

Chapter 17 - WATER AND SEWERS

ARTICLE IV. - CROSS CONNECTION CONTROL

Sec. 17-101. - Purpose.

The purpose of this cross-connection control ordinance is:

- (1) To protect the public potable water supply of the City of Kannapolis from the possibility of contamination or pollution, due to back-siphonage or backpressure, by isolation within the consumer's private water system such contaminants or pollutants, which could backflow into the public water system.
- (2) To define the authority of the City of Kannapolis as the water purveyor entitled to eliminating all cross-connections, new or existing, within its public water system.
- (3) To provide a continuing inspection program of cross-connections, which may be installed in the future.

(Ord. of 9-23-02, § 1)

Sec. 17-102. - Responsibility; City of Kannapolis.

- (1) The City of Kannapolis Department of Water Resources will be primarily responsible for preventing any contamination or pollution of the public water system. This responsibility begins at the point of origin of the public water supply and includes all of the public water distribution system, and ends at the service connection under the Safe Drinking Water Act. The backflow administrator shall exercise vigilance to ensure that the consumer/customer has taken the proper steps to protect the public potable water system.
- (2) When it has been determined that a backflow protection assembly is required for the prevention of contamination of the public water system, the backflow administrator shall notify the owner, in writing, of any such building or premises, to correct within a time set by this article, any plumbing installed or existing that is in violation of this article.
- (3) After surveying the private water system the backflow administrator will select an approved backflow prevention assembly required for containment control to be installed at service entrance.
- (4) Prior to the installation of any backflow prevention assembly, the owner of the private water system must be notified that the installation of a backflow prevention assembly may create a closed system, and as a result thermal expansion may occur. Under such circumstance, the customer must understand and assume all liability and responsibilities for that phenomenon.

(Ord. of 9-23-02, § 1.2)

Sec. 17-103. - Responsibility; customer.

- (1) The customer has the responsibility of preventing contaminants and pollutants from entering the customer's private water system or the public water system operated by the City of Kannapolis. The customer, at his own expense, shall install, operate, and maintain all backflow prevention assemblies specified within this article.
- (2) If a tenant customer does not maintain the private water system and has no authority to bring the system into compliance with the provisions of this ordinance the City of Kannapolis may assert any

available action against the tenant to assure the private water system is brought into compliance with this article.

(Ord. of 9-23-02, § 1.3)

Sec. 17-104. - Definitions.

Air gap separation: An unobstructed vertical distance through the atmosphere between the lowest opening from any pipe or faucet supplying water from any source to a tank, plumbing fixture, or other device and the flood level rim of the receptacle. An approved air gap separation shall be at least double the diameter of the supply pipe. In no case shall the air gap separation be less than one (1) inch. An approved, air gap separation is an effective method to prevent backflow and shall be considered as a backflow prevention assembly.

Atmospheric vacuum breaker: A device used to prevent back-siphonage, which is designed so as not to be subject to static line pressure.

Backflow: Any reverse flow of water, gas or any other liquid substance or combination into the public water system from any source due to an unprotected cross-connection.

Backflow prevention administrator: An employee of the city designated by the director to administer and enforce the provisions of this article.

Backflow prevention assembly approved: An assembly that has been investigated and approved by the City of Kannapolis Water Resources and has been approved to meet the design and performance standards of the American Society of Sanitary Engineers (ASSE), the American Water Works Assoc. (AWWA), or the Foundation for Cross Connection Control and Hydraulic Research of the University of Southern California.

Back pressure: Any elevation of pressure in the down stream piping system caused by pumps, elevation of piping, or steam and/or air pressure above the supply pressure at the point of consideration, which would cause a reversal of the normal direction of flow.

Back siphonage: A reversal of the normal direction of flow in the pipeline due to a negative pressure (vacuum) being created in the supply line with the backflow source subject to atmospheric pressure.

Certified tester: Any individual person who has proven his/her competency to test, repair and overhaul backflow prevention assemblies. This person must hold a certificate of completion from a certified training program in the testing and repair of backflow prevention assemblies and cross connection control.

Consumer/customer: Any person, firm, or corporation using or receiving water from the City of Kannapolis public water system.

Containment: The prevention of backflow from a private water system by an approved, properly functioning backflow prevention assembly, which is installed, operated and maintained in accordance with the provisions of this article.

Contamination: An impairment of the quality of the water to a degree, which creates an actual hazard to the public health through poisoning or through the spread of disease.

Cross connection: Any actual or potential connection or piping arrangement between a public or a consumer'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 fluids, gas or substance which could be harmful or hazardous to the potable water system.

Double check valve assembly: An assembly composed of two (2) single, independently acting, approved check valves, including tightly closing shut-off valves located at each end of the device and suitable connections for testing the water tightness of each check valve.

Dual check valve: A device composed of two (2) single, independently acting, approved check valves. This is classified as a device and cannot be in-line tested.

Hazard-degree: The evaluation of a hazard within a private water system as moderate or high.

Hazard-high: An actual or potential threat of contamination to the public water system or to a customer's potable water system that could cause serious illness or death.

Hazard-imminent: An actual threat of contamination to the public water system that could cause serious illness or death.

Hazard-moderate: An actual or potential threat of damage to the physical components comprising the public water system or a customer's potable water system, or of pollution to the public water system, or to a customer's potable water system.

Pollution: An impairment of the quality of the water to a degree which does not create an actual hazard to the public health, but which does adversely and unreasonably affect such water for domestic use.

Potable water: Water from any source, which has been approved for human consumption by the appropriate agency of the State of North Carolina, City of Kannapolis and/or local health agencies.

Pressure vacuum breaker: An assembly suitable for continuous pressure, to be used to provide protection against back-siphonage.

Private water system: Any water system located on the customer's premise, whether supplied by public potable water or an auxiliary water supply. The system or systems may be either a potable water system or an industrial piping system.

Public water system: The potable water system owned and operated by the City of Kannapolis. This system includes all distribution mains, lines, pipes, connections, storage tanks, and other facilities conveying potable water from the water treatment plants to the service connections of each customer.

Reduced pressure zone assembly: An approved, properly functioning assembly containing two, independently acting check valves 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 assembly must include properly located test cocks and tightly closing shut-off valves at each end of the assembly. This assembly is designed to protect against a high hazard.

Service connection: The terminal end of a service connection from the public potable water system, i.e., where the water purveyor loses jurisdiction and sanitary control over the water at its point of delivery to the consumer's water system.

Used water: Any water supplied by a water purveyor from a public water system to a consumer's water system after it has passed through the point of delivery and is no longer under the control of the water purveyor.

Water purveyor: Owner or operator of a public potable water system providing an approved water supply to the public.

Water supply-auxiliary: Any water supply on or available to the customer's premises other than the purveyor's approved public potable water supply. The auxiliary water may include water from another purveyor's public potable water supply or any natural source such as a well, spring, river, stream, etc., and used or objectionable.

Water supply-unapproved: Any water supply, which has not been approved for human consumption by the North Carolina Department of Human Resources.

(Ord. of 9-23-02, § 2)

Sec. 17-104.1. - Right of entry.

Authorization:

- (1) Any authorized representative from the City of Kannapolis shall have the right to enter any building, structure or premises during normal business hours to perform any duty imposed upon him/her by this article and with in accordance to [Appendix D104.2.1] of the North Carolina State Plumbing Code. Those duties may include sampling and testing of water, or inspection and observation of all piping systems connected to the public water supply. Refusal to allow these representatives to enter for these purposes will result in the disconnection of water service.
- (2) On request, the consumer shall furnish to the water purveyor any pertinent information regarding the water supply system on such property where cross-connection and backflow are deemed possible. [N.C. State Plumbing Code Appendix D104.2.3]

(Ord. of 9-23-02, § 3.1)

Sec. 17-105. - Law.

Unprotected cross-connection prohibited:

- (1) No water service connection to any private water system shall be installed or maintained by the City of Kannapolis unless the water supply is protected as required by this article and other applicable laws. Service of water to any premises shall be discontinued by the City of Kannapolis if a backflow assembly, required by this article, is not installed, tested, and maintained or if a backflow assembly has been removed, bypassed, or if an unprotected cross connection exists on the premises. Service will be restored after all such conditions or defects are corrected.
- (2) No customer shall allow an unprotected cross-connection to be made or to remain involving the customer's private water system.
- (3) No connection shall be made to an unapproved auxiliary water supply unless the public water supply is protected against backflow by an approved backflow assembly, appropriate to the degree of hazard.
- (4) No customer shall fail to maintain in good operating condition any backflow prevention assembly, which is part of the customer's private water system and is required by this article.
- (5) No customer shall fail to submit to the City of Kannapolis any record, which is required by this article.

(Ord. of 9-23-02, § 4)

Sec. 17-106. - Installation.

Installation and testing of backflow prevention assembly:

- (1) The purpose of this section is to require that all water flowing from the public water system, must flow through an approved backflow prevention assembly and that each backflow prevention assembly be properly located, installed, maintained and tested so that the backflow prevention assembly is effective in protecting the public water system from any possible contamination or pollution.
- (2) The installation or replacement of a backflow prevention assembly for domestic water use shall only be performed by a licensed plumber or utility contractor. The installation or repair of a backflow prevention assembly on a dedicated fire sprinkler service shall be performed by a licensed fire sprinkler contractor or utility contractor. All backflow prevention assemblies may be tested by a certified backflow technician authorized by the City of Kannapolis. Repairs to a

backflow prevention assembly on a dedicated fire sprinkler system may only be performed by a fire sprinkler contractor.

- (3) All new construction plans and specifications which will directly effect the City of Kannapolis water system, and/or required by the North Carolina Building Code, the North Carolina Division of Health Services (NCDEHNR), and city or county planning and zoning offices, shall be made available to the City of Kannapolis Backflow Administrator for review, approval and to determine the degree of hazard.
- (4) All existing facilities zoned commercial or industrial and have existing water services with the City of Kannapolis Regional Water Resources and requesting certificate of occupancy from the city or county planning and zoning offices, shall be inspected for compliance of backflow and cross-connection control prevention. Any facility not having backflow protection or changing the degree of hazard shall be brought into compliance before the backflow administrator may release certificate of occupancy.
- (5) All backflow prevention assemblies must be installed and maintained on the customer's premises as part of the customer's private water system at or near the service connection and before the service line is connected to any other pipes except as authorized by the water purveyor.
- (6) If it has been determined that a backflow prevention assembly cannot be installed at the meter service, due to zoning or DOT rights-of-way, an approved backflow assembly must be installed on any branch of plumbing installed between the service meter and the service backflow assembly.
- (7) Any branch of plumbing installed on the private water system that may be of a greater hazard than the supply line, (example: chemical induced irrigation or fire systems, pump systems, etc.) shall be protected with a reduced pressure zone assembly.
- (8) All backflow prevention assemblies shall be installed in accordance with the backflow and cross-connection manual furnished by the City of Kannapolis and/or the manufacturer's instructions, whichever is most restrictive.
- (9) All double check valve assemblies, two-inch or larger, must be installed in a watertight drainable pit wherever below ground installation is necessary in accordance with detailed specifications provided in the backflow and cross-connection control manual. If drain can not be provided, the assembly must be installed above ground.

Double check valve assemblies may be installed in a vertical position with prior approval from the Backflow Administrator provided the flow of water is in an upward direction.
- (10) Reduce pressure principle assemblies must be installed in a horizontal position and in a location in which no portion of the assembly can become submerged in any substance under any circumstances (pit installations are prohibited).
- (11) Each backflow prevention assembly that is required must function properly at time of installment. Each customer will be required to test, maintain and repair each assembly required which is a part of the customer's private water system. A certified backflow prevention technician may only conduct such test. Testing shall be done immediately following installation of any backflow prevention assembly and on an annual or semi-annual basis depending the degree of hazard.
- (12) If repair is found necessary on an assembly it must be re-tested following any repair. A complete duplicate copy of any testing and/or repair shall be sent to the City of Kannapolis within thirty (30) days of completion of test or repair. Each customer must maintain a complete copy of test or repair. Each customer must maintain a complete copy of any test or repair for no less than five (5) years. All test and repair records must be maintained on forms approved by the backflow administrator of the City of Kannapolis.
- (13) All rubber components must be replaced every five (5) years or as often as needed.

- (14) Any customer installing a reduced pressure zone (RPZ) or double check valve assembly (DCVA) must provide the following information to the backflow administrator within ten (10) days after installation:
- a. Service address where assembly is located
 - b. Owner
 - c. Description of assembly's location
 - d. Date of installation
 - e. Type of assembly
 - f. Manufacturer
 - g. Model Number
 - h. Serial Number
 - i. Test results/reports
- (15) The backflow administrator must approve each backflow assembly required by this article. A list of approved assemblies can be obtained through the backflow administrator; any unapproved backflow assembly must be replaced, within a time set by the administrator, with an approved backflow assembly.
- (16) If it has been determined that a customer must install a backflow prevention assembly, the Backflow Administrator will provide the customer with a letter of notification and list of approved backflow assemblies. The following time periods shall be set forth for the installation of the specified assemblies:

Health Hazard	60 days
Nonhealth Hazard	90 days

- (17) If an imminent hazard or unreasonable threat of contamination or pollution to the public water system is detected, the backflow administrator may require the installation of the required backflow assembly immediately or within a shorter time period than specified in subsection (15).
- (18) If a customer does not wish for water service to be interrupted when a backflow assembly is tested, repaired, or replaced, a parallel installation must be made using an approved assembly of the same degree of hazard. The parallel line may be of the same size or smaller.

(Ord. of 9-23-02, § 5)

Sec. 17-107. - Degree of hazards.

(a) Determining degree of hazard:

- (1) No service shall be completed until the backflow administrator has been provided information or has surveyed the private water system to determine the degree of hazard and make a determination of a backflow prevention assembly to be installed to protect the public water supply.
- (2) Any customer making any modification to the private system's configuration or use of, which may change the degree of hazard, shall notify the backflow administrator before any

modification is made. If the backflow administrator determines that such modification requires a different backflow prevention assembly, that assembly must be installed before the modification is made.

- (3) The following types of facilities or services have been identified by the City of Kannapolis Regional Water Resources Department as having a potential for backflow or nonpotable water into the public water supply system. Therefore, an approved backflow prevention assembly will be required on all such services according to the degree of hazard present.

Other types of facilities or services not listed below may also be required to install approved backflow prevention assemblies if determined necessary by the City of Kannapolis Backflow Administrator. As a minimum requirement, all commercial services will be required to install a double check valve assembly unless otherwise listed below:

DCVA = Double check valve assembly

RP = Reduced pressure principle assembly

DCDA = Double check detector assembly

RPDA = Reduced pressure detector assembly

AG = Air gap

PVB = Pressure vacuum breaker

- a. Aircraft and missile plants: RP
- b. Automotive service station, dealerships, etc:
 1. No health hazard: DCVA
 2. Health hazard: RP
- c. Automotive plants: RP
- d. Auxiliary water systems:
 1. Approved public/private water supply: DCVA
 2. Unapproved public/private water supply: AG
 3. Used water and industrial fluids: RP
- e. Bakeries:
 1. No Health hazard: DCVA
 2. Health hazard: hazard
- f. Beauty shops/barber shops
 1. No Health hazard: DCVA
 2. Health had: RB
- g. Beverage bottling plants: RP
- h. Breweries: RP
- i. Buildings: Hotels, apartment houses, public and private buildings, or other structures having unprotected cross connections.
 1. (Under five stories) No Health hazard: DCVA
 2. (Under five stories) Health hazard: RP

- 3. (Over five stories) All: RP
- j. Canneries, packing houses, and rendering plants: RP
- k. Chemical plants: Manufacturing, processing, compounding or treatment: RP
- l. Chemically contaminated water system: RP
- m. Commercial car-wash facilities: RP
- n. Commercial greenhouses: RP
- o. Individual commercial sales establishments (department stores)
 - 1. No Health hazards: DCVA
 - 2. Health hazard: RP
- p. Concrete/asphalt plants: RP
- q. Dairies and cold storage plants: RP
- r. Dye works: RP
- s. Film laboratories: RP
- t. Fire Systems
 - 1. No Health hazard: DCDA
 - 2. Health hazard: (Booster Pumps, Foams, Antifreeze Solution, etc.): RPDA
- u. Hospitals, medical buildings, sanitarium, morgues, mortuaries, autopsy facilities, nursing and convalescent homes, medical clinics, and veterinary hospitals: RP
- v. Industrial facilities:
 - 1. No Health hazard: DCVA
 - 2. Health hazard: RP
- x. Laundries:
 - 1. No Health hazard: DCVA
 - 2. Health hazard: (i.e., Dry Cleaners): RP
- y. Lawn irrigation systems:
 - 1. No health hazard: DCVA
 - 2. Health hazard: (Booster Pumps, Chemical Systems): RP
- z. Malls or strip malls (Frequent tenant change and photo labs, etc.)
 - 1. Health hazard: RP
- aa. Metal manufacturing, cleaning processing, and fabricating plants: RP
- bb. Mobile home parks:
 - 1. No health hazard: DCVA
 - 2. Health hazard: RP
- cc. Oil and gas production, storage or transmission properties: RP
- dd. Paper and paper products plants: RP
- ee. Pest control (exterminating and fumigating): RP
- ff. Plating plants: RP

- gg. Power plants: RP
- hh. Radioactive materials or substances—plants or facilities handling: RP
- ii. Restaurants:
 - 1. No health hazard: DCVA
 - 2. Health hazard: RP
- jj. Restricted, classified, or other closed facilities: RP
- kk. Rubber plants (natural or synthetic): RP
- ll. Sand and gravel plants: RP
- mm. Schools, and colleges: RP
- nn. Sewage and storm drain facilities: RP
- oo. Public Swimming Pools: RP
- pp. Waterfront facilities and industries: RP

All assemblies and installations shall be subject to inspection and approval by the City of Kannapolis Backflow and Cross-Connection Control Department.

- (4) Filling of tanks/tankers or any other container from a City of Kannapolis owned fire hydrant is strictly prohibited unless it has been equipped with the proper meter and backflow protection. At which point the City of Kannapolis Regional Water Resources Department will issue a permit for that tank/tanker or container. Any unauthorized connection to a fire hydrant is considered an illegal cross-connection to the public water system and will be subject to fines.
- (5) If a cross-connection control inspector is unable to survey any portion of a private water system to determine the degree of hazard, due to confidential activities, a reduced pressure zone assembly will be required.
- (b) Low hazard:
 - (1) All single-family residential homes will be considered a low hazard and shall have a minimum of a dual check valve device installed at the meter service.
 - (2) If no other backflow prevention assembly is specified a double check valve assembly must be installed on all private water systems.
- (c) Imminent hazard:
 - (1) If it has been determined a customer's private water system has an imminent hazard; such customer must install a backflow prevention assembly specified by the backflow administrator and this article. This assembly must be installed within twenty-four (24) hours of notification from the administrator. If the customer fails to install the specified assembly within the allowed time limit, water service to the customer's private water system will be terminated and may be subject to specified civil penalties. In the event the backflow administrator is unable to notify the customer in twenty-four (24) hours of determining an imminent hazard exists, the administrator may terminate water service until the specified assembly is installed. These actions may be carried out under the Safe Drinking Water Act (Title XIV Section 1431) and the N.C. State Plumbing Code (Appendix D104.2.6).
 - (2) Only a backflow prevention assembly offering a greater degree of protection may be installed in place of a specified assembly required by this article.

(Ord. of 9-23-02, § 6)

Sec. 17-108. - Notices.

- (1) Notice of contamination or pollution:
 - (a) In the event the customer's private water system becomes contaminated or polluted the customer shall notify the City of Kannapolis Water Resources Department immediately.
 - (b) In the event a customer has reason to believe that a backflow incident has occurred between the customer's private water system and the public water system the customer must notify the City of Kannapolis Water Resources Department immediately in order that appropriate measures may be taken to isolate and remove the contamination of pollution.

(Ord. of 9-23-02, § 7)

Sec. 17-109. - Violations.

- (a) Notification of violation.
 - (1) A written notice must be presented to any customer/person who has been found to be in violation of any part of this article.
 - (2) Such notice must explain the violation and give the time period within which the violation must be corrected. The time period set to correct a violation shall not exceed thirty (30) days after receiving notice unless otherwise specified by the time period chart subsection 17-106(8). If the violation has been determined by the Administrator to be an imminent hazard the customer shall be required to correct the violation immediately.
 - (3) In the event a customer is found in violation of this article and fails to correct the violation in a timely manner or to pay any civil penalty or expense assessed under this section, water service will be terminated.
- (b) The violation of any section of this article may be punished by a civil penalty listed as follows:
 - (1) Unprotected cross connection involving a private water system, which has an imminent hazard: One thousand dollars (\$1,000.00) per day not to exceed ten thousand dollars (\$10,000.00).
 - (2) Unprotected cross connection involving a private water system, which is of a moderate or high hazard: Five hundred dollars (\$500.00).
 - (3) Submitting false records or failure to submit records, which are required by this article: Five hundred dollars (\$500.00).
 - (4) Failure to test or maintain backflow prevention assemblies as required: One hundred dollars (\$100.00) per day.
- (c) Reduction of penalty.
 - (1) The administrator may reduce or dismiss any civil penalty imposed under this section if the administrator has determined that the person charged with the violation has no past history of violation in a timely manner as set by the administrator.
 - (2) No civil penalty shall be reduced if it has been determined the violation was intentional.
 - (3) Any person violating any part of this ordinance must reimburse the City of Kannapolis for any expenses in repairing damage to the public water system caused by any violation and any expenses incurred for investigating a violation.

(Ord. of 9-23-02, § 8)

Secs. 17-110—17-150. - Reserved.