

CROSS-CONNECTION CONTROL AND BACKFLOW PREVENTION POLICY

Department of Public Utilities

May 2011

Section 1. Definitions.

For the purposes of this Policy, the following words and phrases shall have the meanings set forth in this section:

Air gap: The unobstructed vertical distance through free atmosphere between the lowest perimeter of a water outlet and the flood-level rim of any receptacle. This distance will be a minimum of two (2) times the diameter of the outlet. In case of near-walls, this distance will be three (3) times the diameter of the outlet.

Approved backflow preventer: A backflow preventer assembly or device, with the exception of an approved air gap, means any device or assembly that retains a certificate of approval by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research (USC-FCCHR); or is compliant with the International Plumbing Code, manufactured to the applicable standard of the American Water Works Association, and American Society of Sanitary Engineering; or those specifically approved by the Director.

Auxiliary supply: Any water source or system other than the public water supply that may be available in the building or premises.

Backflow: The reversal of flow from its intended direction as a result of backsiphonage or backpressure.

"Backflow prevention device worker" means any individual who engages in, or offers to engage in, the maintenance, repair, testing, or periodic inspection of cross connection control devices, including but not limited to reduced pressure principle backflow preventers, double check-valve assemblies, double-detector check-valve assemblies, pressure type vacuum breaker assemblies, and other such devices designed, installed, and maintained in such a manner so as to prevent the contamination of the potable water supply by the introduction of nonpotable liquids, solids, or gases, thus ensuring that the potable water supply remains unaltered and free from impurities, odor, discoloration, bacteria, and other contaminants which would make the potable water supply unfit or unsafe for consumption and use.

Building Codes Administrator: The Building Codes Administrator or his designee, who shall perform all of the functions and have all of the powers of the code official as set forth in the Uniform Statewide Building Code

Consumer: Any person to whom water from the city water system is supplied directly, either as owner, agent or tenant of the premises to which water service is provided through a city meter, and who is responsible for the payment of charges for the consumption of water so supplied.

Consumer water system: Piping located on private property and system comprised of valves, tanks, piping used for the purpose of conveyance of water for human consumption.

Contaminant: The term "contaminant" means any physical, chemical, biological, or radiological substance or matter in water.

Contamination: The term "contamination" means: (1) the presence of a contaminant in a concentration or quantity exceeding the maximum contaminant level specified for such contaminant, as promulgated in a National Primary Drinking Water Regulation; or, (2) the presence of a contaminant in a concentration or quantity that is toxic or is a nuisance, as determined by the Director.

Cross-connection: Any physical connection between a potable water supply and any waste pipe, soil pipe, sewer, drain or any unapproved source or system; also, any potable water supply outlet which is submerged or can be submerged in waste or other source of contamination.

Director: The Director of Public Utilities or his designee.

Double-check valve assembly: An assembly of two (2) internally loaded, specially designed and independently operating check valves with a tightly closing shut-off valve on the upstream and the downstream side of the check valves, equipped with properly placed female threaded test cocks.

Existing ground level: The level above which surface water will not accumulate under normal conditions.

Flood-level rim: The top edge of the receptacle over which water could overflow.

Hazard: Any condition, device or practice in the water usage system and its operation which creates or, in the judgment of the Director, may create a danger to the health and well-being of the water consumer.

Owner: The person in charge, care and control of the property or the tenant or consumer who signed the water service agreement applicable to the property.

Person: An individual, partnership, association of persons, corporation, organization or any other group of the foregoing acting as a unit.

Public water supply system: The public potable water supply system beginning at the water source and ending at the water meter serving a parcel of property.

Reduced pressure principle back flow preventer or RP: An assembly of differential valves and check valves, including an automatically opened spillage port to the atmosphere, designed to prevent backflow, incorporated with a tightly closing shut-off valve on the upstream and the downstream side of the check valves, equipped with properly placed female threaded test cocks.

Reduced pressure principle detector backflow prevention assembly or RPDA: An RP with a factory installed bypass meter used to detect flow. The RP is equipped with a permanently installed factory meter constructed integrally to the RP unit.

Service connection: The terminal end of a service line from the public water supply system. If a meter is installed at the end of the service, then the service connection means the downstream end of the meter.

Service line: That portion of the water line from the consumer's side of the water meter to the first water outlet.

Testable Backflow Prevention Assemblies: These assemblies include Reduced pressure principle backflow preventer (RP), Reduced pressure principle detector backflow prevention assembly (RPDA), Double check valve assembly (DC), Double check valve detector assembly (DCDA), Pressure Vacuum Breaker (PVB), or Spill resistant pressure vacuum breaker backsiphonage prevention assemblies (SVB)

Toxic substance: Those substances, or combinations of substances, including disease causing agents, which, upon exposure, ingestion, inhalation or assimilation into any organism, either directly or indirectly, are likely to cause impairment of normal health, death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunctions in reproduction) or physical deformations in such organisms or their offspring.

Vacuum breaker, atmospheric: A vacuum breaker designed so as not to be subjected to continuous static line pressure.

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

Section 2. Objectives.

The objectives of this Policy are to:

- (1) Protect the public health, safety, and welfare through a cross-connection control and backflow prevention program intended to prevent the potential or actual occurrence where a backflow, backpressure condition, or cross connection within piping or other portions of consumers' potable water systems, could allow the entry of contaminants or pollutants into the public water supply system;
- (2) Eliminate or control existing cross-connections, actual or potential, at each water outlet from the consumer's service line;
- (3) Provide a continuing inspection program of cross-connection control that will systematically and effectively control all actual or potential cross-connections which may be installed in the future;
- (4) Provide standards on the proper types and usage of cross-connection hazard backflow prevention devices;
- (5) Set forth the respective responsibilities of the consumer, the Director, the Building Codes Administrator and certified cross-connection control test technicians; and
- (5) Supplement applicable regulations of the Commonwealth of Virginia pertaining to cross-connection control and backflow prevention in a manner consistent with such regulations.

Section 3. Responsibilities of consumer.

(a) The consumer's responsibility begins at the point of delivery from the public water supply system, after the meter, and includes all of the consumer's water systems. The consumer shall install, operate, test and maintain approved backflow prevention assemblies or devices, as required herein, and when directed by the Director. It shall be the duty of the consumer to have each backflow prevention assembly or device inspected and tested at least annually, or more often where successive inspections are indicated to be required as determined by a Certified Backflow Prevention Device Worker or the Director. All testing shall be performed only by a Certified Backflow Prevention Device Worker.

(b) The consumer shall ensure that each backflow prevention assembly or devices shall be tested or re-tested after installation, relocation, or repair of the backflow prevention assemblies or devices.

(c) A consumer's new water system to be protected by a backflow prevention assembly or device shall not be placed into service unless backflow prevention assembly or device has been tested, is functioning as designed, the certification paperwork is satisfactory and has been submitted to the Building Code Administrator.

(d) Where an existing consumer's water system is changed or modified or the facility use has changed, the connection to the public water supply system shall not be allowed unless the installation is free of cross connection or the backflow prevention assembly or device has been tested and is functioning as designed; and the certification paperwork has been deemed satisfactory by the Director.

(e) The consumer shall require that inspections will be made by a Certified Backflow Prevention Device Worker. A list of Certified Backflow Prevention Device Workers shall be maintained by the Director and will be available upon request to all persons required to install or maintain a backflow prevention assembly or device.

(f) The consumer shall maintain accurate records of inspections, tests, overhaul, and repairs made to backflow prevention assembly or devices and provide the Director with copies of such records. The records shall be on forms approved or provided by the Director and shall be provided to the Director by the date specified by the Director. The consumer should, but is not required to, retain all such records for a minimum of ten years from the date that a copy of the record was provided to the Director.

(g) The consumer shall ensure that all testable backflow prevention assemblies other than portable assemblies are tagged in accordance with Section 5 subpart d.

Section 4. Responsibilities of director, etc.

(a) The Director's responsibilities include:

(1) Having primary responsibility for implementing and maintaining a cross-connection control and backflow prevention program to prevent contamination of the public water supply system. The Director shall not install, maintain, or allow to be installed a water service connection to any premises where cross connections to a the public water supply system or a consumer's water system may

exist unless such cross connections are abated or controlled to the satisfaction of the Director;

- (2) Inspecting, during reasonable hours and as necessary, consumer water system connected to the public water supply system to ascertain the extent of any hazard and the need for backflow prevention or cross connection control. The inspections and surveys shall be documented on forms as approved by the Director;
 - (3) Maintaining adequate records of all testable backflow prevention or cross connection control assemblies or devices installed, tests made for each, and any subsequent maintenance or repair thereof, and including all cross connection control and backflow prevention inspections and surveys. The records shall be maintained for such period of time as is required by law;
 - (4) Administering and enforcing the provisions of the City Code pertaining to cross-connection control/backflow prevention; and
 - (5) Performing such other duties as may be prescribed by the City Manager.
- (b) The Building Codes Administrator's responsibilities include:
- (1) Administering and enforcing the applicable provisions of the Virginia Uniform Statewide Building Code, Part 1 (Construction), including reviewing building plans, plumbing plans, and performing inspections of new installations of backflow prevention devices in accordance with applicable provisions of Building Code. These responsibilities apply to portions of a consumer's water system beginning at the downstream point of connection to the public water supply system (the demarcation point is the meter where such are used for domestic service; or a valve at the property line on fire supply lines) and apply throughout the extent of the consumer's water system; and
 - (2) Performing such other duties as may be prescribed by the City Manager.
- (c) The certified backflow prevention device worker's responsibilities include:
- (1) Testing, installing, inspecting, repairing, and preparing reports on approved backflow prevention assemblies or devices as authorized or directed by the Director; and
 - (2) Maintaining current certification to perform such responsibilities.

Section 5. Requirements for backflow prevention device workers.

(a) The Director shall maintain a list of approved backflow prevention workers, which shall consist of all persons certified as such by the Virginia Board for Contractors and any other persons who can affirmatively demonstrate that their qualifications meet or exceed the applicable standards prescribed by the American Society of Sanitary Engineering (ASSE Standard 5000).

(b) The Director shall have the authority to remove from the list of approved backflow prevention device workers any person found making incomplete or inaccurate records or documentation, making unauthorized repairs to a backflow prevention assembly or devices, failing to demonstrate proper test procedures, falsifying records, or demonstrating a lack of knowledge and/or professionalism in testing, repairing, installing, and maintaining backflow prevention assemblies.

(c) Backflow prevention device workers shall use test kits that are certified annually. Copies of certifications/calibrations shall be sent to Public Utilities annually upon expiration.

(d) Backflow prevention device workers shall tag the testable backflow prevention assembly upon completion of a test. The tag shall at a minimum contain the following information: Name, Address, and Phone # of Testing Company; Manufacturer, Model Number, Serial Number, and Size of device being tested; Test Date; Tester's Initials; Tester's DPOR Certification Number; and indication if the test passed or failed.

Section 6. General design, installation and maintenance standards for consumer water systems.

(a) A consumer's potable water system shall be designed, installed, tested, and maintained in such a manner as to prevent contamination to the public water supply system or the consumer's water system. This is accomplished by protecting consumer's water system where hazards or possible cross-connections may exist with approved backflow prevention assemblies or devices. Wherever such hazards or possible cross connections are possible, the consumer's water system shall be protected in accordance with the degree of hazard.

(b) An approved backflow prevention device shall be installed at each service connection to a consumer's water system where, in the judgment of the Director, a health, pollution, or system hazard to the public water supply system exists; provided, that when, as a matter of practicality, the backflow prevention device cannot be installed at the service connection, the device may be located downstream of the service connection but prior to any unprotected takeoffs.

(c) A backflow prevention device shall be installed at each service connection to a consumer's water system serving premises where the following conditions exist:

- (1) Premises on which any substance is handled in such a manner as to create an actual or potential hazard to a waterworks (this shall include premises having sources or systems containing process fluids or waters originating from a waterworks which are no longer under the control of the Department of Public Utilities);
- (2) Premises having internal cross connections that, in the judgment of the Director, may not be easily correctable or have intricate plumbing arrangements which make it impracticable to determine whether or not cross connections exist;
- (3) Premises where, because of security requirements or other prohibitions or restrictions, it is impossible or impractical to make a complete cross connection survey;
- (4) Premises having a repeated history of cross connections being established or reestablished;
- (5) Premises having fire protection systems utilizing combinations of sprinklers, fire loops, storage tanks, pumps, antifreeze protection, or auxiliary water sources including siamese connections (fire loops and sprinkler systems with openings not subject to flooding, and containing no antifreeze or other chemicals, no separate fire protection storage, or auxiliary sources, will not normally require backflow prevention); and
- (6) Other premises specified by the Director when cause can be shown that a potential cross connection hazard not enumerated above exists.

Section 7. Protective devices for fire systems, schools and medical facilities.

(a) Fire systems having direct connections from the public water supply system are required to have an air gap, RP, or RPDA backflow prevention assemblies.

(b) Where existing fire protection systems have detector checks installed at the connection to the public water supply system for fire mains and these fire mains are equipped with private fire hydrants and located in the consumer's yard, no backflow prevention or cross connection control will be required. Where changes made to the existing fire protection system and a permit is required, then the fire protection systems shall comply with paragraph (a) above.

(c) The potable water system for schools and medical facilities shall be protected from hazards by use of backflow prevention and cross connection control, the requirements of this Policy, and in accordance with applicable provisions of Article 3 of Chapter 37 of the City Code.

Section 8. Emergency procedures.

(a) In the event the consumer's water system or the public water supply system is contaminated due to a cross connection or backflow cause or condition on that consumer's premises, and the same comes to the knowledge of the consumer, the consumer shall immediately notify the Director. These notifications by the consumer are mandatory so that appropriate measures may be taken to overcome the contamination, inspections can be initiated to resolve the unsatisfactory condition, and corrective measures shall be implemented by the consumer.

(b) In the event of contamination of the consumer's potable water system or public water supply system, due to cross connection or backflow cause or condition on or from the consumer's premises, the consumer shall promptly take all corrective measures to confine and eliminate the further spread of contamination.

(c) Whenever the Director determines that a contamination condition exists, or contamination has created an imminent and substantial endangerment to public health, the Director is authorized to take immediate steps to correct a hazardous condition. These steps may include any one or all of the following: (i) discontinuance of potable water service, (ii) isolation of the consumer's water system from the public water supply system, or (iii) isolation of the consumer's water system. Such emergency steps may be taken without advance notice to the consumer. The consumer shall be notified of the steps taken as soon as reasonably possible thereafter, and the matter brought to the attention of the City Manager, City Attorney's Office, Building Code Administrator, Department of Housing and Neighborhood Preservation, Virginia Beach Health Department, and the Virginia Department of Health Office of Drinking Water (VDHODW).

(d) The Director shall maintain a Backflow Prevention and Cross Connection Control Incidence Response Plan. The Incidence Response Plan will be used for training, a guide, and as needed for responding to incidences involving contamination of water as a result of failure to cross connection control and backflow prevention. The Incidence Response Plan will be updated and training exercises initiated at a frequency as determined by the Director.

(e) In the event a contaminant enters the public water supply system, the following guidelines may be considered by the Director:

- (1) Investigate: Identify and isolate source of contaminant (if possible); conduct sampling to identify the contaminant and extent of contamination; notify VDHODW, Emergency Services, and City Manager. Assist in the preparation of an after action report and preservation of evidence where applicable.
- (2) Containment: If appropriate, conduct directional flushing to purge contaminant from the system; close appropriate system valves to contain the contaminant; and continue sampling until system is clear of contaminants.
- (3) Notification: Notify the public as appropriate to provide door hangers, door to door notification; radio, television, and newspaper.

Section 9. Plan submittal.

(a) Plans or drawings shall indicate the extent of backflow prevention and cross connection control. The plan shall include a schedule that shall, as a minimum, address the following for each backflow prevention assembly or device included in the plan or drawing for the building:

- (1) Owner name and address, phone number
- (2) Building name, address,
- (3) Building zone identification,
- (4) Floor,
- (5) Location/room number,
- (6) System served,
- (7) Occupant/tenant use,
- (8) Degree of Hazard,
- (9) Backflow prevention assembly or device, number each, type, and size,

- (10) Design operational pressure and flow conditions, temperature condition,
- (11) Rated pressure, flow and temperature of the assembly or device, and
- (12) Drainage size and system, as applicable.

Section 10. Records.

- (a) Records should be maintained for not less than ten (10) years.
- (b) Records are to include those required by the Director, but not be limited to:
 - (1) Reports of inspections, recommendations, re-inspections, and corrective actions taken.
 - (2) Correspondence between the consumer, the Building Code Administrator, Director, Virginia Beach health Department, VDHODW, and concerning corrective action.
 - (4) Master list of all backflow protection assemblies or devices in use.
 - (5) Data for each backflow protection assembly or device.
 - (6) Test and maintenance reports for each assembly or device.
 - (7) Monthly summary of inspections, surveys, notices to consumers, backlog of inspections and surveys, total number of consumers and hazards.

Section 11. Fire hydrants.

Any fire hydrant used for purposes other than fire fighting or maintenance shall be protected by an RP. The RP shall be obtained from the City in accordance with established written procedures.

Approved:

James K. Gomez
City Manager or authorized designee

April 25, 2011
Date

Approved as to Content:

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