MISSOULA	**Public Works Department Administrative Rule No. 688**
	Cross-Connection/Backflow Protection Program

Adopted: May 20, 2019

Revised: _____

PURPOSE:

Outline the Backflow and Cross Connection Rules established by Missoula Water.

APPLICABILITY:

Missoula Water staff involved with connections to the public water system.

DISCUSSION:

This rule incorporates the Cross-Connection/Backflow Protection Program more formally as an administrative rule. The program was adopted by the Missoula City Council on June 11, 2018.

OVERVIEW:

Missoula Water's Cross-Connection/Backflow Program has been approved by the Montana Department of Environmental Quality (DEQ) and is summarized in this document. The purpose of the Backflow Program is to protect the water supply and the public from contamination or pollution that can occur as a result of cross-connections.

Backflow occurs when the pressure in the distribution system drops, siphoning water from the customer's system into the distribution system, or when a customer's system is pressurized to the point where it overcomes the pressure in Missoula Water's main. This would also siphon any substance that may be in contact with the water system through a cross-connection.

This summary describes the requirements for residential and commercial uses, fire sprinkler systems, irrigation systems, and auxiliary sources of water. In addition, it includes a list of potential hazards and a checklist for backflow installation.

These backflow requirements may be updated periodically. Contractors and developers are responsible for obtaining and adhering to Missoula Water's current requirements.

DEFINITIONS:

Air-Gap Separation: A physical separation between the free flowing discharge end of a potable water supply pipeline and an open or non-pressure receiving vessel. An approved air gap shall be at least double the diameter of the supply pipe measured vertically above the overflow rim of the vessel - in no case less than one inch.

Approved Backflow Prevention Assembly: An assembly listed by the Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California (FCCC & HR, USC) as an approved backflow prevention assembly that meets the reduction of lead in drinking water act (42 U.S.C. 300G).

Approved Water Supply: Any water supply whose potability is regulated by a State or local health agency.

Atmospheric Vacuum Breaker (AVB), a.k.a. Non-Pressure Type Vacuum Breaker: An assembly containing a float-check, a check seat, and an air inlet port. The flow of water into the body causes the float to close the air inlet port. When the flow of water stops, the float falls and forms a check valve against backsiphonage and at the same time opens the air inlet port to allow air to enter and satisfy the vacuum. A shutoff valve immediately upstream may be an integral part of the assembly. An atmospheric vacuum breaker is designed to protect against a health hazard (i.e., contaminant) under a backsiphonage condition only. No shutoff valve may be installed downstream of an AVB.

Auxiliary Supply: Any water supply on or available to the premises other than the approved water supply. These auxiliary supplies may be polluted or contaminated or may be objectionable and constitute an unacceptable water source over which the water purveyor does not have sanitary control.

AWWA Standard: An official standard developed and approved by the American Water Works Association (AWWA).

Backflow: The undesirable reversal of water flow or the reversal of water flow containing other liquids, gases, or other substances from a connected source that flows into the distribution pipes of the public water supply system.

Backpressure: Any increase of pressure in the downstream piping system (by pump, elevation of piping, or steam and/or air pressure) above the supply pressure at the point where backflow could occur.

Backsiphonage: A form of backflow due to a reduction in system pressure that causes a sub-atmospheric pressure to exist at a site in the water system.

Certified Backflow Prevention Assembly Tester: A person who holds a current certificate from any state certification program authorizing the person to test backflow prevention assemblies or who holds a current certificate from the American Society of Sanitary Engineers, American Backflow Prevention Association, Foundation for Cross-Connection Control, or American Water Works Association.

Critical Level: The C-L or C/L marking of the backflow prevention assembly, which is the point established by the testing laboratory and marked by the manufacturer, from which the minimum required elevation above the flood rim of a fixture, receptacle, or other use is determined. In the absence of such marking, the lowest part of the assembly shall be deemed to be the critical level.

Cross-Connection: Any actual or potential connection between a potable water system used to supply water for drinking purposes and any other water supply system, either public or private, or a wastewater or sewer line or other potential source of contamination so that a flow of water into or contamination of the public water supply system from the other source of water or contamination is possible. By-pass arrangements, jumper connections, removable sections, swivel or changeover assemblies, or other assemblies through which backflow could occur shall be considered to be cross-connections.

Degree of Hazard: Either a pollutant (non-health) or contaminant (health) hazard and is derived from the evaluation of conditions within a system through a cross-connection.

Double Check Valve Assembly: An assembly of two internally loaded, independently acting check valves, including resilient seated shut-off valves on each end of the assembly and test cocks for testing the water tightness of each check valve.

Double Check-Detector Assembly: A specially designed assembly composed of a line-size approved double check valve assembly with a specific bypass 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.

Fixed Air Gap: A backflow prevention assembly manufactured to meet the requirements of an air gap.

Health Agency: The Montana Department of Environmental Quality (DEQ) or the Missoula City/County Health Department (MCCHD).

Health Hazard (Contaminant): A condition that causes or creates a potential for water contamination which may cause disease or have any other physical or toxic effects on humans.

Missoula Water: The City of Missoula's water utility responsible for processing, treatment, transmission, storage, distribution, pumping, and measurement of water supplied to consumers as well as the public water supply owned and/or operated by the City of Missoula.

Non-Health Hazard (Pollutant): A condition that causes or creates a potential for water quality degradation but does not constitute a health hazard and will not cause illness or death.

Non-Potable Water: Water that is not derived from a water supply and system under the authority of the appropriate health authority and is not approved for drinking, personal, or culinary use. Water in a fire, irrigation, reclaimed waste water, or industrial water system is deemed non-potable.

Person: An individual, corporation, company, association, partnership, municipality, public utility, or other public body or institution.

Premises: Any and all areas on a water user's property that are served or have the potential to be served by the public water system.

Pressure Vacuum Breaker: An assembly that has an independently operating, loaded check valve and an independently operating, loaded air inlet valve located on the discharge side of the check valve. The pressure vacuum breaker must be equipped with properly located test cocks and tightly closing shutoff valves located at each end of the assembly. This assembly is designed to protect only against a backsiphonage condition, not against backpressure. A shutoff valve may be used downstream of a pressure vacuum breaker.

Public Water Supply: A system for the provision of water for human consumption that has 15 or more service connections or regularly serves at least 25 persons daily for a period of at least 60 days out of the year.

Reduced Pressure Zone Backflow Prevention Assembly: An assembly incorporating two internally loaded, independently operating check valves and an automatically operating differential relief valve located between the two checks, including resilient seated shut-off valves on each end of the assembly and the necessary test cocks for testing the assembly.

Reduced Pressure Zone-Detector Backflow Assembly: A specially designed assembly composed of a line-size approved, reduced pressure principle backflow prevention assembly with a specific bypass water meter and a meter-size approved, reduced pressure principle backflow prevention assembly. The meter shall register accurately for only very low rates of flow and shall show a registration for all rates of flow.

Service Connection: The point of connection of a user's piping to the Missoula Water system.

Spill-Resistant Pressure Vacuum Breaker: An assembly containing an independently operating loaded air inlet valve located on the discharge side of the check valve. The assembly is to be equipped with a properly located resilient seated test cock, a properly located bleed/vent port, and tightly closing resilient seated shutoff valve located at each end of the assembly. This assembly will protect against a non-health hazard as well as a health hazard under backsiphonage only if installed appropriately. (FCCHR 10th edition pg.172)

Water Supplier: The person who owns or operates the approved water supply system.

Water User: Any person obtaining water from an approved water supply.

SECTION I: CROSS-CONNECTION PROTECTION REQUIREMENTS

A. General Provisions

1. Unprotected cross-connections with the public water supply are prohibited.

2. Whenever Missoula Water finds that backflow protection is necessary to protect the public water supply, the utility will require the water user to install an approved backflow prevention assembly at the water user's expense for continued service or before a new service will be granted.

3. Wherever Missoula Water finds that backflow protection is necessary on a water supply line entering a water user's premises, then any and all water supply lines from the utility's mains entering such premises, buildings, or structures shall be protected by an approved backflow prevention assembly. The type of assembly to be installed will be in accordance with the requirements of this program.

B. Where Protection Is Required

1. Each service connection from the Missoula Water system supplying water to premises having an auxiliary water supply shall be protected against backflow of water from the premises into the public water supply system, even if the auxiliary water supply is

accepted as an additional source by Missoula Water and is approved by the Montana DEQ or the Missoula City/County Health Department (MCCHD).

2. Each Missoula Water service connection supplying water to any premises on which any substance is handled in such a fashion that it may be allowed to enter the public water system shall be protected against backflow from the premises into the public water supply with an approved backflow prevention assembly. This shall include the handling of process waters and waters originating from the Missoula Water system that have been subjected to any change in water quality.

3. Backflow prevention assemblies shall be installed on the service connection to any premises having:

   a. internal cross-connections that cannot be permanently corrected and controlled to the satisfaction of the state or local Health department and Missoula Water,

   b. complicated plumbing and piping arrangements or where entry to all portions of the premises are not readily accessible for inspection purposes, making it impracticable or impossible to ascertain whether or not cross-connections exist, or

   c. cross-connections that cannot be practically eliminated.

C. Type of Protection Required

1. The type of protection that shall be provided to prevent backflow into the approved water supply shall be commensurate with the degree of hazard that exists on the consumer's premises. The types of protective assembly that may be required (listed in an increasing level of protection) include:

   a. Double Check Valve Assembly (DCA)
   b. Atmospheric Vacuum Breaker (AVB)
   c. Pressure Vacuum Breaker (PVB)
   d. Spill Resistant Pressure Vacuum Breaker (SVB)
   e. Reduced Pressure Zone Backflow Prevention Assembly (RP)
   f. Air-gap separation (AG)

2. The water user may choose a higher level of protection than what Missoula Water requires. The minimum types of backflow protection required to protect the approved water supply from varying degrees of hazard are given in Table I. Missoula Water will evaluate situations that are not covered in Table I on a case-by-case basis and will determine the appropriate backflow protection needed. The water user is responsible for the installation of the appropriate backflow assembly.

D. Exemptions

A cross-connection is exempt from the standards in this program if the following conditions are met:

1. The cross-connection is with a public water supply system that has been approved by the DEQ, and

2. The owner or operator of the public water supply that is or will be connected to the system with the approved voluntary cross-connection control program completes the following:

   a. sends a written request for an exemption to the public water supplier with the approved voluntary program, and

   b. submits a sanitary survey conducted within the three years preceding the request for an exemption that complies with the following:

      (A) indicates that there are no cross- connections that violate Rule II within the public water supply system that is or will be connected, and

      (B) has been conducted by the DEQ or a person who has contracted with the department to perform the sanitary survey, or

      (C) has been determined by the DEQ to be competent and reliable, and

      (D) the public water supply system with the approved voluntary program determines in writing that the public water supply that is or will be connected is acceptable as a source.

Table I – Type of Backflow Protection Required

Types of Systems	**Minimum Type of Backflow Prevention**
Fire Protection Systems	
1. Premises on which the fire system is supplied from the public water system and interconnected with an unapproved auxiliary water supply. An RP may be provided in lieu of an AG, with written approval by Missoula Water.	AG
2. Premises on which the fire system is supplied from the public water system and where either elevated storage tanks or fire pumps that take suction from private reservoirs or tanks are used. An RP may be provided in lieu of an AG with written approval by Missoula Water.	AG
3. Premises on which the fire system is supplied from the public water system and there is standing water in the fire system or outside fire hose connections. A DCA may be provided in lieu of an RP with written approval by Missoula Water.	RP

Types of Systems	Minimum Type of Backflow Prevention
4. Residential or Commercial buildings with fire sprinkler systems that have either Fire Department Connection (FDC) and/or require any chemicals to eliminate freezing, including but not limited to antifreeze, which creates a Health Hazard.	RP
Other Systems	
1. Premises on which there are wastewater pumping and/or treatment plants and there is no interconnection with the potable water system. This does not include a single family residence that has a sewage lift pump.	AG
2. Premises on which hazardous substances are handled in such a manner that the substances may enter a potable water system. This does not include a single family residence that has a sewage lift pump. An RP may be provided in lieu of an AG with written approval by Missoula Water.	AG
3. Premises on which there are irrigation systems into which fertilizers, herbicides, or pesticides are or can be introduced.	RP
4. Premises, including single family residences, on which there are underground irrigation systems. A properly installed AVB or PVB may be provided in lieu of an RP with written approval by Missoula Water.	RP
5. Premises on which there is an unapproved auxiliary water supply that is interconnected with the public water system. An RP may be provided in lieu of an AG with written approval by Missoula Water.	AG
6. Premises where there is an unapproved auxiliary water supply and there are no interconnections with the public potable water system. A DCA may be provided in lieu of an RP with written approval by Missoula Water.	RP
7. Premises on which entry is restricted so that inspections for cross-connections cannot be made with sufficient frequency or at sufficiently short notice to assure that cross-connections do not exist.	RP
8. Premises on which there is a history of cross-connections being established or re-established.	RP
9. Premises on which two or more services supply water to the same building, structure, or premises shall have at least an RP assembly on each water service to be located adjacent to and on the customer's side of the respective meters. A DCA may be provided in lieu of an RP with written approval by Missoula Water.	RP

Types of Systems	Minimum Type of Backflow Prevention
10. Premises on which the water user has installed a booster pump to increase the supply pressure to the building, structure, or premises shall have at least an RP assembly on each water service to be located adjacent to and on their customer's side of the respective meters. A DCA may be provided in lieu of an RP with written approval by Missoula Water.	RP
11. Premises on which there are boilers, water heaters, heat exchangers, cooling towers, air conditioners, or other plumbing arrangements in which corrosion inhibitors, antifreeze, or other chemicals are or can be used shall have at least an RP assembly on each water service to be located adjacent to and on the customer's side of the respective meters. A DCA may be provided in lieu of an RP with written approval by Missoula Water.	RP
12. Premises on which there is water treatment equipment through which chemicals or other substances are or can be injected into the customer's water supply shall have at least an RP on each water service to be located adjacent to and on the customer's side of the respective meters. A DCA may be provided in lieu of an RP if treatment and/or chemicals added to the system do not create a health hazard and written approval by Missoula Water.	RP

SECTION II - BACKFLOW PREVENTION ASSEMBLIES

A. Approved Backflow Prevention Assemblies

Only backflow prevention assemblies that comply with the following shall be acceptable for installation by a water user connected to Missoula Water's potable supply:

1. They are listed on the "List of Approved Backflow Prevention Assemblies" published by the Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California, and

2. They meet The Reduction of Lead in Drinking Water Act (42 U.S.C. 300G) requirement that any valve, fitting, or fixture coming in contact with potable water must have a weighted average of lead content of less than 0.25 percent.

B. Existing Backflow Prevention Assemblies

Approved backflow prevention assemblies that are currently in service shall be tested and if found to be in serviceable condition can be left in service after certain information (make, model, size, serial number, and test results) has been provided to Missoula Water. The assembly must then be tested yearly by a certified backflow prevention assembly tester (see Section VII)

or more frequently if determined necessary by Missoula Water. Existing backflow prevention assemblies found to be unserviceable or whose application has been misapplied shall be removed and replaced with an appropriate assembly approved by Missoula Water.

C. Backflow Prevention Assembly Installation

Backflow prevention assemblies shall be installed in a manner prescribed by Missoula Water. Location of the assemblies should be as close as practical to the user's connection. Missoula Water shall have the final authority in determining the required location of a backflow prevention assembly.

1. Air-gap separation (AG) - The air gap separation shall be located on the user's side of and as close to the service connection as practical. All piping from the service connection to the receiving tank shall be above grade and entirely visible. No water use shall be provided from any point between the service connection and the air-gap separation. The water inlet piping shall terminate a distance of at least two (2) pipe diameters above the supply inlet, but in no case be less than 1 inch (1") above the overflow rim of the receiving vessel. Properly installed, the air gap may be used to protect against all levels of backflow hazards.

2. Reduced pressure zone backflow prevention assembly (RP) - The approved reduced pressure zone backflow prevention assembly shall be installed on the user's side and as close to the service connection as practical. The assembly shall be installed a minimum of twelve inches (12") above grade and not more than thirty inches (30") above grade measured from the bottom of the assembly and with a minimum of twelve inches (12") side clearance. The assembly shall be installed in a horizontal position and be readily accessible for maintenance and testing. Water supplied from any point between the service connection and the RP assembly shall be protected in a manner approved by Missoula Water. The water user must provide adequate drainage to prevent flooding in the event the RP assembly bypasses water to atmosphere and sufficient protection to prevent the assembly from freezing. Properly installed, the RP may be used to protect against all levels of hazard under both backpressure and backsiphonage conditions.

3. Double check valve assembly (DCA) - The approved double check valve assembly shall be located as close as practical to the user's connection and shall be installed above grade, if possible, and in a manner where it is readily accessible for testing and maintenance. If a double check valve assembly is put below grade, it must be installed in a vault such that there is a minimum of six inches (6") between the bottom of the vault and the bottom of the assembly and so that the top of the assembly is no more than a maximum of eight inches (8") below grade. Also there must be a minimum of twenty four inches (24") of clearance between the side of the assembly with the test cocks and the side of the vault, and also a minimum of twelve inches (12") clearance between the other side of the assembly and the side of the vault. Special consideration must be given to double check valve assemblies of the "Y" type. These assemblies must be installed on their "side" with the test cocks in a vertical position so that either check valve may be removed for service without removing the assembly. Vaults that do not have an

integrated bottom must be placed on a three-inch (3") layer of gravel. The water user must provide adequate drainage to prevent flooding in the event the assembly leaks or to accommodate spillage during testing and repairs. The water user is responsible for providing adequate protection to prevent freezing of the assembly. The DCA may be used to protect against a non-health hazard under both backpressure and backsiphonage conditions.

4. Pressure Vacuum Breaker (PVB) - The approved pressure vacuum breaker assembly shall be located as close as practical to the user's connection or meter and shall be installed at least 12 inches (12") above all downstream plumbing and the highest fixture flood level rim, outlet, or highest point of water use. In no case should the PVB assembly be used if backpressure could develop in the downstream piping. The PVB shall be installed inline in a vertical position with adequate space to facilitate maintenance and testing. The PVB shall be installed in an area where water spillage through the vacuum relief valve (air inlet) is not objectionable. Adequate drainage to floor drains should be provided to accommodate this spillage. The PVB shall not be installed in a vent hood or where toxic or objectionable fumes or substances could enter and contaminate the potable water piping. Prior to installation, refer to the manufacturer's literature concerning temperature ranges. The PVB must be protected from freezing temperatures, and if installed where temperatures will reach 110 degrees F (43 degrees C) or above, the hot water type of assembly must be used. Properly installed, the PVB may be used to protect all levels of hazard under backsiphonage conditions only.

5. Atmospheric Vacuum Breaker (AVB) - The approved atmospheric vacuum breaker assembly shall be located as close as practical to the user's connection or meter and shall be installed at least six inches (6") above all downstream piping and the highest fixture flood level rim, outlet or highest point of water use. In no case should the AVB assembly be used if backpressure could develop in the downstream piping. The AVB shall be installed inline in a vertical position with adequate space to facilitate maintenance and testing. The AVB shall be installed in an area where water spillage through the vacuum relief valve (air inlet) is not objectionable. Adequate drainage to the floor drain must be provided to accommodate this spillage. The AVB shall not be installed in a vent hood or where toxic or objectionable fumes or substances could enter and contaminate the potable water piping. The AVB shall not be installed where it will be in continuous operation or under continuous pressure for more than 12 consecutive hours. When used for long periods of time, the air inlet valve could become stuck in the closed position. The AVB shall not have any valves installed downstream from the assembly (the discharge side of the plumbing should be exposed to the atmosphere). Prior to installation, refer to the manufacturer's literature for temperature ranges. The AVB must be protected from freezing temperatures, and if installed where temperatures will reach 110 degrees F (43 degrees C) or above, the hot water type of assembly must be used. Properly installed, the AVB can be used to protect against all levels of hazard under backsiphonage conditions only.

6. Spill Resistant Pressure Vacuum Breaker (SVB)- The approved SVB assembly shall be located as close as practical to the user's connection or meter and shall be installed minimum of 12 inches (12") above all downstream plumbing and the highest fixture flood level rim, outlet, or highest point of water use. In no case should the SVB be used if backpressure could develop in the downstream piping. The SVB shall be installed inline in a vertical position with adequate space to facilitate maintenance and testing. The SVB shall be installed in an area where water spillage through the vacuum relief valve (air inlet) is not objectionable. Adequate drainage to floor drains should be provided to accommodate this spillage. The SVB shall not be installed in a vent hood or where toxic or objectionable fumes or substances could enter and contaminate the potable water piping. Prior to installation, refer to the manufacturer's literature concerning temperature ranges. The SVB must be protected from freezing temperatures, and if installed where temperatures will reach 110 degrees F (43 degrees C) or above, the hot water type of assembly must be used. Properly installed, the SVB may be used to protect all levels of hazard under backsiphonage conditions only.

D. Backflow Prevention Assembly Testing and Maintenance

1. The owners of any premises on which, or on account of which, backflow prevention assemblies are installed shall have the assemblies tested by a person who holds a current certificate from any state certification program authorizing the person to test backflow prevention assemblies or who holds a current certificate from the American Society of Sanitary Engineers. Backflow prevention assemblies must be tested at least annually and immediately after installation, relocation, or repair. Missoula Water may require a more frequent testing schedule if it is determined to be necessary. Missoula Water will maintain records regarding the inspection, testing, repair, and location of backflow assemblies on customer premises. No assembly shall be placed back in service unless it is functioning as required. A field testing report shall be submitted to Missoula Water each time the assembly is tested, relocated, or repaired. This form is available on the Missoula Water website.

2. These assemblies shall be serviced, overhauled, or replaced whenever they are found to be defective, and all costs of testing, repair, and maintenance shall be borne by the water user. All repair and maintenance of backflow prevention assemblies shall be done by a person meeting all state and local requirements.

3. If a water user has a water service that is considered critical (i.e., a water service that can't be shut off, even for a few moments at any time), Missoula Water will require either two services to the facility, each having equal backflow protection determined by the degree of actual or potential hazard, or the user may install two assemblies in parallel on the existing service. One assembly can provide water service to the user while the other is tested and/or repaired.

4. Missoula Water will notify affected customers by mail when annual testing of an assembly is needed and also supply users with the necessary forms which must be filled out each time an assembly is tested or repaired.

5. Upon request, Missoula Water will provide a list of persons qualified to test backflow prevention assemblies.

E. Backflow Prevention Assembly Removal

Approval must be obtained from Missoula Water before a backflow prevention assembly is removed, relocated, repaired, or replaced.

1. Removal - The user of an assembly may be discontinued and the assembly removed from service upon verification by Missoula Water that a hazard no longer exists or is not likely to be created in the future.

2. Relocation - An assembly may be relocated following confirmation by Missoula Water that the relocation will continue to provide the required protection and satisfy installation requirements. A retest will be required following the relocation of the assembly.

3. Repair - An assembly may be removed for repair provided the water use is either disconnected until repair is completed and the assembly is returned to service, or the service connection is equipped with other backflow protection approved by Missoula Water. A retest will be required following the repair of the assembly.

4. Replacement - An assembly may be removed and replaced provided the water use is discontinued until the replacement assembly is installed. All replacement assemblies must be approved by Missoula Water and be commensurate with the degree of hazard involved. The replacement assembly must be tested prior to being put into service.

SECTION III - USER SUPERVISOR

At each premise where it is necessary (i.e., schools, industrial facilities, refineries, manufacturing plants, university campuses, etc.) in the opinion of Missoula Water, a user supervisor shall be designated by and at the expense of the water user. This user supervisor shall be responsible for the monitoring of the backflow prevention assemblies and for avoidance of cross-connections. In the event of contamination or pollution of the drinking water system due to a cross connection on the premises, Missoula Water shall be promptly notified by the user supervisor so that the appropriate measures may be taken to overcome the contamination. The water user shall inform Missoula Water of the user supervisor's identity on an annual basis and whenever a change occurs.

SECTION IV - ADMINISTRATIVE PROCEDURES

A. Water System Survey

1. Missoula Water may review any request for new services to determine if backflow protection is needed. Plans and specifications must be submitted to Missoula Water upon request for review of possible cross-connection hazards as a condition of service

for new service connections. If Missoula Water determines that a backflow prevention assembly is necessary to protect the public water system, the required assembly must be installed before service will be granted. In addition, where multiple water systems exist on the user's premises, pipelines shall be identified by the user to clearly distinguish between the systems. This will be done in a manner acceptable to Missoula Water. Outlets of water systems shall be posted as deemed necessary to protect the potable water supply and health of the public.

2. Missoula Water will conduct surveys of its customers' premises in order to eliminate cross-connections. These surveys will be conducted on a priority basis, generally beginning with those identified as having the highest degree of hazard as outlined in Section 5 of the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research Manual of Cross-Connection Control.

3. Missoula Water may, at its discretion, require an inspection or re-inspection for cross-connection hazards on any premise to which it serves water. Conditions that may warrant re-inspection may include, but are not limited to, change of ownership, change of business/user, addition or replacement of equipment, a backflow incident, etc. Any water user who cannot or will not allow an on-premise inspection of his piping system shall be required to install the backflow prevention assembly Missoula Water considers necessary.

B. Customer Notification - Assembly Installation

1. Missoula Water will notify the water user of the survey findings, listing any required corrective actions to be taken. A period of 60 days will be given to complete all corrective actions required, including installation of backflow prevention assemblies.

2. A second notice will be sent to each water user who does not take the required corrective actions prescribed in the first notice within the 60-day period allowed. The second notice will give the water user 2 weeks to take the required corrective action. If no action is taken within the 2-week period, Missoula Water will hand deliver a 24-hour notice of discontinuing service to the service address. If no action is taken to repair and/or test the assembly, Missoula Water may terminate water service to the affected water user until the required corrective actions are taken and inspected by Missoula Water personnel.

C. Customer Notification - Testing and Maintenance

Missoula Water will notify each affected water user when it is time for the backflow prevention assembly installed on their service connection to be tested. This written notice shall give the water user 30 days to have the assembly tested. A second notice shall be sent to each user who does not have their backflow prevention assembly tested as prescribed in the first notice within the 30 day period allowed. The second notice will give the water user 2 weeks to have their backflow prevention assembly tested. If no action is taken within the 2-week period, Missoula Water will hand deliver a 24-hour notice of discontinuing service to the service address. If no

action is taken to repair and/or test the backflow assembly, Missoula Water may terminate water service to the affected water user until the assembly is tested and/or repaired and the necessary forms are submitted to Missoula Water.

SECTION VI - WATER SERVICE TERMINATION

A. General

When Missoula Water encounters water uses that represent a clear and immediate hazard to the public water supply that cannot be immediately abated, Missoula Water may institute the procedure for discontinuing the Missoula Water service.

B. Basis For Termination

Conditions or water uses that create a basis for water service termination shall include, but are not limited to, the following items:

1. Refusal to install a required backflow prevention assembly;
2. Refusal to test or maintain a backflow prevention assembly;
3. Refusal to repair a faulty backflow prevention assembly;
4. Refusal to replace a faulty backflow prevention assembly;
5. Direct or indirect connection between the public water system and a sewer line;
6. Unprotected direct or indirect connection between the public water system and a system or equipment containing contaminants;
7. Unprotected direct or indirect connection between the public water system and an auxiliary water system; and
8. A situation that presents an immediate health hazard to the public water supply system.

C. Water Service Termination Procedures

1. For conditions 1, 2, 3, or 4, Missoula Water may terminate service to a customer's premises after two written notices have been sent specifying the corrective action needed and the time period in which it must be done. If no action is taken within the allowed time period, water service may be terminated.
2. Conditions 5, 6, 7, or 8 are deemed an immediate threat to public health, and Missoula Water may take the following steps:
    a. Make reasonable effort to advise water user of intent to terminate water service.

b. Immediately terminate water supply and lock service valve. The water service will remain inactive until correction of violations has been completed with written approval by Missoula Water.

3. Any and all costs associated with termination of water service shall be borne by the water user. A reconnection fee may also be assessed.

SECTION V - POTENTIAL HAZARDS

A. There are numerous potential hazards that may require backflow protection. Examples include, but are not limited to, the following:

1. Boilers
2. Booster pumps
3. Auxiliary source of water (See Table I – Type of Backflow Protection Required)
4. Sump pumps
5. Pressurized sanitary waste discharge
6. Commercial food processing/preparation equipment/wastes
7. Dental or medical equipment/wastes
8. Manufacturing equipment/processes
9. Carbonators
10. Laboratory equipment
11. Industrial equipment/processes
12. Photographic processing equipment
13. Commercial laundry/cleaning equipment/processes
14. Commercial car wash equipment/processes
15. Autopsy/mortuary equipment/processes
16. Recycled water systems
17. Fire sprinkler systems (See Table I – Type of Backflow Protection Required)

B. A backflow survey by a Missoula Water backflow/cross-connection control specialist must be performed on the premises to identify if any potential hazards exist. If a potential hazard exists, backflow protection must be installed commensurate with the degree of hazard.

C. Backflow Installation Checklist

- ☐ The assembly must be on the approved assembly list.
- ☐ The assembly must be installed above grade with provisions for drainage to atmosphere, such that discharge from the assembly cannot cause the assembly to become submerged. Backflow assemblies may not be installed in crawl spaces.

- ☐ The assembly must be protected from freezing.
- ☐ The assembly shall be installed as close to the service connection as possible with no taps, hose bibs, or connections ahead of backflow assembly.
- ☐ The assembly must be downstream of the water meter.
- ☐ The assembly must be horizontal and level unless approved by Missoula Water.
- ☐ The assembly must be tested annually at a minimum by a certified backflow assembly tester.
- ☐ Onsite thermal expansion control must be installed as needed.
- ☐ Assembly must be installed at least 1 foot and no more than 5 feet from the floor. If assembly is more than 5 feet from floor, a permanent platform must be installed to facilitate testing and repairs.
- ☐ Backflow assemblies cannot be installed in a confined space. There must be a minimum of 1 foot clearance on all sides of the backflow assembly.
- ☐ Some Backflow Assemblies, particularly RPs, require provision for drainage. It is the property owner's responsibility to comply with the drainage requirements of the UPC and provide adequate drainage for the Backflow Prevention Assembly.

Recommended by:

Dennis Bowman, Deputy Public Works Director–Utilities

Drafted by:

Logan McInnis, P.E., Utility Engineer

Reviewed by:

Kevin Slovarp, P.E., City Engineer

Approved by:

Jeremy Keene, P.E., Public Works Director