City of Marysville
Cross-Connection Control Program

DRAFT FINAL

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Prepared by:

ECONOMIC AND ENGINEERING SERVICES, INC.

626 Columbia Street, NW, Suite 2A
Olympia, WA 08901 98507-0976
(360) 352-5090
(360) 357-6573 FAX

* Olympia, WA * Bellevue, WA * Kennewick, WA * Mt. Vernon, WA *Portland, OR *

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Section 1
Introduction

Under Washington Administrative Code Chapter 246-290-490, *Cross-connection control*, water purveyors such as the City of Marysville (City) have the responsibility to protect water users from ill effects associated with contamination due to cross-connections. A cross-connection is any physical arrangement where the potable water supply is connected, directly or indirectly, to any liquid of unknown or unsafe quality so as to allow the liquid to contaminate the public water supply through backflow (reverse flow) from the customer's property or facility into the public water distribution system. In numerous incidents reported nationally, public water systems have been contaminated by cross-connections that resulted in serious injury and illness to the public.

Under the Washington Administrative Code (WAC), the City of Marysville Public Works Department (MPWD) is responsible for developing and implementing a comprehensive Cross-Connection Control Program (CCP) to eliminate or control cross-connections within the City's public water system. The program must satisfy certain minimum requirements as prescribed by WAC 246-290-490. Further, the Washington State Department of Health (DOH) must approve the City's CCP.

The purpose of this document is to describe established policies and practices that constitute the City's CCP. Program implementation is governed by the Marysville Municipal Code (Title 14, *WATER AND SEWERS*, Chapter 14.10 *WATER SUPPLY CROSS-CONNECTIONS*), which defines responsibilities of the City and of individual water system customers in accomplishing successful cross-connection control. This portion of the City's municipal code is included as Appendix A in this document.

The primary audience for this CCP document is assumed to be MPWD employees who have experience with the City's water distribution system and who have been certified by DOH as a Cross-Connection Control Specialist (CCS).

Section 2
Program Purpose and Policies

2.1 Purpose

The purpose of Marysville's CCP is to identify and then eliminate or control any cross-connection to the City's public water system. These actions serve to protect the health of City water system consumers by ensuring the continued potability of water available from the City's distribution system.

2.2 Policies

It is the policy of the Marysville Public Works Department (MPWD) that the CCP meet the intent of all sections of the WAC pertaining to cross-connection control. WAC 246-290-490 (included as Appendix B) constitutes the DOH cross-connection regulations and related definitions governing Group A water systems.

The first priority of the CCP is to protect the public water distribution system from the categories of premises listed in Table 9 of WAC 246-290-490 (4) (b). MPWD will conduct health hazard evaluations as necessary to ensure the protection of the public water supply. The CCP mandates that new water service connections be installed, and existing water service connections be modified, to conform to these requirements where applicable.

The CCP requires premise isolation commensurate with the degree of health hazard to the City's public water supply. Premise isolation involves installing an approved backflow prevention assembly at individual customer service connections. Backflow prevention assemblies used to isolate single-family residences must:

- Provide a level of protection commensurate with the assessed degree of hazard,
- Be selected to satisfy Local and State minimum standards,
- Be installed, inspected, and tested in accordance with CCP procedures and schedules.

2.2.1 Authority and Jurisdiction

The water system consists of two parts: the MPWD public water system and water customers' individual plumbing systems. The MPWD system consists of all water treatment, storage, and distribution facilities under the City's complete control. Customers' systems include point-of-use facilities located downstream of the City's individual service connections. MPWD responsibility for cross-connection control and backflow prevention covers the

City's public water system only. Responsibility ends at the point of delivery to each customer's water system. The point of delivery is defined as the downstream end of the service connection water meter (or at the customer's property line, for any service connection that has no meter).

Under provisions of WAC 246-290-490, a water purveyor is not responsible for eliminating or controlling cross-connections within the consumers' water systems. That responsibility falls under the jurisdiction of a Local Administrative Authority (LAA) designated to administer and enforce the Uniform Plumbing Code (UPC) at the customer's property location. Typically, an LAA is a municipal or county building department. For customer properties located within Marysville City Limits, MPWD serves as water purveyor as well as LAA. For most water customer properties located outside the City Limits, the Snohomish County Building Division serves as LAA.

The Snohomish County Building Division also serves as LAA for customer water systems located within the Tulalip Tribe's Business Park under Chapter 19.27.050 of the Revised Code of Washington (RCW), *Enforcement*. That regulation requires that counties and cities enforce the state building code. Any county or city not having a building department must contract with another county, city, or inspection agency approved by the county or city for enforcement of the state building code within its jurisdictional boundaries.

2.2.2 Existing Backflow Prevention Assemblies

DOH revises the list of approved backflow prevention assemblies periodically to incorporate units with improved designs and to reflect field experience with previous installations. State regulations allow backflow prevention assemblies that were approved at the time they were installed but are not on the current list of approved assemblies to remain in service provided they are:

- ❑ Maintained,
- ❑ Commensurate with the degree of hazard,
- ❑ Inspected and tested annually,
- ❑ Performing satisfactorily.

If an existing, unapproved assembly requires relocation or requires more than minimal maintenance to successfully pass an annual test, the customer must replace it with one selected from the current list of approved assemblies.

If a water system protected by a backflow prevention assembly is modified to include components or operations that increase the assessed health hazard,

the customer must replace the existing backflow prevention assembly with an approved assembly appropriate for the higher degree of hazard.

2.2.3 New Construction Compliance

The MPWD will not establish water service to new construction until the customer furnishes design, installation, inspection, and test data indicating that cross-connection control requirements have been satisfied.

2.2.4 Enforcement

To enforce compliance with the requirements of the CCP, the City reserves the right to correct an actual or potential cross-connection health hazard or to immediately disconnect a customer's water service if immediate remediation is not possible. Section 4.1.3 describes the City's options concerning remediation and disconnection.

2.2.5 Liability

The City assumes no liability for damages and makes no allowances for any loss of customer use, production, sales, services, or any other consequential damages that might arise from the implementation of any of the measures required by and/or contained in the CCP.

The CCP requires that City employees conduct certain assessments and evaluations of customer water systems and facilities. These activities are for the purpose of implementing the City's responsibility for protecting the public water supply system. Satisfactory findings associated with these activities are not to be construed by water system customers or regulatory agencies as absolute assurance of the absence of cross-connections within the customer systems. Similarly, satisfactory findings do not constitute City approvals of individual customers' plumbing systems.

Section 3
Program Implementation

CCP implementation involves three basic functions:

- Assessment of actual or potential cross-connection health hazards posed by new and existing customer water systems and facilities,
- Codification and enforcement of regulations and requirements for cross-connection elimination or control,
- Verification of proper inspection and periodic testing for backflow prevention assemblies installed to control actual or potential cross-connections.

The following sections summarize the personnel and procedures the City employs in implementing the CCP.

3.1 Personnel

The City of Marysville Director of Public Works is responsible for reviewing and approving CCP policies and for ensuring that the program meets Local and State regulations. The CCP Administrator holds primary responsibility for implementing the CCP on a daily basis. The CCP Administrator position, held by the City's Water Quality Supervisor, requires current DOH certification as a Cross-Connection Control Specialist (CCS) in accordance with WAC 246-292 (details on CCS qualifications are found in Element 4). The position also requires experience in Marysville water system operations. For help with record keeping and customer notifications, the CCS may request assistance from MPWD clerical staff.

CCP Administrator duties include:

- Screening applications for new water service
- Reviewing plans associated with new construction and remodels
- Determining appropriate backflow prevention requirements
- Conducting initial and follow-up on-site surveys of customer facilities
- Corresponding with customers affected by the CCP
- Reviewing backflow prevention assembly test results
- Maintaining CCP records
- Initiating CCP enforcement actions
- Diagnosing, investigating, documenting, and directing responses to backflow incidents

- Reviewing and updating assembly installation standards and procedures
- Developing materials used in consumer education
- Communicating with County and State health authorities

3.2 Premise Isolation

The CCP Administrator makes health hazard evaluations for new service connections by reviewing water service applications and by conducting on-site surveys during construction. On-site inspections of 3/4-inch and smaller service connections are not normally conducted unless cross-connections are suspected or identified based on a plan review. The CCP Administrator surveys existing service connections according to priority with the highest degree of hazard assigned the highest priority. Qualified MPWD personnel conduct periodic on-site evaluations, if allowed by customers, at facilities with the highest degree of hazard and at facilities where plumbing changes have been made or have a high potential for changes. When appropriate, the CCP Administrator, a designated City CCS, or a qualified City Plumbing Inspector evaluates individual properties or facilities to verify proper installation and/or operation of an appropriate backflow prevention assembly or air gap.

Whenever cross-connections cannot be eliminated or fully evaluated, the MPWD informs the customer of the City's backflow prevention requirements according to the degree of hazard as described in Elements 2, 3, and 10 (see Section 4).

City personnel certified as backflow assembly testers (BATs) perform testing and maintenance of backflow prevention assemblies owned by the City of Marysville. Backflow prevention assemblies owned by City customers are the responsibility of the customer and must be tested by BATs associated with private companies. City and customer testing and maintenance must be performed and documented in accordance with the requirements described in Element 5. Element 6 describes City procedures that assure proper testing.

Consumer education is a core element essential to the success of the City's Cross-Connection Control Program. Element 8 presents details of the City's approach to consumer education concerning cross-connection control.

The CCP Administrator collects and maintains CCP records as required by WAC 246-290-490(8). These records include information concerning the assessed health hazards associated with individual properties, facilities, and vehicles and the backflow prevention assemblies and/or air gaps used to isolate the associated service connections. For example, the records include detailed installation, inspection, and testing histories for each known backflow assembly or air gap. The records also include copies of routine and special reports generated to document the CCP. Critical records are kept in original paper format. Routine records and

reports are accumulated into an electronic database. All program records are available to the DOH for review on request. Element 9 describes the CCP recordkeeping system in detail.

3.3 Fire Hydrant Utilization Program

Construction contractors and other City water customers occasionally have a need to withdraw water from a City fire hydrant on a temporary basis. Withdrawal can involve filling tanker trucks and/or direct hose or pipe connections to the hydrant. The City allows this temporary use of fire hydrants provided that users comply with terms prescribed by the City's Fire Hydrant Utilization Program.

To implement and monitor the Utilization Program, the City issues two types of permits. A Vehicle Permit allows a customer to fill tank trucks from designated hydrants located throughout the City's service area. A Site Permit allows a customer to withdraw water from a specific hydrant, typically in association with a construction project. Any City employee who observes a customer or other private party operating a hydrant without displaying evidence of a valid Vehicle or Site Permit is obligated to report the observation to the Director of Public Works for investigation. Appendix C presents the Fire Hydrant Utilization Program, including sample forms, sample notification letters, and a sample fee schedule.

3.4 Interested Organizations

The following organizations and individuals are impacted by the City's Cross-Connection Control Program:

- The City of Marysville (City)
- Marysville Public Works Department (MPWD)
- Marysville Parks and Recreation Department
- Snohomish County Building Division
- Snohomish Health District (SHD)
- Tulalip Tribe Business Park water customers
- City water customers that require backflow protection
- City water customers who hold permits to withdraw water from fire hydrant on a temporary basis

3.5 Coordination Agreements

WAC 246-290-490 requires that water purveyors coordinate with the respective local administrative authorities in all matters concerning cross-connection control and that the purveyors document and describe such coordination. The City plans to accomplish this requirement in 2002 by formalizing coordination agreements.

Specifically, the MPWD intends to develop written cross-connection control agreements with the Marysville Fire District, the Snohomish County Building Division, the Tulalip Tribe, and the Snohomish Health District. To date, cooperation between these entities has been satisfactory. Thus, no problems are anticipated in developing satisfactory agreements. When completed, the CCP Administrator will incorporate copies of these agreements into Appendix D.

Section 4
Detailed Program Elements

State regulations mandate that the City's Cross-Connection Control Program include certain minimum functions or elements. Those elements are prescribed in WAC 246-290-490(3). The following sections describe these elements and the procedures the City uses or intends to use to implement them. Underlined text indicates requirements extracted directly from WAC 246-290-490.

4.1 Element 1: Establish Local Authority

Adopt an ordinance, code, or other legal instrument that:

- Establishes the City's legal authority to implement a cross-connection control program (CCP),
- Describes the operating policies and technical provisions of the CCP,
- Describes corrective actions available to the City for use in ensuring that consumers comply with the CCP requirements.

4.1.1 City Ordinances

City of Marysville ordinances related to cross-connection control are presented in the Marysville Municipal Code Title 14, *WATER AND SEWERS*, Chapter 14.10, *WATER SUPPLY CROSS-CONNECTIONS*. Appendix A presents Chapter 14.10 in its entirety. This ordinance provides the basis for CCP policies and provisions.

4.1.2 Other Authority

State Cross-Connection Regulations and Related Definitions – Washington Administrative Code (WAC) Chapter 246-290-490 (included as Appendix B) specifies DOH cross-connection regulations and related definitions governing Group A water systems. The City takes guidance from and enforces compliance with these regulations.

Uniform Plumbing Code - In reviewing and approving building permits and in conducting construction inspections, the MPWD applies the current edition of the Uniform Plumbing Code (UPC). Thus, a customer's water system must comply with the UPC in terms of cross-connection abatement requirements.

Design and Construction Standards - The City's Design and Construction Standards and Specifications prescribe installation requirements for backflow prevention assemblies. These City standards are based on recommendations cited by DOH in WAC 246-290-490(2)(b) and as provided in the current edition of the *Cross-Connection Control Manual, Accepted Procedure and Practice* published by the Cross-Connection Control Committee of the Pacific Northwest Section of the American Water Works Association (PNWS-AWWA).

4.1.3 Enforcement

To enforce compliance with the requirements of the CCP, the City reserves the right to install a backflow prevention assembly at the service connection or immediately disconnect a customer's water service if the City determines that an actual or potential cross-connection health hazard exists. Five (5) days prior to disconnection, the City would deliver written notice to the customer by posting a Termination Notice on the front door of the property. Reasons for disconnecting water service could include:

- Customer's refusal to install an approved backflow prevention assembly as directed by the City, the SHD, or the DOH,
- Customer's failure to have the backflow prevention assembly inspected and tested per City requirements,
- Customer's refusal to allow City personnel to inspect the premises,
- City's discovery that an existing backflow prevention assembly is the wrong type, is defective, or is installed improperly,
- City's discovery of a low health hazard cross-connection to the City's water system.

In the event that a customer fails to abate an existing cross-connection within a prescribed time period, the City may abate the cross-connection by installing an approved backflow prevention assembly on the customer's property or disconnect water service to the premises immediately. If either of these procedures is necessary, the City will charge to the property all associated labor and administrative costs and will enforce payment in the same manner as for other City utility rates and charges. If disconnection is necessary, the City will not restore water service until the customer has complied with the backflow program requirements and paid any delinquent rates, charges (including meter reinstallation charges), and fines.

4.2 Element 2: Evaluate Service Connection Hazards

Develop and implement procedures and schedules for evaluating new and existing service connections to assess the degree of hazard each poses. Notify individual consumers of the results within a reasonable time frame.

4.2.1 Health Hazard Designation

WAC 246-290-490 mandates that certain categories of properties or facilities install backflow prevention assemblies or air gaps (or in some cases both) at the service connection appropriate to protect the City's public water system from the actual or potential degree of hazard. The requirement for a given facility or property can be waived when, in the judgment of the City and DOH, no hazard exists. The core list of categories is listed in Table 9 of WAC 246-290-490 (4) (b). This CCP expands that list to include other types of customer water systems as indicated in Table 4-1 below. Thus, City water customers having a premise, facility, or process listed in Table 4-1 must install and maintain an approved air gap or an approved reduced pressure backflow prevention assembly at the customer end of the service connection, prior to any branch connections.

Table 4-1
Required Backflow Prevention Assemblies for
Premises, Facilities, and Processes Requiring Mandatory Service Protection

Premises Category or Activity	Presumed Health Hazard	Minimum Required Protection
Car washes	High	RPBA
Chemical plants (including ice manufacturing plants and battery manufacturing or repair facilities)	High	RPBA
Food processing plants (e.g., canneries, packing houses, slaughter houses, cold storage plants)	High	RPBA
Beverage bottling plants	High	RPBA
Film processing facilities	High	RPBA
Hospitals, medical centers, medical/dental clinics, veterinary clinics, nursing homes, blood plasma centers	High	RPBA
Laboratories	High	RPBA
Metal plating industries	High	RPBA
Mortuaries	High	RPBA
Premises with irrigation systems that use City water in combination with chemical addition (e.g., parks, playgrounds, mobile home/RV parks, golf courses, cemeteries, and estates)	High	RPBA
Petroleum processing or storage plants	High	RPBA
Piers and docks (e.g., graving docks, boat marinas, dry docks)	High	RPBA
Commercial laundries and dry cleaners	High	RPBA
Properties where hazard survey access is restricted or denied	High	RPBA
Premises with unapproved auxiliary water supply interconnected with the potable water supply	High	RPBA

Table 4-1 (cont)
Required Backflow Prevention Assemblies for
Premises, Facilities, and Processes Requiring Mandatory Service Protection

Premises Category or Activity	Presumed Health Hazard	Minimum Required Protection
Radioactive material processing plants or nuclear reactors	High	AG Note 1
Wastewater and/or sewage treatment plants	High	AG Note 1
Wastewater lift stations and pumping stations	High	RPBA
Agricultural facilities (e.g., farms, dairies)	High	RPBA
Premises where both reclaimed water and potable water are provided	High	RPBA
All properties classified as Commercial (including shopping centers)	High	RPBA
Premises having boilers, heat exchangers, solar water heaters, swimming pools, spas, ponds, irrigation systems (with no chemical addition), etc. connected to the potable water supply	High	On-site DCVA Note 2
Premises having an auxiliary water supply and having internal cross-connections that are not correctable	High	RPBA
Premises that handle any substance that is objectionable (not a health hazard) in a manner that poses a potential cross-connection	High	RPBA
Premises having cross-connection hazards that are unavoidable or not correctable (e.g., buildings over 30 feet tall)	High	RPBA
Premises having a repeated history of cross-connections being established or re-established	High	RPBA
Premises with activities that involve toxic substances and/or materials dangerous to health	High	RPBA
Premises with approved auxiliary water supplies	Low	Not Required
Residential flow-through or combination fire protection systems constructed of potable water piping and materials	Low	Not Required
Privately owned fire hydrants and/or service connections with fire protection systems other than flow-through or combination systems that use only City water with no anti-freeze, no chemical additives, and no on-site storage	Low	On-site DCVA Note 2
Premises with fire sprinkler systems that utilize anti-freeze, chemical additives, or auxiliary water supplies	High	RPBA (or RPDA)
Premises that practice graywater use and/or stormwater reuse	High	RPBA
Premises with irrigation systems that use City water only, with no chemical addition	Low	DCVA
Recreational Vehicle Parks	High	RPBA
New Water Main Construction	Low	DCVA
Premises having complex plumbing arrangements and/or plumbing potentially subject to frequent changes that make it impracticable to assess whether cross-connection hazards exist or may exist in the future	High	RPBA

Notes:
1. Or an RPBA plus an in-plant AG
2. Or a DCDA per Uniform Plumbing Code Requirements

Definitions
AG approved air gap
DCDA double check detector assembly
DCVA double check valve assembly
RPBA reduced pressure backflow assembly
RPDA reduced pressure detector assembly

As mentioned previously, a cross-connection hazard assessment may determine that no hazard exists for an existing or proposed service connection to an individual facility of the type listed in Table 4-1. In those cases, the CCP Administrator must document, on a case-by-case basis, the reasons for the no-hazard assessment and include the documentation in the next *Annual Cross-Connection Control Summary Report*. Details for those facilities are kept on file, and the CCP Administrator assigns a high priority to those facilities for future re-evaluation.

At a minimum:

a. For new connections made on or after the effective date of these regulations, conduct initial evaluations before providing water service.

   In the course of issuing building permits, MPWD personnel review plans and specifications for projects involving new water services (or changes to existing water services) to determine whether those projects pose a potential for cross-connection. These reviews also evaluate the availability of auxiliary water supply and the handling of substances that, if introduced into the water supply, would constitute a health hazard.

   During the construction phase of any new building, structure, or ground installation, and during the regular plumbing inspection, the CCS or a qualified Building Inspector conducts a cross-connection control evaluation. Upon completion of the plumbing inspection, but prior to activating a water service connection, the CCP Administrator must acknowledge that a cross-connection control evaluation has been made and that a backflow prevention assembly is or is not required. The customer must install, inspect, and test any required backflow prevention assembly before MPWD completes the new service connection.

b. For existing connections made prior to the effective date of these regulations, conduct initial evaluations in accordance with a schedule acceptable to DOH.

The CCP Administrator establishes the priority for initial Health Hazard Evaluations and repeat evaluations of existing premises based on the risk management policies established by the City, and the minimum requirements imposed by DOH. The CCP Administrator or a designated CCS conducts an initial assessment of health hazards for existing buildings, structures, and grounds based on available information. If there is an identified health hazard and no premise isolation (i.e., service connection backflow preventer), the CCS follows up by contacting individual customers to obtain additional information and/or to schedule on-site evaluations to determine if adequate cross-connection control exists within the premise (see

Section 4.2.2 for details). First priority for these evaluations is given to facilities of the type specified in Table 9 of WAC 246-290-490 (4) (b). This is a list of facilities for which the State has mandated cross-connection control.

An authorized City CCS will conduct an initial health hazard evaluation of the premise. The CCS coordinates with the LAA regarding in-premise protection for properties located outside the City limits[1]. The CCS will document the results of the evaluation in a Health Hazard Evaluation Report.

If a backflow prevention assembly is needed, the CCS notifies the CCP Administrator. The CCP Administrator issues compliance letter 333 and a copy of the Health Hazard Evaluation Report to the property owner.

After notification, the customer must install an approved backflow prevention assembly within 90 days.

On the designated completion date, the CCP Administrator will ensure that the customer has completed the necessary corrective action. If corrective action has not been completed, the CCP Administrator will send the customer a warning letter, which designates a final compliance date for corrective action. On the final compliance date, the CCP Administrator will determine whether corrective action has been completed. If not completed, the CCP Administrator will begin the process of either installing (via City employees or a DOH certified contractor) an approved backflow prevention assembly at the service connection or disconnecting the customer's service. When a customer's service is to be disconnected, the Director of Public Works will authorize the CCP Administrator to prepare and post a Termination Door Tag at the property. The Door Tag will include wording that:

- Identifies the property and the owner/customer of record,
- States the basis for noncompliance of the property with the City's CCP requirements,
- Warns the customer that service is to be disconnected five days after the Door Tag posting date,
- Advises the customer that disconnection can be prevented if the customer provides proof of compliance with the CCP requirements within the five-day period,
- Advises the customer that, after disconnection, service will not be restored until the customer provides proof of compliance with the CCP requirements.

[1] For properties located within City Limits, the City acts as both the water purveyor and the LAA.

In accordance with WAC 246-290-490, the Director of Public Works will notify the LAA before disconnecting a customer's water service.

4.2.2 On-site Health Hazard Evaluation Procedure

Step 1

The CCP Administrator sends the customer a letter, *On-Site Cross-Connection Health Hazard Evaluation Scheduling*. The letter requests that the customer contact MPWD to schedule an on-site evaluation. If the customer responds to the letter, the CCP Administrator schedules an evaluation and proceeds with Step 3 below.

If the customer does not respond to the letter, the CCP Administrator proceeds with Step 2 below.

Step 2

The CCP Administrator sends the customer a warning letter, *FINAL NOTICE - Cross-Connection Evaluation Scheduling*, via Certified Mail, Return Receipt Requested. If the customer responds to the warning letter, the CCP Administrator schedules an evaluation and proceeds with Step 3 below.

If the customer does not respond to the warning letter, the CCP Administrator begins the process of either installing (via City employees or a DOH-certified contractor) an approved backflow prevention assembly at the service connection or disconnecting the customer's service. When a customer's service is to be disconnected, the Director of Public Works authorizes the CCP Administrator to prepare and post a Termination Door Tag at the property. The Door Tag includes wording that:

- ❑ Identifies the property and the owner/customer of record,
- ❑ States the basis for noncompliance of the property with the City's CCP evaluation requirements,
- ❑ Warns the customer that service is to be disconnected five days after the Door Tag posting date,
- ❑ Advises the customer that disconnection can be prevented if the customer contacts the CCP Administrator and schedules an evaluation to be completed within the five-day period,
- ❑ Advises the customer that, after disconnection, service will not be restored until the customer's water system has been evaluated and demonstrated to be in compliance with the CCP requirements.

In accordance with WAC 246-290-490, the Director of Public Works notifies the LAA before disconnecting a customer's water service.

Step 3

Having been given permission by the customer, on the appointed date, the CCP Administrator or another City CCS conducts a health hazard evaluation of the customer's water system and facility. The process involves:

- ❑ Meeting the customer at the property,
- ❑ Obtaining and reviewing copies of system and/or facility drawings,
- ❑ Taking notes,
- ❑ Making field sketches of all lines and connections, except where intricate plumbing arrangements make sketching impractical (in these cases, the CCS will request that the customer provide a drawing that depicts the existing plumbing system and its components including pipe segments, valves, and fittings),
- ❑ Answering any questions the customer may have about the inspection process,
- ❑ Briefing the customer regarding preliminary findings.

The evaluation includes a thorough physical survey of all exposed piping. Underground facilities are verified to the extent possible. The evaluator follows each line to its end point and determines whether there are any actual or potential cross-connections or other conditions with potential for polluting the City's water system.

After assessing evaluation results, the CCP Administrator prepares a Health Hazard Evaluation Report. The report:

- ❑ Identifies the property, the customer, and the owner,
- ❑ Lists locations and optional methods for controlling any existing cross-connections,
- ❑ Identifies the use and evaluates the probability of cross-connection for all industrial fluids, chemicals, or other contaminating liquids used or pumped under pressure at the facility,
- ❑ Includes copies of any drawings, sketches, documents, etc. that were used to support the hazard evaluation,
- ❑ Summarizes the hazard evaluation results,
- ❑ Describes any required or recommended customer actions.

The CCP Administrator adds the completed report to the CCP database and submits a copy to the Director of Public Works. The CCP Administrator also prepares and sends a letter to the customer that outlines the findings of the report, specifies any corrective action required, and establishes a time limit (normally 90 days) for the customer to complete the action. For evaluations that require customer action, copies of the letter and report are sent to the Public Health Officer, the Building Department, and to the CCP suspense file by date corrective action is to be completed.

The Health Hazard Evaluation Report includes wording to inform the customer that the evaluation of the premises is for the purpose of implementing the City's minimum requirements for protecting the public water supply system, commensurate with the City's assessment of the degree of health hazard. Further, the wording warns the customer that the City backflow prevention assembly survey requirements, or other actions by City personnel, do not constitute approval of the customer's plumbing system or assurance of the absence of cross-connections.

On the corrective action completion date, the CCP Administrator reviews the property file and/or re-evaluates the property to determine whether required corrections have been completed. If all required actions have been completed, a record of the corrections is added to the CCP database. If corrections have not been completed, the CCP Administrator reports the results of the determination to the Director of Public Works who initiates enforcement action as appropriate under the provisions of the City ordinance and/or DOH regulations (see Section 4.2.1 for details).

c. <u>For all service connections, after an initial evaluation is completed, conduct reevaluations on a periodic basis, using a schedule acceptable to DOH, and whenever there is a change in the use of the premises.</u>

For existing service connections to individual facilities of the type listed in Table 4-1, the CCP Administrator conducts follow-up cross-connection hazard assessments on a periodic basis. These follow-up activities verify that required backflow prevention assemblies are installed and operating properly or that the property continues to pose no hazard.

4.3 Element 3: Establish Procedures and Schedules

<u>Develop and implement procedures and schedules to ensure that:</u>

a. <u>Cross-connections are eliminated if possible</u>

b. <u>Cross-connections that cannot be eliminated are controlled by approved backflow prevention assemblies appropriate to the assessed degrees of hazard</u>

Elimination is the optimum remedy for cross-connections. In cases where elimination is not feasible from a mechanical or economic standpoint, the CCP Administrator uses the criteria and procedures detailed in Element 2 above to determine the appropriate backflow prevention for a given water service connection. For resulting installations, whether they are protecting the water distribution system from customer- or City- owned facilities, the CCP Administrator ensures that the selected type of backflow assembly meets the minimum specifications found in the DOH regulations [Table 8 of WAC 246-290-490 (4)(a)(ii)].

Any water customer using a privately owned vehicle to obtain water from a City fire hydrant must equip the vehicle with an approved air gap to eliminate the possibility for cross-connection. Further, the vehicle operator must obtain a permit and follow the procedures prescribed by the City's Fire Hydrant Utilization Program as described in Appendix C.

For temporary water system connections, the CCP implements cross-connection control as follows:

- ***Commissioning New Water Main Segments*** – Until disinfection, flushing, and satisfactory bacteriological sampling have been completed, new sections of water main must be considered contaminated. Therefore, the City uses approved double check valve assemblies to isolate new sections of water main from the existing system until the new sections are disinfected, inspected, approved, and placed in operation.
- ***Connecting Fixed or Mobile Tanks*** - Chemical or bacteriological contaminants may be present in any fixed or mobile tank. Therefore, the City assesses a high health hazard to tanker trucks that are to be filled via a connection to the public water supply. To ensure backflow protection, each such tanker truck must be equipped with an approved air gap or an approved reduced pressure backflow assembly located between the tank and the City's water supply.
- ***Flushing Sewers*** – City sewers and storm drains are susceptible to chemical and bacteriological contamination. When these facilities are flushed, an approved air gap is maintained to protect the potable water system. If possible, flushing water is provided from tanker trucks.
- ***Connecting Portable Cleaning Units*** - Portable pressure spray or cleaning units may become contaminated. When the City connects any of these units to the potable water supply, they isolate the unit by using an approved air gap or an approved double check valve assembly. If the unit or the cleaning operation uses chemicals, then an approved reduced pressure backflow assembly must be installed.

c. Approved backflow prevention assemblies are selected and installed in accordance with WAC 246-290-490(6).

The MPWD requires that all backflow prevention assemblies be selected and installed in accordance with the current edition of the Cross-Connection Control Manual, Accepted Procedure and Practice, published by the Cross-Connection Control Committee of the Pacific Northwest Section of the American Water Works Association (PNWS-AWWA). Appendix F provides detailed backflow prevention assembly installation requirements.

4.4 Element 4: Utilize Qualified Cross-Connection Specialists

The City must ensure that qualified personnel are available to develop and implement the CCP. The personnel provided must include at least one individual who holds DOH certification as a CCS.

Per WAC 246-292, a certified Cross-Connection Control Specialist (CCS) is required to have a minimum of twelve (12) years of education and six (6) months of practical experience in performing hands-on duties associated with cross-connection evaluation and control.

MPWD has encouraged personnel to become certified and to remain active in cross-connection training programs. As of July 2002, six MPWD employees hold state certification as CCS. In addition, three MPWD employees hold state certification as Backflow Assembly Tester (BAT).

MPWD assigns one CCS (i.e., the Water Quality Supervisor) to serve as CCP Administrator. Other MPWD employees holding CCS certification routinely assist the CCP Administrator. In addition, City management assigns other City personnel, as necessary, to assist the CCP Administrator in implementing the program. These other personnel include clerical staff, maintenance and operations personnel, Engineering Department staff, and Parks and Recreation Department staff. DOH renews CCS and BAT certifications on an annual basis based on documented training through attendance at recognized courses and seminars in cross-connection control and backflow prevention.

4.5 Element 5: Establish Testing and Inspection Procedures

Develop and implement procedures to ensure that approved backflow prevention assemblies are inspected and/or tested in accordance with WAC 246-290-490(7).

4.5.1 Testing and Inspection Procedures

MPWD personnel are responsible for installing, testing, and maintaining all City-owned backflow prevention assemblies including assemblies used to isolate the City-owned sewer lift stations and City-owned fire service

connections. A City CCS also inspects and maintains air gaps on customer vehicles that have been permitted for withdrawing water from City fire hydrants.

Individual customers are responsible for installing, testing, and maintaining all backflow prevention assemblies required for isolating their premises from the City's water supply system. To guide and assist customers in meeting this responsibility, the CCP Administrator provides customers with pertinent information including:

- Letters explaining the requirements and the prescribed schedules for annual testing and maintenance,
- A list of individuals certified by DOH as qualified to perform assembly testing,
- Blank forms for use in documenting assembly installation, initial inspection, testing, and maintenance,
- Reminder letters and, if necessary, warning notices to customers who fail to return completed Backflow Prevention Assembly Test Reports within the prescribed time schedule.

The customer's responsibility also includes testing assemblies used to isolate fire services located on the customer's property. Appendix G includes notes, dimensions, and requirements associated with installing and testing privately owned fire service backflow prevention assemblies. Fire service assembly testing must be in accordance with these Appendix G procedures.

4.5.2 Annual Backflow Prevention Assembly Testing Correspondence

DOH regulations require that all backflow prevention assemblies installed for premise isolation be tested after initial installation and annually thereafter. Existing assemblies must also be tested after repair or relocation. The computerized CCP database tracks customers (i.e., properties or facilities) who have installed backflow prevention assemblies. Approximately 30 days before a given assembly is due for annual testing, the database reminds the CCP Administrator to send the customer a letter that identifies the testing requirement and schedule. Annual CCP assembly testing correspondence follows the steps outlined below.

Step 1

The CCP Administrator sends the customer a letter, *Annual Backflow Prevention Assembly Testing Requirement*, as notification of the upcoming testing requirement and schedule. Appendix E includes a sample letter. The letter informs the customer that tests must be completed and satisfactory

test results submitted to the City within thirty (30) days from the date of the notice.

If the customer responds to the letter by submitting a Backflow Prevention Assembly Test Report, the CCP Administrator enters the report information into the CCP database. If the test report indicates that a new assembly has been installed or an existing assembly has been replaced, the CCP Administrator verifies that the new or replacement assembly is included in the current list of DOH-approved assemblies. If a replacement unit does not appear on the list, the CCP Administrator issues a letter to notify the customer. The CCP Administrator proceeds with Step 3 below.

If the customer does not respond to the notification letter, CCP Administrator proceeds with Step 2 below.

Step 2

The CCP Administrator sends the customer a warning letter, *FINAL NOTICE - Annual Backflow Prevention Assembly Testing Requirement*, via Certified Mail, Return Receipt Requested. Appendix E includes a sample letter.

If the customer responds to the warning letter by submitting a Backflow Prevention Assembly Test Report, the CCP Administrator enters the report information into the CCP database. The CCP Administrator proceeds with Step 3 below.

If the customer does not respond to the warning letter, the CCP Administrator begins the process of either installing (via City employees or a DOH-certified contractor) an approved backflow prevention assembly at the service connection or disconnecting the customer's service. When a customer's service is to be disconnected, the Director of Public Works authorizes the CCP Administrator to prepare and post a Termination Door Tag at the property. The Door Tag includes wording that:

- ❑ Identifies the property and the owner/customer of record,
- ❑ States the basis for noncompliance of the property with the City's CCP backflow prevention requirements,
- ❑ Warns the customer that service is to be disconnected five days after the Door Tag posting date,
- ❑ Advises the customer that disconnection can be prevented if the customer provides proof of compliance with the CCP requirements within the five-day period,

- Advises the customer that, after disconnection, service will not be restored until the customer provides proof of compliance with the CCP requirements.

In accordance with WAC 246-290-490, the Director of Public Works notifies the LAA before disconnecting a customer's water service.

Step 3

The CCP Administrator sends the customer a letter, *Participation in Annual Backflow Prevention Assembly Testing,* to express the City's appreciation for the customer's cooperation. Appendix E includes a sample letter.

4.6 Element 6: Establish a Quality Assurance Program for Testing

Develop and implement a quality assurance program for testing backflow prevention assemblies. The program must include documentation of tester certification and test kit calibration, test report content, and schedules for submitting test reports.

The CCP uses WAC 246-290-490(7) as a basis for ensuring performance of all backflow prevention assembly testing.

The CCP Administrator conducts an annual survey of backflow assembly testers (BATs) to assess their interest in being included in the Marysville area list. Interested BATs are required to provide copies of their current certification cards before they are included. The CCP Administrator maintains a list of individuals who do business in the Marysville area and who are currently certified as Backflow Assembly Testers (BATs) by DOH to test, install, and repair backflow prevention assemblies. This list is stored in the Tokay database and updated annually based on an initial list obtained from DOH. Appendix H contains the July 2002 version of the City's list. If a customer submits a test report performed by a BAT who is not on the City's list, the CCP Administrator consults the current DOH list to verify the tester's certification. Appendix E includes a sample of the letter and form the City sends to prospective testers to obtain information for updating the List. As a courtesy, the City provides a copy of this BAT list to affected customers to assist them in locating qualified personnel to perform initial or annual inspections and testing.

The CCS ensures that all Backflow Prevention Assembly Test Reports contain the required information, such as test kit calibration dates, line pressure readings, and the presence of a pressure-regulating valve upstream of the backflow prevention assembly.

Certified backflow assembly testers are also required to submit annual, written verification of calibration accuracy for any test equipment they utilize. Calibration

standards and procedures must comply with those specified by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research.

4.7 Element 7: Establish Incident Response Procedures

Develop and be prepared to implement procedures for responding to backflow incidents.

MPWD personnel are trained to respond to any actual or suspected backflow incident. In summary, detection or suspicion of a backflow incident initiates the following procedures:

- The CCS will recruit any necessary support personnel and contact the customer to arrange an immediate, on-site assessment. Initially, the assessment will focus on determining the nature, severity, and extent of contamination. Operations personnel may suspend water service to the customer and/or to adjoining segments of the distribution system while this determination is proceeding.
- After a preliminary assessment, the CCS will recruit assistants, as required, to further diagnose the problem, to make repairs, and/or to restore water quality. Generally, these assistants will be MPWD operating and maintenance personnel. If the incident involves an industrial facility, the CCS may enlist the assistance of the customer's operating and/or maintenance personnel.
- If it appears that public notification may be required, the CCS will inform the Director of Public Works.
- The CCS will notify the Snohomish Health District and DOH of the problem as soon as the assessment is complete.
- If water service has been suspended, the City will restore service only after the cross-connection has been eliminated and any residual contamination has been removed.

These procedures were developed based on guidance provided in:

- *Cross Connection Control Program Administration*, First Edition, January 1998, published by the Cross-Connection Control Committee of the Pacific Northwest Section of the American Water Works Association (PNWS-AWWA).
- *Backflow Incident Investigation Procedures*, First Edition, December 1996, published by the Cross-Connection Control Committee of the Pacific Northwest Section of the American Water Works Association (PNWS-AWWA).

Appendix I describes the City's backflow incident response procedures in detail.

4.8 Element 8: Implement Consumer Education

Incorporate information on cross-connection control into the City's existing consumer education program.

The City recognizes that consumer education is perhaps the most important element of an effective Cross-Connection Control Program. Consumer education leverages limited City resources and personnel by involving customers in the effort to identify potential cross-connection hazards in homes and by describing backflow prevention assemblies that are recommended and approved for installation by the customer to eliminate or reduce these hazards. The City's consumer education program focuses on explaining the necessity of the CCP in protecting the health of water system customers and on the customer's obligation to comply with the underlying regulations and associated requirements.

4.8.1 Customer Information Kit

The primary tool the City uses for educating consumers about the hazards and requirements associated with cross-connection control is the Customer Information Kit (Appendix J). These kits include information, forms, and instructions designed to guide water system customers through the installation, inspection, and testing process necessary to comply with City and State cross-connection control regulations. The information describes types of facilities and/or potential hazards that require backflow prevention assemblies. It also describes the types of assemblies approved for protecting against different hazard categories.

The CCP Administrator issues the kits according to a priority system that accounts for the CCS's actual or potential risk assessment for the customer's facility or property based on known information. Typically, kits are issued to individual customers in three situations:

- A building permit review indicates that a customer's proposed facility may require cross-connection control,
- A customer requests CCP-related information,
- A hazard evaluation indicates that a customer's existing facility poses a risk of cross-connection health hazards.

4.8.2 Public Involvement Programs

The City is considering developing, advertising, and conducting a series of public forums where MPWD personnel would meet with area organizations and/or groups of individual citizens to explain the basics of cross-connection control and, thus, promote understanding and compliance with the program's objectives. Other potential education opportunities being considered include

adding cross-connection control facts and examples to customer newsletters, brochures, consumer confidence reports, displays at public gatherings, and training sessions for City employees and interested customers. These efforts would present the issue in understandable terms and stress the importance of compliance as a means of maintaining public health.

4.9 Element 9: Maintain Program Records

Develop and maintain cross-connection control program records including:

a. A master list of service connections and/or premises where backflow prevention assemblies are installed, the assessed hazard level for each location, and the type of assembly required and/or installed at each location.

The MPWD recognizes that an up-to-date record system is essential to operation of a successful CCP. Accurate records enhance the City's ability to discover potential cross-connections and eliminate or control them in a timely manner. Detailed records also constitute a basis for any enforcement action or legal defense by the City.

The CCP Administrator uses Tokay, a proprietary software application, for storing, organizing, and tracking CCP records. Tokay includes a menu of services that allow the CCP Administrator to identify and locate the premises where backflow prevention assemblies are installed (or need to be installed) so that appropriate information, instructions, and notifications can be sent to the customer in a timely manner. The CCP Administrator stores blank copies of CCP Backflow Prevention Assembly Test Report Forms and associated customer notification form letters in Microsoft WORD format. See Appendix E for sample program forms and letters, as well as an example assembly inventory list.

The CCP Administrator collects new backflow prevention assembly data, health hazard evaluation data, and Backflow Prevention Assembly Test Reports and adds the information to the CCP file or uses the data to update the Tokay database at regular intervals.

b. Inventory information on:

- ❑ Approved air gaps installed in lieu of approved assemblies, including exact location, assessed degree of hazard, history of health hazard evaluations, installation date, and inspection history (identify dates, results, and inspectors),

- ❑ Approved backflow prevention assemblies including exact location, description (type, manufacturer, model, size, and serial number), assessed degree of hazard, history of health hazard evaluations, installation date, and

inspection history (identify dates, tests performed, test results, assembly repairs, and inspectors),

- ❑ Approved atmospheric vacuum breakers used for irrigation systems including exact location, description (manufacturer, model, and size), installation date, and inspection history (identify dates, results, and inspectors).

The CCP Administrator maintains a list of service connections where approved backflow prevention assemblies are installed to protect the water system from contamination. This list includes the assessed hazard for each connection. The database includes information from all Backflow Prevention Assembly Test Reports and copies of the underlying Health Hazard Evaluation Reports, along with any supporting documents and drawings. The database includes copies of all CCP-related correspondence with individual customers. These records are kept for each property for as long as that property poses a cross-connection hazard to the City's distribution system. For any facility that poses a high health risk of the type mentioned in Table 9 of WAC 246-290-490 (4) (b) but that has no cross-connections at present, the CCP files document why backflow prevention is waived.

c. CCP summary reports and backflow incident reports required by WAC 246-290-490(8).

The CCP Administrator prepares an Annual Cross-Connection Control Summary Report as required by WAC 246-290-490(8) to document the program status and significant activities that occurred during the previous year. The CCP Administrator submits a copy of this report to DOH. The CCP Administrator also distributes copies of this report to the cross-connection program file, to the Director of Public Works, and to appropriate Public Works Department operations and maintenance personnel. Appendix E includes a sample annual report form.

For any backflow incident that occurs, the CCP Administrator prepares a Backflow Incident Report to document all facets of the incident and the associated response. Appendix I includes a sample Backflow Incident Report Form. The CCP Administrator places the original incident report into the cross-connection program file and directs copies to DOH, SHD, PNWS-AWWA, and the Director of Public Works. The CCP Administrator also directs copies to appropriate City operations and maintenance personnel. In addition, record copies of backflow incident reports are attached to the City's next Annual Cross-Connection Control Summary Report for submittal to DOH. Per WAC requirements, these Annual Reports are kept on file for at least five years.

In addition to the reports mentioned above, the CCP Administrator prepares a monthly Cross-Connection Program Report to summarize the program status and to

document recent program activities. The CCP Administrator distributes copies of this report to the CCP file and to the Director of Public Works for distribution to appropriate Public Works Department operations and maintenance personnel. Appendix E includes a sample monthly report form.

4.10 Element 10: Satisfy Reclaimed Water Requirements

Purveyors who distribute and/or have facilities that receive reclaimed water within their service area shall meet any additional cross-connection control requirements imposed by the DOH by obtaining a permit issued in accordance with Chapter 90.46 of the Revised Code of Washington (RCW).

Currently, MPWD does not receive or distribute any reclaimed water. Thus, there is no current requirement for meeting RCW 90.46.

DOH requires that any facility that uses reclaimed water and that also uses the City's water supply must install an air gap or reduced pressure backflow assembly to protect the City's water distribution system. Currently, there are no facilities in the City known to be using reclaimed water.

Section 5
References

Marysville Municipal Code, Title 14, Chapter 14.10 Water Supply Cross-Connections.

WAC 246-290-490, Cross-Connection Control.

1997 Uniform Plumbing Code (including City of Marysville Amendments).

Backflow Incident Investigation Procedures, First Edition, December 1996, published by the Cross Connection Control Committee of the Pacific Northwest Section of the American Water Works Association (PNWS-AWWA).

Manual of Cross-Connection Control, published by the Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California.

Cross-Connection Control Manual, Accepted Procedure and Practice, current edition, published by the Cross-Connection Control Committee of the Pacific Northwest Section of the American Water Works Association (PNWS-AWWA).

City of Marysville Design and Construction Standards and Specifications for Development.

Appendices

Appendix A
City of Marysville
Cross-Connection Control Ordinance

Appendix A

City of Marysville Cross-Connection Control Ordinance

Chapter 14.10 Water Supply Cross-Connections

DRAFT FINAL

Sections:

14.10.010 Adoption of state regulations
14.10.020 Definitions
14.10.030 Compliance required
14.10.040 Cross-connection prohibited
14.10.050 Use of backflow prevention devices
14.10.060 Backflow prevention device installation
14.10.070 Backflow prevention device inspection and testing
14.10.080 Fire hydrant utilization
14.10.090 Enforcement of cross-connection control regulations

14.10.010 Adoption of state regulations.
The Washington State Department of Health regulations concerning cross-connection control (i.e., Washington Administrative Code 246-290-490) are incorporated herein by reference as though fully set forth.
(Amended, 2002)

14.10.020 Definitions.
As used in this chapter, unless the context states otherwise, the following definitions shall apply:
(1) "Air gap separation" means the unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supplying water to a tank, plumbing fixture, or other device and the flood level rim of the receptacle, and is at least double the diameter of the supply pipe measured vertically above the flood level rim of the vessel. In no case shall the gap be less than one inch;
(2) "Auxiliary supply" means any water source or system, other than the public water supply, that may be available in the building or premises;
(3) "Backflow" means the flow other, than the intended direction of flow, of any foreign liquids, gases or substances into the distribution system of a public water supply:
(a) "Back pressure" means backflow caused by a pump, elevated tank, boiler or other means that could create pressure within the system greater than the supply pressure,
(b) "Back siphonage" means a form of backflow due to a negative or subatmospheric pressure within a water system;
(4) "Backflow prevention device" means a device to counteract back pressures or prevent back siphonage;
(5) "Cross-connection" means any physical arrangement whereby a public water supply is connected, directly or indirectly, with any other water supply system, sewer, drain, conduit, pool, storage reservoir, plumbing fixture or other device which contains, or may contain, contaminated water, sewage or other waste or liquid of unknown or unsafe quality which may be capable of imparting contamination to the public water supply as a result of backflow, bypass arrangements, jumper connections, removable sections, swivel or change-over devices, and other temporary or permanent devices through which, or because of which, backflow could occur are considered to be cross-connections;
(6) “Customer” means any person, family, business, corporation, partnership or firm connected to the City of Marysville water supply;
(7) “Customer’s water system” includes point-of-use facilities located downstream of the City's individual service connections and/or meters;

(8) "Double check valve assembly" means an assembly composed of two single, independently acting check valves, including tightly closing shutoff valves located at each end of the assembly and suitable connections for testing the watertightness of each check valve;
(9) “Local Administrative Authority” means the entity responsible for enforcing the Uniform Plumbing Code;
(10) “Public water system” consists of all water treatment, storage, and distribution facilities under the City’s complete control and upstream of the City's individual service connections and/or meters;
(11) “Purveyor” means the entity that owns the public water system and is responsible for cross-connection control and prevention related to the public water system;
(12) "Reduced pressure principle backflow prevention device" means a device incorporating two or more check valves and an automatically operating differential relief valve located between the two checks, two shutoff valves and equipped with necessary appurtenances for testing. The device shall operate to maintain the pressure in the zone between the two check valves, less than the pressure on the public water supply side of the device. At cessation of normal flow, the pressure between the check valves shall be less than the supply pressure. In case of leakage of either check valve the differential relief valve shall operate to maintain this reduced pressure by discharging to the atmosphere. When the inlet pressure is two pounds per square inch or less the relief valve shall open to the atmosphere thereby providing an air gap in the device.
(Amended 2002, Prior code 14.10.050)

14.10.030 Compliance required.
Any customer who is now receiving water from the Marysville public water system or who will in the future receive water from the City of Marysville, regardless whether residing within or without the city limits of the City of Marysville, and including any other water district, municipal organization, or other organization connected to the City of Marysville public water system, shall comply with the rules and regulations contained in this chapter.
(Amended 2002, Prior code 14.10.010 and 14.10.030)

14.10.040 Cross-connection prohibited.
(1) Except as provided in MMC 14.10.050, all cross-connections, as defined in MMC 14.10.020, which may pose a water quality contamination threat to the public water supply, whether or not such cross-connections are controlled by automatic devices such as check valves or by hand-operated mechanisms such as a gate valve or stop cocks, are prohibited.
(2) Cross-connections that pose a water quality contamination threat solely to the customer’s water system must be removed or controlled, as set forth by the Uniform Plumbing Code, which is incorporated by reference into MMC 16.08.010.
(3) Failure on the part of persons, firms or corporations to discontinue the use of any and all cross-connections and to physically separate such cross-connections will be sufficient cause for the discontinuance of the public water service to the premises on which the cross-connection exists.
(4) The purveyor shall, in cooperation with the local administrative authority, make periodic evaluations of premises served by the public water supply to check for the presence of cross-connections. Any cross-connections found in such evaluation shall be ordered removed by the responsible agency. If an immediate hazard to health is caused by the cross-connection, water service to the premises may be discontinued until it is verified that the cross-connection has been removed.
(Amended 2002, Prior code 14.10.060)

14.10.050 Use of backflow prevention assemblies.
Backflow prevention assemblies shall be installed at the service connection or within any premises where, in the judgment of the purveyor or the local administrative authority, the nature and extent of activities on the premises, or the materials used in connection with the activities, or materials stored on the premises would present an immediate and dangerous hazard to health should a cross-connection occur, even though such cross-connection does not exist at the time the backflow prevention assembly is required to be installed. The type of protective assembly required herein shall depend on the presumed degree of health hazard which exists, as follows:
(1) An air gap separation or a reduced pressure principle backflow prevention assembly shall be installed where the water supply may be contaminated with sewage, industrial waste of a toxic nature or other contaminant which would cause a high health or system hazard;
(2) In the case of a low health hazard (i.e., a substance which may be objectionable but not hazardous to health), a double check valve assembly, air gap separation, or a reduced pressure principle backflow prevention assembly shall be installed.

Situations requiring the use of a backflow prevention assembly include, but are not limited to, the following:

Table 14.10.050-1

Required Backflow Prevention Assemblies for
Premises, Facilities, and Processes Requiring Mandatory Service Protection

Premises Category or Activity	**Presumed Health Hazard**	**Minimum Required Protection**
Car washes	High	RPBA
Chemical plants (including ice manufacturing plants and battery manufacturing or repair facilities)	High	RPBA
Food processing plants (e.g., canneries, packing houses, slaughter houses, cold storage plants)	High	RPBA
Beverage bottling plants	High	RPBA
Film processing facilities	High	RPBA
Hospitals, medical centers, medical/dental clinics, veterinary clinics, nursing homes, blood plasma centers	High	RPBA
Laboratories	High	RPBA
Metal plating industries	High	RPBA
Mortuaries	High	RPBA
Premises with irrigation systems that use City water in combination with chemical addition (e.g., parks, playgrounds, mobile home/RV parks, golf courses, cemeteries, and estates)	High	RPBA
Petroleum processing or storage plants	High	RPBA
Piers and docks (e.g., graving docks, boat marinas, dry docks)	High	RPBA
Commercial laundries and dry cleaners	High	RPBA
Properties where hazard survey access is restricted or denied	High	RPBA
Premises with unapproved auxiliary water supply interconnected with the potable water supply	High	RPBA
Radioactive material processing plants or nuclear reactors	High	AG Note 1
Wastewater and/or sewage treatment plants	High	AG Note 1
Wastewater lift stations and pumping stations	High	RPBA
Agricultural facilities (e.g., farms, dairies)	High	RPBA
Premises where both reclaimed water and potable water are provided	High	RPBA
All properties classified as Commercial (including shopping centers)	High	RPBA
Premises having boilers, heat exchangers, solar water heaters, swimming pools, spas, ponds, irrigation systems (with no chemical addition), etc. connected to the potable water supply	High	On-site DCVA Note 2
Premises having an auxiliary water supply and having internal cross-connections that are not correctable	High	RPBA
Premises that handle any substance that is objectionable (not a health hazard) in a manner that poses a potential cross-connection	High	RPBA
Premises having cross-connection hazards that are unavoidable or not correctable (e.g., buildings over 30 feet tall)	High	RPBA
Premises having a repeated history of cross-connections being established or re-established	High	RPBA
Premises with activities that involve toxic substances and/or materials dangerous to health	High	RPBA
Premises with approved auxiliary water supplies	Low	Not Required
Residential flow-through or combination fire protection systems constructed of potable water piping and materials	Low	Not Required
Privately owned fire hydrants and/or service connections with fire protection systems other than flow-through or combination systems that use only City water with no anti-freeze, no chemical additives, and no on-site storage	Low	On-site DCVA Note 2
Premises with fire sprinkler systems that utilize anti-freeze, chemical additives, or auxiliary water supplies	High	RPBA (or RPDA)
Premises that practice graywater use and/or stormwater reuse	High	RPBA
Premises with irrigation systems that use City water only, with no chemical addition	Low	DCVA
Recreational Vehicle Parks	High	RPBA
New Water Main Construction	Low	DCVA
Premises having complex plumbing arrangements and/or plumbing potentially subject to frequent changes that make it impracticable to assess whether cross-connection hazards exist or may exist in the future	High	RPBA

Notes:

1. Or an RPBA plus an in-plant AG
2. Or a DCDA per Uniform Plumbing Code Requirements

Definitions

AG	approved air gap
DCDA	double check detector assembly
DCVA	double check valve assembly
RPBA	reduced pressure backflow assembly
RPDA	reduced pressure detector assembly

Any backflow prevention assembly required, as described above, shall be a model approved by the Washington State Department of Health (DOH). A double check valve assembly or a reduced pressure principle backflow prevention assembly will be approved if it has successfully passed performance tests of the University of Southern California Engineering Center or other testing laboratories satisfactory to DOH.
(Amended 2002, Prior code 14.10.070, 14.10.080, and 14.10.110)

14.10.060 Backflow prevention assembly installation.
Backflow prevention assemblies required in MMC 14.10.050 shall be installed at the meter, at the property line of the premises when meters are not used, or at a location designated by the purveyor or local administrative authority. The assembly shall be located so as to be readily accessible for maintenance and testing, and where no part of the assembly will be submerged. Backflow prevention assemblies required in MMC 14.10.050 shall be installed under the supervision of, and with the approval of, the purveyor.
(Amended 2002, Prior code 14.10.090 and 14.10.100)

14.10.070 Backflow prevention assembly inspection and testing.
Backflow prevention assembly installed under MMC 14.10.050 shall be inspected and tested upon installation and annually thereafter, or more often where successive inspections indicate repeated failure. Testing shall be done by a certified backflow assembly tester (BAT), whose name is present on the City's list of certified BATs. The assemblies shall be repaired, overhauled, or replaced whenever they are found to be defective. Inspections, tests, repairs, and records thereof shall be at the expense of the owner of the assembly and shall be done under the City's supervision.
(Amended 2002, Prior code 14.10.120)

14.10.080 Fire hydrant utilization.
Temporary utilization of City fire hydrants by construction contractors or other City water customers is allowable only if users apply for and are granted a valid Vehicle or Site Fire Hydrant Utilization Permit.
(Amended 2002)

14.10.090 Enforcement of cross-connection control regulations.
To enforce compliance with the requirements of MMC 14.10.010 through 14.10.080, the City reserves the right to correct an actual or potential cross-connection health hazard by installation of a backflow prevention assembly, or by immediately disconnecting a customer's water service if immediate remediation is not possible. Failure of any customer or any district organization to cooperate in the removal of a cross-connection, or the installation, maintenance, testing, or backflow prevention assembly or the requirements of an air gap separation shall be grounds for the termination of the water services at a point where such flow, which is to be terminated by the City of Marysville, would best prevent possible contamination of the public water supply.
(Amended 2002, Prior code 14.10.130)

Appendix B
WAC Chapter 246-290-490
Cross-Connection Control

Appendix B

WAC Chapter 246-290-490 Cross-Connection Control

Effective April 9, 1999

WAC 246-290-490 Cross-connection control. (1) Applicability, purpose, and responsibility.

(a) All community water systems shall comply with the cross-connection control requirements specified in this section.

(b) All noncommunity water systems shall apply the principles and provisions of this section, including subsection (4)(b) of this section, as applicable to protect the public water system from contamination via cross-connections. Noncommunity systems that comply with subsection (4)(b) of this section and the provisions of WAC 51-46-0603 of the UPC (which addresses the installation of backflow preventers at points of water use within the potable water system) shall be considered in compliance with the requirements of this section.

(c) The purpose of the purveyor's cross-connection control program shall be to protect the public water system, as defined in WAC 246-290-010, from contamination via cross-connections.

(d) The purveyor's responsibility for cross-connection control shall begin at the water supply source, include all the public water treatment, storage, and distribution facilities, and end at the point of delivery to the consumer's water system, which begins at the downstream end of the service connection or water meter located on the public right-of-way or utility-held easement.

(e) Under the provisions of this section, purveyors are not responsible for eliminating or controlling cross-connections within the consumer's water system. Under chapter 19.27 RCW, the responsibility for cross-connection control within the consumer's water system, i.e., within the property lines of the consumer's premises, falls under the jurisdiction of the local administrative authority.

(2) General program requirements.

(a) The purveyor shall develop and implement a cross-connection control program that meets the requirements of this section, but may establish a more stringent program through local ordinances, resolutions, codes, bylaws, or operating rules.

(b) Purveyors shall ensure that good engineering and public health protection practices are used in the development and implementation of cross-connection control programs. Department publications and the most recently published editions of references, such as, but not limited to, those listed below, may be used as guidance for cross-connection program development and implementation:

(i) *Manual of Cross-Connection Control* published by the Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California (USC Manual); or

(ii) *Cross-Connection Control Manual, Accepted Procedure and Practice* published by the Pacific Northwest Section of the American Water Works Association (PNWS-AWWA Manual).

(c) The purveyor may implement the cross-connection control program, or any portion thereof, directly or by means of a contract with another agency or party acceptable to the department.

(d) The purveyor shall coordinate with the local administrative authority in all matters concerning cross-connection control. The purveyor shall document and describe such coordination, including delineation of responsibilities, in the written cross-connection control program required in (e) of this subsection.

(e) The purveyor shall include a written description of the cross-connection control program in the water system plan required under WAC 246-290-100 or the small water system management program required under WAC 246-290-105. The cross-connection control program shall include the minimum program elements described in subsection (3) of this section.

(f) The purveyor shall ensure that cross-connections between the distribution system and a consumer's water system are eliminated or controlled by the installation of an approved backflow preventer commensurate with the degree of hazard. This can be accomplished by implementation of a cross-connection program that relies on:

(i) Premises isolation as defined in WAC 246-290-010; or

(ii) Premises isolation and in-premises protection as defined in WAC 246-290-010.

(g) Purveyors with cross-connection control programs that rely both on premises isolation and in-premises protection:

(i) Shall comply with the premises isolation requirements specified in subsection (4)(b) of this section; and

(ii) May reduce premises isolation requirements and rely on in-premises protection for premises other than the type not addressed in subsection (4)(b) of this section, if the conditions in (h) of this subsection are met.

(h) Purveyors may rely on in-premises protection only when the following conditions are met:

(i) The in-premises backflow preventers provide a level of protection commensurate with the purveyor's assessed degree of hazard;

(ii) Backflow preventers which provide the in-premises backflow protection meet the definition of approved backflow preventers as described in WAC 246-290-010;

(iii) The approved backflow preventers are installed, inspected, tested (if applicable), maintained, and repaired in accordance with subsections (6) and (7) of this section;

(iv) Records of such backflow preventers are maintained in accordance with subsections (3)(j) and (8) of this section; and

(v) The purveyor has reasonable access to the consumer's premises to conduct an initial hazard evaluation and periodic reevaluations to determine whether the in-premises protection is adequate to protect the purveyor's distribution system.

(i) The purveyor shall take appropriate corrective action within its authority if:

(i) A cross-connection exists that is not controlled commensurate to the degree of hazard assessed by the purveyor; or

(ii) A consumer fails to comply with the purveyor's requirements regarding the installation, inspection, testing, maintenance or repair of approved backflow preventers required by this chapter.

(j) The purveyor's corrective action may include, but is not limited to:

(i) Denying or discontinuing water service to a consumer's premises until the cross-connection hazard is eliminated or controlled to the satisfaction of the purveyor;

(ii) Requiring the consumer to install an approved backflow preventer for premises isolation commensurate with the degree of hazard; or

(iii) The purveyor installing an approved backflow preventer for premises isolation commensurate with the degree of hazard.

(k) Purveyors denying or discontinuing water service to a consumer's premises for one or more of the reasons listed in (i) of this subsection shall notify the local administrative authority prior to taking such action except in the event of an emergency.

(l) The purveyor shall prohibit the intentional return of used water to the purveyor's distribution system. Such water would include, but is not limited to, water used for heating, cooling, or other purposes within the consumer's water system.

(3) Minimum elements of a cross-connection control program.

(a) To be acceptable to the department, the purveyor's cross-connection control program shall include the minimum elements identified in this subsection.

(b) Element 1: The purveyor shall adopt a local ordinance, resolution, code, bylaw, or other written legal instrument that:

(i) Establishes the purveyor's legal authority to implement a cross-connection control program;

(ii) Describes the operating policies and technical provisions of the purveyor's cross-connection control program; and

(iii) Describes the corrective actions used to ensure that consumers comply with the purveyor's cross-connection control requirements.

(c) Element 2: The purveyor shall develop and implement procedures and schedules for evaluating new and existing service connections to assess the degree of hazard posed by the consumer's premises to the purveyor's distribution system and notifying the consumer within a reasonable time frame of the hazard evaluation results. At a minimum, the program shall meet the following:

(i) For new connections made on or after the effective date of these regulations, procedures shall ensure that an initial evaluation is conducted before service is provided;

(ii) For existing connections made prior to the effective date of these regulations, procedures shall ensure that an initial evaluation is conducted in accordance with a schedule acceptable to the department; and

(iii) For all service connections, once an initial evaluation has been conducted, procedures shall ensure that periodic reevaluations are conducted in accordance with a schedule acceptable to the department and whenever there is a change in the use of the premises.

(d) Element 3: The purveyor shall develop and implement procedures and schedules for ensuring that:

(i) Cross-connections are eliminated whenever possible;

(ii) When cross-connections cannot be eliminated, they are controlled by installation of approved backflow preventers commensurate with the degree of hazard; and

(iii) Approved backflow preventers are installed in accordance with the requirements of subsection (6) of this section.

(e) Element 4: The purveyor shall ensure that personnel, including at least one person certified as a CCS, are provided to develop and implement the cross-connection control program.

(f) Element 5: The purveyor shall develop and implement procedures to ensure that approved backflow preventers are inspected and/or tested (as applicable) in accordance with subsection (7) of this section.

(g) Element 6: The purveyor shall develop and implement a backflow prevention assembly testing quality control assurance program, including, but not limited to, documentation of tester certification and test kit calibration, test report contents, and time frames for submitting completed test reports.

(h) Element 7: The purveyor shall develop and implement (when appropriate) procedures for responding to backflow incidents.

(i) Element 8: The purveyor shall include information on cross-connection control in the purveyor's existing program for educating consumers about water system operation. Such a program may include periodic bill inserts, public service announcements, pamphlet distribution, notification of new consumers and consumer confidence reports.

(j) Element 9: The purveyor shall develop and maintain cross-connection control records including, but not limited to, the following:

(i) A master list of service connections and/or consumer's premises where the purveyor relies upon approved backflow preventers to protect the public water system from contamination, the assessed hazard level of each, and the required backflow preventer(s);

(ii) Inventory information on:

(A) Approved air gaps installed in lieu of approved assemblies including exact air gap location, assessed degree of hazard, installation date, history of inspections, inspection results, and person conducting inspections;

(B) Approved backflow assemblies including exact assembly location, assembly description (type, manufacturer, model, size, and serial number), assessed degree of hazard, installation date, history of inspections, tests and repairs, test results, and person performing tests; and

(C) Approved AVBs used for irrigation system applications including location, description (manufacturer, model, and size), installation date, history of inspection(s), and person performing inspection(s).

(iii) Cross-connection program summary reports and backflow incident reports required under subsection (8) of this section.

(k) Element 10: Purveyors who distribute and/or have facilities that receive reclaimed water within their water service area shall meet any additional cross-connection control requirements imposed by the department under a permit issued in accordance with chapter 90.46 RCW.

(4) Approved backflow preventer selection.

(a) The purveyor shall ensure that a CCS:

(i) Assesses the degree of hazard posed by the consumer's water system upon the purveyor's distribution system; and

(ii) Determines the appropriate method of backflow protection for premises isolation in accordance with Table 8.

TABLE 8

APPROPRIATE METHODS OF BACKFLOW PROTECTION FOR PREMISES ISOLATION

Degree of Hazard	Application Condition	Appropriate Approved Backflow Preventer
High health cross-connection hazard	Backsiphonage or backpressure backflow	AG, RPBA, or RPDA
Low health cross-connection hazard	Backsiphonage or backpressure backflow	AG, RPBA, RPDA, DCVA, or DCDA

(b) Premises isolation requirements.

(i) For service connections with remises posing a high health cross-connection hazard including, but not limited to, those premises listed in Table 9, the purveyor shall ensure that an approved air gap or RPBA is installed for premises isolation.

(ii) If the purveyor's CCS determines that no hazard exists for a connection serving premises of the type listed in Table 9, the requirements of (b)(i) of this subsection do not apply.

(iii) The purveyor shall document, on a case-by-case basis, the reasons for not applying the requirements of (b)(i) of this subsection to a connection serving premises of the type listed in Table 9 and include such documentation in the cross-connection control program summary report required in subsection (8) of this section.

TABLE 9

HIGH HEALTH CROSS-CONNECTION HAZARD PREMISES REQUIRING PREMISES ISOLATION BY AG OR RPBA

Agricultural (farms and dairies)

Beverage bottling plants

Car washes

Chemical plants

Commercial laundries and dry cleaners

Premises where both reclaimed water and potable water are provided

Film processing facilities

Food processing plants

Hospitals, medical centers, nursing homes, veterinary, medical and dental clinics, and blood plasma centers

Premises with separate irrigation systems using the purveyor's water supply and with chemical addition[+]

Laboratories

Metal plating industries

Mortuaries

Petroleum processing or storage plants

Piers and docks

Radioactive material processing plants or nuclear reactors*

Survey access denied or restricted

Wastewater lift stations and pumping stations

Wastewater treatment plants*

Premises with an unapproved auxiliary water supply interconnected with the potable water supply

+ For example, parks, playgrounds, golf courses, cemeteries, estates, etc.

* RPBAs for connections serving these premises are acceptable only when used in combination with an in-plant approved air gap; otherwise, the purveyor shall require an approved air gap at the service connection.

(c) Backflow protection for single-family residences.

(i) For single-family residential service connections, the purveyor shall comply with the requirements of (b) of this subsection when applicable.

(ii) If the requirements of (b) of this subsection do not apply and the requirements specified in subsection (2)(h) of this section are met, the purveyor may rely on backflow protection provided at the point of hazard in accordance with WAC 51-46-0603 of the UPC for hazards such as, but not limited to:

(A) Irrigation systems;

(B) Swimming pools or spas;

(C) Ponds; and

(D) Boilers.

For example, the purveyor may accept an approved AVB on a residential irrigation system, if the AVB is properly installed in accordance with the UPC.

(d) Backflow protection for fire protection systems.

(i) Backflow protection is not required for residential flow-through or combination fire protection systems constructed of potable water piping and materials.

(ii) For service connections with fire protection systems other than flow-through or combination systems, the purveyor shall ensure that backflow protection consistent with WAC 51-46-0603 of the UPC is installed. The UPC requires minimum protection as follows:

(A) An RPBA or RPDA for fire protection systems with chemical addition or using unapproved auxiliary water supply; and

(B) A DCVA or DCDA for all other fire protection systems.

(iii) For new connections made on or after the effective date of these regulations, the purveyor shall ensure that backflow protection is installed before water service is provided.

(iv) For existing fire protection systems:

(A) With chemical addition or using unapproved auxiliary supplies, the purveyor shall ensure that backflow protection is installed within ninety days of the purveyor notifying the consumer of the high health cross-connection hazard or in accordance with an alternate schedule acceptable to the purveyor.

(B) Without chemical addition, without on-site storage, and using only the purveyor's water (i.e., no unapproved auxiliary supplies on or available to the premises), the purveyor shall ensure that backflow protection is installed in accordance with a schedule acceptable to the purveyor or at an earlier date if required by the agency administering the Uniform Building Code as adopted under chapter 19.27 RCW.

(C) When establishing backflow protection retrofitting schedules for fire protection systems that have the characteristics listed in (d)(iv)(B) of this subsection, the purveyor may consider factors such as, but not limited to, impacts of assembly installation on sprinkler performance, costs of retrofitting, and difficulty of assembly installation.

(e) Purveyors may require backflow preventers commensurate with the degree of hazard determined by the purveyor to be installed for premises isolation for connections serving premises that have characteristics such as, but

not limited to, the following:

(i) Complex plumbing arrangements or plumbing potentially subject to frequent changes that make it impracticable to assess whether cross-connection hazards exist;

(ii) A repeated history of cross-connections being established or reestablished; or

(iii) Cross-connection hazards are unavoidable or not correctable, such as, but not limited to, tall buildings.

(5) Approved backflow preventers.

(a) The purveyor shall ensure that all backflow prevention assemblies relied upon by the purveyor are models included on the current list of backflow prevention assemblies approved for use in Washington state. The current approved assemblies list is available from the department upon request.

(b) The purveyor may rely on testable backflow prevention assemblies that are not currently approved by the department, if the assemblies:

(i) Were included on the department and/or USC list of approved backflow prevention assemblies at the time of installation;

(ii) Have been properly maintained;

(iii) Are commensurate with the purveyor's assessed degree of hazard; and

(iv) Have been inspected and tested at least annually and have successfully passed the annual tests.

(c) The purveyor shall ensure that an unlisted backflow prevention assembly is replaced by an approved assembly commensurate with the degree of hazard, when the unlisted assembly:

(i) Does not meet the conditions specified in (b)(i) through (iv) of this subsection;

(ii) Is moved; or

(iii) Cannot be repaired using spare parts from the original manufacturer.

(d) The purveyor shall ensure that AVBs meet the definition of approved atmospheric vacuum breakers as described in WAC 246-290-010.

(6) Approved backflow preventer installation.

(a) The purveyor shall ensure that approved backflow preventers are installed in the orientation for which they are approved (if applicable).

(b) The purveyor shall ensure that approved backflow preventers are installed in a manner that:

(i) Facilitates their proper operation, maintenance, inspection, and/or in-line testing (as applicable) using standard installation procedures acceptable to the department such as those in the USC Manual or PNWS-AWWA Manual;

(ii) Ensures that the assembly will not become submerged due to weather-related conditions such as flooding; and

(iii) Ensures compliance with all applicable safety regulations.

(c) The purveyor shall ensure that approved backflow assemblies for premises isolation are installed at a location adjacent to the meter or property line or an alternate location acceptable to the purveyor.

(d) When premises isolation assemblies are installed at an alternate location acceptable to the purveyor, the purveyor shall ensure that there are no connections between the point of delivery from the public water system and the approved backflow assembly, unless the installation of such a connection meets the purveyor's cross-connection control requirements and is specifically approved by the purveyor.

(e) The purveyor shall ensure that approved backflow preventers are installed in accordance with the following time frames:

(i) For new connections made on or after the effective date of these regulations, the following conditions shall be met before service is provided:

(A) The provisions of subsection (3)(d)(ii) of this section; and

(B) Satisfactory completion of a test by a BAT in accordance with subsection (7) of this section.

(ii) For existing connections where the purveyor identifies a high health cross-connection hazard, the provisions of (3)(d)(ii) of this section shall be met:

(A) Within ninety days of the purveyor notifying the consumer of the high health cross-connection hazard; or

(B) In accordance with an alternate schedule acceptable to the purveyor.

(iii) For existing connections where the purveyor identifies a low health cross-connection hazard, the provisions of subsection (3)(d)(ii) of this section shall be met in accordance with a schedule acceptable to the purveyor.

(f) The purveyor shall ensure that bypass piping installed around any approved backflow preventer is equipped with an approved backflow preventer that:

(i) Affords at least the same level of protection as the approved backflow preventer that is being bypassed; and

(ii) Complies with all applicable requirements of this section.

(7) Approved backflow preventer inspection and testing.

(a) The purveyor shall ensure that:

(i) A CCS inspects backflow preventer installations to ensure that protection is provided commensurate with the

assessed degree of hazard;

(ii) Either a BAT or CCS inspects:

(A) Air gaps installed in lieu of approved backflow prevention assemblies for compliance with the approved air gap definition; and

(B) Backflow prevention assemblies for correct installation and approval status.

(iii) A BAT tests approved backflow prevention assemblies for proper operation.

(b) The purveyor shall ensure that inspections and/or tests of approved air gaps and approved backflow assemblies are conducted:

(i) At the time of installation;

(ii) Annually after installation, or more frequently, if required by the purveyor for connections serving premises or systems that pose a high health cross-connection hazard or for assemblies that repeatedly fail;

(iii) After a backflow incident; and

(iv) After an assembly is repaired, reinstalled, or relocated or an air gap is replumbed.

(c) The purveyor shall ensure that inspections of AVBs installed on irrigation systems are conducted:

(i) At the time of installation;

(ii) After a backflow incident; and

(iii) After repair, reinstallation, or relocation.

(d) The purveyor shall ensure that approved backflow prevention assemblies are tested using procedures acceptable to the department, such as those specified in the most recently published edition of the USC Manual. When circumstances, such as, but not limited to, configuration or location of the assembly, preclude the use of USC test procedures, the purveyor may allow, on a case-by-case basis, the use of alternate (non-USC) test procedures acceptable to the department.

(e) The purveyor shall ensure that results of backflow prevention assembly inspections and tests are documented and reported in a manner acceptable to the purveyor.

(f) The purveyor shall ensure that an approved backflow prevention assembly or AVB, whenever found to be improperly installed, defective, not commensurate with the degree of hazard, or failing a test (if applicable) is properly reinstalled, repaired, overhauled, or replaced.

(g) The purveyor shall ensure that an approved air gap, whenever found to be altered or improperly installed, is properly replumbed or, if commensurate with the degree of hazard, is replaced by an approved RPBA.

(8) Recordkeeping and reporting.

(a) Purveyors shall keep cross-connection control records for the following time frames:

(i) Records pertaining to the master list of service connections and/or consumer's premises required in subsection (3)(j)(i) of this section shall be kept as long as the premises pose a cross-connection hazard to the purveyor's distribution system;

(ii) Records regarding inventory information required in subsection (3)(j)(ii) of this section shall be kept for five years or for the life of the approved backflow preventer whichever is shorter; and

(iii) Records regarding backflow incidents and annual summary reports required in subsection (3)(j)(iii) of this section shall be kept for five years.

(b) Purveyors may maintain cross-connection control records in original form or transfer data to tabular summaries.

(c) Purveyors may maintain records or data in any media, such as paper, film, or electronic format.

(d) The purveyor shall complete the cross-connection control program summary report annually. Report forms and guidance on completing the report are available from the department.

(e) The purveyor shall make all records and reports required in subsection (3)(j) of this section available to the department or its representative upon request.

(f) The purveyor shall notify the department, local administrative authority, and local health jurisdiction as soon as possible, but no later than the end of the next business day, when a backflow incident is known by the purveyor to have:

(i) Contaminated the public water system; or

(ii) Occurred within the premises of a consumer served by the purveyor.

(g) The purveyor shall:

(i) Document details of backflow incidents on a form acceptable to the department such as the backflow incident report form included in the most recent edition of the PNWS-AWWA Manual; and

(ii) Include all backflow incident report(s) in the annual cross-connection program summary report referenced in (d) of this subsection, unless otherwise requested by the department.

[Statutory Authority: RCW 43.02.050. 99-07-021, § 246-290-490, filed 3/9/99, effective 4/9/99. Statutory Authority: RCW 43.20.050. 91-02-051 (Order 124B), recodified as § 246-290-490, filed 12/27/90, effective 1/31/91. Statutory Authority: P.L. 99-339. 89-21-020 (Order 336), § 248-54-285, filed 10/10/89, effective 11/10/89. Statutory Authority: RCW 34.04.045. 88-05-057 (Order 307), § 248-54-285, filed 2/17/88. Statutory Authority: RCW 43.20.050. 83-19-002 (Order 266), § 248-54-285, filed 9/8/83.]

Appendix C
Fire Hydrant Utilization Program

Appendix C

Fire Hydrant Utilization Program

1.0 Policy

Any person who wishes to withdraw water from a City of Marysville fire hydrant must apply to the Public Works Department for a permit and agree to follow all rules, regulations, and procedures that the Public Works Department may adopt in connection with granting and/or renewing such a permit. Access will be limited to one or more specific fire hydrants as designated by the Public Works Department. The initial permit period will expire after one year. If the need for fire hydrant water extends beyond one year, the permit must be renewed. Prior to utilizing any fire hydrant for filling, all vehicles must be inspected and approved as meeting requirements of the City's Cross-Connection Control Program. Similarly, any permit renewal requires that vehicles be re-inspected. The initial inspection and any permit-renewal inspections must be conducted and documented by a Public Works Department employee certified by the DOH as a Cross-Connection Control Specialist (CCS).

2.0 Procedures

The following sections define specific procedures and requirements associated with the two types of fire hydrant utilization permits. Implementation details for each type of permit are discussed below.

2.1 Vehicle Permits

To obtain a Vehicle Permit, the applicant must contact the Public Works Department and arrange to meet with a CCS at the Public Works Department offices (80 Columbia Avenue, Marysville, WA 98270). At the appointment, the applicant must complete a Vehicle Hydrant Utilization Permit Application. (Section [insert reference] presents a sample permit application.) The CCS will conduct an inspection to ensure that each vessel the applicant intends to use for water withdrawal incorporates an approved air gap suitable for eliminating potential for cross-connections with the City's water distribution system. After successful inspection, the MPWD will collect appropriate fees and issues a vehicle identification card that must be carried in the vehicle when withdrawing water from a hydrant. A deposit is required for the identification card.

Existing Vehicle Permit holders must have the air gaps on their vehicles inspected annually in order to renew the hydrant use permit. The CCP Administrator mails an air gap inspection reminder letter to the permit holder prior to the anniversary date of the initial permit.

For each tanker truck, trailer, or other vessel (vehicle) to be filled from a hydrant, the permit holder must pay the Public Works Department a $50.00 monthly Vehicle Hydrant Utilization Permit fee. This fee is imposed to cover the cost of water as well as the associated costs for permit recordkeeping.

For each vehicle to be filled from a hydrant, the permit holder must pay a $100.00 refundable deposit to obtain a vehicle identification card. The permit holder is responsible for assuring that the identification card is present on or in the vehicle and available for inspection at any time when the vehicle is being filled. The City will refund the deposit(s) when the permit holder returns the vehicle identification card(s) to the Public Works Department. That return will terminate the permit.

2.2 Site Permits

To obtain a Site Permit to withdraw water from a specific City fire hydrant for construction purposes, an applicant must complete relevant forms:

- Site Fire Hydrant Utilization Permit Application
- Hydrant Backflow Prevention Assembly and Meter Loan Agreement

- Hydrant Meter Checkout Form

These forms are available from the Public Works Department located at 80 Columbia Avenue.

A refundable deposit (minus $50.00 per month and damages) in the amount of $1,200.00 is required. If a hydrant meter is not deemed necessary by MPWD and not checked out, the deposit will be $600.00 (minus $50.00 per month and damages)**.** The City will refund the customer's deposit after the customer returns all equipment in good condition (as verified via inspection by MPWD personnel) and all charges are paid.

Each month that the permit is in effect, the City will bill the customer a base fee of $50.00 plus water consumption charges based on the current City ordinance water rates.

2.3 Meter and Equipment Checkout

One year is the maximum length of time a meter and backflow prevention assembly can be checked out. If a permit holder needs a meter and assembly for more than one year, the MPWD will issue a new meter and assembly and retrieve the original unit for inspection and maintenance.

The MPWD provides the customer with:

- A fire hydrant meter with gate valve (or gate valve alone when a meter is not required)
- A section of fire hose
- A hydrant valve wrench
- A double check valve assembly (DCVA) or a reduced pressure back flow assembly (RPBA) according to the need
- Adapters for connecting either a fire hose or a garden hose to the hydrant meter
- An instruction sheet that details proper installation procedures

January 20, 2002
Marysville Public Works Department
80 Columbia Avenue
Marysville, WA 98270

To: [Insert Customer's Name]
[Insert Customer's Address]
[Insert Customer's City, State, and Zip Code]

Subject: Vehicle Fire Hydrant Utilization Permit Renewal

The vehicle with license number [insert vehicle license number] is due for an annual air gap inspection, as required by Chapter 246-290-490 of the Washington Administrative Code and by Chapter [insert appropriate chapter reference] of the Marysville Municipal Code. This inspection shall be performed free of charge by City of Marysville employee who holds a valid Certificate of Competency in cross-connection control issued by the Washington State Department of Health.

If the inspection discloses that the air gap is not satisfactory, please make the necessary repairs and have the vehicle re-inspected in accordance with the instructions above. Failure to do so would require denial of a hydrant use permit renewal.

If you have any questions concerning the above requirements, please contact me.

Sincerely,

John Doe
Cross-Connection Control Specialist
Phone: (360) 651-5100
Fax: (360) 651-5182

Marysville Public Works Department
Site Fire Hydrant Utilization Permit Application
And
Hydrant Backflow Prevention Assembly and Meter Loan Agreement

Applicant or Company Name	Applicant or Company Street Address
Designated Contact Person	Applicant or Company City & ZIP Code
Applicant or Company Phone Number	
Designated Hydrant Location	Intended Water Use
Start Date (Month/Day/Year)	Expiration Date (Month/Day/Year)
Meter Serial Number _____	RPBA Serial Number _____
	DCVA Serial Number _____
Issued By (MPWD Employee)	Issue Date (Month/Day/Year)

Fee Amount Paid ($) _____

Deposit Amount Paid ($) _____

Total Amount Paid ($) _____

Receipt Number _____

MPWD and/or Applicant Comments _____

The applicable monthly hydrant use fee, water consumption fee, and any costs to repair or replace City equipment or property will be deducted from the original deposit prior to refund.

Acknowledgment
The undersigned applicant hereby agrees to hold and save harmless the City of Marysville from any and all claims for damages, costs, expenses, or causes of action that may arise of installation and maintenance of the improvement or other equipment use hereto applied. The undersigned further agrees to remove the equipment and return it to the City upon notice from the City and agrees to reimburse the City for loss of or damage to the assembly or City property.

Print Applicant's Name	Sign Applicant's Name

Original to Applicant - Copy to Public Works Department File

Marysville Public Works Department

Hydrant Meter Checkout Form

The CCP Administrator should ensure that the Site Fire Hydrant Utilization Permit holder receives applicable items as marked below and understands the instructions for their proper installation and use.

_____	2-inch Meter With Control Valve, Handle, and Adapters.	Meter number	_____
_____	2-1/2-inch Fire Hose	Serial number	_____
_____	For Low Hazard Use: Double Check Valve Assembly with 2" Female to Hydrant Adapter Fitting	Serial number	_____
_____	For High Hazard Use: Reduced Pressure Backflow Assembly with 2-inch Female to Hydrant Adapter Fitting	Serial number	_____
_____	Hydrant Valve Wrench	Serial number	_____
_____	2-inch Male IPT to Hydrant Adapter Fitting	Serial number	_____
_____	2-inch x 3/4-inch Bushing with 3/4-inch Garden Hose Adapter Fitting	Serial number	_____
_____	2-inch Control Valve (Gate Valve) with Adapter Fittings	Serial number	_____

Instructions:

1. Attach the meter (or the 2-inch control valve, if a meter is not used) to the designated hydrant outlet.
2. Connect the fire hose to the meter at one end, and to the backflow prevention assembly at the other end. Observe the directional arrows on the backflow assembly.
3. With the 2-inch control valve closed, use the hydrant wrench to open and close the hydrant.
4. The control valve on the meter MUST be used to prevent damage to the hydrant and to the water distribution system. Always open and close the control valve slowly to prevent surges or water hammer that could cause damage to the water system.

STATEMENT OF UNDERSTANDING: I have received the components specified above and understand the instructions for their use.

_____ _____
Signature of Hydrant Permit Holder Date

Checked out by _____ Meter Reading _____ Date _____

Checked in by _____ Meter Reading _____ Date _____

Appendix D
Cross-Connection Control Coordination Agreements

Appendix D

Cross-Connection Control Coordination Agreements

WAC 246-290-490 (2)(d) requires the City to coordinate with local administrative authorities in matters concerning cross-connection control. The City is also required to document and describe such coordination in the written cross-connection control program.

1.0 CCP Agreements Within the City Limits

It is necessary for the CCS to be aware of backflow prevention assemblies used on fire services and fire sprinkler systems so that they can be included in the CCP database. Currently, the Marysville Fire District (MFD) regulates and tracks fire services and fire sprinkler systems. Thus, an agreement between the Public Works Department and the MFD is required to define CCP coordination procedures and responsibilities. These two City departments have been working together for many years on cross-connection control issues, and a written agreement is expected to be completed in 2002. This agreement will be inserted into this document for the record.

In general, the agreement will require the MFD to notify the CCP Administrator concerning backflow prevention devices installed or needed in customer water systems to isolate residential and commercial fire sprinkler systems. Similarly, the agreement will require the CCP Administrator to keep the MFD informed of any CCP-related water service disconnections or interruptions.

2.0 CCP Agreements Outside the City Limits

Snohomish County and the Snohomish Health District are the local administrative authorities for premises located in unincorporated areas of the county but served by the City's public water system. Thus, the MPWD is planning to develop written agreements with each of these agencies regarding coordination of cross-connection control efforts and responsibilities. The City has a long-standing record of cooperation with both agencies. Written agreements describing the respective roles and coordination efforts among the Health District, the County, and the City are expected to be completed in 2002. One agreement will designate that Snohomish Health District Inspectors advise the CCP Administrator whenever they identify a potential cross-connection. A second agreement will designate that the Snohomish County Building Division has jurisdiction, as Local Administrative Authority, for plumbing and cross-connection control in customer water systems located outside the City limits. When completed, these agreements will be incorporated in this appendix.

Appendix E
Sample Program Reports, Forms, Letters, and Notices

Appendix E

Sample Program Reports, Forms, Letters, and Notices

Monthly Cross-Connection Program Report

The CCP Administrator provides a program status report to the Director of Public Works on a monthly basis. A sample of this report is shown below.

City of Marysville

Sample Monthly Cross-Connection Program Report

October 2001

Activity or Inventory Item	Number This Month	Number Year To Date
Service Application Reviews	[insert number]	[insert number]
Plan Reviews	[insert number]	[insert number]
On-Site Inspections	[insert number]	[insert number]
Compliance Letters Sent	[insert number]	[insert number]
Air Gap Re-inspection Notices Sent*	[insert number]	[insert number]
Test Notices Sent	[insert number]	[insert number]
Assembly Test Reports Received	[insert number]	[insert number]
Total Number of Facilities Utilizing Backflow Prevention Assemblies**	Not Applicable	[insert total number of known facilities that utilize assemblies]
Total Number of Assemblies**	Not Applicable	[insert total number of known assemblies]

* To owners of tank trucks/vessels used in the Fire Hydrant Utilization Program.
** Based on locations or service addresses on record as having assemblies.

Annual Cross-Connection Control Summary Report

City of Marysville

Sample Annual Cross-Connection Control Summary Report
2002

Summary of System Assembly Inventory and Testing

Type of Assembly	Number of Assemblies in the System	Number of Annual Tests Completed	Number of Test Failures	Number of Repairs	Number of New Assembly Installations
AG	[insert number]	[insert number]	[insert number]	[insert number]	[insert number]
AVB	[insert number]	[insert number]	[insert number]	[insert number]	[insert number]
DCDA	[insert number]	[insert number]	[insert number]	[insert number]	[insert number]
DCVA	[insert number]	[insert number]	[insert number]	[insert number]	[insert number]
PVBA	[insert number]	[insert number]	[insert number]	[insert number]	[insert number]
RPBA	[insert number]	[insert number]	[insert number]	[insert number]	[insert number]
RPDA	[insert number]	[insert number]	[insert number]	[insert number]	[insert number]
SVBA	[insert number]	[insert number]	[insert number]	[insert number]	[insert number]
Total	[insert total]	[insert total]	[insert total]	[insert total]	[insert total]

Definitions:

AG	air gap
AVB	atmospheric vacuum breaker
DCDA	double check detector assembly
DCVA	double check valve assembly
PVBA	pressure vacuum breaker assembly
RPBA	reduced pressure backflow assembly
RPDA	reduced pressure detector assembly
SVBA	spill-resistant vacuum breaker assembly

Summary of Cross-Connection Control Program Activities

Activity or Inventory Item	Number for 2002
Service Application Reviews	[insert number]
Plan Reviews	[insert number]
On-Site Inspections	[insert number]
Compliance Letters Sent	[insert number]
Air Gap Re-inspection Notices Sent*	[insert number]
Test Notices Sent	[insert number]
Assembly Test Reports Received	[insert number]
Total Number of Facilities Utilizing Backflow Prevention Assemblies**	[insert total number of known facilities utilizing assemblies]
Total Number of Assemblies**	[insert total number of known assemblies]

* To owners of tank trucks/vessels used in the Fire Hydrant Utilization Program.
** Based on locations or service addresses on record as having assemblies.

Note that, for properties having high-risk facilities or processes as categorized in Table 4-1, this annual report must document on a case-by-case basis the City's hazard assessment, inspection results, and/or reasoning for each property that is allowed to operate without the mandated type of backflow prevention assembly.

January 20, 2002
Marysville Public Works Department
80 Columbia Avenue
Marysville, WA 98270

Customer Account No. [insert number]
Customer Water Meter No. [insert number]

Subject: Annual Backflow Prevention Assembly Testing Requirement

The City of Marysville operates and maintains a cross-connection control program in accordance with Washington State Department of Health requirements as defined in Section 246-290-490 of the Washington Administrative Code. Under those regulations, the City is responsible for protecting the public water system from contamination and associated health risks due to backflow by eliminating or controlling cross-connections. The City's program requires water customers with systems that pose certain types of potential health hazards to install and maintain approved backflow prevention devices. After the initial installation, inspection, and testing, the water customers are responsible on an annual basis for contracting with a state-certified Backflow Assembly Tester (BAT) to re-inspect and test the unit and to submit a successful test report to the City.

According to City records, one or more backflow prevention assemblies located on your property is due for annual inspection and testing as required under WAC 246-290-490 and Marysville Municipal Code Title 14. It is your responsibility to hire a BAT to perform and document annual testing of your assembly. As a courtesy, I have enclosed a list of state-certified Backflow Assembly Testers who work in the Marysville area. If you prefer not to employ one of the BATs listed, please contact the Washington State Department of Health at 1-800-525-2536 for help in identifying additional certified testers.

If testing discloses that your assembly is not operating properly, please have the necessary repairs made and then have the assembly retested. On completion of a test showing that the assembly is operating properly, the BAT should complete the enclosed Backflow Prevention Assembly Test Report Form and forward it to the Marysville Public Works Department no later than 30 days from the date of this notice.

If you have had your annual test performed within the last twelve months, or if you have any other questions relative to this letter, please call me. Thank you for doing your part in keeping our water supply healthy.

Sincerely,

John Doe
Cross-Connection Control Specialist
Phone (360) 651-5100
Fax (360) 651-5182

Enclosures (2)

January 20, 2002
Marysville Public Works Department
80 Columbia Avenue
Marysville, WA 98270

To: [Insert Tester's Name]
[Insert Company Name]
[Insert Company Address]
[Insert Company City, State, and Zip Code]

Subject: Update Information for Certified Backflow Assembly Tester (BAT) List

The City of Marysville administers a Cross-Connection Control Program to protect the potability of the City's water supply. As a courtesy to interested water system customers, the City compiles and makes available a list of state-certified Backflow Assembly Testers who are available to assist those customers in complying with the program.

Do you wish to remain on (or be added to) the City's Backflow Assembly Tester (BAT) List. Please check the appropriate box below. If your answer is yes, please submit an updated copy of your BAT and/or CCS certification card(s) including the expiration date. Also, please update (or submit) your company name, address, and phone number on this form. If you wish, include your Washington State license number for inclusion in the List.

If you do not wish to appear on the published List but you do expect to perform inspections and tests in the Marysville area, please submit a copy of your BAT certification card and a phone number where City personnel may contact you if there are questions concerning future Backflow Prevention Assembly Test Reports that you or your clients may submit to the City.

☐ I want to remain on the Marysville Area BAT List.

☐ I want to be added to the Marysville Area BAT List.

☐ I want to be removed from the Marysville Area BAT List.

BAT Certification No.: _____ Expiration Date: _____

CCS Certification No.: _____ Expiration Date: _____

Thank you in advance for completing this form and providing supporting information as soon as possible. I have enclosed a pre-addressed envelope to facilitate your response.

Sincerely,

John Doe
Cross-Connection Control Specialist
Phone (360) 651-5100
Fax (360) 651-5182

City of Marysville

Backflow Prevention Assembly Test Report Form
Please Use This Form Only!

ACCOUNT # _____

NAME OF PREMISE _____ **Commercial** ☐ **Residential** ☐

OWNER ADDRESS _____ **CITY** _____ **ZIP** _____

SERVICE ADDRESS _____ **CITY** _____ **ZIP** _____

CONTACT PERSON _____ **PHONE ( )** _____ **FAX ( )** _____

LOCATION OF ASSEMBLY _____

DOWNSTREAM PROCESS _____ **DCVA** ☐ **RPBA** ☐ **PVBA** ☐ **OTHER** _____

NEW INSTALLATION ☐ **EXISTING** ☐ **REPLACEMENT** ☐ **OLD ASSEMBLY SERIAL NUMBER** _____

ASSEMBLY LOCATION _____

ASSEMBLY MANUFACTURER _____ **MODEL** _____ **SERIAL NO.** _____ **SIZE** _____

IS ASSEMBLY FREEZE PROTECTED? _____ **ARE THERE UNPROTECTED CROSS-CONNECTIONS?** _____

ARE CONFINED SPACE PROCEDURES BEING FOLLOWED? _____

	DCVA / RPBA CHECK VALVE NO.1	DCVA / RPBA CHECK VALVE NO.2	RPBA	PVBA/SVBA AIR INLET
INITIAL TEST **PASSED** ☐ **FAILED** ☐	LEAKED ☐ CLOSED TIGHT ☐ _____ PSID	LEAKED ☐ CLOSED TIGHT ☐ _____ PSID	OPENED AT ____ PSID #1 CHECK _____ PSID AIR GAP OK? _____	OPENED AT _____ PSID DID NOT OPEN ☐
NEW PARTS AND REPAIRS	CLEAN REPLACE PART ☐ ☐ _____ ☐ ☐ _____ ☐ ☐ _____ ☐ ☐ _____	CLEAN REPLACE PART ☐ ☐ _____ ☐ ☐ _____ ☐ ☐ _____ ☐ ☐ _____	CLEAN REPLACE PART ☐ ☐ _____ ☐ ☐ _____ ☐ ☐ _____ ☐ ☐ _____	CHECK VALVE HELD AT _____ PSID LEAKED ☐ _____ CLEANED ☐ REPAIRED ☐
TEST AFTER REPAIRS	CLOSED TIGHT ☐ _____ PSID	CLOSED TIGHT ☐ _____ PSID	OPENED AT ____ PSID #1 CHECK _____ PSID	AIR INLET _____ PSID CHK VALVE _____ PSID

AIR GAP INSPECTION: Required minimum air gap separation provided? Yes ☐ No ☐ **Detector Meter Reading** _____

REMARKS: _____

_____ **LINE PRESSURE** _____ **PSI**

TESTERS SIGNATURE: _____ **CERT. NO.** _____ **DATE** _____

TESTERS NAME PRINTED: _____ **TESTERS PHONE # ( )** _____

REPAIRED BY: _____ **DATE** _____

FINAL TEST BY: _____ **CERT. NO.** _____ **DATE** _____

GAUGE # _____ **CALIBRATION DATE** _____/_____/_____ **SERVICE RESTORED YES** ☐ **NO** ☐

January 20, 2002
Marysville Public Works Department
80 Columbia Avenue
Marysville, WA 98270

Customer Account No. [insert number]
Customer Water Meter No. [insert number]

Subject: Unrecorded Irrigation System Backflow Prevention Assembly

During a recent, routine inspection of water system features in your neighborhood, I observed that you have an irrigation system equipped with a backflow prevention assembly. Washington State Department of Health regulations require that assemblies such as yours be inspected for proper initial installation, tested for proper initial operation, and then tested annually to ensure continued proper operation. The regulations also require that the associated inspection and test reports be filed with the City's Public Works Department. Our current records do not include your assembly. I am attaching a sheet titled "Backflow Prevention/Cross-Connection Control for Irrigation Systems" that summarizes the requirements for installing and testing assemblies such as yours. As a courtesy, I have enclosed a list of state-certified Backflow Assembly Testers who work in the Marysville area. If you prefer not to employ one of the BATs listed, please contact the Washington State Department of Health at 1-800-525-2536 for help in identifying additional certified testers.

Experience has shown that proper backflow protection is essential in ensuring a healthy water supply. Therefore, I thank you in advance for your cooperation in complying with the referenced regulations. If you have any questions, please contact me.

Sincerely,

John Doe
Cross-Connection Control Specialist
Phone: (360) 651-5100
Fax: (360) 651-5182

Enclosures (2)

January 20, 2002
Marysville Public Works Department
80 Columbia Avenue
Marysville, WA 98270

Customer Account No. [insert number]
Customer Water Meter No. [insert number]

Subject: Unapproved Auxiliary Water Supply Backflow Prevention Requirement

During a recent, routine inspection of water system features in your neighborhood, I observed that you have an irrigation system equipped with a backflow prevention assembly. Washington State Department of Health regulations require that assemblies such as yours be inspected for proper initial installation, tested for proper initial operation, and then tested annually to ensure continued proper operation. The regulations also require that the associated inspection and test reports be filed with the City's Public Works Department. Our current records do not include your assembly. I am attaching a sheet titled "Backflow Prevention/Cross-Connection Control for Irrigation Systems" that summarizes the requirements for installing and testing assemblies such as yours. As a courtesy, I have enclosed a list of state-certified Backflow Assembly Testers who work in the Marysville area. If you prefer not to employ one of the BATs listed, please contact the Washington State Department of Health at 1-800-525-2536 for help in identifying additional certified testers.

Experience has shown that proper backflow protection is essential in ensuring a healthy water supply. Therefore, I thank you in advance for your cooperation in complying with the referenced regulations. If you have any questions, please contact me.

Sincerely,

John Doe
Cross-Connection Control Specialist
Phone: (360) 651-5100
Fax: (360) 651-5182

Enclosures (2)

January 20, 2002
Marysville Public Works Department
80 Columbia Avenue
Marysville, WA 98270

Customer Account No. [insert number]
Customer Water Meter No. [insert number]

Subject: Irrigation System Backflow Prevention Requirements

Per our telephone conservation, I am enclosing information you requested applicable to backflow prevention requirements for residential irrigation systems:

- *Backflow Prevention/Cross-Connection Control for Irrigation Systems*
- *List of State-Certified Backflow Assembly Testers*

If you have any questions about this information, please contact me. Thank you for your cooperation in helping to ensure a healthy water supply for your family and neighbors.

Sincerely,

John Doe
Cross-Connection Control Specialist
Phone: (360) 651-5100
Fax: (360) 651-5182

Enclosures (2)

January 20, 2002
Marysville Public Works Department
80 Columbia Avenue
Marysville, WA 98270

Customer Account No. [insert number]
Customer Water Meter No. [insert number]

Subject: Residential Fire Sprinkler System Backflow Prevention Requirements

The City of Marysville operates and maintains a cross-connection control program in accordance with Washington State Department of Health requirements as defined in Section 246-290-490 of the Washington Administrative Code. Under those regulations, the City is responsible for protecting the public water system from contamination and associated health risks due to backflow by eliminating or controlling cross-connections. For residential fire sprinkler systems, the program requires that water customers install and maintain approved backflow prevention devices as follows:

- For systems with no chemicals added, a Double Check Valve Assembly (DCVA) is required.
- For systems that add chemicals or utilize auxiliary sources of water, a Reduced Pressure Backflow Assembly (RPBA) is required.

These backflow prevention assembly installations must be located on the customer's side of the City's water meter. The initial installation must be inspected and approved by the City. Prior to inspection by the City, a Washington State Certified Backflow Assembly Tester (BAT) must inspect the assembly for proper installation, test it for proper operation, complete and sign a Backflow Prevention Assembly Test Report, and submit a copy of that report to the Marysville Public Works Department. After the initial installation, inspection, and testing, the water customer is responsible for contracting with a BAT on an annual basis to re-inspected the unit and to submit re-inspection reports to the City.

For additional information or for answers to any questions you may have relative to backflow prevention, please contact me. Thank you for your cooperation in this important community health issue.

Sincerely,

John Doe
Cross-Connection Control Specialist
Phone: (360) 651-5100
Fax: (360) 651-5182

Enclosures (2)

January 20, 2002
Marysville Public Works Department
80 Columbia Avenue
Marysville, WA 98270

Customer Account No. [insert number]
Customer Water Meter No. [insert number]

Subject: Irrigation System Backflow Prevention Requirements

The City of Marysville implements a cross-connection control program in accordance with Washington State Department of Health requirements as defined in Section 246-290-490 of the Washington Administrative Code. Under those regulations, the City is responsible for protecting the public water system from contamination and associated health risks due to backflow by eliminating or controlling cross-connections. For residential irrigation systems, the program requires that water customers install and maintain approved backflow prevention devices as follows:

- For systems with no chemicals added, a Double Check Valve Assembly (DCVA) is required.
- For systems that add chemicals or utilize auxiliary sources of water, a Reduced Pressure Backflow Assembly (RPBA) is required.

These backflow prevention assembly installations must be located on the customer's side of the City's water meter. The initial installation must be inspected and approved by the City. Prior to inspection by the City, a Washington State Certified Backflow Assembly Tester (BAT) must inspect the assembly for proper installation, test it for proper operation, complete and sign a Backflow Prevention Assembly Test Report, and submit a copy of that report to the Marysville Public Works Department. After the initial installation, inspection, and testing, the water customer is responsible for contracting with a BAT on an annual basis to re-inspected the unit and to submit re-inspection reports to the City.

For additional information or for answers to any questions you may have relative to backflow prevention, please contact me. Thank you for your cooperation in this important community health issue.

Sincerely,

John Doe
Cross-Connection Control Specialist
Phone: (360) 651-5100
Fax: (360) 651-5182

Enclosures (2)

January 20, 2002
Marysville Public Works Department
80 Columbia Avenue
Marysville, WA 98270

Customer Account No. [insert number]
Customer Water Meter No. [insert number]

Subject: Commercial/Multi-Dwelling Fire Sprinkler System Backflow Prevention Requirements

The City of Marysville operates and maintains a cross-connection control program in accordance with Washington State Department of Health requirements as defined in Section 246-290-490 of the Washington Administrative Code. Under those regulations, the City is responsible for protecting the public water system from contamination and associated health risks due to backflow by eliminating or controlling cross-connections. For commercial and multi-dwelling fire sprinkler systems, the program requires that water customers install and maintain approved backflow prevention devices as follows:

- For systems with no chemicals added, a Double Check Detector Assembly (DCDA) is required.
- For systems that add chemicals or utilize auxiliary sources of water, a Reduced Pressure Detector Assembly (RPDA) is required.

These backflow prevention assembly installations must be located on the customer's side of the City's water meter. The initial installation must be inspected and approved by the City. Prior to inspection by the City, a Washington State Certified Backflow Assembly Tester (BAT) must inspect the assembly for proper installation, test it for proper operation, complete and sign a Backflow Prevention Assembly Test Report, and submit a copy of that report to the Marysville Public Works Department. After the initial installation, inspection, and testing, the water customer is responsible for contracting with a BAT on an annual basis to re-inspected the unit and to submit re-inspection reports to the City.

For additional information or for answers to any questions you may have relative to backflow prevention, please contact me. Thank you for your cooperation in this important community health issue.

Sincerely,

John Doe
Cross-Connection Control Specialist
Phone: (360) 651-5100
Fax: (360) 651-5182

Enclosures (2)

January 20, 2002
Marysville Public Works Department
80 Columbia Avenue
Marysville, WA 98270

Customer Account No. [insert number]
Customer Water Meter No. [insert number]

Subject: FINAL NOTICE – Annual Backflow Prevention Assembly Testing Requirement

The Public Works Department has not received a test report for one or more backflow prevention assemblies installed on your property. As specified in Chapter 246-290-490 of the Washington Administrative Code and in Title 14 of the Marysville Municipal Code, failure to comply with testing and reporting for the assembly may result in termination of water service until the City has received evidence of a successful test.

A state-certified Backflow Assembly Tester (BAT) must test your assembly and submit a successful report to the Public Works Department within fifteen (15) days of the above date. Otherwise, your water service will be subject to disconnection. As a courtesy, I have enclosed a list of state-certified Backflow Assembly Testers who work in the Marysville area. If you prefer not to employ one of the BATs listed, please contact the Washington State Department of Health at 1-800-525-2536 for help in identifying additional certified testers.

For additional information or for answers to any questions you may have relative to backflow prevention, please contact me. Thank you for your cooperation in this important community health issue.

Sincerely,

John Doe
Cross-Connection Control Specialist
Phone: (360) 651-5100
Fax: (360) 651-5182

Enclosures (1)

January 20, 2002
Marysville Public Works Department
80 Columbia Avenue
Marysville, WA 98270

Customer Account No. [insert number]
Customer Water Meter No. [insert number]

Subject: FINAL NOTICE - Fire Sprinkler Backflow Prevention Assembly Testing Requirement

The Public Works Department has not received a test and maintenance report for one or more backflow prevention assemblies installed to isolate the fire sprinkler system(s) located on your premises.

As specified in Chapter 246-290-490 of the Washington Administrative Code, failure to comply with testing and reporting for the assembly may result in termination of water service until the City has received evidence of a successful test.

Testing must be completed and reports filed with the City within fifteen (15) days of the above date, or your water service will be subject to disconnection. Please contact the Washington State Department of Health at 1-800-525-2536 for information on locating certified testers.

For additional information or for answers to any questions you may have relative to backflow prevention, please contact me. Thank you for your cooperation in this important community health issue.

Sincerely,

John Doe
Cross-Connection Control Specialist
Phone: (360) 651-5100
Fax: (360) 651-5182

January 20, 2002
Marysville Public Works Department
80 Columbia Avenue
Marysville, WA 98270

Customer Account No. [insert number]
Customer Water Meter No. [insert number]

Subject: Participation in Annual Backflow Prevention Assembly Testing

The Marysville Public Works Department thanks you for your cooperation and recent participation in the annual backflow prevention assembly testing program.

We have received a copy of a Backflow Prevention Assembly Test Report that confirms successful test results for one or more backflow prevention assemblies installed on your property. We have filed that report with other important City records.

For additional information or for answers to any questions you may have relative to backflow prevention, please contact me. Thank you, again, for your cooperation in addressing this important community health issue.

Sincerely,

John Doe
Cross-Connection Control Specialist
Phone: (360) 651-5100
Fax: (360) 651-5182

City of Marysville

Water Supply Backflow Prevention Requirements

Please complete and return this form to help us in advising you to meet Washington Administrative Code (WAC 246-290-490) regarding Cross-Connection Control. Submit building mechanical plans for City review and approval.

Water Service Address: _____

Owner's Name: _____

Owner's Phone Number: _____

Owner's Mailing Address: _____

Applicant's Name: _____

Applicant's Phone Number: _____

Applicant's Mailing Address: _____

Applicant's Relationship to Owner: _____

Type of Building: _____

Height of Building: _____

REQUIREMENTS: Approved backflow prevention is required to implement cross-connection control for service connections. For services sized 1-inch or larger and/or for services with hazards listed below or on Page 2 [or, on the reverse side] of this form, call the Marysville Public Works Department and consult with the Cross-Connection Control Program Administrator.

- ☐ Provide approved backflow prevention for irrigation systems.
- ☐ Provide approved backflow prevention for domestic buildings that exceed 3 stories.
- ☐ Provide approved backflow prevention for domestic buildings that extend 33 feet or more above the water main.
- ☐ Provide approved backflow prevention for all fire protection systems.
- ☐ Provide approved backflow prevention for water supplies to heating system boilers, swimming pools, hot tubs, solar heating systems, heat pumps, cooling towers, and air conditioning units.

Type of facility: (e.g., single-family residence, multi-family residence, car wash, medical clinic, shopping center, etc.):

_____

Planned water uses other than those noted above (e.g., carbonation, industrial cooling, etc.):

_____

_____

_____

Note: All backflow prevention assemblies must be included in the current Washington State Department of Health list of approved cross-connection control assemblies. All installations must be inspected and tested by a state-certified backflow assembly tester (BAT). Assemblies must be installed in the orientation for which they are approved. Refer to Page 2 of this form for specific backflow prevention requirements.

If you have any questions regarding the information above, contact:

Marysville Public Works Department
80 Columbia Avenue
Marysville, WA 98270
(360) 651-5100

Page 2 [or reverse side of the form]

Premises, Facilities, and Processes Requiring Mandatory Service Protection Unless No Actual Hazard Exists

Cross-Connection Control Regulation in Washington State
WAC 246-290-490 (4)

Backflow prevention assemblies, appropriate for the degree of hazard or air gaps and in some cases both, shall be installed at the service connection or within the following facilities, unless in the judgment of the water purveyor and the department, no hazard exists: Hospitals, mortuaries, clinics, laboratories, piers and docks, sewage treatment plants, food and beverage processing plants, chemical plants using water process, metal plating industries, petroleum processing or storage plants, radioactive material processing plants or nuclear reactors, car washes, facilities having a nonpotable auxiliary water supply, and others specified by the department.

Premises Category or Activity	**Presumed Health Hazard**	**Minimum Required Protection**
Car washes	High	RPBA
Chemical plants (including ice manufacturing plants and battery manufacturing or repair facilities)	High	RPBA
Food processing plants (e.g., canneries, packing houses, slaughter houses, cold storage plants)	High	RPBA
Beverage bottling plants	High	RPBA
Film processing facilities	High	RPBA
Hospitals, medical centers, medical/dental clinics, veterinary clinics, nursing homes, blood plasma centers	High	RPBA
Laboratories	High	RPBA
Metal plating industries	High	RPBA
Mortuaries	High	RPBA
Premises with irrigation systems that use City water in combination with chemical addition (e.g., parks, playgrounds, mobile home/RV parks, golf courses, cemeteries, and estates)	High	RPBA
Petroleum processing or storage plants	High	RPBA
Piers and docks (e.g., graving docks, boat marinas, dry docks)	High	RPBA
Commercial laundries and dry cleaners	High	RPBA
Properties where hazard survey access is restricted or denied	High	RPBA
Premises with unapproved auxiliary water supply interconnected with the potable water supply	High	RPBA
Radioactive material processing plants or nuclear reactors	High	AG Note 1
Wastewater and/or sewage treatment plants	High	AG Note 1
Wastewater lift stations and pumping stations	High	RPBA
Agricultural facilities (e.g., farms, dairies)	High	RPBA
Premises where both reclaimed water and potable water are provided	High	RPBA
All properties classified as Commercial (including shopping centers)	High	RPBA
Premises having boilers, heat exchangers, solar water heaters, swimming pools, spas, ponds, irrigation systems (with no chemical addition), etc. connected to the potable water supply	High	On-site DCVA Note 2

Premises having an auxiliary water supply and having internal cross-connections that are not correctable	High	RPBA
Premises that handle any substance that is objectionable (not a health hazard) in a manner that poses a potential cross-connection	High	RPBA
Premises having cross-connection hazards that are unavoidable or not correctable (e.g., buildings over 30 feet tall)	High	RPBA
Premises having a repeated history of cross-connections being established or re-established	High	RPBA
Premises with activities that involve toxic substances and/or materials dangerous to health	High	RPBA
Premises with approved auxiliary water supplies	Low	Not Required
Residential flow-through or combination fire protection systems constructed of potable water piping and materials	Low	Not Required
Privately owned fire hydrants and/or service connections with fire protection systems other than flow-through or combination systems that use only City water with no anti-freeze, no chemical additives, and no on-site storage	Low	On-site DCVA Note 2
Premises with fire sprinkler systems that utilize anti-freeze, chemical additives, or auxiliary water supplies	High	RPBA (or RPDA)
Premises that practice graywater use and/or stormwater reuse	High	RPBA
Premises with irrigation systems that use City water only, with no chemical addition	Low	DCVA
Premises having complex plumbing arrangements and/or plumbing potentially subject to frequent changes that make it impracticable to assess whether cross-connection hazards exist or may exist in the future	High	RPBA

Notes:
1. Or an RPBA plus an in-plant AG
2. Or a DCDA per Uniform Plumbing Code Requirements

Definitions
AG approved air gap
DCDA double check detector assembly
DCVA double check valve assembly
RPBA reduced pressure backflow assembly
RPDA reduced pressure detector assembly

City-Owned Back Flow Prevention Devices

CITY OF MARYSVILLE
80 Columbia Ave
Marysville, WA 98270
360-651-5100 Fax: 360-651-5099

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Address / Company	Device / Hazard	Location	Serial #	Initial / Final	Repair
80 Columbia Ave	WILKINS 975 RPPA 3.000		26861	07/08/99 Pass	/ /
City of Marysville	ISTND	Kellogg Marsh Fill Station, in vault by fill station		/ /	
80 Columbia Ave	WILKINS 975 RPPA 3.000		26426	/ /	/ /
City of Marysville	ISTND	Midway Fill Station, s end of fire station parking lot,		/ /	
80 Columbia Ave	WILKINS 975XL RPPA 2.000		738383	/ /	/ /
City of Marysville	ISTND	South end fill station, in hot box by rv sewage dump		/ /	
80 Columbia Ave	FEBCO 825Y DCVA 2.000		AA6396	/ /	/ /
City of Marysville	IWASH	NW corner of wash rack in above ground box		/ /	
4822 Grove St	WILKINS 975XL RPPA 1.500		338703	09/05/97 Pass	/ /
City of Marysville	COFFG	City Hall, west wall in janitor room		/ /	
4822 Grove St	WATTS 007M2 DCVA 1.500		17843	10/23/97 Pass	/ /
City of Marysville	CIRRC	City Hall, by meter just inside sidewalk off Grove		/ /	
6915 Armar Rd	WILKINS 550 DCVA 2.000		W115364	07/06/92 Pass	/ /
City of Marysville	CPARK	Parks Dept- Jennings Park, NE of restrooms in		/ /	
6915 Armar Rd	FEBCO 805Y DCVA 2.000			/ /	/ /
City of Marysville	CPARK	Jennings Park, in ground box right side of park		/ /	
6915 Armar Rd	FEBCO 825YD RPPA 4.000		TAG CORRODED	/ /	/ /
City of Marysville	CGOLF	Cedarcrest Golf Course, E of 67th by fence gate		/ /	
6915 Armar Rd	WATTS 007M2 DCVA 1.500		24227	/ /	/ /
City of Marysville	CPARK	NE corner of Peace Park, in ground box by meter		/ /	
6915 Armar Rd	0.000		941012	/ /	/ /
City of Marysville	CPARK	Baxter Park, N of 5th St sidewalk, in ground box by		/ /	
6915 Armar Rd	FEBCO 805Y DCVA 1.500			/ /	/ /
City of Marysville	CPARK	NW corner of Hickok Park in ground box in grass		/ /	
6915 Armar Rd	WATTS 007M1QT DCVA 1.000		52558	/ /	/ /
City of Marysville	CPARK	NE corner of 4th St Park at N end of Assh St, by		/ /	
6915 Armar Rd	FEBCO 805Y DCVA 1.500		117331	/ /	/ /
City of Marysville	CGOLF	Behind fence, S of restrooms at 71st Ave & Grove St		/ /	
6915 Armar Rd	FEBCO 825Y RPPA 1.500			/ /	/ /
City of Marysville	CPARK	Jennings Park, in vault at entrance to petting zoo		/ /	
6915 Armar Rd	0.000		175423	/ /	/ /
City of Marysville	CPARK	Jennings Park Ballfield, right side of park entrance		/ /	
6915 Armar Rd	WILKINS 975XL RPPA 1.500			/ /	/ /
City of Marysville	CPARK	Park at Tuscany, E of driveway in ground box by		/ /	
6120 Grove Street	WILKINS 975XL RPPA 2.000		250469	/ /	/ /
City of Marysville	AAANO	Library, in mechanical room		/ /	
6120 Grove Street	FEBCO 805Y DCVA 1.500		BA0217	/ /	/ /
City of Marysville	CIRRC	By meter in ground vault		/ /	

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2 Columbia Ave	WATTS	RPPA 2.000		10/16/90	Pass	/ /
City of Marysville	ISEWE	WWTP, South side of sewer lagoon laboratory		/ /		
2 Columbia Ave	HERSEY	B64.4 RPPA 1.500	145534	11/15/94	Pass	/ /
City of Marysville	ISEWE	WWTP, northwest side of building inside thermo		/ /		
2 Columbia Ave	FEBCO	825Y RPPA 1.000	AL2574	01/13/95	Pass	/ /
City of Marysville	ISEWE	WWTP, west truck pump station		/ /		
2 Columbia Ave	FEBCO	825Y RPPA 2.000	BA7797	04/18/96	Pass	/ /
City of Marysville	ISEWE	WWTP, inside double doors lab building/garage		/ /		
2 Columbia Ave	FEBCO	825Y RPPA 0.750	AL6216	/ /		/ /
City of Marysville	ISEWE	WWTP, under stairs in hot box at headworks,		/ /		
2 Columbia Ave	HERSEY	FRP-2 RPPA 1.000	943098	08/25/98	Pass	/ /
City of Marysville	ISEWE	WWTP, Cedarcrest Vista lift station, in hotbox		/ /		
2 Columbia Ave	FEBCO	835B RPPA 0.750	12032	08/31/98	Pass	/ /
City of Marysville	ISEWE	WWTP, Regan Rd lift station, E wall of bldg, near		/ /		
2 Columbia Ave	FEBCO	835B RPPA 2.000		/ /		/ /
City of Marysville	ISEWE	WWTP, outside SW corner of old lab bldg		/ /		
2 Columbia Ave	FEBCO	825Y RPPA 1.000	AL2724	/ /		/ /
City of Marysville	ISEWE	WWTP, S wall of sand filter gallery		/ /		
2 Columbia Ave	FEBCO	825Y RPPA 1.500	AL6193	/ /		/ /
City of Marysville	ISEWE	WWTP, S wall of sand filter gallery		/ /		
2 Columbia Ave	HERSEY	FRP-2 RPPA 0.750	60858	/ /		/ /
City of Marysville	ISEWE	Inside 3rd St lift station, in west ground box		/ /		
2 Columbia Ave	HERSEY	B64.4 RPPA 2.000	176054	/ /		/ /
City of Marysville	ISEWE	Inside lift station, 2nd ladder to well on S wall		/ /		
2 Columbia Ave	0.000		650156	/ /		/ /
City of Marysville	ISEWE	Lift station, W side of generator in hotbox		/ /		
2 Columbia Ave	WILKINS	975XL RPPA 1.000	537871	/ /		/ /
City of Marysville	ISEWE	NE corner of lift station, inside fence		/ /		
2 Columbia Ave	WATTS	009M2QT RPPA 1.500	44914	/ /		/ /
City of Marysville	ISEWE	NE corner of lift station, inside fence		/ /		

Customer-Owner Back Flow Prevention Devices

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Address:	Company:	Survey
4505 100th St NE	100th Street Apts.	/ /
3609 88th St NE	7-11	/ /
10013 Shoultes Rd, Ste A	7-Eleven	/ /
10525 Smokey Pt Blvd	Aacro Denture Clinic	/ /
7211 57th St NE	Aaron Lamoureux	/ /
11401 State Ave	Albertsons #412	/ /
301 Marysville Mall	Albertsons	/ /
3405 173rd Pl NE	Alfy's Pizza	/ /
1004 Cedar Ave	All Pet Supply	/ /
6618 64th St NE	Allen Creek Family Dentistry	/ /
6608 64th St NE	Allen Creek Shopping Center	/ /
1049 State Ave	Allstate Insurance	/ /
1264 State Ave, F&G	Alpha Denture Clinic	/ /
1250 State Avenue	Alta's Pet Gallery	/ /
3521 172nd St NE	AM/PM	/ /
6706 58th St NE	Andrew Sandoval	/ /
1060 Cedar Ave	Animal Medical & Surgical	/ /
3230 172nd St NE	Bank of America	/ /
1330 State Ave	Bank of America LSN #750289	/ /
6210 53rd Ave NE	Barbara Greer	/ /
1065 Beach St	Barnes Wood	/ /
6602 64th St NE	Bartell Drugs	/ /
8626 55th Ave NE	Ben Boyarchuk	/ /
5100 Grove St #A	Beth A Mahar, DDS, PS	/ /
6712 55th Dr NE	Beth Bissit	/ /
5030 61st St NE	Bette Carpenter	/ /
1819 2nd St	Betty Lashua	/ /
7302 67th Pl NE	Bill & Margaret Hawkins	/ /
4310 106th Pl NE	Bill Hackett	/ /
7518 78th St NE	Bill Morse	/ /
7714 74th Dr NE	Bob Austin	/ /
6508 103rd St NE	Brad Goldman	/ /
5904 54th Ave NE	Brad Landis	/ /
75th Ave NE & 52nd Pl NE	Brighton Park H/O Assoc.	/ /
12508 46th Dr NE	Bruce Christopher	/ /
7215 57th St NE	Bryan & Sarah Wells	/ /
7625 70th Pl NE	Bryan Kazem	/ /
7120 47th Ave NE	Bud Darling	/ /
1916 Grove St	Bud Darling	/ /
1315 4th St	Burger King	/ /
3707 124th St NE, Bldg #1	Business Park	/ /
1219 State Avenue	Captain Dizzy	/ /
5327 Grove St	Carley Smith	/ /
15414 Smokey Pt Blvd	Cascade Storage	/ /
921 State Ave	Cascade Veterinary Ctr	/ /

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Address:	Company:	Survey
5415 67th St NE	Cathy Kessel	/ /
8700 67th Ave NE	Cedar Landing Apartments	/ /
9008 62nd Dr NE	Charles & Tamara Caldwell	/ /
5508 69th St NE	Charles Dalton	/ /
3608 88th St NE	Chevron	/ /
8217 50th Ave NE	Christina Bagwill	/ /
[redacted]	[redacted]	/ /
		/ /
		/ /
		/ /
		/ /
		/ /
		/ /
3323 169th Pl NE	Cleaners, Pets, Books, Photo, etc.	/ /
12700 48th Dr NE	Clyde Ecby	/ /
8323 State Ave	Co-op Supply	/ /
7610 47th Ave NE	Coca Cola	/ /
5516 69th St NE	Collette Gower	/ /
3320 173rd Pl NE	Compass Health	/ /
1238 State Ave	Continental Savings Bank	/ /
12831 48th Ave NE	Cookie Pope	/ /
11901 55th Ave NE	Country Mobile Estates	/ /
4805 76th St NE	Country Villa Condos	/ /
6120 29th Dr NE	Crown Photo Systems	/ /
1242 State Ave, H-J	Crystal Door, Mailbox, Hi Tek Nails	/ /
7502 78th St NE	Dan Young	/ /
5405 64th Pl NE	Darren Williams	/ /
5409 64th Pl NE	Dave Clark	/ /
6917 70th Ave NE	David & Tanya Nye	/ /
6812 74th Dr NE	David E. Wade	/ /
7707 75th Dr NE	David Fairchild	/ /
7207 77th Dr NE	David Sneddon	/ /
7628 78th Dr NE	David Wolff	/ /
1212 2nd St	DeYoung Building	/ /
70 State Ave NE	Diamond Jim's Carwash	/ /
8219 55th Ave NE	Don Montague	/ /
4528 127th St NE	Donald Reeves	/ /
4424 107th Pl NE	Doris Goetz	/ /
1533 Grove St	Dr. Brian Jamieson, DDS, PS	/ /
3704 172nd St NE Suite P	DSHS	/ /
7205 Grove St	E.A. Born	/ /
7311 59th St NE	Earl E. Oman	/ /
5321 134th Pl NE	Ed Cort	/ /
5230 69th Dr NE	Edmond Canavan	/ /
5413 64th Pl NE	Ellen Bohn	/ /

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Address:	Company:	Survey
14727 43rd Ave NE	Emerald Hills Estates	/ /
12106 47th Dr NE	Epifanio Ruiz	/ /
6918 76th Dr NE	Erik Nyberg	/ /
9730 State Ave	Espresso Connection	/ /
5706 65th St NE	Eugene Zielke	/ /
5406 64th Pl NE	Eutrina Santos	/ /
9013 62nd Dr NE	Evelyn Bates	/ /
4420 76th St NE	Everett Clinic	/ /
1809 4th St	Evergreen Oral & Maxillofacial	/ /
1300 State Ave	Evertrust Bank	/ /
7602 63rd Dr NE	Felix Main	/ /
1619 172nd St NE	FER Development	/ /
7231 68th Ave NE	Florence Stavert	/ /
17020 Smokey Pt Blvd	Food Pavilion #90	/ /
8915 62nd Dr NE	Fred Goset	/ /
3506 168th St NE	Frontier Bank	/ /
4821 132nd Pl NE	Gary Cooper	/ /
7203 57th St NE	Gary Enigk	/ /
3704 172nd St NE	Gateway Center	/ /
3704 172nd St NE	Gateway Shopping Center	/ /
7703 77th Pl NE	Genin Residence	/ /
6926 53rd Pl NE	George Lindgren	/ /
8911 52nd Dr NE	Gladys Wallace	/ /
8521 67th Ave NE	Grace Academy	/ /
11515 State Ave. Suite D	Great Clips	/ /
14919 40th Ave NE	GSC Partnership	/ /
12330 51st Ave NE	GTE Telephone Operations	/ /
7629 78th Dr NE	Gunnar Laxfoss	/ /
3711 88th St. NE	Haggens	/ /
8308 47th Ave NE	Hampton Court Apartments	/ /
7223 74th St NE	Harold Graham	/ /
1242 State Ave, D	Healthsouth	/ /
6311 33rd Ave NE	Holiday Inn Express	/ /
7403 78th St NE	Howard Lobe	/ /
11811 State Ave NE	Hunter Place Apartments	/ /
5010 Grove St	Ian Millikan	/ /
1083 Cedar Ave	Iris Building	/ /
7324 54th Ave NE	Irma Dudley	/ /
2313 State Rd 530 NE	Island Crossing B-P	/ /
1226 5th St	It's About Time Carwash	/ /
9603 State Ave	Jack in the Box	/ /
6212 80th Pl NE	James Abbott	/ /
6811 57th St NE	James Dippman	/ /
6707 55th Dr NE	James Roberts	/ /
7626 77th Pl NE	James Scharf	/ /

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Address:	Company:	Survey
4505 104th Pl NE	Jan Curtis	/ /
7725 51st Ave NE	Jeffrey Allen	/ /
7804 77th St NE	Jeremy Kercheval	/ /
8210 49th Ave NE	Jerralyn Bishop	/ /
7922 56th Dr NE	Jim Mulligan	/ /
4530 95th St NE	Jim Schandel	/ /
1209 4th St	Jim's Texaco & Subway	/ /
8902 62nd Dr NE	Jo Ann Robinson	/ /
5224 80th St NE	Joan George	/ /
7504 52nd Pl NE	Joe & Susan Halliday	/ /
7426 77th Dr NE	John Anderson	/ /
7810 77th St NE	John Sienicki	/ /
5100 Grove St	Jubie Construction	/ /
12708 48th Dr NE	Karen Bukis	/ /
11727 52nd Dr NE	Karen North	/ /
3912 134th St NE	Kasilof Fish Co.	/ /
5420 Grove St	Kathy DeCann	/ /
4526 95th St NE	Keith & Louise Bowman	/ /
12702 48th Dr NE	Keith & Sarah Dunigan	/ /
11305 54th Dr NE	Keith Gale	/ /
5711 - 100th St NE	Kellogg Village	/ /
5714 Parkside Dr	Kenneth Smith	/ /
7807 77th St NE	Kenneth Weston	/ /
3433 169th Pl NE	Kentucky Fried Chicken	/ /
6703 58th St NE	Kimberly Mewharter	/ /
16410 Smokey Pt Blvd #103	Kincaid-McClary-Zysset DDS	/ /
3820 124th St NE	King Marine	/ /
Lakewood Commons	Lakewood Commons	/ /
17110 16th Dr NE	Lakewood School Dist #306	/ /
17110 16th Dr NE	Lakewood School Dist #306	/ /
4723 136th PL NE	Larry Card	/ /
1908 Liberty Lane	Larry Weir	/ /
5430 91st St NE	Lela Kersy	/ /
6920 75th Dr NE	Leon & Arletta Loucks	/ /
9031 60th Dr NE	Leonard Christopherson	/ /
8405 State Ave	Les Schwab	/ /
16607 Smokey Point Blvd	Les Schwab Tires	/ /
8119 State Ave	Lighthouse Self Storage	/ /
8809 58th Dr NE	Linda Wimer	/ /
12522 45th Dr NE	Loree Parker	/ /
3815 124th St NE	Lowell Industries	/ /
3300 169th Pl NE	Lowes Home Improvement	/ /
4700 56th Pl NE	Luke Manufacturing Inc.	/ /
5925 47th Ave NE	Madeleine Villa	/ /
7411 71st Ave NE	Mark Dufour	/ /

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Address:	Company:	Survey
6807 58th St NE	Mark Impson	/ /
5231 71st Ave NE	Mark Jensen	/ /
12428 46th Dr NE	Mark Pearson	/ /
7122 58th St NE	Mark Potter	/ /
13018 47th Dr NE	Marty Martinis	/ /
6502 58th Dr NE	Mary Duncan	/ /
7219 78th Dr NE	Mary Vermuelen	/ /
1821 Grove St	Marysville Care Center	/ /
8801 State Ave	Marysville Cemetery	/ /
5611 108th St NE	Marysville School District	/ /
2415 74th St NE	Marysville School District	/ /
4317 76th St NE	Marysville School District	/ /
5115 84th St NE	Marysville School District	/ /
4614 131st Pl NE	Maurice King	/ /
3529 172nd St NE	McDonalds	/ /
140th Pl NE	Meadowgreen Homeowners Association	/ /
6805 75th Dr NE	Melissa Canfield	/ /
6914 75th Dr NE	Michael & Jennifer Andrew	/ /
7429 78th St NE	Michael McMillin	/ /
8116 55th Ave NE	Michel Cundiff	/ /
6217 80th Pl NE	Mike Merrigan	/ /
13402 Quil Scenic Dr	Mike Starr	/ /
9530 53rd Dr NE	Millie Peterson	/ /
4228 175th Pl NE	Mitchel & Lisa Whitehouse	/ /
11424 36th Dr NE	Mobile Manor Mobile Home Park	/ /
3805 124th St NE	Moore Moving & Storage	/ /
16404 Smokey Pt Blvd	Mountain View Family Medicine	/ /
16900 51st Ave NE	National Food Corp	/ /
13828 45th Ave NE	Naval Family Support Complex	/ /
45th Ave NE	Naval Family Support Complex	/ /
45 Ave NE Bldg 13900	Naval Family Support Complex	/ /
45 Ave NE Bldg 13900	Naval Family Support Complex	/ /
BLDG 13908	Naval Family Support Complex	/ /
BLDG 13910	Naval Family Support Complex	/ /
BLDG 13914 - Chapel	Naval Family Support Complex	/ /
BLDG 13928	Naval Family Support Complex	/ /
BOQ BLD 13918	Naval Family Support Complex	/ /
BOQ BLD 13918	Naval Family Support Complex	/ /
2900 172nd St NE	Nick's Place	/ /
7613 70th Pl NE	Northpointe H/O Assoc	/ /
12810 Smokey Pt Blvd	Northwest Composites	/ /
9508 State Ave	Northwestern Auto Body	/ /
3710 136th St NE	NW Federal CU	/ /
16710 Smokey Pt Blvd	Oberg's Restaurant & Banquet	/ /
6503 58th Ave NE	Orest Cozzetto	/ /

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Address:	Company:	Survey
5401 64th Pl NE	Orv Nyland	/ /
15100 40th Ave NE	Pacific Industrial Park	/ /
3411 169th Pl NE	Papa Murphy's, Baskin Robbins, etc.	/ /
6531 67th Pl NE	Pat Fitzgerald	/ /
4410 95th St NE	Paul Eldridge	/ /
14110 29th Ave NE	Paul Riordan	/ /
7209 67th Pl NE	Paul Vawter	/ /
5714 65th St NE	Penny Barker	/ /
11603 State Ave	Plaza 116	/ /
5402 64th Pl NE	Port Gardner Management	/ /
3520 166th Pl NE - PUD Substation	PUD	/ /
11705 Old Hwy 99 - PUD Substn	PUD	/ /
9528 State Ave	Quilceda Medical Center	/ /
3719 88th St NE, Ste 3719C	Quizno's	/ /
4911 65th St NE	Ray Miller	/ /
9811 State Ave	Regal Cinemas	/ /
6721 58th St NE	Rena Culley	/ /
7207 57th St NE	Richard Kobashigawa	/ /
7612 68th St NE	Richard Pusateri	/ /
4802 126th Pl NE	Richard Walker	/ /
7318 44th Ave NE	Rising Star Gymnastics	/ /
17625 36th Dr NE	Robert Getchell	/ /
6612 55th Dr NE	Robert Reed	/ /
7704 72nd Dr NE	Robert Stevens	/ /
7619 70th Pl NE	Robert Vadjinia	/ /
7702 77th Ave NE	Roche Residence	/ /
14016 29th Ave NE	Roger Burris	/ /
7610 80th Ave NE	Ron DeLap	/ /
8114 80th Dr NE	Ron Kiel	/ /
12604 48th Dr NE	Ron LaMascus	/ /
9103 62nd Dr NE	Rose Marie Lang	/ /
1067 Columbia Ave	Roy Robinson Chevrolet	/ /
7506 52nd Pl NE	Russell L Wise	/ /
3532 172nd St NE	Safeway Inc #534	/ /
1242 State Ave, B & C	Safeway Plaza	/ /
1242 State Ave, E	Safeway Plaza	/ /
1250 State Avenue	Safeway Plaza	/ /
1258 State Ave	Safeway Store #1485	/ /
5414 64th Pl NE	Samuel Membrado	/ /
3901 116th St NE	Sands Mobile Home Park	/ /
804 State Ave	Schaefer Shipman Funeral Home	/ /
1802 4th St	Schoentrup Enterprises	/ /
7600 68th St NE	Scott Ludwig	/ /
9710 State Ave	Sea-Mar Medical Bldg	/ /
4929 65th St NE	Sherelee Swanson	/ /

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Address:	Company:	Survey
5202 116th St NE	Shoultes Gospel Hall	/ /
13724 57th Ave NE	Singh Jit	/ /
3533 172nd St NE, Bldg B	Smokey Point Family Dentistry	/ /
17432 Smokey Pt Blvd	Smokey Point Mobile Park	/ /
16820 Smokey Point Blvd	Smokey Point Retail	/ /
16632 Smokey Point Blvd	Smokey Point Sales	/ /
11601 State Ave	Smokey Point Shell	/ /
3617 172nd St NE	Smokey Point Town Center LLC	/ /
7312 35th Ave NE	Sno-Isle Reg. Library	/ /
3120 Quil-Ceda Way	Snohomish County PUD	/ /
1015 State Ave	State Farm Insurance	/ /
9516 State Ave	State Street Medical Building	/ /
6005 68th Dr NE	Strawberry Hills H/O Assoc	/ /
9815 State Ave	Strip Mall	/ /
9214 State Ave	Subway #3408	/ /
9214 State Ave	Subway	/ /
76th Ave & 84th St NE	Sunset Ridge Homeowners	/ /
1262 State Avenue	Super Cuts, Papa Murphy's, etc.	/ /
6912 59th Dr NE	Susan Deaver	/ /
5715 66th St NE	Suzanne Moreau	/ /
17904 35th Ave NE	Swanson Apartments	/ /
616 State Ave	Taco Bell	/ /
15303 Smokey Pt Blvd	Terrazz & Stone Supply	/ /
6327 100th St NE	Terry & Shirley Vitcovich	/ /
7714 72nd St NE	Terry Tisdale	/ /
8916 62nd Dr NE	Tess Morales	/ /
3506 88th St NE	Texaco Mart	/ /
7504 68th Ave NE	Thomas Robbins	/ /
6610 64th St NE	Thriftway	/ /
7604 73rd Pl NE	Tim Bartlett	/ /
5227 114th Pl NE	Tim Gurter	/ /
6309 100th St NE	Todd Moon	/ /
7618 77th Pl NE	Todd Peterson	/ /
5410 64th Place N	Tony Lettic	/ /
5911 70th Ave NE	Tony Matthews	/ /
5714 A 88th St NE	Tovar Properties	/ /
6410 33rd Ave NE	Tulalip Bingo	/ /
19th Ave & 72nd St NE	Tulalip Tribes Utilities	/ /
17110 Smokey Pt Blvd	US Bank	/ /
4826 130th Pl NE	Valesa Maddy	/ /
6508 64th St NE	Valley Common Apartments	/ /
7709 72nd St NE	Vern Stulken	/ /
Northbound I-5, Rest Area	WA State DOT	/ /
Southbound I-5, Rest Area	WA State DOT	/ /
7714 73rd Pl NE	Watson Residence	/ /

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Address:	Company:	Survey
7428 79th Dr NE	Wayne Stegemiller	/ /
3404 172nd St NE	Wendy's	/ /
6315 33rd Ave NE	Wendy's	/ /
6514 55th Dr NE	Wesley H Severe	/ /
4107 134th St NE	Western Utilities	/ /
1350 Cedar Ave #G-1	Westwood Crossing	/ /
7624 72nd Dr NE	William A. Palm	/ /
4618 124th Pl NE	William Hobbs	/ /
14407 Smokey Point Blvd	William Scottsman Modular Blgd Co	/ /
4326 106th Pl NE	William Woods	/ /
9802 48th Dr NE	Windsor Pointe Assisted Living	/ /
9802 48th Dr NE	Windsor Pointe Assisted Living	/ /
9802 48th Dr NE	Windsor Pointe Assisted Living	/ /
9912 48th Dr NE	Windsor Square	/ /
6110 64th St NE	Winterhill Apartments	/ /
4300 88th St NE	Wishing Well Apartments	/ /
6420 60th Dr NE	YMCA	/ /

Appendix F
Backflow Prevention
Assembly Installation Requirements

Appendix F

Backflow Prevention Assembly Installation Requirements

1.0 Introduction

This appendix describes guidelines, considerations, and requirements for designing and installing backflow prevention assemblies. Generally, assemblies should be installed in accordance with the Uniform Plumbing Code, the Uniform Building Code, and/or the PNWS-A WW A Cross Connection Control Manual, whichever is more restrictive.

2.0 General Installation Requirements

This section describes general installation practices common to all types of backflow prevention assemblies.

1. Any backflow prevention assembly installed as a component of new construction must be selected from the current list of approved backflow prevention assemblies published by the DOH.

2. Installation or replacement of backflow prevention assemblies in existing plumbing systems, especially fire sprinkler systems, must include any necessary system up sizing to assure adequate flow capacity for continued proper operation of the system.

3. Backflow prevention assemblies installed to retrofit existing systems must be installed by a licensed fire protection sprinkler system contractor in accordance with RCW 18.160 and meet the approval of the Fire Chief.

4. Where an approved assembly is deemed necessary, the customer must submit the model of the assembly and the installation plans to the Public Works Department for review and approval prior to installation.

5. Approved assemblies must be installed downstream of the City's service connection or water meter and on the customer's side of the property line.

6. An assembly located more than five (5) feet above the floor or ground level must include a permanent platform for a tester or maintenance person to stand on.

7. For an assembly installed within a vault or other enclosure, adequate space must be provided to allow unhampered access for testing and maintenance.

8. No part of an assembly may be submerged under water nor installed in a location subject to flooding. If an assembly is installed in a vault or basement, adequate drainage must be provided.

9. In cases where access to a vault is required, any persons entering the vault must comply with local, state, and federal safety rules regarding confined space entry.

10. Assemblies 2-1/2 inches and larger must have support blocks to prevent damage to the assembly or piping.

11. Reduced Pressure Backflow Assemblies may be installed in a vault only if the relief valve discharge can be drained to daylight. The drain must have adequate capacity to carry the full rated flow of the assembly and must be screened at both ends. The relief valve discharge must incorporate an approved air gap.

12. Any assembly that incorporates an air inlet or relief port must be installed outside of any enclosure or hooded area that contains or may contain corrosive, toxic, or poisonous fumes.

13. For an assembly with an air inlet or relief port located inside a building, give consideration to collecting and/or draining water that may spill during testing or that may be released if a relief port or check valve fails.

14. Assembly testing and/or maintenance interrupts water service temporarily. For installations requiring uninterrupted water service, a bypass or parallel backflow prevention assembly should be installed. The bypass or parallel assembly must be of the same type as the primary assembly.

15. Backflow prevention assemblies should be protected from severe weather and accidental physical damage.

16. When choosing a location for a backflow assembly, consider the possibility of theft and vandalism.

17. The installer should thoroughly flush associated water lines before installing an assembly to remove debris that could foul check valves or relief ports.

18. Consider landscaping requirements when planning installation of aboveground assemblies that will be in public view.

3.0 Freeze Protection

Experience has shown that freezing can damage backflow prevention assemblies beyond repair. Therefore, design and installation of assemblies should provide for adequate freeze protection. Specifically, all backflow prevention assemblies that are installed above ground level, or in shallow boxes or vaults, must have provisions for freeze protection. Freeze protection may be provided in two ways: installing the unit in a permanent, heated location; or shutting off and draining the service prior to arrival of severe cold weather. Because backflow prevention assemblies are typically installed in water services that require continuous operation, it is seldom appropriate to shut down a system and drain the assembly.

4.0 Drainage

Testing and maintenance activities require that backflow prevention assemblies be drained occasionally. Provision for proper assembly drainage begins in the design stage. The flowing are major points that the designer and/or installer should consider:

A shutoff valve should be installed on the upstream side of the assembly. If possible, shutoff valves should be located below ground level and inside the building. A drain valve should be installed between the shutoff valve and the assembly. If the shutoff valve is installed inside the building, the drain valve can effectively drain all the piping. If the shutoff valve is located in the ground, a drain valve or stop and waste valve can become submerged inlet and pose a backsiphonage hazard.

5.0 Thermal Expansion

Thermal expansion is the pressure increase due to expansion of water contained within a closed (i.e., restricted) volume resulting from a rise in water temperature. If the pressure caused by thermal expansion is not relieved properly, it can cause serious damage to the customer's plumbing system. As an example, excessive water pressure inside a hot water storage tank, if not relieved, may cause the tank to explode. Customer hot water tanks and associated plumbing components are normally protected by a temperature/pressure relief valve located at or near the top of the hot water storage tank. In addition plumbing codes in certain jurisdictions require installation of separate thermal expansion tanks to achieve pressure relief. Problems can arise in a heated water piping system when the system becomes closed or restricted due to installation of a backflow prevention assembly that includes one or more check valves. Unless properly installed and maintained, the assembly may prevent necessary thermal expansion.

6.0 Specific Installation Requirements

The following sections describe installation practices associated with specific types of backflow prevention assemblies.

6.1 Air Gap Separation Installation Requirements

Air gap separations are designed to prevent potential backflows associated with severe and high health hazard cross-connection assessments.

An approved air gap is a physical separation between the free flowing discharge end of the City's supply line and the overflow rim of an open or non-pressurized receiving vessel. The separation must be oriented vertically and have a height of at least twice the diameter of the inlet pipe, but never less than one inch.
When an air gap separation is affected by an obstruction (e.g., sidewalls), the obstruction may restrict flow of air into the supply pipe and nullify the effectiveness of the gap in preventing backsiphonage. When affected by obstructions, the vertical air gap separation must be at least three times that of the supply pipe diameter. Appendix K includes a rigorous definition of and requirements for an approved air gap.

6.2 Reduced Pressure Backflow Assembly (RPBA) Installation Requirements

A reduced pressure backflow assembly (RPBA) is designed to prevent backflow caused by backpressure and backsiphonage for both low and high health hazard assessments.

The following installation practices are common to all RPBAs and reduced pressure detector assemblies.

1. An RPBA must be installed in the configuration(s) and orientation(s) for which is has been tested and approved. Any other configuration or orientation may hinder its ability to prevent backflow.

2. An RPBA should be installed above ground level, or above the maximum flood level, whichever is higher.

3. An RPBA must be protected from freezing, severe weather, and physical damage.

4. Fluctuating water supply pressure may result in nuisance dripping and potential fouling of the assembly. In a static condition, the zone of reduced pressure between the two check valves must be maintained at 2.0 psig or greater differential below the incoming water supply pressure. Depending upon the degree of fluctuating pressure, the assembly may discharge water from time to time.

5. Approved assemblies larger than two (2) inches shall have a minimum clearance of twelve (12) inches on the backside and twenty-four (24) inches on the test cock side, twelve (12) inches plus the nominal size of the assembly below the assembly and thirty- six (36) inches above the assembly.

6. Assemblies less than two (2) inches shall have a minimum clearance of six (6) inches on the backside, twelve (12) inches on the test cock side of the assembly, and twelve (12) inches plus the nominal size of the assembly below the assembly and thirty-six (36) inches above the assembly.

7. An RPBA should be inspected as soon as possible after installation to insure proper configuration.

8. An RPBA should be tested as soon as possible after installation to verify proper operation.

6.3 Double Check Valve Assembly (DCV A) Installation Requirements

A double check valve assembly (DCV A) is designed to prevent backflow caused by backpressure and backsiphonage associated with low health hazard assessments. The following installation practices are common to all DCV As.

1. Unless an alternative orientation has been evaluated and approved by the City, the DCV A shall only be installed in a horizontal configuration. Any other orientation may hinder the ability of a DCV A to prevent backflow.

2. Ideally, a DCV A should be installed above ground level, or above the maximum flood level, whichever is higher. However, a DCV A may be installed in a basement or pit located below ground level. If installation is below ground, adequate room for testing and maintenance must be provided. Plugs must be installed in the test cocks to reduce the risk of siphoning groundwater into the water line through a leaking test cock. The test cocks must be installed facing upward or to one side. Area drainage must be provided to prevent the assembly from becoming submerged.

3. Assemblies larger than two (2) inches shall have a minimum clearance of twelve (12) inches on the backside, twenty-four (24) inches on the test cock side, twelve (12) inches plus the nominal size of the assembly below the assembly, and thirty-six (36) inches above the assembly.

4. Assemblies smaller than two (2) inches shall have a minimum clearance of six (6) inches on the backside, twelve (12) inches on the test cock side, twelve (12) inches plus the nominal size of the assembly below the assembly, and thirty-six (36) inches above the assembly.

5. A DCV A should be inspected as soon as possible after installation to insure proper configuration.

6. A DCV A should be tested as soon as possible after installation to verify proper operation.

6.4 Double Check Detector Assembly (DCDA) Installation Requirements

A double check detector valve assembly (DCDA) is designed to prevent backflow caused by backpressure and backsiphonage. These assemblies are used both for low health hazard installations and on fire protection systems.

The following installation practices are common to all DCDAs.

1. Unless an alternative orientation has been evaluated and approved by the City, the DCDA shall only be installed in a horizontal configuration. Any other orientation may hinder its ability to prevent backflow.

2. Ideally, a DCDA should be installed above ground level, or above the maximum flood level, whichever is higher. However, a DCDA may be installed in a basement or pit located below ground level. If installation is below ground, adequate room for testing and maintenance must be provided. Plugs must be installed in the test cocks to reduce the risk of siphoning groundwater into the water line through a leaking test cock. The

test cocks must be installed facing upward or to one side. Sufficient area drainage must be provided to prevent the assembly from becoming submerged.

3. Assemblies larger than two (2) inches shall have a minimum clearance of twelve (12) inches on the backside, twenty-four (24) inches on the test cock side, twelve (12) inches plus the nominal size of the assembly below the assembly, and thirty-six (36) inches above the assembly.

Assemblies smaller than two (2) inches shall have a minimum clearance of six (6) inches on the backside, twelve (12) inches on the test cock side, twelve (12) inches plus the nominal size of the assembly below the assembly, and thirty-six (36) inches above the assembly.

4. A DCDA should be inspected as soon as possible after installation to insure proper configuration.

5. A DCDA should be tested as soon as possible after installation to verify proper operation.

Appendix G
Installing and Testing Fire Service Backflow Prevention Assemblies

Appendix G

Installing and Testing Fire Service Backflow Prevention Assemblies

I. All new fire protection systems of American Waterworks Association (AWWA) M-14 Classes I through VI should have a minimum of Double Check Valve Assembly (DCVA) or Double Check Detector Assembly (DCDA) where a low health hazard exists, and a minimum of a Reduced Pressure Backflow Assembly (RPBA) or Reduced Pressure Detector Assembly (RPDA) where a high health hazard exists.

II. A decision regarding the use of the UL listed alarm check for Class I and II fire systems must be made with caution, in light of the Uniform Plumbing Code, State regulations, and guidance manuals that mandate the use of a DCVA or the DCDA as minimum backflow protection. The issue of liability from contamination by the various metals found in fire services that exceed the maximum contaminant levels (MCL) listed by the federal environmental agency (EPA), and presence of heterotrophic plate count bacteria (HPA) that can adversely affect a small portion of the population must be considered before anything less than a DCVA is accepted.

III. Jurisdictions that choose to retrofit rather than ignore fire services that do not have the minimum DCVA or DCDA should do so on a priority basis, and based on certain considerations as follows:

A. Retrofit must be based on a priority basis, with number one below being highest priority.

1. Chemicals, such as antifreeze are added, or an unapproved auxiliary water supply.
2. A backflow incident.
3. No backflow prevention assembly, such as a single check valve, or an UL-approved alarm check valve.
4. Failing or failed single check valve and/or a non-UL-approved alarm check valve.
5. A UL listed alarm check valve that is properly maintained in accordance with NFPA 25 (NFPA 1995b).

B. There are considerations that must be taken into account when retrofitting an existing fire service.

1. Impacts of assembly installation on sprinkler performance.
2. Cost of retrofitting, including hydraulic analysis.
3. Difficulty of assembly installation.

Notes for Double Check Detector Assemblies for 2.5-Inch Horizontal/Inside Installation

- UL- or FM-listed, soft seated, DOH-approved Double Check Detector Valve Assembly. Assembly must be installed in the same orientation for which it was approved. The meter must be mounted remotely, either affixed to an external wall or enclosed in a building meter box.

- Uni-flange with setscrews or mj x fl adapter with megalug or galvanized shackle to main with 2-3/4" rods, or mj retainer glands for both upstream and downstream of the assembly.

- Ductile iron pipe (sized as required) Class 52.

- 2-Galvanized adjustable pipe supports for 2-1/2"-diameter and larger pipe.

- A sufficiently sized floor drain or wall footing drain must be provided in the same room. Only construction materials that can withstand occasional submergence will be allowed.

- External door facing street with key is required. The hardware must be a "Best" system 6-pin "EA" core key or other key. The width and height of the door(s) must exceed the width and height of the assembly. The assembly must be fully accessible for testing and repairs.

- A 2-inch flushing line to the outside wall or a domestic meter in same room must be provided

- The room should be insulated with R-19 insulation or greater and heated to above freezing.

Notes:

1. Tee and gate valve required on the main.

2. Single check detector assemblies are not approved as backflow prevention assemblies.

3. Assembly requires certification upon installation and annually thereafter.

4. Test cocks are required to be plugged.

5. Maximum height of assembly or OS&Y shall be 5 feet unless an OSHA-approved access platform is provided.

6. All dimensions are minimum clearance requirements.

7. Fire department pumper port must be downstream of assembly.

8. Neither OS&Y that are part of the backflow assembly can be used as a post indicator valve.

Testing:

I. Personnel Requirements.

A. The backflow assembly tester (BAT) must be currently certified by the State of Washington.

B. A safety observer is required during entry into confined spaces.

C. It is recommended that a backflow assembly tester carry appropriate insurance to protect against liability.

II. Test Procedures.

A. Minimum Requirements.

1. Observation of Safety Rules in section III below.
2. Notify the property owner, the building occupants, the fire alarm monitoring company (if applicable), and the Marysville Fire District.
3. Test according to one of the standards prescribed in Section B below.
4. Test meter flow.
5. Note meter reading on test report.
6. Open all valves after tests are completed.
7. Notify pertinent people that the fire service is back in service.

B. Accepted standards for testing a double check detector assembly (DCDA).

1. Cross Connection Control Manual: Accepted Procedure and Practice, Sixth Edition, December 1995 (PNWS-AWWA).
2. American Society of Sanitary Engineering Professional Qualification Standards Backflow Prevention Assemblies--Series 500.
   a. Standard 5010-1048-1 for a Duplex gauge.
   b. Standard 5010-1048-2 for a Differential gauge using 2 hoses.
   c. Standard 5010-1048-3 for a Differential gauge using 1 hose.
   d. Standard 5010-1048-4 for a Sight Tube.
3. University of Southern California Foundation for Cross-Connection Control and Hydraulic Research Manual of Cross-Connection Control.

III. Minimum Safety Procedures

A. Tools/Personnel

1. Gauges and proper repair tools.
2. Blower; 600 CFM minimum.
3. Gas Detector-detection for oxygen, hydrogen sulfide, and combustibles (LEL) as a minimum (per WISHA standards)
4. Pump (for dewatering) as needed.
5. Tripod, body harness, and rope for entry into confined spaces.
6. Attendant to be “top man” for confined space entries.

B. Precautions (Not all inclusive)

1. Old assemblies where the cover is used as the spring retainer.
2. Overhead installation should have permanent OSHA platforms provided by the customer.
3. Ground and electrical hazards.
4. Thrust restraint should be in space if assembly needs to be pulled.
5. Hazardous materials in the vicinity.

6. Traffic hazards.

7. Personal Protective Equipment, such as, a hardhat, orange vest, etc.

C. Confined Space Entry Procedures.

1. It shall be assumed that all double check detector assemblies in vaults are in confined spaces and that the appropriate regulations and laws applying to such shall be observed. Communication and coordination before work begins is essential to assure that the minimum confined space entry requirements are being met.

2. WAC 296-62-145 to 296-62-14529) Part M addresses Confined Spaces.

Appendix H
List of Certified Backflow Assembly Testers

Appendix H
List of Certified Backflow Assembly Testers

Snohomish, King, Pierce, and Whatcom Counties

The City of Marysville has assembled the following list of state-certified backflow assembly testers (BATs) and provides copies to our water customers as a courtesy. This list does not include all certified BATs for the region. Rather, it includes those who have indicated their valid certification and their availability to test in the Marysville service area. The City does not intend for this list to constitute a recommendation of any individual BAT. Further, the City has no control over the price a given BAT will charge a customer for testing or repairing a backflow prevention assembly. The City expressly disclaims any responsibility for the quality of work or any other aspect of the services that may be provided by any of these BATs. Note that any water customer is free to identify and hire any BAT who holds current DOH certification, regardless of whether or not that individual's name appear in the following list.

A-BAT Backflow Assembly Testing & Service
PO Box 2374
Everett, W A 98203
425-334-6423/425-886-3260 Pager
King, Ron

Advance Testing & Service
PO Box 1485
Everett, WA 98206
425-337 -4175/425-339-8998 Pager
Sunny, Roger E.

Bell, James
Everett, WA
425-359-2024
Bell, James

Clearwater Backflow Service
2401 Rucker Avenue, Suite 13
Everett, WA 98201
425-257 -2013/425-330- 7645 Cell Phone
Plumbers1226@aol.com Paxline @ Providence.org
Axline, Patrick

Conner, Michael D.
2502 Pine Street
Everett, WA 98201-3232 425-501-2148
Conner, Michael D.

Kim, Young I.
4222 123rd Place N E
Marysville, W A 98271
425-343-6128/425-343-6128 Cell Phone/206-316-4563 Pager
Kim, Young I.

AACRA Backflow Assembly Testing & Service
PMB A-11 621 SR 9 NE
Lake Stevens, W A 98258
425-334-4507/425-330-5802 Cell Phone/425-438-5316 Pager
Young, Lewis

Backflow Testing & Service
PO Box 42
Lake Stevens, WA 98258
425-334-3350
Wahlman, Tom

Grassworks
PO Box 1 022
Lake Stevens, WA 98258
425-335-3819/425-280-5456 Cell Phone
Wade, Brian

Bentley, Raymond
30 139th Avenue SE
Snohomish, W A 98290
360-568-7801
Bentley, Raymond

Haagen's H2O Designs, Inc.
PO Box 1183
8509 168th Street SE
Snohomish, WA 98290
360-483-2684
Haagen, David

Sno King Mechanical
3323 193rd Place SE
Bothell, WA 98012
425- 483-9026
Tackett, Terry

Aqua Tech Services
15508 Country Club Drive A-37
Mill Creek, W A 98012
425-379-8429
Nardone, Vince

Living Designs
10418 NE 143rd Street
Bothell, W A 98011
425-821-5094
Pelroy, Steve

Backflow Assembly Testing Service
6703 227th SW
Mountlake Terrace, WA 98043
425-774-3473
Chris Schultz

Day & Nite Plumbing
PO Box 1021
Lynnwood, WA 98046
425-775-6464
Davis, Bruce
More, Hugh

Bellingham Lock & Safe Inc.
1619 N State Street
Bellingham, W A 98225
360-734-4940
Visser, Mike
Wise, Billy
Pauley, Jess

AAA Fire & Safety Inc.
3013 3rd Avenue North
Seattle, WA 98109
1-800-223-3473
Burroughs, Will

All Temp Mechanical, Inc.
527 NW 196th Place
Seattle, WA 98177
206-281-7067
Coleman, Ron

Backflow Testing Services
11504 Sandpoint Way NE
Seattle, WA 98125
206-361 -1577
Flickinger, Charles

Oarvin Electric Inc.
1703 N E 192nd Street
Seattle, WA 98155
206-364-9323
Avis, Darvin

McKinstry Services
5005 3rd Avenue S
Seattle, WA 98124
Everett: 425-339-1399/800-669-6223
Seattle: 206- 762-5900
Bellevue: 425-454-8125
Colts, Aaron
Oameron, Merle
Garnett, Nils
Peters, James
Koch, Karl
Schnabel, Curtis

NW Mechanical
1100 54th NW
Seattle, WA 98177
206-782-7520
Roach, Baxter

University Mechanical Contractors, Inc.
PO Box 77033
Seattle, W A 98133
206-364-9900
Angus, Clifford
Willis, Edward

Hornbeak Irrigation, Inc.
857 136th NE
Bellevue, WA 98005
425-641-0734
Gutierrez, Alvaro
Justesen, Robbie
Justesen, Roger

US Filter
5823 238th SE
Woodinville, WA 98072
800-422-3081
Kolbo, Ron

Supreme Landscape Services
PO Box 1141
Woodinville, WA 98072
425-483-6222
Smith, Dave

Aqua Containment Company, Inc.
445 SW Forest Drive
Issaquah, WA 98027
425-392-1523
Nelson, Gerald
Nelson, Patricia

Auburn Mechanical
2623 West Valley Hwy
Auburn, WA 98071
253-838-9780
Karr, Christopher
Graham, Kenneth

The Plumbing Joint
351 Union Avenue NE
Renton, WA 98059
425-228-3204
Bushong, Aaron
Kasper, James
Palmer, Dwayne
Palmer, Randy
Rogers, James

Grinnell Fire Protection
1215 Central Avenue S, Suite 128
Kent, W A 98032
253-859-5066
Carolan, Thomas
Skipworth, Skip

Backflows Only
PO Box 846
Kirkland, WA 98083
206-224-4959
Backflows1 @aol.com
Butner, Rick

Water Specialties Company, Inc.
12853 NE 83rd Street
Kirkland, WA 98033
425-827 -4964/800-828-1962
Unger, Dick

Keeney, George
6115 NE 195th Place
Kenmore, WA 98028
206-487 -2180
Keeney, George

Appendix I
Backflow Incident Response Procedures

Appendix I

Backflow Incident Response Procedures

1. Purpose

The purpose of this procedure is to guide the CCS, other Public Works Department personnel, and City management in responding to potential or actual backflow incidents.

2. Procedures

The City has established backflow incident response procedures that address a wide variety of backflow situations including:

- Contaminated Water
- Microbiological Contamination
- Chemical Contamination
- Physical/Mechanical/Operational Failures

2.1 Overview

A backflow incident is often discovered through investigation of a taste, color, or odor inquiry received from a customer water quality complaint. If it is determined that a cross-connection exists and a backflow incident has occurred, then action must be taken to assess the nature and degree of any resulting water system contamination, to prevent further contamination, and to restore water quality in the City's water distribution system and in the customer's water system. This procedure applies to any City employee responding to a water quality complaint, which may be related to a cross-connection. The employee must notify the CCP Administrator or another City cross-connection control specialist (CCS) whenever a cross-connection is suspected.

The CCP Administrator or CCS investigates the inquiry, and determines what response is appropriate. The field investigation must be accomplished by qualified City personnel. If necessary, a team made up of the CCS and a City Plumbing Inspector will conduct the investigation. Other City employee with special water system knowledge and skills may also be involved. The Director of Public Works and Utility Maintenance Supervisor must also be informed and involved.

A broad range of actions will be associated with any Backflow incident ranging from simple isolation of a single property or building to broad issues of potential liability and public health impact. The Director of Public Works takes the lead in making decisions and taking actions related to public information and the involvement of outside agencies. The Director also makes decisions concerning corrective action alternatives that may be beyond the scope of normal Public Works Department expertise and/or experience.

City of Marysville management will notify the DOH, local administrative authority, and local health jurisdiction as soon as possible, but no later than the end of the next business day, when a backflow incident is known to have contaminated the public water system or occurred within the premises of a consumer served by the purveyor.

2.2 Incident Investigation Guidelines

Any backflow incident investigation and follow-up response must be tailored to the nature and degree of the incident. Thus, the following guidelines are somewhat general in nature and designed to help the CCS, supporting personnel, and City management in making initial assessments, organizing a detailed investigation, and planning and executing an appropriate response. The nature and circumstances

associated with a particular incident may eliminate the need for certain of these procedures, or it may change the order in which the suggested procedures occur.

The CCS assumes overall responsibility for conducting the backflow investigation. Depending on the nature, source, location, magnitude, and complexity of any associated water system contamination, the CCS requests assistance from support personnel for diagnosis and repair functions and from City management for public and agency notification functions.

The CCS contacts the customer, arranges to visit the property, interviews the customer, collects grab samples from appropriate locations, and forwards the samples for laboratory analysis. Minimum testing includes pH, free chlorine residual concentration, and bacteriological analysis. The pH and chlorine tests serve as indicators of potential problems, and the bacteriological analysis gives an indication of the integrity of the water supply system.

Based on the actual or suspected degree of hazard, the CCS considers the need for shutting of the water supply, either to the individual property or to one or more segments of the associated water distribution main. If a cross-connection is probable and has the potential to contaminate the system beyond the premises, immediately shut off the water supply line that is at risk. Inform management of your suspicions and actions. Notify the customer of your actions and of the investigation and reason for it. Also, if water is to be shut off, the proper County and State agencies must be alerted. If a cross-connection is confirmed, the Director of Public Works notifies the DOH and Snohomish Health District (SHD) within 48 hours.

If the CCS suspects the cross-connection still exists and the water is or may be contaminated, he/she advises the customer not to drink or use the water. If the customer complains of health problems, the CCS advises the customer to see a physician.

Any water samples should be collected by the CCS or by other trained Public Works Department personnel in accordance with the City's Water Quality Monitoring Program Procedures. The CCS should not ask the customer to collect grab samples.

Short-range incident responses include determining the cause of the problem, eliminating the source of the problem, minimizing the effects of the backflow through containment, and public notification. The DOH and/or the Snohomish Health District may be called upon to help in identifying the source of the problem. The media, as well as police and fire personnel, may be contacted to assist with notifying water customers of the problem.

Medium-range incident responses involve restoring water quality. Restoring potable water to affected customers may take several days to several months to accomplish. The Snohomish Health District or the DOH may be requested to help in providing water. Simply flushing sections of the water main in the area may restore potable water quality. However, if the contamination is severe and post-flushing grab samples continue to exhibit unacceptable water quality standards, one or more sections of the water main may have to be replaced.

Long-range incident response includes a review of how the emergency was handled so that future emergency responses can be improved. It is important to assess what did and didn't work, how procedures can be modified, the performance and cooperation afforded by the agencies involved, and whether re-education and/or better lines of communication are needed.

2.3 Incident Investigation Procedures

The investigating team will take steps appropriate to the specific incident. These steps may include any or all of the following:

- Locate the source of contamination.
- Determine the degree of hazard.
- Determine whether the distribution system been contaminated.
- Conduct premises and distribution system sampling.
- Identify any water chemistry changes (e.g., increase or decrease in chlorine demand).
- Note any abnormal distribution system operating conditions.
- Review appropriate premises and distribution system diagrams.
- Isolate the premises whenever appropriate.
- Do not restore water service until the customer has corrected the problem and demonstrated, via an on-site inspection, that adequate backflow prevention has been implemented.

If the CCS suspects or determines that a portion of the water distribution system has become contaminated, the following procedures will be followed:

- Shut off the water supply to the affected portion(s) of the distribution system.
- Provide personal notification to every customer who is potentially affected by the problem.
- Arrange for a central watering source (bottled water, water truck, etc.).
- Notify customers of the need to boil water for drinking and cooking.
- Test pH and take a grab sample at the meter to identify the nature of the contamination.
- Notify the Fire District of the problem and the potential for aid calls.
- Call the Snohomish Health District, the DOH, and possibly Poison Control if medical attention may be required.
- Contact the news media if necessary.
- Flush main distribution lines and all water lines on the customer's premises.
- After flushing, take follow-up grab samples from appropriate taps on the distribution main and on the customer’s property and submit them for laboratory analysis to confirm that water quality has been restored.
- Re-flush the mainline and customer lines if needed.
- After corrective actions are completed and the water system is considered safe, contact every customer who was involved and provide an explanation of the process and the results.
- If the news media was contacted about the initial problem, contact them again with follow-up information.
- Notify the local administrative authority, and the Snohomish Health District as soon as possible, but no later than the end of the next business day when a backflow incident is known to have contaminated the public water system; or occurred within the premises of a consumer.
- Document all facets of the incident (field actions, sample data, discussions, participants, etc.) and records the data in a Backflow Incident Report Form. An example report form is included at the end of this appendix.

The CCP Administrator is responsible for documenting the incident by completing a Backflow Incident Report Form. An example form is included at the end of this appendix. The initial water quality complaint investigation may provide significant background information related to a backflow incident. However, the nature and focus of a backflow incident investigation may require additional information that the City did not obtain during the water quality complaint investigation. During the course of the backflow incident investigation, the CCS should obtain customer contact information and collect or observe other related information including:

- Property address
- Customer’s name
- Customer’s daytime and evening telephone numbers
- Customer’s fax number and/or e-mail address
- Approximate age of any buildings and plumbing systems on the property
- A description of any recent plumbing system repairs, replacements, or modifications

- For residential, commercial, and institutional facilities, attempt to obtain copies of plans for the building(s) and associated plumbing system(s).
- For industrial facilities, attempt to obtain copies of industrial process diagrams as well as plans for the building(s) and associated plumbing system(s).
- Identity of the person(s) who first discovered the problem
- Conduct interviews as necessary to obtain a full problem description.
- Are (or were) both the hot- and cold-water taps affected by the problem?
- Has the customer (or nearby water system customers) experienced any health issues?
- Have adjacent water system customers experienced the same problem?
- Does the magnitude of the problem seem to be increasing or decreasing?
- Does the problem seem to be continuous or intermittent?
- Has the customer contacted other city, county, or state agencies about the problem?
- Can the customer contribute any knowledge or opinions concerning the source of the problem?
- What actions has the customer taken in an effort to control, isolate, or remedy the problem?

Supplemental information pertinent to documenting a backflow incident investigation might include:

- What were the initial indications that a problem existed?
- What immediate actions were taken?
- What subsequent actions were taken?
- How was the problem isolated?
- What contaminants were involved?
- What was the source of the contamination?
- What were the effects of the contaminant?
- What was the distribution of contaminants?
- What should have been done differently?

- **City of Marysville**

Backflow Incident Report Form

The PNWS-AWWA Cross Connection Control Committee is making an effort to bring all backflow incidents to the attention of water purveyors and the public. If you have any knowledge regarding incidents, please fill out a copy of this form and return it to the committee, c/o the individual named on the reverse side. In addition, the state health agency should be notified.

Reporting Agency: _____ Report Date: _____

Reported by: _____ Title: _____

Mail Address: _____ City: _____

State: _____ Zip Code: _____ Telephone: _____

Date of Incident: _____ Time of Occurrence: _____

General Location (Street, etc.) _____

Backflow Originated From:

Name of Premise: _____

Street Address: _____ City: _____

Contact Person: _____ Telephone: _____

Type of Business: _____

Description of Contaminants: (Attach Chemical Analysis or MSDS if available)

_____

_____

Distribution of Contaminants:

Contained within customer's premise: ☐ Yes ☐ No

Number of persons affected: _____

Effect of Contamination:

Illness Reported: _____

Physical irritation reported: _____

Cross Connection Source of Contaminant (boiler, chemical pump, irrigation system, etc.)

_____

_____

Cause of backflow: (main break, fire flow, etc.)

_____

_____

Corrective Action Taken to Restore Water Quality: (main flushing, disinfection, etc.)

_____

_____

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

Previous Cross Connection Survey of Premise:

Date: _____ By: _____

Types of Backflow Preventer Isolating Premise:

☐ RPBA ☐ RPDA ☐ DCVA ☐ DCDA ☐ PVBA ☐ SVBA ☐ AVB ☐ Air Gap ☐ None ☐ Other Type

Date of Latest Test of Assembly: _____

Notification of State [Provincial] Health Authority:

Date: _____ Time: _____ Person Notified: _____

Attach sheets with additional information, sketches, and/or media information, and mail to: PNWS-AWWA, *c/o George Bratton,* 1252 S. Farragut Drive, Coupeville, WA 98239

Note that the above Backflow Incident Report Form incorporates only basic information relevant to most types of backflow incidents. In documenting a particular incident, the CCS should attach supplemental descriptions to the form as necessary to document information and activities that are unique to the incident being reported.

Appendix J
Customer Information Kit

Appendix J

Customer Information Kit

Marysville has defined and implements a cross-connection program to protect the public water supply and your health. A cross-connection is any actual or potential physical connection that could allow contaminated or used water or other substances to backflow into the City's water distribution system. Backflow can occur from backsiphonage, or backpressure. Backsiphonage is caused by negative pressure in the supply piping. Some common causes are high velocity in pipelines (Fire District turning on hydrants), line repair, or a break that is lower than your service connection. Backpressure is caused when the potable water supply piping is connected to a system or fixture, which exceeds the operating pressure of the supply piping. Some common causes could be from: a booster pump, potable water connections to boilers or other thermal expansion systems, interconnections with another system operated at a higher pressure, or from piping elevated 30 feet above the finished grade.

There are two types of isolation practices. The first is premise isolation, in which the customers entire system is separated from the City's system by means of a backflow prevention assembly installed at the service connection, immediately downstream from the meter. This type of isolation does not offer protection within the customer's water system. The second means of isolation is internal. This is the practice of installing backflow prevention assemblies to protect one item or area within a customer's property or facility from contaminating water piping in another part of the property or facility.

The City's cross-connection control program utilizes premise protection. This requires that approved air gaps or approved backflow prevention assemblies be installed on the customer side of the property lines, at the end of water meter connections or at the end of the service connection for connections without meters.

The State of Washington requires public water systems to develop and implement an active Cross-Connection Program (CCP). Marysville's CCP focuses on: inspecting homes and businesses to identify cross-connection possibilities; eliminating dangerous cross connections; and requiring that customers install backflow prevention assemblies to isolate cross-connections that can not be eliminated. The CCP also requires that backflow prevention assemblies be tested annually by a State Certified Backflow Assembly Tester (BAT), and that those findings be submitted to the City for review and approval.

The City has developed materials to assist you in determining the level of backflow protection, if any, required for isolating your water system. The following documents are enclosed for your information:

- A form letter explaining water system customer responsibilities under WAC 246-290-490
- A copy of the Marysville cross-connection ordinance
- A list of state-certified Backflow Assembly Testers who work in the Marysville area

Approved Backflow Prevention Assemblies

Backflow prevention assemblies installed for cross-connection control must be acceptable to the DOH. As referenced in WAC 246-290-490(5)(a), DOH has published and periodically updates a list of approved assemblies. For customers and purveyors located in northwestern Washington, this list as well as general technical assistance may be obtained by contacting the DOH:

Washington State Department of Health
Division of Drinking Water
Northwest Drinking Water Operations
20435 72nd Ave S, Suite 200, K17-12
Kent WA 98032-2358
Phone (253) 395-6750
Fax (253) 395-6760
TTY Relay Service (800)-833-6388

The DOH publishes the list of approved backflow prevention assemblies once a year with interim updates issued in the form of addenda.

Additional Information

Other materials are available related to the City's CCP. If you have questions about the information presented here or wish to obtain additional information, please contact the City's CCP Administrator by visiting the Marysville Public Works Department located at 80 Columbia Avenue or by calling (360) 651-5100.

Appendix K
Cross-Connection Program
Definitions, Abbreviations, and Acronyms

Appendix K

Cross-Connection Program Definitions, Abbreviations, and Acronyms

This appendix defines terms, abbreviations, and acronyms relating to cross-connection control. Many of the items are extracted from WAC 246-290-010, *Definitions,* which includes official DOH definitions pertinent to Group A public water systems. Other items presented here are specific to this CCP.

“Approved air gap" means a physical separation between the free-flowing end of a potable water supply pipeline and the overflow rim of an open or non-pressurized receiving vessel. To be an air gap approved by the DOH, the separation must be at least:

- Twice the diameter of the supply piping measured vertically from the overflow rim of the receiving vessel, and in no case be less than one inch, when unaffected by vertical surfaces (sidewalls); and:
- Three times the diameter of the supply piping, if the horizontal distance between the supply pipe and a vertical surface (sidewall) is less than or equal to three times the diameter of the supply pipe, or if the horizontal distance between the supply pipe and intersecting vertical surfaces (sidewalls) is less than or equal to four times the diameter of the supply pipe and in no case less than one and one-half inches.

"Approved atmospheric vacuum breaker" means an AVB of make, model, and size that is approved by DOH. AVBs that appear on the current approved backflow prevention assemblies list developed by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research or that are listed or approved by other nationally recognized testing agencies (such as IAPMO, ANSI, or UL) acceptable to the local administrative authority are considered approved by the DOH. (Note: An AVB is a backflow prevention assembly that is operated by atmospheric pressure in combination with the force of gravity. An AVB is designed to work in a vertical plane only. The moving part consists of a valve that must be carefully sized to slide in a guided channel and effectively shut off any reverse flow of water when a negative pressure exists in the supply system. AVBs are designed to protect against backsiphonage only.)

"Approved backflow prevention assembly" means an RPBA, RPDA, DCVA, DCDA, PVBA, or SVBA of make, model, and size that is approved by DOH. Assemblies that appear on the current approved backflow prevention assemblies list developed by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research or other entity acceptable to the DOH are considered approved by DOH.

"Auxiliary water supply" means any water supply on or available to the premises other than water supplied by the City.

"Backflow" means the undesirable reversal of flow of water or other substances through a cross-connection into the public water system or consumer's potable water system.

"Backflow Assembly Tester" means a person holding a valid BAT certificate issued in accordance with WAC 246-292. (i.e., a person who is currently certified by the DOH as trained and competent to inspect and test approved backflow prevention assemblies).

"Contaminant" means a substance present in drinking water that may adversely affect the health of the consumer or the aesthetic qualities of the water.

"Backpressure" means a pressure (caused by a pump, elevated tank or piping, boiler, or other means) on the consumer's side of the service connection that is greater than the pressure provided by the public water system and which may cause backflow.

"Backsiphonage" means backflow due to a reduction in system pressure in the purveyor's distribution system and/or consumer's water system.

"Building Inspector" means any individual authorized by the Local Administrative Authority to review plans and inspect installations associated with consumer's water systems. Qualifications for this position include familiarity with the Uniform Plumbing Code and state certification as a CCS. For consumer properties located within the City of Marysville, the inspector would be a City employee authorized by the Director of Public Works. For consumer properties located outside the City Limits, the inspector would be an employee of the Snohomish County Building Division.

"Check valve" means any example of a variety of valves that are designed to permit flow in one direction only. The variety includes slanting disc checks, silent checks (wafer or globe), automatic control valves, rubber flapper checks, double-disc swing checks, swing checks (internally or externally weighted), and spring-loaded checks. A check valve incorporated in an approved backflow prevention assembly must be an approved check valve that is drip tight in the normal direction of flow when the inlet pressure is at least one psig.

"City" means the City of Marysville".

"Combination fire protection system" means a fire sprinkler system that:

- Is supplied only by the purveyor's water;
- Does not have a fire department pumper connection; and,
- Is constructed of approved potable water piping and materials that serve both the fire sprinkler system and the consumer's potable water system.

"Consumer" means any person, organization, firm, or corporation receiving potable water from a public water system through a legal service connection from either the meter, or the point where the service line connects with the distribution system if no meter is present. (Note: This CCP document uses the terms consumer and customer interchangeably.)

"Consumer's water system," means any potable and/or industrial water system that begins at the point of delivery from the public water system and is located on the consumer's premises. The consumer's water system includes all auxiliary sources of supply, storage, treatment, and distribution facilities, piping, plumbing, and fixtures under the control of the consumer.

"Contaminant" means a substance present in drinking water that may adversely affect the health of the consumer or the aesthetic qualities of the water.

"Cross-connection" means any actual or potential physical connection between a public water system or the consumer's water system and any source of non-potable liquid, solid, or gas that could contaminate the potable water supply by backflow.

"Cross-connection control program" means the administrative and technical procedures the purveyor implements to protect the public water system from contamination via cross- connections as required in W AC 246-290-490.

"Cross-connection control specialist" means a person holding a valid CCS certificate issued in accordance with W AC 246-292.

"Cross-connection control summary report" means the annual report that describes the status of the purveyor's cross-connection control program.

"Customer" means any person, organization, firm, or corporation receiving potable water from a public water system through a legal service connection from either the meter, or the point where the service line connects with the distribution system if no meter is present. (Note: This CCP document uses the terms customer and consumer interchangeably.)

"Degree of hazard" means the relative actual or potential risk to public health and to the City's potable water system posed by actual or potential cross-connections to the public water system as determined by the CCS based on evaluations and/or site inspections. Two categories of hazard include:

- Health cross-connection hazard: Any condition, component, or practice in the water supply system and its operation that could create, or in the judgment of the DOH, may create a danger to the health and well being of the water customer.
- System cross-connection hazard: An actual or potential threat to the physical properties of, or to the potability of water in the City's water system or the customer's water system, which would constitute a nuisance or be aesthetically objectionable or could cause damage to the system or its appurtenances, but would not be dangerous to health.

"Design and construction standards" means DOH design guidance and other peer-reviewed documents generally accepted by the engineering profession as containing fundamental criteria for design and construction of water facility projects. Design and construction standards are comprised of performance and sizing criteria and reference general construction materials and methods.

"Direct service connection" means a service hookup to a property that is contiguous to a water distribution main and where additional distribution mains or extensions are not needed to provide service.

"Disinfection" means the use of chlorine or other DOH-approved agent or process for killing or inactivating microbiological organisms, including pathogenic and indicator organisms.

"Distribution system" means all piping components of a public water system that serve to convey water from transmission mains linked to source, storage and treatment facilities to the consumer excluding individual services.

"Double Check Detector Assembly (DCDA)" means an approved backflow prevention assembly composed of two (2) single, independently acting, check valves, including tightly closing shut-off valves located at each end of the assembly and suitable test cocks for testing the water tightness of each check valve. These assemblies must include a factory-installed bypass designed to monitor low flows on low hazard fire protection systems. These bypasses are used to detect unauthorized use of water allocated for fire protection and to detect leaks in the fire system. DCDAs protect the water system from both backsiphonage and backpressure. They are not suitable for protecting the water system from health threatening substances.

"Double Check Valve Assembly (DCVA)" means an approved backflow prevention assembly composed of two (2) single, independently acting check valves loaded to the closed position by springs or weights, supplemented by tightly closing shutoff valves located at each end of the assembly and by properly located test cocks suitable for testing the water tightness of each check valve.

"Emergency" means an unforeseen event that causes damage or disrupts normal operations and requires immediate action to protect public health and safety.

"Flow-through fire protection system" means a fire sprinkler system that:

- is supplied only by the purveyor's water;
- does not have a fire department pumper connection;
- is constructed of approved potable water piping and materials to which sprinkler heads are attached; and
- terminates at a connection to a toilet or other plumbing fixture to prevent the water from becoming stagnant.

"Grab sample" means a water quality sample collected at a specific instant in time and analyzed as an individual sample.

"Graywater use" means that a customer's system utilizes the effluent from untreated household wastewater that has not come into contact with toilet or food processing waste. Graywater sources include water from bathtubs, showers, washbasins, cloths washers, but not kitchen sinks or dishwashers. All graywater systems must be considered high health hazards because of the potential for transmitting human pathogens.

"Health Hazard" means any condition, assembly, or operating practice in a water supply system that creates or may create a danger to the health and well being of a water system customer.

"Health officer" means the city, county, or state public Health Officers duly appointed by the City, by Snohomish County, or the DOH.

"High health cross-connection hazard" means a cross-connection that could impair the quality of potable water and create an actual public health hazard through poisoning or spread of disease by sewage, industrial fluids, or waste.

"Human consumption" means the use of water for drinking, bathing or showering, hand washing, food preparation, cooking, or oral hygiene.

"Industrial fluids" means fluids or solutions that may be chemically, biologically, or otherwise contaminated or polluted in a form or concentration that would constitute a health or plumbing hazard if introduced into a potable water supply. These substances may include but are not limited to all types of processed waters originating from the public water or auxiliary supply which may deteriorate in sanitary quality; chemicals in fluid form; plating acids and alkalis; circulated cooling waters that are chemically or biologically treated or stabilized with toxic substances; and contaminated natural waters such as from wells, springs, streams, or ponds.

"In-premises protection" means a method of protecting the health of consumers served by the consumer's potable water system, located within the property lines of the consumer's premises, by the installation of an approved air gap or approved backflow prevention assembly at the point of hazard, which is generally a plumbing fixture. In-premise protection requirements are specified by of the Uniform Plumbing Code and enforced by the Local Administrative Authority.

"Local administrative authority" means the local official, board, department, or agency authorized to administer and enforce the provisions of the Uniform Plumbing Code as adopted under RCW 19.27.

"Low health cross-connection hazard" means a cross-connection that could cause an impairment of the quality of potable water to a degree that does not create a hazard to the public health, but does adversely and unreasonably affect the aesthetic qualities of such potable waters for domestic use.

"Potable water" means water suitable for drinking by the public.

"Premises" means a piece of land or other property to which water is provided, including all structures and improvements located on it.

"Premises isolation" means a method of protecting a public water system by installation of approved air gaps or approved backflow prevention assemblies at or near the service connection or alternative location acceptable to the purveyor to isolate the consumer's water system from the purveyor's distribution system.

"Pressure Vacuum Breaker Assembly (PVBA)" means an approved backflow prevention assembly composed of a spring-loaded check valve, an independently operating air inlet valve, inlet and discharge shutoff valves, and properly installed test cocks. The air inlet valve is internally loaded to the open position, normally by means of a spring. This internal loading allows the assembly to be installed on the pressure side of a shutoff valve. These assemblies are designed to protect against backsiphonage only.

"Public water system" means any system providing water for human consumption or other domestic use through pipes or other constructed conveyances, excluding a system serving only one single-family residence and a system with four or fewer connections all of which serve residences on the same farm. Such term includes:

- Collection, treatment, storage, and/or distribution facilities under control of the purveyor and used primarily in connection with such system; and Collection or pretreatment storage facilities not under control of the purveyor, but primarily used in connection with such system.
- In the context of this CCP document, the public water system refers to the source, treatment, storage, transmission, and distribution facilities owned, operated, and maintained by the Marysville Public Works Department to furnish potable water to customers located in the City of Marysville and in surrounding areas of unincorporated Snohomish County.

"Purveyor" means an agency, subdivision of the state, municipal corporation, firm, company, mutual or cooperative association, institution, partnership, or person or other entity owning or operating a public water system. Purveyor also means the authorized agents of such entities.

"Reclaimed water" means effluent derived in any part from sewage from a wastewater treatment system that has been adequately and reliably treated, so that as a result of that treatment, it is suitable for beneficial use or a controlled use that would not otherwise occur, and it is no longer considered wastewater. Reclaimed water is considered to pose a potential high health hazard.

"Reduced Pressure Backflow Assembly (RPBA)" means an approved backflow prevention assembly composed of a minimum of two (2) independently acting check valves, together with an automatically operated differential pressure relief valve located between the two check valves. During normal flow, the pressure between these two check valves must be less than the upstream (supply) pressure. In case of leakage of either check valve, the differential relief valve, by discharging to the atmosphere, operates to maintain not less than 2 psi between the supply pressure and the zone between the two check valves. The unit must include resilient seated shut- off valves located at each end of the assembly, and each assembly must be fitted with properly located test cocks.

"Reduced Pressure Detector Assembly (RPDA)" means an approved backflow prevention assembly composed of two approved reduced pressure backflow assemblies, installed in parallel, and equipped with a metered bypass line to detect small amounts of water leakage or use.

"Service connection" means a piping connection from the City's water system to the consumer's water system designed to provide potable water from the City's distribution main to a single-family residence or other residential or nonresidential premise, facility, or structure. The service connection ends at a customer's property line or, if a City meter is installed, at the customer's end of the meter. Service connections also include water connections from fire hydrants and all other temporary or emergency water service connections to the public potable water system.

"State board of health" means the board created by RCW 43.20.030.

"Stormwater reuse" means that a customer's system utilizes rainwater collected from roof drains, roads, and/or parking areas for lawn and irrigation purposes. All stormwater reuse systems must be considered high health hazard because of the potential for bacterial and/or chemical contamination.

"Unapproved auxiliary water supply" means a water supply (other than the purveyor's water supply) on or available to the consumer's premises that is either not approved for human consumption by the health agency having jurisdiction or is not otherwise acceptable to the purveyor.

"Uniform Plumbing Code" means the code adopted under RCW 19.27.031(4) and amended under WAC 51-46. This code establishes statewide minimum plumbing standards applicable within the property lines of the consumer's premises.

"Used water" means water that has left the control of the purveyor.

Abbreviations and Acronyms

AG	Air Gap
ANSI	American National Standards Institute
APWA	American Public Works Association
AVB	Atmospheric Vacuum Breaker
AWWA	American Water Works Association
BAT	Backflow Assembly Tester
CFR	Code of Federal Regulations
CCS	Cross-connection Control Specialist
DCDA	Double Check Detector Assembly
DCVA	Double Check Valve Assembly
HFVB	Hose Faucet Vacuum Breaker
IAPMO	International Association of Plumbing and Mechanical Officials
MPWD	Marysville Public Works Department
psi	pounds per square inch
psig	pounds per square inch gauge
PVBA	Pressure Vacuum Breaker Assembly
RCW	Revised Code of Washington
RPBA	reduced pressure backflow assembly
RPDA	reduced pressure detector assembly
SVBA	spill-resistant vacuum breaker assembly
UBC	Uniform Building Code
UL	Underwriters Laboratories, Inc.
UPC	Uniform Plumbing Code
WAC	Washington Administrative Code
WSDOT	Washington State Department of Transportation