Prepared for:

Lewes BPW
107 Franklin Avenue
Lewes, DE 19958

CROSS CONNECTION CONTROL PLAN

For

Lewes BPW

Lewes BPW Approved: (insert date)

Prepared by:

HYDROCORP
THE SAFE WATER AUTHORITY

5700 Crooks Rd., Suite 100
Troy, MI 48098
Phone: 248.250.5000

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1. INTRODUCTION

1.1. Purpose

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

- 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 Lewes BPW proclaims this program as a continuing effort to maintain pure, clean, safe potable water. The Lewes BPW 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 "Lewes BPW Cross-Connection Control Program*." This program was adopted by the abovementioned organization on (insert date) and made effective on (insert date).

1.3. Local Ordinance

Legal authority to carry out and enforce the Lewes BPW Cross-Connection Control Program is provided in the Lewes BPW Resolution No. 21-00. A copy of said Resolution and Resolution can be found in Appendix A of this plan.

2. AUTHORITY/ADMINISTRATOR

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

- Establish Authority
- Local Resolution (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

The Lewes BPW or Designated Agent (Administrator/Agent) conducting inspections (site assessments) on behalf of the Lewes BPW must be designated or approved by Lewes BPW. The Administrator /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 Lewes BPW
- 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
  - Outline of test questions
  - Certificate of satisfactory completion
  - Date of Attendance
  - Categories and grading criteria

3. INSPECTIONS

3.1. Inspections (Site Assessments)

Authorized Inspectors, having proper identification, shall be permitted to enter the building/premises 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 Authority 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 Authority 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 their expense, the Authority 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 Authority 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) or Double Check Valve Assembly (DCV). 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 Authority may precede disciplinary action from the Authority.

3.4. Internal Plumbing System Inspection

a) Internal plumbing systems may require inspection at the discretion of the General Manager. 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

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 Authority 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, Lewes BPW shall require the following:

a) Installation and maintenance of assemblies, devices and/or methods to protect all existing Cross-Connections shall be the responsibility of the Owner and will be completed in accordance with manufacturers' guidelines and existing regulation as noted in Section 4.5(a).

4.2. Approved Backflow Prevention Assemblies and Devices

a) Lewes BPW accepts backflow prevention devices, assemblies, and methods (downstream of service line protection) as recognized by the current version of the International Building Code and the Lewes BPW's Standard Specifications and Details Manual.
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

With respect to backflow prevention assemblies installed at the service line, the Authority 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, 3rd Edition. The continued use of UL-listed alarm check valves shall be accepted on any existing connection deemed a low hazard by the Authority/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 curb stop and before the plumbing system's first branch line in the plumbing system or as determined by the Lewes BPW and it's engineering consultant.
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, manufacturers' installation requirements and Lewes BPW's Standard Specifications and Details Manual.

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 Authority 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) Lewes BPW shall reserve the right to direct and administer testing and/or 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 responsibility of the owner.
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

Residential Dual Checks shall be overhauled or replaced upon indication they are no longer operational, as indicated by backflow during any work to the water meter/pitsetter, or as required by 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
Backflow prevention assemblies:			
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
Backflow prevention devices:			
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 Hoe 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
Backflow Preventer Type	**Degree of Hazard**	**Application**	**Applicable Standard**
Backflow prevention devices:			
Vacuum Breaker Wall Hydrants (HBIVB)	High or low hazard	Low head backpressure or backsiphonage	ASSE 1019, ASME A112.21.3, CSA B64.2.2
Other means or methods:			
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 Authority, Plumbing Inspector, Building Inspector, and building contractor(s). The Authority's Cross-connection Control Plan and Backflow Prevention requirements will be reviewed with the responsible party.

5.2. Inspections

The Authority/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 Authority shall enforce this plan as required. The water service and the certificate of occupancy will not be initiated 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, as determined by the General Manager, the Authority 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 Authority.

- 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 Authority.

7. EMERGENCY RESPONSE PLAN

7.1. Emergency Response Plan Procedures

Lewes BPW 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 Municipal Engineer 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.)
   _____
   _____

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

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

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 Lewes BPW staff responsible for cross-connection control program staff must have a good understanding of the program. Lewes BPW 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 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, newsletter article(s), 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 Lewes BPW employees.

APPENDIX A - LOCAL RESOLUTION

APPENDIX A - LOCAL RESOLUTION

Resolution No. 21-00__

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE BOARD OF PUBLIC WORKS OF THE CITY OF LEWES REGARDING CROSS-CONNECTION CONTROL ASSEMBLIES FOR THE PROTECTION OF PUBLIC POTABLE WATER SUPPLIES; PROVIDING LEGISTATIVE FINDINGS; AND PROVIDING FOR THE INCLUSION OF THE SAME IN THE BPW POLICIES

WHEREAS, improperly protected water systems expose the public potable water supply to contamination, which may be hazardous to the public health and safety; and

WHEREAS, per 16 *Del. Admin. Code* § 4462-21.0, the Delaware Department of Health and Social Services, Division of Public Health requires all public water systems to establish and implement a routine cross-connection control program to detect and control cross-connections and prevent backflow of contaminants into the water system; and

WHEREAS, such program shall provide that upon detection of a prohibited cross-connection, both public and non-public water systems shall either eliminate the cross-connection, ensure that appropriate backflow prevention is installed to prevent backflow into the public water system, or discontinue water service until the contaminant source is eliminated; and

WHEREAS, whenever an actual or potential cross-connection is detected, a public water system must require the installation of an appropriate backflow prevention device, or must discontinue service; and

WHEREAS, Section 4.1, *among other provisions*, of the Charter for the Board of Public Works of the City of Lewes (the "Lewes BPW"), being Chapter 10, Volume 77, Laws of Delaware, as amended (the "Lewes BPW Charter"), grants the Lewes BPW authority, responsibility, supervision, and control over current or future utility systems, including public water systems, established within the Lewes BPW Service Area; and

WHEREAS, Section 1 of the Lewes BPW Charter defines the Lewes BPW Service Area as "the corporate limits of the City of Lewes, the territory beyond such limits authorized in [the Lewes BPW Charter], and any franchised service area"; and

WHEREAS, Section 4.20 of the Lewes BPW Charter authorizes the Lewes BPW to "enact and adopt such rules and regulations as the [Lewes BPW] may deem proper in order to supply said utility services"; and

WHEREAS, in accordance with its duties and the State of Delaware Administrative Code, the Lewes BPW, acting in its capacity as a chartered utilities board and a public water system, desires to implement a cross-connection control program.

NOW THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE BOARD OF PUBLIC WORKS OF THE CITY OF LEWES, IN SESSION MET THIS _____ DAY OF _____, _____, THAT:

Section 1. The foregoing recitals are hereby ratified and confirmed as being true and correct and are hereby incorporated as findings of the Lewes BPW and the legislative intent of this Resolution.

Section 2. The Lewes BPW hereby establishes a cross-connection control program pursuant to, and in conformance with the Delaware Department of Health and Social Services, Division of Public Health and the State of Delaware Administrative Code and which is incorporated herein by reference (the "Cross-Connection Control Program"). If any conflicts exist between the Lewes BPW's Cross-Connection Control Program and the Delaware Administrative Code, the more restrictive regulations shall govern.

Section 3. The requirements of this Cross-Connection Control Program are intended to meet or exceed the relevant requirements contained in the Delaware Plumbing Code (IPC 2018), as well as the technical specifications and the installation, repair, and maintenance requirements contained in the American Water Works Association (AWWA) M-14 Manual, 3rd Edition, entitled "Recommended Practice for Backflow Prevention and Cross-Connection Control."

Section 4. The General Manager of the Lewes BPW or other authorized designee shall promulgate a manual which shall be known as the "Cross-Connection Control Plan for Lewes BPW" (the "Plan"), which Plan is hereby adopted and incorporated by reference herein and which may be updated and amended by the Board of Directors of the Lewes BPW from time to time. Compliance with the Plan and the Cross-Connection Control Program set forth therein is hereby required and it shall be prohibited and unlawful to act in any manner that is inconsistent therewith.

Section 5. The General Manager or authorized designee is granted the authority to inspect any and all water service connections served by the public potable water supply, and to take appropriate action to ensure the integrity of said system. The frequency of inspections and re-inspections based on potential health hazards involved shall be established in the Plan and in accordance with applicable State regulations. Duly authorized representatives of the Lewes BPW shall be permitted to enter any building, structure, or property served by a connection to the public potable water supply system of the Lewes BPW at any reasonable time to inspect for actual or potential cross-connections or water quality, to test backflow preventers, to conduct health hazard assessments, to inspect reclaimed water or reuse water systems, and to identify hazards that could contaminate the public potable water supply system. Granting reasonable access to the Lewes BPW and its agents/employees to enter private property for such inspections in order to administer the Cross-Connection Control Program is a condition of receiving Lewes BPW utility service.

Section 6. The General Manager or authorized designee is hereby authorized and directed to discontinue potable water service to any property wherein any connection in violation of the Cross-Connection Control Program exists and to take such other precautionary measures deemed necessary to eliminate any danger of contamination to the public potable water supply system. Water services to such property shall not be restored until the cross-connection has been eliminated or until an

appropriate backflow prevention device has been installed in compliance with the provisions of this Cross-Connection Control Program.

Section 7. All testable backflow prevention assemblies shall be tested initially upon installation to be sure that the assembly is working properly. Subsequent testing of assemblies shall be conducted at least once every year for residential service connections and at least once per year for non-residential service connections. For the purposes of the Cross-Connection Control Program, non-residential service connections include all commercial, utility-owned, and industrial service connections.

Section 8. The Lewes BPW shall be responsible for the installation, testing, maintenance, repair, and/or replacement of required backflow prevention devices for all residential service connections. Residential service connection customers required to utilize a backflow prevention device shall be assessed a service charge, as established by the Lewes BPW pursuant to the Lewes BPW's powers established in the Lewes BPW Charter.

Section 9. Water customers with non-residential service connections shall bear all expense of installing, testing, and maintaining the protective devices required by the Cross-Connection Control Program to ensure proper operation on a continuing basis. Installation, testing, and maintenance of protective devices shall be conducted by certified personnel approved by the Lewes BPW and in accordance with the requirements set forth in the Plan. Non-residential service connection customers shall keep records on testing, maintenance, and repair activities related to cross-connection control and shall make such records available to the Lewes BPW or its agents/employees upon request. Copies of all testing, maintenance, and repair records shall be reported to the Lewes BPW pursuant to the procedures set forth in the Plan.

Section 10. The Lewes BPW may bill water customers or property owners an amount equal to that incurred by the Lewes BPW to perform services required by this Cross-Connection Control Program. This includes, but is not limited to, costs incurred by Lewes BPW agents, employees, and third parties retained by the Lewes BPW.

Section 11. This Cross-Connection Control Program does not supersede the Delaware Plumbing Code, the Delaware Department of Health Plumbing Rules, or any local plumbing ordinance but is supplementary to them, provided that where conflicts exist, the more restrictive provision shall apply.

Section 12. Violation of the Cross-Connection Control Program may be enforced by any or all of the following measures:

A. The issuance of a notice requiring the water customer to cure the violation or face daily fees pursuant to Section 5 of the Lewes BPW Charter, with each day or fraction thereof, to be established in a fee schedule adopted by the Lewes BPW, in which the violation continues being considered a separate offense;

B. The filing of a complaint for injunctive relief;

C. The termination of any current utility service being provided by the Lewes BPW until such

time as compliance is achieved;

D. The installation, repair, and/or replacement of a backflow preventer by the Lewes BPW, its agents/employees, at the cost of the water customer or property owner; and

E. Any other remedy available at law.

Section 13. It is the intention of the Lewes BPW that Sections 2 – 12 of this Resolution shall be made a part of and memorialized in the policies contained within the Plan approved and adopted by the Lewes BPW. Any section, paragraph number, letter, and/or any heading may be changed or modified as necessary to effectuate the foregoing. Grammatical, typographical, and similar or like errors may be corrected.

Section 14. The provisions of this Resolution are declared to be severable and if any section, sentence, clause, or phrase of this Resolution shall for any reason be held by a court of competent jurisdiction to be invalid or unenforceable, such decision shall not affect the validity of the remaining terms, provisions, clauses, sentences, or sections of this Resolution but they shall remain in full force and effect, it being the legislative intent that this Resolution shall stand notwithstanding the invalidity of any part.

Section 15. All resolutions, official determinations, policies, or parts thereof previously adopted or entered by the Lewes BPW or any of its agents, employees, or officials in conflict with this Resolution are hereby repealed to the extent inconsistent herewith.

Section 16. This Resolution shall be posted in the office of the Lewes BPW and on the Lewes BPW website within two (2) days of its adoption by the Board of Directors of the Lewes BPW.

Section 17. This Resolution shall take effect immediately upon its adoption by the Board of Directors of the Lewes BPW.

Adopted by the Board of Directors
of the Lewes Board of Public Works

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		Facility Type		Requirements	
Inspection Status		Facility Status		Assemblies	
Inspection Frequency		Test Cycle		Devices	
High Hazard ☐				Last Insp Notice	
				Next Insp Notice	

Containment:

Potable Supply		Private Well		Reclaim Water	
Fire Supply		Surface Water		Grey Water	
Containment Existing ☐		Containment Required ☐		FP Properly Protect ☐	

Isolation Hazards:

Facility Comments	
Inspector's Name	
Contact's Name	
Contact's Signature	

Sample Inspection Form

Facility Name:	Service Address:	Insp. Date:

ID#	Req	Type	Size	Manufacturer	Model	Serial #	PT	Recommendation
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APPENDIX C - ASSEMBLY AND DEVICE LEGEND

Backflow Preventer Legend			
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	**Yes**
1015	Double Check Valve Backflow Prevention Assembly	DCV	**Yes**
1019	Vacuum Breaker Wall Hydrants	HBIVB	No
1020	Pressure Vacuum Breaker Assembly	PVB	**Yes**
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	**Yes**
1048	Double Check Detector Backflow Prevention Assembly	DDCV	**Yes**
1052	Hose Connection Backflow Preventer	HCBP	No
1055	Chemical Dispensing Systems	AG	No
1056	Spill Resistant Vacuum Breaker Assembly	SVB	**Yes**
1057	Freeze Resistant Yard Hydrant W/Backflow		No
A112.1.2	Air Gap	AG	No
	Single Check Valve	SCV	No

APPENDIX D – NOTICE TEMPLATES

Inspection Notice

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

Print Date: **[DATE]**

RE: [FACILITYNAME] at [SERVICEADDRESS1]

Reference #: **[REFERENCENUMBER]**

Dear Water Customer,

The purpose of the **[CLIENTNAME]** Cross Connection Control Program, as defined in local Ordinance **[ORDINANCENUMBER]**, 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 or contact Lisa with the 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.

Containment Notice

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

Print Date: **[DATE]**

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

Dear Water Customer,

The purpose of the "[Enter name of City or Township]" 's Cross-connection Control Program, as defined in the "[Enter name of City or Township]" Ordinance <<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 Ordinance <<Ordinance>>, the containment devices on the attached list are to be installed immediately after the municipal 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 **«LTR_H2O_Org_Text_01 »**. at «PhoneNumber».

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 "[Insert Client Name]" 's Cross-connection Control Program, as defined in Ordinance «LTR_H2O_Org_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 Ordinance «LTR_H2O_Org_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 "[Insert Client Name]" .

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 «LTR_H2O_Org_Text_01 ». at «PhoneNumber». 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 [ORGNAME]'s Cross Connection Control Program, as defined in local ordinance [ORDINANCENUMBER], 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.

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 [ORGNAME]'s Cross Connection Control Program, as defined in local ordinance [ORDINANCENUMBER], 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.

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 [ORGNAME]'s Cross Connection Control Program, as defined in the [ORDINANCENUMBER], 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 [ORGNAME] 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.

Testing Notice #1

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

Print Date: **[DATE]**

RE: [FACILITYNAME] at [SERVICEADDRESS1]

Reference #: **[REFERENCENUMBER]**

Dear Water Customer,

The purpose of the **[CLIENTNAME]** Cross Connection Control Program, as defined in local Ordinance **[ORDINANCENUMBER]**, 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 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 **[CLIENTNAME]** 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.

Testing – Final Notice

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

Print Date: **[DATE]**

RE: [FACILITYNAME] at [SERVICEADDRESS1]

Reference #: **[REFERENCENUMBER]**

Dear Water Customer,

The purpose of the **[CLIENTNAME]** Cross Connection Control Program, as defined in local Ordinance **[ORDINANCENUMBER]**, 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 3rd 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 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 **[CLIENTNAME]** 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.

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 **[CLIENTNAME]** Cross Connection Control Program, as defined in local Ordinance **[ORDINANCENUMBER]**, 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 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.

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.

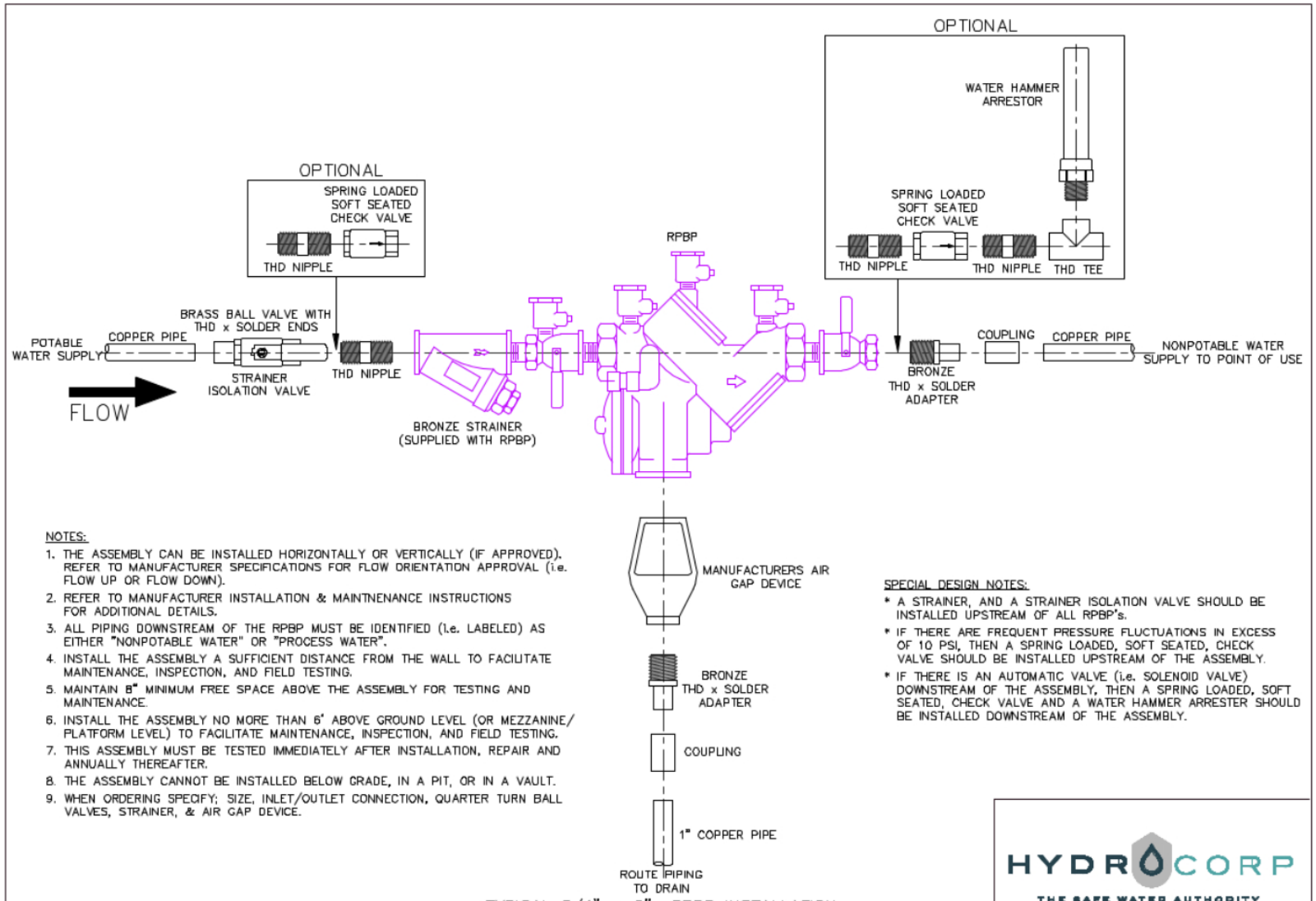
Reclaimed Water: Water that, as a result of the treatment of wastewater, is suitable for direct beneficial use or a controlled use that would not otherwise occur and is not safe for human consumption.

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.

See the BPW’s Standard Specifications and Details Manual for additional references.



NOTES:

1. THE ASSEMBLY CAN BE INSTALLED HORIZONTALLY OR VERTICALLY (IF APPROVED). REFER TO MANUFACTURER SPECIFICATIONS FOR FLOW ORIENTATION APPROVAL (i.e. FLOW UP OR FLOW DOWN).
2. REFER TO MANUFACTURER INSTALLATION & MAINTNENANCE INSTRUCTIONS FOR ADDITIONAL DETAILS.
3. ALL PIPING DOWNSTREAM OF THE RPBP MUST BE IDENTIFIED (i.e. LABELED) AS EITHER "NONPOTABLE WATER" OR "PROCESS WATER".
4. INSTALL THE ASSEMBLY A SUFFICIENT DISTANCE FROM THE WALL TO FACILITATE MAINTENANCE, INSPECTION, AND FIELD TESTING.
5. MAINTAIN 8" MINIMUM FREE SPACE ABOVE THE ASSEMBLY FOR TESTING AND MAINTENANCE.
6. INSTALL THE ASSEMBLY NO MORE THAN 6' ABOVE GROUND LEVEL (OR MEZZANINE/ PLATFORM LEVEL) TO FACILITATE MAINTENANCE, INSPECTION, AND FIELD TESTING.
7. THIS ASSEMBLY MUST BE TESTED IMMEDIATELY AFTER INSTALLATION, REPAIR AND ANNUALLY THEREAFTER.
8. THE ASSEMBLY CANNOT BE INSTALLED BELOW GRADE, IN A PIT, OR IN A VAULT.
9. WHEN ORDERING SPECIFY; SIZE, INLET/OUTLET CONNECTION, QUARTER TURN BALL VALVES, STRAINER, & AIR GAP DEVICE.

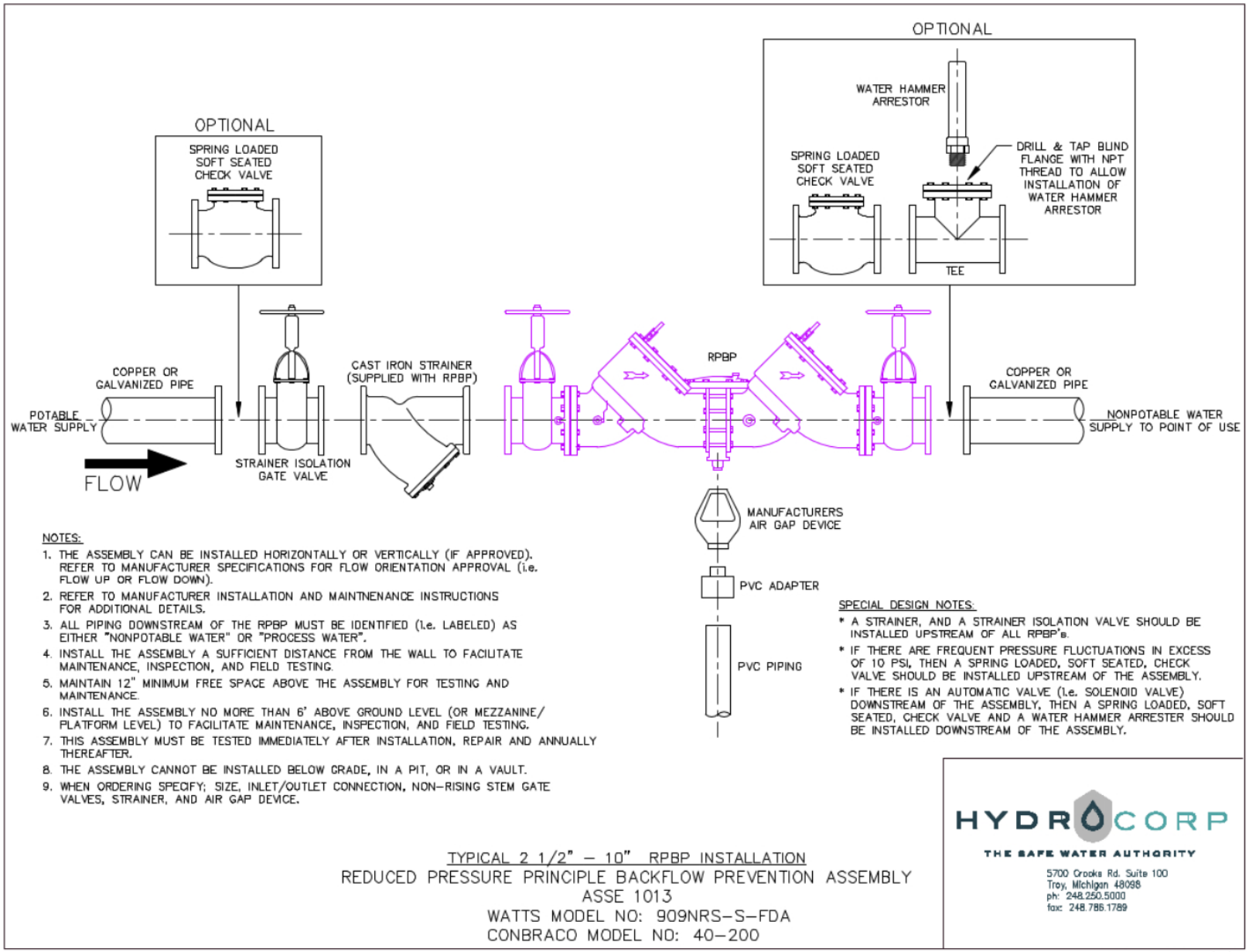
SPECIAL DESIGN NOTES:

* A STRAINER, AND A STRAINER ISOLATION VALVE SHOULD BE INSTALLED UPSTREAM OF ALL RPBP's.
* IF THERE ARE FREQUENT PRESSURE FLUCTUATIONS IN EXCESS OF 10 PSI, THEN A SPRING LOADED, SOFT SEATED, CHECK VALVE SHOULD BE INSTALLED UPSTREAM OF THE ASSEMBLY.
* IF THERE IS AN AUTOMATIC VALVE (i.e. SOLENOID VALVE) DOWNSTREAM OF THE ASSEMBLY, THEN A SPRING LOADED, SOFT SEATED, CHECK VALVE AND A WATER HAMMER ARRESTER SHOULD BE INSTALLED DOWNSTREAM OF THE ASSEMBLY.

TYPICAL 3/4" – 2" RPBP INSTALLATION
REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY
ASSE 1013
WATTS MODEL NO: 909QT–S
CONBRACO MODEL NO: 40–200

HYDROCORP
THE SAFE WATER AUTHORITY
5700 Crooks Rd. Suite 100
Troy, Michigan 48098
ph: 248.250.5000
fax: 248.786.1789

dwg. name: PW3.dwg effective: 2/27/02



NOTES:

1. THE ASSEMBLY CAN BE INSTALLED HORIZONTALLY OR VERTICALLY (IF APPROVED). REFER TO MANUFACTURER SPECIFICATIONS FOR FLOW ORIENTATION APPROVAL (i.e. FLOW UP OR FLOW DOWN).
2. REFER TO MANUFACTURER INSTALLATION AND MAINTNENANCE INSTRUCTIONS FOR ADDITIONAL DETAILS.
3. ALL PIPING DOWNSTREAM OF THE RPBP MUST BE IDENTIFIED (i.e. LABELED) AS EITHER "NONPOTABLE WATER" OR "PROCESS WATER".
4. INSTALL THE ASSEMBLY A SUFFICIENT DISTANCE FROM THE WALL TO FACILITATE MAINTENANCE, INSPECTION, AND FIELD TESTING.
5. MAINTAIN 12" MINIMUM FREE SPACE ABOVE THE ASSEMBLY FOR TESTING AND MAINTENANCE.
6. INSTALL THE ASSEMBLY NO MORE THAN 6' ABOVE GROUND LEVEL (OR MEZZANINE/ PLATFORM LEVEL) TO FACILITATE MAINTENANCE, INSPECTION, AND FIELD TESTING.
7. THIS ASSEMBLY MUST BE TESTED IMMEDIATELY AFTER INSTALLATION, REPAIR AND ANNUALLY THEREAFTER.
8. THE ASSEMBLY CANNOT BE INSTALLED BELOW GRADE, IN A PIT, OR IN A VAULT.
9. WHEN ORDERING SPECIFY; SIZE, INLET/OUTLET CONNECTION, NON-RISING STEM GATE VALVES, STRAINER, AND AIR GAP DEVICE.

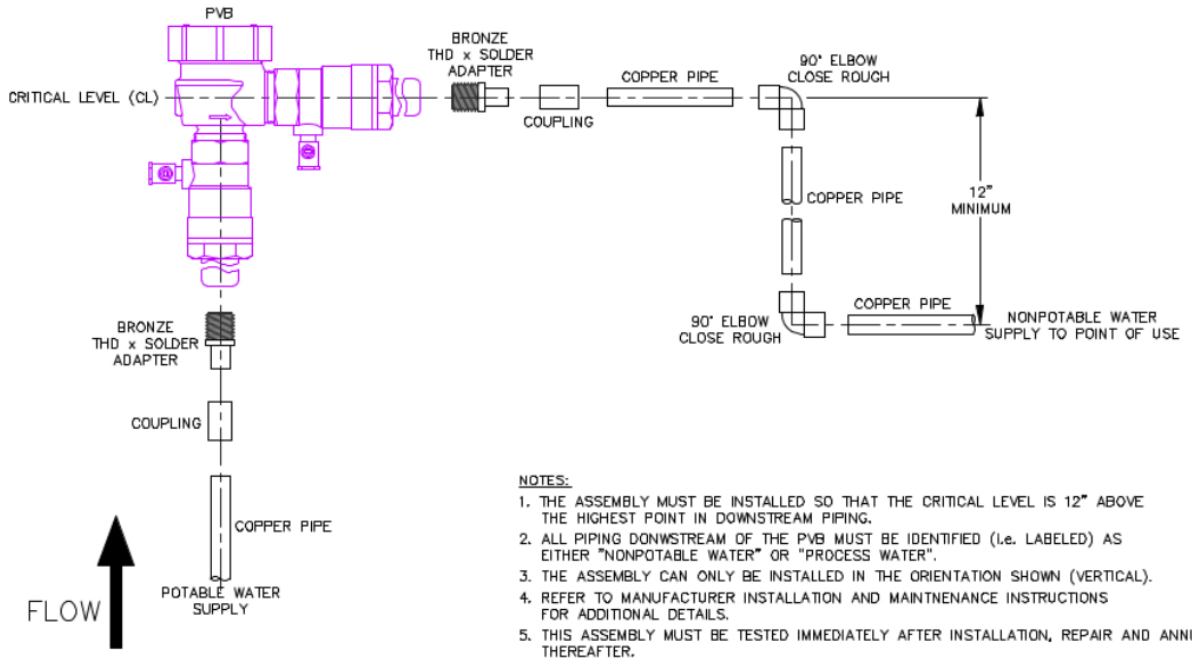
SPECIAL DESIGN NOTES:

* A STRAINER, AND A STRAINER ISOLATION VALVE SHOULD BE INSTALLED UPSTREAM OF ALL RPBP's.
* IF THERE ARE FREQUENT PRESSURE FLUCTUATIONS IN EXCESS OF 10 PSI, THEN A SPRING LOADED, SOFT SEATED, CHECK VALVE SHOULD BE INSTALLED UPSTREAM OF THE ASSEMBLY.
* IF THERE IS AN AUTOMATIC VALVE (i.e. SOLENOID VALVE) DOWNSTREAM OF THE ASSEMBLY, THEN A SPRING LOADED, SOFT SEATED, CHECK VALVE AND A WATER HAMMER ARRESTER SHOULD BE INSTALLED DOWNSTREAM OF THE ASSEMBLY.

TYPICAL 2 1/2" – 10" RPBP INSTALLATION
REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY
ASSE 1013
WATTS MODEL NO: 909NRS-S-FDA
CONBRACO MODEL NO: 40-200

HYDROCORP
THE SAFE WATER AUTHORITY
5700 Crooks Rd. Suite 100
Troy, Michigan 48098
ph: 248.250.5000
fax: 248.786.1789

dwg. name: PW10.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 DONWSTREAM 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 MAINTNENANCE 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

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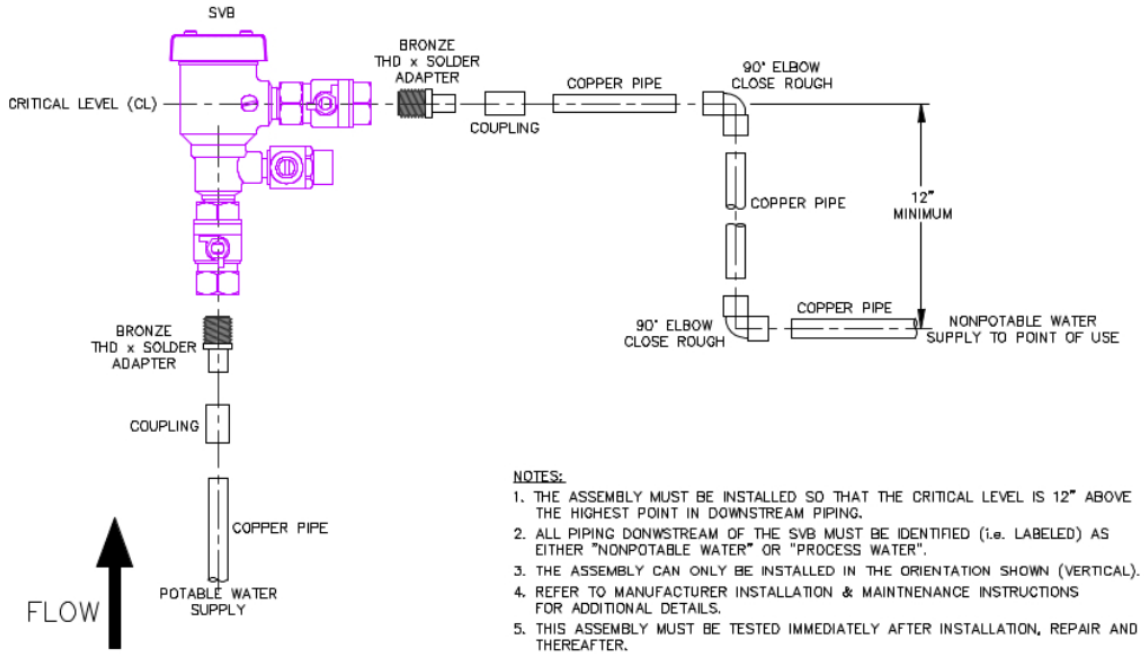
THE SAFE WATER AUTHORITY
5700 Crooks Rd. Suite 100
Troy, Michigan 48098
ph: 248.250.5000
fax: 248.786.1789

dwg. name: PW9.dwg effective: 2/27/02



NOTES:

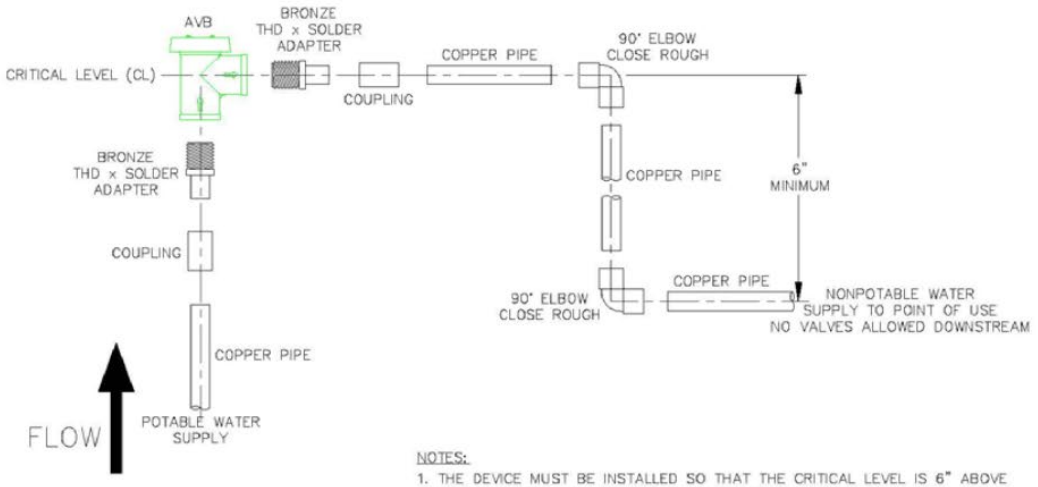
1. THE ASSEMBLY MUST BE INSTALLED SO THAT THE CRITICAL LEVEL IS 12" ABOVE THE HIGHEST POINT IN DOWNSTREAM PIPING.
2. ALL PIPING DONWSTREAM OF THE SVB MUST BE IDENTIFIED (i.e. LABELED) AS EITHER "NONPOTABLE WATER" OR "PROCESS WATER".
3. THE ASSEMBLY CAN ONLY BE INSTALLED IN THE ORIENTATION SHOWN (VERTICAL).
4. REFER TO MANUFACTURER INSTALLATION & MAINTNENANCE 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

HYDROCORP
THE SAFE WATER AUTHORITY
5700 Crooks Rd. Suite 100
Troy, Michigan 48098
ph: 248.250.5000
fax: 248.786.1789

dwg. name: PW4.dwg effective: 2/27/02



NOTES:

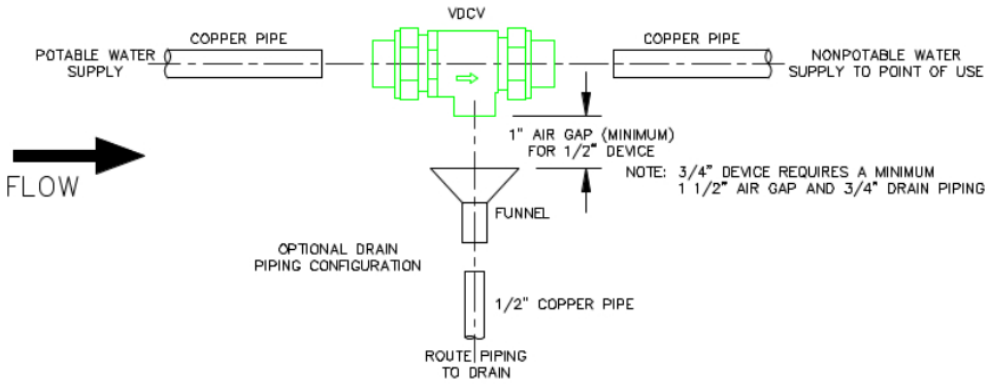
1. THE DEVICE MUST BE INSTALLED SO THAT THE CRITICAL LEVEL IS 6" ABOVE THE HIGHEST POINT IN DOWNSTREAM PIPING.
2. NO VALVES ARE ALLOWED DOWNSTREAM OF THE AVB.
3. ALL PIPING DONWSTREAM OF THE AVB MUST BE IDENTIFIED (i.e. LABELED) AS EITHER "NONPOTABLE WATER" OR "PROCESS WATER".
4. THE DEVICE CAN ONLY BE INSTALLED IN THE ORIENTATION SHOWN (VERTICAL).
5. REFER TO MANUFACTURER INSTALLATION & MAINTNENANCE INSTRUCTIONS FOR ADDITIONAL DETAILS.
6. 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

HYDROCORP
THE SAFE WATER AUTHORITY
5700 Crooks Rd. Suite 100
Troy, Michigan 48098
ph: 248.250.5000
fax: 248.786.1789

dwg. name: PW6.dwg effective: 2/27/02



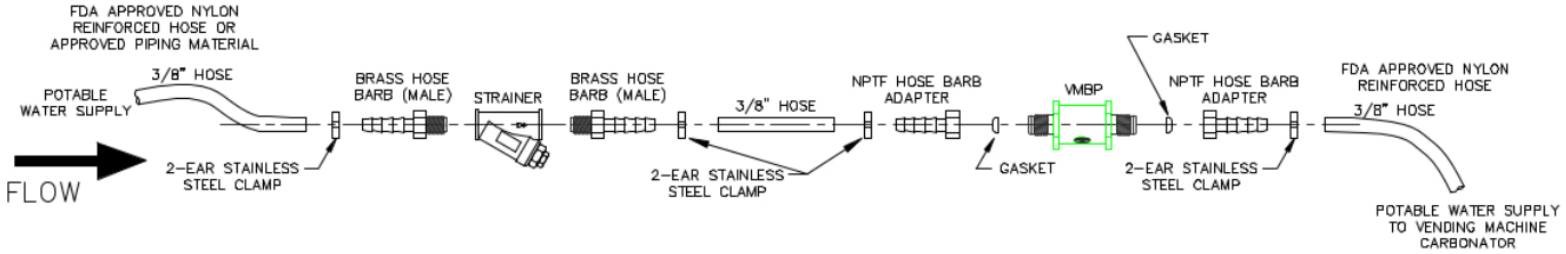
NOTES:
1. THE VDCV CAN BE INSTALLED VERTICALLY OR HORIZONTALLY.
2. ENSURE VENT FROM THE DEVICE IS ORIENTED IN THE DOWN POSITION.
3. REFER TO MANUFACTURERS INSTALLATION & MAINTENANCE INSTRUCTIONS FOR ADDITIONAL DETAILS.
4. WHEN ORDERING SPECIFY: SIZE & INLET/OUTLET CONNECTION.

TYPICAL VDCV INSTALLATION

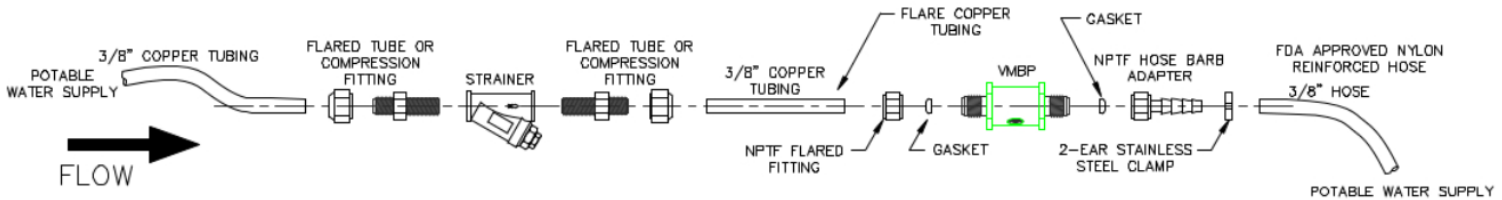
VENTED DUAL CHECK VALVE
ASSE 1012
WATTS MODEL NO: 9D
CONBRACO MODEL NO: 40-400

HYDROCORP
THE SAFE WATER AUTHORITY
5700 Crooks Rd. Suite 100
Troy, Michigan 48098
ph: 248.250.5000
fax: 248.786.1789

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



INSTALLATION ON NYLON HOSE



INSTALLATION ON COPPER TUBING

NOTES:
1. THE CONBRACO DEVICE HAS AN INTEGRAL STRAINER.
2. THE VMBP CAN BE INSTALLED VERTICALLY OR HORIZONTALLY.
3. THE WATTS DEVICE IS CONSTRUCTED OF STAINLESS STEEL; THE CONBRACO DEVICE IS PLASTIC.
4. COPPER TUBING IS NOT AN ACCEPTABLE MATERIAL DOWNSTREAM (DISCHARGE SIDE) OF THE VMBP; ACCEPTABLE MATERIALS INCLUDE FDA APPROVED NYLON REINFORCED HOSE AND STAINLESS STEEL TUBING.
5. REFER TO MANUFACTURERS INSTALLATION & MAINTENANCE INSTRUCTIONS FOR ADDITIONAL DETAILS.

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

HYDROCORP
THE SAFE WATER AUTHORITY
5700 Crooks Rd. Suite 100
Troy, Michigan 48098
ph: 248.250.5000
fax: 248.786.1789

dwg. name: BWB.dwg effective: 2/27/03

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.

Table 1
Backflow Prevention Assembly Types Required for Service Line Containment

Premise - Degree of Hazard	
High Hazard	Low Hazard
Air Gap	Air Gap
Reduced Pressure Principle Back-flow Prevention Assembly	Reduced Pressure Principle Backflow Prevention Assembly
-	Double Check Valve Assembly

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:

Agricultural facilities (e.g., farms, dairies)	*Beverage bottling plants*	*Car washes*
Chemical plants	*Dry cleaners (on site processing)*	*Film processing plants*
Food processing plants	*Laboratories*	*Medical facilities*
Mortuaries	*Metal plating industries*	*Mortuaries*
Petroleum processing/storage plants	*Piers, marinas, docks and waterfront facilities*	
Radioactive material processing plants	*Wastewater treatment facilities*	

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 shalt 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 faits to comply with these regulations shall be subject to penalty as provided in 16 Del.C. §122(3)(c).