

Cross Connection Control Policy 2010 Revision

McCormick County Water Department

362 Airport Road
McCormick, SC 29835
864-852-2807

Cross Connection Control Policy 2010 Revision

Table of Contents

Introduction	1
Purpose	1
Laws and Regulations Governing Cross Connection Control	1
Responsibilities	2
Administration	2
Authority	2
Hazard Levels and Typical Service Connections	3
Type of Protective Device Required	4
Devices Not Approved for Use	4
Current Cross Connection Customers	4
Existing or “Grandfathered” Unprotected Cross Connections	5
Customer Information	
New Customers and Connections	5
Existing Customers and Connections	6
Application Information	
Fire Lines	6
Irrigation Systems (In-ground) for Residential and Commercial Use	6
Residential Services (Typical) for Single Family Structures	7
Swimming Pools (Private)	7
Device Installation	7
General Requirements for Installation	7
Reduced Pressure Principle and Detector Backflow Prevention Assembly	8
Pressure Vacuum Breaker Assembly	8
Unacceptable Practices	8
Certified Testers	9
Testing	
Residential Customers with In-ground Irrigation Systems	9
Commercial Customers with In-ground Irrigation Systems	9
Commercial, Industrial and Fire Lines	9
Acceptable Methods of Testing	9
Unacceptable Testing Practices	9
Test Forms	10
Appeals	10
Appendix 1 Definitions and Acronyms	11
Appendix 2 Backflow Device Test Report Form Sample	16

INTRODUCTION

McCormick County has established an ongoing Cross Connection Control Program to address interconnections between the potable water distribution system and any non-potable source of water or other contaminant. There have been numerous high-profile backflow and backsiphonage incidents across South Carolina and the United States over the last 50 years associated with industry, boiler systems, wastewater treatment facilities, car washes, and even in-ground irrigation systems that have lead to illnesses and even deaths.

This program was established by McCormick County to comply with the United States Environmental Protection Agency's (EPA) Safe Drinking Water Act water standards in the 1970s. The goal of this program is to insure that the customer is supplied with safe and high quality water by preventing contamination and pollution associated with the backflow or backsiphonage of a dangerous and potentially deadly substance.

The procedures outlined in this policy will require a committed effort by both the customers of the water system and McCormick County.

The primary method of cross connection control is to eliminate unnecessary connections entirely. When this method is not applicable, the secondary method of prevention is to install, test, and maintain an approved backflow prevention assembly. Many commercial, industrial, fire protection services and even residential applications are required to use a device on their water services. Even though most customers are in compliance, McCormick County personnel are vigilant in seeking new cross connections and preventing potential hazards to the water system. The South Carolina Department of Health and Environmental Control (DHEC) regulations require that McCormick County notify customers who are not in compliance with current regulations and direct them to install the devices necessary to protect the water distribution system, thus, the health of the community.

Due to periodic changes with the EPA Safe Drinking Water Act, South Carolina Safe Drinking Water Act, DHEC State Primary Drinking Water Regulations, and local ordinances this policy manual is subject to change with or without notice. Every effort will be made to alert existing customers of upcoming changes to the policy. The customer is solely responsible for maintaining compliance with the current (most recently updated) copy of this policy. Current copies of this policy can be obtained from the McCormick County Water Department. All questions should be directed to the McCormick County Water Department Director at (864) 852-2807.

PURPOSE

DHEC, referencing the American Water Works Association (AWWA), states that cross contamination has caused more waterborne illnesses and outbreaks than any other factor associated with drinking water treatment and distribution in the modern era. To combat this, McCormick County has established a cross connection control program to protect the drinking water distribution system from the potential hazards associated with the backflow or backsiphonage of a potentially harmful material from an unprotected or unnecessary cross connection. Protection of the system will be accomplished by:

- Eliminating all unnecessary cross connections between a customer or user of water supplied by McCormick County and the distribution system;
- Installing, testing and maintaining all necessary cross connections using physical and/or mechanical devices;
- Obtaining cross connection control by containment; and
- Implementing and adhering to all regulations and standards established by the EPA, DHEC and other applicable regulatory agencies.

LAWS AND REGULATIONS GOVERNING CROSS CONNECTION CONTROL

Authority to establish and operate a cross connection control program is granted to McCormick County by the EPA Safe Drinking Water Act of 1974 (and amendments and revisions thereof), the State of South Carolina Safe Drinking Water Act (South Carolina Code of Laws 44-55-10, et seq.), the DHEC State Primary Drinking Water Regulations (R.61-58 and amendments and revisions thereof) and the plumbing codes and ordinances adopted by McCormick County.

McCormick County has the authority to implement procedures and set minimum requirements necessary to protect the drinking water distribution system from potential pollution or contamination hazards caused by backflow or backsiphonage from unprotected cross connections. McCormick County personnel evaluate connections to the drinking water distribution system for cross connections and the customer shall provide, test, and maintain an approved backflow assembly that meets or exceeds the degree of hazard protection for each cross connection at that site. McCormick County, as granted authority by the governing bodies listed in the Cross Connection Control Policy (also referred to as "Policy"), is not obligated to provide or continue drinking water service to customers who fail to comply with the current Policy.

RESPONSIBILITIES

The customer shall have the sole responsibility of eliminating backflow and backsiphonage from entering the McCormick County drinking water distribution system by installing an approved cross connection control device. The customer shall install, test, and maintain all backflow and backsiphonage prevention systems in accordance with the Cross Connection Control Policy and all applicable local, state and federal ordinances, regulations and laws.

ADMINISTRATION

McCormick County shall operate a cross connection control program in accordance with all applicable ordinances, laws and regulations. As a part of such program, McCormick County can, among other things, conduct onsite inspections and investigations, interviews, review plans and specifications, consult with local and state plumbing officials, maintain files with pertinent customer information and require customers to perform annual testing and maintenance.

According to ordinances, laws and regulations, it is unlawful to knowingly or unknowingly install, permit to install, or maintain any unprotected cross connections. Customers who install or maintain service connections to the McCormick County distribution system that are unprotected or fail to install the necessary protective device or to annually test and maintain backflow prevention assemblies shall have their water service terminated by means of physical disconnection until corrections or tests are conducted and approved by the McCormick County Water Department. The customer will be subject to pay any applicable reconnection fees.

AUTHORITY

The Water Purveyor

- McCormick County, as the water purveyor, has the primary authority to set policies and take steps necessary to prevent the contamination and pollution of the public water distribution system from backflow and backsiphonage. This authority includes the entire water transmission and distribution system and ends at the customer's service connection; most often at the junction of the customer's private service line and the water meter or meter yoke. McCormick County has the authority to deny or discontinue the supply water to a premises where unprotected cross connections exist.
- McCormick County's Cross Connection Control Program will be in accordance with and conform to the current revision of the *South Carolina State Primary Drinking Water Regulations 61-58* and all other local, state and federal ordinances, laws and regulations.
- McCormick County has the authority to promulgate and enforce laws, rules, regulations and policies necessary to protect the public water system.
- McCormick County shall make every effort possible to maintain adequate pressure throughout the system at all times to minimize the hazards of a cross connection.
- McCormick County shall cooperate with the Plumbing Official and Health Official for cross connection control regarding new construction, repairs or additions to a customer's water systems.

The Building Official

- The Building Official enforces the provisions of the International Plumbing Code as adopted for the applicable area, including, but not limited to, those provisions regarding cross connections from the customer's water service connection to the extremities of the customer's water systems.
- The Building Official has no jurisdiction over the water distribution system.

The Health Official

- The Health Official (DHEC) legislates and enforces the laws, rules, and regulations of the State of South Carolina concerning water quality. The Health Official monitors the water purveyor's Cross Connection Control Program.
- The Health Official trains and certifies testers of backflow and backsiphonage prevention assemblies. A list of certified testers is maintained and updated by the Health Official. The Health Official renews and revokes certification as necessary.
- The Health Official reviews backflow prevention assemblies and provides a current list of approved assemblies for installation and use in South Carolina. Only those assemblies may be used on the water purveyor's distribution system.

The Customer's Responsibility

- Each customer, people or facility that receives water from McCormick County has the primary responsibility to keep contaminants and pollutants out of the potable water distribution system. This responsibility begins at the service connection and includes any and all private water distribution on the premises.
- The customer shall assist the Water Purveyor, Building Official and/or the Health Official in surveying or inspecting the customer's water system for actual or potential cross connections. Customers must make available plans, drawings or proposed changes, or additions.
- If a cross connection or potential for a cross connection exists, the water user, at the water user's expense, must install, have tested, and maintain an approved backflow prevention device as required by McCormick County and/or the Health Official. The customer shall prevent creating cross connections by modifying their water system as necessary.

HAZARD LEVELS AND TYPICAL SERVICE CONNECTIONS

Table 1 contains a list of typical service connections and the hazard level characteristically associated with each type use. This list is not complete and is meant only as a guide for McCormick County personnel. All services on the McCormick County's water system will be evaluated individually and the specific hazard level will be determined on a case-by-case basis.

Table 1 - Cross connections, based on hazard type, and their associated facilities

HIGH HAZARD*

Agricultural Operations and Farms (cattle, hog, etc.)	Herbicide / Pesticide / Rodenticide Chemical Mixing Facilities and Farms
Aspirators (laboratories, funeral homes, etc.)	Hospitals
Autopsy Facilities	Laboratories (medical and others)
Boilers	Landscape Irrigation with injection of any type
Chemical Plants	Metal Plating Industries
Cooling Towers and Chillers	Poultry Operations and Houses
Dry Cleaners	Sterilizers
Exterminators	Waste Water Lift Stations with a direct and permanent interconnection with the potable distribution system
Fire Protection Systems with injection	Waste Water Treatment Plants
Funeral Homes	

LOW HAZARD*

Auxiliary Water System	Laundromats
Baptismal Founts (located within worship facilities)	Lawn Irrigation without injection (commercial and residential)
Beauty and Barber Salons	Master-metered Systems for Water Distribution (public and private) (a.k.a. — bulk water systems)
Butcher's Markets (meat markets)	Medical Facilities (i.e. — doctor's office, dentist, veterinarian, chiropractor, etc.)
Car Washes	Multi-family Housing Complexes

Commercial Food Processors	Photographic Developers
Auto Garages and Shops	Pumped water systems (i.e.-for pumping water to upper floors in a multi-level structure, fire fighting, etc.)
Crematoriums	Restaurants and Commercial Food Preparation Facilities
Dishwashers (commercial grade)	Schools
Facilities with Flush Valve Toilets	Solar Energy Systems
Fire Protection Systems without injection	Swimming Pools (public and private)
Fire Protection that utilizes onsite storage	Tattoo Parlors
Gas Stations	Waste Water Lift Stations without a direct and permanent interconnection with the potable distribution system
Grocery Stores	Water, Used
Hotels and Motels	Watering Troughs
Hydrants used as water sources other than fire protection	Wells (public and private), including spring-fed and surface water systems
Inner-Connections with Surface Water Intakes (i.e. – lake irrigation systems, etc.)	

*Hazard tables based on American Water Works Association (AWWA) standard

In response to the changes in water safety regulations and industry technology, the McCormick County's Water Department requirements are subject to change with or without notice. These requirements are reviewed and updated periodically and it is the owner's responsibility to possess the most current revision of these requirements.

TYPE OF PROTECTIVE DEVICE REQUIRED

The McCormick County Water Department Director will evaluate each facility on a case by case basis to determine the type of hazard (high or low) and the type of backflow prevention device required. Table 11 of this policy will be used as a guide,

It is the policy of McCormick County to encourage a physical separation between the potential source of contamination and the potable water supply by use of an air gap.

High hazard devices require an air gap separation, a Reduced Pressure Principal Backflow Prevention Assembly (RP Assembly), or a Pressure Vacuum Breaker Assembly (PVB) (not to be used in applications where there will be backpressure) only. Low hazard devices can be any of the high hazard devices or a Double Check Valve Assembly (DCVA). Standards for residential domestic service and other new and existing service applications (in-ground irrigation systems, commercial and industrial, dedicated fire lines, etc.) can be seen in the following sections of the Policy.

DEVICES NOT APPROVED FOR USE

The following devices are not considered to be approved for backflow prevention to protect the public water distribution system: atmospheric vacuum breakers, barometric loops, double check with intermediate atmospheric vent, and hose bib vacuum breakers. While these types of devices may be used for internal protection (check with local Health Official and Building Official) they are not considered to be approved devices to protect the health of the public and the integrity of the public drinking water system. If any of these devices are used an additional device will be required in accordance with this Policy.

CURRENT CROSS CONNECTION CUSTOMERS

Customers with backflow protection in place shall receive a reminder notice via U.S. Mail to test devices annually. Every effort shall be made by McCormick County to provide notification no later than the beginning of the month the test is due. It shall be the responsibility of the customer to be sure all contact information is accurate and up-to-date. Backflow prevention devices must meet all criteria for a properly functioning device or must be repaired or replaced and retested. Defective devices must be repaired or replaced as soon as possible but no later than 20 business days following the failed test. Test forms must

be submitted to the McCormick County Water Department Director within 10 days after the test has been performed or customer is subject to having water service disconnected. Test forms must be received by McCormick County no later than 90 days after receipt of form (45 days for in-ground irrigation systems per ordinance). Failure to test a device or repair/replace a faulty device after notification has been made by McCormick County will result in the disconnection of water service in accordance with the Policy. The customer will be subject to pay any applicable reconnection fees. Water service to a customer that has been disconnected must also have the device tested (to include repair/replacement and retest) in accordance with the Policy within three (3) days once water service has been reestablished by McCormick County or water will again be disconnected,

EXISTING OR “GRANDFATHERED” UNPROTECTED CROSS CONNECTIONS

McCormick County does not recognize a “grandfathered” customer. This section of the Policy shall supersede any prior notification made by McCormick County. Customers that have been “grandfathered” with no cross connection prevention device(s) installed will be resurveyed to determine protection needed. A device will be required based on the hazard type stated in Table 1 of the Policy.

CUSTOMER INFORMATION

The following information addresses new and current customers regarding backflow prevention,

New Customers and Connections

All new customers for devices must first contact the McCormick County Water Department and supply specific information regarding the proposed business, industry, irrigation, or dedicated fire line. A device must be installed on all applications that meets or exceeds the requirements of the McCormick County Cross Connection Control Policy. The device must provide protection based on the hazard type stated in Table 1 of the Policy. A set of plans for each structure will be required for all new construction that indicate meter location(s), size service, type of backflow prevention device (including make and model), size of backflow prevention device, and specific location of backflow prevention device. The only exemptions to these requirements for new construction are single family residential customers and in-ground irrigation systems for residential and commercial customers (see APPLICATION INFORMATION section of Policy for additional information).

All new customers shall have the proper backflow prevention device installed as soon as possible, prior to water service being established to the customer. Upon device installation the installer, contractor and/or owner shall contact and meet with a McCormick County representative for inspection of the device. If the device has been correctly installed, permission to have water service established will be granted and a Backflow Device Test Report Form will be provided at this time. If the device has not been properly installed then it must be properly installed before water will be turned on. After the device has been reinstalled an inspection will be required by a McCormick County representative.

Tester will have three (3) days to test the device once water service is established by McCormick County personnel. Backflow prevention devices must meet all criteria for a properly functioning device or must be immediately repaired or replaced and retested (see Current Cross Connection Customers section of Policy). Defective devices must be repaired as soon as possible but no later than 20 business days following the failed test. A completed Backflow Device Test Report Form (also referred to as “test form”) must be submitted to the McCormick County Water Department Director by the Tester within 10 days of the test, but no later than 90 days after receipt of form (45 days for in-ground irrigation systems per ordinance). If repairs or replacement of the device was done then it should be noted on the form. Failure to test a device or repair/replace a faulty device after proper notification has been made by McCormick County will result in the disconnection of water service in accordance with the Policy. The customer will be subject to pay any applicable reconnection fees. Water service to a customer that has been disconnected must also have the device tested (to include repair/replacement and retest) in accordance with the Policy within three (3) days once water service has been reestablished by McCormick County or water will again be disconnected.

Existing Customers and Connections

Current Customers in Good Standing - Systems with backflow protection in place shall receive reminder notification via U.S. Mail to have device(s) tested annually. Notification shall be made by McCormick County no later than the beginning of the month the test is due. Backflow prevention devices must meet all criteria for a properly functioning device or must be immediately repaired or replaced and retested (see Current Cross Connection Customers section of Policy). Defective devices must be repaired as soon as possible but no later than 20 business days following the failed test. A completed Backflow Device Test Report Forms (also referred to as "test form") must be submitted to the McCormick County Water Department Director by the Tester within 10 days of the test, but no later than 90 days after receipt of form (45 days for in-ground irrigation systems per ordinance). If repairs or replacement of the device was done then it should be noted on the form. Failure to test a device or repair/replace a faulty device after proper notification has been made by McCormick County will result in the disconnection of water service in accordance with the Policy. The customer will be subject to pay any applicable reconnection fees. Water service to a customer that has been disconnected must also have the device tested (to include repair/replacement and retest) in accordance with the Policy within three (3) days once water service has been reestablished by McCormick County or water will again be disconnected.

Customers Found to be Inadequately or Improperly Protected Against Backflow - All existing customers that are found to be without adequate backflow prevention devices will be required to install an appropriate device. For information see "New Customers and Connections" within the CUSTOMER INFORMATION section of the Policy (above). Failure to install a device in a timely manner after proper notification has been made by McCormick County will result in the disconnection of water service in accordance with the Policy. The customer will be subject to pay any applicable reconnection fees.

"Grandfathered" Customers - McCormick County does not recognize a "grandfathered" customer. This section of the Policy shall supersede any prior notification made by McCormick County. Customers that have been "grandfathered" with no cross connection prevention device(s) installed will be resurveyed to determine protection needed. A device will be required based on the hazard type stated in Table 1 of the Policy. See "Customers Found to be inadequately or Improperly Protected Against Backflow" (above) for additional information.

APPLICATION INFORMATION

The following information addresses several specific applications regarding backflow prevention.

Fire Lines

All dedicated fire lines that are not metered must have a Reduced Pressure Principle Detector Assembly or Double Detector Check Valve Assembly installed at or near the earliest reasonable point beyond the service connection. The type of device will depend on the hazard level associated with the dedicated fire suppression system. The device will be based on the hazard type stated in Table 1 of the Policy.

Irrigation Systems (In-ground) for Residential and Commercial Use

First contact for an irrigation tap shall be the McCormick County Water Department.

Protection required on the in-ground irrigation system will be based on the hazard type stated in Table 1 of the Policy. Customers that irrigate via above-ground sprinklers only (via domestic water service meter) do not have to install a backflow prevention device above what is supplied at or near the meter by McCormick County.

Customers who choose to install a 3/4 inch irrigation meter via a "tee" off of the domestic service line shall be required to install a backflow prevention device regardless of irrigation method.

Customers who choose to install an in-ground irrigation system on their domestic water service shall be required to install the appropriate backflow prevention device based on the hazard type stated in Table 1 of the Policy.

Residential and commercial customers who are found to have an unprotected in-ground irrigation system

installed, whether it is operational or not, shall be required to have a backflow prevention device installed and tested in accordance with the Policy. For information see “New Customers and Connections” within the CUSTOMER INFORMATION section of the Policy. This includes all in-ground irrigation systems and the like that are supplied with water solely from the domestic water service connection with no separate irrigation connection.

Residential Services (Typical) for Single Family Structures

While residential customers do not usually pose much of a risk to the potable water system they are still required by regulation to be protected. Residential services are required to be protected because of a number of factors: swimming pools, pesticide aspirator applicators, garden ponds and fountains to name a few. For residential services that do not have an in-ground irrigation system, backflow protection will be by a residential dual check valve supplied and installed by the customer at or near the meter. Residential dual check valves are approved under the ASSE 1024 Standard.

As older unprotected residential services are repaired or renewed by McCormick County personnel, an approved ASSE 1024 Standard device must be installed at that time. This exception is allowed by DHEC.

Swimming Pools (Private)

Privately owned swimming pools associated with a single family residence will be protected via an approved ASSE 1024 Standard residential dual check valve. Residents are encouraged to install a DCVA but it is not required at this time. Residents are also encouraged not to leave a hose that is connected to a hose bib to be submerged in the pool as this is an avoidable cross connection.

As older unprotected residential services are repaired or renewed by McCormick County personnel, an approved ASSE 1024 Standard device must be installed at that time. This exception is allowed by DHEC.

DEVICE INSTALLATION

When application for service is made “in person” all information and associated forms shall be presented to the customer at that time. Customers who contact McCormick County by another form of communication shall be informed of regulations and requirements.

Air gap separation is encouraged for both high and low hazard applications. The appropriate location for an air gap is at the meter or at an approved location. No branch, tap, tee, bypass, or any other connection that may allow a substance to enter or exit the water line shall be installed between the meter and the air gap.

When an air gap separation is not practical the following methods must be followed:

General Requirements for Installation

- All backflow prevention assemblies are to be installed at the property or right-of-way boundary. McCormick County reserves the right to make exceptions to any installation requirements based on limited space, piping constraints, safety, and protection of the backflow prevention assembly. All exemptions must be obtained in writing from McCormick County prior to work being performed.
- The device shall be installed on the customer’s side of the water meter.
- Backflow devices shall not be installed closer to the water meter than twelve inches (12”) nor farther away than six feet (6’). Measurements will be taken from the outlet of the water meter yoke or flange, to the inlet side of the number one shutoff valve or strainer associated with device.
- As required by ordinance and regulation, all devices must be tested at the time of installation or as soon as water is made available to the device.
- No branch, tap, tee, wye (“Y”), bypass, or any other connection that may allow a substance to enter or exit the water line shall be installed between the meter and the device.
- All installations shall be conducted in accordance with the manufacturer’s specifications and all applicable ordinances, codes, regulations and laws governing installation.
- All devices shall have an isolation valve on the upstream and downstream side of the device immediately adjacent to the device. Resilient seated ball valves are required on all devices up to two inches (2”) and resilient wedge gate valves required on all devices larger than two inches (2”). Butterfly valves are not permitted for use except for fire flow backflow device applications. Only

butterfly valves that have been approved by the University of Southern California Foundation for Cross Connection Control & Hydraulic Research may be used for fire flow protection application.

- Above ground installations require the device to be protected against freezing.
- Piping materials for above ground installation shall be copper or cement-lined ductile iron pipe. The device shall be installed in a way to promote rigid stability.
- Piping materials for below ground installation may use Schedule 40 PVC pipe with Schedule 80 fittings. Below ground installation may also be plumbed using the same materials allowed for above ground installation.
- Below ground installations shall utilize an appropriately sized box for the conditions to which it will be subjected (i.e., traffic load, length of device, etc.). It is required that a two inch (2") layer of pea-sized gravel be placed between the floor and the bottom of the device (including test cocks). There shall be adequate spacing of six inches (6") between the "floor" of the box (soil, etc.) and the device.
- Under no circumstances shall a device be installed in a location that jeopardizes the safety of the installer, tester, inspector, owner, employees (if at a business), or the public at large.
- Upon completion of water tap, the curb stop shall be locked in the off position until the installer meets an McCormick County representative on site for inspection. All device information will be taken at this time and a test form shall be provided. Installer will be given 10 days to return completed test form to the McCormick County's Water Department Director. Failure to comply will constitute disconnection of water service.
- All information shall be entered into the Cross Connection Control tracking program by the program coordinator.

Reduced Pressure Principle and Detector Backflow Prevention Assembly

- All RP Assemblies must be installed above ground unless otherwise specified by the McCormick County.
- RP Assemblies shall be installed in a location where the relief valve opening is directed toward ground level. RP Assemblies are not designed for the relief port to be installed in any other orientation (no vertical installations).
- RP Assemblies allowed to be installed inside buildings or in a pit below ground must have a floor gravity drain that is sufficiently sized (at least twice the diameter of the relief valve) to allow the full discharge to positively drain out of the pit or floor. The drain shall be inspected at least annually by the customer and tester to insure that it is not blocked by debris and that it drains freely by gravity. Any drain that is slow to drain or is clogged must be cleaned immediately upon discovery.
- RP Assemblies are not allowed to be installed in a flood plain or in a location where the relief valve may become submerged in water, soil, mud, etc.
- Relief valve shall not be plumbed directly to any piping to handle discharge. There must be an air gap separation between the relief valve opening and any catch piping. The air gap separation must meet the requirements of the typical air gap (at least twice the diameter but never less than two inches (2") of the opening size of the relief port).

Pressure Vacuum Breaker Assembly

- All PVBs must be installed above ground and at least twelve inches (12") above the highest downstream portion of the customer's system.
- PVBs shall be installed in a location where the air inlet valve is clear of any foreign debris and material, including shrubbery. The minimum setback for any landscaping (trees, flowers, shrubbery, birdbaths, etc.) is three feet (3').
- PVBs are never to be installed inside a building.
- PVBs are not allowed to be installed in a flood plain or in a location where the air inlet valve may become submerged in water, soil, mud, etc.

Unacceptable Practices

McCormick County will not allow anything not associated with the testing and/or maintenance of a device to be permanently or temporarily connected to the test cocks of a backflow prevention assembly. Prohibited items include: hose bib connections, pressure gauges, hose pipes, bypass piping, etc. If discovered by McCormick County personnel, water service to that account will be terminated in accordance with this

Policy.

CERTIFIED TESTERS

All backflow prevention assemblies shall be tested by a DHEC-certified tester in accordance with applicable DHEC standards, regulations and testing procedures. The tester must operate under a current certification as issued by DHEC and be in good standing with McCormick County. Testers must operate under current business practices as established by DHEC and in accordance with the TESTING section of the Policy (below).

A list of the currently licensed DHEC Inspectors and Testers of Backflow Prevention Equipment can be viewed at www.scdhec.gov/environment/water (see the Drinking Water link to find information regarding Backflow Prevention),

McCormick County reserves the right to conduct follow-up tests on recently tested devices to ensure that tests are being conducted in accordance with the Policy.

McCormick County reserves the right to not accept tests from any individual who has been found to be fraudulent in conducting backflow prevention equipment tests on this or any other water system.

TESTING

All testing must be in compliance with all sections of the Policy.

Residential Customers with In-ground Irrigation Systems

Residential backflow devices associated with in-ground irrigation systems shall be tested upon installation of device and every 12 months thereafter. Results must meet the requirements stated in Table 2 of the Policy for it to be considered acceptable. Testing must be conducted by a Tester currently certified by DHEC and in good standing with McCormick County. Reminder letters will be sent to each customer approximately 30 days before the test is due.

Commercial Customers with In-ground Irrigation Systems

Commercial in-ground irrigation systems shall be tested upon installation of device and every 12 months thereafter. Results must meet the requirements stated in Table 2 of the Policy for it to be considered acceptable. Testing must be conducted by a tester currently certified by DHEC and in good standing with McCormick County. Reminder letters will be sent to each customer approximately 30 days before the test is due.

Commercial, Industrial and Fire Lines

Commercial, industrial and dedicated fire lines shall be tested upon installation of device and every 12 months thereafter. Results must meet the minimum requirements stated in Table 2 of the Policy for it to be considered acceptable. Testing must be conducted by a tester currently certified by DHEC and in good standing with McCormick County. Reminder letters will be sent to each customer approximately 30 days before the test is due.

Acceptable Methods of Testing

McCormick County recognizes only the Differential Pressure method of testing for RP Assemblies. The Differential Pressure test or the Direction of Flow test using the Differential Gauge is acceptable for testing PVBs. Either the Differential Pressure test or the Directional of Flow test using the Vertical Site Tube or Differential Gauge may be used for DCVAs. Air gaps do not need to be tested but should be visually inspected by the McCormick County Water Department annually.

Unacceptable Testing Practices

McCormick County and DHEC no longer recognize the Transfer of Pressure, Single Gauge, or Ten Pound Back Pressure methods of testing DCVAs.

By Ordinance, McCormick County reserves the right to terminate water service to any customer for non-compliance with the Cross Connection Control Policy. The customer will be subject to pay all applicable reconnection fees prior to water service being reestablished.

Table 2 – Minimum testing standards for each type of device

HIGH HAZARD[^]			
To be tested by a three (3) hose or five (5) hose differential gauge only			
	Check Number 1	Check Number 2	Air Inlet Valve Or Relief Valve
Reduced Pressure Principal Backflow Prevention Assembly (RP assembly)	5.0 psi minimum 11.0 psi max	1.0 psi minimum 4.0 psi max	2.0 psi minimum 5.0 psi max
Pressure Vacuum Breaker Assembly (PVB)	1.0 psi minimum 4.0 psi max		1.0 psi minimum 4.0 psi max

LOW HAZARD[^]	
Tested using the Direction of Flow test	
Double Check Valve Assembly (DCVA)	<u>Both check valves must close tight using a vertical tube that is operated in accordance with standardized DHEC testing requirements.</u>
Double Check Valve Assembly (DCVA)	<u>Both check valves must close tight and maintain a minimum of 1.0 psi.</u>

[^]Based on Table 1 of the Cross Connection Control Policy

TEST FORMS

The Backflow Device Test Report Form (also referred to as “test form” or “form”) must be filled out completely and must be signed by the tester stating that all results are certified to be correct. The test form and explanation of each item required to be completed on the form can be found in Appendix 2 of the Policy. Completed test forms must be submitted to the McCormick County Water Department Director by the Tester within 10 days of the test, but no later than 90 days after receipt of form (45 days for in-ground irrigation systems per ordinance). Defective devices must be repaired or replaced as soon as possible but no later than 20 business days following the failed test. If repairs or replacement of the device was done then it should be noted on the test form. Failure to return the completed test form within 10 days of the date of a successful test has been conducted will result in the disconnection of water service in accordance with the Cross Connection Control Policy. The customer will be subject to pay any applicable reconnection fees. Water service to a customer that has been disconnected must also have the device tested (to include repair/replacement and retest) in accordance with the Policy within three (3) days once water service has been reestablished by McCormick County or water will again be disconnected.

APPEALS

Customers, contractors, or other individuals who disagree with any decision of McCormick County with respect to the Cross Connection Control Policy may appeal such decision to the McCormick County Water Department Director.

Appeals must be submitted to the Water Department Director in writing within 15 days of the date that the initial decision was issued to the individual or company. Should an appeal be made, McCormick County reserves the right to discontinue water services during the appeal process. After an investigation and review has been conducted by Water Operations management, the individual or business will be notified of the decision in writing within 10 days of receipt of appeal.

Appendix 1

Definitions and Acronyms

ASSE - An acronym for American Society of Sanitary Engineering.

ASSE 1024 Standard - *Performance Requirements for Dual Check Backflow Preventers* standard established by ASSE.

AWWA - an acronym for American Water Works Association.

Air Gap - The unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet conveying water or waste to a tank, plumbing fixture, receptor, or other assembly and the flood level rim of the receptacle. These vertical, physical separations must be at least twice the diameter of the water supply outlet but never less than two inches (2").

American Water Works Association - An international nonprofit scientific and educational organization in the field of water and wastewater.

Approved - Accepted by the governing authority (McCormick County Water Department, DHEC, municipal or local governments) as meeting an applicable specification stated or cited in this policy or as suited for the proposed purpose.

Auxiliary Water Supply - Any water on or available to the customers' premises other than the McCormick County drinking water supply. Auxiliary water supplies may include water from other water purveyors, from any natural source (groundwater wells, springs, rivers, streams, etc.), used waters, or industrial fluids. These waters may be contaminated or polluted, or they may be objectionable and constitute an unacceptable water source over which the water purveyor does not have sanitary control.

Backflow - The undesirable reversal of flow of water in a potable water distribution system as a result of a cross connection.

Back Pressure - A pressure, higher than the water purveyor's supply pressure, caused by a pump, elevated or pressurized tank, boiler, or any other means that may cause a backflow.

Backsiphonage - Backflow caused by negative or reduced pressure in the supply piping.

Backflow Prevention Assembly - An assembly or means designed to prevent backflow that has been approved by DHEC that is used to prevent backflow and backsiphonage.

Bulk Water System - See Master-metered System.

CDC - An acronym for the United States Department of Health and Human Services — Centers for Disease Control and Prevention.

Certified Tester - Any person that meets the requirements of the local approving authority and holds a current certification certificate with the local and/or state approving authority (in South Carolina the approving authority is DHEC). The certified tester must be in good standing with the McCormick County Water Department and DHEC to be recognized as a certified tester.

Commercial - A customer account that is associated with a customer other than a single-family residence. This is to include home-based businesses, standalone businesses, duplexes and multi-plexes that are supplied water via only one meter, subdivision homeowner associations, industries, etc.

Community-type Structure - See Multi-occupancy Structure.

Contamination - Impairment to the potable water supply by the introduction or admission of any foreign substance that degrades the quality of water and creates a health hazard.

Cross Connection - Any actual or potential connection or structural arrangement between a potable water distribution system and any other source or system through which it is possible to introduce into any part of the public water system any used water, industrial fluid, gas, or substance other than the intended potable water which the system is supplied. Bypass arrangements, jumper connections, removable sections, swivel or changeover devices and other temporary or permanent devices through which or because of which backflow can or may occur are considered to be cross connections.

Cross Connection Control by Containment - The installation of an approved backflow prevention assembly at the water service connection to any customer's premises, where it is physically and economically unfeasible to find and permanently eliminate or control all actual or potential cross connections within a customer's water system; or it shall mean the installation of an approved backflow prevention assembly on the service line leading to and supplying a portion of a customer's water system where there are actual or potential cross connections that cannot be effectively eliminated or controlled at the point of the cross connection.

Cross Connection Control Policy - The most current edition of the McCormick County Water Department's policy regarding cross connection control. Also referred within the document as "Policy."

Cross Connections-Controlled - A connection between a potable water system and a non-potable water system with an approved backflow prevention assembly that has been properly installed, tested, and maintained so that it will continuously provide the protection commensurate with the degree of hazard.

Customer - Any person, business, industry or premises that legally or illegally receives water from the McCormick County drinking water distribution system.

DCVA - Acronym for a Double Check Valve Assembly.

DHEC - Acronym for the South Carolina Department of Health and Environmental Control, the state health and environmental regulatory authority in the State of South Carolina.

Differential Gauge - An approved and calibrated gauge used to conduct a differential pressure test on backflow prevention devices. The calibration must be within an accuracy tolerance of plus or minus two percent (2%), equal to 0.3 pounds per square inch differential (psid).

Differential Pressure Test - The test type used to test all testable backflow prevention devices. This type of test requires a three (3) hose or a five (5) hose differential gauge.

Direction of Flow Test - The type of test conducted only on double check valve assemblies using a vertical sight tube that contains a column of water that is at least 27 3/4 inches high to create a pressure equal to 1.0 pounds per square inch (psi) or with a differential gauge using only one hose (high hose).

Distribution System - The network consisting of pipes, valves, hydrants, pump stations, storage facilities, service connections, meters, and other appurtenances that is used to distribute potable water from a source to a customer.

Domestic Water Service - A service connection providing water to be used for drinking, food preparation, bathing, washing clothes and dishes, flushing toilets, and other household purposes only, not to include in-ground irrigation systems.

Double Check Valve Assembly - The approved double check valve assembly consists of two internally loaded check valves, either spring loaded or internally weighted, installed as a unit between two tightly closing resilient-seated shutoff valves and fittings with properly located resilient-seated test cocks. This assembly shall only be used to protect against a non-health hazard (a pollutant).

Double Detector Check Valve Assembly - An approved double check valve assembly with a bypass installed on the assembly. The bypass will have an approved double check valve assembly and may have a meter to detect any water that passes through the assembly.

EPA - An acronym for the United States Environmental Protection Agency, the environmental governing authority in the United States of America.

Flood Level Rim - The level from which liquid in a holding vessel (examples include, but are not limited to, plumbing fixtures, appliances, storage tanks and vats) could overflow onto the floor or ground when all drain and overflow openings built into the equipment are obstructed.

Hazard, Degree of - The term is derived from an evaluation of the actual or potential risk to public health and the adverse effect of the hazard upon the potable water system.

Health Hazard - See High Hazard.

Hazard System - An actual or potential threat of severe damage to the physical properties of the public potable water system or the consumer's potable water system or of a pollution or contamination that would have a protracted effect on the quality of the potable water system.

Health Official - Typically the South Carolina Department of Health and Environmental Control (DHEC) but could possibly be anyone representing a number of federal agencies (including but not limited to the United States Department of Health and Human Services — Centers for Disease Control and Prevention, also known as CDC).

High Hazard - A cross connection or potential cross connection involving any substance that could, if introduced in the public water supply, cause death, illness, spread disease or have a high probability of causing such effects. This hazard covers any and all types of health-related hazards.

Hose Bib - A water tap or faucet with a threaded end that enables a hose to be attached, commonly referred to as a spigot.

Industrial - A customer account that is associated with an industry or large-scale production of a good.

Low Hazard - A cross connection or potential cross connection involving any substance that generally would not be a health hazard, but would constitute a nuisance or be aesthetically objectionable, if introduced into the potable water system.

Master-metered System - A public water system, as defined by state and federal laws and regulations, that receives drinking water through a service connection with McCormick County's distribution system. A master-metered system can include multi-family dwellings, such as apartment and condominium complexes and mobile home parks and subdivisions that are served by other utility companies not under the direct control of the McCormick County Water Department.

Multi-occupancy Structure - This type of living facility would consist of apartments, condominiums, townhouses, dormitories, and multi-plexes (duplexes, tri-plexes, etc.) that is served by only one meter for the entire complex. This type of arrangement will be treated as a master-metered system.

Non-potable Water - Water that is not safe for human consumption or that is of questionable quality.

PVB - An acronym for a Pressure Vacuum Breaker Assembly.

Pollution - The presence of any foreign substance in potable water that tends to degrade its quality so as to constitute a non-health hazard or impair the usefulness of the water.

Potable Water - Water that is safe for human consumption as described by the public health authority having

jurisdiction (in South Carolina it is typically the Department of Health and Environmental Control).

Pressure Vacuum Breaker - See Pressure Vacuum Breaker Assembly.

Pressure Vacuum Breaker Assembly - An assembly consisting of an independently operating, internally loaded check valve, an independently operating loaded air inlet valve located on the discharge side of the check valve, with properly located resilient-seated test cocks and tightly closing resilient-seated shutoff valves at each end of the assembly designed to operate under pressure for prolonged periods of time to prevent backsiphonage. The pressure vacuum breaker is not designed to withstand any amount of back pressure. This device is often referred to as a "PVB" or a "Pressure Vacuum Breaker?"

Private Well - A well that supplies potable or non-potable water to a single person or premises. The source of water can be from either ground or surface, such as a bored well.

Public Water System - (1) Any public or privately owned waterworks system which provides drinking water, whether bottled or piped, for human consumption, including the source of supply whether the source of supply is of surface or subsurface origin; (2) all structures and appurtenances used for the collection, treatment, storage or distribution of drinking water delivered to consumers; (3) any part or portion of the system and including any water treatment facility which in any way alters the physical, chemical, radiological, or bacteriological characteristics of drinking water; provided, that public water system shall not include a drinking water system serving a single private residence or dwelling. A separately owned water system with its source of supply from another waterworks system shall be a separate public water system so long as the two are not inner-connected.

Public Well - A well serving a public water system.

RP Assembly - An acronym for a Reduced Pressure Principle Backflow Prevention Assembly.

Reduced Pressure Assembly - See Reduced Pressure Principle Backflow Prevention Assembly.

Reduced Pressure Principle Backflow Prevention Assembly - The approved reduced pressure principle backflow assembly consists of two independently acting approved check valves together with a hydraulically operating, mechanically independent pressure differential relief valve located between the check valves and below the first check valve. These units are located between two tightly closing resilient-seated shutoff valves as an assembly and equipped with properly located resilient-seated test cocks.

Reduced Pressure Principle Detector Assembly - An approved Reduced Pressure Assembly with a bypass installed on the assembly. The bypass will have an approved reduced pressure assembly and may have a meter to detect any water that passes through the assembly.

Residential - A customer account that is associated with a dwelling that serves as a shelter for a single family. This is to include duplexes and multi-plexes that are supplied water via an individual meter for each individual unit. Properties that are owned by a company or multiple cooperative owners (i.e., homeowners associations, etc.) are classified as Commercial.

Residential Dual Check Valve - A device of two independently operating spring-assisted check valves and can be located with or independent of the meter-yoke assembly. This device is not typically equipped with a shutoff valve or test cocks. This device is used for selectively approved low hazard category cross connections.

Service Connection - The terminal end of a service connection from the public potable water system. This is where the water purveyor loses jurisdiction and sanitary control over the water at its point of delivery to the customer's water system. If a meter is installed at the end of the service connection, then the service connection shall mean the downstream end of the meter. If no meter is installed (an illegal connection with McCormick County's distribution system) then the service connection begins at the tap into the water main owned by the McCormick County Water Department. There shall be no unprotected takeoffs from the service line before any meter or backflow prevention assembly located at the point of delivery to the customer's water

system. The service connection shall include water service connections from a fire hydrant and all other temporary or emergency water service connections from a public potable water system.

South Carolina Department of Health and Environmental Control - The state health and environmental regulatory authority in the State of South Carolina, also known as DHEC.

Tester - See Certified Tester.

Used Water - Any water supplied by a water purveyor from a public potable water system to a consumer's water system after it has passed through the point of delivery and is no longer under the sanitary control of the purveyor.

Vertical Sight Tube - A clear tube constructed of plastic that can contain a column of water that is at least 27 3/4 inches high to create a pressure equal to 1.0 pounds per square inch (psi). This testing device is approved to conduct the Direction of Flow test on double check valve assemblies.

Water Purveyor - The owner and/or operator of a public or private potable water supply (relative to this document the water purveyor is the McCormick County Water Department, a publicly owned and operated water provider).

Well - A bored, drilled or driven shaft, or a dug hole whose depth is greater than the largest surface dimension, from which water is extracted or injected. This shall include, but is not limited to, wells used for water supply for irrigation, industrial or manufacturing processes or drinking water; wells used for underground injection of waste for disposal, storage, or drainage disposal; wells used in mineral or geothermal recovery, and any other special process well.

Appendix 2 Backflow Device test Report Form

McCormick County Water Department
362 Airport Road
McCormick, SC 29835
(864) 852-2708

Date: _____
 Account Name/Business Name: _____
 Account Address: _____
 Account Number: _____ Meter Number: _____
 Device Manufacturer: _____ Model Number: _____
 Serial Number: _____ Size: _____
 Device location: _____
 Tested By (Print): _____

	Check Number 1	Check Number 2	Air Inlet Valve or Relief Valve	#1 Gate or Ball (circle One)	#2 Gate or Ball (circle One)
Test Before Repairs	(Mark One) Leaked _____ Closed _____ Tight _____ Diff. Press _____	(Mark One) Leaked _____ Closed _____ Tight _____ Diff. Press _____	Opened at _____ lbs. Differential Pressure	(Mark One) Leaked _____ Closed _____ Tight _____	(Mark One) Leaked _____ Closed _____ Tight _____
Repairs and New Materials					
Test After Repairs	(Mark One) Leaked _____ Closed _____ Tight _____ Diff. Press _____	(Mark One) Leaked _____ Closed _____ Tight _____ Diff. Press _____	Opened at _____ lbs. Differential Pressure	(Mark One) Leaked _____ Closed _____ Tight _____	(Mark One) Leaked _____ Closed _____ Tight _____

Above data certified to be correct.

Tester Signature: _____ Certification Number: _____
 Company Name: _____ Company Telephone: _____
 Category: General _____ Limited _____ Inspector _____
 Method of Testing: _____ Test Kit Used: _____
 Comments: _____

