Bay County Cross-Connection Program

REVISION DATE ___December 2020_____

Cross-Connection Control Program Plan
For Bay County Utility Services

Requirement for Program Plan

The Bay County Water System, PWS ID #1030050, hereinafter referred to as the "community water system (CWS)," has the responsibility to protect itself from contamination caused by cross-connections on customers' premises. A cross-connection is defined in Rule 62-550.200, Florida Administrative Code (F.A.C.), as follows:

> ***"CROSS-CONNECTION" means any physical arrangement whereby a public water supply is connected, directly or indirectly, with any other water supply system, sewer, drain, conduit, pool, storage reservoir, plumbing fixture, or other device which contains or may contain contaminated water, sewage or other waste, or liquid of unknown or unsafe quality which may be capable of imparting contamination to the public water supply as the result of backflow. By-pass arrangements, jumper connections, removable sections, swivel or changeable devices, and other temporary or permanent devices through which or because of which backflow could occur are considered to be cross-connections.***

Pursuant to Rule 62-555.360, F.A.C., the CWS is required to establish and implement a cross-connection control (CCC) program utilizing backflow protection at or for service connections from the CWS. The CCC program must include a written plan that contains, as a minimum, the following components:

I. Legal authority for the CWS's CCC program.
II. The CWS's policy establishing where backflow protection at or for service connections from the CWS is mandatory.
III. The CWS's policy regarding ownership, installation, inspection/testing, and maintenance of backflow protection that the CWS is requiring at or for service connections from the CWS.
IV. The CWS's procedures for evaluating customers' premises to establish the category of customer and the backflow protection being required at or for the service connection(s) from the CWS to the customer.
V. The CWS's procedures for maintaining CCC program records.

Note: Throughout this CCC program plan, the term "customer" is used. Customer, as used herein, means the property owner and/or occupant of the premises served by the CWS (i.e., whoever interfaces with the CWS regarding water service). Also, unless otherwise defined, all CCC-related terms used in this CCC program plan have the same definitions as those contained in Rules 62-550.200 and 62-555.360, F.A.C.

Program Plan Components

Rule 62-555.360, F.A.C., requires that written CCC program plans include certain minimum components. The minimum components are listed in Table 62-555.360-1 in Rule 62-555.360. This section includes the required minimum components. Components are numbered the same as they appear in Table 62-555.360-1.

Component I: ***Legal authority for the CWS's CCC program (i.e., an ordinance, a bylaw or resolution, or water service rules and regulations).***

The CWS has adopted Resolution No. 377, which is included in Appendix A. The resolution authorizes the CWS to establish and implement a CCC program and references the following CWS policies:

- The CWS's policy establishing where backflow protection at or for service connections from the CWS is mandatory.
- The CWS's policy regarding ownership, installation, inspection/testing, and maintenance of backflow protection that the CWS is requiring at or for service connections from the CWS.

Component II: ***The CWS's policy establishing where backflow protection at or for service connections from the CWS is mandatory.***

This policy applies to all new or existing customers.

The following minimum backflow protection shall be provided at or for service connections from the CWS to the following categories of customers:

Category of Customer	**Minimum Backflow Protection[1] to Be Provided at or for the Service Connection from the CWS to the Customer**
Beverage processing plant, including any brewery	DC if the plant presents a low hazard[2]; or RP if the plant presents a high hazard[2]
Cannery, packing house, rendering plant, or any facility where fruit, vegetable, or animal matter is processed, excluding any premises where there is only a restaurant or food service facility	RP
Car wash	RP
Chemical plant or facility using water in the manufacturing, processing, compounding, or treatment of chemicals, including any facility where a chemical that does not meet the requirements in paragraph 62-555.320(3)(a), F.A.C., is used as an additive to the water	RP
Dairy, creamery, ice cream plant, cold-storage plant, or ice manufacturing plant	RP[3]
Dye plant	RP
Film laboratory or processing facility or film manufacturing plant, excluding any small, noncommercial darkroom facility	RP
Hospital; medical research center; sanitarium; autopsy facility; medical, dental, or veterinary clinic where surgery is performed; or plasma center	RP
Laboratory, excluding any laboratory at an elementary, middle, or high school	RP
Laundry (commercial), excluding any self-service laundry or Laundromat	RP
Marine repair facility, marine cargo handling facility, or boat moorage	RP
Metal manufacturing, cleaning, processing, or fabricating facility using water in any of its operations or processes, including any aircraft or automotive manufacturing plant	DC if the facility presents a low hazard[2]; or RP if the facility presents a high hazard[2]

Category of Customer	Minimum Backflow Protection[1] to Be Provided at or for the Service Connection from the CWS to the Customer
Mortuary	RP
Premises where oil or gas is produced, developed, processed, blended, stored, refined, or transmitted in a pipeline or where oil or gas tanks are repaired or tested, excluding any premises where there is only a fuel dispensing facility	RP
Premises where there is an auxiliary or reclaimed water system[4,5]	A. At or for a residential service connection[6]: DuC[7] B. At or for a non-residential service connection[6]: DC if the auxiliary or reclaimed water system presents a low hazard[8,9]; or RP if the auxiliary or reclaimed water system presents a high hazard[8,9]
Premises where there is a cooling tower	RP
Premises where there is an irrigation system that is using potable water and that… I. Is connected directly to the CWS's distribution system via a dedicated irrigation service connection II. Is connected internally to the customer's plumbing system	I. At or for a residential or non-residential dedicated irrigation service connection[6]: PVB if backpressure cannot develop in the downstream piping[10]; or RP if backpressure could develop in the downstream piping[10] II. None[11]
Premises where there is a wet-pipe sprinkler, or wet standpipe, fire protection system that is using potable water and that… I. Is connected directly to the CWS's distribution system via a dedicated fire service connection[12] II. Is connected internally to the customer's plumbing system	I.A. At or for a residential dedicated fire service connection[6]: DuC if the fire protection system contains no chemical additives and is not connected to an auxiliary water system[4]; or RP/RPDA if the fire protection system contains chemical additives or is connected to an auxiliary water system[4,13] I.B. At or for a non-residential dedicated fire service connection[6]: DC/DCDA if the fire protection system contains no chemical additives and is not connected to an auxiliary water system[4]; or RP/RPDA if the fire protection system contains chemical additives or is connected to an auxiliary water system[4,13] II. None[11]
Radioactive material processing or handling facility or nuclear reactor	RP
Paper products plant using a wet process	RP
Plating facility, including any aircraft or automotive manufacturing plant	RP
Restricted-access facility	RP
Steam boiler plant	RP

Category of Customer	Minimum Backflow Protection[1] to Be Provided at or for the Service Connection from the CWS to the Customer
Tall building – i.e., a building with five or more floors at or above ground level	DC if the customer has no potable water distribution lines connected to the suction side of a booster pump; or RP if the customer has one or more potable water distribution lines connected to the suction side of a booster pump
Wastewater treatment plant or wastewater pumping station	RP
Customer supplied with potable water via a temporary or permanent service connection from a CWS fire hydrant	Varies[14]

[1] Means of backflow protection, listed in an increasing level of protection, include the following: a dual check device (DuC); a double check valve assembly (DC) or double check detector assembly (DCDA); a pressure vacuum breaker assembly (PVB); a reduced-pressure principle assembly (RP) or reduced-pressure principle detector assembly (RPDA); and an air gap. A PVB may not be used if backpressure could develop in the downstream piping.

[2] The CWS shall determine the degree of hazard. "Low hazard" or "non-health hazard" and "high hazard" or "health hazard" are defined in American Water Works Association Manual of Water Supply Practices—M14, Third Edition, *Recommended Practice for Backflow Prevention and Cross-Connection Control* as follows:

- "Non-health hazard (low hazard)" means 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 supply.
- "Health hazard (high hazard)" a cross-connection or potential cross-connection involving any substance that could, if introduced into the potable water supply, cause death or illness, spread disease, or have a high probability of causing such effects.

[3] A DC may be provided if it was installed before 5-5-14; and if such a DC is replaced on or after 5-5-14, it may be replaced with another DC.

[4] For the purpose of this table, "auxiliary water system" means a pressurized system of piping and appurtenances using auxiliary water, which is water other than the potable water being supplied by the CWS and which includes water from any natural source such as a well, pond, lake, spring, stream, river, etc., includes reclaimed water, and includes other used water or industrial fluids described in American Water Works Association Manual of Water Supply Practices—M14, Third Edition, *Recommended Practice for Backflow Prevention and Cross-Connection Control*; however, "auxiliary water system" specifically excludes any water recirculation or treatment system for a swimming pool, hot tub, or spa. (Note that reclaimed water is a specific type of auxiliary water and a reclaimed water system is a specific type of auxiliary water system.)

[5] The Department of Environmental Protection shall allow an exception to the requirement for backflow protection at or for a residential or non-residential service connection from a CWS to premises where there is an auxiliary or reclaimed water system if all of the following conditions are met:

- The CWS is distributing water only to land owned by the owner of the CWS.
- The owner of the CWS is also the owner of the entire auxiliary or reclaimed water system up to the points of auxiliary or reclaimed water use.
- The CWS conducts at least biennial inspections of the CWS and the entire auxiliary or reclaimed water system to detect and eliminate any cross-connections between the two systems.

[6] For the purpose of this table, "residential service connection" means any service connection, including any dedicated irrigation or fire service connection, that is two inches or less in diameter and that supplies water to a building, or premises, containing only dwelling units; and "non-residential service connection" means any other service connection.

[7] A DuC may be provided only if there is no known cross-connection between the plumbing system and the auxiliary or reclaimed water system on the customer's premises. Upon discovery of any cross-connection between the plumbing system and any reclaimed water system on the customer's premises, the CWS shall ensure that the cross-connection is eliminated. Upon discovery of any cross-connection between the

plumbing system and any auxiliary water system other than a reclaimed water system on the customer's premises, the CWS shall ensure that the cross-connection is eliminated or shall ensure that the backflow protection provided at or for the service connection is equal to that required at or for a non-residential service connection.

[8] A reclaimed water system using reclaimed water regulated under Part III of Chapter 62-610, F.A.C., is a low hazard unless the reclaimed water is stored with surface water in a pond that is part of a stormwater management system, in which case the system is a high hazard; an auxiliary water system using well water is a low hazard unless determined otherwise by the CWS; an auxiliary water system using industrial fluids or used water other than reclaimed water is a high hazard unless determined otherwise by the CWS; an auxiliary or reclaimed water system using reclaimed water not regulated under Part III of Chapter 62-610, F.A.C., or surface water is a high hazard.

[9] Upon discovery of any cross-connection between the plumbing system and any reclaimed water system on the customer's premises, the CWS shall ensure that the cross-connection is eliminated.

[10] A DC may be provided if both of the following conditions are met:

- The dedicated irrigation service connection initially was constructed before 5-5-14.
- No chemicals are fed into the irrigation system.

[11] The CWS may rely on the internal backflow protection required under the *Florida Building Code* or the predecessor State plumbing code. The CWS may, but is not required to, ensure that such internal backflow protection is inspected/tested and maintained the same as backflow protection provided at or for service connections from the CWS.

[12] The Department of Environmental Protection shall allow an exception to the requirement for backflow protection at or for a residential or non-residential dedicated fire service connection from a CWS to a wet-pipe sprinkler, or wet standpipe, fire protection system if both of the following conditions are met:

- The fire protection system was installed and last altered before 5-5-14.
- The fire protection system contains no chemical additives and is not connected to an auxiliary water system as defined in Footnote 4.

[13] Upon discovery of any cross-connection between the fire protection system and any reclaimed water system on the customer's premises, the CWS shall ensure that the cross-connection is eliminated.

[14] The CWS shall ensure that backflow protection commensurate with the degree of hazard is provided at or for the service connection from its fire hydrant.

Consideration for Fire Service Lines

Fire service lines may feed internal fire sprinkling systems, hose connections, storage tanks, fire hydrants and other types of suppression systems thus the types of fire suppression is classified on the basis of water source and arrangements of the water supply. AWWA categorizes fire suppression systems into six (6) distinct classes (Class 1 through Class 6.) The description and plumbing for the variety of possible fire suppression plumbing arrangements is beyond the scope of this document and for any fire service line that includes the connection of any plumbing beyond fire sprinkling systems, the reader is referred to AWWA Recommended Practices for Backflow Prevention and Cross-Connection Control M14 and NFPA, Chapter 13.

Fire service lines connected directly to public water mains only where no pumps, tanks, and there are no reservoirs, or physical connection from other water supplies and there are no anti-freeze or other additives of any kind and where all sprinkler drains discharge to the atmosphere, dry wells, or other safe drains or outlets may not constitute a health hazard condition. However, if any of the following conditions exist backflow prevention is required.

Examples of Special Conditions Requiring Backflow Prevention Assemblies on Fire Sprinkling Systems

1. Underground fire sprinkler pipelines parallel to and within 10 ft (3 m) horizontally of sewer pipelines or other pipelines carrying significantly toxic materials.

2. When water is supplied to a site or an area from two or more services of a water utility or from two different water utilities.
3. Occupancies (or changes in occupancies) that involve the use, storage, or handling of types and quantities of materials in a manner that could present a significant health hazard to the domestic supply.
4. Premises with unusually complex piping systems (usually these premises will have an approved backflow-prevention assembly on their domestic service piping).
5. Systems with pumper connections in which non-toxic corrosion inhibitors or other non-toxic chemicals are added to tanks of fire trucks, or where the water purveyor cannot be assured of the potability of the input to the pumper connection.

Source: AWWA Recommended Practices for Backflow Prevention And Cross-Connection Control M14.

Because of the potential for Cross-Connections from internal plumbing or for consideration of the conditions listed above, backflow prevention assemblies are often required by the water system. At a minimum, for service lines supplying fire sprinkler systems only, the service line should be protected by a minimum of a Double Check Valve Assembly.

Component III: ***The CWS's policy regarding ownership, installation, inspection/testing, and maintenance of backflow protection that the CWS is requiring at or for service connections from the CWS.***

A. Except for dual check devices (DuCs), the customer shall own, and shall be responsible for installation, inspection/testing, and maintenance of, any backflow protection required at or for a service connection from the CWS. The CWS shall own, and shall be responsible for installation and maintenance of, any DuC required at a service connection from the CWS; however, the customer shall be responsible for installation and maintenance of the thermal expansion control that is necessary, and required under the *Florida Building Code*, where a DuC is installed at a service connection to a customer using storage water heating equipment. At least 60 days before the CWS installs a DuC at the service connection to a customer, the CWS will notify the customer in writing and advise the customer to install thermal expansion control if the customer's plumbing system includes storage water heating equipment but does not include thermal expansion control. (A notice/letter is included in Appendix C.)

The following table shows the schedule that the CWS will follow for installation of backflow protection required at or for service connections.

Type of Service Connection	Schedule
New service connection to a customer in a category listed in Component II.	Before water service is initiated.
Existing—i.e., previously constructed—service connection to a premises where there is a reclaimed water system.	Before reclaimed water service is initiated.

Type of Service Connection	Schedule
Existing—i.e., previously constructed—service connection where the CWS will install a dual check device (DuC).	The CWS advises customers to install thermal expansion control if the customer's plumbing system includes storage water heating equipment but does not include thermal expansion control. (A notice/letter is included in Appendix C.) If the service connection is to a premises where there is an auxiliary water system, the CWS shall deliver the aforementioned written notification within 30 days after the CWS discovers the auxiliary water system and shall install the DuC 60 to 90 days after the customer receives the aforementioned written notification.
Existing—i.e., previously constructed—service connection to a customer in any category listed in Component II except premises where there is a reclaimed water system or service connections where the CWS will install a DuC.	The CWS will ensure that all existing service connections install appropriate backflow protection at or for the service connection by December 31, 2025. The County will submit quarterly progress reports to FDEP.

B. All new backflow protection required at or for service connections from the CWS shall conform to, or comply with, the following standards:
   - New dual check devices (DuCs) shall conform to the latest edition of American Society of Sanitary Engineering (ASSE) Standard 1024 or Canadian Standards Association (CSA) Standard B64.6 or B64.6.1.
   - New double check valve assemblies shall conform to the latest edition of ASSE Standard 1015, American Water Works Association (AWWA) Standard C510, or CSA Standard B64.5.
   - New double check detector assemblies shall conform to the latest edition of ASSE Standard 1048.
   - New pressure vacuum breaker assemblies shall conform to the latest edition of ASSE Standard 1020 or CSA Standard B64.1.2.
   - New reduced-pressure principle assemblies shall conform to the latest edition of ASSE Standard 1013, AWWA Standard C511, or CSA Standard B64.4.
   - New reduced-pressure principle detector assemblies shall conform to the latest edition of ASSE Standard 1047.
   - New air gaps shall comply with the latest edition of American Society of Mechanical Engineers Standard A112.1.2.

Additionally, all new customer-owned backflow preventers required at or for dedicated fire service connections from the CWS shall be listed by a nationally recognized testing laboratory, such as Underwriters Laboratories, Inc., or Factory Mutual, Inc., pursuant to Chapter 633, Florida Statutes.

New DuCs required at or for service connections from the CWS will be installed immediately downstream of the water meter and in the meter box. All other backflow protection required at or for service connections from the CWS shall be installed downstream from, and within five feet after, the CWS's water meter box or the customer's property line unless a deviation is approved by the CWS. The CWS will consider, and may approve, on a case-by-case basis deviations requested and justified in writing; but in no case shall there be any outlet, tee, tap, or connection of any type to or from the water piping between the water meter, or property line, and the required backflow protection.

All new backflow protection required at or for service connections from the CWS shall be installed in accordance with the manufacturer's instructions and the installation criteria in American Water Works Association Manual of Water Supply Practices—M14, Third Edition, *Recommended Practice for Backflow Prevention and Cross-Connection Control*. Installation criteria in the third edition of M14 are reproduced in Appendix B. Additionally, all new customer-owned backflow preventers required at or for dedicated fire service connections from the CWS shall be installed in accordance with applicable National Fire Protection Association standards adopted in Chapter 69A-3, Florida Administrative Code, and all other new customer-owned backflow protection required at or for service connections from the CWS shall be installed in accordance with the latest edition of the *Florida Building Code*.

C. All air gaps (AGs) required at or for service connections from the CWS shall be inspected at least annually. Persons inspecting AGs required at or for service connections from the CWS shall be a certified or registered plumbing contractor or shall be a backflow preventer tester holding a current certification from one of the following organizations or schools:

- The American Backflow Prevention Association;
- The American Society of Sanitary Engineering;
- The American Water Works Association;
- The Florida Water and Pollution Control Operators Association;
- The University of Florida Center for Training, Research, and Education for Environmental Occupations.

D. All backflow preventer assemblies (i.e., double check valve assemblies and double check detector assemblies; pressure vacuum breaker assemblies; and reduced-pressure principle assemblies and reduced-pressure principle detector assemblies) required at or for non-residential service connections from the CWS shall be tested after installation or repair, and at least annually thereafter, and shall be repaired if they fail to meet performance standards. All backflow preventer assemblies required at or for residential irrigation service connections from the CWS shall be tested after installation or repair and at least biennially (once every two years) thereafter and shall be repaired if they fail to meet performance standards. Failure of the customer to perform required testing within 30 days of notification of required testing, will result in the termination of water at the customer's irrigation service connection. Residential service connections are service connections, including dedicated irrigation or fire service connections that are two inches or less in diameter and that supply water to a building, or premises, containing only dwelling units; all other service connections are non-residential service connections.

Persons testing backflow preventer assemblies required at or for dedicated fire service connections from the CWS shall be a certified Fire Protection System Contractor I or II pursuant to Chapter 633, Florida Statutes. Persons testing backflow preventer assemblies required at or for all other service connections from the CWS shall be a certified or registered plumbing contractor or shall be a backflow preventer tester holding a current certification from one of the following organizations or schools:

- The American Backflow Prevention Association;
- The American Society of Sanitary Engineering;
- The American Water Works Association;
- The Florida Water and Pollution Control Operators Association;
- The University of Florida Center for Training, Research, and Education for Environmental Occupations; or
- Any other organization or school approved in writing by the CWS.

Backflow preventer assemblies required at or for service connections from the CWS shall be tested using the procedures in one of the following standards or manuals:

- The latest edition of American Society of Sanitary Engineering Standards 5013, 5015, 5020, 5047, and 5048;
- The latest edition of Canadian Standards Association Standard B64.10.1;
- The latest edition of *Backflow Prevention: Theory & Practice* by the University of Florida Center for Training, Research, and Education for Environmental Occupations;
- The latest edition of the *Manual of Cross-Connection Control* by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research Center; or
- Any other standard or manual approved in writing by the CWS.

Testing equipment used to test backflow preventer assemblies required at or for service connections from the CWS shall be verified/calibrated at least annually in accordance with the equipment manufacturer's recommendations.

E. All dual check devices (DuCs) required at service connections from the CWS shall be refurbished or replaced at least once every 10 years or at a lesser frequency if the CWS determines and documents that the lesser frequency is appropriate based on data from spot-testing DuCs at service connections or based on data from backflow sensing meters at service connections.

Component IV: ***The CWS's procedures for evaluating customers' premises to establish the category of customer and the backflow protection being required at or for the service connection(s) from the CWS to the customer.***

A. The CWS will evaluate the customer's premises at a newly constructed service connection before the CWS begins supplying water to the service connection.

B. The CWS will evaluate the customer's premises at an existing—i.e., previously constructed—service connection whenever any of the following events occur:
   - Whenever the customer connects to a reclaimed water distribution system. The CWS will coordinate with the reclaimed water supplier to ensure that reclaimed water service is not turned on until appropriate backflow protection is provided at the potable water service connection.
   - Whenever an auxiliary water system is discovered on the customer's premises.
   - Whenever a prohibited or inappropriately protected cross-connection is discovered on the customer's premises.
   - Whenever the customer's premises is altered under a building permit in a manner that could change the backflow protection required at or for a service connection to the customer. The CWS will coordinate with the local building department so the CWS will know when building permits are being applied for or issued.

C. To evaluate the customer's premises at a service connection from the CWS, the CWS will use "a water use questionnaire" and, if necessary, will also review construction plans or conduct an on-site inspection. ("Water use questionnaire" forms are included in Appendix C.)

Note: Where entry to all portions of the customer's premises is not available, the CWS could consider the customer to be a restricted-access facility, for which an RP is required at the service connection.

Component V: ***The CWS's procedures for maintaining CCC program records.***

A. The CWS will maintain, in either electronic or paper format, a current inventory of all backflow protection required at or for service connections from the CWS. The inventory will include the following for each service connection where backflow protection is required:

- The service connection number or other identification number used by the CWS;
- The service connection address;
- The service connection category (i.e., non-residential or residential) and subcategory (standard, dedicated irrigation, or dedicated fire);
- The location of the backflow protection at/for the service connection;
- The type of hazard isolated (i.e., the category of customer);
- The date when backflow protection was initially installed at or for the service connection;
- The type of current backflow protection (i.e., air gap, reduced-pressure principle assembly, reduced-pressure principle detector assembly, pressure vacuum breaker assembly, double check valve assembly, double check detector assembly, or dual check device [DuC]);
- If the type of current backflow protection is a backflow preventer assembly, the size, manufacturer, model, serial number, and date installed; and
- If the type of backflow protection is a DuC, the size, manufacturer, model, date installed, and if any DuC is refurbished (instead of replaced), the date refurbished.

B. The CWS will maintain, in either electronic or paper format, records of the installation, inspection/testing, and repair of all backflow protection required at or for service connections from the CWS.

The inventory described in Component V.A. will include the date when backflow protection was initially installed at or for any service connection where backflow protection is required. Also, the inventory described in Component V.A. will include the date when any current backflow preventer assembly or any current dual check device (DuC) was installed. Furthermore, if any DuC is refurbished (instead of replaced), the inventory described in Component V.A. will include the date the DuC was refurbished.

Records of the inspection of air gaps (AGs) required at or for service connections from the CWS will be maintained by keeping either an electronic or paper copy of AG inspection reports. (An AG inspection report form is included in Appendix C.) Records of the testing and repair of backflow preventer assemblies required at or for service connections from the CWS will be maintained by keeping either an electronic or paper copy of backflow preventer assembly testing and repair reports. (A backflow preventer assembly testing and repair report form is included in Appendix C.) All AG inspection reports and all backflow preventer assembly testing and repair reports will be kept for not less than 10 years.

C. The CWS will prepare and submit CCC program annual reports. The first annual report will cover calendar year 2016, and subsequent annual reports will cover each calendar year thereafter. Each annual report will be prepared using the latest version of Form 62-555.900 (13), Cross-Connection Control Program Annual Report. Each annual report will be submitted to the appropriate Department of Environmental Protection district office or Approved County Health Department within three months after the end of the calendar year covered by the report.

Program Administration Documents

Appendix A -contains resolution establishing a Cross Connection Control Program (CCCP)
Appendix B -contains installation criteria for backflow devices
Appendix C -contains forms and notices/letters used in the Cross Connection Program
Appendix D -contains test and maintenance report form for cross connection devices
Appendix E -contains definitions
Appendix F -contains frequently ask questions & cross connection prevention for customers
Appendix G -contains partial list of certified backflow testers

The CWS will notify in writing each customer who owns an air gap (AG) or backflow preventer assembly required at or for a service connection and will request that the customer have the AG inspected or backflow preventer assembly tested. Notices/letters will be delivered at least 30 days before the due date of the inspection or test. Notices/letters will specify that the inspection or test report must be returned to the CWS within 60 days after the date of the notice/letter.

Appendix A

RESOLUTION NO. 3773

A RESOLUTION OF THE BAY COUNTY WATER SYSTEM ESTABLISHING A CROSS-CONNECTION CONTROL PROGRAM

WHEREAS, a community water system is responsible for supplying its customers with water that meets federal and State drinking water standards;

WHEREAS, a community water system is responsible for the protection of its water distribution system from contamination or pollution due to backflow of contaminants or pollutants through water service connections; and

WHEREAS, Rule 62-555.360, Florida Administrative Code, requires that each community water system shall establish and implement a cross-connection control program utilizing backflow protection at or for service connections in order to protect the community water system from contamination caused by cross-connections on customer's premises.

NOW, THEREFORE, BE IT RESOLVED BY THE BAY COUNTY WATER SYSTEM

Component II in the Cross-Connection Control Program Plan for the Bay County Water System, dated November 18, 2020, shall establish where backflow protection at or for service connections is mandatory.

Component III in the Cross-Connection Control Program Plan for the Bay County Water System, dated November 18, 2020, shall establish requirements regarding ownership, installation, inspection/testing, and maintenance of mandatory backflow protection at or for service connections.

Upon the effective date of this resolution, all prior and conflicting resolutions, or parts of resolutions, establishing a cross-connection control program, or parts of a cross-connection control program, shall be repealed, rescinded, superseded, and replaced by this resolution.

This resolution shall become effective December 15, 2020.

PASSED AND ADOPTED in open session this 15th day of December, 2020

BAY COUNTY BOARD OF COUNTY COMMISSIONERS

ATTEST:

Bill Kinsaul, Clerk

Robert Carroll, Chairman

APPROVED AS TO FORM:

County Attorney's Office

Brian D. Leebrick

CIRCUIT COURT BAY COUNTY, FLORIDA

BOARD OF COUNTY COMMISSIONERS SEAL BAY COUNTY, FLORIDA

Appendix B

Installation Criteria for a Dual Check Device (DuC)

- A DuC must be installed in the orientation as it was approved by the testing agency.
- A DuC must not be subjected to conditions that would exceed its maximum working water pressure and temperature rating. The increased pressure that can happen from creation of a closed system also must be evaluated because excessive pressure can damage the device or other plumbing components.
- A DuC should be sized hydraulically, taking into account both volume requirements and pressure loss through the device.
- A pipeline should be thoroughly flushed before a DuC is installed to ensure that no dirt or debris is delivered into the device because dirt or debris might adversely affect the DuC's working abilities.
- A DuC shall be installed where it can be inspected or replaced as necessary.

Installation Criteria for a Double Check Valve Assembly (DC) or Double Check Detector Assembly (DCDA)

- A DC or DCDA must be installed in the orientation as it was approved by the testing agency with no field modifications allowed.
- A DC or DCDA must not be subjected to conditions that would exceed its maximum working water pressure and temperature rating. The increased pressure that can happen from the creation of a closed system also must be evaluated to prevent damage to the assembly or other plumbing-system components.
- A DC or DCDA shall be sized hydraulically, taking into account both volume requirements and pressure loss through the assembly.
- A DC or DCDA should not be installed in a pit or below grade when possible. If the DC or DCDA must be installed in a vault, adequate space for testing and maintenance must be provided. If the DC or DCDA must be installed below grade, the test cocks shall be sealed or plugged so water or debris cannot collect in the test cock.
- A pipeline should be thoroughly flushed before a DC or DCDA is installed to ensure that no dirt or debris is delivered to the assembly because dirt or debris might adversely affect the assembly's working abilities.
- A DC or DCDA shall be installed a minimum of 12 inches above the surrounding grade and floodplain. The installation shall not be installed where platforms, ladders, or lifts are required for access. If an assembly must be installed higher than 5 feet above grade, a permanent platform shall be installed around the assembly to provide access for workers.
- A DC or DCDA shall be installed where it can be easily field-tested and repaired as necessary. The assembly shall have adequate clearance around it to facilitate testing, disassembly, and assembly of the DC or DCDA.
- If a DC or DCDA must be subjected to environmental conditions that could freeze or heat the assembly beyond working temperatures, some means of protection should be installed to provide the correct temperature environment in and around the assembly.

Installation Criteria for a Pressure Vacuum Breaker Assembly (PVB)

- A PVB must be installed in the orientation as it was approved by the testing agency.
- A PVB must not be subjected to conditions that would exceed its maximum working water pressure and temperature rating. The increased pressure that can happen from the creation of a closed system also must be evaluated because a PVB cannot be exposed to backpressure.
- A PVB shall not be installed where it is subjected to backpressure.
- A PVB should be sized hydraulically, taking into account both volume requirements and pressure loss through the assembly.
- A pipeline should be thoroughly flushed before a PVB is installed to ensure that no dirt or debris is delivered into the assembly because dirt or debris might affect the PVB's working abilities.
- A PVB must not be installed in a pit or below grade where the air inlet could become submerged in water or where fumes could be present at the air inlet because this installation might allow water or fumes to enter the assembly.
- A PVB shall be installed a minimum of 12 inches above the highest point of use and any downstream piping supplied from the assembly. The installation should not be installed where platforms, ladders, or lifts are required for access. If an assembly must be installed higher than 5 feet above grade, a permanent platform should be installed around the assembly to provide access for workers.
- A PVB shall be installed where it can be easily field-tested and repaired as necessary. The assembly shall have adequate clearance around it to facilitate disassembly, repairs, testing, and other maintenance.
- A PVB may periodically discharge water from the air inlet. The effect of this discharge on the area around the assembly must be evaluated.
- If a PVB must be subjected to environmental conditions that could freeze or heat the assembly beyond its working temperatures, some means of protection should be installed to provide the correct temperature environment in and around the assembly.

Installation Criteria for a Reduced-Pressure Principle Assembly (RP) or Reduced-Pressure Principle Detector Assembly (RPDA)

- An RP or RPDA must be installed in the orientation as it was approved by the testing agency.
- An RP or RPDA must not be subjected to conditions that would exceed its maximum working water pressure and temperature rating. The increased pressure that can occur because of the creation of a closed system also must be evaluated because excessive backpressure can damage the assembly or other plumbing components.
- An RP or RPDA should be sized hydraulically, taking into account both volume requirements and pressure loss through the assembly.
- A pipeline should be thoroughly flushed before an RP or RPDA is installed to ensure that no dirt or debris is delivered into the assembly because dirt or debris might adversely affect the assembly's working abilities.
- An RP or RPDA must not be installed in a pit or below grade where the relief valve could become submerged in water or where fumes could be present at the relief-valve discharge because this installation might allow water or fumes to enter the assembly.
- An RP or RPDA shall be installed a minimum of 12 inches above the relief-valve discharge-port opening and the surrounding grade and floodplain. The installation should not be installed where platforms, ladders, or lifts are required for access. If an assembly is installed higher than 5 feet above grade, a permanent platform should be installed around the assembly to provide access for workers.
- An RP or RPDA shall be installed where it can be easily tested and repaired as necessary. The assembly shall have adequate clearance around it to facilitate disassembly, repairs, testing, and other maintenance.
- An RP or RPDA might periodically discharge water from the relief valve. The effect of this discharge from the relief valve around the assembly must be evaluated. If the RP or RPDA discharge is piped to a drain, an air-gap separation must be installed between the relief-valve discharge opening and the drain line leading to the drain.
- If an RP or RPDA must be subjected to environmental conditions that could freeze or heat the assembly beyond its working temperatures, some means of protection should be installed to provide the correct temperature environment in and around the assembly.

Air Gap Description

- An air gap is a piping arrangement that provides an unobstructed vertical distance through free atmosphere between the lowest point of a water supply outlet and the overflow rim of an open, nonpressurized receiving vessel into which the outlet discharges.
- These vertical separations must be at least twice the effective opening (inside diameter) of the water supply outlet but never less than 1 inch.
- In locations where the outlet discharges within three times the inside diameter of the pipe from a single wall or other obstruction, the air gap must be increased to three times the effective opening but never less than 1.5 inches.
- In locations where the outlet discharges within four times the inside diameter of the pipe from two intersecting walls, the air gap must be increased to four times the effective opening but never less than 2 inches.
- Air gaps should not be approved for locations where there is potential for the atmosphere around the air gap to be contaminated nor should the inlet pipe be in contact with a contaminated surface or material.

Appendix C

OFFICE OF UTILITY SERVICES
3410 Transmitter Rd.
Panama City, Florida 32404
Telephone: (850) 248-5010
Fax: (850) 248-5006

Board of County Commissioners

ww.baycountyfl.gov

340 WEST 11TH STREET
ANAMA CITY, FL 32401

COMMISSIONERS:

Tommy Hamm
DISTRICT I

Robert Carroll
DISTRICT II

WILLIAM T. DOZIER
DISTRICT III

KEITH BAKER
DISTRICT IV

ILIP "GRIFF" GRIFFITTS
DISTRICT V

ROBERT J. MAJKA JR.
COUNTY MANAGER

[Insert date]

[Insert Customer Name]
[Insert Customer Street Address]
[Insert Customer City, State, and Zip Code]

RE: [Insert service connection number]
[Insert service connection address]

Dear [Insert Customer Name]:

As required by Rule 62-555.360, Florida Administrative Code, the Bay County Water System has established, and is implementing, a cross-connection control (CCC) program utilizing backflow protection at or for service connections from the water system in order to protect the water system from contamination caused by cross-connections on customers' premises. Under our CCC program, we will install a backflow preventer in the meter box at the above referenced service connection.

This letter is to advise you that you might need to have thermal expansion control installed in the plumbing system connected to the above referenced service connection. When water is heated, it expands and requires more volume; this is called thermal expansion. A backflow preventer installed at a service connection will stop heated water in the customer's plumbing system from expanding back into the public water system; the backflow preventer creates what is called a closed plumbing system at the customer's premises. Thermal expansion in a closed plumbing system will cause an increase in pressure in the system. The increased pressure usually causes the temperature and pressure relief (T&P) valve on a water heater tank to open and discharge water from the water heater tank. But a T&P valve is not intended to be used for routine thermal expansion control, and if a T&P valve fails, the water heater tank might explode.

The current *Florida Building Code* requires that thermal expansion control shall be installed in closed plumbing systems using a water heater tank. **If your plumbing system includes a water heater tank but does not include thermal expansion control, you are advised to have thermal expansion control installed in your plumbing system.** We recommend you consult with a certified or registered plumbing contractor to determine the best solution for your specific needs.

If you have any questions or need further information regarding the Cross-Connection Control Program, please contact Utility services at 850) 248-5010 or by email at utilitybilling@baycountyfl.gov

Your prompt attention to this matter would be greatly appreciated.

OFFICE OF UTILITY SERVICES
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Panama City, Florida 32404
Telephone: (850) 248-5010
Fax: (850) 248-5006

Date>

Board of County Commissioners

ww.baycountyfl.gov

40 WEST 11TH STREET
ANAMA CITY, FL 32401

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DISTRICT IV

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DISTRICT V

ROBERT J. MAJKA JR.
COUNTY MANAGER

<Customer Name>
<Mailing Address>
<Mailing Address>

Dear Customer

As required by Rule 62-555.360, Florida Administrative Code, the Bay County Water System has established, and is implementing, a cross-connection control (CCC) program utilizing backflow protection at or for service connections from the water system in order to protect the water system from contamination caused by cross-connections on customers' premises. Under the CCC program, the customer-owned backflow preventer assembly/device located at the above referenced water service connection is due for required testing to ensure that it is functioning properly.

Reference:
<Device Location/Business Name>
<Due Date>
<Serial #: >

A successful test of the device must be completed by a Certified Tester and the results sent to this department. If the assembly is at a fire service connection, the testing must be conducted by a certified Fire Protection System Contractor I or II. The test results must be received by our office no later than the due date indicated above.

If you have any questions or need further information regarding the Cross-Connection Control Program, please contact Utility services at 850) 248-5010 or by email utilitybilling@baycountyfl.gov

Your prompt attention to this matter would be greatly appreciated.

Enclosures: Backflow Preventer Assembly Testing & Maintenance Report & partial list of certified testers

"Water Use Questionnaire" for Non-Residential Service Connections

Public Water System (PWS) No. 1030050 PWS Name Bay County Water System
Customer's Name/Address: _____

_____

Customer's Phone No: _____
Service Connection Number(s): _____
Service Connection Address: _____

Description of Customer's Business or Premises at Service Connection Address: _____

_____

_____

Is your business or premises in one or more of the following categories (check all that apply)?

Beverage processing plant, including any brewery	
Cannery, packing house, rendering plant, or any facility where fruit, vegetable, or animal matter is processed, excluding any premises where there is only a restaurant or food service facility	
Chemical plant or facility using water in the manufacturing, processing, compounding, or treatment of chemicals, including any facility where a chemical that does not meet the requirements in Rule 62-555.320(3)(a), F.A.C., is used as an additive to the water	
Dairy, creamery, ice cream plant, cold-storage plant, or ice manufacturing plant	
Dye plant	
Film laboratory or processing facility or film manufacturing plant, excluding any small, noncommercial darkroom facility	
Hospital; medical research facility; sanitarium; autopsy facility; medical, dental, or veterinary clinic where surgery is performed; or plasma center	
Laboratory, excluding any laboratory at an elementary, middle, or high school	
Laundry (commercial), excluding any self-service laundry or Laundromat	
Marine repair facility, marine cargo handling facility, or boat moorage	
Metal manufacturing, cleaning, processing, or fabricating facility using water in any of its operations or processes, including any aircraft or automotive manufacturing plant	
Mortuary	
Premises where oil or gas is produced, developed, processed, blended, stored, refined, or transmitted in a pipeline or where oil or gas tanks are repaired or tested, excluding any premises where there is only a fuel dispensing facility	
Premises where there is an auxiliary or reclaimed water system	
Premises where there is a cooling tower	
Premises where there is an irrigation system that is using potable water and that is connected directly to the PWS's distribution system via a dedicated irrigation service connection	
Premises where there is a wet-pipe sprinkler, or wet standpipe, fire protection system that is using potable water and that is connected directly to the PWS's distribution system via a dedicated fire service connection	
Radioactive material processing or handling facility or nuclear reactor	
Paper products plant using a wet process	
Plating facility, including any aircraft or automotive manufacturing plant	
Restricted-access facility	
Steam boiler plant	
Tall building—i.e., a building with five or more floors at or above ground level	
Wastewater treatment plant or wastewater pumping station	

Customer Representative's Signature: _____ Date: _____
Customer Representative's Printed Name: _____

"Water Use Questionnaire" for Residential Service Connections

Public Water System No. 1030050

Public Water System Name Bay County Water System
Customer's Name/Address: _____

_____

Customer's Phone No: _____
Service Connection Number(s): _____
Service Connection Address: _____

Does your premises have one or more of the following (check all that apply)?

An auxiliary or reclaimed water system*	
An irrigation system that is using potable water and that is connected directly to the PWS's distribution system via a separate, dedicated irrigation service connection	
A wet-pipe sprinkler, or wet standpipe, fire protection system that is using potable water and that is connected directly to the PWS's distribution system via a separate, dedicated fire service connection	

* "Auxiliary water system" means a pressurized system of piping and appurtenances using auxiliary water, which is water other than the potable water being supplied by the public water system and which includes water from any natural source such as a well, pond, lake, spring, stream, river, etc., and includes reclaimed water; however, "auxiliary water system" specifically excludes any water recirculation or treatment system for a swimming pool, hot tub, or spa. (Note that reclaimed water is a specific type of auxiliary water and a reclaimed water system is a specific type of auxiliary water system.)

Customer's Signature: _____ Date: _____

Customer's Printed Name: _____

Air Gap Inspection Report

Public Water System (PWS) No.: 1030050
PWS Name: Bay County Water System
Customer's Name/Address: _____

_____

Service Connection No.: _____
Service Connection Address: _____
Service Connection Category: non-residential ☐ residential ☐
Service Connection Subcategory: standard ☐ irrigation ☐ fire ☐
Location of Air Gap at/for Service Connection: _____

Comments:

I certify that the air gap at/for the above identified service connection complies with the requirements of the above identified PWS and has not been bypassed or otherwise been made ineffective.

Inspector's Signature: _____ Date: _____
Inspector's Printed Name: _____
Inspector's Qualification:* _____

*The inspector's plumbing contractor certification or registration number or the inspector's backflow preventer tester certification organization and number.

Appendix D

TEST & MAINTENANCE REPORT

CROSS CONNECTION CONTROL DEVICES

Name of Premise: ______________________________

Street Address: ______________________________

Device Location: ______________________________

Type of Device: RPZ ☐ DC ☐ PVB ☐ Size: ____________

Manufacturer & Model: ____________ Serial Number: ____________

Pressure Drop across First Check Valve: _____ psi Line Pressure at Time of Test: _____ psi

	Check Valve # 1	Check Valve #2	Differential Pressure Relief Valve	Pressure Vacuum Breaker
INITIAL	1. Leaked ☐ 2. Closed tight ☐	1. Leaked ☐ 2. Closed tight ☐	Opened at ___ lbs. Did not open ☐	Air inlet opened at ___ lbs Did not open ☐
REPAIRS	Cleaned ☐ Replaced: Rubber parts kits ☐ C.V. assembly ☐ Or Disc ☐ O-rings ☐ Seat ☐ Spring ☐ Stem/guide ☐ Retainer ☐ Locknuts ☐ Other ☐	Cleaned ☐ Replaced: Rubber parts kits ☐ C.V. assembly ☐ Or Disc ☐ O-rings ☐ Seat ☐ Spring ☐ Stem/guide ☐ Retainer ☐ Locknuts ☐ Other ☐	Cleaned ☐ Replaced: Rubber parts kits ☐ C.V. assembly ☐ Or Disc ☐ O-rings ☐ Seat ☐ Spring ☐ Stem/guide ☐ Retainer ☐ Locknuts ☐ Other ☐	Check valve: Leaked ☐ Closed tight ☐ Cleaned ☐ Replaced: C.V. assembly ☐ Disc air inlet ☐ Spring ☐ Retainer ☐ Guide ☐ O-ring ☐ Other ☐
FINAL	Closed tight ☐	Closed tight ☐	Opened at ___ lbs Reduced pressure	Satisfactory ☐

Remarks:

____

____

Initial test by: ____________

Certified Tester Number: ________ Date: ____________

Repaired by: ____________ Date: ____________

Final test by: ____________ Certified Tester Number: ________ Date: ______

Appendix E

Definitions

Approved

Accepted by the Director of Utilities or his designee, as meeting an applicable specification stated or cited in this Ordinance, or as suitable for the proposed use.

Approved Backflow Prevention Device:

Must include isolation valves and test cocks to facilitate in-line testing and repair. The assembly must appear on a current approval list from the American Society of Sanitary Engineering (A.S.S.E.) or on an approval list from the Foundation of Cross-Connection Control and Hydraulic Research at the University of Southern California (FCCC & HR @ USC)

Auxiliary Water Supply

Any water supply on or available to the premises other than the purveyor's approved public potable water supply. These auxiliary waters may include water from another purveyor's public water supply or any natural source(s) such as a well, spring, river, stream, harbor, etc., or "used waters" or "industrial fluids". These waters may be polluted or contaminated or they may be objectionable and constitute an unacceptable water source over which the water purveyor does not have sanitary control.

Backflow

The flow of water or other liquids, mixtures, or substances under pressure into the distribution piping of a potable water supply system from any source or sources other than its intended source.

Backpressure:

A pressure, higher than the supply pressure, caused by a pump, elevated tank, boiler, or any other means that may cause backflow.

Back-Siphonage

The flow of water or other liquids, mixtures, or substances into the distribution piping of a potable water supply system from any source other than its intended source caused by the sudden reduction of pressure in the potable water supply system.

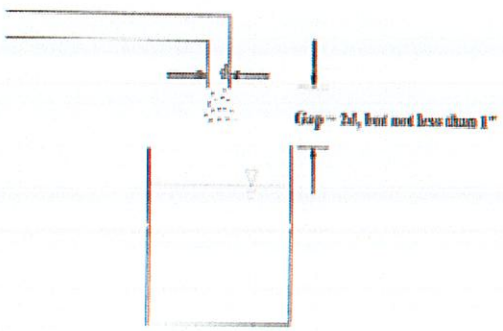
Backflow Prevention Assembly: A mechanical backflow preventer (i.e., SVB, PVB, DCVA, RP), used to prevent the backward flow of contaminants or pollutants into a potable water distribution system. An assembly has a resilient seated, full-flow shut-off valve before and after the backflow preventer making it testable in-line. The assembly is shipped with the shut-off valves attached to the backflow preventer. An assembly is labeled with the manufacture's symbol, size, serial number, model number, the working pressure, and the direction of flow. The Foundation for Cross Connection Control and Hydraulic Research at the University of Southern California tests and approves backflow prevention assemblies.

Backflow Prevention Device: A means of backflow protection, usually mechanical that does not require shut-off valves and test cocks. Any backflow prevention assembly without the shut-off valves is called a device. The American Society of Sanitary Engineers (ASSE) approves backflow prevention devices.

Backflow Preventer:

1) A device, assembly or means designed to prevent backflow. These devices or assemblies are described below:

Air Gap (AG)



An air gap is measured vertically from the lowest end of the supply pipe to the flood level rim or highest possible water level of the fixture or tank into which it discharges. In general, the separation must be twice the supply pipe inside diameter, but never less than one inch. The close proximity of walls or obstructions will necessitate the use of a larger air gap. A larger air gap will also be required if foaming materials are added to the reservoir so that foam does not back up into the supply pipe. 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 separation" shall be at least double the diameter of the supply pipe measured vertically above the top of the rim of the vessel. In no case shall it be less than 1 inch. When an air-gap is used at the service connection to prevent the contamination or pollution of the public potable water system, an emergency by-pass shall be installed around the air gap system and an approved reduced pressure principle assembly shall be installed in the by-pass system.

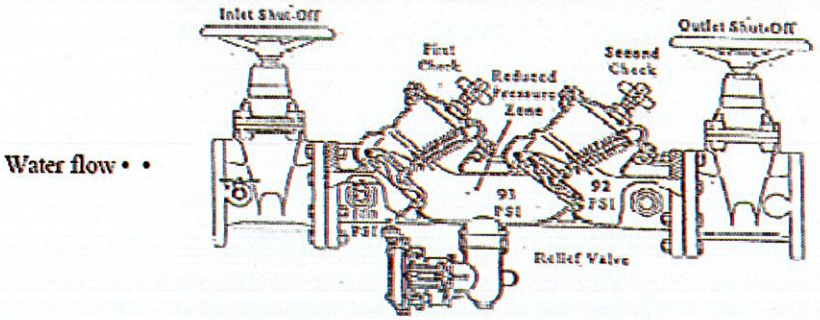
Advantages:

- Very safe and reliable if properly installed and maintained
- Provide maximum protection due to physical separation of potable and non-potable water
- Easy to inspect

Limitations:

- Easy to bypass or defeat with funnels or hoses
- Supply pressure is lost, requiring reservoir and additional pumping equipment
- Undesirable splashing may occur
- Incoming water may be exposed to airborne contaminants or lose residual chlorine

Reduced Pressure Principle Backflow Preventer (RP)



A Reduced Pressure Backflow Prevention Assembly may be used to isolate health hazards in place of an Air Gap. It consists of two independently acting check valves, an automatically operated pressure differential relief valve located between the two check valves, and watertight valves located at each end of the assembly, together with four properly located test cocks for testing the operation of the device. This assembly will indicate leakage through one or both check valves or the relief valve by the discharge of water from the relief valve port. During normal operation, both check valves remain closed until there is a demand for water. The differential relief valve remains closed because the inlet pressure is higher than the pressure in the intermediate zone. The second check remains open as water flows through the device. In opening and closing the check valves, the water pressure may be reduced by 4 to 20 psi depending upon the assembly design.

During a backpressure condition, pressure increases downstream of the assembly and both check valves close to prevent backflow. If the second check valve is prevented from closing tightly, leakage back into the zone between the check valves will increase the pressure in the zone and cause the relief valve to open. Water in the zone will then be discharged.

During backsiphonage, the supply pressure drops and the relief valve opens automatically and drains enough water from the zone to maintain pressure in the zone lower than the supply pressure. The second check valve closes to prevent downstream water from draining through the relief valve.

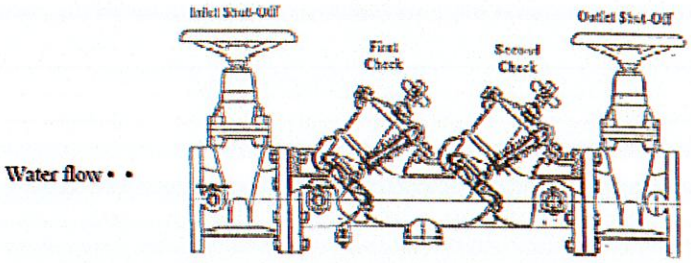
Advantages:

- Protects against both backpressure and backsiphonage
- Can be used under constant pressure
- An RP is effective against backpressure backflow and backsiphonage
- Malfunctioning is easily indicated by discharge of water from the relief valve.

Limitations:

- Pressure loss of 6-12 psi across the assembly and must be installed above grade

Double Check Valve Assembly (DCVA)



A Double Check Valve Assembly consists of two single independently acting check valves with watertight valves located at each end of the assembly, and four properly located test cocks for testing the water tightness of each check valve. During normal operation, both check valves remain closed until there is a demand for water. In the event of backflow, both check valves close preventing reversal of flow.

Two standard plumbing check valves in series may not be used in place of the double check valve assembly due to the necessity for testing. The Double Check Valve Assembly is an integral assembly designed specifically for backflow prevention.

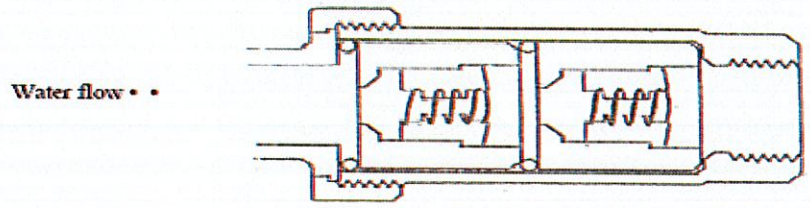
Advantages:

- Protect against backflow due to both backpressure and backsiphonage
- May be used under continuous pressure
- Little pressure loss occurs across the device

Limitations:

- No external indication of failure
- May only be used in low hazard situations

Residential Dual Check Valve



Dual check valves may not be used for health or high hazards: A Dual Check Valve is effective against backpressure backflow and backsiphonage but should be used to isolate only non-health hazards they are an acceptable solution for preventing potential backflow and backsiphonage for service connections in water service areas that are also served with reclaimed water. They are sized for use on small supply lines (1" or less) and are to be installed immediately downstream of the meter.

Residential Dual Check Valve Backflow Preventers consist of two independently operating check valves. It usually does not include shutoff valves, may or may not be equipped with test cocks or ports, and is generally less reliable than a DCVA. During normal operation, both checks close to prevent reversal of flow. Dual Checks may be used for continuous pressure applications and will protect against both backsiphonage and backpressure. Dual Checks may be used for continuous pressure applications and will protect against both backsiphonage and backpressure

NOTE: Consideration must be given to thermal expansion problems that may arise in the home after installation of a dual check device.

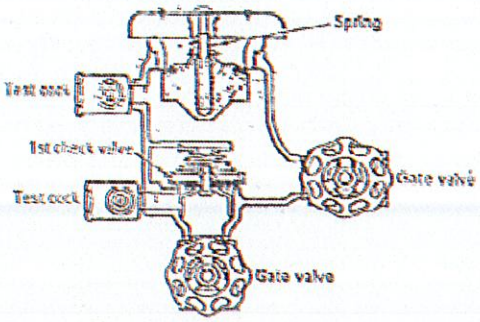
Advantages:

- Protect against both backsiphonage and backpressure in low hazard situations
- May be used under continuous pressure
- Low initial installation cost
- May be Used for Reclaimed Water

Limitations:

- May be used only for residential applications
- No external indication of failure
- Must be replaced at least every 5 year

Pressure Vacuum Breaker (PVB)



A PVB may be used to isolate high or low hazards but is effective against backsiphonage only. This assembly is intended to be used under constant pressure conditions.

It is a mechanical backflow preventer that consists of an independently acting, spring-loaded check valve and an independently acting, loaded air inlet valve on the discharge side of the check valve. It includes shutoff valves at each end of the assembly and is equipped with test cocks.

The pressure vacuum breaker uses loading to actuate the atmospheric vent only when backsiphonage occurs or when the line is depressurized. Two gate valves, test cocks and an additional check are also added. This assembly differs from the atmospheric vacuum breaker in that a spring has been added to the check valve.

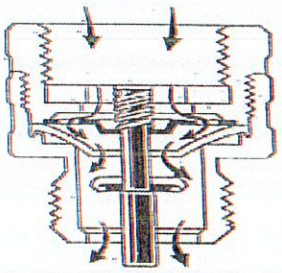
Advantages:

- Sometimes less expensive than alternatives

Limitations:

- Does not protect against backflow due to backpressure.
- May only be used in non-health or low hazard situations
- Cannot be installed if chemicals are used.

Hose Bibb Vacuum Breaker (Isolation)



Hose Bibb Vacuum Breakers: Is a device which is permanently attached to a hose bibb which acts as an atmospheric vacuum breaker. They are not approved for health or high hazard situations, but provide an inexpensive means of isolating potential backsiphonage situation caused by connections of hoses to outside spigots. The device consists of a spring loaded check valve that seals against an atmospheric outlet when water is flowing. When the water supply is turned off, the device vents to atmosphere, thus protecting against backsiphonage.

These assemblies are suitable only for isolation in situations where outside spigots may be used to connect hoses. Hoses pose both non-health and health threats. Health threats are introduced when water pressure is used in combination with a hose to apply fertilizers or herbicides. Hoses may also be unintentionally submerged in toxic or microbially contaminated liquids that can backsiphone under the right conditions.

Advantages:

- Inexpensive method of isolating hoses
- Isolation of hose problems resolves most customer complaints

Limitations:

- Does not protect against backflow due to backpressure.
- May only be used in for isolation and is not acceptable for protection against health or high hazards.
- Will fail to operate properly if there is a shut-off valve installed downstream.

Contamination

Means an impairment of the quality of the potable water supply system by sewage, industrial fluids, or waste fluids, compounds, or other materials to a degree which creates an actual hazard to the public health through poisoning or through the spread of disease.

Cross-Connection

Any physical connection or arrangement of piping or fixtures between two otherwise separate piping systems, one of which contains potable water and the other non-potable water or industrial fluids of questionably safety,
through which, or because of which, backflow or back-siphonage may occur into the potable water system. A
water service connection between a public potable water distribution system and a customer's water distribution system which is cross-connected to a contaminated fixture, industrial fluid system, or with potentially contaminated supply or auxiliary water system, constitutes one type of cross-connection. Other types of cross-connections include connectors such as swing connections, removable sections, four-way valves, spools, dummy sections of pipe, swivel or change-over devices, sliding multiport tubes, solid connections, etc.

Cross-Connection, Controlled

A connection between a potable water system and a non-potable water system with an approved backflow prevention device properly installed that will continuously afford the protection commensurate with the degree of hazard.

Cross-Connection Control by Containment

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

Hazard, Degree of:

The term is derived from an evaluation of the potential risk to public health and the adverse effect of the hazard upon the potable water system.

a. Hazard, Health

Any condition, device or practice in the water supply system and its operation which could create, or in the judgment of the Bay County Utilities Department, may create a danger to the health and wellbeing of the water customer. An example of a health hazard is a structural defect, including cross-connections, in a water supply system.

b. Hazard, Plumbing

A plumbing type cross-connection in a customer's potable water system that has not been properly protected by a vacuum breaker, air-gap separation or backflow prevention device. Unprotected plumbing type cross-connections are considered to be a health hazard.

c. Hazard, Pollutional

An actual or potential threat to the physical properties of the water supply system or to the potability of the public or the customer's potable water system, but which would constitute a nuisance or be aesthetically objectionable or could cause damage to the system or its appurtenances, but would not be dangerous to health.

d. Hazard, System

An actual or potential threat of severe damage to the physical properties of the public potable water supply system or the customer's potable water system or of a pollutant or contaminant which would have a protracted effect on the quality of the potable water in the system.

Industrial Fluids System

Any system containing a fluid or solution, which may be chemically, biologically or otherwise contaminated or polluted in a form or concentration such as, would constitute a health, system, pollutional or plumbing hazard is introduced into an approved water supply. This may include, but not be limited to: polluted or contaminated waters; all types of process waters and "used waters" originating from the public potable water system which may have deteriorated in sanitary quality; chemicals in fluid form; plating acids and alkalies, circulated cooling water connected to an open cooling tower and/or cooling towers that are chemically or biologically treated or stabilized with toxic substances; contaminated natural water such as from wells, springs, streams, rivers, bays, harbors, seas, irrigation canals or systems, etc.; oils, gases, glycerin, paraffin's, caustic and acid solutions and other liquids and gaseous fluids used in industrial or other purposes or for fire-fighting purposes.

Isolation:

Isolation consists of two types, fixture isolation and area or zone isolation. Isolation at a fixture means installing an approved backflow preventer at the source of the potential contamination. Isolation at an area or zone is confining the potential source of contamination within a specific area. Isolation may be appropriate with or without containment depending on the whether the conditions create a health or non-health hazard.

Pollution

Means the presence of any foreign substance (organic, inorganic, or biological) in water which tends to degrade its quality so as to constitute a hazard to impair the usefulness of quality of the water to a degree which does not create an actual hazard to the public heath, but which does adversely and unreasonable affect such waters for domestic use.

Public Utility Director/Designated Agent

The Public Utility Director in charge of the Utility Department of Bay County is vested with the authority for the implementation of an effective cross-connection control program and for the enforcement of the provisions of this program. The Public Utilities Director may assign the enforcement of this program to the agent, or employee of his choice.

Water, Potable

Any water which, according to recognized standards, is safe for human consumption.

Water, Non-Potable

Water which is not safe for human consumption or which is of questionable potability.

Water Purveyor

This term shall mean the owner or operator of the public potable water system supplying an approved water supply to the public. As used herein, the terms water purveyor and the ***Bay County Board of County Commissions (BOCC), Bay County Utility Services*** may be used synonymously.

Water Service Connections

The terminal end of a service connection from the public potable water system, i.e., 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. There should be no unprotected takeoffs from the service line ahead of any meter or backflow prevention device located at the point of delivery to the customer's water system. Service connections shall also include water service connections from a fire hydrant and all other emergency or temporary water service connections from the public potable water system.

Water, Used

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

Appendix F

CROSS CONNECTION & BACKFLOW

Frequently Asked Questions

1. What is back siphonage?

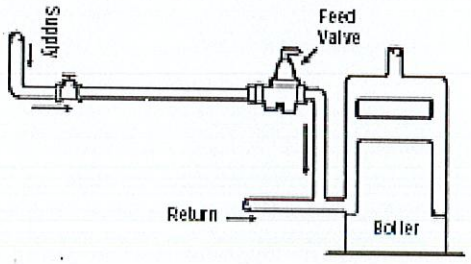
Back siphonage is the reversal of normal flow in a system caused by a negative pressure (vacuum or partial vacuum) in the supply piping.

2. What factors can cause back siphonage?

Back siphonage can be created when there is stoppage of the water supply due to nearby firefighting, repairs or breaks in city main, etc. The effect is similar to the sipping of an ice cream soda by inhaling through a straw, which induces a flow in the opposite direction.

3. What is backpressure?

Backpressure is the reversal of normal flow in a system due to an increase in the downstream or customer's pressure above that of the supply pressure.

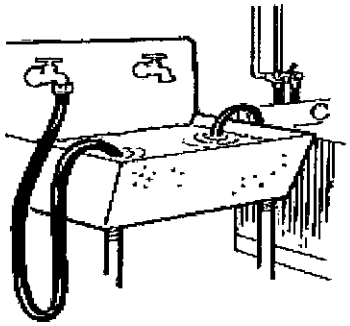


4. What factors can cause a backpressure condition?

Backpressure is created whenever the downstream pressure exceeds the supply pressure, which is possible in installations such as heating systems, elevated tanks, and pressure-producing systems. An example would be a hot water space-heating boiler operating less than 15-20 lbs. Pressure coincidental with a reduction of the city water supply below such pressure (or higher in most commercial boilers). As water tends to flow in the direction of least resistance, a backpressure condition would be created and the contaminated boiler water would flow into the potable water supply.

5. What is a cross-connection?

A cross-connection is a direct arrangement of a piping line, which allows the potable water supply to be connected to a line, which contains a contaminant. An example is the common garden hose attached to a sill cock with the end of the hose lying in a cess-pool. Other examples are a garden hose attached to a service sink with the end of the hose submerged in a tub full of detergent, supply lines connected to bottom-fed tanks, supply lines to boilers.

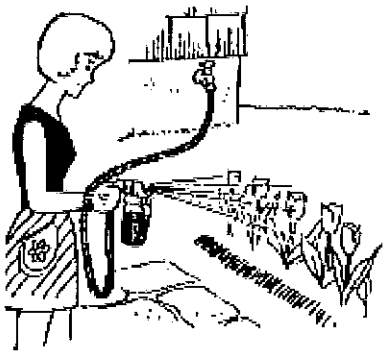


6. What is the most common form of a cross-connection?

Ironically, the ordinary garden hose is the most common offender as it can be easily connected to the potable water supply and used for a variety of potentially dangerous applications.

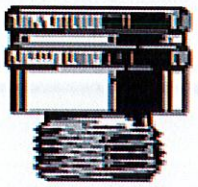
7. What is potentially dangerous about an unprotected outside spigot or sill cock?

The purpose of a sill cock is to permit easy attachment of a hose for outside watering purposes. However, a garden hose can be extremely hazardous because they are left submerged in swimming pools, lay in elevated locations (above the sill cock) watering shrubs, chemical sprayers are attached to hoses for weed-killing,
etc.; and hoses are often left lying on the ground which may be contaminated with fertilizer, cesspools, and garden chemicals.



8. What protection is required for sill cocks?

A hose bibb vacuum breaker should be installed on every sill cock to isolate garden hose applications thus protecting the potable water supply from contamination.
Should a hose bibb vacuum breaker be used on frost-free hydrants? Definitely, providing the device is equipped with means to permit the line to drain after the hydrant is shut-off. A "removable" type hose bibb vacuum breaker could allow the hydrant to be drained, but the possibility exists that users might fail to remove it for draining purposes, thus defeating the benefit of the frost-proof hydrant feature. If the device is of the "Non-Removable" type, be sure it is equipped with means to drain the line to prevent winter freezing.



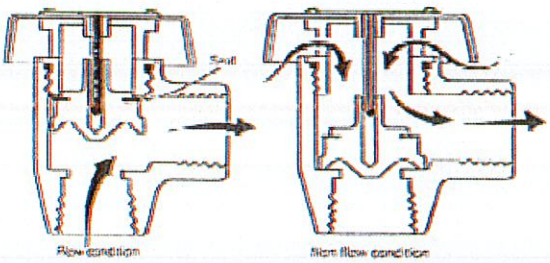
Hose Bibb Vacuum Breaker

9. Can an atmospheric, anti-siphon vacuum breaker be installed on a hose bibb?

Theoretically yes, but practically no. An anti-siphon vacuum breaker must be elevated above the sill cock to operate properly. This would require elevated piping up to the vacuum breaker and down to the sill cock and is normally not a feasible installation. On the other hand, a hose bibb vacuum breaker can be attached directly to the sill cock, without plumbing changes and at minor cost.

10. What is an atmospheric vacuum breaker?

The device usually consists of a float which is free to travel on a shaft and seal in the uppermost position against atmosphere with a disc. Water flow lifts the float, which then causes the disc to seal. When the water supply pressure drops below atmospheric pressure (14.7 psi) the disc will drop down venting the unit to atmosphere and opening the downstream piping to atmospheric pressure, thus preventing backsiphonage. The device is designed to be installed downstream of the last valve in the system and to be operated under pressure for no more than twelve hours in any twenty-four-hour period.

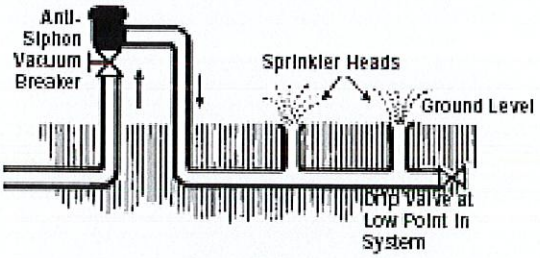


11. **Will an anti-siphon vacuum breaker protect against a backpressure condition?**

Absolutely not! If there were an increase in the downstream pressure over that of the supply pressure, the check valve would tend to "modulate" thus permitting the backflow of contaminated water to pass through the orifice into the potable water supply line.

12. Can an atmospheric vacuum breaker be used on lawn sprinkler systems?

Yes, if these are properly installed, they will protect the potable water supply. The device shall be installed 12" above the highest sprinkler head and shall have no control valves located downstream from the device.



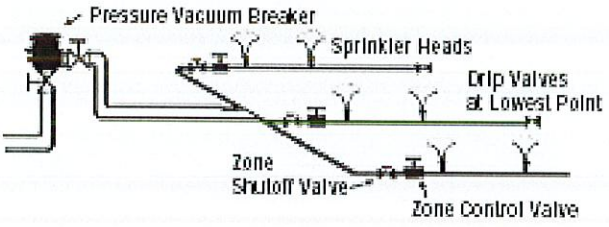
Single Zone System

13. Can an atmospheric vacuum breaker be used under continuous pressure?

No! Codes do not permit this as the device could become "frozen", and not function under an emergency condition.

14. Can a pressure vacuum breaker be used on a multi-zone lawn sprinkler system?

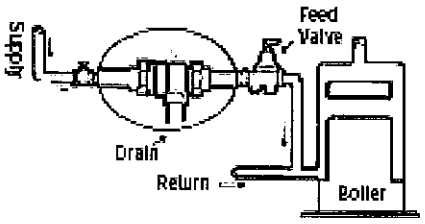
Yes. This type of vacuum breaker can be used under continuous pressure. Therefore, if properly installed, it will protect the potable water supply. The assembly shall be installed 12" above the highest sprinkler head.



Multi-Zone System

15. What is continuous pressure?

This is a term applied to an installation in which the pressure is being supplied continuously to a backflow preventer for periods of over 12 hours at a time. Laboratory faucet equipment, for example, is entirely suitable for a non-pressure,
atmospheric anti-siphon vacuum breaker because the supply is periodically being turned on and shut off. A vacuum breaker should never be subjected to continuous pressure unless it is of the continuous pressure type and clearly identified for this service.



16. Are check valves approved for use on boiler feed lines?

Most jurisdictions require backflow protection on all boiler feed lines. Some will allow a backflow preventer with intermediate vent as minimum protection for residential boilers. A reduced pressure backflow preventer is generally required on commercial and compound boilers. However, low cost, continuous pressure backflow preventers are now available which will perform with maximum protection; thus check valves are not recommended.

17. What is the difference between pollution and contamination?

Pollution of the water supply does not constitute an actual health hazard, although the quality of the water is impaired with respect to taste, odor or utility. Contamination of the water supply, however, does constitute an actual health hazard; the consumer being subjected to potentially lethal water borne disease or illness.

18. What does "Degree of Hazard" mean?

The degree of hazard is a commonly used phrase utilized in cross-connection programs and is simply a determination on whether the substance in the non-potable system is toxic (health hazard) or non-toxic (non-health hazard).

19. What is the difference between a toxic and a non-toxic substance?

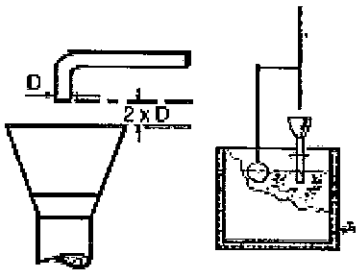
Toxic substance is any liquid, solid or gas, which when introduced into the water supply creates, or may create a danger to health and well-being of the consumer. An example is treated boiler water. A non-toxic substance is any substance that may create a non-health hazard, is a nuisance or is aesthetically objectionable, i.e., foodstuff, such as sugar, soda pop, etc. Therefore, you must select the proper device or assembly according to the type of connection and degree of hazard. There are five basic products that can be used to correct cross-connection.

20. What are the five basic products used for protection of cross-connections?

The five basic products are:

1. Air Gap
2. Atmospheric Vacuum Breakers -which also includes hose connection vacuum breakers
3. Pressure Vacuum Breakers
4. Double Check Valve Assembly
5. Reduced Pressure Principle Backflow Preventers

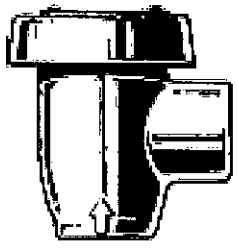
21. What is an Air Gap and where is it used?



Air Gap is the physical separation of the potable and nonpotable system by an air space. The vertical distance between the supply pipe and the flood level rim should be two times the diameter of the supply pipe, but never less than 1". The air gap can be used on a direct or inlet connection and for all toxic substances.

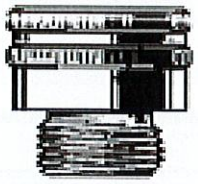
Because today's complex plumbing systems normally require continuous pressure, air gap applications are actually in the minority. It should be remembered, however, that whenever a piping terminates a suitable distance above a contaminant, this itself is actually an air gap. Air Gaps are frequently used on industrial processing applications, but care should be taken that subsequent alterations are not made to the piping, which would result in a direct connection.

22. Where is an Atmospheric Vacuum Breaker used?



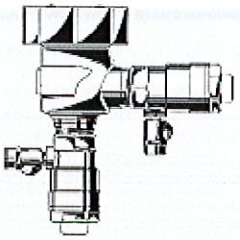
Atmospheric Vacuum Breakers may be used only on connections to a non-potable system where the vacuum breaker is never subjected to backpressure and is installed on the discharge side of the last control valve. It must be installed above the usage point. It cannot be used under continuous pressure.

23. Where is a Hose Bibb Vacuum Breaker used?



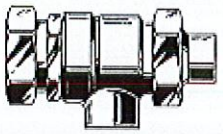
Hose Bibb Vacuum Breakers are small inexpensive devices with hose connections, which are simply attached to sill cocks and threaded faucets or wherever there is a possibility of a hose being attached which could be introduced to a contaminant. However, like the Atmospheric Vacuum Breaker they should not be used under continuous pressure. Remember, no shut-off valves are permitted downstream!

24. Where is a Pressure Vacuum Breaker used?



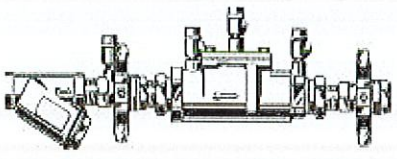
Pressure Vacuum Breakers may be used as protection for connections to all types of non-potable systems where the vacuum breakers are not subject to backpressure. These units may be used under continuous supply pressure. They must be installed above the usage point. (Spill resistant models for indoor use are also available).

25. Where is a Backflow Preventer with Intermediate Atmospheric vent used?



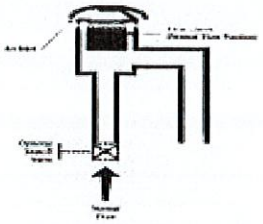
These devices are made for 1/2" and 3/4" lines feeding residential boilers. In addition, they provide the added advantage of providing protection against backpressure in low hazard applications.

26. Where is a Double Check Valve Assembly used?



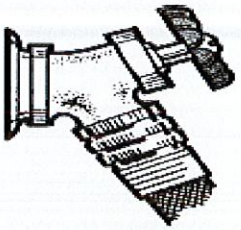
A double check valve assembly may be used as protection of all direct connections through which foreign material might enter the potable system in concentration, which would constitute a nuisance, or be aesthetically objectionable, such as air, steam, food, or other material which does not constitute a health hazard.

27. What are typical applications for Atmospheric Vacuum Breakers?



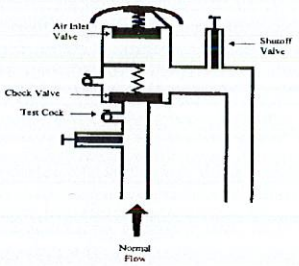
Atmospheric Vacuum Breakers can be used on most inlet type water connections which are not subject to backpressure such as low inlet feeds to receptacles containing toxic and non-toxic substances, valve outlet or fixture with hose attachments, lawn sprinkler systems and commercial dishwashers.

28. What are typical applications for Hose Bibb Vacuum Breakers?



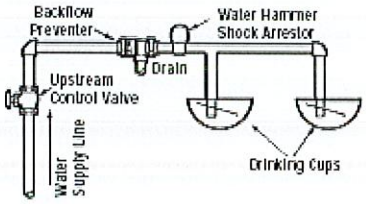
Hose Bibb Vacuum Breakers are popularly used on sill cocks, service sinks and any threaded pipe to which a hose may potentially be attached.

29. What are typical applications for Pressure Vacuum Breakers?



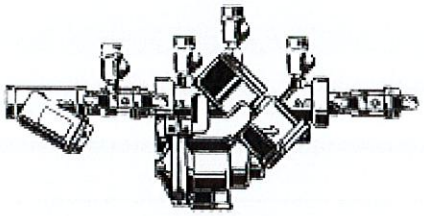
These applications should be similar to the Atmospheric Vacuum Breaker with the exception that these may be used under continuous pressure. However, they should not be subject to backpressure.

30. What are typical applications of Backflow Preventer with Intermediate Vent?



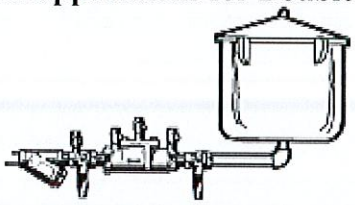
For 1⁄2" and 3⁄4" lines these devices are popularly used on low hazard boiler feed water supply lines, cattle drinking fountains, trailer park water supply connections and other similar low-flow applications. They will protect against both backsiphonage and backpressure and can be used under continuous pressure.

31. Where is a Reduced Pressure Zone Backflow Preventer used?



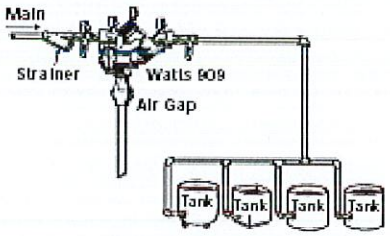
Reduced Pressure Principle Assemblies may be used on all direct connections which may be subject to backpressure or back siphonage, and where there is the possibility of contamination by the material that does constitute a potential health hazard.

32. What are typical applications for Double Check Valve Assemblies?



Double Check Valve Assemblies may be used where the degree of hazard is non-health, or low hazard meaning that the nonpotable source is polluted rather than contaminated. The degree of hazard is oftentimes determined by local Inspection Departments and, therefore, such departments should be questioned in order to comply with local regulations.

What are typical applications for Reduced Pressure Zone Backflow Preventers?



Branch Line Applications

This type should be used whenever the non-potable source is more of a contaminant than a pollutant. Basically, they are applied as main line protection to protect the municipal water supply, but should also be used on branch line applications where non-potable fluid would constitute a health hazard, such as boiler feed lines, commercial garbage disposal systems, industrial boilers, etc.

33. Are there any regulations in OSHA regarding cross-connections?

Yes, OSHA requires that no cross-connection be allowed in an installation unless it is properly protected with an approved backflow preventer. These requirements are also covered in B.O.C.A., Southern Standard Building Code, Uniform Plumbing Code, IOC, UPC, and City, State and Federal Regulations.

34. What Standards are available governing the manufacture of backflow prevention assemblies?

Reduced Pressure Backflow Prevention Assemblies, Double Check Valve Assemblies, Pressure Vacuum Breakers and Atmospheric Breakers are specified by USC Foundation for Cross-connection Control, ANSI/AWWA and ASSE. Dual Check Valves and Hose Bibbs are specified by the ASSE Standards. Various manufactures carry backflow prevention devices meeting these standards, including Cla-Val, Febco, Hersey, Watts and Ames.

35. What is the benefit of a strainer preceding a backflow preventer?

A strainer will protect the check valves of a backflow preventer from fouling due to foreign matter and debris, which may be flowing through the line. This not only protects the valve but also eliminates nuisance fouling and subsequent maintenance and shutdown. The use of a strainer with a water pressure reducing valve has been an accepted practice for years. The amount of pressure drop attributed to the strainer is negligible and is far outweighed by the advantages provided by the strainer.

36. What would cause a reduced pressure backflow preventer to leak?

Leakage from a backflow preventer is normally attributed to foreign matter lodging on the seating area of either the first or second check valve. Most times this can be corrected by simply flushing the valve, which will dislodge any loose particles. It is, therefore, most important on new installations that the piping be thoroughly flushed before installing the unit. It should be remembered, however, that spillage does provide a "warning signal" that the valve is in need of maintenance.

37. Is periodic testing required for reduced pressure backflow preventers?

Yes, and this is to ensure that the valve is working properly and is a requirement of many states and cross-connection control programs. Test cocks are provided on the valve for this purpose and manufacturers are required to furnish field testing information.

38. Should a backflow preventer be installed in the water supply line to each residence?

Because of the growing number of serious residential backflow cases, many water purveyors are now requiring the installation of approved dual check valve backflow preventers at residential water meters. They are also educating the public concerning cross-connections and the danger of backflow into the local water supply. Since water purveyors cannot possibly be responsible for or monitor the use of water within a residence, the requirements for these cross-connection control programs are increasing throughout the country.

39. What is a cross-connection control program?

This is a combined cooperative effort between plumbing and health officials, water-works companies, property owners and certified testers to establish and administer guidelines for controlling cross-connections and implementing means to ensure their

enforcement so that the public potable water supply will be protected both in the city main and within buildings. The elements of a program define the type of protection required and responsibility for the administration and enforcement. Other elements ensure continuing education programs.

40. What are the concerns with thermal expansion and backflow prevention?

Since backflow prevention devices prevent the exchange of water between the customer and the public water provider that prevents thermal expansion, a pressure blow-off valve must be provided at the hot water tank. Blow-off water should be directed to a proper drain. Gas fired hot water tanks have a tendency to build pressures quickly and these pressures can rupture internal plumbing. Customers are advised to contact a local plumber to correct these situations.

41. What are the concerns with freezing and backflow prevention?

When temperatures are expected to fall below 32° F for several hours, standing water in unprotected backflow prevention devices can freeze and cause the device to rupture. Above ground non-protected backflow prevention devices should be wrapped in insulating material and/or covered to prevent freezing. Water that is kept in motion (by running the water continuously) will not freeze but this solution can be costly.

Cross-Connection Prevention for Homeowners

Contamination of your water can be caused by how you use water in your home. You may be surprised how many different ways that water can become contaminated by inadvertent misused.

This brochure discusses a few of the uses of water that may cause the water that you use to become contaminated if simple back flow procedures are not followed.

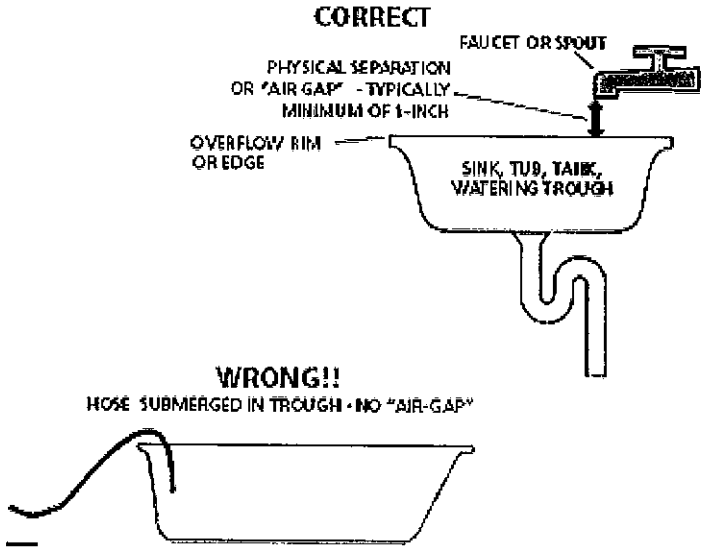
Sinks, Tubs, Tanks

The faucets in your bathroom or kitchen must be located so that the end of the faucet is above the overflow level of the sink or tub.

Fill lines to water troughs or tanks must also be physically separated or "air-gapped."

If there is no air-gap, then the contents of the sink, tub, or tank may be sucked or "backsiphoned" into the water line during a loss of water pressure.

Backflow Caused by a Submerged Drain Hose with no Air Gap.



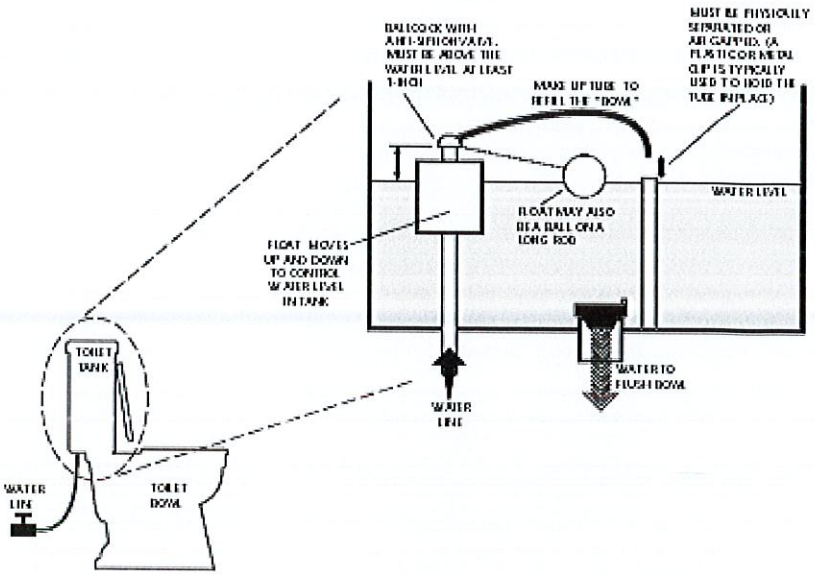
Never submerge the end of a hose in a sink or a drain!

Bathroom and Kitchen Plumbing Fixtures

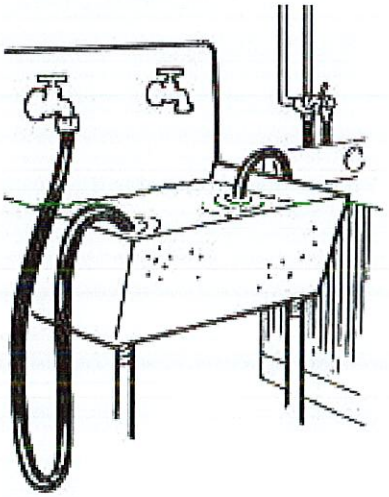
Toilets

Toilets need water to flush the waste material into the sewer system. The water that flushes the toilet enters into the toilet tank from the small hose or pipe connected to the bottom of the toilet tank. It is essential that the float-valve (or anti-siphon ballcock) inside of the toilet tank is the correct type so that the contents of the toilet tank don't get back into the drinking water system in your house. As shown in the illustration, the anti-siphon ballcock and refill tube must be above the water level in the tank.

Toilet Showing Water Inlet above Water Surface



Submerged Drain From Washing Machine with no Air Gap



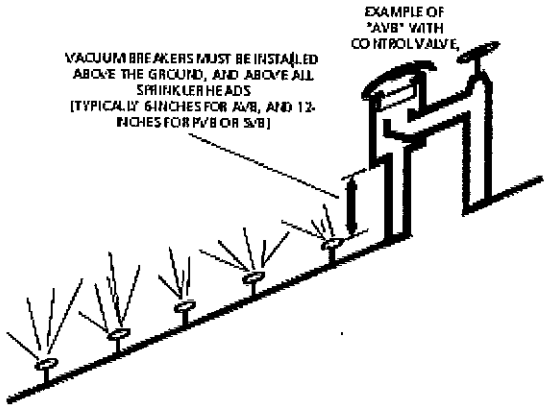
Washing Machines and Dishwashers

In addition, no appliance drains such as a dishwasher or a dishwasher should never be drained directly to a sanitary drain without an air gap. The air gap prevents any type of siphoning effect.

Lawn and Flower Irrigation

Irrigation systems make watering of your lawn or garden much easier. but if not properly constructed, contaminants may backflow into your drinking water. Backflow from hoses can be prevented by the use of some simple cross-connection control devices.

Water pooling around sprinkler heads may be contaminated by chemicals, fertilizers, or animal waste. For permanent installations, a atmospheric vacuum breaker must be installed to prevent backflow from occurring.



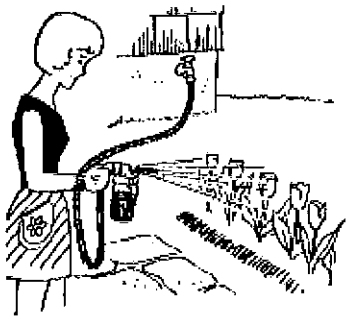
Hose bibs

Hose bibs are part of our everyday life. They allow us to hook up a garden hose to water the plants, wash the car, clean out the gutters, fill the swimming pool, etc.

Hose Bibb Vacuum Breaker

However, every time you connect a garden hose to a hose bibb, you are extending the end of the water line.

To make sure that no harmful materials are drawn back into the garden hose, a vacuum breaker should be installed on each hose bibb.



Adapted from

Foundation for Cross-Connection Control and Hydraulic Research

Appendix G

PARTIAL LIST

CERTIFIED BACKFLOW PREVENTION DEVICE TESTERS

American Backflow Inspections (ABI)	Coastal Plumbing of Bay County, Inc
Kenneth Fowler	850-747-8030
258-5963 cell	
784-9351 office	
David Piercy Plumbing	Johnny Benefield (Benefield Plumbing)
769-6926	271-3887
Roto Rooter	Plumb Better
769-3666	914-3036
Mr. Rooter of NW FL	Triple S Fire Protection Inc. (only tests fire lines)
769-3125	(904) 378-3449
Bill McGinn	Steve Weeks
866-4164 cell	960-3601
Clifton Whaley	Peaden Air Conditioning, Heating, and Plumbing
615-2302	872-1004
Gary Certalich	Advanced Irrigation, Gary Certalich
527-2452	527-2452
Jim Harris	Corbitt Moseley Plumbing
763-3154	722-7226
KS Maintenance	
352-236-5151	