City of Venice
Utilities Department

CROSS-CONNECTION CONTROL PROGRAM MANUAL

ORDINANCE NO. 2018 - 30

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Program Approved By:

The Venice City Council and Sarasota County Health Department

The Sarasota County Health Department is the local representative for the Florida Department of Environmental Protection. The Sarasota County Health Department's approval is for backflow assemblies and the Cross-Connection Control Program for the potable water supply system. The reclaimed water portion of this document is not under the jurisdiction of the Sarasota County Health Department.

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Program Summary

The Federal Safe Drinking Water Act of 1974 and its amendments, requires the Florida Department of Environmental Protection to adopt rules necessary to carry out its functions under the act, which is to protect public health by regulating the nation's public drinking water supply.

In order to protect the City's drinking water the City of Venice is required to meet state and federal requirements. These requirements, as stated in the Florida Administrative Code Section 62-555.360, require the City to establish and implement a Cross-Connection Control Program to protect the community water system from contamination caused by cross-connections. This program shall include a written plan that is developed using accepted practices of the American Water Works Association's Manual M14, as incorporated into Florida Administrative Code Section 62-555.360.

The City's initial Cross-Connection Control Manual was approved by the Sarasota County Health Department and was adopted by City Council as Ordinance No. 92-32 in November of 1992. Updates to the manual are required when regulations are amended or technology improved. This manual was updated in August 2003, January 2007, and August 2018.

This revised manual will show property owners the requirements to protect the potable water system in accordance with new Department of Environmental Protection (DEP) Rule changes adopted on May 5, 2014. It will list the responsibilities of each property owner and those of the water purveyor, the type of backflow assembly that may be required and how the assembly is to be installed.

It is understood that the citizens may have some concerns. The City of Venice Utilities Department will work with each property owner to discuss any concerns they may have. The City is expected to meet these requirements; however, it will be done in the most cost effective and amenable fashion possible.

Authority:

Under authority of the Venice City Council, this program is established to protect the public drinking water system from harmful pollutants and contaminates that may enter the City's drinking water system by means of a backflow condition. This program will provide, to the best extent feasible, the necessary authority, guidance and direction to protect the public drinking water system from unprotected cross-connections. Additionally, this program will meet the requirements of Florida Administrative Code Section 62-555.360 by establishing a written cross-connection control program.

References to Other Authorities:

Where a statute, rule, or ordinance is referenced herein, it shall be defined as the most recently adopted version of said statute, rule, or ordinance. Where the City of Venice's Cross-Connection Control Manual is referenced herein, it shall be defined as the most recently updated version.

The following are hereby incorporated into this ordinance by reference, and may be amended from time to time:

- The American Water Works Association (AWWA), Manual M14, *Recommended Practice for Backflow Prevention and Cross-Connection Control*
- City of Venice Standard Details
- University of Southern California, Foundation for Cross-Connection Control and Hydraulic Research (FCCC&HR), 10th Edition, Manual of Cross-Connection Control
- The Florida Building Code
- The Environmental Protection Agency (EPA), Cross-Connection Control Manual
- Code of Federal Regulations (CFR), Title 40, Part 141, Section 2
- Florida Statutes (FS), Section 633.021(19)
- The Florida Administrative Code (FAC), Sections: 1) 62.550.200, 2) 62-555.360, 3) 62-610, 4) 4A-406.040

Introduction:

The City of Venice Utilities Department will use as a guideline the latest edition of the American Water Works Association, Manual M14, as referenced by Florida Administrative Code Section 62.555. The City of Venice Utilities Department, as required by the Safe Drinking Water Act, will update this manual as needed when regulations change and as technology improves. The City of Venice Utilities Department worked closely with the Sarasota County Health Department and the Department of Environmental Protection in the revision of this manual and their approval allows the City to maintain an aggressive and effective cross-connection control program.

Purpose and Objective:

The purpose of this manual is to support the City of Venice Cross-Connection Control Code of Ordinances Section 74-45, as amended, by detailing the procedures used to minimize the risk and opportunities of cross-connections and backflow events and thereby assure safe drinking water for all City customers. It is designed to illustrate the characteristics of water hydraulics; degrees of hazards associated with water use, and explain

administrative and field procedures in layman terms.

The objective is to streamline the procedures that are used by everyone involved in keeping the water supply safe. This includes plumbers, engineers, inspectors, fire protection contractors, the water purveyor (City of Venice) and each water customer. The ultimate goal is for every water service to be protected with an approved backflow prevention assembly and for water customers to understand and appreciate the importance and the requirements that are involved in the ownership of their property.

Containment versus Isolation:

The City of Venice Cross-Connection Control Program is a containment program, rather than an isolation program. A containment program is one that protects the water supply at the point of connection to the customer's water piping by requiring that an approved backflow prevention assembly be installed at every water meter or fire protection service connection when a cross-connection hazard exists. This will greatly reduce the chances of a wide spread contamination event due to backflow. An isolation program goes further into the plumbing systems of individual homes and buildings and addresses all aspects of possible cross-connections within those systems and is addressed under the Florida Building Code.

Section 1 - Definitions

Air Gap:

An **air gap** is a physical separation of the supply pipe by at least two pipe diameters (with 1" minimum separation) vertically above the overflow rim of the receiving vessel. With an air gap, there is no direct connection between the supply line and the equipment. An air gap may be used to protect against a contaminant or a pollutant at all hazard levels, and will protect against both backsiphonage and backpressure. An air gap may be substituted for any mechanical backflow preventer or backflow prevention assembly.

Approved Backflow Prevention Assembly:

An **approved backflow prevention assembly** is a device that incorporates resilient seated, full flow shut-off valves located before and after the backflow preventer and appropriate located resilient seated test ports making it testable in line. The assembly shall be marked by the manufacturer with the model number, serial number, size and direction of flow and shipped complete as a single unit. At minimum, the assembly must be included on the approved list of assemblies provided by the University of Southern California, Foundation of Cross-Connection Control and Hydraulic Research.

Auxiliary Water Systems:

Auxiliary water system means a system of piping and appurtenances that is used to supply water from an auxiliary water supply, or reclaimed water supply to landscaping, industrial agricultural crops, plumbing fixtures, decorative fountains, car washing facilities, air conditioning systems, etc. All are considered an auxiliary water system or a reclaimed water system, respectively.

Reclaimed water system means a system of piping and appurtenances that conveys and utilizes reclaimed water supplied by a reuse system regulated under Florida Administrative Code Section 62-610, Part II, III, or

VII. The City of Venice's reclaimed water distribution system is supplied from the City's domestic wastewater treatment facility. The reclaimed water has received secondary treatment as regulated in the Florida Administrative Code and is supplied to users of reclaimed water at the reclaimed metered service connection. Bulk reclaimed water users are not considered part of the City's reclaimed water system once the reclaimed water is delivered to surface water and subject to contamination.

Reuse water systems may utilize one or more water sources such as reclaimed wastewater, harvested rainwater, non-potable wells, surface water, stormwater, greywater and condensate from air conditioning systems. Reuse water will vary in hazard level. For residential applications, auxiliary water systems using reclaimed water from the City of Venice's domestic wastewater treatment facility and from non-potable wells will be considered low or non-health hazards for determining cross-connection control protection requirements.

Auxiliary Water Supply:

Auxiliary water supply means any water supply on or available to premises other than the community water system. Such water supplies include natural water and reclaimed sources such as wells, ponds, lakes, cisterns, rainwater collection systems, greywater collection systems, springs, streams, rivers, etc., and include used or reclaimed water that has passed beyond the community water system's control at the point of delivery and has been used in a way that might contaminate it. Used water supplies are discussed further in Chapter 5 of the American Water Works Association, Manual M14, as incorporated into the Florida Administrative Code Section 62-555.330.

Reclaimed water, except as specifically provided in the Florida Administrative Code Section 62-610 means water that has received at least secondary treatment and basic disinfection and is reused after flowing out of a domestic wastewater treatment facility.

Surface water means water upon the surface of the earth, whether contained in bounds created naturally or artificially or diffused. Water from natural springs shall be classified as surface water when it exits from the spring onto the earth's surface. Surface water is subject to contamination due to storm/rain run-off, pesticides, herbicides, animal waste, etc.

Non-potable water supply well means a well used as a source of water for irrigation, cooling or other uses. Wells used as a source of water for drinking, culinary, or domestic purposes are excluded from the definition of non-potable water supply wells.

Greywater (also called graywater, grey water and gray water) is differentiated from other auxiliary water supplies like rainwater or condensate in that it has already been "gently used" usually as water from showers and sinks, but it could also be sourced from the rinse water in a commercial washing machine or dishwasher. It is most often harvested to flush toilets in a building but cleaned greywater can also be used for irrigation and other applications. Toilet wastewater is termed "black water" and is not considered for auxiliary water supplies. Greywater is considered a high or health hazard for determining cross-connection control protection requirements.

Backflow:

Backflow means any unwanted flow of used or non-potable water or substance from any domestic, industrial, or institutional piping system into the community water system or customer's potable water system. The direction of flow under these conditions is in the reverse direction from that which is intended by the system. Backflow may be caused by numerous specific conditions, more commonly; however, the reverse pressure gradient may be due to a loss of pressure in the supply main, called backsiphonage, or by the flow from a customer's pressurized system through an unprotected cross-connection, which is called backpressure. A reversal of flow in a community water system, or in a customer's system, can be created by any change of system pressure where the pressure at the supply point becomes lower than at the point of use. When this loss of water pressure happens in an unprotected situation, the water at the point of use will be siphoned back into the system thus potentially polluting or contaminating the customer's water system. It is also possible that the contamination of polluted water could continue to backflow into the community water system. The point at which it is possible for a non-potable substance to come into contact with the potable drinking water system is called a cross-connection. To prevent backflow from occurring at the point of a cross-connection, a backflow prevention assembly must be installed. However, it is important the backflow prevention assembly must match the particular hydraulic conditions at that location and is able to protect against the degree of hazards present.

Backflow Incident:

Backflow incident means an event where contaminants or foreign substances are found within a community water system or customer's potable water system and the occurrence of the contaminants or foreign substances is known, or reasonably suspected, to have been caused by backflow.

Backflow Preventer:

Backflow preventer means a method (e.g., air gap), a mechanical assembly, or device that prevents backflow. An approved assembly has test cocks and shutoff valves that are used for field testing or repairing the backflow preventer while it is installed in-line and is approved by the water purveyor. A device usually cannot be field tested or repaired while it is installed in-line such as a dual check.

Backpressure:

Due to the length of a community water system main distribution pipe and the normal elevation of the service above the distribution main, the pressure gradient within a service decreases as the point of discharge becomes further from the main. Consequently, in many processing plants or high-rise buildings there is a need for booster pumps or in many instances, recirculation, fire protection, irrigation or auxiliary water pumps with suction supplies connected to auxiliary water supplies. Thus, if there is any pathway whereby this pressurized industrial water or water from an auxiliary supply may enter the community water system or customer's potable water system, there will be a backflow incident as the result of this **backpressure**.

Backsiphonage:

Backsiphonage occurs when a fluid is siphoned out of a container or pipeline and into the customer's potable water system or community water system. Siphoning causes a fluid to flow up over the rim of the container or top of the pipe and then down into a lower elevation through a piece of tubing, conduit, or in this case, a piece

of pipe that is part of a potable water distribution system. It is important to understand that it is not necessary for the system main to be under a true vacuum (i.e., zero psi) for backsiphonage to occur. All that is required is a negative difference in pressure and a piece of tubing, conduit, or pipe that is completely full of fluid and void of air. One of the causes of backsiphonage is a situation that arises when a temporary shutdown of a community water system or in-plant pipe that occurs necessitating repairs. If the repair is at some point other than that of the highest point in the system, then there will be a potential for reverse flow if one of the lower points of service is opened while the main valve is closed. Under this condition, the water in the internal piping system will drain to the open valve or point of water use, siphoning anything it may be in contact with at the time creating a backflow incident.

Community Water System:

A **community water system** is a category of a public water system. For the propose of this program a community water system is a public water system that provides potable drinking water to at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents and may be publicly or privately owned. The City of Venice is a community water system that serves more than 10,000 persons and is required to establish a cross-connection program meeting the requirements of the Florida Administrative Code Section 62-555.360.

Cross-Connection:

Any physical connection or arrangement between two otherwise separate piping systems, one of which contains potable water and the other either water of unknown or questionable safety, or steam, gas or chemical, whereby there exists the possibility for flow from one system to the other, with direction of the flow depending on the pressure differential between the two systems. Unprotected by-pass arrangements, jumper connections, removable sections, swivel or changeover arrangements, or other temporary arrangements through which backflow could occur are considered to be **cross-connections**.

Double Check Detector Assembly (DCDA):

The **double check detector assembly** is composed of a line-sized double check valve assembly with a specific by-pass meter and meter-sized double-check valve assembly. This assembly is used when the protection of a double check valve assembly is required, with the added requirement of detecting any leakage or unauthorized use of water. This type is commonly required for a fire service. The assembly must be approved as a complete unit. Field constructed assemblies utilizing individually obtained components or conversions of a double check valve assembly shall not be approved as a double check detector assembly. A reduced pressure detector assembly (RPDA) is a higher level of protection and may be used as a substitute for a double check detector assembly provided the fire protection system have been engineered for the reduced pressure and flow.

Double Check Valve Assembly (DC):

The **double check valve assembly** consists of two internally spring loaded, independently operating, check valves together with resilient seated shut off valves upstream and downstream of the check valves. Additionally, there are resilient seated test cocks for testing of the assembly. The double check valve assembly may be used to protect against pollutants only. However, this assembly is suitable for protection against

backpressure. A reduced pressure principal backflow prevention assembly is a higher level of protection and may be substituted for a double check valve assembly if desired.

Dual Check Valve (DuC):

A **dual check** is a compact device manufactured with two independent spring actuated check valves. The dual check is acceptable only as added backflow prevention in areas served by reuse systems defined in the Florida Administrative Code Section 62-610. A double check valve assembly or reduced pressure principal backflow prevention assembly is a higher level of protection and may be substituted for a dual check if desired. However, the reduced pressure principal assembly may not be installed below ground. Double check valves may be installed below ground provided the test ports have been plugged with a non-metallic plug.

Fire Protection System:

Fire protection system means a system that is designed individually to protect the interior or exterior of a specific building, structure, or other special hazard from fire and that uses water from a public water system as an extinguishing agent. Such a system could be connected directly to a public water system's distribution system via a dedicated fire service connection or could be connected internally to the potable water system of a customer of a public water system. Fire protection systems include the following:

- Sprinkler Systems (wet-pipe systems, deluge systems, dry-pipe systems, and pre-action systems)
- Spray systems
- Standpipe Systems (wet standpipe systems and dry standpipe systems)
- Combinations of the aforementioned systems, some of which are discussed further in Chapter 5 of American Water Works Association, Manual M14 as incorporated into Florida Administrative Code Section 62-555.360, and herein.

Fire protection systems also include any connected mains and appurtenances (including backflow preventers), hydrants, tanks, or pumps that are located downstream of the point-of-service for the system. Note that Florida Statutes Chapter 633 defines the point-of-service for fire protection systems, excluding standpipe systems unless they are connected to a sprinkler system, as the point at which the underground piping for the fire protection system becomes used exclusively for the fire protection system. Also, note that a system that is designed to protect premises from fire and that uses water from an auxiliary water supply or uses reclaimed water is considered an auxiliary water system or a reclaimed water system, respectively. The testing and repair of backflow preventers after the point-of-service for fire protection systems shall be performed by appropriately licensed contractors under this section.

High or Health Hazard:

High or health hazard means an actual or potential cross-connection involving any foreign substance that, if introduced into a potable water system, could cause death or illness, spread disease, or has a high probability of causing such effects.

Irrigation System:

Irrigation system means a system of in-ground piping and appurtenances that is used to apply water from a

community water system to landscaping or agricultural crops at commercial, industrial, or residential premises. Such a system could be connected directly to a community water system's distribution system via a dedicated irrigation service connection or could be connected internally to the potable water system of a customer of a community water system. Note that a system of piping and appurtenances that is used to apply water from an auxiliary water supply, or reclaimed water, to landscaping or agricultural crops is considered an auxiliary water system or a reclaimed water system, respectively.

Low or Non-Health Hazard:

Low or non-health hazard means an actual or potential cross-connection involving any foreign substance that, if introduced into a potable water system, generally would not be a health hazard but could constitute a nuisance or be aesthetically objectionable and is no longer considered meeting the requirements for primary drinking water standards.

Public Water System:

A **public water system** means a system for the provision of water to the public for human consumption through pipes or other constructed conveyances, if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. Such term includes: any collection, treatment, storage, and distribution facilities under control of the operator of such system and used primarily in connection with such system; and any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system. Such term does not include any special irrigation districts. A public water system is either a community water system or a non-community water system. See the Code of Federal Regulations, Title 40, Part 141, Section 2.

Reclaimed Water System:

See "Auxiliary Water System".

Reduced Pressure Principal Backflow Prevention Assembly (RP):

This assembly consists of two internally spring loaded, independently operating check valves and a mechanically independent, hydraulically dependent relief zone of reduced pressure between the check valves. This relief valve is designed to maintain a zone of reduced pressure between the two check valves at all times. The reduced pressure principal backflow prevention assembly also contains resilient seated shut off valves upstream and downstream of the check valves along with resilient seated test cocks for testing. This assembly is used for protection of the potable water supply from pollutants, contaminates, backsiphonage, and backpressure.

Reduced Pressure Detector Assembly (RPDA):

The **reduced pressure detector assembly** is very similar to the double detector check assembly except the RPDA is designed for situations requiring the protection of a reduced pressure assembly and detection of unauthorized use of water and/or leaks. This assembly is normally used on fire services, which may contain contaminates, such as anti-freeze additives or foamite. The assembly must be approved as a complete unit.

Field constructed assemblies utilizing individually obtained components or conversions of a reduced pressure principal backflow prevention assembly shall not be approved as a reduced pressure detector assembly.

Residential/Commercial Water Service:

A **residential water service** is any service connection, including any dedicated irrigation or fire service connection, that is two inches or less in diameter and that supplies water to a building or premises containing only dwelling units and a **commercial** water service connection means any other service connection.

Tall Building:

A **tall building** is a building with five or more floors above ground level.

Section 2 - Responsibilities

The Water Purveyor:

Under the rules of the Florida Department of Environmental Protection, the Florida Administrative Code Section 62-555 and the Federal Safe Drinking Water Act relating to cross-connection control, the water purveyor has the primary responsibility of maintaining a cross-connection control program to prevent water from unapproved sources, or any other substance, from entering the community water system. This responsibility begins at the source of the community water system, including the entire water supply distribution system and ends at the point of connection to the consumer. The water purveyor has the responsibility for promulgating and enforcing laws, rules, regulations, and policies necessary to carry out designated responsibilities. The water purveyor is the City of Venice Utilities Department. Upon detection of a prohibited cross-connection, the City of Venice Utilities Department will eliminate the cross-connection. The City of Venice Utilities Department will install an approved backflow prevention assembly at the point of connection to the community water system or immediately discontinue service until the contaminate source is eliminated. The City of Venice Utilities Director, or authorized representative, must notify the Sarasota County Health Department within 24 hours upon detection of a cross-connection. As of October 1, 2018, the City of Venice Utilities Department will be responsible for the backflow prevention assembly or device installation, maintenance, repair, replacement, and testing (excluding backflows on fire protection systems or new construction).

The Consumer:

The consumer is responsible for the backflow prevention assembly or device installation, maintenance, repair, replacement, and testing on fire protection systems and new construction in accordance with City of Venice Standard Details. In the event of an accidental pollution or contamination of the City of Venice water supply due to a backflow incident or from the consumer's premises, the consumer shall promptly take steps to confine further spread of pollution or contamination within the consumer's premises. It is the responsibility of the consumer to immediately notify the City of Venice Utilities Department of the hazardous condition.

Section 3 – Hazards

Degrees of Hazard:

The degrees of hazard refer to the possible contaminates or pollutants that have the potential of entering the customer's and/or the City of Venice's water supply. There are two categories of hazards: low or non-health hazard, and moderate or high health hazard. However, residential premises, less than five floors, constructed under the Florida Building Code, will not be required to install a backflow preventer unless a known hazard exists as determined by the water purveyor. The City of Venice Utilities Department shall inspect/evaluate new and existing drinking water and or reclaimed/reuse service connections for cross-connection hazards prior to establishing or re-establishing service.

Low Non-Health Hazard Backflow Protection Requirements:

Contaminates that can change the aesthetic quality of the potable water system but are not toxic or do not create a hazard to the community water system are considered low non-health hazard. These contaminates may change the color, odor, or taste of the water, however, they do not pose a health threat to the water consumer. Double check valve assemblies and dual check valve devices as listed in table 3.1 will be acceptable for metered service protection as documented in American Water Works Association, Manual M14, Typical Hazards. Direct connection to the community water system without a meter will require a double detector assembly such as is typical with dedicated fire service line connections. Dual check valve devices shall be required at 3/4" and 1" residential service connections served directly by reclaimed water from the City of Venice's pressurized reclaimed water distribution system as additional protection, provided no additional hazard or cross-connection exists. Private reclaimed water systems supplied by an open storage pond or other open auxiliary water supplies are subject to additional hazards and are considered to be high or health hazards.

Listed below are typical low non-health hazard applications requiring double or dual check valves for defined residential services for premise or service protection cross-connection control. This is not a definitive list and the water purveyor may determine that other hazards to the community water system may exist during the site survey or subsequent property inspections for specific cross-connection control hazards.

- Solar or HVAC heat exchangers connected to potable water with single wall construction
- Commercial swimming pools with below the rim or automatic fillers (unless protected by an Air Gap)
- Low non-health hazard auxiliary water systems (wells, the City's reclaimed water system)

Moderate-High Health Hazard Backflow Protection Requirements:

Contaminates that may not only change the aesthetic qualities of the potable water but may also cause illness or death if consumed are considered moderate-high health hazards. Reduced pressure backflow prevention assemblies will be acceptable for metered service protection as documented in American Water Works Association, Manual M14. Direct connection to the community water system without a meter will require a reduced pressure detector assembly such as is typical with dedicated fire service line connections determined to pose a high health hazard to the community water system as documented in American Water Works Association, Manual M14, Chapter 5, Typical Hazards. Non-residential premises typically known as commercial properties are transitory in nature and the types of businesses and property use changes often without notice. The water purveyor has determined, as many others have, that commercial premises as defined

herein, pose a higher risk of potential cross-connections to the community water system simply by the nature of business. Reduced pressure principal backflow prevention assemblies shall be required at all service connections to commercial premises. Air gaps may be substituted for reduced pressure backflow prevention assemblies where the loss of pressure from the community water system is acceptable.

Listed below are typical moderate-high health hazard applications requiring reduced pressure backflow prevention assemblies for premise or service protection cross-connection control. This is not a definitive list and the water purveyor may determine that other hazards to the community water system may exist during the site survey for specific cross-connection control hazards.

- Irrigation systems supplied by the community water system
- Auxiliary water systems when the auxiliary water supply is or may be contaminated
- Reuse, recycled or greywater systems used to supply plumbing fixtures that would normally or otherwise be supplied by potable water
- HVAC cooling towers
- Boilers or steam generators
- Fire protection systems that utilize non-food grade chemicals
- Medical equipment connected to any drain, conduit, pipe, or water supply
- Commercial laundry, car wash, medical facilities, mortuaries, funeral homes and veterinary facilities
- Multi-story buildings utilizing booster pumps
- Restaurants and food preparation facilities
- Spas, beauty shops and barber shops
- Ports, docks and ship repair facilities located on navigable waterways
- Temporary fire hydrant meters

TABLE 3.1

The following categories of customers shall ensure minimum backflow protection is provided at the water service connection:

		On Site Irrigation Systems Backflow Prevention Required on Potable Meter				Fire Sprinkler Systems	
Category of Customer	**No Known Hazard or Cross-Connection**	**Drinking Water Source Irrigation***	**Well Water Source Irrigation**	**Reclaimed Water Source Irrigation**	**Surface Water Source Irrigation (Pond, Lake)**	**Fire Sprinkler Systems Chemical Additives**	**Fire Sprinkler Systems No Additives**
Residential Connections 1" or less. 4 floors or less in height.	None	Reduced Pressure (RP)	Dual Check (DuC)	Dual Check (DuC)	Reduced Pressure (RP)	Reduced Pressure (RP)	Dual Check (DuC)
Residential Connections 1 1/2" or greater. 5 or more floors in height	Double Check (DC)	Reduced Pressure (RP)	Double Check (DC)	Double Check (DC)	Reduced Pressure (RP)	Reduced Pressure Detector Assembly (RPDA)	Double Check Detector Assembly (DCDA)
Non-Residential (Commercial/Industrial)	Reduced Pressure (RP)	Reduced Pressure (RP)	Reduced Pressure (RP)	Reduced Pressure (RP)	Reduced Pressure (RP)	Reduced Pressure Detector Assembly (RPDA)	Double Check Detector Assembly (DCDA)

* Reduced Pressure Principal Backflow Prevention Assembly (RP) required at drinking water source irrigation meter.

Section 4 – Surveys and Inspections

Site Surveys and Service Connection Inspections:

The water purveyor shall survey the service connection(s) on the customer's property utilizing established criteria and procedures outlined in American Water Works Association, Manual M14. Except when protected by a reduced pressure backflow prevention assembly, the water purveyor shall survey existing service connections whenever there is a change in the customer of record or when the water purveyor suspects there has been a change in use requiring additional or a higher degree of protection.

The water purveyor or its agent is authorized to enter upon properties to survey or re-survey for cross-connections, to test backflow preventers, conduct health hazard assessments, and to identify auxiliary water supplies that could contaminate the community water system before, during, and after water service is established.

If the survey indicates that potential cross-connection hazards exist, the water purveyor shall install an appropriate backflow preventer.

Cross-connection surveys will be performed by City staff that have received cross-connection control training. The City of Venice has the right to perform an immediate inspection if a cross-connection is suspected or reported. Should the City not be able to enter the structure to perform this inspection, the Utilities Director may direct an appointed designee to turn off the water service in order to protect both the community water system and public interest.

Upon completion of an investigation, survey, or inspection, the inspector will complete a Cross-Connection Survey Report. This report will be reviewed by the City of Venice Utilities Department for inadequacies related to the plumbing system, or evidence that a degree of hazard status change may be required as provided by this program. Should a water service with a known or identified hazard be found without an approved backflow prevention assembly, or if there is an actual cross-connection causing a backflow condition or a health hazard causing a danger to health and safety, the City of Venice will install an approved backflow prevention assembly immediately.

Section 5 – Installation Requirements, Thermal Expansion and Fire Services

Backflow Prevention Assembly Installation:

Backflow prevention assemblies must only be installed by a licensed plumber, the property owner under Florida Statutes Chapter 489, or a fire protection contractor as required, and shall be installed in accordance with manufacturer's specifications and this program manual, utilizing the City's Standard Details as an installation guide. However, all assemblies must be tested by a certified backflow prevention assembly technician, fire protection contractor or a licensed plumber, at the time of installation or repair and as required by this manual thereafter. The type of assembly to be installed shall follow the guidelines set forth in the hazard assessment portion of this program manual. All backflow assemblies shall be installed immediately downstream of the water meter without any branches or tees between the water meter and the backflow prevention assembly. Waivers may be made through the Utilities Director or their designee to install the assembly at an alternate location for special exceptions. Waivers will be evaluated based on public health and safety on a case-by-case basis. Except for approved detector assemblies or parallel installations, by-pass arrangements, jumper connections, changeable or swivel connections shall not be installed around a backflow prevention assembly.

All meters installed above ground shall have a backflow prevention assembly joined at the outlet side of the water meter. This work, whether new construction or retrofit, must be coordinated with the City of Venice Utilities Department.

Approval/Requirements:

All backflow prevention assemblies (excluding the air gap and dual check) must have been tested and approved by University of Southern California Foundation for Hydraulic Research and Cross-Connection Control (FCCC&HR).

Dual Checks must be approved by American Society of Sanitation Engineers (ASSE).

All mechanical backflow preventers must be compliant with Federal Standards for lead content as required by the Federal Safe Drinking Water Act.

Thermal Expansion:

A device or system to relieve thermal expansion shall be installed between a backflow prevention device or assembly and water heating system in accordance with the plumbing code to prevent thermal expansion. Water pressure for domestic residential or commercial potable use shall not exceed 80 pounds per square inch gauge pressure.

Fire Services:

Structures with fire protection shall be protected with an approved backflow prevention assembly as outlined in this program. Residential fire protection systems that are integrated with the domestic water plumbing and contain no dead ends or branch outlets shall not be required to install a backflow prevention assembly at the point-of-connection to the community water service. These types of installations are adequately covered in the Florida Building Code.

Fire protection systems that are not integrated with the building's domestic water system and are connected directly to the community water system will require premise or service protection cross-connection control as outlined in Section 3. Unless declared otherwise by the State of Florida Department of Insurance or other state agency having jurisdiction, the installation, repair, maintenance and testing of a fire protection system must begin at the point-of-service for the fire protection system. The complete system begins at the point-of–service as defined in Florida Statutes Section 633.021(19), and ends at the most remote head inside the facility. Anyone performing any kind of work, including installation, maintenance, testing or repair of the system after the point-of-service designated by Florida Statutes Section 633.021(19), must be certified as a Fire Protection Contractor I, a Fire Protection Contractor II, or a Fire Protection Contractor V, pursuant to Florida Statutes Section 633.521 and Florida Administrative Code Section 69A-60.

Fire hydrants used to supply temporary potable water through a hydrant meter set by the City of Venice shall be fitted with an approved reduced pressure backflow prevention device. No connection shall exist, at any time, including manual or automatic flushing fixtures or devices, to a fire hydrant installed on the community water system unless the connection is protected from backflow through an approved backflow prevention assembly or air gap.

Section 6 – Testing and Inspections

Backflow Prevention Assembly Testing:

Initial and Annual/Biennial Backflow Preventer Testing:

The City of Venice Utilities Department shall test commercial backflow prevention assemblies annually (every 12 calendar months) using a certified backflow prevention assembly tester. The City of Venice Utilities department shall test residential backflow prevention assemblies biennially (once every two years) ~~by~~ using a certified backflow prevention assembly tester (Dual Check devices (DuC) cannot be tested and must be replaced every ten years). At a minimum, all testers shall meet the requirements set forth in American Water Works Association, Manual M14, and meet any state or local license requirements. The Utilities Director or their designee can, at any time, require more than once a year testing on assemblies where increased monitoring is warranted, such as an extremely high health hazard. The City of Venice will notify the water customer of the need for the test prior to the anniversary. A plumbing permit is not required for the testing and/or repair of a backflow prevention assembly.

Testing shall be done in accordance with American Water Works Association, Manual M14, the American Society of Sanitary Engineers, Series 5000 or University of Southern California's Foundation for Cross-Connection Control and Hydraulic Research 10th edition or later.

All tested backflow prevention assemblies shall be tagged by the tester with dated tags, supplied by the tester, and shall be completely filled out according to the City of Venice Utilities Department instructions and affixed vertically on the first shutoff valve in a visible location. The tag shall be constructed of a durable material lasting at least two years in direct sun and attached by sealing wire, plastic tie or an approved method and material as directed or by the City of Venice. Information written on the tags and labels shall be clear, legible and weather resistant for two years. At minimum, the tag shall contain the company name, company telephone number, tester's name, tester's certification number, water meter number, date of test and or expiration date, and an indication of pass or fail.

Test reports for inspections conducted by other than the City of Venice Utilities Department or their agent shall be completed on original forms or in the format provided by the City of Venice Utilities Department, signed and dated by the tester and submitted to the City of Venice Utilities Department within 30 days of completing the test. At the discretion of the City of Venice Utilities Department, an electronic filing of the required report may be submitted to the City in a format as specified or provided by the City of Venice Utilities Department. The City of Venice Utilities Department may at their own discretion provide access to on-line digital media or program applications for filing test reports or accessing data. Electronic filing formats shall utilize a secure password system or electronic signature to ensure a valid entry. All test reports shall reference the water meter number and backflow prevention assembly's serial number associated with the property address. False or misleading information submitted to the City of Venice Utilities Department by the tester or the water customer shall be considered a violation of this program and will void all associated test reports and may result in the removal of a tester from the list of approved testers maintained by the City. The City of Venice reserves the right to refuse any test report that is not complete, accurate, and legible, or based on a test conducted with equipment that has not been calibrated within the past 12 months. The City of Venice may re-test random samples of backflow preventers managed under this program for compliance and submitted test result verification.

Properly calibrated test equipment is essential to ensure accurate test data acquisition. Testers or contractors shall provide test kit calibration certifications from an authorized independent instrument testing company or the original equipment manufacturer annually. Calibration of the equipment shall be the responsibility of the tester or contractor. The City of Venice may refuse or reject any test report required by this program when the accuracy of the test equipment is unknown, has a calibration report older than 12 calendar months, or does not meet calibration requirements. Test gauges and equipment for this program shall meet the calibration requirements set forth in American Water Works Association, Manual M14, and the current edition of the University of Southern California's Manual for Cross-Connection Control, or in the protocol established by the test equipment's manufacturer.

TABLE 6.1

The City of Venice Utilities Department shall ensure backflow testing is conducted as indicated:

Category of Customer	Dual Check (DuC)	Double Check Assembly (DC)	Reduced Pressure Assembly (RP)	Double Check Detector Assembly (DCDA)	Reduced Pressure Detector Assembly (RPDA)
Residential	Replace every 10 years	Every 2 Years	Every 2 Years	Every 2 Years	Every 2 Years
Commercial	N/A	N/A	Every Year	Every Year	Every Year

Initial and Annual Backflow Preventer Inspections:

Air gap backflow preventers shall be inspected annually and when initially installed by an approved certified backflow assembly technician meeting the requirements of this program. The inspection shall include a written inspection report filed with the water purveyor indicating conditions and hazards of corruption associated with the air gap. All testable backflow prevention assemblies should be inspected during the testing process for compliance with installation standards, damage, accessibility and appropriate hazard protection.

Backflow Prevention Assembly Tester:

A person wishing to be considered an approved certified backflow assembly technician by the City of Venice Utilities Department must have attended and successfully completed a comprehensive training program as approved by one of the following: American Water Works Association (AWWA), the American Society of Sanitation Engineers (ASSE), University of Florida TREEO Center, (UFTREEO), Florida Water & Pollution Control Operators Association (FWPCOA), The Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California (FCCC&HR) (USC) or other approved programs as may be provided by the City of Venice. Testers or contracting companies providing testing services for fire protection system backflow prevention assemblies, after the point of connection to the community water service where

the system becomes used for the exclusive purpose of serving a fire protection system, shall be licensed as outlined and defined in Florida Statutes Chapter 633. An individual with the proper training and meeting any state licensing requirement, wishing to be on the City's approved backflow tester list must make the request in writing to the water purveyor or designee.

The City will notify the tester of acceptance or denial by phone and/or in writing. The City reserves the right to remove individuals from the list should that person be found testing assemblies incorrectly or reporting false data. Once the tester has been accepted, they will be provided a copy of this manual. It will be their responsibility to supply the City of Venice Utilities Department with the information gathered from their tests as outlined in the backflow assembly installer's responsibilities. The test results must be sent to the City of Venice Utilities Department within three working days of the test. To remain on the approved testers list, re-certification documentation must be provided to the City of Venice Utilities Department in addition to a current test kit calibration certification for all test kits used for backflow testing. If not received by the expiration date of the certification, the name will be removed from the list.

Backflow Prevention Test Forms:

Installers are responsible for installing backflow assemblies in accordance with the manufacturer's specifications and the specifications outlined in this manual. A plumbing permit must be obtained from the Building Department at City Hall (401 West Venice Avenue, Venice, Florida) on new construction and fire protection devices. The installer must furnish the following information to the City of Venice Utilities Department immediately following the assembly's installation:

- Service address where the assembly is located
- Description of assembly's location on the property
- The owner's name for residential or business name if commercial
- Potable water meter and/or potable irrigation meter number if applicable
- Date of installation, repair, testing
- Backflow assembly type
- Backflow assembly manufacturer
- Backflow assembly model number
- Backflow assembly serial number
- Backflow assembly size
- Indication of any maintenance performed and/or assembly being replaced
- Test results
- Tester's certification number and business name
- Tester's signature

Section 7 - Repairs

Backflow Prevention Assembly Repairs and Maintenance:

Should an assembly fail the test, the tester must be ready to repair and/or replace the assembly immediately. Repair kits and associated parts for the assembly should be on hand prior to the testing taking place. If an assembly fails to the point where replacement is necessary, but cannot be accomplished in a timely manner,

the tester shall contact the City of Venice Utilities Department immediately and explain the situation. Depending on the degree of hazard, City staff will determine if the water service is to be discontinued until a replacement assembly is installed. Repair of any backflow prevention assembly or device must be made by a certified repair technician employed or contracted by the City of Venice and licensed as defined in Florida Statutes Chapter 489 and in the case of fire protection systems, after the point of connection to the community water service where the system becomes used for the exclusive purpose of serving a fire protection system. Testing and or repair technicians or contractors shall be licensed as outlined and defined in Florida Statutes Chapter 633. All backflow prevention assemblies, air gaps, and devices shall be maintained in good working order by the City of Venice meeting the standards of this program and the State Building Code. Fire protection system backflows shall be maintained in good working order by the consumer meeting the standards of this program and the State Building Code.

Section 8 – Non-Compliance

Results of Non-Compliance:

Should a water customer refuse to comply with guidelines set forth in this manual, the City of Venice Utilities Department may discontinue utility services to the property. At the time of discontinuance, the Building Official and the Sarasota County Health Department (SCHD) will be notified of this action and the site will be condemned for inhabitable occupancy. Financial penalties will be assessed in the form of covering the cost for the Utilities Department to remove the water meter and plugging the sanitary sewer service.

Section 9 – Record Keeping

Record Keeping:

It will be the responsibility of the City of Venice Utilities Department to maintain the records of backflow prevention assembly, installation, testing, repairs and all Cross-Connection Control Inspection Reports for a period of ten years. This is to comply with the Florida Department of Environmental Protection codes. An annual report will be prepared and kept for ten years. This report will be a summary of installations, inspections, cross-connections and results, testing, and a list of certified testers.

The records are to include, but not be limited to:

- An inventory of assemblies installed including customer information which must include customer I.D. number and/or Location I.D. number that is assigned by utility billing
- Test and repair information forms
- Applications for approved tester with copy of certifications
- Cross-connection inspections
- Site surveys
- List of high hazard locations
- Records of public awareness programs and media coverage

Section 10 – Reclaimed Water Systems

Reclaimed Water Systems:

The City of Venice Reclaimed Water System is designed to provide residential and commercial irrigation to Venice residents and reduce the overall ground water withdrawn by both the City and irrigation wells. There are restrictions and guidelines that the Reclaimed Water Program has that directly affect the Cross-Connection Control Program:

- All wells that supply water into a stormwater collection pond for irrigation, that also has a reuse water supply, shall be protected by an air gap at the well discharge pipe to prevent backflow into the ground water well.
- When a new customer for the reclaimed water makes application, City staff will perform a cross-connection inspection to assess what type of backflow prevention assembly is required. All areas with reclaimed water will require an annual enhanced inspection to determine if any conditions have changed. Should access to the residence be denied, a reduced pressure principle assembly (RP) would be required at the property.

- Hose bibs, and other connections of that type, connected to the reuse system must follow these rules:

    - All connections to the reclaimed water system, other than irrigation spray heads, must remain below ground in a locking box stating both the source water is *"non-potable"* and *"do not drink", and employ the international symbol indicating "bad water" in both Spanish and English text.*
    - Hose bib connections supplied by reclaimed water shall be fitted with an adaptor approved by the Utilities Director, which prevents a common garden hose from being connected directly to the hose bib.
    - All potable water and well water hose bib outlets are to be fitted with an approved hose bib vacuum breaker in accordance with the plumbing code.

The City of Venice will provide public education to customers that are served by reclaimed water as provided for under Florida Administrative Sections 62-555-360(5), 62-610.468(6) and 62-610.469(7)(h).

Dual Checks:

The City of Venice, after a thorough cross-connection control inspection, deems the availability and use of public access reclaimed water a low health hazard and therefore allows the use of a dual check as specified in this program. Should the City of Venice feel, due to any findings in an inspection, that the degree of hazard is greater than a low health hazard, the City of Venice has the right to require another type of approved backflow prevention assembly.

Dual check valves shall be replaced or rebuilt every ten calendar years.

Interconnections of reclaimed water and potable water are prohibited.