WATER WORKS AND SANITARY SEWER BOARD

OF THE

CITY OF MONTGOMERY

Montgomery, Alabama

CROSS-CONNECTION AND BACKFLOW PREVENTION POLICY

AUGUST 1998

INTRODUCTION

In September 1949, pursuant to Section 394 through 402 of Title 37 of the Code of Alabama (1940) , the Board was duly formed and incorporated with the title "The Water Works Board of the City of Montgomery." In September 1952, the functions of the Board were expanded to include the operation of the sanitary sewer system of the City and its title was changed to "The Water Works and Sanitary Sewer Board of the City of Montgomery."

As a purveyor of potable water, the Board is required by law to ensure the public potable water system remains safe under all ***foreseeable*** circumstances. Under the current governing regulations the Board is obligated to promulgate and enforce any rule, regulation, or policy necessary to accomplish this task. This responsibility begins at the source of the water supply, includes the distribution system, and ends at the user's connection (meter).

It is realized cross-connection control and plumbing inspections on premises of water customers are regulatory in nature and should be handled through the rules, regulations, and recommendations of the health authority or the plumbing-code enforcing agencies having jurisdiction. However, the Board will take all reasonable precautions to protect the public water distribution system from any hazard originating on a customer's premises. Such action would include the installation of backflow prevention devices consistent with the degree of the hazard (actual or perceived) at the service connection or the discontinuance of water service.

This cross-connection control and backflow prevention policy is consistent with and meets the requirements of the following:

- The Federal Safe Drinking Water Act of 1974 (and Amendments of 1986) - Public Law 93-523.
- The U.S. Environmental Protection Agency (EPA) - Cross Connection Control Manual, 1989.
- The National Fire Prevention Association (NFPA) Code 25, 1998 Edition
- The Alabama Department of Environmental Management, Division 7, Water Supply Program, Code R. 335-7-9 - Cross-Connection Control Requirements. Effective: January 1996.
- Statutory Authority: Code of Alabama 1975, Section 22-23-33, 22-23-49, 22-22A-5, and 22-22A-6.
- Rules and Regulations of the Water Works & Sanitary Sewer Board of the City of Montgomery, Alabama (Amended 1995)

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I. INTENT

The intent of this policy is to protect against any actual or potential cross-connection, back pressure, or backsiphonage which could endanger the quality of the public potable water supply. The protection outlined under this policy shall be provided through the implementation of three backflow prevention methodologies: isolation, elimination, and program maintenance.

A. Isolation

Isolate within the customer's internal distribution systems such contaminants or pollutants which could backflow or backsiphon into the public water supply system.

B. Elimination

Eliminate existing cross-connections, actual or potential, between the consumer's water systems and the public potable water system.

C. Program Maintenance

Maintain a program of cross-connection control which effectively prevents the contamination or pollution of the potable water system by requiring the installation and maintenance of approved backflow prevention devices at potential cross-connection locations.

II. DEFINITIONS

A. Auxiliary water

Any water on or available to the premises other than the water supplied by the public water system. These auxiliary waters may include water from another supplier's public water system; or water from a source such as wells, lakes, or streams; or process fluids; or used water. They may be polluted, contaminated, or objectionable, or constitute a water source or system over which the supplier does not have control.

B. Backflow

Any reversal of flow of water from its intended direction that can potentially cause used water to return to the Board's distribution system. Backflow or reversed flow occurs through a cross connection under two conditions - Back Pressure and Backsiphonage.

C. Back Pressure

Backflow caused by an increase in the pressure of the private (customer's) system above that of the Board's distribution system.

D. Backsiphonage

Backflow caused by a lowering in the pressure of the Board's distribution system below that of the private (customer's) system.

E. Degree of hazard

A term derived from an evaluation of the potential risk to health and the adverse effect on the potable water system.

F. Cross Connection

Any physical connection between a potable water system and any potential source of contamination not protected by an approved device. By-pass arrangements, jumper connections, removable sections, swivel or change-over devices, and other temporary or permanent devices through which backflow can occur are considered to be cross-connections

G. Customer

The owner or tenant, or the agent of either, or other persons in charge of any premises supplied by or in any manner connected to the Board's potable water system.

H. Health Hazard

Any condition, device, or practice in a water system or its operation that creates, or may create, a danger to the health and well-being of users. The word "severe" as used to qualify "health hazard" means a hazard to the health of the user that could reasonably be expected to result in significant morbidity or death.

I. Pollutional hazard

A condition through which an aesthetically objectionable or degrading material not dangerous to health may enter the public water system or a consumer's potable water system.

J. Process fluids

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, pollutional, or system hazard if introduced into the public or a potable consumer's water system. This includes, but is not limited to:

- Polluted or contaminated waters
- Process waters

- Used waters originating from the public water system which may have deteriorated in sanitary quality
- Cooling waters
- Contaminated natural waters taken from wells, lakes, streams, or irrigation systems
- Chemicals in solution or suspension
- Oils, gases, acids, alkalis, and other liquid and gaseous fluids used in industrial or other processes, or for fire fighting purposes

K. Service Connection

The terminal end of a service line from the public water system. If a meter is installed at the end of the service, then the service connection means the downstream end of the meter.

L. Service Lines

The customer's potable water system downstream of the Board's meter.

M. System hazard

A condition posing an actual or potential threat of damage to the physical properties of the public water system or a consumer's potable water system.

N. Used water

Any water supplied by the public water system to a consumer's water system and is no longer under the control of the supplier.

III. POLICY

A. General

It is a primary responsibility of the Board to evaluate the hazards inherent in supplying a customer's potable water system. When a hazard or potential hazard to the public water supply is identified on the customer's premises, the customer shall be required to install approved backflow prevention device(s) at each service connection to the premises. The type and location of the device(s) shall be approved by the Board.

B. New Service Connections

All applications for new service connections to the public potable water system shall be evaluated by the Board to determine the degree of hazard present and the type of backflow prevention assembly required. The criteria used for evaluation shall be as outlined in section IX of this document (FACILITIES REQUIRING

BACKFLOW PROTECTION). The device(s) required and approved by the Board shall be installed and tested by the customer before service will be granted.

Where adequate plans and specifications are not available for review, and no realistic evaluation of the proposed water uses can be determined, the Board will require the customer to install a backflow prevention assembly that will provide the maximum protection to the public potable water supply.

C. Existing Service Connections

For services existing prior to the start of this program, the Board will perform evaluations and inspection of plans and/or premises to identify potential cross connections/backflows. Initial focus will be on high hazard industries and commercial premises. Once identified, the Board shall inform owners by letter of any corrective action deemed necessary, the method of achieving the correction, and the time allowed for the correction to be made.

Ordinarily, ninety (90) days will be allowed for compliance. However, this time period may be shortened depending upon the degree of hazard involved and the history of the device(s) in question. The criteria for selection of backflow protection shall be as outlined in section IX of this document (FACILITIES REQUIRING BACKFLOW PROTECTION).

Any customer who cannot or will not allow an on-premises inspection of their piping system shall be required to install the backflow prevention assembly that will provide the maximum protection to the public potable water supply system. Refusal by a customer to allow an inspection or refusal to install the required backflow preventer shall cause the Board to discontinue service for non-compliance.

IV. RESPONSIBILITY

A. Purveyor

The Purveyor shall have the responsibility for developing, implementing, and enforcing a backflow prevention policy that will reasonably protect the public potable water supply from hazards or pollutants originating in its customers' systems.

In June of 1984, the AWWA stated:

> *"The water purveyor has a responsibility to provide its customers, at the service connection, with water that is safe under all foreseeable circumstances. Thus, in the exercise of that responsibility the water*

purveyor must take reasonable precaution to protect the community distribution system from hazards originating on the premises of its customers that may degrade the water in the community."

In December 1990, the Alabama Department of Environmental Management stated:

"It is the responsibility of the community water system to establish and to operate a cross connection control and backflow prevention program consistent with the extent of the system within the jurisdiction of the utility."

Such responsibility begins at the point of origin of the water supply and includes adequate treatment facilities, storage facilities, distribution system, and ends at the point of service to the consumer's water system.

The Purveyor shall not be held responsible for any losses or damages incurred by the consumer as a result of upgrading existing backflow prevention assemblies or the installation of new approved backflow prevention assemblies required under this policy.

B. Customer

The customer shall have the prime responsibility of preventing contaminants and pollutants from their water systems from entering the public potable water supply.

The customer shall have the responsibility to consult with the appropriate engineering professionals to ensure the backflow devices required by this policy are incorporated into their existing system appropriately. The customer shall furnish and install all approved backflow prevention assemblies required in accordance with this policy.

The customer shall bear all cost for the installation, testing, and maintenance of the prevention assemblies including any repairs or upgrades to their existing water distribution system that may be necessary as a result of a decrease in line pressure or flow attributed to the upgrade.

V. PENALTIES FOR NON-COMPLIANCE

A. Discontinuance of service

Under the authority of Alabama Department of Environmental Management Code R. 335-7-9-.05, the Board shall deny or discontinue water service to any customer if a required backflow prevention device is not installed, tested, or properly maintained, or if a cross-connection exists on the premises and in the view of the

Board, there is inadequate backflow protection at the service connection. Water service shall not be restored to such premises until the deficiencies have been corrected or eliminated to the satisfaction of the Board.

VI. CAUSES OF BACKFLOW

Backflow is the undesirable reversal of flow of used water or other substances through a cross-connection and into the piping of a public water system or consumer's potable water system. There are two types of backflow: backsiphonage and backpressure.

A. Backsiphonage

Backsiphonage is the backflow caused by negative or reduced pressure in the supply piping. The principal causes of backsiphonage are:

- Breaks or repairs on the supply system piping which cause a negative pressure.
- Withdrawal of water through an undersized piping system at high velocity can result in a pressure differential creating a reversal of flow from unprotected service connections.
- Reduced supply pressure due to high flows withdrawn due to fire fighting, suction of a booster pump, water main flushing or water main breaks.

B. Back Pressure

Back pressure is the reverse flow of water caused by an increase in the pressure on the downstream side of a service connection to a pressure greater than that in the water supply system. The principal causes of back pressure are:

- Connection with auxiliary water systems having a higher pressure.
- Connection to boilers, booster pumps, and other pressure systems without backflow preventers.
- Storage tanks or plumbing systems which, due to their elevations, could create sufficient back pressure.

VII. APPROVED BACKFLOW PREVENTION METHODS

Currently there are only five EPA/AWWA approved methods for the prevention of backflow. Methods include air gap, double check valve assembly, reduced pressure principle backflow prevention assembly, atmospheric vacuum breaker, and pressure vacuum breaker.

For the purposes of protecting the Board's distribution system only the air gap, double check valve assembly, and reduced pressure principle backflow prevention assembly are applicable. Descriptions, functions, and applications of the atmospheric and pressure vacuum breakers are provided for information only.

A. Air Gap (AG)

1. Description

An air gap is an unobstructed vertical distance through free atmosphere between the lowest point of a water supply outlet and the flood level rim of the fixture or assembly into which the outlet discharges. These separations must be at least twice the diameter of the water supply outlet, but never less than one inch. In theory, a well designed air gap is the best means available for protection against backflow. The air gap method of protection is the most vulnerable to bypass.

2. Application

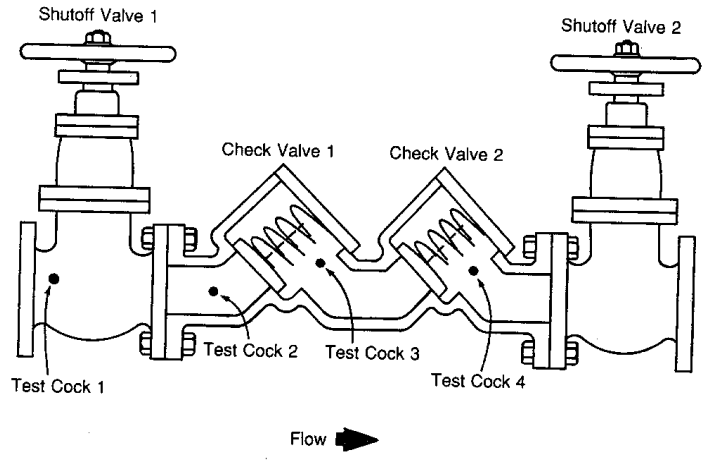
The only absolute means to eliminate backflow. This method, however, does not guarantee continuous protection because it is the easiest method of protection to bypass.

Note: This method is easily subjected to modification and/or cross connection and will only be considered for backflow protection under special circumstances.

B. Double Check Valve Assembly (DCVA)

1. Description

The DCVA consists of two internally loaded check valves, either spring loaded or internally weighted, installed as a unit between two tightly closing resilient-seated shutoff valves as an assembly, and fittings with properly located resilient-seated test cocks.



2. Function

During normal operation the check valves open, permitting flow. If a backflow condition occurs, the check valves will close tightly, preventing any backflow.

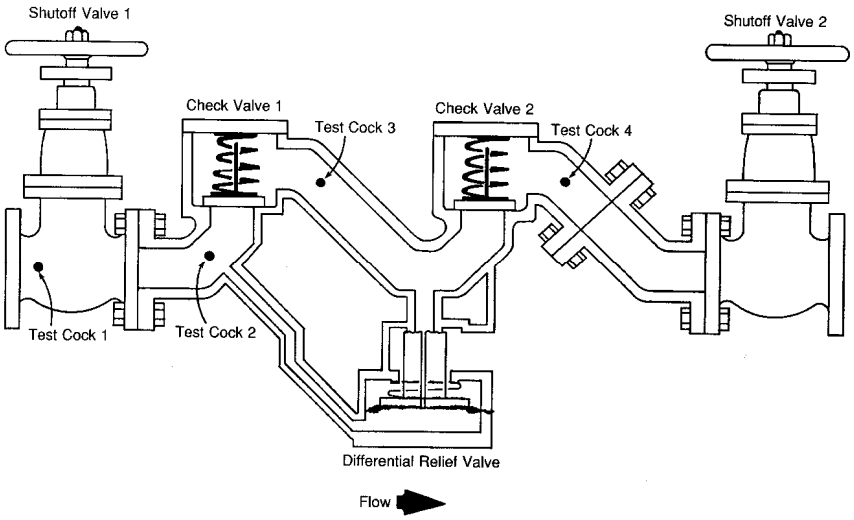
3. Application

The DCVA is effective against backflow caused by back pressure and backsiphonage and is used to protect the water system from pollutants that would not constitute a health hazard but might be objectionable to the water supply. The DCVA is used to isolate non-health hazards. The DCVA will be a backflow protection option for industrial/commercial and residential customers who, in the Board's opinion, do not present a health hazard to the public water distribution system.

C. Reduced-Pressure Principle Backflow-Prevention Assembly (RPBA)

1. Description

The RPBA backflow prevention assembly consists of two independently acting check valves together with a hydraulically operating, mechanically independent pressure-differential relief valve located between two tightly closing resilient-seated shutoff valves, as an assembly, and are equipped with properly located resilient-seated test cocks.



2. Function

During normal operation the first internally loaded check valve creates a reduced-pressure zone between the two check valves. Under normal flow conditions both valves are open, allowing flow to the downstream piping. The relief valve is held closed by the supply pressure acting on a diaphragm within the relief valve.

In a no-flow or static-pressure condition both check valves will close and the supply pressure will hold the relief valve shut.

If the supply pressure drops, the relief valve will maintain a minimum pressure in the zone between check valve one and check valve two of 2 psi lower than the supply pressure by releasing sufficient water to maintain the required difference in pressure. If the supply pressure becomes less than 2 psi, the relief valve opens, discharging the material in the reduced-pressure zone to the atmosphere.

In the event that pressure increases downstream of the assembly, tending to reverse the direction of flow, both check valves in the assembly should close tightly and prevent backflow. However, if the second check valve does not close tightly, leakage into the reduced-pressure zone will increase the pressure and cause the relief valve to open.

If the supply pressure drops to atmospheric pressure or within 2 psi of the reduced-pressure zone, the relief valve will open, creating an internal air gap. Any leakage past the second check valve would then be discharged through the open relief valve.

3. Application:

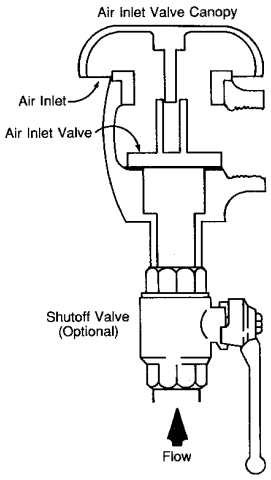
The RPBA is effective against backflow caused by back pressure and backsiphonage. The RPBA is used to isolate health hazards. The main advantage is there is visible flow if failure of the assembly or system occurs. The RPBA is normally used in locations where an approved air gap is impractical. The RPBA shall be used to isolate customers that, in the Board's opinion, present a health hazard to the public distribution system.

Note: It is important to remember that RPBA's are mechanical devices and must be tested and serviced regularly to maintain positive protection.

D. Atmospheric Vacuum Breaker (AVB)

1. Description

The atmospheric vacuum breaker is an assembly that performs similarly to a pressure vacuum breaker. The AVB consist of a float check, a check seat, and an air inlet port. A shutoff valve immediately upstream may be an integral part of the assembly.



2. Function

During normal flow, the float within the AVB seals against the air inlet seat. When a backsiphonage condition develops, the cessation of normal flow permits the float to drop, thus opening the air inlet valve. The float seals against the check seat and there is no backsiphonage from the AVB body or downstream piping. If the seat is fouled, the air entering through the air inlet valve dissipates the vacuum through the check valve, thus preventing the backsiphonage into the supply piping.

3. Application

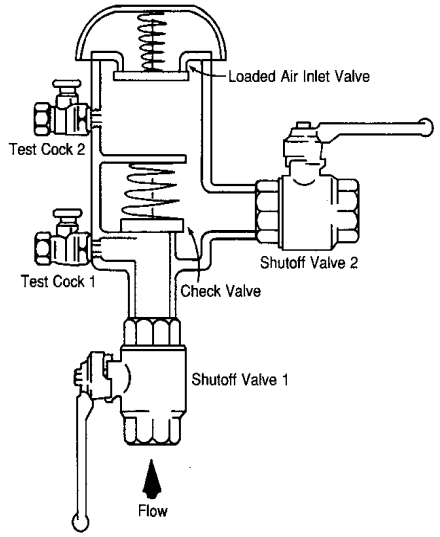
The AVB is effective against backflow caused by backsiphonage only and shall not be used if back pressure could develop in the downstream piping.

The AVB should be used for protection against non-health hazards. If used to isolate a health hazard, additional area or premises isolation shall be required. Note: This assembly is not for use at a meter because of its inability to protect against back pressure conditions. This assembly will not be considered as a backflow protection alternative for the Board's system.

E. Pressure Vacuum Breaker (PVB)

1. Description

A pressure vacuum assembly consists of an independently operating internally loaded check valve and an independently operating loaded air inlet valve located on the discharge side of the check valve with properly located resilient-seated test cocks, and tightly closing resilient -seated shutoff valves attached to each end of the assembly.



2. Function

During normal flow the internally loaded check valve remains open and the air inlet valve is closed. When backsiphonage condition develops, the internally loaded check valve closes. If this check valve is not fouled, it precludes backsiphonage of water from the PVB body and downstream piping. However, if the check valve is fouled, the air inlet valve opens

with the cessation of normal flow and allows air to enter the supply pipe through the fouled check valve, thus, breaking the vacuum and not permitting backsiphonage from the downstream piping.

3. Application

The PVB is effective against backflow caused by backsiphonage only and should not be used if back pressure could develop in the downstream piping.

The PVB is normally used to isolate both pollutants and contaminants. If used for health hazards, careful consideration must be given to the possibility of the assembly being circumvented. Where such possibilities exist, area or premises isolation is necessary.

Note: This assembly is not for use at a meter because of its inability to protect against back pressure conditions. This assembly will not be considered as a backflow protection alternative for the Board's system.

VIII. BACKFLOW PREVENTION SELECTION CRITERIA

The type of backflow protection that will be required shall be commensurate with the degree of hazard that exists on the consumer's premises. It is commonly accepted that the degree of hazard increases as a function of both the probability that backflow will occur and the toxicity of the substance that may backflow. However, the risk associated with the substance's toxicity (or virulence) is always a greater concern. Thus, when selecting the type of assembly, it is the potential hazard, and not the probability of its occurrence, that will govern the required backflow prevention assembly.

The type of approved backflow prevention assemblies that may be required (listed in increasing level of protection) includes: DCVA, RPBA, or an air-gap separation. *Note: The customer may choose a higher level of protection than required by this policy.*

IX. FACILITIES REQUIRING BACKFLOW PROTECTION

Situations which are not covered in this policy shall be evaluated on a case-by-case basis and appropriate backflow protection shall be determined by the Board's Engineer. If, in the opinion of the Board's Engineer, a premises presents a pollutional or a contaminant risk (actual or potential) to the public potable water supply system, the Board shall require the customer to isolate such premises through the use of appropriate backflow prevention devices.

A. Fire Protection Systems

All fire protection systems connected to the water purveyor's potable water system on the property side of the potable water service, shall be isolated with an approved backflow prevention assembly.

Note: A single check or single check detector check shall not be considered an approved backflow preventer.

The level of backflow protection shall be commensurate with the degree of hazard. The following are descriptions of those situations which determine the different fire systems hazards, and the minimum acceptable type of backflow protection required:

1. High-Hazard Fire Systems:

   Required backflow prevention assembly is a reduced pressure backflow assembly (RPBA) or a reduced pressure backflow/detector assembly (RPDA). This category shall include:

   a) All foamite systems
   b) Systems where an unapproved auxiliary water supply is connected to a fire system, or is in close proximity and intended for use by fire pumper trucks.
   c) Systems in which chemical addition or antifreeze is allowed.

Note: Whenever chemicals are added to a system, the probability of those chemicals being toxic should be considered in the risk assessment. No assurance can be accepted that a system containing a non-toxic chemical will continue to contain only non-toxic chemicals in the future, either due to human error or the choice of a less expensive toxic chemical. ***ALL FIRE PROTECTION SYSTEMS WILL BE CONSIDERED AS HIGH HEALTH HAZARDS UNLESS THE BOARD HAS KNOWLEGE THAT A SYSTEM DOES NOT CONTAIN AND IS UNLIKELY TO CONTAIN CHEMICALS.***

2. Low Hazard Fire System:

   The recommended backflow prevention assembly is a double check valve assembly (DCVA) or a double check backflow/detector assembly (DCDA). This category consists of all fire systems not included under "High Hazard Fire Systems."

Note: The risk assessment is partly based on water utilities' experience that chemicals, particularly antifreeze, have been added to a sprinkler system without a chemical feed connection.

B. Premises Isolation: "Health Hazard"

The Board shall require an approved reduced pressure principle backflow prevention assembly to isolate an entire premises for any premises, facility, or process where a potential cross connection could constitute a health hazard to the public water supply.

Premises that fall into the classification of a potential health hazards include but are not limited to:

- Premises that irrigate with pond water or other untreated surface water
- Premises where inspection is restricted
- Hospitals, mortuaries, clinics, etc.
- Laboratories
- Farming operations
- Piers, docks, and other water front properties
- Sewage treatment plants and sewage lift stations
- Food and beverage processing plants
- Chemical plants using water
- Metal plating plants
- Petroleum processing or storage plants
- Gas stations, filling stations, etc.
- Radioactive materials processing plants/nuclear reactors
- Car washing facilities
- Any premises using reclaimed water
- Facilities with complex piping layout which could result in an unintentional cross connection
- Premises that have pressurized sewer force mains

C. Premises Isolation: "Pollutant Hazard"

In addition to any backflow prevention device required by the Standard Plumbing Code, the Board may require an approved double check valve backflow prevention assembly to isolate an entire premises.

Premises that have the potential to generate back pressure creating backflow of a pollutional hazard into the public water supply shall be isolated from the public water supply. Premises that fall into this classification include but are not limited to:

- Premises with an auxiliary water supply
- Multi-storied buildings that use booster pumps or elevated storage tanks to distribute potable water within the premises
- Any building that exceeds forty (40) feet in height as measured from the service connection to the highest water outlet.
- Any premises that requires a domestic service of 1 ½" or larger unless identified as a "Health Hazard" in paragraph B above.
- Any premise that contains multiple service lines unless identified as a "Health Hazard" in paragraph B above

X. APPROVED BACKFLOW PREVENTION ASSEMBLIES

Approved backflow prevention assemblies accepted for installation are as listed in the Board's Engineering Design Manual, Section 8 Water Distribution Systems (latest edition).

XI. INSTALLATION OF ASSEMBLIES

A. General

Backflow prevention and detector assemblies, as required by the Board, shall be situated on the customer's premises as close to the service connection as practicable. They shall be installed in the horizontal or vertical position as recommended by the manufacturer and protected from the elements. No intervening connections or by-passes shall be between the service connection and outlet side of the assembly, except for by-pass meter piping on detector devices. The customer shall have all devices tested immediately after installation and annually thereafter. A certificate verifying the testing shall be sent to the Board.

B. Strainers

The Board strongly recommends all new installation of reduced pressure principle devices and double check valve backflow preventers include the installation of strainers located immediately upstream of the backflow device. The installation of strainers will preclude the fouling of backflow devices due to both foreseen and unforeseen circumstances occurring to the water supply system such as water main repairs, water main breaks, fires, periodic cleaning and flushing of mains, etc. These occurrences may "stir up" debris within the water main that will cause fouling of backflow devices installed without the benefit of strainers.

C. Assembly Arrangement

1. Double Check Valve Assembly

The Double Check Valve shall not be buried in earth, but may be installed below ground in a meter box or vault provided the test cocks are fitted with brass plugs. A positive shut off valve shall be on the inlet side of the device. Three ball valve test cocks shall be on the device; a fourth test cock shall be on the inlet side of the No.1 shutoff valve. A union or flange should be adjacent to the inlet and outlet sides of the device.

2. Reduced Pressure Principle Assembly

Reduced Pressure Principle backflow preventers shall not be buried or installed in below ground vaults. This device shall be installed above ground and so located to prevent a relief or vent opening from being submerged at any time. When installed in above ground vaults, there shall be drain outlets to the outside of the vault at grade level. The device shall be positioned in the vault so the relief or vent opening is a minimum of twelve (12) inches above final grade level outside the vault. The drain outlet in the vault shall be a minimum of four (4) times the area of the outlet side of the device. Three ball valve test cocks shall be on the device; a fourth test cock shall be on the inlet side of the device.

3. Double Check Valve Detector Check

This device is for fire systems only. The device may be installed below ground in a vault as specified by the Board. The four ball valve test cocks on the device shall be fitted with brass plugs. A union or a flange should be adjacent to the inlet and outlet side of the device.

4. Reduced Pressure Principle Detector Check

This device is for fire systems only. The device shall not be buried or installed in below ground vaults. The device shall be installed above ground and located to prevent any relief or vent opening from being submerged at any time. There shall be a drain outlet to the outside of the vault at grade level. The drain outlet(s) shall be a minimum four (4) times the area of the relief vent opening on the device. A union or flange should be adjacent to the inlet side of the device.

D. Assembly Enclosures

Approved backflow prevention assembly enclosures accepted for installation are as listed in the Board's Engineering Design Manual, Section 8 Water Distribution Systems (latest edition).

XII. BACKFLOW PREVENTION ASSEMBLY REMOVAL

Approval must be obtained from the Board before a backflow prevention assembly is removed, relocated, or replaced. Devices servicing fire prevention systems shall also require approval of the Montgomery Fire Department, Division of Codes and Standards at (334) 241-2916.

A. Removal

The use of a device may be discontinued and the device removed from service upon presentation of sufficient evidence to the Board to verify that a hazard no longer exists.

B. Relocation

An assembly may be relocated following confirmation by the Board that the relocation will continue to provide the required protection and satisfy the installation requirements. Testing and certification will be required upon relocation.

C. Replacement

An assembly may be removed and replaced provided the water use is discontinued until the replacement assembly is installed. All replacement assemblies must be approved by the Board and must be commensurate with the degree of hazard involved. An assembly may be removed for repair, provided the water use is discontinued until the repair is completed and the device is returned to service. Water use may be continued if the service connection is equipped with other backflow protection approved by the Board.

XIII. TESTING

A. General

It shall be the responsibility of the customer to maintain in good working condition all backflow preventers located on premises. All tests, repairs, overhauls, and/or replacements shall be at the expense of the customer.

B. Testing Personnel

Testing of backflow prevention assemblies shall be performed by certified backflow prevention assembly technicians. Testing personnel shall complete a 32 hour training course as outlined by the AWWA Manual M14, *Recommended Practice for Backflow Prevention and Cross Connection Control*, latest edition. The course shall include class room instruction, laboratory (hands-on) experience with various types of backflow prevention assembles, familiarization with testing equipment from several manufacturers, and the successful completion of a written examination. No test reports shall be accepted from non-certified personnel.

Test(s) of backflow assembly devices submitted by non-certified/non-approved inspectors shall be considered in non-compliance with the policy.

1. Fire Line/Sprinkler Systems

   In addition to the requirements of testing personnel as outlined above, personnel testing backflow devices servicing Fire Lines/Sprinkler Systems must be a pre-approved, qualified inspection technician, currently on file with the State Fire Marshall's office. Testing documentation received from non-approved sources shall not be considered for review.

C. Test frequency

Approved backflow prevention assemblies shall be tested immediately after installation and annually thereafter. In instances where the Board has deemed the hazard is great enough, testing may be required at more frequent intervals.

D. Test Reports/Procedures

Reports on all testing and maintenance of backflow prevention assemblies shall be reported to the Board's online database by either the certified Testing Personnel or a Responsible Managing Employee of the Testing Personnel's Company. Test procedures shall be those currently recommended by the Foundation for Cross-Connection Control and Hydraulic Research - University of Southern California as reported in the latest edition of the *Manual of Cross-Connection Control*.

1. Fire Line/Sprinkler Systems

   In addition to the requirements of testing as outlined above, personnel testing backflow devices servicing Fire Lines/Sprinkler Systems shall comply with the requirements of NFPA 25, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems, 1998 Edition, Section 9-6.

E. Non-Compliance Administration Procedure

The Board shall notify each affected water user when it is time for the backflow prevention assembly installed on the service connection to be tested. This written notice shall give the water user thirty (30) days to have the device tested and supply the water user with the necessary form to be completed and resubmitted to the department. For devices servicing fire prevention systems, a copy of the notice shall be forwarded to the Montgomery Fire Department, Division of Codes and Standards.

A second notice shall be sent to each user who does not have his/her backflow prevention device tested as prescribed in the first notice within the thirty (30) day period allowed. The second notice shall give the water user a two-week period to have his/her backflow assembly tested. If no action is taken within the two-week period, the Board may terminate water service to the affected water user until the subject device is in compliance. For devices servicing fire prevention systems, a copy of the second notice stating the Board's intent to terminate for non-compliance shall be forwarded to the Montgomery Fire Department, Division of Codes and Standards.