



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

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REVISED APPROVAL FOR REMEDIAL USE

Pursuant to Title, 310 CMR 15.000

Name and Address of Applicant:

On-Site Treatment Systems™
W300 N7706 Christine Lane
Hartland, WI 53029

Trade name of technology: Aerobic Recovery System™ Septic Restoration Process Models 101, 102, 103 and 104 (hereinafter called the "System"). Schematic drawing(s) of a typical System and a Technology inspection checklist are attached and are a part of this Approval.

Transmittal Number: X22441
Date of Issuance: January 27, 2009, current revision May 12, 2011
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Authority for Issuance

Pursuant to Title 5 of the State Environmental Code, 310 CMR 15.000, the Department of Environmental Protection hereby issues this Approval for Remedial Use to: On-Site Treatment Systems™, W300 N7706 Christine Lane, Hartland, WI 53029 (hereinafter "the Company"), approving the System described herein for Remedial Use in the Commonwealth of Massachusetts. Sale and use of the System are conditioned on compliance by the Company and the System owner with the terms and conditions set forth below. Any noncompliance with the terms or conditions of this Approval constitutes a violation of 310 CMR 15.000.

David Ferris, Director
Wastewater Management Program
Bureau of Resource Protection

May 12, 2011
Date

I. Purpose

1. The purpose of this Approval is to allow use of the System in Massachusetts, on a Remedial Use basis to repair systems failing to protect public health and safety and the environment where failure has occurred as described in 310 CMR 15.303 (1) (a) (1) and (2), due to clogging of the soil absorption system (SAS).
2. With the necessary permits and approvals required by 310 CMR 15.000, this Approval for Remedial Use authorizes the use and installation of the System in Massachusetts.
3. The System may only be installed on facilities that meet the criteria of 310 CMR 15.284(2).
4. This Approval for Remedial Use authorizes the use of the System where the local approving authority finds that the System is for upgrade of a failed, failing or nonconforming system and the design flow for the facility is less than 2,000 gallons per day (GPD).

II. Design Standards

1. The System is designed to convert an anaerobic system into an aerobic system and reduce the strength of the wastewater received by the existing soil absorption system (SAS). Prior to System installation the septic tank must be pumped to remove settled solids. The System consists of an On-Site Treatment Systems™ aeration unit, 120 volts operated on a continuous basis, with an airline piped into an existing septic tank or a new septic tank designed in accordance with 310 CMR 15.223 through 15.228. The airline feeds a Micro Bubble Diffuser with floats within the septic tank. The adjustable floats are connected to the airline and keep the diffuser suspended at the proper level in the tank, typically 18 inches from the bottom.
2. Aerobic treatment is established in the septic tank and maintained using the On-Site Treatment Systems™ aeration unit. The aerator mixes the contents of the septic tank with the bacteria and aerates the wastewater. The System's biomass reduces the strength of the wastewater in the septic tank. The aerated effluent from the septic tank is designed to reduce the thickness of the existing biomat in the SAS, thereby improving the soil absorption capacity.
3. Prior to installation of the System, the site and existing system shall be evaluated in accordance with 310 CMR 15.100 through 15.107. The existing on-site system including the septic tank, distribution box and SAS shall be inspected in accordance with 310 CMR 15.302. The evaluation shall include identification of existing components, their compliance with 310 CMR 15.000, cause of failure, and the location for the upgrade of the system if required in the future.
4. The System shall not be proposed for installation where:
 - A. The high groundwater elevation determined in accordance with 310 CMR 15.103 would be less than two feet in soils with recorded percolation rate more

- than two minutes per inch or less than three feet in soils in soils with a recorded percolation rate of two minutes per inch or less below the bottom of the SAS.
- B. A facility for which the site investigation indicates that the existing onsite system was designed and installed for a design flow smaller than required by 310 CMR 15.203. The minimum area for the existing SAS shall not be less than 50 percent of the area required in accordance with 310 CMR 15.242.
 - C. The existing septic tank(s) has not been tested and shown to be watertight.
 - D. The existing system includes a leaching pit or cesspool.
 - E. A site investigation indicates that the existing soil absorption system must be removed and replaced prior to installation of the System.
- 5. For seasonal use, the System O&M provider shall witness reactivation of System at each start-up and ensure System is operating properly.
 - 6. System installation shall not include modifications, excavations, or any other changes to the existing SAS, with the exception of the work required in section III (7).

III. General Conditions

- 1. All provisions of 310 CMR 15.000 are applicable to the use of this System, the System owner and the Company, except those that specifically have been varied by the terms of this Approval.
- 2. Any required operation and maintenance, monitoring and testing shall be performed in accordance with a Department approved plan. Any sample analysis shall be conducted by an independent U.S.EPA or DEP approved testing laboratory, or a DEP approved independent university laboratory. It shall be a violation of this Approval to falsify any data collected pursuant to an approved testing plan, to omit any required data or to fail to submit any report required by such plan.
- 3. The facility served by the System and the System itself shall be open to inspection and monitoring by the Department and the local approving authority at all reasonable times.
- 4. In accordance with applicable law, the Department and the local approving authority may require the System owner to cease operation of the system and/or to take any other action as it deems necessary to protect public health, safety, welfare and the environment.
- 5. The Department has not determined that the performance of the System will provide a level of protection to public health and safety and the environment that is at least equivalent to that of a sewer system. No System shall be installed, upgraded or expanded, if it is feasible to connect the facility to a sanitary sewer, unless as allowed by 310 CMR 15.004. When a sanitary sewer connection becomes feasible, the facility served by the System shall be connected to the sewer, within 60 days of such

feasibility, and the System shall be abandoned in compliance with 310 CMR 15.354, unless a later time is allowed, in writing, by the approving authority.

6. Design, installation and operation shall be in strict conformance with 310 CMR 15.000 and this Approval.
7. A minimum of one (1) inspection port shall be provided within the SAS down to the lower stone/soil interface to enable monitoring for ponding. Existing inspection ports may be acceptable for use if found to be at appropriate depth and in good condition.

IV Conditions Applicable to the System Owner

1. The System is approved for the treatment and disposal of sanitary sewage only. Any wastes that are non-sanitary sewage generated or used at the facility served by the System shall not be introduced into the System and shall be lawfully disposed.
2. Operation and Maintenance Agreement:
 - A. Throughout its life, the owner shall operate and maintain the System in accordance with the Company and designer's operation and maintenance (O&M) requirements and this Approval. To ensure proper (O&M), the owner shall enter into an O&M agreement. No O&M agreement shall be for less than one year.
 - B. No System shall be used until an O&M agreement is submitted to the local approving authority which:
 - i. Provides for the contracting of a person or firm trained by the Company as provided in Section V (7) and competent in providing services consistent with the System's specifications, with the operation and maintenance requirements specified by the Company and the designer, and with any specified by this approval;
 - ii. Contains procedures for notification to the local board of health within five days of a System failure or alarm event and for corrective measures to be taken immediately;
 - iii. Provides the name of an O&M provider, which must be an approved Title 5 System Inspector trained by the Company that will operate and monitor the System. The O&M provider must inspect and maintain installed Systems at single family homes at least quarterly and anytime there is an alarm event, and.
 - iv. For all other System installations the O&M provider must inspect and maintain the System at least every month and anytime there is an alarm event.
3. The System owner shall at all times have the System properly operated and maintained in accordance with this Approval, the designer's operation and

maintenance requirements and the Company's approved procedures and monitoring protocols. The System owner shall notify the local approving authority in writing within seven days of any cancellation, expiration or other change in the terms and/or conditions of their O&M agreement.

4. Prior to transferring any or all interest in the property served by the System, or any portion of the property, including any possessory interest, the System owner shall provide written notice of all conditions contained in this Approval to the transferee(s). Any and all instruments of transfer and any leases or rental agreements shall include as an exhibit attached thereto and made a part thereof a copy of this Approval. The System owner shall send a copy of such written notification(s) to the Company and local approving authority within 10 days of such notice being given.

5. Monitoring Requirements:

A. For system's approved and installed prior to the date of this revised Approval and has an observation port or monitoring well within the SAS, then it shall monitor according to Section IV(5) (B) this Approval.

For system's approved and installed prior to the date of this revised Approval and do not has an observation port or monitoring well within the SAS, but has the monitoring device in the D-box, then shall continue monitoring as the following:

- i. The System's monitoring device shall be maintained such that it provides data collection to include tracking the elevation of the ponding within the d-box. The data shall continue to be stored and reported with the high, low and average ponding levels on quarterly for single family homes and monthly for all other system installations;
- ii. If the ponding in the d-box has been eliminated, monitoring may be reduced from monthly to quarterly; quarterly to every six months. Further reduction in monitoring is not allowed;
- iii. If the System exhibit excessive ponding levels (ponding levels within the d-box equal to or greater than the ponding prior to installation of the System) then monitoring shall be continue monthly, if at that time the ponding in the d-box has been eliminated, monitoring may be reduced from monthly to quarterly; quarterly to every six months; and
- iv. If the System is still excessive ponding (ponding within the d-box) for 6 consecutive months, that System shall be removed in accordance with Section V (8).

B. Systems approved and installed after the revised date of this Approval shall monitored quarterly for single family homes and monthly for all other system installations.

The system shall monitor the depth of the ponding below the leaching field after three months of System operation to indicate the dose storage (dose storage is the void space from the discharge pipes invert to the bottom of stone/naturally occurring soil interface.).

- i. If the depth of the ponding indicates at least 50% of dose storage available then monitoring may be reduced from monthly to quarterly; quarterly to every six months. Further reduction in monitoring is not allowed;
- ii. If the depth of the ponding indicates less than 50% of dose storage then repeat the monitoring 30 days later. If the second reading is at least 50% of dose storage then the previous observation port measurement reduced frequency may be continued. However if the second reading is not at least 50% of dose storage then the system must be monitored monthly, evaluated and a report provided to the local approving authority. The report shall include water use data as well as depth of ponding; and
- iii. If the System continues to indicate excessive ponding for 6 consecutive months as defined above, the System is in failure and shall be removed in accordance with Section V (8).

Example for monitoring the depth of ponding: For a leaching field has 12 inches depth from the discharge pipes invert to the bottom of stone/ naturally occurring soil interface. If monitoring shows ponding level is more than 6 inches then 50% of dose storage is not met. If monitoring shows the ponding level is less than 6 inches then 50% of dose storage is met.

6. By February 15th of each year for the previous year, the System owner or a designated O&M provider shall submit to the local approving authority all data collected in accordance with Section IV (5), and Company technology inspection checklists.
7. Prior to the issuance of a Certificate of Compliance for the System, the System owner shall record and/or register in the appropriate Registry of Deeds and/or Land Registration Office, a Notice disclosing both the existence of the alternative septic system subject to this Approval on the property and the Department's approval of the System. If the property subject to the Notice is unregistered land, the Notice shall be marginally referenced on the owner's deed to the property. Within 30 days of recording and/or registering the Notice, the System owner shall submit the following to the local approving authority: (i) a certified Registry copy of the Notice bearing the book and page/instrument number and/or document number; and (ii) if the property is unregistered land, a Registry copy of the owner's deed to the property, bearing the marginal reference.

V Conditions Applicable to the Company

1. The Company shall develop and submit to the Department within 60 days of the revised date of this Approval: minimum site evaluation criteria and installation

requirements; an operating manual, including information on substances that should not be discharged to the System; a technology checklist; and a recommended schedule for maintenance and replacement of components essential to consistent successful performance of the installed Systems. The Company shall develop and submit to the Department within 60 days of the revised date of this Approval a standard protocol for evaluating ponding within the SAS. System success is defined as ponding elevation consistently maintained at or below the naturally occurring soils elevation (below the designed discharge storage volume) within the SAS. The Company shall also submit to the local approving authority within 60 days of the revised date of this Approval a protocol for completing inspections and monitoring of the System and any procedures that will be implemented should the System fail. The Company shall make available, in print and electronic format, the above referenced procedures and protocols to owners, O&M providers, designers and installers of the System.

2. The Company shall develop and submit within 30 days of the revised date of this approval to the Department a plan for ensuring the submission of inspection reports by the O&M provider to the Company and local approving authority.
3. By February 15th of each year, the Company shall submit a report to the Department, signed by a corporate officer, general partner or Company owner that contains information on the System, for the previous calendar year. The report shall include the following information:
 - A. The total number of units of the System sold for use in Massachusetts during the previous year; the address of each installed System, the owner's name and address, the type of use (e.g. residential, commercial, institutional) and the design flow;
 - B. Date when system was installed and started up;
 - C. Tabulation of the monitoring parameters and results with backup inspection and laboratory sheets;
 - D. Tabulation of systems that are in failure as described in 310 CMR 15.303 (1)(a)(1) or (2) due to excessive ponding of effluent in the SAS, reasons for non-compliance and any corrective action taken including but not limited to design, installation and/or operation or maintenance changes required to reach compliance;
 - E. Completed technology inspection checklists shall be maintained by the Company or its representative on file for possible Department auditing.
 - F. A general summary of the results for the year, any recommended changes to the design, installation and/or operation and maintenance procedures and a schedule for implementing those changes; and
 - G. Warranty issues both resolved and unresolved or an explanation of any warranty claims that have been received and their resolution.

4. The Company or its designee shall review the plans and site evaluation conducted for the System prior to the sale of any unit to ensure that the proposed installation of the System is at a site consistent with this Approval and the System's capabilities. The Company shall certify in writing that the System plan and existing site conditions conform to the requirements of this Approval and any requirements of the Company and shall submit a copy of that certification to the local approving authority and the System owner.
5. Prior to the issuance of a Certificate of Compliance for the System, the Company or its designee shall submit to the local approving authority and the System owner a signed certification that the System has been installed in accordance with the Company's requirements, the approved plan and this Approval. This certification in no way changes the requirements of 310 CMR 15.021(3).
6. The Company or the Company's approved operation and maintenance contractor shall maintain a contract with the System owner that:
 - A. Provides for operating and maintaining the System with an O&M provider that has been trained by the Company to operate the System consistent with the System's specifications and any additional operation and maintenance requirements specified by the designer or by the local approving authority;
 - B. Contains procedures for notification to the System owner and the local approving authority within five days of knowledge of a System failure and for corrective measures to be taken immediately; and
 - C. Contains a plan to determine if required after the first three months of operation why the effluent water surface elevations in the SAS are as high or higher than the water surface elevation when the System was installed.
7. The Company shall institute and maintain a program of O&M provider training and continuing education, as approved by the Department. The Company shall maintain and annually update, and make the list of qualified O&M providers available by February 15th of each year. The company shall update the list of qualified O&M providers and make the list known to users of the technology.
8. The Company shall provide to each System owner a written warranty transferable to a new owner that includes the following:
 - A. Refund of the cost of equipment and installation should the System continue in failure as described in 310 CMR 15.303(1)(a)(1) and (2) after 120 days of operation that is conducted in accordance with the Company's specifications and oversight; or
 - B. Refund of the cost of equipment and installation should the System fail as described in Section IV (5) within two years of installation provided that the System owner has entered into and maintained an operation and maintenance contract with the Company and has operated the System in accordance with the Company's specifications.

9. The Company shall conduct a performance evaluation starting after the first 100 systems have been installed and operating for at least one year. A report shall be submitted to the Department no more than 180 days beyond the one year period evaluating whether at least 90 percent of the units installed for at least one year have demonstrated a reduction in ponding depth (data as required in section IV (5) (B)) and that the reduction in depth of the effluent elevation for the SAS systems has occurred within 120 days of start up or that ponding elevations are not excessive. Should the System not demonstrate the capability to reduce or eliminate ponding in 90 percent of the failed systems, the report shall detail the changes that must be made in site evaluation, design, installation and/or operation or maintenance to meet the goal and shall include a schedule containing a deadline for implementing those changes. No more than 100 systems shall be installed until the performance report has been completed and the results indicate that over 90 percent of the Systems are no longer in failure.
10. The Company shall include copies of this Approval and the procedures and protocol described in Section V (1) with each System that is sold. In any contract executed by the Company for distribution or re-sale of the System, the Company shall require the distributor or re-seller to provide each purchaser of the System with copies of this Approval and the procedures and protocol described in Section V (1).
11. The Company shall notify the Director of the Wastewater Management Program at least 30 days in advance of the proposed transfer of ownership of the technology for which this Approval issued. Said notification shall include the name and address of the proposed new owner and a written agreement between the existing and proposed new owner containing a specific date for transfer of ownership, responsibility, coverage and liability between them. All provisions of this Approval applicable to the Company shall be applicable to successors and assigns of the Company, unless the Department determines otherwise.
12. The Company shall furnish the Department any information that the Department requests regarding the System within 21 days of the receipt of that request.
13. If the Company wishes to continue this revised Approval after its expiration date, the Company shall apply for and obtain a renewal of this Approval. The Company shall submit a renewal application at least 180 days before the expiration date of this Approval, unless written permission for a later date has been granted in writing by the Department. This approval shall continue in force until the Department has acted on the renewal application.
14. Systems approved and installed after the revised date of this Approval, thirty (30) days prior to submitting an application for a Disposal System Construction Permit (DSCP), the Company or its representative shall provide to the Approving Authority a certification, signed by the owner of record for the property to be served by the unit, stating that the property owner:

- A. has been provided a copy of the Remedial Use Approval and all attachments and agrees to comply with all terms and conditions;
- B. has been informed of all the owner's costs associated with the operation including power consumption, maintenance, sampling, recordkeeping, reporting, and equipment replacement;
- C. understands the requirement for a contract with a company approved O&M provider and has been provided a current list of all approved O&M providers;
- D. agrees to fulfill his responsibilities to provide a Deed Notice as required by 310 CMR 15.287(10) and the Approval; and
- E. agrees to fulfill his responsibilities to provide written notification of the Approval conditions to any new owner, as required by 310 CMR 15.287(5).

VI. Reporting

1. All notices and documents required to be submitted to the Department by this Approval shall be submitted to:

Director
Wastewater Management Program
Department of Environmental Protection
One Winter Street - 5th floor
Boston, Massachusetts 02108

VII. Rights of the Department

1. The Department may suspend, modify or revoke this Approval for cause, including, but not limited to, non-compliance with the terms of this Approval, non-payment of the annual compliance assurance fee, for obtaining the Approval by misrepresentation or failure to disclose fully all relevant facts or any change in or discovery of conditions that would constitute grounds for discontinuance of the Approval, or as necessary for the protection of public health, safety, welfare or the environment, and as authorized by applicable law. The Department reserves its rights to take any enforcement action authorized by law with respect to this Approval and/or the System against the owner, or O&M provider of the System and/or the Company.

VIII Expiration Date

1. Notwithstanding the expiration date of this Approval, any System sold and installed prior to the expiration date of this Approval, and approved, installed and maintained in compliance with this Approval (as it may be modified) and 310 CMR 15.000, may remain in use unless the Department, the local approving authority, or a court requires the System to be modified or removed, or requires discharges to the System to cease.