



June 4, 2007

J. F. AHERN CO.
PLUMBING
JOSH JACKELS
855 MORRIS ST
FOND DU LAC WI 54936-1316

Re: Description: GRAYWATER REUSE SYSTEM
Manufacturer: J. F. AHERN CO.
Product Name: GREENWATER
Model Number(s): #1
Product File No: 20070082

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 June 2012.

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 Comm 82.20 (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/graywater system;
 - 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.

- A copy of a deed attachment, and a copy of the cancelled check made out to the Register of Deeds in the county the proposed installation will be located, must be sent along with each Plumbing Plan. The deed attachment must contain the following minimum information:
 1. A written functional description of the system and it's anticipated effects;
 2. A written statement by the owner that specifically acknowledges that if the maintenance of the system is not performed on schedule, or quarterly reports are not received in time, the system will be ordered shut down and removed.

Plumbing Plans submitted without a deed attachment will not be reviewed.

- 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.
- The pressure loss for any single mechanical filtration device shall not exceed 15 psig over and above the pressure loss of the mechanical filtration device when initially backwashed and settled. If the pressure loss exceeds 15 psig, then the mechanical filtration devices must be backwashed, serviced or replaced.

Each individual pressure vessel installed in series or parallel is considered a separate and distinct mechanical filtration device.

- The site constructed concrete tanks used with this system must be constructed to withstand the pressures to which it will be subjected, and, be water tight.

At the discretion of the Plumbing Consultant performing the on-site inspection of this system, a water tightness test on the site constructed concrete tank may be required prior to the system going into operation.

The tanks must be designed and constructed in conformance to the specifications submitted to, and approved by, this department during the site specific plan review process, and, the sealant manufacturer's printed directions for proper use of the sealing materials.

The manufacturer of the site constructed tanks must retain a set of stamped and approved plans and specifications such that the approved plans and specifications are available for inspection by an authorized representative of this department for then duration of this approval.

- The UV disinfection device used with this system shall be the "Hallet 15xs" manufactured by UV Pure Technologies, Inc. The "Hallet 15xs" UV disinfection device must be installed and maintained as specified by the manufacturer's printed maintenance instructions. The "Hallet 15xs" device must conform fully to NSF Standard 55, Class A, criteria for the duration of this approval.

The model number of the replacement lamps shall be "E300209."

The maximum service flow rate for the "Hallet 15xs" is 14.6 gallons per minute (gpm), and, a flow control shall be installed in the UV system outlet to prevent the service flow rate from exceeding 14.6 gpm.

- All piping within this system shall be CPVC conforming to at least one of the following American Society of Testing and Materials (ASTM) Standards:

1. ASTM D2846;
2. ASTM F441/F441M; or
3. ASTM F442.F442M

The fittings use to join the aforementioned CPVC pipe shall conform to at least one of the following ASTM Standards:

- a. ASTM F437;
- b. ASTM F438; or
- c. ASTM F439

In addition, all wetted (i.e. water contacting) materials of construction used in, or fixtures served by, this system shall be fully compatible with naturally soft water (i.e. little or no alkalinity/buffering capacity).

- The roof surface, roof drains and grates shall be maintained to minimize the influent particulate (i.e. leaves, twigs, grit, etc.) loading on this system.
- The submitters stated uses of the collected and treated stormwater are to serve the following:
 1. toilet flushing;
 2. urinal flushing; and
 3. surface or spray irrigation of non-food related plants

Based on the stated end uses, the following test data must be collected on a biannual basis and submitted to the Plumbing Consultant assigned to a given installation as directed. The samples must be collected at least four months apart, while the system is in full operation:

- a. Biological oxygen demand [BOD5 (must be \leq 10 mg/l)];
- b. Total suspended solids [TSS (must be \leq 5 mg/l)];
- c. Fecal coliform [cfu/100 ml (must be non-detectable)];

The chlorine residual requirements are waived in lieu of the use of a UV disinfection system that is tested and listed by NSF as conforming fully to NSF Standard 55, Class A criteria.

As a treatment performance historical trend for a specific installation emerges, the aforementioned testing requirements may be reduced at the discretion of the assigned Plumbing Consultant.

- All exterior hose bibbs served by this device must be conspicuously labeled as "non-potable", and be protected with a means of cross connection control acceptable to this department, typically this constitutes a hose connection vacuum breaker that conforms to American Society of Sanitary Engineering (ASSE) Standard 1011.
- All piping, and any hose bibbs, served by this system must be conspicuously labeled as "non-potable" as specified by s. Comm 82.4 (3) (d).

J.F. Ahern Company
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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
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Safety and Buildings Division
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