Cross-Connection Control Program

INTRODUCTION

A cross-connection control (CCC) program is a proactive and ongoing effort of a water purveyor to protect the health of its customers by preventing contamination of the municipal water supply that it supplies by preventing backflow of contaminants through cross connection. A cross connection is any physical connection, actual or potential, between a water system and any source of non-potable substance. All public water systems in Washington State are required to implement a cross connection control program. All required elements of a local CCC program must be documented and included in either the Comprehensive Water System Plan (applicable to the City of Stanwood) or Small Water System Management Program document (not applicable). The State mandate for a CCC program and the required elements of a CCC program are contained in WAC 246-290-490 Cross-Connection Control, which became effective in April of 1999. The minimum required elements in a CCC program are as follows.

- An adopted local ordinance, resolution or code that establishes the purveyor's legal authority and describes operating policies and the corrective actions of a CCC program.
- Develop and implement procedures and schedules for evaluating new and existing service connections to assess hazards.
- Develop and implement procedures and schedules that eliminate or control cross connections and ensure approved backflow preventers are properly installed.
- Ensure that personnel, including one certified Cross-Connection Control Specialist (CCS), are provided to develop and implement the CCC program.
- Develop and implement procedures to ensure approved backflow preventers are properly inspected and tested.
- Develop and implement a backflow prevention assembly testing quality control assurance program.
- Develop and implement procedures for backflow incident response.
- Include CCC program information in customer education materials.
- Develop and maintain CCC program records.
- Meet any additional CCC requirements if reclaimed water is distributed or received in the water service area.

RECENT PROGRAM ACTIVITIES

The City of Stanwood (City) has established an active CCC program to help protect water system customers from cross-connection contamination. Recently the City has actively participated in the following CCC activities:

- Contacted an expanded list of high hazard premises and required backflow assemblies at the

identified sites.

- Required new customers, as necessary, to install backflow assemblies at service connections for premise isolation.
- Began contacting residential customers to determine if a backflow device is necessary.
- Updated the record keeping process with Backflow Management Inc.'s Cross-Track software.
- Monitored 260 backflow assemblies by mailing letters to customers requiring annual testing of backflow assemblies, and entering the test data into Cross-Track.
- Approximately 92 percent of the 260 backflow assemblies were in compliance with the City's testing and inspection program in 2013. The City is striving for 100 percent compliance.
- Maintained three certified cross connection control specialists (CCS) personnel.

PURPOSE AND SCOPE

This document establishes minimum standards for the City of Stanwood (City) to protect the public water supply from possible contamination from backflow. This document also describes minimum CCC program operating policies and provides guidelines for installation, testing and maintenance of approved backflow devices. In addition, permitting and inspection requirements for existing and new backflow prevention devices are described. The document concludes with recommendations the City is advised to address to comply with the updated CCC program requirements.

AUTHORITY

The Federal Safe Drinking Water Act of 1974 and the statutes of the State of Washington RCW Title 43 require purveyors to protect the public water systems from contamination. In addition, WAC 246-290-490 establishes cross-connection control program requirements for the State. In Washington State, the Department of Health (DOH) and the Department of Community, Trade and Economic Development are the lead agencies for the development and administration of the State's CCC program. The City has an adopted cross-connection control ordinance in Chapter 12.18, Water Utility Regulations of the City's Municipal Code. This code establishes the City's authority in implementing a cross-connection control program and prohibits cross connections.

RESPONSIBILITY

The City is responsible for protecting its public water supply from contamination due to backflow of pollutants through water service connections. If the City determines that a backflow prevention device is necessary at a customer's premise, the City will notify the customer to install an approved backflow device. Installation of said backflow device(s) shall be a condition of continued water service from the City. Upon installation, the customer shall notify the City requesting inspection and testing of said device(s). The customer will be responsible for all applicable testing and inspection fees.

FAILURE TO COMPLY

Any person, firm or corporation who violates any of the provisions of this document or Stanwood Municipal Code Chapter 12.18, may be punished in accordance with the Stanwood Municipal Code. Any person, firm or corporation who violates any provisions and requirements of this document shall be subject to discontinuance of supply of City water to the premise. Discontinuance of the City's potable supply to the premise shall remain in effect until corrective action, as required by the City, is completed, tested and approved.

CROSS-CONNECTION CONTROL PROGRAM

The City has implemented the required elements of the CCC program as listed above. This document describes the City's current CCC program and also discusses program elements that the City needs to continue. The City is committed to protecting the public water supply from contamination by eliminating potential cross connections. The City's CCC program that follows includes a statement of its goals and objectives, the evaluation of CCC elements, the program implementation schedule and recommendations.

CCC PROGRAM GOALS AND OBJECTIVES

The goals and objectives of the City's CCC Program consist of:

- Prevent contamination of the public water supply by eliminating cross connections;
- Inventory all potential cross-connection hazard areas; and
- Establish an inspection and maintenance program for all backflow prevention devices.

The City will achieve these goals and objectives through the implementation of the CCC program that follows.

Evaluation of CCC Program Elements

The City is required to develop and implement a cross-connection control program. All required elements of a local CCC program must be documented and included in the City's Comprehensive Water System Plan. The evaluation of these CCC program elements and current level of implementation are presented below.

Cross-Connection Control Ordinance

This CCC program element requires that the purveyor "adopt a local ordinance, resolution, code, bylaw, or other written legal instrument" outlining the purveyor's program. In addition, this document must establish the purveyor's legal authority to implement a CCC program. Operating policies, technical provisions and corrective actions of the CCC program must also be addressed in the legal document. Ordinance Number 721 was passed by the City to authorize the CCC program described in Chapter 12.18 of the City's Municipal Code. This section establishes the City's authority to implement a cross-connection program and prohibits cross connections.

In addition, the American Water Works Association (AWWA) published a manual entitled

Recommended Practice for Backflow Prevention and Cross-Connection Control (AWWA M14) that outlines cross-connection control procedures that is recommended by the WAC requirements as a tool for developing a CCC program. This manual specifically lists types of backflow devices that should be used for different premises. Stanwood's Municipal Code currently references the AWWA document as part of its CCC program.

Evaluation of Service Connections

This CCC program element requires that the purveyor develop and implement procedures for evaluating existing and new service connections to assess the risk of connecting the consumer's premises to the purveyor's public water system. This element also requires that the purveyor notify the consumer within a reasonable timeframe of the evaluation results. New connections are required to be evaluated prior to service. Existing connections shall be inspected on a schedule acceptable to DOH.

The City has an established procedure for evaluating new service connections for potential cross connection. This risk assessment evaluation is performed during the building permit process for new water service applicants. If a backflow device is required as a result of this evaluation, the device, owner's name, property address and other pertinent information is recorded on a list that is filed at the City's Public Works facility.

The City has performed a system-wide risk assessment of all existing non-residential service connections. Connections that have been determined to be high risk cross-connection hazards are required to be tested annually. The City tracks this through their Cross Track BMI program. High risk cross-connection hazard customers are sent out notices when their testing is due and are required to return test results to the City.

A system-wide risk assessment for all existing residential service connections was begun in summer 2009 and is anticipated to be completed in 2016. A sample letter that was sent to residential customers and a questionnaire form for determining the potential for cross connection hazards is included in **Appendix A**. A reevaluation is conducted through the building permit process to verify if the change in use of the premises requires a change in risk for a cross connection.

Table 1 lists standard abbreviations for backflow prevention devices. These abbreviations will be used in the tables that follow.

Table 1
Abbreviations

Abbreviation	Description	Level of Protection
AG	Air Gap	1
RPBA	Reduced Pressure Backflow Assembly	2
RPDA	Reduced Pressure Detector Assembly	2
DCVA	Double Check Valve Assembly	3
DCDA	Double Check Detector Assembly	3
PVBA	Pressure Vacuum Breaker Assembly	4
AVB	Atmospheric Vacuum Breaker	5

Table 2 shows typical premises located within a water service area and the appropriate backflow device necessary to prevent contamination to the public water system.

Table 2
Premises Requiring Mandatory Service Protection

Premises	Protection	Premises	Protection
Beverage Bottling Plants	RPBA	Nursing Homes	RPBA
Car Washes	RPBA	Petroleum Processing or Storage Plants	RPBA
Chemical Plants	RPBA	Piers and Docks	RPBA
Fire Sprinkler Services	DCVA	Radioactive Material Processing Plants or Nuclear Reactors	RPBA
Food Processing Plants	DCVA		
Sewage Lift Stations	RPBA	Hospitals, Medical Centers and Clinics	RPBA
Sewage Pump Stations	RPBA	Sewage Treatment Plants	RPBA
Laboratories	RPBA	Tall Buildings (Over 30', Domestic Water)	DCVA
Metal Plating Industries	RPBA	Unapproved Auxiliary Supply	RPBA
Mortuaries	RPBA		

Table 3 shows various facilities and the minimum level of required protection for each facility. **Table 4** lists fixtures, equipment, and areas that have the potential to contaminate the public drinking water system. **Table 4** also shows the minimum protection required by the City to prevent such contamination. These tables are referenced by the City during the risk assessment for each premises.

Table 3
Facilities Requiring Backflow Protection

Facilities	Protection	Facilities	Protection
Battery Manufacturing or Repair Facilities	RPBA	Film Processing Facilities	RPBA
Boat Marinas	RPBA	Ice Manufacturing Plants	RPBA
Canneries	DCVA	Mobile Home Parks	DCVA
Cold Storage Plants	RPBA	Packing Houses (Slaughter Houses)	RPBA
Commercial Laundries	RPBA	Paper Product Plants	RPBA
Concrete Mixing Plants	DCVA	Parks and Playgrounds	DCVA
Dairies	DCVA	Plasma Centers	RPBA
Dry Cleaners	RPBA	Sand and Gravel Plants	DCVA
Dry Docks	RPBA	Ship Repair Facilities	RPBA
Farms	DCVA	Shopping Centers	DCVA

Table 4
Fixtures, Equipment and Areas with Backflow Potential

Fixtures, Equipment and Areas	Protection	Fixtures, Equipment Areas	Protection
Air Compressors	DCVA	Janitor Sinks	AVB
Air Conditioning Systems	RPBA	Kitchen Equipment	AVB
Air Washers	RPBA	Laboratory Equipment	RPBA
Aquarium Make-Up Water	AG/RPBA	Laundry Machines, Commercial	RPBA
Aspirators, Medical	AVB	Lavatories	AVB
Aspirators, Vault Drain	RPBA	Livestock Drinking Tanks	DCVA
Aspirators, Weedicide/Herbicide/Pesticide	RPBA	Make-Up Tanks	AG/RPBA
Autoclaves	RPBA	Mobile Carpet Cleaners	RPBA
Autopsy Tables	RPBA	Mop Sinks	AVB
Baptismal Fountain	RPBA,AG/AVB	Outboard Motor Test Tanks	AG/RPBA
Bathtub, Below Rim Filler	Not Allowed	Perchlorethylene Reclaim	AG/RPBA
Bedpan Washers	RPBA	Pesticide Applicator Trucks	AG/RPBA
Beverage Dispensers using C02	RPBA	Photo Developing Tanks and Sinks	RPBA
Bidets	AVB/AG-Internal	Photostat Equipment	RPBA
Boat Lifts	RPBA	Pipette Washers	AVB
Boiler Feed Lines	AG/RPBA	Potato Peelers	AVB
Bottle Washing Equipment	RPBA	Poultry Feeders	RPBA
Box Hydrants	DCVA	Private Hydrants	DCVA
Brine Tanks	AG/DCVA	Processing Tanks	AG/RPBA
Can Washing Equipment	RPBA	Pump Seal Water	AG/RPBA
Chemical Feeder Tanks	AG/RPBA	Pumps, Pneumatic Ejector	RPBA
Chilled Water Systems	RPBA	Pump Prime Lines	RPBA/DCVA
Chlorinators	RPBA	Pumps, Water Operated Ejector	RPBA
Coffee Urns	AG/AVB	Radiator Flushing Equipment	RPBA
Computer Cooling Lines	AG/RPBA	Recreational Vehicle Dump Stations	RPBA
Condensate Tanks	AG/RPBA	Serrated Faucets	AVB
Cooking Kettles	AG/AVB	Service Sinks	AVB
Cooling Towers	AG/RPBA	Sewer Connected Equipment	AG
Decorative Ponds	AG/RPBA	Sewer Flushing	AG
Degreasing Equipment	RPBA	Shampoo Basins/Hose Rinse	AVB
Demineralized Water System	RPBA	Showers, Telephone	AVB
Dental Cuspidors	RPBA	Sitz Baths	AVB
Detergent Dispensers (Dishwasher)	AVB	Soap Mixing Tanks	AG/RPBA
Dialysis Equipment	RPBA	Solar Heating Systems	RPBA
Dishwashers	AVB	Solution Tanks	AG/RPBA
Drinking Fountains	AG	Spas	AG/RPBA
Dye Vats and Tanks	AG/RPBA	Specimen Tanks	AG/RPBA
Dynamometers	DCVA	Starch Tanks	AG/RPBA
Emergency Generators	RPBA	Steam Cleaners	RPBA
Etching Tanks	AG/RPBA	Steam Ejectors	RPBA
Fermenting Tanks	AG/RPBA	Steam Generating Facilities	RPBA
Fertilizer Injection Equipment	RPBA	Sterilizers	RPBA
Film Processors	RPBA	Stills	RPBA
Fire Department Connections w/o chemicals	DCVA/DCDA	Stream-Air Sprays	RPBA
Fire Department Connections with chemicals	RPBA/RPDA	Sumps	AG
Fire Sprinkler Systems w/o chemicals	DCVA/DCDA	Swimming Pools	AG/RPBA
Fire Sprinkler Systems with chemicals	RPBA/RPDA	Toilets (Internal)	AG
Floor Drains	AG	Trap Primers	AG
Flushing Floor Drains	AVB	Ultrasonic Baths	AG

Continued on Next Page

Table 4 (continued)
Fixtures, Equipment and Areas with Backflow Potential

Fixtures, Equipment and Areas	Protection	Fixtures, Equipment Areas	Protection
Table Continued			
Foamite Systems	RPBA/RPDA	Urinals (Internal)	AG
Fountains, Ornamental	AG/RPBA	Used Water Systems	RPBA
Fume Hoods	RPBA	Vats	AG/RPBA
Garbage Can Washers	RPBA	Washing Pools	AG/RPBA
Garbage Disposals	RPBA	Wall Hydrants	AVB
Heat Exchangers	RPBA	Wash Basins	AG/AVB
Heat Pumps	RPBA	Wash-Up Sinks	AG/AVB
High Pressure Washers w/o chemicals	DCVA	Wash Tanks	AG/RPBA
High Pressure Washers with chemicals	RPBA	Wastewater Lines	AG
Hose Bibs	AVB	Water-Air Sprays	DCVA
Hoses, Kitchen Rinse	AVB	Water Closets (Internal)	AG
Hot Tubs	AG/RPBA	Water Cooled Equipment	RPBA
Hot Water Heating Systems	RPBA	Water Ejectors	RPBA
Hot Water Boilers	RPBA	Water Recirculating Systems	DCVA
Humidifier Tanks and Boxes	AG	Water Settling	RPBA
Hydraulically Operated Equipment	RPBA	Water Treatment Tanks	AG/RPBA
Hydrotherapy Baths	RPBA	Water Trucks	AG/DCVA
Ice Makers	RPBA	Wet Vacuum Systems	RPBA
Industrial Fluid Systems	RPBA	Whirlpool Baths	AVB/DCVA
Interties (Looped) Water Systems	DCVA	Windshield Washer Fluid Aspirators	RPBA
Irrigation Systems w/o chemicals	DCVA	X-Ray Processors	RPBA
Irrigation Systems with chemicals	RPBA		

Table 5 summarizes the number of each type of backflow prevention assembly protecting the City's distribution system as of December 31, 2013.

Table 5
Summary of Backflow Prevention Assemblies

Type of Device	Quantity
AG	0
RPBA	119
DCVA	136
PVBA	0
SVB	4
AVB	1
Other	0

Cross-Connection Control and Elimination

This CCC program element requires that the purveyor eliminate existing cross connections wherever possible. If elimination is not possible, then approved backflow devices should be properly installed

to eliminate the risk of contamination.

The City endeavors to eliminate potential cross connections where possible. The City does not allow any potential cross connection unless it is protected by an approved backflow device for which a permit has been issued. Backflow devices are inspected to ensure they are installed in the manner for which they were approved. Owners shall be responsible for following the provisions of the City's CCC program. In addition, owners shall be responsible for the elimination or protection of all cross connections on their premises. The City maintains an inventory of existing backflow devices that it currently operates, maintains and inspects. This inventory includes all devices on customers' premises that are the responsibility of the customer to maintain. This inventory is on file at the Public Works facility and is updated as necessary.

Personnel Certification

WAC 246-290-490 requires that personnel, including one certified Cross-Connection Control Specialist (CCS), are provided by the purveyor to develop and implement a CCC program. Ms. Gina Melander, Water Department Lead, is certified as a Cross-Connection Control Specialist (CCS). Two other members of the water department are also CCS certified. The City will continue to provide properly certified personnel to implement the CCC program. The City has the properly certified staff to implement and maintain a CCC program as outlined by the State.

Backflow Device Inspection and Testing

DOH requires that all backflow devices are routinely inspected and tested by certified personnel. Inspections are required at the time of installation, annually thereafter, after a backflow incident, and/or after the assembly is repaired, reinstalled or relocated.

The City is responsible for maintaining those devices that are installed on the public water distribution system, not including those devices installed after a meter on private premises. For devices installed on customers' premises, the customer shall contact the City requesting inspection and testing of said devices. The customer is subject to all applicable inspection and testing fees as may be established. On new installations, the City: 1) provides an on-site evaluation and/or inspection of plans to determine the type of backflow device, if any, that will be required; 2) issues permits; and 3) performs inspection. For existing premises, the City performs evaluations and inspections of plans and/or premises and informs owners by letter of any corrective action deemed necessary, the method of achieving the correction and the time allowed for the correction to be made. Ordinarily, corrections must be made within 60 days; however, the City may shorten this time period depending on the degree of hazard involved and the history of the device(s) in question. The City then inspects the premises on or after the expiration date of the required action to correct a cross connection. If found to not be in compliance with the City's request, the owner receives written notice that water service to the premises will be discontinued. If the owner informs the City of extenuating circumstances as to why the correction has not been completed within five working days of receipt of the notice of termination, the City may grant a time extension up to, but not exceeding, 30 days.

Inspection and testing of devices shall be done: 1) during the initial installation; 2) during on-site

reviews of existing installations; 3) after any repairs or maintenance; 4) after any relocation; and 5) on an annual basis. When an initial installation or annual test indicates that a backflow device is not functioning properly, the owner shall correct the malfunction within five working days as directed by the City. The owner shall contact the City after correcting the problem for re-inspecting and testing of the device(s).

The owner shall be responsible for the payment of all fees for permits, annual or semi-annual device inspection/testing, re-testing if the device fails to operate correctly and any re-inspections for non-compliance with City requirements. The fee for a backflow device permit shall be the same as the fee for a plumbing permit as specified in the Stanwood Municipal Code.

The City maintains records of backflow device inspections at the Public Works facility. Sample letters to customers regarding backflow device testing and inspection are included in **Appendix A**.

Testing Quality Control Assurance Program

This program element requires development and implementation of a quality control assurance program for the testing of backflow prevention devices. Successful implementation of this program element assures that all backflow prevention devices are tested in a similar manner and kept in optimal condition.

The City shall ensure that all testing procedures are completed in a consistent manner. Only certified personnel shall be utilized to test backflow devices. Testing shall be recorded on the proper forms and maintained at the Public Works facility. Examples of testing forms can be found in the AWWA *Recommended Practice for Backflow Prevention and Cross-Connection Control* manual. Personnel shall be trained as outlined by the State, fulfilling all necessary requirements in order to comply with WAC 246-290-490.

Testing personnel shall adhere to the following steps: 1) use only properly operating and calibrated gauge equipment; 2) follow proper field test procedures; 3) consult the manufacturer's repair and maintenance manual when disassembly is required; 4) use only original manufacturer spare parts; and 5) retest the backflow device immediately after repair or maintenance.

In addition to the above steps, the following testing procedures shall be performed by a certified test personnel: 1) advise the customer of an impending test/inspection so that the customer's staff may participate; 2) notify the fire department when shut down of a fire service is necessary; 3) flush residential dirt through test cocks before attaching test gauges; 4) ensure that the high and low pressure bypass hoses of the test kit are connected to the proper test cocks (open test cocks slowly when bleeding air through the bypass hoses); 5) test gauges shall be properly calibrated by a certified testing agency; and 6) assemblies should be tested before the warranty expiration date. For further testing details, refer to the AWWA manual.

Incident Response

This CCC program element requires that the purveyor develop a backflow incident response plan. The following paragraph outlines the City's response to a backflow incident. Other emergency

response procedures are included in the *City of Stanwood Emergency Response Plan*.

Emergency Condition: Water System Contamination Due to a Backflow Incident

Impact on System: Potentially major impact. Water not suitable for potable use - loss of supply.

Emergency Response:

1. Notify the City CCS personnel of the incident.
2. Shut down the affected mains if possible to contain the affected contaminants.
3. Notify DOH of the backflow incident.
4. Notify all customers of the problem and instruct them to boil all water to be used for consumption and cooking or issue a no-drinking warning.
5. Flush affected water mains to remove contaminants.
6. Disinfect reservoirs and water mains, as necessary, to remove contaminated residuals.
7. Analyze water quality in other parts of the distribution system to ensure that all contaminants were contained.

This document and the *City of Stanwood Emergency Response Plan* outlines procedures to be followed if an emergency arises. When a cross-connection control emergency is called into the Stanwood Police Department or other emergency responder during non-business hours, the responder will notify the Public Works Department on-call person. This person assesses the emergency and notifies any water division personnel as deemed necessary, depending on the severity of the emergency. All emergencies are reported to Mr. Kevin Hushagen, Public Works Director, who is responsible for coordinating with water division personnel, as well as other emergency responders, as necessary.

Public Education

Another CCC program requirement is that educational information of the CCC program be included in existing water system materials that are distributed to customers. Educational materials can be included in pamphlets, brochures, bill inserts, public service announcements, and consumer confidence reports. The City's CCC educational brochure, which is include in **Appendix A**, is sent to customers when inquiring about existing cross connections. The brochure is also available to all customers at City hall.

Recordkeeping

Purveyors must also develop and maintain records of their CCC program, as mandated by DOH. At a minimum, purveyors must maintain the following records:

- Master list of service connections and/or premises where backflow devices are protecting the public water system;
- Assessed hazard level of each backflow device;

- Inventory information on approved air gaps, including location, degree of hazard, installation date, inspection history, inspection results and personnel conducting inspections;
- Backflow inventory information, including location, assembly description, installation date, inspection history, test and repair history, test results and inspecting personnel;
- Atmospheric Vacuum Breaker (AVB) inventory, including location, description, installation date, inspection history and inspecting personnel; and
- Program summary and backflow incident reports.

The City currently maintains these records at the Public Works facility to allow access by water system personnel.

Reclaimed Water Requirements

The final CCC program requirement is for systems that distribute or receive reclaimed water within their water service area. For these systems, additional cross-connection control requirements may be imposed by DOH in any permits issued in accordance with Chapter 90.46 RCW. The City currently does not distribute or receive reclaimed water within its service area; therefore, these requirements are not applicable. However, if reclaimed water is used in the future, the City will follow all requirements of the permits issued under Chapter 90.46 RCW.

PROGRAM IMPLEMENTATION AND RECOMMENDATIONS

The City's CCC program is an on-going effort that requires staffing and resources to ensure its effectiveness in protecting the quality of drinking water in the distribution system. The City will continue its inspection procedures for installed approved backflow devices and document the inspections to comply with the regulatory requirements. The City strives to be 100 percent in compliance for high hazard backflow devices. The City will also continue to contact residential customers to determine if additional backflow devices are necessary.

The City currently meets the regulatory requirement of having at least one CCS within the water division to administer its CCC program. The City will continue its active training program in order to comply with these requirements.

Help protect your Drinking Water *from* Contamination

How Contamination Occurs

Water normally flows in one direction, from the public water system through the customer's cold or hot water plumbing to a sink tap or other plumbing fixture. The plumbing fixture is the end of the potable water system and the start of the waste disposal system.

Under certain conditions water can flow in the reverse direction. This is known as ***backflow***. Backflow occurs when a backsiphonage or back-pressure condition is created in a water line.

Backsiphonage may occur due to a loss of pressure in the water distribution system during a high withdrawal of water for fire protection, a water main or plumbing system break, or a shutdown of a water main or plumbing system for repair. A reduction of pressure below atmospheric pressure creates a vacuum in the piping. If a hose bib was open and the hose was submerged in a wading pool during these conditions, the non-potable water in the pool would be siphoned into the house's plumbing and back into the public water system.

Backpressure may be created when a source of pressure, such as a pump, creates a pressure greater than that supplied from the distribution system. If a pump supplied from a non-potable source, such as a landscape pond, was accidentally connected to the plumbing system, the non-potable water could be pumped into the potable water supply.

Common Household Hazards

Chemical Spray Applicators

The chemicals used on your lawn and garden can be toxic or fatal if ingested. These chemicals include pesticides, herbicides, and fertilizers. Even strong cleaning chemicals sprayed on cars, house siding, etc., may cause health problems if ingested.

Submerged Hoses

Water held in pools, ponds or other vats open to the air and exposed to humans or animals may contain microbiological contaminants. Hoses submerged in buckets or containers can act as a conduit for contaminants under backflow conditions.

Underground Lawn Irrigation Systems

Underground irrigation systems often have puddles of standing water around the groundlevel sprinkler heads. The sprinkler heads **are not** designed to be drip-tight under backflow conditions. The puddles of water may contain microbiological contaminants, such as excrement from animals or chemical residue from fertilizer and herbicides sprayed on the lawn.

How to Prevent Contamination of Your Drinking Water

Protect your drinking water by taking the following precautions:

Don't:

- Submerge hoses in buckets, pools, tubs, sinks, ponds, etc.
- Use spray attachments without a backflow prevention device.
- Connect waste pipes from water softeners or other treatment systems to the sewer, submerged drain pipe, etc.
- Use a hose to unplug blocked toilets, sewers, etc.

Do:

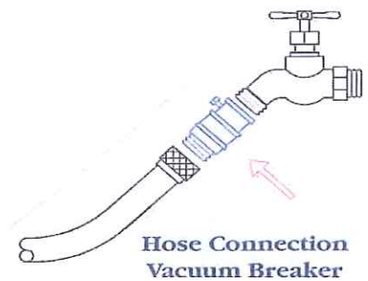
✔ Keep the ends of hoses clear of all possible contaminants.

✔ If not already equipped with an integral (built-in) vacuum breaker, buy and install hose bib type vacuum breakers on all threaded faucets around your home. These devices are inexpensive and are available at hardware stores and home improvement centers.

✔ Install an approved backflow prevention assembly on all underground lawn irrigation systems. Remember, a plumbing permit is required for the connection of an underground lawn irrigation system to your plumbing system.

Hose Connection Vacuum Breaker

Hose connection vacuum breakers are specifically made for portable hoses attached to threaded faucets. Their purpose is to prevent the flow of contaminated water back into the drinking water. These devices screw directly to the faucet outlet. They can be used on a wide variety of installations, such as service sinks, hose faucets near a wading pool, laundry tub faucets, etc.



Hose Connection Vacuum Breaker

Some units are designed for manual draining for freezing conditions. Some are furnished with breakaway set screws as a tamper proof feature. These device are not intended for operation under continuous pressure.

Protection of the Water Purveyor's Distribution System

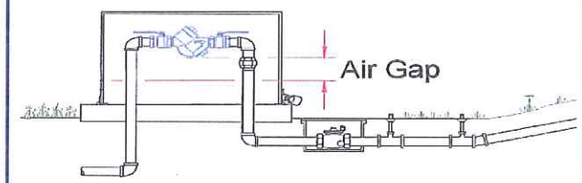
In general, the installation of plumbing in compliance with the plumbing code will provide adequate protection for your plumbing system from contamination.

However, the water purveyor may require (as a condition of service) the installation of a backflow prevention assembly on the water service to provide additional protection for the public water system. A backflow prevention assembly will normally be required where a single-family residence has special plumbing that increases the hazard above the normal level found in residential homes, or where a hazard survey cannot be completed.

To help determine if a backflow prevention assembly is required, the water purveyor may send residential customers a Cross Connection Control Survey Questionnaire. The water purveyor will evaluate the returned questionnaires to assess the risk of contamination to the public water system. Based on the results of the evaluation, the installation of backflow prevention assemblies may be required on services to some customers.

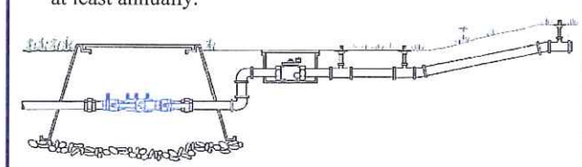
Reduced Pressure Backflow Assembly for Isolation of Lawn Irrigation System

- The reduced pressure backflow assembly (RPBA) should be installed to isolate irrigation systems using injectors or pumps to apply fertilizer and other agricultural chemicals.
- The RPBA must be installed above ground to prevent the relief valve opening from becoming submerged.
- The RPBA should be installed in an insulated enclosure to provide freeze protection.
- The RPBA should be tested by a certified backflow assembly tester upon installation, after repair of relocation, and at least annually.



Double Check Valve Assembly for Isolation of Lawn Irrigation System

- The double check valve assembly (DCVA) may be installed to isolate all irrigation systems that do not use injectors or pumps to apply fertilizer and other agricultural chemicals.
- The DCVA may be installed in a below-ground enclosure provided the assembly test cocks are plugged; the test cocks are pointed up; adequate space is provided for maintenance and testing; and any compressed air connections are installed only downstream of the DCVA.
- The DCVA shall be tested by a certified backflow assembly tester upon installation, after repair of relocation, and at least annually.



Cross Connections can create Health Hazards

What is a Cross Connection?

A cross connection is a point in a plumbing system where the potable water supply is connected to a non-potable source. Briefly, a cross connection exists whenever the drinking water system is or could be connected to any non-potable source (plumbing fixture, equipment used in any plumbing system). Pollutants or contaminants can enter the safe drinking water system through uncontrolled cross connections when backflow occurs. Backflow is the unwanted flow of non-potable substances back into the consumer's plumbing system and/or public water system (i.e., drinking water).

There are two types of backflow: ***backsiphonage*** and ***backpressure***. ***Backsiphonage*** is caused by a negative pressure in the supply line to a facility or plumbing fixture. Backsiphonage may occur during waterline breaks, when repairs are made to the waterlines, when shutting off the water supply, etc.

Backpressure can occur when the potable water supply is connected to another system operated at a higher pressure or has the ability to create pressure. Principal causes are booster pumps, pressure vessels and elevated plumbing.

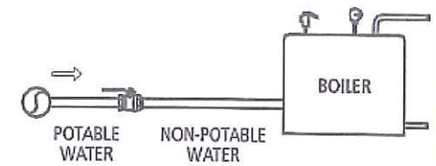
Backflow preventers are mechanical devices designed to prevent backflow through cross connections. However, for backflow preventers to protect as designed, they must meet stringent installation requirements.

Why Be Concerned?

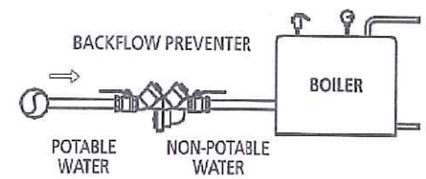
Most water systems in the United States and Canada have good sources of water and/or sophisticated treatment plants to convert impure water to meet drinking water standards. Millions of dollars are spent to make the water potable before it enters the distribution system so most water purveyors think that their supplies are not in jeopardy from this point on. Studies have proven this to be wrong. Drinking water systems may become polluted or contaminated in the distribution system through uncontrolled cross connections.

Cross connections are installed each day in the United States because people are unaware of the problems they can create. Death, illness, contaminated food products, industrial and chemical products rendered useless are some of the consequences of such connections. As a result, many hours and dollars are lost due to ***cross connections.***

Wrong:
Uncontrolled Cross Connection

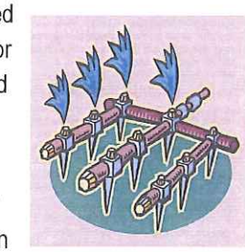


Right:
Controlled Cross Connection



Lawn Irrigation Systems

For the protection of the water purveyor's distribution system, all irrigation systems must have an approved backflow prevention assembly that is compatible with the degree of hazard. Irrigation systems are categorized as high health hazard or moderate health hazard as defined below.



Any irrigation system that contains pumps or injectors for the addition of chemicals and/or fertilizers is considered a high hazard. This risk assessment is also based on the additional hazard posed by bacterial contaminants found on lawns, and on the possibility of changes being made to the irrigation system by the customer. An approved reduced pressure backflow assembly (RPBA), or an approved air gap separation, should be required in all cases where chemicals or herbicides may be injected into the irrigation system, or where an auxiliary water supply is also provided for irrigation water.

All irrigation systems that are not classified as a high health hazard are considered to be moderate health hazards. This risk assessment is based on the hazard posed by bacterial and chemical contaminants found on lawns, and on the possibility of changes being made to the irrigation system by the customer. An approved double check valve assembly (DCVA), should be required.

Where are Cross Connections Found?

Cross connections are found in all plumbing systems. It is important that each cross connection be identified and evaluated as to the type of backflow protection required to protect the drinking water supply. Some plumbing fixtures have built-in backflow protection in the form of a physical air gap. However, most cross connections will need to be controlled through the installation of an approved mechanical backflow prevention device or assembly. Some common cross connections found in plumbing and water systems include:

1. Wash basins and service sinks.
2. Hose bibs.
3. Irrigation sprinkler systems.
4. Auxiliary water supplies.
5. Laboratory & aspirator equipment.
6. Photo developing equipment.
7. Processing Tanks.
8. Boilers.
9. Water recirculating systems.
10. Swimming pools.
11. Solar heat systems.
12. Fire sprinkler systems.

The various types of mechanical backflow preventers include: reduced protection, designed for the degree of hazard and backflow it is controlling, installed correctly, tested annually by a State certified tester, and repaired as necessary. Some states require mandatory backflow protection on certain facilities where high healthhazard- type cross connections are normally found. The following is a partial list of those facilities:

1. Petroleum processing and storage plants.
2. Food and beverage processing centers.
3. Hospitals, mortuaries, clinics.
4. Metal plating and chemical plants.
5. Laboratories.
6. Car washes.
7. Piers and docks.
8. Sewage treatment plants.

For further information contact the City of Stanwood Water Department at (360) 629-9781 or the PNWS/AWWA Cross-Connection Control Committee through the PNWS office at (877) 767-2992 or on the web at www.pnws-awwa.org

American Water Works Association
Pacific Northwest Section

City of Stanwood

Public Works
10220 270th Street NW
Stanwood, Washington 98292
(360) 629-9781 Fax: (360) 629-0867

October 8, 2014

Test to be completed by the end of «TestDue»

«CustomerName»
«MAddress1»
«MAddress2»
«MCity», «MState» «MZip»

«AttnLine»
RE: Assembly(s) at «SAddress1»

SUBJECT: Scheduled Test Notice

According to our records, the backflow prevention assembly(s) listed below are due for testing. Enclosed is a list of backflow assembly testers who are qualified to test assemblies in your area. The tester should forward a copy of the completed test report to the «ServiceDistrict» and also provide you a copy for your records.

Serial #	***Location***
«SerialNumber»	«Location»
«SerialNumber2»	«Location2»
«SerialNumber3»	«Location3»
«SerialNumber4»	«Location4»
«SerialNumber5»	«Location5»
«SerialNumber6»	«Location6»
«SerialNumber7»	«Location7»
«SerialNumber8»	«Location8»
«SerialNumber9»	«Location9»

Thank you for working with us to protect your drinking water. Your prompt response is greatly appreciated. Please do not hesitate to contact us with any questions or concerns.

Sincerely,

Lisa Noonchester

«DistrictContact»
«ContactTitle»
«ContactPhone»

Enclosure(s)

City of Stanwood

Public Works
10220 270th Street NW
Stanwood, Washington 98292
(360) 629-9781 Fax: (360) 629-0867

October 8, 2014

«CustomerName»
«MAddress1»
«MCity», «MState» «MZip»

«AttnLine»
RE: Assembly(s) at «SAddress1»

SUBJECT: 1st Notice of Non-Compliance

According to our records, the backflow prevention assembly(s) listed below are past due for testing. The test(s) were to be completed by the end of «TestDue». Enclosed is a list of certified testers who are qualified to test assemblies in your area. You have 15 days to schedule a tester to complete the test(s). We must receive the test report(s) within the allocated time.

Serial #	***Location***
«SerialNumber»	«Location»
«SerialNumber2»	«Location2»
«SerialNumber3»	«Location3»
«SerialNumber4»	«Location4»
«SerialNumber5»	«Location5»
«SerialNumber6»	«Location6»
«SerialNumber7»	«Location7»
«SerialNumber8»	«Location8»
«SerialNumber9»	«Location9»
«SerialNumber10»	«Location10»

Your prompt response is greatly appreciated. Please do not hesitate to contact us with any questions or concerns.

Sincerely,

Lisa Noonchester

«DistrictContact»
«ContactTitle»
«ContactPhone»

Enclosure(s)

City of Stanwood

Public Works
10220 270th Street NW
Stanwood, Washington 98292
(360) 629-9781 Fax: (360) 629-0867

October 8, 2014

«CustomerName»
«MAddress1»
«MAddress2»
«MCity», «MState» «MZip»

«AttnLine»
RE: Assembly(s) at «SAddress1»

SUBJECT: 2nd Notice of Non-Compliance

We have not received the test results for the backflow prevention assembly(s) listed below. You have 10 days to schedule a tester to complete the test and forward the results to this office. We must receive the report(s) in this office within the allocated time to avoid further action as provided by the «Regulation» and «ServiceDistrict».

Serial #	***Location***
«SerialNumber»	«Location»
«SerialNumber2»	«Location2»
«SerialNumber3»	«Location3»
«SerialNumber4»	«Location4»
«SerialNumber5»	«Location5»
«SerialNumber6»	«Location6»
«SerialNumber7»	«Location7»
«SerialNumber8»	«Location8»
«SerialNumber9»	«Location9»
«SerialNumber10»	«Location10»

Your prompt response is greatly appreciated. Please contact us with any questions or concerns.

Sincerely,

Lisa Noonchester

«DistrictContact»
«ContactTitle»
«ContactPhone»

City of Stanwood

Public Works

10220 270th Street NW, Stanwood, Washington 98292
(360) 629-9781 | Fax: (360) 629-0867

October 8, 2014

«CustomerName»
«MAddress1»
«MAddress2»
«MCity», «MState» «MZip»

«AttnLine»
RE: Assembly(s) at «SAddress1»

SUBJECT: Final Notice – Termination of Service

This is the last and final notice that will be sent regarding the testing of the backflow prevention assembly(s) listed below.

Serial #	*Location*
«SerialNumber»	«Location»
«SerialNumber2»	«Location2»
«SerialNumber3»	«Location3»
«SerialNumber4»	«Location4»
«SerialNumber5»	«Location5»
«SerialNumber6»	«Location6»
«SerialNumber7»	«Location7»

THIS IS YOUR FINAL NOTICE. You must contact this office immediately. If we do not hear from you, we will have no other recourse than to take appropriate actions to protect the drinking water, up to and including terminating your water service to this address.

We must receive a prompt reply.

Sincerely,

Lisa Noonchester

«DistrictContact»
«ContactTitle»
«ContactPhone»

BACKFLOW ASSEMBLY TEST REPORT

☐ NEW
☐ EXISTING
☐ REPLACEMENT

PREMISE OWNER: «CustomerName» PHONE: «Phone»

MAILING ADDRESS: «MAddress1» «MAddress2»

CITY: «MCity» STATE «MState» ZIP «MZip»

ASSEMBLY ADDRESS: «SAddress1» «SAddress2», «SCity»

ASSEMBLY TYPE: «AsmType» ASSEMBLY LOCATION: «Location»

MAKE: «AsmMake» MODEL: «AsmModel» SIZE: «AsmSize»

WATER PURVEYOR: «ServiceDistrict» SERIAL NUMBER: «SerialNumber»

	REDUCED PRESSURE ASSEMBLY		PRESSURE VACUUM BRKR/ SPILL-RES VACUUM BRKR		INITIAL TEST
		DOUBLE CHECK	AIR INLET	CHECK	
TEST RESULTS	#1 CHECK PRESS _____ (A) RELIEF VALVE OPENS AT _____ (B) (MIN 2 PSID) APPROVED AIR GAP YES ☐ NO ☐ #2 CHECK VALVE TIGHT ☐ LEAKED ☐	CHECK #1 TIGHT ☐ _____ PSID LEAKED ☐ CHECK #2 TIGHT ☐ _____ PSID LEAKED ☐	OPENED AT: _____ PSID DID NOT OPEN ☐	PRESSURE DROP _____ PSID FAILED ☐	PASSED ☐ FAILED ☐ DATE: / / SYSTEM PSI _____

COMMENTS & NOTES	

	REDUCED PRESSURE ASSEMBLY		PVBA./SVBA		RE-TEST AFTER REPAIR DATE:
		DCVA	AIR INLET	CHECK	
RE-TEST AFTER REPAIRS	#1 CHECK PRESS DROP _____ (A) RELIEF OPENED _____ (B) MIN 2 PSID BUFFER (A)-(B) = _____ MIN 3 PSI	CHECK #1 TIGHT ☐ _____ PSID CHECK #2 TIGHT ☐ _____ PSID	OPENED AT _____ PSID	PRESS DROP _____ PSID	/ / PASSED ☐

GAUGE CALIBRATION DATE: _____ DETECTOR METER READING _____

TESTER SIGNATURE _____ TESTER CERT # _____

TESTERS NAME PRINTED _____ GAUGE # _____

TESTERS ADDRESS _____ PHONE # _____

COMPANY NAME _____

☐ WATER RESTORED ?

REPORT RECEIVED BY: _____ (REPRESENTATIVE OF OWNER)

City of Stanwood

Public Works
10220 270th Street NW
Stanwood, Washington 98292
(360) 629-9781 Fax: (360) 629-0867

October 8, 2014

«CustomerName»
«MAddress1»
«MCity», «MState» «MZip»

«AttnLine»

SUBJECT: Residential Questionnaire Request

The «ServiceDistrict» takes pride in providing safe drinking water to our customers. Although the water that reaches your home or business meets all State and Federal drinking water standards and is safe to drink, contamination can occur within your own piping system. This potential hazard is known as an unprotected "cross connection", which can cause backflow to occur.

The «Regulation» has established rules and requirements to enable the «ServiceDistrict» to protect our water system. Our goal is to identify potential cross connection hazards and take appropriate actions to protect against the possibility of backflow to occur. We need your help, because as a water user, you are the most familiar with how our water is being used within your property.

Water suppliers, homeowners, business owners and health officials must all share in the responsibility to ensure the safety of our drinking water. Please read the enclosed informational brochure. We feel it will help give a better understanding of cross connections and backflow and the means of protection available. Please take time to complete and return the attached cross connection questionnaire within 30 days of the date on this letter. Your participation is essential to the success of this program.

If you have questions or would like more information, please contact this office at the number listed below. Thank you for your cooperation.

Sincerely,

«DistrictContact»
«ContactTitle»
«ContactPhone»

Enclosure(s)

Cross Connection Questionnaire Form

1. Is this residential or commercial property? Residential ☐ Commercial ☐

   If commercial, please specify business name: _____

2. Are you renting or do you own this property? Rent ☐ Own ☐

   If renting, please provide name and address of owner:

   _____

   _____

   _____

3. Your water meter serves how many homes? ___ How many buildings? _____

4. Do you have any of the following?

a. Swamp cooler connected to piping	Yes ☐	No ☐
b. Hot tub (fills with a hose or automatic filler)	Yes ☐	No ☐
c. Swimming pool	Yes ☐	No ☐
d. Underground sprinkler system	Yes ☐	No ☐
e. Drip irrigation system	Yes ☐	No ☐
f. Greenhouse	Yes ☐	No ☐
g. Solar water heating system	Yes ☐	No ☐
h. Water makeup lines (boiler, hydronic heating)	Yes ☐	No ☐
i. Utility sink with threaded faucet (hose attachment)	Yes ☐	No ☐
j. Fire sprinkler system	Yes ☐	No ☐
k. Unknown, unidentifiable or complicated piping	Yes ☐	No ☐

5. Do you use:

a. Antifreeze flush kits with your automobile	Yes ☐	No ☐
b. Insecticide sprayers (that attach to a garden hose)	Yes ☐	No ☐
c. Darkroom or photo developing equipment	Yes ☐	No ☐
d. Fill adapters for waterbed, fish tank or other	Yes ☐	No ☐

6. Does anyone on the premise use a portable dialysis machine? Yes ☐ No ☐

7. Do you have a bathtub/Jacuzzi that fills from the bottom <u>or</u> does not have an overflow drain <u>or</u> the fill spout is not above the tub rim? Yes ☐ No ☐

8. Do you have a water softener or any other water treatment system connected to your drinking water supply? Yes ☐ No ☐

9. Do you have auxiliary water supply (i.e. well, pond) on your premises? Yes ☐ No ☐

10. Do you have livestock (i.e., horses, cows, etc.) that use a water trough? Yes ☐ No ☐

11. Is the water piping that enters your home more than 10 feet above your water meter? Yes ☐ No ☐

12. Does a creek, river, or spring run near your property? Yes ☐ No ☐
    a. Do you pump or draw water from this source? Yes ☐ No ☐

13. Do you have a booster pump, well pump, or any other type of water pump? Yes ☐ No ☐

14. Do you receive irrigation water from a different source? Yes ☐ No ☐

15. Do you have a backflow preventer on your property now? Yes ☐ No ☐
    If yes, where?_____

16. Do you have any situation that you are aware of that could create a connection between your drinking water and any other substance? Yes ☐ No ☐

17. Do you have any other water using equipment on your property not mentioned above? Yes ☐ No ☐

Comments: _____

_____

_____

Please notify the Roberts Creek Water District if any of the above conditions change on your property such as remodeling, changes or additions to your water piping system.

_____ _____
Signature of Water Customer Phone Number

_____ _____
Print Your Name Best time to call or alternate contact

Today's Date _____

Your mailing address:

_____
_____
_____

Physical address of property (if different):

_____
_____
_____

Please answer all of the above questions and return the questionnaire within 30 days. This form will be kept on file at the Roberts Creek Water District. If you have any questions please call us at (541) 679-6451.

RETURN SURVEY REPORT FORM TO:

Charles L. Borden
Roberts Creek Water District
4336 Old Highway 99 South
Roseburg, OR 97470

City of Stanwood

Public Works
10220 270th Street NW
Stanwood, Washington 98292
(360) 629-9781 Fax: (360) 629-0867

October 8, 2014

«CustomerName»
«MAddress1»
«MCity», «MState» «MZip»

«AttnLine»

SUBJECT: Residential Questionnaire Return Request

Recently you received a questionnaire related to the «ServiceDistrict» Cross Connection Control Program and the «Regulation». Your questionnaire was not received within the 30 days, as requested.

It is important that you take the time to fill out the enclosed form and return it immediately. If the questionnaire is not returned within 15 days of this letter, we may need to schedule an on-site survey or require your premise to be isolated by the installation of a backflow prevention assembly at the water meter. The cost of either of these actions will be added to your water bill. There are many reasons why we ask for this questionnaire but the two most important are: it could save you money and it will protect your health.

Sincerely,

«DistrictContact»
«ContactTitle»
«ContactPhone»

Enclosure

City of Stanwood

Public Works
10220 270th Street NW
Stanwood, Washington 98292
(360) 629-9781 Fax: (360) 629-0867

October 8, 2014

«CustomerName»
«MAddress1»
«MAddress2»
«MCity», «MState» «MZip»

«AttnLine»

SUBJECT: Notice of Initial Survey

The protection of the drinking water supply in «MCity» is a matter of mutual concern and benefit.

Pursuant to «Regulation» regulating our Cross Connection Control Program, we will be conducting surveys. These surveys will be carried out in the near future and we would appreciate your cooperation in this matter.

Literature explaining water quality issues and the possible need for backflow protection is included for your information. We will contact you to set up an appointment. Should you require further information on our Cross Connection Control Program, please contact us at the number below.

Sincerely,

«DistrictContact»
«ContactTitle»
«ContactPhone»

Enclosure

City of Stanwood

Public Works
10220 270th Street NW
Stanwood, Washington 98292
(360) 629-9781 Fax: (360) 629-0867

October 8, 2014

«CustomerName»
«MAddress1»
«MAddress2»
«MCity», «MState» «MZip»

«AttnLine»
RE: Assembly(s) at «SAddress1»

SUBJECT: No Internal Protection Reminder

Dear Water Customer:

Our records indicate that your facility or premise has a backflow prevention assembly installed on the main service line to the facility. This assembly protects the public drinking water supply from the potential of a reversal in the normal direction of water flow, referred to as "backflow". Backflow can result in the contamination of your drinking water if unprotected plumbing hazards exist.

This letter is a reminder that an assembly installed at the water meter (called "premise isolation") is for the protection of the public drinking water supply. It does not provide protection against any internal plumbing hazards that may exist within your facility or premise.

Protection against internal hazards is afforded through proper application of the plumbing code. We encourage you, as your water supplier, to notify us in the event that you plan on making changes to your plumbing system, so we can assist you in determining if plumbing permits will be required and how to obtain permits.

Thank you for taking part in protecting your community's drinking water supply. Please contact us if you have any questions or concerns.

Sincerely,

«DistrictContact»
«ContactTitle»
«ContactPhone»

City of Stanwood

Public Works
10220 270th Street NW
Stanwood, Washington 98292
(360) 629-9781 Fax: (360) 629-0867

October 8, 2014

«CustomerName»
«MAddress1»
«MCity», «MState» «MZip»

«AttnLine»

SUBJECT: Thermal Expansion Information

Our records indicate you have, or will be installing, a backflow prevention assembly on your water service supply line. This backflow prevention assembly prevents used water or other solutions within your property from entering the distribution system of your drinking water supply and was required for compliance with state and local rules.

It is necessary to inform you of a potential hazard that exists in relation to this backflow prevention assembly and your water heater. Water heaters must be installed with a temperature and pressure (T/P) relief valve, which is designed to vent water to the atmosphere in the event of over-pressurization of the contained water, when created by an excessive rise in temperature. This condition called "thermal expansion" is simply explained as an increase in volume due to a rise in temperature. This increase in volume, if not adequately released by the T/P valve, can force hot water backwards (a condition known as "backflow") through the cold water inlet pipe of the water heater, and back into the water distribution system.

Once a backflow prevention assembly is installed on your water supply line, hot water will no longer be able to backflow (which is our goal) past the backflow prevention assembly and into the distribution system. As the property owner, there are some things to consider for your protection from thermal expansion problems:

1. Do you have a properly installed and functioning T/P valve and thermal expansion tank or other device designed for intermittent operation for thermal expansion control, as required by current plumbing code?
2. If you do not, contact a licensed plumber.
3. If you are not sure, contact a licensed plumber.

Remember, the backflow prevention assembly provides a very important function and so does the T/P valve and thermal expansion tank or device. Please make sure you and your property are properly protected against thermal expansion.

Sincerely,

«DistrictContact»
«ContactTitle»
«ContactPhone»