

## **ARTICLE 10 BACKFLOW PREVENTION**

**10-1 GENERAL:** The purpose of this regulation is to protect the District's Water System from contaminants or pollutants that could enter the District Water System by backflow from a Property Owner's water supply system through the service connection.

**10-2 AUTHORITY:** The authority to implement this program is contained in the following statute, legislation and regulations and acts:

- C.R.S. § 25-1-114 and 114.1
- Section 39 of 5 CCR 1002-11, Colorado Primary Drinking Water Regulations
- Colorado Plumbing Code

These sources provide the following authority to the District:

10-2-1 To survey all service connections within the District Water System to determine if the connection is a cross-connection.

10-2-2 To control all service connections within the District Water System if the connection is a cross-connection.

10-2-3 To control any service connections within the District Water System in lieu of a survey as long as the service connection is controlled with an air gap or reduced pressure zone backflow prevention assembly.

10-2-4 To collect fees for the administration of this program.

10-2-5 To maintain records of cross-connection surveys and the installation, testing and repair of all backflow prevention assemblies installed for containment and containment by isolation purposes.

10-2-6 To administer, implement, and enforce the provisions of this regulation, except as otherwise provided by law.

**10-3 APPLICABILITY:** This regulation applies to all commercial, industrial and multi-family residential service connections within the District Water System and to any persons outside the District who are, by contract or agreement with the District, users of the District Water System. This Regulation does not apply to single-family-residential service connections unless the District becomes aware of a cross connection at the single family connection.

### **10-4 DEFINITIONS:**

10-4-1 "ACTIVE DATE" means the first day that a backflow prevention assembly or backflow prevention method is used to control a cross-connection in each calendar year.

10-4-2 "AIR GAP" is a physical separation between the free flowing discharge end of a potable water supply pipeline and an open or non-pressure receiving vessel installed in accordance with standard AMSE A112.1.2.

10-4-3 "BACKFLOW" means the undesirable reversal of flow of water or mixtures of water and other liquids, gases or other substances into the public Water Systems District Water System from any source or sources other than its intended source.

10-4-4 "BACKFLOW CONTAMINATION EVENT" means backflow into a public Water System from an uncontrolled cross connection such that the water quality no longer meets the Colorado Primary Drinking Water Regulations or presents an immediate health and/or safety risk to the public.

10-4-5 "BACKFLOW PREVENTION ASSEMBLY" means any mechanical assembly installed at a water service line or at a plumbing fixture to prevent a backflow contamination event, provided that the mechanical assembly is appropriate for the identified contaminant at the cross connection and is an in-line field-testable assembly.

10-4-6 "BACKFLOW PREVENTION METHOD" means any method and/or non-testable device installed at a water service line or at a plumbing fixture to prevent a backflow contamination event, provided that the method or non-testable device is appropriate for the identified contaminant at the cross connection.

10-4-7 "CERTIFIED CROSS-CONNECTION CONTROL TECHNICIAN" means a person who possesses a valid Backflow Prevention Assembly Tester certification from one of the following approved organizations: American Society of Sanitary Engineering (ASSE) or the American Backflow Prevention Association (ABPA). If a certification has expired, the certification is invalid.

10-4-8 "CONTAINMENT" means the installation of a backflow prevention assembly or a backflow prevention method at any connection to the District Water System that supplies an auxiliary water system, location, facility, or area such that backflow from a cross connection into the District Water System is prevented.

10-4-9 "CONTAINMENT BY ISOLATION" means the installation of backflow prevention assemblies or backflow prevention methods at all cross connections identified within a Property Owner's water system such that backflow from a cross connection into the District Water System is prevented.

10-4-10 "CONTROLLED" means having a properly installed, maintained, and tested or inspected backflow prevention assembly or backflow prevention method that prevents backflow through a cross connection.

10-4-11 "CROSS CONNECTION" means any connection that could allow any water, fluid, or gas such that the water quality could present an unacceptable health and/or safety risk to the public, to flow from any pipe, plumbing fixture, or a Property Owner's water system into the District Water System's District Water System or any other part of the District Water System through backflow.

10-4-12 "MULTI-FAMILY" means a single residential connection to the District Water System's District Water System from which two or more separate dwelling units are supplied water.

10-4-13 "SINGLE-FAMILY" means:

10-4-13.1 A single dwelling which is occupied by a single family and is supplied by a separate service line; or

10-4-13.2 A single dwelling comprised of multiple living units where each living unit is supplied by a separate service line.

10-4-14 "UNCONTROLLED" means not having a properly installed and maintained and tested or inspected backflow prevention assembly or backflow prevention method, or the backflow prevention assembly or backflow prevention method does not prevent backflow through a cross connection.

10-4-15 "WATER SUPPLY SYSTEM" means a water District Water System, piping, connection fittings, valves and appurtenances within a building, structure, or premises. Water supply systems are also referred to commonly as premise plumbing systems.

## **10-5 REQUIREMENTS:**

10-5-1 Commercial, industrial and multi-family service connections shall be subject to a survey for cross connections. If a cross connection has been identified an appropriate backflow prevention assembly and or method shall be installed at the Property Owner's water service connection, at the Property Owner's expense, within 120 days of its discovery. The assembly shall be installed downstream of the water meter or as close to that location as deemed practical by the District. If the assembly or method cannot be installed within 120 days the District must take action to control or remove the cross connection, suspended service to the cross connection or receive an alternative compliance schedule from the Colorado Department of Public Health and Environment.

10-5-2 In no case shall it be permissible to have connections or tees between the meter and the containment backflow prevention assembly.

10-5-3 In instances where a reduced pressure principle backflow preventer cannot be installed, the owner must install approved backflow prevention devices or methods at all cross-connections within the owner's plumbing system.

10-5-4 Backflow prevention assemblies and methods shall be installed in a location which provides access for maintenance, testing and repair.

10-5-5 Reduced pressure principle backflow preventers shall not be installed in manner subject to flooding.

10-5-6 Provisions shall be made to provide adequate drainage from the discharge of water from reduced pressure principle backflow prevention assemblies. Such discharge shall be conveyed in a manner which does not impact waters of the state.

10-5-7 All assemblies and methods shall be protected to prevent freezing. Those assemblies and methods used for seasonal services may be removed in lieu of being protected from freezing. The assemblies and methods must be reinstalled and then tested by a certified cross-connection control technician upon reinstallation.

10-5-8 Where a backflow prevention assembly or method is installed on a water supply system using storage water heating equipment such that thermal expansion causes an increase in pressure, a device for controlling pressure shall be installed.

10-5-9 All backflow prevention assemblies shall be tested at the time of installation and on an annual schedule thereafter. Such tests must be conducted by a Certified Cross-Connection Control Technician.

10-5-10 The public Water System shall require inspection, testing, maintenance and as needed repairs and replacement of all backflow prevention assemblies and methods, and of all required installations within the owner's plumbing system in the cases where containment assemblies and or methods cannot be installed.

10-5-11 All costs for design, installation, maintenance, testing and as needed repair and replacement shall be borne by the Property Owner.

10-5-12 No grandfather clauses exist except for fire sprinkler systems where the installation of a backflow prevention assembly or method will compromise the integrity of the fire sprinkler system.

10-5-13 For new buildings, all building plans must be submitted to the public Water System and approved prior to the issuance of water service. Building plans must show:

10-5-13.1 Water service type, size and location

10-5-13.2 Meter size and location

10-5-13.4 Backflow prevention assembly size, type and location

10-5-13.5 Fire sprinkler system(s) service line, size and type of backflow prevention assembly.

10-5-13.5-1 All fire sprinkling lines shall have a minimum protection of an approved double check valve assembly for containment of the system.

10-5-13.5-2 All glycol (ethylene or propylene), or antifreeze systems shall have an approved reduced pressure principle backflow preventer for containment.

10-5-13.5-3 Dry fire systems shall have an approved double check valve assembly installed upstream of the air pressure valve.

10-5-13.5-4 In cases where the installation of a backflow prevention assembly or method will compromise the integrity of the fire sprinkler system the District's Water System can choose not to require the backflow protection. The District Water System will measure chlorine residual at location representative of the service connection once a month and perform periodic bacteriological testing at the site. If the District suspects water quality issues the District will evaluate the practicability of requiring that the fire sprinkler system be flushed periodically.

#### **10-6 INSPECTION, TESTING AND REPAIR:**

10-6-1 Backflow prevention assemblies or methods shall be tested by a Cross-Connection Control Technician who has been certified by the American Society of Safety Engineers or the American Backflow Prevention Association. Such testing shall take place upon installation and at least annually thereafter. The tests shall be made at the expense of the Property Owner.

10-6-1.1 Any backflow prevention assemblies or methods that are non-testable, shall be inspected at least once annually by a certified cross-connection control technician. The inspections shall be made at the expense of the Property Owner.

10-6-2 As necessary, backflow prevention assemblies or methods shall be repaired and retested or replaced and tested at the expense of the Property Owner whenever the assemblies or methods are found to be defective.

10-6-3 Testing gauges shall be tested and calibrated for accuracy at least once annually.

#### **10-7 REPORTING AND RECORDKEEPING:**

10-7-1 Copies of records of test reports, repairs and retests, or replacements shall be kept by the Property Owner for a minimum of three (3) years.

10-7-2 Copies of records of test reports, repairs and retests shall be submitted to the District by mail, facsimile or e-mail by the testing company or testing technician.

10-7-3 Information on test reports shall include, but may not be limited to

10-7-3.1 Assembly or method type

10-7-3.2 Assembly or method location

10-7-3.3 Assembly make, model and serial number

10-7-3.4 Assembly size

10-7-3.5 Test date; and

10-7-3.6 Test results including all results that would justify a pass or fail outcome

10-7-3.7 Certified cross-connection control technician certification agency

10-7-3.8 Technician's certification number

10-7-3.9 Technician's certification expiration date

10-7-3.10 Test kit manufacturer, model and serial number

#### 10-7-3.11 Test kit calibration date

### **10-8 RIGHT OF ENTRY:**

10-8-1 A properly credentialed representative of the District shall have the right of entry to survey any and all buildings and premises for the presence of cross-connections for possible contamination risk to and for determining compliance with this section. This right of entry shall be a condition of water service in order to protect the public health, safety and welfare throughout the District.

### **10-9 COMPLIANCE:**

10-9-1 Property Owners shall cooperate with the installation, inspection, testing, maintenance, and as needed repair and replacement of backflow prevention assemblies and with the survey process. For any identified uncontrolled cross-connections, the District shall complete one of the following actions within 120 days of its discovery:

10-9-1.1 Control the cross connection

10-9-1.2 Remove the cross connection

10-9-1.3 Suspend service to the cross connection

10-9-2 The District shall give notice in writing to any Property Owner whose plumbing system has been found to present a risk to the District's District Water System through an uncontrolled cross connection. The notice and order shall state that the Property Owner must install a backflow prevention assembly or method at each service connection to the Property Owner's premises to contain the water service. The notice and order will give a date by which the Property Owner must comply.

10-9-2.1 In instances where a backflow prevention assembly or method cannot be installed, the Property Owner must install approved backflow prevention assemblies or methods at all cross-connections within the Property Owner's water supply system. The notice and order will give a date by which the Property Owner must comply.

### **10-10 VIOLATIONS AND PENALTIES:**

10-10-1 Any violation of the provisions of this regulation shall, upon conviction, be punishable as provided in all applicable statutes, laws, and regulations.

10-10-2 In addition to any other remedy available to the District by rule or at law or equity, the District shall have the authority to suspend water service to any building, structure, or facility that is in violation of this regulation, pursuant to the provisions of Section 3-4 of these Rules and Regulations.

### **10-11 CONFLICT WITH OTHER CODES:**

10-11-1 If a dispute or conflict arises between the Colorado Plumbing Code as adopted herein, and any plumbing, mechanical, building, electrical, fire or other code adopted by the State, then the most stringent provisions of each respective code shall prevail.

**10-12 DISTRICT'S COSTS AND EXPENSES:**

10-12-1 If and to the extent the District's costs and expenses incurred in the enforcement of this Article 10 are not recoverable pursuant to Article 7 of these Rules and Regulations, all such costs and expenses shall be charged to the Property Owner who shall pay the same within thirty (30) days after the date of the District's invoice, and thereafter any unpaid amount of such charges shall become a lien against the subject property pursuant to C.R.S. § 32-1-1001(1)(j)(I).