



King County Water District No. 90

Backflow Frequently Asked Questions

2018

What is a cross-connection?

A cross-connection is a temporary or permanent connection between a public water system, providing drinking water, and any secondary system containing non-potable (undrinkable) water or other substances.

What causes backflow?

Backflow is the undesirable condition where non-drinking water or other fluids, via a cross-connection, flow in the direction opposite the normal flow. There are two types of backflow: 1) backpressure and 2) backsiphonage.

What is backpressure?

Backflow is caused when downstream pressure is greater than upstream, or supply, pressure. This situation can result when downstream pressure is increased, and upstream pressure is decreased, or a combination of both. Downstream pressure can be increased by pumps, temperature increases in boilers, and other factors. Upstream pressure can be decreased by high flows, such as during water line flushing, fire fighting, or breaks in the water main.

What is backsiphonage?

Backflow caused by a negative pressure in the water system. For example when a vacuum or partial vacuum is created. The effect is similar to drinking water through a straw. Backsiphonage can occur when there are high flows due to nearby fire fighting, a break in the water main, etc.

Why is backflow a problem?

Backflow into a public water system can pollute or contaminate that system, potentially causing that water to become unusable or unsafe to drink. Each water supplier has the responsibility to provide water that is usable and safe to drink under all foreseeable circumstances.

What are some common situations that can cause backflow?

1. Fire Department hooking up to a hydrant to fight a fire, dramatically increasing demand and pulling all available water toward the hydrant.
2. Lowered main pressure due to high water withdrawal, such as an open hydrant, water main break, or main flushing.
3. Increased pressure on the Customer side due to a booster pump, a building over 30 feet, etc.

What is a Backflow Prevention Assembly?

A backflow prevention assembly must be approved by Washington State, for preventing backflow. There are a number of different types of assemblies, some of the most common used in protecting our water system are:

1. Air Gap Separation: (AG) A physical vertical separation between where the water discharges and the end of the water supply.
2. Atmospheric Vacuum Breaker: (AVB) A unit consisting of an air inlet valve in the supply line that opens to the atmosphere when the pressure in the line drops below atmospheric pressure.
3. Double Check Valve Assembly: (DCVA) Two independent acting check valves (check valves allow flow in only one direction) two shut off valves and test ports for testing the assembly.
4. Pressure Vacuum Breaker Assembly: (PVBA) Consists of one spring loaded check valve in the supply line, spring loaded air inlet on the downstream side of the check valve, which will open to the atmosphere when the pressure in the assembly drops, and test ports for testing the assembly.
5. Reduced Pressure Backflow Prevention Assembly: (RPBA) An assembly for preventing backflow incorporating two check valves, a differential relief valve located between the two check valves, two shut-off valves, and test ports for testing the assembly.

Will a backflow assembly affect my hot water heater?

If a backflow prevention assembly is installed on a water line supplying a hot water tank, it is necessary to ensure that the hot water tank is equipped with a pressure relief valve and/or expansion tank.

Who may need a backflow device? (Assembly Type)

(RPBA: Reduced Press. Backflow - DCVA: Double Check Valve - PVBA: Pressure Vacuum Breaker)

Agricultural (RPBA/AG)	Boiler (RPBA)
Buildings Over three Stories (DCVA)	Car Washes (RPBA/AG)
Decorative Ponds/ Fish Ponds (RPBA)	Film Processing Labs (RPBA/AG)
Fire Department Connections (DCVA)	Fire Sprinklers/ Private Hydrants (DCVA)
Hot Tubs & Swimming Pools (RPBA/AG)	Irrigation Systems (PVBA/DCVA)
Kidney Dialysis Machines (DCVA)	Laboratories (RPBA/AG)
Mobile Home Parks (DCVA)	Post Mix Soda Machines (RPBA)
Shopping Malls (DCVA)	Property w/Auxiliary Water Supply (DCVA/RPBA)
Three (+) Services on One Meter (DCVA)	X-Ray Equipment (RPBA)

Why do I have a backflow assembly on my fire sprinklers?

Fire sprinklers are considered a high health hazard due to:

- The growth of microorganisms, which cause taste/odor problems.
- The leaching of metals (Fire Systems are non-potable piping and not suitable for drinking water.
- The addition of corrosion inhibitors to protect the piping i.e., anti-freeze.
- A loss of pressure in the main or an increase in pressure on the homeowner's system could allow water from the fire system to enter the drinking water system.

*All fire protection systems that are connected to the District's system must be isolated with an approved backflow prevention assembly. (With the exception of District approved flow-through fire systems).

Why do I have to have a backflow assembly on my irrigation system?

To prevent contaminated water from being drawn into the drinking water system during a loss of pressure in the District's water system, this can be caused by an open fire hydrant, flushing of the mains, or a service leak/break. Most lawn irrigation systems are considered a low health hazard for which an approved double check valve or pressure vacuum breaker assembly is required.

Why do I have a backflow assembly for my mobile home park?

Mobile home parks have an increased probability of cross-connections, due to the potential for plumbing that has not been approved. Premise isolation by a double check valve assembly is required.

Where can I get more information? More information can be found at www.abpa.org or WAC 246-290-490 <http://apps.leg.wa.gov/WAC/default.aspx?cite=246-290-490>
WAC 246-290-010 <http://apps.leg.wa.gov/WAC/default.aspx?cite=246-290-010>

You can also contact the District office, Monday through Friday, 8:00 a.m. to 4:30 p.m. at 425-255-9600 or email us at info@kcwd90.com. Additional information is also provided on our website at www.kcwd90.com.