

Appendix F

Cross-Connection Control Policy Manual



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EXECUTIVE SUMMARY

Congress passed the “Safe Drinking Water Act” with the intent of protecting the public health and welfare of all public water supply users in the United States. The Environmental Protection Agency (EPA) interpreted this mandate to mean that certain contaminants should not be found in water “delivered to the free-flowing outlet of the ultimate user.” Thus, protection of the water system from these contaminants became the responsibility of the water purveyor.

The Public Utility District No. 1 of Skagit County (District) relies on a multiple barrier approach to protect the public water supply and, subsequently, public health. One of the most important aspects of the multiple barrier approach is an active and effective cross-connection control program. The greatest public health risk lies in the introduction of a contaminant into the public water supply system, as the water distribution system can provide the conduit for the spread of the contaminant to a large population. Once water leaves the control of the distribution system, the District must consider the possibility that the water could become contaminated. Accordingly, the District must consider the plumbing system of all customers to be a potential health hazard. The hazard, and the health risk, may vary from minor to severe.

Under certain hydraulic conditions, water can flow in the opposite direction from the intended direction of flow (“backflow”). Two conditions that can cause backflow are when pressure is reduced in a supply line or from a source of pressure on the customer side that exceeds the supply pressure. Reduced pressure can be caused from the opening of a fire hydrant or a break in the water main. Sources of pressure that can exceed the supply pressure include, but are not limited to, booster pumps, thermal expansion, and elevated piping. If a cross-connection exists, or is created, chemicals, gases, or substances other than potable water could be introduced into the distribution system.

There are numerous backflow incidents where cross-connections have been responsible for contaminating drinking water. The potable water supply piping often gets connected to piping carrying another fluid or gas, such as an air conditioner containing chemicals to kill algae. A garden hose submerged in a swimming pool, water trough for animals, a car’s radiator to flush out antifreeze, or attached to a fertilizer sprayer, could siphon contaminants back into the public water system. Other common cross-connections include irrigation systems, private wells, and water recirculating systems.

Inconsistent reporting and documentation procedures make it difficult to assess the full scope of contamination and outbreaks of illness due to backflow incidents. Around eighty incidents have been reported to Washington State Department of Health since 1996. One example is when an unprotected irrigation system with untreated water backflowed into the domestic water lines and caused eleven cases of giardiasis. Another example is when a city’s residents were without water for four days after herbicide 2,4-D was back-siphoned into the community’s water system.

Many of the District’s customers conduct activities that could contaminate the public water system if cross-connections and a backflow event occur. Examples include wastewater treatment plants, dairy farms, car washes, and food processing plants. The District has experienced a few minor backflow incidents of air being introduced into the distribution system. Irrigation systems are very common and if not winterized properly can backflow air and any water that remains in the system. Compressed air is used to purge the system and if the correct valves are not closed to isolate the system backflow can occur. Another backflow incident

happened at a hospital served by the District. A pump was installed to increase pressure in another building. Unknown to facility staff, the pump was repeatedly turning on and off, causing major water hammer. Backflow occurred, but fortunately subsequent water quality samples tested negative for contamination.

This Cross-Connection Control Program Manual (CCCPM) documents the District's compliance with requirements of Washington State Department of Health (DOH) and Washington Administrative Code (WAC) to implement a cross-connection control program. The purpose of the program is to protect the public water system from contamination via cross-connections and therefore the health and safety of the District's customers. The District often requires existing services to install a new backflow prevention assembly. These requirements can cause unexpected costs for the customer which leads to conflict and confusion.

The minimum required elements of a Cross-Connection Control Program are:

Element 1: Establishment of legal authority and program policies.

Element 2: Evaluation of premises for cross-connection hazards.

Element 3: Elimination and/or control of cross-connections.

Element 4: Provision of qualified personnel.

Element 5: Inspection and testing of backflow preventers

Element 6: Quality control of the testing process.

Element 7: Response to backflow incidents

Element 8: Public education about cross-connection control.

Element 9: Record keeping.

1. INTRODUCTION

Washington Administrative Code (WAC) 246-290-490 establishes the minimum requirements for how the District is to protect its public water systems from contamination via cross-connections. In accordance with these requirements, this Cross-Connection Control Program Manual (CCCPM) documents the District's policies related to cross-connection control.

The CCCPM describes how the District administers the minimum requirements of WAC 246-290-490, and includes specific requirements, clarifications, and procedures that are not explicitly defined in the law. The CCCPM provides a clear and concise description of District policy in most circumstances. In rare circumstances, the District may refer to additional resources related to cross-connection control in the implementation of the CCCPM. If determined necessary by the District, the following resources may be used as a reference while administering this program:

- Washington Administrative Code (WAC)
- Department of Health Guidance Documents
- Seventh Edition (or any superseding edition) Cross-Connection Control Manual Accepted Procedure and Practice, Pacific Northwest Section American Water Works Association
- Tenth Edition (or any superseding edition) Manual of Cross-Connection Control, University of Southern California

The District's responsibility for cross-connection control begins at the water supply source, includes all public water treatment, storage, and distribution facilities, and ends at the point of delivery to the customer's water system. The point of delivery to the customer's water system begins at the downstream end of the service connection. Most often this is the outlet of the water meter and is a valve in the case of a fire protection service.

The District is not responsible for eliminating or controlling cross-connections within the customer's water system. Under chapter 19.27 RCW, the responsibility for cross-connection control within the consumer's water system lies with the Authority Having Jurisdiction (AHJ) or Building Official. Based on these requirements, the District's CCCPM is focused on protection of the public water system and is not intended to prevent cross-connections within the premises. The CCCPM will be provided to the applicable AHJ within the District's service area.

The District works to ensure that cross-connections between the distribution system and a customer's premises are eliminated or controlled by the installation of an approved backflow preventer or approved air gap that is commensurate with the assessed degree of hazard. The CCCPM describes how the District will determine the required protection.

The customer is required to install, maintain, and test backflow protection assemblies (or approved air gaps) as determined by the District. The cost of assembly design, installation, maintenance, replacement, and testing are the responsibility of the customer. Backflow protection assemblies and approved air gaps are the property and responsibility of the customer. District representatives may make inspections of such equipment periodically.

Customers who fail to cooperate in the installation, maintenance, repair, inspection, or testing of backflow preventers or approved air gaps as required by the District, will not receive a water service or will have service disconnected. Water service disconnection will occur as described in the enforcement section of the CCCPM.

2. DEFINITIONS

AGRICULTURAL (farms and dairies) – specific land areas on which agricultural activities are conducted. Agricultural uses and practices include, but are not limited to: producing, breeding, or increasing agricultural products; rotating and changing agricultural crops; conducting agricultural operations; maintaining, repairing, and replacing agricultural equipment; maintaining, repairing, and replacing agricultural facilities.

APPROVED AIR GAP (AG) – 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 approved 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);
- 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 BACKFLOW PREVENTION ASSEMBLY –an RPBA, RPDA, DCVA, DCDA, of make, model, and size that is approved by the District. Assemblies must appear on the current approved backflow prevention assemblies list developed by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research.

AUTHORITY HAVING JURISDICTION (AHJ) – the local official, board, department, or agency authorized to administer and enforce the provisions of the plumbing codes as adopted under chapter 19.27 RCW. This includes the Building Official from the cities of Burlington, Mount Vernon, Sedro-Woolley and Skagit County.

AUXILIARY WATER SUPPLY – a water supply (other than the District's water supply) on or available to the consumer's premises. A well is an example of an auxiliary water supply.

BACKFLOW – the undesirable reversal of flow of water or other substances through a cross- connection into the District's water system, or consumer's potable water system.

BACKFLOW ASSEMBLY TESTER (BAT) – a person holding a valid BAT certificate issued under chapter 246-292 WAC.

BACKFLOW PREVENTION DEVICE – a backflow preventer that is not designed for in-line testing.

BACKPRESSURE – 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 – backflow due to a reduction in system pressure in the purveyor's distribution system and/or consumer's water system.

CROSS-CONNECTION – 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 SPECIALIST (CCS) – a person holding a valid CCS certificate issued under chapter 246-292 WAC.

DEGREE OF HAZARD – the type of potential risk or hazard, such as pollution or contamination, that is determined through an evaluation of the conditions within a consumer's water system.

DOUBLE CHECK DETECTOR ASSEMBLY (DCDA) – a backflow prevention assembly consisting of two approved double check valve assemblies, set in parallel, equipped with a meter on the bypass line to detect small amounts of water leakage or use.

DOUBLE CHECK VALVE ASSEMBLY (DCVA) – a backflow prevention assembly composed of two single, independently acting check valves, spring loaded to the closed

position, and installed as a unit with, and between, two resilient seated shutoff valves and having four properly located resilient seated test cocks.

FACILITY SURVEY – an on-site review to assess the degree of hazard. A survey of the customer's premises is not intended to be an inspection of the entire plumbing system; it allows a District cross-connection control specialist to determine the degree of hazard and commensurate backflow prevention requirements. The District may waive an on-site review depending on information received from the customer, or when related to proposed new service connections.

FIRE PROTECTION SERVICE CONNECTION – a water service for fire protection that is fitted with such fixtures only as are needed for fire protection and is entirely disconnected from those used for other purposes.

HIGH HEALTH HAZARD – Any physical, chemical, biological, or radiological substance that may enter the drinking water supply and impair the quality of the potable water and may result in injury, poisoning, or the spread of disease.

IN-PREMISES ISOLATION – the practice of installing backflow prevention assemblies, devices or methods at the point of hazard.

IRRIGATION SERVICE CONNECTION – a meter installed solely for the purpose of metering non-agricultural irrigation water to a customer's premises.

LOW HEALTH HAZARD – those contaminants which, at the levels found in the water, could cause adverse aesthetic problems to the drinking water supply such as taste, odor and color of the water but do not present a danger to public health.

NON-POTABLE – any water, liquid, gas, or other substance that is not intended for human consumption.

NON-RESIDENTIAL SERVICE CONNECTION – all service connections that do not meet the definition of residential, fire protection, or irrigation service connections.

POTABLE WATER – water which is safe for human consumption and free from harmful or objectionable materials that could cause injury, disease or harmful physiological effects.

PREMISES – any property where water service is provided, including all buildings, improvements, moveable and permanent structures.

PREMISES ISOLATION – 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.

REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA) – a backflow prevention assembly composed of two independently acting check valves spring loaded to the closed position and an automatically opening differential relief valve located between the two check valves. Installed as a unit with, and between, two resilient seated shutoff valves and having four properly located resilient seated test cocks.

REDUCED PRESSURE DETECTOR ASSEMBLY (RPDA) – a backflow prevention assembly incorporated of two approved reduced pressure backflow assemblies, set in parallel, equipped with a meter on the bypass line to detect small amounts of water leakage

or use.

RESIDENTIAL SERVICE CONNECTION – a meter serving a single-family dwelling or residential building that consist of three or less units. Meter may serve associated uses such as agricultural, home-based businesses, or approved accessory dwelling units (ADU).

SEVERE HEALTH HAZARD – a cross-connection which could impair the quality of potable water and create an immediate, severe health hazard through poisoning or spread of disease by contaminants from radioactive material processing plants, nuclear reactors, or wastewater treatments plants.

3. AUTHORITY HAVING JURISDICTION (AHJ)

Washington Administrative Code requires water purveyors and local administrative authorities to coordinate on cross connection issues. A successful Cross-Connection Control Program depends on cooperation and collaboration between the purveyor and AHJ. The local authorities in the District's service area include the City of Burlington, City of Mount Vernon, City of Sedro-Woolley, and Skagit County.

The District's responsibility for cross-connection control ends at the point of delivery to the consumer's water system. The responsibility for cross-connection within the consumer's water system lies with the AHJ.

The District's policy for non-residential connections is to implement a premises isolation program that protects the public water system, and the AHJ establishes requirements for the customer's premises in accordance with plumbing codes. The District monitors backflow preventers that protect the public water system. When premises isolation is established at a service connection, the District will only monitor the assembly(s) that isolate the public water system from the consumer's water system. In these situations, the District will discontinue monitoring of other in-premises backflow preventers. For residential connections, the District will allow and monitor backflow protection at the point of hazard where allowed by this CCCPM.

The District will continue to strive for improved coordination and collaboration with the AHJs. The District relies on communication from an applicable AHJ regarding permit-driven activity to help in the identification of existing services which may require backflow protection. If the District is unable to obtain this information, public record requests may be necessary.

4. PREMISES AND IN-PREMISES ISOLATION REQUIREMENTS

The District implements a combination program that relies on both premises isolation and in-premises isolation for protection of the public water system. Customers shall comply with the minimum protection requirements specified in subsection (4)(A) and (4)(B) of this section. All other uses will require a facility survey by the District to determine requirements for backflow protection.

A. PREMISES ISOLATION

The control or elimination of cross-connections shall be no less stringent than the following. Premises with activities or water uses that may create a potential or actual cross-connection require the premises owner to provide backflow prevention methods, as

determined by the District, commensurate with the degree of hazard. The following list

includes, but is not limited to, the type of premises, and/or the type of water use, at or within a premise, that require backflow prevention, and the District's minimum allowable method for each.

Description of Hazard or Premises	Minimum Protection at Service Connection
Agricultural (farms and dairies)	RPBA
Agricultural rate customers	RPBA
Auxiliary supply	RPBA
Fire protection system* With chemical injection Without chemical injection	RPDA DCDA
Hydroponics	RPBA
Irrigation system with chemical injection	RPBA
Large parcels (5+ acres)	DCVA
Non-residential service connection	RPBA
Residential booster pump	DCVA
Residential sewage pump, lift station and/or grinder pump	RPBA
Solar heating system, heat exchangers	RPBA
Survey access denied or restricted	RPBA
All other premises listed in Table 9 WAC-246-290-490	RPBA

*Backflow prevention not required on residential flow-through fire protection systems constructed entirely of approved potable water piping, materials and fixtures.

B. IN-PREMISES ISOLATION

Backflow protection is allowed at the point of hazard for residential hazards such as, but not limited to, the following:

Description of Fixture, Equipment, or Use of Water	Minimum Protection at Fixture
Dialysis equipment	RPBA
Recirculating pumps	RPBA
Swimming pool	AG, RPBA
Irrigation system without chemicals	DCVA

5. FACILITY SURVEY SCHEDULE

A. The District will establish the priority of its facility surveys based on the degree of hazard and the minimum DOH requirements. Once the District is made aware of a service connection that does not have proper cross-connection control, priority of the enforcement process will be on those categorized as a higher risk by the District. The District shall ensure that the customer installs approved backflow preventers commensurate with the degree of hazard within 30-90 days of the District notifying the customer. The District reserves the right to deviate from this schedule. Once the District has completed a facility survey and determined the level of protection required, if any, the customer will be notified in writing of the requirements and schedule. Enforcement procedures for non-compliance with backflow prevention requirements are described in Section 7.

B. Facility surveys will occur as follows:

1. New Service Connection:

Upon application for water service, the District will interview the customer about the proposed use and determine the appropriate level of backflow prevention required. These requirements will be communicated to the customer prior to processing the application. The service shall not be activated until backflow protection requirements have been approved by the District. Temporary activation is allowed to facilitate testing, but service will be disconnected if testing is not completed in a timely manner.

2. Existing Service Connection:

The District may require a facility survey when made aware of proposed permit-driven activity or other similar communication from the AHJ, or when a customer inquiry to the District initiates an investigation. Proposed permit-driven activity includes, but is not limited to, new construction, remodeling, additions, revised plumbing, and land divisions or changes in use. Facility surveys may also be required if a customer is proposing changes to existing water services or new water system improvements at a Pre-Application/Pre-Development Meeting with the AHJ.

Facility surveys shall assess both existing and proposed uses. The District does not otherwise proactively search for, or enforce, requirements for new backflow protection on existing service connections.

6. ANNUAL BACKFLOW PREVENTION ASSEMBLY TESTING

- A.** All backflow prevention assemblies will be tested upon installation, after repair, reinstallation or relocation, and annually thereafter. The District will notify customers annually by mail in the month prior to the month of their annual due date that an annual test of their backflow prevention assembly is required. The test must be completed, and the associated test report received by the District before the last day of their annual due date month of the same year. It is the customer's responsibility to assure that the test report has been received by the District. The District will not acknowledge that a test has been completed until the test report has been received.
- B.** A Backflow Assembly Tester (BAT), holding a valid Washington State BAT certification is required to complete all testing of backflow prevention assemblies. Testers will be required to furnish a current Washington State Department of Health certification and a verification of test equipment calibration to the District, prior to the District's acceptance of backflow prevention assembly test reports.
- C.** The customer will be responsible for the replacement or repair of the backflow prevention assembly if the assembly fails to test satisfactorily. The replacement, repair and successful testing shall be accomplished prior to the customer's annual due date.
- D.** The District is transitioning to an online only backflow test entry system. Certified testers and testing companies will be required to submit test results online when the test entry system is fully operational.

7. ENFORCEMENT

A. General Enforcement

Existing or future water service to a premises will not be allowed by the District, or be "grandfathered", if a backflow prevention assembly required by the District is not documented in writing to be permanently installed, maintained and tested annually.

Section 2.4.7 of the District's Water Policy Manual describes the District's authority to disconnect service when a customer fails to meet cross-connection control requirements. The following circumstances may result in disconnection of water service:

- Refusal to install a backflow prevention assembly when required by the District.
- Failure to replace an improper type, and/or failure to replace or repair a defective or improperly installed backflow prevention assembly.
- Failure to have the backflow prevention assembly tested per District requirements.

Advanced notification will be provided prior to disconnection of the water service for non-compliance, unless the degree of hazard, or potential degree of hazard, is so severe that it could cause immediate contamination and/or health risk. All costs incurred enforcing the action shall be borne by the property's responsible party.

The progressive enforcement process, as described below, details how the District will enforce non-compliance when new protection is required on existing services or when customers fail to comply with backflow assembly testing requirements.

Removal, replacement, or relocation of a backflow prevention assembly requires District approval and inspection, and may require a new facility survey. The removal of an assembly is not allowed until a facility survey is completed and a determination is made that the hazard is eliminated. If there are other assessed hazards at the time of the facility survey, a new assembly installation will be required commensurate with the degree of hazard.

B. Enforcement Process - New Installations on Existing Services

After a facility survey has been completed on an existing service, the required backflow prevention assemblies must be installed within ninety (90) days of the District notifying the customer. A reminder notice shall be mailed thirty (30) days prior to due date.

If requirements have not been satisfied by the due date, a past due notice will be mailed to the customer one (1) working day after the original due date, allowing the delinquent customer fifteen (15) additional calendar days to complete the installation.

If requirements have not been satisfied by the revised due date, a final notice shall be mailed to the customer notifying the customer that their water service will be disconnected if requirements are not completed. The final notice will provide (10) ten calendar days' notice of the scheduled disconnection. Service may be disconnected at that time if the requirements are not satisfied.

The District reserves the right to deviate from this schedule. Before turn on/reconnection, the Customer will be advised of current charges for service turn on/reconnection. (See Appendix A, Table A-9 in the District's Water Policy Manual).

C. Enforcement Process - Annual Testing

If the annual backflow assembly test has not been received by the customer's established due date, a second notice will be mailed fifteen (15) days after the original due date. The second notice will state that the annual backflow assembly test is Past Due and must be completed and submitted within thirty (30) days.

If requirements have not been satisfied following the second notice and additional thirty-day period, a third notice will be mailed fifteen (15) days after second due date. The third notice will state that testing must be completed and submitted within fifteen (15) days.

If requirements have not been satisfied by the revised due date, a final notice shall be mailed to the customer notifying the customer that their water service will be disconnected if requirements are not completed. The final notice will provide (10) ten calendar days' notice of the scheduled disconnection. Service may be disconnected at that time if requirements have not been satisfied.

The District reserves the right to deviate from this schedule. Before turn on/reconnection, the Customer will be advised of current charges for service turn on/reconnection. (See Appendix A, Table A-9 in the District's Water Policy Manual).

D. Appeal Process

Any Customer or other person who believes he/she has been wrongfully treated by a decision of the District related to this CCCPM may request an appearance before the Commission in accordance with Section 2.8 (Dispute Resolution) of the District's Water Policy Manual. The customer's written notification to initiate the Dispute Resolution process must be received prior to the scheduled disconnection date to stay the scheduled disconnection.

8. PROGRAM ADMINISTRATION

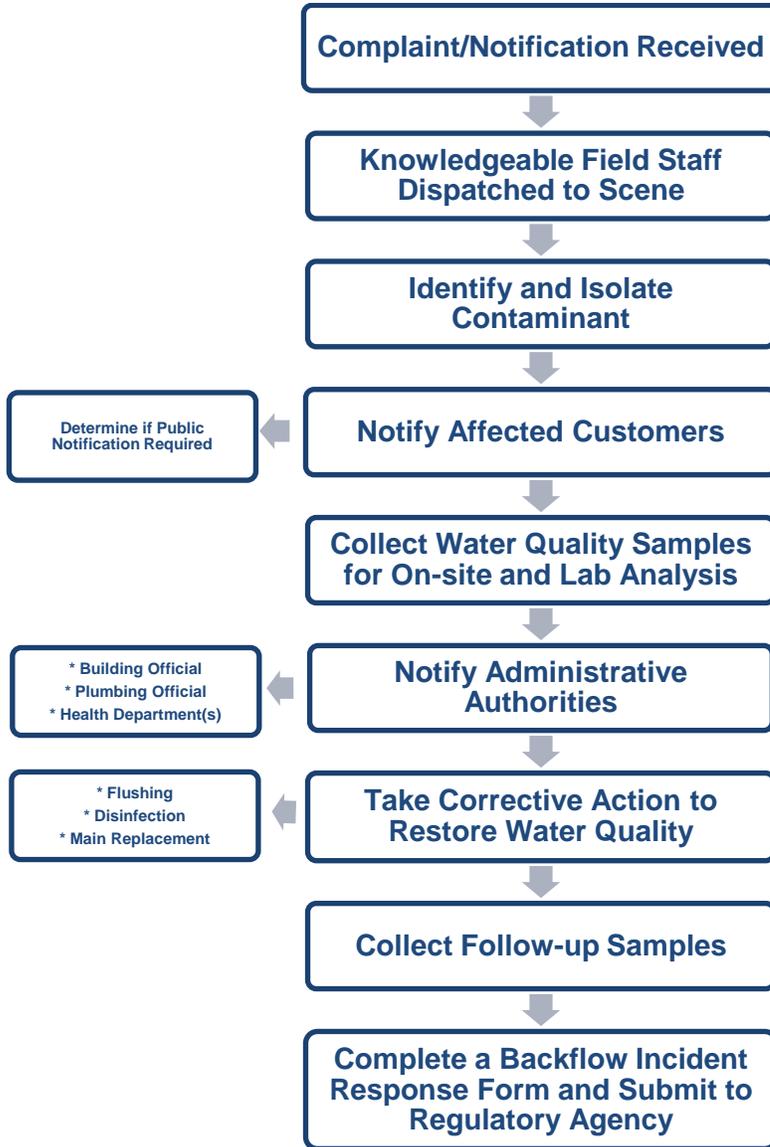
The District is responsible for the development and implementation of the Cross-Connection Control Program. The District employs multiple certified Cross-Connection Control Specialists in support of the Program. Program administration duties are the responsibility of the Engineering Department.

Public education will include periodic pamphlet distribution, newsletter columns, website updates and continued discussion with existing and new customers.

The District maintains cross-connection control records. Technology is utilized to keep a master list of service connections where backflow preventers protect the public water system from contamination. Specialized tracking software programs keep inventory information on approved air gaps and backflow assemblies including, location, assembly description, assessed degree of hazard and history of inspections and testing.

9. BACKFLOW INCIDENT RESPONSE

In the event of a possible or suspected backflow incident, the following general steps will be taken:



10. INCENTIVE PROGRAM

Overview

Due to the long history of the District's water systems, evolving regulations and practices related to cross-connection control, and changes to uses on a given property over time, the District may require an existing customer to install backflow preventers where they did not exist in the past. This requirement may be unexpected to the customer and can result in unanticipated costs.

The incentive program described below works to provide financial assistance to a limited number of customers faced with the requirement to install backflow preventers at an existing water service location. Providing a level of financial assistance to customers in these situations can directly benefit the District's efforts to protect the public water system. This assistance can result in reduced staff time enforcing cross-connection policy and may expedite the installation of backflow preventors at unprotected service locations. In this manner, the incentive program is within the District's public charge and mission to provide our customers with high-quality water services at an affordable price.

Funding levels for the assistance program shall be established by the Board of Commissioners during each annual budgeting process.

Application process

Existing customers that require cross-connection control for premises isolation (DCVA or RPBA) would be eligible to apply, except for the following customers who are not eligible for the incentive program:

- customers applying for or currently approved for the agricultural water rate
- customers requesting to upsize an existing water service
- customers with a premises requiring new backflow protection for more than the initial 90-day period.

The District will consider applications on a "first come, first served" basis. When annual funding as detailed in the current District budget for a given year is fully allocated to approved applications, the District will cease approving allocations until the following year and pending budget approval. Application approval would be effective for six (6) months from the date of District approval notification to District approval of project completion (installation and testing).

Assistance details

A lump sum reimbursement would be provided by the District to the customer upon successful installation, successful testing of the new backflow prevention assembly, and submittal of required cost documentation. Reimbursed costs shall be clearly associated with the basic scope of backflow prevention assembly installation as depicted on District standard details, excluding costs related to surface restoration, electrical components, and non-contracted labor. A conceptual design or sketch of the proposed installation shall be supplied by the customer with the application. Reimbursements shall be in accordance with the following table. Reimbursement "Not to Exceed" (NTE) amounts would be considered for revision each year as a part of the annual budgeted process.

2020 Cross-Connection Control Incentive Program funding limits:

Cost type	DCVA Assembly	RPBA Assembly
Materials (customer provided receipt)	NTE \$600	NTE \$1,800
Subcontractor (customer provided receipt)	NTE \$500	NTE \$500
Total	NTE \$1,100	NTE \$2,300

11. ENGINEERING STANDARD DETAILS

PLAN VIEW
N.T.S.

ELEVATION
N.T.S.

VAULT INFORMATION	
DCDA SIZE	DOOR MODEL NO.
4"	676-T-2-332P
6"	687-WA
8"	684-T-2-332P
10"	5106-WA
	5106-3-T-2-332P
	OR APPROVED EQUAL

MATERIALS:

- 1 CONCRETE VAULT WITH ACCESS HATCH DOORS, H-20 LOADING.
- 2 LINK SEAL, (TYP.)
- 3 FIRE DEPARTMENT CONNECTION PIPING.
- 4 GRAVITY DRAIN LINE OR SUMP PUMP DISCHARGE LINE.
- 5 RESTRAINED FLANGE COUPLING ADAPTER.
- 6 CHECK VALVE.
- 7 GRAVITY DRAIN OR SUMP & PUMP.
- 8 ISOLATION VALVE FLXFL.
- 9 DOUBLE CHECK DETECTOR ASSEMBLY.
- 10 BYPASS METER & BYPASS DCVA.
- 11 PIPE SUPPORT - RUST RESISTANT.
- 12 ISOLATION BALL VALVE.
- 13 IN LINE CHECK VALVE.
- 14 6" COMPACTED CLASS B BACKFILL MINIMUM (MSDOT)
- 15 FLXFL CONNECTION POURED IN CONCRETE.
- 16 CONCRETE BALLAST.
- 17 GEOTEXTILE SEPARATION FABRIC.
- 18 OSHA APPROVED LADDER.

GENERAL NOTES:

1. BACKFLOW ASSEMBLY MUST BE SELECTED FROM THE CURRENT WASHINGTON STATE APPROVED LIST OF ASSEMBLIES AND INSTALLED IN THE MANNER WHICH IT IS APPROVED. NO MODIFICATION TO ASSEMBLY IS ALLOWED.
2. THE DCDA IS TO BE INSTALLED IMMEDIATELY DOWNSTREAM OF THE DISTRICT'S SERVICE CONNECTION. FINAL LOCATION TO BE APPROVED BY THE DISTRICT.
3. HATCH LID DRAIN CHANNEL TO DRAIN TO DAYLIGHT.
4. ENGINEER RESPONSIBLE TO ENSURE ADEQUATE BALLAST IS PROVIDED TO PREVENT FLOATING OF VAULT.
5. SUMP PUMP SHALL BE WIRED PER WASHINGTON STATE ELECTRICAL CODE AND ELECTRICAL PERMIT REQUIRED. THE DISCHARGE PIPE SHALL BE CONNECTED TO THE NEAREST APPROVED ON-SITE STORM DRAINAGE STRUCTURE.
6. BRASS PLUGS TO BE INSTALLED IN THE TEST COCKS. TEST COCKS MUST BE INSTALLED FACING UP OR TO ONE SIDE.
7. DISTRICT TO SUPPLY AND INSTALL BADGER RECORD-ALL BY-PASS METER.
8. CUSTOMER RESPONSIBLE FOR TYPE III SERVICE FEE TO INSTALL BADGER RECORD-ALL BY-PASS METER.
9. INSTALLATION TO BE INSPECTED BY THE DISTRICT INSPECTOR. IF INSTALLATION DOES NOT MEET DISTRICT REQUIREMENTS, CORRECTIONS MUST BE COMPLETED BEFORE CUSTOMER MAY BEGIN OR CONTINUE WATER USAGE.
10. OWNER RESPONSIBLE FOR INITIAL (UPON INSTALLATION) AND SUBSEQUENT ANNUAL TESTS. MUST BE PERFORMED BY A WASHINGTON STATE CERTIFIED BACKFLOW ASSEMBLY TESTER. (LIST AVAILABLE UPON REQUEST)
11. THE DISTRICT REQUIRES COPIES OF ALL TEST(S) OF REQUIRED BACKFLOW PREVENTION ASSEMBLIES BEFORE WATER USAGE MAY BEGIN OR CONTINUE.

PUD NO. 1 OF SKAGIT COUNTY ENGINEERING MANAGER

APPROVED ON: _____ AUGUST 16 _____, 2016

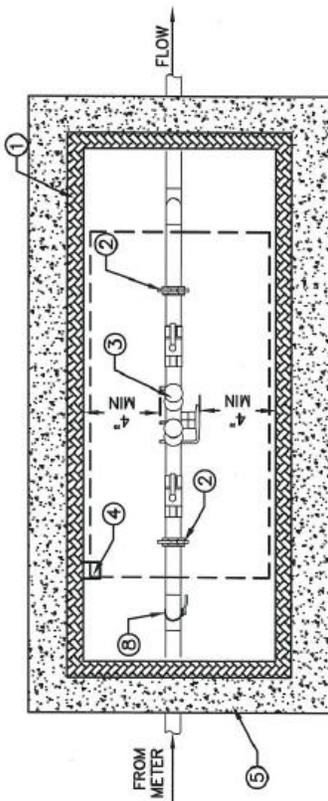
**STANDARD INSTALLATION OF
DOUBLE CHECK DETECTOR ASSEMBLY**

SCALE: N.T.S.
DATE: 7/19/16
REVISED: 8/17/16
DRAWN BY: JLB
APPROVED BY: GJS

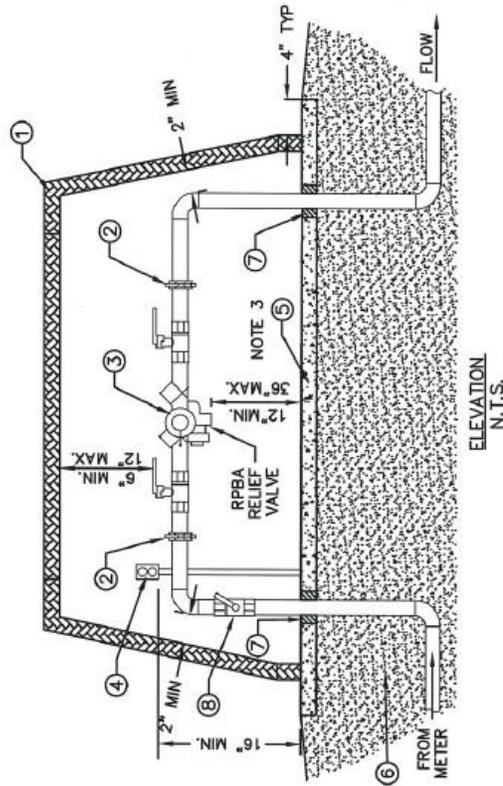
STANDARD

WDCDA-1

SHEET 1/1



PLAN VIEW
N.T.S.



ELEVATION
N.T.S.

MATERIALS:

- ① INSULATED & HEATED ENCLOSURE UNION.
- ② REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA) INCLUDES SHUTOFF VALVES 1&2
- ③ ELECTRICAL OUTLET & CONDUIT W/ GFI BREAKER IN PANEL.
- ④ CONCRETE PAD - 4" THICK MIN.
- ⑤ COMPACTED CLASS B FILL - (USDOT)
- ⑥ SEPARATION MEMBRANE WRAP OR PVC SLEEVE
- ⑦ ISOLATION BALL VALVE

GENERAL NOTES:

1. SELECT RPBA FROM WASHINGTON STATE APPROVED LIST OF ASSEMBLIES. RPBA TO BE INSTALLED IN THE MANNER FOR WHICH IT IS APPROVED AND IMMEDIATELY AFTER METERED WATER SERVICE OR FIRE CONNECTION. LOCATION TO BE PRE-APPROVED BY DISTRICT.
2. ALL WETTED SURFACES TO BE IN COMPLIANCE WITH THE LEAD FREE DEFINITION UNDER THE SAFE DRINKING WATER ACT.
3. REQUIRED SEPARATION BETWEEN CONCRETE PAD AND METER BOX 2'x3'x6" SOLID CONCRETE SLAB MUST BE SET AT OR ABOVE SURROUNDING FINISHED GRADE, AND OR MAXIMUM FLOOD LEVEL, WITH POSITIVE DRAINAGE AWAY FROM THE SLAB.
4. SIZING OF ENCLOSURE TO MAINTAIN MINIMUM CLEARANCES AT ALL TIMES IS THE RESPONSIBILITY OF THE OWNER.
5. ENCLOSURES MUST PROVIDE PROTECTION FROM ABUSE AND FREEZING. APPROVED PRE MANUFACTURED ENCLOSURES INCLUDE HOT BOX, SAFE-T-COVER (HEATED), OR EQUAL CUSTOM BUILT ENCLOSURES MUST BE PRE-APPROVED BY DISTRICT.
6. ENCLOSURE MUST HAVE DRAIN ADEQUATELY SIZED AND SCREENED TO PASS THE MAXIMUM FLOW OF THE RELIEF VALVE.
7. ENCLOSURE TO BE ANCHORED TO CONCRETE PAD & INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
8. RECEPTACLE & ELECTRICAL CONDUIT TO CONFORM WITH APPLICABLE ELECTRICAL CODES AND PERMITS.
9. INSTALLATION OF ASSEMBLY AND INITIAL TESTING TO BE INSPECTED AND WITNESSED BY A DISTRICT CROSS CONNECTION SPECIALIST.
10. OWNER RESPONSIBLE FOR INITIAL (UPON INSTALLATION) AND SUBSEQUENT ANNUAL TESTS. MUST BE PERFORMED BY A WASHINGTON STATE CERTIFIED BACKFLOW ASSEMBLY TESTER. (LIST AVAILABLE UPON REQUEST)
11. BEFORE WATER USAGE MAY BEGIN AND/OR CONTINUE, COPIES OF PASSING BACKFLOW PREVENTION TESTS MUST BE RECEIVED BY THE DISTRICT.

[Signature]

PUD NO. 1 OF SKAGIT COUNTY ENGINEERING MANAGER

APPROVED ON: AUGUST 16, 2016

	STANDARD INSTALLATION OF 2" & SMALLER REDUCED PRESSURE BACKFLOW ASSEMBLY		STANDARD
	SCALE: NTS	DATE: 7/19/16	REVISED: 7/19/16
			DRAWN BY: JLB APPROVED BY: GJS