RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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Alternative/Experimental OWTS Technology Program

Vendor Information:
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Technology Name & Model Numbers:
Singulair Model 960 DN 500, 750, 1000, 1250 & 1500 GPD (concrete)

Norweco Singulair Green® 500 (HDPE)
(Maximum design flow 600 GPD)

Technology Type:
Nitrogen Reducing System – Class II
TN ≤ 19 mg/L

Certification Dates:
Issued: February 5, 2010
Revised: June 17, 2010
Revised: December 9, 2011
Expires: February, 5, 2015

CERTIFICATION

The RI Department of Environmental Management (RIDEM) has reviewed the Class II Alternative/Experimental (A/E) Technology application for the Singulair Model 960 DN treatment system, hereafter referred to as the "System". The System consists of a three-chambered concrete tank; the first chamber provides pretreatment, the second is an aeration chamber with an infused air system on a 30-minute/hour timed run cycle. Where site conditions and design flow accommodate, the Norweco Singulair Green® 500, may be used in place of the concrete tank. Air is introduced to the aeration chamber by an aeration system, which spins a hollow aspirator shaft, drawing air into the hollow shaft, through four intake ports located beneath the aerator handle; the aerator vent through which the air is drawn is integral to the access cover above the aerator. Settling takes place in the clarification chamber following aeration and currents generated by the spinning aerator draw sludge from the clarification chamber back to the aeration chamber. The Bio-Kinetic filter within the clarification chamber filters wastewater prior to discharge to a PVC recirculation well that follows the three-chambered treatment tank, where a small electric pump recirculates wastewater for 10 seconds per minute, recirculating 10 – 15% of the design flow back to the first chamber or to the inlet pipe. Treated effluent is discharged to a leachfield.

All functions are monitored through a phone line via the Norweco Service PRO Monitoring, Compliance and Diagnostic (MCD) control panel.

Based upon information contained in the application submitted by Siegmund Environmental Services, Inc. hereafter referred to as the "Vendor", and by Norweco, Inc., the RIDEM hereby accepts the System for listing on the RIDEM Alternative/Experimental Technology List and use where appropriate, of the Norweco Singulair Green® 500. The RIDEM recognizes the System as capable of achieving effluent concentrations of less than or equal to 19/mg/L TN and 30 mg/L for both TSS and BOD. Design, installation and operation of the System shall be in accordance with the following terms and conditions:

30% post-consumer fiber

I. General Design Requirements

1. The System (Singulair Model 960 DN 500, 750, 1000, 1250 & 1500 GPD [concrete]) is recognized for treating residential-strength wastewater with design flow not to exceed 1,500 gpd. Norweco Singulair Green® 500 may be used where site conditions are appropriate and design flow does not exceed 600 gpd. See Vendor's design manual for appropriate model-specific design flows.

2. The System is not preceded by a septic tank unless it is proposed for use where the design flow will be 1,000 gpd or greater; in these cases, the System must be preceded by a septic tank appropriately sized for the specified design flow in accordance with the Vendor's design manual.

3. The System is to be set for aeration on a 30-minute on, 30-minute off run cycle.

4. Leachfield Area Reduction
   a) Designs incorporating this System and a conventional leachfield, or alternative leachfield with a RIDEM Class I "component" approval shall be allowed a 40% reduction in the required leachfield size. This reduction is based upon the ability of the System to remove BOD and suspended solids as demonstrated by the data presented in the Vendor's submittal. No reduction in leachfield size shall be allowed for non-conventional leachfields unless approved as a Class I alternative component technology and such reduction is not prohibited by the Class I alternative component technology's certification. Deep leaching chambers and any conventional leachfield using more than one foot of stone below shall be prohibited with or without the reduction.

   b) Each applicant proposing a reduced leachfield area shall demonstrate that sufficient land area is available on the lot to permit installation of a full size leachfield. The full size leachfield shall meet all applicable OWTS setback requirements. This is not a requirement that an entire "replacement" field be available, only that enough additional land area be available to increase the "reduced" leachfield area to standard size if ever necessary.

5. No System where design flow exceeds 900 gpd shall employ the use of a bottomless sand filter (BSF) as the final means of disposal without technical studies to address the possible adverse effects as indicated in the BSF guidance document issued by the RIDEM.

6. The control panel must incorporate an event counter, an elapsed-time meter and a visible and audible pump/power failure warning indicator in a NEMA approved cabinet exterior to the building.

7. System tanks, septic tanks, dosing chambers, pumping chambers, and riser assemblies shall be certified or tested for water tightness using procedures set forth in RIDEM OWTS Rules.

8. Design and installation shall be in strict conformance with the approved System design and installation manual. The design shall be prepared by a RIDEM licensed designer and the installation shall be performed by a RIDEM licensed installer each of whom has received training and is authorized in writing by the Vendor to perform the applicable work on the System.

9. System tanks, dosing chambers, pumping chambers, and riser assemblies shall be field-tested for water tightness. Pumps must be wired to the same circuit as the aerator.

10. Each System installation shall meet all other applicable OWTS standards and receive prior approval by the RIDEM pursuant to the Rules in effect at the time of application.

II. General Certification Requirements

1. Training
   a) The Vendor shall hold two training seminars for RIDEM Licensed Designers, Installers and Service Providers before the expiration or renewal of this certification. The first shall be held within the first six (6) months of the date of this certification.

   b) The Vendor shall notify the RIDEM of the date and time of each training seminar and submit to

the RIDEM a detailed agenda, material to be distributed to attendees and a list of presenters specifying their credentials at least six weeks in advance of the date of the scheduled seminar. Please consult the RIDEM-issued requirements for Vendors' technology training available on the RIDEM website in the A/E technology section.

2. The Vendor shall make available to the public, a means of identifying the individuals, by name and category (designer, installer, professional service provider), who have received training and are authorized in writing by the Vendor to design, install and maintain the System.

3. This Class II approval shall be effective until the expiration date of this Certification.

4. If the Vendor wishes to extend this Class II approval beyond its expiration date, they shall apply for and obtain a renewal of this approval. The Vendor shall submit a renewal application in accordance with the RIDEM Onsite Wastewater Treatment System Rules.

5. The Vendor shall notify the RIDEM at least 30 days prior to any proposed transfer of ownership of the System technology. Notification shall include the name and address of the new owner and a written agreement between the existing and new owner specifying a date for transfer of ownership, responsibility, and liability for the technology. All provisions of this approval shall be applicable to any new owners.

6. The Vendor shall provide any purchaser of the System with a copy of this approval Certification prior to the sale of the System.

7. The Vendor shall notify the RIDEM in writing of any changes to the System, including its discontinuation. Modifications deemed by the RIDEM to be substantial, may require re-application to the alternative/experimental program.

8. The Vendor shall submit to the RIDEM, a guidance document detailing all design, installation, operation and maintenance requirements for the System. Once this guidance document has been approved, the System shall be placed on the RIDEM's list of approved Alternative/Experimental Technologies and training may be scheduled.

9. The Vendor is responsible for making the RIDEM approved design, installation and operation and maintenance guidance available to the public.

III. Operation and Maintenance (O&M) Requirements

1. The RIDEM approved O&M Manual shall be provided to the Owner/Operator.

2. Systems shall be maintained according to the manufacturer's specifications.

3. For seasonally used Systems, the Vendor shall provide specifications for protection of the System and the biological component from freezing, and conditions under which power to the System may be turned off.

4. The Vendor must offer for sale a minimum two-year service contract that must include, as an option, service to all A/E components of the treatment train in addition to the System.

5. Vendor trained homeowners may perform O&M on their own systems; training must have been received for all components of the treatment train on which a homeowner wishes to perform O&M.

6. The Applicant/Owner shall record copies of the OWTS construction permit issued by RIDEM and the initially executed O&M contract(s) for the System, and all other A/E components in the treatment train, in the land evidence records of the applicable city or town prior to the RIDEM issuing the Certificate of Conformance for each installation.

7. a.) The owner shall retain a public or private maintenance entity (Service Provider) for the life of the System and all other A/E components of the treatment train; a Vendor-authorized homeowner functioning as Service Provider is exempt from this for the System and any components of the treatment train for which the homeowner is providing service.

   b.) No agreement with a maintenance entity shall be for less than two years.

   c.) Service Providers must be trained and authorized in writing by the appropriate Vendor to perform O&M on the System and all other A/E components of the treatment train for which they will be performing O&M.

   d.) The Service Provider or homeowner providing O&M on his or her own System shall:
   (1) Receive training as approved by the Vendor.
   (2) Be available to perform required preventative maintenance, perform repairs, respond to System emergency situations, and conduct performance monitoring when required by this certification or by permit.
   (3) Perform an inspection of the treatment System at least twice annually.
   (4) Report to the Vendor, all inspections and maintenance calls conducted and all problems or failures observed with a summary of the cause and remedial measures taken.

8. The Vendor shall provide to the RIDEM within six months of the issuance of this certification, a list of trained Service Providers. At least two qualified independent professional Service Providers shall be maintained on the list at all times. A Service Provider who subcontracts service for the same technology, shall not be considered meeting this requirement. The list of Service Providers must be provided to RIDEM as part of the annual reporting requirement. Homeowners authorized to perform O&M on their own Systems shall be included on this list provided to the RIDEM, with the System address and associated permit number.

9. A list of trained professional Service Providers shall be made available to the public.

10. The Vendor shall have an inventory of System parts available locally.

IV. Reporting Requirements

1. The Vendor shall submit an annual report to the RIDEM by the anniversary of this Certification each year, to include the following information for the preceding 12-months:
   a) The number of Systems installed in Rhode Island since the last report,
   b) The address of each installation, the name of the owner and the RIDEM permit number,
   c) For each System, the number of inspections/maintenance calls conducted and a brief comment regarding activities performed and observations,
   d) All known problems or failures experienced with a brief summary of the cause and remedial measures taken.

   Electronic submission is encouraged.

2. The Vendor shall monitor the treatment efficiency of a minimum of three residential installations of the System in Rhode Island that are occupied year round. Grab samples shall be taken from the d-box or pump chamber prior to the leachfield. Each of the Systems shall be monitored at least four times a year for a minimum of two years; the RIDEM may require extension of this requirement. Two samples shall be taken in the summer months and two in the winter months. At a minimum the following parameters shall be monitored: BOD5, TSS, pH, TKN, nitrate, nitrite, ammonia, alkalinity and fecal coliform. This information shall be included in the annual report submitted to the RIDEM as directed by item 1 above. Sampling requirements may be extended or sampling frequency for the System may be reduced at the discretion of the RIDEM after two years' data have been evaluated.

   If, at any time, the information gathered from the monitoring indicates that a System's performance is not in compliance with the terms of this certification, measures shall be taken to correct the System's treatment of the wastewater, and additional sampling and analysis shall be conducted. The System

shall be re-sampled as necessary until the System is operating in compliance with this certification. The Vendor shall submit to the RIDEM an explanation of the measures taken to correct the System's performance and the laboratory analyses for each sampling event. This information shall be submitted as soon as it is available after each re-sampling event.

3. The Service Provider shall report any termination or non-renewal of maintenance agreements to the RIDEM, the Vendor and to the local wastewater management authority should one exist for that area. Electronic notification is encouraged.

V. Rights of the RIDEM

1. The RIDEM may suspend, modify or revoke this approval for cause, including but not limited to: non-compliance with any of the conditions or provisions of this approval, misrepresentation or failure to disclose fully all relevant data, or receipt of new information indicating that the use of the System is contrary to the public interest, public health or the environment.

2. This approval does not represent an endorsement of the System by the RIDEM. This letter of approval may be reproduced only in its entirety.

Russell J. Chateauneuf, P.E.
Chief of Groundwater and Wetlands Protection

Issuance Date: 12/9/11