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CROSS-CONNECTION CONTROL/BACKFLOW PREVENTION

In accordance with the Pennsylvania Department of Environmental Protection's Safe Drinking Water Act, Highridge Water Authority (HWA), hereby implements the following policy:

PA Title 25 Section 109.709(b)

"The public water supplier (PWS) shall develop and implement a comprehensive control program for the elimination of existing cross-connections and the effective containment of sources of contamination, and prevention of future cross-connections."

I. CROSS CONNECTION

a) A physical connection created between a possible source of contamination and the public drinking water system (HWA) that poses a potential health risk should an undesirable reversal of water flow carry a contaminant into the Highridge Water System.

b) This reversal of flow is called backflow and can happen in the following instances:

i. Backsiphonage occurs whenever conditions exist that cause a negative pressure in the public water system such as a high water withdrawal rate created by high public demand, a water main leak or firefighters opening hydrants. A negative pressure occurrence can siphon contaminants into the public water system (PWS) on any premise where a cross connection could exist.

ii. Backpressure conditions exist when a pressure higher than that of the public water system is created in the user's plumbing system and causes foreign substances (contaminants) to be pushed into HWA's water system. These higher pressures inside a customer's plumbing can be generated by a pump, thermal expansion from a boiler, and occasionally elevation.

c) The following are just several examples of cross-connection contaminants and backflow scenarios:

i. Soapy water or cleaning compounds backsiphon to the PWS through a faucet or hose submerged in a bucket or laundry tub.

ii. Pool water backsiphons into the PWS through a hose submerged in a swimming pool, hot tub, or spa.

iii. Fertilizers/pesticides back siphon into the PWS through a garden hose attached to fertilizer/pesticide sprayers.

iv. Bacteria/chemicals/additives in a boiler system backsiphon into the PWS.

v. Unsafe water pumped from a private well applies backpressure and contaminates the PWS through an illegal connection between the well and water supplied by Highridge.

II. BACKFLOW PREVENTION

The purpose of which is to isolate the particular premise and contain any contaminants to the user's side of PWS.

a) Residential Customers – Installation of an approved dual check valve device for backflow prevention is required. This will create a closed system within the home and may require the installation of a thermal expansion tank on the hot water tank. This device shall be located on the customers side of the water meter, as close to the meter as reasonably practical and prior to any other connection and will serve to separate the home owners water supply piping from the water mains of the PWS, thereby containing any contamination which may occur as a result of any cross connection and thus protecting the public water supply.

b) Commercial/Industrial Customers – A PWS approved backflow prevention assembly shall be installed at each service connection to a consumer's water system serving, but not necessarily limited to, the following types of facilities:

- Laboratories
- Hospitals, mortuaries, nursing homes or clinics, dental offices
- Sewage treatment plants
- Food or beverage processing plants
- Chemical plants
- Metal plating industries, processing plants

- Vehicle washing facilities
- Commercial boilers
- Commercial fire sprinklers
- Animal clinics
- Commercial laundries
- Mobile home parks or RV parks with RV hookups
- Multiple townhouse, condominium, and apartment unit exceeding 3 living units
- Schools and colleges
- Shopping plazas and malls
- Power plants
- Buildings with unspecified use

  NOTE: *Approved backflow prevention assemblies for commercial/industrial customers are testable.

c) If the consumer's water system serves multiple units on the property, each living or commercial unit must have an individual approved backflow preventer/assembly to prevent cross supply between units.

d) HWA shall determine backflow prevention requirements for all other facilities or activities not specified herein.

e) Due to the potential volume of water associated with a backflow incident, any service (domestic or other) larger than 1 ½ inches in diameter shall be protected by testable backflow prevention assembly approved by HWA.

III. APPROVED BACKFLOW PREVENTERS

- ASSE 1024 Dual check valve (non-testable) backflow preventer
- ASSE 1013 Reduced Pressure Zone backflow assembly (RPZ) – testable
- ASSE 1015 Double Check Valve Assembly (DCVA) – testable
  - For Commercial and Industrial applications, all installation and/or maintenance work must be done by a certified backflow prevention specialist.

Definitions

1. Approved – Any backflow prevention device/assembly that has been accepted by HWA as suitable for the proposed use.

2. Auxiliary Water System – Any water source or system on the premises of, or available to, the customer except connections to HWA water system.

3. Backflow – A condition, induced by a differential in pressure, that causes a reversal of flow of water from a consumer's water system into the public water system owned and operated by HWA. Backflow can result from either backsiphonage or back pressure.

4. Backflow Preventer – Device/assembly that prevents backflow of water or any other substance into HWA's water system.

5. Backpressure – An event which creates an increase of water pressure in the customer's water system that could create backflow into the PWS.

6. Backsiphonage – The backflow of water into the PWS whenever the PWS line pressure drops below that of the customer's water system. A drop in the PWS water main pressure can be due to a water leak or other events whereby a heavy withdrawal of water occurs in the system.

7. Consumer – Owner or person in control of any premises supplied with water through a connection to the public water system.

8. Consumer's Water System – Any water system located on the consumer's premises supplied or connected to the public water system. A household plumbing system is considered to be a consumer's water system and begins after the HWA service valve (curb stop).

9. Containment – Cross connection control device/assembly which isolates the consumer's entire facility from contaminating the public water system in the event of a backflow.

   NOTE – Although containment prevents contamination of the public water supply, it offers no protection to the consumer's water system.

10. Contamination – Degradation of the quality of drinking water that would create an actual health hazard to the public.

11. Cross-connection – A physical connection created between a possible source of contamination and the public drinking water system. Any auxiliary water system having a connection to a potable water line is a cross-connection.

12. Degree of Hazard – A determination by the water supplier as to the method of protection and installation that is sufficient to protect the public water system against a potential pollution or contamination hazard.

    a) High Hazard – highly dangerous if introduced to PWS that could cause death, injury, illness, or spread of disease, in other words, a definite danger to public health. Only reduced pressure zone assemblies can be used for this service connection.

    b) Low Hazard – a pollutant introduced into PWS, although generally not a health hazard, but would constitute a nuisance, or be aesthetically objectionable. Only testable backflow preventers are acceptable for these service connections.

13. Double Check Valve Assembly (DCVA) – An assembly composed of two single independently acting check valves, including tightly closing shut-off valves located at each end of the assembly that serves as a back flow preventer for use by commercial/industrial customers.

14. Dual Check Valve – An approved backflow prevention device for residential customers.

15. Hot Water Heating Systems – Used in residential premises and do not generate steam. Dual check valves (ASSE 1024) are permissible but must be replaced every 3-5 years.

16. Internal Protection – Plumbing code requirements require the consumer to isolate all water-use appliances within a facility (e.g. kitchen appliances, central air conditioning units, boilers, process tanks, etc.) from other lines of the consumer's water system (plumbing). These devices prevent backflow contamination within and throughout the facility.

    Examples of the safety devices outlined in national plumbing code requirements include:

    •air gaps built into sink, tub, and basin faucets

    •anti-siphon type ballcocks in toilets

    •vacuum breakers on hose bibs and sill cocks

    •backflow preventers on lawn sprinklers

    •backflow preventers on supply lines to boilers or other equipment containing non-potable and cross connected to the potable water system.

    •certain municipalities require backflow protection on swimming pools, hot tubs, spas, residential solar heating systems, and private wells and other auxiliary water supplies.

17. Isolation – in addition to the internal measures listed in #16, backflow prevention devices are required to prevent backflow contamination between multiple units served by a consumer's water system.

18. Non-potable water – Water not safe for drinking, personal, culinary, or any other type of domestic use. Many auxiliary water systems contain non-potable water.

19. Potable water – Water which is safe for drinking and domestic use which meets the requirements of DEP.

20. Property – otherwise referred to as a premises. A lot, parcel, or other division of land that is:

    c) Used for separate dwelling purposes;

    d) Equipped for the preparation of food;

    e) Used for a house, building, structure or personal property for human occupancy, employment, recreation or other purpose; and

    f) Used for condominiums, multi-family dwellings, mobile or recreational vehicle (RV) sites, parks, campgrounds, commercial or industrial purposes.

21. Public Water System (PWS) – Water system which consists of filtration facilities, pump stations, fire hydrants, water tanks, water mains, distribution lines, and any appurtenances used in the operation of supplying potable water to the public. HWA is a PWS.

22. Pumps – Where a booster pump has been installed on the service line to a property, such pump shall be equipped with a low pressure cut-off device designed to shut off the booster pump when the pressure in the service line on the suction side of the pump drops to 10 psi or less. Must be tested annually and results provided to PWS.

23. Reduced Pressure Zone Assembly (RPZ) – An assembly of two independently acting check valves, between which is located an automatically operated differential relief valve that is designed to prevent backflow. This assembly is one of two units that are required to be used by commercial and industrial customers. This shall be installed horizontally inside a building.

24. Service Connection – The water service line extending from the water main to Authority's service valve (curb box) and is installed and maintained by the public water supplier.

25. Steam Boiler – Generally used in commercial plumbing systems for heating larger buildings. Determined a high hazard and requires an RPZ (ASSE 1013) back flow assembly. Steam boilers are identified by the presence of a clear glass tube on one side of the boiler.

V. TESTING FREQUENCY

a. Residential – Visual check and/or test to coincide with meter maintenance and service line inspections. Change out subject to manufacturer's recommendation.

b. Commercial/Industrial – RPZ's and DCVA's shall be subject to annual testing by a certified test provider. Test results shall be reported to HWA on an approved form within 60 days after test date.

   Acceptable tester certifications:

   - American Society of Sanitary Engineering (ASSE)
   - Backflow Management, Inc. (BMI)
   - New England Waterworks Association (NEWWA)
   - American Water Works Association (AWWA)

VI. RETROACTIVE INSTALLATION REQUIREMENTS

The provisions of this policy shall apply to all new water customers and all water customers currently existing prior to the enactment date of this policy.

All existing water services will be subject by HWA to inspection of premises to determine if backflow preventers are present. Backflow prevention devices or assemblies installed prior to this enactment of this policy, which do not comply with current requirements, shall be updated at customer's expense.

VII. TERMINATIONS

a. Upon determination that a backflow prevention device/assembly is necessary, HWA will provide water user written notice allowing forty-five days from date of written notice to complete installation. If not completed within the 45 day period, a second notice shall be sent.

b. The second notice shall inform the water user that if installation of the backflow preventer is not completed within 15 days of the date of second notice, water service will be discontinued without further notice.

c. The same procedure explained above in (a) and (b) shall be used when customers are notified that annual testing of the device/assembly is to be completed. The testing must be completed by a certified test person.

d. HWA reserves the right to inspect any installation to ensure the proper backflow preventers are installed.