

RULE AND REGULATION NO. 23-02

Division of Water

Department of Public Utilities

SUBJECT: BACKFLOW PREVENTION AND CROSS-CONNECTION CONTROL

Pursuant to the authority granted under Columbus City Codes Chapters 1101 and 1113, the Director of the Department of Public Utilities hereby adopts, establishes, and publishes this rule and regulation to be effective at the earliest date allowed by law. This rule and regulation supersedes Division of Water rule and regulation 18-01 entitled: "Backflow Prevention and Cross Connection Control", published in the City Bulletin on March 3, 2018.

This rule and regulation is in addition to any established requirements that have not been superseded or rescinded by this or any previous act.

Section 1. Cross-Connection Control – General Policy

A. Purpose. The purpose of this Rule and Regulation is:

1. To protect the public potable water supply from contamination or pollution by containing within the consumer's water system contaminants or pollutants that could backflow into the public water system.
2. To promote the elimination or control of existing cross-connections, actual or potential, between the public and consumer's potable water system and non-potable water systems, plumbing fixtures and sources or systems containing process fluids.
3. To provide for the maintenance of a continuing program of backflow prevention and cross-connection control that will systematically and effectively prevent the contamination or pollution of the public water system

B. Application. This Rule and Regulation shall apply to all premises served by the public water system of the City of Columbus, Division of Water, including those water distribution systems owned by other political subdivisions but operated, under contract, by the City of Columbus, Division of Water for which the Ohio EPA considers the City of Columbus, Division of Water to be the water purveyor. This Rule and Regulation does not apply to master-metered public water systems that purchase water from the City of Columbus and who are considered their own public water system by the OEPA.

Section 2. Definitions.

A. The following definitions shall apply in the interpretation and enforcement of this Rule and Regulation:

1. "Administrator" means the Administrator of the City of Columbus, Division of Water or designee.
2. "Air gap separation" means the unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supplying water to a tank, plumbing fixture, or other device and the flood-level rim of the receptacle.
3. "Approved" means that a backflow preventer has been accepted by the Division of Water Administrator and the OEPA Director as suitable for the proposed use.
4. "Auxiliary water system" means any water system on or available to the premises other than the public water system. Auxiliary water systems include used water or water from a source other than the public water system, such as wells, cisterns or open reservoirs that are equipped with pumps or other prime movers, including gravity.
5. "Backflow" means the flow of water or other liquids, mixtures, or substances into the distributing pipes of a public water system from any other source other than the intended source of the potable water supply.
6. "Backflow preventer" means any assembly, device, method, or type of construction intended to prevent backflow into a public water system.
7. "Consumer" means the owner or person in control of any premises supplied by or in any manner connected to a public water system.
8. "Consumer's water system" means any water system, located on the consumer's premises, supplied by or in any manner connected to a public water system. A household plumbing system is considered to be a consumer's water system.
9. "Containment principle backflow preventer" is a backflow preventer that is intended to prevent any water with contaminants from back flowing into the public water system. The containment principle backflow preventer is installed on the consumer's water system after the water meter and prior to any other connections, unless otherwise approved by the Administrator. Any reference to a backflow preventer in this Rule and Regulation shall mean a containment principle backflow preventer unless otherwise stated.
10. "Contamination" means an impairment of the quality of the water by sewage or process fluid or waste to a degree which could create an actual hazard to the public health through poisoning or through spread of disease by exposure.

11. "Cross-connection" means any physical connection arrangement whereby backflow can occur.
12. "Degree of hazard" is a term derived from an evaluation of the potential risk to health and welfare.
13. "Double check valve assembly" or "DC" means an assembly composed of two single, independently acting, check valves including tightly closing shutoff valves located at each end of the assembly and suitable connections for testing the water-tightness of each check valve.
14. "Double check detector assembly" or "DCDA" means a specially designed assembly composed of a double check valve assembly with a specific detector water meter and a meter-sized approved double check valve assembly. The meter shall register accurately for only very low rates of flow and shall show a registration for all rates of flow.
15. "Dwelling unit" means a single, self-contained unit providing independent living facilities for one or more individuals and which contains eating, living, sanitary and sleeping areas and one cooking facility, all for exclusive use by the occupants. This definition does not apply to units in (as defined by City Code Title 33, Zoning Code) dormitories, homeless shelters, hotels, motels or other buildings designed for transients.
16. "Food service operation" means a place, location, site, or separate area, required to be licensed as a food service operation by state law, where food intended to be served in individual portions is prepared or served for a charge or required donation. As used in this definition, "served" means a response made to an order for one or more individual portions of food in a form that is edible without washing, cooking, or additional preparation and "prepared" means any action that affects a food other than receiving or maintaining it at the temperature at which it was received. Food service operations are further classified by Risk Level, based on the opportunity for contamination of the food handled or served on site, as defined in state law. Where a local health department has made a determination that a food service operation license is required, that determination along with determination of the Risk Level shall be sufficient for application of the standards herein.
17. "Health hazard" means any condition, device, or practice in a water system or its operation that creates, or may create, a danger to health of users.
18. "Isolation Backflow Prevention Device" means a device for the prevention of the backflow of liquids, solids, or gases that is regulated by the plumbing code adopted pursuant to section 3781.10 of the Revised Code.
19. "Non-residential use" means use of a property other than for a dwelling unit and those incidental uses normally associated with use as a dwelling unit. For the purpose of this Rule and Regulation, mixed use properties consisting of both residential and non-residential uses served by the same water service line(s) shall be considered non-residential.

20. "Non-potable water" means water not safe for human consumption. For the purposes of this Rule and Regulation, used water that has been in contact with plumbing or appurtenances that have not been specifically approved by City of Columbus Plumbing Code for use in a water system shall be considered non-potable.
21. "OEPA Director" means the Director of the Ohio Environmental Protection Agency or the OEPA Director's duly authorized representative.
22. "Owner Occupied" means the customer is the owner of the entire premise served by the water service line, the customer controls water use at the premise, and no part of said premise is leased, sublet, etc.
23. "Pollution" means the presence in water of any foreign substance that tends to degrade its quality or aesthetics so as to constitute a hazard or impair the usefulness or quality of the water to a degree which does not create an actual hazard to the public health but which does adversely and unreasonably affect such waters for domestic use.
24. "Pollutional hazard" means a condition through which an aesthetically objectionable or degrading contaminant, which is not dangerous to the public water system or health of users, may enter the public water system or a consumer's water system.
25. "Premises" means any building, structure, dwelling or area containing plumbing or piping supplied from a public water system.
26. "Pressure vacuum breaker" or "PVB" means an assembly composed of an independently acting spring loaded check valve located downstream of an independently acting spring loaded air inlet valve including, tightly closing shutoff valves located at each end of the assembly and suitable connections for testing the integrity of the air inlet and check valves.
27. "Process fluids" means any fluid or solution which contain contaminants in a form or concentration such as would constitute a severe health, health, pollutional, or system hazard if introduced into the public or a consumer's water system. This includes, but is not limited to:
 - a. process waters;
 - b. used waters originating from the public water system which may have deteriorated in sanitary quality;
 - c. cooling waters;
 - d. contaminated natural waters taken from wells, lakes, streams, or irrigation systems;
 - e. chemicals in solution or suspension; and
 - f. oils, gases, acids, alkalis, and other liquid and gaseous fluids used in industrial or other processes, or for firefighting purposes.
28. "Reduced pressure principle backflow prevention assembly" or "RP" means an assembly containing a minimum of two independently acting check valves together with an

automatically operated pressure differential relief valve located between two check valves. During normal flow and at the cessation of normal flow, the pressure between these two checks shall be less than the supply pressure. In case of leakage of either check valve, the differential relief valve, by discharging to the atmosphere, shall operate to maintain the pressure between the check valves at less than the supply pressure. The unit shall include tightly closing shutoff valves located at each end of the assembly, and each assembly shall be fitted with properly located test cocks.

29. "Reduced pressure principle detector assembly" or "RPDA" means a specially designed assembly composed of a reduced pressure principle backflow prevention assembly with a specific detector water meter and a meter-sized approved reduced pressure principle backflow prevention assembly. The meter shall register accurately for only very low rates of flow and show a registration for all rates of flows.
30. "Residential use" means use of a property for a dwelling unit and those incidental uses normally associated with use as a dwelling unit. See also the definition of Non-residential use.
31. "Retail food establishment" means a premises or part of a premises, required to be licensed as a retail food establishment by state law, where food is stored, processed, prepared, manufactured, or otherwise held or handled for retail sale. Retail food establishments are further classified by Risk Level, based on the opportunity for contamination of the food handled or served on site, as defined in state law. Where a local health department has made a determination that a retail food establishment license is required, that determination along with determination of the Risk Level shall be sufficient for application of the standards herein.
32. "Service connection" means the same as defined in Chapter 1105.01 of the Columbus City Code.
33. "Service line" means the same as defined in Chapter 1105.01 of the Columbus City Code. For the purposes of this Rule and Regulation, the beginning of the service line is the connection point to the tap. For combined domestic and fire service lines or domestic only services, the end of the service line is the outlet of the meter setting. For fire only services, the end of the service line is at the inlet to the backflow preventer/detector assembly.
34. "Severe health hazard" means a health hazard to users that could reasonably be expected to result in significant morbidity or death.
35. "System hazard" means a condition posing an actual or potential threat of damage to the physical properties of the public water system or a consumer's water system.
36. "Used water" means any water supplied by a public water system to a consumer's water system after the water has passed through the service line and is no longer under the control of the supplier.

37. "Tap" means the same as defined in Chapter 1105.01 of the Columbus City Code.
38. "Water system" means a system for the provision of piped water or process fluids, and includes any collection, treatment, storage or distribution facilities used primarily in connection with such system.
39. "Weep holes" mean a series of small diameter holes located in the wall of the supply pipe for a yard hydrant that allow for drainage of accumulated water from the delivery piping. These holes are usually part of a plunger and valve system that seals off the holes during water usage and opens the holes during shutdown. These openings are located below ground level and below the frost line in areas where the threat of freezing exists.
40. "Yard hydrant" means a device that is located outside of a building, equipped with a valved mechanism that controls the delivery of potable water, and is not designed to supply a fire department pumper. This does not include hose bibs that are wall mounted and supplied by a pipe through the wall from the consumer's water system.

B. Referenced materials. This chapter includes references to certain subject matter or materials. The text of the referenced materials is not included in the rules contained in this chapter. Information on the availability of the referenced materials as well as the date of and the particular edition or version of the material is included in this rule. For materials subject to change, only the specific version specified in this rule are referenced. Material is referenced as it exists on the effective date of this rule. Except for subsequent annual publication of existing (unmodified) Code of Federal Regulation compilations, any amendment or revision to a referenced document is not referenced unless and until this rule has been amended to specify the new dates.

1. Availability. The referenced materials are available as follows:

- a. "American National Standards Institute/American Water Works Association" (ANSI/AWWA). A copy may be obtained from "AWWA Bookstore, 6666 W. Quincy Avenue, Denver, CO, 80235," (303) 794-7711, www.awwa.org. The standards are available for review at "Ohio EPA, Lazarus Government Center, 50 West Town Street, Suite 700, Columbus, OH, 43215."
- b. "American National Standards Institute/National Sanitation Foundation" (ANSI/NSF). A copy may be obtained from "NSF International, 789 N. Dixboro Road, P.O. Box 130140, Ann Arbor, MI 48105," (734) 769-8010, www.nsf.org. The standards are available for review at "Ohio EPA, Lazarus Government Center, 50 West Town Street, Suite 700, Columbus, OH, 43215."
- c. "American Society of Mechanical Engineers" (ASME). A copy may be obtained from "ASME, Three Park Avenue New York, NY 10016-5990 or, a copy may be obtained from Global Engineering Documents, 15 Inverness Way East, Englewood, CO 80112, (303) 397-7956 or (800) 854-7179, global.ihs.com. The standards are available

for review at "Ohio EPA, Lazarus Government Center, 50 West Town Street, Suite 700, Columbus, OH, 43215-3425."

d. "American Society of Sanitary Engineering" (ASSE). A copy may be obtained from "American Society of Sanitary Engineering, 901 Canterbury Road, Suite A, Westlake, OH, 44145-1480", (440) 835-3040, www.asse-plumbing.org or from "Global Engineering Documents, 15 Inverness Way East, Englewood, CO, 80112" (303) 397-7956 or (800) 854-7179, global.ihs.com. The standards are available for review at "Ohio EPA, Lazarus Government Center, 50 West Town Street, Suite 700, Columbus, OH, 43215-3425."

e. "Foundation for Cross Connection Control and Hydraulic Research, University of Southern California." A copy of "Manual of Cross-connection Control" tenth edition, may be obtained from the "Foundation for Cross Connection Control and Hydraulic Research, University of Southern California, Research Annex 219, 3716 Hope street, Los Angeles, CA 90089-7700," (866) 545-6340, www.usc.edu/dept/fccchr.

f. "Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers." A copy of "Recommended Standards for Water Works" may be obtained at www.health.state.mn.us/communities/environment/water/tenstates/standards.html.

2. Referenced materials:

a. "ASME A112.1.2, Air Gaps in Plumbing Systems," 2012.

b. "ASME A112.1.3, Air Gap Fittings for Use with Plumbing Fixtures, Appliances, and Appurtenances," 2000, reaffirmed 2015.

c. "ASSE 1013, Performance Requirements for Reduced Pressure Principle Backflow Prevention Assemblies," 2011.

d. "ASSE 1015, Performance Requirements for Double Check Backflow Prevention Assemblies," 2011.

e. "ASSE 1020, Performance Requirements For Pressure Vacuum Breaker Assemblies," 2004.

f. "ASSE 1047, Performance Requirements For Reduced Pressure Detector Fire Protection Backflow Prevention Assemblies," 2011.

g. "ASSE 1048, Performance Requirements for Double Check Detector Fire Protection Backflow Prevention Assemblies," 2011.

- h. "ASSE 1056, Performance Requirements for Spill Resistant Vacuum Breaker Assemblies," 2013.
- i. "ASSE 1057, Performance Requirements for Freeze Resistant Sanitary Yard Hydrants with Backflow Protection," 2012.
- j. "ASSE 1060, Performance Requirements For Outdoor Enclosures For Fluid Conveying Components," 2006.
- k. "AWWA C510, Double Check Valve Backflow Prevention Assembly," 2007.
- l. "AWWA C511, Reduced-Pressure Principle Backflow Prevention Assembly," 2007.
- m. "Foundation for Cross Connection Control and Hydraulic Research, University of Southern California, "Standards for Backflow Prevention Assemblies contained in Chapter 10 of the Manual of Cross-Connection Control" tenth edition (2009)."
- n. "Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers', Recommended Standards for Water Works" (2018).

Section 3. Water System.

- A. The water system shall be considered as made up of two parts: the public water system and the consumer's water system.
- B. The public water system shall consist of the source facilities and the distribution system, and shall include all those facilities of the water system under the control of the Administrator, up to the point where the consumer's water system begins.
- C. The source shall include all components of the facilities utilized in the production, treatment, storage and delivery of water to the public distribution system.
- D. The public distribution system shall include the network of conduits used for delivery of water from the source to the consumer's water system.
- E. The consumer's water system shall include those parts of the facilities beyond the tap which are utilized in conveying water from the public distribution system to points of use, including any backflow preventers required by this Rule and Regulation. If a backflow preventer is installed in a vault or heated enclosure, the vault or enclosure is considered part of the consumer's water system.

Section 4. Cross-Connections Prohibited.

- A. No water service cross-connection shall be made or maintained to any premises where actual or potential cross-connections to or within a public water system, unless such actual or potential

cross-connections are abated or controlled to the satisfaction of the Administrator and at minimum, in compliance with this Rule and Regulation.

B. No cross-connection shall be installed or maintained whereby water from an auxiliary water system may enter a public water system. Notwithstanding, auxiliary or emergency connections to other public water systems, as defined by ORC 6109.01(A), may be permitted as long as such auxiliary or emergency water supply and the method of connection and use of such system meet the standards in 3745-95 of the OAC and are approved by the Administrator and by the OEPA Director as required by Section 6109.13 of the Ohio Revised Code.

C. There shall be no arrangement or connection by which an unsafe substance may enter the public water supply.

Section 5. Survey and Investigations.

A. The consumer's premises shall be open at all reasonable times to the Administrator, or their authorized representative, for surveys and investigations of water use practices within the consumer's premises to determine whether there are actual or potential cross-connections to the consumer's water system through which contaminants or pollutants could backflow into the public water system.

B. On request by the Administrator, or their authorized representative, the consumer shall furnish information on water use practices and/or the piping system within their premises.

C. It shall be the responsibility of the water consumer to conduct periodic surveys of water use practices on their premises to determine whether there are actual or potential cross-connections in their water system through which contaminants or pollutants could backflow into their or the public water system. Any cross-connection control water use surveys or other plumbing inspections required by the Administrator shall be conducted by the City of Columbus, Division of Water, or an authorized representative.

Section 6. Where Protection Is Required.

A. An approved backflow preventer shall be installed on the consumer's water system. The approved backflow preventer shall be installed after the water meter and prior to any other connections. If the water meter is located in a building, the backflow preventer shall be installed immediately after the water meter. If the water meter is located in a vault and the backflow preventer is located in a building, the backflow preventer shall be installed within the first two feet where the building plumbing turns up into the building. If the water meter is located in a heated enclosure or dedicated building, the backflow preventer shall be located immediately after the water meter and prior to any other connections. An approved backflow preventer shall be installed where the following conditions exist:

1. Premises where any situation exists that could allow backflow of process fluids.

2. Premises having internal cross-connections that, in the judgment of the Administrator, are not correctable, or intricate plumbing arrangements which make it impractical to determine whether or not cross-connections exist;
3. Premises where, because of security requirements or other prohibitions or restrictions, it is impossible or impractical to make a complete cross-connection survey;
4. Premises having a repeated history of cross-connections being established or re-established;
5. Others specified by the Administrator or the OEPA Director.

B. An approved backflow preventer shall be installed on the consumer's water system for both domestic and fire services for master metered residential developments serving five (5) or more dwelling units including but not limited to:

1. Condominiums, apartment complexes, townhome units, manufactured home parks, subdivisions, or other premises

C. For all non-residential properties, an approved backflow preventer shall be installed on the consumer's water system for both domestic and fire services to a consumer's water system, unless an exception is allowed by this Rule and Regulation and granted by the Administrator.

1. Upon written request by the customer, an exception to this requirement may be granted by the Administrator if the customer can demonstrate that the site meets all of the following conditions:
 - a. The site is owner-occupied.
 - b. The facility served by the water service line(s) is not any of the following types:
 - i. Hospitals, mortuaries, clinics, nursing homes, medical offices;
 - ii. Laboratories;
 - iii. Piers, docks, waterfront facilities;
 - iv. Sewage treatment plants, sewage pumping stations or storm water pumping stations;
 - v. Food or beverage processing plants;
 - vi. Chemical plants;
 - vii. Metal plating industries;
 - viii. Petroleum processing or storage plants;
 - ix. Radioactive material processing plants or nuclear reactors;
 - x. Car washes;
 - xi. Publically owned lands and buildings;
 - xii. Food service operations and retail food establishments, with a Risk Level III or IV license issued by the local health department, operating from a fixed location, not including seasonal or temporary operations;
 - xiii. Automotive repair and body repair shops;

- xiv. Laundromats;
 - xv. Bulk water loading, including but not limited to, bulk water loading stations and temporary use of fire hydrants;
 - xvi. Others specified by the Administrator or the OEPA Director.
- c. The facility served by the water service line(s) does not contain any of the hazards contained in Section 6.D of this Rule and Regulation, or any other cross-connection hazard as determined by the Administrator.
2. It shall be the responsibility of the customer to provide any such information the Administrator deems necessary to evaluate the request for an exception. A site survey by the Administrator or their representative, at their option, may be required before granting the request.
3. Exceptions are granted to the customer based on the site use and plumbing configuration in existence at the time of the request and are not transferrable to new owners. Customers will be required to periodically verify that they continue to meet the criteria to receive the exception.
4. An exception may be rescinded at any time if, in the opinion of the Administrator, the potential hazard justifies installation of a backflow preventer. Reasons for rescinding an exception may include:
- a. Change in site use
 - b. Addition of a non-potable system connected to the public water system
 - c. Availability of new information showing that a potential hazard exists
 - d. Changes in laws or rules affecting backflow prevention and cross-connection control.
 - e. Others as determined by the Administrator.

D. An approved backflow preventer shall be installed on each connection between the water meter and the consumer's water system serving any of the following systems, regardless of whether the system is regularly used:

- 1. Lawn/landscape irrigation systems;
- 2. Swimming pools directly plumbed to the consumer's water system;
- 3. Water powered sump pumps;
- 4. Water or foam based fire suppression systems;
- 5. Private fire hydrant systems;
- 6. Boiler or hot water heating systems with chemicals added or the ability to be added;
- 7. Water storage tanks with chemicals added or the ability to be added;
- 8. Geothermal heating systems;
- 9. Yard hydrants;
- 10. Other systems connected to the consumer's water system whose piping is required by City Plumbing Code, as determined by the Department of Building and Zoning Services, to be isolated from the consumer's public water system by a general type of backflow preventer or method described in Section 8 of this Rule and Regulation. If the premise is outside of the City of Columbus' corporation limits, a determination by a local or state building department having jurisdiction over the private plumbing system may be used.

11. Other systems connected to the consumer's water system whose piping or appurtenances are not permitted by City Plumbing Code for use in a public water system. If the premise is outside of the City of Columbus' corporation limits, a determination by a local or state building department having jurisdiction over the private plumbing system may be used.

E. The following requirements apply to premises that have an auxiliary water system on the real property, on or available to the premises, that is owned or under control of the consumer or public water system:

1. The Division of Water shall document, in writing, through an onsite inspection conducted or caused to be conducted by the Division of Water, every twelve months that there is no connection or means of connection between the public water system or a consumer's water system and the auxiliary water system as prohibited by this Rule and Regulation.
2. An approved backflow preventer shall be installed on the consumer's water system after the water meter and prior to any other connections, unless otherwise approved by the Administrator.

Section 7. Type of Protection Required.

A. When protection is required under Section 6 of this Rule and Regulation, at a minimum, the level of protection shall depend on the degree of hazard which exists as follows:

1. An approved air gap separation shall be installed where the public water system may be contaminated with substances that could cause a severe health hazard. In lieu of providing an air gap separation on the consumer's water system after the water meter and prior to any other connections, an approved air gap separation at the hazard in combination with an approved reduced pressure principle backflow prevention assembly on the consumer's water system after the water meter and prior to any other connections may be utilized. This alternate arrangement will be considered two backflow prevention assemblies, each subject to applicable fees and testing/inspection requirements.
2. An approved air gap separation or an approved reduced pressure principle backflow prevention assembly shall be installed where the public water system may be contaminated with any substance that could cause a system or health hazard;
3. An approved air gap separation or an approved reduced pressure principle backflow prevention assembly or an approved double check valve assembly shall be installed where the public water system may be polluted with substances that could cause a polluttional hazard.

B. If a premises has more than one cross-connection hazard, the degree of protection provided shall match the highest level of water use hazard on site.

C. If a premises is served by more than one water service line, the degree of protection provided shall meet the most restrictive requirements of any of the service lines, unless otherwise

approved. This requirement applies even if the service lines are not interconnected through the private plumbing system. Water service lines serving dedicated fire protection systems will be considered separately from other water service lines serving the property.

- D. The type of protection required under Section 6.A.1., 2, 3, 4, and 5 shall be an approved air gap separation or an approved reduced pressure principle assembly preventer unless otherwise allowed in this Rule and Regulation. If a severe health hazard is present, the type of protection shall be as required by Section 7.A.1.
- E. For the type of properties and hazards identified in Section 6.B, C, and D, the backflow prevention required by the Administrator shall be an approved air gap separation or an approved reduced pressure principle backflow preventer, unless otherwise allowed in this Rule and Regulation. If a severe health hazard is present, the type of protection shall be as required by Section 7.A.1.
- F. For premises having an auxiliary water system, or with access to an auxiliary water system, unless approved by the Division of Water Administrator and Ohio EPA Director as an approved additional water source, shall have an approved air gap installed at the point of connection between the auxiliary water source and the public water system. A reduced pressure backflow prevention assembly is also required to be installed on the consumer's water system after the water meter and prior to any other connections.
- G. Allowable exceptions to the type of protection required under Sections 7.D and E are as follows:
 - 1. When installation of a residential lawn/landscaping irrigation system meets all of the following criteria, an approved pressure vacuum breaker may be installed on the supply pipe to the irrigation system in-lieu of an air gap, or reduced pressure principle assembly after the water meter and prior to any other connections:
 - a. The premises is not a facility specified in Section 6.C.1.b.; and
 - b. It is the only cross-connection hazard at the premise; and
 - c. It supplies water only (without chemical additive); and
 - d. It is not subject to backpressure; and
 - e. It is not equipped with a pump or tank at an elevation which can apply backpressure to the public or consumer's water system.
 - 2. When a fire protection system uses water only, the site does not have access to an auxiliary water system, and the system is not subject to chemical additives (by either the customer or a fire department) an approved double check valve assembly may be used in lieu of an air gap or reduced pressure principle assembly. Where metering of a fire line is required, a double check valve detector assembly may be used in lieu of a reduced pressure principle detector assembly.
 - a. Any structure(s) or portion of structure(s) with Use and Occupancy Classification High Hazard: Groups H-1, H-2, H-3, H-4 and H-5 from Section 302 of the Ohio Building Code, and where the fire protection system has a fire department connection

are considered to be subject to chemical additives, and therefore do not qualify for this exception.

- b. If a section of the fire protection system is subject to chemical additives, and this section can be permanently isolated, a backflow preventer approved for that hazard can be installed on the supply line to the hazard. An approved double check valve assembly shall still be required between the public water system and the consumer's water system for the remaining fire protection system. Both backflow prevention devices shall be subject to the requirements of Section 10.

H. The following applies to yard hydrants that are installed on the consumer's water system:

1. On the effective date of this rule, installation of yard hydrants with weep holes is prohibited. Any new or replacement yard hydrant installed shall meet the requirements of the "American Society of Sanitary Engineers (ASSE) standard 1057, Performance Requirements for Freeze Resistant Sanitary Yard Hydrants with Backflow Protection."
2. Yard hydrants with weep holes installed prior to the effective date of this rule shall have the weep hole permanently sealed with a threaded plug supplied by the manufacturer or another compatible threaded plug.

I. The type of protection required for the parallel lines under Section 9.G shall be the same on each line.

J. The type of protection for any system with chemicals added shall be an approved air gap separation or an approved reduced pressure principle backflow prevention assembly unless otherwise specified in this Rule and Regulation. If a severe health hazard is present, the type of protection shall be as required by Section 7.A.1.

K. Where metering of a fire protection system is required, a reduced pressure principle detector assembly may be used in lieu of a reduced pressure principle assembly and in-line meter. Note that all meter requirements are to comply with the City of Columbus, Division of Water meter installation rules.

Section 8. Backflow Preventers.

A. Any backflow preventer required by this Rule and Regulation shall be of a model or construction approved by the Administrator and the OEPA Director, and shall comply with the following:

1. An air gap separation complying with ASME A112.1.3, shall be at least twice the diameter of the supply pipe, measured vertically above the top rim of the vessel, but in no case less than one inch.

2. All backflow preventers, as required by this Rule and Regulation, shall be endorsed by the American Society of Sanitary Engineering (ASSE) as meeting the applicable standards as listed below:

Device Type	ASSE Standard
Reduced Pressure Principle Assembly (RP)	1013
Reduced Pressure Principle Detector Assembly (RPDA)	1047
Double Check Valve Assembly (DC)	1015
Double Check Valve Detector Assembly (DCDA)	1048
Pressure Vacuum Breaker (PVB)	1020

3. Backflow preventers must be labeled by the manufacturer showing a serial number, model number, and the applicable ASSE endorsement for the standard that the assembly has been certified to meet.
4. Reduced pressure principle assemblies shall be fitted with an approved air gap assembly on the outlet of the relief valve.
5. On domestic only services, the nominal size of the backflow preventers shall be determined by the consumer, unless otherwise approved by the Administrator.
6. On combined fire and domestic services, the nominal size of the backflow preventers shall be determined by the consumer, unless otherwise approved by the Administrator.
7. If dual backflow preventers are installed as described in Section 9.D, the nominal sizes of the backflow preventers on the domestic and fire lines shall be as determined by the consumer, unless otherwise required by the Administrator.
8. On fire only services, the nominal size of the backflow preventers must match or be one size smaller than the nominal diameter of the service line, unless otherwise approved by the Administrator.
9. No modifications to backflow preventers are allowed, except for replacement of components with others that have been approved by ASSE as an alternate component for the particular make and model of backflow preventer.

Section 9. Installation.

- A. Backflow preventers required by this Rule and Regulation shall be installed in a manner approved by the Administrator and at the expense of the water consumer.
- B. Backflow preventers shall be installed on the consumer's water system after the water meter and prior to any other connections, unless otherwise approved by the Administrator. Location of RPDA or DCDA backflow prevention assembly/detector assembly combinations, which

also serve as the fire meter, shall be as required by the City of Columbus, Division of Water meter installation rules.

- C. If there is only one water-use hazard on site and in the opinion of the Administrator the make-up piping to this hazard can be permanently isolated, a backflow assembly approved for the hazard can be installed on the supply pipe to the hazard in lieu of one at the end of the water service line.
- D. On combined fire and domestic service lines served by a single meter, the consumer may split their plumbing system immediately after the meter bypass into a separate fire and domestic line, provided that an approved backflow preventer is installed on each line as shown on Division of Water Standard Detail Drawings. The backflow prevention assemblies must be installed immediately downstream of the meter bypass.
- E. Backflow preventers shall be installed with manufacturer approved shutoff valves on each side of the preventer and as shown on Division of Water Standard Detail Drawings. Butterfly valves are not permitted.
- F. No backflow preventer shall be bypassed unless the bypass line contains equal backflow protection and the approval of the Administrator. If the complete interruption of water through a given service is critical to the customer's operations, an installation of a backflow preventer in parallel is required.
- G. Backflow preventers must be installed so that they are accessible for inspection, testing, and maintenance.
- H. Reduced pressure principle assemblies, reduced pressure principle detector assemblies, pressure vacuum breakers, and air gap separations shall not be installed in a vault or any area subject to flooding.
- I. Pressure vacuum breakers shall never be subject to backpressure and must be installed a minimum of 12" above the highest downstream piping, including nozzle.
- J. Installation of approved backflow preventers shall be made in accordance with the applicable Division of Water Standard Detail Drawings and to the satisfaction of the Administrator.
- K. No backflow preventer shall be subject to excessive heat or freezing. Above grade exterior installations that remain in service through the winter shall be installed within an ASSE 1060 Type I heated enclosure provided by the consumer and approved by the Administrator. The enclosure shall have a thermostatically operated electric heater, sized per manufacturer specs to maintain a temperature of 40 degrees Fahrenheit inside the enclosure at an outside temperature of minus 30 (-30) degrees Fahrenheit.

Section 10. Inspection, Testing, and Maintenance.

- A. It shall be the duty of the consumer at any premises, on which backflow preventers required by this Rule and Regulation are installed, to maintain the backflow preventer(s) and any required appurtenances (e.g. vaults and heated enclosures) in working order. The Division of Water shall retain authority over any containment principal backflow preventer required by O.A.C. 3745-95-05. Inspections, tests, and overhauls shall be made in accordance with the following schedule, or more often where inspections indicate a need:
1. Air gap separations shall be inspected at the time of installation and at least every twelve months thereafter;
 2. Double check valve assemblies, double check detector assemblies, reduced pressure principle assemblies, and reduced pressure principle detector assemblies shall be inspected and tested for tightness at the time of installation and at least every twelve months thereafter.
 3. Pressure vacuum breakers approved for lawn/landscaping irrigation systems shall be inspected and tested for tightness at the time of installation and tested upon start-up of the system each year. Assemblies shall be tested at least every twelve months regardless of whether the irrigation system is or will be used.
 4. Double check valve assemblies (including detector assemblies), reduced pressure principle assemblies (including detector assemblies) and pressure vacuum breakers shall be dismantled, inspected internally, cleaned and repaired whenever needed.
 5. Vaults, heated enclosures, and other appurtenances shall be inspected at the time of installation and along with the annual testing required by this Section.
- B. Inspections, tests, and overhauls of backflow prevention assemblies and appurtenances shall be made at the expense of the water consumer, and shall be performed by the Administrator or a person approved by the Administrator as qualified to inspect, test and overhaul backflow prevention assemblies.
- C. Tests shall be performed using procedures listed in the following reference:
1. Ohio Department of Commerce, Division of Industrial Compliance, Backflow Prevention and Cross-Connection Control Manual, For the Education of Ohio Certified Backflow Prevention Technicians;
- D. Whenever backflow prevention assemblies required by this Rule and Regulation are found to be defective, they shall be repaired or replaced at the expense of the consumer without delay.
- E. The water consumer shall maintain a complete record of each backflow preventer from purchase to retirement. This shall include a comprehensive listing that includes a record of all tests, inspections, repairs and overhauls. Records of inspections, tests, repairs and overhaul

shall be submitted to the Administrator no later than five (5) days after the test, repair, or overhaul. The owner/consumer may authorize the tester to submit test reports and repair records on their behalf; however, the burden of submittal resides with the owner/consumer.

- F. Backflow preventers shall not be bypassed, made inoperative, removed or otherwise made ineffective without specific authorization by the Administrator.
- G. Each backflow assembly (including air gaps) shall have a tag attached, listing the date of the most recent test, the name of the tester, the tester's certificate number, the company with which the tester is employed, the type and date of any repairs and the test results.
- H. Test equipment used for backflow preventer testing required by this Rule and Regulation shall be calibrated at least every twelve (12) months by an independent calibration company.

Section 11. Approval to Inspect, Test, and Overhaul Backflow Prevention Assemblies

- A. In order for an individual who is not a Division of Water employee to be approved by the Administrator to inspect, test, and overhaul backflow prevention assemblies for compliance with this Rule and Regulation, the following are required:
 - 1. The individual must possess a current valid backflow tester certification from the Ohio Department of Commerce, Division of Industrial Compliance;
 - 2. The individual must have access to a test kit that has been calibrated within the prior 12 months;
 - 3. The individual or the company they work for must possess a current valid contractor license issued by the Department of Building and Zoning Services;
 - 4. The individual shall register as a backflow tester with the City of Columbus, Division of Water and pay an initial registration fee and annual renewal fee of the amount specified in City Code 1105.09.
- B. Testers are required to submit documentation to the Administrator demonstrating that they have the credentials required in Section 11.A. Failure to submit up to date documentation will result in loss of approval status.
- C. For the purposes of the fees specified in City Code 1105.09.O, the annual renewal date is February 15 of each year for all testers. Testers not previously approved or testers whose approval has lapsed or been suspended for 30 days or more shall be required to pay the initial fee to obtain/regain approval. The initial fee shall be valid from the time a tester is approved until the following February 15.
- D. Individuals who only test devices at their employer's facilities do not need to be registered with the Department of Building and Zoning Services nor pay the Division of Water registration or annual fee. Department of Commerce certification and registration with the Division of Water are still required.
- E. Testers are required to submit test reports to the Administrator within five (5) days of testing. Test reports shall be in a format as specified by the Administrator.

- F. Testers are required to provide a copy of the test report to the consumer.
- G. A tester's approval may be revoked for failure to follow the guidelines, for repeatedly submitting tests with incorrect or missing data, for falsifying test results, or for other actions that either jeopardize the safety of the public water system or place an excessive burden on Division of Water staff.
- H. The Administrator may establish additional requirements and guidelines as the Administrator deems necessary regarding approval of testers, testing guidelines, and submittal of test reports to the Division of Water.

Section 12. Booster Pumps.

- A. No person shall install or maintain a cross connection to any premise where a booster pump has been installed unless an approved method is in place and is operational to maintain a minimum suction pressure as prescribed in the following:
 - 1. For booster pumps not intended to be used for fire suppression, such booster pump shall be equipped with a low pressure cut-off designed to shut off the booster pump when the pressure in the service line on the suction side of the pump drops to ten pounds per square inch gauge or less.
 - 2. For booster pumps, or fire pumps, used for fire suppression, such booster pump, or fire pump, shall be equipped with one of the following:
 - a. A low suction throttling valve on the booster pump discharge, which throttles the discharge of the pump when necessary so that suction pressure will not be reduced below ten pounds per square inch gauge while the pump is operating; or,
 - b. A variable speed suction limiting control on the booster or fire pump. The speed control system must be used to maintain a minimum suction pressure of ten pounds per square inch gauge at the pump inlet by reducing the pump driver speed while monitoring pressure in the suction piping through a sensing line.
 - c. Booster pumps used for fire suppression, also referred to as fire pumps, installed prior to August 8, 2008, which are equipped with a low pressure cut-off as defined in paragraph A.1 of this section, are not required to modify the installation solely for the purpose of meeting the new methods accepted after this date, under paragraph A.2 of this rule.
- B. It shall be the duty of the water consumer to maintain required pressure sustaining devices in proper working order and to certify to the Administrator, at least once every twelve months that the minimum pressure sustaining method in place is operating properly.
- C. Inspections, tests, and overhauls of required pressure sustaining devices shall be made at the expense of the water consumer and shall be performed by a person qualified to inspect, test

and overhaul pressure sustaining devices. Tests shall be performed using procedures listed in the most up-to-date version of the following: *Ohio Environmental Protection Agency, Division of Drinking and Ground Waters, Backflow Prevention and Cross-Connection Control*.

- D. Whenever pressure sustaining devices required by this Rule and Regulation are found to be defective, they shall be repaired, overhauled or replaced at the expense of the consumer without delay.
- E. The water consumer must maintain a complete record of each pressure sustaining device from purchase to retirement. This shall include a comprehensive listing that includes a record of all tests, inspections, repairs and overhauls. Records of inspections, tests, repairs and overhaul shall be submitted to the Administrator.
- F. Pressure sustaining devices shall not be bypassed, made inoperative, removed or otherwise made ineffective without specific authorization by the Administrator.
- G. Each pressure sustaining device shall have an attached tag listing the date of the most recent test, the name of the tester, the company with which the tester is employed, the type and date of any repairs and the test results.
- H. The owner/consumer shall forward test and repair results to the City of Columbus, Division of Water, Backflow Compliance Office. The owner/consumer may authorize the tester to submit test reports on their behalf. However, should the tester fail to submit test reports, the burden of submittal still resides with the owner/consumer.


Section 13. Abandonment

- A. If an owner/consumer wishes to do away with the annual testing requirement and annual administrative fee for a backflow preventer that has been required by the Administrator, it shall be the responsibility of the owner/consumer to remove the hazardous or potentially hazardous cross-connection, demonstrate to the satisfaction of the Administrator that the hazardous cross-connection has been adequately abated, and demonstrate that no other hazardous cross-connections exist at the premises. Specific requirements are:
 - 1. Removal of a backflow preventer is not permitted if protection would still be required by Section 6.A.1, 2, 3, 4, and 5, Section 6.C.1.b., or Section 6.D.
 - 2. The cross-connection must be eliminated by cutting and capping the supply line to the hazardous system.
 - 3. For some systems, additional equipment must also be removed. For example:
 - a. For a well, remove all electric, piping, and the pump from the well; cut and plug the supply line prior to entering the building/house (cutting the line flush with the interior wall surface is acceptable); cap the well in accordance with any other applicable rules and regulations.

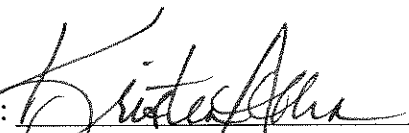
- b. For lawn/landscape irrigation systems the backflow preventer and all above grade exterior pipe must be removed. This means, at a minimum, cut the inlet pipe to the backflow preventer flush with the exterior wall and cut the outlet pipe from the backflow preventer below the ground level.
- c. For a water-powered sump pump, remove the water-powered eductor and the on/off float or switch.

Section 14. Deny or Discontinue Water Service

- A. The Administrator shall deny or discontinue the water service to any premises wherein any backflow prevention device required by this Rule and Regulation is not installed, tested and maintained in a manner acceptable to the Administrator, or if it is found that the backflow preventer has been removed or by-passed, or if an unprotected cross-connection exists on the premises, or if the minimum pressure sustaining method required by this Rule and Regulation is not installed and maintained in working order.
- B. At the Administrator’s discretion, when a premises is served by multiple service lines, termination of service for violation of this Rule and Regulation may be applied to any or all water service lines serving the premises.
- C. The Administrator shall immediately discontinue water service to any property wherein a backflow condition exists or is suspected to exist or an authorized representative of the water supplier is denied entry to determine compliance with this chapter.
- D. Termination of service under this regulation shall be pursuant to City Code Section 1101.03 or Section 1101.06, as applicable.
- E. Water service to such premises shall not be restored until the consumer has corrected or eliminated such conditions or defects in conformance with this Rule and Regulation, and to the satisfaction of the Administrator.

APPROVED: 
 John Newsome, P.E.
 Administrator, Division of Water

5-12-23
 Date

APPROVED: 
 Kristen Atha
 Director, Department of Public Utilities

5-15-2023
 Date

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