

## **Ultraviolet (UV) Treatment for Small Water Systems**

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This guideline is intended to provide assistance to owners of small water systems applying for a construction permit regulated under the Drinking Water Protection Act. This guideline is limited to small systems with a single connection serving a public or commercial facility such as a restaurant. It is not intended for use by owners of small systems with more than one connection, small systems serving private residences, or larger systems. As part of the process the water system supplier will need to contact UV equipment suppliers and qualified installers. After review of the application by the Public Health Engineer (PHE), a construction permit may be issued.

### **Initial Requirements**

Prior to applying for the construction permit, the water system supplier needs to obtain community water source approval from the local Public Health Inspector (PHI). The analysis must include a UVT (UV Transmittance) result of 80% or higher as well as turbidity readings.

### **Description of UV System Components**

The UV System will consist of:

- 25 to 1 micron cartridge filter,
- 1 micron absolute cartridge filter,
- pressure gauges, and
- UV unit (NSF 55A certified, installed with a solenoid valve fail safe shut off)

The cartridge filters and UV unit are installed with isolation valves allowing servicing of the equipment. Each cartridge filter has a pressure gauge installed on the upstream and the downstream side for a total of 3 pressure gauges (see Figure 1). They are used to monitor the maintenance and replacement requirements of the cartridge filters. The equipment is installed in a location that is easily accessible for daily maintenance checks. Any pressure tanks are installed upstream of the pre-filter and UV unit. No bypasses around the pre-filter or UV unit are allowed. This system is not to supply water in case of an alarm or power outage.

### **Construction Permit Application Process**

#### **STEP 1 - Completing the Application**

The water system supplier will complete an Application for a Water System Construction Permit (HPL0620) and submit it to the Public Health Engineer. The application should include the following information:

- a) Under Description of Proposed Water Main Extension/Replacement:
  - pipe length, size, pressure rating and material
- b) Under Description of Related Works:
  - water source type (ground, surface water),
  - number of isolation valves,

- number of pressure gauges,
  - 25 to 1 micron cartridge filter including make and model,
  - 1 micron absolute cartridge filter including make and model,
  - solenoid valve (may be standard as part of UV unit), and
  - UV unit including make, model and NSF 55A certified
- c) Under Location of Proposed Works:
- describe where the equipment is located on the property, in the building, and in relation to water outlets
- d) Responses to the questions on the application. All equipment and piping will be required to be disinfected in accordance with AWWA standards. As such, a qualified installer is required to complete the installation. For the system described in this document only, engineered drawings are not required. Any modifications to the system described in this document will require a Professional Engineer. This system is only applicable to water supply systems servicing one connection.
- e) A diagram of the treatment system indicating:
- pipe,
  - isolation valves,
  - pressure gauges,
  - 25 to 1 micron cartridge filter,
  - 1 micron absolute cartridge filter,
  - solenoid valve,
  - UV unit, and
  - location of treatment equipment

## **STEP 2 - Submitting the Application**

Submit the completed Application for a Water System Construction Permit and the diagram to the Public Health Engineer for review. If there are questions or inquiries the PH Engineer will contact the water system supplier, otherwise a construction permit will be issued.

## **STEP 3 – Letter of Completion**

After the system is installed, the supplier or installer is required to submit a letter stating that the installation was completed in accordance with the approved application and diagram.

## **STEP 4 - Operating Permit**

Contact the area Public Health Inspector regarding the issuance of a Permit to Operate.

## **STEP 5 – Additional Information**

The installation of the UV system should include spare parts (minimum of a spare UV bulb and cartridge filters), a maintenance checklist, contact number for servicing, operating and trouble shooting manual and emergency response plan.

*If you have any questions, please contact the area Public Health Engineer*

<b><i>Kootenay Region</i></b>	<b><i>Okanagan Region</i></b>	<b><i>Thompson Cariboo Shuswap Region</i></b>
Nelson Health Unit 333 Victoria Street Nelson BC V1L 4K3 1-877-221-3388 or (250) 505-7200	Penticton Health Centre 740 Carmi Avenue Penticton BC V2A 8P9 (250) 770-3434	Kamloops Health Unit 519 Columbia Street Kamloops BC V2C 2T8 1-866-847-4372 or (250) 851-7300

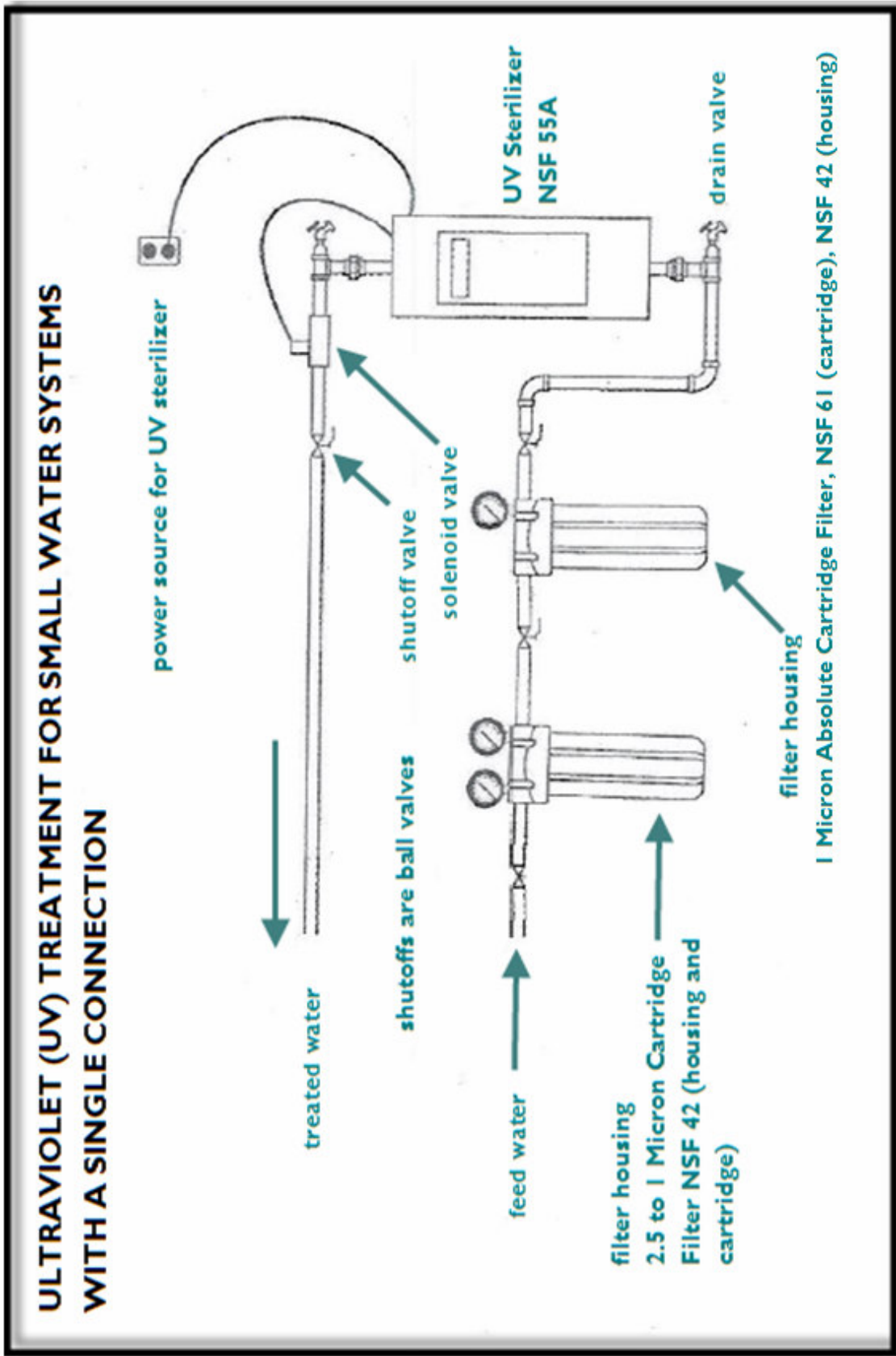


Figure 1. Schematic Drawing of UV Treatment in a Small Water System