



DIVISION OF INDUSTRY SERVICES  
 PO BOX 7162  
 MADISON WI 53707-7162  
 Contact Through Relay  
 www.dsps.wi.gov/sb/  
 www.wisconsin.gov

Scott Walker, Governor  
 Dave Ross, Secretary

May 22, 2014

CUST ID No. 224056

*ATTN: Plumbing Inspector*

KEITH L SCHEDLER  
 DONS PLUMBING SERVICE  
 1003 E CLIFTON ST  
 TOMAH WI 54660

BUILDING INSPECTION  
 CITY OF SPARTA  
 201 W OAK ST  
 SPARTA WI 54656

**CONDITIONAL APPROVAL**  
**PLAN APPROVAL EXPIRES: 05/22/2016**

Identification Numbers
<b>Transaction ID No. 2406135</b>
<b>Site ID No. 647065</b>
Please refer to both identification numbers, above, in all correspondence with the agency.

**SITE:**

Department of The Army Fort McCoy  
 2171 S 8TH Ave Attn Afrc Fm Ssb  
 City of Sparta, 54656-5136  
 Monroe County

**FOR:**

Facility: 634717 DEPARTMENT OF THE ARMY FORT MCCOY  
 2171 S 8TH AVENUE ATTN AFRC FM SSB  
 SPARTA 54656  
 Plan Type: Addition-Alteration; 1 Interior Fixture(s)

Object Type: Commercial Water Treatment Device Regulated Object ID No.: 1485635

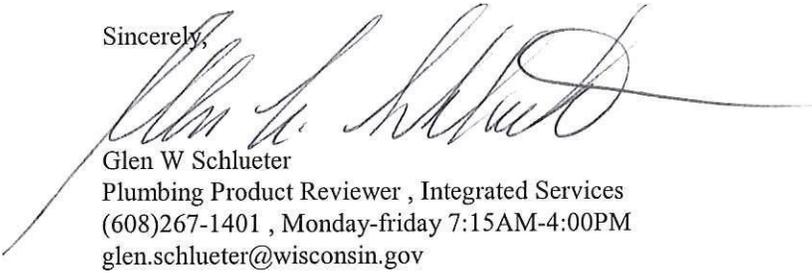
The submittal described above has been reviewed for conformance with applicable Wisconsin Administrative Codes and Wisconsin Statutes. The submittal has been **CONDITIONALLY APPROVED**. The owner, as defined in chapter 101.01(10), Wisconsin Statutes, is responsible for compliance with all code requirements.

**No person may engage in or work at plumbing in the state unless licensed to do so by the Department per s.145.06, stats.**

The following conditions shall be met during construction or installation and prior to occupancy or use:

- This plan review was performed at the specific request of the Wisconsin Department of Natural Resources (WDNR); not because there are violations of the Safe Drinking Water Act (SDWA). A review of the bacteriological sampling history at Fort McCoy indicates a persistent history of microbiologically safe water.
- The UV Pure Technologies Inc., Hallett 30 UV device is approved by NSF International under NSF/ANSI Standard 55, Class A:  
<http://info.nsf.org/Certified/dwtu/listings.asp?CompanyName=UV+Pure&submit1=Search+by+Manufacturer&Program=DWTU>  
 The Hallett 30 UV device was approved as a stand alone means of disinfection by the Department of Safety & Professional Services (DSPS) until the approval expired on September 30, 2010. Said approval has not been renewed. A copy of the expired approval letter is enclosed for reference purposes.
- If adenovirus is a concern, then supplemental chlorination may be required. This is a decision that rests with the WDNR.
- The installation and use of these UV devices shall conform to the most current version of the document entitled "DNR Criteria for Ultraviolet (UV) Water Treatment Systems for Private and Non-Community Public Water Supplies to Control Microbiological Contamination." Copy enclosed.

Sincerely,



Glen W Schlueter  
 Plumbing Product Reviewer , Integrated Services  
 (608)267-1401 , Monday-friday 7:15AM-4:00PM  
 glen.schlueter@wisconsin.gov

Fee Required \$	160.00
Fee Received \$	160.00
Balance Due \$	0.00
WiSMART code: 7657	

cc: Dons Plumbing Service Inc  
 Bruce E Meiners, Plumbing Consultant, (608) 399-4156 , Mon - Fri 8:00 am - 4:30 pm  
 Fort Mccoy Directorate of Public Works

**Note: Effective January 1, 2012,** all codes under the jurisdiction of the Division of Industry Services (formerly Safety & Buildings) will be modified. Code references with prefixes starting with "Comm" have been replaced with "SPS" to recognize the relocation of the Division of Industry Services from the former Department of Commerce to the Department of Safety & Professional Services. Additionally, all IS (formerly S&B) codes have been renumbered and addressed in a "300" series. For future reference, the Wisconsin Commercial Building Code will be addressed by SPS Chapters 360-366.

*Conditionally*  
**APPROVED**  
 DIVISION OF SAFETY AND BUILDINGS  
  
 SEE CORRESPONDENCE

~~VOID~~

March 26, 2009

UV PURE TECHNOLOGIES INC  
DANIELLE BAINS  
60 VENTURA DR SUITE 19  
TORONTO, ONTARIO, M1B 3S4, CANADA  
CANADA

UV PURE TECHNOLOGIES INC.  
SANDRO PECILE  
60 VENTURE DR UNIT 6  
TORONTO, ON, M1B 3S4  
CANADA

Re: Description: WATER TREATMENT DEVICE-ULTRAVIOLET  
Manufacturer: UV PURE TECHNOLOGIES INC.  
Product Name: HALLET UV WATER PURIFIERS (POE)  
Model Number(s): HALLET 13, HALLET 15 XS AND HALLET 30 (POE)  
Product File No: 20070475

The specifications and/or plans for this plumbing product have been reviewed and determined to be in compliance with chapters Comm 82 through 84, Wisconsin Administrative Code, and Chapters 145 and 160, Wisconsin Statutes.

The Department hereby issues an approval based on the Wisconsin Statutes and the Wisconsin Administrative Code. This approval is valid until the end of September 2010.

This approval supersedes the approval issued on August 17, 2007 under product file number 20070338.

- INFO ONLY
- This product has undergone sufficient testing to document the product's ability to reduce only those contaminants and/or substances as specified in this approval letter when the product is installed and maintained in strict accordance with the manufacturers published instructions.
  - Where the Department of Natural Resources (DNR) has jurisdiction, a written approval may be required prior to installation of this product in a water supply system to reduce the concentration of a contaminant that exceeds the primary drinking water standards contained in ch. NR 809, Wis. Admin. Code, the enforcement standards contained in ch. NR 140, Wis. Admin. Code, or for a water supply system that is subject to a written advisory opinion by the DNR. For more information contact the DNR Section of Private Water Systems, P.O. Box 7921, Madison, WI 53707, telephone (608) 266-3415.
  - If this approved device is modified or additional assertions of function or performance are made, then this approval shall be considered null and void, unless the change is submitted to the department for review and the approval is reaffirmed.
  - The installation and use of these devices shall conform to the most current version of the document entitled "DNR Criteria for Ultraviolet (UV) Water Treatment Systems for Private and Non-Community Public Water Supplies to Control Microbiological Contamination".
  - The device(s) covered under this approval are designed to inactivate microorganisms, including bacteria, viruses, Cryptosporidium oocysts and Giardia cysts from contaminated water. The device(s) covered under this approval are not intended for the treatment of water that has obvious and/or intentional contamination source (e.g. raw sewage) nor is the device(s) intended to convert wastewater into drinking water. The device(s) are intended to be installed on visually clear water.
- INFO ONLY

If this device(s) is not installed downstream of a device(s) specifically approved for cyst reduction/inactivation by this department, then protozoan related performance claims are limited to Cryptosporidium oocysts and Giardia cysts only. If this device(s) is installed downstream of a separate device specifically approved for cyst reduction by this department, then a general cyst reduction claim can be made when applied to untreated surface waters and/or ground waters under the direct influence of surface waters.

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- At 254 nanometers (nm), this device must deliver a minimum UV dose of 40 millijoules per square centimeter ( $40 \text{ mJ/cm}^2$ ) at the alarm set point.  $40 \text{ mJ/cm}^2$  is equivalent to 40,000 microwatt-seconds per square centimeter ( $4.0 \times 10^4 \text{ } \mu\text{wsec/cm}^2$ ).

A normally closed (N.C.) solenoid shall be installed on the inlet piping immediately adjacent to this device. At the alarm set point (i.e.  $40 \text{ mJ/cm}^2$ ) the N.C. solenoid valve shall deenergize halting the flow of water through this device.

- A narrow band monitor shall be included with this device. The narrow band monitor shall specifically measure the 254 nanometer (nm) wavelength. When the UV dosage decrease to the alarm set point (i.e. 40 millijoules (mJ) minimum), the narrow band monitor shall signal the normally closed (N.C.) solenoid on the inlet piping to this device to close.

Based on testing data submitted to and reviewed by the department, this approval recognizes that this plumbing product will reduce the concentration of contaminants as specified on pages 1 through 2 of this letter.

**MICROBIOLOGICAL INACTIVATION PERFORMANCE**  
**PRODUCT FILE NUMBER 20070475**  
**TABLE 1 OF 1**

**Flow Rates:** Hallett 13 = 49.2 liters per minute (lpm) [13 gallons per minute (gpm)]  
Hallett 15xs = 55.3 lpm [14.6 gpm]  
Hallett 30 = 113.1 lpm [30 gpm]

Tested Contaminant	Influent Challenge Concentrations (pfu/ml)
MS2 Bacteriophage (ATCC# 15597-B)	$5 \times 10^4$ to $5 \times 10^5$

**Other conditions:** the testing performed on these devices was conducted in accordance with NSF/ANSI Standard 55. The devices meet NSF/ANSI Standard 55, Class "A" criteria, this means these devices are approved for the inactivation of bacteria, viruses, Cryptosporidium oocysts and Giardia cysts from microbiologically unsafe water.

pfu/ml = plaque forming units per milliliter

This device was tested under controlled laboratory, or field, conditions. The actual performance of this device for a specific end use installation will vary from the tested conditions based on local factors such as water pressure, water temperature and water chemistry.

The department is in no way endorsing this product or any advertising, and is not responsible for any situation which may result from its use.

Sincerely,

VOID

Glen W. Schlueter  
Engineering Consultant-Plumbing Product Reviewer  
Bureau of Integrated Services  
Safety and Buildings Division  
Department of Commerce  
(608) 267-1401 Phone  
(608) 267-9566 Fax  
glen.schlueter@wi.gov Email  
8:00AM – 4:30PM CDT Work Hours  
GWS:gws

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INFO ONLY

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The Department of Safety and Professional Services (DSPS) must approve private residential UV water treatment devices serving one or two family dwellings prior to sale or installation. DNR requires DSPS approved devices to be installed on all private and non-community water systems. Installation must be made according to manufacturers printed instructions and Chapters SPS 381 through 387, Wisconsin Administrative Code. An owner may install the treatment device on their residence. A licensed pump installer or plumber is required for installation on rented property that an owner does not occupy and for non-community systems. A licensed pump installer shall do contracted work, if the device will be installed before the pressure tank. A licensed plumber must install the equipment after the pressure tank. All work must comply with applicable code requirements.

### **Water Quality Characteristics**

The water supply shall be analyzed for the following water quality parameters and the results shall be included in the UV application. Pretreatment is required for UV installations if the water quality exceeds any of the following maximum limits. When an initial sample exceeds a maximum limit, a check sample shall be taken and analyzed.

Parameter	Maximum	Preferred
Color (if visibly present)	15 APHA units	No APHA units
Dissolved Iron	0.3 mg/L	<0.01 mg/L
Dissolved Manganese	0.05 mg/L	<0.0004 mg/L
Hardness	120 mg/L	17.1 mg/L
Hydrogen Sulfide (if odor is present)	Non-Detectable	Same
Iron Bacteria	None	Same
pH	6.5 to 9.5	Same
Suspended Solids	10 mg/L	<1mg/L
Turbidity	5.0 NTU	1.0 NTU
Total Coliform	1,000 *CFU/100 ML	
E. Coli	100 *CFU/100 ML	

\* CFU = Colony Forming Unit

Raw water quality shall be evaluated and pretreatment equipment shall be designed to handle water quality changes. Turbidity caused by rainfall events is of special concern.

### **UV with Microfiltration Approval Process**

DNR approval is required prior to installation of an UV water treatment device on a microbiologically unsafe water supply.

1. The owner must sign a short statement describing the steps previously taken to correct the microbiological problem and send it along with the application to:

DNR Private Water Systems DG/2  
Box 7921  
Madison, WI 53707-7921

2. The DNR will review the application for completeness. Incomplete applications will be returned. Disapproved applications will be returned to the applicant with the reasons for disapproval. There is no fee for reviewing the application.

3. Installation of the DNR approved water treatment system may proceed subject to approval conditions. Most approvals require:
  - a. Installation according to the submitted plans and approval conditions.
  - b. Initial sampling of raw water and treated water at startup and a routine sampling program.
  - c. Routine maintenance requirements.
  - d. Non-Community public water supply systems will be required to submit periodic reports of sample results and maintenance actions to the Department.

### **Application**

The information that is required for a complete application is found in the attached Application Content Outline. The Department asks that you take the time to obtain the information specified and be as complete as possible in your application. Information that is requested in item #5 on the attached outline about the depth of well casing, casing integrity and the well's total depth must be obtained in order to evaluate the request. In addition, the water quality data specified in item #6 on the attached outline is critical in designing an UV water treatment system. Attached are the UV specifications that must be met in order for the Department to approve the installation of the water treatment device(s) on a microbiologically unsafe water supply.

### **Criteria Updates**

The Department plans to update the UV Criteria as additional information becomes available and as technology changes. If you are anticipating installing an UV water treatment device please contact us at the address provided above to obtain the latest version of the criteria.

### Application Outline Content

- Property Owner: Include the name, mailing address, and telephone number.
- Water Treatment Device Operator: Provide the name, mailing address and telephone number of the water treatment device operator if different from owner above.
- Property Location and Legal Description: Provide the village or city street and number or if rural, the road and fire number. Include the legal description including the  $\frac{1}{4}$   $\frac{1}{4}$  -Section,  $\frac{1}{4}$  -Section, Section number, Town and Range numbers, and County.
- Property Map: Locate the property on a map. A plat map or topographic map is acceptable.
- Well Description: Provide a copy of the well construction report if available. If not available, provide the following information:
- a. The approximate date of well construction,
  - b. The total depth of the well and
  - c. The depth of the casing in the well.
- Also provide a copy of an inspection report showing compliance of the well and pumping system with Chapter NR812.
- Water Quality: These tests shall be performed by a State Safe Drinking Water Act certified laboratory.
- Results of the following well water quality tests collected at the well sampling faucet:
- a. Total coliform bacteria,
  - b. E-Coli bacteria
  - c. Iron bacteria
  - d. Color, if color is present,
  - e. Dissolved iron,
  - f. Dissolved manganese,
  - g. Hardness,
  - h. Hydrogen sulfide, if odor is present,
  - i. pH,
  - j. Suspended solids,
  - k. Turbidity.
- Water Quantity: Measure or estimate the average daily water usage in gallons. Indicate the pump capacity in gallons per minute.

Water Distribution System Sketch:

Provide a sketch of the water distribution system from the well to the final treated water distribution point including the location of any sampling faucets, pressure gauges, shutoff valves, by-pass piping, pressure tanks, any other treatment devices, and the proposed location of the water treatment device or water treatment system.

Water Treatment Device or System  
Installation Information:

Provide the name of the manufacturer, the product name and model number.

Maintenance Program:

Describe the required maintenance for the UV water treatment device and any pretreatment devices to be installed. Provide a copy of any maintenance and operational agreements. Specify the responsible party for maintaining the water treatment system.

If you have questions, please call Mr. Mark Nelson of the WDNR's Private Water Supply Section in Madison, at (608) 267-4230 or email: [mark.nelson@wisconsin.gov](mailto:mark.nelson@wisconsin.gov).

## UV SPECIFICATIONS

### DESIGN AND OPERATIONAL CRITERIA FOR POINT-OF-ENTRY INSTALLATIONS USING ULTRAVIOLET (UV) FOR PRIVATE AND NON-COMMUNITY WATER SUPPLY SYSTEMS.

The following criteria must be met in order to install an UV water treatment device on a bacteriologically unsafe water supply well.

#### A. CRITERIA FOR UV WATER TREATMENT DEVICES

1. UV water treatment devices must comply with Class A criteria under the American National Standard Institute (ANSI)/National Sanitation Foundation (NSF) Standard 55 - Ultraviolet Microbiological Water Treatment Systems; Residential UV models shall be approved by the Department of Safety and Professional Services (DSPS); each UV water treatment device shall meet the following standards;
  - a. Ultraviolet radiation at a wavelength of 253.7 nanometers shall be applied at a minimum dose of 40 millijoules per square centimeter ( $\text{mJ}/\text{cm}^2$ ) ( $40,000 \mu\text{W}\text{-sec}/\text{cm}^2$ ) at the failsafe set point at the end of lamp life for a cyst rated reduction system;
  - b. The UV device shall be fitted with a lamp viewing port to safely visually verify electrical operation of the lamp(s);
  - c. The UV light assembly shall be insulated from direct contact with the influent water by a lamp jacket and the lamp and lamp jacket shall be replaceable;
  - d. An automatic fixed flow rate control shall be provided to prevent flow above the manufacturer's maximum rated flow over the manufacturer's recommended operating pressure range;
  - e. The UV assemblies shall be accessible for visual observation, cleaning and replacement of the lamp jackets and sensor window/lens;
  - f. The ultraviolet tube(s) shall be 1) jacketed so that a proper operating lamp temperature of about 104 degrees Fahrenheit is maintained and 2) the jacket shall be of quartz or high silica glass with similar optical and strength characteristics;
  - g. A narrow band UV monitoring device shall be provided. It shall be accurately calibrated to 253.7 nanometers and installed at the point of greatest water depth. The device shall trigger an audible alarm in the event the sensor or lamp fails or if insufficient dosage is detected as defined in item "a" above;
  - h. An automatic shutdown valve shall be installed ahead of the UV treatment system that will be activated whenever the water treatment system loses power or is tripped by a monitoring device when the dosage drops below  $40 \text{ mJ}/\text{cm}^2$ . When power is not being supplied to the UV unit the valve shall be in a closed (fail-safe) position.
  - i. The UV housing shall be stainless steel 304 or 316L;
2. A flow delay mechanism shall be provided to permit a sufficient time for tube warm-up per manufacturer recommendations before water flows from the unit upon startup;
3. Identical parallel UV treatment systems shall be provided at public water systems to provide a continuous water supply when one unit is out of service;

4. No bypasses shall be installed on non-community water systems;
5. All water from the well shall be treated. The well owner may request a variance to treat only that portion of the water supply that is used for potable purposes provided, that the daily average and peak water use is determined and signs are posted at all non-potable water supply sources.
6. The well pump shall have adequate pressure capability to maintain minimum water system pressure after the water treatment devices.

## **B. PRETREATMENT**

### **1. Prefilters**

A. Bacteriologically Unsafe Water Supply using a previously approved UV device that provides a minimum dose of 38 millijoules per square centimeter ( $\text{mJ}/\text{cm}^2$ ) ( $38,000 \mu\text{W}\text{-sec}/\text{cm}^2$ ) at the failsafe set point at the end of lamp life.

1. A 5 to  $<50$  -micron sediment prefilter shall be installed before the UV device. The filter shall comply with ANSI Standard 42 and ANSI criteria for particulate reduction. DSPS shall approve the filter model if installed on a residential water supply;

2. Filter(s) rated for cyst reduction shall be installed before the UV device. The filter shall comply with ANSI Standard 53 and ANSI criteria for cyst reduction. DSPS shall approve the filter(s) if installed on a residential water supply.

B. Bacteriologically Unsafe Water Supply using an approved UV device that provides a minimum dose of 40 millijoules per square centimeter ( $\text{mJ}/\text{cm}^2$ ) ( $40,000 \mu\text{W}\text{-sec}/\text{cm}^2$ ) at the failsafe set point at the end of lamp life.

1. A 5 to 15 -micron sediment prefilter (NSF Class III) shall be installed before the UV device. The filter shall comply with ANSI Standard 42 and ANSI criteria for particulate reduction. DSPS shall approve the filter model if installed on a residential water supply.

C. A Bacteriologically Safe Water Supply

1. A 5 to 15 -micron sediment prefilter (NSF Class III) shall be installed before the UV device. The filter shall comply with ANSI Standard 42 and ANSI criteria for particulate reduction. DSPS shall approve the filter model if installed on a residential water supply.

2. Or a 5 to  $<50$  -micron sediment prefilter(s) (NSF Classes III, IV and V) with filter(s) rated for cyst reduction shall be installed before the UV device as specified in A above. DSPS shall approve the filter model if installed on a residential water supply.

D. The prefilter and cyst reduction filter shall be replaced when the pressure loss across an in use filter has increased by 10 psig above a clean new filter at the manufacturers rated service flow rate.

2. Other pretreatment water treatment devices may be necessary depending on source water quality.

3. The Department may consider alternative test data with appropriate protocol and supported test data.

### **C. ADDITIONAL TREATMENT FOR VIRUSES**

The Environmental Protection Agency is currently developing criteria for Public Water Drinking Systems that may require the addition of chlorine as a post treatment technology because of a virus concern. The owner is required to provide plumbing connections to facilitate the installation of a chemical feed system and detention tank if this should be required at some future point in time.

### **D. WATER QUALITY MONITORING**

Total coliform monitoring will be used to evaluate UV treatment effectiveness. The Department on a case specific basis may require other parameters. The monitoring frequency will be as follows:

Startup and 2 weeks after start up - one raw and one treated sample - all systems

Monthly thereafter for all public water systems - raw and treated

Private water system owners are encouraged, but not required, to routinely monitor effectiveness of the water treatment system.

The Department on a case-by-case basis may require monitoring for additional parameters or total coliform on an increased frequency.

### **E. OVERSIGHT AND MONITORING**

UV light intensity of each installed unit shall be monitored continuously. Treatment units and the water system shall automatically shutdown if the UV dosage falls below the required output of 38 or 40 mJ/cm<sup>2</sup> depending upon which system is installed. Water systems that have a large variation in the turbidity of the water source may be required to install a turbidimeter ahead of the UV water treatment device. An automatic shutdown valve shall be installed and operated in conjunction with the turbidimeter. Each owner shall have at least one replacement lamp, 5 to 15 micron replacement filter and cyst reduction filter available on site.

### **F. SEASONAL OPERATIONS**

UV water treatment devices that are operated on a seasonal basis shall be inspected and cleaned prior to use at the start of each operating season. The UV water treatment system including the filters shall be disinfected prior to placing the water treatment system back into operation. A procedure for shutting down and starting up the UV treatment system shall be developed for or by each owner based upon manufacturer recommendations and submitted in writing to the department. This language shall be included in the Maintenance Program section of the application.

### **G. APPLICATION, RECORD KEEPING and ACCESS**

A record shall be kept of the water quality test data, dates of lamp replacement and cleaning, a record of when the device was shutdown and the reason for shutdown, and the dates of prefilter replacement.

Department representatives shall have access to the UV water treatment system and records.

Non-community water systems will be required to submit operating reports and required sample results on a monthly or quarterly basis as described in the conditions of approval.