

Town of Annapolis Royal Policy

TITLE: Water Utility Cross Connection and Backflow Prevention	
POLICY NO.: 2025-03	SUPERSEDES: N/A
EFFECTIVE DATE: FEBRUARY 20, 2025	APPROVED BY COUNCIL MOTION NO.: MOTION #C2025-02-19-09

1. Purpose

The purpose of this program is to inform Town of Annapolis Royal (ToAR) water utility customers of the potential for cross contamination within the water utility, ensure public health safety through a continued safe water supply, and provides backflow prevention device information that would reduce the risk to our water utility and to help ensure the safety and cleanliness of the water that is produced by the water utility.

This document will serve to inform residents of precautions that can be taken to avoid cross contamination, situations which could require the installation of backflow prevention devices within their supply line to reduce the possibility of a backflow incident and also outline the acceptable backflow prevention devices and their proper inspection and maintenance requirements for those devices.

2. Definitions

- 2.1 Air Gap as it relates to the plumbing trade is the unobstructed vertical space between the water outlet and the flood level of a fixture. This arrangement will prevent any contaminants from flowing into the potable water system by siphonage and is the least expensive form of backflow prevention. Common instances where an air gap is warranted include:
- Filling a swimming pool
 - Animal watering stations
 - Filling any large container with potable water

2.2 Approval to Operate

- 2.2 Backflow is a term in plumbing for an unwanted flow of water in the reverse direction. Contamination of potable water supplies with foul water can be a serious health and safety risk.
- 2.3 Backflow Prevention Devices is a device that is installed on a property owner's lateral water line that allows water to flow in one direction but never in the opposite

direction. Its sole job is to prevent drinking water from being contaminated due to backflow. It is typically installed as close as possible to the entry point of the water lateral entry into the premises.

- 2.4 Back Pressure is a resistance or force opposing the desired flow of fluid through pipes, leading to friction loss and pressure drop. Back Pressure occurs when the facility pressure is greater than the water distribution system supply pressure. Common causes or sources of back pressure include pumps, elevated piping, and thermal expansion, private wells for irrigation, pressurized containers and process water systems.
- 2.5 Back Siphonage can occur when negative pressure exists within the water distribution system, for example during annual water main blow off and hydrant flushing. Back siphonage is caused by negative pressure from a vacuum (or partial vacuum) in the supply piping. Back siphonage reverses normal flow in the system and can pull contaminants into the drinking water. Potential circumstances that may cause back siphonage are any high demand situations including water main breaks, service interruptions due to lateral repairs, fire emergency water withdrawal, inadequate public water system source and/or storage capacity, high demand by customers, etc.
- 2.6 Cross Connection is defined as a link, structural arrangement, or potential connection where potable water in a distribution system can be exposed to or come into contact with unwanted contaminants that may adversely affect water quality in the Water Utility distribution system. A cross connection can also occur when unwanted contaminants are drawn into the system. It is the physical point at which it is possible for a non-potable substance to come in contact with the drinking water system whether by back pressure or back siphoning. These contaminants could include any form of gas, liquid, or solid that would adversely affect water quality when introduced into the water utility.
- 2.7 DECC refers to the Department of Environment and Climate Change.
- 2.8 Risk Classification
 - 2.8.1 Minor Risk Classification – Any Cross Connection or potential cross connection that constitutes only a nuisance and that results in a reduction in only aesthetic quality of water (colour, odour, or taste with few to no health effects).
 - 2.8.2 Moderate Risk Classification – Any minor hazard connection that has a low probability of becoming a severe hazard and would constitute a nuisance and objectionable if introduced into a domestic water supply.
 - 2.8.2.1 Types of Facilities: Office buildings, multi-service interconnected facilities, schools, colleges, shopping malls, multi-tenant single service facilities, premises with sprinklers (no glycol), or restaurants

2.8.3 High Risk Classification – Any type of cross-connection or potential cross-connection involving water that has additives or substances that under any concentration can create danger to health and is likely to result in serious injury or death.

2.8.3.1 Types of Facilities – Hospitals, labs, mortuary facilities, plants using radioactive materials, petroleum processing and storage facilities, chemical or plating plants, commercial laundries, sewage facilities, automotive shops, dry cleaners, car washes, food and beverage processing plants, premises where access is restricted, dockside facilities for ships, premises with sprinkler systems with glycol loops.

2.9 Potable Water, also known as drinking water, is water that is safe for consumption and can be used for food preparation.

2.10 Town of Annapolis Royal Water Utility- Water Utility

2.12 Water Service Lateral (Lateral line) is the pipe that provides water from the water main in the street to a home or business. For residences this pipe is usually 3/4" inch in size and runs from the water main into the home where the water meter is installed. A typical water service lateral includes a tap at the main, a length of pipe to a location at or near the street right-of-way line, a curb stop and box, and another length of pipe into the building being served.

3. Requirements for a Backflow Prevention Device

3.1 As per the regulations set by the DECC in the Town's approval to operate, a backflow prevention device is required wherever there is a risk of contamination.

3.2 The Water Utility may require a customer to install a proper backflow prevention device when a high risk classification facility has been identified or is to be connected to the Water Utility.

3.3 If a backflow prevention device is required, the cost for installation, maintenance and testing of the device is the responsibility of the Water Utility customer. Backflow prevention devices are required to be installed on all new water service connections and sprinkler service connections supplying the following types of units:

- Multi-unit Residential
- Industrial
- Commercial
- Institutional
- Premises serviced by private booster pumps
- Residential connections assessed by the Water Utility as presenting a risk to the system based on the system pressure at the connection location.

4. Type of Backflow Prevention Device

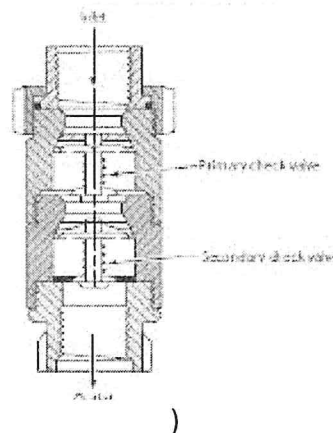
- 4.1 Installation, maintenance, field testing and selection of all backflow prevention devices must conform to the latest revision of CSA B64.10 and CSA B64 series as well as the National Plumbing Code of Canada, latest edition.
- 4.2 The type of backflow prevention device to be selected is determined by the degree of hazard for the specific premises. The degree of hazard can be evaluated by referencing CSA B64.10/B64.10.1 Table B.2 Guide to Degree of Hazard – Premise.

5. Hazard Classification Framework

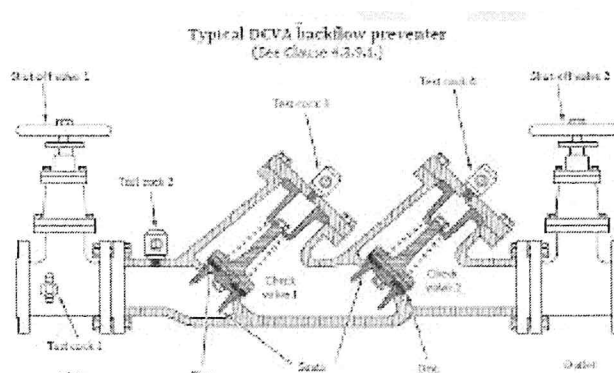
- 5.1 The type and Installation of backflow preventers must adhere to the National Fire Protection Association Standards. Backflow prevention devices on sprinkler service connections must be approved by the relevant authorities.
- 5.2 The following are examples of backflow prevention devices that shall be used based on risk classification (see definitions) and the hazard identified:

- Minor Hazard - Dual Check Valve (DuC)

TYPICAL DuC BACKFLOW PREVENTER

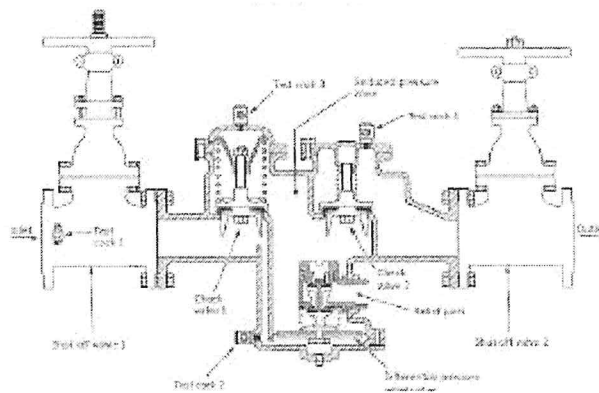


- Moderate Hazard - Double Check Valve Assembly (DCVA)



- Severe Hazard - Reduced Pressure Principle (RP)

TYPICAL RP BACKFLOW PREVENTER



6. Proper Installation of a Backflow Prevention Device

- 6.1 Backflow prevention devices must be installed immediately downstream of the water meter in a horizontal position and isolated with shut off valves on the inlet and outlet side for servicing when required. A water connection is not permitted between the water meter and backflow prevention device.
- 6.2 Where a pump is installed on a fire protection system, the backflow prevention device is to be installed downstream of the pump. A hydraulic analysis must be submitted under the seal of a professional engineer in order to obtain an approval to locate the backflow prevention device upstream of the fire pump.
- 6.3 Reduced Pressure Principle backflow prevention devices are not allowed upstream of the fire pumps under any circumstances. Reduced Pressure Principle backflow prevention devices are not permitted to be installed within the below grade meter chamber.
- 6.4 In the event of the failure of a backflow prevention device, there can be a significant volume of water discharged during a backflow condition. An appropriately sized floor drain must be installed and positioned to accept the volume of water that may be discharged.

7. Schedules for Testing Backflow Prevention Devices

- 7.1 Testing of backflow prevention devices should be completed:
 - Upon Installation
 - When cleaned, repaired or overhauled
 - When relocated
 - Annually
 - Following alterations to the water supply systems upstream of the device
 - Following a backflow incident.

8. Inspection and Testing of Backflow Prevention Devices
 - 8.1 Only persons with valid Cross Connection Control (CCC) certification as issued by the Atlantic Canada Water and Wastewater Association (ACWWA), the American Water Works Association (AWWA), or approved equivalent certification authority, can install, inspect and test backflow prevention devices.
 - 8.2 A tag must be displayed on the backflow prevention device indicating the following information:
 - Name and address of owner(s) of the device
 - Location of device
 - Type of device
 - Manufacturer, serial number, size of device
 - Date of last test
 - Tester initials, name of employer of tester, tester license number.
 - 8.3 The Water Utility customer is solely responsible for all costs associated with the inspection, testing, repair, replacement, and maintenance of any backflow prevention device servicing their water system.
 - 8.4 The Water Utility customer may also be responsible for any costs incurred by the utility due to a failure of their backflow prevention device or to prevent a backflow incident from occurring in the water distribution system.

9. Backflow Incident Response Procedures

Operation and maintenance performance standards activity: Backflow Incident Response

Objectives: To ensure the safety and quality of the water being supplied to Water Utility customers through timely response to a backflow incident.

Performance Standard

- Activity
 - 9.1.1 Locate and repair the cause of backflow and assess the risk.
 - 9.1.2 Identify the affected area and work to limit the spread of contamination.
 - 9.1.3 Call DECC regional office (during working hours) and inform them of the situation. Decisions will be made with respect to which customers need contacting and whether to issue a health advisory.
 - 9.1.4 Communicate with customers affected by the incident. Inform them as to what precautions should be taken to protect their health, and what the Water Utility is doing to correct the situation in coordination with the DECC.
 - 9.1.5 Flush affected parts of the water distribution system to remove any contaminants and check chlorine residual to ensure a minimum of 0.25

ppm of Chlorine at the dead ends affected from the contamination.

- 9.1.6 Disinfect affected parts of the system to reduce the risk of waterborne disease.
- 9.1.7 Collect water quality samples after restoring normal operating pressure, including coliform and possibly certain chemical samples, to confirm that the system meets drinking water standards.
- 9.1.8 Report all findings to DECC and all related repairs or processes undertaken.

9.2 Record Information

9.2.1 The documentation of the incident will include:

- Date
- Time
- Any Damages, or Repairs needed or to be completed.
- Water sample records from the backflow incident
- Records will be maintained a minimum of five (5) years.

THIS IS TO CERTIFY that this policy was duly passed by a majority vote of the whole Council at a duly called Council meeting held on the 19 day of February 2025.

GIVEN under the hand of the CAO and under the seal of the Town of Annapolis Royal the 20 day of February 2025.



Sandi Millett-Campbell
Chief Administrative Officer

