City of Ellensburg
WASHINGTON

WATER DIVISION

Cross Connection and Backflow Policy and Procedures

November 2017

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(Revised: 1999, 2002, 2009, 2014, 2017)

CROSS CONNECTION AND BACKFLOW PREVENTION PROGRAM

--- SECTION 1: PURPOSE ---

To protect and maintain the bacteriological, chemical and aesthetic quality of the municipal potable water supply by the elimination and prevention of cross connections between the City of Ellensburg's potable water distribution system and other sources of water, liquids or gases for any purpose whatsoever.

GENERAL:

Except where specifically designated herein, all words used in this procedure shall carry their customary meanings. Words used in the present tense include the future, and plural included the singular: The word "shall" is always mandatory; the word "may" denotes the use of discretion in making a decision.

CROSS CONNECTION ABATEMENT:

The installation or maintenance of a cross-connection that will endanger the water quality of the potable water supply of the City of Ellensburg is prohibited. Any such cross-connection now existing or hereafter installed is hereby declared a nuisance and shall be abated. The control or elimination of cross-connections shall be in accordance with the State of Washington Administrative Code (WAC 246-290-490) or subsequent revisions, together with any future manuals of standard practice pertaining to cross-connection control approved by the Director of the State of Washington, Department of Social and Health Services. The water supply shall be discontinued to any premise for failure to comply with the provisions of this section and will not be re-established until the Director approves compliance.

Service from the City of Ellensburg water supply system to any premise upon which a private water supply system is used or operated contrary to the provisions of the rules and regulations of the State Board of Health regarding public water supplies may be discontinued or refused upon order of the Director.

Furnishing of any water service shall be contingent upon the installation of a backflow prevention assembly at the water service entrance or point of use, or both when required.

By-pass arrangements, jumper connections, removable sections, swivel or change-over devices and other temporary or permanent piping through which or because of which "backflow" can or may occur, will be considered cross-connections and will not be allowed.

REFERENCES:

1) City of Ellensburg Cross-Connection Control Ordinance.

2) Current edition of the Uniform Plumbing Code and all subsequent revisions.

3) Department of Health (DOH) Drinking Water Regulations WAC 246-290-490. (And subsequent revisions)

4) Cross-Connection Control Manual - Accepted Procedure and Practice - Pacific Northwest Section - American Water Works Association.

5) Manual of Cross-Connection Control-Ninth Edition, (Tenth Edition when adopted) USC Foundation for Cross-Connection Control and Hydraulic Research.

6) Cross-Connection Control Manual EPA #57019-89-007.

7) Recommended Practice for Backflow Protection and Cross Connection Control M-14 A.W.W.A

8) Washington State DOH list of 'Backflow Prevention Assemblies Approved for Installation…'

--- SECTION 2: DEFINITIONS ---

Air Gap Separation (A.G.): Shall mean 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. All air gap separations shall be at least twice the inside diameter of the supply pipe measured vertically above the flood level rim of the vessel, and will never be less than one (1) inch.

Approved Backflow Prevention Assembly: Shall mean an RPBA, RPDA, DCVA, DCDA, PVBA or SVBA of make, model and size that is approved by the WA State Dept. of Health. Assemblies that appear on the current approved list developed by the University of Southern Cal. for Cross Connection Control and Hydraulic Research or other entity acceptable the department are considered approved by the department.

Atmospheric Vacuum Breaker (AVB): Shall mean a backflow prevention device that is operated by atmospheric pressure in combination with the force of gravity. The unit is so designed to work on a vertical plane only. The moving part consists of a poppet valve that must be carefully sized to slide in a guided chamber and effectively shut off the reverse flow of water when a negative pressure exists in the supply system. (Considered a non- testable device)

Authority Having Jurisdiction: The local official, board, dept. or agency authorized to administer and enforce the provisions of the Uniform Plumbing Code as adopted under chapter 19.27 RCW. The Community Development Department has conveyed authority to the City's CCS regarding cross-connection control.

Auxiliary Supply: Shall mean any water supply on or available to the premises other than the public water supply.

Backflow: Shall mean the undesirable reversal of flow of water or other substances through a cross connection into the public water supply system or customers potable water system.

Backflow Assembly Tester (BAT): Shall be a person who has received training, and is certified by the State of Washington to test backflow prevention assemblies. This person also inspects backflow assemblies, devices and air gaps for proper installation. The BAT has also been trained to submit legible, accurate and complete test report forms following each backflow test (one each to the customer and the water purveyor).

Backpressure: Shall mean 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 pressure provided by the public water supply system and which could cause backflow.

Backsiphonage: Shall mean backflow due to a reduction in system pressure in the public distribution system and/or consumers water system.

Code Authority and Enforcement: The enforcement of this cross-connection program in the area served by the Water Department, City of Ellensburg, will be in accordance with the Uniform Plumbing Code, 2006 edition as amended by the City of Ellensburg "Water Regulations", Official Code of the City of Ellensburg and WAC 246-290-490, Rules and Regulations of the State Board of Health relating to public water supplies.

Cross-Connection: The term "cross connection" shall mean any actual or potential physical connection between the public water supply and any source of non-potable liquid, solid or gas that could contaminate the potable water supply by backflow.

Cross-Connection Specialist (CCS): Shall be a person(s) who has been trained and is certified by the State of Washington as a CCS, to carry out the City of Ellensburg's cross-connection control program. This includes the creation, implementation and enforcement of the City's Cross-Connection Policy, WAC 246-290-490 and sections of the UPC pertaining to cross connection control. The CCS shall have basic knowledge of state and local plumbing codes. The CCS shall oversee the proper installation, repair, testing and/or inspection of backflow assemblies or devices used to protect the public water supply.

Customer: Any person, persons, firm or corporation that is furnished potable water from the public water supply through a legal service connection to the public water supply distribution system.

Degree of Hazard: The low or high hazard classification that shall be attached to all actual cross connections.

Director of Public Works: Shall mean the Director of Public Works, City of Ellensburg, Ellensburg, Washington. His designee may perform any task required or authorized by the "Director of Public Works" on his or her behalf.

Double Check Detector Assembly (DCDA): Shall mean a specifically designed assembly composed of a line-size approved double check valve assembly with a bypass containing a specific water meter and an approved double check valve assembly. The meter shall register accurately for rates of flow up to 2 gpm (gallons per minute) and shall show a registration for all rates of flow.

Double Check Valve Assembly (DCVA): Shall mean an assembly composed of two (2) single, independently acting approved check valves, four (4) properly located test cocks and tightly closing resilient seated approved shutoff valves attached to each end of the assembly.

General Policy: It is the intention of this policy to provide for the permanent abatement or control of all cross-connections. Where it is physically and economically unfeasible to locate or to permanently eliminate all cross-connections of the customer' water system, and when it is deemed necessary by the CCS / City personnel, there shall be installed at the service connection and/or point of use, a suitable backflow assembly or device commensurate with the degree of hazard to the public water supply.

Health Hazard: Shall mean any condition, device, or practice in a water supply system and/or its operation that creates or may create a danger to the health and wellbeing of a customer.

Industrial Fluids: Shall mean any fluid or solution, which could be chemically, biologically or otherwise contaminated or polluted in a form or concentration, which might constitute a health or plumbing hazard if introduced into a potable water supply. This may include but is not limited to all types of processed waters originating from the public water supply or auxiliary supply which may deteriorate in sanitary quality; chemicals in fluid form; plating acids and alkalies; circulated cooling waters that are chemically or biologically treated or stabilized with toxic substance; contaminated natural waters such as from wells, springs, streams or ponds.

Liquids: The term liquid shall mean any substance that flows readily but does not expand indefinitely, such as water and industrial fluids.

Plumbing Hazard: Shall mean a cross-connection in a customer's potable water system that may permit backsiphonage in the event of a negative pressure in the supply line.

Pressure Vacuum Breaker Assembly (PVBA): Shall mean an assembly containing an independently operating internally loaded check valve and an independently operating loaded air inlet valve located on the discharge side of the check valve. The assembly is to be equipped with properly located resilient test cocks and tightly closing resilient seated shutoff valves attached to each end of the assembly.

Public Health Officer: Shall be the duly appointed Kittitas County Public Health Dept. official
A representative of the Health Department authorized to enforce state and local codes relating to public health.

Public Water Supply: The system of water supply intended or used for human consumption or other domestic use, including source, treatment, storage, transmission and distribution facilities where served by the potable water supply system.

Reduced Pressure Backflow Assembly (RPBA): Shall mean an assembly containing two independently acting approved check valves together with a hydraulically operating, mechanically independent pressure differential relief valve located between the check valves and at the same time below the first check valve. The unit shall include properly located resilient seated test cocks and tightly closing resilient seated shutoff valves at each end of the assembly.

Reduced Pressure Detector Assembly (RPDA): Shall mean a specifically designed assembly composed of a line-size approved reduced pressure principle backflow prevention assembly with a specific bypass containing a specific water meter and an approved reduced pressure principle backflow prevention assembly. The meter shall register accurately for rates of flow up to 2 gpm (gallons per minute) and shall show a registration for all rates of flow.

Spill-Resistant Vacuum Breaker Assembly (SVBA): Shall mean an assembly containing an independently operating internally loaded check valve and independently operating loaded air inlet valve located on the

discharge side of the check valve. The assembly is to be equipped with a properly located resilient seated test cock, a properly located bleed/vent valve, and tightly closing resilient seated shutoff valves attached to each end of the assembly.

System Hazard: Shall mean an actual or potential threat of severe damage to the physical properties of the public potable water system or the customer's potable water system or of a pollution or contamination that would have a protracted effect on the quality of the potable water in the system.

Temporary Usage Connection: Any vehicle to which a tank or container is affixed for containing water and/or chemicals, materials, or any temporary use of water for construction, testing, cooling or other non-domestic purposes which are capable of imparting contamination or pollution to the public water supply through a cross-connection between such points of usage and the water supply via a fire hydrant or other temporary connection.

Thermal Expansion: Water expands when heated. Generally water moves back and forth through the water meter to adjust to the increase and decrease of water volume. If the system becomes closed because a backflow assembly is installed, water heaters and plumbing may be damaged if pressure temperature relief valves malfunction.

Water Purveyor: The entity responsible for the public water supply system from the source to the meter. The purveyor shall ensure that actual and potential cross-connections between the distribution systems in a customer's water system are eliminated or controlled by the installation of an approved backflow assembly or device commensurate with the degree of hazard.

Water Service Entrance: The customer's water supply piping system, downstream of the City water meter where it enters the property or facility.

--- SECTION 3: RESPONSIBILITIES ---

City of Ellensburg

1) The City of Ellensburg shall work to protect the health of its customers by ensuring safe and reliable drinking water using both 'premises isolation' and 'in-premises' protection methods. Our efforts will include on-going surveillance of new and existing water supply systems and facilities in order to meet City and State requirements.

2) The City shall provide advance notification to the customer of any required testing of the backflow prevention assembly. The customer shall have such test performed by any person certified by the Washington State Department of Health, and the results shall be delivered to the City on a form prescribed by the City. If such test is not performed within the time requested herein, the City may initiate proceedings for termination of water service.

Water Customer

1) The water customer shall be responsible for the elimination or control of actual or potential cross connections on their property through the installation, testing and maintenance of approved backflow prevention assemblies and/or devices.

2) The water customer shall be responsible to obtain the required permits and provide information, entry and access for water use surveys and inspections.

3) The water customer is responsible for notifying the CCS of assemblies or devices which the customer believes are no longer required or are inactive.

4) The water customer is responsible for providing signs at all water take-off points downstream of backflow prevention assemblies or devices.

5) The water customer is responsible for all costs associated with installation, initial testing, annual testing and maintenance of backflow prevention assemblies and devices.

--- SECTION 4: SURVEY/INSPECTION PROGRAM ---

The City of Ellensburg Water Division is required to protect the water system from contamination due to cross connections (WAC 246-290-490) and a systematic program of 'water use surveys' of all new and existing buildings and grounds is established.

The systematic program of surveys/inspections shall establish priorities on the basis of risk to public health and shall be conducted as outlined in the following section:

New and Proposed Construction:

1. Upon application for a building permit, the City shall require a copy of detailed plans and specifications related to the mechanical drawing(s).

2. The City shall review these plans and specifications to determine the probability of cross-connections, the availability of auxiliary water supply, the handling of substances, which, if introduced into the water supply would constitute a health, plumbing, or system hazard. If upon review it is determined that any of these conditions will exist, the City shall advise the customer of solutions to either eliminate or protect the cross-connection.

3. During the construction phase of any new building, structure, or ground installation, the City will perform an on-site water use survey. Upon completion of the survey, but prior to the establishment of a water service connection, it shall be certified in writing that a cross-connection control survey has been completed and that backflow prevention is or is not required.

4. Upon receipt of an application for a new water service, but prior to occupancy, a cross-connection water use survey shall be completed by the CCS. City officials may require that backflow prevention assemblies and/or devices be installed at the Water Service Entrance or on in-premise equipment etc. Backflow assembly testing must be completed prior to the system being put into use.

Existing Buildings, Structures and Grounds:

1. Water Use Surveys (inspection) will be performed by a City of Ellensburg CCS on facilities served by city water based on the relative hazard. The survey may include other City personnel and/ or it's consultants as deemed necessary by City staff.

2. Water Use Surveys shall proceed according to the following steps:

    a) Prior to the initial water use survey the CCS will contact the customer by phone, letter or in person to explain the necessity of a cross-connection program. The CCS will discuss the owners' responsibilities/liabilities and answer questions the owners may have.

    b) The CCS will make an appointment for inspection at a time agreeable to both parties involved. This may be done by telephone, mail or in person. The City may request a person knowledgeable with the customer's water system to be present at the time of inspection. The City may also request copies of any/all building, mechanical or 'as built' drawings of the building to assist them in completing the survey.

    c) On the scheduled date, the CCS along with the building owner or representative (if one is assigned) will complete a physical survey of the building including the plumbing system, fixtures and equipment.

    d) Upon completion of the survey the CCS will complete a Water Use Survey report form.(see appendix) The report shall include, but is not limited to the following information:

        1. All required customer information contained in the heading.

        2. List of all actual or potential cross-connections located on the premises and corrective actions required or recommended. The survey report may include a list of all on-site water using equipment/fixtures.

        3. List all material, chemicals or other contaminating liquids used on site and/ or pumped under pressure, their use, and degree of risk.

4. List of any applicable drawings, sketches, blueprints, photographs, etc. that were used to complete the survey.
5. A summary of findings.
6. Other recommendations. (if any)

--- SECTION 5: CORRECTIVE ACTION & COMPLIANCE REQUIREMENTS ---

1. The Director of Public Works or the CCS shall prepare a letter to the customer outlining the findings of non-compliance, the corrective action required and establishing a time frame (normally 30 days) in which corrective action(s) must be completed*. A copy of the letter and report will be sent to the customer and one copy placed in a suspense file noting the date of which the corrective action(s) must to be completed.
    - If a severe health hazard exists the CCS will notify the Director of Public Works who may act to terminate the customer's water service immediately at his/her discretion.
2. On the corrective action completion date, the CCS shall take the necessary steps to confirm whether or not the corrections have been completed. (see; non-compliance)
3. Upon completion of the re-inspection, the CCS will provide a copy of the report to the Public Works Director.
4. When all required corrective actions have been completed, a copy of the report shall be placed in the CCS files.
5. Premises may be resurveyed to ensure compliance.

Non-Compliance – If the CCS determines upon completion of the second' follow up' survey that corrective actions have not been completed as required, the following actions will then be taken;

1. The customer will be sent a warning letter giving the customer ten (10) working days, including a date of completion to comply.
2. If ten (10) working days pass and the correction(s) have not yet been completed, the City's legal department will send another warning letter listing City/ state code requirements, advising the customer that; "Failure to comply with the corrective measure will result in the termination of water service" .The customer shall have ten (10) working days, including a date of completion to comply with this letter.
3. If there is no response after ten (10) working days another letter will be hand delivered if possible or delivered by certified mail, giving the customer a date for a hearing and a date for water service termination. The hearing will be held on a Thursday and water shut off will occur on the following Monday if compliance is not obtained from the customer.
4. If the customer does not respond, the meter will be turned off and locked on the termination date. The service will remain off until the customer complies.

*****The Director of Public Works or the CCS reserves the right to also impose penalties based upon Chapter 1.80 of the Ellensburg City Code.

Moving, Removing, or Replacing backflow prevention assemblies or device:

The CCS shall be notified prior to a customer moving, removing, or replacing backflow assemblies or devices. If the customer feels that a backflow assembly or device is no longer required, or would like to place an assembly/device on an in-active status, the customer must submit a written request to do so to the City's CCS for consideration. The CCS may request that the assembly or device be removed and its supply pipes be permanently capped or removed to prohibit use.

--- SECTION 6: BACKFLOW PROTECTION OPTIONS ---

The installation of water main extensions shall be in accordance with construction plans and specification approved by the City, and shall comply with the most current version of the WSDOT Standard Specifications.

Code: The following are the terms and abbreviations used herein for backflow assemblies or devices that may be used to prevent or eliminate actual or potential cross connections.

Backflow Assemblies; (testable)

1.	Double Check Valve Assembly	DCVA*
2.	Double Check Detector Assembly	DCDA
3.	Pressure Vacuum Breaker Assembly	PVBA***
4.	Spill Resistant Vacuum Breaker Assembly	SVBA
5.	Reduced Pressure Backflow Assembly	RPBA**
6.	Reduced Pressure Detector Assembly	RPDA

*DCDA's can be substituted where DCVA's are required
**RPDA's can be substituted where RPBA's are required
***SVBA's can be substituted where PVBA's are required

Backflow Devices; (non-testable)

1. Air Gap — AG

   NOTE: Air Gaps must be appropriately sized and be permanent, non-moveable.

2. Atmospheric Vacuum Breaker — AVB

   NOTE: All threaded (add on type) AVB's must be non-removable and A.S.S.E. certified.

TERMS:	(Minimum) Backflow Protection Options	BP Options
	Not Allowed	N/A

The following list summarizes various types of actual or potential cross-connections which may be anticipated in various facilities, buildings, equipment, etc. and the required corrective measures.

I. MORGUES, HOSPITALS, MEDICAL CLINICS, CONVALESCENT AND RETIREMENT HOMES

		BP OPTIONS
1	Autopsy, operating rooms and laboratories	
	a) Aspirators	AG or RPBA
	b) Flushing floor drains	AG or RPBA
	c) Wash-up sinks	AG
	d) Stills	AG or RPBA
	e) Sterilizer	AG or RPBA
	f) Toilets or bidets	AG or RPBA
	g) Wash-down or flushing hoses	RPBA
	h) Pipette washers	AG or RPBA
2	Bed pan washers	AG or RPBA
3	Toilets, urinals or bidets	AG or RPBA
4	Fire sprinkler drains	AG*

5	Water operated equipment such as elevators, presses or other similar equipment	AG or RPBA
6	Drinking fountains required angle stream with mouth guard	AG
7	Orthopedic baths	AG or RPBA
8	Colon irrigations or douche attachment	AG or RPBA
9	Water used for heating or cooling agent	AG or RPBA
10	Mop, service or slop sink with hose faucet	RPBA
11	Compound boiler	AG or RPBA
12	Hose faucets in areas were possible contamination may exist	RPBA
13	Foot bath	AG
14	Sits tub	AG
15	Bathtub	AG
16	Bathtub with hose attachment	RPBA
17	Potable waterline directly connected to sewer	N/A

**No antifreeze permitted in fire sprinkler system.*

II. INDUSTRIAL OR COMMERCIAL INSTALLATIONS

		BP OPTIONS
1	Dip tanks or vats	AG or RPBA
2	Water operated presses, elevators, or other similar equipment	AG or RPBA
3	Water used for cooling or heating agent	AG or RPBA
4	Fire sprinkler drains	AG*
5	Toilets or urinals	AG or RPBA
6a	Sinks and basins	AG
6b	Sink faucet with hose connection	RPBA
7	Hose faucets in areas where a hose could possibly be left submerged	AG or RPBA
8	Dual water supply source	AG
9	Pump primers	RPBA
10	Flushing floor drains	AG or RPBA
11	Potable water line directly connected to sewer	N/A
12	Water operated ejectors	RPBA
13	Drinking fountains that require angle stream with mouth guard	AG
14	Foamite stations/quick connection	RPBA
15	Hose bibs/water supply outlets located in pits, tanks, trenches or other locations that may become flooded with contaminated liquids, etc.	AVB
16	Compound boilers	AG or RPBA
17	Commercial car washing installations with cross connection	RPBA
18	Shampoo basin hose rinse	RPBA
19	Soap and chemical portioned/injector	AG or RPBA

**No antifreeze permitted in fire sprinkler system.*

III. YARD SPRINKLER/DRIP IRRIGATION SYSTEMS USING CITY WATER

		BP OPTIONS
1	Sprinkler systems	PVBA or DCVA
2	Sprinkler systems supplied with potable water and interconnected with other sources of non-potable water such as ditch water, ponds, lakes or creeks, etc.	AG or RPBA
3	Sprinkler systems containing fungicides, pesticides, soil conditioners or any other chemicals or additives	N/A
4	Hose faucet/bibs (installed above grade)	AVB
5	Hose faucet/bibs (installed below grade)	DCVA
	**NOTE: All sprinkler and/or drip irrigation systems containing ANY buried or below grade conduits, pipes, hoses, tubes, etc. used for carrying water must be protected with one of the following backflow assemblies.*	*PVBA or DCVA*

IV. EDUCATIONAL INSTITUTIONS

		BP OPTIONS
1	Sink/lavatory	AG or AVB
2	Sink with threaded faucet	AVB
3	Dishwashing machine	AG or RPBA
4	Garbage disposers	AG or RPBA
5	Toilets and urinals	AG or PVB
6a	Drinking fountains require angle stream and mouth guard	AG
6b	Drinking fountains with water supply in waste pipe	N/A
7	Fire sprinkler drains	AG*
8	Compound boilers	AG or RPBA
9	Hose faucets/bibs	AVB

**No antifreeze permitted in fire sprinkler system.*

V. FAMILY RESIDENTIAL FACILITIES

		BP OPTIONS
1	Toilets and bidets	AG
2	Sink/lavatory	AG
3a	Bathtubs	AG
3b	Bathtubs with hose attachments	AVB
4	Fire sprinkler drains	AG*
5	Compound boilers	AG or RPBA
6	Mop service, or slop sink with hose faucets	AVB
7	Drinking fountains require angle stream with a mouth guard	AG
8	Swimming pool water supply	AG or RPBA

**No antifreeze permitted in fire sprinkler system.*

VI. PLACES OF PUBLIC ASSEMBLY

		BP OPTIONS
1	Toilets	AG
2	Sink/lavatory	AG
3	Bathtubs	AG
4	Swimming pool water supply	AG or RPBA
5	Fire sprinkler drains	AG*
6	Mop, service or slop sinks with hose faucet	AVB
7a	Drinking fountains require angle stream with a mouth guard	AG
7b	Drinking fountain with water supply in waste pipe	N/A
8	Compound boilers	AG or RPBA
9	Hose faucet/bibs	AVB

**No antifreeze permitted in fire sprinkler system.*

VII. OFFICE BUILDINGS

		BP OPTIONS
1	Toilets or bidets	AG
2	Lavatories	AG
3a	Drinking fountains require angle stream with a mouth guard	AG
3b	Drinking fountain with water supply in waste pipe	N/A
4	Bathtubs	AG
5	Fire sprinkler drains	AG*
6	Compound boilers	AG or RPBA
7a	Mop service, or slop sink with hose faucets	AVB
7b	Threaded connections/faucets where possible cross connections exist	AVB
8	Medical equipment with potable water supply	AG or RPBA
9	Potable water connection to film developing tanks	AG or RPBA
10	Water operated presses, elevators, or other similar equipment	AG or RPBA

**No antifreeze permitted in fire sprinkler system.*

VIII. FIRE PROTECTION SYSTEMS

		BP OPTIONS
1	High Hazard Fire Systems: Foam filled, chemicals, antifreeze or air pressurized	AG or RPBA
2	Low Hazard Fire Systems: Standpipe connection	DCDA
3	Residential Fire Systems: Potable water with approved water line material only	FOLLOW CODE

Backflow prevention assemblies may be required at the' water service entrance' where, in the opinion of the Director of Public Works and/ or the Community Development Dept. it is determined that the municipal water supply system should be isolated due to an actual or potential cross-connection in the customer's piping system. The following list is a guide to the degree of protection required for a number of commercial and industrial establishments:

The following methods of cross-connection control are considered minimum protection at the service connection:

1. All new commercial, industrial or multi-family residential buildings shall have a DCVA installed at the water service entrance. All existing commercial, industrial or multi-family residential buildings undergoing major remodeling, additions or change of use shall have a DCVA installed at the service entrance.

2. The public water supply to premises having an auxiliary water supply with no known cross-connections may be required to install an RPBA at the service connection at the City's discretion if a high health hazard is involved

3. The public water supply to premises on which is handled a substance that is objectionable (not a health hazard) in a manner constituting a potential cross-connection shall require a DCVA at the water service entrance.

4. The public water supply to premises on which there is an auxiliary water supply and having internal cross-connections that are not correctable or intricate plumbing arrangements, which make it impractical to ascertain whether or not cross-connections exist, shall require an RPBA at the water service entrance.

5. The public water supply to premises on which material dangerous to health or toxic substances are handled shall have installed an RPBA at the water service entrance.

6. The public water supply to premises where entry is restricted so that inspection for cross-connection cannot be made with sufficient frequency or at sufficient short notice to assure that cross-connections do not exist shall have installed an RPBA at the water service entrance.

7. The public water supply to premises on which any substance is handled under pressure so as to permit entry into the public water supply, or where a cross-connection could reasonably be expected to occur, shall have installed an RPBA at the water service entrance.

8. The public water supply to premises having a repeated history of cross-connections being established or re-established, shall have installed an RPBA at the water service entrance.

EXISTING FACILITIES/PLANTS REQUIRING PREMISES ISOLATION AT THE WATER SERVICE ENTRANCE

(NOT A COMLETE LIST)

	PLANT OR FACILITY	BP OPTIONS
1	Aircraft and Missile Plants	AG or RPBA
2	Automotive Plants	AG or RPBA
3	Auxiliary Water Systems	
	a) Unapproved Source	AG or RPBA
	b) Approved but not Chlorinated Source	DCVA
	c) Approved Chlorinated Source	DCVA
4	Beverage, Bottling Plants and Breweries	
	a) With Steam Boiler	AG or RPBA
	b) Without Steam Boiler	AG or RPBA
5	Buildings or Other Structures	
	a) Health Hazard Exist	AG or RPBA

	b) No Health Hazard Exist	NONE REQUIRED
6	Canneries, Packing Houses and Rendering Plants	AG or RPBA
7	Chemical Plants	AG or RPBA
8	Chemically Contaminated Water System	AG or RPBA
9	Dairies and Cold Storage Plants	AG or RPBA
10	Film Laboratories	AG or RPBA
11	Nursing Homes and Convalescent Centers	AG or RPBA
12	Hospitals, Medical Buildings, Sanitariums, Morgues, Mortuaries, Autopsy Facilities	AG or RPBA
13	Premises Having Irrigation Systems Using City Water and With Chemical Addition, Such as Parks, Playgrounds, Cemeteries, Golf Courses, Schools, Estates, Ranches, etc.	AG or RPBA
14	Laundries and Dye Works	AG or RPBA
15	Metal Manufacturing, Cleaning, Processing and Fabricating Plants	AG or RPBA
	a) Health Hazard Exist	AG or RPBA
	b) No Health Hazard Exist	DCVA
16	Oil and Gas Production – Storage or Transmission Facilities	AG or RPBA
17	Paper and Paper Products Plants	AG or RPBA
18	Power Generation Plant	AG or RPBA
19	Plating Plants	AG or RPBA
20	Facilities Containing Radioactive Materials or Substances	AG or RPBA
21	Restricted, Classified or Other Closed Facilities	AG or RPBA
22	Sand and Gravel Plants	AG or RPBA
23	Schools and Colleges	DCVA or RPBA
24	Sewage and Storm Drain Facilities	AG or RPBA
25	Waterfront Facilities and Industries	
	a) Health Hazard Exist	AG or RPBA
	b) No Health Hazard Exist	AG or RPBA
26	Recreational Vehicle Parks	DCVA
27	Recreational Vehicle Dump Sites With City Water Supply	AG or RPBA
28	Mobile Food/Beverage Carts Using City Water	DCVA

--- SECTION 7: INSTALLATION, INSPECTION, MAINTENANCE AND TESTING OF BACKFLOW PREVENTION ASSEMBLIES/DEVICES ---

General Installation Requirements:

1. Backflow assemblies or devices must be installed as specified in the latest editions of the Uniform Plumbing Code, AWWA and the City's CCC manual(most restrictive applies) and then inspected and approved by the City's CCS following its installation. The term "approved" shall mean an assembly that has been manufactured in full conformance with the standards established by the American Water Works Association. Each model must have passed the laboratory and field performance specifications

of the Foundation for Cross-Connection Control and Hydraulic Research of the University of Southern California. All new or replacement assemblies and devices must be listed in the Washington State Department of Health, Drinking Water Programs approved assemblies list.(latest edition including revisions)

2. Assemblies and devices shall be easily accessible for in-line testing, maintenance and repair with threaded or bolt on style unions installed (see Section 603.4.3 - 2015 Uniform Plumbing Code)

3. Assemblies and devices shall be protected against freezing, flooding and mechanical damage including harmful, toxic fumes etc.

4. RPBA's shall be located in an area where water spillage is not objectionable. A drain capable of handling the maximum flow from the relief valve shall be provided when the assembly is located within a building.

PVB-SPVB-DCVA-DCDA-RPBA-RPDA: See appendix for installation clearance requirements.

Atmospheric Vacuum Breakers (AVB) Installation Requirements (see below)

FIXTURES OR EQUIPMENT	INSTALLATION REQUIREMENTS
Aspirators and Ejectors	C-L at least 6" above flood level of receptacle served
Dental Units	C-L at least 6" above flood rim of bowl on models without built in vacuum breakers
Dishwashing Machines	C-L at least 6" above flood level of machine. Install on both hot and cold water supply lines
Flushometers (closet & urinal)	C-L at least 6" above top of fixture supply
Garbage Can Cleaning Machine	C-L at least 6" above flood level of machine. Install on both hot and cold water supply lines
Hose Outlets	C-L at least 6" above highest point on hose line
Laundry Machines	C-L at least 6" above flood level of machine. Install on both hot and cold water supply lines
Lawn Sprinklers (existing)	C-L at least 6" above highest downstream pipe
Steam Tables	C-L at least 6" above flood level
Tanks and Vats	C-L at least 6" above flood level rim
Trough Urinals	C-L at least 30" above perforated flush pipe
Flush Tanks	Equipment with approved ball cock where ball cocks touch tank water, equipment with vacuum breaker must be at least 1" above overflow outlets. Where ball cock does not touch tank water, install ball cock outlet at least 1" above overflow outlet or provide vacuum breaker as specified
Hose Bibs (where aspirators or ejectors could be connected)	C-L at least 6" above flood level of receptacle served

C-L, critical level is defined as the level to which the backflow preventer (vacuum breaker) may be submerged before backflow will occur. The bottom of the assembly or device shall be taken as the C-L.

Testing and Maintenance:

1. Since there are a large number of AVB's installed in the City a continuous program of inspection is determined to not be economically feasible. Field inspection shall be monitored or completed by the CCS or a City approved Backflow Assembly Tester (BAT). Visual inspections for proper installation etc. shall be done on a regular basis.

2. When a defective or damaged AVB is reported and/or discovered the owner shall have the device repaired or replaced as soon as possible. Not to exceed 10 days.

--- SECTION 8: PERMIT REQUIREMENTS ---

Prior to installing a backflow assembly or device in the City of Ellensburg, you must first obtain a permit. With the exception of assemblies installed on Fire Protection Systems* all permits for in-premise and premise isolation protection can be obtained from the Public Works Dept. located on the 2nd floor of City hall at: 501 N. Anderson Street.

After all permits have been issued, installation work may begin. Please note that all installation or repairs inside a building must be performed by the building owner, his/her employee or a licensed/bonded plumber. Backflow assembly/device repairs inside a building may also be performed by a BAT who also has a current WA State Backflow Specialty Certificate.

After the installation work is complete, and before its use, the assembly or device must be inspected by City's CCS. After the installation has been approved, the assembly must be tested/passed by a City Approved Backflow Assembly Tester (BAT). Copies of the original completed test report must be forwarded to the City's CCS* and the customer. *The customer is responsible for all cost associated with the installation, testing, and maintenance of backflow assemblies or devices.*

***Fire Protection system backflow assemblies are currently permitted thru the Kittitas Valley Fire & Rescue, located at 400 East Mountain View Avenue.**

--- SECTION 9: TESTING REQUIREMENTS ---

1. All backflow assemblies connected to City water shall be tested/passed at least annually to ensure proper operation. Irrigation system assemblies must be tested by June 30th.

2. Backflow assemblies shall also be tested/passed after being moved relocated or immediately following repairs or a backflow incident. The CCS may require assembly testing following assembly freeze/thaw events.

3. If an assembly fails any part of the test, it will be placed in suspense until all repairs and retesting have been completed.

4. Immediately following a test failure, the assembly must be repaired and retested/passed. If repair parts are unavailable the assembly must be replaced and retested/passed.

   Note: The City CCS/BAT reserves the right to be present when a backflow assembly or device is being installed, tested or repaired. The City CCS/ BAT may also choose to test the assembly using City owned test equipment at no additional cost to the customer.

Testing notification for existing installations:

- The CCS shall provide in writing a minimum of thirty (30) days advance notification to the customer of the required annual test due date of the backflow prevention assembly.
- The customer is required to notify the CCS if the address/contact information has changed, or if problems exist that may inhibit compliance.

Notification for non-compliant testing of existing installations:

- The CCS will send a second notification letter to the customer immediately after the initial testing due date stating they have ten (10) working days to complete the annual required testing of the Backflow Device.
- If, after ten (10) working days following the second notification letter, the City has not received a satisfactory testing report in compliance with the Cross Connection Control Policy and Procedures, the City of Ellensburg Public Works Director or his or her designee, shall send a third and final notice letter both by certified mail and regular mail informing the customer that a satisfactory testing report must be received by the City within ten (10) working days from the date of the letter to show compliance with the testing requirements. The final notice letter will include a date of termination of water service to inform the customer that failure to provide a satisfactory testing report by such date will result in the termination of the customer's water service until compliance with the testing requirements.

--- SECTION 10: BACKFLOW ASSEMBLY TESTER REQUIREMENTS ---

1. All testing and/or inspection of backflow assemblies or devices connected to or supplied by City water shall be completed by a City Approved BAT.

2. BAT's must be on to the City's Approved Backflow Assembly Tester List prior to testing or inspection of backflow assemblies or devices. In order have the business name added to the list, BAT's are required to submit the following, current information:

    1) BAT certification cards. (all)
    2) Test kit calibration report. (all)
    3) L&I Registration (including Specialty Certificate, if applicable)
    4) City of Ellensburg Business License
    5) Certificate of Liability Insurance

    Note: The City Approved BAT List is subject to change and therefore the City CCS may have the only current, 'up to date' version of the list on file at any time. Anyone that would like to receive a copy of the list should contact the CCS during regular business hours.

3. BAT's shall receive permission from the customer prior to every test/inspection/repair. After inspections or testing have been completed, the BAT is then required to fill out a test report form. Copies of the original report must then be forwarded to the CCS and the customer. The time period to submit the report form shall not exceed seven (7) days from date of test.

    - Test report forms must be pre-approved by the City of Ellensburg's CCS before use.*
    - Test reports must be neat, legible and complete using all applicable fields.*

    **Test reports not meeting the above listed requirements may not be accepted.*

    The CCS shall inform the customer and/or the BAT if the test report is non-compliant.

B.A.T NON-COMPLIANCE

The City of Ellensburg reserves the right to temporarily suspend or remove **B**ackflow **A**ssembly **T**esters from the City's Approved List, and will not be eligible to test pending an appeal. BAT's may be suspended or permanently removed from the list for failure to conform to either the WA State Dept. of Heath or City requirements. The City's CCS shall maintain a detailed record of serious or repeat infraction(s) and submit copies of these records to the Director of Public Works. The Director shall review the findings and determine if a BAT should be removed or suspended from the list.*

*If a BAT is removed or suspended from the list, he/she will be notified by certified mail. BAT's that are removed or suspended may appeal to the Director for re-instatement. Appeals must be submitted in writing for consideration.

BACKFLOW ASSEMBLY INSTALLATION & CLEARANCE REQUIREMENTS

DCVA & DCDA

a. When installed outside of a building, assemblies shall be installed in a well-drained, below ground valve box or in an above ground valve box that is protected against freezing, flooding, contamination etc.

b. The tie-in connection and valve box(s) shall be installed with a minimum separation distance of at least three (3') feet from the City's water meter/valve box(s)

c. A union shall be installed on each end of the assembly,(inside of the valve box, when applicable).

d. A minimum clearance of at least three (3) inches shall be maintained from the outside edge of each union, measured from the inside face of the valve box.

e. Additional installation clearances are as follows:
   - 12" minimum clearance below the assembly (6" if installed above a 12" deep gravel base.)
   - 24" minimum clearance* above the assembly.
   - 3" minimum clearance from the back side of the assembly to any surface or obstruction.
   - 24" minimum clearance* from the front side of the assembly to the any surface or obstruction.

   * Unless assembly is centered in large valve box with a removable lid. The distance from top of assembly to the top of valve box and/or finish grade shall not exceed sixteen (16") inches.)

RPBA & RPDA

a. When installed outside of building, assemblies may be installed in a box/vault below grade and shall be 'bore sight' drained. Above and below grade box/vault installations shall include provisions to protect against freezing, flooding, toxic fumes, contamination etc.

b. Same as 'b' listed above.

c. Same as 'c' listed above.

d. Same as 'd ' listed above.

e. Same as 'e' listed above except that a distance of twelve (12") inches shall always be maintained between the lowest portion of relief valve and grade.

PVBA & SVBA

a. Must be installed above ground and the center line a minimum of twelve (12') inches above the highest downstream piping or outlet. The assembly must be protected from freezing, flooding, toxic fumes contamination etc.

b. Same as 'b' listed above.

c. Same as 'c' listed above (without valve box).

d. Additional installation clearance requirements are as follows:
   - 24"- minimum clearance above the assembly
   - 3" - minimum clearance from the back side of the assembly to any surface or obstruction.
   - 24"- minimum clearance from the front side of the assembly to any surface or obstruction.

   Note: Different requirements may apply for assemblies that are 2 1/2" and larger.

Recommendations:

- An additional shut off valve should be installed on each side of the assembly to allow for maintenance and repairs without having to shut down and/or drain the entire system for maintenance.

- Landscape irrigation system assemblies should include a winterization 'blow out(s)'.

Note: Never 'blow out' thru any part of a backflow assembly or device as this may damage internal working components causing assembly failure and/ or contamination to enter the water supply.

- Install 'tracer wire' above all buried, customer owned, water lines installed downstream of the meter.

WATER USE SURVEY FORM

Date: _____

Customer name: _____ Customer phone #_____
Customer mailing address: _____
Name of Facility: _____ Facility address: _____

--WATER SUPPLIED FIXTURE & OR EQUIPMENT--	YES	NO
POST MIX BEVERAGE DISPENSER		
ICE MAKER		
BOILER		
PHOTO DEVELOPMENT EQUIPMENT (SINKS OR TANKS)		
HEAT EXCHANGERS OR PUMPS (OMIT DOUBLE WALL WITH LEAK PATH)		
HIGH PRESSURE WASHER		
DIALYSIS EQUIPMENT		
FIRE PROTECTION SYSTEM		
STRUCTURES OVER 30’ IN HEIGHT ON PREMESIS		
ASPIRATOR-INCLUDING HOSE END TYPE		
BOOSTER PUMPS		
AIR CONDITIONING EQUIPMENT THAT IS CONNECTED TO CITY WATER SUPPLY		
SOAP OR CHEMICAL INJECTION EQUIPMENT		
HYDRONIC HEATING SYSTEM		
TRAP PRIMER		
LANDSCAPE IRRIGATION-SPRINKLER - DRIP SYSTEM		
HOSE BIBS - INCLUDING OUTSIDE - FROST FREE TYPE		
PRIVATE WELL OR OTHER AUXILLARY WATER SUPPLY		
HOT TUB OR SPA		
SWIMMING POOL		
DECORATIVE POND		
ELEVATED STORAGE TANKS		
RESEVOIRS - COOLING TOWERS		
WATER TROUGH		
BAPTISMAL		
RECLAIMED WATER STORAGE - BARRELS ETC.		
GARBAGE DISPOSAL		
DISHWASHER		
Survey completed by:		