ORDINANCE #271

CITY OF DUFUR

41-00261

Dufur, South Basin

41-01216

AN ORDINANCE FOR THE INSTALLATION, TESTING AND INSPECTION OF BACKFLOW PREVENTION DEVICES

SEPTEMBER 1988

TABLE OF CONTENTS

1-A. General Statement

1. These standards set forth minimum requirements for safe practice in the delivery of water for domestic use. They are to be interpreted as meeting only the minimum requirements of design, construction, maintenance, and operations of the water utility system.

2. For the purpose of these minimum requirements, the use of the word "Shall" indicates a mandatory requirement and the use of the word "Should" indicates a recommendation for good waterworks practice.

1-B. Water System

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

2. The utility system shall consist of the source of 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 system begins, generally at the water meter, or in a case of unmetered fire services, at the utility control valve or detector check.

3. The customer system shall include those parts of the facilities which convey domestic water to points of use beyond the termination of the utility system. The term "customer system" is that of any user whether or not a charge is made.

1-C. Connection With Customer System

1. As used in this section unless the context requires otherwise, the following definition shall apply:

   a. "AIR GAP SEPERATION" means a physical separation between the free flowing discharge end of a potable water supply pipeline and the overflow rim of an open or non-pressure receiving vessel. The air gap shall be at least twice the diameter of the inlet pipe, measured vertically above the top overflow rim of the receiving vessel, but in no case less than one inch.

   b. "ATMOSPHERIC VACUUM BREAKER" means a device which allows air to enter the water line when the line pressure is reduced to a gauge pressure of zero or below.

   c. "AUXILIARY WATER SUPPLY" means and water supply that is or may be cross connected to the public water supply system.

d. "BACKFLOW" means the flow of water or other liquids from any source, back into the potable water supply within a facility and/or public water supply. Backflow occurs due to a differential pressure existing between two different points within a continuous fluid system and may occur due to either backsiphonage or backpressure.

e. "CHECK VALVE" means a check valve that seats readily and completely. It must be carefully machined to have free moving parts and assure water tightness. The base of the closure element and valve seat must be molded synthetic rubber, composition or other non-corrodible material which will seat tightly under all prevailing conditions of field use. Pins and bushing shall be of bronze or other non-corrodible, non-sticking material, machined for easy dependable operation. The closure element shall be internally loaded to promote rapid and positive closure in all sizes where this feature is obtainable.

f. "CROSS CONNECTION" means any physical arrangement whereby a public water supply is connected, directly or indirectly, with any non-potable or unapproved water supply system, sewer, drain, conduit, pool, storage reservoir, plumbing fixture, or other device which contains, or man contain, contaminated water, liquid, gases, sewage or other waste, of unknown or unsafe quality which may be capable of im imparting contamination to the public water supply as a result of backflow.

Bypass arrangements, jumper connections, removable sections, swivel or change-over divices, and other temporary, permanent or potential connections through which, or because of which, backflow could occur, are considered to be cross connections.

g. "DOUBLE CHECK VALVE ASSEMBLY" means a device consisting of two internally loaded check valves, either spring loaded or internally weighted, installed as a unit between two tightly closing shut off valves.

h. "DOUBLE DETECTOR CHECK VALVE ASSEMBLY" means a device which is a hybrid version of a mainline double check valve assembly with a smaller factory installed double check valve assembly and meter in a bypass configuration to detect leakage or use.

i. "PRESSURE VACUUM BREAKER" means a device consisting of one or more spring loaded check valves and an independently operating air inlet vlave installed as a unit between two tightly closing shut off valves. The air inlet valve is internally loaded to the open position.

j. "REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION DEVICE" means a device consisting of two independently acting, spring loaded check valves separated by a spring loaded differential pressure relief valve. This device shall be installed as a unit between two tightly closing shut off valves. During normal operation the pressure between the two check valves is maintained at a lower pressure than the supply pressure. If either check valve should leak, the differential pressure relief valve will maintain a pressure differential of not less than two psi between the supply pressure and the zone between the check valves by discharging water to atmosphere.

2. The customer's system should be open for inspection at all reasonsble times to authorized representatives of the utility to determine whether cross connections or other structural or sanitary hazards, including violations of these regulations, exist. When such a condition becomes known, the utility shall deny or immediately discontinue the service to the premises by a physical break in the service until the condition has been corrected, provided that opportunity to be heard upon request shall be allowed thereafter as soon as practicable.

3. Backflow protection shall be installed whenever cross connections exist. The type of protection required shall depend on the degree of the hazard as follows:

a. In the case of any premises where there is an auxiliary water supply which is, or intended to be, connected to the customer system, the potable water system shall be protected by an approved air gap separation or an approved reduced pressure principle backflow prevention device.

b. In the case of any premises where there is any material dangerous to health which is handled in such a fashion as to permit entry into the potable water system, the potable water system shall be protected by an approved air gap separation or an approved reduced pressure principle backflow prevention device.

c. In the case of any premise where a substance that would be objectionable but not hazardous to health, if introduced into the potable water system shall be protected by an approved double check valve assembly or by an approved pressure vacuum breaker.

d. Irrigation systems may be protected by atmospheric and pressure vacuum breakers, when properly installed. These devices do not provide adequate protection if they are subject to flooding, backpressure, or if compressed air is used to winterize the system. In these situations, double check valve assemblies shall be used.

A reduced pressure principle backflow prevention device or an air gap separation shall be used in cases where chemicals are introduced into the system.

4. Any protective device required herein shall be a model approved by the City of Dufur.

5. All backflow protection installed shall comply with the Installation guidelines defined in these rules.

6. It shall be the duty of the owner of the property served to keep backflow prevention devices in good working condition at all times. It shall also be the duty of the owner of the property at any premise where backflow prevention devices are installed to have thorough inspections and leakage tests made at least once a year or more often in those instances where successive inspections indicate failure. These inspections and tests shall, at the expense of the owner of the property, be performed by the representatives of the City or by a person approved by the City as a competent device tester. It is the responsibility of the City's representatives to see that these tests are made. Approved device testers may be required to notify the City in advance when the test is to be undertaken so that City representatives may witness the test. Backflow prevention devices shall be repaired, overhauled or replaced at the expense of the owner of the property whenever they are found to be defective. Records of such tests, repairs and overhauls will be maintained by the City, and it is the responsibility of any backflow prevention device tester performing tests and maintenance on backflow prevention devices to submit records of such tssts, repairs, and overhauls to the City.

7. All presently installed backflow prevention devices which do not meet the requirements of these rules, but were approved divices for the purposes decribed herein at the time of installation and which have been properly maintained shall, except for the requirements under sub-section 1-C. 6., be excluded from the requirements of these rules so long as they satisfactorily protect the water system. Whenever such existing device is moved from the present location or requires more than minimum maintenance, the device shall be replaced by a backflow prevention device meeting the requirements of these rules.

1-D. Private Fire Protection Service

Backflow protection requirements for Fire Protection Systems shall be determined at the time of inspection and/or installation. Minimum requirements for Fire Protection Systems shall be an approved double check valve assembly device.

1-E. Interconnection With Other Water Supplies Prohibited

1. The City shall not permit any physical connection between any other water supply and the City's water distribution system unless a reduced pressure principle backflow device as described in 1-C. 1. j. above is installed and maintained. The City will immediately discontinue water service to any premises or customer where such a condition occurs until such time as the cross connection is eliminated or the required backflow prevention device is installed. Customers using the City's water supply and any other water aupply on the same premises shall install and maintain a separate plumbing system for the City's water supp;y which shall be separated by an air gap of not less than one foot from any other supply, unless such reduced pressure principle backflow device is installed and maintained at the meter for the premises.

1-F. Plumbing Code

1. As a condition of water service, customers shall install, maintain, and operate their piping and plumbing systems in accordance with the Oregon State Plumbing Laws and Administrative Rules.

1-G. Protection Against Circulating Flow

1. The City may refuse to service any premise with more than one service connection except that multiple service connections may be used for service to a premise under one ownership or management wherein each service connection serves separate buildings or groups of buildings, and there is no physical connection between the separate plumbing systems which would permit circulating flow at the time of application for service, and there is reasonable assurance that no future interconnection will be established.

   In large industrial and commercial customer piping systems requiring multiple service connections for adequacy of supply and for fire protection, the City may permit such multiple connections with interconnection on the customer's premises provided that there shall be an approved double check valve assembly installed immediately downstream from each meter to prevent circulating flow.

ORDINANCE #280

AN ORDINANCE AMENDING ORDINANCE #271

AN ORDINANCE FOR THE INSTALLATION, TESTING AND INSPECTION OF BACKFLOW DEVICES: AND DECLARING AN EMERGENCY.

The City of Dufur ordains as follows:

Section 1-A. General Statement

2. For the purpose of these minimum requirements, the use of the word "shall" indicates a mandatory requirement and the use of the word "should" indicates a recommendation for good waterworks practice. Failure to comply with these rules shall result in the termination of services for non compliance. Services will be reinstated upon compliance.

Section 1-C. Connection With Customer System

1.c. "AUXILIARY WATER SUPPLY" means any water supply other than the City of Dufur, that is or may be cross connected to the public water supply system.

1.g. "DOUBLE CHECK VALVE ASSEMBLY" means an approved device listed by the State of Oregon, consisting of two internally loaded check valves, either spring loaded or internally weighted, installed as a unit between two tightly closing shut off valves.

1.h. "DOUBLE DETECTOR CHECK VALVE ASSEMBLY" means an approved device listed by the State of Oregon, which is a hybrid version of a mainline double check valve assembly with a smaller factory installed double check valve assembly and meter in a bypass configuration to detect leakage or use.

1.i. "PRESSURE VACUUM BREAKER" means an approved device listed by the State of Oregon, consisting of one or more spring loaded check valves and an independently operating air inlet valve installed as a unit between two tightly closing shut off valves. The air inlet valve is internally loaded to the open position.

1.j. "REDUCED PRESSURE PRINCIPLE BACKFLOW DEVICE" means an approved device listed by the State of Oregon, consisting of two independently acting, spring loaded check valves separated by a spring loaded differential pressure relief valve. This device shall be installed as a unit between two tightly closing shut off valves. During normal operation the pressure between the two check valves is maintained at a lower pressure than the supply pressure. If either check valve should leak, the differential pressure relief valve will maintain a pressure differential of not less than two

psi between the supply pressure and the zone between the check valves by discharging water to atmosphere.

3.e. On premises having one or more cross connections as that term is defined in these regulations, Section 1-C,1.f.

6. It shall be the duty of the owner of the property served to keep backflow prevention devices in good working condition at all times which includes protection from freezing. It shall also be the duty of the owner of the property at any premise where backflow prevention devices are installed to have thorough inspections and leakage tests made at least once a year or more often in those instances where successive inspections indicate failure. These inspections and tests shall, at the expense of the owner of the property, be performed by the representatives of the City or by a person approved by the City as a competent device tester. It is the responsibility of the City's representatives to see that these tests are made. Approved device testers may be required to notify the City in advance when the test is to be undertaken so that City representatives may witness the test. Backflow prevention devices shall be repaired, overhauled or replaced at the expense of the owner of the property whenever they are found to be defective. Records of such tests, repairs and overhauls will be maintained by the City, and it is the responsibility of any backflow prevention device tester performing tests and maintenance on backflow prevention devices to submit records of such tests, repairs, and overhauls to the City.

ADOPTED by the Council of Dufur, Oregon, this 8th day of May, 1991, by the following vote:

YEAS: 4

NEAS: 0

Darrel Wolff, Mayor

ATTEST:

Maryln C. Sawyer

Maryln C. Sawyer, City Recorder

SECTION @

BACKFLOW PREVENTION DEVICES INSTALLATION GUIDELINES

2-A. Air Gap Separation

Air gap separation provide maximum protection from backflow hazards and may be utilized at premises where a substance is handled which would be hazardous to health if introduced into the potable water system.

1. An air gap separation shall be at least double the diameter of the supply pipeline measured vertically above the top rim of the receiving vessel - in no case less than one (1) inch.

   If splashing is a problem, tubular screens may be attached or the supply line is cut at a 45^{o} angle, the air gap distance is measured from the center of the angle. Hoses are not allowed.

2. Air gap separations shall not be altered in any way without prior approval from the City of Dufur and must be available for inspection at all reasonable times.

2-B. Atomspheric Vacuum Breaker (AVB)

AVB's are spproved backflow protection for landscape irrigation systems only. AVB's protect against backsiphonage only and shall not be installed where there is potential for backpressure.

1. The device shall be installed a minimum of six (6) inches above the highest use outlet or overflow level downstream from the device.

2. Shut-off valves downstream from the device are not permitted.

3. AVB's are permitted for only those applications where there is less than 12 hours per day continuous use.

4. AVB's shall not be installed in an area subject to flooding or where water damage may occur when the device discharges water.

2-C. Pressure Vacuum Breaker (PVB)

PVB's may be utilized at premises where a substance is handled which would be objectionable but not hazardous to health if introduced into the potable water system. PVB's protect against backsiphonage only and shall not be installed where there is potential for backpressure.

1. The device shall be installed a minimum of 12 inches above the highest use outlet or overflow level downstream from the device.

2. PVB's shall not be installed in an area subject to flooding or where water damage would occur when device discharges water.

3. The device must be protected from freezing.

4. The device shall be readily accessible for testing and maintenance, with a minimum clearance of 12 inches all around the device.

5. PVB's shall be located between 12 inches and 48 inches above ground level.

6. A strainer with blow out tapping is recommended ahead of the device.

7. All PVB's must be tested upon installation and at least once per year thereafter by an approved certified tester. The owner provides the initial test and all subsequent tests thereafter. The owner must notify the City of Dufur upon installation of any backflow prevention device.

8. Variances from these specifications will be evaluated on a case by case basis. Any deviations must have prior written approval of the City of Dufur.

9. Standard drawings are shown in Appendix.

2-D. Double Check Valve Assembly (DCV)

Double check valve assemblies may be utilized at premises where a substance is handled which would be objectionable but not hazardous to health if introduced into the potable water system.

1. DCV's must be sized to provide an adequate supply of water and pressure for the premises being served. Flow characteristics are not standard. Consult manufacturer's specifications for specific performance data.

2. Premises where interruption of water supply is critical should be provided with two devices installed in parallel. They should be sized in such a manner that either device will provide the minimum water requirements while the two together will provide the maximum flow required.

3. Bypass lines are not permitted. Pipe fittings which could be used for connecting a bypass line shall not be installed.

4. Backflow prevention devices which are installed to isolate premises from the public potable water system must be installed on the downstream side of the meter at or near the property line or immediately inside the building being served, but in any case must be installed before the first branch line.

5. Installation

The device shall be readily accessible with adequate room for testing and maintenance. DCV's may be installed below grade, providing all test cocks are fitted with brass pipe plugs. All vaults shall be constructed of concrete, plastic, or other suitable materials, sized to make the valve readily accessible for testing and maintenance, and allow for the minimum clearances established below. Vault sides and bottom shall be solid to prevent collapse or rodent intrusions and shall be well drained.

Devices 2 inches and smaller shall have at least 6 inch clearance below and on both sides of the device, and if located in a vault, the bottom of the device shall be between 12 inches and 24 inches below grade. All devices larger than two (2) inches shall have a minimum clearance of 12 inches on the back side, 18 inches on the test cock side, 12 inches below the device, and 36 inches above the device. Headroom of 6'0" is required in vaults without a full opening top. Access to the device and to any vault or chamber shall remain unrestricted at all times.

6. The device must be protected from freezing and other severe weather conditions.

7. A strainer with blow out tapping is recommended ahead of the device.

8. The property owner assumes all responsibility for foundation or basement wall penetration, leaks, and damage. The owner shall also see that the vault is kept reasonably free of silt and debris.

9. All DCV's must be tested upon installation and at least once per year therafter by an approved certified tester. The owner provides the initial test and all subsequent tests thereafter. The owner must notify the City of Dufur upon installation of any backflow prevention device.

10. Variances from these specifications will be evaluated on a case by case basis. Any deviations must have prior written approval of the City of Dufur.

11. Standard drawings are shown in Appendix.

2-E. Double Detector Check Valve Assembly (DDC)

Double detector check valve assemblies may be substituted in all installations requiring a double check valve assembly and detector check.

1. DDC's shall comply with the installation requirements applicable for double check valve assemblies.

2. A remote reading register is required on all devices and must be installed within eight (8) inches of the vault lid.

3. Standard drawings of typical installations are shown in the appendix (Drawing No. 801).

2-F. Reduced Pressure Principle Backflow Prevention Device (RPBD)

RPBD's may be utilized at premises where a substance is handled which would be hazardous to health if introduced into the potable water system. The RPBD is normally used in locations where an air gap is impractical and is effedtive against both backsiphonage and back-pressure.

1. RPBD's must be sized to provide an adequate supply of water and pressure for the premises being served. Flow characteristics are not standard. Consult manufacturer's specifications for specific performance data.

2. Premises where interruption of water supply is critical should be provided with two devices installed in parallel. They should be sized in such a manner that either device will provide the minimum water requirements while the two together will provide the maximum flow required.

3. Bypass lines are not permitted. Pipe fittings which could be used for connecting a by-pass line must not be installed.

4. Backflow prevention devices which are installed to isolate premises from the public potable water system must be installed on the downstream side of the meter at or near the property line or immediately inside the building being served, but in any case must be installed before the first branch line.

5. Installation:

The device must be readily accessible for testing and maintenance and must be located in an area where water damage to building or furnishings would ot occur when the relief valve is flowing. If the relief valve is piped to discharge water away from the device, an approved air gap funnel assembly may be used. This assembly is designed to handle occasional minor discharges and will not control flow in a continuous relief situation. Drain lines to accommodate full relief valve discharge flow should be considered. (Reference chart in appendix.)

RPBD's are typically installed above grade, with drainage openings located at the bottom of protective enclosure (at grade surface).

RPBD's may be installed below grade providing that an adequate drain is provided. Drains mist be bore sighted to daylight.

Installation without drains must be located in suitable areas where the highest possible level of standing water is below the bottom of the device.

Any vault or enclosure must be sized to make the device readily accessible for testing and maintenance and allow for the minimum clearances established below. Sides and bottom of enclosure must be solid to prevent collapse or rodent intrusion. All enclosures must drain to daylight. Drain ports should be sized to accommodate full pressure discharge from the device. (Reference Chart in Appendix.)

Devices two (2) inches and smaller shall have at least 6-inch clearance all around the device (some models require at least 12 inches below the device). All devices larger than two (2) inches shall have a minimum of 12 inches on the back side, 18 inches on the test cock side, 36 inches above the device, and the relief valve opening shall be at least 12 inches plus mominal size of device above the highest possible water level. Head room of 6'0" is required in vaults without a full opening top.

6. The device must be protected from freezing and other severe weather conditions.

7. Vertical installation is not permitted.

8. A strainer with blow out tapping is recommended ahead of the device.

9. The property owner assumes all responsibility for foundation or basement wall penetration, leaks, and damage. The owner shall also see that the vault is kept reasonably free of silt and debris.

10. All RPBD's must be tested upon installation and at least once per year thereafter by a state certified tester. The owner provides the initial test and all subsequent tests thereafter. The owner must notify the City of Dufur upon installation of any backflow prevention device.

11. Variances from these specifications will be evaluated on a case by case basis. Any deviations must have prior written approval of the City of Dufur.

12. Standard drawings are shown in Appendix.

SECTION 3

LIST OF APPROVED DEVICES