



Making a difference...together

Agenda Item #9  
REPORT #RWSC 2008-12

**REPORT TO REGIONAL WATER SUPPLY COMMISSION  
MEETING OF WEDNESDAY, MAY 21 2008**

---

SUBJECT      AMENDMENTS TO THE CROSS CONNECTION CONTROL BYLAW

PURPOSE

To propose amendments to the CRD Cross Connection Control Bylaw No.1, 2006.

BACKGROUND

In 2005, the Chief Medical Health Officer ordered the water suppliers in the Greater Victoria Drinking Water System to implement a Cross Connection Control Program.

The Cross Connection Control Bylaw outlines the requirements for Cross Connection Control that applies to each of the Municipalities being supplied with drinking water from the Greater Victoria Drinking Water Supply System. When first introduced in 2006, the Cross Connection Control Bylaw was written at a fairly high, non-technical level. However, additional technical detail and direction is required in the Bylaw to provide consistency and direction throughout municipalities in Greater Victoria.

The proposed amendments provide additional flexibility and discretion to the Cross Connection Control Officer in applying the requirements in the original Bylaw. The proposed amendments now provide alternatives for premises isolation that should reduce some of the upgrading costs that owners of existing facilities will be facing while still providing satisfactory protection for the Public Water System. The proposed amendments provide needed guidance and direction for mechanical system designers and municipal Building Inspectors that should reduce the number of calls currently being made to the Cross Connection Control Officer to clarify cross connection issues. Finally, the proposed amendments to the Bylaw are broadly aligned with those in other jurisdictions across Canada.

ALTERNATIVES

1. Recommend the Board adopt the amended Bylaw.
2. Do not adopt the amended Bylaw.

**Alternative 1. Proposed Amendments to the Bylaw**

In the attached copy of the Bylaw (**Attachment 1**), the amendments proposed are identified as coloured text. The rationale for the proposed amendments, other than housekeeping and language clarification changes, are provided below. Where sections are no longer required, they have been deleted. The proposed Bylaw has been reviewed by legal counsel and the Vancouver Island Health Authority.

**Section 2. Definitions (Pages 2-6)**

- A number of new definitions are proposed. In general, these new definitions are required to support the additional technical requirements in the Bylaw. Definitions no longer required have been deleted.
  - Backflow Prevention Assembly - this definition was replaced by the generic term 'Backflow Preventer' throughout the document.
  - High Cross Connection Hazard – this definition was replaced with Severe Cross Connection Hazard to be more consistent with CSA.

### **Section 3. Application (Page 7)**

- This section has been substantively changed to show the inter-relationships between the Bylaw, standards, codes and policies. In the event of a conflict between the CRD Bylaw and municipal Bylaws, the stricter requirement shall prevail. If there is conflict between the standards in CSA and the Bylaw, the Bylaw shall prevail. If there is a conflict between CSA and the BC Building Code, the stricter requirements shall prevail. If the Code is silent on an issue, the Bylaw shall prevail. If there is a conflict in Engineering Specifications, the stricter requirement shall prevail.

### **Section 4. Customer Responsibilities (Page 8)**

- This is a new section which was suggested by legal counsel and clearly states the responsibilities of the Customer.

### **Section 5. Cross Connections Prohibited (Page 8)**

- Previously, **Section 5.1** included the words 'Moderate or High'. This section has been rephrased to specify that all types of cross connections are prohibited – not just those that pose a moderate or severe hazard. Therefore, since **Section 5.1** is now all inclusive, the section previously titled 'Minor Cross Connection Hazards' is no longer needed and has been deleted. This change can now be made because all of the Water Suppliers have agreed to install Dual Check Backflow Preventers on new Minor Cross Connection Hazard Facilities. When the original Bylaw was passed in 2006, that agreement was not in place.

### **Section 6.3 Contaminating Condition Found (Page 9)**

- New requirements in the event that a contaminating condition is found, which includes requiring the Customer to install a Backflow Preventer or the Water Supplier installing the Backflow Preventer at the Customer's cost.

### **Section 7.1 Ensure Testing of Backflow Preventers (Page 9)**

- Now includes provision for more frequent testing as required by the Cross Connection Control Officer.

### **Section 7.2 Report Results of Testing (Page 9)**

- Changed the responsibility of submitting the results of the testing from the Certified Tester to the Customer who is ultimately responsible.
- Modified the number of days between the date when a notice to test has been sent out and the date the test results should be received from 30 days to 35 days. The additional 5 days allows for inefficiencies in posting and mailing the notice.

### **Section 7.4 Notify Repair/Replacement of Defective Backflow Preventer (Page 9)**

- Changed the time period for the testing and notification of repaired or replaced Backflow Preventers from 7 days to 14 days to provide a more reasonable time frame in which to receive replacement parts for the defective Backflow Preventer without unduly affecting risk.

### **Section 7.6 Maintain a File of Test Results (Page 10)**

- This section places the onus on the Customer to maintain a record of the test results so that it is available for perusal by the Officer during an inspection.

**Section 7.7 Tri-Annual Testing of Single-Family Residence Irrigation Backflow Preventers (Page 10)**

- This is a new section that reduces the testing frequency for Backflow Preventers on single-family, non-chemically injected irrigation systems from once per year (annual) to once every 3 years (tri-annual). This relaxation of the testing frequency takes into account the fact that the vast majority of single-family irrigation systems have no chemical injection, are relatively small irrigation systems and the duration of active use is limited due to watering restrictions and seasons and is therefore considered a Minor Cross Connection Hazard. The Cross Connection Control Officer believes that these systems do not represent a sufficient hazard to warrant annual testing.

**Section 8. By-Pass, Remove or Tampering (Page 10)**

- Additional conditions regarding the removal of Backflow Preventers.

**Section 9. New Water Mains (Page 11)**

- This section outlines the relatively new optional requirement in the American Water Works Association standard for disinfecting new water mains. As there have been several local Backflow incidents associated with the installation of new water mains, the Water Suppliers have agreed that the requirement for Backflow protection when disinfecting new mains is appropriate.

**Section 10. Temporary Water Service (Page 11)**

- This topic required more detail than what was listed in the original Bylaw not only because of the current high level of construction in Greater Victoria but also because the Water Suppliers have been using inconsistent protocols for dealing with new construction.

**Section 10.1 General Requirements for Temporary Water Service (Page 11)**

- This section reiterates the requirements in CSA.

**Section 10.2 Backflow Preventer Required (Page 12)**

- This section details the conditions for requiring a Backflow Preventer for Temporary Water Services.

**Section 10.3 Temporary Water Service to ICI or Multi-Family Construction Sites (Page 12)**

- Industrial-commercial-institutional (ICI) and Multi-family Residential Facility construction sites have the potential to have relatively large quantities of construction materials and liquids on site and generally present a greater risk of Backflow than do the small residential construction sites. A Reduced Pressure Backflow Preventer (which is the highest level of protection) is the appropriate protection.

**Section 10.4 Temporary Water Service to Small Residential Construction Sites (Page 12)**

- Small Residential Facility construction sites typically have smaller quantities of construction materials on site and require smaller volumes of water during construction with small connections and thus present a smaller risk of Backflow than do the large construction sites. The Backflow protection required for these Small Residential Facility construction sites recognizes the difficulty in policing the multitude of these sites spread across Greater Victoria and is believed to be a reasonable compromise between the risks that are present and some form of Backflow protection.

**Section 11. Design Level Cross Connection Survey Form (Page 13)**

- This is a new form that provides the basis for cross connection control in New Facilities where plumbing permits have been issued. The information contained in this form should make it much easier for Building

Inspectors and Water Suppliers to understand the design of the Backflow protection system in these New Facilities and ensure that the designers have allowed for cross connection control as part of their design. So far, this form has only been used informally and has received very favourable comments from the regulators.

**Section 12. Turn on Water Service for Occupancy (Page 13)**

- This is a new section that requires Premises Isolation be in place for newly constructed or renovated buildings before turning on the water supply to those Facilities.

**Section 13. New Facilities (Page 13)**

- CSA notes that Premises Isolation shall be required for New Facilities even when the water system within the building conforms to British Columbia Building Code requirements because of the potential for Point-of-Use Isolation or Area Isolation to fail and allow Contamination to enter the Public Water System.

**Section 13.4 New Minor Hazard Facilities (Page 13)**

- In the Greater Victoria Drinking Water Supply System, non-testable, Dual Check Backflow Preventers are typically installed by the Water Supplier downstream of the water meter for all New Facilities classified as a Minor Cross Connection Hazard.

**Section 14. Existing Facilities (Page 13)**

- Premises Isolation is also required for Existing Facilities with the type of Backflow Preventer dependent upon the hazard level of the Facility. However, installing Premises Isolation into Existing Facilities is much more problematic than for New Facilities, primarily because of space limitations for the Backflow Preventer and therefore, for each of the hazard categories in **Section 14**, an alternative is described. This is broadly aligned with other Cross Connection Control Programs in Canada for Premises Isolation. In this Bylaw, a 'Note' is used to provide additional guidance or explanations of the section preceding it.

**Section 14.1 Existing Severe Hazard Facilities (Page 13)**

- Existing Severe Hazard Facilities require Premises Isolation using a Reduced Pressure Backflow Preventer. However, at the option of the Owner, the Water Suppliers are offering a relaxation of the Premises Isolation requirement to a Double Check Backflow Preventer as long as other internal Backflow Preventers are in place and tracked. A detailed Facility Survey may be required.

**Section 14.2 Existing Moderate Hazard Facilities (Page 14)**

- Existing Moderate Hazard Facilities require Premises Isolation using a Double Check Backflow Preventer if the conditions listed apply. If these conditions do not apply, the requirement for Premises Isolation may be relaxed if a Cross Connection Audit has been conducted and in-premises Backflow Preventers are in place.

**Section 14.3 Existing Minor Hazard Facilities (Page 15)**

- Existing Minor Hazard Facilities require Premises Isolation using a Dual Check Backflow Preventer. This requirement will be satisfied when the Water Suppliers retrofit the water service.

**Section 15. Restricted Access Premises (Page 15)**

- This is a new section that specifies the Backflow requirements for specific types of restricted access Premises. Premises Isolation is required since the activities and hazards contained within those Premises cannot be assessed by the Cross Connection Control Officer.

**Section 16. Locations for Premises Isolation (Page 15)**

- Typically, Premises Isolation is provided by a Backflow Preventer installed just downstream of the water meter (often referred to as 'at-the-meter') since this location provides the best assurance that all subsequent connections will be downstream of the Backflow Preventer. However, where space limitations preclude an at-the-meter location, an alternative installation location may be proposed by the Customer (e.g. just inside the point of service entry to the building).

**Section 17. Fire Protection Systems (Page 16)**

- This section simply reinforces the requirement for Backflow Protection for Fire Protection Systems. **Section 17.2** is a relatively new requirement in the Building Code of which people may not be aware. **Section 17.3** cautions that the operation of existing Fire Protection Systems should be assessed prior to the installation of a Backflow Preventer because of the pressure losses.

**Section 18. Booster Pumps (Page 16)**

- This section states the Premises Isolation requirement when a Booster Pump is used on a Premise.

**Section 19. Auxiliary Water Supply (Page 16)**

- This section states the Premises Isolation requirement when an Auxiliary Water Supply is available on the Real Property.

**Section 20. Irrigation Systems (Page 17)**

- This section states the Backflow Preventer requirements for in-ground Irrigation Systems. In-ground Irrigation Systems are subject to both the risk of Back-Siphoning and Back-Pressure and the Cross Connection hazards for in-ground Irrigation Systems are considered to be moderate to severe. Therefore, a testable Backflow Preventer is required. In-ground irrigation systems include:
  - In-ground piping without chemical injection
  - In-ground piping with chemical injection

**Section 21. Carbonation Systems (Page 17)**

- This is a new section that specifies the requirements for carbonation systems. The BC Building Code is silent on this issue and CSA does not attribute sufficient hazard to this type of equipment. Several cross connection incidents have occurred locally and caused people to be sick.

**Section 22. Boiler Heating Systems (Page 17)**

- This is a new section that specifies the requirements for this type of equipment.

**Section 23. Solar Hot Water Single-Plate Heat Exchangers (Page 18)**

- This is a new section that specifies the requirements for this type of equipment.

**Section 24. Dishwashers / Glasswashers (Page 18)**

- This is a new section that specifies the requirements for this type of equipment.

**Section 25. Detergent Dispensing Units (Page 18)**

- This is a new section that specifies the requirements for this type of equipment.

**Section 26. Reverse Osmosis Equipment (Page 18)**

- This is a new section that specifies the requirements for this type of equipment.

**Section 27. Bulk Water Carriers (Page 18)**

- This section provides the Backflow Preventer requirements for Bulk Water Carriers.

**Section 28. Cross Connection Audits (Page 19)**

- This section specifies that Cross Connection Audits on Severe and Moderate Hazard Facilities must be conducted every 5 years. This audit will provide continuing assurance that the Public Water System is adequately protected from Contamination caused by a Backflow. This audit will provide a check on plumbing and process changes that would otherwise not be accounted for. It also outlines liabilities for a Customer if inadequate internal isolation is not provided.

**Section 29. Certified Testers and Testing Equipment (Page 19)**

- This section introduces a new requirement that all Certified Testers be registered by the CRD if they wish to work in the Greater Victoria Drinking Water System. Currently, no registration is required and the Cross Connection Control Officer is having difficulty in knowing whether or not the certification of a particular tester has lapsed since the information does not come to the CRD from the BC Water and Waste Association (BCWWA) on a timely basis. BCWWA is the certifying body. To be registered, the Certified Tester can simply forward a copy of the pertinent documents to the CRD when applying for re-certification with BCWWA.

**Section 30. Facility Survey Specialists (Page 20)**

- This section outlines the requirements acceptable to the CRD before a Cross Connection Control Facility Survey Specialist can conduct surveys within the Greater Victoria Drinking Water Supply System. At present there is no one in the CRD who has been formally recognized in this fashion although there are several individuals in the area who would meet these requirements. Currently, BCWWA is considering minimum requirements for Facility Survey Specialist. However, there is no stated timeline for this to happen.

**Section 31.1 Enter Real Property (Page 21)**

- Inserted 'including all areas within individual Facilities' to ensure that there is no question about access. This would not include properties that have been designed as 'Restricted Access' such as DND or First Nations. Because of the 'Restricted Access' designation, these properties require the highest level of premises isolation.

**Section 31.3 Failure to Receive Test Results (Page 21)**

- Changed the timing for receiving test results so that it is now calculated from the deadline date in the initial notice to test. In practice, there are number of operational reminders that the Cross Connection Control Officer will use before considering the Backflow Preventer defective and applying penalties. These reminders include a confirmatory telephone call to the Customer, a second reminder notice which has a deadline of 30 calendar days and final notice which has a deadline of 15 calendar days. If these warnings do not secure the desired action, this will prompt an inspection of the Facility by the Cross Connection Control Officer. Then depending upon the results of the inspection, the Customer may be directed to install, upgrade or test the Backflow Preventers.

**Section 31.4 Failure to Repair/Replace Defective Backflow Preventers (Page 22)**

- In a similar fashion to **Section 31.3**, Customers must repair or replace defective Backflow Preventers and notify the Cross Connection Control Officer. This section specifies the action that will be taken if these results are not received in a timely manner.

**Section 31.6 Failure to Comply with Direction of CCCO (Page 22)**

- This is a new section that outlines the requirement for a Customer to follow the directives of the Cross Connection Control Officer. If these directives are not followed, the Water Supplier can apply penalties.

**Alternative 2. Do not Amend the Bylaw**

With no amendments to the existing Bylaw, the application of cross connection control will be inconsistent throughout Greater Victoria and the mechanical designers and Building Inspectors will continue to require clarification of the rules. With no amendments, no allowances will be made for premises isolation of existing Severe and Moderate Hazard Facilities and this will translate into substantial additional expenditures for the facility owners. Finally, the amendments strengthen the enforcement elements of the Bylaw.

**FINANCIAL IMPLICATIONS**

The funding for the Regional Cross Connection Control Program is in place and is provided in the 2008 Operations Budget for the Water Quality Division. The cost of operating the program is recovered through the bulk water rate charged to each bulk water supply customer. The proposed amendments to the Bylaw do not have any new financial implications for the CRD.

**RECOMMENDATION**

That the Regional Water Supply Commission recommend to the Capital Regional District Board that Bylaw 3516, "Capital Regional District Cross Connection Control Bylaw No. 1 2008", be introduced and read a first time, read a second time, read a third time and adopted.

---

Robert (Bob) Sochowski  
Cross Connection Control Officer, Water Quality Division

---

J. A. (Jack) Hull, MBA, P. Eng.  
General Manager, Water Services

---

Stewart Irwin  
Senior Manager, Water Quality Division