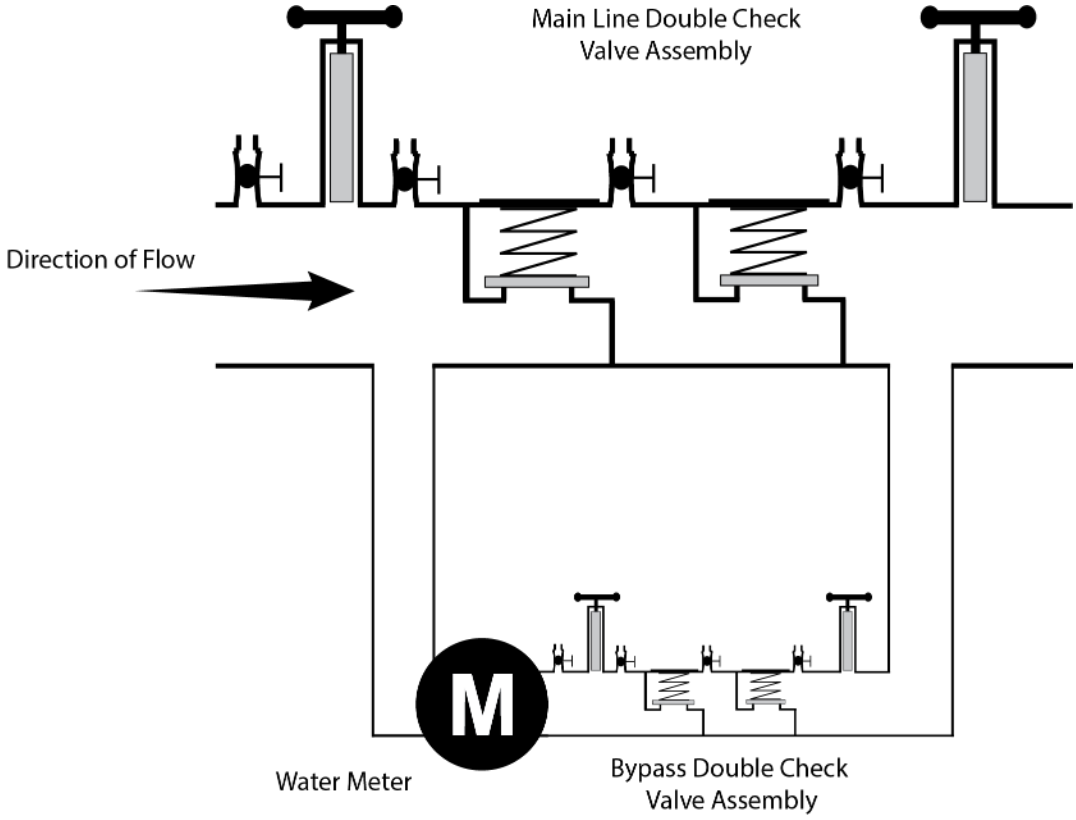
Appendix C

Diagram 1
Double check detector backflow prevention assembly[1]

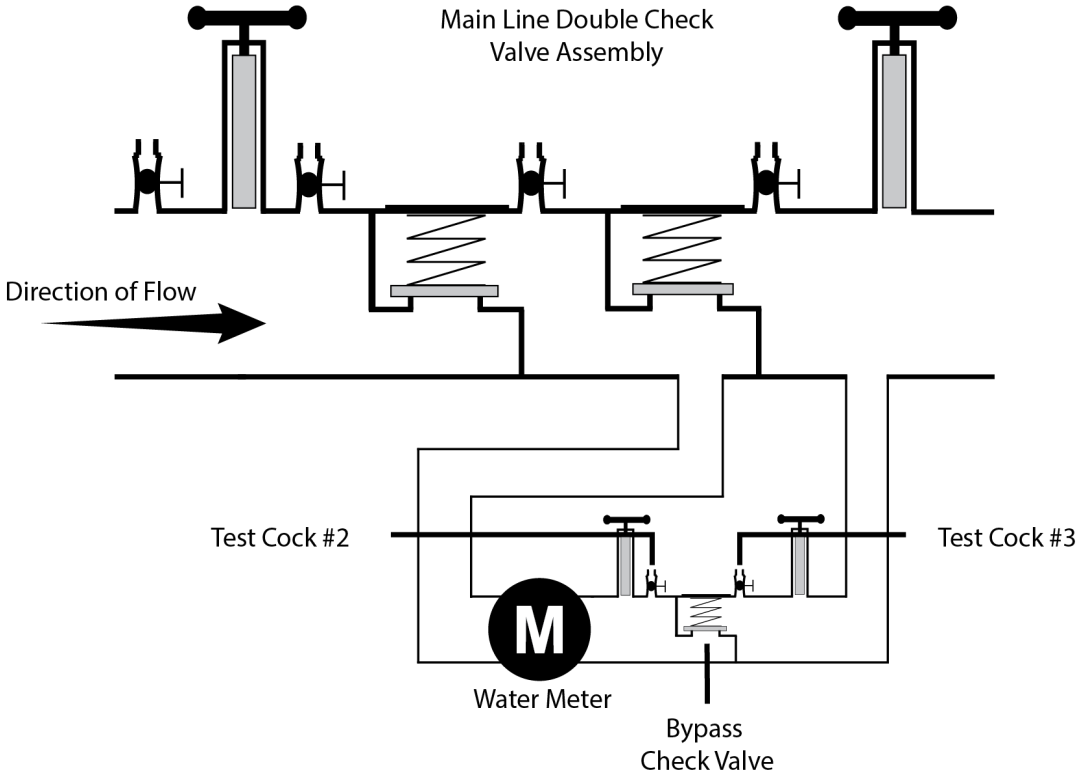


[1] © 2023 University of Southern California. Used with permission.

Appendix C

Diagram 2

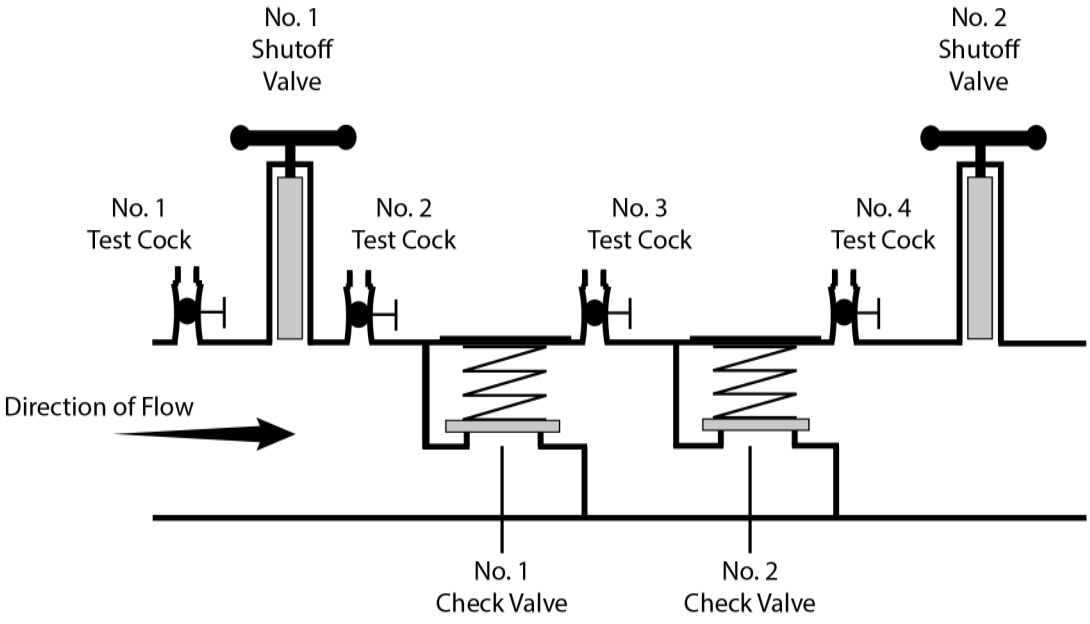
Double check detector backflow prevention assembly – type II [2]



[2] © 2023 University of Southern California. Used with permission.

Appendix C

Diagram 3
Double check valve backflow prevention assembly[3]

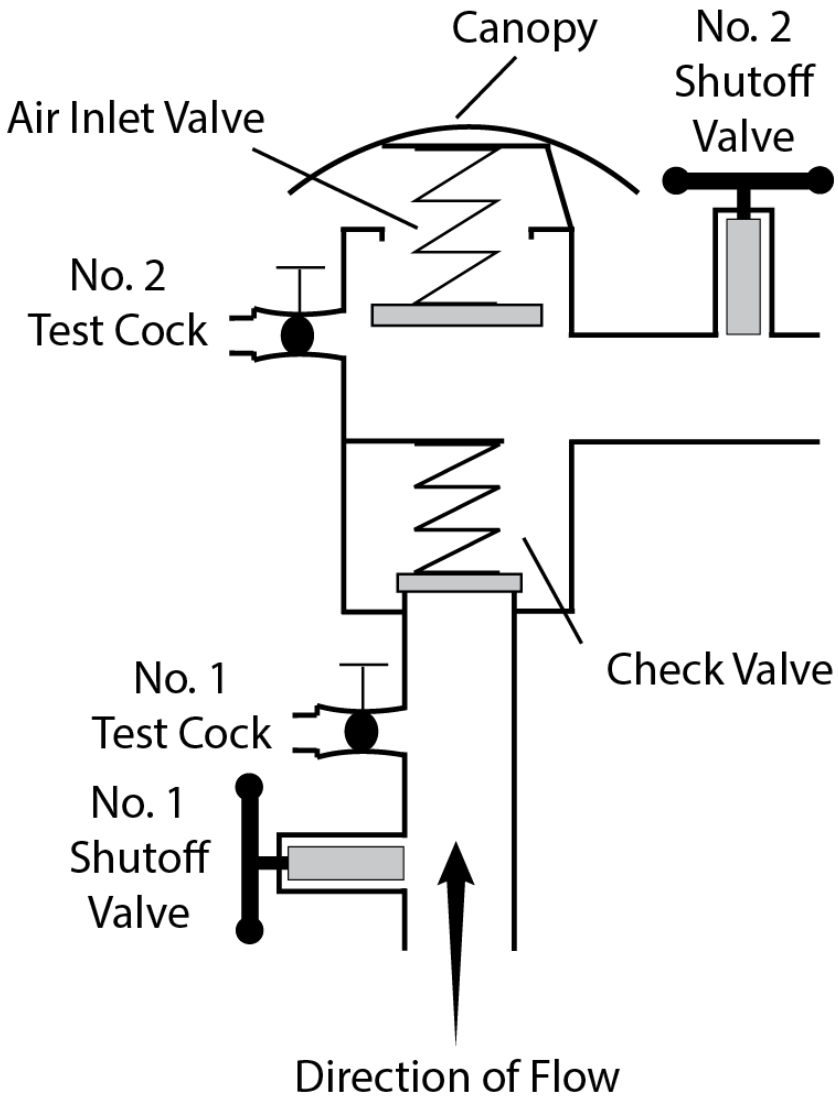


[3] © 2023 University of Southern California. Used with permission

Appendix C

Diagram 4

Pressure vacuum breaker backsiphonage prevention assembly [4]

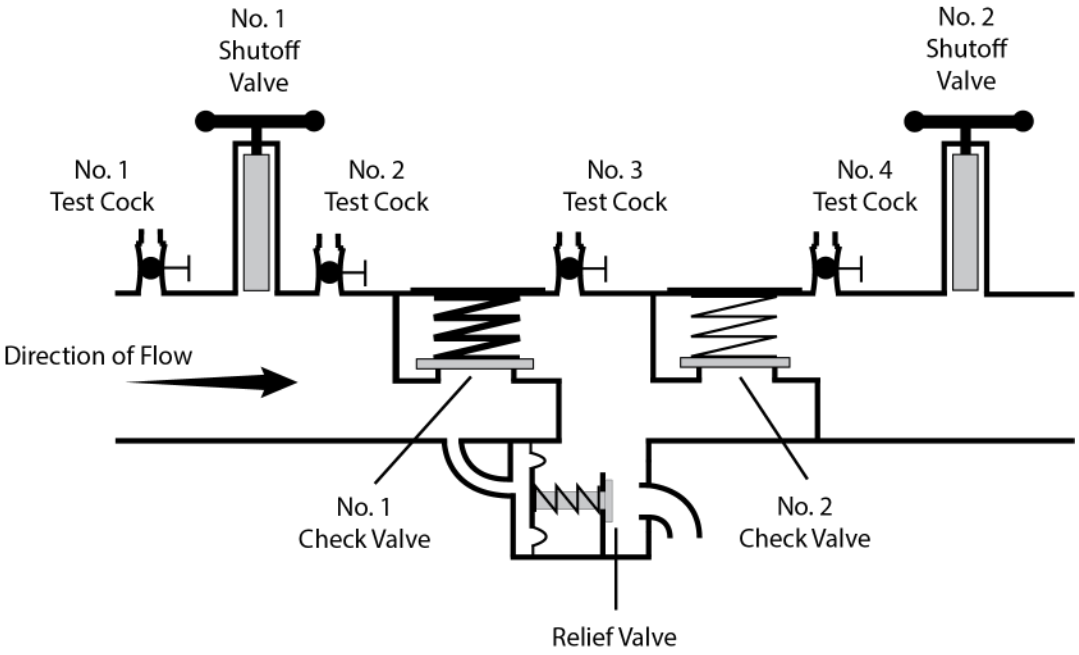


[4] © 2023 University of Southern California. Used with permission

Appendix C

Diagram 5

Reduced pressure principle backflow prevention assembly [5]



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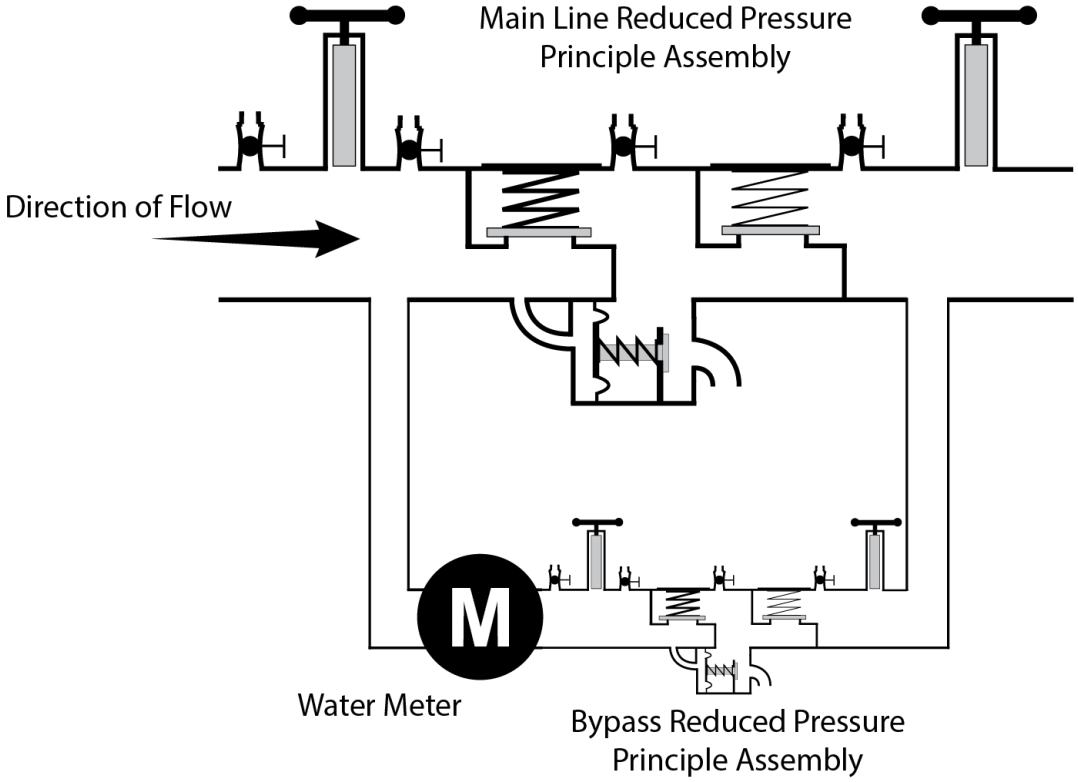
Appendix C

Diagram 6

Reduced pressure principle detector backflow prevention assembly [6]

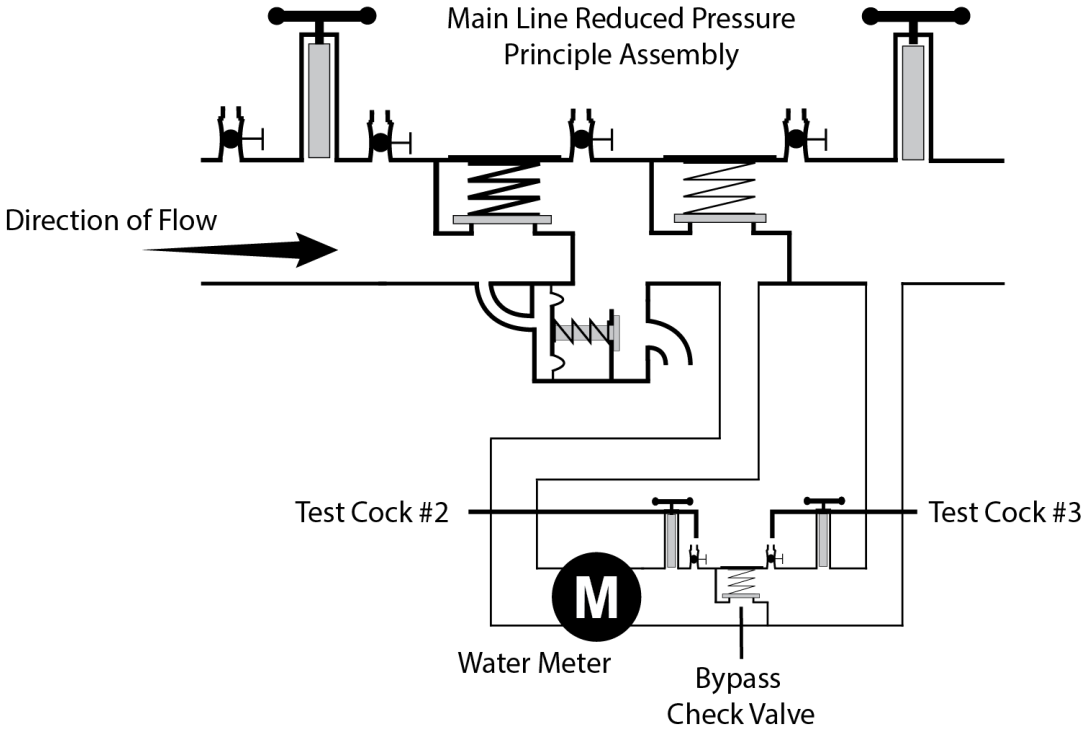


[6] © 2023 University of Southern California. Used with permission

Appendix C

Diagram 7

Reduced pressure principle detector backflow prevention assembly – type II [7]

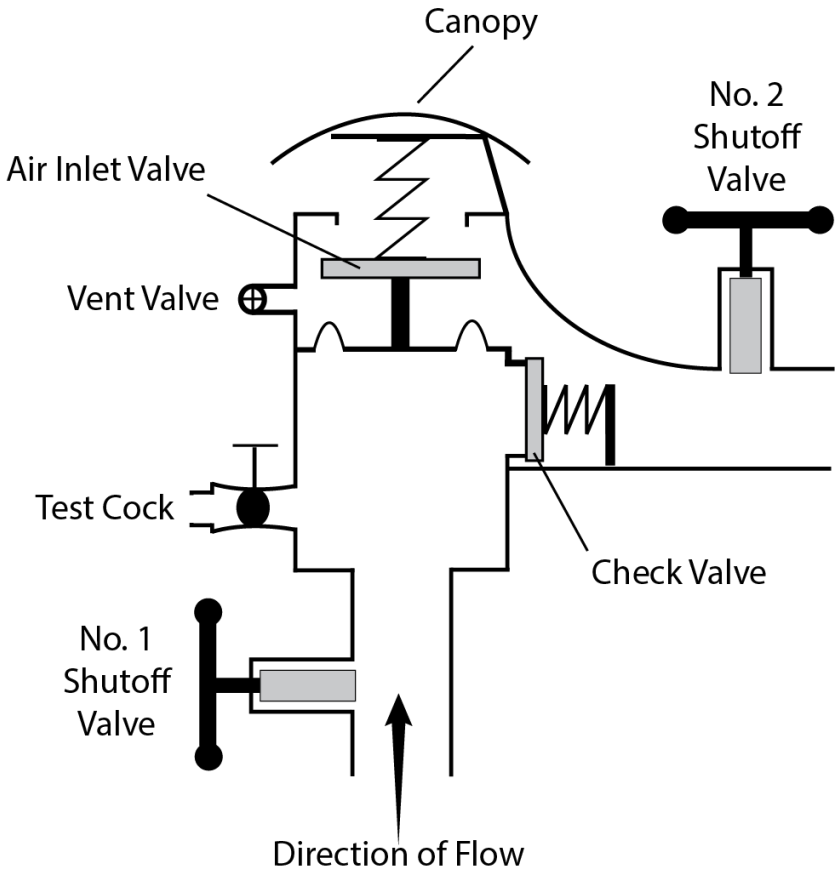


[7] © 2023 University of Southern California. Used with permission

Appendix C

Diagram 8

Spill-resistant pressure vacuum breaker backsiphonage prevention assembly [8]



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Appendix C

Swivel-Ell Design and Construction Criteria

The criteria below, in conjunction with the swivel-ell diagrams that follow (Diagrams 9a and 9b), are **minimum** acceptable design and construction-related requirements for utilizing a swivel-ell. For restrictions and allowances for utilizing a swivel-ell, see CCCPH section 3.2.2.

A. Prior to operation of a swivel-ell, the PWS will receive approval for the design and construction plans of that swivel-ell from the State Water Board.

B. The drinking water supply must not, under any circumstances, be directly connected to the recycled water supply, nor be designed such that the recycled water use site could be supplied concurrently by a recycled water supply and a drinking water supply.

C. The drinking water supply line and the recycled water supply line must be offset (see Diagram 9b) in a manner that ensures a tee-connection, spool, or other prefabricated mechanical appurtenance(s) could not be readily utilized in lieu of the swivel-ell connection, nor result in the recycled water use site being supplied concurrently by recycled water and drinking water.

D. The recycled water supply line used in conjunction with the swivel-ell must be the only recycled water supply to the recycled water use area.

E. The swivel-ell must be located as close as practical to the public water system service connection, with the swivel-ell connection being located as close as practical to the RP upstream of the swivel-ell.

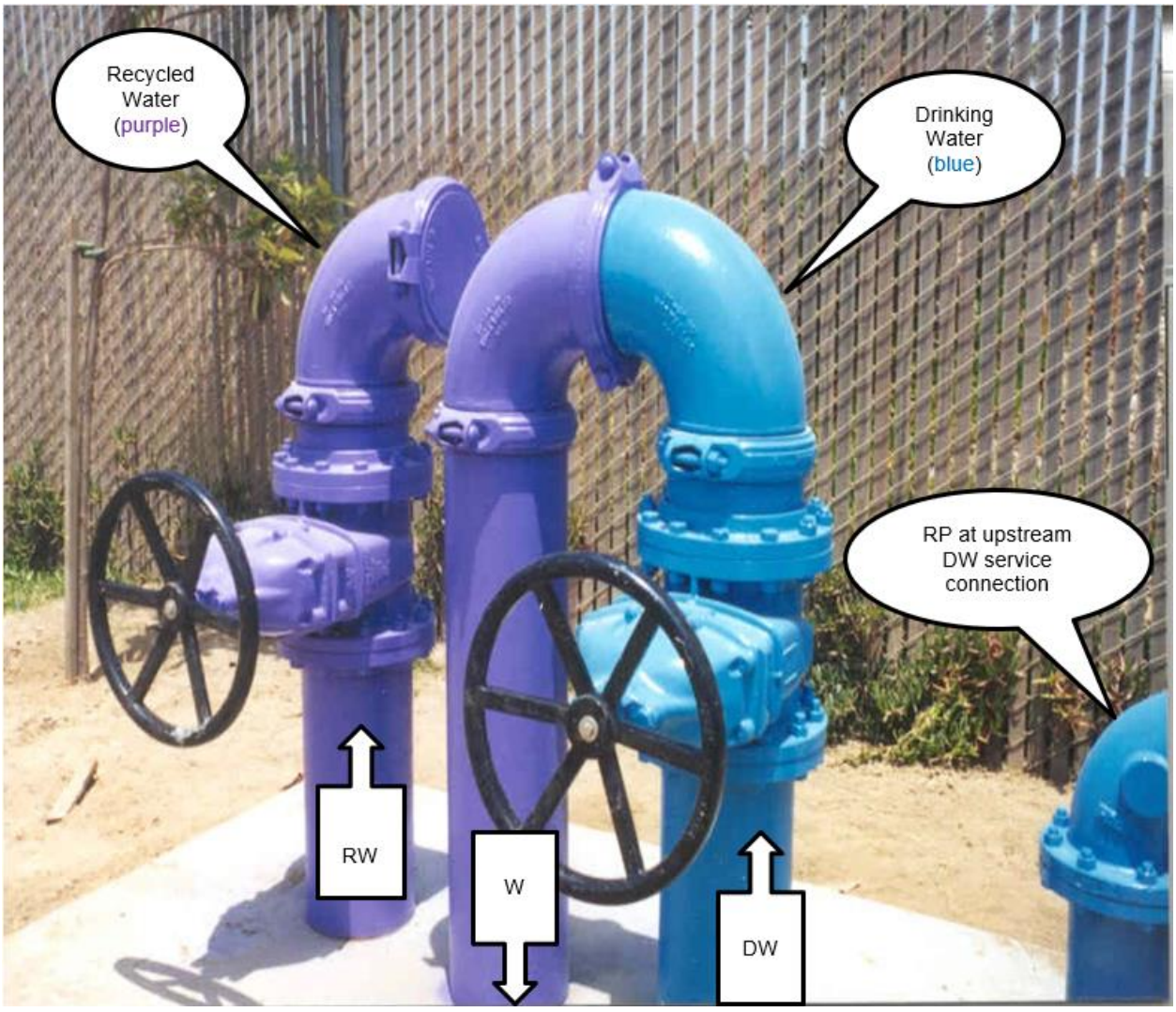
F. The swivel-ell must:

1. be located above ground;
2. be color-coded pursuant to section 116815 of the CHSC and its implementing regulations;
3. include appropriate signage, as required by regulation and the State Water Board;
4. be provided the security necessary to prevent interconnections, vandalism, unauthorized entry, etc.; and
5. be provided with meters on both the recycled water service and drinking water service connections.

Legend for Diagram 9a and 9b (also see next page)

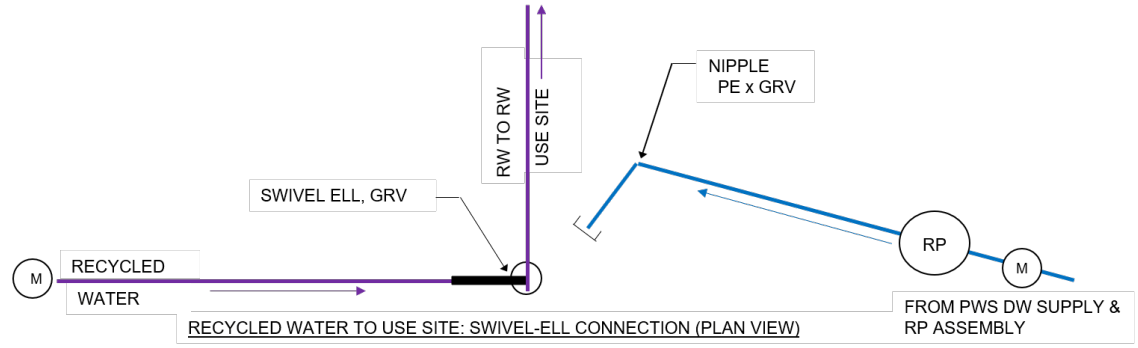
RP = Reduced pressure principle backflow prevention assembly
RW = Tertiary-treated recycled water originating from wastewater treatment facility
DW = Drinking water originating from a public water system
W = Water (tertiary recycled water **or** drinking water) to use site. As pictured, configured for supplemental drinking water to the use site.
M = Meter (*next page*)
PE = Plain End (*next page*)
GRV = Groove (*next page*)
PWS = Public Water System (*next page*)

Diagram 9a: Example Swivel-Ell Pictorial (also see Plan View Schematics)

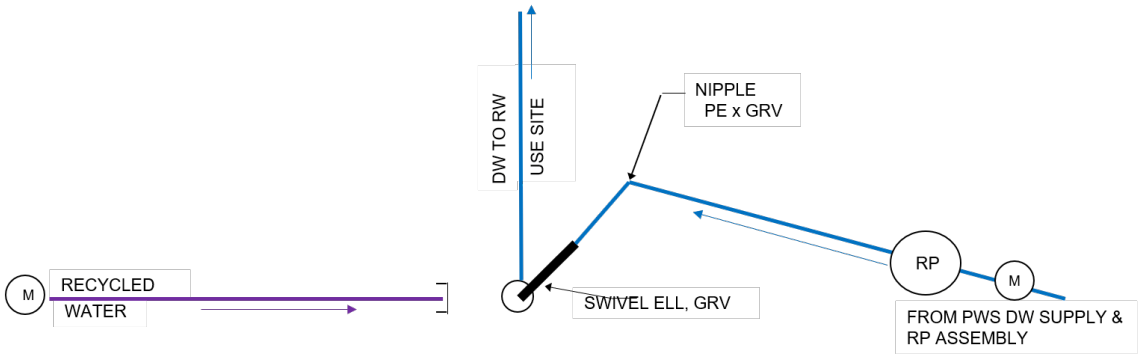


Note: The RP, a required component of an acceptable swivel-ell, is not shown in the picture.

Diagram 9b: Swivel-Ell Typical Plan View Schematics
(not intended to be an exact portrayal of the pictorial)



RECYCLED WATER TO USE SITE: SWIVEL-ELL CONNECTION (PLAN VIEW)



POTABLE WATER TO USE SITE: SWIVEL-ELL CONNECTION (PLAN VIEW)

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Appendix D

High Hazard Premises

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APPENDIX D

HIGH HAZARD CROSS-CONNECTION CONTROL PREMISES

The list below identifies premises that require backflow protection provided by an air gap or a reduced pressure principle backflow prevention assembly, unless noted otherwise. The list below is not intended to be all-inclusive. A PWS, State Water Board, or local health agency may require an AG, RP, or both to protect a PWS from other hazards not listed below and identified in premises through the hazard assessment completed in CCCPH Chapter 3, section 3.2.1. A PWS may reduce or increase the minimum protection required for a previously hazard-assessed user premise following a hazard reassessment as described in CCCPH Chapter 3, section 3.2.1.

1. Sewage handling facilities
2. Wastewater lift stations and pumping stations
3. Wastewater treatment processes, handling, or pumping equipment that is interconnected to a piping system connected to a PWS (+)
4. Petroleum processing or storage plants
5. Radioactive material storage, processing plants or nuclear reactors
6. Mortuaries
7. Cemeteries
8. Sites with an auxiliary water supply interconnected with PWS (+)
9. Sites with an auxiliary water supply not interconnected with PWS
10. Premises with more than one connection to the PWS (++++)
11. Recycled water (++)(+++)
12. Recycled water interconnected to piping system that contains water received from a PWS (+)
13. Graywater systems, as defined in California Water Code Section 14876, that are interconnected to a piping system that is connected to a PWS
14. Medical facilities
15. Kidney dialysis facilities
16. Dental office with water-connected equipment
17. Veterinarian facilities
18. Chemical plants
19. Laboratories
20. Biotech facilities
21. Electronics manufacture
22. Dry cleaner facilities
23. Industrial or commercial laundry facilities
24. Metal-plating facilities
25. Business park with a single meter serving multiple businesses
26. Marine-port facilities
27. Car wash facilities
28. Mobile home park, RV park, or campgrounds with RV hookups

29. Hotels/motels
30. Gas stations
31. Fire stations
32. Solid waste disposal facilities
33. Pet groomers
34. Agricultural premises
35. Hazard assessment access denied or restricted
36. Railroad maintenance facilities
37. Incarceration facilities (e.g. prisons)
38. Temporary connections to fire hydrants for miscellaneous uses, including construction
39. Private water distribution mains
40. Drinking water storage tank overflow connected to a sump or storm drain (+)
41. Airports

(+) Premise isolated by air gap only except as allowed through CCCPH Section 3.2.2(c)

(++) Dual-plumbed use areas established per CCR Title 22, Section 60313 through 60316.

(+++) Residences using recycled water for landscape irrigation as part of an approved dual plumbed use area established pursuant to CCR Title 22, sections 60313 through 60316 shall use, at a minimum, a DC. If the water supplier is also the supplier of the recycled water, then the recycled water supplier may obtain approval of the local public water supplier or the State Water Board, to utilize an alternative backflow protection plan that includes an annual inspection of both the recycled water and potable water systems and an annual cross-connection test of the recycled water and potable water systems pursuant to subsection 60316(a) in lieu of any BPA.

(++++) All connections must receive at least the same level of protection excluding fire protection when connected to the PWS distribution system (e.g. if one connection requires an RP then all connections must have RPs installed).

Appendix E

General Range of Knowledge for Cross-Connection Control Specialists

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APPENDIX E

General Range of Knowledge for Cross-Connection Control Specialists

To effectively prevent unintended backflow into a PWS's distribution system, it is necessary for a cross-connection control specialist to have an understanding of a range of subjects related to cross-connection control. This appendix provides a list of such subjects.

This appendix is not meant to preclude instruction of additional subjects that may be necessary or beneficial to the goal of a prospective or existing cross-connection control specialist in being proficient in protecting public health from backflow through cross-connection control measures. Emphasis on particular subjects should be in a manner that best achieves that goal.

(a) GENERAL

(1) Cross-connection control terminology.
(2) The history leading to the need for cross-connection control, including causes, impacts, including but not limited to:

(A) potable water distribution systems;
(B) examples of backflow incidents and actual or potential public health impacts; and
(C) evolution of methods of cross-connection control and backflow prevention assemblies.

(3) Hydraulics (general) – An understanding of hydraulic gradients, pressure variations, flow rates, temperature, the properties of water, backsiphonage, backpressure, and other elements necessary to understand the causes for backflow.
(4) Public outreach – How to appropriately convey the value of cross-connection control to PWS personnel and the public.

(b) LAWS, REGULATIONS, AND GUIDANCE

(1) Federal – Applicable federal laws, regulations, and guidance.
(2) State – California laws and regulations, including, but not limited to, the State Water Resources Control Board's most recent edition of its *Cross-Connection Control Policy Handbook* and other requirements related to cross-connection control.
(3) Local – An understanding of the need to ensure local requirements are considered and how best to find such requirements.

(c) HAZARD ASSESSMENTS AND METHODS TO PREVENT BACKFLOW

A comprehensive understanding of how to conduct cross-connection surveys of water systems for the purpose of identifying cross-connections, assessing hazards, and identifying the most effective and legally appropriate methods for protection from backflow. At a minimum, the following topics should be considered to achieve such an understanding:

(1) Surveys:

(A) Preparation (e.g., authority, notification, prioritizing customers/premises, coordinating with public water systems, etc.);
(B) Design and as-built drawings related to water supply and cross-connection control;
(C) Public water system schematics;
(D) How to identify existing and new construction, with an understanding of how construction may impact backflow protection;
(E) How to identify cross-connections (actual and potential);
(F) How to identify and differentiate between high hazard and low hazard cross-connections; and
(G) Problems associated with multi-story buildings, multiple service connections at a premises, typical water-use equipment, etc., and varying types of water service, including irrigation, recycled water, gray water, fire prevention systems, and dual plumbed premises.

(2) Assessing Hazards:

(A) Identifying and differentiating between premises activities leading to high hazard cross-connections and low hazard cross-connections (for examples of high hazard activities, see Appendix D); and
(B) Understanding potential public health impacts from backflow associated with the problems in section (c)(1)(G) of this appendix.

(3) Assemblies and Methods for Backflow Prevention:

(A) A comprehensive understanding of approved methods for cross-connection control and preventing backflow with respect to an assessed hazard;
(B) Identifying unapproved methods for cross-connection control and preventing backflow;
(C) An understanding of components, design and operation, proper installation and location of backflow prevention assemblies, including air gaps, and backflow prevention assembly field test methods, field test results, and the assessment of air gaps; and
(D) Identifying unapproved assemblies, as well as those assemblies whose operation and/or state of repair necessitates replacement with an approved assembly.

(d) CROSS-CONNECTION CONTROL PROGRAMS

A comprehensive understanding of the development, elements, and administration of cross-connection control programs, including, but not limited to:

(1) An ability to assess the federal, state, and local requirements applicable to a public water system's cross-connection control program, such that adherence to the cross-connection control program would result in compliance with the requirements;
(2) The roles, responsibilities, and authority of individuals and entities involved in the critical elements of a successful plan for cross-connection control (see CCCPH section 3.1.4); and
(3) The ability to assess the components of a public water system's Cross-Connection Control Plan (see CCCPH section 3.1.4) that best assures the prevention of undesired backflow into the public water system's distribution system, and to communicate deficiencies to public water system personnel.

(e) CROSS-CONNECTION TESTS

A comprehensive understanding of:

(1) The purpose of a cross-connection test and when a cross-connection test should be performed;
(2) The ability to develop protocols and make arrangements for cross-connection tests, and subsequently oversee and/or perform such cross-connection tests, in a manner that determines whether interconnections exist between unapproved sources and approved water supplies; and
(3) Follow-up actions and notifications if a cross-connection test indicates an interconnection.

(f) RECORDKEEPING AND INCIDENT RESPONSE

A comprehensive understanding of:

(1) The agencies and authorities to be notified in the event of a backflow incident;
(2) How to determine the cause of a backflow incident and the actions necessary to prevent similar incidents in the future;
(3) How to properly document a backflow incident, including but not limited to the information in the example backflow incident response form in Appendix F; and
(4) How to properly document the elements associated with surveys and hazard assessments, including those identified in section (c) of this appendix.

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Appendix F

Example Backflow Incident Reporting Form

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BACKFLOW INCIDENT REPORT FORM

Water System: _____

Water System Number: _____

Incident Date: _____

Incident Time (if known):_____

Incident Location: _____

How was the incident discovered?

_____

Backflow Originated from:

Premise Location: _____

Address: _____

Premise Contact Person: _____ Title:_____

Phone:_____ Email: _____

Connection Type: (please check one)

□ Industrial □ Commercial □ Single-Family Residential □ Multi-Family Residential

□ Irrigation □ Recycled Water □ Water System Facility

□ Other: _____

Description and source of backflow substance (please be as descriptive as possible):

_____

_____

If available, please attach an MSDS or other chemical description form

Was the backflow fluid contained within the user side? YES □ NO □

Estimated Number of Affected Persons: _____

Number and description of consumer complaints received:

_____

_____

Did any consumers report illness? Please describe.

_____

_____

If applicable, please describe the consumer notification:

_____

_____

INVESTIGATION

Please describe the water system investigation including time frames:

_____
_____
_____
_____
_____
_____

What was the area system pressure? _____

Is this within typical range: YES ☐ NO ☐ - typical pressure: _____

Was a sample of the water contaminated by the backflow incident collected and stored before flushing? YES ☐ NO ☐

Please describe all sampling:

_____

_____

_____

DDW recommends laboratory or field sampling for the following parameters: total coliform, E. coli, free and total chlorine residual, pH, odor, turbidity, temperature, and color. Additional sampling should be collected at the PWS and regulatory agency's discretion.

CORRECTIVE ACTIONS

Please describe the corrective actions taken by the water system:

_____
_____
_____
_____
_____
_____

Was the chlorine residual increased after discovery of backflow incident? YES ☐ NO ☐

Date of the last cross-connection control hazard assessment of the premise with the backflow incident conducted: _____

Did the premise have backflow prevention assemblies? YES ☐ NO ☐

Date of most recent backflow prevention assembly test(s): _____

When was the Division of Drinking Water or Local County Health office notified?

Date: _____Time: _____ Contact Person: _____

Was the Division or Local County Health notified within 24 hours? YES ☐ NO ☐

Other agencies or organizations contacted?

CERTIFICATION

Name: _____ Job Title: _____

Certification(s): _____

_____

Please list all cross-connection control related certifications including number and expiration date

I certify that the forgoing information is true and correct to the best of my ability.

Signature: _____ Date: _____

Attach the following applicable documentation

1. Laboratory Test Results
2. Sketch of the cross-connection and modifications
3. MSDS or chemical information forms if chemical hazard is known
4. Applicable backflow assembly test reports including the most recent test before the incident
5. Other relevant supporting documentation

Appendix G

Related Statutes and Regulations

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The following laws and regulations are considered related or tangential to the CCCPH, and are included in a descriptive format to provide additional, relevant background information

California Laws and Regulations

In addition to the California SDWA statutory requirements cited in CCCPH Chapter 1, section 1.3.1, California has statutes addressing certain authorities and requirements that may have influenced the CCCPH or may otherwise be of interest.

- Urban and community water systems must have a written policy on discontinuation of residential service for nonpayment and must not discontinue residential service for nonpayment if certain conditions are met. (CHSC sections 116900 – 116926)

- Senate Bill 1263 (2017) requires that before a person submits an application for a permit for a proposed new public water system, the person shall first submit a preliminary technical report which must include a cost comparison of a new public water system and consolidations with an existing system. (CHSC section 116527)

- Effective June 24, 2015, Senate Bill 88 (SB 88) (Statutes 2015, Chapter 27) added sections 116680-116684 to the CHSC, allowing the State Water Board to require certain water systems that consistently fail to provide safe drinking water to consolidate with, or receive an extension of service from, another public water system. The consolidation can be physical or managerial.

- Local health officers may maintain programs for the control of cross-connections by water users, within water users' premises, where public exposure to backflow may occur. Such programs may include water user premises inspections, collection of fees, certification of backflow prevention assembly[1] (BPA) testers, and other discretionary elements. Local health officer BPA tester certification standards must be consistent with the standards prescribed in the CCCPH. Water users are required to comply with all orders, instructions, regulations, and notices from the local health officer regarding installation, testing, and maintenance of a BPA. (CHSC sections 116800 - 116820).

- Pursuant to the California Building Standards Law (CHSC sections 18901 - 18949.31), the California Building Standards Commission (CBSC) must administer the processes related to the adoption, approval, and publication of regulations referred to as the California Building Standards Code (Title 24, California Code of Regulation). Title 24 serves as the basis for the minimum design and construction

[1] California statutes use a variety of terms when referencing a 'backflow prevention assembly' (e.g., backflow protective device, backflow protection equipment, backflow prevention device, backflow or back siphonage protection device, backflow preventer, or backflow device). For consistency with industry terminology, 'backflow prevention assembly' is used in the CCCPH, unless directly quoted otherwise.

of buildings in California and includes the California Plumbing Code (Part 5 of Title 24), which contains requirements pertaining to cross-connection control and backflow prevention.

- A BPA intended to convey or dispense water for human consumption via drinking or cooking must meet California's "lead free" requirements. (CHSC section 116875)

- Limits are established for the installation of backflow protection equipment where automatic fire sprinkler systems are utilized. (CHSC section 13114.7)[2]

- Cross-connection control must be addressed in engineering reports that are required (CCR Title 22, section 60323) for recycled water projects. (Wat. Code section 13552.8)

- If a public agency requires the use of recycled water for toilet and urinal flushing in a structure (except certain mental health facilities), the public health agency must prepare an engineering report that addresses cross-connection control. (Wat. Code section 13554)

- Prior to indoor use of recycled water in a condominium project, the entity delivering the recycled water must submit a report, for State Water Board[3] approval, and include the following related to cross-connection control (Wat. Code section 13553(d)(1)):

    - The condominium project must be provided with a backflow prevention assembly approved by the State Water Board.

    - The backflow prevention assembly must be inspected and tested annually by a certified tester.

    - The condominium project must be tested by the recycled water agency or local agency at least once every four years for indications of possible cross-connections between the condominium's potable and non-potable systems.

- California's Department of Water Resources was required to convene a task force, known as the 2002 Recycled Water Task Force, to identify constraints, impediments, and opportunities for the increased use of recycled water and report

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[2] CHSC section 13114.7 historically provided potential limits for backflow prevention assemblies on fire sprinklers. Even though current standards differ from the language stated in CHSC section 13114.7, it is still being provided as a historical reference as there may still be installations with the now outdated limits established in section 13114.7

[3] The California Department of Public Health's authority and responsibility pertaining to this reference was transferred to the State Water Board via Senate Bill 861 (2014, Chapter 35). As such, applicable statutory mandates that may refer to "California Department of Public Health" or "Department" may be referred to as "State Water Board" in this document.

to the Legislature by July 1, 2003. The task force was also asked to advise and make recommendations concerning cross-connection control, including the applicability of visual inspections instead of pressure tests for cross-connections between potable and non-potable water systems. (Wat. Code section 13578(b)(1). The final report[4] provided the following recommendations to the State Water Board – Division of Drinking Water (Division):

- ▫ Prepare guidance on dual plumbed regulations (22 CCR sections 60313-60316) consistent with Appendix J of plumbing code (Chapter 15 of 2019 California Plumbing Code, formerly Chapter 16A).
- ▫ Support thorough assessment of risk associated with cross-connections between disinfection tertiary recycled water and potable water.
- ▫ Ensure uniform interpretation of cross-connection control requirement of Title 22 regulations (recycled water) and Title 17 (cross-connection control regulations)
- ▫ Recommend stakeholders to review draft Title 17 regulations.

▪ A person engaged in the salvage, purchase, or sale of scrap metal who knowingly possesses a backflow prevention assembly (or connections to the assembly or any part of the assembly), or who failed to report the possession of such items, which was previously owned by a utility or public agency, is guilty of a crime. (Pen. Code section 496e)

▪ Junk dealers or recyclers who possess a backflow prevention assembly (or connections to that assembly or any part of the assembly) without a written certification from the agency or utility owning or previously owning the assembly will be liable to the agency or utility for the wrongful possession. (Civ. Code section 3336.5 and, similarly, Bus. & Prof. Code section 21609.1)

Please note that a number of the codes, regulations, and statutes cited above are implemented under the authority of regulatory entities other than the State Water Board and would therefore be beyond the scope of this CCCPH. The intent of providing such citations is to increase general awareness with respect to other potential statutory requirements associated with cross-connection control. The list is not exhaustive and does not include other requirements that may exist, including those via regulations that may have been adopted by an appropriate regulatory entity.

Federal Laws and Regulations

[4] California Department of Water Resources. (2003). *Water Recycling 2030: Recommendations of California's Recycled Water Task Force*

All suppliers of domestic water to the public are subject to regulations adopted by the U.S. Environmental Protection Agency (EPA) under the U.S. Safe Drinking Water Act (SDWA) of 1974, as amended (42 U.S.C. section 300f et seq.), as well as by the State Board under the California SDWA (Health & Saf. Code, div. 104, pt. 12, ch. 4, section 116270 et seq.). Additionally, the State Water Board has been delegated primacy - the responsibility and authority to administer U.S. EPA's drinking water regulations within California – on the condition that California adopt enforceable requirements no less stringent than U.S. EPA's.

The U.S. EPA currently has no distinct cross-connection control requirements that apply broadly to public water systems (PWS); however, the importance of cross-connection control is evident by the issue papers and guidance documents developed by U.S. EPA and their recognition that cross-connections and backflow represent a significant public health risk (see discussion in Chapter 2). Although U.S. EPA currently has no distinct cross-connection control requirements, the subject of cross-connection or backflow prevention assemblies is included in the U.S. SDWA and the Code of Federal Regulations (C.F.R.) in relation to PWS, including the following:[5]

- If used exclusively for non-potable services, a backflow prevention assembly (BPA) is exempt from the federal lead prohibitions. (42, U.S.C. section 300g)
- Allows increasing disinfectant concentrations in a PWS distribution system in the event of a cross-connection (backflow) event. (40 C.F.R. section 141.130(d))
- Proper maintenance of the distribution system, including cross-connection control, is identified as a best available technology (BAT) for microbial contaminant control. (40 C.F.R. section 141.63(e))
- Under the federal Revised Total Coliform Rule, a PWS having a cross-connection control program is one of the enhancements necessary to reduce monitoring for a PWS that had been under an increased monitoring frequency. (40 C.F.R. section 141.854(h)(2))
- Under the federal Revised Total Coliform Rule, a PWS having a cross-connection control program is a criterion for a state to allow a reduced monitoring frequency (40 C.F.R. section 141.855(d)(1))
- If a state allows the monitoring frequency reductions previously mentioned under the federal Revised Total Coliform Rule, a state is required to include in its primacy package to U.S. EPA how a PWS will be required to demonstrate cross-connection control. (40 C.F.R. section 142.16(q))

[5] For requirements unrelated to cross-connection control, please consult California's laws and regulations specific to the topic of interest. California may have more stringent requirements (e.g., reduced monitoring allowed via federal regulations may be prohibited in California).