

**DRAFT FOR
COMMENT
18th October 2007**

An Introduction to Point of Entry / Point of Use (POE/ POU) Water treatment Systems in British Columbia



Prepared by:

Sustainable Infrastructure Society

PO Box 3075 STN CSC
R-Hut McKenzie Avenue
University of Victoria
Victoria, B.C. Canada V8W 3W2
250 472 4327

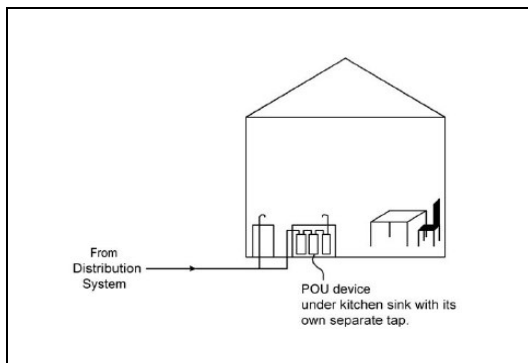
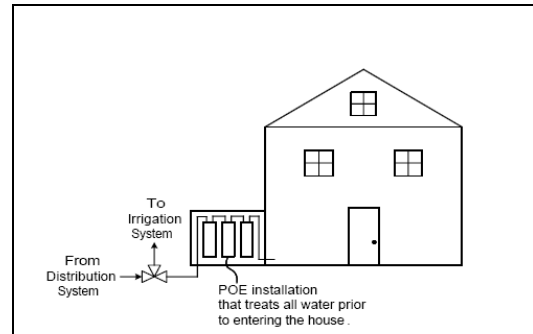
www.SustainIS.org

October 2007



1. What is POE / POU?

Point of Entry (POE): A Point of Entry water treatment 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 water treatment 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 a potable standard.

2. Benefit to Your Water System

POE / POU systems may offer benefits to certain kinds of small water systems. If you manage a water system, consider these questions:

- Is a high percentage of the total water you supply used for irrigation or other non domestic use?
- Do many of your customers provide their own potable water supply, and use your system only for irrigation, fire fighting or other non-domestic purpose?
- Are you are in a remote location where electricity is only produced on individual properties for personal use?
- Do you think that POE / POU may be more affordable for your small system to own or to operate than a centralized treatment system?
- Do you have a chronic chemical contaminant in your source water, for example arsenic, that must be removed to make the water safe to drink?

If you answered “Yes” to any of these questions, it may be worthwhile for you to investigate use of a POE/ POU system further, to determine if this is suitable for you.

3. Planning Considerations

If you decide to investigate the use of POE / POU for your system you should be aware of certain considerations, some of which derive from best practices or legislated requirements. When planning a POE / POU system you should:

- ❑ Make decisions about the kind of water treatment to be used with reference to your long-term plan for the water system, and identify in writing the water treatment needs of your system at an early stage in the process
- ❑ Contact your local drinking water officer (DWO) at an early stage and describe your plans for POE / POU, and review the applicable legislation.
- ❑ Be aware that all POU / POE equipment should be owned and maintained by your system.
- ❑ Prepare a written plan covering purchase, installation, monitoring and operation of the POE / POU devices which is acceptable to the DWO.
- ❑ Ensure that the owners of all homes and other premises connected to the water system agree to the installation of POE / POU equipment.
- ❑ Plan for full communication with your customers about the use of POE / POU.
- ❑ Be aware that you should not use Point of Use (POU) devices to treat for microbial contaminants or for an indicator of a microbial contaminant.
- ❑ Be prepared to demonstrate to the DWO that the technology you select is effective in removing your contaminants of concern and is appropriately certified; that the microbiological safety of the water will be maintained at all times, and that the equipment will provide a level of health protection equivalent to that provided by centralized water treatment.
- ❑ Ensure that the POU and POE units have a warning device which will automatically notify customers of operational problems, and that POE units will have an automatic shut-off mechanism which activates if there is a malfunction.

You can review the full version of these POE / POU planning considerations on the web site of the Sustainable Infrastructure Society at: www.SustainIS.Org

4. A Systematic Approach

There is a systematic process you can follow in evaluating the use of POE / POU for your water system. This systematic process will also help you to plan the

procurement and installation of the system if you decide to proceed. It consists of the following seven steps:

1. Identify Needs
2. Examine Options
3. Plan the Project
4. Assemble the Team
5. Design in Detail
6. Supply and Install
7. Commission & Operate

The extent of work involved in a given step is dependent on the nature of the water system, the availability of existing information and the experience of those involved in the process. Some steps may involve more work than do others. You can find more information on this process in the POE / POU guidebook referenced at the end of this publication.

5. Use of POE / POU Systems

The type of POE / POU equipment you use will depend on the contaminants in your source water supply and other local conditions. The following sections give simplified examples of POE / POU systems that may be applicable in certain locations in BC:

System 1: Low turbidity, high UV transmittance (clear water), acceptable metals/minerals, total / fecal coliforms present

System: 5 micron sediment filtration and UV.

Features/options: UV: audio/visual alarms, auto-shutoff, UV intensity monitor, remote monitoring, lamp usage timer (replacement reminder), power surge protection.

Maintenance: change filter as needed (average – once per year) and bulb once per year; clean sleeve at time of bulb change.

System 2: Moderate levels of Iron/Manganese/H₂S, pH: 6.5 to 8.5, Bacteria present

System: Greensand, 5 micron sediment filtration and UV.

Features/options: Greensand: metered or time controlled backwash/regeneration. UV: audio/visual alarms, auto-shutoff, UV intensity monitor, remote monitoring, lamp usage timer.

Maintenance: change filter as needed (average – once per year) and bulb once per year. Clean sleeve at time of bulb change. Add Potassium Permanganate as required.

System 3: Clear, Excessively Hard water, no bacteria present

System: Water softener.

Features/options: Softener: metered or time controlled backwash/regeneration.

Maintenance: Add salt to brine tank as required.

System 4: Surface water, tannins, high turbidity, low pH, and bacteria present

System: One option is POE Reverse Osmosis and UV. Note, when tannins are involved there are a number of solutions with varying effectiveness.

6. Equipment Suppliers

It is important to work with an experienced equipment supplier. Before equipment suppliers can provide you with an outline of the equipment that may be suitable, they will require information about your system. You can provide this conveniently by completing worksheets on the web site of the Sustainable Infrastructure Society.

The information you provide should include an analysis of your source water. It is important to test for a range of contaminants. The presence of certain constituents, which in themselves do not present problems, can interfere with the working of the POE / POU equipment. Experienced suppliers will suggest a treatment system to suit your circumstances. In some cases you may also consider employing the services of a consulting engineer.

In all cases you must ensure that the system you choose is appropriate for your area, your source water and your site. Make sure the installation will be secure, and protected from environmental conditions such as low winter temperatures.

7. Further Information

Further information is being assembled on the web site of the Sustainable Infrastructure Society. This information includes:

Resources:

- ❑ List of equipment suppliers
- ❑ List of consulting engineers

Publications:

- ❑ Planning Considerations
- ❑ Guidebook
- ❑ Drinking Water Protection Act and Regulation

Links to other sources:

- ❑ BC Health Authority web sites
- ❑ Drinking Water Officers Guide

To access these sources go to the web site of the Sustainable infrastructure Society at: **www.SustainIS.Org**
