

VOLUME II -
Chapter 49 - WATER, SEWERS AND SEWAGE DISPOSAL
ARTICLE II. - MUNICIPAL WATER SYSTEM
DIVISION 3. BACKFLOW PREVENTION AND CROSS-CONNECTION CONTROL

DIVISION 3. BACKFLOW PREVENTION AND CROSS-CONNECTION CONTROL

Sec. 49-58. Purpose.

The purposes of this division are as follows:

- (1) To protect the public potable water supply of the City from the possibility of contamination or pollution by preventing the backflow of contaminants and pollution into the public potable water supply system;
- (2) To promote the elimination or control of existing cross-connections, actual or potential, within a ~~user's~~ **customer's** internal potable water system, plumbing fixtures and industrial piping systems;
- (3) To provide for a continuing program of cross-connection control which will prevent the contamination or pollution of the public potable water supply system; and
- (4) To comply with Arizona Department of Environmental Quality Regulations including A.A.C. §R18-4-215.

Sec. 49-59. Backflow prevention required.

- (a) Backflow prevention shall be required at every customer supply line of a ~~user's~~ **customer's** water system when the Water Resources Division determines that the potable water supplied by the public potable water system may be subject to contamination, pollution or other deterioration of quality by conditions or potential conditions within the ~~user's~~ **customer's** water system. **The customer and the property owner are responsible for meeting the requirements of this division.**
- (b) Backflow prevention required by the Water Resources Division shall be sufficient to protect against the potential degree of hazard to the public potable water supply from the ~~user's~~ **customer's** water system.

Sec. 49-60. Hazard potential.

The potential degree of hazard to the public potable water supply and system from a ~~user's~~ **customer's** water supply system shall be determined using the following hazard factors:

- (1) *Health*: Any actual or potential condition, device or practice which, in the judgment of the Water Resources Division, may create a threat of contamination to a potable water supply or may create a danger to the health and well-being of the potable water consumers.
- (2) *Plumbing*: An actual or potential plumbing cross-connection in a ~~users~~ **customer's** water supply system that has not been protected by an approved backflow prevention assembly. A plumbing hazard may be either a pollution or contamination hazard.
- (3) *Nonhealth*: Any actual or potential condition, device or practice which, in the judgment of the Water Resources Division, may create a threat of pollution to a potable water supply system that is either a nuisance or aesthetically objectionable but is not toxic and does not pose a health hazard.
- (4) *System*: Any actual or potential condition, device or practice which, in the judgment of the Water Resources Division may create a threat of severe damage to the physical properties of a potable water supply system or that would have a protracted effect on the quality of the potable water in the system.

Sec. 49-61. Backflow prevention assemblies; approved list.

- (a) All backflow devices, independent of design and application, must be "lead free" as defined in 40 Code of Federal Regulations (CFR) 143, Subpart B and the Safe Drinking Water Act Section 1417. The following are the recognized types of backflow prevention assemblies which the Water Resources Division may require, subject to the degree of hazard, under section 49-59 or section 49-62.
- (1) *Air gap*: The unobstructed vertical distance through free atmosphere between the lowest point of a water supply outlet, pipe or faucet supplying potable water to a tank, plumbing fixture or other device and the flood level rim of the tank, plumbing fixture or other device. An approved air gap shall be at least twice the diameter of the supply pipe or faucet and in no case less than one (1) inch.
 - (2) *Reduced pressure principle assembly (hereinafter "RP")*: A backflow prevention 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 assembly shall include properly located test cocks and tightly closing shut-off valves at each end of the assembly.
 - (3) *Double check valve assembly (hereinafter "DC")*: A backflow prevention assembly composed of two independently acting, approved check valves, including tightly closing shut-off valves located at each end of the assembly and fitted with properly located test cocks.
 - ~~(4) *Pressure vacuum breaker assembly (hereinafter "PVB")*: A backflow prevention assembly containing an independently operating, 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 test cocks and tightly closing shut-off valves located at each end of the assembly.~~
- (b) A ~~user~~ customer may use a backflow prevention assembly if it has received the approval of the Foundation for Cross-Connection Control and Hydraulic Research of the University of Southern California, the American Society of Sanitary Engineering or other recognized testing agency approved by the Water Resources Division, and its use is approved by the division. Approved assemblies must have a local manufacturer's parts and service center.

Sec. 49-62. Backflow prevention assemblies required.

- (a) When any of the following items or activities are present or conducted on premises served by the public potable water supply system, a potential hazard to the public potable water supply system shall be presumed and a backflow prevention assembly, of the type specified for that item or activity herein, must be in place at each service connection for that premises. The Water Resources Division reserves the right to require a higher level of protection based on site-specific hazard evaluations.
- (1) Aircraft and missile plants: RP.
 - (2) Animal clinics and animal grooming shops: RP.
 - (3) Any premises where a cross-connection is maintained: RP.
 - (4) Automotive repair with steam cleaner, acid cleaning equipment, or solvent facilities: RP.
 - (5) Auxiliary water systems: RP.
 - (6) Beauty shops: RP.
 - (7) Bottling plants, beverage or chemical: RP.
 - (8) Breweries: RP.

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- (9) Buildings that have plumbing or fixtures connected to plumbing that are greater than thirty-four (34) feet in height maximum from service connection: RP.
- (10) Buildings with house pumps and/or potable water storage tank: RP.
- (11) Buildings with landscape fountains, ponds, or baptismal tanks: RP.
- (12) Buildings with sewage ejectors: RP.
- (13) Buildings used for commercial mini-warehouses or industrial uses where one (1) service connection supplies more than one (1) tenant or occupant of the building: RP.
- (14) Buildings with potable water service lines that are greater than or equal to one hundred (100) feet in length: RP.
- ~~(14)~~15) Canneries, packing houses, and reduction plants: RP.
- ~~(15)~~16) Car wash facilities: RP.
- ~~(16)~~17) Cooling towers, boilers, chillers and other heating and cooling systems utilizing potable water: RP.
- ~~(17)~~18) Chemical plants: RP.
- ~~(18)~~19) Chemically treated potable or nonpotable water systems: RP.
- ~~(19)~~20) Civil works (government-owned or- operated facilities not open for inspection by the Water Resources Division): RP.
- ~~(20)~~21) Commercial laundries: RP.
- ~~(21)~~22) Dairies and cold storage plants: RP.
- ~~(22)~~23) Dye works: RP.
- ~~(23)~~24) Film processing laboratories, facilities, or equipment: RP.
- ~~(24)~~25) Fire systems, as classified by the American Water Works Association (AWWA) Manual M14, 2nd edition:
- a. In accordance with section 49-64(a), Class 1, Class 2: DC.
 - b. Class 3, all systems: DC
 - c. Classes 4, 5 and 6, all systems: RP.
- ~~(25)~~26) Fire systems. Where backflow protection is required on the industrial/domestic service connection that is located on the same premises, both service connections will have adequate backflow protection for the highest degree of hazard affecting either system.
- ~~(26)~~27) Food processing plants: RP.
- ~~(27)~~28) Educational Institutions, Public and Private: RP.
- ~~(28)~~29) Holding tank disposal stations: RP.
- ~~(29)~~30) Hospitals and mortuaries: RP.
- ~~(30)~~31) Hydrant meters connecting to the public potable water supply system to be used for irrigation or construction water: RP or air gap.
- ~~(31)~~32) Irrigation system:
- a. Premises where nonpotable water is used for irrigation: RP.

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- b. Premises using potable water with nonpotable water piping: RP.
 - c. Premises having a system served by more than one (1) service connection (looped system): RP.
 - d. Landscape irrigation systems: PVB or RP.
- ~~(3233)~~ Laboratories using toxic materials: RP.
 - ~~(3334)~~ Manufacturing, processing, and fabricating plants using toxic or nontoxic materials: RP.
 - ~~(3435)~~ Master metered apartments, condos and townhouses with more than two units per meter: RP.
 - ~~(3536)~~ Medical and dental buildings, sanitariums, rest and convalescent homes engaged in the diagnosis, care or treatment of human illness: RP.
 - ~~(3637)~~ Mobile home parks served by master meter: RP.
 - ~~(3738)~~ Motion picture studios: RP.
 - ~~(3839)~~ Multiple services-interconnected: RP.
 - ~~(3940)~~ Oil and gas production facilities: RP.
 - ~~(4041)~~ Paper and paper product production facilities: RP.
 - ~~(4142)~~ Plating plants: RP.
 - ~~(4243)~~ Portable insecticide and herbicide spray tanks: RP or air gap.
 - ~~(4344)~~ Post mix drink machines: RP.
 - ~~(4445)~~ Power plants: RP.
 - ~~(4546)~~ Public swimming pools with self-levelers or automatic fillers: PVB or RP.
 - ~~(4647)~~ Radioactive materials processing facilities: RP.
 - ~~(4748)~~ Restaurants: RP.
 - ~~(4849)~~ Restricted, classified, or other closed facilities: RP.
 - ~~(4950)~~ Rubber plants: RP.
 - ~~(5051)~~ Sand and gravel plants: RP.
 - ~~(5152)~~ Sewage and storm drainage facilities: RP.
 - ~~(5253)~~ Shopping centers served by master meters: RP.
 - ~~(5354)~~ Waterfront facilities, piers, docks, dockside facilities and boat marinas: RP.
 - ~~(5455)~~ Water trucks, water tanks or hydraulic sewer cleaning equipment: RP or air gap.
- (b) When two (2) or more of the items or activities listed above are present or conducted on the same premises and served by the same service connection, the most restrictive backflow preventer required for any of the items or activities present or conducted on the premises shall be required to be utilized or installed at the service connection. The order of most restrictive to least restrictive backflow preventers shall be as follows:
- (1) Air gap (most restrictive);
 - (2) Reduced pressure principle assembly (RP);
 - (3) Double check valve assembly (DC);
 - ~~(4) Pressure vacuum breaker assembly (PVB) (least restrictive).~~

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- (c) If any property owner or account holder customer fails to install a device or perform any action required by this section within ninety-fourty-five (9045) calendar days for install of a device or thirty (30) days to perform a necessary action of receiving written notice from the Water Resources Division of the need to do so, the Division may either:
- (1) If feasible, install the required device or perform any necessary action on behalf of the property owner or account holder customer and include the cost of such installation plus a one hundred (100) percent surcharge on the next regularly scheduled invoice to the account holder, or
 - (2) Discontinue water service as outlined in Section 49-66 to the property until the required device is installed.
 - (3) Once a customer is designated as non-compliant, the then current water rate per 1,000 gallons will be adjusted by one hundred fifty (150) percent for one full billing cycle or until the customer is deemed compliant, whichever comes later.
- (d) The notice sent to the property owner or account holder customer in accordance with subsection (c) shall include an advisory from the Division that the Division may install an appropriate device at the owner or account holder's expense or that the service may be discontinued if the required device is not installed assess additional fees, discontinue service, or perform actions at the responsible party's expense if required actions are not completed or if a required device is not installed.

Sec. 49-63. Backflow assembly installation—Requirements; location.

- (a) Backflow prevention assemblies shall be installed at the customer supply line connection by the user/customer, by obtaining a permit for the appropriate backflow prevention assembly and completing the installation within 45 calendar days. This installation shall be at the user's customer's expense and the standards and specifications adopted by the Division. The assembly shall have a diameter at least equal to the diameter of the service connection.
- (b) The backflow prevention assembly shall be installed in an accessible location as close as possible to the service connection with proper clearances above the ground in accordance with the current set of standard details approved by the Division for backflow prevention assemblies.
- (c) When a user customer requires a continuous water supply, two (2) or more backflow prevention assemblies shall be installed parallel to one another at the customer supply line to allow a continuous water supply during testing or maintenance of the backflow prevention assemblies. When backflow prevention assemblies are installed parallel to one another, the sum of the cross-sectional area of the assemblies shall be at least equal to the cross-sectional area of the customer supply line the diameter of each assembly shall be at least equal to the diameter of the service connection.

Sec. 49-64. Installation for fire sprinkler systems.

- (a) A backflow prevention assembly is required for a customer water supply system connection supplying water only to a fire sprinkler system shall be installed in compliance with the current set of standard details adopted by the Division. A dedicated water supply main for the fire sprinkler system shall be provided with backflow protection. The supply shall not be a common domestic/fire sprinkler main. A double check valve backflow prevention assembly must be installed on a fire sprinkler system when any of the following conditions occur:
 - (1) During the course of new construction on commercial buildings;
 - (2) The existing class 1 or 2 fire sprinkler system is modified from its present condition requiring new hydraulic calculations;

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- (3) The existing single check valve shows signs of deterioration/defects and/or lacks inspection records required by 49-64(C);
 - (4) The existing system or condition of the system constitutes a hazard to the health, safety or welfare of the public.
- (b) If the chief of the fire department, or their designee, determines that a fire sprinkler system shall have a continuous water supply which may not be interrupted during testing of the backflow prevention assembly, the ~~user~~ customer shall install, at their expense, two (2) backflow prevention assemblies parallel to one another at the service connection. The diameter of each assembly shall be at least equal to the diameter of the service connection.
- (c) Owners of existing Class 1 and 2 fire sprinkler prevention systems that do not have a double check backflow prevention assembly shall annually have the internal components of the required single check valve assembly inspected and maintained according to procedures identified in the National Fire Protection Association Publication 25 or Division guidelines. Inspection tag must be prominently displayed or easily accessible at all times. If the single check is defective, it shall be reported within twenty-four (24) hours to the fire department and Water Resources Division and the Owner must obtain a permit and complete installation to replace the defective single check valve with a double check backflow prevention assembly within 45 calendar days.
- (d) Prior to installing or replacing a backflow prevention assembly on an existing sprinkler system, the sprinkler system must be tested and determined able to meet National Fire Protection Association Standard 13 minimum flow calculations with the addition of a backflow prevention assembly on the existing system. The fire department must approve the plans and hydraulic calculations prior to the installation of a backflow prevention assembly. The approved plans and calculations shall be available on-site at the time of the fire department underground inspection and flow test. Immediate retrofit of the appropriate backflow prevention assembly shall be required if the existing system or condition of the system constitutes a hazard to the health, safety or welfare of the public.
- (e) Any person, firm, corporation, partnership, enterprise or association, whether as principal, owner, agent, tenant, or otherwise who violates, disobeys, omits or refuses to comply with, or who resists the enforcement of any of the provisions of this section is subject to a civil penalty. Upon a finding of a civil violation, the court shall impose a fine not to exceed one thousand dollars (\$1,000.00). Each day a violation of any provision of this section continues to exist shall constitute a separate offense.
- (f) Notwithstanding subparagraph (e) of this section, a second or subsequent violation of any of the provisions of this section within a two-year period shall be deemed a misdemeanor. Upon conviction of a misdemeanor, the defendant shall be sentenced pursuant to the provisions of sSection 1-8 of this Code.

Sec. 49-65. Inspections; maintenance; records.

- (a) An inspection ~~shall~~ may be conducted to determine whether any cross-connections or other hazard potentials exist and to determine compliance with this article. The ~~user's~~ customer's water system shall be available at all times during normal business hours for inspection by authorized personnel of the Water Resources Division.
- (b) Backflow prevention assemblies shall be tested at least once a year during the designated testing month determined by the Division. A notice shall be issued by the Division to the ~~user~~customer when a backflow prevention assembly is due for testing. If the testing reveals the assembly to be defective or in unsatisfactory operating condition, repairs shall be performed and a passing test of operation provided to the Division, including replacement of the assembly if necessary, which will return the assembly to satisfactory operating condition within forty-five (45) calendar days after the date of the notice issued by the Division. The testing and maintenance of each assembly shall be performed at the expense of the ~~user~~ customer.

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- (c) If the Division or ~~user~~ customer learns or discovers, during the period between tests, that an assembly is defective or is in unsatisfactory operating condition, the ~~user~~ customer shall perform any necessary repairs, including replacement of the assembly, if necessary, which will return the assembly to satisfactory operating condition.
 - (d) The installation, testing, maintenance, repair, and replacement of backflow prevention assemblies shall only be performed by an individual certified and approved by an agency recognized by the Division. A tester may be suspended from testing in Scottsdale for improper testing, maintenance, reporting or other improper practices as determined by the Division.
 - (e) The ~~user~~ customer or property owner shall maintain records, of the results of all installation, testing, maintenance, repairs, and replacements of the backflow prevention assemblies on forms approved by the Division for a minimum of three years and must provide them upon request. The ~~user~~ customer or property owner shall submit to the Division a copy of the records within ~~seven~~ ten (710) calendar days after completion of the activity for which the records are made.
 - (f) Existing Class 1 and 2 fire systems that are not equipped with a double check backflow prevention assembly shall have the internal components of the required single check valve assembly inspected and maintained according to procedures identified in the National Fire Protection Association Publication 25, as contained in the Water Based Fire Protection Systems, 1992 edition. Inspections of fire protection systems shall be performed on an annual basis with records of the inspections provided to the fire department and the Division. Any malfunction or abnormality with the check valve shall be reported within twenty-four (24) hours to the local fire department and Water Resources Division and replaced immediately with a double check backflow prevention assembly.

Sec. 49-66. Discontinuance of water service; notice.

- (a) The Division may disconnect water service to any ~~user~~ customer who refuses entry or access to Division inspectors for inspection pursuant to Section 49-65.
- (b) If the Division discovers that a ~~user~~ property owner or customer has not installed a required backflow prevention assembly or that a backflow prevention assembly has been improperly tested or maintained, bypassed or removed, or that an unprotected cross-connection exists in the ~~user's~~ customer's water system, the customer supply line from the meter shall be disconnected if the situation is not remedied within the time specified in the notice sent to the ~~user~~ property owner or customer as described in subsection (d) below. The {customer supply line} shall not be restored until the condition is remedied.
- (c) A {customer supply line} to a fire sprinkler system shall not be subject to disconnection under this section, but may be subject to penalties pursuant to Section 49-64 of this Code.
- (d) Prior to disconnecting any customer supply line because a condition set forth in subsection (a) or (b) above exists, the Division shall send a notice, to the customer, and property owner if different than the customer, describing the condition and notifying the ~~user~~ customer and property owner that the condition must be remedied within thirty (30) calendar days after notice is sent by the Division ~~mailing of the notice by the division~~. If such condition is not remedied within the thirty (30) calendar -day period, the dDivision shall send a second notice, by certified mail, to the ~~user~~ property owner and customer ~~notifying the customer~~ that water service will be disconnected in ten (10) calendar days if the condition is not remedied within such time period.
- (e) The Division may disconnect, without notice, water service to any ~~user~~ customer when the division discovers that the ~~user's~~ customer's water system is contaminating the public potable water supply.
- (f) If water service is terminated for non-compliance with the provisions in this ~~Division~~ section, a fee to reimburse the city will be added to the ~~user's~~ customer's monthly water billing statement upon compliance

with the required backflow testing as outlined in Section 49-65. The fee shall be a minimum charge equal to two (2) hours of labor at the prevailing the current disconnect rate as established by the City in Section 49-54(b). The property owner may be charged such additional amounts as may be necessary and in all such cases, the user customer shall receive an itemized bill. The fee shall be assessed for each additional water turn-on trip required after each non-compliance with this Division section resulting in termination of water service.

Sec. 49-67. Reserved.

Sec. 49-68. Plan review.

- (a) All backflow prevention assemblies which will be installed shall be shown and specified on all required building and engineering plans. City approval of the intended installation is required prior to issuance of any building or encroachment permit.
- (b) Installation permits for the installation or replacement of all backflow prevention assemblies required by the City shall be obtained from the City prior to installation. A separate permit shall be obtained for each required backflow prevention assembly to be installed or replaced, including replacement. All newly installed, including replacement, assemblies are to be tested by a certified tester and shown to be operating correctly.
- (c) Backflow prevention assemblies must be installed as to meet the current set of standard details and specifications of the Water Resources Division and be tested by a certified tester and shown to be operating correctly before a temporary certificate of occupancy is issued by the City.
- (d) The Water Resources Division may, in writing, suspend or revoke a permit issued under the provisions of this article, whenever the permit is issued in error, or on the basis of incorrect information supplied, or in violation of any ordinance or regulation of any provision of the Uniform Plumbing Code or this article. Installation permits expire one (1) year from issuance.
- (e) The Water Resources Division retains independent enforcement authority under Scottsdale Revised Code Chapter 49 to require the installation of backflow prevention assemblies at any stage of development or occupancy, regardless of prior plan approval. Failure to include or install required assemblies may result in enforcement actions, including withholding of water service or occupancy approvals, until compliance is achieved.

Sec. 49-69. Fees.

A fee may be established by City Council resolution to recover the cost of the cross-connection control program.

Sec. 49-70. ReservedVariances.

A variance is an approval by the Division Director that authorizes a deviation from one or more requirements of Sections 49-58 through 49-70 if in the opinion of the Division Director a health hazard, safety or nuisance will not result from the deviation.

- (a) Variances may be required when an unusual or unreasonable barrier exists to comply with a provision of this Division.
- (b) A separate variance must be obtained for each deviation from the requirements of this Division.

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- (c) A variance may be granted provided that the proposed alternate method or work conforms to the general intent of the rules and regulations. A variance granted by the Division may include stipulations or additional requirements.
 - (d) Request must be submitted through the formal variance process established by the Division.
 - (e) The Division will notify the applicant upon determination.
 - (f) Any subsequent replacement or location change of an assembly will require a new variance request.