North Plains Water Dept
PWS #41-00576

Chapter 3.20
BACK FLOW AND CROSS-CONNECTIONS

3.20.010 Purpose.

The purpose of this Chapter is:

(1) To protect the public potable water supply of North Plains from the possibility of contamination or pollution by isolating within the customer's internal distribution system(s) or the customer's private water system(s) such contaminants or pollutants which could back flow into the public water systems; and,

(2) To promote the elimination or control of existing cross connections, actual or potential, between the customer's in-plant potable water system(s) and non-potable water system(s), plumbing fixtures and industrial piping systems; and,

(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 all potable water systems.

3.20.020 Responsibility.

The Public Works Director or designee shall be responsible for the protection of the public potable water distribution system from contamination or pollution due to the back flow of contaminants or pollutants through the water service connection. If, in the judgement of said Superintendent, an approved back flow prevention assembly is required at the customer's water service connection; or, within the customer's private water system, for the safety of the water system, the Superintendent shall give notice in writing to the customer to install such an approved back flow prevention assembly(s) at a specific location(s) on the customer's premises.

The customer shall immediately install such an approved back flow prevention assembly(s) at the customer's own expense; and, failure, refusal or inability on the part of the customer to install, have tested, and maintained said assembly(s), shall constitute grounds for discontinuing water service to the premises until such requirements have been satisfactorily met.

(1) Public Works Director.

The Superintendent in charge of the Public Works Department of North Plains who is invested with the authority and responsibility for the implementation of an effective cross-connection control program and for the enforcement of the provisions of this chapter.

(2) Air Gap.

A physical separation between the free flowing discharge end of a potable water supply pipeline and an open or non-pressure receiving vessel. An "approved air gap" shall be at least double the diameter of the supply pipe measured vertically above the overflow rim of the vessel--in no case less than 1 inch (2.54 cm.).

(3) Approved.

As herein used in reference to a water supply shall mean a water supply that has been approved by the Oregon State Health Division. As herein used in reference to an air gap, a double check valve assembly, a reduced pressure principle back flow prevention assembly or other back flow prevention assemblies or methods shall mean an approval by the administrative authority having jurisdiction.

(4) Auxiliary Water Supply.

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

(5) Back flow.

The undesirable reversal of flow of water or mixtures of water and other liquids, gases or other substances into the distribution pipes of the potable supply of water from any source or sources. See terms back siphonage and back pressure.

(6) Back pressure.

Any elevation of pressure in the downstream piping system (by pump, elevation of piping, or steam and/or air pressure) above the supply pressure at the point of

consideration which would cause, or tend to cause, a reversal of the normal direction of flow.

(7) Back siphonage.

A form of back flow due to a reduction in system pressure which causes a sub-atmospheric pressure to exist at a site in the water system.

(8) Back flow Preventer.

An assembly or means designed to prevent back flow.

(9) Contamination.

An impairment of the quality of the water which creates an actual hazard to the public health through poisoning or through the spread of disease by sewage, industrial fluid, waste, etc.

(10) Cross-Connection.

Any unprotected actual or potential connection or structural arrangement between a public or a customer's potable water system and any other source or system through which it is possible to introduce into any part of the potable system any used water, industrial fluid, gas, or substance other than the intended potable water with which the system is supplied. Bypass arrangements, jumper connections, removable sections, swivel or change-over devices and other temporary or permanent devices through which or because of which back flow can or may occur are considered to be cross-connections.

(a) The term "direct cross-connection" shall mean a cross-connection which is subject to both back siphonage and back pressure.

(b) The term "indirect cross-connection" shall mean a cross-connection which is subject to back siphonage only.

(11) Cross-Connections-Controlled.

A connection between a potable water system and a non-potable water system with an approved back flow prevention assembly properly installed and maintained so that it will continuously afford the protection commensurate with the degree of hazard.

(12) Cross-Connection Control by Containment.

The appropriate type or method of back flow protection at the service connection, commensurate with the degree of hazard of the customer's potable water system.

(13) Double Check Valve Back Flow Prevention Assembly.

An assembly composed of two independently acting, approved check valves, including tightly closing resilient seated shutoff valves attached at each end of the assembly and fitted with properly located resilient seated test cocks. (See Specifications, Section 3.20.100 for additional details.) This assembly shall only be used to protect against a non-health hazard (i.e., pollutant).

(14) Hazard, Degree of.

Either a pollutional (non-health) or contamination (health) hazard, which is derived from the evaluation of conditions within a system.

(a) Hazard--Health.

An actual or potential threat of contamination of a physical or toxic nature to the public potable water system or the customer's potable water system that would be a danger to health.

(b) Hazard--Plumbing.

An internal or plumbing type cross-connection in a customer's potable water system that may be either a pollutional or a contamination type hazard. This included but is not limited to cross connections to toilets, sinks, lavatories, wash trays and lawn sprinkling systems. Plumbing type cross-connections can be located in many types of structures including homes, apartment houses, hotels and commercial or industrial establishments. Such a connection, if permitted to exist, must be properly protected by an appropriate type of back flow prevention assembly.

(c) Hazard--Pollutional.

An actual or potential threat to the physical properties of the water system or the potability of the public or the customer's potable water system but which would not constitute a health or system hazard, as defined. The maximum degree or intensity of pollution to which the potable water system could be degraded under this definition would cause a nuisance or be aesthetically objectionable or could cause minor damage to the system or its appurtenances.

(d) Hazard--System.

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

(15) Industrial Fluids.

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

(16) Pollution.

An impairment of the quality of the water to a degree which does not create a hazard to the public health but which does adversely and unreasonably affect the aesthetic qualities of such waters for domestic use.

(17) Reduced Pressure Principle Back Flow Prevention Assembly.

An assembly containing two independently acting approved check valves together with a hydraulically operating, mechanically independent pressure differential relief valve located between the check valves and at the same time below the first check valve. The unit shall include properly located resilient seated test cocks and tightly closing resilient seated shutoff valves at each end of the assembly. This assembly is designed to protect against a non-health (i.e., pollutant) or a health hazard (i.e., contaminant). This assembly shall not be used for back flow protection of sewage or reclaimed water.

(18) Water--Potable.

Any public potable water supply which has been investigated and approved by the health agency and is safe for human consumption. The system must be operating

under a valid health permit. In determining what constitutes an approved water supply, the health agency has final judgment as to its safety and potability.

(19) Water--Non-potable.

A water supply which has not been approved for human consumption by the health agency having jurisdiction.

(20) Water--Service Connection.

The terminal end of a service connection from the public potable water system, (i.e., where the water purveyor may lose jurisdiction and sanitary control of the water at its point of delivery to the customer's water system). If a water meter is installed at the end of the service connection, then the service connection shall mean the downstream end of the water meter.

(21) Water--Used.

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

3.20.030 Policy

(1) The water system shall be considered as made up of two parts: The City's System and the Customer's System.

(2) The City's System shall consist of the source facilities and the distribution system; and shall include all those facilities of the water system under the complete control of the City, up to the point where the Customer's System begins.

(3) The source shall include all components of the facilities utilized in the production, treatment, storage, and delivery of water to the distribution system.

(4) The distribution system shall include the network of conduits used for the delivery of water from the source to the Customer's System.

(5) The Customer's System shall include those parts of the facilities beyond the termination of the City's distribution system which are utilized in conveying potable water to points of use.

3.20.040 Requirements.

(1) No water service connection to any premise shall be installed or maintained by the City unless the water supply is protected as required by State laws and regulations and this Code.

(2) The Customer's System should be open for inspection at all reasonable times to authorized representatives of the City to determine whether unprotected cross-connections or other structural or sanitary hazards, including violations of these regulations exist. When such a condition becomes known, the Public Works Director shall deny or immediately discontinue service to the premises by providing for a physical break in the service line until the customer has corrected the condition(s) in conformance with the State statutes relating to plumbing and water supplies and the regulations adopted pursuant thereto.

(3) An approved back flow prevention assembly shall also be installed on each service line to a customer's water system at or near the property line or immediately inside the building being served; but, in all cases, before the first branch line leading off the service line wherever the following conditions exist:

(a) In the case of premises having an auxiliary water supply which is not or may not be of safe bacteriological or chemical quality and which is not acceptable as an additional source by the Public Works Director, the public water system shall be protected against back flow from the premises by installing an approved back flow prevention assembly in the service line commensurate with the degree of hazard.

(b) In the case of premises on which any industrial fluids or any other objectionable substance is handled in such a fashion as to create an actual or potential hazard to the public water system, the public system shall be protected against back flow from the premises by installing an approved back flow prevention assembly in the service line commensurate with the degree of hazard. This shall include the handling of process waters and waters origination from the water purveyor's system which have been subject to deterioration in quality.

(c) In the case of premises having (1) internal cross connections that cannot be permanently corrected or protected against, or (2) intricate plumbing and piping arrangements or where entry to all portions of the premises is not readily accessible for inspection purposes, making it impracticable or impossible to ascertain whether or not dangerous cross-connections exist, the public water system shall be protected against back flow from the premises by installing an approved back flow prevention assembly in the service line.

(4) The type of protective assembly required by this chapter shall depend upon the degree of hazard which exists as follows:

(a) In the case of any premise where there is auxiliary water supply as stated in this chapter and it is not subject to any of the following rules, the public water system shall be protected by an approved air gap or an approved reduced pressure principle back flow prevention assembly.

(b) In the case of any premise where there is water or substance that would be objectionable but not hazardous to health, if introduced into the public water system, the public water system shall be protected by an approved double check valve back flow prevention assembly.

(c) In the case of any premise where there is any material dangerous to health which is handled in such a fashion as to create an actual or potential hazard to the public water system, the public water system shall be protected by as approved air gap or an approved reduced pressure principle back flow prevention assembly. Examples of premises where these conditions will exist include sewage treatment plants, sewage pumping stations, chemical manufacturing plants, hospitals, mortuaries, and plating plants.

(d) In the case of any premise where there are unprotected cross connections, either actual or potential, the public water system shall be protected by an approved air gap or an approved reduced pressure principle back flow prevention assembly at the service connection.

(e) In the case of any premise where, because of security requirements or other prohibitions or restrictions, it is impossible or impractical to make a complete in-plant cross-connection survey, the public water system shall be protected against back flow from the premises by either an approved air gap or an approved reduced pressure principle back flow prevention assembly on each service to the premise.

(5) Any back flow prevention assembly required herein shall be a make, model and size approved by the Public Works Director and the State Health Division. The term "Approved Back Flow Prevention Assembly" shall mean an assembly that has been manufactured in full conformance with the standards established by the American Water Works Association entitled: A.W.W.A.

(a) AWWA/ANSI C5 10-92' Standard for Double Check Valve Back Flow Prevention Assemblies;

(b) AWWA/ANSI C5 11-92' Standard for Reduced Pressure Principle Back Flow Prevention Assemblies;

(c) and, have met completely the laboratory and field performance specifications of the Foundation for Cross-Connection Control and Hydraulic Research of the University of Southern California (USCFCCCHR) established in:

(d) Specifications of Back Flow Prevention Assemblies - Section 10 of the most current edition of the Manual of Cross Connection Control.

(e) Said AWWA and USC FCCHR standards and specifications have been adopted by the State of Oregon Health Division and are hereby advised by the City of North Plains. Final approval shall be evidenced by a "Certificate of Compliance" for the said AWWA standards; or "Certificate of Approval" for the said USC FCCHR Specifications; issued by an approved testing laboratory.

(f) The following testing laboratory has been qualified by the Public Works Director and the State Health Division to test and approve back flow prevention assemblies:

(g) Foundation for Cross-Connection Control and Hydraulic Research University Of Southern California KAP-200 University Park MC-2531 Los Angeles, California 90089-2531

(h) Testing laboratories other than the laboratory listed above will be added to an approved list as they are qualified by the Public Works Director and State Health Division.

(i) Back flow preventers which may be subjected to back pressure or back siphonage that have been fully tested and have been granted a Certificate of Approval by said qualified laboratory and are listed on the laboratory's current list of approved back flow prevention assemblies may be used without further test or qualification.

(6) It shall be the duty of the customer at any premise where back flow prevention assemblies are installed to have a field test performed by a certified back flow prevention assembly tester upon installation and at least once per year. In those instances where the Public Works Director deems the hazard to be great enough, field tests may be required at more frequent intervals.

These tests shall be a the expense of the water user and shall be performed by the assembly manufacturer's personnel, the water department personnel, or by a certified tester approved by the State Health Division. It shall be the duty of the Public Works Director to see that these tests are made in a timely manner. The customer shall notify the Public Works Director in advance when the tests are to be undertaken so that an official representative may witness the field tests if so desired. These assemblies shall be repaired, overhauled, or replaced at the

expense of the customer whenever said assemblies are found to be defective. Records of such tests, repairs, and overhaul shall be kept and made available to the Public Works Director.

(7) All presently installed back flow prevention assemblies which do not meet the requirements of this chapter but were approved devices for the purposes described herein at the time of installation and which have been properly maintained, shall, except for the testing and maintenance requirements by this chapter, be excluded from the requirements of these rules so long as the Public Works Director is assured that they will satisfactorily protect the water purveyor's system.

Whenever the existing device is moved from the present location or requires more than minimum maintenance or when the Public Works Director finds that the maintenance constitutes a hazard to health, the unit shall be replaced by an approved back flow prevention assembly meeting the requirements of this code.

(8) The Public Works Director is authorized to make all necessary and reasonable rules and policies with respect to the enforcement of this chapter. All such rules and policies shall be consistent with the provisions of this chapter and shall be effective 30 days after being passed by a vote of the City Council.

(ORD. 235 July, 25, 1994)