



September 16, 2014

AQUA RECYCLE  
RANDY ANDERSON  
1355 WEST OAKS COMMONS LANE  
MARIETTA GA 30062

Re: Description: REUSE SYSTEM - GRAYWATER  
Manufacturer: AQUA RECYCLE  
Product Name: AQUARECYCLE WASH WATER RECYCLE SYSTEMS  
Model Number(s): EMI 200-3MG, EMI 200-5MG, EMI 200-7MG AND EMI 200-12MG  
Product File No: 20140259

The specifications and/or plans for this plumbing product have been reviewed and determined to be in compliance with chapters SPS 382 through 384, 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 2019.

This approval supersedes the approval issued on August 11, 2004 under product file number 20040126.

This approval is contingent upon compliance with the following stipulation(s):

- A plumbing plan must be submitted and approved prior to each proposed installation in accordance with DSSPS 382.20 (1) (a) 2. A Plumbing Plan Review must be successfully completed prior to each proposed installation. A minimum of four sets of completed plans and specifications, signed by a Wisconsin registered Architect, Designer, Engineer or licensed Master Plumber shall be submitted along with the following specific information:
  - a. A "Plumbing Plan Review Application" (i.e. SBD-6154) and required fee;
  - b. A scaled plot plan;
  - c. A scaled floor plan;
  - d. A drain, waste and vent system (i.e. DWV) isometric drawing for the engineered blackwater/graywatersystem;
  - e. A non-potable water system isometric drawing;
  - f. A potable water system isometric drawing;
  - g. A maintenance manual addressing all serviceable components or systems;
  - h. A written contingency plan; and
  - i. Water calculation worksheets:
    - 1. The complete non-potable water system; and
    - 2. The complete potable water system
  - j. A copy of this approval letter

For system installations that include irrigation and/or infiltration, the following information must also be provided:

- k. The soil type; and
- l. Infiltration rate

After the plan review process is complete, and the installation is finished, the State Plumbing Consultant assigned to the county in which the installation is located, shall inspect the completed installation. The final installation shall be completed and passed before the system is put into service.

Some of the information listed previously may not pertain to a specific installation.

- Monitoring of these systems shall be performed by licensed POWTS Maintainers, Master Plumbers or licensed Professional Engineers. The maintenance of these systems may be performed by an unlicensed individual.
- Data collection and reporting shall occur on a monthly basis. The minimum data collected and reported shall consist of the following for each system:
  - a. The scum, sludge and water volumes in all holding, storage and treatment tanks within the system;
  - b. The volume of any make-up water added to, or wastewater subtracted from the system;
  - c. Any maintenance performed on the system, including regularly scheduled maintenance;
  - d. The following data shall be collected grab samples of water withdrawn directly from the water storage chamber within the system's third stage treatment tank:
    1. pH;
    2. Biological oxygen demand - 5 day (BOD5);
    3. Total suspended solids (TSS);
    4. Fecal coliform per 100 ml;
    5. Color; and
    6. Odor
    7. Free chlorine residual

All chemical/physical analyses must be performed in accordance with "Standard Methods For the Examination of Water and Wastewater", current edition.

This data must be officially reported to this department by a Wisconsin registered Architect, Engineer or licensed Master Plumber who's directly overseeing the installation and maintenance on a biannual basis. If the data requested for a given system is more than thirty days late, then the system will be shut down and ordered removed and the pertinent site specific plan approval immediately rendered null and void.

- Any initial start-up water, or make-up water, added to these systems must be supplied from a NR 811 or NR 812 approved source.
- Any wastewater or waste materials (e.g., sludge, or scum) withdrawn from these systems must be disposed of in accordance with ch. NR 113.
- The final effluent from these systems may only be used for the following specific end uses:
  - a. Surface irrigation of landscaping (1, 2);
  - b. Vehicle washing (1);
  - c. Toilet and urinal flushing;
  - d. Air conditioning;
  - e. Once through cooling;
  - f. Subsurface dispersal/irrigation;
  - g. Soil compaction/dust control (1); and

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h. Washing aggregate/making concrete (1);

Other urban uses with similar human access or exposure must be approved by this department, in writing, prior to these devices being sold or installed for any other purposes other than those listed in a-h above. Any, or all, of the aforementioned end uses may require a Wisconsin Pollutant Discharge Elimination System (WPDES) permit, contact the Wisconsin Department of Natural Resources WPDES permit program at (608) 267-7639 to determine what, if any, permitting may be required.

**1 = in addition to acceptable disinfection with free chlorine, or equivalent alternative, systems installed for this end use application must also provide an acceptable means of cyst/oocyst reduction.**

**2 = does not include food crops**

- Bio-Guard, sodium hypochlorite, 3-inch diameter, non-expandable tabs, EPA Product Number 5185-144, EPA Establishment Number 585-GA-1, must be installed in the chemical tube, downstream of the activated carbon filter, within the third stage treatment tank, at all times.

The free chlorine concentration within the water storage chamber must be greater than, or equal to, 1.0 mg/l at all times.

- In addition to department approved plans, if the final effluent from these systems is discharged below the surface of a soil, then at least one of the following must be true:
  1. There must be a minimum of one foot of separation between the point of infiltration and groundwater; or
  2. The wastewater must contain 0 fecal coliform per 100 ml.
- Any tanks used in this system must be designed to withstand the pressures to which they will be subjected.
- Installation and servicing of these systems must be performed in accordance with the manufacturer's written instructions and this approval letter. A copy of the manufacturer's installation and servicing instructions, and a copy of this approval letter, must be given to the owner of each system and kept on site.
- The manhole (entry) openings for these systems shall be a minimum of 23 inches in the least dimension. The inspection ports for these systems shall be a minimum of three inches in the least dimension.

Inspection ports and manhole openings for systems, located below ground, shall extend to a minimum of the finished grade. Inspection, servicing and maintenance openings for these systems shall terminate with a means that prevents entrance of deleterious materials.

Covers for these systems located at, or above, grade for openings larger than eight inches in the greatest dimension shall be provided with locking devices. These locking devices shall remain locked except for inspection, servicing or maintenance purposes.

- The maximum depth of bury for these systems is four feet.
- The backfill material for these systems shall be stone free.
- A permanent tag or label must be affixed to these experimental systems in a location that is visible after installation is complete. The tag or label must display the following minimum information:
  1. The complete name and mailing address of the manufacturer (i.e. Environmental Plumbing Solutions, Inc.);
  2. The telephone number of the manufacturer (i.e. Environmental Plumbing Solutions, Inc.);
  3. The model number of the experimental system

- Monitoring of this system shall be performed by Wisconsin licensed POWTS Maintainers, Wisconsin licensed Master Plumbers or Wisconsin licensed professional Engineers.

The maintenance of this system may be performed by an unlicensed individual.

- Data collection and reporting shall occur on a quarterly basis when the system is in operation. The minimum data collected and reported shall consist of the following:
  1. The scum, sludge and water volumes in all holding, storage and treatment tanks within this system;
  2. The volume of any make-up water added to, or wastewater subtracted from this system;
  3. Any maintenance performed on this system, including regularly scheduled maintenance;
  4. The following data shall be collected downstream of the Wedeco M2 ultra violet disinfection unit, and prior to any distal outlets:
    - a. pH;
    - b. Biological oxygen demand (BOD5)
    - c. Total suspended solids (TSS)
    - d. Fecal coliform per 100 ml;
    - e. Color; and
    - f. Odor.

The following data shall be collected after the carbon filter and prior to the WEDECO M2 ultra violet disinfection unit:

1. Color (15 APHA units max.);
2. Dissolved iron (0.3 mg/l max.);
3. Dissolved manganese (0.05 mg/l max.);
4. Hardness (120 mg/l max.);
5. Hydrogen sulfide (no detectable odor max.);
6. Iron bacteria (none present max.);
7. pH (6.5 min. - 9.5 max.)
8. Total suspended solids (5.0 mg/l max.)
9. Turbidity (5.0 NTU max.)
10. Total coliform (1,000 CFU/100ml max.)
11. E. Coli (100 CFU/100 ml max.)
12. UVT (75% min.)

All chemical and physical analyses must be performed in accordance with "Standard Methods For The Examination Of Water And Wastewater", current edition. Color and odor determinations may be reported as present or absent, along with a description of the color and/or odor if present. Ultra violet transmittance (UVT)

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may be determined on-site with a calibrated meter.

Additional UV pretreatment, or an acceptable alteration of the disinfection process will be required if any of the maximum/minimum criteria displayed immediately above are not met.

All data requested above must be officially reported to this department by a Wisconsin registered Architect, Wisconsin registered Engineer or Wisconsin licensed Master Plumber that's directly overseeing the installation and maintenance. The data must be collected on a quarterly basis while the system is in full operation. If the data requested for this system is more than thirty days late, then the system will be shut down and ordered removed and this approval immediately rendered null and void.

Submit all test data to:

**DSPS – Green Bay**

Attn: Vicky Brennan  
2331 San Luis Place, Suite 150  
Green Bay WI 54304

**Phone:** 920-492-5601

**Email:** vicky.brennan@wisconsin.gov

The data we are requesting in this approval letter may be subtracted from, or added to, as deemed appropriate by this department.

- Any initial start-up water, or make-up water, added to system must be supplied from a NR 811 and/or NR 812 approved source.
- Any wastewater and/or waste materials (e.g. sludge, scum) withdrawn from this system must be disposed of in accordance with NR 113.
- The influent wastewater to this system is limited to graywater wastes only.
- The final effluent from this system may only be used for the following specific end uses:
  - a. Toilet and urinal flushing;
  - b. Subsurface dispersal/irrigation

Other uses with similar human access or exposure must be approved by this department, in writing, prior to this system being used for any other purposes than those listed in a-b above. Any, or all, of the aforementioned end uses may require a Wisconsin Pollution Discharge Elimination System (WPDES) permit. Contact the Wisconsin Department of Natural Resources WPDES program at (608) 267-7639 to verify what, if any, permitting is required.

- A WEDECO model M2 ultra violet (UV) disinfection unit that conforms to NSF/ANSI Standard 55 - 2002, Class A, criteria must be installed and maintained downstream of the carbon unit and prior to any distal outlets. The minimum UV dosage shall be maintained at, or above, 40 millijoules (mJ) per square centimeter (cm<sup>2</sup>). All required pre-treatment equipment must be installed and maintained at all times while this system is in operation such that the performance of the WEDECO M2 UV disinfection unit is not compromised.
- If the final effluent from this system is used for subsurface dispersal/irrigation then the maximum soil application rate shall conform with Table SPS 383.44-2 and the minimum depth of unsaturated soil shall conform to Table SPS 383.44-3.

- Installation and servicing of this system must be performed in accordance with the component manufacturer's written instructions and this approval letter. Copies of the component manufacturer's installation and servicing instructions, and a copy of this approval letter must be given to the owner of this system.
- A permanent tag or label must be affixed to this experimental system in a location that is visible after installation is complete. The tag or label shall display the following minimum information:
  1. The complete name and mailing address of the owner of this system.
  2. The telephone number of the owner of this system.
  3. The unique name or model number of this system.
- The Atlantic Ultraviolet Corp. "Ster-L-Ray" UV disinfection units used within these systems must include the "Guardian" UV monitor. The minimum failsafe dosage must be greater than or equal to 30 millijoules (i.e. 30,000 uWsec/cm<sup>2</sup>). If the minimum failsafe dosage is not being achieved, then the "Guardian" monitor shall immediately signal the programmable logic controller (PLC) to shut down the supply pump to halt the flow of water.

A prerequisite for the use of the Atlantic Ultraviolet "Ster-L-Ray" UV disinfection units within these systems is the functional presence of ozone injection systems serving both the initial holding tanks (IHTs) and final holding tanks (FHTs).

Fixed rate flow controls must be installed on the inlet piping to the "Ster-L-Ray" disinfection units such that the flow rates do not exceed the rated service flow rates at which the 30 mJ minimum dosages were measured.

- Samples of the treated graywater shall be collected biannually and analyzed for the following specific parameters:
  1. Fecal coliform (not detected);
  2. BOD<sub>5</sub> (<= 10 mg/l);
  3. pH (6-9);
  4. total suspended solids (<= 5 mg/l)
- A copy of the stamped and approved plan for a specific installation site, along with a copy of this approval letter, must be submitted to the Plumbing Consultant of authority within the district in which the installation will occur prior to the Plumbing Consultant's final inspection, prior to system start-up. To determine the proper Plumbing Consultant to contact for a given installation site, first, determine the county of the proposed installation. Then access to following web site:

<http://dsps.wi.gov/Documents/Industry%20Services/Maps/Plumbing-PoolsMap.pdf>

Use the map to determine the district number that the pertinent county lies within. Then determine the Plumbing Consultant responsible for that district. The contact information for the Consultant is given at the bottom of the page.

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,

Glen W. Schlueter  
Environmental Engineer - Plumbing Product Reviewer  
Dept of Safety and Professional Services  
Division of Industry Services  
Bureau of Technical Services  
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