

Rural Lorain County Water Authority

Rules and Regulations for Backflow Prevention

Resolution 01-83, 03-108, 08-10, updated 06-12

Section I

Backflow Prevention- General Policy

A. Purpose

The purpose of these Rules and Regulations is:

1. To protect the public potable water supply from contamination or pollution by isolating within the consumers' water system contaminants or pollutants which could backflow through the service connection into the public potable water system.
2. To eliminate or control any existing cross-connections, actual or potential, between the public or consumer's potable water system and non-potable water systems, plumbing fixtures and sources or systems containing process fluids.
3. To provide for the maintenance of a continuing program of cross-connection control which will systematically and effectively prevent the contamination or pollution of the public or consumers' potable water systems.

B. Application

These Rules and Regulations shall apply to all premises served by the public potable water system of the Rural Lorain County Water Authority.

C. Policy

The General Manager is responsible for the protection of the public potable water system from contamination due to backflow of contaminates through the water service connection. If in the judgement of the General Manager, an approved backflow device is necessary at the water service connection to any consumer's premises for the safety of the water system, the General Manager or the authorized representative shall give notice to the consumer to install such approved backflow prevention device(s) at the owners expense, and failure, refusal or inability on the part of the consumer to install such device(s) immediately shall constitute grounds for discontinuing water service to the premises until such device(s) have been installed.

Section II

Definitions:

- A. "Air gap separation" means 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.
- B. "Approved" means that a backflow prevention device or method has been accepted by the supplier of water and the director as suitable for the purposed use.
- C. "Auxiliary Water System" means any water system on or available to the premises other than the public water system. These auxiliary water systems shall include used water or water from a source other than the public water system, such as wells, cisterns or open reservoirs that are equipped with pumps or other prime movers, including gravity.
- D. "Backflow" means 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.
- E. "Backflow prevention device" means any device, method, or type of construction intended to prevent backflow into a potable water supply.
- F. "Booster pump" means any device which is intended to increase the in-line water pressure.
- G. "Consumer" means the owner or person in control of any premises supplied by or in any manner connected to a public water system.
- H. "Consumer's water system" means 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 consumers water system.
- I. "Cross-Connection" means any arrangement whereby backflow can occur.
- J. "Degree of Hazard" is a term derived from an evaluation of the potential risk to health and welfare.
- K. "Director" means the director of environmental protection or his duly authorized representative.

- L. “Double check valve assembly” means 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.
- M. “Double check-detector check valve assembly” means a specially designed assembly composed of a line-size approved double check valve assembly with a specific bypass water meter and a meter-sized approved double check valve assembly. The meter shall register accurately for only very low rates of flow and shall show a registration for all rates of flow.
- N. “Health hazard” means any condition, device, or practice in a water system or its operation that creates, or may create, a danger to the health of users.
- O. “Human consumption” means the ingestion or absorption of water or water vapor as the result of drinking, cooking, dishwashing, hand washing, bathing, showering, or oral hygiene.
- P. “Interchangeable connection” means an arrangement or device that will allow alternate but not simultaneous use of two sources of water and includes an approved reduced pressure principle backflow prevention assembly or an approved reduced pressure principle-detector assembly on the public water system sided of the connection.
- Q. “Person” means the state, any political subdivision, public or private corporation, individual, partnership, or other legal entity.
- R. “Pollution hazard” means a condition through which an aesthetically objectionable or degrading material, which is not dangerous to the public water system or health of users, may enter the public water system or portion of a consumer’s water system.
- S. “ Potable water” means water intended for human consumption.
- T. “Premises” means any building, structure, dwelling or area containing plumbing or piping supplied from a public water system.
- U. “Process fluids” means any fluid or solution which may be chemically, biologically, or otherwise contaminated or polluted in a form or concentration such as would constitute a pollutional, system, health or sever health hazard if introduced into the public water system or portion of a consumer’s water system. This includes, but is not limited to:
 - 1. Polluted or contaminated waters;
 - 2. Process waters;

3. Used waters originating from a 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;
 7. Oils, gases, acids, alkalis, and other liquid and gaseous fluids used in industrial or other processes, or for fire fighting purposes.
- V. "Public water system" has the same meaning as in rule 3745-81-01 of the Administrative Code
- W. "Reduced pressure principle backflow prevention assembly" means a device containing a minimum of two independently acting check valves together with an automatically operated pressure differential relief valve located between the two 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.
- X. "Reduced pressure principle-detector assembly" means a specially designed assembly composed of a line-sized approved reduced pressure principle backflow prevention assembly with a specific bypass water meter and a meter sized approved reduced pressure principle backflow prevention assembly. The meter shall register accurately for only very low rates of flow and shall show a registration for all rates of flows.
- Y. "Service connection" means 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.
- Z. "Severe health hazard" means a health hazard to users that could reasonably be expected to result in significant morbidity or death..
- AA. "Supplier of Water" means the owner or operator of a public water system.

- BB. “System hazard” means a condition posing an actual or potential threat of damage to the physical properties of the public water system or a consumer’s water system.
- CC. “Used water” means 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.
- DD. “Water system” means a system for the provision of piped water or process fluids, and includes any collection, treatment, storage or distribution facilities used primarily in connection with such system.

SECTION III

WATER SYSTEM

- A. The water system shall be considered as made up of two 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 the potable water system under the control of the General Manager 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.

SECTION IV

CROSS-CONNECTIONS PROHIBITED

- A. 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 consumer’s water system may exist unless such actual or potential cross-connections are abated or controlled to the satisfaction of the supplier of water.

- B. No person shall install or maintain a connection between a public water system or consumer's water system and an auxiliary water system unless the auxiliary water system, the method of connection and the use of such system have been approved by the supplier of water and by the director as required by section 6109.13 of the Revised Code.

SECTION V

SURVEY AND INVESTIGATIONS

- A. The consumers premises shall be open at all reasonable times to the General Manager, or the authorized representative, for the conduction of surveys and investigations of water use practices within the 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 potable water system.
- B. On request by the General Manager or the authorized representative, the consumer shall furnish information on water use practices within the premises.
- C. It shall be the responsibility of the water consumer to conduct periodic surveys of water use practices on the premises to determine whether there are actual or potential cross-connections in the water system through which contaminants or pollutants could backflow into the public potable water system.

SECTION VI

WHERE PROTECTION IS REQUIRED

- A. An approved backflow prevention device shall be installed on each service line to a consumers water system serving premises, where in the judgement of the General Manager or the Director of the Ohio EPA, actual or potential hazards to the public potable water system exist.
- B. An approved backflow prevention device shall be installed on each service line to a consumer's water system serving premises where the following conditions exist.
 - 1. Premises having an auxiliary water system, unless such auxiliary system is accepted as an additional source by the General Manager and the source is approved by the Director of the Ohio EPA.
 - 2. Premises on which any substance is handled in such a fashion as to create an actual or potential hazard to the public potable water system. This shall include premises having sources or systems containing process fluids or

waters originating from the potable water system which are no longer under the sanitary control of the General Manager.

3. Premises having internal cross-connections that, in the judgment of the General Manager, are not correctable, on intricate plumbing arrangements which make it impractical to determine whether or not cross-connections exist.
 4. Premises where, because of security requirements or other prohibitions or restrictions, it is impossible or impractical to make a complete cross-connection survey.
 5. Premises having a repeated history of cross-connections being established or re-established.
 6. Others specified by the General Manager or the Director of the Ohio EPA.
- C. An approved backflow prevention device shall be installed on each service line to consumer's water system serving, but not necessarily limited to, the following types of facilities unless the General Manager or the Director of the Ohio EPA determines that no actual or potential hazard to the public potable water system exists:
1. Hospitals, mortuaries, clinics, nursing homes, funeral 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.
 11. Other as specified by the General Manager or Director.
- D. An approved backflow prevention device shall be installed at any point of connection between the public potable or consumer's water system and an auxiliary water system, unless such auxiliary system is accepted as an additional source by the General Manager and the source is approved by the Director of the Ohio EPA.

SECTION VII

TYPE OF PROTECTION REQUIRED

- A. The type of protection required under Section 6A, 6B, and 6C of these rules and regulations shall depend on the degree of hazard which exists as follows:
1. An approved air gap separation shall be installed where the 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 assembly or an approved reduced pressure detector check assembly shall be installed where a public water system may be contaminated with any substance that could cause a system or health hazard;
 3. An approved air gap separation, an approved reduced pressure principle backflow prevention assembly, an approved double check valve assembly or an approved double check-detector check valve assembly shall be installed where a public water system may be contaminated with any substances that could cause a polluttional hazard.
- B. The type of protection required under Section 6D of these rules and regulations shall be an approved air gap separation or an approved interchangeable connection.
- C. Where an auxiliary water system is used as a secondary source of water for a fire protection system, the provisions of Section 7B for an approved air gap separation or an approved interchangeable connection may not be required, provided:
1. At premises where the auxiliary water system may be contaminated with substances that could cause a system, health or severe hazard, a public water system or consumer's water system shall be protected against backflow by installation of an approved reduced pressure principle backflow prevention assembly or an approved reduced pressure principle-detector check assembly;
 2. At all other premises, the public water system or a consumer's water system shall be protected against backflow by installation of an approved reduced pressure principle backflow prevention assembly or an approved double check valve assembly or an approved double check-detector check valve assembly;
 3. A public water system or a consumer's water 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 the public water system or a consumer's water system; and
5. The water in the fire protection system shall be used for fire protection only, with no other use of water from the fire protection system downstream from the approved backflow prevention device.

SECTION VIII

BACKFLOW PREVENTION DEVICES

- A. Any backflow prevention device required by these rules 3745-95-04 and 3745-95-05 of the Administrative Code shall be of a model or construction approved by the supplier of water and conform to at least one of the following standards:
 1. For air gap separations: American National Standards Institute standard A112.1.2. – 1991;
 2. For reduced pressure principle backflow prevention assemblies: American National Standards Institute/American Water Works Association standard C511-97 (1997), or American Society of Sanitary Engineering standard 1013-99 (1999), or Canadian Standards Association standard B64.4-01 (2001), or Foundation for Cross Connection Control and Hydraulic Research, University of Southern California Specifications of Backflow Assemblies for Reduced Pressure Principle Assemblies – ninth edition (1993);
 3. For double check valve assemblies: American National Standards Institute/American Water Works Association standard C510-97 (1997), or American Society of Sanitary Engineering standard 1015-99 (1999), or Canadian Standards Association standard B64.5-01 (2001), or Foundation for Cross Connection Control and Hydraulic Research, University of Southern California Specifications of Backflow Assemblies for Double Check Valve Assemblies – ninth edition (1993);
 4. For reduced pressure principle-detector assemblies: American National Standards Institute/American Society of Sanitary Engineering standard 1047-99 (1999), Canadian Standards Association standard B64.4.1-01 (2001), or Foundation for Cross Connection Control and Hydraulic Research, University of Southern California Specifications of Backflow Assemblies for Reduced Pressure Principle Assemblies – ninth edition (1993); or
 5. For double check-detector check valve assemblies: American National Standards Institute/American Society of Sanitary Engineering standard

1048-99 (1999), or Canadian Standards Association standard B64.5.1-01 (2001), or Foundation for Cross Connection Control and Hydraulic Research, University of Southern California Specifications of Backflow Assemblies for Double Check-Detector Assemblies – ninth edition (1993).

- B. Any backflow prevention device required by rules 3745-95-04 and 3745-95-05 of the Administrative Code shall be installed at a location and in a manner approved by the supplier of water and shall be installed at the expense of the water consumer. In addition, any backflow prevention device required by paragraphs (B) and (C) of rule 3745-95-05 of the Administrative Code shall be installed at a location and in a manner approved by the director as required by section 6109.13 of the Revised Code.

- C. It shall be the duty of the water consumer to maintain any backflow prevention device required by rules 3745-95-04 and 3745-95-05 of the Administrative Code in proper working order and in continuous operation.
 - 1. The supplier of water shall retain authority over any backflow prevention device required by rules 3745-95-04 and 3745-95-05 of the Administrative Code.
 - 2. It shall be the duty of the supplier of water to see that the tests and inspections required under this paragraph are made.
 - 3. The consumer shall, on any premises on which backflow prevention devices required by rules 3745-95-04 and 3745-95-05 of the Administrative Code are installed, have thorough inspections and operational tests made of the devices at the time of the installation or repair, and as may be reasonably required by the supplier of water or the director, but in all cases at least once every twelve months. These inspections and tests shall be at the expense of the water consumer and shall be performed by the supplier of water or a person approved by the supplier as qualified to inspect and test backflow prevention device.
 - 4. These devices shall be repaired, overhauled or replaced at the expense of the consumer whenever they are found to be defective.
 - 5. Records of such inspections, tests, repairs and overhaul shall be kept by the consumer and made available to the supplier of water

- D The supplier of water shall inspect or cause to be inspected all installations where an approved connection exists between an auxiliary water system and the public water system or a consumer's water system at least once every twelve months and shall maintain an inventory of all such installations and inspection records. Such inventories and inspection records shall be made available during sanitary surveys and at other reasonable times.

- E. Backflow prevention devices approved by the supplier of water and conforming to prior or subsequent editions of the standards cited in paragraph (A) of this rule, and which are properly maintained in accordance with paragraph (C) of this rule shall be excluded from the requirements of paragraphs (A) and (B) of this rule if the supplier of water and the director are assured that the devices will satisfactorily protect the public water system

[Comment: This rule incorporates the following standard by reference: American National Standards Institute standard A112.1.2 – 19991, Air Gaps in Plumbing Systems R(1991). At the effective date of this rule, a copy may be obtained from Global Engineering Documents, 15 Inveness Way East, Englewood, CO 80112, phone: 303-397-7956 or 800-854-7179, world-wide web address: <http://global.ihs.com/>. This document is available for review at Ohio EPA, Lazarus

SECTION IX

INSTALLATION

- A. Backflow prevention devices required by these rules and regulations shall be installed at a location and in manner approved by the General Manager and at the expense of the water consumer. In addition, any backflow prevention device required by Section 7B and 7C of these rules and regulations shall be installed at a location and in a manner approved by the Director of the Ohio EPA as required by Section 6109.13 of the Ohio Revised Code.
- B. 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 connection.
- C. Pits or vaults shall be located and constructed to permit maintenance, inspection and testing of the backflow prevention device. A vault specification / recommendation sheet is available upon request.
- D. Reduced pressure principle backflow prevention devices must be installed above ground level or floor level, whichever is higher.
- E. Double check, pressure vacuum breaker and reduced pressure assemblies shall be mounted according to manufacturer specifications.

SECTION X

INSPECTION & MAINTENANCE

- A. It shall be the duty of the consumer at any premises on which backflow prevention devices required by these rules and regulations are installed to have inspections, tests, and overhauls made in accordance with the following schedule, or more often where inspections indicate a need:
1. Air gap separation shall be inspected at the time of installation and at least every twelve months thereafter;
 2. Double check valve assemblies shall be inspected and tested for tightness at the time of installation and at least every twelve months thereafter;
 3. Reduced pressure principle backflow prevention devices shall be inspected and tested for tightness at the time of installation and at least every twelve months thereafter;
 4. Interchangeable connections shall be inspected at the time of installation and at least every twelve months thereafter.
 5. Pressure vacuum breakers shall be inspected at the time of installation, and tested at least every twelve months thereafter.
- B. Inspections, tests, and overhauls of backflow prevention devices shall be made at the expense of the water consumer and shall be performed by a person approved by the Water and Department as qualified to inspect, test, and overhaul backflow prevention devices.
- C. Whenever backflow prevention devices required by these rules and regulations are found to be defective, they shall be repaired, overhauled or replaced at the expense of the consumer without delay.
- D. The water consumer must maintain a complete record of each backflow prevention device from purchase to retirement. This shall include a comprehensive listing that includes a record of all tests, inspections, repairs and overhauls. Records of inspection, test, repairs and overhaul shall be submitted to the General Manager.
- E. Backflow prevention devices shall not be bypassed, made inoperative, removed or otherwise made ineffective without specific authorization by the General Manager.
- F. Please find in APPENDIX A of this manual a list of certified back flow testers approved by RLCWA. List can also be found on our website www.rlcwa.com.

SECTION XI

BOOSTER PUMPS

- A. No person shall install or maintain a water service connection to any one, two or three family dwelling where a booster pump has been installed, unless an air gap separation is provided.
- B. No person shall install or maintain a water service connection to any premises not included in paragraph (A) of this rule 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 or less.
- C. 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 supplier of water, at least once every twelve months, that the device is operable and maintained in continuous operation..

SECTION XII

VIOLATIONS

- A. The General Manager shall deny or discontinue, after reasonable notice the occupants thereof, the water service to any premises wherein any backflow prevention device required by these rules and regulations is not installed, tested and maintained in a manner acceptable to the General 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 is required by these rules and regulations is not installed and maintained in working order.
- B. Water service to such premises shall not be restored until the consumer has corrected or eliminated such conditions or defects in conformance with these rules and regulations and to the satisfaction of the General Manager. If water service is terminated a \$50 reconnection fee will be assessed.

CHAPTER 3745-99: MISCELLANEOUS WATER SUPPLY RULES

3745-95-09 Effective 4-19-2012

REQUIREMENTS FOR YARD HYDRANTS

- (A) Yard hydrants with weep holes.
 - (1) Yard hydrants with weep holes used for human consumption installed on a public water systems are prohibited unless the weep holes are sealed.
 - (2) Yard hydrants with weep holes not used for human consumption installed on a public water system and those installed on a consumer's water system, shall have an appropriate backflow prevention assembly on the service line to protect the public water system. Yard hydrants with weep holes installed on public water systems shall be clearly labeled as "non-potable" or "not for human consumption."

- (B) Sanitary yard hydrants that do not have weep holes, such as those that meet the requirements of the "American Society of Sanitary Engineers" (ASSE) standard 1057, Performance Requirements for Freeze Resistant Yard Hydrants with Backflow Protection" (2001) are not prohibited provided:
 - (1) The device is acceptable to the public water system to which it will be connected; and
 - (2) Any other applicable backflow prevention and cross-connection requirements of this chapter are met.

POLICY ON THE USE OF ANTIFREEZE IN A CONSUMERS WATER SYSTEM

The following information is provided as general information and to assist in the protection of a public water supply when an antifreeze solution is required to prevent freezing of the consumer's water system;

1. Antifreeze solutions can consist of either a pure glycerin solution, provided the glycerin is of 96.5% United States pharmacopoeia grade, or of food grade propylene glycol base.
2. Propylene glycol dipotassium phosphate is acceptable for use as an antifreeze solution. The Propylene glycol is the antifreeze component; the dipotassium phosphate functions as a bacterial inhibitor.
3. The antifreeze manufactures must furnish proof to the water purveyor that the product is of pharmaceutical grade or of food grade quality and that the product contains no harmful or toxic substances.

4. Antifreeze solutions can consist of either a pure glycerin solution, provided the glycerin is of 96.5% United States pharmacopoeia grade, or of food grade propylene glycol base.
5. Propylene glycol dipotassium phosphate is acceptable for use as an antifreeze solution. The Propylene glycol is the antifreeze component; the dipotassium phosphate functions as a bacterial inhibitor.

INFORMATIONAL UPDATES

THERMAL EXPANSION, DOC

The Ohio Plumbing Code, Ohio Administrative Code, Chapter 4101 2- 58-12 (E) specifies that:

“when a backflow prevention device, check valve, or pressure reducing device is installed in the cold water system to a water heater an expansion tank or other device designed in accordance with accepted engineering practices for thermal expansion control shall be installed. The temperature and pressure relief valve installed on the water heater shall not be used as the primary thermal expansion control device.”

Thermal expansion of heated water may occur wherever potable water is heated in a closed system. An expansion tank is designed to absorb thermal expansion that may be created by the hot water heater, if the water user’s potable system is closed with a containment principle backflow prevention assembly, a check valve or a pressure reducing valve.

The expansion tank must be installed in the cold water service piping on the supply side of the hot water heater.

- You should notify the local plumbing officials if your backflow prevention requirement will create a closed system, since the installation of a thermal expansion tank falls under their authority.

WATER-OPERATED BACKUP SUMP PUMPS

Water-Operated backup sump pumps pose a potential backflow hazard by way of the cross connection between the drinking water supply and the contaminated water in the sump pit; Therefore RLCWA customers are prohibited from using such devices.

SUMMARY

The successful promotion of a backflow prevention and cross-connection control program is dependent upon legal authority to conduct such a program.

The Ohio Revised Code represents the primary base of authority for the two Ohio agencies, the Ohio EPA and the Ohio Department of Commerce, that are charged with the protection of the water supply.

The Ohio Administrative Code and the Ohio Building Code present the specific regulations by which the charge is satisfied.

Local governing authorities should enact local ordinances and regulations, which parallel and augment state laws, to provide a united program of backflow prevention.

The supplier of water should adopt an ordinance and/or regulations for cross-connection control that will:

1. Prohibit cross-connection to private, auxiliary or emergency water supplies unless approved by the supplier of water and the Ohio EPA.
2. Provide for a program of inspections for cross-connection hazards.
3. Require installation of backflow prevention devices where, in the opinion of the supplier of water or otherwise required, such devices are necessary.
4. Provide penalties for violation.

LIST OF APPROVED BACKFLOW PREVENTION DEVICES

A. General

In accordance with 3745-95-06 (A), any backflow prevention device required by Rules 3745-95-04 and 3745-95-05 shall be of a model or construction approved by the supplier of water and Director of the Ohio EPA.

B. Device Approval List

The list of State approved devices is subject to change as new units are designed, tested and approved; therefore, a list of approved units may be obtained by writing to the following:

Cross-connection Control
Division of Drinking and Ground Waters
Ohio EPA
P.O. Box 1049
Columbus, Ohio 43266-0149