Davidson Water, Inc.
Cross-Connection Control Policy

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Section 1- CROSS-CONNECTION CONTROL-GENERAL POLICY

1.1 PURPOSE:

The purpose of this policy is:

1.1.1 To protect the public potable water supply of Davidson Water, Inc. from the possibility of contamination or pollution by isolating within the customer's internal distribution system(s) or the customer's private water system(s) such contaminants or pollutants that could backflow into the public water system; and,

1.1.2 To promote the elimination or control of existing cross-connections, actual or potential, between the customer's in-plant potable water system(s) and nonpotable water systems, plumbing fixtures, and industrial piping systems; and,

1.1.3 To provide for the maintenance of a continuing program of cross-connection control that will systematically and effectively prevent the contamination or pollution of all potable water systems.

1.2 RESPONSIBILITY

The Cross-Connection Control Coordinator shall be responsible for the oversight and implementation of this policy. If, in the judgment of said Cross-Connection Control Coordinator an approved backflow-prevention assembly is required (at the customer's water service connection; or, within the customer's private water system) for the safety of the water system, the Cross-Connection Control Coordinator or his/her designated agent shall give notice in writing to said customer to install such an approved backflow-prevention assembly(s) at specific location(s) on his/her premises. The customer shall immediately install such approved assembly(s) at his/her own expense; and, failure, refusal, or inability on the part of the customer to install, have tested, and maintain said assembly(s) shall constitute grounds for discontinuing water service to the premises until such requirements have been satisfactorily met.

Section 2 – DEFINITIONS

2.1 WATER COMMISSIONER OR HEALTH OFFICIAL: The Davidson Water, Inc. Cross-Connection Control Coordinator is invested with the authority and responsibility for the implementation of an effective cross-connection control program and for the enforcement of the provisions of this policy.

2.2 APPROVED: Accepted by the authority responsible as meeting an applicable specification stated or cited in this policy or as suitable for the proposed use.

2.3 AUXILIARY WATER SUPPLY: Any water supply on or available to the premises other than Davidson Water, Inc.'s public water supply or any natural source(s), such as a well, spring, river, stream, and so forth; used waters; or industrial fluids. These waters may be contaminated or polluted, or they may be objectionable and constitute an unacceptable water source over which Davidson Water, Inc. does not have sanitary control.

2.4 BACKFLOW: The undesirable reversal of flow in a potable water distribution system as a result of a cross-connection.

2.5 BACK-PRESSURE: A pressure, higher than the supply pressure, caused by a pump, elevated tank, boiler, or any other means that cause backflow.

2.6 BACK-SIPHONAGE: Backflow caused by negative or reduced pressure in the supply piping.

2.7 BACKFLOW PREVENTER: An assembly or means designed to prevent backflow.

2.7.1 Air Gap: The unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet conveying water or waste to a tank, plumbing fixture, receptor or other assembly and the flood level rim of the receptacle. These vertical, physical separations must be at least twice the diameter of the water supply outlet, never less than 1 in. (25 mm).

2.7.2 Reduced-Pressure Backflow-Prevention Assembly: The approved reduced-pressure principle backflow-prevention assembly consists of two independently acting, approved check valves, together with a hydraulically operating, mechanically independent pressure differential relief valve located between the check valves and below the first check valve. These units are located between two tightly closing resilient-seated shutoff valves as an assembly and equipped with properly located resilient-seated test cocks.

2.7.2a Reduced-Pressure Principle-Detector Assembly: An assembly composed of an approved reduced pressure principle backflow prevention assembly with a bypass water meter and a meter-sized approved reduced pressure principle device. The meter shall register accurately for very low flow rates and shall register all flow rates.

2.7.3 Double Check Valve Assembly: The approved double check valve assembly consists of two internally loaded check valves, either spring loaded or internally weighted, installed as a unit between two tightly closing resilient-seated shut-off valves and fittings with properly located resilient-seated test cocks. This assembly shall only be used to protect against a non-health hazard (that is, a pollutant).

2.7.3a Double Check-Detector Check Valve Assembly: An assembly composed of an approved double check valve assembly with a bypass water meter and a meter-sized approved double check valve device. The meter shall register accurately for very low flow rates and shall register all flow rates.

2.8 CONTAMINATION: an impairment of a potable water supply by the introduction or admission of any foreign substance that degrades the quality and creates a heath hazard.

2.9 CROSS-CONNECTION: A connection or potential connection between any part of a potable water system and any other environment containing other substances in a manner that, under any circumstances would allow such substances to enter the potable water system. Other substances may be gases, liquids, or solids, such as chemicals, waste products, steam, water from other sources (potable or nonpotable), or any matter that may change the color or add odor to the water.

2.10 CROSS-CONNECTION CONTROLLED: A connection between a potable water system and a nonpotable water system with an approved backflow-prevention assembly properly installed and maintained so that it will continuously afford the protection commensurate with the degree of hazard.

2.11 CROSS-CONNECTION CONTROL BY CONTAINMENT: The installation of an approved backflow-prevention assembly at the water service connection to any customer's premises, where it is physically and economically unfeasible to find and permanently eliminate or control all actual or potential cross-connections within the customer's water system; or it shall mean the installation of an approved backflow-prevention assembly on the service line leading to and supplying a portion of a customer's water system where there are actual or potential cross-connections that cannot be effectively eliminated or controlled at the point of the cross-connection.

2.12 HAZARD, DEGREE OF: The term is derived from an evaluation of the potential risk to public health and the adverse effect of the hazard upon the potable water system.

2.12.1 Hazard – health: a cross-connection or potential cross-connection involving any substance that could, if introduced into the potable water supply, cause death or illness, spread disease, or have a high probability of causing such effects.

2.12.2 Hazard – plumbing: A plumbing-type cross-connection in a consumer's potable water system that has not been properly protected by an approved air gap or an approved backflow-prevention assembly.

2.12.3 Hazard – non-health: A cross-connection or potential cross-connection involving any substance that generally would not be a health hazard but would constitute a nuisance or be aesthetically objectionable, if introduced into the potable water supply.

2.12.4 Hazard – system: An actual or potential threat of severe damage to the physical properties of the public potable water system or the consumer'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.

2.13 INDUSTRIAL-FLUIDS SYSTEM: Any system containing a fluid or solution that may be chemically, biologically, or otherwise contaminated or polluted in a form or concentration, such as would constitute a health, system, pollution, or plumbing hazard, if introduced into an approved water supply. This may include, but not limited to, polluted or contaminated waters; all types of process waters and used waters originating from the public potable water system that may have deteriorated in sanitary quality; chemicals in fluid form; plating acids and alkalies; circulating cooling waters connected to an open cooling tower; and/or cooling towers that are chemically or biologically treated or stabilized with toxic substances; contaminated natural waters, such as wells, springs, streams, rivers, bays, harbors, seas, irrigation canals or systems, and so forth; oils, gases, glycerin, paraffins, caustic and acid solutions, and other liquid and gaseous fluids used in industrially, for other processes, or for fire-fighting purposes.

2.14 POLLUTION: The presence of any foreign substance in water that tends to degrade its quality so as to constitute a non-health hazard or impair the usefulness of the water.

2.15 SERVICE CONNECTION: The terminal end of a service connection from the public potable water system, that is, where the water purveyor loses jurisdiction and sanitary control over the water at its point of delivery to the customer's water system. If a meter is installed at the end of the service connection, then the service connection shall mean the downstream end of the meter. There should be no unprotected takeoffs from the service line ahead of any meter or backflow-prevention assembly located at the point of delivery to the customer's water system. Service connection shall also include water service connections from the public potable water system.

2.16 UPGRADE: The replacement of backflow preventer(s), boxes, enclosures, vaults, piping, drainpipes, valves, and any apparatus associated with a backflow preventer. All upgrades require prior approval by the Cross-Connection Control Coordinator, and shall be brought into full compliance with the standards set forth in this policy.

2.17 WATER – POTABLE: Water that is safe for human consumption as described by the public health authority having jurisdiction.

2.18 WATER – NONPOTABLE: Water that is not safe for human consumption or that is of questionable quality.

2.19 WATER – USED: Any water supplied by a water purveyor from a public potable water system to a consumer's water system after it has passed through the point of delivery and is no longer under the sanitary control of the water purveyor.

Section 3 – REQUIREMENTS

3.1 WATER SYSTEM

3.1.1 The water system shall be considered as made up of two parts: the utility system and the customer system.

3.1.2 The utility system shall consist of the source facilities and the distribution system and shall include all those facilities of the water system under the complete control of the utility, up to the point where the customer's system begins.

3.1.3 The source shall include all components of the facilities utilized in the production, treatment, storage, and delivery of water to the distribution system.

3.1.4 The distribution system shall include the network of conduits used for the delivery of water from the source to the customer's system.

3.1.5 The customer's system shall include those parts of the facilities beyond the termination of the utility distribution system; that are utilized in conveying utility delivered domestic water to points of use.

3.2 POLICY

3.2.1 No water service connection to any premises shall be installed or maintained by the water purveyor unless the water supply is protected as required by state laws and regulations and this cross-connection control policy. Service of water to any premises shall be discontinued by the water purveyor if a backflow-prevention assembly required by this cross-connection control policy is not installed, tested, and maintained, or if it is found that a backflow-prevention assembly has been removed, bypassed, or if an unprotected cross-connection exist on the premises. Service will not be restored until such conditions or defects are corrected. Those facilities requiring protection under this policy shall include, *but are not necessarily limited to*, those listed on the attachment entitled, "Facilities Requiring Protection."

3.2.2 The customer's system should be open for inspection at all reasonable times to authorized representatives of Davidson Water, Inc. to determine whether cross-connections or other structural or sanitary hazards, including violations of these regulations exist. When such a condition becomes known, the Cross-Connection Control Coordinator shall deny or immediately discontinue service to the premises by providing for a physical break in the service line until the customer has corrected the condition(s) in conformance with state, and city statutes relating to plumbing and water supplies and the regulations adopted pursuant thereto.

3.2.3 An approved backflow prevention assembly shall be installed on each service line to a customer's water system at or near the property line before the first branch line leading off the service line wherever the following conditions exist:

3.2.3a In the case of premises having an auxiliary water supply that is not or may not be of safe bacteriological or chemical quality and that is not acceptable as an additional source by the Cross-Connection Control Coordinator, the public water system shall be protected against backflow from the premises by installing an approved backflow-prevention assembly in the service line, appropriate to the degree of hazard.

3.2.3b In the case of premises on which any industrial fluids or any other objectionable substances are handled in such a fashion as to create an actual or potential hazard to the public water system, the public system shall be protected against backflow from the premises by installing an approved backflow-prevention assembly in the service line, appropriate to the degree of hazard. This shall include the handling of process waters and waters originating from the utility system that have been subject to deterioration in quality.

3.2.3c In the case of premises having (1) internal cross-connections that cannot be permanently corrected and controlled, or (2) intricate plumbing and piping arrangements or where entry to all portions of the premises is not readily accessible for inspection purposes, making it impracticable or impossible to ascertain whether or not dangerous cross-connections exist, the public water system shall be protected against backflow from the premises by installing an approved backflow-prevention assembly in the service line.

3.2.4 The type of protective assembly required under subsections 3.2.3a, 3.2.3b, and 3.2.3c shall depend upon the degree of hazard that exists as follows:

3.2.4a In the case of any premises where there is an auxiliary water supply as stated in subsection 3.2.3a of this section and it is not subject to any of the following rules, the public water system shall be protected by an approved air-gap separation or an approved reduced-pressure principle backflow-prevention assembly.

3.2.4b In the case of any premises where there is water or substance that would be objectionable but not hazardous to health, if introduced into the public water system, the public water system shall be protected by an approved double check valve assembly.

3.2.4c In the case of any premises where there is any material dangerous to health that is handled in such a fashion as to create an actual or potential hazard to the public water system, the public water system shall be protected by an approved air-gap separation or an approved reduced-pressure principle backflow-prevention assembly. Examples of premises where these conditions will exist include sewage treatment plants, sewage pumping stations, chemical manufacturing plants, hospitals, mortuaries, and plating plants.

3.2.4d In the case of any premises where there are "uncontrolled" cross-connections, either actual or potential, the public water system shall be protected by an approved air-gap separation or an approved reduced-pressure principle backflow-prevention assembly at the service connection.

3.2.4e In the case of any premises where, because of security requirements or other prohibitions or restrictions, it is impossible or impractical to make a complete in-plant cross-connection survey, the public water system shall be protected against backflow from the premises by either an approved air-gap separation or an approved reduced-pressure principle backflow-prevention assembly on each service to the premises.

3.2.4f In the case of any premises where, in the opinion of the Cross-Connection Control Coordinator, an undue health threat is posed because of the presence of extremely toxic substances, the Cross-Connection Control Coordinator may require an air gap at the service connection to protect the public water system. This requirement will be at the direction of the Cross-Connection Control Coordinator and is dependent on the degree of hazard.

3.2.5 The following testing laboratory has been qualified by the Cross-Connection Control Coordinator to test and certify backflow preventers: Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California, University Park, Los Angeles, Ca 90089.

Backflow preventers that may be subjected to backpressure or Backsiphonage that have been fully tested and have been granted a certificate of approval by said qualified laboratory and are listed on the laboratory's current list of approved backflow-prevention assemblies may be used without further testing or qualification.

3.2.6 It shall be the duty of the customer-user at any premises where backflow-prevention assemblies are installed to have certified inspections and operational test made at least once a year. In those instances where the Cross-Connection Control Coordinator deems the hazard to be great enough, certified inspections may be required at more frequent intervals. These inspections and test shall be at the expense of the water user and shall be performed by a certified tester, or by the assembly manufacture's representative approved by the Cross-Connection Control Coordinator. It shall be the duty of the Cross-

Connection Control Coordinator to see that these tests are made in a timely manner. The customer-user shall notify the Cross-Connection Control Coordinator in advance when the tests are to be undertaken so that an official representative may witness the test if so desired. These assemblies shall be repaired, overhauled, or replaced at the expense of the customer-user whenever said assemblies are found to be defective. Records of such tests, repairs, and overhaul shall be kept and made available to the Cross-Connection Control Coordinator.

3.2.7 Davidson Water, Inc. reserves the right to interrupt service for test, maintenance, and repairs. When it is not possible to interrupt water service, the customer shall provide for the parallel installation of an approved backflow prevention assembly, the Cross-Connection Control Coordinator will not accept an unprotected bypass around a backflow preventer when the assembly is in need of testing, repair, or replacement.

3.2.8 All presently installed backflow-prevention assemblies that do not meet the requirements of this section but were approved assemblies for the purpose described herein at the time of installation and that have been properly maintained, shall, except for the inspection and maintenance requirements under subsection 3.2.6, be excluded from the requirements of these rules so long as the Cross-Connection Control Coordinator is assured that they will satisfactorily protect the utility system. Whenever the existing assembly is moved from the present location, requires more than minimum maintenance, or when the Cross-Connection Control Coordinator finds that the maintenance constitutes a hazard to health, the unit shall be replaced by an approved backflow-prevention assembly meeting the requirements of this section.

3.2.9 The installation of a backflow prevention assembly may create a closed system, and as a result thermal expansion may occur. Under such circumstance, the customer must understand and assume all liability and responsibilities for that event.

Section 4 – NOTIFICATION

4.1 NOTICE OF CONTAMINATION OF POLLUTION:

4.1.1 In the event the customer's private water system becomes contaminated or polluted the customer shall notify Davidson Water, Inc. immediately.

4.1.2 In the event a customer has reason to believe that a backflow has occurred between the customer's private water system and the public water system the customer must notify Davidson Water, Inc. immediately in order so that appropriate measures may be taken to isolate and remove the contamination of pollution.

4.1.3 Any customer making any modification to the private system's configuration or use of which may change the degree of hazard, shall notify the Cross-Connection Control Coordinator before any modification is made. If the Cross-Connection Control Coordinator determines that such modification requires a different backflow prevention assembly that assembly must be installed before the modification is made.

Section 5 – FIRE SPRINKLER SYSTEMS

5.1 FIRE SPRINKLER SYSTEMS-COMMERCIAL:

5.1.1 All unmetered fire sprinkler systems without any means of back pressure, booster facilities, fire department connection, or chemical additives must have a double check-detector check valve assembly as a minimum containment device.

5.1.2 All unmetered fire sprinkler systems with means of back pressure, booster facility, fire department connection, or chemical additives must have a reduced pressure principle-detector assembly as a minimum containment device.

5.1.3 Fire lines are not to be used for any purpose other than fire suppression.

5.1.4 In the case when the fire sprinkler system is metered the approved assembly will not be required to have a detector meter.

Section 6 – LAWN IRRIGATION

6.1 IRRIGATION SYSTEMS INCLUDE BUT NOT LIMITED TO AGRICULTURAL, RESIDENTIAL, COMMERCIAL APPLICATIONS:

6.1.1 All new in-ground irrigation systems that are connected to the Davidson Water, Inc. system are required to have a separate meter.

6.1.2 All new lawn irrigation systems require an above ground reduced pressure principle backflow preventer with an approved enclosure.

6.1.3 There shall be no branch lines between the meter and the backflow preventer.

6.1.4 All existing lawn irrigation systems that have a double check valve assembly in place may remain until such time replacement is necessary. At which time an above ground reduced pressure principle assembly will be required.

6.1.5 It is recommended by the Cross-Connection Control Coordinator that all enclosures meet ASSE 1060 standards for above ground enclosures.

6.1.6 An Inspection of the Backflow preventer by a Davidson Water, Inc. employee is required on all new lawn irrigation systems

6.1.7 Backflow preventers shall be located at the service connection. Service connection implies the closest location adjacent to the meter and out of public rights of way. With approval prior to installation and subject to inspection of line leading to backflow preventer, the backflow may be located near a building or structure at a reasonable distance from the service connection.