Memphis Light, Gas & Water Division

CROSS CONNECTION CONTROL PROGRAM

(http://www.mlgw.com/crossconnection)

June 2024

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Definition of Terms

Air Gap: A physical separation between the free flowing discharge end of a potable water supply line and an open or non-pressurized receiving vessel.

Approved Air Gap: An air gap separation with a minimum distance of at least twice the diameter of the supply line when measured vertically above the overflow rim of the vessel, but in no case less than one (1) inch.

Approved: Any condition, method, device, procedure accepted by the Tennessee Department of Environment and Conservation, Division of Water Supply, and Memphis Light, Gas & Water Division (the water purveyor).

Auxiliary Intake: Any piping connection or device whereby water may be secured from any sources other than from the public water system.

Auxiliary Water Supply: Any water supply on or available to the premises other than water supplied by the public water system.

Backflow: The reversal of the intended direction of flow of water or mixtures of water and other liquids, gases, or other substances into the distribution pipes of a potable water system from any source.

Backpressure: A pressure in the downstream piping that is higher than the supply pressure.

Backsiphonage: Negative or Sub-atmospheric pressure in the supply piping.

Backflow Prevention Assembly: An approved assembly designed to prevent backflow.

Bypass: Any system of piping or other arrangement whereby water may be diverted around a backflow prevention assembly, meter, or any other public water system controlled device.

Contamination: The introduction or admission of any foreign substances that causes illness or death.

Contaminant: Any substance introduced into the public water system that will cause illness or death.

Cross Connection: Any physical arrangement whereby public water supply is connected, directly or indirectly, with any other water system, sewer, drain, conduit, pool, storage reservoir, plumbing fixture or other device which contains, or may contain, contaminated water, sewage, or other waste or liquid of unknown or unsafe quality which may be capable of contaminating the

public water supply as a result of backflow caused by the manipulation of valves, because of ineffective check valves or backpressure valves or because of any other arrangement.

Direct Cross Connection: An actual or potential cross connection subject to backsiphonage and backpressure.

Double Check Valve Assembly (DCVA): An assembly of two internally loaded check valves, either spring loaded or internally weighted, installed as a unit between tightly closing resilient seated shutoff valves and fitted with properly located resilient seated test cocks. This type of device shall only be used to protect against non-health hazard pollutants.

Fire System Classifications Protection: The classes of fire protection systems, as designated by the American Water Works Association "M14" for cross connection control purposes based on water supply source and the arrangement of supplies, are as follows:

Class 1: Direct connection to the public water main; non pumps, tanks, or reservoirs; no physical connection from other water supplies; no antifreeze or other additives or any kind; all sprinklers drains discharging to the atmosphere, dry well or other safe outlets.

Class 2: Same as Class 1, except booster pumps may be installed in connection from the street mains.

Class 3: Direct connection to public water supply mains in addition to any one or more of the following: elevated storage tanks; fire pumps taking suction from above ground covered reservoirs or tanks; and pressure tanks.

Class 4: Directly supplied from public water supply mains, similar to Class 1 and Class 2, with an auxiliary water supply dedicated to fire department use and available premises, such as an auxiliary supply located within 1700 feet of the pumper connection.

Class 5: Directly supplied from public water supply mains and interconnection with auxiliary supplies such as pumps taking suction from reservoirs exposed to contamination, or from rivers, ponds, wells or industrial water systems; where antifreeze or other additives are used.

Class 6: Combined industrial and fire protection systems supplied from the public water mains only, with or without gravity storage or pump suction tanks.

Hazard, Health (High Hazard): A cross connection or potential cross connection with less risk of contamination, or less likelihood of cross connections contaminating the system involving any substance that could, if introduced in the public water supply, cause death, illness and spread disease.

Hazard, Health (High Risk High Hazard): A cross connection or potential cross connection with an immediate risk of cross connection contamination involving any substance that could, if introduced in the public water supply, cause death, illness and spread disease. High Risk High Hazards require a reduced pressure principle (or detector) assembly.

Hazard, Health (Low Hazard): A cross connection or potential cross connection involving any substance that would not be a health hazard, but would constitute a nuisance or be aesthetically objectionable if introduced into the public water supply.

Indirect Cross Connection: An actual or potential cross connection subject to backsiphonage only.

Inspection: An on-site evaluation of an establishment to gather detailed information about the water usage and potential risk to MLGW's water supply. Inspections may include an in-depth tour of the premise by MLGW representatives along with dialogue with customer personnel in order to determine all hazards are mitigated to a proper degree.

Point of Entry (POE): The point of delivery to the customer's water system; the terminal end of a service connection from the public water system where the water department loses jurisdiction and control over the water.

Questionnaire: A list of questions that will be given to residential and/or commercial/industrial customers by mail, online, or by automated phone system in order to determine the cross connection risk level of the premise. Questionnaires will be given to residential and/or commercial/industrial customers requesting a new service and to all residential and/or commercial/industrial customers approximately once every 5 years. Results of the questionnaire will be used to determine any risks to the water system.

Reduced Pressure Principle Assembly (RP): An assembly consisting or two independently acting approved check valves together with hydraulically operating, mechanically independent, pressure differential relief valve located between the check valves and below the first check valve. These units shall be located between two tightly closing resilient seated shutoff valves as an assembly and equipped with properly located resilient seated test cocks.

Survey: A cursory review of a premise by a water system representative performed for the determination of actual or potential cross connection hazards and the appropriate backflow prevention needed.

Verification: An on-site evaluation of a specific area of a premise to address any discrepancies between MLGW records and data submitted by Testers, or resolve conflicting information from a survey, inspection, or test submittal.

Memphis Light, Gas and Water Division
Cross Connection Control Program

I. Introduction

A. Purpose

Pursuant to the Tennessee Department of Environment and Conservation (TDEC) Division of Water Supply:

> *Each public water supply shall develop a comprehensive, ongoing program for the detection, elimination, and prevention of cross connections. A policy or ordinance and a plan for the program shall be submitted to the Director of the Division of Water Supply, Tennessee Department of Environment and Conservation, for review and approval. Upon approval of the plan, the water purveyor shall implement the program.*

Pursuant to Sections 68-221-701 through 68-221-720 of the Tennessee Code Annotated:

> *The water purveyor has primary responsibility to prevent water from unapproved sources, or any other foreign substance from entering the public water system. The water purveyor is prohibited by this law and the regulations authorized herein for installing or maintaining a water service connection to a customer's private water system where cross connection or backflow hazard exists or will probably exist, unless the public water supply system is properly protected against backflow.*

The goal of Memphis Light, Gas & Water (MLGW) is to supply safe drinking water to each and every customer under all foreseeable circumstances. Each instance where water is used improperly so as to create the possibility of backflow due to cross connections threatens the health and safety of customers and increases the chances of not realizing this goal. The possibility of backflow due to improper use of water within the customer's premises is especially significant because such cross connections may easily result in the contamination of our water supply mains. Such situations may result in the public water system becoming a transmitter of disease causing organisms, toxic materials, or other hazardous substances that may adversely affect large number of people.

The only protection against such occurrences is the elimination of such cross connections or the isolation of such hazards from the water supply lines by properly installed approved backflow prevention assemblies. MLGW must maintain a program of cross connection control to systematically and effectively prevent the contamination or pollution of the potable water system.

B. Plan of Action

MLGW is determined to take every reasonable precaution to ensure that cross connections are not allowed to contaminate the water being distributed to our customers. This cross connection plan outlines a course of action designed to control cross connection within the area served by MLGW. This plan is intended to be a practical guide for safeguarding the quality of water distributed from becoming contaminated or polluted through backflow. By following this plan of action, MLGW will ensure that all aspects of Federal, State, Local, and MLGW Service Policy requirements for Cross Connection Control are being followed.

II. Authority for Cross Connection Control

Under Sections 68-221-701 through 68-221-720 of the Tennessee Code Annotated, the water purveyor has primary responsibility to prevent water from unapproved sources, or any other foreign substance from entering the public water supply system. MLGW's Service Policy can be found on our webpage at www.MLGW.com. This policy prohibits cross connections within MLGW's water system, authorizes MLGW to make inspections and surveys of the customer's premises, requires that cross connection hazards be corrected and provides for enforcement. This policy expresses clear determination on the part of MLGW that the water system is to be operated free of real or potential cross connections that endanger the health and safety of those depending upon the public water supply. This policy is considered to be a sound basis for the control of cross connection hazards by the staff and management of MLGW. The provisions, contained within this policy, are in keeping with the requirements set forth in Section 68-221-711 (6) of Tennessee Code Annotated and Section 0400-45-1-.17(6) of Tennessee Department of Environment and Conservation Rules governing Public Water Systems and The Federal Safe Drinking Water Act of 1974.

III. Program Overview

MLGW has established an active, ongoing cross connection control program. This program is a continuing effort to locate and correct all existing cross connection hazards and to discourage the creation of new problems. MLGW will not grandfather any premise that is determined to have a cross connection or a potential cross connection as an exempt facility for cross connection control just because the premise existed prior to the effective date of MLGW's Cross Connection Control Program. Safeguarding the quality of water being distributed to our customers is a high priority concern of MLGW.

A. Staffing

MLGW's Cross Connection Control program is comprised of:

1. Cross Connection Control Coordinator
2. Cross Connection Field Representatives
3. Cross Connection Clerks

The Cross Connection Control Coordinator is in charge of implementation of an effective cross connection control program. The Cross Connection Control Coordinator will ensure that all aspects of the plan and applicable portions of the MLGW Service Policy are followed.

B. Cross Connection Control Inspections

1. Non-Residential Premises

Any premise with an existing (as of the adoption date of this document) Non-Residential water service or Fire Protection Connection that does not currently have a MLGW approved Backflow Prevention Assembly at the Point of Entry (POE) will be inspected to determine the risk to the water supply.

If the inspection identifies a potential risk to the public water supply, the customer will receive a letter explaining the type of backflow prevention assembly required and the installation deadline. The customer is responsible for contacting a licensed plumbing contractor to permit, install and test the device. The customer is responsible for ensuring MLGW receives the Test Report for the device upon installation. The customer is responsible for all costs with the installation and ongoing maintenance.

All premises with existing Non-Residential water service and/or Fire Protection Connections not required to have assemblies will be inspected every five (5) years maximum. If the premise changes ownership (name listed on water bill) or type of business, an inspection may be performed. If the inspection identifies a potential risk to the public water supply, the customer will receive a letter explaining the type of action required and the deadline for compliance. The customer is responsible for contacting a licensed plumbing contractor to permit, install, and test the device. The customer is responsible for ensuring MLGW receives the Test Report for the device upon installation. The customer is responsible for all costs associated with this work and ongoing maintenance and testing.

If at any time an irrigation system is installed, a well is drilled within the establishment, or any other changes to the plumbing system of any Non-Residential establishment that does not currently have POE containment, an inspection may be performed and a MLGW approved POE containment system may be required to be installed as a part of that work.

2. High Risk High Hazards

After a site inspection, any premise deemed as a High Risk High Hazard will require a reduced pressure principle (or detector) assembly at that time.

The following is a list of premises deemed High Risk High Hazard by the State of Tennessee (NOTE: MLGW can include other facilities as deemed necessary):

a) Mortuaries, morgues, autopsy facilities
b) Hospitals, medical buildings, animal hospitals and control centers, doctor and dental offices
c) Sewage treatment facilities, water treatment, sewage and water treatment pump stations
d) Premises with auxiliary water supplies or industrial piping systems
e) Chemical plants (manufacturing, processing, compounding, or treatment)
f) Laboratories (industrial, commercial, medical research, school)
g) Packing and rendering houses
h) Manufacturing plants
i) Food and beverage processing plants
j) Automated car wash facilities
k) Extermination companies
l) Airports, railroads, bus terminals, piers, boat docks
m) Bulk distributors and users of pesticides, herbicides, liquid fertilizer, etc.
n) Metal plating, pickling, and anodizing operations
o) Greenhouses and nurseries
p) Commercial laundries and dry cleaners
q) Film Laboratories
r) Petroleum processes and storage plants
s) Restricted establishments
t) Taxidermy facilities
u) Establishments which handle, process, or have extremely toxic or large amounts of toxic chemicals or use water of unknown or unsafe quality extensively.

3. Residential Premises

For new residential customers, a questionnaire will be given at the time of application for new water service. If the results of the questionnaire reveal that a potential cross connection may be present, a residential inspection may be performed. The need for backflow protection will be determined based on the results of the questionnaire and/or the inspection. Notification of the type of backflow prevention assembly required and a date of compliance will be sent to the customer. Each new residential customer will agree to not create cross connections. Reference to MLGW's website will be given to each new customer to inform about cross connections and the responsibility of the customer in not creating cross connections.

Questionnaires (written, online, or by automated phone system) will be presented to existing residential customers to determine if potential cross connections exist. The distribution will be divided into five segments and 20% of residential customers will be presented a questionnaire each year.

Any completed questionnaires that suggest increased cross connection potential may initiate a Residential Inspection of the premise by MLGW representatives.

All Residential Premises with areas of cross connection concerns must take adequate measures to isolate those areas of concern from MLGW's water system. Evidence of cross connection concerns include, but are not limited to, the presence of a swimming pool, geothermal heating/cooling systems, hot tub, alternative water source, home water treatment systems, underground irrigation system, or fire protection system. MLGW will perform annually physical residential surveys of selected residential locations. The residential survey will consist of property review from the street or sidewalk nearest the residence. Residential Survey documentation will be maintained on file for review and will include date of survey, address of residence, and note of cross connection hazards and any protective devices seen.

At locations where a cross connection concern is found, the customer will be notified and directed how to comply with MLGW's Cross Connection Control Program.

4. Well System Inspections

All premises with water supplied by MLGW that have wells drilled on site must have a MLGW approved Backflow Prevention Assembly at the Point of Entry (POE) to ensure separation of the water well system from MLGW's water distribution system. Inspections may be performed on any premise that has or is suspected of having a water production well to confirm compliance.

C. Public Education and Awareness Efforts

MLGW recognizes that it is important to inform its customers of the health hazards associated with cross connections and to acquaint them with the program being pursued to safeguard the quality of water being distributed. MLGW will seek to use every practical means available to acquaint its customers with the health hazards associated with cross connections in an effort to get cooperation. Use of customer notification letters, bill inserts, and the http://www.mlgw.com/crossconnection website will be incorporated into the notification plan. Efforts will be made to have an employee, or employees, of MLGW to appear before civic clubs, PTAs, school groups, and other appropriate forums to discuss the problems of cross connections and the program that is being pursued for cross connection control.

D. Customer's Responsibility

The customer has the dual responsibility for protecting the water being distributed within his premises as well as protecting the public water supply system against contamination through cross connections.

Any customer with cross connections created and maintained for his convenience endangers the health and safety of all who depend on the public water supply. Therefore, the customer whose premise requires cross connection protection as determined by MLGW's Cross Connection Control Program shall bear the expense of providing necessary backflow protection and for keeping the protective measures in good working order. This includes installation, operation, maintenance, proper permitting, and testing.

MLGW will not grandfather any premise that is determined to have a cross connection or a potential cross connection as an exempt premise for cross connection control just because the premise existed prior to the effective date of MLGW's Cross Connection Control Program.

E. Enforcement

Every effort will be made to secure the voluntary cooperation of the customer in correcting cross connection hazards. If voluntary action cannot be obtained within the time set forth by written notice (90 days maximum for Low Hazard, 14 days maximum for High Hazard and High Risk High Hazard) to the customer, water service will be discontinued until conditions are in line with MLGW's Cross Connection Control Program for the protection of the health and safety of the water distribution system.

After surveys or inspections have been completed, the establishments will be contacted by written correspondence if corrective action is needed. This correspondence will outline any correction (adding or repairing backflow prevention devices) needed, and the time schedule allowed for correction of the

conditions. If the conditions have not been corrected by the time allotted, the water service will be discontinued to the establishment. Additionally, fines or other penalties may be incurred as deemed necessary by MLGW.

MLGW may give additional warnings of water service disconnection before the water service is actually interrupted. The time period for correction will be determined by MLGW based on the seriousness of the hazard and risk of contamination, ranging from immediate correction or for a time period of up to 90 days. The maximum allowable time for correction will be no more than 90 days. If the conditions do not satisfy all MLGW, Local, State, and Federal requirements within the allotted time period, water service may be discontinued. In the case of backflow prevention devices on fire systems, the fire department will be contacted before water service is discontinued. The fire department has the option of condemning the building, thus not allowing anyone to enter.

Water service will not be allowed to the establishment until all corrections have been made and a reconnection fee paid.

F. Mandatory Tester Classes for Independent Backflow Testers

As part of MLGW's ongoing effort to protect our potable water system, the Cross Connection Control Program will not accept any test reports unless the submitting Certified Backflow Assembly Tester has attended one (1) of the free, mandatory information meetings offered by MLGW for any given calendar year.

The purpose of these meetings is to inform Testers of new and updated information relative to the MLGW Cross Connection Control Program, the Memphis and Shelby County Cross Connection Control Program and the TDEC's Cross Connection Control Program. Furthermore, this forum is provided to assist in forging better working relationships between Testers and MLGW. The information shared is vital to the success of MLGW's Cross Connection Control Program. These mandatory meetings will be held at the MLGW Joyce M. Blackmon Training Center located at 4949 Raleigh LaGrange (Memphis, TN 38128). The meetings are scheduled for 2 hours each and Testers only have to attend one **(1)**.

IMPORTANT NOTE: Failure to sign-up for and attend one of the mandatory sessions will result in suspension of testing privileges on MLGW's water system.

G. Tester Conduct

All testers performing backflow prevention device testing on MLGW's system must have an active certification by the State of Tennessee and be approved by MLGW to test on MLGW's system. MLGW has the authority to add, remove, or suspend testers from the approved list. Removal and suspension from the approved list will be based on serious failures on the part of the tester and shall include formal notice with an opportunity for response to the action, unless such infraction was for theft or fraud.

Length of suspension shall be determined by MLGW based on severity of infraction and passed infractions.

At the end of the suspension period, the tester may submit a written request for reinstatement to the MLGW Cross Connection Coordinator. At that time, a review will be conducted. If the tester's certification is active with the State of Tennessee and no new issues regarding qualifications or performance (including issues with other Water Systems) are found, the tester will be reinstated to test on MLGW's Water system after attending the MLGW mandated Tester Meeting.

H. Use of Fire Hydrants to Obtain Water

Any mobile tank that is filled from a fire hydrant must have the following:

1. Top Fill – An approved (fixed) Air Gap or a Reduced Pressure Backflow Preventer with an in-line strainer before this unit.
2. Bottom Fill – An approved Reduced Pressure Backflow Preventer with tight closing gate valves before and after the unit with an in-line strainer mounted on the supply side of the unit.

In general, proper backflow protection shall be used for any customer connection to a fire hydrant to prevent the possibility of contamination of the public water system through cross connection.

Customers can lease fire hydrants from MLGW's Water Meter Services area located at 3941 Grandview Avenue, Memphis, TN 38111, (901) 320-3910. The Water Meter Services area will lease a water meter with a Reduced Pressure Backflow Prevention device for any customer withdrawing water from a fire hydrant.

IV. Procedures for Surveys and Inspections

A. Survey Procedures

During the survey, all pertinent information will be recorded, detailing significant findings. The hazards which pose cross connections may be explained by the Cross Connection Representative to the customer. The information gathered during the survey will be reviewed by MLGW's Cross Connection Coordinator and/or staff and a written notice containing any recommendations and requirements will be mailed to him/her as soon as possible if a change to the customer's system is required.

B. Inspections

Inspections will be performed by MLGW personnel or representatives to:

1. Gather more detailed information about a customer's water usage,
2. Address any discrepancies between MLGW records and data submitted by Testers, or
3. Resolve conflicting information from the survey.

Inspections may include an in-depth tour of the customer's facility along with dialogue with key customer personnel in order to ensure proper compliance with cross connection control requirements. The customer will be informed that the information gathered during the inspection will be reviewed by MLGW's Cross Connection Coordinator and/or Staff and that a written notice containing any recommendations and requirements will be mailed to him/her as soon as possible if a change to the customer's system is required.

C. Notice to Customers

If action is needed to comply with this manual, the findings of the survey and/or inspection will be summarized and a written notice will be sent to the owner and site representative (if applicable). Cross connections found will be described briefly along with a recommended method of correction. An effort will be made to keep the description of the findings and recommendations clear, concise and as brief as possible. The correspondence will indicate a willingness to answer any questions. The customer will be given a time limit for making the needed corrections (maximum of 90 days) depending upon the seriousness of the cross connections involved and upon the complexity and difficulty of correcting the problems.

D. Follow-up Visits

Follow-up visits will be made as needed to assist the customer and to ensure that satisfactory progress has been made. Such visits will continue until all corrective action has been completed to the satisfaction of MLGW.

E. Installation of Backflow Prevention Devices

Where the customer is asked to install a backflow prevention assembly, the customer will be directed to the Cross Connection Section of MLGW's website (www.mlgw.com/crossconnection) in order to view a list of contractors approved to test in MLGW's Water System. All new devices must be installed by a licensed plumber after receiving a Permit from Code Enforcement. A unit cannot be accepted until MLGW has received a test report including the permit number indicating the unit passed the testing performed by an approved tester. Such backflow prevention assemblies must be of a make, model, and orientation currently listed as acceptable by the Tennessee Department of Environment and Conservation.

F. Technical Assistance

The customer will be urged to call or email MLGW if they need any assistance or have questions. MLGW's Cross Connection Control section can be reached at:

- (901) 528-7757,
- (901) 528-7758, or
- crossconnection@mlgw.org

V. Premises Requiring Reduced Pressure Principle Assemblies or Air Gap Separation

A. Non-Residential Premises

All Non-Residential domestic services, fire protection connections, and irrigation services installed after the adoption date of this policy are required to have a MLGW approved Reduced Pressure (RP) Principle Backflow Assembly installed after the meter and before any branches of the interior plumbing – called Point of Entry (POE) containment. Multi-family dwellings with five or more units are considered Non-Residential Premises.

Any premise with an existing (as of the adoption date of this document) Non-Residential water service or Fire Protection Connection that does not currently have a MLGW approved Backflow Prevention Assembly at the POE will be inspected as described above to determine the risk to the water supply.

If the inspection identifies a potential risk to the public water supply, the customer will receive a letter explaining the type of backflow prevention assembly required and the installation deadline. The customer is responsible for contacting a licensed plumbing contractor to permit, install and test the device. The customer is responsible for ensuring MLGW receives the Test Report for the device upon installation. The customer is responsible for all costs with the installation and ongoing maintenance.

If at any time plumbing permits are issued, irrigation systems installed, a well is drilled within the establishment, or any other changes to the plumbing system of any Non-Residential establishment that does not currently have POE containment occur, an inspection may be performed and a MLGW approved POE containment system may be required to be installed.

B. Residential Premises

All Residential Premises with areas of cross connection concerns must take adequate measures to isolate those areas of concern from MLGW's water system. Evidence of cross connection concerns include, but are not limited to, the presence of a swimming pool, geothermal heating/cooling systems, hot tub, alternative water source, home water treatment systems, underground irrigation system, or fire protection system.

C. Premises with Well Systems

Properties that are supplied by MLGW's water system and have active well(s) are required to have at a minimum a Point of Entry Reduced Pressure Principle Assembly.

D. Premises with Fire/Booster Pump Systems

No person should install or maintain a water service connection to any premises where a booster pump has been installed unless the booster pump is equipped with either an approved suction pressure sustaining valve or a low pressure cutoff mechanism designed to cut off the booster pump when the pressure on the suction side of the pump drops to 20 psi gauge or less.

The suction pressure-sustaining valve has a distinct advantage over the low pressure cut off assembly in that it will not stop the pump because of low pressure in the suction valve. In the event that insufficient water is being supplied to the pump to maintain a head of 20 psi gauge, the suction pressure-sustaining valve, located on the discharge side of the pump, will smoothly throttle only to the extent necessary to maintain a preset suction pressure. In the case of a fire service line, the suction pressure sustaining valve or low-pressure cutoff assembly should be manufacturer approved for that use.

It should be the duty of the water customer to maintain the low-pressure cutoff device and pressure sustaining valve assembly in proper working order. The water customer shall either have the required certification or license or hire a company possessing the required certification or license to certify to the water purveyor at least once a year that the device is operating correctly. Such booster pumps should be installed in a manner that prevents backflow into the public water system.

MLGW will maintain records showing the results of the tests on the cutoff or pressure sustaining devices.

VI. Premises Allowing Double Check Valve Assemblies

Fire protection systems, regardless of class, pose an inherent cross connection risk to MLGW's water distribution system because stagnant water exists in these systems. The stagnant water will have little to no chlorine residual and may become discolored and could allow bacterial growth causing a risk to public health.

Therefore, all MLGW main line connections to fire protection systems installed are required to have either a MLGW approved Double Check Valve Assembly (DCVA) or Reduced Pressure (RP) Principle Backflow Assembly depending on type of system installed before any branches of the interior plumbing. Classes 1-3 fire protection systems are the only types that may use the Double Check Valve Assembly.

Any premise with a MLGW main line connection to a fire protection system will be inspected and based on level of risk and type of system may be required to install either a MLGW approved Double Check Valve Assembly (DCVA) or Reduced Pressure (RP) Principle Backflow Assembly.

VII. Installation and Testing of Backflow Prevention Assemblies

A. Approval of New Installations

MLGW will not consider the installation of new Backflow Prevention Assemblies to be complete until we have received:

1. A **Passing** test from a State of Tennessee certified tester that is approved to test on MLGW's Water System, and
2. The permit number under which the work was done by a licensed plumber.

B. Routine Inspection and Testing of Assemblies

To ensure that all assemblies are functioning properly, Reduced Pressure Backflow assemblies must be tested within a 12 month period and Double Check Valve Assemblies must be tested within a 6 month period by a State of Tennessee certified tester that is approved to test on MLGW's Water System. If assembly is not tested within the required time period, enforcement action will be started. In conjunction with testing the assembly, the water system representative or approved tester will investigate to determine:

1. That cross connections, actual or potential, have not been added ahead of the protective assemblies,
2. The assembly meets all installation criteria; and
3. The assembly has not been bypassed or altered in some other way to compromise the backflow protection.

All reduced pressure and double check valve backflow prevention assemblies utilized for the protection of the water system will be tested by a person possessing a valid Certificate of Competency from the State of Tennessee and approved by MLGW in keeping with the following criteria:

1. Immediately following installation;
2. At least every 12 months (6 months for double check valve assembly);
3. Any time assemblies have been partially disassembled for cleaning and/or repair;
4. Where there is indication that the unit may not be functioning properly (i.e. excessive or continuous discharges from relief valve, chatter, or vibration of internal parts) and;
5. At start up for irrigation systems.

C. Accepted Test Procedure

Tests of assemblies will be made using a 3 or 5 valve test kit that has valid annual certification in accordance to the latest approved testing procedure from the Tennessee Department of Environment and Conservation Division of Water Supply.

D. Official Tests

Only tests performed by persons possessing a valid Certificate of Competency from the State of Tennessee and approved by MLGW to test on MLGW's water system will be considered official tests by MLGW. All test reports submitted must be of the type approved by MLGW. All parts of testing procedure must be recorded accurately on the test report with a determination of status: Passed or Failed. Certificates of Competency are not transferable.

E. Repairs

Should a protective assembly be found defective or have a status of Failed, MLGW will require the assembly to be repaired by a licensed plumber with a proper permit with manufacturer's specified parts, in accordance to manufacturer's suggested procedure, and placed in proper operating condition within a specified time limit (maximum 90 days, 14 days for high hazards and high risk high hazards). Following repairs, the assembly is to be tested again to verify that it is meeting performance standards and has a status of Passed. The owner will be held responsible for maintaining protective measures in a good state of repairs. The owner of an assembly needing repairs or maintenance must receive a plumbing permit from the Memphis and Shelby County Office of Construction Code Enforcement to do the work if such owner is properly qualified, or the owner may elect to secure the services of someone else experienced in the repair of the assemblies with proper permitting.

VIII. Parallel Units

MLGW may require the installation of parallel assemblies if the customer cannot readily accommodate interruptions of water service for periodic testing and repairs of the assemblies or is unwilling to cooperate in scheduling a shutdown promptly for testing.

IX. Recordkeeping

Good records are invaluable in MLGW's efforts to safeguard the quality of water being distributed against degradation from backflow through cross connections. Adequate records will be maintained as a part of MLGW's files to:

A. Document the overall effort of MLGW to properly discharge its responsibility to see that each customer receives safe water under all foreseeable circumstances;
B. Give a complete picture as to the current status and history of the individual premises regarding the potential for backflow, corrections made, etc.;
C. To support enforcement action, whenever necessary, to obtain backflow protection; and
D. Document that assemblies have been properly installed, maintained, and tested routinely.

Records to be maintained by MLGW for a minimal of 5 years will include, but not necessarily be limited to the following:

A. Master List of all Establishments with assemblies used for Point of Entry containment, including location, assembly used, make, model, size, serial number, etc.
B. Record of correspondence between MLGW and its customers
C. Copy of Approved Plan
D. Copy of Approved Service Policy/Ordinance
E. Test report information for each assembly
F. Records of Certificates of Competency for each tester
G. Records of test kit certifications
H. Site Inspection Report Information
I. Survey Report Information
J. Backflow incident reports
K. A file system designed to call to the attention of the cross connection control personnel when testing and reinspections of premises are needed.
L. Public education pamphlets and information.

X. Backflow Contamination Procedures

A. Contamination/Customer Water Quality Complaints

1. Water Distribution System

a. Identify contamination area(s) by customer water quality complaints. Initiation of a corresponding verification process to evaluate the event to determine if contamination exists and whether it is an aesthetic or a health hazard shall occur. An evaluation of the need to isolate contamination area(s) via distribution valves will be determined. Depending on the type of contamination, customers in affected area(s) will be notified via MLGW's Corporate Communications Department. MLGW's Water Quality Assurance Lab and Emergency Management Agency will determine if the contamination should be further isolated via the stop cock (turn off affected customer's meter connection) and/or provision made for alternative supply of potable water. Depending on the type of contamination, water mains will be disinfected and flushed along with the water services of the customers as needed. Periodically, the water will be sampled to determine if water mains and customer water services can be placed back in service.

2. Boil Water Order / No Use Water Order

a. If a cross connection contamination event occurs, an MLGW Operator of Record will notify TDEC. Also, the Water Key Group of MLGW's Emergency Response Team will convene to address the situation.

If it is determined that a Boil Water, or No Use Order is warranted, the following guidelines should be followed:

1) If a contamination event occurs and water sampling testing has revealed that the contaminant can be neutralized by boiling, a general precautionary *Boil Water Order* will be issued for the affected area(s). In the case of a contaminating event in which it is determined that boiling the water would still render customers vulnerable to harm if the water is consumed, a *No Use Water Order* will be disseminated to the General Public.

2) After water distribution system flushing and confirmation tests from MLGW's Water Quality Assurance Lab verify that the water is safe to drink, the *Boil Water Order OR No Use Water Order* will be rescinded.

XI. Modifications to Plan

This plan may be modified from time to time to meet the needs of MLGW, Local, State, or Federal requirements. The plan and policy will be reviewed by MLGW at a maximum of every five (5) years to determine if the existing plan meets requirements set forth by the Tennessee Department of Environment and Conservation Division of Water Supply and that it promotes an ongoing program.

XII. Approval Signatures

Approved By: _____ **Date:** 10-24-2016
David Wright, Cross Connection Coordinator, MLGW

Approved By: _____ **Date:** 10-24-16
Chris McCormick,
Supervisor, Water Engineering, MLGW

Approved By: _____ **Date:** 10/24/16
Odell Johnson
Manager, Water Engineering & Operations Department, MLGW

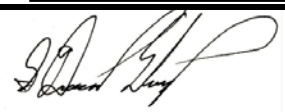
Approved By: _____ **Date:** 10/24/16
Alonzo Weaver
VP, Engineering & Operations, MLGW

Approved By: _____ **Date:** 10/24/16
Jerry Collins
President & CEO, MLGW

Approved By: _____ **Date:** 11/2/16
MLGW Board Chairperson
Vice

Approved By: _____ **Date:** 11/8/16
Joellyn Brazile, Environmental Program Manager
Division of Water Resources
Memphis Environmental Field Office
Tennessee Department of Environment and Conservation

XIII. Document Review

1. TITLE - CROSS CONNECTION CONTROL PROGRAM **2. DESCRIPTION -** MLGW Cross Connection Control Program Manual	
3. REVIEWERS - A signature below indicates that the reviewer has reviewed/approved the document. **Reviewers should not sign this form if they do not approve of the content of the document.**	**4.COMMENTS - Reviewers should use this section to explain why they do not approve of the content of the document, ask questions, and suggest changes to document.** Reviewers may also use this section to provide additional information about the document.
 11/12/2021 Signature Date Name: Chris McCormick Title: Supervisor Water Engineering	No changes needed at this time.
 11/12/2021 Signature Date Name: David Wright Title: Cross Connection Coordinator	No changes needed at this time.
Signature Date Name: Title:	

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DocuSigned by: Felicia Baxter D6BC555EB32F4DB... Signature 8/1/2024 Date Name: Felicia Baxter Title: Cross Connection Coordinator	Section V.A. – Changed language on multi-family dwellings being defined as having "three or four" units to "five or more" units.
DocuSigned by: 99AF842B5AFD42A... Signature 8/1/2024 Date Name: Aaron Smith Title: Supervisor, Water Engineering	Section V.A. – Changed language on multi-family dwellings being defined as having "three or four" units to "five or more" units.
DocuSigned by: Jeffery C. Embry F005CA411E924AC... Signature 8/2/2024 Date Name: Jeff Embry Title: Manager, Water Engineering & Operations	Section V.A. – Changed language on multi-family dwellings being defined as having "three or four" units to "five or more" units.