FORT LEWIS
CROSS CONNECTION CONTROL PROGRAM

SECTION 1: PROGRAM

FORT LEWIS

CROSS CONNECTION CONTROL PROGRAM

1.1 PURPOSE

The purpose of a cross connection control program is to protect the health of water consumers and potability of the water system. It is also intended to define and establish the policies and procedures necessary to properly implement a cross connection control program as required by ordinance and established in the Washington Administrative Code (WAC).

1.2 DEFINITIONS:

Except where specifically designated herein, all words used in this program shall carry their customary meanings. The word "shall" is always mandatory, and the word "may" denotes a use of discretion in making a decision.

Air Gap Separation (AG): An unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supplying water to a tank, plumbing fixture or other assembly and the maximum flood level rim of the receptacle. This gap shall be at least double the diameter of the supply pipe measured vertically above the flood level rim of the vessel. In no case shall this gap be less than one (1") inch.

Approved Backflow Prevention Assembly (BPA): Any assembly to prevent backflow that has been approved for use by the Washington State Department of Health. BPA is synonymous with cross connection control device.

Atmospheric Vacuum Breaker (AVB): An assembly, designed and manufactured in accordance with design and material specifications published in the AWWA Manual that contains a float check (poppet), a check seat and an air inlet port. An AVB is designed to open the water system to atmosphere if flow reverses upstream of the AVB, thus preventing back siphonage of liquid from downstream of the AVB.

Backflow: The flow, other than in the intended direction of flow, of any foreign liquids, gases or other substances (including water) into the distribution system of the public water supply.

Back Pressure: Any induced pressure caused by a pump, elevated tank or plumbing, boiler, or other means within the customer's system greater than the operating pressure of the public water supply.

Back Siphonage: Backflow of water due to a negative or reduced pressure within the water system.

Certified Backflow Assembly Tester: A person certified by the Washington Department of Health to test backflow prevention assemblies.

Certified Cross Connection Control Specialist: That person certified by the Washington Department of Health to administer a cross connection control program and to conduct cross connection surveys.

Contractor: That individual or or organization, employed by contract with the Government, that will provide all labor, tools, equipment and materials for testing and maintenance of backflow preventers at Fort Lewis in strict accordance with the Testing Service Contract. Personnel employed by the Contractor will be qualified to perform the work. Testing of Backflow Prevention Assemblies will be performed by Certified Backflow Assembly Testers. Installation or Replacement of Backflow Prevention Assemblies will be performed by a Journeyman Plumber certified by the State of Washington.

Cross Connection: Any physical arrangement whereby a potable water supply is connected, directly or indirectly, with any other water supply system, sewer, drain, conduit, pool, storage reservoir, plumbing fixture or other assembly which contains, or may contain, contaminated waste, sewage, or other waste or liquid of unknown or unsafe quality which may be capable of imparting contamination to the public water supply as a result of backflow.

Customer: Any person or persons at Fort Lewis furnished potable water through a service connection to the public water supply distribution system.

Degree of Hazard: A rating that expresses the results of an evaluation of a health, system, or plumbing hazard as outlined in the Centrac Report.

Double Check Detector Assembly (DCDA): An assembly, designed and manufactured in accordance with design and material specifications published in the AWWA Manual, that consists of two independent assemblies configured in parallel, with the smaller of the parallel branches equipped with a flow meter. Each independent assembly consists of two independently operating check valves in series, a shutoff valve installed upstream of the upstream check valve, and a shutoff valve installed downstream of the downstream check valve. DCDAs are suitable for use where prevention of backflow of objectionable, non-toxic substances into the water system is required. DCDAs do not provide suitable protection where backflow creates a potential for introducing health threatening substances into the water supply.

Double Check Valve Assembly (DCVA): An assembly composed of two (2) single, independently acting, check valves, including tightly closing shut-off valves located at each end of the assembly and suitable connections for testing the water tightness of each check valve. Double check valve assemblies protect the water system from both back siphonage and back pressure events. DCVAs are suitable for use where

prevention of backflow of objectionable, non-toxic substances into the water system is required. DCVAs do not provide suitable protection where backflow creates a potential for introducing health threatening substances into the water supply.

Government Inspector: Individual(s) employed or authorized by the Army Corps of Engineers or Fort Lewis Public Works to perform quality assurance inspections of cross connection control devices using the quality assurance procedures outlined in the Testing Service Contract. The government inspector will be a Certified Backflow Assembly Tester.

Health Hazard: Any condition, assembly, or practice in a water supply system and/or its operation that creates or may create a danger to the health and well-being of a customer.

Industrial Fluids: Fluid or solution which may be chemically, biologically or otherwise contaminated or polluted in a form or concentration that would constitute a health or plumbing hazard if introduced into a potable water supply. This may include but is not limited to all types of processed waters originating from the public water or auxiliary supply which may deteriorate in sanitary quality; chemicals in fluid form; plating acids and alkalis; circulated cooling waters that are chemically or biologically treated or stabilized with toxic substance; and contaminated natural waters such as from wells, springs, streams or ponds.

Liquids: Any substance that flows readily but does not expand indefinitely, such as water and industrial fluids.

Non-Health Hazard: A hazard which could cause aesthetic problems or have an adverse effect on the quality of the water in the system.

Plumbing Hazard: A potential or existing cross connection in a customer's potable water system that may permit back siphonage in the event of a reduced pressure in the supply line.

Pressure Vacuum Breaker Assembly (PVBA): Pressure vacuum breaker assemblies consist of a spring loaded check valve (3-inch and larger consists of two), an independently operating air inlet valve, inlet and discharge shut-off valves, and test cocks. The air inlet valve is internally loaded to the open position, normally by means of a spring. This internal loading allows the device to be installed on the pressure side of a shut-off valve. They are designed to protect against back siphonage only.

Public Water Supply: The system operated and maintained by the Water Purveyor which is a water supply intended or used for human consumption or other domestic use. It includes the source, treatment, storage, transmission and distribution facilities.

Reduced Pressure Backflow Assembly (RPBA): Assembly containing a minimum of two (2) independently acting, check valves, together with an automatically operated pressure differential relief valve located between the two check valves. During normal flow, the pressure between these two checks shall be less than the upstream (supply) pressure. In case of leakage of either check valve, the differential relief valve, by discharging to the atmosphere, shall operate to maintain not less than 2 psi between the supply pressure and the zone between the two check valves. The unit must include tightly closing shut-off valves located at each end of the assembly, and each assembly shall be fitted with properly located test cocks.

Repair: The restoration of a failed or failing piece of equipment (or component thereof) to such condition that it may be effectively used for its designated purpose, by overhaul, overlay, reprocessing, or replacement of constituent parts or materials which have been damaged by action of the elements or wear and tear in use.

Replacement: A complete reconstruction of a piece of equipment destroyed or damaged beyond the point at which it may be economically repaired.

Service Connection: A connection between the public water supply distribution system and the customer's system.

Water Purveyor: The Fort Lewis Public Works Operations and Maintenance Division; Roads and Sanitation Branch.

1.3 REFERENCES

AWWA Manual- Cross Connection Control Manual, Accepted Procedure and Practice- P.N.W.S.-A.W.W.A., May 1990 Fifth Edition.

UPC- Uniform Plumbing Code, 1994.

Centrac Report- Study to Determine Extent of Cross Connection Deficiencies, Major Mechanical System. Centrac Associates, Inc., January 28, 1987.

Testing Service Contract- Specifications for Test and Maintain Backflow Preventers, Spec. No. 1533-96, June 8, 1995.

1.4 CODE AUTHORITY AND ENFORCEMENT

The enforcement of this cross connection program in the area served by the Water Purveyor, will be in accordance with the WAC 246-290-490, Rules and Regulations of the State Board of Health relating to public water supplies.

1.5 GENERAL BACKGROUND

Centrac Associates, Inc. inspected 243 buildings located at Fort Lewis for potential cross connections and summarized their results in the Centrac Report dated January 28, 1987. The Madigan Hospital complex (9900 series) was included in this study but evaluated only for cross connections in fire protection systems.

Both the number and type of backflow prevention devices required for each building included in the Centrac Report were identified. Only fixtures requiring backflow preventers were inventoried; fixtures with existing proper cross connection control devices were not itemized.

The Centrac Report identified seven categories of potential cross connections at Fort Lewis. The categories and backflow prevention device(s) required for each category are listed below:

• Janitor sinks and inside hose bibbs	AVB
• Boilers	RPBA
• Building cold water supplies	RPBA
• Heat exchangers	The BPA required for heat exchangers is site specific.
• Hydronic converters	RPBA
• Lawn irrigation systems including outside hose bibbs	AVB and PVBA
• Fire protection system	DCVA

Since the Centrac Report was completed, Fort Lewis has awarded three contracts to install cross connection control devices in 151 buildings (DACA67-91-C-0088, DACA67-93-C-2005 and DAKF57-95-C-0135). Table 1 lists the buildings surveyed in the Centrac Report, and the 32 buildings surveyed in April and May 1995. The table also indicates in which buildings devices have been installed. The table indicates 58 buildings requiring installation. There are 14 buildings requiring BPAs only for fire protection systems. Cost estimates for each building requiring BPA(s) are provided. Cost of installing BPAs for fire protection systems for each building may be minimized by identifying if some of these buildings share a common connection from the water system. Buildings that have been or are scheduled to be demolished and buildings for which as-builts are available are also summarized in Table 1. These buildings were identified on lists provided by Fort Lewis in the spring of 1995.

Table 1 also identifies the priority of each building for installation of cross connection control devices, priority "A" being the highest and priority "E" being the lowest. A description of each priority is outlined below:

"A": priority buildings includes food service areas, mess halls, open mess, clubs, and cafes. These buildings are given the highest priority because of their large amount of direct and indirect (water used for cooking) water consumption, the number of people exposed to each building, and the potential for bacteriological and chemical contamination inherent in food service establishments.

"B": priority buildings are those using industrial or hazardous processes involving water, including laundries, shop areas with chemical tanks or vats, photography reproduction buildings, and heating plants. This type of building generally has a low exposure to base personnel, but because of the high physical or toxic hazards present these buildings are given the second highest priority.

"C": priority buildings are buildings with high domestic water use, including living quarters and barracks, gymnasiums and swimming pools. These buildings are somewhat lower in toxic hazards but have a very high exposure; therefore, they are given the third highest priority.

"D": priority buildings comprise the largest group. Water consumption, exposure, and danger of contamination are lower in these buildings than the buildings above. These buildings include offices, instructional buildings, light repair and maintenance shops, PX and commissary, and leisure activities buildings.

"E": priority buildings include warehouses, storage spaces, and aircraft hangers. These buildings have a very low exposure factor and water consumption; therefore, they are given a lower priority than those above.

Scheduling of BPA installation should be based on the priority given to the building.

Table 1 also includes the estimated BPA installation cost for those buildings surveyed in the Centrac Report. The 1987 estimated costs have been updated using the Engineering News Record (ENR) Construction Cost Index (CCI). These estimates may be used by Fort Lewis Public Works for budgeting the BPA installations.

TABLE 1
BPA INSTALLATION SURVEY

BLDG #	ADDRESSED IN CENTRAC REPORT	BPA INSTALLATION DACA67-91-C-0088	BPA INSTALLATION DACA-93-C-2005	ADDITIONAL SURVEY	BLDGS TO BE DEMOED/ DEMOED[1]	BUILDINGS W/ IDENTIFIED CROSS CONNECTION DEFICIENCIES	ESTIMATED COST OF INSTALLATION[3]	PRIORITY
1015	X				X			
1017	X			4/13/95				
1161	X					X	$464	D
1163	X			4/6/95		X[2]	$7,900	C
1220	X				X			
1227	X				X			
1263	X				X			
1401	X			4/6/95		X[2]	$19,833	B
1410	X				X			
1450		X						
1452		X						
2003	X			4/6/95				
2004	X			4/6/95				
2006	X	X						
2007	X	X						
2008	X	X						
2009	X				X			
2012	X	X						
2013	X	X						
2014	X	X						
2015	X	X						
2019		X		4/12/95				
2020		X						
2021		X						
2022	X	X						
2025	X	X						
2026	X	X						
2027	X	X						

Superscript refers to footnote. See last page of table.

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BPA INSTALLATION SURVEY

BLDG #	ADDRESSED IN CENTRAC REPORT	BPA INSTALLATION DACA67-91-C-0088	BPA INSTALLATION DACA-93-C-2005	ADDITIONAL SURVEY	BLDGS TO BE DEMOED/ DEMOED[1]	BUILDINGS W/ IDENTIFIED CROSS CONNECTION DEFICIENCIES	ESTIMATED COST OF INSTALLATION[3]	PRIORITY
2043	X			4/6/95				
2044	X			4/6/95				
2045	X			4/13/95				
2054	X			4/13/95		X[2]	$5,992	D
2068	X						$585	B
2095		X						
2103		X						
2109	X			4/12/95		X[2]	$5,992	D
2110	X	X						
2140	X			4/12/95		X[2]	$9,916	D
2150	X	X						
2160	X			4/13/95		X[2]	$5,992	D
2161	X	X						
2162	X	X						
2163	X			4/13/95				
2165	X				X	X[2]	$7,900	D
2166	X			4/13/95				
2202	X	X						
2260		X						
2270	X			4/13/95				
2272	X			4/13/95		X[2]	$7,900	D
2400	X	X						
2491	X					X	$5,502	D
2492	X	X						
2493	X	X						
3026	X					X	$4,047	E
3036	X					X	$28,040	E
3041	X					X	$28,040	E

Superscript refers to footnote. See last page of table.

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BLDG #	ADDRESSED IN CENTRAC REPORT	BPA INSTALLATION DACA67-91-C-0088	BPA INSTALLATION DACA-93-C-2005	ADDITIONAL SURVEY	BLDGS TO BE DEMOED/ DEMOED[1]	BUILDINGS W/ IDENTIFIED CROSS CONNECTION DEFICIENCIES	ESTIMATED COST OF INSTALLATION[3]	PRIORITY
3052	X					X	$5,994	E
3065	X			4/13/95		X[2]	$5,956	D
3075	X					X	$28,040	E
3077	X			4/13/95		X[2]	$5,956	D
3086	X			4/12/95				
3098	X			4/13/95				
3102		X						
3114	X	X						
3115	X	X						
3116	X	X						
3118	X	X						
3119	X	X						
3121	X	X						
3122	X	X						
3123	X	X						
3124	X	X						
3127		X						
3152	X	X						
3156	X	X						
3157	X	X						
3158	X	X						
3160	X	X						
3161	X	X						
3163	X	X						
3164	X	X						
3165	X	X						
3166	X	X						
3168		X						

Superscript refers to footnote. See last page of table.

TABLE 1
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BLDG #	ADDRESSED IN CENTRAC REPORT	BPA INSTALLATION DACA67-91-C-0088	BPA INSTALLATION DACA-93-C-2005	ADDITIONAL SURVEY	BLDGS TO BE DEMOED/ DEMOED[1]	BUILDINGS W/ IDENTIFIED CROSS CONNECTION DEFICIENCIES	ESTIMATED COST OF INSTALLATION[3]	PRIORITY
3204		X						
3213	X	X						
3214	X	X						
3215	X	X						
3216	X	X						
3218	X	X						
3219	X	X						
3221	X	X						
3222	X	X						
3223	X	X						
3224	X	X						
3236		X						
3245		X						
3271				4/13/95		X[2]	$5,956	D
3278	X	X						
3279		X						
3280		X						
3281		X						
3283		X						
3284		X						
3286		X						
3287		X						
3288		X						
3292		X						
3413		X						
3414		X						
3415		X						
3416		X						

Superscript refers to footnote. See last page of table.

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BLDG #	ADDRESSED IN CENTRAC REPORT	BPA INSTALLATION DACA67-91-C-0088	BPA INSTALLATION DACA-93-C-2005	ADDITIONAL SURVEY	BLDGS TO BE DEMOED/ DEMOED[1]	BUILDINGS W/ IDENTIFIED CROSS CONNECTION DEFICIENCIES	ESTIMATED COST OF INSTALLATION[3]	PRIORITY
3417	X	X						
3418	X	X						
3419	X	X						
3420	X	X						
3421	X	X						
3422	X	X						
3445	X	X						
3469	X	X						
3470	X	X						
3474	X	X						
3475	X	X						
3644	X			4/13/95				
3650	X			4/20/95				
3653	X	X						
3654	X	X						
3655	X	X						
3656	X	X						
3657	X	X						
3725	X			4/20/95				
3740		X						
3741		X						
3751	X			4/12/95		X[2]	$4,047	D
3757	X	X						
3761	X	X						
3762	X	X						
3763	X	X						
3764	X	X						
3765	X	X						

Superscript refers to footnote. See last page of table.

TABLE 1
BPA INSTALLATION SURVEY

BLDG #	ADDRESSED IN CENTRAC REPORT	BPA INSTALLATION DACA67-91-C-0088	BPA INSTALLATION DACA-93-C-2005	ADDITIONAL SURVEY	BLDGS TO BE DEMOED/ DEMOED[1]	BUILDINGS W/ IDENTIFIED CROSS CONNECTION DEFICIENCIES	ESTIMATED COST OF INSTALLATION[3]	PRIORITY
3766	X	X						
3850	X	X						
3901	X			4/12/95		X[2]	$7,259	D
3910	X			4/12/95				
3911	X			4/12/95				
4043	X					X	$729	D
4060	X					X	$6,640	E
4071	X	X			X			
4074	X			4/12/95				
4076	X					X	$9,038	E
4127	X					X	$500	D
4170	X			4/12/95		X[2]	$7,900	D
4174	X					X	$536	D
4175	X					X	$16,870	E
4201	X					X	$223	D
4220	X				X			
4246	X				X			
4274	X					X	$6,643	D
4290		X						
4301	X				X			
4320	X					X	$8,592	D
4420	X				X			
5038	X			4/26/95				
5102	X					X	$644	D
5137	X					X	$1,049	D
5163	X					X	$538	D
5172	X					X	$4,086	E
5173	X					X	$538	D

Superscript refers to footnote. See last page of table.

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BLDG #	ADDRESSED IN CENTRAC REPORT	BPA INSTALLATION DACA67-91-C-0088	BPA INSTALLATION DACA-93-C-2005	ADDITIONAL SURVEY	BLDGS TO BE DEMOED/ DEMOED[1]	BUILDINGS W/ IDENTIFIED CROSS CONNECTION DEFICIENCIES	ESTIMATED COST OF INSTALLATION[3]	PRIORITY
5209	X	X			X			
5227	X					X	$113	D
5275		X						
6133	X					X	$536	D
6165	X					X	$574	D
6229	X					X	$538	D
6995		X						
8085	X	X						
8300		X						
9179		X						
9403	X					X	$500	D
9500	X	X						
9503	X					X	$262	D
9504	X					X	$6,871	D
9550	X				X			
9570	X	X						
9575	X				X			
9579	X				X			
9580	X	X				X	$9,243	D
9582	X							
9599		X						
9620	X		X					
9626	X					X	$111,280	E
9630	X							
9631		X						
9640	X		X					
9641	X		X					
9643	X	X						

Superscript refers to footnote. See last page of table.

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9645	X					X	$7,936	E
9646	X					X	$7,259	E
9650	X					X	$50,671	E
9660	X		X					
9665	X		X					
9669	X		X					
9670	X		X					
9781		X						
9782		X						
9783		X						
9785		X						
9786		X						
9790		X						
9988		X						
9997		X						
3E48	X					X	$538	D
3E95	X					X	$5,994	D
10B8	X	X				X	$12,476	D
11B2		X						
11B29	X		X					
11B31		X						
11D47	X		X					
12B14	X							
12C75	X					X	$6,028	D
13C50	X					X	$538	D
13C51		X						
13C53	X	X						
14A26	X		X					

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BLDG #	ADDRESSED IN CENTRAC REPORT	BPA INSTALLATION DACA67-91-C-0088	BPA INSTALLATION DACA-93-C-2005	ADDITIONAL SURVEY	BLDGS TO BE DEMOED/ DEMOED[1]	BUILDINGS W/ IDENTIFIED CROSS CONNECTION DEFICIENCIES	ESTIMATED COST OF INSTALLATION[3]	PRIORITY
14A51	X		X					
1A2	X		X					
1A32			X					
1B14	X		X					
1C12	X							
1E57		X						
1J8	X		X					
2A13	X							
2A15	X		X					
3A10	X		X					
3A2	X		X					
3A3	X		X					
3A35	X		X					
3A38	X		X		X			
3C30	X							
4E1	X					X	$4,850	A
4E23	X					X	$4,850	A
5E1	X					X	$4,850	A
5E23	X					X	$4,850	A
6A2			X					
6A3			X					
6A4			X					
6A6			X					
6A7			X					
6A32			X					
6A33			X					
6A36			X					
3A37			X					

Superscript refers to footnote. See last page of table.

TABLE 1
BPA INSTALLATION SURVEY

BLDG #	ADDRESSED IN CENTRAC REPORT	BPA INSTALLATION DACA67-91-C-0088	BPA INSTALLATION DACA-93-C-2005	ADDITIONAL SURVEY	BLDGS TO BE DEMOED/ DEMOED[1]	BUILDINGS W/ IDENTIFIED CROSS CONNECTION DEFICIENCIES	ESTIMATED COST OF INSTALLATION[3]	PRIORITY
6A38			X					
6A39			X					
6A40			X					
6A41			X					
6D35	X							
6E1	X					X	$4,850	A
6E23	X					X	$4,850	A
7E1	X					X	$4,850	A
7E23	X					X	$4,850	A
8A2			X					
8A3			X					
8A6			X					
8A7			X					
8A27			X					
8A28			X					
8A29			X					
8A32			X					
8A33			X					
9A2								
9A3								
9A6								
9A7								
9A28								
9A29								
9A32								
9A33								
8E1	X					X	$4,850	A
8E23	X					X	$4,850	A

Superscript refers to footnote. See last page of table.

TABLE 1
BPA INSTALLATION SURVEY

BLDG #	ADDRESSED IN CENTRAC REPORT	BPA INSTALLATION DACA67-91-C-0088	BPA INSTALLATION DACA-93-C-2005	ADDITIONAL SURVEY	BLDGS TO BE DEMOED/ DEMOED[1]	BUILDINGS W/ IDENTIFIED CROSS CONNECTION DEFICIENCIES	ESTIMATED COST OF INSTALLATION[3]	PRIORITY
931	X					X	$4,850	A
9E23	X					X	$4,850	A
F1	X					X	$5,992	E
F15	X					X	$5,992	E
F17	X					X	$9,169	E
F3	X					X	$5,992	D
F5	X					X	$5,992	D
F7	X					X	$5,992	E
F8	X					X	$5,992	E
F9	X					X	$5,992	E
						TOTAL	$596,498	

Superscript refers to footnote. See last page of table.

NOTES:

1. The list of buildings planned for demolition are based on Demo Lists provided by Fort Lewis Public Works.
2. Building inspected by Gray & Osborne needing BPAs installed on Fire Mains. Contract for installation of cross connection control devices (DAKF57-95-C-0135, File No. 5189) in these buildings was awarded September 21, 1995. Cross connection control devices required for fire protection services were not included.
3. Cost taken from Centrac report completed January 28, 1987, and modified to 1995 cost using ENR Publications August, 1995, CCI=5,895.8, and December, 1988, CCI=4,738.35.

1.6 GENERAL POLICY

Recommendations published in Section 3 of the AWWA Manual (May 1990) and Chapter 10 in the UPC (1994), are incorporated herein as minimum requirements.

It is the intention of this program to provide for the permanent abatement or control of all cross connections at Fort Lewis. In order to ensure proper administration of the cross connection control program, individual(s) from Fort Lewis Public Works will be certified as Certified Cross Connection Control Specialists within six months of implementation of this program.

Where it is not physically and economically feasible to find or eliminate all cross connections of the customers' water system, and when it is deemed necessary by the certified cross connection control specialist, there will be installed at the service connection a suitable BPA commensurate with the degree of hazard to the public water supply.

1.7 MINIMUM PROTECTION

The following methods of cross connection control are considered minimum protection at the service connection:

1.7.1 The public water supply to a premises having an auxiliary water supply from an additional public supply with no known cross connections will require an approved DCVA at the service connection.

1.7.2 The public water supply to a premises on which is handled a substance that is objectionable (not a health hazard) in a manner constituting a potential cross connection will require a DCVA at the service connection.

1.7.3 The public water supply to a premises on which there is an auxiliary water supply and having internal cross connections that are not correctable or intricate plumbing arrangements which make it impractical to ascertain whether or not cross connections exist, will require a RPBA at the service connection.

1.7.4 The public water supply to a premise on which material dangerous to health or toxic substances are handled will have installed a RPBA at the service connections.

1.7.5 The public water supply to a premise where entry is restricted so that inspection for cross connection cannot be made at a sufficient frequency or at sufficient short notice to assure that cross connections do not exist will have installed a RPBA at the service connection.

1.7.6 The public water supply to a premise on which any substance is handled under pressure so as to permit entry into the public water supply, or where a cross connection could occur, will have installed a RPBA or a DCVA according to health hazard at the service connection.

1.7.7 The public water supply to a premise having a repeated history of cross connections being established or re-established, will have installed a RPBA at the service connection.

1.8 CORRECTIVE MEASURES

The Water Purveyor shall follow guidelines in the most recently published edition of the AWWA Manual.

1.9 PROCEDURE FOR INSTALLATION, INSPECTION, AND MAINTENANCE OF BACKFLOW PREVENTION DEVICES

1.9.1 Atmospheric Vacuum Breakers (AVB)

1.9.1.1 Initial Installation

Atmospheric Vacuum Breakers as required will be installed by a licensed plumber.

Atmospheric Vacuum Breakers will be installed as specified in the latest editions of the UPC, and/or the AWWA Manual, whichever is the more restrictive.

1.9.1.2 Testing and Maintenance

Field inspection will be performed by the contractor in accordance with the Testing Service Contract (Specification No. 1533-96).

When a defective AVB is reported and/or discovered, the water purveyor will take immediate action to have the subject assembly repaired by a Certified Backflow Assembly Tester or replaced by a qualified and licensed plumber.

1.9.2 Pressure Vacuum Breakers Assemblies (PVBA), Double Check Valve Assemblies (DCVA), Double Check Detector Assembly (DCDA) and Reduced Pressure Backflow Prevention Assembly (RPBA)

1.9.2.1 Initial Installation

Fort Lewis Public Works, Operations and Maintenance Division will be responsible for determining the need and installation details for BPAs.

Installation of the approved BPAs will be performed by a licensed plumber. Testing will be performed by a Certified Backflow Assembly Tester.

Installation of the above stated devices will be installed as specified in either the latest edition of the UPC, and/or the AWWA Manual, whichever is the more restrictive.

Upon completion of the installation of the BPA, the device will be tested by the Contractor to insure proper operation. If the assembly fails any part of the test, the assembly will be rejected until repaired or replaced in order to meet all elements of the test. The test results, provided on the Backflow Prevention Assembly Test Report, will then be supplied to the Fort Lewis, Public Works, Operations and Maintenance Division. The Fort Lewis, Public Works, Operations and Maintenance Division will add the BPA to the Testing Service Contract.

1.9.2.2 Inspection and Maintenance

All BPAs, except AVBs, will be tested not less than once a year. AVBs located in buildings with other types of BPAs, will be observed once a year. The designated Contractor will be responsible for testing devices according to the Testing Service Contract. Fort Lewis Public Works is responsible for administering this contract.

Maintenance

When a BPA is determined to be defective, the tester will immediately notify the Water Purveyor.

Upon receipt of notification of the defective assembly, the Purveyor will take necessary steps to have the defective assembly repaired or replaced. The defective assembly shall be repaired by a Certified Backflow Assembly Tester, or if necessary replaced by a licensed plumber.

Upon completion of repair, the BPA will be tested by a Certified Backflow Assembly Tester.

1.10 RECORDS AND REPORTS

1.10.1 Records for each individual inspection will be generated by Contractors and retained by the Fort Lewis Public Works, Operations and Maintenance Division, in order to track the performance of each device. These records shall be maintained through use of a database system as outlined in the Testing Service Contract. The Testing Service Contract is outlined in Section 3.

1.10.2 The Contractor for the Testing Service Contract will input test data and BPA identification information into the database. The Government will provide 2 databases designed to work with the Microsoft database program. The Microsoft Access database program and all other software required to run the database program will be provided by the Contractor. In addition, the Contractor shall provide all personnel with the necessary skills to operate Microsoft Access version 2.0 database program.

1.10.3 For each BPA test performed, the following data will be maintained:

- BPA Identification Code
- Test Date
- Contract Number
- Contractor Name
- Contractor Number
- Backflow Assembly Tester Identification Number
- Remarks to describe any noted discrepancies
- BPA Manufacturer
- BPA Manufacturer's Model Number
- BPA Manufacturer's Serial Number
- BPA Size
- BPA Type
- Building Number
- Room Number

Refer to the Testing Service Contract for a testing schedule. The following insert is an example of a Backflow Prevention Assembly Test Report.

BACKFLOW PREVENTION ASSEMBLY (BPA) TEST REPORT
FORT LEWIS, WASHINGTON

BUILDING NUMBER (FROM DRAWINGS): _____ ROOM NUMBER (FROM _____

IDENTIFICATION CODE (FROM DRAWINGS): _____

SIZE OF LINE: _____ TYPE OF LINE: _____

EQUIPMENT SERVICED: _____

BPA MANUFACTURER: _____ BPA MODEL: _____

BPA SERIAL NUMBER: _____ BPA SIZE: _____

TYPE OF BPA: _____ LINE PRESS @ TIME OF TEST: _____

	Reduced Pressure Backflow Assemblies (RPBAs)			**Pressure Vacuum Breaker Assemblies (PVBAs)**	
	Double Check Valve Assemblies (DCVAs)		**Relief Valve**	**Air Inlet**	**Check Valve**
	1st CHECK	2nd CHECK	Opened at _____ psid	Opened at _____ psid	_____ psid
Initial Test	DC-closed tight ☐ RP-_____psid Leaked ..... ☐	Closed tight ... ☐ Leaked ..... ☐	Opened at _____ psid	Did not open ..... ☐	Leaked ..... ☐
Repairs and Materials Used					
Test After Repair	DC-closed tight ☐ RP-_____ psid	Closed tight ..... ☐	Opened at _____ psid	Opened at _____ psid	_____ psid

REMARKS: _____

_____

_____

_____

CONTRACTOR: _____ CONTRACT NUMBER: _____

TESTER NAME: _____ TESTER CERT. NUMBER: _____

TESTER SIGNATURE: _____ _____

SIGNATURE ABOVE CERTIFIES TESTS WERE DONE IN CONFORMANCE WITH RECOMMENDATIONS PUBLISHED IN THE AWWA CROSS CONNECTION CONTROL MANUAL

TEST DATE