Article 4. Backflow and Cross Connections Control

16.4.1. Definitions.

The following words and phrases when used in this Article have the meanings ascribed to them in this subsection except when the context otherwise requires:

A. Agency: the Utility Department of the City of Bel Aire, Kansas which is invested with the authority and responsibility for the enforcement of this Article.

B. Airgap: 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.

C. Approved: accepted by the Agency as meeting an applicable specification stated or cited in this Article, or as the Agency determines to be suitable for the proposed use.

D. Auxiliary Supply: any water source or system other than the municipal water system supply that may be available in the building or premises.

E. Backflow: the flow of water or other liquids, mixtures, or substances into the distributing pipes of a potable supply of water from any source or sources other than its intended source. Backsiphonage is one type of backflow.

F. Backflow preventer: a device or other means used to prevent backflow.

G. Backsiphonage: backflow resulting from negative pressures in the distributing pipes of a potable water supply.

H. Barometric loop: a loop of pipe rising at least 35 feet, at its topmost point, above the highest fixture it supplies.

I. Check valve: a self-closing device which is designed to permit the flow of fluids in one direction and to close if there is a reversal of flow.

J. City Engineer: the individual employed or retained by the City to serve in the capacity of City Engineer or such Engineer's designee.

K. Community Development Director: the individual employed or retained by the City to serve in the capacity of the Community Development Director, or such Director's designee.

K. Contamination: See Pollution.

L. Cross-connection: any physical connection between a Potable Water supply and any waste pipe, soil pipe, sewer, drain, or any unapproved source or system. Furthermore, it is any Potable Water supply outlet which is submerged or can be submerged in waste water and/or any other source of Contamination, therefore subject to potential Backflow and Backsiphonage.

M. Drain: any pipe that carries waste water or waterborne wastes in a building drainage system into the municipal sewer system or to the building's exterior environment.

N. Fixture: any installed plumbing receptacle, device, or appliance supplied with water or that receive or discharge liquids or liquid-borne wastes to or from any Drain.

O. Flood-level rim: the edge of the receptacle from which water overflows.

P. Health Hazard: any condition or device, in the municipal water system supply or practice engaged in for operation of that system which creates, or, in the reasonable judgment of the City Engineer, may create a danger to the health and safety of the account holder and any water consumer. An example of a health hazard is a structural defect in the municipal water system, whether of location, design, or construction, that regularly or occasionally may prevent satisfactory purification of the municipal water system supply or cause it to be polluted.

Q. Hydro-pneumatic tank: a pressure vessel in which air pressure acts upon the surface of the water contained within the vessel, pressurizing the water distribution piping connected to the vessel.

R. Inlet: the open end of the water supply pipe through which water is discharged into the Fixture.

S. Non-potable Water: Water that is not safe for human consumption or that is of questionable potability.

T. Plumbing Hazard: any arrangement of a building's Plumbing System whereby a cross-connection is created.

U. Plumbing System: the municipal water system supply line and the distribution pipes, Fixtures, and traps; soil, waste, and vent pipes; building Drains and building drainage systems including their respective connections and devices within the property lines of the account holder's premises; and any attached water-treating or water-using equipment within that premises. The Plumbing System of a building includes separate Potable Water supply, sewer and stormwater drainage systems.

V. Pollution: the presence of any foreign substance (organic, inorganic, radiological, or biological) in water or in any medium surrounding or supporting the Plumbing System that tends to degrade water quality so as to constitute a Health Hazard or impair the usefulness of the water.

W. Potable Water: Water free from impurities in amounts sufficient to cause disease or harmful physiological effects. The bacteriological and chemical quality of Potable Water shall conform to the requirements of the Federal Drinking Water Standards and to the regulations of the City Engineer.

X. Reduced Pressure Principal Backflow Preventer: an assembly of differential valves and check valves including an automatically opened spillage port to the atmosphere designed to prevent backflow.

Y. Surge Tank: the receiving, non-pressurized vessel forming part of the airgap separation between the municipal water supply system and an auxiliary water supply.

Z. Vacuum: any pressure less than that exerted by the atmosphere.

AA. Vacuum breaker, non-pressure type designed so as not to be subjected to static line pressure.

BB. Vacuum breaker, pressure type: designed to operate under conditions of static line pressure.

16.4.2. Responsibilities of the City Engineer.

The City Engineer, shall inspect the Plumbing System in every building or premises in this City as frequently as may be necessary to ensure that such Plumbing System has been installed in such a manner as to prevent the possibility of Pollution of the municipal water system of the City.

The City Engineer shall notify in writing the account holder, and if known to be a separate person or entity, the owner or authorized agent of the owner of any such building or premises to correct, within a reasonable time set by the City Engineer, any defect in the Plumbing System installed or existing contrary to or in violation of the Code of this City.

16.4.3 Responsibilities of the Community Development Director.

The Community Development Director shall inspect the Plumbing System installed in every newly constructed residential building or premise in the City prior to the issuance of a certificate of occupancy to ensure that such Plumbing System incorporates Backflow Devices appropriate for the intended applications as would be necessary to prevent the possibility of Pollution of the municipal water system of the City. The Community Development Director shall withhold a certificate of occupancy on any building or premise until this standard is met.

16.4.4. Inspection.

The City Engineer shall have the right to enter any property and any building during business hours or other reasonable hours to inspect the Plumbing Systems installed in such building or premises. Before entering any residence the City Engineer shall obtain consent to such inspection from a person of suitable age and discretion present in the residence or in control of the residence.

16.4.5. General requirements.

A. The Potable Water supply component of a building's Plumbing System shall be designed, installed, and maintained in such manner as to prevent Contamination from Non-potable Water and other liquids, solids, or gases introduced into the Potable Water supply through one or more cross-connections.

B. Cross-connections between Potable Water systems and the building sewage and stormwater drainage systems or other systems or equipment containing water or other substances of unknown or questionable safety are prohibited except when and where, as approved by the City Engineer, suitable protective devices such as the Reduced Pressure Zone Backflow Preventer, or an alternative approved Backflow Prevention Device, are installed, tested, and maintained to insure proper operation on a continuing basis.

C. Interconnection between two or more public water supplies shall be permitted only with the approval of the City Engineer.

D. Cross-connections between an individual water supply and a potable public supply shall not be made unless specifically approved by the City Engineer.

E. Potable Water connections to boilers shall be made through an Airgap or provided with an approved Backflow Preventer.

F. Connection to the Potable Water supply component of a building' System for the following Fixtures is prohibited unless protected against Backflow in accordance with the Plumbing Code of this City, or as set out herein.

1. Bidets.

2. Operating, dissecting, embalming, and mortuary tables or similar equipment; in such installation the hose used for water supply shall terminate at least twelve (12) inches away from every point of the table or attachments.

3. Pumps for non-potable water, chemicals, or other substances; priming connections may be made only through an airgap.

4. Building drainage, sewer, or vent systems.

5. Refrigerator condensers or cooling jackets

6. Any other Fixture reasonably determined by the City Engineer to be of similar hazard.

Except where Potable Water provided for a refrigerator condenser or cooling jacket is entirely outside the piping or tank containing a toxic refrigerant, the inlet connection shall be provided with an approved check valve. Also adjacent to and at the outlet side of the check valve, an approved pressure relief valve set to relieve at 5 psi above the maximum water pressure at the point of installation shall be provided if the refrigeration units contain more than 20 pounds of refrigerants.

G. A Potable Water system shall be protected against Backflow and Backsiphonage by providing and maintaining at each outlet an airgap between the potable water outlet and the flood level rim of the fixture it supplies or between the outlet and any other source or contamination, or backflow preventer. The minimum required airgap shall be measured vertically from the lowest end of the fixture or receptacle into a potable water outlet to the flood rim or line which it discharges. The minimum required airgap shall be twice the effective opening of a potable water outlet unless the outlet is a distance less than three times the effective opening away from a wall or similar vertical surface, in which cases the minimum required airgap shall be three times the effective opening of the outlet. The air gap shall be the greater of this standard or any provided by the Plumbing Code.

H. Before any device for the prevention of Backflow or Backsiphonage is installed, it shall have first been certified by a recognized testing laboratory acceptable to the City Engineer. Devices installed in a Potable Water supply component of a building's Plumbing System for protection against Backflow shall be maintained in good working condition by the person or persons responsible for the maintenance of the system.

Vacuum breakers shall be installed with the critical level at least six (6) inches above the flood level rim of the fixture they serve and on the discharge side of the last control valve to the fixture or at such greater level as set out in the Plumbing Code. For closed equipment or vessels such as pressure sterilizers the top of the vessel shall be treated as the flood level rim but a check valve shall be installed on the discharge side of the vacuum breaker.

A reduced pressure principal type backflow preventer may be installed subject to full static pressure.

Where a Potable Water outlet terminates below the rim of a tank or vat and the tank or vat has an overflow of a diameter not less than provided by the Plumbing Code, the overflow pipe shall be provided with an airgap as close to the tank as possible.

The Potable Water outlet to the tank or vat shall terminate a distance not less than 1.5 times the height to which water can rise in the tank above the top of the ever flow. This level shall be established at the maximum flow rate of the supply to the tank or vat and with all outlets except the airgap overflow outlet closed, or at such greater height as established in the Plumbing Code.

I. Approved devices to protect against Backflow and Backsiphonage shall be installed at all Fixtures where Backflow and/or Backsiphonage may occur and where a minimum airgap as set by the Plumbing Code cannot be provided between the water outlet to the Fixture's flood-level rim.

J. Where a water connection is not subject to backpressure, a vacuum breaker shall be installed on the discharge side of the last valve on the line serving the fixture or equipment. Conditions requiring protective devices of this kind and method of installation are as provided by the Plumbing Code.

K. Where a Potable Water connection is made to a line, fixture, tank, vat, pump, or other equipment with a hazard of backflow or backsiphonage where the water connection is subject to back pressure, and an airgap cannot be installed, the City Engineer may require the use of an approved reduced pressure principal backflow preventer.

L. For Potable Water supply connections for which an actual or potential Backsiphonage hazard exists a Barometric Loop may be installed in lieu of devices specified by the Plumbing Code. Barometric Loops shall precede the point of connection.

M. The City Engineer may authorize installation of approved, double check-double gate valve assemblies with test cocks as protective devices against Backflow in connection between a Potable Water system and ether fluid systems which present no significant Health Hazard in the judgment of the City Engineer.

N. When a booster pump is used on a water pressure booster system and the possibility exists that a positive pressure of 10 psi or less may occur on the suction side of the pump, there shall be installed a low-pressure cutoff on the booster pump to prevent the creation of a vacuum or negative pressure on the suction side of the pump, thus cutting off water to ether outlets.

16.4.6. Maintenance requirements.

It shall be the responsibility of the account holder to maintain all Backflow Preventers and Vacuum Breakers within the building or on the premises in good working order and to ensure no one makes any piping or other arrangements for the purpose of bypassing or removing Backflow Preventers.

Backflow Preventers shall be inspected annually, any necessary overhaul or repairs made, and a backflow device test report filed with the City of Bel Aire, Kansas. The inspection and testing shall be by a plumber or tester/repair technician certified by the Sedgwick County Health Department and or the City of Bel Aire, and licensed in Bel Aire. Testing procedures shall be in accordance with the manufacturer's instructions and approved by the City Engineer. Backflow prevention devices shall be rebuilt or replaced

upon testing failure or the City Inspector's determination that the system poses a significant/imminent risk to public health.

The annual inspection requirement for Backflow systems not in use may be waived if and only if the subject water connection point is no longer being utilized, has been completely disconnected from the water system and has been capped off. These abandoned systems are required to be reported to the City for inspection by the City Engineer and shall be recorded. Upon return to use, the account holder shall be responsible for installing a backflow prevention device and resuming testing/inspection in accordance with this Code.

16.4.7. Disconnection of water service/prosecution.

Upon failure of the account holder to file the Backflow inspection report when due or to have the defective backflow prevention device corrected within the specified time, the City Engineer may, if in the Engineer's judgment a Health Hazard exists, cause the water service to the building or premises to be disconnected. Additionally, or in lieu thereof, the Engineer may cause a citation to be issued to such account holder for violation of the City's Nuisance Code. All prosecutions for violation of this Article shall be to the City's Municipal Court.