

MARANA BACKFLOW CODE

CHAPTER 14-8. BACKFLOW PREVENTION AND CROSS-CONNECTION CONTROL

14-8-1 Purposes

- A. To protect the public potable water supply from the possibility of contamination or pollution.
- B. To promote the elimination and control of actual or potential customer cross-connections.
- C. To provide for a continuing program of cross-connection control.

14-8-2 Backflow prevention required

- A. An approved backflow prevention method or device shall be utilized or installed at every water system service connection and us age point when required by applicable state and federal regulations.
- B. The town shall determine the backflow prevention method based on the degree of hazard.

14-8-3 Definitions

- A. Contamination: impairment of the quality of the water which creates an actual hazard to the public health through poisoning or through the spread of disease by sewage, industrial fluids, waste, etc.
- B. 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. Bypass arrangements, jumper connections, removable sections, swivel or change-over devices and other temporary or permanent devices through which or because of which backflow can occur are considered to be cross-connections.
 - 1. Direct cross-connection: A cross-connection which is subject to both backsiphonage and backpressure.
 - 2. Indirect cross-connection: A cross-connection which is subject to backsiphonage only.
- C. Degree of hazard: Either a pollutional (non-health) or contamination (health) hazard, derived from the valuation of conditions within a system.
- D. Hazard: An actual or potential threat which could damage public water utility infrastructure or negatively affect potable water quality.
 - 1. Plumbing hazard: An internal or plumbing type cross-connection in a consumer's potable water system that may be either a pollution or a contamination type hazard. Plumbing type cross-connections can be located in many types of structures including homes, apartment houses, hotels and commercial or industrial establishments. Such a connection, if permitted to exist, must be properly protected by an appropriate type of backflow prevention assembly.
 - 2. System hazard: An actual or potential threat of severe danger to the physical properties of the public or the consumer's potable water system or of a pollution or contamination which would have a protracted effect on the quality of the potable water in the system.
- E. Pollution: An impairment of the quality of the water to a degree which does not create a hazard to the public health but which does adversely and unreasonably affect the esthetic qualities of such waters for domestic use.

14-8-4 Backflow prevention methods or devices

- A. A backflow prevention method or device is any assembly or other means that prevents backflow. The following are recognized backflow prevention methods the town may require under section 14-8-2 or 14-8-5.

1. Air gap: A physical separation between the free flowing discharge end of a potable water supply pipeline and an open or non-pressure receiving vessel. An approved air gap shall be at least double the diameter of the supply pipe measured vertically above the overflow rim of the vessel, and in no case less than one inch.

2. Reduced pressure principle assembly (“RPA”): An assembly containing two independently acting approved check valves together 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 unit shall include properly located resilient seated test cocks and tightly closing resilient seated shut off valves at each end of the assembly.

3. Double check valve assembly (“DCVA”): An assembly composed of two independently acting, approved check valves, including tightly closing resilient seated shutoff valves attached at each end of the assembly and fitted with properly located resilient seated test cocks. This assembly shall only be used to protect against a non-health hazard (i.e., pollutant).

4. Double check detector assembly (“DCDA”): A specially designed assembly composed of a line size approved double check valve assembly with a bypass containing a specific water meter and an approved double check valve assembly. The meter shall register accurately for only very low rates of flow up to three gallons per minute and shall show a registration for all rates of flow. This assembly shall only be used to protect against a non-health hazard (i.e., pollutant). The DCDA is primarily used on fire sprinkler systems.

5. Pressure vacuum breaker assembly (“PVB”): An assembly containing an independently operating internally loaded check valve and an independently operating loaded air inlet valve located on the discharge side of the check valve. The assembly shall be equipped with properly located resilient seated test cocks and tightly closing resilient seated shutoff valves attached at each end of the assembly. This assembly is designed to protect against a non-health hazard (i.e., pollutant) or a health hazard (i.e., contaminant) under a backsiphonage condition only.

B. The utilities director may approve a backflow prevention method not listed above if it has received the approval of the foundation for cross-connection control and hydraulic research of the University of Southern California.

14-8-5 Backflow prevention methods required

A. The activities listed below require an RPA at each service connection to the potable water system:

1. Cooling tower, boiler, condenser, chiller, or other cooling system

2. Tank, water vessel, water receptacle, and any other water connection without an approved air gap, including a mobile unit (except emergency vehicles and private swimming pools)

3. Commercial ice maker

4. Water cooled equipment, booster, pump or autoclave

5. Commercial or industrial water treatment facility or water processing equipment

6. Commercial or industrial washer for bottles, bedpans, garbage cans, and the like

7. Commercial or industrial pesticide, herbicide, fertilizer, or chemical applicator

8. Aspirator

9. Commercial dishwasher, food processing or preparation equipment, carbonation equipment, or other food service process

10. Decorative fountain, baptismal, or similar feature where water is exposed to the air (except at a private residence)

11. X ray equipment, plating equipment, or photographic processing equipment

12. Auxiliary water supply or connection to a water supply system other than the town potable water system

13. Recreational vehicle sewer dump station or any other location where potable water may be exposed to bacteria, viruses, or gas

14. Any premises where chemicals, oils, solvents, pesticides, disinfectants, cleaning agents, acids or other pollutants and/or contaminants may come in direct contact with potable water (other than normal, infrequent residential applications)

15. Any material or piping system not approved by the uniform plumbing code or the environmental protection agency for potable water usage

16. Any premises with a cross-connection that requires internal backflow protection under the uniform plumbing code

17. Any on-site water system served by more than one meter

18. Any structure having any portion of the water distribution system located 34 feet or more above, or three or more stories above, where the potable water supply enters the structure

19. Any fire system falling within American water works association classes 3 through 6

B. The activities listed below require the following specified method or methods of backflow prevention at each service connection to the potable water system.

1. Separately metered or unprotected irrigation systems and construction water services: RPA or PVB.

2. Unless exempted by an applicable fire code, any fire system falling within American water works association classes 1 and 2 or constructed of a piping material not approved for potable water pursuant to the UPC as adopted by the town: DCVA or DDCVA

3. Where backflow protection is required on premises containing both industrial and domestic service, backflow protection shall be provided on the fire service connection for the highest degree of hazard affecting either system.

C. When two or more of the activities listed above are conducted on the same premises and serviced by the same service connection or multiple service connections, the most restrictive backflow prevention method required for any of the activities conducted on the premises shall be required at each service connection. The order of most restrictive to least restrictive backflow prevention methods shall be as follows:

1. Air gap
2. RPA
3. DCVA
4. PVB

14-8-6 Backflow assembly installation requirements

A. Each backflow prevention assembly shall have a diameter at least equal to the diameter of the service connection.

B. Each backflow prevention assembly shall be in an accessible location approved by the utilities department.

C. Each RPA, PVB, and DCVA backflow prevention assembly shall be installed at least 12 inches above ground.

D. When a continuous water supply is required, two parallel backflow prevention assemblies shall be installed at the service connection to avoid interruption of water supply during backflow prevention assembly testing.

E. No person shall alter, modify, bypass or remove a backflow prevention assembly or method without the approval of the utilities department.

14-8-7 Installation of backflow prevention assemblies for fire systems

In addition to the requirements of section 14-8-5, the following shall also apply:

A. Fire protection systems consist of sprinklers, hose connections, and hydrants. Sprinkler systems may be dry or wet, open or closed. Systems of fixed spray nozzles may be used indoors or outdoors for protection of flammable liquid and other hazardous processes. It is standard practice, especially in towns, to equip automatic sprinkler systems with fire department pumper connections.

B. A meter (compound, detector check) should not normally be permitted as part of a backflow prevention assembly. An exception may be made, however, if the meter and backflow prevention assembly are specifically designed for that purpose.

C. For cross-connection control, fire protection systems shall be classified on the basis of water source and arrangement of supplies as follows:

1. Class 1: direct connections from public water mains only; no pumps, tanks, or reservoirs; no physical connection from other water supplies; no antifreeze or other additives of any kind; all sprinkler drains discharging to atmosphere, dry wells, or other safe outlets.

2. Class 2: same as class 1, except that booster pumps may be installed in the connections from the street mains. Booster pumps do not affect the potability of the system; it is necessary, however, to avoid drafting so much water that pressure in the water main is reduced below 20 psi.

3. Class 3: direct connection from public water supply main plus one or more of the following: elevated storage tanks; fire pumps taking suction from aboveground covered reservoirs or tanks; and pressure tanks (all storage facilities are filled or connected to public water only, the water in the tanks to be maintained in a potable condition.) Otherwise, class 3 systems are the same as class 1 systems. Class 3 systems will generally require minimum protection (approved double check valves) to prevent stagnant waters from backflowing into the public potable water system.

4. Class 4: directly supplied from public mains similar to classes 1 and 2, and with the auxiliary water supply on or available to the premises; or an auxiliary supply may be located within 1,700 feet of the pumper connection. Class 4 systems will normally require backflow protection at the service connection. The type (air gap or RPA) will generally depend on the quality of the auxiliary supply.

5. Class 5: directly supplied from public mains, and interconnected with auxiliary supplies, such as pumps taking suction from reservoirs exposed to contamination, or rivers and ponds; driven wells, mills or other industrial water systems; or where antifreeze or other additives are used. Class 4 and 5 systems normally would need maximum protection (air gap or RPA) to protect the

public potable water system.

6. Class 6: combined industrial and fire protection systems supplied from the public water mains only, with or without gravity storage or pump suction tanks. Class 6 system protection would depend on the requirements of both industry and fire protection, and could only be determined by a survey of the premises.

D. When a backflow prevention assembly is required for a water service connection supplying water only to a fire system, the assembly shall be installed on the service line in compliance with standard specifications adopted by the town. (Installation of DCVAs or DDCVAs in a vertical position on the riser may be allowed on fire systems with the approval of the utilities director.)

14-8-8 Inspections

A customer's water system shall be available at all times during business operations for premises inspection by the utilities department. The inspection shall be conducted to determine whether any cross-connection or other hazard potentials exist and to determine compliance with this chapter.

14-8-9 Backflow permit required

A. Installation: Unless included as a component of a building permit for new construction, a separate backflow permit shall be obtained from the utilities department for the installation of each backflow prevention assembly required by this chapter, including a replacement assembly.

B. Notification: The person performing work authorized by a backflow permit shall notify the utilities department at least 24 hours before the work is ready to be inspected.

C. Permit suspension or revocation: The utilities department may suspend or revoke a permit issued in error or in violation of any applicable ordinance or regulation.

14-8-10 Test; maintenance; records

A. The customer shall test and service backflow prevention assemblies at least once a year. If the testing reveals that the assembly is defective, the customer shall repair, replace, or overhaul the assembly to satisfactory operating condition.

B. If the utilities department or a customer learns or discovers between tests that an assembly is defective, the customer shall repair, replace, or overhaul the assembly to satisfactory operating condition.

C. The annual testing shall be performed by an individual certified by an entity approved by the utilities department to test backflow prevention assemblies. The utilities department will maintain and make available upon request a list of individuals certified to test backflow prevention assemblies.

D. The customer shall maintain records of all test results and all servicing, repairs, overhauls or replacements of the backflow prevention assembly. The records shall be maintained on forms approved by the utilities department. A copy of the records shall be promptly submitted to the utilities department after completion of the activity for which the record is made.

E. Fire systems shall not be out of service for more than eight consecutive hours due to testing, maintenance, or repairs. The local fire department shall be notified immediately of any changes in fire service status.

14-8-11 Modification of backflow prevention requirements

The utilities department may modify the requirements of section 14-8-5 if both of the following apply:

A. Inspection of the customer's system indicates that a backflow prevention method less restrictive than required in section 14-8-5 will provide adequate protection of the public potable water supply from the degree of hazard potential by the customer's water system.

B. The less restrictive method is supported by industry best management practices.

14-8-12 Discontinuance of water service

A. If a required backflow prevention method is not installed or has been bypassed or removed, or an unprotected cross-connection exists in the customer's water system, the water service to that service connection shall be disconnected. The utilities department shall take reasonable steps to notify the customer before, and if unable to do so, after the disconnection. The service shall not be restored until the condition is corrected.

B. If a required backflow prevention method is not properly tested or maintained, the utilities department shall issue a notice to the customer requiring the condition to be corrected within the time specified in the notice, which shall be not less than seven days. If not corrected within the time specified in the notice, water service shall be disconnected. The service shall not be restored until the condition is corrected.

C. Water service to a fire sprinkler system shall not be disconnected unless a cross-connection exists and presents an imminent threat to the public potable water supply.

14-8-13 Fees

The fee for any permit required pursuant to the terms of this chapter shall be established by a fee schedule adopted by the council and amended from time to time.

14-8-14 Violation

It shall be a civil offense, punishable by a \$250 fine, for any person to violate any of the requirements of this chapter. Each day a violation continues shall be considered a separate offense.