

# Jackson County Public Water Supply District #12 Customer Manual – Backflow & Cross-Connection

## I. REQUIREMENTS FOR BACKFLOW PREVENTION

- A. Each water customer and/or user shall install an approved backflow prevention device on each service line to their water system serving the premises where, in the judgment of the District or the Missouri Department of Natural Resources, actual or potential hazards to the public (District) potable water system exist. The type and degree of protection required shall be commensurate with the degree of hazard as set forth by the Missouri Department of Natural Resources.
- B. A Missouri Department of Natural Resources “currently approved” backflow prevention device shall be installed on the water service line upstream of the meter where, in the opinion of the District or pursuant to 10 CSR 60-11.010 Mo State Regulations, conditions exist which may cause the backflow of contaminants harmful to the District’s system or its customers. The proper hazard class of the device is stated in the Department of Natural Resources regulations. Original installation, testing and successive annual tests shall be paid for at the customer’s expense. The tests are to be performed by a Missouri Department of Natural Resources certified backflow prevention tester. The approved test results are to be forwarded to the District and the State of Missouri Department of Natural Resources for their respective files.

## II. CROSS-CONNECTIONS PROHIBITED

- A. No water service connection shall be installed or maintained to any premises where actual or potential cross-connections to the public potable or customer’s water system may exist unless such actual or potential cross-connections are abated or controlled to the satisfaction of the District and as required by the laws and regulations of the Missouri Department of Natural Resources.
- B. No connection shall be installed or maintained whereby an auxiliary water supply may enter a public potable or customer’s water system unless such auxiliary water supply and the method of connection and use of such supply shall have been approved by the District and the Missouri Department of Natural Resources.
- C. No water service connection shall be installed or maintained to any premises in which the plumbing system, facilities, and fixtures have not been constructed and installed using acceptable plumbing practices considered by the District and the City of Greenwood as necessary for the protection of health and safety.

## III. SURVEY AND INVESTIGATION

- A. The customer’s premises shall be open at all reasonable times to the District, or his/her authorized representative, for the conduction of surveys and investigations of water use practices within the customer’s premises to determine whether there are actual or potential cross-connections to the customer water system through which contaminants or pollutants could backflow into the public potable water system.
- B. On request by the District or his/her authorized representative, the customer shall furnish information on water user practices within his/her premises.
- C. It shall be the responsibility of the water customer to conduct periodic survey of water use practices on his/her premises to determine whether there are actual or potential cross-connections to his/her water system through which contaminants or pollutants could backflow into his/her or the public potable water system.

#### **IV. TYPE OF PROTECTION REQUIRED**

- A. The type of protection required shall depend on the degree of hazard which exists, as follows:
1. An approved air-gap separation shall be installed where the public potable water system may be contaminated with substances that could cause a system or health hazard.
  2. An approved air-gap separation or an approved reduced pressure principle detector backflow prevention device shall be installed where the public potable water system may be contaminated with a substance that could cause a system or health hazard.
  3. An approved air-gap separation or an approved reduced pressure principle detector backflow prevention device or an approved double-check valve detector assembly shall be installed where the public potable water system may be polluted with substances that could cause a pollution hazard not dangerous to health.

#### **V. WHERE PROTECTION IS REQUIRED**

- A. An approved backflow prevention device shall be installed on each service line to a customer's water system serving premises where, in the judgment of the District or the Missouri Department of Natural Resources, actual or potential hazards to the public potable water system exist. The type and degree of protection required shall be commensurate with the degree of hazard, as determined by the District.
- B. An approved air-gap separation or reduced pressure principle detector backflow prevention device shall be installed after the metered flow of any service connection or within any premises where, in the judgment of the District or Missouri Department of Natural Resources, the nature and extent of activities on the premises, would present an immediate and dangerous hazard to health should a cross-connection occur, even though such cross-connection may not exist at the time the backflow prevention device is required to be installed. This includes but is not limited to the following situations:
1. Premises having an auxiliary water supply, unless the quality of the auxiliary supply is acceptable to the District and the Missouri Department of Natural Resources.
  2. Premises having internal cross-connections that are not correctable or intricate plumbing arrangements which make it impractical to ascertain whether a cross-connection exists.
  3. Premises where entry is restricted so that inspections for cross-connections cannot be made with sufficient frequency or at sufficiently short notice to ensure the cross-connections do not exist.
  4. Premises having a repeated history of cross-connections being established or re-established.
  5. Premises, which due to the nature of the enterprise therein, are subject to recurring modifications or expansion.
  6. Premises on which any substance is handled under pressure so as to permit entry into the public water supply, or where a cross-connection could reasonably be expected to occur. This shall include the handling of processed waters and cooling waters.
  7. Premises where materials of a toxic or hazardous nature are handled such that if back siphonage or backpressure should occur, a serious health hazard may result.
- C. Facilities representing Class I backflow hazards fall into one (1) or more of the categories of premises where an approved air-gap separation or reduced pressure principle detector backflow device is required by the District and the Missouri Department of Natural Resources to protect the public water supply and must be installed at these facilities unless all hazardous or potentially hazardous conditions have been eliminated or corrected by other methods to the satisfaction of the District and the Missouri Department of Natural Resources. Such facilities shall include, but are not limited to, the following:
1. Aircraft and missile plants.
  2. Automotive plants, including those plants which manufacture motorcycles, automobiles, trucks, recreational vehicles, construction and agricultural equipment.

3. Auxiliary water systems.
  4. Beverage bottling plants, including dairies, breweries, and wineries.
  5. Canneries, packaging houses and reduction plants.
  6. Car washing facilities.
  7. Chemical, biological and radiological laboratories, including those in high schools, trade schools, colleges, universities and research institutions.
  8. Chemical manufacturing, processing, compounding or treatment plants.
  9. Commercial facilities that use herbicides, pesticides, fertilizers or any chemical which would be a contaminant to the public water system.
  10. Facilities which have pumped or repressurized cooling or heating systems that are served by the public water system, including all boiler systems.
  11. Facilities manufacturing, refining, compounding, or processing fertilizer, film, herbicides, natural or synthetic rubber, pesticides, petroleum or petroleum products, pharmaceuticals, radiological materials or any chemical which would be a contaminant to the public water system.
  12. Fire protection systems using any chemical additives.
  13. Hazardous waste storage and disposal sites.
  14. Hospitals, mortuaries, clinics, medical buildings, autopsy facilities, morgues and other medical facilities.
  15. Industrial facilities, which recycle water.
  16. Irrigation and sprinkler systems with facilities for injection of pesticides, herbicides or other chemicals or with provisions for creating backpressure.
  17. Laundries and dye works.
  18. Metal or plastic manufacturing, cleaning, processing, plating and fabricating plants.
  19. Oil and gas production, storage or transmission properties.
  20. Paper and paper products plants.
  21. Plating plants.
  22. Plants processing, blending or refining animals, vegetable or mineral oils.
  23. Portable tanks for transporting water taken from the public water system.
  24. Potable water dispensing stations which are served by the public water system.
  25. Power plants.
  26. Printing and publishing facilities.
  27. Radioactive material processing plants or nuclear reactors.
  28. Restricted or classified facilities or other facilities closed to the District.
  29. Sewage and storm drainage and industrial waste treatment facilities and pumping stations.
  30. Waterfront facilities and industries.
- D. Facilities representing Class II backflow hazards fall into the category of premises where an approved air-gap separation, reduced pressure principle detector backflow prevention assembly or double-check valve detector assembly is required by the District to protect the public water supply and must be installed at these facilities unless all hazardous or potentially hazardous conditions have been eliminated or corrected by other methods to the satisfaction of the District. This includes, but is not limited to, the following types of facilities:
1. Tanks to store water from the public water system for firefighting only, unless such tanks meet the requirements of the Missouri Department of Natural Resources for construction to maintain bacteriological quality of the water.
  2. Irrigation systems not using chemical additives and with provisions for creating backpressure.
  3. Fire sprinkler systems not using chemical additives.
  4. Fire lines.
  5. Swimming pools with piped or permanent connection to the public water supply.
  6. Cross-connections that could permit introduction of contaminants into the public or customer water system and thereby create a nuisance, be aesthetically objectionable, or cause minor damage to the public water system or its appurtenances.
- E. The District, at its discretion, may require a backflow prevention device at facilities other than those above that it deems may have a hazardous or potentially hazardous condition.

## **VI. BACKFLOW PREVENTION DEVICES**

- A. Any backflow prevention device required by this Chapter shall be of a type, model and construction approved by the District and the Missouri Department of Natural Resources as follows:
  - 1. Air-gap separation to be approved 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 three (3) inches.
  - 2. Double-check valve detector assemblies or reduced pressure principle detector backflow prevention devices shall be approved by the District and shall appear on the current list of approved backflow prevention devices established by the Missouri Department of Natural Resources. (attached)
- B. Existing backflow prevention devices approved by the District at the time of installation and properly maintained shall, except for inspection and maintenance requirement, be excluded from the requirements of this Chapter so long as the District is assured that they will satisfactorily protect the water system. Whenever the existing device is moved from its present location, or requires more than minimum maintenance, or when the District finds that the maintenance or lack of maintenance constitutes a hazard to health, the unit shall be replaced by a backflow prevention device meeting the requirements of this Chapter.

## **VII. INSTALLATION**

- A. Backflow prevention devices required by this Chapter shall be installed at a location and in a manner approved by the District and shall be installed at the expense of the water customer.
- B. Backflow prevention devices installed on the service line to the consumer's water system shall be located on the consumer's side of the water meter, immediately inside the wall where the line enters the building, and prior to any other connection.
- C. Backflow prevention devices shall be located so as to be readily accessible for maintenance and testing, protected from freezing, and where no part of the device will be submerged or subject to flooding by any fluid.
- D. The discharge pipe of an airgap shall terminate a minimum of two (2) pipe diameters of the discharge pipe above the flood level rim of the receiving vessel; in no case shall the distance be less than one (1) inch.
- E. Only those models of double-check valve detector assemblies and reduced pressure principle backflow prevention assemblies which are on the approved list maintained by the Missouri Department of Natural Resources are acceptable to meet the requirements of this section.
- F. A reduced pressure principle assembly shall not be installed upstream of a fire pump.
- G. Reduced pressure principle detector backflow prevention devices shall be installed with no plug or additional piping affixed to the pressure differential relief valve port and with the pressure differential relief valve port a minimum of 12 inches above the floor level. The device shall be installed at the location where any leakage from the pressure differential relief valve port will be noticed, that allows easy access to the device for maintenance and testing, and that will not subject the assembly to flooding, excessive heat, or freezing.
- H. No bypass piping shall be allowed around a backflow prevention device unless the bypass is equipped with the same level of protection.

## **VIII. INSPECTION AND MAINTENANCE**

- A. Periodic inspection and testing schedules shall be established by the District for all backflow prevention devices. Inspections will not exceed the following intervals: 30 days prior to, or 30 days after the annual schedule requirement date set by the District.
- B. Airgaps shall be inspected each year by a date which is no later than thirty (30) days past the anniversary date established by the supplier of water to ensure that they continue to meet the requirements of subsection(4)(A).
- C. Reduced pressure principle backflow prevention assemblies shall be tested by a certified backflow prevention assembly tester each year by a date which is no later than thirty (30) days past the anniversary date established by the supplier of water to ensure the following:
  - a. The pressure differential relief valve operates to maintain the zone between the two (2) check valves at least two pounds per square inch (2.0 psi) less than the supply pressure.
  - b. The #2 check valve is leak tight against reverse flow under all pressure differentials.
  - c. The static pressure drop across the #1 check valve is at least three pounds per square inch (3.0 psi) greater than the pressure differential between the supply pressure and the pressure in the zone required to open the pressure differential relief valve.
- D. Double check valve assemblies shall be tested each year by a certified backflow prevention assembly tester by a date which is no later than thirty (30) days past the anniversary date established by the supplier of water to ensure that both the #1 and #2 check valves maintain at least one pound per square inch (1.0 psi) differential in the direction of flow and are leak tight against reverse flow under all pressure differentials.
- E. All costs associated with inspections, testing, cleaning, repairs, overhauls or replacement of backflow prevention devices shall be the responsibility of the water customer. All inspections, testing, cleaning, repairs and overhauls of backflow prevention devices shall be performed by a State of Missouri Certified Backflow Prevention Service Tester. It shall be the responsibility of the customer to provide the District with written inspection documentation upon receipt.
- F. Backflow prevention devices found to be defective shall be repaired or replaced at the expense of the water customer without delay and in any event no later than thirty (30) days from the discovery of the defect.
- G. Backflow prevention devices shall not be bypassed, made inoperative, removed, or otherwise made ineffective without specific written authorization by the District. Bypass piping around a backflow prevention assembly is allowed only if the bypass is equipped with an identical backflow prevention assembly.
- H. The District shall maintain a complete record of each backflow prevention device. Records will include a comprehensive listing of installation, tests, inspections, cleaning, repairs, and overhauls and generally be a complete history of each backflow prevention device from purchase to retirement. Records of customer repairs, cleaning, overhaul, and replacement shall be made available to the District upon request.

## **IX. VIOLATIONS**

- A. The District shall deny or discontinue, after reasonable notice to the customer thereof, the water service to any premises wherein any backflow prevention device required by this Chapter is not installed, tested, and maintained in a manner acceptable to the District or if it is found that the backflow prevention device has been removed or bypassed, or if an unprotected cross-connection exists on the premises.
- B. Water service to such premises shall not be restored until the customer has corrected or eliminated such conditions or defects in conformance with this Chapter to the satisfaction of the District.