



**CITY OF NEWARK**  
**CROSS CONNECTION CONTROL PLAN**

Effective Date: March 11, 2024

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# 1. INTRODUCTION

## 1.1. Purpose

The purpose of this document is to outline the City of Newark's Cross Connection Control (CCC) policies for all commercial, institutional, residential, industrial, and miscellaneous facilities having service connections to the City of Newark's public water supply and are summarized as follows to:

- Protect the public water supply from contaminants and pollutants that could cause backflow through the service connection(s)
- Promote eliminating actual and potential cross connections between the public water supply and non-potable water systems, plumbing fixtures, and sources or systems containing substances of unknown or questionable quality.
- Promote eliminating actual and/or potential cross connections between the facility's water supply and non-potable water systems, plumbing fixtures, and sources or systems containing substances of unknown or questionable quality.
- Provide guidance for maintaining a continuing program for protection from the potential of the service line and interior cross-connections within the facility.

## 1.2. Legality

In accordance with the Delaware Department of Health and Social Services (DDHSS), Division of Public Health, the City of Newark proclaims this program as a continuing effort to maintain pure, clean, safe potable water. The City of Newark shall comply with the Cross-connection Control Rules in the Delaware Administrative Code 4462, Chapter 16, Section 21.

By reference to the DDHSS Code requirement, "*we hereby establish the "City of Newark Cross-Connection Control Program."* This program was adopted by the City of Newark on and made effective on (March 11, 2024).

## 1.3. Local Ordinance

Legal authority to carry out and enforce the City of Newark Cross-connection Control Program is provided in the City of Newark code of ordinances, Chapter 30 – Water, Article X. Cross Connection Control Ordinance. A copy of said ordinance can be found in Appendix A of this plan.

## 2. AUTHORITY/ADMINISTRATOR

The City of Newark shall be the Administrator of the Cross-connection Control (CCC) Program. This Cross-connection Control Program shall include, but not be limited to:

- Local Ordinance (See Appendix A)
- Applicable Rules and Regulations
- Inspection Process and Requirements
- Approved Backflow Prevention Devices and Assemblies
- Testing Requirements of Backflow Prevention Assemblies
- Data Management
- Reporting
- Public Education and Awareness

### 2.1. Inspector/Designated Agent

The City of Newark or Designated Agent (Authority/Agent) conducting inspections on behalf of the City of Newark must be designated/approved by the City of Newark. The Authority/Agent must meet both: 1) an experience component and 2) a certification/training component. Acceptable components are as follows:

Experience - Acceptable experience may include one- (1) or more of the following:

- Be employed by a Utility, Water Purveyor, Building Department, or body of jurisdiction and must meet the qualifications and training requirements as dictated by the Authority conducting inspections/surveys on behalf of the City of Newark
- Have held a similar position (CCC Inspector) with a previous municipality
- One-year full-time experience in conducting cross-connection control inspections in commercial, institutional, and industrial facilities.

Certification/Training - Acceptable experience may include one- (1) or more of the following:

- Meet American Society of Sanitary Engineer Standards (ASSE) 5120 and completed their Cross Connection Inspector Course (40 hours)
- Possess a certificate of completion from one of the following:
  - American Society of Sanitary Engineers (ASSE) Certified Cross-connection Control Surveyor
  - University of Southern California (USC) Cross-connection Control Specialist Course (40 hours)
  - University of Florida TREEO Center (UFTREEO) Cross-connection Control Program Manager Course (40 hours)
- Other approved cross-connection courses for surveying, as approved by the Authority for conducting inspections/surveys on behalf of the “city name.” Submission requirements for approvals must include the following:
  - Course outline
  - Date of Attendance
  - Outline of test questions
  - Categories and grading criteria
  - Certificate of satisfactory completion

## 3. INSPECTIONS

### 3.1. Inspection

Authorized Inspectors, having proper identification, shall be permitted to enter the building/premises or exterior structures at any reasonable time for inspection for the presence or absence of cross-connections, testing, repair, and maintenance of any part of the plumbing system or any cross-connection control device connected to the water system. The City shall deny or discontinue, after reasonable notice to the occupants, water service to any building/premises for refusal or failure to arrange a cross-connection inspection. The City shall deny or discontinue water service if there is reason to believe the building/premises pose a potential danger to the public or occupants.

### 3.2. Responsibility of the Owner

The Owner shall protect the public water supply from contamination due to backflow through the water service connection. At the owner's expense, the City may require the Owner to install, alter, replace, or repair any plumbing connected to the public water system that may threaten health. Failure, refusal, or the inability, on the part of the Owner, to correct any deficiency or violation immediately shall be unlawful, and the City may deny or discontinue water service to the premises. The owner shall be responsible for eliminating all unprotected cross-connections and any connections downstream of the service line supply to the building(s).

### 3.3. Service Line Protection Inspection

- a) Existing service line connections should be reassessed/inspected at an interval of no less than every ten - (10) years (unless the service line is protected with an approved Reduced Pressure Backflow Prevention Assembly or properly installed air gap) to determine if the existing backflow preventer/method is appropriate for the level of hazard, or if service line protection is required.
- b) New service line connections should be assessed before introducing the new service to determine what method of backflow protection is required.
- c) Existing and new commercial service line backflow prevention assemblies/methods shall be a Reduced Pressure Backflow Prevention Assembly (RP).  
All water that is determined to be a high hazard is required to have, at a minimum, an RP installed after the water meter or before the entrance of the building before any connections.
- d) Failure to install backflow protection as required by the City may result in disciplinary action from the City.

### 3.4. Internal Plumbing System Inspection

- a) Internal plumbing systems may require inspection at the discretion of the the Public Works and Water Resources Director or his/her designee. The facilities' internal water use practices shall be reviewed to determine whether there are actual or potential cross-connections to the plumbing system through which contaminants or pollutants could backflow into the public water supply or the facility's internal plumbing system.

### 3.5. Inspection/Survey Forms

An *Inspection/Survey Form* shall be used in every inspection, as required, and will be filed in a location as identified in Section 3.8, along with other pertinent information accumulated. This form will be used to record both existing backflow prevention devices discovered and any requirements for additional backflow prevention devices at the time of the inspection.

### 3.6. Inspection Procedures (for Internal Inspections Only)

Cross-connection control inspections shall be completed as follows:

- a) Identify the building to be inspected and schedule the inspection.
- b) Meet on-site with facility contact/owner.
- c) Explain the Cross-connection Control Program to the facility contact/owner before the inspection.
- d) Inspect/Evaluate the status of service line protection – complete all inspection forms as required (See line item “e” below).
- e) Inspect the building downstream of the service line if required and complete the Inspection Form(s) as applicable/required with the following information:
- f) Visually review all exposed piping and water outlets/uses downstream of the service connection.
- g) Document all existing backflow prevention assemblies, devices, and methods (including make, model#, size, and serial # (if applicable) that are currently protecting cross-connections on the *Existing Devices and Assemblies Form*.
- h) Describe the point of use or equipment supplied for each backflow prevention assembly, device, or method on the *Existing Devices and Assemblies Form*.
- i) Use the *CCC Requirements Form* to provide specific requirements for corrective action.
- j) Fill out an *Inspection Form* to document general findings; provide a “Compliance Status” and any follow-up action to be taken. If no action is required (*i.e., Compliant*), provide a date of the next inspection due, if applicable. If the facility requires corrective action (*i.e., Non-Compliant*), give a due date to complete corrective action(s) as designated on *CCC Requirements Form*.
- k) Date all forms with the date of the in-field inspection.
- l) In addition to the field forms, a piping diagram or schematic of the plumbing system may be requested or required.

### 3.7. Request for Internal Cross-connection Control Information

The City has the right to request specific cross-connection control information, including but not limited to service line protection methods, assembly test records, CCC Program information, piping drawings, etc.

### 3.8. Record Keeping and Data Management Software

All data obtained from the *Inspection Forms*, *Existing Devices Forms*, and *Requirements Forms* will be input into a data management system and held for no less than ten- (10) years to facilitate the CCC Program. This information will include:

- Address and location
- Owner name and contact information
- Required re-inspection frequency
- Degree of hazard classification
- List of assemblies
- Location of assemblies
- Make, model, and size of assemblies
- Testing and maintenance of assemblies
- Description of other cross-connections within the facility
  - Air gaps
  - Non-testable devices

Additionally, all written backflow incident reports, and annual cross-connection control program activities reports shall be maintained for no less than ten – (10) years.

## 4. BACKFLOW PREVENTION ASSEMBLIES AND DEVICES

### 4.1. Responsibility

With respect to backflow prevention devices/assemblies or methods, the City of Newark shall require the following:

- a) The Owner shall install and maintain assemblies, devices, and methods to protect all existing cross-connections.

### 4.2. Approved Backflow Prevention Assemblies and Devices

- a) The City of Newark accepts backflow prevention devices, assemblies, and methods (downstream of service line protection) as recognized by the Delaware Building Code.
- b) ASSE recognized backflow prevention devices, assemblies, and methods intended to protect the public water supply at the point of the service connection must be used.
- c) New installation of Reduced Pressure Backflow Prevention Assemblies intended for service line protection must conform to AWWA Standards C510 and C511 and the ASME Standards.

### 4.3. Service Line Backflow Prevention Assembly Protection

Concerning backflow prevention assemblies installed at the service line, the City will require the following:

- a) Service line protection shall be required at all commercial properties.
- b) Where service line protection is required, the owner shall receive formal written notification detailing the requirement and instructions about the need for protection from thermal expansion (see *Containment Notification* located in Appendix C).
- c) Service connections to fire protection systems shall be required in accordance with the AWWA M-14 Manual, 3<sup>rd</sup> Edition. The continued use of UL-listed alarm check valves shall be accepted on any existing connection deemed a low hazard by the City or Authorized Agent. Residential properties with an internal fire protection system must have backflow prevention that conforms to these standards.
- d) If an existing fire protection system requires a higher degree of protection than that which is currently installed and additional or new backflow prevention devices are required that may affect the hydraulics of the system, the owner shall receive formal written notification detailing the requirement and the owner's responsibility to hire a registered professional engineer or a certified fire-protection system contractor to ensure there will not be an adverse effect on the operation of the system.
- e) The installation of a Reduced Pressure Backflow Prevention Assembly as service line protection shall be required at all commercial, industrial, and governmental facilities also served by reclaimed water or where secondary water systems exist.
- f) The installation of residential Dual Checks or Double Checks shall be required as service line protection at all residential homes also served by reclaimed water or where an auxiliary water system exists.
- g) Backflow prevention assemblies, devices, or methods installed as service line protection shall be installed downstream of the water meter and before the plumbing system's first branch line.
- h) New Installation of Reduced Pressure Backflow Prevention Assemblies and Double Check Valve Assemblies must conform to AWWA Standards C510 and C511.

- i) The installation of Reduced Pressure Backflow Prevention Assemblies, Pressure Vacuum Breaker Assemblies, and Atmospheric Vacuum Breakers below grade or in an underground pit shall be prohibited.
- j) The installation of Double Check Valve Assemblies and residential Dual Checks below grade or in an underground pit shall be accepted under the following conditions:
  - If the test cocks are plugged
  - If adequate drainage is provided to maintain an ordinarily dry location
- k) Assemblies located at the service line shall be tested upon installation, upon repair, upon responding to a reported backflow incident, and annually.

#### **4.4. Lawn Irrigation Systems**

Lawn irrigation systems supplied from a dedicated service line shall be equipped with a Reduced Pressure Backflow Prevention Assembly downstream of the water meter and before the first irrigation branch line. Lawn irrigation systems installed so that the supply originates downstream of the potable service line connection to a building shall be equipped with a Reduced Pressure Backflow Prevention Assembly or a Pressure Vacuum Breaker at the origination of the system. These assemblies must be installed in accordance with the DE Plumbing Code IPC 2018, Section 608, and the manufacturers' installation requirements.

#### **4.5. Testing of Backflow Prevention Assemblies**

- a) All backflow prevention assemblies located at the service line and downstream shall be tested upon installation, upon repair, upon responding to a reported backflow incident, and on an annual basis. Assemblies must be tested in accordance with applicable standards referenced within the DE Plumbing Code, Section 608, and ASSE 5000 Series. All testable backflow prevention equipment installed at a residential property will be tested annually.
- b) Equipment used to field test assemblies must be certified and calibrated for accuracy annually.
- c) Assembly test form(s) to record test results will be maintained by the Owner and submitted to the City as required.
- d) The Owner shall have all assemblies tested by a tester having completed the 40-hour ASSE Backflow Prevention Assembly Tester Training and Certification Course. All testers must also complete a recertification exam at an interval not to exceed once every two years.
- e) The City of Newark shall reserve the right to direct and administer testing and maintenance of any backflow prevention assemblies installed as service line protection. All costs associated with testing and any necessary repairs of these assemblies shall be the owner's responsibility. If the City assumes the responsibility for backflow assembly maintenance, all costs for testing, repairs, and installations will be charged back to the owner as deemed appropriate by City Council.
- f) Failure to test assemblies and submit appropriate test forms located at the service line may result in termination of water service.

#### 4.6. Backflow Prevention Device Maintenance and Inspection

- a) Residential dual checks may be installed as service line protection at any home during a meter exchange. Dual checks are replaced by the owner upon indication that they are no longer operational, as indicated by backflow during meter work. Dual check valves shall be replaced or overhauled with meter exchange projects or as required by the DDHSS.

#### 4.7. Application of Backflow Preventers

The following table outlines acceptable backflow protection for certain types of cross-connection conditions that may be encountered. The table will be used as a guideline in determining adequate cross-connection control measures, not as an absolute requirement; see Appendix G for sample installation schematics.

Backflow Preventer Type	Degree of Hazard	Application	Applicable Standard
<b>Backflow prevention assemblies:</b>			
Double Check Valve Assembly (DCV)	Low hazard	Backpressure or backsiphonage	ASSE 1015, AWWA C510, CSA B64.5, CSA B64.5.1
Double Check Detector Assembly (DCDA)	Low hazard	Backpressure or backsiphonage	ASSE 1048
Pressure Vacuum Breaker Assembly (PVB)	High or low hazard	Backsiphonage	ASSE 1020, CSA B64.1.2
Reduced Pressure Principle Backflow Prevention Assembly (RPBP)	High or low hazard	Backpressure or backsiphonage	ASSE 1013, AWWA C5411, CSA B64.4, CSA B64.4.1
Reduced Pressure Detector Assembly (RPDA)	High or low hazard	Backsiphonage	ASSE 1047
Spill-resistant Vacuum Breaker Assembly (SVB)	High or low hazard	Backsiphonage	ASSE 1056
<b>Backflow prevention devices:</b>			
Antiphon-type Fill Valve (FV)	High hazard	Backsiphonage	ASSE 1002, CSA B125.3
Atmospheric Vacuum Breaker (AVB)	High hazard	Backsiphonage	ASSE 1001, CSA B64.1.1
Backflow Preventer for Carbonated Beverage Equipment (VMBP)	Low hazard	Backpressure or backsiphonage	ASSE 1022
Backflow Preventer with Intermediate Atmospheric Vent (VDCV)	Low hazard	Backpressure or backsiphonage	ASSE 1012, CSA B64.3
Dual Check (DC)	Low hazard	Backpressure or backsiphonage	ASSE 1024, CSA B64.6
Hose Connection Backflow Preventer (HCBP)	High or low hazard	Low head backpressure or backsiphonage	ASSE 1052, ASME A112.21.3, CSA B64.2.1.1
Hose Bibb Vacuum Breaker (HBVB)	High or low hazard	Low head backpressure or backsiphonage	ASSE 1011, ASME A112.21.3, CSA B64.2, CSA B64.2.1

Anti-frost Hose Bibb Vacuum Breaker	High or low hazard	Low head backpressure or backsiphonage	ASSE 1011, ASME A112.21.3, CSA B64.2, CSA B64.2.1
Lab Faucet Vacuum Breaker (LFVB)	High or low hazard	Backsiphonage	ASSE 1035, CSA B64.7
<b>Backflow Preventer Type</b>	<b>Degree of Hazard</b>	<b>Application</b>	<b>Applicable Standard</b>
<b>Backflow prevention devices:</b>			
Vacuum Breaker Wall Hydrants (HBIVB)	High or low hazard	Low head backpressure or backsiphonage	ASSE 1019, ASME A112.21.3, CSA B64.2.2
<b>Other means or methods:</b>			
Air Gap (AG)	High or low hazard	Backsiphonage	ASME A112.1.2
Air Gap Fittings for use with Plumbing Fixtures, Appliances, and Appurtenances	High or low hazard	Backsiphonage	ASME A112.1.3
Barometric Loop	High or low hazard	Backsiphonage	MI Plumbing Code Sec. 608.13.4

## **5. NEW SERVICE INSPECTION**

### **5.1. Procedures**

All plumbing plans and permits for a proposed building shall be reviewed by the City, Building Inspector, and building contractor(s). The City's Cross-connection Control Plan and Backflow Prevention requirements will be reviewed with the responsible party.

### **5.2. Inspections**

The City/Designated Agent conducting the cross-connection control inspection shall inspect the building for compliance with the Cross-connection Control Program.

### **5.3. Compliance**

Upon completion of the cross-connection control inspection and determination that the building complies and has met any required actions of this plan, a certificate of occupancy and water service may be initiated as applicable.

### **5.4. Non-Compliance**

If the building does not comply with the Cross-connection Control Program, the City shall enforce this plan as required. The water service and the certificate of occupancy will not be issued until compliance is achieved and approved.

## 6. PIPING IDENTIFICATION

### 6.1. Requirements

- When two or more piping systems are used for water in a building, extreme care should be taken not to interconnect the systems. There may be a potable water system and systems carrying lesser quality water, such as fire protection or re-use. To help prevent the possibility of two systems being interconnected, pipes must be identified adequately. Legends and color coding should be based on the American Standards Association "Scheme for Identification of Piping Systems" (ANSI Z535.1-199) or an identification plan accepted by the Authority and prominently posted throughout the facility.
- Color-coding and/or labeling should not be used solely to identify the contents of pipes but should be used supplementary to the use of legends. Potable water lines must be painted and/or labeled, and the words "Potable Water" must be put on the pipe at appropriate intervals. Pipes carrying water for fire protection must be painted or labeled. Piping systems having other materials or non-potable water must also be identified with the appropriate legends and color coding. Flow arrows should be included to indicate the direction of flow.
- Buildings that do not comply with the identification of piping system requirements on the effective date of this plan must be painted or labeled per this section. Identification must be completed as soon as reasonably possible.
- When the piping system layout creates an unusual or extreme situation in a limited area of inaccessibility, the City of Newark may permit permanently attached durable sign(s), or such piping segments may require substitute techniques to achieve identification. The use of substitute techniques shall not deviate from ANSI Z535.1-199 standards and must be approved by the City.
- All openings from which secondary water may be obtained shall have at all times a sign prominently posted within two (2) feet of the opening bearing the following warning: WATER UNSAFE FOR DRINKING. Such sign shall be at least eight (8) inches by ten (10) inches in size, prominently lettered in contrasting colors, with no letters less than one (1) inch in height. Signs are to be furnished and maintained by the owner of the secondary supply and must be of material and design acceptable to the City.

## 7. EMERGENCY RESPONSE PLAN

### 7.1. Emergency Response Plan Procedures

The City of Newark shall develop and maintain an Emergency Response Plan (ERP) document to appropriately respond to a backflow event. The written ERP shall be readily available to designated personnel.

Investigative actions to address an actual or potential backflow event are intended to:

- a) Protect the distribution system from the spread of a contaminant detected in the water supply.
- b) Quickly restore the quality of water in the distribution system if a contaminant has entered the system through backflow.
- c) Prevent any further contamination of the distribution system.

The facilities investigation should include these steps:

- 1) Locate the source of contamination.
- 2) Isolate the source to protect the water distribution system from further contamination.
- 3) Determine the extent of the spread of contamination through the distribution system and provide timely, appropriate notification to the public and its regulatory agencies as applicable.
- 4) Take corrective action to clean the contamination from the distribution system.
- 5) Restore water service.

### 7.2. Emergency Scenarios

Common scenarios causing unintended backflow forcing execution of Emergency Response may include the following:

- a) Main water supply pipe break
- b) Internal facility water pipe break
- c) Internal facility – unprotected cross-connection allowing contaminant to flow into the potable water distribution system
- d) Report of illness due to water supply contamination
- e) Report of discolored water

### 7.3. Sample Emergency Response Plan

#### BACKFLOW INCIDENT REPORT FORM

Many backflow incidents occur that are not reported. This is usually because they are of short duration, are not detected, the customer needs to be made aware they should be reported, or it may not be known to whom the incident should be reported. If you have any knowledge regarding incidents, please complete the form below and return it to the City of Newark Public Works Department at the above address.

Reporting Agency: \_\_\_\_\_ Report Date: \_\_\_\_\_  
Reported By: \_\_\_\_\_ Position: \_\_\_\_\_  
Mail Address: \_\_\_\_\_ City: \_\_\_\_\_  
Province: \_\_\_\_\_ Postal Code: \_\_\_\_\_ Telephone: \_\_\_\_\_  
Date of Incident: \_\_\_\_\_ Time of Occurrence: \_\_\_\_\_  
General Location (Street, etc.): \_\_\_\_\_

#### 1. Backflow Originated From:

Name of Premise: \_\_\_\_\_  
Street Address: \_\_\_\_\_ City: \_\_\_\_\_  
Contact Person: \_\_\_\_\_ Telephone: \_\_\_\_\_  
Type of Business: \_\_\_\_\_

#### 2. Description of Contaminant(s):

(Attach Chemical Analysis if available)

\_\_\_\_\_  
\_\_\_\_\_

#### 3. Distribution of Contaminant(s):

Contained within customer's property: Yes: \_\_\_ No: \_\_\_  
Number of persons affected: \_\_\_\_\_

#### 4. Effect of Contamination:

Illness reported: \_\_\_\_\_

Physical irritation reported: \_\_\_\_\_

#### 5. Cross-connection Source of Contaminant:

(boiler, chemical pump, irrigation system, etc.)

\_\_\_\_\_  
\_\_\_\_\_

**Backflow Incident Report Form**  
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**6. Cause of Backflow:**  
(main break, fire flow, etc.)

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**7. Corrective Measures Taken to Restore Water Quality:**  
(main flushing, disinfection, etc.)

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**8. Corrective Action Ordered to Eliminate or Protect from Cross-connection:**  
(type of backflow preventer, location, etc.)

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**9. Previous Cross-connection Survey of Premise:**

Date: \_\_\_\_\_ By: \_\_\_\_\_

**10. Type(s) of Backflow Preventer Isolating Property:**

RP: \_\_\_ RPDA: \_\_\_ DCVA: \_\_\_ DCDA: \_\_\_ PVB: \_\_\_ SVBA: \_\_\_  
AVB: \_\_\_ Air Gap: \_\_\_ None: \_\_\_ Other Type: \_\_\_\_\_

**11. Date of Latest Test of Device:** \_\_\_\_\_

**12. Notification of Health Department:**

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Person Notified: \_\_\_\_\_

*Attach sheets containing any additional information, sketches, etc., to the back of this form.*

## 8. EDUCATION AND AWARENESS

The cross-connection control program staff must have a good understanding of the program. The City of Newark shall ensure their cross-connection control staff receives proper in-the-field training and classroom education focusing on terminology, backflow prevention devices/assemblies, regulations, and hydraulic concepts. In addition, cross-connection control staff will be encouraged to receive continuing education to be made aware of new backflow prevention devices/assemblies, regulation changes (i.e., plumbing code updates), new water use devices that pose cross-connection concerns, etc.

Furthermore, attempts to educate the public about cross-connections will be made by distributing newsletters, pamphlets on common residential cross-connections, visiting schools, providing onsite education of facility management and maintenance staff during routine inspections, speaking at condominium association meetings, website information, or posting newspaper announcements. Education content will comply with DDHSS, Div. of Public Health, 16 DE Administrative Code 4462, Section 21.2.5.1.

Cross-connection staff shall also be available upon request to provide backflow prevention education to pertinent community officials and the City of Newark employees.

## APPENDIX A - LOCAL ORDINANCE

## City of Newark Cross Connection Control Ordinance

### **Chapter 30 – Water, Article X. Cross Connection Control Ordinance**

An ordinance regulating cross connections with the public water system, i.e., connections or arrangements of piping or appurtenances through which water of questionable quality, wastes or other contaminants can enter the public water system.

The council of the city of Newark hereby ordains:

1. That the City of Newark adopts by reference the City of Newark's Cross Connection Control Plan, in conformance with the Delaware Department of Health and Social Services, Division of Public Health ("Division"), 16 Del. C. § 4462, Section 21.0 Cross Connection Control, as may be updated and amended from time to time and which is incorporated herein by reference. Compliance with the City of Newark Cross Connection Control Plan manual located on the City of Newark website and the cross-connection program contained therein is hereby required.
2. That it shall be the duty of the City of Newark to cause surveys to be made of all properties served by the public water system where it is deemed possible that cross connections with the public water supply exist. The frequency of surveys and resurveys based on potential health hazards involved shall be as established by the City of Newark and as approved by the Division.
3. That at any reasonable time, the representative of the City of Newark shall have the right to enter any property served by a connection to the public water system of City of Newark for the purpose of surveying the piping system or systems thereof for cross connections. On request, the owner, lessees, or occupants of any property so served shall furnish to the City or survey agency any pertinent information they have regarding the piping system or systems on such property. The refusal to provide such information or refusal of access, when requested, shall be deemed evidence of the presence of cross connection.
4. That the City of Newark is hereby authorized and directed to discontinue water service after reasonable notice to any property wherein any connection in violation of this ordinance exists and to take such other precautionary measures deemed necessary to eliminate any danger of contamination of the public water system. Water service to such property shall not be restored until the non-compliant cross connection(s) has been eliminated in compliance with the provisions of this ordinance.
5. That all testable backflow prevention assemblies shall be tested initially upon installation, repair or relocation to be sure that the assembly is working properly. Subsequent testing of assemblies shall be performed on an annual basis as required by the City and in accordance with Division requirements. Only individuals that are approved and State of Delaware certified shall be qualified to perform such testing. That individual(s) shall certify the accuracy of the results of his/her testing.

6. That the potable water supply made available on the properties served by the City of Newark be protected from possible contamination as specified by this ordinance, by the State of Delaware and/or City of Newark Plumbing Code. Any water outlet which could be used for potable or domestic purposes, and which is not supplied by the potable system must be labeled in a conspicuous manner as:



Size: 10" x 14"

7. That this ordinance does not supersede the State of Delaware and/or City of Newark Plumbing Code but is supplementary to them.
8. That any person or customer found guilty of violating any of the provisions of this ordinance or any written order of the City, in pursuance thereof, shall be deemed guilty of a misdemeanor and upon conviction thereof shall be punished by a fine of not less than \$100 and not more than \$1,000. Each day upon which a violation of the provisions of this act occurs shall be deemed a separate and additional violation for the purpose of this ordinance. Alternatively, the City may issue a civil citation as set forth below in subsections a), b) and c).
- a) That any person in violation of any provision of this article shall be subject to a civil penalty. Each subsequent day that a violation listed in subsection 1 through 4 below continues, shall constitute a separate and distinct offence according to the following fine schedule:
1. Unprotected cross-connection involving a private water system which is deemed an imminent hazard: \$1,000 per day and/or disconnection of water services.
  2. Unprotected cross-connection involving a private water system which is deemed a high hazard: \$750 per day and/or disconnection of water services.
  3. Unprotected cross-connection involving a private water system which is deemed a moderate hazard: \$500 per day and/or disconnection of water service.
  4. Unprotected cross-connection for which no other civil penalty is prescribed: \$250 per day and/or disconnection of water services.
- b) Each violation listed in subsection 1 through 5 below shall be considered a one-time violation (per incident) subject to the following schedule:
1. Falsifying records which are required to be submitted by this article: tester may be removed from the approved certified tester/repairer list and/or \$500.

2. Submitting incomplete records or failing to submit records which are required by this article: tester may be removed from the approved certified tester/repairer list and/or \$250.
  3. Failing to test backflow assemblies as required: \$100.
  4. Failing to maintain backflow assemblies as required: \$100.
  5. Any other violation of the provisions of this article: \$100.
- c) The Director of Public Works and Water Resources or their designee may increase any civil penalty assessed under this section by \$100 or 50% of the maximum civil penalty associated with the violation, whichever is greater, for a second violation of the same provision within a two-year period. Water service may be terminated after a third violation of the same provision within a two-year period. Any person violating any provision of this article shall pay the City all expenses incurred by the City in repairing damage to the public water system caused in whole or in part by such violation and any expense incurred by the City in investigating such violation. All such expenses are deemed to be a part of the civil penalty assessed with the violation.

## APPENDIX B - FIELD FORMS

Facility Comments	
-------------------	--

Facility Information			Mailing Information		
Facility Name:			First:	Last:	
Address:			Address:		
Address 2:			Address 2:		
City:	State:	Zip:	City:	State:	Zip:
Phone:	Ext:	Fax:	Phone:	Ext:	Fax:
Contact Name:			Email:		

Inspection Date <input style="width: 100%;" type="text"/> Inspection Status <input style="width: 100%;" type="text"/> Inspection Frequency <input style="width: 100%;" type="text"/> High Hazard <input type="checkbox"/>	Facility Type <input style="width: 100%;" type="text"/> Facility Status <input style="width: 100%;" type="text"/> Test Cycle <input style="width: 100%;" type="text"/>	Requirements <input style="width: 100%;" type="text"/> Assemblies <input style="width: 100%;" type="text"/> Devices <input style="width: 100%;" type="text"/> Last Insp Notice <input style="width: 100%;" type="text"/> Next Insp Notice <input style="width: 100%;" type="text"/>
--	--	---

### Containment:

Potable Supply <input style="width: 100%;" type="text"/> Fire Supply <input style="width: 100%;" type="text"/> Containment Existing <input type="checkbox"/>	Private Well <input style="width: 100%;" type="text"/> Surface Water <input style="width: 100%;" type="text"/> Containment Required <input type="checkbox"/>	Reclaim Water <input style="width: 100%;" type="text"/> Grey Water <input style="width: 100%;" type="text"/> FP Properly Protect <input type="checkbox"/>
--	--	---

### Isolation Hazards:

Facility Comments	
Inspector's Name	<input style="width: 100%;" type="text"/>
Contact's Name	<input style="width: 100%;" type="text"/>
Contact's Signature	<input style="width: 100%;" type="text"/>



## APPENDIX C - ASSEMBLY AND DEVICE LEGEND

<b>Backflow Preventer Legend</b>			
A.S.S.E Standard	Legend	Acronym	Testable Device
1001	Atmospheric Type Vacuum Breakers	AVB	No
1002	Anti-siphon Fill Valves (Ballcocks)	ASBC	No
1011	Hose Connection Vacuum Breaker	HBVB	No
1012	Backflow Preventer w/Intermediate Atmospheric Vent	VDCV	No
1013	Reduced Pressure Backflow Prevention Assembly	RPBP	<b>Yes</b>
1015	Double Check Valve Backflow Prevention Assembly	DCV	<b>Yes</b>
1019	Vacuum Breaker Wall Hydrants	HBIVB	No
1020	Pressure Vacuum Breaker Assembly	PVB	<b>Yes</b>
1022	Backflow Preventer for Carbonated Beverage Machine	VMBP	No
1024	Dual Check Valve Type Backflow Preventers	DC	No
1024	Residential Dual Check	RDC	Yes/No
1035	Laboratory Faucet Backflow Preventer	LFVB	No
1037	Pressurized Flushing Devices (Flushometers)	PFD	No
1047	RP Detector Backflow Prevention Assembly	RPDA	<b>Yes</b>
1048	Double Check Detector Backflow Prevention Assembly	DDCV	<b>Yes</b>
1052	Hose Connection Backflow Preventer	HCBP	No
1055	Chemical Dispensing Systems	AG	No
1056	Spill Resistant Vacuum Breaker Assembly	SVB	<b>Yes</b>
1057	Freeze Resistant Yard Hydrant W/Backflow		No
A112.1.2	Air Gap	AG	No
	Single Check Valve	SCV	No

## **APPENDIX D – NOTICE TEMPLATES**

(The below notices are for informational purposes only. Actual notices may differ slightly from the templates below.)

## ***Inspection Notice***

[MAILINGNAME]  
[MAILINGADDRESS]  
[MAILINGCITY,MAILINGSTATE,MAILINGZIP]

Print Date: [DATE]

**RE: [FACILITYNAME] at [SERVICEADDRESS1]**

Reference #: **[REFERENCENUMBER]**

Dear Water Customer,

The purpose of the **City of Newark's Cross-connection Control Program**, as defined in City of Newark Municipal Ordinance (Chapter 30 - Water, Article X. Cross Connection Control Ordinance, is to help eliminate possible contamination of the public water distribution system.

Our records indicate it is time for a cross-connection survey of the backflow prevention assembly(s) at your facility. Any costs associated with the cross-connection survey, replacement, modification, installation, and/or testing of backflow prevention assembly(s) is the responsibility of the property owner/manager and/or occupant. The survey must be performed by an ASSE (American Society of Sanitary Engineering) approved Cross-Connection surveyor.

### **What should you do next?**

**Step #1:** Locate and schedule an ASSE approved Cross-Connection surveyor to conduct your inspection. Please visit HydroCorp's website at [watercustomer.com](http://watercustomer.com) or contact Delaware Rural Water Association at 302-424-3792 to view a list of known and approved surveyors in your area. We suggest contacting several to get the best pricing available. NOTE: Neither HydroCorp or **[CLIENTNAME]** can aid in the inspection process of your backflow prevention assembly(s) nor can a certified surveyor be recommended to you.

**Step #2:** Schedule a date with the surveyor you have chosen to complete your inspection. Inspection results must be submitted on or before the required due date of **[RESPONSEDATE]**.

**Step #3:** Once the Cross-Connection survey has been completed, instruct your surveyor to submit the results online at <https://portal.hydrosoft.io>. Inspection results will not be accepted via mail, fax or email.

You will be notified following the cross-connection survey if corrective measures &/or testing of backflow prevention assemblies is necessary. Thank you for assisting us with protecting our water supply! If you have any questions or require additional information, please contact HydroCorp from 8am to 6pm EST Monday through Friday at 1-844-493-7641 or visit their website at [hydrocorpinc.com](http://hydrocorpinc.com).

## Containment Notice

[MAILINGNAME]  
[MAILINGADDRESS]  
[MAILINGCITY,MAILINGSTATE,MAILINGZIP]

Print Date: [DATE]

**RE: [FACILITYNAME] at [SERVICEADDRESS1]** Reference #: **[REFERENCENUMBER]**

Dear Water Customer,

The purpose of the City of Newark's Cross-connection Control Program, as defined in the City of Newark Municipal Ordinance (Chapter 30 - Water, Article X. Cross Connection Control Ordinance, is to help eliminate possible contamination of the public water distribution system.

"Containment" is the installation of a backflow prevention device, or a testable assembly between the facility and the public water distribution system. Containment assures there is no chance for water of questionable quality to leave your facility and to enter the public water distribution system.

**As authorized by Cross Connection Control Ordinance, the containment devices on the attached list are to be installed immediately after the City water meter and before the first tap.** If a by-pass around the backflow prevention assembly is required, the by-pass shall also be protected with a backflow prevention assembly of equal protection. **Please note that the installation of a containment device will create a closed system. Proper installation of an expansion tank or other means to protect your piping system from the effects of thermal expansion may be necessary. Your facility has 30 days to install the assemblies shown on the attached pages.**

Please be advised that the installation of containment devices does not relieve your facility of the responsibility of providing potable water to its employees and visitors. In order to comply with applicable laws, and to ensure the integrity of your internal water distribution system, a comprehensive cross-connection inspection should be completed. If you have any questions, please contact please contact HydroCorp from 8am to 6pm EST Monday through Friday at 1-844-493-7641 or visit their website at [hydrocorpinc.com](http://hydrocorpinc.com).

## Request for Internal Cross-Connection Control Information Notice

[MAILINGNAME]  
[MAILINGADDRESS]  
[MAILINGCITY,MAILINGSTATE,MAILINGZIP]

Print Date: [DATE]

**RE: [FACILITYNAME] at [SERVICEADDRESS1]      Reference #: [REFERENCENUMBER]**

Dear Water Customer,

The purpose of the City of Newark's Cross-connection Control Program, as defined in City of Newark Municipal Ordinance (Chapter 30 - Water, Article X. Cross Connection Control Ordinance, is to help eliminate possible contamination of the public water distribution system. There are two required components of the program: 1) Site inspection, and 2) Testing of backflow prevention assemblies.

As specified by the ordinance, your facility is required to supply potable water free of existing and/or potential cross-connections to its employees and/or the public. Due to the complexity of your internal piping, an inspection of the potable water piping system is necessary to determine if there are any existing and/or potential cross-connections. This inspection must be completed by an individual or firm acceptable to the City of Newark.

The Potable Water Cross-connection Survey Report is to be submitted within 30 days from the date of this notice. Accompanied with the Potable Water Piping Cross-connection Survey Report shall be an Action Plan and timetable for correcting any deficiencies noted in the report.

If you have any questions or require additional information, please contact please contact HydroCorp from 8am to 6pm EST Monday through Friday at 1-844-493-7641 or visit their website at [hydrocorpinc.com](http://hydrocorpinc.com) . Your facility's cooperation in this matter is greatly appreciated.

# Inspection Non-Compliance Notice 1

[MAILINGNAME]  
[MAILINGADDRESS]  
[MAILINGCITY,MAILINGSTATE,MAILINGZIP]

Print Date: [DATE]

**RE: [FACILITYNAME] at [SERVICEADDRESS1]** Reference #: **[REFERENCENUMBER]**

Dear Water Customer,

The purpose of the City of Newark's Cross-connection Control Program, as defined in City of Newark Municipal Ordinance (Chapter 30 - Water, Article X. Cross Connection Control Ordinance, is to help eliminate possible contamination of the public water distribution system. There are two required components of the program; 1) Site inspection and 2) Testing of backflow prevention assemblies.

An inspection of your facility's internal water distribution system was completed on [LASTSURVEYDATE]. Inspectors reviewing your water system found connections that could possibly contaminate the public water distribution system. A list of requirements is enclosed.

Requirements on this list must be addressed using only State approved backflow prevention devices. A licensed plumber should be able to assist you with acquiring approved backflow prevention devices. Some backflow prevention devices (assemblies) also require testing by a State Certified Tester. We suggest that the licensed plumber installing the testable assemblies also have the state certification to test assemblies. **All testable assemblies must be tested immediately at the time of installation.**

**These requirements must be completed by [RESPONSEDATE]. After the requirements and devices have been installed (if applicable) please call the number below on or before the date listed above to schedule a compliance inspection. Failure to do so will result in future non-compliant notices.**

To arrange for compliance review or if require additional information, please contact HydroCorp from 8am to 6pm EST Monday through Friday at 1-844-493-7641 or visit their website at [hydrocorpinc.com](http://hydrocorpinc.com).

## Inspection Non-Compliance Notice 2

[MAILINGNAME]  
[MAILINGADDRESS]  
[MAILINGCITY,MAILINGSTATE,MAILINGZIP]

Print Date: [DATE]

**RE: [FACILITYNAME] at [SERVICEADDRESS1]** Reference #: **[REFERENCENUMBER]**

Dear Water Customer,

The purpose of the City of Newark's Cross Connection Control Program, as defined in City of Newark Municipal Ordinance (Chapter 30 - Water, Article X. Cross Connection Control Ordinance, is to help eliminate possible contamination of the public water distribution system. There are two required components of the program; 1) Site inspection and 2) Testing of backflow prevention assemblies.

An inspection of your facility's internal water distribution system was completed on [LASTSURVEYDATE]. Inspectors reviewing your water system found connections that could possibly contaminate the public water distribution system. **A letter of notification was previously sent to you outlining the required corrective measures.** For your reference, a duplicate list of requirements is enclosed.

Requirements on this list must be addressed using only State approved backflow prevention devices. A licensed plumber should be able to assist you with acquiring approved backflow prevention devices. Some backflow prevention devices (assemblies) also require testing by a State Certified Tester. We suggest that the licensed plumber installing the testable assemblies also have the state certification to test assemblies. **All testable assemblies must be tested immediately at the time of installation.**

**These requirements must be completed by [RESPONSEDATE]. After the requirements and devices have been installed (if applicable) please call the number below on or before the date listed above to schedule a compliance inspection. Failure to do so will result in future non-compliant notices.**

To arrange for compliance review or if require additional information, please contact HydroCorp from 8am to 6pm EST Monday through Friday at 1-844-493-7641 or visit their website at [hydrocorpinc.com](http://hydrocorpinc.com).

## Cross-connection Control Program Inspection Shut-Off Notice

[MAILINGNAME]  
[MAILINGADDRESS]  
[MAILINGCITY,MAILINGSTATE,MAILINGZIP]

Print Date: [DATE]

**RE: [FACILITYNAME] at [SERVICEADDRESS1]      Reference #: [REFERENCENUMBER]**

Dear Water Customer,

The purpose of the City of Newark's Cross-connection Control Program, as defined in the City of Newark Municipal Ordinance (Chapter 30 - Water, Article X. Cross Connection Control Ordinance, is to help eliminate possible contamination of the public water distribution system. There are two required components of the program; 1) Site inspection and 2) Testing of backflow prevention assemblies.

As part of this program, an inspection of your facility's internal water distribution system was completed on [LASTSURVEYDATE]. Inspectors reviewing your water system found connections that could possibly contaminate the public water distribution system. Two- (2) previous letters of notification were sent to you outlining the required corrective measures. For your reference, a duplicate list of requirements is attached.

We presently have no record or notification from you that the corrective action has been completed. If you have already completed the requirements, please call the number below to schedule a compliance inspection.

**You are hereby notified that in accordance with the City of Newark local ordinance, the water supply to the above noted premises will be discontinued as of [RESPONSEDATE]. Water service may not be resumed until corrective measures have been addressed.**

**To arrange for compliance review please contact HydroCorp at 1-844-493-7641. If you require additional information, please visit their website at [www.hydrocorpinc.com](http://www.hydrocorpinc.com).**

## Testing Notice #1

[MAILINGNAME]  
[MAILINGADDRESS]  
[MAILINGCITY,MAILINGSTATE,MAILINGZIP]

Print Date: [DATE]

**RE: [FACILITYNAME] at [SERVICEADDRESS1]**

Reference #: **[REFERENCENUMBER]**

Dear Water Customer,

The purpose of the City of Newark's Cross-connection Control Program, as defined in the City of Newark Municipal Ordinance (Chapter 30 - Water, Article X. Cross Connection Control Ordinance, is to help eliminate possible contamination of the public water distribution system.

This correspondence addresses testing of backflow prevention assemblies. Periodic testing of backflow prevention assemblies is required to ensure proper working order.

Our records indicate it is time for testing of the backflow prevention assembly(s) at your facility. Any costs associated with the replacement, modification, installation, and/or testing of backflow prevention assembly(s) is the responsibility of the property owner/manager and/or occupant. Testing of backflow prevention assembly(s) must be performed by an ASSE (American Society of Sanitary Engineering) Backflow Prevention Assembly Tester.

### **What should you do next?**

**Step #1:** Locate a State Approved ASSE Certified Backflow Tester to complete testing of your backflow prevention assembly(s). The assembly(s) required to be tested at this time are listed on the following page(s). For your convenience, a courtesy listing of known testers is available on HydroCorp's website at [watercustomer.com](http://watercustomer.com) or you may contact Lisa with Delaware Rural Water at 302-424-3792. We suggest contacting several testers to get the best pricing available. NOTE: Neither HydroCorp or City of Newark can aid in the testing of your backflow prevention assembly(s) nor can a certified tester be recommended to you.

**Step #2:** Schedule a date with the tester you have chosen to have your backflow prevention assembly(s) tested. Completed test results must be submitted on or before the required due date of **[RESPONSEDATE]**.

**Step #3:** Once testing has been completed, instruct your tester to submit the results online at <https://portal.hydrossoft.io>. Test results will not be accepted via mail, fax or email. NOTE: Compliance can only be achieved if the test results equal passing or your tester/plumber indicates the supply has been disconnected and the backflow assembly(s) have been removed. You will continue to receive notification if the results equal failure and/or repairs are necessary.

Thank you for assisting us with protecting our water supply! If you have any questions or require additional information, please contact HydroCorp from 8am to 6pm EST Monday through Friday at 1-844-493-7641 or visit their website at [hydrocorpinc.com](http://hydrocorpinc.com).

## Testing – Final Notice

[MAILINGNAME]  
[MAILINGADDRESS]  
[MAILINGCITY,MAILINGSTATE,MAILINGZIP]

Print Date: [DATE]

**RE: [FACILITYNAME] at [SERVICEADDRESS1]**

Reference #: [REFERENCENUMBER]

Dear Water Customer,

The purpose of the City of Newark’s Cross-connection Control Program, as defined in City of Newark Municipal Ordinance (Chapter 30 - Water, Article X. Cross Connection Control Ordinance, is to help eliminate possible contamination of the public water distribution system.

Our records indicate it is time for testing of the backflow prevention assembly(s) at your facility. Any costs associated with the replacement, modification, installation, and/or testing of backflow prevention assembly(s) is the responsibility of the property owner/manager and/or occupant. Testing of backflow prevention assembly(s) must be performed by an ASSE (American Society of Sanitary Engineering) Backflow Prevention Assembly Tester.

**This is the 3<sup>rd</sup> and final notice you should have received regarding this matter. Failure to complete testing by the date shown below could result in a fine &/or interruption in water service.**

### **What should you do next?**

**Step #1:** Locate a State Approved ASSE Certified Backflow Tester to complete testing of your backflow prevention assembly(s). The assembly(s) required to be tested at this time are listed on the following page(s). For your convenience, a courtesy listing of known testers is available on HydroCorp’s website at [watercustomer.com](http://watercustomer.com) or you may contact Lisa with Delaware Rural Water at 302-424-3792. We suggest contacting several testers to get the best pricing available. NOTE: Neither HydroCorp or City of Newark can aid in the testing of your backflow prevention assembly(s) nor can a certified tester be recommended to you.

**Step #2:** Schedule a date with the tester you have chosen to have your backflow prevention assembly(s) tested. Completed test results must be submitted on or before the required due date of [RESPONSEDATE].

**Step #3:** Once testing has been completed, instruct your tester to submit the results online at <https://portal.hydrosoft.io>. Test results will not be accepted via mail, fax or email. NOTE: Compliance can only be achieved if the test results equal passing or your tester/plumber indicates the supply has been disconnected and the backflow assembly(s) have been removed. You will continue to receive notification if the results equal failure and/or repairs are necessary.

Thank you for assisting us with protecting our water supply! If you have any questions or require additional information, please contact HydroCorp from 8am to 6pm EST Monday through Friday at 1-844-493-7641 or visit their website at [hydrocorpinc.com](http://hydrocorpinc.com).

# **Cross Connection Control Program**

## **Notice of Inspection & Testing**

[MAILINGNAME]  
[MAILINGADDRESS]  
[MAILINGCITY,MAILINGSTATE,MAILINGZIP]

Print Date: [DATE]

**RE: [FACILITYNAME] at [SERVICEADDRESS1]**

Reference #: **[REFERENCENUMBER]**

Dear Water Customer,

The purpose of the City of Newark's Cross-connection Control Program, as defined in City of Newark Municipal Ordinance (Chapter 30 - Water, Article X. Cross Connection Control Ordinance, is to help eliminate possible contamination of the public water distribution system.

Our records indicate it is time for a cross-connection survey and or testing of the backflow prevention assembly(s) at your facility. Any costs associated with the cross-connection survey, replacement, modification, installation, and/or testing of backflow prevention assembly(s) is the responsibility of the property owner/manager and/or occupant.

### **What should you do next?**

**Step #1 (Survey):** Locate and schedule an ASSE approved Cross-Connection surveyor to conduct your inspection. Please visit HydroCorp's website at [watercustomer.com](http://watercustomer.com) or contact Lisa with the Delaware Rural Water Association at 303-424-3792 to view a list of known and approved surveyors in your area. Survey results must be submitted online at <https://portal.hydrosoft.io>; mailed, faxed & emailed submissions will not be accepted.

**Step #2 (Testing):** Once the cross-connection survey is complete and the necessary backflow prevention assembly(s) are installed, schedule an ASSE approved backflow prevention assembly tester to conduct a performance test of your backflow prevention assembly(s). Test results must be submitted online at <https://portal.hydrosoft.io>; once again mailed, faxed & emailed submissions will not be accepted.

The cross-connection survey and/or backflow prevention assembly testing must be completed, and results submitted by **[RESPONSEDATE]**.

You will be notified following the cross-connection survey if corrective measures are necessary. Thank you for assisting us with protecting our water supply! If you have any questions or require additional information, please contact HydroCorp from 8am to 6pm EST Monday through Friday at 1-844-493-7641 or visit their website at [hydrocorpinc.com](http://hydrocorpinc.com).

## APPENDIX E - DEFINITIONS

**Air Gap:** The unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet conveying water or waste to a tank, plumbing fixture, receptor, or other assembly and the flood-level rim of the receptacle. These vertical, physical separations must be at least twice the diameter of the water supply outlet and at no time less than 1 inch.

**Approved:** Accepted by the authority responsible as meeting an applicable specification stated or cited in this plan or as suitable for the proposed use.

**Auxiliary Water System:** Any water system on or available to the premises other than the purveyor's approved public water supply.

**Backflow:** The undesirable reversal of flow in a potable water distribution system due to a cross-connection.

**Backflow Preventer:** An assembly, device or method designed to prevent backflow.

**Backflow Prevention Assembly:** A mechanical backflow preventer used to prevent backward flow of contaminants or pollutants into a potable water distribution system. An assembly has a resilient seated, full-flow shut-off valve before and after the backflow preventer making it testable in line.

**Backflow Prevention Device:** A mechanical backflow preventer without shut-off valves. Typically these devices are not testable in the field.

**Backpressure:** A pressure higher than the supply pressure caused by a pump, elevated tank, boiler, or any other means that may cause backflow.

**Backsiphonage:** Backflow caused by negative or reduced pressure in the supply piping.

**Contaminant:** Any foreign substance (liquid, solid, or gas) that degrades the quality of water and creates a health hazard.

**Cross-connection:** A connection or potential connection between any part of a potable water system and any other environment containing other substances in a manner that, under any circumstances, would allow such substances to enter the potable water system. Other substances 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 an odor to the water.

**Owner:** Person or entity receiving service from the public water distribution system.

**Pollutant:** Any foreign substance (liquid, solid, or gas) that degrades the quality of water to constitute a non-health hazard or impair the usefulness of the water.

**Potable Water:** Water safe for human consumption as described by the public health official having jurisdiction.

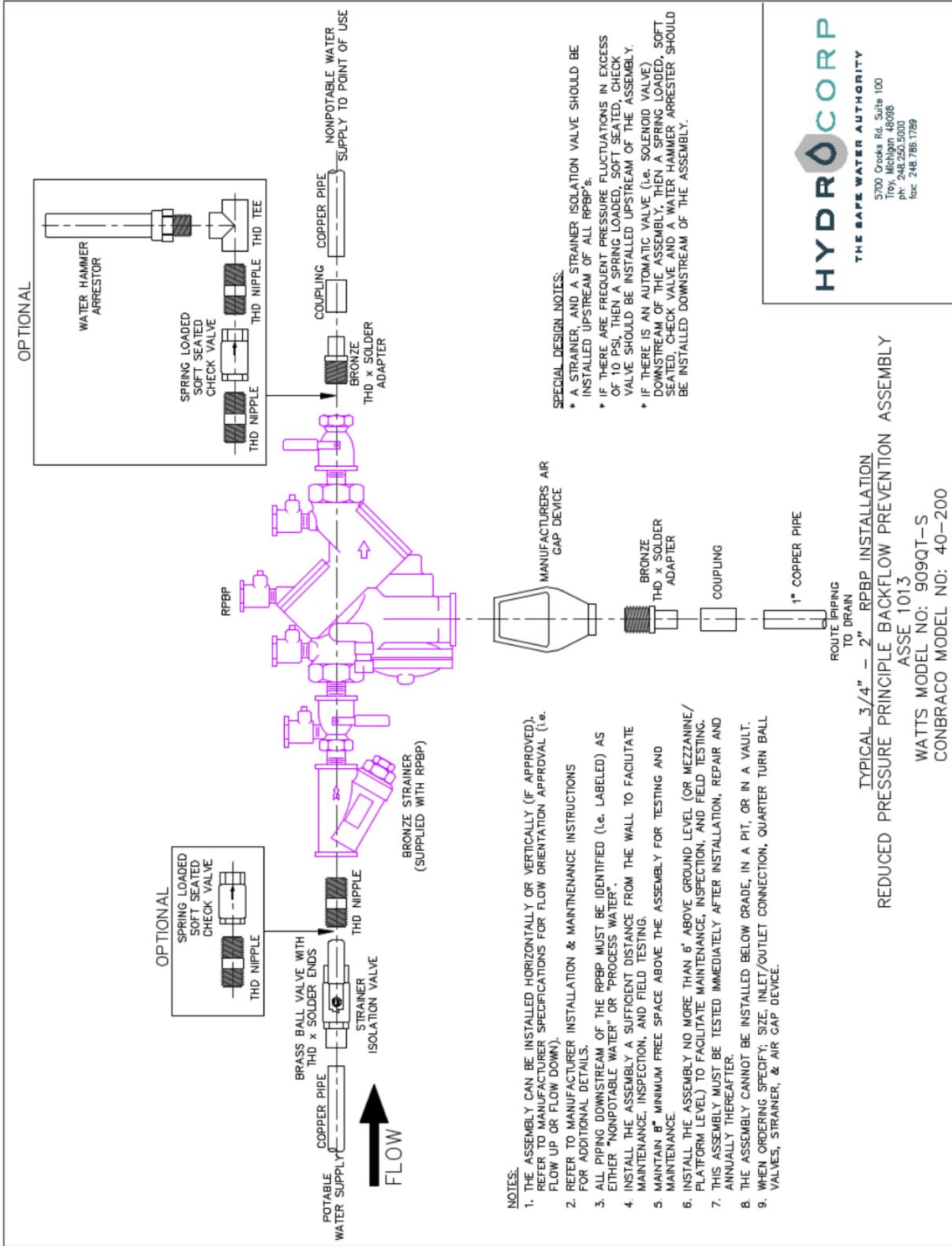
**Non-Potable Water:** Water unsafe for human consumption or questionable quality.

**Reclaimed Water:** Water that, as a result of the treatment of wastewater, is suitable for direct beneficial use or a controlled use that would not otherwise occur and is not safe for human consumption.

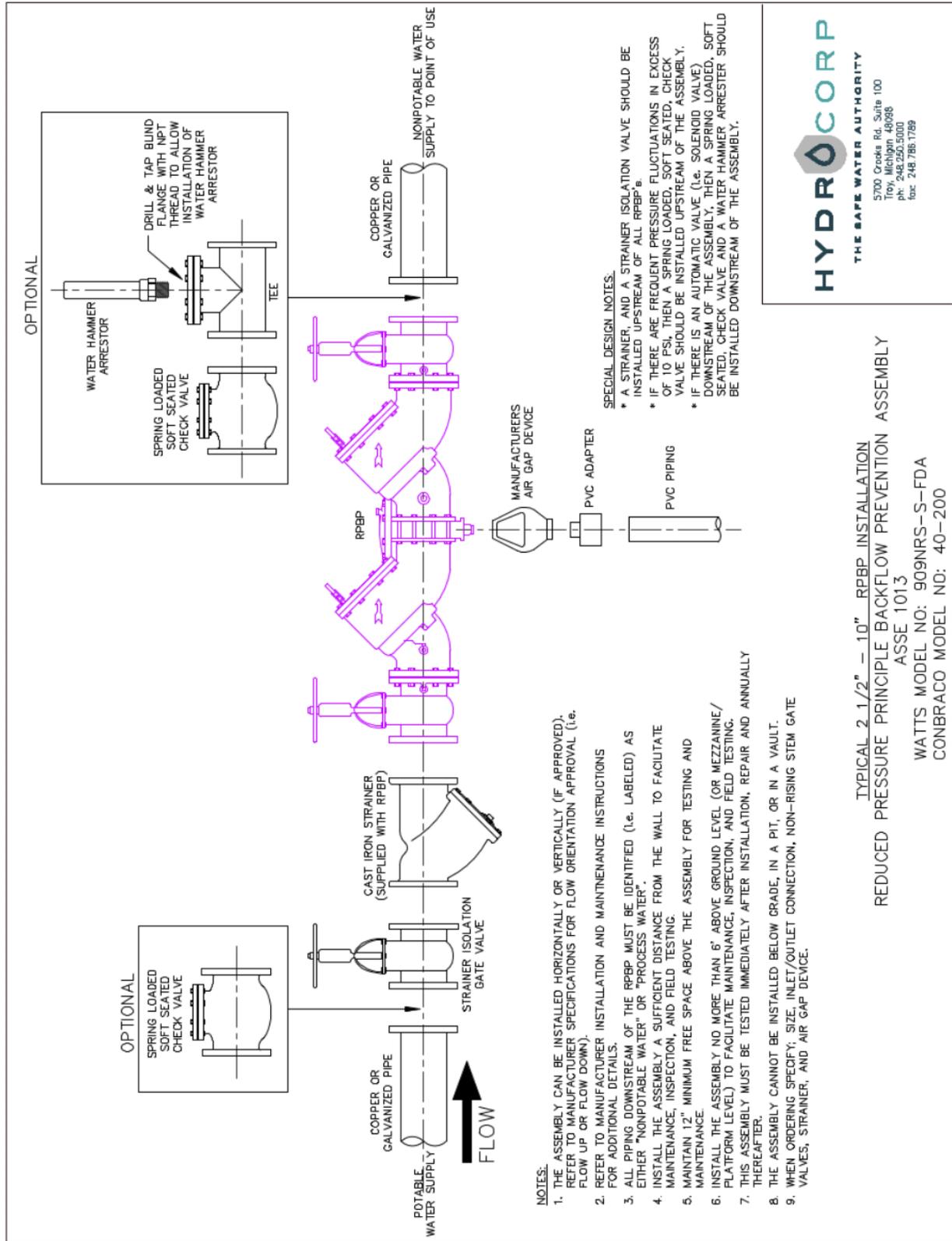
**Service Line Protection:** Installation of an approved backflow prevention device, assembly, or method at the point of service to confine potential contamination caused by a cross-connection within the facility where it arises; also referred to as containment.

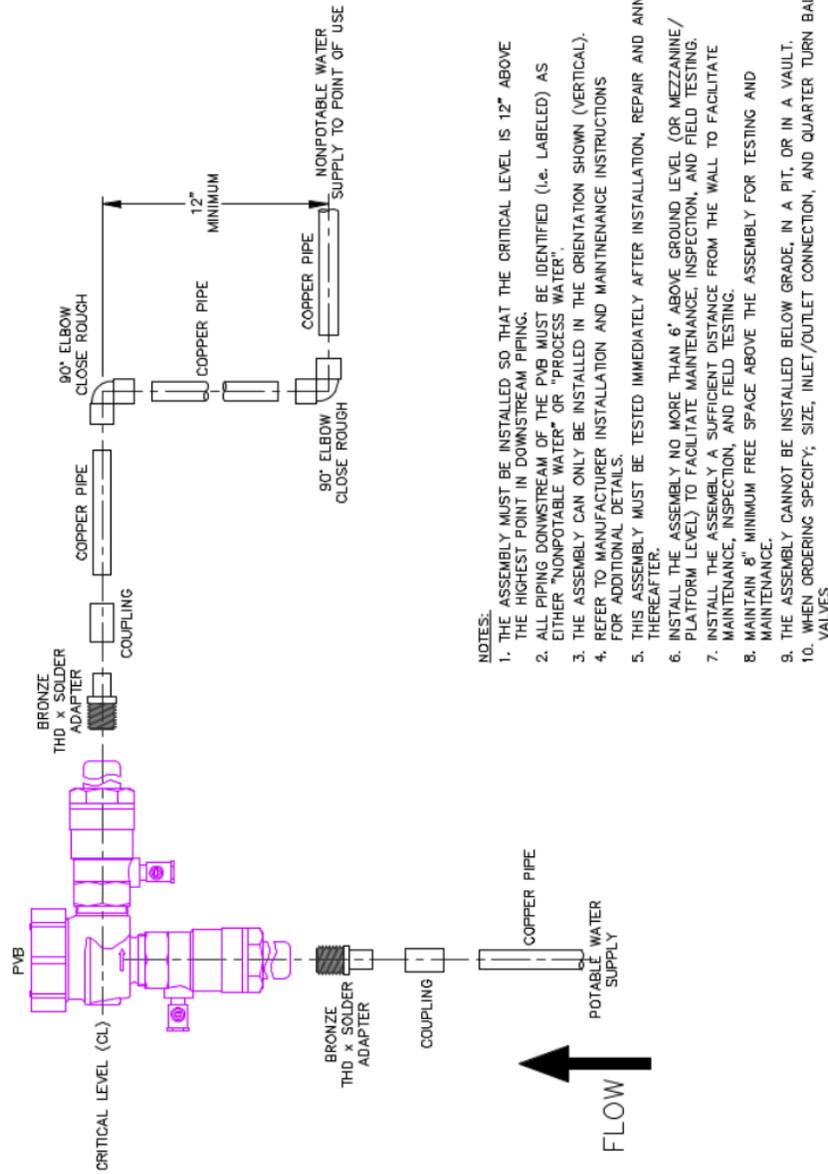
## **APPENDIX F – INSTALLATION SCHEMATICS**

Drawings contained in this section are only “typical” installations for reference purposes. All new installations must be installed per code and manufacturer specifications.



dwg. name: PWA.dwg effective: 2/27/02

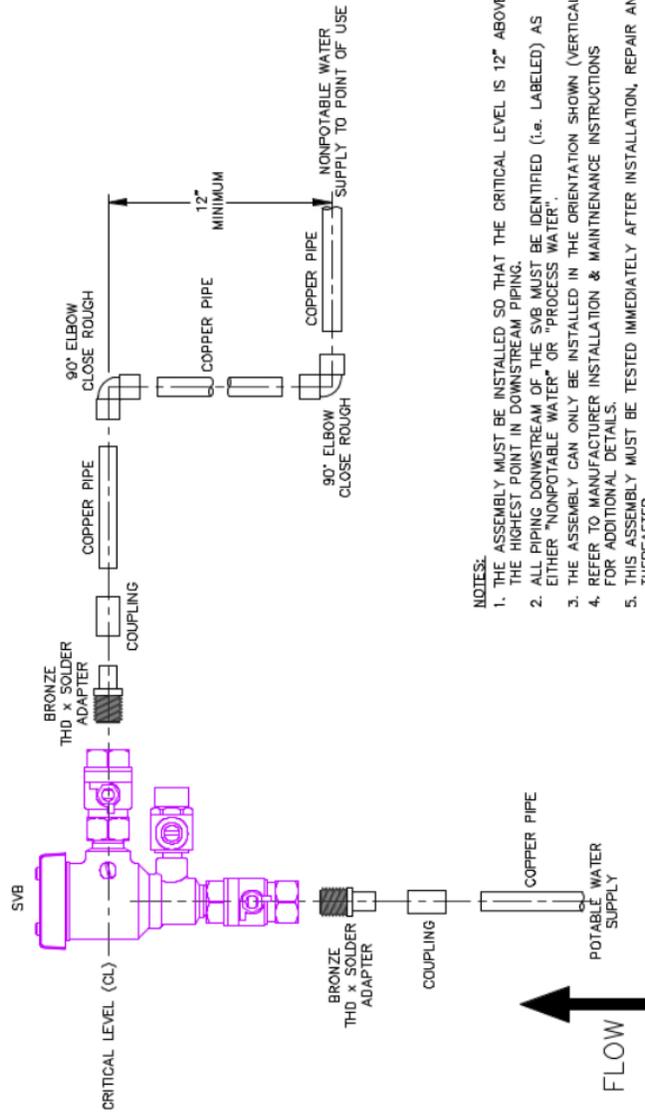




- NOTES:**
1. THE ASSEMBLY MUST BE INSTALLED SO THAT THE CRITICAL LEVEL IS 12" ABOVE THE HIGHEST POINT IN DOWNSTREAM PIPING.
  2. ALL PIPING DOWNSTREAM OF THE PVB MUST BE IDENTIFIED (i.e. LABELED) AS EITHER "NONPOTABLE WATER" OR "PROCESS WATER".
  3. THE ASSEMBLY CAN ONLY BE INSTALLED IN THE ORIENTATION SHOWN (VERTICAL).
  4. REFER TO MANUFACTURER INSTALLATION AND MAINTENANCE INSTRUCTIONS FOR ADDITIONAL DETAILS.
  5. THIS ASSEMBLY MUST BE TESTED IMMEDIATELY AFTER INSTALLATION, REPAIR AND ANNUALLY THEREAFTER.
  6. INSTALL THE ASSEMBLY NO MORE THAN 6' ABOVE GROUND LEVEL (OR MEZZANINE/PLATFORM LEVEL) TO FACILITATE MAINTENANCE, INSPECTION, AND FIELD TESTING.
  7. INSTALL THE ASSEMBLY A SUFFICIENT DISTANCE FROM THE WALL TO FACILITATE MAINTENANCE, INSPECTION, AND FIELD TESTING.
  8. MAINTAIN 8" MINIMUM FREE SPACE ABOVE THE ASSEMBLY FOR TESTING AND MAINTENANCE.
  9. THE ASSEMBLY CANNOT BE INSTALLED BELOW GRADE, IN A PIT, OR IN A VAULT.
  10. WHEN ORDERING SPECIFY: SIZE, INLET/OUTLET CONNECTION, AND QUARTER TURN BALL VALVES.

TYPICAL PVB INSTALLATION  
 PRESSURE VACUUM BREAKER ASSEMBLY  
 ASSE 1020  
 WATTS MODEL NO: 800M4QT  
 CONBRACO MODEL NO: 40-500





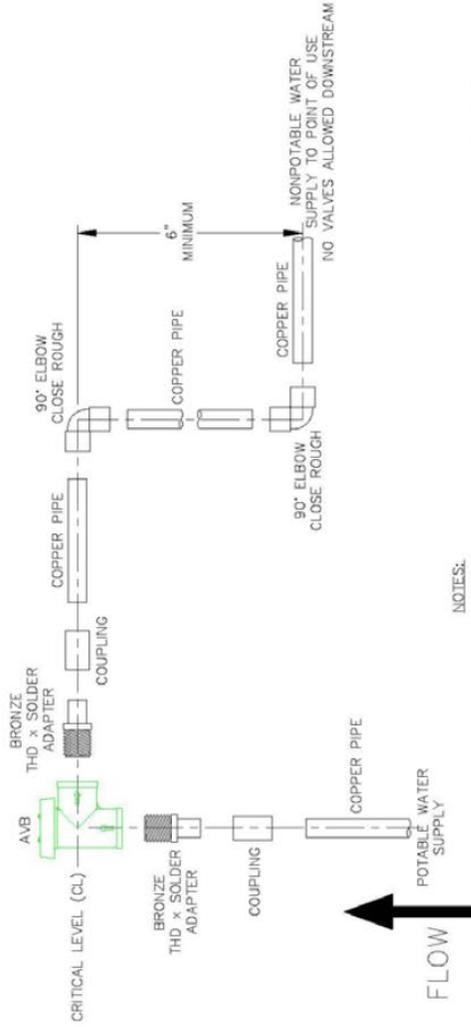
**NOTES:**

1. THE ASSEMBLY MUST BE INSTALLED SO THAT THE CRITICAL LEVEL IS 12" ABOVE THE HIGHEST POINT IN DOWNSTREAM PIPING.
2. ALL PIPING DOWNSTREAM OF THE SVB MUST BE IDENTIFIED (i.e. LABELED) AS EITHER "NONPOTABLE WATER" OR "PROCESS WATER".
3. THE ASSEMBLY CAN ONLY BE INSTALLED IN THE ORIENTATION SHOWN (VERTICAL).
4. REFER TO MANUFACTURER INSTALLATION & MAINTENANCE INSTRUCTIONS FOR ADDITIONAL DETAILS.
5. THIS ASSEMBLY MUST BE TESTED IMMEDIATELY AFTER INSTALLATION, REPAIR AND ANNUALLY THEREAFTER.
6. INSTALL THE ASSEMBLY NO MORE THAN 6' ABOVE GROUND LEVEL (OR MEZZANINE/PLATFORM LEVEL) TO FACILITATE MAINTENANCE, INSPECTION, AND FIELD TESTING.
7. INSTALL THE ASSEMBLY A SUFFICIENT DISTANCE FROM THE WALL TO FACILITATE MAINTENANCE, INSPECTION, AND FIELD TESTING.
8. MAINTAIN 8" MINIMUM FREE SPACE ABOVE THE ASSEMBLY FOR TESTING AND MAINTENANCE.
9. THE ASSEMBLY CANNOT BE INSTALLED BELOW GRADE, IN A PIT, OR IN A VAULT.
10. WHEN ORDERING SPECIFY; SIZE, INLET/OUTLET CONNECTION, AND QUARTER TURN BALL VALVES.

**TYPICAL SVB INSTALLATION**  
 SPILL RESISTANT VACUUM BREAKER ASSEMBLY  
 ASSE 1056  
 WATTS MODEL NO: 008QT  
 CONBRACO MODEL NO: N/A



5700 Crooks Rd. Suite 100  
 Troy, Michigan 48068  
 PH: 248.593.0000  
 FOC: 248.786.1789

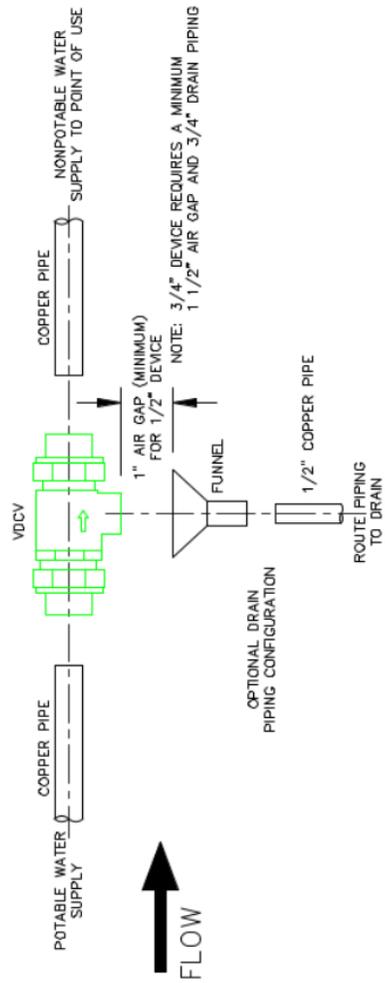


**NOTES:**

1. THE DEVICE MUST BE INSTALLED SO THAT THE CRITICAL LEVEL IS 6" ABOVE THE HIGHEST POINT IN DOWNSTREAM PIPING.
2. NO VALVES ARE ALLOWED DOWNSTREAM OF THE AVB.
3. ALL PIPING DOWNSTREAM OF THE AVB MUST BE IDENTIFIED (I.E. LABELED) AS EITHER "NONPOTABLE WATER" OR "PROCESS WATER".
4. THE DEVICE CAN ONLY BE INSTALLED IN THE ORIENTATION SHOWN (VERTICAL). REFER TO MANUFACTURER INSTALLATION & MAINTENANCE INSTRUCTIONS FOR ADDITIONAL DETAILS.
5. WHEN ORDERING SPECIFY: SIZE AND INLET/OUTLET CONNECTION.

**TYPICAL AVB INSTALLATION**  
 ATMOSPHERIC VACUUM BREAKER  
 ASSE 1001  
 WATTS MODEL NO: 288A-C  
 CONBRACO MODEL NO: 38-100

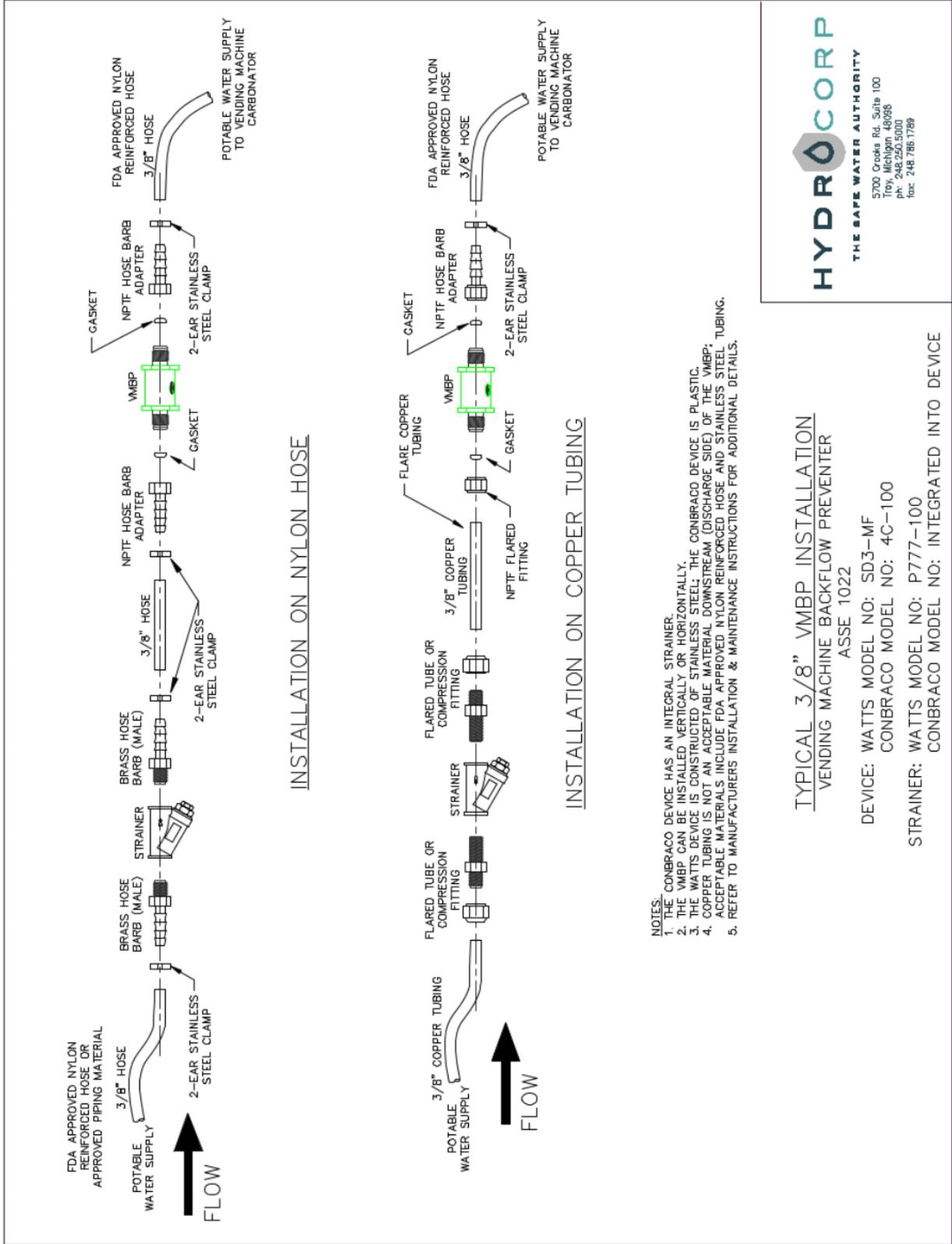
**HYDRACORP**  
 THE SAFE WATER AUTHORITY  
 5700 Crooks Rd, Suite 100  
 Troy, Michigan 48068  
 ph: 248.250.5000  
 fax: 248.786.1789



- NOTES:**
1. THE VDCV CAN BE INSTALLED VERTICALLY OR HORIZONTALLY.
  2. ENSURE VENT FROM THE DEVICE IS ORIENTED IN THE DOWN POSITION.
  3. REFER TO MANUFACTURERS' INSTALLATION & MAINTENANCE INSTRUCTIONS FOR ADDITIONAL DETAILS.
  4. WHEN ORDERING SPECIFY: SIZE & INLET/OUTLET CONNECTION.

**TYPICAL VDCV INSTALLATION**  
**VENTED DUAL CHECK VALVE**  
 ASSE 1012  
 WATTS MODEL NO: 9D  
 CONBRACO MODEL NO: 40-400





**THE SAFE WATER AUTHORITY**  
 5700 Crooke Rd. Suite 100  
 Troy, Michigan 48068  
 PH: 248.250.5000  
 FAX: 248.786.1789

**TYPICAL 3/8" VMBP INSTALLATION**  
 VENDING MACHINE BACKFLOW PREVENTER  
 ASSE 1022

DEVICE: WATTS MODEL NO: SD3-MF  
 CONBRACO MODEL NO: 4C-100

STRAINER: WATTS MODEL NO: P777-100  
 CONBRACO MODEL NO: INTEGRATED INTO DEVICE

## APPENDIX G – DELAWARE CCC REGULATION

**21. Cross-Connection Control**

**21.1. Cross-connection control requirements and prohibitions.**

- 21.1.1. No public water system shall install or maintain a water service connection to any premises where actual or potential cross-connections to a public water system exist unless such actual or potential cross-connections are eliminated or controlled to the satisfaction of the owner of the public water system and the Division.
- 21.1.2. No public water system shall install or maintain any connection whereby water from an auxiliary water system may enter a public water system unless the auxiliary water supply and the method of connection.
- 21.1.3. In accordance with subsection 1.12.1, public water systems shall maintain acceptable water pressure throughout the distribution system so that the risk of backflow is reduced.
- 21.1.4. If a cross-connection exists or backflow occurs at a consumer's water system, the public water system may discontinue service to the consumer and water service shall not be restored until the deficiencies have been corrected.

**21.2. Cross-connection control programs.**

- 21.2.1. A public water system shall develop a plan for a comprehensive cross-connection control program for the elimination, prevention, and control of cross-connections appropriate to the number of service connections, size of the distribution system, and type of customers. The cross-connection control program shall include an individual designated by the public water system and appropriately trained and experienced in cross-connection control programs to be responsible for the program.
- 21.2.2. A cross-connection control program shall include an inventory and records of testing, repairs, and maintenance of all backflow prevention assemblies, and backflow elimination methods.
- 21.2.3. A cross-connection control program shall include appropriate policies to complete assessments of customer premises for potential cross-connections to establish hazard criteria to classify customer premises consistent with Table 1, and to determine the degree of hazard and adequacy of existing preventive measures.

<u>Table 1</u> <u>Backflow Prevention Assembly Types Required for Service Line Containment</u>	
<u>Premise - Degree of Hazard</u>	
<u>High Hazard</u>	<u>Low Hazard</u>
<u>Air Gap</u>	<u>Air Gap</u>
<u>Reduced Pressure Principle Backflow Prevention Assembly</u>	<u>Reduced Pressure Principle Backflow Prevention Assembly</u>
<u>-</u>	<u>Double Check Valve Assembly</u>

21.2.4. An approved backflow prevention assembly or backflow elimination method shall be installed at premises where the following conditions exist in a location intended to prevent backflow into the distribution system:

- 21.2.4.1. Premises having auxiliary water system:
- 21.2.4.2. Premise types that are deemed by the public water system or the Division to represent a health or high hazard to the public water system, to include but not be limited to:
 

<i>Agricultural facilities (e.g., farms, dairies)</i>	<i>Beverage bottling plants</i>	<i>Car washes</i>
<i>Chemical plants</i>	<i>Dry cleaners (on site processing)</i>	<i>Film processing plants</i>
<i>Food processing plants</i>	<i>Laboratories</i>	<i>Medical facilities</i>
<i>Mortuaries</i>	<i>Metal plating industries</i>	<i>Mortuaries</i>
<i>Petroleum processing/storage plants</i>	<i>Piers, marinas, docks and waterfront facilities</i>	
<i>Radioactive material processing plants</i>	<i>Wastewater treatment facilities</i>	
- 21.2.4.3. Premises where having internal cross-connections that, in the judgment of the public water system, are not correctable or are impractical to determine if cross-connections exist due to intricate plumbing arrangements;
- 21.2.4.4. Premises where because of security requirements or other prohibitions, it is impossible to complete a cross-connection control survey; or
- 21.2.4.5. Premises having a history of cross-connections being established or reestablished.
- 21.2.5. In lieu of assessments and installation of backflow prevention assemblies at customer premises deemed low hazard, a public water system may implement a public education program.
  - 21.2.5.1. **The public education program shall include, at minimum:**
    - 21.2.5.1.1.1. Causes and dangers of backflow and cross-connections, including health effects;
    - 21.2.5.1.1.2. Information on how to identify actual and potential cross-connections
    - 21.2.5.1.1.3. Preventive measures to reduce or eliminate cross-connection and backflow risks; and
    - 21.2.5.1.1.4. Information on reporting suspected cross-connections to the

**21.3. Corrections and protective devices.**

21.3.1. Backflow prevention assemblies shall conform to the standards of the American Society of Sanitary Engineering (ASSE), the American Water Works Association (AWWA), and the American Society of Mechanical Engineers (ASME)

**21.4. Cross-connection control records and reporting.**

- 21.4.1. All backflow prevention assembly test records which document the test results of assemblies designed to protect the public water system shall be retained on file for a period of no less than 10 years.
- 21.4.2. All cross-connection control survey records which document results from the monitoring of cross-connections shall be retained on file for a period of no less than 10 years.

**21.5. Violations.**

- 21.5.1. The following items shall be deemed to be violations of these regulations:
  - 21.5.1.1. Failure to develop and implement a comprehensive cross-connection control program in accordance with Section 3.0 of this regulation within three years of the effective date of these regulations;
  - 21.5.1.2. Failure to implement the cross-connection control program as prescribed; and
  - 21.5.1.3. Failure to maintain all backflow prevention assembly test records on file for at least 10 years.

**21.6. Penalty Clause.**

Any person who neglects or fails to comply with these regulations shall be subject to penalty as provided in 16 Del.C. §122(3)(c).