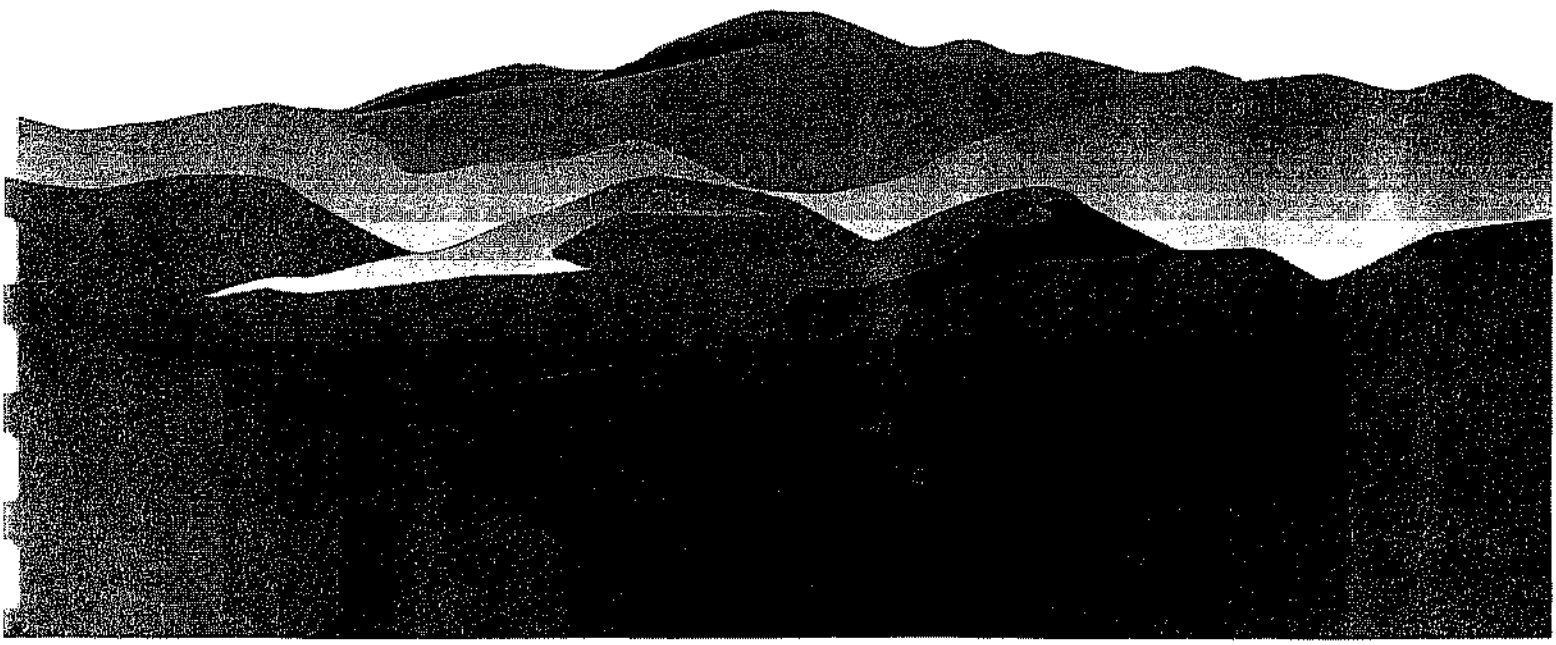
APPENDIX W-1

CHEROKEE COUNTY
WATER AND SEWERAGE AUTHORITY

CROSS-CONNECTION CONTROL PROGRAM

Cherokee County Water and Sewerage Authority

Cross-Connection Control Program



CHEROKEE COUNTY WATER AND SEWERAGE AUTHORITY

CROSS-CONNECTION CONTROL PROGRAM

ADDENDUM ONE

APRIL 14, 2003

ALL NEWLY INSTALLED DEVICES SHALL BE TESTED UPON INSTALLATION BY A CONTRACTOR APPROVED BY THE AUTHORITY.

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CROSS-CONNECTION CONTROL PLAN

SECTION - I
PURPOSE, RESPONSIBILITIES AND PROCEDURES

1.1 PURPOSE

To prevent the entry of contaminants or pollutants into any area of the potable water supply through the control of cross-connections. Control shall be accomplished by isolating potential sources of contaminants or pollutants on the customer's premises and or protecting the public supply by isolation and containment at the service connection.

1.2 APPLICABILITY

The provisions of backflow prevention by isolation and containment are applicable to any customer or system supplied by the Cherokee County Water and Sewerage Authority's distribution system including irrigation sprinklers, fire protection systems, residential systems, and other service connections.

1.3 RESPONSIBILITIES

1.3.1 The Cherokee County Water and Sewerage Authority and the Cherokee County Commission are responsible for establishing regulations regarding the control of cross-connections to the public distribution system.

1.3.2 *The Water and Sewerage Authority* is responsible for enforcing certain of these regulations in an effort to protect the public water supply system through the prevention of backflow or back siphonage of contaminants or pollutants. This responsibility begins with the production of water and extends throughout the distribution system to the service connection, applying to new construction as well as to existing customers and situations.

1.3.3 *The Cherokee County Department of Public Service* - The Building Inspection Department is responsible for enforcing the Cherokee County adopted plumbing code

regulations in an effort to prevent backflows on the customer's premises from entering the customer's own potable water system. As with the Authority this responsibility extends to both new and existing customers.

1.3.4 *The Water Customer* is responsible for complying with the Authority regulations including maintenance, testing, and reporting on certain devices. When required customers are required to allow on site inspections to verify compliance with the Authority's cross-connection control policy. The customers also have the dual responsibility for protecting the water in their own system from degradation due to conditions originating on their premises and for protecting the quality of water in the public distribution system. The customer is liable for any health hazard due to backflow from unprotected cross-connections on their premises. When a backflow preventer is required at the service connection, the customer is responsible for the costs of procurement, installation, testing, and maintenance.

1.4 PUBLIC AWARENESS

General methods that the authority may use to inform its customers of the potential dangers from illegal and improper cross-connection include the following.

1.4.1 Written descriptions of potential cross-connection locations and the need to protect the public water system would be included as special interest articles for newspaper and local publications.

1.4.2 Providing speakers for civic clubs, political bodies and other functions.

1.4.3 Providing informational pamphlets to be distributed at schools and other locations.

1.4.4 Scrolling text messages about backflow prevention will put on the government access channel of the local cable TV.

1.5 RESOURCES FOR IMPLEMENTATION

1.5.1 New Construction Plan Review

1.5.1.1 Both the Authority and County Building Department shall review all plans for new construction.

1.5.1.2 Both the Authority and County Building Department shall advise developers of regulations in advance and determine that appropriate protection measures and devices are proposed. Devices required by either the Authority or County Building Department will be installed at the developer, builder, or owner's expense.

1.5.1.4 New construction will be inspected for Cherokee County plumbing code compliance by the Cherokee County Department of Public Services Building Inspection Department to determine that individual cross-connections are isolated from the public water supply (isolation policy).

1.5.1.5 The Authority will inspect all new service connections for cross-connection control compliance, determine the degree of hazard to the public supply, and assign the customer to a risk category (containment policy). The Authority will refuse service in cases of non-compliance.

1.5.2 Existing System and Customers

1.5.2.1 The Authority will identify by on site inspection those existing customers or connections to the public supply which represent potential hazards.

1.5.2.2 Customers will be identified and a priority ranking of *high, medium*, or *low* hazard assigned. Hazard levels will be assigned with respect to the likelihood and consequence of backflow on the site.

1.5.2.3 Letters will be mailed to identified potential cross-connection customers defining cross-connections and indicating that the Authority intends to restrict such connections by requiring the installation of backflow prevention devices. The Authority will provide assistance to the owner by providing a listing of persons or companies approved by the Authority to install and test backflow prevention devices.

1.5.2.4 The Authority will discontinue service in cases of non-compliance.

1.5.3 Management and Record Keeping

1.5.3.1 The Authority has a designated Cross-Connection Control Program Manager. The program manager will perform site inspections, record keeping, and the

sending out of various notifications to customers.

1.5.3.2 The Authority has invested in a personal computer for the purpose of maintaining records, and managing the Cross-Connection Control Program. The computer system includes; a program to track customers, backflow preventer locations, inspections, maintenance and will print letters to customers informing them annual testing is required.

1.5.3.3 The Authority will track the location of high risk customers and the valves necessary to isolate them on a 6' x 6' county road map until a computerized map proposed for the future is available.

1.6 EMERGENCY NOTIFICATION PROCEDURES

Cherokee County Water and Sewerage Authority personnel shall use the following notification procedures in the event of a backflow incident.

1.6.1 The following information will be obtained for transmission to the General Manager and the Cross-Connection Control Program Manager by the first employee on the scene.

1.6.1.1 Location, time, and date of incident.

1.6.1.2 Name of person(s) or company and phone number.

1.6.1.3 Type of material involved, if known.

1.6.1.4 Physical description of contamination. Color of water, odor, taste?

1.6.1.5 Is any City, County, or Water Authority personnel on the scene of the incident, (Fire, Police, Pollution Control, etc.)

1.6.2. Notification of Water and Sewerage Authority Personnel:

1.6.2.1 Notify General Manager

1.6.2.2 Notify Cross-Connection Control Manager

1.6.3 EPD Notification:

Notify the Environmental Protection Division. The Emergency (24 hour) Telephone Numbers are (404)-656-4863 and (404) 656-6905.

1.6.4 Cherokee County Department of Public Services Notification:

1.6.4.1 Health Department Personnel:

Health Department Personnel will be notified and requested to respond in the event of an emergency, so that they may assist with the identification and treatment of the contamination.

1.6.4.2 Building Inspectors:

Building Inspectors will be notified and requested to assist in the locating of contamination sources.

1.6.5 Water Treatment Plant Personnel Notification:

Water Treatment Plant Personnel shall be notified as to the type of emergency, so that they may assist in the location, identification, and correction of any cross-connection which may affect the supply system. Laboratory personnel from the plant will be required to take samples of the contaminated water for analysis.

1.6.6 Public Notification:

If an incident or emergency warrants public notification the following person(s) are authorized to make statements to the news media and shall be in charge of handling the emergency in the order listed:

1.6.6.1 Chairman of the Board of Directors of the Cherokee County Water and Sewerage Authority.

1.6.6.2 General Manager of the Cherokee County Water and Sewerage Authority

1.6.6.3 Public Relations Officer of the Cherokee County Water and Sewerage Authority

1.6.7 Operation Procedures:

1.6.7.1 During normal working hours, all radio transmissions shall cease except for necessary emergency use. Base stations shall be notified by the General Manager or his designated agent(s).

1.6.7.2 Service crew or crews shall be dispatched to the scene.

1.6.7.3 Service crew(s) shall be locate, operate and turn off customer's water service at the meter and fire line valves.

1.6.7.4 Service crews shall be prepared to close all necessary valves to isolate a

section of the distribution system when instructed to do so. If the distribution system is contaminated, the contamination shall be contained in the smallest area possible.

1.7 LABORATORY

1.7.1 A laboratory technician shall be dispatched to the backflow site.

1.7.2. A cross-connection could contaminate only the customer's plumbing system. This is usually the case unless pressure in the water distribution system is less than on the customer's property. The potable water could become discolored and may have an odor present. (Please keep in mind these are the simplest signs to look for, NOT all chemicals are as easy to detect.) Plumbing officials should be notified and approved backflow prevention devices installed before any water fountains are turned back on.

1.7.3 The laboratory technician shall collect the necessary samples after the customer's meters and fire service valves have been turned off, and make provisions for further testing if there is a significant change in chlorine residual. Samples will be sent to and to the state lab for identification, and the General Manager notified, so that the area of contaminated water can be valved off and isolated.

1.8 REMEDY

1.8.1 After the contaminant is identified, the cross-connection, and the place of occurrence shall be located. All drinking fountains should be turned off. Water service shall be discontinued at the place of occurrence until an approved backflow prevention device is installed and tested.

1.8.2. Service crews shall start flushing the water system upon the General Manager's, or his designated agent's order to do so and shall continue flushing lines until lab tests show the contaminant to be at a safe level for human consumption.

1.9 PROPOSED IMPLEMENTATION SCHEDULE

Proposed Date	Item
Feb. 26, 1996	Cherokee County Water and Sewerage Authority Board adopts Cross-Connection Control Policy.
Mar. 12, 1996	Send letters to high risk potential cross-connection customers informing them of the requirements.
Mar. 12, 1996	Begin scheduling and performing high risk customer inspections.
May 12, 1996	Send letters to medium risk potential cross-connection customers.
May 12, 1996	Begin scheduling and performing medium risk customer inspections.
Jun. 12, 1996	Deadline for Improvements for high risk customers.
Nov. 12, 1996	Deadline for Improvements for medium risk customers.
Jan. 1, 1997	Begin charging a $2.00 fee for record maintenance on high and medium risk customers.
Jan. 1, 1998	Require all residential meter replacements to include a dual check BFPD.
Jan. 1, 2000	Require all new construction to have a minimum testable double check valve assembly BFPD.
Jun. 1, 2001	Complete electronic map of water system showing all potential cross-connection locations.

SECTION II

SELECTION, APPROVAL AND INSTALLATION OF DEVICES

2.1 SELECTION

Vacuum breakers and backflow preventers shall be selected based on the level of risk that each customer represents. The level of risk (high, medium or low) will be determined by the degree of hazard and the type cross-connection on each premise. The degree of hazard shall be determined by whether the impurities involved are *contaminants* or *pollutants* and by the type cross-connection whether it is *non-pressure* or *pressure* (see Definitions Section). High risk customers shall be required to install a approved reduced pressure zone backflow preventer and have the device tested for proper operation annually. Medium risk customers shall be required to install a approved double check backflow preventer and have the device tested for proper operation annually. Low risk commercial customers shall be required to install a approved double check backflow preventer. Low risk non-commercial customers shall not be required to install backflow prevention devices.

2.2 APPROVAL OF DEVICES

All vacuum breakers and backflow preventers shall be approved in accordance with the applicable standards of the American Society of Sanitary Engineering, the American National Standards Institute, the University of Southern California Foundation of Cross Connection Control and Hydraulic Reasearch, and the American Water Works Association.

2.3 INSTALLATION OF DEVICES

Vacuum breakers and backflow preventers equipped with atmospheric vents, or with relief openings, shall be so installed and so located as to prevent any vent or any relief opening from being submerged. They shall be installed in the position as recommended by the manufacturer, and shall be protected from freezing.

2.3.1 Backflow Preventer, Dual Check Valve (DuCV) *Low Risk Category* - This device shall not be buried in earth, but may be installed below ground in a meter box. A

positive shut-off valve and union shall be near the inlet side of the device. When the device is installed below ground the shut-off valves and unions shall be on both sides.

2.3.2 Backflow Preventer, Double Check Valve (DCV) *Medium Risk Category* -This device shall not be buried in earth but may be installed below ground in a pit provided ball valve test cocks fitted with brass plugs are used. A positive shut-off valve shall be near the inlet and outlet sides of the device, and three ball valve test cocks provided on the device. A fourth test cock shall be provided on the upstream side of the inlet shut-off valve. When below ground, a union or flange shall be near the inlet and outlet sides. No intervening connections shall be between the shut-off valves and the backflow preventer.

2.3.3 Backflow Preventer Reduced Pressure Zone (RPZ) *High Risk Category* - This device shall not be installed below ground. Where relief valve discharge could cause water damage, it shall be piped via an air gap. or a funnel, at the vent/relief port to a floor drain or other approved location. A positive shut-off valve shall be near the inlet and outlet sides of the device, and three approved test cocks provided on the device. A fourth test cock shall be provided on the upstream side of the inlet shut-off valve. A bronze strainer with 20-mesh stainless steel screen shall be included between the inlet shut-off valve and the device on sizes through 2-1/2 inch. No intervening branch connection(s) shall be between the shut-offs and the backflow preventer. When the reduced pressure zone device is installed in a line subject to periodic no-flow conditions, and supply pressure subject to fluctuations, an auxiliary directional check with soft disc, capable of functioning in any position the BFP might be installed in, shall be provided between the inlet shut-off valve and the BFP head to lock the supply pressure in, and prevent discharge through the vent/relief port. When a water pressure reducing valve is required in the same line with the RPZ device, it is usually possible to locate the reducing valve upstream of the device and take advantage of the check valve effect of the reducing valve. In such case, the auxiliary directional check would not be required

2.4 MAINTENANCE AND TESTING OF DEVICES

All backflow preventers shall be maintained in proper working order. High risk customers with RPZ backflow preventers and medium risk customers with DCV backflow preventers shall have the devices tested on an annual basis. The Authority shall keep records of the testing, maintenance and repair of (high risk) RPZ and (medium risk) DCV backflow preventers, and shall send out notices to customers when annual inspections come due. All backflow preventers shall be individually factory-tested. Field testing and repairs of these devices shall be by persons approved by the Cherokee County Water and Sewerage Authority.

NOTE: A THERMAL EXPANSION CONTROL DEVICE shall be installed between a backflow preventer and a water heater to limit the static pressure increase due to thermal expansion of the heated water.

Air Gap - An unobstructed vertical distance between the lowest opening from any pipe or faucet supplying water to a tank, plumbing fixture or other device and the flood level rim of the receptacle.

Authority- The Cherokee County Water and Sewerage Authority.

Backflow Preventer - A device or means to prevent backflow or backsiphonage.

BFPD - Backflow Prevention Device.

Containment- Installation of an appropriate device at the service connection to prevent backflow or backsiphonage.

Contaminant - A toxic substance that if introduced into the potable water supply would create a health hazard.

Cross-Connection Control Program Manager - Authorized representative of the General Manager of the Cherokee County Water and Sewerage Authority who shall administer the Cross-Connection Control Policy.

Cross-Connection - A physical connection between two otherwise separate piping systems or vessels one of which contains potable water and the other does not.

Cross-Connection Non-Pressure Type - A low inlet installation where a potable water supply pipe is connected or extended below the overflow rim of a receptacle, or an environment, that does not contain potable water and which is at atmospheric pressure.

Cross-Connection Pressure Type - An installation where a potable water supply pipe is connected to a closed vessel, or a piping system, that does not contain potable containment water and which is above atmospheric pressure.

Customer- Any and all persons, including any individual firm or association, and any municipal or private corporation organized or existing under the laws of this or any other state or country having a service connection to the public water supply.

Double Check Valve Assembly- An assembly of at least two independently acting check valves.

General Manager -The General Manager of the Cherokee County Water and Sewerage Authority.

Isolation- Installation of an appropriate device at the source of a Cross-Connection on a premises to prevent backflow or backsiphonage.

Pollutant - A non-toxic substance that if introduced into the potable water supply would be objectionable but would not create a health hazard.

Public Water Supply- The Cherokee County Water and Sewerage Authority water works system furnishing water to Cherokee County, being recognized by the Department of Natural Resources / Environmental Protection Division as the public water supply.

Reduced Pressure Backflow Prevention Device- A reduced pressure principal backflow prevention device is a device that consists of two (2) spring-loaded independently acting check valves with an intermediate, or reduced pressure zone draining to the atmosphere by an independently acting relief valve.

Vacuum Breaker - A general term applied to a backsiphonage prevention device that introduces air into the potable water system.

Vacuum Breaker Atmospheric Type- A vacuum breaker designed for use under flow conditions only, not to exceed 24 consecutive hours, and where it will be subject to no static pressure, and no back pressure.

Vacuum Breaker Hose Type- A vacuum breaker designed for hose connection only. It is not approved for continuous pressure, static or flowing.

Vacuum Breaker Pressure Type- A vacuum breaker designed to operate under continuous pressure; static or flowing, but no back pressure.