

City of Tampa
Water Department

CROSS CONNECTION CONTROL
AND
BACKFLOW PREVENTION

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Table of Contents

SECTION 1 SCOPE AND TITLE.....1
SECTION 2 REQUIRED BACKFLOW PREVENTION ASSEMBLIES - BY DEGREE OF HAZARD.....4
SECTION 3 REQUIRED BACKFLOW PREVENTION ASSEMBLIES - BY CUSTOMER TYPE.....5
SECTION 4 REQUIRED BACKFLOW PREVENTION ASSEMBLIES – INSTALLATION.....9
SECTION 5 REQUIRED BACKFLOW PREVENTION ASSEMBLIES – TESTING.....5
SECTION 6 REQUIRED BACKFLOW PREVENTION ASSEMBLIES - REPAIR/REPLACEMENT....11
SECTION 7 EXISTING BACKFLOW PREVENTION DEVICES.....12
SECTION 8 EVALUATION PROCEDURE.....13
SECTION 9 MAINTENANCE OF RECORDS.....13

SECTION 1 SCOPE AND TITLE

This manual embodies the rules, regulations, and procedures necessary to administer and enforce the provisions and intent of the City of Tampa ordinances related to the control of Cross-Connections with and the prevention of Backflow into Public Potable Water Systems (said ordinances being hereinafter referred to collectively as the "Ordinance"). The city incorporates by reference those portions of Chapter 62-555 Florida Administrative Code revised by the Florida Department of Environmental Protection and as applicable to the implementation of the cross connection control program implemented by the city. This manual shall be known and may be cited as the Manual of Cross-Connection Control and Backflow Prevention (hereinafter, the "Manual").

1.1 DEFINITIONS

This section identifies words, terms, and phrases, which have been assigned definitions. When cited throughout, such words, terms, and phrases shall be construed as having the meaning assigned in this section.

- 1.1.1 Air Gap:** A Backflow Prevention Device characterized by a physical separation between the free flowing discharge end of a Potable Water supply pipeline and an open or non-pressure receiving vessel. The physical separation shall be at least twice the diameter of the supply pipe measured vertically above the overflow rim of the vessel but in no case less than one (1) inch. This configuration can be used to eliminate a Cross-connection.
- 1.1.2 Applicant:** The Property Owner, the duly authorized representative of the Property Owner, or the lessee or occupant of said property who applies for water service to and for said property and who can be bound to all legal obligations related to water service for the property.
- 1.1.3 Auxiliary Water Supply System:** A pressurized or pumping-ready water supply system other than a Public Potable Water System which is located on or available to the Customer's property whether or not connected to a distribution system within the property. Such auxiliary systems include but are not limited to Reclaimed Water systems, private water systems and private wells.
- 1.1.4 Backflow:** The undesirable reversal of flow of water or mixtures of waters and other liquids, gases or other substances into the distribution pipes of the potable supply of water from any source(s).
- 1.1.5 Backflow Prevention Assembly:** A mechanical assembly which is supplied with properly located resilient-seated shut-off valves at each end of the Assembly and properly located test cocks, meets the standards of the University of Southern California's Foundation for Cross-Connection Control and Hydraulic Research

(U.S.C.), and complies with the standard listed in the State Building Code as adopted by the City of Tampa, and approved by the Department.

1.1.6 Backflow Prevention Device: A mechanical device or plumbing configuration that is designed for use to prevent Backflow.

1.1.7 City - The City of Tampa, a political subdivision of the State of Florida, in Hillsborough County

1.1.8 Commercial Customer: A Customer other than a Residential or Apartment Customer.

1.1.9 County: Hillsborough County, a political subdivision of the State of Florida.

1.1.10 Cross-Connection: “Any unprotected actual or potential connection or structural 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 fluid, gas, or substance other than the intended potable water with which the system is supplied. By-pass arrangements, jumper connections, removable sections, swivel or changeover assemblies, or any other temporary or permanent connecting arrangements through which, or because of which, backflow can or may occur, are considered to be Cross-Connections.” (AWWA M14)

1.1.11 Customer: Customer means the person who lawfully receives or contracts for the provision of water, reclaimed water, sanitary sewer or solid waste services. Customer includes, but is not limited to, the tenants, personal representatives, successors and assigns of the party referred to; and the covenants and agreements contained in any contract between a department providing services as set out in this chapter and its customers shall be binding upon and inure to the benefit of the tenants, successors, heirs, executors, administrators or assigns of the respective parties thereto.

1.1.12 Double Check Valve Assembly: A Backflow Prevention Assembly which includes two internally spring loaded check valves, which are installed as a unit between two tightly closing resilient-seated shutoff valves and fittings with properly located test cocks.

1.1.13 Fireline Services: Any service line specifically designated for fire protection only. These systems consist of fire sprinklers, hose connections and fire hydrants only. No other connection shall be permitted to these systems.

1.1.14 Hazard: A Cross-Connection or potential Cross-Connection which involves an actual or potential threat to the quality and/or potability of the water supplied by a Public Potable Water System. The degree of Hazard associated with any Private

Water System shall be determined from an evaluation of the conditions existing within that system.

- 1.1.15 Health Hazard:** A Hazard involving any substance that could, if introduced into the Public Potable Water System, cause death or illness, spread disease, or have a high probability of causing such effects.
- 1.1.16 Non-Health Hazard:** A Hazard involving any substance that generally would not be a Health Hazard but would, if introduced into the Public Potable Water System, constitute a nuisance, be aesthetically objectionable and/or cause minor damage to the system.
- 1.1.17 Inspection Personnel:** Utility, Plumbing and City Staff involved in the implementation of the Ordinance.
- 1.1.18 Non-Potable Water:** Water, which is unsuitable for human consumption or which is of questionable potability.
- 1.1.19 Potable Water:** Water that is suitable for human consumption.
- 1.1.20 Potable Water System:** All facilities utilized for the production, treatment, storage, transmission, distribution and delivery of potable water within the City and County.
- 1.1.21 Pressure Vacuum Breaker Assembly:** A Backflow Prevention Assembly which includes an independently operating, internally loaded check valve; an independently operating, internally loaded air inlet valve located on the discharge side of the check valve; and properly located test cocks and tightly closing resilient-seated shut-off valves attached at each end of the Assembly. This Assembly shall not be used if back pressure could develop in the downstream piping.
- 1.1.22 Private Water System:** All piping and appurtenances downstream from the Water Service Connection.
- 1.1.23 Prohibited Connection:** Any connection of a safe system to an unsafe system as deemed by Inspection Personnel.
- 1.1.24 Property Owner:** The titleholder of record for a parcel of land.
- 1.1.25 Public Potable Water System:** Each Potable Water System which is owned and/or controlled by the City.
- 1.1.26 Reclaimed Water:** Non-Potable Water derived from wastewater which has received at least secondary treatment pursuant to State regulations followed by high level disinfection.

- 1.1.27 Reduced-Pressure Principle Assembly:** A Backflow Prevention Assembly which includes two independently acting check valves; a hydraulically operating, mechanically independent pressure differential relief valve located both between the check valves and below the first check valve; and properly located test cocks and tightly closing resilient-seated shut-off valves attached at each end of the Assembly.
- 1.1.28 Residential Customer:** The Customer for a Residential Service Address.
- 1.1.29 Residential Service Address:** A Service Address whose private water systems serve only residential dwellings. Any service with more than two dwelling units is considered an apartment service address. For the purpose of backflow prevention, apartment buildings, mobile home parks, and other multi-family arrangements, are considered a **Commercial Service Address**.
- 1.1.30 Service Address:** Address for the property, which is served by one or more water service connections.
- 1.1.31 Utility:** The individuals and/or legal entities, which own and are responsible for the operation and maintenance of a Public Potable Water System.
- 1.1.32 Water Service Connection:** The point of connection to the Public Potable Water System (metered or non-metered) where the Utility loses jurisdiction and sanitary control over the Potable Water delivered to that point. Included within this definition are connections for fire hydrants and other temporary or emergency water service. For metered connections, the point of connection is just downstream of the water meter box, vault or slab, as shown on City of Tampa Water Department standard details. This is also referred to as the point of delivery.

SECTION 2 REQUIRED BACKFLOW PREVENTION ASSEMBLIES/DEVICES BY DEGREE OF HAZARD

- 2.1** The type of Backflow Prevention Device/or Assembly required shall depend upon the degree of Hazard that exists as determined by Inspection Personnel.
- 2.2 Health Hazard** - An approved Air Gap and/or Reduced-Pressure Principle Assembly is required for each Water Service Connection where in the opinion of Inspection Personnel a Health Hazard would otherwise exist.
- 2.3 Non-health Hazard** - An approved Double Check Valve Assembly is required at a minimum for each Water Service Connection where in the opinion of Inspection Personnel a Non-Health Hazard would otherwise exist.

**SECTION 3
REQUIRED BACKFLOW PREVENTION DEVICES
BY CUSTOMER TYPE**

3.1 Residential Customers The provisions of this subsection 3.1 apply to Residential Service Addresses only.

3.1.1 Unless a greater level of Backflow Prevention is required, a Double Check Valve Assembly is required for each Domestic Water Service Connection of every Residential Service Address, which receives Reclaimed Water service for irrigation system. The backflow prevention device shall be installed and maintained by the City. Inspection Personnel shall determine if a greater level of Backflow prevention is required.

3.1.2 A minimum of a Double Check Valve Assembly is required for every Residential Service Address when auxiliary water supply is discovered. Inspection Personnel shall determine if a greater level of Backflow prevention is required. This device is the responsibility of the customer to own and maintain.

3.1.3 No cross connections are permitted between potable and non-potable systems. A dual system of pipes is required as specified in City of Tampa Code of Ordinances Chapter 26 Article II.

3.1.4 All new potable irrigation systems must be protected with a minimum of a pressure vacuum breaker assembly. Inspection Personnel shall determine if a greater level of Backflow prevention is required. This device is the responsibility of the customer to own and maintain.

3.2 Commercial Customers - The provisions of this subsection 3.2 apply to non-residential service addresses only.

3.2.1 An appropriate Backflow Prevention Device which is commensurate with the degree of Hazard specified in Section 2 above is required for each Water Service Connection as specified in the City Code of Ordinances where a Hazard would or could exist. These devices are to be owned and maintained by the customer.

3.2.2 A minimum of a Double Check Valve Assembly is required for each Domestic Water Service Connection of every service address that receives reclaimed water service for irrigation system. These devices are to be owned and maintained by the customer.

3.2.3 A minimum of a Double Check Valve Assembly is required for every Commercial Service Address when auxiliary water supply is discovered. Inspection Personnel shall determine if a greater level of Backflow prevention is required. This device is the responsibility of the customer to own and maintain.

3.2.4 No cross connections are permitted between potable and non-potable systems. A dual system of pipes is required as specified in City of Tampa Code of Ordinances Chapter 26 Article II.

3.2.5 All commercial potable irrigation systems must be protected by a minimum of a pressure vacuum breaker. Inspection Personnel shall determine if a greater level of Backflow prevention is required. This device is the responsibility of the customer to own and maintain.

3.3 Fireline Services The provisions of this subsection apply to fireline services only.

3.3.1 Residential Fireline Services All new residential firelines shall be protected with a double detector check valve owned by the City unless the fireline system contains chemical additives. When chemical additives are present, a reduced pressure backflow prevention device shall be installed. These devices are to be owned and maintained by the City unless otherwise specified in the City Code of Ordinances.

3.3.2 Commercial Fireline Services All new commercial firelines shall be protected by double detector check valve assemblies unless the fireline system contains chemical additives. When chemical additives are present, a reduced pressure backflow prevention device shall be installed. These devices are to be owned and maintained by the City unless otherwise specified in the City Code of Ordinances. If a higher level of protection is required as determined by the City, or installed within a building as approved by the City, this shall be the responsibility of the customer and will be owned and maintained by the customer.

SECTION 4 REQUIRED BACKFLOW PREVENTION DEVICES OR ASSEMBLIES INSTALLATION

4.1 Existing Water Service Connections - Inspection

4.1.1 Inspection Personnel - Inspection Personnel shall be allowed access to inspect each service address Customer as to the existence of any auxiliary water supply and/or hazard(s) at the service address. Each such inspection report shall be in writing and shall include the date on which it will be deposited with the U.S. Postal Service for delivery, which date

shall also be considered the date of receipt by the Customer. Each inspection report distributed shall include the appropriate form(s) for the Customers response.

4.2 Existing Water Service Connections - Backflow Prevention Assemblies

4.2.1 The City of Tampa Water Department shall notify each Customer whose water service connection requires a Backflow Prevention Assembly. Each such notice shall include the date on which it was deposited with the U.S. Postal Service for delivery, which date shall also be considered the date of receipt by the noticed party. The City of Tampa shall provide an appropriate “Test and Maintenance Report” form with the notice.

4.2.2 Customer - When a Backflow Prevention Assembly is required, the Customer shall, within thirty (30) days for 2” and smaller and 60 days for larger than 2” service lines, following receipt of a notice pursuant to paragraph **4.2.1** above, complete the installation and initial testing of the Assembly and submit a completed Test and Maintenance Report to the City of Tampa. No customer shall receive less than thirty (30) days to complete the installation and initial testing of a mandatory Backflow Prevention Assembly.

4.3 New Water Service Connections

4.3.1 The City of Tampa shall provide each of its Applicants with written details and a Test and Maintenance Report form for each Backflow Prevention Assembly required under the Ordinance for the prospective water service connection. Prior to completing a new water service connection, the City shall inspect connections made to the Public Potable Water System terminating at the meter outlet, verifying that the installation conforms to City of Tampa Water Department Technical Manual. The City shall inspect and verify the proper plumbing installation and testing of the appropriate Backflow Prevention Assembly(ies) required for that connection under the Ordinance, and that the installation complies with all applicable codes as adopted by City of Tampa.

The City shall install the appropriate Backflow Prevention Assembly(ies) when the Ordinance requires such installation(s) and the City shall own, test and maintain such installations. In all other events, the customer shall install, maintain and test the required device(s) and all expenses associated with these appropriate Backflow Prevention Assembly(s) shall be borne by the customer.

4.4 Installation Requirements - The installation of all Backflow Prevention Assembly(ies) shall be performed in accordance with the applicable requirements of the State Building Codes as adopted by City of Tampa, and the City of Tampa Water Department Technical Manual, latest edition. If any conflict should exist between provisions of this Manual, the provisions of State Building Codes as adopted by City of Tampa or the City of Tampa Water Department Technical Manual, latest edition, the more restrictive provision shall apply. (For installation requirements see City of Tampa Water Department Technical Manual, latest edition)

4.4.1 The City may authorize the Installation of a required Backflow Prevention Assembly at a location within the Service Address other than adjacent to the Water Service Connection, provided a hazard would exist if installed adjacent to the water service connection. Such authorization shall be made in writing by the City.

4.5 Backflow Prevention Assembly Installers

4.5.1 Qualifications of Installer The installation of a mandatory Backflow Prevention Assembly in the City of Tampa shall be performed only by an individual who:

(a) Holds, in good standing, either a current certificate of competency as a master plumber, which is valid in Hillsborough County, or a current, valid State of Florida Plumbing Contractor's License,

(b) holds, in good standing, a current journeyman plumber's license, which is valid in Hillsborough County, and who works under the direct supervision of an individual described in (a) above; or is authorized by State law to install a Backflow Prevention device.

4.5.2 The employees of the City or its contractors shall be exempt from meeting the qualifications prescribed in paragraph **4.5.1** above when performing installations on behalf of the City on City property or rights of way.

4.5.3 A Backflow Prevention Assembly that isolates an irrigation piping system, not containing reclaimed water, may be installed by a licensed irrigation contractor.

4.5.4 A Certified Fire Protection Contractor may also install a Backflow Prevention Assembly when the Backflow Prevention Assembly is installed as protection for the public potable water system from the private fire line system and the buildings internal sprinkler system.

4.5.5 Installation Responsibility - The installer shall install each mandatory Backflow Prevention Device or Assembly in accordance with this Manual and

with all applicable codes as adopted by City of Tampa, the requirements established by the manufacturers, and the City of Tampa Water Department Technical Manual, latest edition, for such installations.

4.5.6 Testing Responsibility - The installer is responsible for having a newly installed Backflow Prevention Assembly tested in accordance with section 5 below to verify proper functioning. A completed Test and Maintenance Report is to be submitted to the City within fourteen (14) days from the date of the installation.

SECTION 5 REQUIRED BACKFLOW PREVENTION ASSEMBLIES TESTING

- 5.1** Each Backflow Prevention Assembly subject to the Ordinance shall be inspected and tested upon its initial installation and periodically thereafter. Each in-place Backflow Prevention Assembly or Device subject to the Ordinance shall be inspected and tested on at least an annual basis for commercial service connections and on biennial basis for residential service connections and at such earlier intervals or times as is reasonable, in the judgment of Inspection Personnel, to protect the public potable water systems. All such inspection and testing shall only be performed by an individual meeting the qualifications prescribed in paragraph 5.2 below.
- 5.2 Qualifications of Tester** - The inspection and testing of each mandatory Backflow Prevention Assembly shall be performed only by an individual who is currently certified through one of the comprehensive Backflow Prevention Assembly tester training programs identified pursuant to paragraph 5.2.1 below. Each individual meeting the requirements of that paragraph shall be known as a "Certified Tester".

5.2.1 Certification Programs – The Director of the Tampa Water Department or his/her designee is responsible for publishing a list of training programs, which are acceptable under the Ordinance for qualification as a Certified Tester. The Tampa Water Department shall be the final authority for the addition to or deletion from the list of any certification training programs.

5.2.2 Registered - To test Backflow Prevention Assemblies in the City of Tampa, testers shall be registered with City of Tampa and re-certified every (2) two years

5.2.3 Equipment Calibration - Backflow Prevention Assembly testing equipment shall be re-calibrated annually and such calibration shall be registered with the City of Tampa.

5.3 Certified Tester - When retained by the Customer to perform the inspection and testing activities required by this Section, the Certified Tester shall at a minimum:

- (a) inspect and test the Backflow Prevention Assembly in accordance with the procedures established by the approved certification programs,
- (b) complete a Test and Maintenance Report form for submission by the Customer to the City, or within seven (7) days complete and return, to the City, the survey form provided to the customer for the assembly(ies) on the property.
- (c) notify the City within 48 hours when an assembly has failed a test,

5.4 City Requirements - The City shall provide applicable Customers with a Test and Maintenance Report form for each mandatory Backflow Prevention Assembly known by the City to be in place at the Customer's Service Address. Notice of the requirements for completing and returning said form and the penalties provided by the Ordinance for non-compliance, including interruption of water service, and enforcement of applicable Codes, as adopted by the City of Tampa, shall accompany distribution of the form. Such distribution shall be made at least fourteen (14) days in advance of the date designated by the City in the notice for an inspection and test of the Backflow Prevention Assembly.

5.4.1 If a completed Test and Maintenance Report form, which certifies the proper operation of the Backflow Prevention Assembly, is not received by the City within the specified time period, a second notification shall be delivered providing a fourteen (14) days extension for compliance.

5.4.2 If a submitted Test and Maintenance Report form indicates that the Backflow Prevention Assembly requires repair in order to be certified as operating properly, the City shall grant a thirty (30) day extension for receiving an acceptable Test and Maintenance Report to allow sufficient time for completion of the necessary repairs.

5.4.3 If a completed Test and Maintenance Report form certifying the proper operation of the Backflow Prevention Assembly has not been received by the City within the period designated by the City for submission including all extensions granted, the City may immediately interrupt service to that Water Service Connection. Service shall not be restored until such time that the City has received the required Test and Maintenance Report form. Following such an interruption, temporary service shall be provided to the Water Service Connection at the request of a Certified Tester to enable completion of the inspection and testing requirements prescribed in paragraph **5.5** below. In such an event, all expenses associated with the interruption or resumption of service shall be borne by the customer.

5.5 Customer - Within fourteen (14) days after the date designated by the City pursuant to paragraph **5.4** above, the Customer shall:

- (a) have each mandatory Backflow Prevention Assembly which is in place at the Customer's Service Address inspected and tested by a Certified Tester and
- (b) submit the completed Test and Maintenance Report form certifying the proper operation of each such Backflow Prevention Assembly to the City.

If the Test and Maintenance Report submitted by the Customer pursuant to this paragraph indicates that the Backflow Prevention Assembly is not in compliance with the Ordinance, the Customer shall within thirty (30) days following the date of said submission:

- (a) obtain the repairs necessary for the Backflow Prevention Assembly to achieve such compliance and
- (b) submit an acceptable Test and Maintenance Report form to the City.

SECTION 6 REQUIRED BACKFLOW PREVENTION ASSEMBLIES REPAIR

6.1.1 The repair of any Backflow Prevention Assembly subject to the Ordinance shall be performed only by an individual who:

- (a) holds, in good standing, either a current certificate of competency as a master plumber, which is valid in Hillsborough County, or a current, valid State of Florida Plumbing Contractor's License,
- (b) holds, in good standing, a current journeyman plumber's license which is valid in Hillsborough County and who works under the direct supervision of an individual described in (a) above.

6.1.2 The employees of the City or its contractors shall be exempt from meeting the qualifications prescribed in items (a) and (b) of paragraph **1.1.1** above when performing repairs on behalf of the City, on it's own properties or facilities.

6.1.2.1 A Certified Fire Protection Contractor may only repair a Backflow Prevention Assembly that was installed as protection for the Public Potable Water system from the customer fire line and buildings internal sprinkler system which is not owned by the City.

6.1.2.3 A licensed Irrigation Contractor or someone working under their supervision may repair a Backflow Prevention Assembly, not owned by the City, installed on an irrigation system.

6.1.3 Customer - Each Customer shall within fourteen (14) days after having a mandatory Backflow Prevention Assembly repaired:

- (a) have the repaired Assembly inspected and tested by a Certified Tester and
- (b) submit a completed Test and Maintenance Report form to the City for that Assembly.

If the Test and Maintenance Report submitted by the Customer pursuant to this paragraph indicates that the Backflow Prevention Assembly is not in compliance with the Ordinance, the Customer shall within thirty (30) days following the date of said submission:

- (a) obtain the repairs necessary for the Backflow Prevention Assembly to achieve such compliance and
- (b) submit an acceptable Test and Maintenance Report form to the City.

6.1.4 Certified Tester - All inspection and testing services performed pursuant to this Section shall comply with paragraph 5.3 above.

SECTION 7 EXISTING BACKFLOW PREVENTION ASSEMBLIES

7.1 Except as provided in paragraph 7.3 below, each Backflow Prevention Assembly, which:

- (a) was in place as of the effective date of the Ordinance;
- (b) does meet the requirements of this Manual;
- (c) was an approved assembly for the purposes described in and subject to the Ordinance at the time of installation;
- (d) has been properly maintained; and
- (e) was installed to protect a Water Service Connection, which requires one or more Backflow Prevention Devices under the Ordinance

May remain in service so long as the City is assured that the Assembly will satisfactorily protect the Public Potable Water System.

7.2 Each Backflow Prevention Assembly remaining in service pursuant to paragraph 7.1 above shall be periodically inspected and tested in accordance with the procedures prescribed in Section 5 above.

7.3 If a Backflow Prevention Assembly remaining in service pursuant to paragraph 7.1 above:

- (a) is repaired, or moved from its present location;
- (b) requires more than minimum maintenance in the opinion of Inspection Personnel ; or
- (c) constitutes a Hazard in the opinion of Inspection Personnel.

The unit shall be replaced by an appropriate approved Backflow Prevention Assembly determined by Inspection Personnel.

- 7.4** The replacement or relocation, subsequent to the effective date of the Ordinance, of any Backflow Prevention Assembly described in paragraph **7.1** above shall be subject to the installation and testing requirements prescribed in subsection **4.4** and **4.5** above.

SECTION 8 EVALUATION PROCEDURE

The City of Tampa Water Department shall evaluate all newly constructed service connection in order to establish the category of customer and the backflow protection required at or for the service connection(s) before it begins supplying water to the service connection.

The City of Tampa Water Department shall evaluate the existing customer's premises when the customer connects to a reclaimed water distribution system, when an auxiliary water system is discovered on the customer's premises, when a prohibited or inappropriately protected cross connection is discovered on the customer's premises, and when the customer's premises is altered under a building permit in a manner that could change the backflow protection required at or for a service connection to the customer.

SECTION 9 MAINTENANCE OF RECORDS

The City of Tampa Water Department shall maintain the following records and documentation, which shall be provided by the customers of the City.

- (a)** Record of all in-place, mandatory Backflow Prevention assemblies and devices for each water service connections whether installed by the City or by their customers.
- (b)** Record of all tests, repairs, and replacements of those assemblies and Devices whether performed by the City or by their customers.
- (c)** Copy of the latest completed Test and Maintenance Report form submitted to the City for each Backflow Prevention Assembly, until a form for a subsequent test is received for that Backflow Prevention Assembly;
- (d)** Records for the past three-(3) years of known Cross-Connections and incidents of Backflow;

- (e) Current list of Certified Testers known to the City, and latest equipment calibration date; and
- (f) All written customer complaints related to or resulting from the installation, testing or repair of a mandatory Backflow Prevention Assembly for the Utility's Water Service Connections, during the past three (3) years.