PORTLAND WATER DISTRICT

CROSS-CONNECTION CONTROL PROGRAM

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Portland Water District
Cross-Connection Control Program

I. PURPOSE

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 Portland Water District's system by preventing the introduction of any substance other than water into the distribution system.

II. AUTHORITY

This program derives its enforceability from Title 22, MRSA, SS 42(1), 42(3), 2612(2) & 2612(5) Maine Department of Health and Human Services, Division of Environmental Health, Cross-Connection Rules 10-144 In addition, authority rises from the Rules and Regulations as published by the Portland Water District and as approved by the Public Utilities Commission of the State of Maine and from provisions of the Occupational Safety and Health Act, and from provisions of the State Plumbing Code, part I, 10-144A CMR 238.

III. DEFINITIONS

A. Approved

Accepted by the District as meeting the applicable specification or procedures as stated or cited in these regulations.

B. Backflow

The flow of water or other foreign liquids, gases or other substances into the District's distribution system from any source other than the intended source.

C. Backflow Preventer

A device to prevent backflow.

1. AIR GAP

A physical separation of at least two (2) pipe diameters, but not less than one inch, to prevent backflow between the free-flowing discharge end of the potable water system and any other system.

2. ATMOSPHERIC NON-PRESSURE TYPE VACUUM BREAKER

A breaker that prevents back-siphonage 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

A device having two independently operating, spring-loaded, bronze faced with rubber disc check valves, with shutoff valves and test cocks for periodic testing. A single check valve is not an approved backflow preventer.

5. DUAL CHECK VALVE ASSEMBLY

A device meeting ASSE Standard # 1024 containing two independently acting check valves. It is used primarily on residential services, but may also be installed on other low hazard services. It is not subject to periodic testing.

6. HOSE BIBB VACUUM BREAKER

A device which is permanently attached to a hose bibb and which acts as an atmospheric vacuum breaker.

7. PRESSURE VACUUM BREAKER

A device containing a spring-loaded check valve and a spring-loaded atmospheric vent, which opens when pressure approaches atmospheric. It contains valves and fittings, which allow the device to be tested.

8. REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER

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. It has valves and fittings, which allow the device to be tested. Also referred to as an RPZ.

D. Back-Pressure

A condition in which the owner's system pressure is greater than the District's system at the service entrance.

E. Back-Siphonage

Backflow resulting from negative or less than atmospheric pressure in the District's distribution system.

F. Certified Backflow Prevention Device Tester

A person certified by New England Water Works Association or the American Backflow Prevention Association as having completed necessary training in the testing of backflow devices

G. Containment

A method of backflow prevention that requires an approved backflow preventer at the water service entrance to prevent backflow of contaminated water into the District's distribution system. Protection by containment only protects the District's distribution system and in no way is meant to protect the fixture or personnel within the structure involved.

H. Containment Device

An approved backflow preventer that includes a strainer as recommended by the manufacturer. The containment device shall be installed down-stream of any required District water meter and any by-pass.

I. Cross-Connection

Any physical connection or arrangement between two otherwise separate piping systems, one of which contains potable water and the other water or other substances of unknown or questionable safety, whereby water or other substances may flow from one system to the other, the direction of flow depending on the pressure differential between the two systems.

J. Department

State of Maine Department of Health and Human Services Drinking Water Program.

K. District

The Portland Water District.

L. Fixture Isolation

A method of backflow prevention in which a backflow preventer is located at or near the potential source of contamination or pollution to correct a cross-connection within the owner's premises rather than at the water service entrance.

M. Owner

Any person who has legal title to, or license to operate or inhabit, a property upon which a cross-connection inspection is to be made or upon which a cross-connection is present

N. Person

Any individual, partnership, company, public or private corporation, political subdivision or agency of the State, department, agency or instrumentality of the United States or any other legal entity.

O. Potable Water

An approved water, free from impurities present in any amount sufficient to cause disease or harmful physiological effects. Its physical, chemical, bacteriological and radiological quality conforms to the Maine Safe Drinking Water Regulations or any regulations pertaining thereto.

P. Water Service Entrance

That point in the owner's water system which is beyond the sanitary control of the District and is first readily accessible for connections. This will ordinarily be at the point where the service enters the building and always before an unprotected branch.

Q. Private Water Source

Any source of water, which may or may not be approved by the Department, utilized by any Owner for consumptive and/or other purposes, and which is not under the immediate control of the District.

R. Plumbing System

The plumbing system means and includes 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 premises and shall include potable water piping, potable water treating or using equipment, and water heaters.

S. District's Distribution System

Any publicly or privately owned system of pipes, structures, and facilities through which potable water is sold, furnished or distributed to the public for human consumption, and which is under control of the District. The system shall not include any portion of service pipe owned and maintained by the Owner.

T. Submerged Inlet

The water pipe or extension thereof from a potable water supply terminating less than two pipe diameters above the flood level rim of a tank, vessel, fixture or appliance which may contain a water of questionable quality, waste or other contaminant or pollutant.

U. 13D Residential Life Safety Sprinkler Systems

Automatic sprinkler systems for one and two family dwellings and manufactured homes.

IV. ADMINISTRATION

A. An employee of the District, having properly identified himself, shall have free access during the District's normal business hours, to all premises supplied with water to permit inspection of the plumbing system for possible cross connections. The Owner shall follow the provisions of these rules and the Department's Cross Connection Rules; if a cross connection is found to exist.

V. RESPONSIBILITIES

A. The District's inspections for cross connections or potential cross connections shall be made during the District's normal working hours unless otherwise arranged with the Owner. If for security requirements or other prohibitions, it is impossible or impractical to make a complete cross-connection survey; or if access is denied, a Class III hazard as defined in Section VI C will be assumed and a reduced pressure principle backflow preventer will be required.

B. The District will, after the initial inspection of the premises, inform the owner by letter of any correction deemed necessary, the method of making the correction. Thirty (30) working days will be allowed for correction.

C. Cross connections will not be allowed to remain unless they are protected by an approved backflow preventer, installed, tested and maintained at the owner's expense. Certain fixtures are exempted from this provision and are listed in Section VII.

D. The District shall inform the Owner by letter of any failure to comply by the time of the first re-inspection. The District will allow 15 days for the correction. If there is a failure to comply by the time of the second re-inspection, the District shall inform the Owner by letter that the water service to the Owner's premises will be terminated 14 days from the postmark date of the notice.

E. If the District determines at any time that a serious threat to the public health exists, service shall be terminated immediately.

F. Re-establishment of service before the installation of a backflow preventer may be allowed by the District, when the District determines that no immediate threat to the public exists, and after an agreement has been made between the District, the Department, and the Owner indicating the intention of the Owner to comply with the provisions of these rules. A confirmed purchase order and installation date shall be evidence of good intention to comply by the Owner.

G. The District will allow temporary water service for construction purposes of new commercial or industrial services only if a testable double-check valve with atmospheric vent has been installed at the service entrance. Permanent water service will only be given after the required backflow preventers have been installed.

H. The Owner, upon the request of the District, shall at his expense install, maintain and have tested by an approved certified backflow prevention device tester, any backflow preventer on his premises. The Owner shall be responsible for the submission of test results, the name and certification of the backflow prevention device tester, and the nature of device test failures, and status of required repairs.

I. The Owner shall correct any malfunction of the backflow preventer, which is revealed by periodic testing. This shall include the replacement of any parts or the replacement of the backflow preventer, if deemed necessary by the District.

J. The Owner shall inform the District of any new, proposed or modified cross connections and also any existing cross connection which the Owner is aware of but has not been found by the District. Any Owner having a private well or other private water source shall not have it connected to the District's system. The Owner will be required to have a Reduced Pressure Principle Backflow Preventer at the Water Service entrance, if a private water source is maintained, even if it is not cross-connected to the District's system.

K. The Owner shall not install a by-pass around any backflow preventer unless there is the same type of backflow preventer on the bypass. Owners who cannot shut down operation

during the District's normal business hours for testing must supply the additional devices necessary to allow testing to take place.

L. The Owner shall only install backflow preventers specified and approved by the District and the Department.

M. The Owner shall install the backflow preventer in a manner approved by the District.

N. Installations of reduced pressure backflow preventers in confined spaces below ground level, i.e. pit installations, will not be allowed.

O. If the Owner installs plumbing to provide potable water for domestic purposes which is on the District's side of the approved backflow preventer, such plumbing must have its own approved backflow preventer or individual fixture isolation.

P. The District requires that its distribution system be protected by containment. It is the responsibility of the Owner to control water quality beyond the outlet end of the District prescribed containment device.

VI. DEGREE OF HAZARD

The District recognizes the difference in the threat to its distribution system arising from different types of cross connection. These hazards can be classified as follows:

A. Class I - Low Degree of Hazard

If backflow were to occur, the resulting health significance would be limited to minor changes in the esthetic quality such as taste, odor or color. The foreign substance must be non-toxic and non-bacterial in nature and have no significant health effect.

B. Class II - Moderate Degree of Hazard

If backflow were to occur, the resulting effect on the water supply would be significant changes in esthetic quality such as taste, odor or color. The foreign substance must be non-toxic to humans and non-bacterial in nature and have no significant health effect.

C. Class III - High Degree of Hazard

If backflow were to occur, the resulting effect on the water supply could cause illness or death if consumed by humans. The foreign substance may be toxic to humans either chemically, bacteriological or radiologically. Toxicity may result from either short or long-term exposure.

The following are considered Class III hazards and must be protected by containment:

1. Wastewater installations.
2. Industries where a health hazard exists.
3. Hospitals, nursing homes, clinics.
4. Vessel watering points or fixtures.
5. Tank trucks, street sweepers, and other similar units that receive water at the District's shop or any of its hydrants. The District will provide a testable double check valve assembly with hydrant meters. A service charge will become part of the meter rental.
6. Mortuaries or funeral homes where embalming is performed
7. Lawn irrigation systems where chemicals are added.

8. Swimming Pools.
9. Car wash facilities.
10. Farms where water is used for other than domestic purposes.
11. Commercial photo developing establishments.
12. Automotive repair garage.
13. Laboratories.
14. Commercial florists.
15. Health spas.
16. Any commercial structure in which the specific business activity cannot be ascertained or which contains rental units.

Class III hazards which must be protected by fixture isolation include:

1. Cooling towers
2. Chemically treated boilers.
3. X-ray developers/processors.

VII. EXEMPTIONS

Certain fixtures that constitute cross-connection may be controlled by non-testable backflow preventers and will not require a permit. Examples of these fixtures include:

1. Hose bibbs which are only potential cross-connections.
2. Below the rim outlets which can be replaced by a gooseneck device.
3. Toilets with anti-siphon ballcocks.
4. Any fixture with a built-in atmospheric vacuum breaker which cannot be bypassed.
5. Others as listed in Appendix A of the State regulations.

VIII. PERIODIC TESTING

It is recognized that any backflow preventer can fail and any method of protection can be subverted; thus, periodic testing and inspection is necessary. This includes air gap protection.

A. The District shall be responsible for conducting the initial test upon installation of a backflow prevention device at a service activation.

B. The owner is responsible for periodic testing, per an established District schedule, shall be performed by a certified backflow prevention device tester.

C. The District will bill the owner of the device for testing the device if a test is completed by the District

D. Any backflow preventer that fails during testing must be repaired as soon as possible. Any extended delay shall require discontinuance of service or other means to ensure protection of public water system unless an exemption is granted by the District.

E. Certain Class III degree of hazard cross connections will not be allowed to continue unprotected for more than 24 hours if the backflow preventer fails the test and cannot be immediately repaired.

F. The minimum testing frequency for backflow preventers in the District's system shall be as follows:

(1) Reduced pressure backflow preventers on Class III degree of hazard cross-connections shall be tested at least annually.

(2) Double-check valves, reduced pressure principle backflow preventers and pressure type vacuum breakers on Class I or Class II degree of hazard cross-connections shall be tested annually.

(3) Mechanical air gaps shall be inspected annually. If the air gap has been circumvented, a reduced pressure principle backflow preventer shall be installed at the service entrance.

IX. FIRE PROTECTION SERVICE LINES

A. Approved backflow preventers will not be required for fire sprinkler systems with direct connections from the District's distribution system which have sprinkler drains discharging to the atmosphere or other safer outlet provided that the owner has none of the following: tanks or reservoirs; physical connections from other water supplies; toxic antifreeze or other additives of any kind. All new wet pipe fire sprinkler systems installed after January 1, 2000 will be protected from backflow by the installation of a double-check valve assembly at the service entrance and before the fire sprinkler valve. All newly installed antifreeze loop type fire systems will be protected from backflow by the installation of a double check valve assembly at the juncture of the standard wet fire system and the antifreeze loop. The device will be tested annually. Owners of facilities with antifreeze loops existing on or before June 1, 1992 will be required to certify annually that the antifreeze loop has been serviced and tested by a professional fire sprinkler system firm. Failure to provide certification will result in the District requiring a double check valve installation.

B. Fire sprinkler systems with direct connections from the District's distribution system and with an auxiliary water supply on or available to the premises; or an auxiliary supply located within 1700 feet of the pumper connection, shall be required to have a testable double-check valve assembly installed prior to the auxiliary supply connection or pumper connection.

C. Fire sprinkler systems directly supplied from the District's distribution system and interconnected with auxiliary supplies, such as pumps taking suction from reservoirs exposed to contamination, or rivers and ponds, driven wells, mills or other industrial water systems; or where additives are used shall be required to have a reduced pressure backflow preventer installed at the fire service entrance.

D. The rules in this section do not apply to Section X 13D and Life Safety Sprinkler Systems.

X. 13D AND LIFE SAFETY SPRINKLER SYSTEMS (ALL F/S WILL HAVE TESTABLE DOUBLE CHECK ASSEMBLY)

A. If the customer's domestic supply line is used without a separate branch line for the sprinkler heads, then a dual-check valve shall be installed after the meter and before the first branch line.
B. If a branch line is used to service the sprinkler heads only, and is dead-ended, then a dual-check valve shall be installed on the branch line.

C. If the head loss of the dual-check valve becomes detrimental to the effect of the sprinkler system, then a State-approved testable backflow preventer that meets with flow design requirements shall be installed.

XI. LIABILITY

The District, its employees or agents, shall not be liable to any person for any damage, injuries or loss arising out of any act or omission by the District, its employees or agents, in connection with these rules.

APPENDIX

Exempted Devices and Situations.

1. Water closets fitted with anti-siphon ballcocks and installed in accordance with §1006b of the Maine State Plumbing Code shall be permitted without further protection.

2. Urinal and water closet flushometer valves fitted with approved vacuum breakers and installed in accordance with §1003a,c of the Maine State Plumbing Code shall be permitted without further protection.

3. Boilers in non-industrial application and not containing toxic chemicals may be fitted with approved double-check valve assemblies with intermediate atmospheric vent.