



PL&W Cross Connection Control Program

Backflow prevention is essential to ensure water quality and protect public health. In an effort to control cross connection hazards, PL&W hereby adopts regulations outlined in WAC 246-290-490 and cross connection regulations of the Uniform Plumbing Code. The USC Manual of Cross Connection Control and the PNWS-AWWA Cross Connection Control Manual will be used as guidance documents. WAC 246-290-490 states that “All community water systems shall comply with the cross-connection control requirements specific in this section”. Parkland Light & Water Company will include the nine elements listed in the WAC as a minimum number of elements in its program.

PL&W will enforce its cross connection control program. Parkland Light & Water Company's responsibility for cross connection control shall begin at the water supply source, and include all public water treatment, storage and distribution facilities ending at the point of delivery to the consumer's water system. Responsibility for cross connections within the property lines of the consumer's premise falls under the jurisdiction of the Authority Having Jurisdiction (AHJ) whomever enforces the Uniform Plumbing Code. The purpose of Parkland Light & Water Company's cross connection control program will be to protect the utilities public water system from any contaminants or pollutants entering the public system from a reverse flow cross connection whether actual or potential. Parkland Light & Water Company will implement the requirements of WAC 246-290-490 at a minimum but may establish a more stringent program through a legal instrument. A combination premise/in-premise program requires premises isolation for high hazard facilities (including, but not limited to, Table 9) and for other types of facilities, backflow assemblies are installed for area isolation (fixture protection) within the customer's premises. Purveyors can only legally enforce premises isolation.

Customers are responsible for all costs associated with the installation, testing, maintenance, and repair of backflow prevention assemblies.

Low health hazard cross connections and some high health hazards (CO2 beverage machines, ice machines, etc...) may have the backflow assemblies installed at the point of hazard. Table 9 facilities and other premises which present high health hazard cross connections require premises isolation with a RPBA/RPDA, AG or a combination of both. If inspection of premises is denied, the premises will be assessed as high health hazard. Premises isolation will create a “closed” plumbing system and expansion tank(s) will be recommended to allow for thermal expansion. All cross connection related decisions are subject to the professional judgment of PL&W's Cross Connection Specialist (CCS).

Premises Isolation

Backflow assemblies used for premises isolation will be located directly behind the water meter. An alternate location may be allowed if approved by PL&W's cross connection specialist. If premises isolation is used no connections between the water meter and the backflow assembly are allowed. A visual inspection by the CCS of the water service line between the meter and the backflow assembly prior to backfill of a new or alternate location, will be required.

Area Isolation

When a backflow assembly is used to protect a specific hazard the assembly shall be located directly after the connection to the potable water supply. This limits the possibility of unauthorized connections between the connection to the potable water supply and the backflow assembly.

Definitions

"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 department, 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 the department. *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 department.

"Approved backflow preventer" means an approved air gap, an approved backflow prevention assembly, or an approved AVB. The terms "approved backflow preventer," "approved air gap," or "approved backflow prevention assembly" refer only to those approved backflow preventers relied upon by the purveyor for the protection of the public

water system. The requirements of WAC 246-290-490 do not apply to backflow preventers installed for other purposes.

"Approved backflow prevention assembly" means an RPBA, RPDA, DCVA, DCDA, PVBA, or SVBA of make, model, and size that is approved by the department. 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 department are considered approved by the department.

"Authority having jurisdiction" means the local official, board, department, or agency authorized to administer and enforce the provisions of the Uniform Plumbing Code as adopted under chapter 19.27 RCW.

"Auxiliary Water Supply" means any water source (well, lake etc) or system, other than the public water supply, that may be available in or on the building or premises being served.

"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 chapter 246-292 WAC.

"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.

"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 receiving water from a public water system from either the meter, or the point where the service line connects with the distribution system if no meter is present. For purposes of cross-connection control, "consumer" means the owner or operator of a water system connected to a public water system through a service connection.

"Consumer's water system," as used in WAC 246-290-490, 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.

"Cross connection" means any actual or potential physical connection between a public water system or the consumer's water system and any source of nonpotable 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 WAC 246-290-490.

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

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

"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.

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

"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 backflow prevention assembly at the point of hazard, which is generally a plumbing fixture.

"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.

“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.

"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.

“Testing date of record” the annual date of testing for the backflow device regardless of when the last inspection took place.

“Table 9” Minimum list of Severe and High Health Actual and Potential Cross-Connection hazard Premises requiring premise isolation by AAG an RPBA an RPDA or a combination of a AAG with either an RPBA or RPDA.

"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 chapter 51-46 WAC. This code establishes statewide minimum plumbing standards applicable within the property lines of the consumer's premises.

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

Abbreviations and Acronyms

AAG	approved air gap
AHJ	Authority having jurisdiction
AVB	atmospheric vacuum breaker
BAT	backflow assembly tester (for WAC 246-290-490)
CCS	cross-connection control specialist
DCDA	double check detector assembly
DCVA	double check valve assembly
DOE	Department of Ecology
IAPMO	International Association of Plumbing and Mechanical Officials

PVBA	pressure vacuum breaker assembly
RPBA	reduced pressure backflow assembly
RPDA	reduced pressure detector assembly
SVBA	spill resistant vacuum breaker assembly
TPCHD	Tacoma Pierce County Health Department
UBC	Uniform Building Code
UL	Underwriters Laboratories Inc.
UPC	Uniform Plumbing Code

Additional Acronyms and Abbreviations

ABPA	American Backflow Prevention Association
AG	air gap
ANSI	American National Standards Institute
ASR	Annual Summary Report
AVB	atmospheric vacuum breaker
AWWA	American Water Works Association
BAT	backflow assembly tester
BPA	backflow prevention assembly
DOH	Washington State Department of Health
EPA	U.S. Environmental Protection Agency
HBVB	hose bib vacuum breaker
L&I	Washington State Department of Labor and Industries
LAA	Local Administrative Authority
MCL	maximum contaminant level
NTNC	non-transient non-community
PNWS-AWWA	Pacific Northwest Section - American Water Works Association
PSI	pounds per square inch
PVBA	pressure vacuum breaker assembly
PWS	public water system
RCW	Revised Code of Washington
ROW	right-of-way
SBCC	Washington State Building Code Council
SDWA	Safe Drinking Water Act
The Group	WA. State Cross-Connection Prevention Professionals Group
TNC	transient non-community
USC	University of Southern California

USCFCCCHR

University of Southern California - Foundation for Cross-
Connection Control and Hydraulic Research

WAC

Washington Administrative Code

Cross Connections

There are two types of cross connections:

- Actual Cross Connections- Any direct connection between the potable water supply and any non-potable fluid, gas, or substance.
- Potential Cross Connections- May become an actual cross connection at any time. Examples of potential cross connections but not limited to, include threaded hose bibs, complicated piping, wells not decommissioned whether in use or not, and/or any other water system used to produce water for premise use.

Degree of Hazard

The degree of hazard posed by a cross connection is divided into three categories:

Severe Health Hazard- Direct connection between potable water & sewer or radioactive waste. This type of cross connection is unlawful and must be protected with an AAG.

High Health Hazard- Any substance that could pose an immediate risk of illness, the spread of disease, or death.

Low Health Hazard- A substance that would not pose an immediate health concern but could cause an impairment of water quality to a degree that the water would not meet drinking water standards, and will adversely and unreasonably affect the aesthetic qualities of potable water for domestic use.

Backflow

Backflow is the flow of water (or other solid, liquid, or gas from any source) back into the potable water supply. Backflow may be due to either-

- Backsiphonage- Backflow caused by a negative pressure (vacuum or partial vacuum) in the supply piping. Backsiphonage occurs when system pressure is reduced below atmospheric pressure. The effect is similar to sipping water through a straw.
- Backpressure- Backflow caused when pressure in the customer's plumbing is greater than the pressure in the water distribution piping. The higher pressure in the customer's plumbing may be from a booster pump, heating boiler, etc.

Hazards of Backflow Contamination

There are three categories of backflow contaminants: Biological Hazards, Chemical Hazards, and Physical Hazards.

- Biological Hazards- In cross connection control, waterborne disease is the primary public health concern (e.g., cholera, typhoid, giardiasis, and cryptosporidiosis). Microbiological organisms that may cause waterborne disease include: bacteria, viruses, protozoa, and parasitic helminthes (worms). The severity of the health effect experienced by an individual consuming drinking water containing a disease-

causing microorganism varies by the type of organism, quantity ingested, and the strength of the person's immune system.

- Chemical Hazards- With chemical contaminants, the issue of toxic dose must be considered just like with microbiological contaminants. Every chemical will have some effect on the person being exposed. The severity of the health effect experienced by an individual consuming drinking water containing a chemical contaminant depends on the type of chemical, amount of chemical in the water and the duration of exposure. With chemical contaminants, the severity of health effects increases with dose, i.e., the higher the dose, the more significant the health effects. Similarly, longer exposures result in more significant health effects.
- Physical Hazards- Most physical hazards are also chemical hazards. Examples of "pure" physical hazards are compressed air, hot water and steam. Hot water and/or steam, when present in the potable water supply, may result in the burning of the skin, eyes, etc., of consumers served by the water system. Gas is another type of physical hazard. The public health risks posed by a gas, such as propane, are of an entirely different dimension and magnitude compared to the risks posed by hot water and/or steam. In addition to toxic effects, propane gas may cause an explosion.

Backflow Incidents

Parkland Light & Water Company shall develop and implement procedures for responding to backflow incidents. All known backflow incidents shall be documented and reported to the DOH. Actions taken by the company in the event of a backflow incident will vary depending on the health effects of the contaminant, amount of contaminant, and area affected. At a minimum company actions will include:

- Public notification
- Isolation and flushing of distribution system
- Water quality sampling

Public Education

The company will include information about cross connection in the annual Consumer Confidence Report or newsletter. Additionally, cross connection pamphlets will be available at the company office.

Records

The company will maintain general records of all cross connections for as long as the cross connection poses a threat to the public water supply. At a minimum the records will include:

- Installation date
- Type of assembly or device
- Type of hazard the assembly, device, or AAG is protecting

All test reports shall be kept for a minimum of 5 years

Methods of Backflow Prevention

Backflow can be prevented in two ways, either through installation of-

1. An Approved Air Gap (AAG) that provides a physical separation between the contaminant and the drinking water supply; or
2. Mechanical devices or assemblies that prevent backflow from occurring.

Company Approved Backflow Assemblies

Each year the DOH updates their list of “Approved Backflow Prevention Assemblies Approved for Installation in Washington State”. To be accepted by the company, the assembly installed must be listed in the most recently published DOH list and be installed in the orientation for which it is approved. Backflow assemblies not currently approved by the DOH may be accepted providing:

- The assembly was approved by the DOH at the time of installation.
- The assembly has been properly installed, maintained, and tested.

Assemblies that are modified from the manufacturer’s “As Shipped” configurations including removal of the name plate at any time will no longer be an approved backflow assembly.

Cross Connection Assessments

All assessments surveys will be performed by a company employee currently certified by the DOH as a Cross Connection Specialist (CCS). The assessment shall consist of an inspection/survey of the entire premises. The acceptable risk of cross connections will be determined by duration, flow, and degree of hazard.

Initial Assessments- Before water is provided to new services an initial cross connection assessment of the premises will be performed. The company will attempt to eliminate all cross connections found during the assessment. Cross connections that cannot be eliminated will be protected by a properly installed, DOH approved backflow assembly, commensurate with the degree of hazard before water is provided.

Re-assessments- Once an initial assessment has been performed the frequency of reassessments will be determined by the degree of hazard, frequency of cross connection incidents and/or at Parkland Light & Water Company's discretion. If unprotected cross connections are found or the degree of protection is inadequate the customer must comply with company cross connection regulations. Connections with premises isolation with a RPBA are not required to be reassessed providing test reports are received.

- Locked off services, or empty residences or buildings that have sat in this configuration through the inspection date of record shall have the premises reassessed by the CCS and the device retested prior to obtaining service.
- Meter readers perform periodic assessments and report findings to the company CCS.
- The premises may be reassessed any time a change in the use of the premises or it’s classification has been discovered.

Time Frames for Installing Backflow Assemblies

Time frames will be based on the assessed degree of hazard. Unprotected or improperly protected low health hazards will be given 90 days to comply with company cross connection regulations. Table 9 high hazards will be given 30 days to comply with cross connection requirements. Unprotected or improperly protected severe health hazards will be corrected immediately. The company may discontinue service to any premise with a 30 day minimum written notice. The company may discontinue service to any premises without prior notice providing;

- The cross connection poses an immediate high or severe health hazard risk.

Backflow Assembly Selection

The assessed degree of hazard and hydraulic conditions will dictate the type of backflow assembly required.

Low Health Hazard- Assemblies and devices approved to protect low health hazards will be selected based upon hydraulic conditions. AVBs, PVBAs, and SVBAs are approved for backsiphonage conditions only. DCVAs and DCDAs are approved for both back siphonage and back pressure conditions.

High Health Hazard- Assessed high health hazard premises including but not limited to Table 9 facilities require premises isolation by the installation of an RPBA, RPDA, AAG or a combination of an AAG with either a RPBA or RPDA. Bypass arrangements must be protected with an assembly that is commensurate with the assessed degree of hazard. Premises isolation by the use of a mechanical backflow assembly will create a “closed” plumbing system and expansion tank(s) will be recommended on water heaters to allow for thermal expansion.

Backflow Assembly and AAG Location

The assessed degree of hazard will dictate where the backflow assembly or AAG is installed.

Low Health Hazard- The assembly shall be located directly after the connection to the potable water supply. This limits the possibility of unauthorized connections between the connection to the potable water supply and the backflow assembly. An alternate location may be allowed if approved by the company.

High Health Hazard- High health hazard facilities require premises isolation. The backflow assembly or AAG will be located directly behind the water meter. An alternate location may be allowed if approved by the company CCS. If premises isolation is used no connections between the water meter and the backflow assembly or AAG are allowed.

Installation Requirements

Unions & Strainers are encouraged for all backflow devices and assemblies

Bypass piping installed around any approved backflow preventer must be equipped with an approved backflow preventer equal to the protection level or exceeds that of the main line BF protection.

**All devices and Assemblies shall be installed to company specifications.*

AVB

A non-testable device and approved to protect low health hazard landscape irrigation systems from back siphonage only.

Requirements-

- In a manner that facilitates proper operation, maintenance, and inspection
- In a manner that ensures compliance with all applicable safety regulations
- Must be installed vertically
- Installed a minimum of 6” above highest downstream piping.
- No valves allowed downstream

Shall not be installed where it is subject to:

- Continuous pressure for more than 12 hours in a 24 hour period.
- Backpressure
- Flooding
- Toxic Fumes

PVBA

Testable assembly approved to protect low health hazards from back siphonage only.

Installation requirements-

- In the orientation for which it is approved
- In a manner that facilitates the assembly’s proper operation, maintenance, inspection, and inline testing.
- In a manner that ensures compliance with all applicable safety regulations
- Installed a minimum of 12” above highest downstream piping.
- Valves allowed downstream

The PVBA shall not be installed where it is subject to:

- Backpressure
- Flooding
- Toxic Fumes

SVBA

Testable assembly approved to protect low health hazards from back siphonage only.

Installation requirements-

- In the orientation for which it is approved
- In a manner that facilitates the assembly’s proper operation, maintenance, inspection, and inline testing.
- In a manner that ensures compliance with all applicable safety regulations
- Installed a minimum of 12” above highest downstream piping.

The SVBA shall not be installed where it is subject to:

- Backpressure
- Flooding
- Toxic Fumes

DCVA and DCDA

Testable assemblies approved to protect low health hazards from back-pressure and back-siphonage.

Installation requirements-

- In the orientation for which it is approved
- In a manner that ensures the assembly will not become submerged
 - * *If a DCVA or DCDA is installed below ground where the assembly may*

become submerged the test cocks must be plugged.

- In a manner that facilitates the assembly's proper operation, maintenance, inspection, and inline testing.
- In a manner that ensures compliance with all applicable safety regulations
- Test cocks pointing up or to one side

AAG

An AAG is the highest form of backflow protection and is used to isolate high health hazards. The AAG is approved to protect against back pressure and back-siphonage.

Installation requirements-

- 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.

RPBA and RPDA

Testable assemblies approved to protect high health hazards from back siphonage and backpressure.

Installation requirements-

- In the orientation for which it is approved
- In a manner that facilitates the assembly's proper operation, maintenance, inspection, and inline testing.
- In a manner that ensures compliance with all applicable safety regulations
- Drain sized to allow maximum flows discharged from assembly
- Drain must terminate above maximum flood level
- AAG between relief vent and drain but never less than 12"
- May be installed in a semi-buried pit if an appropriately sized drain is bore-sighted to daylight and an AAG exists between the RPBA vent and drain.

The RPBA shall not be installed where it is subject to:

- Water spilled from the assembly during normal operation, testing, and repair will be objectionable
- Temperature or pressure is greater than the assembly's rating
- Flooding
- Toxic fumes
- Freezing
- All devices and assemblies shall be installed to PL&WCo's specifications.

Backflow Assembly and AAG Testing and Inspection Frequency

Backflow assemblies and AAG's shall be inspected for proper installation and tested for proper operation:

1. At the time of installation
2. Annually after installation (minimum frequency) using annual inspection date of record. If the inspection is done after the annual testing date of record, the date of record will still remain the date of the next testing.
3. After a backflow incident
4. After an assembly is repaired, reinstalled, or relocated (or an AG is re-plumbed)
5. More frequently if desired by the company

Backflow Assembly Test Procedures

Backflow assemblies shall be tested using procedures acceptable by DOH, such as those specified in the most recently published edition of the USC Manual. When circumstances preclude the use of USC test procedures, alternate test procedures acceptable to the DOH may be used on a case by case basis providing the company CCS is given advance notice.

BAT Minimum Qualifications

The minimum requirements to test backflow assemblies within the PL&W service area shall be a current Washington State Department of Health Backflow Assembly Tester certification card and test kit calibration within the last year. PL&W will maintain a file containing all testers who have met the minimum company standards. These records will be updated as new information is provided from testers. Testers who fail to meet the minimum company standards will be removed from the file. Test reports will not be accepted from testers whose information is not maintained in this file.

Documentation of BAT Certification- All testers of backflow assemblies shall provide a current Washington State Department of Health Backflow Assembly Tester certification card. Certification cards will be accepted until March 1st of the year following the year stated on the card. *Example: A validation card for the year 2004 will be accepted until March 1st 2005.*

Test Kit Calibration- All testers of backflow assemblies shall provide current test kit calibration. Test kit calibration will be valid for a period of one year from the date of calibration. Tests performed with test kits outside of this calibration window will not be accepted.

PL&W BAT List

PL&W has an agreement with a BAT contractor to test residential assemblies for a contract amount. Residential customers are not required to use this contractor and may use other contractors providing the contractor meets company standards ie testing per DOH regulations and uses test equipment with current annual test date. The company will maintain a list of certified BAT contractors and provide this list to our customers. Contractors will be added to the list on a first come, first serve basis. The company makes no claims as to the services provided by the contractors on the list. Customers are encouraged to contact several contractors to compare services and prices.

Minimum qualifications to be added or maintained on the list-

- Current DOH BAT certification
- Test kit calibration within the last year

The list shall be updated annually before April 1st. Contractors that fail to update information before April 1st will be dropped from the list. The company may remove contractors from the list at any time for any reason.

Test Report Contents

All test reports submitted to PL&W shall be complete, accurate, and legible. All test reports shall be documented on the supplied form. Other forms may be accepted providing minimum information is documented.

Minimum Report Contents-

- Values obtained during the test
- Whether the assembly passed or failed
- Manufacturer, type, model, size, and serial number of the assembly
- Whether or not the assembly is approved by the DOH
- Downstream process
- Tester's name, signature, and certification number
- Test kit calibration date
- Address and location of assembly
- Meter read on a detector assembly

Time Frames for Submitting Completed Test Reports

A letter of the company's backflow testing requirements shall be sent to customers 1 month before the test is due. Test reports for all assemblies shall be received by the deadline specified in the letter. Testing completed after the annual testing date of record will not change the testing date of record and will require re-testing on the next date of record.

Enforcement Procedures

Delinquent customers will be sent a reminder letter. Test reports not received by the deadline specified in the delinquent letter may result in a fine or discontinuance water service. A door hanger with the disconnection date will be posted several days before service is discontinued. Delinquent customers who have received proper notice of required testing and who then experience a back flow incident due to a malfunctioning assembly will be responsible for the cost to mitigate damage to the public water system.

Specific Requirements

Elevated Piping

All premises with piping that is elevated greater than 30' above the distribution main are required to have a DCVA located directly behind the meter. This protection will be upgraded if an assessment of the premises determines greater protection is required.

Industrial/Commercial Properties

All new service connections and those that are remodeled which are used for industrial/commercial purposes will be protected with a RPBA or RPDA located directly after the meter. Existing industrial/commercial use customers will not be required to retrofit providing cross connection protection is adequate and the premises is not remodeled. Premise isolation will be at the discretion of the CCS upon change of tenant or ownership.

Auxiliary Water Supplies & Improperly Abandoned Wells

Premises with auxiliary water supplies and improperly abandoned wells whether in use or not, shall have premises isolation with an RPBA whether or not the supply is interconnected with the internal plumbing system or Parklands public water supply. PL&W has no legal authority to require well abandonment, however, TPCHD will be notified of all improperly abandoned wells. Wells abandoned to TPCHD standards do not require premises isolation.

Waterfront Properties

Premises located near surface water must be thoroughly inspected/assessed for cross connections. Boat lifts and pumps that draw water from the lake are common cross connections that must be carefully inspected to ensure cross connection regulations are enforced. The Cross Connection Specialists shall determine in all cases whether a back flow assembly is required or not.

Fire Hydrant Meters

All fire hydrant meters shall be installed with a RPBA.

Fire Sprinkler Systems

All new low hazard fire sprinkler systems shall be protected with a DCDA. All new high hazard fire sprinkler systems shall be protected with a RPDA. The desired location of the backflow assembly is inside the building. However, if the assembly will be more than 75 linear feet from the water main then the assembly shall be installed at the edge of the right of way.

Irrigation Systems

All new low hazard irrigation systems shall be protected with a DCVA. Existing low hazard systems with AVB's, PVBA's, or SVBA's will be accepted providing the protection is commensurate with the degree of hazard and the assembly(s) or device(s) have been properly installed & maintained. If they have not been properly maintained or the system has been modified a DCVA will be required after the meter as premise isolation. Parkland Light & Water Company recommends a Pierce County building plumbing permit and an expansion tank on the water heater be obtained.

Tables

Parkland Light & Water Company shall ensure that the Cross Connection Specialist assesses the degree of hazard posed by the consumer's water system upon the purveyors public distribution system; and determines the appropriate method of backflow protection for premises isolation as described in 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 cross connection Hazard	Backsiphonage or backpressure backflow	AG, RPBA, RPDA DCVA, or DCDA

Parkland Light & Water Company shall ensure that an approved Air Gap, RPBA, RPDA are installed for premises isolation for service connections to premises posing a high health cross connection hazard including, **but not limited to** those premises listed in Table 9. For service connections to premises posing a severe health cross connection hazard listed in Table 9, including wastewater treatment plants, radioactive material processing plants, and nuclear reactors, Parkland Light & Water Company shall ensure that either an approved Air Gap is installed for premises isolation; or an approved RPBA or RPDA is installed for premises isolation in combination with an in-plant approved Air Gap.

TABLE 9

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

1. Agricultural (farms and dairies)
2. Beverage bottling plants
3. Car washes
4. Chemical plants
5. Commercial laundries and dry cleaners

6. Premises where both reclaimed water and potable water are provided
7. Film processing facilities
8. Food processing plants
9. Hospitals, medical centers, nursing homes, veterinary, medical and dental clinics, and blood plasma centers.
10. Premises with separate irrigation systems using the purveyor's water supply and with chemical addition. Examples being but not limited to: parks, playgrounds, golf courses, cemeteries, estates etc.
11. Laboratories
12. Metal plating industries
13. Mortuaries
14. Petroleum processing or storage plants
15. Piers and docks
16. Premises with unapproved auxiliary water supply interconnected or not with the potable water supply
17. Any non-decommissioned well whether in use or not, whether interconnected or not with the potable water supply.
18. Any commercial building or commercial strip where tenants can change rapidly without notice
19. Any wastewater lift stations and pumping stations
20. Complex plumbing arrangements or plumbing subject to change
21. Any customer that denies or restricts survey access

**Severe Health Cross Connection Hazard Premises Requiring
Minimum Air Gap at the Service Connection or RPBA's at Service
Connection in Combination with In-Plant approved Air Gap**

1. Radioactive material processing plants or nuclear reactors
2. Wastewater treatment plants

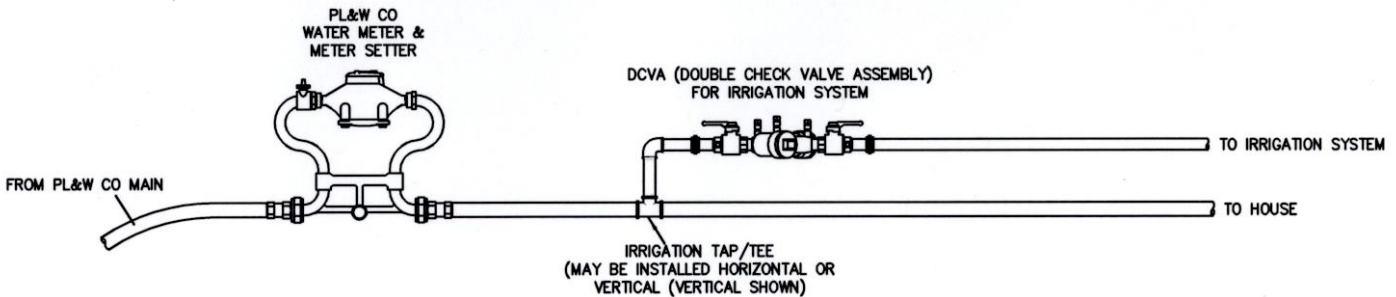
Abandonment Procedures for Backflow Assemblies.

In most cases the procedure for properly abandoning a backflow assembly will require the customer to excavate down to the customers water service line where it tees off for the backflow assembly and cap or plug it at the tee. Not all cases will be the same. Some cases will be subject to the discretion of the CCS. The backflow assembly must be removed along with three feet of pipe directly after the backflow assembly.

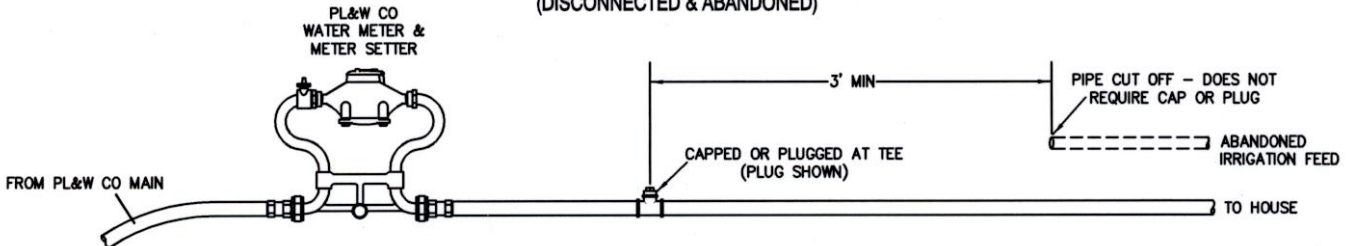
DO NOT BACKFILL YET!

The customer must set up an appointment during normal business hours for the CCS to inspect the abandoned connection. The CCS will take photos of the abandoned connections and will note our files with details of the event. At that time the customer must backfill the excavation while the CCS observes the excavation being covered. Please see the drawing below of a common abandonment.

BEFORE



AFTER (DISCONNECTED & ABANDONED)



**ADOPTED by the board of trustees of Parkland Light & Water Company this
3rd day of March 2011.**

PARKLAND LIGHT & WATER CO.

Robert C. Richardson, President