



CROSS CONNECTION CONTROL PROGRAM: HANDBOOK OF POLICIES AND PROCEDURES

UTILITIES DEPARTMENT

2020

Table of Contents

Section 1: Introduction.....	1
1.1 TITLE	1
1.2 POLICY STATEMENT	1
1.3 PURPOSE	2
1.4 RESPONSIBILITY.....	2
Section 2: Authority and Responsibility.....	3
2.1 GENERAL RESPONSIBILITY.....	3
2.2 ADMINISTRATIVE RESPONSIBILITY.....	4
2.3 AUTHORITY	4
2.4 COSTS	5
Section 3: General Provisions.....	6
3.1 GENERAL	6
3.2 GENERAL REQUIREMENTS	6
3.3 OBJECTIVES	9
Section 4: Program Implementation	11
4.1 GENERAL	11
4.2 METHOD OF ACTION.....	11
4.3 PUBLIC AWARENESS EFFORTS	12
Section 5: Survey and Inspection Procedures.....	13
5.1 GENERAL	13
5.2 PRIORITIZATION	13
5.3 INITIATING SURVEY INSPECTIONS.....	14
5.4 CONDUCTING INITIAL SURVEYS	14
5.5 SURVEY FOLLOW-UP AND ENFORCEMENT ACTION	15
Section 6: Assembly Specifications and Approval Procedures.....	17
6.1 GENERAL	17
6.2 SPECIFICATIONS	17
6.3 RPZA CONTAINMENT REQUIRED	18
6.4 FIRE PROTECTION SYSTEMS – CONTAINMENT REQUIRED	20
6.5 ASSEMBLY APPROVAL.....	21
Section 7: Assembly Installation and Initial Inspection.....	22
7.1 GENERAL	22

TABLE OF CONTENTS

7.2 AUTHORIZED INSTALLERS 22

7.3 INSTALLATION SPECIFICATIONS 22

7.4 COMPLETION OF INSTALLATION 24

Section 8: Assembly Testing Procedures 25

8.1 GENERAL 25

8.2 AUTHORIZED TESTERS 25

8.3 PERIODIC TESTING REQUIREMENTS 25

8.4 PRE-TESTING ARRANGEMENTS 25

Section 9: Maintenance and Repair Procedures 27

9.1 GENERAL 27

9.2 RESPONSIBILITY 27

9.3 MAINTENANCE FACTORS 27

9.4 MAINTENANCE TASKS 28

9.5 MAINTENANCE DOCUMENTATION 28

Section 10: Records and Reports 29

10.1 GENERAL 29

10.2 RECORDS AND REPORTS REQUIRED 29

Section 11: Enforcement Plan 31

11.1 GENERAL 31

11.2 REQUIREMENTS 31

11.3 NON-COMPLIANCE 32

11.4 ENFORCEMENT ACTIONS 33

Section 12: Emergency Action Plan 35

12.1 GENERAL 35

12.2 INFORMATION GATHERING 35

12.3 INVESTIGATE COMPLAINT 35

12.4 PROCEDURES IF BACKFLOW IS SUSPECTED OR REPORTED 35

Section 13: Definitions 37

13.1 DEFINITIONS 37

Section 14: Appendix (Forms and Sample Letters) 42

14.1 GENERAL 42

14.2 FORMS AND INTENDED USE 42

14.3 SAMPLE LETTERS AND INTENDED USE 42

Section 1: Introduction

1.1 TITLE

This document shall be known as the “City of Fayetteville Cross Connection Control Program: Handbook of Policies and Procedures.”

1.2 POLICY STATEMENT

Each instance where water is used improperly creates the possibility of backflow. Improper use of water within the customer’s property is especially significant, because cross-connections may easily result in the contamination of the City’s water system and become a transmitter of disease organisms, toxic materials or other hazardous substances which may adversely affect large numbers of people. The only protection against such occurrences is the elimination of cross connections or the isolation of hazards from the water supply lines by utilizing properly installed and University of Southern California (USC) approved backflow prevention assemblies.

The City is determined to take every reasonable precaution to see that cross-connections are not allowed to contaminate the water being distributed to its customers through a plan of cross-connection control and backflow prevention. This backflow prevention plan outlines a program of action based on the containment theory designed to control cross-connections between the City’s water system and the customers it serves. This plan is intended to be a practical guide for safeguarding the quality of water distributed from becoming contaminated or polluted through backflow.

The City will endeavor to eliminate and prevent backflows from cross-connections to protect the City water system from damage and the water in the City water system from pollution or contamination as a result of backflow through cross-connections. All cross-connections shall be eliminated where possible. The City water system shall be adequately protected against backflow from water service lines to all water users if there is a cross-connection, whether direct or indirect, or if there is the potential for a cross-connection to the City water system. The proper design, construction, maintenance, and testing of all backflow prevention assemblies in our water system shall minimize the possibility of pollution or contamination of public water from cross-connections.

Backflow prevention assemblies in water service lines shall be properly installed by a licensed Master Plumber, tested by an Arkansas State Certified Assembly Technician, and repaired by an Arkansas State Certified Assembly Repair Technician.

INTRODUCTION

1.3 PURPOSE

- A. To protect the public potable water supply of the City of Fayetteville from the possibility of contamination or pollution by isolating within the customer's internal distribution system or the customer's private water system such as contaminants or pollutants that could backflow into the public water system.
- B. To promote the elimination or control of existing cross-connections, actual or potential, between the customer's internal potable water system and non-potable water systems, plumbing fixtures, and industrial piping systems.
- C. To provide for the maintenance of a continuing program of backflow prevention and cross-connection control that will systematically and effectively prevent the contamination or pollution of all potable water systems supplied by the City of Fayetteville.

1.4 RESPONSIBILITY

The City of Fayetteville, recognized as the water supplier, shall endeavor to protect the public potable water distribution system from contamination or pollution due to the backflow of contaminants or pollutants through the water service connection.

If, in the judgment of City officials administering this program, a USC approved backflow prevention assembly is required (at the customer's water service connection or within the customer's private water system) for the safety of the water system, the City's designated agent shall give notice in writing to said customer to install a USC approved backflow prevention assembly(s) at a specific location(s) on his/her premises. The customer shall immediately install such approved assembly at his/her own expense. Failure, refusal, or inability on the part of the customer to install, have tested, and maintain said assembly shall constitute grounds for discontinuing water service to the premises until such requirements have been satisfactorily met.

The Utilities Director acting as the designated representative for the City of Fayetteville shall administer and execute the backflow prevention and cross-connection control program. Said Utilities Director may designate other City employees in the Water and Sewer Department to see that the program is pursued in an aggressive and effective manner. The term "Program Administrator" will be used throughout this manual to refer to the Utilities Director and/or the individual(s) authorized to administer and execute the provisions of this program.

Section 2: Authority and Responsibility

2.1 GENERAL RESPONSIBILITY

The purpose of this manual is to establish a cross-connection control program. Implementing an effective cross connection control program requires the full cooperation of water users, water suppliers, health agencies, and plumbing officials. Each must carry their share of a coordinated cross connection control program in order to prevent contamination of the potable water supply. If the drinking water system on a premises is found to be contaminated, the health agency and/or water supplier should be promptly notified and appropriate measures taken to eliminate the contamination. The responsibilities of the entities are outlined below.

A. WATER USER (Property Owner or Consumer)

The water user has the primary responsibility to keep contaminants out of the potable water system. This responsibility begins at the user connection and includes any and all water distribution piping on the premises. If a cross-connection or a potential for a cross-connection exists, the water user, at the water user's expense, must install, have tested, and maintain approved backflow preventers as required by the Arkansas Department of Health and the City of Fayetteville (water supplier). The water user should prevent the creation of a cross-connection by modifications of the plumbing system.

B. WATER SUPPLIER (City of Fayetteville)

The water supplier has the responsibility to prevent contamination of the public water system from backflow. This responsibility begins at the source and includes the entire water supply distribution system and ends at the service connection. The water supplier should not provide water service to premises where an unprotected cross-connection or potential cross-connection exists. The water supplier has the responsibility for promulgating and enforcing laws, rules, regulations, and policies necessary to carry out designated responsibilities.

C. HEALTH AGENCY (Arkansas Department of Health)

The health agency also has the responsibility for promulgating and enforcing laws, rules, regulations, and policies to be followed in controlling cross-connections. The agency has the responsibility to ensure that internal protection is provided and adequate backflow prevention programs by water utilities are maintained.

AUTHORITY AND RESPONSIBILITY

D. PLUMBING OFFICIAL (City of Fayetteville)

The plumbing official has the responsibility for the enforcement of plumbing regulations concerned with preventing cross-connections.

E. PROGRAM ADMINISTRATOR (City of Fayetteville)

The water supplier may designate a Program Administrator to be responsible for the backflow prevention and cross-connection control program. This Program Administrator shall review the installation and use of pipelines and equipment to assure that cross-connections are eliminated. Close control of water system piping by a Program Administrator who is adequately trained in cross-connection control will eliminate or reduce the hazards of contamination of the water supply.

2.2 ADMINISTRATIVE RESPONSIBILITY

It is generally recognized that the water supplier has the primary responsibility to protect the public water system from hazards resulting from problems on the users' premises. Such internal problems are the responsibility of the Inspection Division, health agency, and the water users.

The water supplier is required to have a backflow prevention and cross-connection control program acceptable to the Arkansas Department of Health and in conformance with established health regulations. In addition, the supplier is required to adopt its own local ordinance or operating rules.

Cities and towns that have developed complete backflow prevention programs involving inspections of buildings and annual testing of assemblies have found the greatest benefits in both increased public awareness and in greatly reduced numbers of cross-connections. An ongoing program is required because it has been found that continual piping changes and the addition of new equipment will always carry the possibility of new cross-connections.

2.3 AUTHORITY

The Utilities Director acting as the designated representative for the Mayor of the City of Fayetteville shall administer and execute the cross connection control program. Individuals may be designated as official representatives for the Utilities Director to see that the program is pursued in an aggressive and effective manner. The term "Program Administrator" will be used throughout this manual; this term shall refer to the Utilities Director and/or the individuals authorized to administer and execute the provisions in this program.

2.4 COSTS

The water user of a property that could present a potential hazard shall bear the expense and burden of protecting the City water system from the potential hazard through USC approved backflow prevention methods and procedures.

Section 3: General Provisions

3.1 GENERAL

This section provides an overview of the various functions, tasks, and requirements necessary to execute the provisions of the Cross Connection Control Program. The Utilities Director as the designated representative of the Mayor of the City of Fayetteville shall administer the program and designate personnel as necessary.

3.2 GENERAL REQUIREMENTS

- A. No water service connection to any premises shall be installed or maintained by the City of Fayetteville unless the water supply is protected as required by the Arkansas Department of Health and the City of Fayetteville laws and regulations and the “City of Fayetteville Cross Connection Control Program.” Service of water to any premises shall be discontinued by the City if a backflow prevention assembly required by this manual is not installed, tested, and maintained, or if it is found that a backflow prevention assembly has been removed, bypassed, or if an unprotected cross-connection exists on the premises. Service shall not be restored until such conditions or defects are corrected.
- B. The customer's system should be open for inspection at all reasonable times to authorized representatives of the City of Fayetteville to determine whether cross connections or other structural or sanitary hazards, including violations of these regulations, exist. When such a condition becomes known, the City shall deny or immediately discontinue service to the premises by providing for a physical break in the service line until the customer has corrected the condition(s) in conformance with all State of Arkansas and City of Fayetteville statutes relating to plumbing, backflow prevention, cross-connection control, and water supplies and the regulations adopted pursuant thereto.
- C. A USC approved backflow prevention assembly shall be installed on each service line to a customer's water system at or near the property line or immediately inside the building being served; but in all cases, before the first branch line and the first outlet leading off the service line wherever the following conditions exist:
 - (1) In the case of premises having an auxiliary water supply that is not or may not be of safe bacteriological or chemical quality and that is not acceptable as an additional source by the City, the public water system shall be protected against backflow from the premises by an approved air gap separation.
 - (2) In the case of premises on which any industrial fluids or any other objectionable substances are handled in such a fashion as to create an actual or potential hazard to

GENERAL PROVISIONS

the public water system, the public system shall be protected against backflow from the premises by installing a USC approved backflow prevention assembly in the service line, appropriate to the degree of hazard. This shall include the handling of process waters and waters originating from the utility system that have been subject to deterioration in quality.

- (3) In the case of premises having (1) internal cross-connections that cannot be permanently corrected and controlled, or (2) intricate plumbing and piping arrangements or where entry to all portions of the premises is not readily accessible for inspection purposes, making it impracticable or impossible to ascertain whether or not dangerous cross-connections exist, the public water system shall be protected against backflow from the premises by installing a USC approved backflow prevention assembly in the service line.
 - (4) In the case of premises on a master meter that is providing water to more than one unit and the City of Fayetteville has no control of the tenant change the public water system shall be protected against backflow from the premises by an approved air gap separation or a USC approved Reduced Pressure Zone Assembly (RPZA) installed in the service line before the first branch off.
 - (5) In the case where a customer installs a frost proof hydrant (farm hydrant) with a potential High Hazard condition, the customer will be required to install a USC approved Reduced Pressure Zone Assembly (RPZA) in the service line.
- D. The type of protective assembly required under the provisions of this program shall depend upon the degree of hazard that exists as follows:
- (1) In the case of any premises where there is an auxiliary water supply, the public water system shall be protected by an approved air gap separation or a USC approved Reduced Pressure Zone Assembly (RPZA).
 - (2) In the case of any premises where there is water or substance that would be objectionable but not hazardous to health, if introduced into the public water system, the public water system shall be protected by a USC approved Reduced Pressure Zone Assembly (RPZA).
 - (3) In the case of any premises where there is any material dangerous to health that is handled in such a fashion as to create an actual or potential hazard to the public water system, the public water system shall be protected by an approved air gap separation or a USC approved Reduced Pressure Zone Assembly (RPZA). Examples of premises where these conditions will exist include sewage treatment plants, sewage pumping stations, chemical manufacturing plants, hospitals, mortuaries, and plating plants.

GENERAL PROVISIONS

- (4) In the case of any premises where there are “uncontrolled” cross-connections, either actual or potential, the public water system shall be protected by an approved air gap separation or a USC approved Reduced Pressure Zone Assembly (RPZA) at the service connection.
 - (5) In the case of any premises where, because of security requirements of other prohibitions or restrictions, it is impossible or impractical to make a complete in-plant cross-connection survey, the public water system shall be protected against backflow from the premises by either an approved air gap separation or a USC approved Reduced Pressure Zone Assembly (RPZA) on each service line to the premises.
 - (6) In the case of any premises where, in the opinion of the Program Administrator, an undue health threat is posed because of the presence of extremely toxic substances, the Program Administrator may require an air gap at the service connection to protect the public water system. This requirement shall be at the discretion of the Program Administrator or official representative of the City and is dependent on the degree of hazard.
- E. Any backflow prevention assembly required herein shall be a model and size approved by USC, the Arkansas Department of Health, and the City of Fayetteville. The term “approved backflow prevention assembly” shall mean an assembly that has been manufactured in full conformance with the standards established by USC, the American Water Works Association, and approved by the Arkansas Department of Health and the City of Fayetteville.
 - F. All backflow prevention assemblies shall be tested within ten (10) working days after installation of the assembly. All tests performed on backflow prevention assemblies shall be performed by an Arkansas State Certified Assembly Testing Technician.
 - G. It shall be the responsibility of the City at any premises where backflow prevention assemblies are installed to ensure that an inspection is performed and a test made by an Arkansas State Certified Assembly Testing Technician on an annual basis at the water customer/user expense. In those instances where the City deems the hazard to be great enough, certified inspections may be required at more frequent intervals. These additional inspections and tests shall be at the expense of the water customer/user and shall be performed by an Arkansas State Certified Assembly Testing Technician. Any assemblies requiring repair or rebuild shall be performed by an Arkansas State Certified Assembly Repair Technician at the expense of the customer/user. Records of such tests, repairs, and overhaul shall be maintained and copies submitted to the City Backflow Department.
 - H. All presently installed backflow prevention assemblies that do not meet the requirements of this manual but were approved assemblies for the purpose described herein at the

GENERAL PROVISIONS

time of installation and that have been properly maintained, shall, except for the inspection, testing and maintenance requirements under these provisions, be excluded from the requirements of these rules so long as the City is assured that they will satisfactorily protect the City's water system. Whenever the existing assembly is moved from the present location, requires more than minimum maintenance, requires repairs, requires replacement, building, remodel, or when the City finds that the maintenance constitutes a hazard to health, the unit shall be replaced by a USC approved backflow prevention assembly meeting the requirements of this program, and required to meet current city code and Arkansas State Plumbing Code.

3.3 OBJECTIVES

- A. Ensure Water and Sewer Services personnel work effectively to protect the public potable water distribution system from contamination or pollution due to the backflow or back-siphonage of contaminants through the water service connection.
- B. Conduct an inspection program which includes routine inspection of all water customer establishments for cross-connections.
- C. A backflow prevention assembly shall be installed depending upon the degree of hazard which exists at the point of cross-connection (whether direct or indirect).
- D. Construction Plans are reviewed for determination of whether or not backflow prevention assemblies are required. For the purposes of this program new construction, alteration, or additions, is considered construction, as well as modification of existing plumbing or fire protection systems.
- E. Provide installation criteria for backflow prevention assemblies and issue a written approval of specifications prior to construction on fire systems.
- F. Conduct final inspection of backflow prevention assembly installations to verify conformance with approved installation plans.
- G. To ensure the initial testing of backflow prevention assemblies are working properly and meet all test standards.
- H. Issue an Assembly Test and Maintenance Report for the installations passing the final inspection and to set up schedule for annual renewals.
- I. Submit all required reports, maintain a database, coordinate with other agencies to accomplish the goals of the Cross Connection Control Program.

GENERAL PROVISIONS

- J. Ensure an Arkansas State Certified Assembly Repair Technician is responsible for all repairs performed on an assembly. A Master Plumber's License shall be required when installing or replacing backflow prevention assemblies within the City's water service area.
- K. Verify only Arkansas State Certified Assembly Testing Technicians perform testing on backflow prevention assemblies.
- L. Verify only Arkansas State Certified Assembly Repair Technicians perform repairs on backflow prevention assemblies.
- M. Utilize training opportunities when available to ensure that the City is staffed with competent personnel.

Section 4: Program Implementation

4.1 GENERAL

A complete backflow prevention and cross-connection control program requires a carefully planned and executed initial action plan followed by aggressive implementation and constant follow-up. Proper staffing and education of personnel is a requirement to ensure that an effective program is achieved.

4.2 METHOD OF ACTION

This implementation plan for the “Cross Connection Control Program”, adopted by the City of Fayetteville Council shall be executed by the Program Administrator and shall include the following strategies:

- A. Conduct public informative meetings that define the backflow prevention and cross-connection program, review the provisions of the Ordinance, and answer all questions that may arise concerning the reason for the program. Demonstrate why and how the surveys will be conducted, and the potential impact upon the industrial, commercial, and residential water customers. Have state authorities and the local press attend the meetings.
- B. Place written notices of the “Cross Connection Control Program” in the local newspapers, and have the local radio stations and television stations make announcements about the program as a public service notice.
- C. Send employees who will administer the program to a course(s) on backflow tester certification, backflow survey courses, backflow assembly repair courses, etc. Ensure that at least two (2) employees become “Certified Assembly Repair and Testing Technicians.”
- D. Equip the certified technicians with backflow assembly test kits.
- E. Conduct meeting(s) with plumbing inspection personnel, building inspectors, and licensed plumbers in the area who will be active in the inspection, installation, and repair of backflow assemblies. Inform them of the intent of the program and the part that they can play in the successful implementation of the program.
- F. Prior to initiating a survey of the established commercial, industrial, and irrigation installations, prepare a list of these establishments from existing records, then prioritize the degree of hazard that they present to the water system, (i.e., plating plants, hospitals, mortuaries, etc.). These will be the initial facilities inspected for cross-

PROGRAM IMPLEMENTATION

connections and will be followed by less hazardous installations. After all commercial and industrial customers have been surveyed, begin surveying residential customers for potential cross-connections.

- G. Ensure that any new construction plans are reviewed by the Program Administrator to assess the degree of hazard and ensure that the proper backflow preventer is installed concurrent with the potential degree of hazard that the facility presents.
- H. Prepare a list of all backflow assemblies in the water system to ensure that all testable assemblies are tested annually by an Arkansas State Certified Assembly Testing Technician.
- I. Prepare and submit testing documentation of backflow assemblies to the City of Fayetteville Backflow Department.
- J. Survey all commercial and industrial non-profit facilities and require appropriate backflow prevention assemblies be installed. Follow up to ensure that the recommended assemblies are installed and tested on both an initial basis and an annual basis at the water customer/user expense.
- K. Survey residential customers where cross-connections or potential cross-connections are suspected.

4.3 PUBLIC AWARENESS EFFORTS

The Program Administrator recognizes that it is important to inform its customer of the health hazards associated with cross-connections and shall make every effort to acquaint them with the program being pursued to safeguard the quality of water being distributed. The Program Administrator shall provide resource information to its customers in an effort to obtain their full cooperation. More information can be found on the Backflow Prevention page of the City of Fayetteville website.

Section 5: Survey and Inspection Procedures

5.1 GENERAL

Program Administrators shall survey the property of all customers considered likely to have cross-connections. The various water uses within the premises shall be investigated to determine if backflow can occur. In addition, routine surveys shall be made periodically to determine if backflow prevention measures are maintained, and are functioning properly and that new cross-connections have not been created.

The surveys and inspections should only be conducted by personnel knowledgeable about commercial and industrial potential cross-connections as well as general industrial uses for both potable and process water. Since “containment” is the primary objective of the survey, then only sufficient time need be spent in the facility to determine the degree of hazard inherent within the facility or operation. Once this is determined, a judgment can be made by the backflow technician as to what type of backflow prevention assembly will be needed at the potable supply entrance, or immediately downstream of the water meter.

5.2 PRIORITIZATION

The selection of existing property for cross-connection surveys shall be made on the basis of suspected hazard. In general, those customers suspected of having the most hazardous cross-connections shall be surveyed first. Surveys shall continue until all property considered likely to have cross-connection problems have been surveyed.

After a review of all water customers served by the City water system, a list shall be developed as the one to receive top priority for early investigation. Establishments likely to have some of the most hazardous cross-connections shall be surveyed first. Follow-up surveys shall be made as necessary until all cross-connections found have been corrected or a USC approved backflow prevention assembly has been installed. The goal of obtaining corrective action shall be set according to its severity.

Customers suspected of having cross-connection problems of somewhat lower degree hazard shall be considered second priority. Surveys shall be made as necessary until all cross-connections found have been corrected or a USC approved backflow prevention assembly has been installed.

As other establishments are found which should be included in one of the priority listings, they shall be included and a survey conducted as soon as possible.

5.3 INITIATING SURVEY INSPECTIONS

To initiate survey inspections of existing establishments, prepare a list of all commercial, industrial, non-profit and irrigation customers.

- A. Prioritize the suspected degree of hazard that each customer presents to the water system.
- B. Conduct the first survey beginning with the customers that are of the highest hazard to the water system.
- C. Proceed with surveying customers that pose a potential hazard to the water system.
- D. Surveys shall be conducted for those where cross-connections or potential cross-connections are suspected.
- E. Ensure that any new construction plans are reviewed by the Program Administrator to assess the degree of hazard and ensure that the proper backflow prevention assembly is installed concurrent with the potential degree of hazard that the facility presents. Ensure that the USC approved backflow prevention assembly is properly installed before water service is connected to the premises.
- F. Prepare a list of all backflow assemblies currently in the community and record all required information pertaining to the assemblies.

5.4 CONDUCTING INITIAL SURVEYS

Consideration shall be given to the following objectives when performing a backflow prevention survey:

- A. Contact the owner of facility to be surveyed and arrange an appointment, convenient for the customer and for the backflow technician, to perform an on-site survey inspection of the premises.
- B. Upon entry, identify yourself and the purpose of the visitation and why the cross-connection survey will be of benefit to the owner.

SURVEY AND INSPECTION PROCEDURES

- C. Ask what processes are involved within the facility and for what purpose potable water is used (i.e., do the boilers have chemical additives? Are air conditioning cooling towers in use with chemical additives? Do they have a second source of water (raw water from wells, etc.)?
- D. Request “as-built” engineering drawings of the potable water supply in order to trace out internal potable lines and potential areas of cross-connections.
- E. Initiate the survey by starting at the potable entrance supply (the water meter in most cases) and then proceed with the internal survey.
- F. Survey the plant facilities with the objective of looking for cross-connections or potential cross-connections at all potable water outlets such as hose bibs, slop sinks, mop sinks, wash room facilities, cafeterias and kitchens, fire protection systems, irrigation outlets, boiler rooms, mechanical rooms, laundry facilities, etc.
- G. Make record of all areas found to warrant backflow prevention and determine the degree of hazard.
- H. Review with the owner or manager what you have found and explain the findings to him. Inform him that he will receive a written report documenting the findings together with a written recommendation for corrective action. Attempt to answer all questions at this time.
- I. Document all findings and recommendations and specifically state the size and generic type of backflow prevention assembly required at the facility.
- J. If possible at this time, determine a suitable location for the backflow prevention assembly to be installed.

5.5 SURVEY FOLLOW-UP AND ENFORCEMENT ACTION

After completion of the initial survey, the following strategies shall be followed:

- A. Complete the Survey Result Form to document your findings during the initial survey.
- B. Send the following to the owner:
 - (1) A copy of the completed Survey Result Form.
 - (2) Specifications of the backflow prevention assembly required to be installed at the premises.

SURVEY AND INSPECTION PROCEDURES

- (3) Assembly Approval Application Form to be completed by the owner and returned to the Program Administrator for approval of the assembly proposed to be installed.
 - (a) For existing water customers that already have water service connected to the premises, notice shall be given by certified mail stating the due date in which the approved backflow prevention assembly must be installed (normally 30 days from receipt of notice).
 - (b) For new water customers, water service shall not be connected to the premises until the USC approved backflow prevention assembly has been properly installed, and inspected by the City of Fayetteville.
 - (4) Follow up to ensure that the required backflow prevention assembly is properly installed.
 - (5) All backflow prevention assemblies shall be tested within ten (10) working days of initial installation, and annually thereafter. This testing shall be performed by an Arkansas State Certified Testing Technician.
 - (6) Set up schedule to ensure assembly is tested on an annual basis.
- C. Additional surveys shall be made as needed to ensure appropriate backflow prevention.
- D. If the customer refuses to make corrective action needed for the protection of the water system, the Program Administrator shall follow the guidelines of the Enforcement Plan.

Section 6: Assembly Specifications and Approval Procedures

6.1 GENERAL

All cross-connections or potential cross-connections shall be eliminated or adequate backflow prevention shall be used to protect the City water system from potential hazards.

Specifications for backflow prevention assemblies are essential to ensure the highest possible performance and reliability under every condition. The term “USC Approved Backflow Prevention Assembly” shall mean an assembly that has been designed, constructed, and tested to be operated in accordance with Nationally Accepted Standards which have been accepted and approved by the Arkansas Department of Health, and have received a final approval by the City of Fayetteville.

6.2 SPECIFICATIONS

- A. Only those USC assemblies that are approved by the Arkansas Department of Health and the City of Fayetteville shall be used for backflow prevention on water service lines.
- B. An approved “Y” strainer shall also be required upstream of each RPZA backflow prevention assembly.
- C. An RPZA shall conform to AWWA C511 latest revision.
- D. A DCVA shall conform to AWWA C510 latest revision.
- E. The check valves in all backflow prevention assemblies shall be spring-loaded.
- F. A Double Check Detector Assembly (DCDA), Double Check Valve Assembly (DCVA), Reduced Pressure Principle Backflow Assembly (RPZA), and Reduced Pressure Detector Assembly (RPDA) shall all be USC approved, and also approved by the Arkansas Department of Health and the City of Fayetteville.
- G. The following information shall be distinctly marked on every RPZA, DCVA, DCDA, and RPDA by cast in the metal, stamped in the metal, or stamped on a brass or stainless- steel nameplate permanently affixed to the assembly:
 - (1) Name or trademark,
 - (2) Type (RPZA, DCVA, DCDA, or RPDA),
 - (3) Size,

- (4) Model number,
- (5) Direction of flow (indicated by an arrow),
- (6) Serial number,

H. Every RPZA, DCVA, DCDA, and RPDA shall be shipped completely assembled.

6.3 RPZA CONTAINMENT REQUIRED

The City water system shall be protected from cross-connection backflow by an approved RPZA where there is a potential high hazard on the premises. The RPZA shall be located before the first branch or outlet on the Owner's water service line. A USC approved RPZA is required, but not limited to, the following types of water users:

A. Buildings

- (1) Any public or private structure if a booster pump is used that furnishes water to all or part of the property.
- (2) Any structure where there is a sewage pumping facility on the premises.
- (3) Any structure expected that a piping or equipment change might be made that could result in a cross-connection to a high hazard.
- (4) Any structure where there is the potential for a cross-connection to a degree of high hazard.

B. Establishments

(1) Examples:

- Aircraft Plants
- Automotive Plants
- Autopsy Facilities
- Breweries
- Canneries
- Car Wash Facilities
- Chemical Plants
- Colleges
- Compressed Gas Handling Facilities
- Convalescent Homes
- Dye Works
- Film Laboratories

ASSEMBLY SPECIFICATIONS AND APPROVAL PROCEDURES

Glass Etching Plants
Gravel Processing Plants
Health Clinics
Hospitals
Irrigation Systems
Laundromats
Liquid Gas Handling Facilities
Livestock Operations
Medical Facilities
Metal Plating, Etching, Passivation, Pickling Plants
Mines and Quarries
Missile Plants
Morgues
Mortuaries
Motion Picture Studio
Natural Gas Handling Facilities
Nursing Homes
Oil Handling Facilities
Packing Houses
Paper and Paper Product Manufacturing Plants
Poultry Operations
Power Plants
Pressure Vessel Repair, Testing and Maintenance Facilities
Radioactive Material Plants and Handling Facilities
Reduction Plants
Restaurants
Restricted, Classified, or Other Closed Facilities
Rubber Manufacturing Plants
Sand Processing Plants
Sanitariums
Schools
Tank Repair, Testing, and Maintenance Facilities
Water Front Facilities and Industries

- C. Multiple Water Services – Anywhere there is a potential for two (2) or more water service lines being interconnected, a USC approved RPZA shall be required on both (or all) water service lines.
- D. Private Water Systems – Anywhere there is an auxiliary water supply on or available to the premises.
- E. Reclaimed Waters and Industrial Fluids – Any facility where there is reclaimed used water or industrial fluid system on the premises.
- F. Solar Heating Systems – Any facility that has a solar heating system on the premises, and chemicals are added to the Solar heating system, and also if the solar heating system is not used exclusively for once-through heating (i.e. domestic hot water).

ASSEMBLY SPECIFICATIONS AND APPROVAL PROCEDURES

- G. Chemically Contaminated Water Systems – Where chemicals are used as an additive to the water, or the water subjected to additional treatment, or water is used on the premises to transport chemicals, or chemicals are used with water on the premises in compounding or processing.
- H. Sewer and Storm Drains – Any premise that is used for handling sewage or storm water (e.g. treatment and processing facilities, pumping plants, gaging stations, lift stations, ejector plants).
- I. Irrigation Systems – Any water user, including industrial, commercial, and domestic customers, where there is an irrigation system on the premises.

6.4 FIRE PROTECTION SYSTEMS – CONTAINMENT REQUIRED

A. Classes of Fire Protection Systems

- (1) Class 1 - A fire protection system directly connected to the City water system as the only water supply (no pumps, tanks, or reservoirs); no physical connection to auxiliary water supplies; no antifreeze or other additives of any kind; all fire protection system drains discharging to atmosphere, dry wells, or other safe outlets. (Class 1 Example: NFPA 13 and 13R systems)
- (2) Class 2 - A fire protection system that is the same as a “Class 1” system, except that a booster pump is installed in the fire protection system, and no outlet is located between the booster pump and the City water system. (Note: Booster pumps alone do not affect the portability of the system. In a “Class 2” fire protection system, it is necessary to avoid low or negative pressures that can occur by excessive flow through the booster pump. A minimum pressure of 20 psi on the inlet side of the booster pump shall be maintained through proper design, construction, operation, and maintenance in addition to the use of a low pressure cutoff switch, pump modulating valve, or other automatic device. (Class 2 Example: NFPA 13 and 13R systems)
- (3) Class 3 - A fire protection system that is the same as a “Class 1” system, except that a storage tank, fire pump that pumps from a covered above-ground reservoir or tank, or pressure tank is connected to the fire protection system. (Note: All storage facilities must be filled only from and connected exclusively to the City water system. Furthermore, water in the storage facilities must be maintained in a potable condition.)
- (4) Class 4 – A fire protection system that is the same as a “Class 1” or “Class 2” system, except that an auxiliary water supply is on or available to the property(s), or there is an auxiliary water supply designated by a water supplier within a radius of 1,700 feet from a pumper connection to the fire protection system.

ASSEMBLY SPECIFICATIONS AND APPROVAL PROCEDURES

- (5) Class 5 – A fire protection system that is connected to an auxiliary water supply which could be exposed to a high hazard (e.g. nonpotable reservoirs, rivers, ponds, well, industrial water), or that uses additives (e.g. antifreeze, wetting agents, “Foamite”, etc.), or that does not maintain a minimum pressure of 20 psi on the inlet side of a booster pump as defined for a “Class 2” fire protection system.
- (6) Class 6 – A fire protection system that is connected to a water service line from the City water system if the water service line is not used exclusively for fire protection. (Class 6 Example: NFPA 13D system for 1 and 2 family residential, 13D system)

B. Backflow Prevention on Fire Protection Systems

The City water system shall be protected by an approved method of backflow prevention in water service lines to fire protection systems, regardless of backflow prevention requirements in other water service lines on the premises.

- (1) Classes 1 and 2 - A USC approved DCDA is required as the minimum backflow prevention in the water service line to a Class 1 or Class 2 fire protection system, if the owner can document that there are no potential high hazards on the premises, and all fire protection system water storage vessels are maintained in a potable condition. A USC approved RPDA is required in the water service line to the fire protection system if there is a potential high hazard on the premises.
- (2) Class 3 – A USC approved DCDA is required as the minimum backflow prevention in the water service line to a Class 3 fire protection system, if the owner can document that there are no potential high hazards on the premises, and all fire protection system water storage vessels are maintained in a potable condition. A USC approved RPDA is required in the water service line to a Class 3 fire protection system if the industrial or domestic water system could potentially be subjected to a high hazard.
- (3) Classes 4 and 5 – A USC approved RPDA is required in the water service line to fire protection systems.
- (4) Class 6 – A USC approved DCVA is required in the water service line to a Class 6 fire protection system (a 13D system). If the owner can document that the system is plumbed in a way to keep the fire system flushed out through normal water use, and that no chemicals or additives are being used, no DCVA is required.

6.5 ASSEMBLY APPROVAL

The City shall review for approval only backflow prevention assemblies that have been tested and approved by the Foundation for Cross Connection Control and Hydraulic Research at the University of Southern California, and certified by the Arkansas Department of Health.

Section 7: Assembly Installation and Initial Inspection

7.1 GENERAL

Proper installation of backflow prevention assemblies is necessary to adequately protect the City water system from backflows.

7.2 AUTHORIZED INSTALLERS

Installation of backflow prevention assemblies on water service lines shall be accomplished by a Master Plumber licensed and certified by the State of Arkansas.

7.3 INSTALLATION SPECIFICATIONS

Installation shall not begin until assembly approval has been issued by the Program Administrator. All backflow prevention assemblies shall be installed in a manner that provides easy access for testing, maintaining, repairing and replacing the assembly.

A. General Assembly Specifications

- (1) A backflow prevention assembly shall be installed in accordance with USC approved instructions and shall be reviewed and approved by the Program Administrator before installation.
- (2) An assembly shall be installed on the owner's side of the water meter and before the first branch or outlet off the owner's water service line and in a location approved by the Program Administrator, or installed on the owner's side of the property boundary if no water meter is installed in the water service line and in a location approved by the Program Administrator.
- (3) Piping connected to the assembly shall not be used for electrical grounding.
- (4) Piping connected to the assembly shall be thoroughly flushed before installing the assembly.
- (5) An adequate and permanent method of handling test water discharge shall be provided.
- (6) A pressure relief valve shall be properly installed and maintained on all water heating apparatus served by the assembly.
- (7) The assembly installation shall be protected from freezing.
- (8) Adequate support, excluding water lines, shall be provided for assemblies that are

ASSEMBLY INSTALLATION AND INITIAL INSPECTION

two (2) inch or larger.

- (9) If the assembly cannot be installed in the prescribed manner for any reason, the proposed deviations shall be submitted to the Program Administrator for review and approval before installation.
- (10) The bottom of the assembly shall be at least twelve (12) inches from ground floor but not more than thirty-six (36) inches finish floor level. A minimum clearance of ten (10) inches shall be provided on each side of the assembly, eight (8) inches on each end of the assembly, ten (10) inches above the highest point of the assembly.
- (11) Designed to protect from freezing, enclosures must be insulated, have a heat source, and must have a hinged drain for water discharge. Enclosures must have removable panels and must be lockable.

B. RPZA and RPDA Installations

- (1) The RPZA and RPDA shall not be installed below grade or in a vault or pit.
- (2) The RPZA and RPDA shall be contained in an approved heated assembly enclosure, or can be installed inside the building in an approved location. Enclosures shall be placed on a wire reinforced concrete pad a minimum of four (4) inches thick.
- (3) An adequate and permanent method of handling relief vent discharge and test water discharge shall be provided.
- (4) Clear unobstructed space for the relief vent shall be provided at all times to prevent the vent from becoming blocked or flooded.
- (5) The RPZA and RPDA shall be installed horizontally with the relief vent pointed down, unless otherwise approved by the Program Administrator, USC, or Arkansas Department of Health.
- (6) An air-gap separation shall be provided between the relief vent and drain line. The factory bolt-on air gap and drainage attachment are preferred.
- (7) The relief drain vent opening shall not be reduced in size.
- (8) If not part of the approved assembly for two (2) inch or smaller assemblies, an approved "Y" strainer shall be installed on the inlet side of the RPZA and RPDA prior to the assembly isolation valve, so that all water must pass through the "Y" strainer immediately before entering the RPZA or RPDA. An approved isolation valve for the "Y" strainer shall be installed on the inlet side of the "Y" strainer.

C. DCVA and DCDA Installations

ASSEMBLY INSTALLATION AND INITIAL INSPECTION

- (1) The DCVA shall not be installed below grade or in a vault or pit.
- (2) Manufactured enclosures shall be removable. Enclosures shall be equal to or the equivalent of a heated "Hydrocowl" enclosure. Enclosures shall be placed on a wire reinforced concrete pad a minimum of four (4) inches thick.
- (3) The DCVA and DCDA shall be installed horizontally unless otherwise approved by the Program Administrator.

7.4 COMPLETION OF INSTALLATION

The installer is responsible for insuring the installation is in accordance with the City approved installation plans. Failure to do this may result in the denial of water service and the Owner shall bear any additional costs incurred to correct the infraction.

Upon completion of installation, the installer shall notify the Program Administrator. The assembly shall be inspected by the Program Administrator to verify conformance to approved installation plans. The Program Administrator shall then verify proper operation of the assembly through a test accomplished by an Arkansas State Certified Assembly Testing Technician. Test results shall be documented on the Assembly Test and Maintenance Report and a copy sent to the Backflow Department before the installation is accepted.

Section 8: Assembly Testing Procedures

8.1 GENERAL

All backflow prevention assemblies must be tested annually to ensure each assembly is performing accurately. Every new assembly installed must be tested within ten (10) working days after installation.

8.2 AUTHORIZED TESTERS

Only Arkansas State Certified Assembly Testing Technicians may perform testing on backflow prevention assemblies.

8.3 PERIODIC TESTING REQUIREMENTS

- A. All backflow prevention assemblies shall be tested and inspected on an annual basis.
- B. Annual testing shall be performed by an Arkansas State Certified Assembly Testing Technician.
- C. Any backflow preventer which fails during an annual test shall be repaired or replaced. When repairs are necessary, upon completion of the repair the assembly shall be re-tested at the owner's expense to ensure correct operation. High hazard situations shall not be allowed to continue unprotected if the backflow preventer fails the test and cannot be repaired immediately. In other situations, a compliance date of not more than thirty (30) days after the test date shall be established. Parallel installation of two (2) assemblies is an effective means of the owner ensuring that uninterrupted water service during testing or repair of assembly and is strongly recommended when the owner desires such redundancy.
- D. Backflow prevention assemblies shall be tested more frequently than specified in "A" above, in cases where there is a history of test failures and the Program Administrator feels that due to the degree of hazard involved, additional testing is warranted. Cost of all additional tests shall be borne by the owner.

8.4 PRE-TESTING ARRANGEMENTS

Prior to initiating a test of any backflow assembly, it is recommended that the following procedures be followed:

- A. Permission must be obtained from the owner, or his representative, to shut down the water supply. This is necessary to ensure that since all testing is accomplished under no-flow conditions, the owner is aware that his water supply will be temporarily shut

ASSEMBLY TESTING PROCEDURES

off while the testing is being performed. Some commercial and industrial operations require constant and uninterrupted water supplies for cooling, boiler feed, seal pump water, etc. and water service interruption cannot be tolerated. The water supply to hospitals and continuous process industries cannot be shut off without planned and coordinated shut downs. The request to shut down the water supply is therefore a necessary prerequisite to protect the customer as well as limit the liability of the tester.

- B. Concurrent with the request for permission to shut off the water, it is advisable to point out to the owner, or his representative, that while the water is shut off during the test period, any inadvertent use of water within the building will reduce the water pressure to zero. Backsiphonage could result if unprotected cross-connections exist which would contaminate the building water supply system. In order to address this situation, it is recommended that the owner caution the inhabitants of the building not to use the water until the backflow test is completed and the water pressure restored. Additional options available to the building owner would be the installation of two backflow assemblies in parallel that would enable a protected by-pass flow around the assembly to be tested. Also, if all water outlets are protected within the building with a "fixture outlet protection" backflow assembly, cross-connections would not create a problem in the event of potential backsiphonage conditions occurring while assemblies are tested, or for any other reason.

Section 9: Maintenance and Repair Procedures

9.1 GENERAL

It is important that backflow prevention assemblies are regularly maintained in good working condition to accomplish their purpose. The movement of water through these assemblies, whether corrosive or depositing, causes deterioration that will affect their functioning. Therefore, maintenance is essential to ensure proper operation of backflow prevention assemblies.

9.2 RESPONSIBILITY

- A. It shall be the responsibility of the owner to ensure that all assemblies are regularly maintained in good working condition.
- B. Ensure an Arkansas State Certified Assembly Repair Technician is responsible for all repairs performed on an assembly. A Master Plumber's License shall be required when replacing backflow prevention assemblies within the City's water service area.
- C. Arkansas State Certified Assembly Repair and Testing Technicians employed by the City of Fayetteville shall provide maintenance and repair on devices and assemblies that are owned by the City and/or located on City premises.
- D. The City of Fayetteville shall utilize training opportunities when available to ensure that the City is staffed with the appropriate amount of Certified Assembly Repair and Testing Technicians.
- E. The owner shall coordinate with a Certified Assembly Repair and Testing Technician of any repairs or damage resulting from vandalism or any malfunctioning of backflow prevention assemblies.

9.3 MAINTENANCE FACTORS

- A. Maintenance and repair are necessary because of the problems that are created merely by water flowing through the assembly.
- B. Corrosive waters can disintegrate metal parts.
- C. The use of dissimilar metal pipes and the use of dissimilar metals in backflow prevention assemblies themselves can result in the disintegration of metal parts (galvanic corrosion).

MAINTENANCE AND REPAIR PROCEDURES

- D. High pressures and temperatures.

9.4 MAINTENANCE TASKS

- A. Cleaning and lubrication: Use only lubricants recommended by the manufacturer that are food grade quality as approved by the Food and Drug Administration.
- B. Refer to manufacturer's literature for a detailed program of preventive maintenance and repair.
- C. Keep spare parts such as seals, gaskets, tubing, etc. or have information readily available for ordering of replacement parts.

9.5 MAINTENANCE DOCUMENTATION

- A. Documentation is required by the Program Administrator and is essential for tracking long term trends.
- B. Documentation is also used in the decision-making process by the Program Administrator for determination of whether existing assemblies need replacement.
- C. Adequate maintenance records are a requirement for annual test records.

Section 10: Records and Reports

10.1 GENERAL

It is imperative that adequate records of all assemblies are kept up-to-date.

10.2 RECORDS AND REPORTS REQUIRED

The City shall initiate and maintain the following records:

- A. Master files on all customer cross-connection surveys and inspections.
- B. Master files on all backflow prevention assembly tests and inspections.
- C. Master files on customer Assembly Test and Maintenance Reports.
- D. Copies of Assembly Approval Application Forms and approvals.
- E. Copies of lists and summaries supplied to the Arkansas Department of Health.
- F. The number of annual tests conducted on backflow prevention assemblies.
- G. The number of annual backflow prevention surveys performed.
- H. The total number of each type of backflow prevention assembly that is installed in the service area.
- I. The following information is required per backflow prevention assembly (Note: DCDA and RPDA are each made up of two assemblies; each of these assemblies shall require the following information):
 - (1) The customer's name, service address, mailing address, telephone number, contact name, and billing account number.
 - (2) Type of assembly and its date of installation and the installation specifications.
 - (3) The name of the manufacturer, model number, and serial number of the assembly.
 - (4) Date of initial backflow prevention survey and the survey results.
 - (5) The type of actual or potential hazard, if any.
 - (6) Date of initial Assembly Approval Application Form and approval date.

RECORDS AND REPORTS

- (7) Assembly location on property, operational history, installer's name and telephone number, and type of establishment.
- (8) All test results immediately following installation, and annual test results thereafter.
- (9) The test results before and after repair or maintenance and date of latest retest, if any were required.
- (10) The maintenance performed or the repairs that were made to the unit, including the replacement parts and part numbers and the date these repairs were made.
- (11) Information on backflows through the assembly, if any, including any litigation resulting from failure of the assembly.

Section 11: Enforcement Plan

11.1 GENERAL

The purpose of this section is to provide guidance for City staff in all phases of enforcement related to the City of Fayetteville Cross Connection Control Program. General guidance has been provided throughout this manual.

11.2 REQUIREMENTS

- A. The City requires all owners with actual or potential cross-connections on their property or when required by the City to install and maintain backflow prevention assemblies to obtain an “Assembly Approval” as a condition for water service. These approvals represent the City’s first means of executing an effective Cross Connection Control Program.
- B. An “Assembly Approval” will remain valid until such time that the existing assembly is moved from the pre-approved location, requires more than minimum maintenance, requires replacement, or when the owner has made plumbing changes within the premises that may change the assembly specification requirements due to the increased degree of hazard.
- C. All presently installed backflow prevention assemblies that do not meet the requirements of this manual but were approved assemblies for the purpose described herein at the time of installation and that have been properly maintained shall, except for the inspection, testing, and maintenance requirements under these provisions, be excluded from the requirements of these rules so long as the City is assured that they will satisfactorily protect the City’s water system. Whenever the existing assembly is moved from the present location, requires more than minimum maintenance, requires repairs, requires replacement, or when the City finds that the maintenance constitutes a hazard to health the unit shall be replaced by a USC approved backflow prevention assembly meeting the requirements of this program.
- D. All backflow prevention assemblies shall be located on the owner’s water service line located before the first branch or outlet off the owner’s water service line.
- E. For each backflow prevention assembly, the Program Administrator shall determine what data are required or needed to determine compliance with applicable backflow prevention and cross-connection standards, as well as when and how it can be obtained. If information submitted is deficient or late, the owner shall be notified and required to complete the submission of the required information to avoid termination of water service.

ENFORCEMENT PLAN

- F. Every effort shall be made to secure the voluntary cooperation of the owner in correcting cross-connection hazards. If voluntary corrective action cannot be obtained within a reasonable period of time, the City shall take the necessary steps to terminate water service until such time that the infraction has been corrected.

11.3 NON-COMPLIANCE

All violations to the provisions of this program shall be characterized and a determination made as to whether the user is in significant non-compliance. Certain instances of non-compliance are not of sufficient impact to justify extensive enforcement actions. However, certain violations or patterns of violations are significant and must be identified as such. Significant non-compliance may be on an individual or long-term basis of occurrence.

Instances of non-compliance are owners/customers who violate one or more of the following criteria:

- A. Failure to submit reports required by the Cross Connection Control Program; not responding to letters or verbal requests; frequently violating reporting requirements; not reporting pollution or contamination of City water main(s); reporting false information; missing deadlines for reporting; not reporting any proposed, modified, or existing cross-connections; or not reporting an auxiliary source of water on property such as well, even if not connected to the owner's piping system.
- B. Failure to meet specifications of the "Assembly Approval" intentionally violating conditions of the "Assembly Approval"; failure or refusal to comply with provisions of this program; or not servicing or making required repairs to backflow prevention assemblies.
- C. Violating conditions of the Cross Connection Control Program resulting in the pollution or contamination of the City's water main(s).
- D. Installation of plumbing to provide potable water for domestic purposes which is on the City's side of the backflow preventer without such plumbing having its own backflow prevention assembly and approval.
- E. Installation of a backflow prevention assembly in a manner not approved by the Program Administrator.
- F. Failure to eliminate or control all cross-connections on their property.
- G. Severe cases of failure to maintain proper records, falsification of records; refusal to submit copies of records to the Program Administrator.

ENFORCEMENT PLAN

- H. Refusal to allow inspection of property for the purpose of conducting a survey to ascertain degree of hazard, possibility of a cross-connection, compliance of program directives, or conformance of approved assembly installation specifications.

11.4 ENFORCEMENT ACTIONS

- A. The Program Administrator shall send a “Non-compliance Letter” to the owner that states that there is a violation of the Cross Connection Control Program. This letter shall explain the nature of the violation and provide what corrective action is required. The letter shall also state that additional enforcement action may be pursued if corrections are not accomplished within 30 days.
- B. The non-compliance letter shall be sent by certified mail, return receipt requested, with copies maintained by the Program Administrator.
- C. A second non-compliance letter shall be issued upon the instance of a repeat violation, or if the original violation has not been corrected within twenty (20) days after the date of the first letter. This second letter shall have the same content as the first letter, however, it shall notify the customer that non-compliance will be subject to water service disconnection.
- D. The second non-compliance letter shall be sent by certified mail, return receipt requested, with copies maintained by the Program Administrator.
- E. If the violations still exist after the first and second non-compliance letters have been sent by the Program Administrator and received by the owner (proven by return receipt), a third and final non-compliance letter shall be sent stating that the water service will be disconnected ten (10) days after the date of the third letter. After that ten (10) day period, if no actions have been taken to correct the violations, the Program Administrator shall instruct the appropriate personnel to discontinue water service at the connection.
- F. If the owner disagrees with the identified violation, he/she may submit a request in writing to the Utilities Director stating the circumstances that warrant a review of the situation.
- G. The City shall have legal authority to immediately and effectively disconnect water service to the premises without prior written notice where it reasonably appears to present an imminent endangerment to the health or welfare of persons, or to the public water system, or which threatens to interfere with the City's operation of the public water system.

ENFORCEMENT PLAN

- H. Upon disconnection of water service, the water meter must be completely removed from the connection point in order to achieve a complete separation between the public water system and the owner's private system.
- I. The customer must correct all violations, plus pay all prescribed service charges before water service will be connected. Program personnel shall re-inspect the premises to ensure that all violations have been corrected. After water service is reconnected customer has ten (10) working days to submit test results.
- J. The City may initiate any procedures, investigations, or studies deemed necessary and desirable to determine the cause of such violations and methods to correct them.
- K. The City may initiate legal action against the owner that remains in non-compliance of this program, especially in cases where discontinuance of the water service is not possible or would cause dangerous conditions to exist, or where it would cause a public health hazard.
- L. If any person knowingly contaminates the City's water system, contrary to the provisions of this program or any applicable State or Federal law, the City, through legal counsel, may commence an action for appropriate legal and/or equitable relief, including recovery of civil penalties assessed by the City.
- M. The customer shall bear the expense of all legal fees, administrative charges, and any other related costs incurred by the City in the enforcement of the Cross Connection Control Program.

Section 12: Emergency Action Plan

12.1 GENERAL

Because backflows sometimes occur even with a comprehensive cross connection control program in place, it is essential that the City of Fayetteville have a plan to deal with backflow emergencies.

12.2 INFORMATION GATHERING

- A. Refrain from suggesting possible causes of problem while taking the complaint.
- B. When the complaint is initially received, try to gather as much relevant information as possible.
- C. Fill out a Customer Complaint Form.

12.3 INVESTIGATE COMPLAINT

- A. Assess the scope of the complaint (Is there one complaint or several from a certain area?).
- B. Dispatch appropriate personnel to the source of the complaint to examine and take a sample of the water.
- C. Initiate a test on the water (i.e., PH, chlorine and bacteriological analysis).

12.4 PROCEDURES IF BACKFLOW IS SUSPECTED OR REPORTED

- A. The Utilities Director and the designated Program Administrator shall be contacted immediately.
- B. The following names and telephone numbers shall be kept updated and on file at all times to effectively handle an emergency situation:
 - (1) Utilities Director
 - (2) Designated Backflow Prevention Program Administrator
 - (3) City Plumbing Inspector
 - (4) Water and Sewer Operations Manager

EMERGENCY ACTION PLAN

- (5) Mayor of the City of Fayetteville
 - (6) City of Fayetteville Police Department
 - (7) City of Fayetteville Fire Department
 - (8) Washington County Health Department
 - (9) Washington Regional Medical Center
 - (10) Central Emergency Medical Services (EMS)
 - (11) Central Dispatch
 - (12) Local radio stations
 - (13) Local television stations
- C. Personnel dispatched to examine the complaint shall take the necessary samples, attempt to locate the source of the contamination, and, if possible, correct the problem to restore water quality.
- (1) Sample bottles shall be designated for emergency responses.
 - (2) Containment of a contaminated area shall be used through water shut down to affected areas if necessary.
- D. Short-range responses shall be to minimize the effects of the backflow through containment and public notification.
- E. Medium-range responses shall be to restore water quality by flushing lines and neutralizing the contaminant, and public notification.
- F. Long-range responses shall be a detailed review of performance to include standard operating procedures and performance of other agencies and individuals.

Section 13: Definitions

13.1 DEFINITIONS

- A. Air Gap - Means a physical separation between two piping systems. The unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supplying water to a tank, plumbing fixture, receptor, or other device and the flood-level rim of the receptacle. These vertical, physical separations must be at least 2.5 times the diameter of the water supply outlet, never less than one (1) inch (25 mm).
- B. Auxiliary Water Supply - Any water supply on or available to the property other than the City's water supply. These auxiliary water supplies may include water from another public water supply system or any natural source(s), such as a well, spring, river, stream, harbor, and so forth; used waters; or industrial fluids. These water supplies may be contaminated or polluted, or they may be objectionable and constitute an unacceptable water source over which the City does not have sanitary control.
- C. Backflow - Shall mean a hydraulic condition, caused by a difference in pressures, in which non-potable water or other fluids flow into a potable water system.
- D. Backflow Preventer – Shall mean a testable assembly to prevent backflow.
- E. Backflow Prevention Assembly (Backflow Preventer) - Mechanical backflow prevention device assembled with shut-off valves, and provided as a complete assembly by a single manufacturer, used to prevent the flow of contaminants or pollutants into the City's water system. The assembly must have the approval of the Foundation for Cross Connection Control and Hydraulic Research at the University of Southern California, State of Arkansas Department of Health, and the City of Fayetteville.
- F. Backflow Prevention Device (Backflow Preventer) - Mechanical backflow preventer without the shut-off valves. It does not have a shut-off valve on either side of the backflow prevention mechanism. Any backflow prevention assembly without the shut-off valves is called a device.
- G. Backflow Technician - Person or persons designated by the City to perform various functions required in this program. Backflow technician may also refer to a "State Certified Assembly Repair Technician" or a "State Certified Assembly Testing Technician".
- H. Backpressure- A pressure, higher than the supply pressure, caused by a pump, elevated tank, boiler, or any other means that may cause backflow.
- I. Back-siphonage - Backflow resulting from negative pressure or reduced pressure in the distributing pipes of a potable water supply.

DEFINITIONS

- J. Bypass - Any arrangement of pipes, plumbing, or hoses designed to divert the flow around an installed assembly through which the flow normally passes.
- K. Certified Assembly Testing Technician (Tester) - Person certified by the Arkansas Department of Health as an assembly testing technician to perform testing on backflow prevention assemblies.
- L. Certified Assembly Repair Technician - Person certified by the Arkansas Department of Health as an assembly repair technician to perform repairs on backflow prevention assemblies.
- M. City – The City of Fayetteville, Arkansas.
- N. Containment - Method of cross-connection control requiring a backflow prevention assembly at point of service connection to the City's water system. This method provides a separation between the public water system and the customer's internal piping system to ensure protection against backflow occurrences.
- O. Contamination - An impairment of a potable water supply by the introduction or admission of any foreign substance that degrades the quality of the water and creates a health hazard.
- P. Cross-Connection - Any actual or potential connection between the public water system and a source of contamination or pollution. Sources of contamination or pollution may be gases, liquids, or solids, such as chemicals, waste products, steam, water from other sources (potable or non-potable), or any matter that may change the color or add odor to the water.
- Q. Cross-Connection Control - The use of backflow prevention assemblies, methods, and procedures to prevent contamination or pollution of a potable water supply through cross-connections and to continuously afford the protection commensurate with the degree of hazard.
- R. Degree of Hazard - Level of danger posed by a particular substance or set of circumstances; evaluation of the potential risk to public health and the adverse effect of the hazard upon the potable water system.
- S. Domestic – Refers to plumbing as defined by the State of Arkansas Plumbing Code and is not associated with designated fire protection water service lines and systems.

DEFINITIONS

- T. Double Check Valve Assembly (DCVA) – Means a complete assembly meeting AWWA Standard C510 and the requirements of the Arkansas State Plumbing Code consisting of two (2) internally loaded, independently operating check valves between two (2) tightly closing resilient seated shutoff valves, with four (4) properly placed resilient seated test cocks. DCVA can be subjected to backpressure.
- U. Double Check Detector Assembly (DCDA) - A DCVA with a flow detector meter in parallel used to detect system leaks and unauthorized use of water.
- V. Fire Protection System - A fire protection system consists of pipes, sprinklers, valves, fixtures, fittings, ponds, tanks, water storage vessels, and fire hydrants that are intended and used exclusively for fire protection.
- W. Inspector - Person authorized by the City to perform inspections of owner’s facilities for the purpose of determining compliance with the City of Fayetteville's Backflow Prevention Program.
- X. Isolation - Method to confine a potential source of contamination to the non-potable system being served; to provide a backflow prevention mechanism at each actual or potential cross-connection.
- Y. Multiple Services - Two or more water services. In the case that two or more water agencies are involved, the multiple service connections constitute as an “auxiliary source” of water on the property.
- Z. New Construction - Construction of a new facility, alteration or addition to an existing facility, or modification or addition to existing plumbing and/or fire protection systems.
- AA. Owner - Person or persons who possess any interest in the structure or property to which such ownership relates.
- BB. Pollutant - Any foreign substance that if permitted to enter into the City water system, will degrade its quality so as to constitute a non-health hazard or impair the usefulness of the water.
- CC. Program - The City of Fayetteville, Arkansas Cross Connection Control Program.
- DD. Program Administrator - Person or persons designated by the Mayor of the City of Fayetteville to execute and administer the Cross Connection Control Program. The Utilities Director is the supervising authority of this program, thus, individuals designated by said Utilities Director to execute this program shall also be referred to as the Program Administrator.

DEFINITIONS

- EE. Reduced Pressure Detector Assembly (RPDA) – An RPZA with a flow detector meter in parallel. Used to detect system leaks and unauthorized use.
- FF. Reduced Pressure Principle Backflow Assembly (RPZA) - Means a complete assembly meeting AWWA Standard C511 and the requirements of the Arkansas State Plumbing Code consisting of a hydraulically operating, mechanically independent differential relief valve located between two (2) independently operating, internally loaded check valves that are located between two (2) tightly closing resilient seated shut off valves with four (4) properly placed resilient seated test cocks. The RPZA contains a relief port which will open to atmosphere if the pressure in the zone falls within 2 psi of the supply pressure. The assembly provides protection against both backpressure and back-siphonage.
- GG. Retrofit – Replacement of an existing backflow prevention assembly when the specifications or condition of the assembly are not adequate for the degree of hazard found on the property as defined by this program.
- HH. Service Connection – The terminal end of a service connection from the public potable water system, that is, where the water supplier loses jurisdiction and sanitary control over the water at its point of delivery to the customer's water system. If a meter is installed at the end of the service connection, then the service connection shall mean the downstream end of the meter. There should be no unprotected branches or outlets from the service line ahead of any meter or backflow prevention assembly located at the point of delivery to the customer's water system. Service connection shall also include water service connection from a fire hydrant and all other temporary or emergency water service connections from the public potable water system.
- II. Vacuum - Any absolute pressure less than that exerted by the atmosphere.
- JJ. Water Potable - Water that is safe for human consumption as described by the Arkansas Department of Health. Water free from impurities present in amounts sufficient to cause disease or harmful physiological effects. Its bacteriological and chemical quality shall conform to the requirements of the Public Health Service Drinking Water Standards or the regulation of the public health authority having jurisdiction.
- KK. Water Non-Potable - Water that is not safe for human consumption or that is of questionable quality; water that has been introduced to foreign substances (pollutants or contaminants).
- LL. Water Used - Any water supplied by a water supplier from a public potable water system to a consumer's water system after it has passed through the point of delivery and is no longer under the sanitary control of the water supplier.

DEFINITIONS

MM. Water Outlet - A discharge opening through which water is supplied to a fixture, into the atmosphere (except into an open tank which is part of the water supply system), to a boiler or heating system, to any assembly equipment requiring water to operate but which are not part of the plumbing system.

NN. Water Supply System - The water service pipe, the water distributing pipes, and the necessary connecting pipes, fittings, control valves, and all appurtenances in or adjacent to the building or premises. The water supply system is part of the plumbing system.

Section 14: Appendix (Forms and Sample Letters)

14.1 GENERAL

This section contains the forms and sample letters that will be used for the administration of this program.

14.2 FORMS AND INTENDED USE

A. ASSEMBLY INFORMATION DATA – MASTER FILE FORM

To be maintained on every backflow prevention assembly installed in our water service area.

B. CROSS CONNECTION SURVEY FORM

The Program Administrator, or Backflow Technician, will complete the form during an interview with the customer and during the on-site inspection.

C. BACKFLOW PREVENTION ASSEMBLY TEST REPORT

This report shall be completed by an Arkansas State Certified Assembly Testing Technician each time a test is performed on an assembly. It shall also be used by an Arkansas State Certified Assembly Repair Technician each time repairs and maintenance are performed on the assembly.

D. BACKFLOW INCIDENT FORM

This form shall be completed by the City whenever a complaint is made by a customer who suspects that backflow has occurred.

14.3 SAMPLE LETTERS AND INTENDED USE

A. ON-SITE INSPECTION REQUEST

This letter shall be sent to the customer to schedule an inspection of the customer's premises in order to determine if there are cross-connections or potential cross-connections.

B. BACKFLOW ASSEMBLY TEST REQUIRED

This letter may be used by the City to notify a customer that their assembly requires testing, by an Arkansas State Certified Testing Technician, scheduled by the customer. A Second

APPENDIX (FORMS AND SAMPLE LETTERS)

Notice letter shall be sent to remind the customer to test the backflow assembly. A Final Notice shall be sent stating the date that water service will be disconnected as a result of failing to comply with the backflow assembly testing requirements.

C. NOTICE TO REPAIR BACKFLOW ASSEMBLY

This letter shall be sent to the customer to notify them that their assembly did not pass a certified test and will require immediate repair or replacement.

D. BACKFLOW ASSEMBLY NEEDED

This letter shall be sent to the customer after an inspection of the customer's premises reveals an actual or potential hazard to the City's water system. The customer shall be given 30 days from the receipt of this letter to install a backflow prevention assembly.

E. NON-COMPLIANCE LETTER AND SHUT OFF NOTICE

This letter shall be sent to those customers that are in non-compliance after sufficient time has been granted to correct the problem after sending the notice that a backflow assembly is needed. A shut off notice shall then be sent to the customer that states the termination date when their water service will be disconnected if the problem has not been corrected and they come into full compliance with the regulations of this program.