APPENDIX J

Cross-Connection Control Program

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1. Purpose

The Sammamish Plateau Water and Sewer District has developed a cross-connection control program under the requirements for Group A Water Systems (WAC 246-290-490). The purpose of this program is to protect the health of water consumers of the public water system. This cross-connection control program addresses this requirement by establishing minimum operating policies and backflow prevention assembly installation and testing practices and procedures. It is structured such that it may be supplemented with published documents and materials developed by the District for its specific use. The authority to enforce these practices and policies is established in District Resolution 1327 or its future revisions.

2. Responsibilities

a. The Sammamish Plateau Water and Sewer District

i. The District or its designated representative shall prevent the contamination of the water distribution system by inspecting cross connections, providing guidance for new installations and existing connections, maintaining records on backflow prevention devices, and responding to customer inquiries to meet the requirements of the state regulations in cross-connection control.

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

b. Water Customer

i. The water customer shall be responsible for identifying and eliminating cross connections or controlling them through the installation, regular testing, and maintenance of approved backflow prevention assemblies.

ii. The water customer shall be responsible for providing the necessary information, scheduling, and providing access for inspection (as required) to allow a determination of cross-connection potential and the necessary control methods.

iii. The water customer is responsible for notifying the District of any assembly that the customer believes is no longer required.

iv. The water customer is responsible for all costs associated with the inspection, testing, repair, and replacement of backflow prevention assemblies.

3. Applicability of Regulations and References

a. The control or elimination of cross connections shall be in accordance with the most current revisions of the following state, county, and local rules and regulations:

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

ii. Washington State Plumbers Code RCW 18.106

iii. Washington State Building Code RCW 19.27

iv. Washington State Public Water Systems Mandate RCW 70.119A.060

v. Washington State Powers and Duties of the State Board of Health RCW 43.20.050

vi. Sammamish Plateau Water and Sewer District Resolution 1327

b. The polices, procedures, and criteria for determining appropriate levels of protection shall be in accordance with the most current editions of the following references:

i. *Cross-Connection Control Manual: Accepted Procedure and Practice* published by the Cross-Connection Control Committee of the Pacific Northwest Section of the American Water Works Association

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

iii. *Recommended Practice for Backflow Prevention and Cross-Connection Control* (AWWA M14) published by the American Water Works Association

c. Interpretation of the above regulations and references is subject to the discretion of the District or its designated representatives.

4. Operating Procedures

a. Guidelines for Premises Isolation:

i. The District shall rely on premises isolation as defined in WAC 246-290-010 for cross-connection control.

ii. Premises isolation is the District's recommended method of cross-connection control, where an approved air gap or approved backflow prevention assembly is installed at or near the service connection or an alternative location acceptable to the District to isolate the consumer's water system from the District's distribution system.

iii. If the in-premises isolation method is used, that is, as in the case of residential irrigation systems, residential swimming pools, spas, decorative ponds and boilers, it must provide a level of protection commensurate with the District's assessed degree of hazard. In-premises isolation employs an approved air gap or approved backflow prevention assembly that is located within the property lines of the customer's premises, which is generally a plumbing fixture. If access for inspection is denied by the water customer and there is not an immediate hazard present, the District will install an air gap (AG) or reduced pressure backflow assembly (RPBA) at the property line or immediately upstream of the area where access has been denied. The customer will assume costs.

b. Guidelines for Type and Location of Protection

i. The type of backflow protection required shall depend on the degree of hazard. The final hazard determined shall be made by the District or its designated representative.

A. For customers requesting new service connections, an initial evaluation of the premises' planned or future water service in regards to cross connections shall be made by the District or its designated representative. Proper selection and installation of a backflow prevention assembly, as determined by the District or its designated representative, shall be a condition of allowing new water service connection.

B. For existing service connections, the District will perform an initial inspection according to a plan developed by the District. The District will notify the customer of the required inspection, and the customer is responsible scheduling the inspection.

C. For all service connections, upon initial evaluation, an annual reevaluation of hazard shall occur in accordance with Section 6 of this program.

ii. An Air Gap (AG), Reduced Pressure Backflow Assembly (RPBA), or a Reduced Pressure Detector Assembly (RPDA) shall be used for services that present high health hazards, where back pressure and back siphonage may occur. These premises are listed, but not limited to, those in Table 9, High Health Cross-Connection Hazard Requiring Premises Isolation by AG or RPBA, in WAC 246-290-490.

iii. A Double Check Valve Assembly (DCVA) or a Double Check Detector Assembly (DCDA) shall be used for low health hazards where back pressure and back siphonage may occur. Higher levels of protection, that is AG, RPBA, or RPDA may be installed but would not be required.

iv. A Pressure Vacuum Breaker Assembly (PVBA) or Spill Resistant Vacuum Breaker Assembly (SVBA) would be required for high and low health hazards for backsiphonage only. Higher levels of protection, i.e., AG, RPBA, RPDA, DCVA, or DCDA, may be installed, but would not be required.

c. Guidelines for Eliminating Cross Connections

i. Cross connections shall be eliminated whenever possible.

ii. When cross connections cannot be eliminated, an approved air gap or an approved backflow prevention assembly, commensurate to the degree of hazard as determined by the District or its designated representative shall be installed in accordance with Section 5 of this program.

5. Installation Procedures

a. General

i. The criteria for assembly installation practices shall be in accordance with the current edition of the following manuals: *Accepted Procedure and Practice*, published by the Cross-Connection Control Committee of the Pacific Northwest Section of the American Water Works Association; *Manual of Cross-Connection Control* published by the Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California; *Recommended Practice for Backflow Prevention and Cross-Connection Control* (AWWA M14) published by the American Water Works Association, and the Sammamish Plateau Water and Sewer Districts *Technical Specifications Manual.*

ii. The installer is responsible for notifying the District of newly installed assemblies.

iii. All new installations shall be inspected and tested by a state certified backflow assembly tester.

iv. Assemblies shall be accessible for testing and maintenance. They shall be installed no higher than five (5) feet above the floor or ground surface to the centerline of the assembly, or else be provided with an OSHA approved work platform for assembly maintenance and testing.

v. Assemblies shall be protected against freezing, flooding, and mechanical damage.

vi. Assemblies shall not be installed in any enclosure or area containing fumes which are corrosive or toxic.

b. Installation of Prevention Devices

i. Approved Air Gaps (as defined by the Washington State Department of Health Drinking Water Regulations Relating to Cross-Connection):

A. An "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 nonpressurized receiving vessel. To be an air gap approved by Washington State Department of Health (DOH), the separation must be at least:

- Twice the diameter of the supply piping measured vertically from the overflow run 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 surface (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.

ii. Reduced Pressure Backflow Assembly (RPBA) and Reduced Pressure Detector Assembly (RPDA)

A. RPBAs/RPDAs shall be installed horizontally, unless they are approved by the State for vertical installation.

B. RPBAs/RPDAs shall be installed with minimum clearances of 12 inches (larger RPBAs may require more clearance) in front of test cocks, check valves, and relief valve covers to facilitate testing and maintenance. If an assembly is installed in an area with limited accessibility, a crawl space, a minimum of 24 inches clearance in front of test cocks shall be provided.

C. RPBAs/RPDAs shall be installed a minimum of 12 inches above ground or flood level, whichever is greater.

D. RPBAs/RPDAs shall not be installed in a below grade pit, vault, or box.

E. RPBAs/RPDAs shall be installed in a location where discharge from the relief port will not be objectionable, and shall be provided with an approved air-gapped drain which will reasonably handle the full discharge of the relief port.

iii. Double Check Valve Assembly (DCVA) and Double Check Detector Assembly (DCDA)

A. DCVAs / DCDAs shall be installed horizontally, unless they are approved by the State for vertical installation.

B. DCVAs / DCDAs shall be installed with minimum clearances of 12 inches (larger DCVAs / DCDAs may require more clearance) in front of test cocks and check valves to facilitate testing and maintenance. If an assembly is installed in an area with limited accessibility, a crawl space, a minimum of 24 inches clearance in front of test cocks shall be provided.

C. DCVAs / DCDAs shall be installed at such a location that they will not become submerged due to weather related conditions such as flooding.

iv. Pressure Vacuum Breaker Assembly (PVBA) and Spill Resistant Pressure Vacuum Breaker Assembly (SVBA)

A. PVBAs / SVBAs shall be installed to prevent backflow caused by backsiphonage only.

B. A PVBA shall only be installed in a vertical configuration, a minimum of 12 inches above the highest downstream piping.

C. A SVBA shall only be installed in a vertical configuration a minimum of 12 inches above the highest downstream piping. The SVBA shall be treated the same as a PVBA because of the potential for the SVBA to be replaced by a PVBA. When the SVBA is located inside a building, the concern is not as great about its installation in a location where the occasional spitting from the air inlet port could be a problem when the assembly is first pressurized. The SVBA is spill resistant, not spill proof.

6. Inspection and Testing Procedures

a. General

i. Backflow prevention assemblies shall be inspected and tested at the time of:

A. Initial installation. If an assembly is installed prior to the enactment of this program, an initial inspection time should be scheduled.

B. After the assembly is repaired or moved.

C. Annually after the initial installation.

D. As required by the District if testing indicates repeated failures.

ii. Annual testing of backflow assemblies shall be per WAC 246-290-490. The District may require more frequent testing of certain facilities.

iii. Testing procedures shall be in accordance with the requirements of the Washington State Department of Health.

b. Inspection and testing of new installations

i. All new assemblies shall be tested upon initial installation.

ii. The District shall notify property owners of required backflow preventers including air gaps (AGs). The District will notify property owners of required inspection for all new installations of backflow preventers, including AGs in the District's service area.

iii. The installer is responsible for notifying the District of newly installed assemblies.

iv. If at the inspection, the newly installed backflow preventer fails its performance test, the installer and/or owner of the backflow prevention assembly must have the repair completed, and provide evidence of a satisfactory performance test by a state-certified Backflow Assembly Tester, submitted to the District within 30 days of the initial unsatisfactory performance test. All test reports, whether satisfactory or unsatisfactory, must be submitted to the District.

v. The District or its designated representative shall assess the degree of hazard prior to and after the elimination and removal of any assembly. An assembly no longer needed and for which the site was inspected, will be removed from the District's database of active backflow prevention devices.

vi. The District will levy a standard charge, in accordance with District Resolution 1327, against the customer's water service account for inspection of any installed or removed backflow prevention assemblies.

c. Inspecting and testing of existing installations

i. All assemblies shall be tested annually by a certified Backflow Assembly Tester, who has on file a current certificate proving verification of accuracy of his/her test equipment at the District. If this information is not on file, the tester shall submit this verification to the District prior to submitting any test results.

ii. The District will notify all water customers responsible for assemblies of record of the requirement for testing not less than 60 days before the test is required.

iii. Results indicating satisfactory performance must be forwarded to the District within 60 days from the date of notification.

iv. If satisfactory results have not been received within 60 days of notification, a second, certified letter will be sent, requesting satisfactory testing reports be forwarded to the District within

10 days, with notification of a specific date of termination of water service, if reports are not received within 10 days. The District will levy a standard charge against the customer's water service account for each overdue backflow preventer.

v. If satisfactory test results have not been received within 10 days of the certified letter being sent, a notification of water shutoff will be hand delivered, if necessary, to the occupants of the building to which water is scheduled for termination. If the District determines a high health hazard, termination will follow immediately thereafter. If the District determines that there is a low non-health hazard and no imminent danger, the following corrective measures will be followed:

A. Denying or discontinuing water service to a customer's premises until the cross-connection hazard is eliminated or controlled to the satisfaction of the District. Shutoff will follow within 72 hours of notice.

B. Requiring the consumer to install approved backflow preventer for premises isolation commensurate to the degree of hazard.

C. The District will install an approved backflow preventer for premises isolation commensurate with the degree of hazard.

vi. The District will levy a standard charge against the customer's water service account for each notification of water shutoff and/or installation of a backflow prevention assembly in order to achieve premises isolation. Water service will be terminated if no action is satisfactorily taken to test and/or repair and retest the backflow assembly(ies) and will remain discontinued until the testing is successfully completed and satisfactory test reports are provided to the District. The District will levy a standard charge against the customer's water service account for each shut-off and turn-on action required at the affected address.

vii. The District or its designated representative may require testing more often than annually or may field verify the test results.

d. Inspection and testing of repaired or replaced installations

i. Testing is required of any assembly that is repaired, replaced, or moved due to problems found during the annual test or due to revisions of the plumbing system.

e. Inspections of high hazard sites

i. The District shall assign priorities to high hazard site inspections with special emphasis on the following types of facilities: hospital, schools, clinics, laboratories, piers and docks, mortuaries, sewage treatment plants, food and beverage processing plants, chemical plants using

water process, metal plating industries, petroleum processing or storage plants, car washes, facilities having a non-potable auxiliary water supply, and others specified by the District.

ii. The District shall notify the responsible party of the premises which require inspection.

A. If during the site survey, a cross connection is found that presents, in the opinion of the inspector, an imminent threat to public health, water service to the site shall be immediately terminated and shall remain off until the hazard is corrected.

B. The state-certified cross-connection specialist must provide the property owner and District a written notice of the results of the survey including a list of the cross connections found. If an approved backflow prevention assembly is required on the customer's system, the type and location of the assembly shall be specified in the inspectors written notice. The owner has 30 days after the written notice to have the required backflow prevention assembly(ies) installed and tested.

C. The water customer shall notify the District at the completion of the required work and certification that the backflow assemblies have been installed and tested with a positive test result.

D. If the water customer does not complete the work required in the inspector's letter within the time specified, a certified letter will be sent by the District requiring the water customer to complete the work within a shorter specified time (generally 10 days) and reminding the water customer that it is the District's responsibility to deny water service to anyone who does not comply with backflow protection requirements. The District will levy a standard charge, in accordance with District Resolution 1327, against the customer's water service account for each certified letter sent to the customer.

E. If the water customer does not complete the work within the time specified or does not make special arrangements with the District for an alternate compliance date based on extenuating circumstances, the District will give notice to the water customer of its intention to discontinue water service within 24 hours. The standard District charges for termination of water service will be levied against the customer's water service account.

7. Backflow Incident Response Procedures

a. Due to the severity of cross-connection effects, the District shall respond to backflow incidents immediately, upon receipt of an incident report. The

response time may vary depending on the location of the incident, time and day of the report, and location of the responder, but this time should not be more than 30 minutes, as delineated in the WAC.

8. Quality Control Program

a. General

i. The criteria for tester certification and test kit calibration practices shall be in accordance with the current edition of the following manuals: *Accepted Procedure and Practice,* published by Cross-Connection Control Committee of the Pacific Northwest Section of the American Water Works Association; *Manual of Cross-Connection Control*, published by the Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California; *Recommended Practice for Backflow Prevention and Cross-Connection Control* (AWWA M14), published by the American Water Works Association.

b. Tester Certification and Test Kit Calibration

i. Acceptance of customer's test reports will be contingent upon the District's records for the receipt of records of the state-certified Backflow Assembly Tester and the test kit calibration.

c. Test Reports

i. Sample test reports are attached to this program.

ii. Test Report Submittal Schedule

Connection Type	Results	Test Report Submittal Schedule
New Connection	Satisfactory Results	Submit Test Report at the time of the inspection (within 10 days of inspection date).
	Unsatisfactory Results	Submit Unsatisfactory Test Report at the time of inspection (within 10 days of inspection date). Submit Retest Report within 30 days of the unsatisfactory test date.
Existing Connection	Satisfactory Results	Submit Satisfactory Test Report within 60 days of notification of annual test requirement.
	Unsatisfactory Results	Make necessary repairs and submit Satisfactory Test Report within 60 days of notification of annual test requirement.

9. Records

a. General:

i. The Master List of Service Connections shall be in accordance with WAC 246-290-490(3)(j). Information to be included in the database:

A. Customer address

B. Assessed hazard level

C. Required backflow prevention assembly

b. The District shall maintain an inventory of information as required in WAC 246-290-490(3)(j)(ii) on:

i. Approved Air Gaps used in Lieu of Approved Assemblies

A. Property owner

B. Exact location on premises

C. Assessed degree of hazard

D. Installation date

E. Inspection results and history

F. Name of person conducting inspections

ii. Approved Backflow Assemblies

A. Property owner

B. Exact location on premises

C. Assembly description (type, manufacturer, model, serial number, size, etc.)

D. Assessed degree of hazard

E. Installation date

F. Inspection results and history, test results, and repairs

G. Name of person conducting inspection

iii. Approved AVBs used for irrigation system applications

A. Property owner

B. Exact location on premises

C. Assembly description (manufacturer, model, and size)

D. Installation date

E. Inspection results and history

F. Name of person conducting inspection

iv. Cross-Connection Control Program Summary Reports

v. Backflow Incident Reports

c. Sample reports are provided as attachments.

d. Sample notification letters are provided as attachments.

10. Public Education Program

a. The District shall provide their existing and future water customers with information regarding backflow and backflow prevention, as well as the District's Cross-Connection Control Program. This public education program shall include, but is not limited to:

i. Articles in the District's newsletter

ii. Fact sheets available for new customers and developers

iii. Informational pamphlets and brochures available at the District office

iv. Water quality (Consumer Confidence) reports

11. Improvements Program

a. The District shall prepare staff and delineate resources to meet the requirements of this Cross-Connection Control Program. Their tasks include upgrading their existing procedures to the requirements set in this program and preparing the program so that it will meet the challenges of future water system operations. This shall include, but is not limited to:

i. Dedicating staff to execute and maintain the cross-connection control program

ii. Establishing funds for all new and existing cross-connection program activities

iii. Identification, inspection, and record of all cross-connections

A. New cross connections (First priority)

B. Existing cross connections (Second priority)

iv. Establishing an annual inspection schedule for all new and existing cross connections after the initial inspection.