

## **PHOENIX CITY CODE:**

### **ARTICLE XII. BACKFLOW PREVENTION**

#### **37-141 Declaration of policy; authorization**

It is declared that danger to the public health, safety, and welfare resulting from contamination or pollution of the public potable water supply system requires that measures be adopted to protect that system by authorizing City officials to:

- a. Protect the public potable water supply from the possibility of contamination or pollution by preventing the backflow of contaminants or pollutants into the public potable water supply system;
- b. Promote the awareness and elimination of cross connections, actual or potential, of a customer's internal potable water system with the public potable water supply system;
- c. Provide for a continuing program of backflow prevention control which will prevent the contamination or pollution of the public potable water supply system;
- d. Provide for the monitoring and enforcement of a continuing program of backflow prevention which will prevent the contamination or pollution of the public potable water supply; and
- e. Comply with the State requirements contained in Arizona Administrative Code, title 18, chapter 4, article 232 (R184-232) entitled "Operation: Backflow Prevention" that was promulgated by the Arizona Department of Environmental Quality with an effective date of August 8, 1991, and is incorporated herein by reference (hereinafter referred to as State Rule R184-232). One copy shall be on file with the City Clerk and the Planning and Development Department.

(Ord. No. G-3672, § 1)

#### **37-142 Cross connections from or to source of water supply other than that of City.**

It shall be unlawful for any customer to cause a connection to be made or to allow one to exist for any purpose whatsoever between the City water supply and any other source of water supply without the approval of the Director.

(Ord. No. G-3672, § 1)

#### **37-143 Responsibility for backflow prevention control.**

- (a) Water Services Director. It shall be the responsibility of the Water Services Director to protect the public water supply by applying the remedies and enforcement provisions set forth in City Code section 37-146

(b) Planning and Development Department responsibilities. It shall be the responsibility of the Planning and Development Director to enforce certain provisions of this chapter, as follows:

1. The Planning and Development Director shall administer and enforce all applicable cross connection control provisions of the Phoenix Plumbing Code, including issuance of permits for all required backflow prevention assemblies.
2. The Planning and Development Director shall determine whether a facility is a listed facility or activity in section 37-144 and therefore requires backflow protection. This responsibility includes inspection as necessary of all existing facilities connected to City of Phoenix water services.
3. The Planning and Development Director shall, as a condition of issuance of any building permit require installation of appropriate backflow prevention as required by section 37-144 and the Phoenix Plumbing Code.
4. The Planning and Development Director shall determine the type and location of all backflow prevention assemblies in accordance with this chapter and all other codes and ordinances of the City.
5. The Planning and Development Director shall keep adequate records of each test of an approved backflow prevention assembly and any subsequent maintenance or repair thereof.

(c) Customer responsibilities. It shall be the responsibility of the customer to prevent pollutants or contaminants from entering the customer's building potable water system and the public potable water system. The customer's responsibility starts at the point of service delivery from the public potable water system and includes all water piping systems. The customer is required to properly locate, install, test and maintain each backflow prevention assembly in good working condition and shall provide the necessary inspections to assure that the assembly is operating properly. These responsibilities include, but are not limited to, the following:

1. The customer shall obtain a permit from the Planning and Development Department for the installation of any backflow prevention assembly or for the modification of any plumbing system.
2. The customer shall test all backflow prevention assemblies at least once a year except that the Planning and Development Director may require more frequent testing if warranted. As to fire lines or fire sprinkler systems with backflow prevention assemblies, the initial and annual test shall be performed by a certified tester who is also permitted by the City Fire Marshal to test fire lines or fire sprinkler systems. The initial and annual test shall include a full flow test. It is the responsibility of the customer to test and submit all testing results to the Planning and Development Director. If the test reveals the assembly to be defective or in unsatisfactory operating condition, the customer shall perform to the satisfaction of the Development Services Director all repairs or replacement so that the assembly is in satisfactory operating condition.
3. If the Director, the Planning and Development Director, or customer becomes aware during the interim period between annual tests that an assembly is defective or in unsatisfactory operating condition, the customer shall perform to the satisfaction of the Planning and Development Director all repairs, replacement and any retesting so that the customer has an assembly in satisfactory operating condition.

4. Assembly testing shall be performed by a certified tester. Testing requirements shall be in accordance with the procedures outlined in the Eighth Edition of the University of Southern California Manual of Cross-Connection Control and Hydraulic Research (USC-FCCCHR or the Foundation) Los Angeles, CA, June, 1988 (hereinafter "USC manual"), section 9. The USC manual is incorporated herein by reference. One copy of the USC manual shall be on file with the City Clerk and the Planning and Development Department.

5. The customer shall be responsible for submitting copies of testing records pertaining to assemblies, on forms approved by the Planning and Development Director, by the date specified by the Planning and Development Director. The customer shall be required to retain all records for a minimum of three years from the date that a copy of the record was provided to the Planning and Development Director.

6. Backflow prevention assemblies shall be installed by the customer, at the customer's expense, in compliance with the standards and specifications adopted by the City.

7. In the event the customer's or the public water system is contaminated or polluted due to a cross connection or other cause, and the same comes to the knowledge of the customer, the Water Services Director and the Maricopa County Health Authority shall be promptly notified by the customer so that appropriate measures may be taken to overcome the contamination.

(Ord. No. G-3672, § 1; Ord. No. G-3774, § 1; Ord. No. G-4033, § 1, passed 7-2-1997, eff. 9-1-1997; Ord. No. G-5444, § 3, adopted 10-21-2009, eff. 11-20-2009; Ord. No. G-5590, § 1, adopted 2-23-2011, eff. 3-25-2011)

## **37-144 Backflow prevention methods.**

Unless otherwise specifically designated by the Director:

(a) An approved backflow prevention method shall be one of the following types:

1. Air gap: An unobstructed vertical distance through the free atmosphere between the opening of any pipe or faucet supplying potable water to a tank plumbing fixture or other device and the flood level rim of said tank, plumbing fixture or other device. An approved air gap shall be at least double the diameter of the supply pipe or faucet and in no case less than one inch.

2. Reduced pressure principle assembly (hereafter "RP"): An assembly containing two independently acting approved checkvalves together with a hydraulically operating, mechanically independent pressure differential relief valve located between the checkvalves and at the same time below the first checkvalve. The assembly shall include properly located test cocks equipped with brass plugs and tightly closing resilient seated shut-off valves at each end of the assembly.

3. Pressure vacuum breaker assembly (hereafter "PVB"): An assembly containing an independently operating, loaded checkvalve and an independently operating, loaded air inlet valve located on the discharge side of the checkvalve. The assembly shall be equipped with properly located test cocks fitted with brass plugs and tightly closing resilient seated shut-off valves located at each end of the assembly.

4. Double checkvalve assembly (hereafter "DC"): An assembly composed of two independently acting, approved checkvalves, including tightly closing resilient seated shut-off

valve at each end of the assembly and fitted with properly located test cocks equipped with brass plugs.

(b) Requirements for new services and existing services. An approved backflow prevention method is required for the activities or facilities listed in this paragraph that are connected to the public water system. The backflow prevention method shall be in accordance with that specified in section 7 of the USC Manual. The location shall be as close as practicable to the point of service delivery except that the customer may request that the approved backflow prevention method be located internally within the activity or facility. The customer must demonstrate that the proposed location will adequately protect the public water supply as well as satisfy the applicable requirements of this article. For purposes of this paragraph, the listed facilities, equipment or conditions shall be as defined in section 7 of the USC Manual, or if not listed in the USC Manual, shall be defined in the City of Phoenix Zoning Ordinance or Construction Code:

Industrial facilities:

- (1) Aircraft and missile plants (air gap or RP).
- (2) Automotive plants (air gap or RP).
- (3) Beverage bottling plants (air gap, RP or DC).
- (4) Breweries (air gap or RP).
- (5) Canneries, packing houses, reduction plants and food processing plants (air gap or RP).
- (6) Chemical plants—manufacturing, processing, compounding or treatment (air gap or RP).
- (7) Dairies and cold storage plants (air gap, RP or DC).
- (8) Film laboratories (air gap or RP).
- (9) Laundry and dye works (air gap or RP).
- (10) Metal manufacturing, cleaning, processing and fabricating plants (air gap, RP or DC).
- (11) Oil and gas production, storage or transmission properties (air gap or RP).
- (12) Paper and paper products plants (air gap or RP).
- (13) Plating plants (air gap or RP).
- (14) Power plants (air gap or RP).
- (15) Radioactive materials or substances—plants or facilities handling (air gap or RP).
- (16) Rubber plants—natural or synthetic (air gap or RP).
- (17) Sand and gravel plants (air gap or RP).
- (18) Semiconductor manufacturing facilities (air gap or RP).

(19) Sewage and storm drain facilities, reclaimed water (air gap or RP).

Medical facilities:

(20) Research laboratories (air gap or RP).

(21) Hospitals, medical buildings, sanitariums, morgues, mortuaries, autopsy facilities, nursing and convalescent homes and clinics (air gap or RP).

(22) Veterinary hospital, animal research, or animal grooming shops (air gap or RP).

Commercial and educational facilities:

(23) Buildings: Any structure having a cross connection in violation of the Phoenix Plumbing Code or water operated sewage pumping facilities, auxiliary water supplies or other like sources of contamination which would create a potential hazard to the public water system (air gap, RP or DC).

(24) Carwash facilities (air gap or RP).

(25) Motion picture studios (air gap or RP).

(26) Multi-storied buildings having booster pumps or above-ground storage tanks (air gap, RP or DC).

(27) Multiple services—interconnected (air gap, RP or DC).

Exception: Existing facilities which are not otherwise listed in section 37-144 constructed prior to August 1, 1993.

(28) Mobile home parks (RP or DC).

Exception: Existing mobile home parks unless a specific hazard is identified.

(29) Recreational vehicle parks (RP or DC).

(30) Schools and colleges with laboratories (air gap or RP).

(31) Retail shopping centers and strip malls; retail and industrial shell buildings (when one service supplies more than one tenant) (RP).

Exception: Existing retail shopping centers and strip malls, retail and industrial shell buildings (when one service supplies more than one tenant) unless a specific hazard is identified.

Portable or temporary services or equipment:

(32) Construction sites or construction water services (air gap or RP).

(33) Mobile equipment utilizing public potable water (i.e., water trucks, street sweepers, hydro-vacs, etc.) (air gap or RP).

(34) Portable insecticide and herbicide spray tanks (air gap or RP).

Miscellaneous activities and equipment:

(35) Auxiliary water systems (air gap or RP).

(36) Chemically contaminated water systems (air gap or RP).

(37) Fire systems:

(i) Class 1 or 2: No backflow prevention assembly required. Checkvalve assemblies required by the Phoenix Fire Code shall be inspected, tested and maintained at least annually to verify the valves are properly installed and functioning. Annual flow and valve confidence tests shall be performed by a tester who is permitted by the City Fire Marshal to test or maintain fire lines or fire sprinkler systems. Test results, on forms approved by the City, shall be provided to the Director and the City Fire Marshal within thirty days following the inspection. Any fire sprinkler system which fails shall be repaired as required by the Fire Code.

(ii) Class 3, 4, 5, or 6 (RP).

(38) Industrial fluid systems. Any industrial fluid system interconnected with the public water supply and containing any fluid or solution which may be chemically, biologically or otherwise contaminated or polluted in a form or concentration such as would constitute a health, system, pollution or plumbing hazard if introduced into an approved water supply (RP or DC).

(39) Irrigation systems:

(i) System using a chemical injection system (RP).

(ii) System having elevated areas which are higher than six inches below the PVB or multiple services (RP).

(iii) System not subject to backpressure (PVB).

(40) Restricted, classified or other closed facilities including civil works (air gap or RP).

(41) Solar heating systems—direct and auxiliary (RP).

Exception: Once through solar heating systems.

(c) The Planning and Development Director shall determine on a case-by-case basis backflow prevention requirements for any facility or activity not listed in this section in order to prevent contamination or pollution of the public potable water system.

(d) All assemblies shall be accessible for testing and maintenance. A reduced pressure principle assembly or double checkvalve assembly shall not be installed in a basement, meter box, pit, or vault unless adequate clearance and drainage is provided. A pressure vacuum breaker assembly shall be installed above ground.

(e) Unless a cross connection problem is specifically identified, or as otherwise provided in this ordinance, the requirements of this ordinance do not apply to single-family residences used solely for residential purposes.

(f) Close as practicable is the point nearest the service delivery where the assembly can be installed. Where the assembly installation location may interfere with obstacles such as driveways and sidewalks, then close as practicable is the nearest point after the obstacle, but in no event beyond the first tap.

(g) An air gap separation shall be located as close as practicable to the customer's point of service delivery. All piping between the customer's connection and receiving tank shall be entirely visible unless otherwise approved by the Planning and Development Director.

(Ord. No. G-3672, § 1; Ord. No. G-3774, § 1; Ord. No. G-4033, § 2, passed 7-2-1997, eff. 9-1-1997; Ord. No. G-5590, § 1, adopted 2-23-2011, eff. 3-25-2011)

### **37-145 Appeals.**

An action or decision concerning the determination of the Planning and Development Director may be appealed to the Development Advisory Board in accordance with the procedures set forth in chapter 2, article IX of the Phoenix City Code.

(Ord. No. G-3672, § 1; Ord. No. G-4176, § 14, passed 5-19-1999, eff. 6-18-1999; Ord. No. G-5590, § 1, adopted 2-23-2011, eff. 3-25-2011)

### **37-146 Remedies.**

(a) If a customer has committed one or more of the acts contained in paragraph d below and has not taken the corrective action as required by the Planning and Development Director, the Water Services Director may elect to impose a civil penalty not to exceed one thousand percent per billing period on the charges for all water used beginning from the date the corrective action was required and until the corrective action has been completed by the customer.

(b) If a situation, which would otherwise result in discontinuance of water service, is not remedied within the time provided in the notice of termination sent to the customer, the Water Services Director, at his discretion, may install a backflow prevention assembly at the customer's point of service delivery and bill the customer for all costs, together with all applicable penalties.

(c) The Water Services Director, at his discretion, may publish in the largest daily newspaper published in the City, notice of customers who at least once during the preceding twelve-month period were in violation with any requirement of this article. The publication shall also summarize any enforcement action taken.

(d) In addition to any other remedy available to the Water Services Director under chapter [37](#) of the Phoenix City Code, to enforce this article, the Development Services Director may request the Water Services Director to terminate water service if the customer:

(1) Fails to properly locate, install, test or maintain a required backflow prevention assembly;  
or

- (2) Removes or bypasses a required backflow prevention assembly without the prior approval of the Planning and Development Director; or
- (3) Allows a cross connection to occur;
- (4) Fails to timely submit records of tests and repairs of a backflow prevention assembly; or
- (5) Fails to comply with the written policy on backflow prevention and cross connection on file with the City Clerk and Planning and Development Director; or
- (6) Fails to comply with any requirements imposed upon the customer by State Rule R18-4-232.

Termination of water service shall be immediate and without prior notice if the Water Services Director determines that the customer's water system may cause a health hazard to the public potable water supply. Otherwise, the Water Services Director shall give ten days' written notice to the customer prior to termination of water service. Water service may be restored when the condition forming the basis for the termination has been remedied to the satisfaction of the Planning and Development Director. All costs, fees, and expenses incurred, and all surcharges and penalties relating to the termination and restoration of water service shall be paid prior to the water service being restored.

(Ord. No. G-3672, § 1; Ord. No. G-4033, § 3, passed 7-2-1997, eff. 9-1-1997; Ord. No. G-5444, § 3, adopted 10-21-2009, eff. 11-20-2009; Ord. No. G-5590, § 1, adopted 2-23-2011, eff. 3-25-2011)