

City of San Diego, California <b>DEPARTMENT INSTRUCTION</b>	DI Number <b>55.21</b>	Department <b>Public Utilities Department</b>
Subject <b>POLICY ON CROSS-CONNECTION AND BACKFLOW PREVENTION</b>	Page <b>1 of 11</b>	Effective Date <b>December 31, 2023</b>
	Supersedes DI <b>55.21</b>	Dated <b>September 21, 2012</b>

1. PURPOSE

- 1.1. To set forth policies and procedures for the control of Cross-Connection and the requirements for backflow protection. See Department Instructions (DI) 55.13 for information on backflow requirements for private fire protection systems.

2. AUTHORITY

*All authorities and references shall be current versions and revisions.*

- 2.1. Code of Federal Regulation, Safe Drinking Water Act of 1986.
- 2.2. Code of California Regulations (CCR), Titles 17 and 22.
- 2.3. State of California Water Code.
- 2.4. California Plumbing Code (CPC).
- 2.5. City of San Diego Municipal Code (MC) Chapter IV, Article 4, Division 01, Section 44.0114 and Chapter VI, Article 7, Division 02, Section 67.0202.
- 2.6. City of San Diego Rules and Regulations for Recycled Water Use and Distribution.
- 2.7. Public Utilities Department Director.

3. REFERENCES

- 3.1. American Water Works Association (AWWA) Manual M-14, Recommended Practice for Backflow Prevention and Cross-Connection Control.
- 3.2. American Water Works Association Guidelines for Distribution of Non-Potable Reclaimed Water.
- 3.3. USC Foundation for Cross-Connection Control and Hydraulic Research Manual (10th Edition).

4. POLICY

- 4.1. The City of San Diego, as a water purveyor, has the responsibility for implementing a Cross-Connection Control program per City of San Diego Municipal Code Chapter IV, Article 4, Division 01, Section 44.011 4 and Chapter VI, Article 7, Division 02, Section 67. 0202, and Code of California Regulations (CCR) Titles 17 and 22.
- 4.2. The Cross-Connection Control Unit within the Public Utilities Department shall follow all applicable regulations and laws found in Section 2, AUTHORITY, in implementing and maintaining a Cross-Connection Control program within the City's jurisdiction.
- 4.3. A Cross-Connection is defined as any actual or potential connection or structural arrangement between a public or a consumer's potable water system and any other source or

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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. Bypass arrangements, jumper connections, removable sections, swivel, or change-over devices and other temporary or permanent devices through which or because of which backflow can occur are considered to be cross connections, per USC Foundation for Cross-Connection Control and Hydraulic Research Manual 10th Edition, Section 1.27.

4.4. The Cross-Connection Control program shall consist of the following two categories:

- a. **Public Utilities Department Installed and Maintained Backflow Prevention Assemblies:** Assemblies installed and maintained by the City of San Diego shall be strictly City of San Diego properties and facilities. At the City's discretion, previously City maintained assemblies on noncity properties will be transferred to private responsibility as they are brought up to code.
- b. **Privately Installed and Maintained Backflow Prevention Assemblies:** The following conditions must be met before a privately installed backflow prevention assembly will be approved as meter service protection by the City of San Diego Public Utilities Department:
  - 4.4.1. The backflow prevention assembly(ies) to be installed shall be on the approved list furnished by the Public Utilities Department. This list can be obtained from the Public Utilities Department Cross-Connection Control Unit.
  - 4.4.2. The backflow prevention assembly(ies) to be installed shall meet the City's standards. The City standard for all backflow prevention assemblies considered as meter or service protection shall be reduced pressure principle assemblies (RP). All assemblies used on services supplying water used for human consumption must be made from lead free materials and designated as such on the assembly. Each meter or service identified to require protection must have a dedicated backflow preventer without manifold. Backflow preventers must match meter size and be installed per the latest City of San Diego Standard Drawings. These devices shall be installed in a location approved by the Cross-Connection Control Specialist assigned to that facility and must be installed directly behind and as close to the meter as practical and before any branches, tees, valves, strainers, and pressure regulators in the water line. Therefore, no branches, tees, valves, strainers, or pressure regulators are allowed in the water line between the meter or service and backflow assembly. Any submittal for a variance will be considered on a case-by-case basis and reviewed by the Cross-Connection Control Program Administrator.
  - 4.4.3. The Cross-Connection Control Unit shall maintain a list of certified backflow prevention assembly testers. All testing of backflow prevention assemblies must be completed by individuals on the approved list. The lists shall consist of testers who possess a current backflow tester certificate with either of the following California-

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Nevada, American Water Works Association (AWWA), or Regional American Backflow Prevention Association (ABPA) certification, or Cross-Connection Control Unit accepted certificate, current gage calibration, and accepted certification to remain on file.

- 4.4.4. The installation of a backflow prevention assembly must be inspected and approved by the Cross-Connection Control Unit. After installation and before becoming operational, an initial test shall be performed by a certified tester on the current Public Utilities Department Tester list. The assembly is also required to be on the Cross-Connection Control Unit's approved list and must be tested on an annual basis or more frequently as required by the Cross-Connection Control Unit.
- 4.4.5. The Cross-Connection Control Unit shall maintain a record of tests performed on all backflow prevention assemblies for at least three years and shall notify the property owner thirty days in advance of the next test due date.
- 4.4.6. All testing, maintenance, repair, installation, and replacement of backflow prevention assemblies shall be performed at the expense of the property owner or responsible party being supplied by that water service.
- 4.4.7. The backflow prevention assembly test forms shall be completed with all required information, including test results, maintenance, and repairs performed. The certified testers shall notify the Cross-Connection Control Unit regarding all unapproved piping or modifications. All test forms shall be returned to the Cross-Connection Control Unit within ten (10) calendar days from completion. The certified testers must only use pre-printed test forms supplied by the Cross-Connection Control Unit.
- 4.4.8. All properly installed, inspected, and previously approved backflow prevention assemblies that have been regularly maintained will be accepted by the Public Utilities Department, provided they comply with Title 17 or Title 22 of the Code of California Regulations (CCR). Failing backflows must be repaired or replaced within 60 calendar days with an approved assembly and installed to current City of San Diego Public Utilities Department specifications.
- 4.4.9. Consumers may request an inspection of plumbing systems on their premises by a representative of the Cross-Connection Control Unit. The inspection will determine if cross connection and/or violations of these regulations exist. If such conditions are present, the property owner or responsible party being supplied by that water service shall be notified in writing that meter or service protection is required.

- 4.5. After a site survey, the Cross-Connection Control Unit shall send a letter notifying the property owner or responsible party being supplied by that water service of the

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requirements for a backflow prevention assembly to be installed in the pre-approved location. The installation shall be according to the current City of San Diego Public Utilities Department specifications. This notice will allow sixty (60) calendar days for the installation to be completed. A final notice allowing five (5) calendar days will be sent if the property owner or responsible party being supplied by that water service refuses to comply. Continued failure to comply with the requirements of this policy will be subject to enforcement action pursuant to the City of San Diego Municipal Code.

- 4.6. In addition to any applicable judicial remedy, the City of San Diego, as a water purveyor, has the right to issue a Notice of Violation, Administrative Citation, Civil Penalties, refer the case to the City Attorney for prosecution, or discontinue water service to any premises for the following instances of noncompliance:

- 4.6.1. If a backflow prevention assembly is not installed, tested, and/or maintained as required by the City of San Diego Public Utilities Department Cross-Connection Control Unit.
- 4.6.2. If a property owner fails to repair or replace a failing backflow prevention assembly following notice by the City of San Diego Public Utilities Department Cross-Connection Control Unit.
- 4.6.3. If an assembly is removed or bypassed.
- 4.6.4. If unprotected cross-connection or other inadequate protection exists on the premises.
- 4.6.5. If any violation of any applicable State of California or City of San Diego Municipal Code regulation pertaining to the water supply exists on the premises.

**WATER SERVICE SHALL BE TERMINATED AND NOT RESTORED (EXCEPT TO COMPLETE THE REQUIRED BACKFLOW PREVENTION ASSEMBLY TESTING) UNTIL ALL REQUIREMENTS ARE MET AS VERIFIED BY THE CROSS-CONNECTION CONTROL UNIT OF THE PUBLIC UTILITIES DEPARTMENT.**

- 4.7. The California Department of Public Health and County Health Department may also require the City of San Diego to discontinue water service to any premises if there is an actual or potential cross-connection or environmental hazard that may affect the public or consumer's water supply.
- 4.8. Approved certified backflow prevention assembly testers must comply with the following requirements:
- 4.8.1. All approved certified backflow prevention assembly testers must meet all requirements for testing as listed in Section 4.4.b. 4.4.3 and attend an orientation session offered by the Cross-Connection Control Unit before testing any backflow prevention assembly within the Department's jurisdiction.

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- 4.8.2. All testers must agree to the terms as stipulated on the Tester Application Form. Testers must sign and submit the form to the Cross-Connection Control Unit for approval (see attached Tab 1).
- 4.8.3. All testing instruments shall be regularly maintained and calibrated at least once a year. Should a tester's gauge calibration or tester certification expire, the tester will be removed from the list and backflow assembly tests completed within that expired period will not be accepted. Backflow testers shall submit annual calibration and certification renewals to the Cross-Connection Control Unit for verification and processing.
- 4.8.4. Public Utilities Department backflow forces shall receive proper training as determined by the Cross-Connection Control Unit. These requirements must be met before testing backflow prevention assemblies in the City of San Diego water system.

5. **CONDITIONS REQUIRING BACKFLOW PREVENTION**

- 5.1. Backflow prevention assemblies or backflow prevention measures shall be required on all water services as determined by the Cross-Connection Control Unit or if any of the following conditions exist:
  - a. The consumer's premises are served by more than one meter and the internal water system may be interconnected.
  - b. Non-interconnected private wells, elevated storage tank, or any type of auxiliary water supply exists on the premises.
  - c. Interconnected private wells, elevated storage tank, or any type of auxiliary water supply exists on the premises directly connected to the City's water system require air gap backflow prevention.
  - d. A building's water service is forty feet or higher above the meter elevation.
  - e. The premise being served is commercial/industrial with a water service(s) of 1.5 inches or larger. The backflow installation/testing requirement for commercial/industrial services 1 inch and smaller will be determined on a case-by-case basis by the Cross-Connection Control Unit and will be based on degree of potential hazard to the City water supply.
  - f. The premise being served is multi-family with a water service(s) of 1.5 inches or larger. The backflow installation/testing requirement for commercial/industrial services 1 inch and smaller will be determined on a case-by-case basis by the Cross-Connection Control Unit and will be based on degree of potential hazard to the City water supply.
  - g. A pump or other device is used for boosting water pressure which may cause back pressure to the City of San Diego water mains.

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- h. The premises being served use potable water for industrial or commercial use such as chemical mixing, cleaning, cooling, dipping or other industrial processing.
  - i. A water service located at a waterfront facility where there is a potential danger of back siphonage.
  - j. Premises where there are irrigation systems may be required to install a meter protection backflow assembly at the discretion of the Cross- Connection Control Unit.
  - k. All installations of dedicated irrigation, industrial or fire services.
  - l. The consumer's water piping system is so extensive that it is not easily inspected.
  - m. There are submerged inlets that are connected to holding, processing or other tanks.
  - n. There is a carbonator on the premises.
  - o. Premises that are dual plumbed.
  - p. There is a graywater system installed on the property. If the system is pressurized, then a reduced pressure principle assembly will also be required at the make-up water line for the system.
  - q. All temporary or mobile meters used for construction purposes shall have a reduced pressure principle assembly attached. This assembly shall be tested every time it is installed at a water service, or annually.
- 5.2. Where sewage, atomic wastes, toxic wastes, lethal or other hazardous materials are pumped, processed, or treated, an approved air gap shall be installed.
- 5.3. When the requirement for backflow protection is in question, a detailed inspection of the consumer's premises shall be conducted by the Cross-Connection Control Unit.

**6. RECYCLED WATER**

- 6.1. All new and existing facilities using recycled water shall comply with City, County, and State rules, regulations, ordinances, and laws. A summary of applicable regulations can be found in the *Rules & Regulations for Recycled Water Use and Distribution within the City of San Diego's* website <https://www.sandiego.gov/public-utilities/sustainability/recycled-water>

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- 6.2. All new facilities must be plan-checked and approved by the City of San Diego, Public Utilities Department Recycled Water Program and prior to the system becoming operational. To prevent potential Cross-Connection, the installation of all meters, wet taps and services on recycled systems or future recycled systems shall only be released by the Recycled Water Program. The Recycled Water Program will notify the potable Cross-Connection Control Unit prior to a recycled water system becoming operational.
- 6.3. All materials and equipment used in the operation of recycled water shall be used for recycled water only and installed per Rules & Regulations for Recycled Water Use and Distribution within the City of San Diego. Recycled meter boxes shall be purple polymer boxes with purple warning tags inside the meter box and shall be provided with curb markers per RW-102A and RW-121 of the latest Edition of Book 7 of the City of San Diego Recycled Water Systems Guidelines.
- 6.4. A Cross-Connection Control Specialist from the Recycled Water Program shall make an on-site inspection of all potential recycled water customer sites prior to and during construction. A final inspection of the recycled water system and a shutdown test of the potable system shall be completed prior to the system becoming operational and recycled water service initiated. The recycled water Cross-Connection Specialist may require changes to the system to protect public health and uphold rules and regulations.
- 6.5. A recycled water distribution system shall not be connected directly or indirectly to a potable water system. An air gap or other method approved and accepted by the Recycled Water Program shall be required.
- 6.6. All recycled water shall be used for its intended and stated purposes only and any additional use shall be approved by the Recycled Water Program prior to system expansion.
- 6.7. All recycled water use sites must be inspected annually by the Recycled Water Program staff. Every four years the sites must be tested to ensure there is no cross-connection between the recycled and potable systems. The Recycled Water Program shall maintain a record of all recycled water use sites that includes all inspections, testing and current Site Supervisor information.
- 6.8. No services shall be installed on a recycled distribution system less than two (2) inches in diameter.

**7. BACKFLOW PROTECTION FOR INSTALLATION OF NEW WATER SERVICES**

- 7.1. All standard water service installations for new construction and tenant improvements shall be reviewed by the Development Services Department to determine if backflow protection is required. In addition, the Public Utilities Department's Water and Sewer Development Review group may also need to review these installations, as required. Any deviation from the standards will be reviewed by the Cross-Connection Control Unit for acceptance. The Cross- Connection

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Control Unit will keep Development Services staff up to date on any regulatory or policy changes. The Cross-Connection Control Unit shall reserve the right to make changes according to new regulations.

**8. ENFORCEMENT OF CROSS-CONNECTION AND BACKFLOW PREVENTION POLICIES**

- 8.1. The Cross-Connection Control Unit shall enforce the policies and procedures related to cross-connection and backflow requirements. Where there is an alleged violation of applicable Codes, the Cross-Connection Control Unit may at its discretion refer the matter to the Public Utilities Code Enforcement Unit for application of appropriate remedy. Prior to any referral, the Cross-Connection Control Unit will make reasonable effort to confirm, when practicable, that the reasonable party has received the appropriate notification and subsequently failed to comply.
- 8.2. The Cross-Connection Control Unit shall maintain records of installed backflow prevention assemblies and review plans for backflow requirements. Site investigations shall be performed by the section's Cross-Connection Control Specialists.
  - 8.2.1. Cross Connection staff will send out annual notifications for backflow tests. Additional inspections will be conducted if test reports present suspicious data, adjustments to the plumbing system or changes in the type of activity performed on the premises impacting the degree of hazard.
  - 8.2.2. If backflow assembly needs to be repaired or replaced, customer is responsible for an initial test that shall be performed by a certified tester on the current Public Utilities Department Tester list. Cross Connection database will be updated to reflect the new backflow assembly and placed into the annual testing notification schedule.
  - 8.2.3. After installation of new backflow assembly and before becoming operational, an initial test shall be performed by a certified tester on the current Public Utilities Department Tester list. The assembly is also required to be on the Cross-Connection Control Unit's approved list and must be tested on an annual basis or more frequently as required by the Cross-Connection Control Unit.
- 8.3. The Cross-Connection Control Unit shall coordinate and implement all rules, regulations and laws regarding the requirements and installation of backflow prevention assemblies and shall act as liaison with the State of California and County of San Diego Health Department in matters involving cross-connection control and backflow prevention.


**9. APPEAL PROCESS**

- 9.1. If the consumer believes there is no justification for the installation of a backflow prevention assembly, the consumer may appeal the decision. The first level appeal must be made in writing to the Field Services and Investigations Manager within 10 (ten) calendar days of receipt of installation notice.



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- 9.2. The Field Services and Investigations Manager will respond in writing to the consumer within 30 days.
- 9.3. If the consumer is not satisfied with the Field Services and Investigations Manager's decision, a final appeal may be made in writing to the Customer Support Division's Deputy Director within 10 (ten) calendar days of the date of the Field Services and Investigations Manager's decision letter.
- 9.4. The Deputy Director will review the case and respond in writing to the consumer within 45 days of receipt of the consumer's final appeal letter.



Juan Guerreiro  
Director of Public Utilities

#### APPENDIX

##### Tab 1 – Tester Application Form

Administering Division: Customer Support Division, Cross-Connection Section

Subject Index: Backflow Prevention and Cross-Connection  
Cross-Connection and Backflow Prevention Water Services  
Cross-Connection and Backflow Prevention

Distribution: Department Intranet Website

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## TESTER APPLICATION

page 1

City of San Diego  
Water Meter Services, Cross-Connection Control  
9192 Topaz Way  
San Diego, CA 92123  
Email: [CrossConnect@sandiego.gov](mailto:CrossConnect@sandiego.gov)

To be placed on the City of San Diego's list of Approved Backflow Testers, you must provide the following documentation and agree to all requirements listed below.

**Applicant hereby agrees to:**

1. Not falsify test results.
2. Use test procedures approved by your certifying agency.
3. Abide by City of San Diego Cross-Connection Control procedures.
4. Not make unneeded repairs or re placements.
5. Sign only those test reports for assemblies that you have personally performed work on.
6. Return original preprinted test reports to the Cross-Connection Control Unit within 10 working days of performing test.
7. Maintain and provide copy(s) of current tester certificate with the Cross-Connection Control Unit (ABPA, AWWA).
8. Maintain and provide copy(s) of a current gauge calibration certificate, annually to the Cross-Connection Control Unit.
9. Document and notify the Cross-Connection Control Unit of any unapproved, incorrectly installed backflow prevention assemblies and submit test forms for assemblies which fail test.

I, the undersigned, agree to meet the above requirements and understand that failure to do so warrants removal from the List of Approved Testers.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

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### TESTER APPLICATION

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City of San Diego  
Water Meter Services, Cross-Connection Control  
9192 Topaz Way  
San Diego, CA 92123  
Email: [CrossConnect@sandiego.gov](mailto:CrossConnect@sandiego.gov)

Name \_\_\_\_\_  
(last) (first) (mi)

Address \_\_\_\_\_  
(number) (street name) (city) (state) (zip)

Phone # \_\_\_\_\_ E-mail \_\_\_\_\_

\_\_\_\_\_ General Tester – able to perform backflow testing within City of San Diego

\_\_\_\_\_ Limited Tester – single facilities only (i.e., UCSD, Sharp, Kaiser, etc.)

\_\_\_\_\_ City of S.D. – employed by City of San Diego

Employer \_\_\_\_\_

Address \_\_\_\_\_  
(number) (street name) (city) (state) (zip)

Phone # \_\_\_\_\_ Fax # \_\_\_\_\_

Cellular # \_\_\_\_\_ Pager # \_\_\_\_\_

Email \_\_\_\_\_

Certifications: \_\_\_\_\_ ABPA #: \_\_\_\_\_

\_\_\_\_\_ AWWA #: \_\_\_\_\_

Test Kit(s): Type \_\_\_\_\_ Serial # \_\_\_\_\_

Type \_\_\_\_\_ Serial # \_\_\_\_\_