CITY OF PAPILLION
CROSS-CONNECTION CONTROL PROGRAM
TO PROTECT THE PUBLIC WATER SYSTEM

THE POLICY OF THE CITY OF PAPILLION PUBLIC WATER SYSTEM FOR CROSS-CONNECTION CONTROL IS AS FOLLOWS:

I. SECTION 1: PURPOSE

The purpose of this Policy is (1) to protect the public water supply against actual or potential contamination that may occur within a water user's premises because of some undiscovered or unauthorized cross-connection on the premises; (2) to eliminate existing connections between drinking water systems and other sources of water that are not approved as safe and potable for human consumption; (3) to eliminate cross-connections between drinking water systems and sources of contamination; (4) to prevent the making of cross-connections in the future, (5) and to conduct on ongoing cross-connection control program in accordance with the Nebraska Department of Health Regulations, Title 179, Chapter 2.

II. SECTION 2: DEFINITIONS

A. Air-Gap: a physical break between a supply pipe and a receiving vessel. An "approved air gap" shall be at least double the diameter of the supply pipe measured vertically above the top rim of the vessel, in no case less than one-inch.

B. Approved Backflow Prevention Device: a backflow prevention device that has been manufactured in full conformance of standards established by the American Water Works Association and by the American Society of Sanitary Engineers, and tested by the Foundation for Cross Connection Control and Hydraulic Research, University of California, Los Angeles, California.

C. Approved Water Supply: any water supply whose potability is regulated by a State or local health agency.

D. Auxiliary Supply: any water supply on or available to the premises other than the approved water supply.

E. AWWA Standards: the official standards developed and approved by the American Water Works District (AWWA).

F. Backflow: an undesirable reversal of flow of water or mixtures of water and other liquids gases or others substances in the distribution pipes of the potable supply of water from any source or sources. Backsiphonage is one cause of backflow. Back pressure is the other cause.

G. Backpressure: 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.

H. Backsiphonage: a form of backflow due to a reduction in system pressure which causes a sub atmospheric pressure to exist at a site in the water system.

I. City: the Public Works Director of the City of Papillion or any authorized representative.

J. Contamination: an impairment of the quality of the water by sewage, or waste to a degree which could cause an actual hazard to the public health through poisoning or through spread of disease by exposure.

K. Cross-Connection: any unprotected actual or potential connection between a potable water system used to supply water for drinking purposes and any source or system containing unapproved water or a substance that is not or cannot be approved as safe, wholesome, and potable. By-pass arrangements, jumper connections, removable sections, swivel or changeover devices, or other devices through which backflow could occur, shall be considered cross-connections.

L. Degree of Hazard: a term derived from an evaluation of the potential risk to health and the adverse effects upon the potable water system.

M. Double Check Valve Assembly: an assembly of at least two independently acting check valves including tightly closing shut-off valves on each side of the check valve assembly and test cocks available for testing the water tightness of each check valve.

N. Health Agency: the Nebraska Health and Human Services Regulation and Licensure.

O. Premises: any and all areas on a water user's property which are served by the public water system.

P. Pressure Vacuum Breaker: an assembly containing an independently operating internally loaded check valve and an independently operating

loaded air inlet valve located on the discharge side of the check valve. The assembly is to be equipped with properly located resilient seated test cocks and tightly closing resilient seated shut-off valves attached at each end of the assembly.

Q. Public Water System: a system for the provision of piped water to the public for human consumption that has five or more service connections or regularly serves an average of 25 individuals daily at least 60 days out of the year.

R. Reduced Pressure Principle Backflow Prevention Device: a device incorporating two or more check valves and an automatically operating differential relief valve located between the two checks, a tightly closing shut-off valve on each side of the check valve assembly, and equipped with necessary test cocks for testing.

S. Service Connection: refers to the point of connection of a user's piping to the water supplier's facilities.

T. Testers: Any backflow testers doing work in the City of Papillion, shall be certified by the State of Nebraska HHS L & R as a Grade VI Water Operator, and shall provide the City of Papillion with his/her certification number on an annual basis.

U. Water User: any person obtaining water from an approved water supply system.

III. SECTION 3: SURVEYS AND INVESTIGATIONS

A. The City of Papillion shall require its consumers by survey to assess and report potential backflow hazards on their premises no less often than every five years and to take any steps necessary for protection of public health and safe as reasonably requested by the City.

B. The consumer shall furnish the City with the completed survey, information on water use practices within the consumer's premises. If the consumer within a reasonable time refuses to submit the proper information or to cooperate in obtaining the proper information, the City shall treat the premises as if no appropriate cross-connection survey has been completed. In such event, the consumer shall be required to install an approved backflow prevention device within the time stipulated by the City.

C. The City shall have the right to enter a premises served by the public water supply system at all reasonable times for the purpose of making surveys and investigations of water use practices within the premises.

In order to inspect such premises, the City shall give notice setting forth a proposed date and time to the consumer at least ten (10) days in advance. If the consumer cannot make the premises available for inspection at the proposed date and time, the consumer shall contact the City and arrange for another date and time for the inspection. If the City and the consumer cannot agree on a date and time, then the City shall treat the premises as if no appropriate cross-connection survey has been completed. In such event the consumer shall be required to install an approved backflow prevention device as required in this Section, or water service shall be discontinued by the City.

D. CUSTOMER NOTIFICATION: DEVICE INSTALLATION

The City shall notify the water user of the survey findings, listing the corrective actions to be taken if any are required by means of a cover letter, a test form, an installation standards information package, and a list of certified testers.

1. A period of 90 days will be given to complete all corrective actions required, including installation of backflow prevention devices.

2. A second notice shall be sent to each water user 20 days before the due date with a cover letter and another test form as a courtesy reminder of the due date.

3. A third notice shall be sent 5 days before the due date warning of the consequences of non-compliance.

4. A fourth notice informing the water user of non-compliance shall be hand delivered to the water user after water service is terminated.

E. CUSTOMER NOTIFICATION: DEVICE TESTING

The City shall notify the water user of the required annual device testing by means of a cover letter and a test form.

1. A period of 60 days will be given to complete this requirement. A certified tester must complete this test. The water user is responsible to submit this completed test within the time allowed.

2. A second notice will be sent to each water user 20 days before the due date with a cover letter and another test form as a courtesy reminder of the due date.

3. A third notice will be sent 5 days before the due date warning of the consequences of non-compliance.

4. A fourth notice informing the water user of non-compliance will be hand delivered to the water user after water service is terminated. This section will be determined at the examination of the Public Works Director.

IV. SECTION 4: CROSS CONNECTION PROTECTION REQUIREMENTS

A. CROSS-CONNECTIONS: FORBIDDEN

No person shall install or maintain a water service connection containing cross-connections to a public water supply system or a consumer's potable water supply system unless such cross-connections are abated or controlled in accordance with this Section, and as required by the laws and the State of Nebraska and the regulations of the Nebraska Department of Health.

B. HOSE BIB VACUUM BREAKERS: WHERE REQUIRED

All premises served by the public water supply shall have installed approved hose bib (connection) vacuum breakers on all fixtures that are threaded to accept standard garden hose fittings. These include all outside sill cocks, utility sink faucets, and fixtures that are determined to be a potential hazard by the City. Washing machine fixtures and hot water heater drain lines are exempt.

C. BACKFLOW PREVENTION DEVICES: INSTALLED AT CONSUMER'S EXPENSE

Any approved backflow prevention device required by the City shall be installed at a location and in a manner approved by the City. The consumer, at his sole expense, shall obtain and install said approved backflow prevention device(s) within 30 days of notice and as directed by the City.

D. BACKFLOW PREVENTION DEVICES: CONDITIONS WHERE REQUIRED

1. Where a substance is handled in such a fashion as to create an actual or potential hazard to a public water supply system. This shall include premises having sources or systems containing process fluids or waters originating from a public water supply system which are no longer under the sanitary control of the public water supply.

2. Where internal cross-connections are not correctable in the judgment of the City, or there exists intricate plumbing arrangements which make it impracticable to determine whether or not cross-connections exist.

3. Where cross-connections have been established or re-established within the preceding three years.

4. Where there is more than one customer service connection which could constitute a potential cross-connection.

E. BACKFLOW PREVENTION DEVICES: FACILITIES WHERE REQUIRED

An approved backflow prevention device shall be installed on each service line to a customer's water supply system serving the following types of facilities unless the City determines that no health, pollution, or system hazard to the public water supply system exists: (See Table 2)

1. Hospitals, mortuaries, dental clinics, nursing and convalescent homes, medical buildings;

2. Testing laboratories, film laboratories, film development facilities;

3. Sewage treatment plants, sewage pumping stations, or storm water pumping stations;

4. Food or beverage processing plants;

5. Chemical plants;

6. Metal de-greasing, plating industries, machine tool plants, dye and metal processing or productions;

7. Chemical and petroleum processing or storage plants;

8. Car washes, automobile servicing facilities;

9. Lawn irrigation systems and swimming pools;

10. Laundries and dry cleaners;

11. Packing houses;

12. Power plants;

13. Premises having radioactive materials such as laboratories, industries, hospitals;

14. Rendering plants;

15. Premises having water recirculation system as used for boilers or cooling systems and water softeners; softeners may be isolated with a double check valve assembly, or factory manufactured internal backflow protection, and approved by the City;

16. Veterinary establishments, kennels, feed yards, stables, rodeo grounds, stockyards, pet grooming salons;

17. Beauty salons, barbershops, massage parlors, health clubs;

18. Premises with bar carbonators directly connected to the water supply.

F. EXISTING BACKFLOW PREVENTION DEVICES

Existing backflow prevention devices approved by the City prior to the effective date of this rule and which are properly installed and maintained shall, except for inspection, testing, and maintenance requirements, be excluded from the requirements of this Section but only if the City determines that the devices will satisfactorily protect the public water supply system. One hundred percent closing shut-off ball valves or resilient seat gate valves for testing shall be provided on existing backflow prevention devices, if deemed necessary for proper testing by the City. If the City determines that an existing backflow prevention device requires replacement, it shall be replaced with an approved backflow prevention device.

G. STRAINERS: WHEN REQUIRED

The City may require a strainer of approved type and size to be installed in conjunction with required backflow prevention devices. The strainers shall be installed in such a manner as to preclude the fowling of the backflow prevention device(s) due to such circumstances as water main repairs, water main breaks, fires and periodic cleaning and flushing of mains.

H. BOOSTER PUMPS: LOW PRESSURE CUTOFF REQUIRED

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 cutoff designed to shut-off the booster pump when the pressure in the service line on the suction side of the pump drops to twenty (20) pounds per square inch gauge or less.

It shall be the duty of the water customer to maintain the low pressure cutoff device in proper working order.

I. YARD HYDRANTS: TO BE EQUIPPED WITH ATMOSPHERIC VACUUM BREAKER

Yard hydrants or hose bibs which would be used by the consumer to provide water to mix pesticides, fertilizer, or other chemicals, for direct use or aerial application to surface areas shall be equipped with an atmospheric vacuum breaker.

J. UNDERGROUND LAWN AND GARDEN SPRINKLERS: BACKFLOW PREVENTION DEVICE REQUIRED

All underground lawn and garden sprinklers shall be equipped with an approved backflow prevention device.

K. FIRE SUPPRESSION SYSTEMS

All proposed installations of fire suppression systems shall be reviewed by the State Fire Marshall to determine the appropriate type of backflow prevention device(s) required. As such they must not be installed, moved, removed, replaced, shut off or in any way altered unless in a strict compliance with the rules and regulations promulgated by the State Fire Marshall.

TABLE 1
Cross-Connection Rated by Degree of Hazard for Commonly Encountered Equipment, Fixtures, Facilities, and Their Use

(For a more complete list, refer to the Manual of Cross-Connection Control referenced in section 008.01E9a)

Direct or Indirect Potable Water Connections	Hazard	
	High	Low
I. Subject to Back Pressure		
Pumps, tanks & lines handling:		
Sewage	X	
Toxic substances	X	
Nontoxic substances		X
Water connection to steam and steam boiler		
1. Boiler or steam connection to toxic substances	X	
2. Boiler or steam connection to nontoxic substances (boiler blow off through air gap).		X
II. Not Subject to Back Pressure		
Sewer-connected water line (not subject to waste stoppages)	X	
Low inlets to receptacles containing:		
1. Toxic substances	X	

2. Nontoxic substances		X
Coils or jackets used as heat exchangers in compressors in lines carrying:		
1. Sewage	X	
2. Toxic substances	X	
3. Nontoxic substances		X
Flush valve toilets or urinals	X	
Toilet, urinal tanks and approved bathtubs		X
Bidets, sitz tanks, or spa, therapy and roman pools not otherwise isolated by design or backflow protectors	X	
Trough urinals		X
Valved outlets or fixtures with hose attachments that may constitute a cross-connection to:		
1. Toxic substances	X	
2. Nontoxic substances		X
Aspirators that may constitute a cross-connection to:		
1. Toxic substances	X	
2. Nontoxic substances		X
III. Other Equipment and Facilities Subject to a Variety of Backflow Conditions		
Lawn sprinkling systems that may constitute a cross-connection to:		
1. Toxic substances including lawn chemicals	X	
2. Nontoxic substances		X
Fire suppression systems employing toxic chemicals.	X	
Soft drink dispenser or bar carbonators	X	
Radiological, photographic, dental, medical, biological or chemical laboratories or facilities	X	
Swimming pools	X	
Tank truck loading station	X	

TABLE 2
Permitted Backflow Assemblies, Devices and Methods

Assembly, Device or Method1	Degree of Hazard				Installation2,3,4,6
	Low		High		
	Backsiphonage	Back Pressure	Backsiphonage	Back Pressure	
Air Gap	X	X	X	X	Shall be a minimum of 1 inch but not less than 2 times the diameter of the effective spout opening when not

					affected by side walls, and 8 times the diameter of the effective opening when affected by side walls. Side walls will be assumed to not affect air gaps when they are spaced horizontally a distance greater than 4 times the effective opening from the spout opening.
Atmospheric Vacuum Breaker	X		X		Upright position. No valves downstream. Minimum of 6 inches or listed distance above all downstream piping & flood level rim of receptor5
Double Check Valve Assembly	X	X			Horizontal unless otherwise listed. Requires 1 foot below & sufficient side & head room for testing & maintenance with a maximum of 5 feet above the ground, work floor, or a permanently installed working platform with stairs or ladder affixed. Does not discharge water.
Pressure Vacuum Breaker Assembly	X		X		Upright position. May have valves downstream. Minimum of 12 inches above all downstream piping & flood level rim of receptor. May discharge water.

Reduced Pressure Principle Backflow Prevention Assembly	X	X	X	X	Same as Double Check Valve Assembly above except may discharge water & wherever installed, provision for draining away at least 2 times the rated gallons per minute of the devise shall be made.

NOTE: Atmospheric Hose Bib Vacuum Breaker: non-removable or integral, frost-proof, self draining, not subject to continuous operating pressure (12 hours of 24 hours).

Cash-Acme Type VB 222 or Approved.

V. SECTION 5: WATER SERVICE TERMINATION

A. GENERAL

When the City encounters water uses that represent a clear and immediate hazard to the potable water supply that cannot be immediately abated, the City shall institute the procedure for discontinuing the District water service.

B. BASIS FOR TERMINATION

Conditions or water uses that create a basis for water service termination shall include, but are not limited to, the following items:

1. Refusal to install a required backflow prevention device;

2. Refusal to test a backflow prevention device;

3. Refusal to repair or replace a faulty backflow prevention device;

4. Direct or indirect connection between the public water system and a sewer line;

5. Unprotected direct or indirect connection between the public water system and a system or equipment containing contaminants;

6. Unprotected direct or indirect connection between the public water system and an auxiliary water system;

7. A situation which presents an immediate health hazard to the public water system.

C. WATER SERVICE TERMINATION PROCEDURES

1. For conditions 1, 2, 3, or 4, the City will terminate service to a customer's premise after 3 written notices have been sent specifying the corrective action needed and the time period in which it must be done. If no action is taken within the allowed time period, water service may be terminated.

2. For conditions 5, 6, or 7, the City will take the following steps:

a. Make reasonable effort to advise water user of intent to terminate water service;

b. Terminate water supply. The water service will remain inactive until correction of violations has been approved by the City.

D. RESTORATION OF WATER SERVICE: DEFECTS TO BE CORRECTED Where water service has been discontinued as provided in this Section, it shall not be restored until the consumer has corrected or eliminated such conditions or defects in conformance with this Section to the satisfaction of the City and paid a reconnect fee.

E. LIABILITY: CITY TO HOLD ALL CITY EMPLOYEES HARMLESS All City employees shall be relieved from personal liability for acts taken under this Section. The City shall hold harmless all City employees when acting in good faith and without malice, from all personal liability for any damage that may occur to any person or property as a result of any act required or authorized by this Section, or by reason of any act or omission of any City employee in the discharge of his duties hereunder.