

If a potential or actual cross-connection contamination hazard is identified, the customer will be required to eliminate the hazard and/or install an appropriate backflow preventer at the service connection and/or at the hazard.

Special Conditions

Auxiliary Water Systems

What is an auxiliary water system?

It is any water system on or available to your property other than the public water system. Used water or water from wells, cisterns or open reservoirs that are equipped with pumps or other sources of pressure, including gravity are examples.

What protection is required?

- The auxiliary water system must be completely separated from water supply plumbing served by a public water system; and
- An approved backflow preventer must be installed at the service connection (where the public water system connects to the customer's plumbing system).

OR

- The auxiliary water system must be eliminated.

Are there exceptions?

At their discretion, the water supplier may waive the requirement for a backflow preventer at the service connection if all the following conditions are met:

- All components of the auxiliary water system, including pumps, pressure tanks and piping, are removed from the premises, which are defined as all buildings, dwellings, structures or areas with water supply plumbing connected to the public water system.

- The possibility of connecting the auxiliary water system to the water supply plumbing is determined by the water supplier to be extremely low.
- No other hazards exist.
- The customer enters into a contract with the water supplier, as described below.

The contract will require the customer:

- To understand the potential hazard of a cross-connection.
- To never create a cross-connection between the auxiliary water system and the public water system.
- To allow an inspector to survey their property for hazards as long as the contract is in effect.
- To face loss of service and other penalties if the contract is violated.

The water supplier must perform an annual inspection of the customer's contract-regulated property to verify the conditions have not changed, which would warrant installation of a backflow preventer. The water supplier must, by law, do everything reasonably possible to protect the water system from contamination.

Booster Pumps

What is the concern?

Booster pumps connected to plumbing systems or water mains can cause backsiphonage by reducing the water mains. The following requirements are in place to help prevent backsiphonage:

- Booster pumps, not used for fire suppression, must be equipped with a low suction cut-off switch that is tested and certified every year;
- Alternately, when a booster pump is necessary for one-, two- and three-family dwellings, it is preferred that the booster pump draw from a surge tank filled through an air gap; and

- Booster pumps, used in a fire suppression system, must be equipped with either a low suction throttling valve on the discharge side or be equipped with a variable speed suction limiting control system. Low-pressure cut-off devices will suffice for fire pumps installed prior to August 8, 2008, until a significant modification is warranted, at which point the minimum pressure sustaining method must be updated. Each of these methods must be tested and certified each year.

Contacts

Need more information?

Questions concerning backflow prevention and cross-connection control may be directed to your local water department or to your local Ohio EPA District Office at the following numbers:

Northwest District	(419) 352-8461
Northeast District	(330) 963-1200
Southwest District	(937) 285-6357
Southeast District	(740) 385-8501
Central District	(614) 728-3778

Questions regarding internal plumbing in the home may be directed to your local plumbing authority or to the Ohio Department of Commerce, Plumbing Administrator, at (614) 644-3153.

John Kasich, Governor
Craig W. Butler, Director

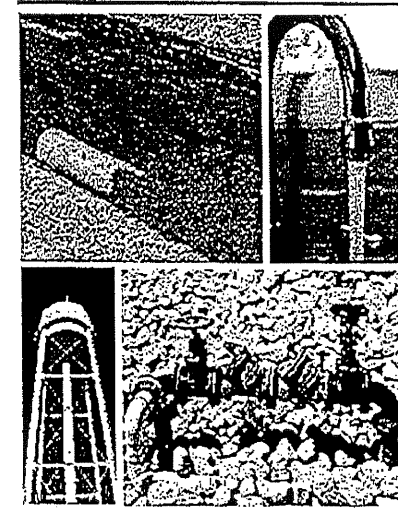
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Backflow Prevention and Cross-Connection Control

Protecting our
Public Water System

August 2015



Division of Drinking and Ground Waters
P.O. Box 1049
Columbus, Ohio 43216-1049
(614) 644-2752
www.epa.ohio.gov

What is a cross-connection?

Any physical connection created between a possible source of contamination and any drinking water system piping.

What is backflow?

It is the flow through a cross-connection from a possible source of contamination back into the drinking water system. It occurs when a cross-connection is created and a pressure reversal, either as backsiphonage or backpressure, occurs in the water supply piping.

Why be concerned?

- ALL cross-connections pose a potential health risk.
- Backflow can be a health hazard for your family or other consumers if contaminated water enters your water supply plumbing system and is used for drinking, cooking or bathing. Chemical burns, fires, explosions, poisonings, illness and death have all been caused by backflow through cross-connections.
- Backflow occurs more often than you think.
- You are legally responsible for protecting your water supply plumbing from backflow that may contaminate drinking water, either your own or someone else's. This includes complying with the plumbing code and not creating cross-connections.

What causes backsiphonage?

Backsiphonage occurs when there is a loss of pressure in a piping system. This can occur if the water supply pressure is lost or falls to a level lower than the source of contamination. This condition, which is similar to drinking from a glass with a straw, allows liquids to be siphoned back into the distribution system.

What causes backpressure?

Backpressure occurs when a higher opposing pressure is applied against the public water system's pressure. This condition allows undesirable gases or liquids from another system to enter the drinking water supply. Any pumping system (such as a well pump) or pressurized system (such as steam or hot water boilers) can exert backpressure when cross-connected with the public water system.

What can I do?

- Be aware of and eliminate cross-connections.
- Maintain air gaps. Do not submerge hoses or place them where they could become submerged.
- Use hose bib vacuum breakers on fixtures (hose connections in the basement, laundry room and outside).
- Install approved, testable backflow preventers on lawn irrigation systems.
- Do not create a connection between an auxiliary water system (well, cistern, body of water) and the water supply plumbing.

What must be done to protect the public water system?

The public water supplier must determine potential and actual hazards. If a hazard exists at a customer's public water supply service connection, the customer will be required to install and maintain an appropriate backflow preventer* at the meter and/or at the source of the hazard.

*Check with your water supplier to verify which backflow preventer is required before purchase or installation.

Who is responsible?

In Ohio, the responsibility for preventing backflow is divided. In general, state and local plumbing inspectors have authority over plumbing systems within buildings while Ohio EPA and water suppliers regulate protection of the distribution system at each service connection.

Water customers have the ultimate responsibility for properly maintaining their plumbing systems. It is the homeowner's or other customer's responsibility to ensure that cross-connections are not created and that any required backflow preventers are tested yearly and are in operable condition.

What is the law?

Ohio Administrative Code Chapter 3745-95 requires the public water supplier to protect the public water system from cross-connections and prevent backflow situations. The public water supplier must conduct cross-connection control inspections of their water customers' property to evaluate hazards. Local ordinances or water department regulations may also exist and must be followed in addition to state regulations.

What are some common backflow hazards that threaten the homeowner and other consumers?

- Hose connections to chemical solution aspirators to feed lawn and shrub herbicides, pesticides or fertilizers.
- Lawn irrigation systems.
- Chemically treated heating systems.
- Hose connections to a water outlet or laundry tub.
- Swimming pools, hot tubs, spas.
- Private and/or non-potable water supplies located on the property.
- Water-operated sump/drain devices.
- Feed lots/livestock holding areas or barnyards fed through pipes or hoses from your water supply plumbing.

What are examples of cross-connection and backflow scenarios?

- Soapy water or other cleaning compounds backsiphon into the water supply plumbing through a faucet or hose submerged in a bucket or laundry basin.
- Pool water backsiphons into the water supply plumbing through a hose submerged in a swimming pool.
- Fertilizers/pesticides backsiphon into the water supply plumbing through a garden hose attached to a fertilizer/pesticide sprayer.
- Chemicals/pesticides and animal feces drawn into the water supply plumbing from a lawn irrigation system with submerged nozzles.
- Bacteria/chemicals/additives in a boiler system backsiphon into the water supply plumbing.
- Unsafe water pumped from a private well applies backpressure and contaminates the public water supply through a connection between the private well discharge and the potable water supply plumbing.

Sizes 1/2" - 1 1/4"

FOR LOW HAZARD APPLICATIONS — RESIDENTIAL SYSTEM CONTAINMENT — Installations with Continuous Pressure

One or more cross-connections may exist in any domestic water supply system. Cross-connections usually are created without the knowledge of local plumbing and health inspectors. Usually the individuals responsible for creating them are not aware of it. Also, service contractors, exterminators or others using the domestic water supply fail to take precautions against backflow. Backflow hazards originating in domestic water supply systems (owner systems) are beyond the jurisdiction of the water purveyor to control.

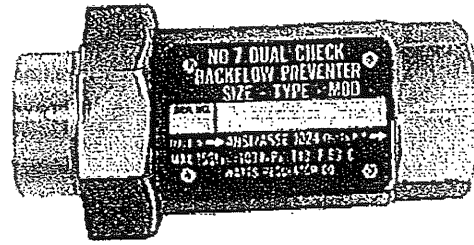
Watts 7 Dual Check provides protection for the public water supply (water purveyor systems) against backflow hazards originating in the owner system. Also, the (owner water supply system) needs suitable backflow preventers at all cross-connections to protect drinking water against backflow hazards, for the benefit of the homeowner. Watts 7 is designed to prevent the reverse flow of water. Installation is downstream from residential water meters. It is recommended that all water outlets including sill cocks, toilet ball cocks, etc., be downstream and that the owner's supply system must be in compliance with federal, state and local codes.

A properly installed and inspected domestic water supply system is the 1st line of defense for quality drinking water. Installation of the dual check valve has become relied upon as a 2nd line of defense. For more on "2nd line of defense", send for folders F-DGV and F-BDL.

Any one or more of the following conditions not protected with a proper backflow preventer offer potential backflow hazards:

- Hose attached garden spray bottles
- Lawn sprinkler systems
- Bath tub whirlpool adaptors
- Hot tubs
- Water closet bowl deodorizer
- Wells (back-up water system)
- Photo developing darkrooms
- Exterminator's equipment misapplied

Note: If a known water system health hazard is discovered by survey, consult state or local health officials for more stringent protection.



Provides backflow protection by containment at the water meter. The Dual Check is a versatile backflow preventer. It operates efficiently in the horizontal or the vertical position and under intermittent or continuous pressure. The Series 7 valve can be supplied in an extensive combination of inlet/outlet size, type of thread and type connections.

Inlet/Outlet Connections

The letter "U" is used in prefix to the type of thread and designates union connection. A union connection can be supplied on inlet/outlet or both. The example below indicates a 3/4" inlet x 3/4" outlet No. 7 with 3/4" NPT threaded female outlet.

Example:

SIZE	SERIES	SUFFIX FOR CONNECTIONS	
		INLET	OUTLET
3/4" x 3/4"	- 7 -	U 2	- 2

SUFFIX/SIZES:

- | | |
|---|--|
| 1 - Union Connection 1/2", 3/4", 1", 1 1/4" | 7 - Pack joint male 1/2", 1", James Jones |
| 2 - NPTF thread female 1/2", 3/4", 1" | 8 - Female sweat 1/2", 3/4", 1" |
| 3 - NPTM thread male 1/2", 3/4", 1", 1 1/4" | 9 - Male sweat 1/2", 3/4", 1" |
| 4 - Meter thread female 1/2", 1", 1 1/4" | 10 - Female meter thread (swivel) 1/2", 1", 1 1/4" |
| 5 - Meter thread male 1/2", 1", 1 1/4" | 11 - NPTM Male hose thread 1/2" |
| 6 - Pack joint female 1/2", 1" | 12 - HTF Female hose thread 1/2" |

CONNECTIONS/ABBREVIATIONS:

- | | |
|---|---|
| U - Union | PJF - Pack Joint Female |
| NPTF - National Pipe Tapered Female | †PJM - Pack Joint Male - James Jones |
| NPTM - National Pipe Tapered Male | MTSF - Meter Thread Female (Swivel) |
| (4) NHF - National Hose Straight Female (Meter Thread Female) | HTM - Hose Thread Male (Garden Hose) |
| (5) NHM - National Hose Straight Male (Meter Thread Male) | HTF - Hose Thread Female (Garden Hose) |
| | BSPFF - British Standard Pipe Parallel Female |
| | BSPFM - British Standard Pipe Parallel Male |

*Meter thread connections

†Requires complete pack joint assembly manufactured by James Jones

When ordering No. 7 valve with meter thread connection, order the connection one size larger than the water meter size.

1. 1/2" and 3/4" water meter; order 3/4" meter thread connection.
2. 1" and 1 1/4" water meter; order 1 1/4" meter thread connection.
3. 1 1/2" water meter; order 1 1/2" meter thread connection.

Series L7 Dual Checks are

designed for containment backflow prevention programs and installation at the service entrance. The dual check is designed to "backup" the local or state plumbing code requirements for each premise served. The L7 dual check provides residential backflow protection from conditions such as mainline flushing, fire fighting and water main breaks. These conditions can siphon domestic water systems, drawing potentially polluted water in the system back into the public water supply. The L7 has plugged test ports for in-line testing which may be required now or in the future.

For additional information, send for ES-L7.



Series A7 Angle dual check backflow preventer Max pressure 175 psi Max Temp 140°F. Easy in-line service. Cast bronze body. Inlet 1/2" & 3/4" yoke or 3/4" meter coupling connections. Outlet: 3/4" in female iron pipe, flared copper, compression tube or super grip tubes connections. Length 3 1/2" Height 4 1/4" Weight 1 lbs, 10oz.

For additional information, send for S-A7 and S-7/A7



No. 7B Compact design dual check backflow preventer similar to the Series 7 in machined brass construction. Max. pressure 150 psi.

Max. Temp. 140°F. 1/2" inlet and outlet, NPT threaded connections. No. 7BU2-2 has female union inlet x female outlet. No. 7B3-U2 has male inlet x female union outlet. No. 7BU2-U2 has female union inlet x female union outlet. Length 4" Height 1 1/2". Weight 1lb.

For additional information, send for IS/ES-7B



No. 07S Residential fire sprinkler system dual check backflow preventer. No. 07S is designed for containment control programs and installation at the fire sprinkler service entrance. Inquire with governing authorities for local installation requirements. Cast bronze body. Max pressure 175 psi. Max temp. 140°F. Size 1" NPT. Female union inlet x female outlet connections. Length 6 3/4", Height 2 1/4". Weight 3lbs, 5oz. Also available in 1 1/4".

For Additional Information, send for ES-07S



Series 7 can be installed in many varied piping configurations and in conjunction with a wide variety of meter horns, copper setters, easy setters retrofit adapters and meter boxes. Both check modules can be removed from the body and checked independently with Watts No. TK-7 test kit (see page 5).

Standards (see page 3)

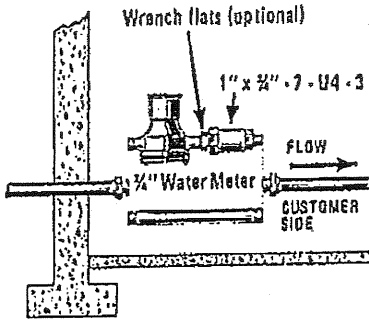
For more information, send for ES-7
Inquire with governing authorities for local requirements

BACKFLOW PREVENTERS and METER SETTERS

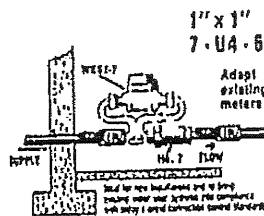
For information on Watts easy-setter retrofit adapter with dual check backflow preventer, send for S-WES2-7. For pit setters, send for S-WHPS.

Installations

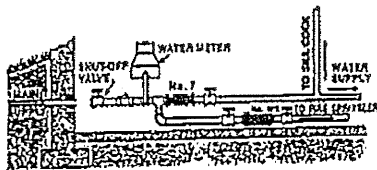
3/4" RESIDENTIAL INSTALLATION



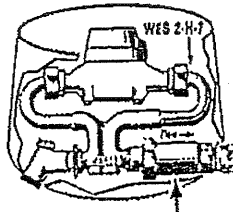
WES2-7 RESIDENTIAL RETROFIT



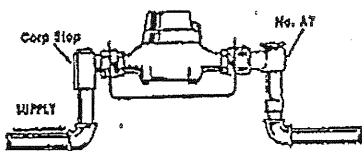
07S INSTALLATION



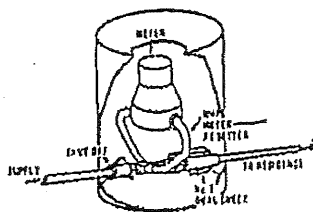
RETROFIT METER BOX



A7 INSTALLATION



PIT SETTER WHPS2-7



Materials - Construction

Cast bronze body - two durable plastic check modules injected molded of Acetyl Resin - silicone Disc and Buna "N" seals - stainless steel springs, one union and "O" ring union seal. Straight line poppet type construction minimizes pressure drop and provides smooth flow characteristics. It is not adversely affected by normal line pressure surges, will not cause water hammer and operates without chatter or vibration.

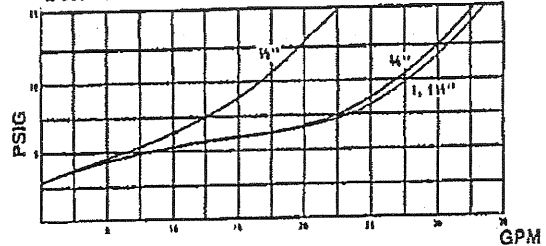
Pressure-Temperature

Max. pressure - 150psi, Min pressure - 10psi
Working temperature - 33F° to 140F° sustained (Intermittent to 180°F)

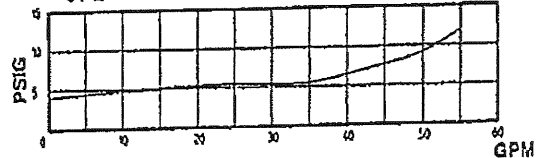
Capacity

As compiled from documented Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California lab tests.
*Typical maximum mechanical/irrigation system flow rate (7.6 feet per second)
**Typical maximum fireline system flow rate (15.0 feet per second)

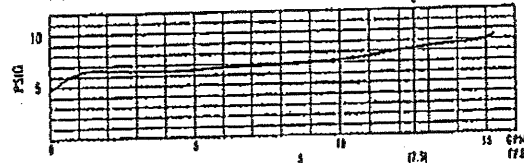
Series 7



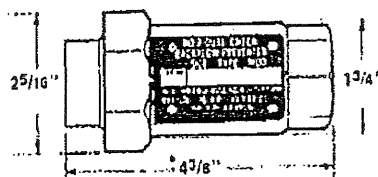
07S



A7



Dimensions-Weights (approximate)



Weight: 1 lb., 12 oz. 3/4", 1" NPT model only.

Series DET Watts Series DET expansion tanks are designed to absorb the increased volume of water created when the hot water storage tank is heated and keeps the system pressure below the relief setting of the T&P relief valve. It is a pre-pressurized steel tank with an expansion membrane that prevents contact of the water with the air in the tank.

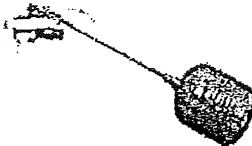


For additional information, send for: F-DET/ET, S-DET.

The answer to thermal expansion problems

Watts® Governor 80® Ball Cock Relief Valve

A triple purpose product: toilet tank ball cock fill valve, anti-siphon backflow preventer and thermal expansion relief valve in one assembly. It is Listed by IAPMO and CSA certified for anti-siphon ball cocks, FDA approved under CFR-21-177-2600, ANSIA.S.S.E. No. 1002. It will govern and limit the domestic water system preset static pressure to 80 psi as required by plumbing codes. Eliminates the need for thermal expansion tanks, auxiliary relief valves and their discharge lines. For more information send for folder F-80.



SECTION 7 - BACKFLOW PREVENTION AND CROSS CONNECTION

7.1 – Backflow Prevention:

1) *General Policy*

- A. To protect the public potable water supply from contamination or pollution by isolating within the consumer's water system, and contaminants or pollutants which could backflow through the service connection into the public potable water system.
- B. To promote the elimination and prevention of cross-connections, actual or potential, between the public and/or consumer's potable water system and non-potable water systems, plumbing fixtures and sources or systems containing process fluids or anything other than potable water.
- C. To provide for the maintenance of a continuing program of cross-connection prevention which will systematically and effectively prevent the contamination or pollution of the public and consumer's potable water systems.

2) *Application*

These Regulations shall apply to all premises served by the public potable water system of the District and as managed and operated by the District.

3) *Installation*

The District shall be responsible for the protection of the public potable water system from contamination due to backflow of contaminants through any water service connection. If, in the judgment of the District Manager, an approved backflow prevention device is necessary at the water service connection(s) to any consumer's premises for the safety of the water system, the District or its authorized representative shall give notice to the consumer to install an approved backflow prevention device or devices. The consumer shall immediately install the backflow prevention at his own expense. Failure, refusal or inability on the part of the consumer to install such device or devices immediately shall constitute grounds for discontinuing water service to the premises until such devices or devices have been installed to the approval of the District Manager.

7.2 – Definitions:

The following definitions shall apply to the interpretation and enforcement of these Regulations for backflow prevention:

- 1. *Air Gap Separation:* The unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supplying water to a tank, plumbing fixture, or other device and the flood level rim of the receptacle.

2. *Approved*: A backflow prevention device or method has been accepted by the Ohio Plumbing Code and the District Manager as suitable for the proposed use.
3. *Auxiliary Water System*: Any water system on or available to the premises other than the public water system and includes the water supplied by the system. These auxiliary waters may include water from another supplier's public water system; or water from a source such as wells, lakes, or streams; or process fluids; or used water. They may be polluted or contaminated or objectionable or constitute a water source or system over which the supplier of water does not have control.
4. *Backflow*: The flow of water or other liquids, mixtures, or substances into the distributing pipes of a potable water supply from any source other than the intended source of the potable water supply.
5. *Backflow Prevention Device*: Means any device, method or type of construction intended to prevent backflow into a potable water system.
6. *Backsiphonage*: Backsiphonage occurs when negative pressure develops either in the water user's piping system or, more seriously, in the community system. If plumbing defects exist in the consumer's piping system, the siphoned water will be contaminated and, in turn, can contaminate the community supply. In a community piping system, this negative pressure can be caused by main breaks, planned or emergency shutdowns, fire demands, water use exceeding the hydraulic capabilities of the system, and other reasons.
7. *Consumer*: The owner or person in control of any premises supplied by or in any manner connected to a public water system.
8. *Consumer's Water System*: Any water system located on the consumer's premises, supplied by or in any manner connected to a public water system. A household plumbing system is considered to be a consumer's watersystem.
9. *Contamination*: An impairment of the quality of the water by sewage or process fluids or waste to a degree which could create an actual or potential hazard to the public health through poisoning or through spread of disease by exposure.
10. *Cross-Connection*: Any arrangement whereby backflow can occur. A cross-connection is any physical link or route that makes it possible for this contamination to flow into the potable water system. While the cross connection provides the physical link, there must also be a pressure differential that acts to force the contamination into the potable water system. Backflow will occur when the pressure in the potable water system is lower than the pressure in the system containing the contamination.
11. *Degree of Hazard*: A measure of the potential risk to health and the adverse effect upon the potable water system derived from an evaluation of that potential.

12. *Double Check Valve Assembly*: An assembly composed of two single, independently acting, check valves including tightly closing shutoff valves located at each end of the assembly and suitable connections for testing the water tightness of each check valve.
13. *Health Hazard*: Any condition, device, or practice in a water system or its operation that creates, or may create, a danger to the health and well-being of users. The word "severe" as used to qualify "health hazard" means a hazard to the health of the user that could reasonably be expected to result in significant morbidity or death.
14. *Interchangeable Connection*: An arrangement or device that will allow alternate but not simultaneous use of two (2) sources of water.
15. *Non-Potable Water*: Water not safe for personal, drinking or culinary use.
16. *Person*: The state, any political subdivision, public or private corporation, individual, partnership, or other legal entity.
17. *Pollution*: Any foreign substance that tends to degrade its quality so as to constitute a hazard or impair the usefulness or quality of the water to a degree which does not create an actual hazard to the public health, but which does adversely and unreasonably affect such waters for domestic use.
18. *Potable Water*: Water which is satisfactory for drinking, culinary and domestic purposes and meets the requirements of the Environmental Protection Agency.
19. *Process Fluids*: Any fluid or solution which may be chemically, biologically or otherwise contaminated or polluted in a form or concentration that would constitute a health, pollution, or system hazard if introduced into the public or a potable consumer's water system. This includes, but is not limited to:
 1. Polluted or contaminated waters;
 2. Process waters;
 3. Used waters originating from the public water system which may have deteriorated in sanitary quality;
 4. Cooling waters;
 5. Contaminated natural waters taken from wells, lakes, streams, or irrigation systems;
 6. Chemicals in solution or suspension; and
 7. Oils, gases, acids, alkalis, and other liquid and gaseous fluids used in industrial or other process, or for firefighting purposes.
20. *Public Water System*: A system which provides water for human consumption as defined in Rule 3745-81-01 of the Ohio Administrative Code.

21. *Reduced Pressure Principle Backflow Prevention Device:* A device containing a minimum of two (2) independently acting check valves together with an automatically operated pressure differential relief valve located between the two (2) check valves. During normal flow and at the cessation of normal flow, the pressure between these two checks shall be less than the supply pressure. In case of leakage of either check valve, the differential relief valve, by discharging to the atmosphere, shall operate to maintain the pressure between the check valves at less than the supply pressure. The unit must include tightly closing shutoff valves located at each end of the device, and each device shall be fitted with properly located test cocks.
22. *Service Connection:* The terminal end of a service line from the public water system. If a meter is installed at the end of the service then the service connection means the downstream end of the meter.
23. *Supplier of Water:* The owner or operator of a public water system.
24. *System Hazard:* A condition posing an actual or potential threat of damage to the physical properties of the public water system or a potable consumer's water system.
25. *Pollutional Hazard:* A condition through which an aesthetically objectionable or degrading material not dangerous to health may enter the public water system or a potable consumer's water system.
26. *Used Water:* Any water supplied by a supplier of water from a public water system to a consumer's water system after it has passed through the service connection and is no longer under the control of the supplier.

7.3 – Water System:

- A. The water system shall be considered as made up of two (2) parts: the public potable water system and the consumer's water system.
- B. The public potable water system shall consist of the source facilities and the distribution system, and shall include all those facilities of potable water system under the control of the District up to the point where the consumer's water system begins.
- C. The source shall include all components of the facilities utilized in the production, treatment, storage and delivery of water to the public distribution system.
- D. The public distribution system shall include the network of conduits used for delivery of water from the source to the consumer's water system.
- E. The consumer's water system shall include those parts of the facilities beyond the

service connection which are utilized in conveying water from the public distribution system to points of use, which is normally considered to be all water lines and related components after the curb stop or meter installation point as determined by the District.

7.4 – Where Protection is Required:

7.4.1 An approved backflow prevention device shall be installed on each service line to a consumer's water system, where in the judgment of the supplier of water, the District Manager or the OEPA, actual or potential pollution or hazards to the public potable water system exists.

This includes but is not limited to the following applications:

1. Premises having sources or systems containing process fluids or waters originating from the public potable water system which are no longer under the sanitary control of the District;
2. Premises having geothermal or boiler heating systems;
3. Where service is extended to an auxiliary building with potential to contaminate the water system or create health hazard;
4. Premises having internal cross-connections that in the judgment of the District Manager are not correctable, or have intricate plumbing arrangements which make it impractical to determine whether or not cross-connections exist;
5. Premises where, because of security requirements or other prohibitions or restrictions, it is impossible or impractical for the District to make a complete cross-connection inspection;
6. Premises having an irrigation system;
7. Premises having a repeated history of cross-connections being established; or
8. Others as specified by the District or the OEPA.

7.4.2 An approved backflow prevention device shall be installed on each service line to a consumer's water system where the following conditions exist:

- a) Premises having an auxiliary water system, unless such auxiliary system is accepted as an additional source by the supplier of water and the source is approved by the District Manager;
- b) Premises on which any substance is handled in such a fashion as to create an actual or potential hazard to a public water system. This shall include premises having sources or systems containing process fluids or waters originating from a public water system which are no longer under the control of the supplier of water;

- c) Premises having internal cross-connections that, in the judgment of the supplier of water, are not correctable or intricate plumbing arrangements which make it impracticable to determine whether or not cross-connections exist;
- d) Premises where, because of security requirements or other prohibitions or restrictions, it is impossible or impractical to make a complete cross-connection survey;
- e) Premises having a repeated history of cross-connections being established or re-established;
- f) Premises where private domestic or fire suppression lines are not dedicated and contain one or more connections, such as fire hydrants, that create an actual or potential hazard to the public water system;
- g) Others specified by the District Manager or OEPA.

7.4.3 An approved backflow prevention device shall be installed on each of the following service lines to a consumer's water system unless the District Manager or the OEPA determines that no actual or potential hazard to the public potable water supply exists:

1. Hospitals, mortuaries, clinics, nursing homes;
2. Laboratories;
3. Piers, docks, waterfront facilities;
4. Sewage treatment plants, sewage pumping stations or storm water pumping stations;
5. Food or beverage processing plants;
6. Chemical plants;
7. Metal plating industries;
8. Petroleum processing or storage plants;
9. Radioactive material processing plants or nuclear reactors;
10. Car washes; and
11. Others as specified by the District Manager or the OEPA.

7.4.4 An approved backflow prevention device shall be installed at any point of connection between a public water system or a potable consumer's water system and an auxiliary water system, unless such auxiliary system is accepted as an additional source by the District Manager and the source is approved by the OEPA.

7.5 – Type of Protection Required:

7.5.1 The type of protection required shall depend on the degree of hazard which exists as follows:

1. An approved air gap separation shall be installed where a public water system may be

contaminated with substances that could cause a severe health hazard.

2. An approved air gap separation or an approved reduced pressure principle backflow prevention device shall be installed where a public water system may be contaminated with any substance that could cause a system or health.
3. An approved air gap separation or an approved reduced pressure principle backflow prevention device or an approved double check valve assembly shall be installed where a public water system may be polluted with substances that could cause a pollutional hazard.

7.5.2 The type of protection required shall be an approved air gap separation or an approved interchangeable connection.

7.5.3 Where an auxiliary water system is used as a secondary source of water for a fire protection system, an approved air gap separation or an approved interchangeable connection may be waived, provided:

1. At premises where the auxiliary water system may be contaminated with substances that could cause a system or health hazard, the public water system or a potable consumer's water system shall be protected against backflow by installation of an approved reduced pressure principle backflow prevention device;
2. At all other premises, a public water system or a potable consumer's water system shall be protected against backflow by installation of either an approved, reduced pressure principle backflow prevention device, or a double check valve assembly;
3. The public water system or a potable consumer's system shall be the primary source of water for the fire protection system;
4. The fire protection system shall be normally filled with water from a public water system or a potable consumer's water system;
5. The water in the fire protection system shall be used for fire protection only, with no regular use of water from the fire protection system downstream of the backflow prevention device; and
6. The water in the fire protection system shall contain no additives.

7.5.4 The waiver permitted pursuant to the provisions of this Section shall be obtained from the District Manager in written form before the consumer's auxiliary water system is implemented as a secondary water source for fire protection.

7.6 – Installation Requirements:

When a backflow device is installed, the District must be notified in writing as to name, location,

and type of device.

Reduced pressure principle backflow prevention devices must be:

1. Installed so as to be readily accessible for inspection, testing, and maintenance.
2. Provided with adequate space for inspection, testing, maintenance and disassembly.
3. Protected from freezing by installation within a heated building.
4. Mounted in a horizontal position except for certain models that have been specifically designed to be installed in a vertical position.
5. Installed above ground level or floor level whichever is higher.
6. Installed so that there is a visible free discharge from the relief port with no extension piping.

The installation of reduced pressure principle backflow prevention devices in pits is specifically prohibited.

7.7 – Backflow Prevention Devices:

7.7.1 Any backflow prevention device required by rules 3745-95-04 and 3745-95-05 of the Ohio Administrative Code shall be of a model or construction approved by the District and the OEPA. In addition, any backflow prevention device required by these Regulations shall be of a model or construction approved by the District Manager and the OEPA, and shall comply with the following:

1. An air gap separation shall be at least twice the diameter of the supply pipe, measured vertically above the top rim of the vessel, but in no case less than one inch.
2. A double check valve assembly or a reduced pressure principle backflow prevention device shall be approved by the District Manager.

7.7.2 Any backflow prevention device required by rules 3745-95-04 and 3745-95-05 of the Ohio Administrative Code shall be installed at a location and in a manner approved by the District Manager and shall be installed by and at the expense of the water consumer. Locations may include meter pits, meter vaults or a dedicated out-building.

Backflow prevention devices installed on the service line to a consumer's water system shall be located on the consumer's side of the water meter, as close to the meter as is reasonably practical, and prior to any other connections.

Pits or vaults shall be of water-tight construction, be so located and constructed as to prevent flooding and shall be maintained free from standing water by means of either a sump pump

or a suitable drain connected to a suitable storm water outlet. Such sump pump or drain shall not connect to a sanitary sewer nor permit flooding of the pit or vault by reverse flow from its point of discharge. An access ladder and adequate natural or artificial lighting shall be provided to permit maintenance, inspection and testing of the backflow prevention device.

Reduced pressure principle backflow prevention devices must be installed above ground level or floor level, whichever is higher.

7.7.3 It shall be the duty of the consumer, on any premises on which backflow prevention devices required by rules 3745-95-04 and 3745-95-05 of the Ohio Administrative Code are installed, to have thorough inspections and operational tests made of the devices in accordance with the following schedule, or more often where inspections indicate a need:

1. Air gap separations shall be inspected at the time of installation and at least every twelve (12) months thereafter;
2. Double check valve assemblies shall be inspected and tested for tightness at the time of installation and at least every twelve (12) months thereafter. Double check valve assemblies shall be dismantled, inspected internally, cleaned and repaired whenever needed and at least every thirty (30) months.
3. Reduced pressure principle backflow prevention devices shall be inspected and tested for tightness at the time of installation and at least every twelve (12) months thereafter. Reduced pressure principle backflow prevention devices shall be dismantled, inspected internally, cleaned and repaired whenever needed and at least every five (5) years.
4. Interchangeable connections shall be inspected at the time of installation and at least every twelve (12) months thereafter.

These inspections and tests shall be at the expense of the water consumer and shall be performed by the District or a person approved by the District as qualified to inspect and test backflow prevention devices. Testers are certified by the Ohio Department of Commerce, Division of Industrial Compliance to perform backflow prevention testing. A current copy of the certification shall be kept on file by the District. To cover the administrative costs of this program an annual fee of \$25.00 per device will be collected with the completed test form. It shall be the duty of the District Manager to see that these tests and inspections are made.

Water consumers are sent a notice by first class mail to have their backflow prevention device tested within 30 days from date of notice. Test results of a backflow prevention device are to be returned to the District. If the water consumer does not comply within 30 days, a second notice via first class mail is sent with a compliance requirement of 30 days or their water service will be turned off.

7.7.4 Whenever backflow prevention devices are found to be defective, they shall be repaired, overhauled or replaced at the expense of the consumer without delay or water

service to the property will be terminated until such work is completed.

7.7.5 The water consumer must maintain a complete record of each backflow prevention device from purchase to retirement. This shall include a comprehensive listing of all tests, inspections, repairs and overhauls. Records of inspections, tests, repairs and overhauls shall be submitted to the District.

7.7.6 Backflow prevention devices shall not be bypassed, made inoperable, removed or otherwise made ineffective without specific authorization from the District Manager.

7.7.7 Existing backflow prevention devices approved by the District prior to the effective date of these Regulation and which are properly maintained shall, except for inspection, testing, and routine maintenance requirements, be excluded from the requirements of this Section if the District is assured that the devices will satisfactorily protect the public water system. However, any replacement or repairs to an existing device will require adherence to this Section.

7.8 – Cross Connections:

7.8.1 No person shall install or maintain a water service connection to any premises where actual or potential cross-connections to a public water system or a potable consumer's water system may exist unless such actual or potential cross-connections are abated or controlled to the satisfaction of the District.

7.8.2 No person shall install or maintain any connection whereby water from an auxiliary water system may enter a public water system or potable consumer's water system unless the auxiliary water system, the method of connection and use of such system shall have been approved by the District Manager and/or the OEPA.

7.9 – Surveys and Investigations:

7.9.1 The supplier of water shall conduct or cause to be conducted periodic surveys and investigations, of frequency acceptable to the District Manager, of water use practices within a consumer's premises to determine whether there are actual or potential cross-connections to the consumer's water system through which contaminants or pollutants could backflow into the public water system.

7.9.2 The District Manager, or his authorized representative, shall have the right to enter premises served by the public water system at all reasonable times for the purpose of making surveys and investigations of water use practices within the premises.

7.9.3 On request by the supplier of water, or his authorized representative, the consumer shall furnish the supplier, or his authorized representative, information on water use practices within the consumer's premises. The District shall have the right to copy the consumer's records relevant to determining compliance with the requirements of these Regulations.

7.9.4 Section 7.9.1 of this Section does not relieve the consumer of the responsibility for conducting, or causing to be conducted, periodic surveys of water use practices on his premises to determine whether there are actual or potential cross-connections in the consumer's water system through which contaminants or pollutants could backflow into a public water system or a consumer's potable water system.

7.10 – Booster Pumps:

7.10.1 No person shall install or maintain a water service connection to any premises where a booster pump has been installed on the service line to or within such premises, unless such booster pump is equipped with a low pressure cut-off designed to shut off the booster pump when the pressure in the service line on the suction side of the pump drops to ten pounds per square inch gauge pressure or less.

7.10.2 It shall be the duty of the water consumer to maintain the low pressure cut-off device in proper working order and to certify to the District at least once a year that the device is operable, or water service to the premises shall be terminated until such work is completed.

7.11 – Violations:

7.11.1 The District shall deny or discontinue, after reasonable notice to the occupants thereof, the water service to any premises wherein any backflow prevention device required by this Section is not installed, tested and maintained in a manner acceptable to the District Manager, or if it is found that the backflow prevention device has been removed or bypassed, or if an unprotected cross-connection exists on the premises or if a low pressure cut-off required by rule 3745-95-07 of the Ohio Administrative Code is not installed and maintained in working order, or if the District Manager, District employee, or the authorized representative of either, is denied entry to determine compliance with this chapter of the Administrative Code.

7.11.2 Water service to such premises shall not be restored until the consumer has corrected or eliminated such conditions or defects in conformance with these Regulations and this chapter of the Ohio Administrative Code, and to the satisfaction of the District Manager.

7.12 Through 7.98 – Reserved:

service connection which are utilized in conveying water from the public distribution system to points of use, which is normally considered to be all water lines and related components after the curb stop or meter installation point as determined by the District.

7.4 – Where Protection is Required:

7.4.1 An approved backflow prevention device shall be installed on each service line to a consumer's water system, where in the judgment of the supplier of water, the District Manager or the OEPA, actual or potential pollution or hazards to the public potable water system exists.

This includes but is not limited to the following applications:

1. Premises having sources or systems containing process fluids or waters originating from the public potable water system which are no longer under the sanitary control of the District;
2. Premises having geothermal or boiler heating systems;
3. Where service is extended to an auxiliary building with potential to contaminate the water system or create health hazard;
4. Premises having internal cross-connections that in the judgment of the District Manager are not correctable, or have intricate plumbing arrangements which make it impractical to determine whether or not cross-connections exist;
5. Premises where, because of security requirements or other prohibitions or restrictions, it is impossible or impractical for the District to make a complete cross-connection inspection;
6. Premises having an irrigation system;
7. Premises having a repeated history of cross-connections being established; or
8. Others as specified by the District or the OEPA.

7.4.2 An approved backflow prevention device shall be installed on each service line to a consumer's water system where the following conditions exist:

- a) Premises having an auxiliary water system, unless such auxiliary system is accepted as an additional source by the supplier of water and the source is approved by the District Manager;
- b) Premises on which any substance is handled in such a fashion as to create an actual or potential hazard to a public water system. This shall include premises having sources or systems containing process fluids or waters originating from a public water system which are no longer under the control of the supplier of water;