



PROVIDENCE WATER SUPPLY BOARD

CROSS-CONNECTION CONTROL PROGRAM

RULES AND REGULATIONS



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PROVIDENCE WATER SUPPLY BOARD
Cross-Connection Prevention Program

I. PURPOSE

Safe drinking water is a scientific, budgetary, and emotional issue, and the need for cost-effective services, coupled with a stringent quality assurance program, cannot be overstated. Cross-connections between water supplies and non-potable sources of contamination represent one of the most significant threats to health in the water supply industry. This program is therefore designed to maintain the safety and potability of the water in the system by preventing the introduction of any foreign liquids, gases, or substances, other than water from the intended sources, to provide protection from actual or potential cross-connections.

II. AUTHORITY

This program derives its authority from the Federal Safe Drinking Water Act which requires that the water purveyor has the primary responsibility for preventing water from unapproved sources, or any other substances, from entering the public potable water system. This intent is further clarified in the Rhode Island General Law Section 46-13-22 (Cross-Connection Control) and the Rhode Island Health Department Rules and Regulations Pertaining to Drinking Water, Section 9.4 (Cross-Connection Control), which are hereby incorporated by reference.

III. DEFINITIONS

- A. ABPA: American Backflow Prevention Association
- B. ASSE: American Society of Sanitary Engineers
- C. Backflow: The flow of water or other foreign liquids, gases, or other substances or materials of any kind in any form into the distribution system of a public water supply from any source other than the intended.
- D. Backflow Preventer: A device to prevent backflow
 - 1) Air Gap: A physical separation sufficient to prevent backflow between the free-flowing discharge end of the potable water system and any other system.
 - 2) Atmospheric Vacuum Breaker: A device which prevents backsiphonage by creating an atmospheric vent where there is either a negative pressure or sub-atmospheric pressure in a water system.
 - 3) Backflow Preventer with Intermediate Atmospheric Vent: A device having two check valves separated by an atmospheric vent.
 - 4) Double Check Valve Assembly (DCVA): An assembly of at least two independently acting check valves including tightly closing shut-off valves on each side of the check valve assembly and test cocks available for testing the water tightness of each check valve.
 - 5) Dual Check Valve: A device having two spring-loaded independent check valves. Used primarily in residential situations.

- 6) Hose Bib Vacuum Breaker: A device which is permanently attached to a hose bib and which acts as an atmospheric vacuum breaker.
 - 7) Pressure Vacuum Breaker: A device containing an independently operating, internally-loaded check valve and an independently operating air inlet valve on the discharge side of the check valve.
 - 8) Reduced Pressure Zone Backflow Preventer (RPZ): An assembly of check valves and a reduced pressure zone which spills water to the atmosphere in the event of the failure of the check valves.
 - 9) Approved Device: A backflow prevention device as approved by the Providence Water Supply Board.
- E. Backpressure: A condition in which the owner's system pressure is greater than the supplier's system pressure.
 - F. Backsiphonage: Backflow resulting from negative or less than atmospheric pressure in the water system.
 - G. Containment: A method of backflow prevention which requires a backflow preventer (containment device) at the water service entrance.
 - H. Containment Device: An approved backflow assembly that may include a strainer as recommended by the manufacturer.
 - I. Cross-Connection: A cross-connection is any connection or arrangement, physical or otherwise, between a potable water supply system and any plumbing fixture, tank, or any receptacle, through which it may be possible for non-potable, used, unclean, polluted, contaminated water, and/or other substances to enter into any part of such potable water system under any condition. It is not necessary for contamination or backflow to have actually occurred. A cross-connection is simply the connection through which it may be possible for backflow or contamination to occur.
 - J. Cross-Connection Survey: An inspection conducted by PWSB in order to identify any actual or potential cross-connections, to determine the degree of hazard or potential hazard and the appropriate means of backflow prevention, or to confirm compliance with the PWSB cross-connection program.
 - K. Domestic Service: A water line which supplies potable water for non-fire protection uses such as drinking, bathing, culinary, heating, and process water purposes.
 - L. Fire Service: A water line that supplies water for fire protection to a fire sprinkler system.
 - M. Fixture Isolation: A method of backflow prevention in which a backflow preventer is located to correct a cross-connection in any in-plant unit rather than at the water service entrance. Fixture isolation alone is not deemed an acceptable method of backflow prevention by the PWSB within its distribution system.
 - N. NEWWA: New England Water Works Association.

- O. Owner: One in whom the legal title to real estate is vested, or who is recognized and held responsible by law as the Owner of real property. The owner is ultimately responsible for the installation and maintenance of an approved backflow device at the water service entrance.
- P. Person: Any individual or entity including without limitation, a partnership, company, public or private corporation, political subdivision or agency of the State, Department, Agency, or instrumentality of the United States.
- Q. Plumbing System: All potable water supply and distribution pipes, all plumbing fixtures and traps, all drainage and vent pipes, and all building drains, including their respective joints and connections, devices, receptacles and appurtenances within the property lines of the premise and will include potable water piping, potable water treating or using equipment, and water heaters.
- R. PWSB: Providence Water Supply Board.
- S. Seasonal Meter Set: A meter that is set for a limited amount of time (such as for the summer) for a specific purpose (such as a swimming pool or fountain). Seasonal customers must sign a temporary meter agreement which requires installation, inspection, and/or testing of an approved backflow prevention device within 10 calendar days of the date of agreement.
- T. USC: University of Southern California, Foundation for Cross-Connection Control, and Hydraulic Research.
- U. Water Service Entrance: That point in the owner's water system beyond the sanitary control of the PWSB. This will normally be the outlet end of the meter and will always be before any unprotected branch.

IV. SCOPE

It is the intent of the PWSB that all domestic water services – both new and existing – will be equipped to prevent potential backflow or backsiphonage through the “containment” approach. This requires the installation of an approved backflow prevention device at the water meter by the owner at the owner's expense. Fixture isolation alone is not deemed an acceptable method of backflow prevention by the PWSB within its distribution system. Installation of an approved backflow device is a condition of service with the PWSB. The PWSB recognizes that the containment approach protects only the water source and does not provide protection for personnel or fixture(s) within the structure.

V. ADMINISTRATION

- A. The PWSB will operate a cross-connection control program to include keeping of necessary records, which fulfill the requirements of the PWSB's Cross-Connection Regulations and is approved by the PWSB. Modifications to the program may be made at the PWSB's discretion as the need arises.
- B. Employees of the PWSB, having properly identified themselves, will have free access at reasonable hours to all premises supplied with Providence Water to

conduct a cross-connection survey to determine backflow prevention needs and whether the needs have been met by the owner. Access to the property for a cross-connection survey is a condition of service with the PWSB. The PWSB will determine the appropriate means of backflow prevention based on its approved program, and the owner will comply with the PWSB recommendations.

- C. The PWSB generally refers to dual-check backflow prevention devices as “residential” or “non-testable” although it recognizes that these devices can be tested. The PWSB generally refers to double-check and reduced-pressure zone backflow prevention devices as “testable” because testing is required at least annually, and recognizes that these devices may be installed in residential structures.
- D. If the PWSB determines at any time that an imminent threat to public health exists, service will be terminated immediately and without written warning.
- E. Re-establishment of service before the installation of a backflow preventer may be allowed by the PWSB after an agreement has been signed between the PWSB and the owner indicating the intention of the owner to comply with the provisions of the agreement.
- F. The PWSB is not responsible for any cross-connections beyond the meter.
- G. The PWSB will assure that all domestic services comply with the cross-connection program. A copy of the plumbing system’s plan, survey, specifications, and/or drawings may be required from a customer.
- H. The PWSB will maintain a cross-connection survey program of all industrial and commercial customers at least every five years, and residential customers at least every ten years. This does not preclude the PWSB from conducting surveys more frequently.

VI. PWSB RESPONSIBILITY

- A. The PWSB will maintain a copy of its current approved Cross-Connection Prevention Program and will make it available to customers on request.
- B. Installation and Inspection
 - 1. The PWSB will perform inspections for actual or potential cross-connections. These inspections will be made during normal working hours unless – at the discretion of the PWSB – other arrangements are necessary.
 - 2. The PWSB will, after the inspection of premises and/or review of plans or third-party inspection reports, notify the owner by letter of any necessary correction, the method of making the correction, and any additional customer responsibility such as required testing.
 - 3. The recommendation will be based on the hazards observed during the inspection and the current perceived use of the building. An upgrade in backflow prevention to a higher hazard device may be required should new information be received or observed during inspection, or a change in use occur.

4. The PWSB will allow a maximum of (45) calendar days from the initial written notification for installation or correction unless the customer can demonstrate good cause for a time extension to the PWSB satisfaction (see Section 6e).

C. Testing

The PWSB recognizes that any backflow preventer can fail and any method of protection can be subverted; thus, periodic testing and inspection are necessary. This includes air gap protection.

1. Dual check devices will be replaced on a 10-year cycle.
2. The owner is responsible for an initial test immediately after installation and annually thereafter unless otherwise specified. The PWSB will maintain a schedule of when tests are due and will notify customers in writing not less than once a year that a test is required by a specified deadline. The customer will be notified at least three months in advance of the deadline. Test results, including the tester's name and certification number, are to be reported in writing to the PWSB on forms provided. Incorrect or incomplete forms will be returned and a retest may be required.
3. Regarding backflow preventers which fail during testing, the PWSB requires that repair parts be ordered within 24 hours and that shipment is by the fastest means possible. Furthermore, any extended delay (more than 7 days) may require discontinuance of service or other means to ensure protection of the public water system. Certain high-hazard situations which, in the PWSB's determination pose a threat to public safety, will not be allowed to continue unprotected if the backflow preventer fails the test and cannot be immediately repaired. The PWSB does not perform repairs on backflow preventers.
4. Failure to comply with any of the testing requirements is grounds for discontinuance of service.
5. The PWSB reserves the right to perform periodic testing or observe testing as performed by any certified individual. The PWSB does not perform annual backflow preventer tests while the services of a certified tester are available locally. The PWSB will make available a list of certified backflow preventer testers who wish to test for the general public.
6. The PWSB recognizes backflow preventer testers who have successfully completed a training course approved by the PWSB. Failure to meet PWSB standards may result in temporary or permanent revocation of tester's right to test in the PWSB service area.

D. Disconnection

1. The PWSB will issue an initial notice to the owner by letter of any failure to comply with the provisions – including installation, permitting, testing, and maintenance – in this program, and will allow (45) calendar days for compliance unless another deadline is specified.

2. The PWSB will issue a second notice by letter of failure to comply by the stated deadline and will allow (10) additional calendar days for compliance.
3. The PWSB will issue a third notice by letter that disconnection proceedings will commence.
4. The PWSB will commence disconnection proceedings in the manner specified in Paragraph 8 of the Division of Public Utilities Commission regulations, or as subsequently amended.

E. Extensions

1. Time extensions may be granted to customers in compliance with the following:
 - a. The extension will not result in unreasonable risk to public health within the period of the extension.
 - b. The owner is unable to comply with the regulations due to compelling factors, NOT exclusively economic.
 - c. Approval by the Regulatory Services Program Manager and;
 - d. Endorsement by the General Manager, Board, or Department if deemed necessary.
2. Extensions of more than 90 days or involving a perceived high-hazard will be signed by both the PWSB and the customer. The PWSB will provide an agreement form and failure of the customer to sign the form will render the agreement void.
3. Failure to meet the terms of the agreement by the specified deadline will result in disconnection proceedings.

VII. Owners Responsibilities

- A. The PWSB holds the current owner ultimately responsible for the installation and maintenance of the backflow prevention device. Any arrangements between the owner and other parties such as tenants, real estate brokers, and etc. do not concern the PWSB.
- B. The owner, after being notified by a letter from the PWSB, will notify the PWSB as required of his intent to comply with the PWSB's regulations.
- C. The owner, at his own expense, will install, maintain, and have tested as required an approved backflow preventer on his premises. This is a condition of service with the PWSB.
- D. The owner will only install backflow preventers approved by the AWWA Standard C506 or the latest revision of the applicable standard of the ASSE. This applies to dual check backflow preventers for residential applications only. Double check valve assemblies and reduced pressure zone assemblies must be approved by U.S.C. All DCVA and RPZA will be installed horizontal unless special approvals are granted.

- E. Customers with seasonal water meter sets must have an approved backflow device in place before the water meter is set. Devices not previously in service will be tested by the owner within (10) calendar days of meter installation. Devices previously in service must be tested by a certified tester with the results submitted to the PWSB within (10) calendar days of meter installation. Seasonal customer will be required to sign a Temporary Meter Set Agreement detailing this requirement.
- F. The owner will comply with the PWSB's requirements for testing double check and reduced pressure zone devices. The test will be performed by the specified deadline to the PWSB on the forms provided. Dual check devices will be replaced on a 10-year cycle as notified by the PWSB.
- G. The owner will correct any malfunction of the backflow preventer which is revealed by periodic testing. Regarding backflow preventers which fail during testing, the PWSB requires that repair be ordered within 24 hours and that shipment is by the fastest means possible. Furthermore, any extended delay (more than 7 days) may require discontinuance of service or other means to ensure protection of the public water system. Certain high-hazard situations, if determined by the PWSB pose a threat to public safety, will not be allowed to continue unprotected if the backflow preventer fails the test and cannot be immediately repaired.
- H. Failure to comply with testing requirements is grounds for discontinuance of service.
- I. The owner will inform the PWSB of any new, potential, proposed, or modified cross-connection and also any existing cross-connection which the owner is aware of but which has not been found by the PWSB.
- J. The owner will not install a by-pass around any backflow preventer unless there is an approved backflow preventer on the bypass. Owners who cannot shut down operation for testing must supply the additional devices necessary to allow testing to take place.

VIII. Degree of Hazard

- A. The PWSB recognizes the differences in the threat to the public water system arising from different types of connections. These can be classified as follows:
 - 1. Low Hazard: Residential homes and apartments with 3 or less units; requires a residential dual check device.
 - 2. Moderate Hazard: Fire services and residential or apartments with 3 or less units having a service larger than one inch; requires a double check valve assembly.
 - 3. High Hazard: All commercial and industrial services require reduce pressure zone devices.
- B. Examples of establishments, their hazard classification, and containment requirements are:

Single Family Residential	I	Residential Dual check
Home Occupation:		
Office (no chemicals)	I	RPZ
Office (chemicals)	III	RPZ
Beauty Shop	III	RPZ
Animal Grooming	III	RPZ
Food Service	II/III	RPZ
Dark Room	III	RPZ
Apt. Building (up to 3 units)	I	Residential Dual check
Apt. Building (4 units or more)	III	RPZ
Pools (directly plumbed)	III	RPZ
Pools (indirectly plumbed)	II	RPZ
Solar Collectors	III	RPZ
Commercial Food Service	III	RPZ
Barber/Beauty Shops	III	RPZ
Dry Cleaners	III	RPZ
Laundromats	III	RPZ
Garage/Equipment Repair	III	RPZ
Gas Stations	III	RPZ
Motels/Hotels	III	RPZ
Office Buildings	III	RPZ
Medical/Dental Offices	III	RPZ
Print Shops	III	RPZ
Florist	III	RPZ
Hospitals	III	RPZ
Veterinary Offices / Kennels	III	RPZ
Mortuaries	III	RPZ
Cemeteries	III	RPZ
Wells	III	RPZ

(This is not intended to be a complete list, only a sampling)