

**DRAFT FOR
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“Point of Entry” and “Point of Use” Water Treatment Systems

Planning Considerations for British Columbia: Edition 1



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Point of Entry / Point of Use Water Treatment

Summary of Planning Considerations for British Columbia

Prepared by Sustainable Infrastructure Society, September 2007

Please Note

This summary of POE / POU planning considerations for British Columbia has been prepared by the Sustainable Infrastructure Society. It is intended for reference by water supply systems who may be considering the application of Point of Entry / Point of Use (POE / POU) water treatment systems. It should be used only for initial reference when considering use of POE / POU equipment and does not replace the need for site-specific examination or the advice of experienced specialists.

This document outlines planning considerations, certain of which may evolve in the future into “best practices” as experience is gained with POE / POU installations in BC. It is important to note that best practices are not the same as regulatory requirements. This document does not set out regulatory requirements and is not intended to replace or supersede any directives or similar documents produced by the regional health authorities or any other authorities having jurisdiction. It has not been endorsed by any branch of government or by any health authority or any other organization.

This document may be replaced at some point by other materials such as a formal Best Management Practice guide covering the use of POE / POU systems, and prepared following consultation with a number of organizations.. The planning considerations in this document have been prepared from study of experience and guidelines from other jurisdictions, together with an initial review of regulations and procedures in British Columbia. They are themselves subject to change based on experience with POE / POU pilot projects in various areas of BC.

The document: “Guide Book: Planning and Implementation of “Point of Entry” and “Point of Use” Water Treatment Systems in British Columbia” provides a more comprehensive guide to the application of POE / POU equipment and will be available early in 2008.

Preface to the Planning Considerations

The following notes provide background to the POE / POU planning considerations for BC:

Amendment to the Regulation: The amended British Columbia Drinking Water Protection Regulation states that a small system is exempt from section 6 of the Drinking Water Protection Act if each recipient of the water from the system has a Point of Entry or Point of Use (POE/ POU) treatment system that makes the water potable. By being

exempt from section 6 of the Act in this way, the water purveyor is no longer required to provide water that is potable before it reaches the consumer's home.

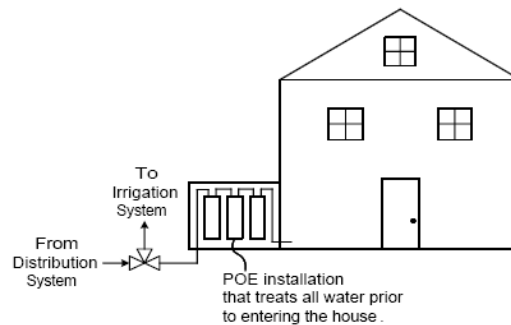
Small System: Section 1 of the Regulation defines “small system” to mean all water supply systems that serve up to 500 individuals during any 24-hour period.

POE / POU Installations: A POE / POU installation consists of various items of equipment, for example filters and disinfection units, which when assembled together treat the water to a desired standard. These devices are typically installed at the home or facility of the consumer.

Operating Permits: Water suppliers must not operate a water supply system without an operating permit and must comply with the terms and conditions of the permit.

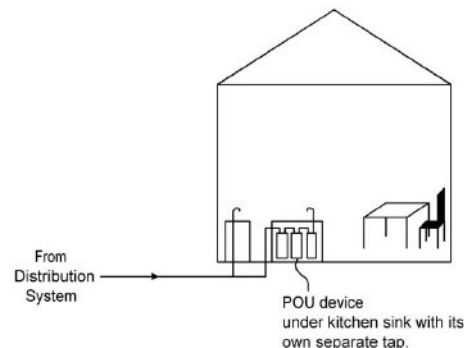
Drinking Water Officer (DWO): A DWO is a member of the regional health authority having jurisdiction, and who is responsible for enforcement of drinking water protection legislation including the issuance of operating permits.

Point of Entry (POE): A Point of Entry device is one which is located at the point where the water supply enters the premises and treats all water entering the premises to a



potable standard.

Point of Use (POU): A Point of Use device is one that is typically (but not necessarily) installed within the premises and located immediately before the point at which water is drawn for consumption, such as a kitchen tap, and which treats only water drawn at that point to potable standard.



Summary of Planning Considerations for British Columbia: Edition 1

A. General

1. Decisions about the kind of water treatment to be used should be made with reference to a long-term or strategic plan for the water system.

It is good practice for every water system to have a long term plan in place which covers such items as the renewal of infrastructure including estimated costs and schedules, the long term financial viability of the system including the adequacy of rates and charges, and the protection of water quality. Within this context decisions about water treatment can be made more effectively.

2. The water treatment needs of the system should be clearly identified at an early stage in the examination of POE / POU systems, and the expected advantages of POE / POU should be fully analyzed.

In certain circumstances POE / POU may offer clear advantages. For example some systems supply water in the summer, a very high percentage of which is required for irrigation and does not need treatment to potable standards. Other systems may have a large group of customers each with an individual well providing drinking water. This group of customers may require system water only for irrigation and fire-fighting purposes and may be reluctant to pay for centralized treatment. In all cases a systematic analysis, including examination of life cycle costs for each option, should be undertaken before making decisions about the use of centralized or POE / POU water treatment.

3. All POU / POE equipment should be owned and installed by the water supplier. All POE / POU equipment should be monitored and maintained by the water supplier or by a contractor hired for the purpose.

This will help to ensure proper operation, monitoring and maintenance of the devices. The water supplier retains the ultimate responsibility for the quality and quantity of the water provided to the customers and must closely monitor all contractors. Further, the water supplier should not delegate its responsibility for the operation and maintenance of installed POU or POE devices to homeowners. The Drinking Water Officer may require a trained or certified operator for the operation and maintenance of POE/POU units.

4. At an early stage in considering the use of POE / POU the water supplier should contact the local drinking water officer (DWO). The water supplier should follow the process clearly defined by the DWO when providing information in connection with the installation of a POE / POU system.

The DWO may require submission of a range of information concerned with the design, installation, operation, monitoring and maintenance of the POE / POU system. This may include the legal agreement between the water supplier and the customer.

5. POE / POU devices should be procured, installed, operated, monitored and maintained under a written plan acceptable to the DWO, and which considers local context and circumstances.

The DWO may require adequate certification of performance and field-testing of the POE /POU devices. The water supplier should consider the context in which POE /POU devices are to be installed. For example, will the treatment devices require protection against freezing and/or will they be readily accessible for inspection and maintenance? Plans and specifications may require approval by the DWO or other official.

6. The owners of all homes and other premises connected to the water system and in which the water supplied by the system may be used for drinking or other domestic purposes must agree to the installation of POE / POU equipment.

The water supplier should have a governance structure which enables effective planning, implementation and operation of the POE / POU system. Procedures may be required that enable the water supplier to disconnect buildings without a POE / POU device if the owner has not agreed to the installation within a stated period of time.

B. Applications & Effectiveness

7. POU devices should not be used as a treatment technique for microbial contaminants or for an indicator of a microbial contaminant.

POU devices only treat water at an individual tap (usually the kitchen faucet) and therefore raise the possibility of potential exposure to contaminants at other faucets. Also, they do not treat contaminants introduced by the shower (breathing) and skin contact (bathing).

8. In certain circumstances specialized guidelines may be required to cover the use of POE / POU devices.

Specialized guidelines may be required for example when there is an indication of the need for corrosion control treatment requirements for lead and copper, or where there are contaminants present such as radium, beta particle activity and regulated radionuclides.

9. The water supplier should be prepared to demonstrate that the technology selected is effective in removing the contaminants of concern.

The water supplier may choose to work with suppliers and other specialists to demonstrate effectiveness. In some cases this may mean field testing,

demonstration of compliance with applicable standards, or certification by an experienced professional.

10. POE devices should provide a level of health protection equivalent to that provided by centralized water treatment. Where appropriate the equipment should be certified for potable water use.

“Equivalent” means that the water would be of quality comparable to water taken from the same source and treated by a central treatment plant to meet quality objectives established by the health authority having jurisdiction.

11. The microbiological safety of the water should be maintained at all times, and POE / POU installations should be designed and operated accordingly.

There may be a tendency for certain POE devices to increase bacterial concentrations in treated water. This is a problem sometimes associated with activated carbon technologies. Therefore, it may be necessary to require frequent back-washing, post-filter disinfection, and monitoring to ensure the microbiological safety of the treated water.

C. Involvement with Customers

12. Prior to installation, an information notice about the POE /POU units and a contact number for servicing should be given to (and verbally explained to) all occupants, homeowners and property owners.

The water supplier should ensure that all customers are delivered the information notice and are verbally contacted to ensure they are aware of and understand the information provided. The purpose of the notice is to inform people of basic information about the POE / POU system including that:

- ❑ POE units are for the purpose of drinking water safety.
- ❑ The drinking water system is the owner of the POE / POU installation and is responsible for the maintenance and operation of POE/ POU units.
- ❑ The drinking water system owner and/or contractor will periodically require access to the premises for the purpose of maintenance of POE / POU units and water sampling.
- ❑ POE units are installed with automatic shut-off in the event that there is insufficient water flow to ensure to proper functioning of the unit. If the water supply is interrupted the resident should contact the water supplier to obtain further assistance.
- ❑ A legal agreement will be required between the water supplier and the end user.

13. The water supplier should develop procedures to ensure every building connected to the system continues to have a POE/ POU device installed, maintained, and adequately monitored.

The water supplier should seek 100 percent participation of all property and/or building owners except those exempt from the requirement to provide potable water under Section 3.1 (a) of the Regulation. Procedures should be developed that enable the water supplier to formally notify all owners and occupiers of the risks of non compliance, and which enable the supplier to disconnect buildings without a POE / POU device if the owner has not agreed to the installation within a stated period of time. Lack of cooperation by a small number of customers may disrupt plans for installation of POE / POU equipment throughout the system. Without 100% participation the water supplier will lose the exemption from the requirement to provide potable water, and may be exposed to legal liability.

14. The water supplier should ensure that the rights and responsibilities of each customer in connection with the POE/ POU installation are clearly conveyed in a written agreement with customer, and that these rights and responsibilities convey with title upon sale of property.

The written agreement should include items covering access and maintenance. For example the water supplier should be allowed access to the property or residence for the purpose of maintenance of POE units and water sampling. The property owner's responsibilities for the POE /POU device must be included in the title to the property. The rights and responsibilities of the customer in connection with the POE /POU installation must be transferred to the new owner with the title when the building is sold. The agreement may include arrangements for enforcement, and for the recovery of costs of the POE / POU installation and maintenance.

15. The water supplier should have a written plan in place for continuing public communication and education concerning the use of POE /POU devices, and should provide a clear mechanism to receive and respond to customer concerns, and communicate this to the public and to the DWO.

Complete participation of the public is an important component of a successful POE / POU strategy. The water supplier should provide a customer contact line and ensure that there is always a prompt reply to queries. Even with regular maintenance and replacement of certified, reliable POE units, there may be unanticipated problems, particularly when the units are first installed. Maintenance resources should be on call at all times.

D. Operation and Monitoring

16. POU and POE units should have a warning device which will automatically notify customers of operational problems. POE units should have an automatic shut-off mechanism which activates if there is a malfunction of the unit and a device to notify customers of the problem.

Each POU /POE treatment device should be equipped with a warning device (e.g., alarm, light, etc.) that will alert users when the unit is no longer adequately treating the water. If loss of power may lead to ineffective operation of the unit then an automatic shut-off mechanism should be installed which would be activated upon loss of power. Procedures that cover by-pass or interference by the customer with the POE/POU treatment device should be in place.

17. The water supplier should develop a monitoring plan that is acceptable to the drinking water officer prior to the installation of POE / POU devices.

The monitoring plan should help ensure that the POE / POU device continues to treat contaminants of concern. The monitoring plan should include frequency of monitoring for the contaminant of concern and number of units to be monitored. Monitoring may include physical measurements and observations such as total flow treated and mechanical condition of the treatment equipment. Monitoring results should be linked to administration of maintenance, repairs and replacement parts inventory.

18. The water supplier should develop a written operating plan, including record-keeping, that is acceptable to the drinking water officer, prior to the installation of POE / POU devices

The drinking water supplier should ensure that accurate records are kept of installations, servicing and maintenance visits, work performed, sample test results and property access problems.

19. In cases where the POE / POU devices are used to augment central treatment, these planning considerations may also be useful.

In some cases POE / POU devices maybe used to supplement central treatment. For example central disinfection may be provided, with POU devices used in individual premises to reduce the level of a certain inorganic contaminant.

These POE / POU planning considerations are available on the web site of the Sustainable Infrastructure Society at:

www.SustainIS.Org