Village of Grantsburg, WI
Cross Connection Control Program

Introduction:
It is the goal of Grantsburg's Water Utility to continue to provide clean and safe drinking water for the Village's residents. In our effort to protect the public health and keep the water system safe from contaminants and pollutants, the Village of Grantsburg, along with the Wisconsin Department of Natural Resources (DNR), and the Wisconsin Department of Safety and Professional Services, have implemented a Cross Connection Control Program. This program is required under Wisconsin Administrative Code NR 810.15 and SPS 382.

Implementing This Program:
The Grantsburg Water Utility coordinates with licensed contractors that are Wisconsin State certified to perform commercial, industrial and public authority cross connection inspections and testing. The Grantsburg Utility Operator will conduct the residential cross connection inspections. The Utility employee(s) will receive regular training as provided by The Department of Natural Resources and other recognized organizations.

What Is a Cross Connection:
A cross connection is an actual or potential connection between any part of the potable water system and any other environment containing other substances such as gases, liquids, or solids. The most common form of cross connection is a garden hose, which is easily connected to the public water system and can be used to apply a variety of potential dangerous substances, including chemicals and fertilizers. Other common cross connections include dishwashers, toilets, pressure washers, boilers, pools, and lawn sprinkler systems.

How a Cross Connection Occurs:
Under normal conditions water flows in one direction, from the public water system through a customer's water service line into the household plumbing. In some situations water can reverse flow direction. This is known as backflow and it occurs when backsiphonage or backpressure is created in a water line.
Backsiphonage happens when there is a drop in supply pressure of the water distribution system. This may be caused by a water main break or repair or during a rapid withdrawal of water from a fire hydrant. This creates a vacuum, which may pull or siphon contaminants or pollutants into the drinking water supply.
Back pressure occurs when a source of pressure such as from a pump or boiler system creates a pressure greater than the public water distribution system pressure. This results in the reverse flow direction of water.

The Required Inspection (Survey):

The survey consists of a walk-through inspection of all the plumbing in a building or property starting at the water meter and ending at the last water tap. The inspector is looking for proper or improper backflow protection devices and where a device may be required. The inspector also looks for any possible cross connections between potable and non-potable water. The time it takes to do a survey may vary depending on the complexity and size of the property's plumbing. A paper copy of the inspection will be given to the water customer and a copy will be kept on file at the Village office. The survey form will contain the following information: the date of the survey, the name, phone number, and address of the property owner, what corrective action must be taken, if any, customer signature and date, and the surveyor/inspector signature.

If a property is found to be non-compliant a follow-up inspection is required to insure compliance. Commercial, industrial, and public authority properties need to be found compliant within the inspection schedule deadline. Follow-up inspections can be avoided if corrections are made at the time of the initial survey.

Educating the Public:

The Grantsburg Utility will educate its customers about cross connections and the need for inspection/surveys of their household plumbing. This will be accomplished through the Village of Grantsburg's website.

Frequency of Performed Inspections:

All cross connection inspections in the village will be conducted according to the following schedule:

Cross Connection Control Inspection Frequency

(C. denotes commercial, I denotes industrial, P. denotes public authority, R. denotes residential, M. denotes multi-family)

Billing Code	Facility Description	Inspection Frequency	Reason
M-6	Apartment complex	6	Multiple uses, boilers, lawn irrigation
C-6	Bank	6	Janitorial sinks, irrigation,
C-2	Bar / Pub (no kitchen)	2	Food preparation, soda carbonators
C-2	Car dealership	2	Multiple water uses in service bays, power paint booths, fire sprinkler systems
C-2	Car wash	2	Chemical pumps, high pressure pumps
C-6	Church	6	Janitorial sinks, boilers, kitchens, baptismal fonts. High volume of people
P-2	City-owned building (other)	2	Maintenance shop, parks, irrigation, water and wastewater processes
P-6	City-owned (office)	6	Janitorial sinks, boilers. High volume of people
M-10	Condominium	10	Similar to residential
P-2	County-owned building	2	Multiple use, mechanical room hazards. High volume of people
C-6	Day care center	6	Janitorial sinks, kitchens. High volume of young people
C-2	Dentist	2	X-ray developer, wet vacuum system, dental tools
C-6	Doctor office (single)	6	No x-ray developer or other water processes
C-2	Dry cleaner	2	Chemically treated boilers, high volume water use, steam pressure connections
C-6	Fitness center	6	Multiple uses. Serves high volume of people
C-2	Florist	2	Fertilizer mixers, prep area, hose connections
C-2	Funeral home /	2	Embalming systems, prep area. High volume of people

Billing Code	Facility Description	Inspection Frequency	Reason
	mortuary		
C-2	Auto repair garage	2	Anti-freeze mixing, hose connections, power washers
C-6	Gas station w/no garage	6	Food prep, soda carbonator, utility sink, beverage mixers
C-2	Gas station with car wash	2	High pressure pumps
C-2	Grocery store / market	2	Janitorial sinks, food prep, chemical mixers
C-2	Gym	2	Janitorial sinks, chemical mixers, pool fill
C-2	Banquet hall	2	Food prep, soda carbonators. High volume of people
C-2	Hotel / motel	2	Janitorial sinks, food prep, laundry, pool, irrigation
C-2	Industrial facility	2	Multiple use, complex piping, on-going changes
C-6	Laundromat	6	Verify air gap, RPZ or ASSE 1001 with no valves downstream in supply to each machine
C-2	Shopping mall	2	Survey all common restrooms, mechanical rooms, food vendors, soda carbonators, beverage mixers, steamers, janitorial areas, irrigation. Occupant turnover within 6 years is common.
C-2	Medical complex	2	X-ray equipment, janitorial sinks, chemical mixers, dialysis equipment,
M-10	Mobile home park / complex	10	Similar to residential
C-2	Nursing home	2	Janitorial sinks, chemical mixers, water therapy devices, irrigation, beverage mixers. High volume of people
C-6	Office building	6	Janitorial sinks, irrigation, mechanical room. Occupant turnover within 6 years is common.
C-2	Other	2	Use this code when facility is unique
P-2	Community park	2	Maintenance shop, hose connections, irrigation system. High volume of people
R-10	Residential	10	If meters are changed out every 20 years, use that frequency
C-2	Restaurant	2	Janitorial sinks, soda carbonators, beverage mixers, steamers, dishwashers, irrigation
C-6	Retail store	6	Janitorial sinks, mechanical rooms, outside hose bibbs. Occupant change over within 6 years is common
C-6	Retail store in a strip mall	6	Janitorial sinks, mechanical rooms, outside hose bibbs. Occupant change over within 6 years is common
C-2	Hair salon / barber shop	2	Salon shampoo sink hoses. Owner changeover common
P-2	School	2	Janitorial sinks, boilers, irrigation, food prep, chemical mixers, science lab. High volume of people/youth.
C-6	Strip mall	6	Janitorial sinks, mechanical rooms, outside hose bibbs. Occupant change over within 6 years is common
C-2	Stadium / civic center	2	Janitorial sinks, boilers, irrigation, food prep, chemical mixers. High volume of people/youth.
	Vacant building / suite	1	Confirm no new uses

• An emergency inspection may be warranted at any property service by the water utility in order to discover if a possible cross-connection has introduced contaminants into the water distribution system.

• Any village resident may request a cross-connection inspection of their home.

Residential inspections:
Residential customers shall be inspected at a minimum of once every ten years, or whenever water meters are repaired or replaced.

Fixtures typically inspected in a residential home that are low hazard fixtures include: faucets, toilets, dishwashers, hand-held showerheads, and ice makers. Other fixtures typical to a residence, such as point-of-use water treatment devices, laundry sinks with threaded faucets, hot water or steam boilers, indoor/outdoor hose bibs, hot water or steam boilers with chemical feed systems, lawn irrigation systems, residential fire protection systems, whole house water treatment systems, including water softeners, furnace humidifiers and water driven sump pumps are considered high hazard fixtures. Interconnection with other systems such as pools, saunas, hot tubs, fountains, ponds, wells, and cisterns are also considered to be high hazard.

Commercial/Industrial/Public Authority inspections:
Inspection frequencies for commercial, industrial, and public authority shall be assigned according to the facility description and water use. These inspections shall be conducted by licensed contractors that are Wisconsin State certified to perform commercial, industrial and public authority cross connection inspections or another qualified individual. If the facility description and water use changes, Utility staff may, following the review of the inspection report, assign a different inspection frequency.

Secondary Water Supply:

Any user with a private water supply shall be inspected every five years. All private wells shall be permitted to comply with Village ordinance. A copy of the inspection reports will be placed on file at the Village office.

Protective Devices:
Inspections, testing and use of all protective devices will be done in conformance to SPS 382.41, Wis. Adm. Code and Wisconsin Department of Industry, Labor and Human Relations (DILHR) publication Cross-Connection Control Manual. Specific devices to be installed will be listed in the WI Plumbing Product Registration published by WI Department of Commerce. Any departure from the recommended methods must be approved by the Wisconsin Department of Safety and Professional Services or the Department of Natural Resources.

Bulk Water for Tanks or Truck Filling:
Purchasing bulk water through a fire hydrant will only be allowed if approved by the Grantsburg Utility. The Utility will provide a meter with a backflow preventer that will need to be attached to the hydrant. The meter and equipment shall be the responsibility of the customer when received. Any damage to the village water meter or equipment or hydrant during the time it is used by the customer shall be repaired at customer's expense.

Any vessel, tank, tank truck, tank trailer or other apparatus used or adapted for use to contain water for transportation or other purposes shall not be filled from the Village of Grantsburg water system except as provided herein**:**

• Protection against contamination of the public water supply shall be provided during the filling process. A suitable method of cross-connection control acceptable to the Village of Grantsburg shall be employed. In many cases, a fixed and visible air gap will be the most suitable method. Where no air gap is possible a Reduced Pressure Zone Backflow Preventer (RPZ) valve shall be used.

• The container shall be labeled according to its use: potable or non-potable water. The container and filling device shall be presented for inspection by Utility personnel before any connection is made to the water system. Customer must use all required equipment furnished. A pipe wrench or other unapproved tool shall never be used on a fire hydrant.

• Any damage, with the exception of normal wear and tear, to village streets, hydrants, water works or other public facilities occurrence by a bulk water sales customer shall be the responsibility of said customer.

• Proper billing information shall be furnished before any connection is made to the water system.

Reporting Requirements:

A report shall be submitted to the Department of Natural Resources (DNR) annually. This report will include the total number of water service connections in use in each category with the total amount of surveys performed in each category. The report will state the number of surveyed customers that were found to be non-compliant at the end of that calendar year.

Grantsburg currently has 483 residential connections, 89 commercial connections, 35 public authority connections and 9 industrial connections.

The Village of Grantsburg will enforce the following Village ordinance concerning cross connections to water service:

VILLAGE OF GRANTSBURG ORDINANCE FOR CROSS CONNECTION CONTROL

ORDINANCE NO. 12-01

TO PROVIDE A PROGRAM FOR PROTECTING THE PUBLIC WATER SYSTEM FROM CONTAMINATION DUE TO BACKFLOW OF CONTAMINANTS THROUGH THE WATER SERVICE CONNECTION INTO THE PUBLIC WATER SYSTEM

WHEREAS, Chapters NR 810 and SPS 382, Wisconsin Administrative Code, require protection for the public water system from contamination due to backflow of contaminants through the water service connection; and

WHEREAS, the Wisconsin Department of Natural Resources requires the development and implementation of a comprehensive cross connection control program to effectively prevent the contamination of potable water systems;

NOW THEREFORE, BE IT ORDAINED by the board of the Village of Grantsburg, State of Wisconsin:

1. DEFINITION OF CROSS CONNECTION. A cross connection is defined as any physical connection or arrangement between two otherwise separate systems, one of which contains potable water from the Village of Grantsburg's public water system, and the other of which contains water from

a private source, water of unknown or questionable safety, or steam, gases, or chemicals, whereby there may be a flow from one system to the other, with the direction of flow depending on the pressure differential between the two systems.

2. UNPROTECTED CROSS CONNECTIONS PROHIBITED. No person, firm, or corporation may establish or maintain, or permit to be established or maintained, any unprotected cross connection. Cross connections shall be protected as required in Ch. SPS 382, Wisconsin Administrative Code.

3. INSPECTION. The water utility will inspect residential properties served by the public water system for cross connections. The water utility will require industrial, commercial and public authority properties to have their plumbing inspected, at their own expense by a State of Wisconsin Certified Cross Connection Inspector/Surveyor. The frequency of inspections shall be established by the water utility in accordance with Wisconsin Administrative Code. Any unprotected cross connections identified by the inspection shall be promptly corrected. Failure to promptly correct an unprotected cross connection shall be sufficient cause for the water utility to discontinue water service to the property, as provided under paragraph 6 of this ordinance.

4. RIGHT OF ENTRY. Upon presentation of credentials, a representative of the water utility shall have the right to request entry, at any reasonable time, to a property served by a connection to the public water system for the purpose of inspecting the property for cross connections. Refusing entry to such utility representative shall be sufficient cause for the water utility to discontinue water service to the property, as provided under paragraph 6 of this ordinance. If entry is refused, a special inspection warrant under Section 66.0119 of the Wisconsin Statutes may be obtained.

5. PROVISION OF REQUESTED INFORMATION. The water utility may request an owner, lessee, or occupant of property served by a connection to the public water system to furnish the water utility with pertinent information regarding the piping systems on the property. Refusing to provide requested information shall be sufficient cause for the water utility to discontinue water service to the property, as provided under paragraph 6 of this ordinance.

6. DISCONTINUATION OF WATER FOR VIOLATION. The water utility may discontinue water service to any property wherein any unprotected connection in violation of this ordinance exists, and take other precautionary measures deemed necessary to eliminate any danger of contamination of the public water system. Water service may be discontinued, however, only after reasonable notice and opportunity for hearing under Chapter 68, Wisconsin Statutes, except as provided in paragraph 7 of this ordinance. Water service to such property shall not be restored until the unprotected cross connection has been eliminated.

7. EMERGENCY DISCONTINUANCE. If it is determined by the water utility that an unprotected cross connection or emergency endangers public health, safety, or welfare, and requires immediate action, and if a written finding to that effect is filed with the City Clerk and delivered to the customer's premises, water service may be immediately discontinued. The customer shall have an opportunity for hearing under Chapter 68, Wisconsin Statutes, within 10 days of such emergency discontinuance. Water service to such property shall not be restored until the unprotected cross connection has been eliminated

Effective this 9th date of July 2012.

This survey form will be used to perform residential inspections:

VILLAGE OF GRANTSBURG WATER UTILITY
RESIDENTIAL CROSS CONNECTION CONTROL SURVEY

Owner's Name _____Parcel Number _____
Property Address _____Inspector's Name _____
Date _____Time _____Contact Person _____

1.	Private Well on Property?	Yes	No	
2.	Interconnection between private & public?	Yes	No	
3.	Legal Well?	Yes	No	
4.	Current Private Well Permit?	Yes	No	
5.	Exterior Wall Hydrants?	Yes	No	Quantity? ____Quantity not in compliance? ____
6.	Lawn Irrigation System?	Yes	No	In Compliance? Yes No
7.	Water Softener Drain?	Yes	No	In Compliance? Yes No
8.	Decorative Fountain/Pool?	Yes	No	In Compliance? Yes No
9.	Interior Hose Bibbs?	Yes	No	In Compliance? Yes No
10.	Laundry Tub w/hose thread?	Yes	No	In Compliance? Yes No
11.	Automatic Clothes Washer?	Yes	No	In Compliance? Yes No
12.	Dishwasher?	Yes	No	In Compliance? Yes No
13.	Kitchen Faucet?	Yes	No	Pull out Spout? _____ Side Spray? _____ No Spray? _____In Compliance? Yes No
14.	Boiler? <15# ___ <30# ___	Yes	No	In Compliance? Yes No
15.	Heat Pump?	Yes	No	In Compliance? Yes No
16.	Humidifier?	Yes	No	In Compliance? Yes No
17.	Water Treatment Device?	Yes	No	In Compliance? Yes No
18.	Toilets?	Yes	No	In Compliance? Yes No
19.	Hand-Held Showers?	Yes	No	In Compliance? Yes No
20.	Bathtubs?	Yes	No	In Compliance? Yes No
21.	Bidets?	Yes	No	In Compliance? Yes No
22.	Pool/Spa/Hot Tubs?	Yes	No	In Compliance? Yes No
23.	Water powered sump pump?	Yes	No	In Compliance? Yes No
24.	_____	Yes	No	In Compliance? Yes No

Comments/Violations:

_____
Item No. Violation/Code Section/Location Recommended Correction

_____
Item No. Violation/Code Section/Location Recommended Correction

_____
Item No. Violation/Code Section/Location Recommended Correction

_____
Item No. Violation/Code Section/Location Recommended Correction

The above noted violations shall be corrected by the compliance date indicated. Please notify the Water Utility at (715) 463-5670 as soon as the corrections have been completed.

_____ _____
Compliance Date Signature of Contact Person

_____
Reinspection Date Compliance Attained? Yes No

If compliance not attained, refer for legal action? Yes No _____
Referral Date

***This survey form will be used to perform industrial, commercial & PA inspections**:*

INSPECTOR'S BUSINESS HEADING HERE

CROSS CONNECTION INSPECTION REPORT for Grantsburg, WI

Owner/Building _____
Address _____City _____State _____ Zip_____
Contact Person _____
Date of Inspection _____Time_____

REF/NOTE #	ROOM LOCATION	FIXTURE EQUIPMENT ITEM	DEGREE HAZARD HI-LOW	CODE REF #	CODE COMPLIANT YES/NO	SUGGEST PROTECTION	PHOTO #

(SEE PAGE 2 FOR COMMENTS TO REF/NOTE #)

The above noted violations shall be corrected by persons licensed in accordance with Wisconsin Statutes. These corrections shall be completed within 45 days of the date of the inspection.

Comments by Owner/Contact:
_____
_____
_____
_____
____

Re-inspection Date (if needed): _____ (attach pages 2& 3)

COPIES OF THIS INSPECTION REPORT GIVEN TO:

Owner/Contact Signature _____ Date _____

Inspector Signature _____ Date _____

Other Signature _____ Date _____

COPY SENT TO WATER UTILITY - Date _____

INSPECTOR'S BUSINESS HEADING HERE

CROSS CONNECTION INSPECTION REPORT for Grantsburg, WI

REF/NOTE # from Page 1	COMMENTS

INSPECTOR'S BUSINESS HEADING HERE

CROSS CONNECTION RE-INSPECTION REPORT for Grantsburg, WI

REF/NOTE # from Page 1	PHOTO #	COMMENTS

COPIES OF THIS RE-INSPECTION REPORT GIVEN TO:

Owner/Contact Signature _____ Date _____

Inspector Signature _____ Date _____

Other Signature _____ Date _____

COPY SENT TO WATER UTILITY - Date _____

Backflow Prevention Devices, Assemblies and methods must conform to the following National Standards as indicated in WI Dept of Safety & Professional Services Chapter Comm 82.41. State plumbing code and consultant information can be found online at: http://dsps.wi.gov/sb/SB-PlumbingProgram.html

1. **ASME A112.1.2** Air Gap - The unobstructed vertical distance between the lowest point of any pipe, faucet or fixture and the FLOOD LEVEL RIM of the receptor into which it is discharging.
2. **ASSE 1011*** Hose Bibb Vacuum Breaker (for indoor use)
3. **ASSE 1002*** Anti-Siphon Ball Cock for Gravity Water Closet Flush Tanks
4. **ASSE 1012** Vented Dual Check Valve - For supplies to untreated boilers with less than 15 psig steam or maximum water pressure of 30 psig.
5. **ASSE 1019** Vacuum Breaker wall hydrants, freeze resistant automatic draining type
6. **ASSE 1011*** Anti–Frost Hose Bibb Vacuum Breaker - For use on outside hose bibbs where it could be exposed to freezing.
7. **ASSE 1013** Reduced Pressure Principle Backflow Prevention Assembly – Requires State registration and annual testing by a certified tester.
8. **ASSE 1014** Vacuum breaker for hand held showers
9. **ASSE 1001** Atmospheric Vacuum Breaker - Critical Level of AVB must be installed at least 6” above all downstream piping and No valves downstream.
10. **ASSE 1020** Pressure Vacuum Breaker - This assembly is not allowed for indoor installations. Requires State registration & annual testing by a certified tester.
11. **ASSE 1056** Spill–Resistant Vacuum Breaker - Critical Level of SVB must be installed at least 6” above all downstream piping. Requires State registration & annual testing by a certified tester.
12. **ASME A112.1.3** Air-gap Fittings for use with plumbing fixtures and appliances
13. **ASME A112.18.1** Plumbing Supply Fittings
14. **ASSE 1053** Dual Check Backflow Preventer Wall Hydrant Freeze Resistant Type
15. **ASSE 1052** Hose Connection Backflow Preventers

*These backflow preventers can be found at hardware stores. A local plumbing permit may be required for some installations. State Plumbing code may allow other devices under certain hydraulic/pumping/hazard conditions.

SPS 382.41 Cross connection control. (1) SCOPE.

The provisions of this section set forth the requirements for the protection of water within water supply systems when and where there is the possibility of contamination due to cross connections or backflow conditions.

Note: The Department of Natural Resources governs the operation and design of community water systems and under s. NR 811.09 requires the supplier of water to develop and implement a comprehensive cross connection control program.

(2) MATERIALS. (a) All devices, assemblies and mechanisms intended to protect water supplies relative to cross connection or backflow shall be of a type recognized and approved in accordance with ch. SPS 384 and as described in sub. (4).

(b) All methods including barometric loops and air gaps intended to protect water supplies relative to cross connection or backflow shall be constructed of materials suitable for water supply systems in accordance with ch. SPS 384.

(3) GENERAL REQUIREMENTS. Water supply systems and the connection of each plumbing fixture, piece of equipment, appliance or nonpotable water piping system shall be designed, installed and maintained in such a manner to prevent the contamination of water supplies by means of cross connections.

(a) *Types of cross connection control.* 1. Water supply systems shall be protected against contamination due to cross connections or backflow conditions by one of the methods or devices specified in Table 382.41−1 depending upon the situation or Table 382.41−2 depending upon the specific application or use, and the limitations specified in sub. (4).

2. For the situations described in par. (b) 3., cross connection control shall be provided as part of the fixture fitting outlet or in the water supply piping for the fixture fitting outlet.

(b) *Classifications.* For the purposes of this section:

1. The designation of a high hazard or low hazard situation shall be determined on the basis of how a toxic or nontoxic solution is intended or recommended by the manufacturer of the solution to interface with the potable water supply system.

2. a. A continuous pressure situation shall be considered to exist when a pressure greater than atmospheric within the water supply system exists for more than 12 continuous hours.

b. A noncontinuous pressure situation shall be considered to exist if the conditions in subd. 2. a. do not occur.

3. A high hazard cross connection situation shall be considered to exist for a connection of the water supply system to:

a. Any part of the drain system; and

b. Any other piping system conveying water from nonpotable sources, including but not limited to lakes, rivers, streams or creeks.

4. Except as provided in subd. 5., a high hazard cross connection situation shall be considered to exist at:

a. A water supply hose bibb, faucet, wall hydrant, sill cock or other outlet which terminates with hose threads allowing a hose to be attached;

b. A water supply faucet, wall hydrant or other outlet which terminates with a serrated nipple allowing a hose to be attached;

c. A water supply faucet, hydrant or outlet serving a sink used for building maintenance in a public building;

d. A chemical pot−feeder or automatic chemical feeder is installed to serve a boiler, cooling tower or chilled water system; and

e. In the water supply piping connecting to the outlet of a fire hydrant for any purpose other than fire suppression.

5. A cross connection shall not be considered to exist at the hose threaded outlet installed for the sole purpose of:

a. Draining a water supply system or any portion thereof;

b. Obtaining water quality samples of the water supply system or any portion thereof; or

c. Connecting individual residential automatic clothes washers.

6. a. A high hazard situation shall be considered to exist for the connection of 2 water supply systems one supplied by a public water supply and the other system supplied by a private well.

Note: The interconnection of a public water supply system and another source of water is addressed in s. NR 811.09 and must be approved by the Department of Natural Resources.

b. Except as provided in subd. 7., a low hazard situation shall be considered to exist for the connection of a piping system, including but not limited to automatic fire sprinkler systems, standpipe systems, and processing purposes, which provides potable water for nonrequired potable water uses.

Note: Cross connection control devices used in conjunction with automatic fire sprinkler systems are to be listed by an acceptable testing agency for such an application under the standards governing the design and installation of automatic fire sprinkler systems.

7. A cross connection situation shall not be considered to exist when a multipurpose piping system serves a one− or 2− family dwelling provided the sprinkler system is constructed of materials and joints suitable for water distribution systems as specified in ss. SPS 384.30 (4) (e) and 384.40, respectively.

(c) *Containment.* 1. For sewerage treatment facilities which are required to conform with ch. NR 110, in addition to the cross connection control required for each potable water usage or water outlet, a reduced pressure principle backflow preventer shall be installed:

a. In the water service to each building or structure within the complex;

b. In the private water main upstream of all water services serving the facility; or

c. In the water distribution system upstream of all water outlets and in the process piping network upstream of all points of use, if both a water distribution system and a process network is contained within the same building or structure.

2. For marinas, wharves and docks where potable water outlets are provided to serve boats or ships, in addition to the cross connection control required for each potable water outlet or usage, a reduced pressure principle backflow preventer shall be installed in the water supply system to limit backflow into the water supply source.

3. The installation of a cross connection control device in the water supply system for a building or structure shall not alleviate the requirement to provide cross connection control for the connection of each plumbing fixture, piece of equipment, appliance or other piping system.

(d) *Prohibitions.* The use of a toxic solution as a heat transfer fluid in single−wall heat exchanger for potable water is prohibited.

(e) *Existing automatic fire sprinkler systems.* An alteration, modification or addition to an existing automatic fire sprinkler shall necessitate conformance with this section, if the:

1. Existing water supply line to the existing sprinkler system is increased in diameter; or

2. Existing device or method which had been previously recognized to address cross connection concerns is to be removed or replaced.