

## Cross-Connection Prevention and Backflow Prevention Devices

### What is a Cross-Connection?

A cross connection is defined as any direct connection between the public water supply and a non-potable water source or contaminant (potable water is fit for consumption, regulated, and regularly tested for safety whereas non-potable water is not). For example, take the seemingly innocent garden hose. When the hose is attached to a chemical sprayer or submerged in a swimming pool, a physical connection is then established between the public water supply and a potentially hazardous source – in this case lawn or pool chemicals.

### What makes the cross-connection a potential hazard?

The answer is hydraulics. A cross-connection can introduce contaminants from a non-potable source (such as the chemical sprayer or swimming pool mentioned above) into the public water supply by either back siphonage or backflow. Back siphonage occurs when there is a sudden surge in water use - usually due to hydrant flow, main break, etc. resulting in a reversal of normal flow downstream due to negative pressure (think of how a straw works to sip a drink). Backpressure – and resulting reversal of flow - can occur when downstream pressure exceeds the supply pressure. Regardless of the means, reversal of water flow can introduce contaminants into the public water supply if there is a physical connection to a non-potable source.

### Does this really happen?

There have been instances (not in Foxborough thankfully!) where contaminants such as pesticides, caustics, boiler chemicals, and even blood have been introduced into a public water supply due to a lack of proper cross connection protection. Recently, hydroseeding chemicals were introduced into the Somerset public water supply after a company illegally connected to a fire hydrant. The pressure in the hydroseeding truck tank exceeded that of the public supply (backpressure) causing the material to flow into the main. Fortunately, no one became sick.

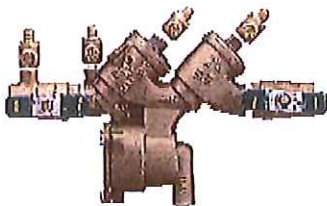
### What does the Foxborough Water Department do about cross-connections?

The Foxborough Water Department maintains a robust cross-connection control program as required by the MassDEP. This program consists of surveying all non-residential facilities serviced by the Department for cross-connections, regular inspection of all installed backflow prevention devices, and educational outreach to customers regarding the importance of cross-connection elimination and protection. Additionally, the Department requires that all facilities served by town water are equipped with the appropriate backflow prevention device where any cross-connections exist.

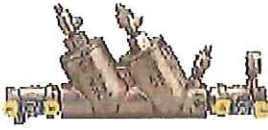
There are different types of devices to be used based on the degree of hazard present. Some devices are testable – whereas others are not.

### Type of Testable Backflow Prevention Devices:

Reduced Pressure Zone Backflow Device (RPZ). This type of device utilizes two check valves and a relief valve, and is designed for high-hazard uses.



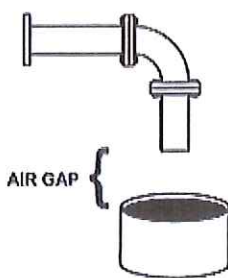
Double Check Valve (DC): This type of device utilizes two check valves, but no relief valve, and is designed for low hazard uses such as for a fire sprinkler line.



Pressure Vacuum Breaker: This type of device utilizes one check valve, and is typically used in irrigation systems.

Air Gap. This is not a device, but a physical separation (of twice the diameter of the supply pipe and never less than 1 inch) between the potable water supply and the non-potable supply.

Although not strictly a device, it is measurable. The air gap is extremely effective but limited to uses where downstream system pressure is not required.



#### **Type of Non-Testable Backflow Prevention Devices:**

Hose Bibb Vacuum Breaker: This is a small, inexpensive device available at most hardware stores that can be easily attached to your outside tap before the garden hose. It's used to prevent back siphonage, and is a simple way to protect garden hose cross-connections.



#### **What can Customers do?**

Provide Water Department personnel access to your facility during regular business hours (when requested) to perform required cross-connection surveys and backflow prevention device inspections (normally, surveys and inspections of residences are only needed if there is a fire sprinkler system installed).

Comply with Massachusetts Plumbing Codes to ensure all cross-connections are protected with the appropriate device (a licensed plumber should be able to provide assistance). However, if you have any questions do not hesitate to contact the Water Department at 508-543-1209.

A simple and inexpensive way for residential customers to protect against back siphonage from their garden hose is to install the hose bibb vacuum breaker described above.



## Cross Connection Control Program (CCCP)

### 1. Cross Connection Program Coordinator

<input type="text" value="TIMOTHY S"/>	<input type="text" value="DANIELS"/>	
Coordinator First Name	Coordinator Last Name	
<input type="text"/>	<input type="text"/>	
Coordinator Street Address Line 1	Coordinator Street Address Line 2	
<input type="text"/>	<input type="text"/>	<input type="text"/>
City/Town	State	Zip Code
<input type="text"/>	<input type="text"/>	
Phone Number	Fax Number (if available)	
<input type="text"/>		
Coordinator email		

#### Surveyor Personnel Information :

To add a surveyor, begin typing the certification ID # in the field below. Pick the license # off the list and then click the "Add Surveyor" button.

MassDEP Certification ID Number

Surveyor's FirstName	Surveyor's LastName	MassDEP Certification ID Number	Expiration Date	Phone Number	Reviewer Surveyor
<input type="text" value="ARTHUR F"/>	<input type="text" value="REYNOLDS JR."/>	<input type="text" value="WS10-0031887"/>	<input type="text" value="4/1/2018"/>	<input type="text"/>	<input checked="" type="checkbox"/>

#### Tester Personnel Information :

To add a tester, begin typing the certification ID # in the field below. Pick the license # off the list and then click the "Add Tester" button..

MassDEP Certification ID Number

Tester's FirstName	Tester's LastName	MassDEP Certification ID Number	Expiration Date	Phone Number
<input type="text" value="TIMOTHY S"/>	<input type="text" value="DANIELS"/>	<input type="text" value="WS10-0032397"/>	<input type="text" value="6/1/2018"/>	<input type="text"/>
<input type="text" value="ARTHUR F"/>	<input type="text" value="REYNOLDS JR."/>	<input type="text" value="WS10-0031887"/>	<input type="text" value="4/1/2018"/>	<input type="text"/>

2. Did your system use the services of a third party/consultant for the implementation of your Cross-connection Control Program or a portion of it?

Yes  No

Contact First Name

Consultant Street Address Line 1

City/Town

Phone Number

Contact Last Name

Consultant Street Address Line 2

State

Fax Number (if available)

Doing Business As  
(Company/Individual Name)

Zip Code



Massachusetts Department of Environmental Protection  
 Bureau of Water Resources (BWR) – Drinking Water Program  
*Public Water Supply Annual Statistical Report*  
 Reporting Year 2017

PWSID#: 4099000  
 Name: FOXBORO WATER DEPARTMENT  
 City: FOXBOROUGH  
 PWS Class: COM



Consultant email

**Third Party Consultant Surveyor Personnel Information:**

To add a surveyor, begin typing the certification ID # in the field below. Pick the license # off the list and then click the "Add Surveyor" button.

MassDEP Certification ID Number

Surveyor's First Name	Surveyor's Last Name	MassDEP Certification ID Number	Expiration Date	Phone Number	Third Party Reviewer Surveyor
<input type="text" value="GARY S"/>	<input type="text" value="ODOARDI"/>	<input type="text" value="WS10-0002016"/>	<input type="text" value="4/1/2018"/>		<input type="text"/>

**Third Party Consultant Tester Personnel Information:**

To add a tester, begin typing the certification ID # in the field below. Pick the license # off the list and then click the "Add Tester" button.

MassDEP Certification ID Number

Tester's First Name	Tester's Last Name	MassDEP Certification ID Number	Expiration Date	Phone Number
<input type="text" value="GARY S"/>	<input type="text" value="ODOARDI"/>	<input type="text" value="WS10-0002016"/>	<input type="text" value="4/1/2018"/>	

What services does the consultant perform for the town	
<input checked="" type="checkbox"/> Facilities Survey	<input checked="" type="checkbox"/> Testing of Devices
<input type="checkbox"/> Device Installation Plan Approval	<input checked="" type="checkbox"/> Program Management
<input checked="" type="checkbox"/> Other(explain)	<input type="text" value="ASSIST IN PREPARING DEP ASR"/>

3. Complete the following table summarizing types and numbers of facilities surveyed during this reporting period.

Type of Facility	Total # of Facilities Served by PWS	# of Facilities Surveyed Prior to this reporting period	# of Facilities with first time surveys during this reporting period	# of Facilities Remaining to be Surveyed	# of Facilities Re-surveyed in this reporting period
	A	B	C	= A - (B+C)	
Commercial	<input type="text" value="210"/>	<input type="text" value="210"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="9"/>
Industrial	<input type="text" value="16"/>	<input type="text" value="16"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Institutional	<input type="text" value="3"/>	<input type="text" value="2"/>	<input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value="0"/>



Massachusetts Department of Environmental Protection

Bureau of Water Resources (BWR) – Drinking Water Program

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Reporting Year 2017

PWSID#: 4099000

Name: FOXBORO WATER

DEPARTMENT

City: FOXBOROUGH

PWS Class: COM

Municipal	26	25	1	0	0
Residential (Optional)	0	0	0	0	0
Total	255	253	2	0	9

\*Use Comment field at the end of this question set (question #16) to provide, clarifications, descriptions or explanations regarding the above data. Please reference the question number and table field in your description.

4. Are there any cross-connection(s) within your systems service area protected by:

Reduced Pressure Backflow Preventer (RPBP):	<input checked="" type="radio"/> <input type="radio"/>		
	Yes No		
Double Check Valve Assembly (DCVA):	<input checked="" type="radio"/> <input type="radio"/>		
	Yes No		

If the answer is No to both questions go to question 8. If the answer is yes please complete the appropriate section(s) of the following table.



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Type of Facility	Total # of devices at the beginning of this reporting period	# of devices installed in this reporting period	# of devices removed & not replaced in this reporting period	Total # of devices	# of seasonal devices in Total
	A	B	C	= A +B-C	
RPBP					
Commercial	190	4	7	187	32
Industrial	36	1	0	37	0
Institutional	8	1	0	9	0
Municipal	23	0	0	23	3
Residential (Optional)	0	0	0	0	0
Total	257	6	7	256	35
DCVA					
Commercial	131	8	1	138	0
Industrial	6	0	0	6	0
Institutional	3	0	0	3	0
Municipal	11	1	0	12	0
Residential (Optional)	0	0	0	0	0
Total	151	9	1	159	0

\*Use Comment field at the end of this question set (question #16) to provide, clarifications, descriptions or explanations regarding the above data.  
 Please reference the question number and table field in your description.  
 \*PWSs must maintain a list of ALL registered cross connections that are being protected by a RPBP or DCVA. The list must contain at a minimum the following information: owner/business name, Cross Connection ID#, types of protection (RPBP or DCVA), brand, model, serial # and exact location within the facility.

**5. Provide information on the testing performed in this reporting period by the type of device/assembly.**

Type of Protection	# of Initial tests	# of Routine tests	# of Failures	# of Repairs & Re-tests	# Not Tested
RPBP	6	473	148	126	4
DCVA	9	150	16	16	0



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Describe any discrepancies between the expected number of tests, based on the total number of devices reported in question #5, and the actual number of tests reported in question #6. If you reported a value greater than 0 for "# Not Tested" in question #6 provide an explanation for why the devices were not tested.

(1) RPZ LOCATED AT FWD WELL #12 (WELL OFF). (3) RPZ'S INSTALLED ON IRRIGATION SYSTEMS (OFF / NOT IN USE) \* AS OF APRIL 2108, ALL BACKFLOW DEVICES WHICH FAILED THE INITIAL TESTING IN 2016 AND 2017 HAVE BEEN REPAIRED OR REPLACED AND HAVE SUCCESSFULLY PASSED INSPECTION.

6. Can your PWS provide MassDEP with a copy of the list of RBPB and DCVA within 2 hours?

Yes  No

7. Does your PWS approve, permit and/or test PVB and/or SPPVB\* devices?

PVB DEVICES	<input checked="" type="radio"/> Yes <input type="radio"/> No	SPPVB DEVICES	<input type="radio"/> Yes <input checked="" type="radio"/> No
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If Yes to either please provide the following details:

Type of Protection	# of Initial tests	# of Routine tests	# of Failures	# of Repairs & Re-tests
PVB	3	41	11	11
SPPVB				

\*Use Comment field at the end of this question set (question #16) to provide, clarifications, descriptions or explanations regarding the above data. Please reference the question number and table field in your description.

8. What is the maximum time allowed to protect a cross connection after the discovery of a violation?

Check one:  14 days  30 days  90 days  Greater than 90 days

9. Do you have a fully implemented active cross-connection educational program directed toward residential customers?

<input checked="" type="radio"/> Yes <input type="radio"/> No	If No, is there a date when you plan to have an educational program implemented? NTNCs may skip this question.	Date(mm/dd/yyyy)
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10. Do you have a fully implemented educational program for specific users (ex. Industrial, Commercial, Institutional, Municipal and Residential)?

<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A	"N/A" should be selected only if your system does not have any Industrial, Commercial, Institutional, Municipal or Residential users. If Yes, please list the types of users targeted through your education program. (Check all that apply):			
<input checked="" type="checkbox"/> Industrial	<input checked="" type="checkbox"/> Commercial	<input checked="" type="checkbox"/> Institutional	<input checked="" type="checkbox"/> Municipal	<input checked="" type="checkbox"/> Residential

If No, when do you plan to have the educational program implemented?

Date(mm/dd/yyyy)

11. Does your system have an atmospheric vacuum breaker (hose bib) program for your customers?

<input checked="" type="radio"/> Yes <input type="radio"/> No	If no do you plan to institute one in future? If yes go to question 13	<input type="radio"/> Yes <input type="radio"/> No	If yes When? If no go to question 13.	Date(mm/dd/yyyy)
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12. Does your system have a local ordinance, by-law or policy statement on cross-connection control?										
<input checked="" type="radio"/>	<input type="radio"/>									
Yes	No									
If YES, and you already provided copy to MassDEP in 2008 (2007 ASR) no further action is required.										
If YES, and you did not provide a copy to MassDEP please forward a copy to:										
MassDEP Boston office, 1 Winter Street, 5 <sup>th</sup> floor, Boston, MA 02108										
Attn : Otavio DePaula-Santos										
13. Does your water system have a total containment policy?										
<input type="radio"/>	<input checked="" type="radio"/>									
Yes	No									
Containment policy means ALL services connections have a device installed at the meter. Containment protects the water main by isolating each facility independently of its activity ( residential, commercial, industrial, or municipal).										
14. Has there been a cross-connection incident in your water system during the reporting period?										
<input type="radio"/>	<input checked="" type="radio"/>									
Yes	No									
If Yes, please provide information below:										
<table border="1"> <thead> <tr> <th>Date of Incident</th> <th>Location of the Incident</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>					Date of Incident	Location of the Incident	DESCRIPTION			
Date of Incident	Location of the Incident	DESCRIPTION								
Comments or additional information regarding this section										
AS OF APRIL 26, 2018, TIMOTHY DANIELS BECAME CROSS CONNECTION COORDINATOR FOR THE TOWN OF FOXBOROUGH.										