Mohawk Municipal Commission

Water Department Rules & Regulations

Part II

Regulations for the

Safeguard of Potable Water from

Contamination by Cross Connection

To the

Village of Mohawk Distribution System

Cross Connection Control Regulations

Section 23. Purpose, General Requirements and Inspection

A. Purpose

The purpose of these regulations is to safeguard potable water supplies from potential contamination by preventing backflow from a water user's system into the public water system and to comply with the requirements of the New York Sanitary Code, Part 5, Section 5-1.31.

The regulations are to be reasonably interpreted. It is the intent of these regulations to recognize that the varying degrees of hazard and to apply the principle that the degree of protection should be commensurate with the degree of hazard.

B. General Requirements

1. Hazardous cross-connections must be promptly eliminated.

2. Cross-connection control is the responsibility of the supplier of water and the water customer (Part 5, New York Sanitary Code, and Section 5-1 Public water supplies, Section 5-1.31).

3. Cross-connection control by containment must be employed and requires the installation of an acceptable backflow prevention device in every water service line to a facility for which a potential hazard exists. Control devices will be installed at or as near the property line of the facility as possible.

4. These regulations are enacted and enforced to protect the public water system in accordance with provisions mandated by the New York State Department of Health as described in the Public Water Supply Guide – Cross Connection Control dated January 1981. If questions arise of interpretation or conflict of degree of application, the above publication will be the source of final information.

5. All cross-connection control devices in the Mohawk water system will be tested by a New York State Department of Health certified tester. The property owner will supply a copy of all results to the Mohawk Municipal Commission if individuals other than Municipal Commission personnel conduct tests.

6. All plans and specifications for cross-connection control devises install or to be installed in the Mohawk water system must be prepared by a New York State licensed professional engineer and accepted by the Mohawk Municipal Commission and approved by the New York State Department of Health. These steps must take place in the above-described order and no approval will be accepted through other channels.

7. Should access to any facility or dwelling be denied to Municipal Commission personnel for the purpose of determining if and/or what cross connection control devise is necessary, then the maximum protection devise will automatically be mandated with no further investigation by Commission personnel.

8. Failure to provide the required protective devise or to adhere to prescribed testing requirements will result in proceedings to terminate service to the violating party per stipulation in Part I – Section 22 of these regulations.

9. All plans and specifications relating to cross-connection control must be approved by the Municipal Commission and the State Department of Health. A completed works approval is also required for the installation of acceptable backflow prevention devises at all new customer facilities and for corrections to installations at existing customer facilities.

10. Availability of supplementary supply of water. The existence of a supplementary supply of water available to a facility may create the situation wherein the facility rating changes to a more severe category. In the instance where a supplementary source water quality is found acceptable, an agreement must be reached between the supplier and the water customer for a sampling program appropriate to monitor the supplementary source water quality. The customer will be made aware, that is at any time the New York State Drinking Water Standards are exceeded, an acceptable reduced pressure zone (RPZ) or air gap will have to be installed on the service connection to the public water supply system.

11. Testing and maintenance records shall be kept by the supplier of water for each required backflow prevention device.

C. Frequency of inspection of protective device.

1. It shall be the duty of the water user on any premises on account of which backflow protective devises are installed, to have competent inspections made at least once a year, per Section 23 Sub b Sub 2 of these regulations, or more often in those instances where successive inspections indicate repeated failure.

2. These devises shall be repaired, overhauled or replaced at the expense of the water user whenever they are found to be defective. These tests shall be preformed by a qualified prevention devise tester and all results will be provided to the water purveyor within 72 hours after the test is made.

3. Records of such test, repairs and overhaul shall also be kept and made available to the water purveyor and the local health department on request.

Section 24. <u>Definitions and Basic Methods of Control</u>

A. Definitions
As used in this part, unless the context or subject matter otherwise requires, the following terms shall have the following meaning:

1. **Acceptable Backflow Prevention Device** is an acceptable air gap; reduced pressure zone device or double check valve assembly as used to contain potential contamination within a facility.

2. **Acceptable Devices** are those devises or assemblies found to be acceptable for containment control in New York State in accordance with the Department of Health requirements as outlined in Section 8 of the Cross Connection Control Guide, January 1981.

3. **Aesthetically Objectionable Facility** is one in which substances are present, which if introduced into the public water supply could be a nuisance to other water customers, but would not adversely affect human health. Typical examples of such substances are: (food-grade dyes, hot water, stagnant water from fire lines in which no chemical additives are used, etc)

4. **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 a faucet supplying water to a tank, plumbing fixture or other device and the flood level rim of the receptacle. The differential distance shall be at least double the diameter (D) of the supply pipe. In no case shall the air gap be less than 1 inch. (See fig. 24-1)

5. **Approved Check Valve** the term "approved check valve" means a check valve that seats readily and completely. It must be carefully machined to have free moving parts and assured watertightness. The face of the closure element and valve seat must be bronze, composition or other noncorrodible material, which will seat tightly under all prevailing conditions of field use. Pins and bushings shall be bronze or other noncorrodible, non-sticking material, machined for easy, dependable operation. The closure element, e.g. clapper shall be internally weighted or otherwise internally equipped to promote rapid and positive closure in all sizes where this feature is obtainable.

6. **Approved Water Supply** the term "approved water supply" means any water supply approved by the New York State Department of Health.

7. **Auxiliary Supply** the term "auxiliary supply" means any water supply on or available to the premises other than the approved public water supply.

8. **Backflow** means a flow condition, induced by a differential in pressure that causes the flow of water or other liquids and/or gases into the distribution pipes of a public water supply from any source other than its intended source.

9. **Backpressure** means the resulting backflow of contamination, polluted or otherwise unacceptable quality water from a plumbing fixture or other customer's source(s) into a public water supply system due to a greater pressure within the customer's water system. (see fig. 24-2)

Example: Only the valve at A separates the potable and the fire tank water in a large factory. The factory's potable water system, at B is being filled from the public water supply at C, which is delivering water at a pressure of 60 psi. At the same time, the fire fighting system is activated, which provides potentially stagnant tank water at a pressure of 120 psi. If valve A is open, or leaks, the tank water will be forced into the public water supply system.

10. **Backsipohonge** means the backflow of contaminated or polluted water or water of questionable quality from a plumbing fixture or other customer source(s), into a public water supply system main due to a temporary negative or sub-atmospheric pressure within the public water supply system. (See fig. 24-3)

    Example: A hose is submerged in a laboratory sink a. Both buildings are connected to the same public water supply system, C. this main could develop a leak of adequate pressure due to a main break elsewhere in the system. The building on the right has installed a booster pump in the basement at B, in order to augment available pressures. The booster pump could deplete the water in main C, thereby subjecting the customer's water system to a pressure less than the atmospheric thus causing a reversal of flow from the laboratory in the opposite building.

11. **Certified Backflow Prevention Device Tester** is a person who is examined annually by the water purveyor and found competent for testing of backflow prevention devices. He or she shall be provided with an appropriate identification card, which must be renewed annually. Failure to perform his or her duties competently and conscientiously will result in prompt withdrawal of his or her certification.

12. **Customer** means a water user served by a public water system.

13. **Customer's Water System** means the piping used to convey water supplied by a public water supply system throughout a customer's facility.

14. **Containment** means cross-connection control, which isolates the customer's entire facility from the public water system so as to provide the protection necessary to prevent contamination of the public water supply in the event of backflow from the customer's facility.
15. **Contamination** means the presence in water of a substance that tends to degrade its quality.
16. **Cross-Connection** means a physical connection through which a water supply could be contaminated.
17. **Degree of Hazard** means whether a facility is rated as hazardous, aesthetically objectionable or non-hazardous.
18. **Double Check Valve (DCV) Assembly, Acceptable** means two single independently acting check valves, including tightly closing shutoff valves located at each end of the assembly and suitable connections for testing the watertightness of each check valve. This devise must be approved as a complete assembly (Where Applicable). (See fig. 24-4)
19. **Hazardous Facility** is one which substances may be present which if introduced into the public water system would or may endanger or have adverse effect on the Health of other water customers. Typical examples: laboratories, sewage treatment plants, chemical plants, hospital, and mortuaries.
20. **Interconnection** is joining of two independently operated public water supply distribution systems.
21. **Local Health Department Engineering** is the city, county, district or regional health department engineer having jurisdiction.
22. **Non-Hazardous Facility** is one, which does not require the installation of acceptable backflow prevention devices.
23. **Plumbing Control** is prevention and elimination of cross-connections within the customer's water system by enforcement of building or plumbing codes.

24. **Public Water Supply System** means a supplier of water system including the source, treatment works, transmission mains, distribution system and storage facilities serving the public.
25. **Reduced Pressure Zone (RPZ) Device, Acceptable** means 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 upstream (supply) pressure. In case of leakage of either check valve, the differential relief valve, by discharge to the atmosphere, shall operate to maintain the pressure between the checks at less than the supply pressure. The unit must include tightly closing shutoff valves located at each end of the devise, and each device shall be fitted with properly located test cocks. This device must be approved as a complete assembly. (see fig. 24-5)
26. **Supplementary Supply** means any water source or system, other than the public water supply, that is available within the water customer's facility.
27. **Supplier of Water** means the owner or operator of a public water system.
28. **Water Supervisor** the term "Water Supervisor" means the consumer or a person on the premises charged with the responsibility of complete knowledge and understanding of the water supply piping within the premises and for maintaining the customer's water system free from cross connections and other sanitary defects, as required by regulations and laws.

B. Basic Method of Control
Whenever possible, cross connection control will be achieved by containment method. Any user employing which will achieve control by any other method will make written application to the Mohawk Municipal Commission to request authorization. The Municipal Commission will be the final authority determining the applicability of any devices so used.

1. The Containment Method
Using the containment approach to cross-connection control results in totally isolating a facility with a potential hazard from the public water supply system. Each water service line to such a facility will be protected in a manner commensurate with the degree of hazard.

When any portion of a customer's water supply system is rated hazardous, then the entire system receives the same rated degree of hazard. That includes piping for potable as well as non-potable water. Under certain conditions, fire sprinkler system connections to the public water supply system may warrant a serrate evaluation of the type of protection device required.

Section 25. Determining the Degree of Hazard and Protection of the Public Water System

A. Degree of Hazard
To achieve containment, an acceptable backflow prevention device must be installed in every service connection to every facility connected to the Public Water Supply.

Three categories will be considered when determining the degree of hazard posed by the facility and making the subsequent determination of the type of protective device required. They are:

1.Use, Toxicity and Availability of Containment's

2. Availability of a Supplementary Supply of Water

3. Fire Fighting System Evaluation

Based on these considerations, a facility will be rated as hazardous, aesthetically objectionable or non-hazardous.

This cross-connection control program will enact a major emphasis on isolating those facilities that pose the greatest hazard in the most vulnerable portions of the distribution system.

B. Degree of Protection

The degree of protection shall be commensurate with the degree of hazard.

A hazardous facility must be contained through the use of RPZ or an air gap.

An Aesthetically objectionable facility must be contained through the use of DCV.

Non-hazardous facilities may, but are not mandated by these regulations to be, protected through internal plumbing control to ensure that plumbing cross-connections are adequately protected or eliminated.

It is not possible to list every circumstance and facility type that may be encountered while evaluating all water users in the Water System. Therefore, while evaluating a facility, the inspector will rely on these regulations, good common sense and the local health department engineer, as needed, to adequately insure the basic protection desired for this program.

Internal plumbing control necessary for the protection the on-premise user, is not equivalent to containment, but is necessary adjunct to a totally protective program. The water customer is responsible to prevent cross-connection within his facility.

Section 26. Type of Protection and Acceptable Devices

A. The type of protection shall depend on the degree of hazard as tabulated below:

1. At the service connection on any premises on which there is an auxiliary water supply, the public water supply system shall be protected by an air gap separation or an approved reduced pressure principle backflow prevention device.

2. At the service connection on any premises on which a substance that would be objectionable (but not hazardous to health if introduced into the public water supply) is handled so as to constitute a cross-connection, the public water supply shall be protected by an approved double check valve assembly.

3. At the service connection to any premises on which a substance of unusual toxic concentration or danger to health is or may be handled; but not under pressure, the public water supply shall be protected by an air gap separation or an approved reduced pressure principle backflow prevention device. This device shall be located as close as practicable to the property line and all piping between the water meter and receiving tanks shall be entirely visible.

4. At the service connection to any premises on which any material dangerous to health, or toxic substance in toxic concentration, is or may be handled under pressure, the public water supply shall be protected by an air gap separation. The air gap shall be located as close to as practicable to the property line and all piping between the property line and receiving tanks shall be entirely visible. If these conditions cannot reasonably be met, the public water supply shall be protected with an approved reduced pressure principle backflow prevention device, providing the alternative is acceptable to the Mohawk Municipal Commission.

5. At the service connection to any sewage treatment plant or sewage pumping station, the public water supply shall be protected by an air gap separation. The air gap shall be located as close as practicable to the property line and all piping between water meter and receiving tanks shall be entirely visible. If these conditions cannot be reasonably met, the public water supply shall be protected with an approved reduced pressure principle backflow prevention device.

6. At the service connection to any premises not covered by 1-5 above, the public water supply shall be protected with an approved single check valve assembly.

B. Acceptable devices for backflow prevention
Acceptable devices for backflow prevention will be approved by New York State Department of Health as listed in their most current Environmental Health.

    1. Only devices in said manual will be allowed.
    2. A copy of said listing will be supplied upon request by the Municipal Commission at no charge.

Section 27. Fire Fighting System Evaluation

A. A separate evaluation of the fire fighting system in use at a facility is required because of the number of variables involved in making the determination of a adequate protection of the water supply system.

    The sprinkler system service connection is usually an independent connection to the public water supply and as such will be separately evaluated as to the hazard posed.

    Fire department connections are used to pump water into the sprinkler system. The quality of the water pumped into the sprinkler may be of concern.

B. The following outlines the type of acceptable backflow prevention device required by class of sprinkler system used ("AWWA Manual no. m-14, Backflow Prevention and Cross-Connection Control").

The device is the minimum needed to satisfy containment requirements and applies to only to sprinkler systems connected to public water supply water mains.

1. Class 1 – direct connections from public water mains only: no pumps, tanks or reservoirs; no antifreeze or other additives of any kind; all sprinkler drains discharging to atmosphere, dry wells or other safe outlets.

2. Class 2 – same as Class 1, except that a booster pumps may be installed in the connections form the street mains (booster pumps do not affect the potability of the system; it is neccessary, however, to avoid drafting so much water that pressure in the water main is reduced below 20 psi)

3. Class 3– direct connection from public water supply main plus one or more of the following: elevated storage tanks; fire pumps taking suction form above ground covered reservoirs or tanks; and pressure tanks (all storage facilities are filled or connected to public water only, the water in the tanks to be maintained in a potable condition. otherwise, Class 3 systems are in the same as Class1).

4. Class 4 – directly supplied from public mains similar to Classes 1 &2 and with an auxiliary water supply on or available to the premises; or an auxiliary supply may be located within 1,700 feet of pumper connection.

5. Class 5– directly supplied from public mains and interconnected with auxiliary supplies, such as: pumps taking suction from reserviors exposed to contamination or rivers and ponds; driven wells, mills or other industrial water systems; or where antifreeze or other additives are used.

6. Class 6 – combined industrial and fire protection systems supplied from the public water mains only, with or without gravity storage or suction tanks.

C. Corresponding Backflow Protection Recommended: (AWWA M-14)

Class 1 – none, other that the check valve required by the National Fire Code.

Class 2 – none, other than the check valve required by the National Fire Code.

Class 3 – will generally require minimum protection (approved DCV) to prevent stagnant waters from backflowing into the public potable water system.

Class 4 – will normally require backflow protection at the service connection. The type (air gap, RPZ, or DCV) will generally depend on the quality of the auxiliary supply will normally need maximum protection (air gap or RPZ) to protect the public potable water system.

Class 5 – will normally need maximum protection (air gap or RPZ) to protect the public potable water system.

Class 6 – protection would depend on the requirements of both industry and fire protection and could only be determined by a survey of the premises.