Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

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REMEDIAL USE APPROVAL

Pursuant to Title 5, 310 CMR 15.00

Name and Address of Applicant:

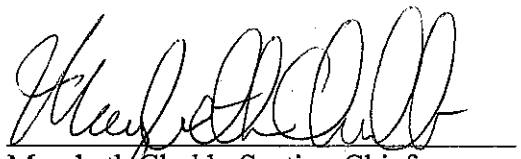
Geomatrix Systems, LLC
114 Mill Rock Road East
Old Saybrook, CT 06475

Trade name of technology and models: **GeoMat™ Leaching System.** Models 200, 400, 600, 1200 and 3900 (hereinafter called the "System"). The Installation Instructions including schematic drawings of typical Systems, an inspection checklist, and a System Installation Form are part of this Approval.

Transmittal Number:	X267826
Date of Issuance:	October 26, 2016, First Modified March 13, 2017, Second Modification July 14, 2017 and Last Modification June 26, 2019.

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: Geomatrix Systems, LLC, 114 Mill Rock Road East, Old Saybrook, CT 06475 (hereinafter "the Company"), certifying the System described herein for Remedial Use in the Commonwealth of Massachusetts. The sale, design, installation, and use of the System are conditioned on compliance by the Company, the Designer, the Installer 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.



Marybeth Chubb, Section Chief
Wastewater Management Program
Bureau of Water Resource

August 14, 2019
Date

Technology Description

The system is an alternative subsurface Soil Absorption System (SAS) that replaces a conventional SAS designed in accordance with 310 CMR 15.000. GeoMat™ is a low profile leaching system which consists of an approximately 1–inch thick core of fused, entangled plastic filaments fully wrapped in a hygroscopic membrane. A distribution pipe is placed inside the fabric on top of the core. The distribution laterals for gravity systems can either be 2 or 3 inch SCH40 pipe with minimum ½ inch perforations or 4 inch SDR35 perforated pipe. Pressure Distribution laterals are typically 1-2 inch SCH40 PVC. Size will vary depending on design and site conditions. Distribution laterals that are at different elevations should have flow equalization valves installed to provide equal head/flow of effluent to all rows. Orifice holes should be oriented in a downward (six o'clock) direction and can be spaced according to the dosing requirements of the system. The GeoMat system can be installed in trench and bed configurations and function in a gravity and pressure distribution system configuration. GeoMat with gravity distribution and 6" of ASTM C33 sand is NSF standard 40 certified treatment systems. Pressure distribution is required when the GeoMat is installed directly into native soil; gravity or pressure distribution is possible when GeoMat is installed in Title 5 fill. In a pressure distribution configuration, diffusers are installed over the orifices.

Both gravity and pressure distribution configurations utilize a transmissive core and a hygroscopic membrane that is in contact with the native soil or imported sand/soil medium to further distribute the water. Water is sent to the GeoMat™, emitted from perforations or the diffusers by the "by pressure differential", into the transmissive core where it contacts the hygroscopic membrane. Water is subsequently moved by hygroscopic and capillary force between the diffusers and around the membrane surface of the GeoMat. Once the hygroscopic and capillary forces are overcome by head, the dose is released into the surrounding soil. The capillary force of the soil then draws the water away from the GeoMat.

Conditions of Approval

The term "System" refers to the Alternative Soil Absorption System in combination with the other components of an on-site treatment and disposal system that may be required to serve a facility in accordance with 310 CMR 15.000.

The term "Approval" refers to the technology-specific Special Conditions, the Standard Conditions for General and Remedial Use Approval of Alternative Soil Absorption Systems (the 'Standard Conditions'), and the General Conditions of 310 CMR 15.287, and any Attachments.

For Alternative Soil Absorption Systems that have been issued Remedial Use Approval for the installation of Systems to serve facilities where the site meets the requirements for new construction, the Department authorizes reductions in the effective leaching area (310 CMR 15.242), subject to the applicable portions of the Standard Conditions, and subject to the Special Conditions below applicable to this Technology.

Special Conditions

1. The System is an approved Patented Sand Filter System for use as an Alternative Soil Absorption System. In addition to the Special Conditions contained in this Approval, the System shall comply with all Standard Conditions for Alternative Soil Absorption Systems, except where stated otherwise in these Special Conditions.

2. This Approval applies to the installation of a System for the upgrade or replacement of an existing failed or nonconforming system, provided that the facility meets the siting requirements for upgrades, as provided in II(7) and II(9) of the Standard Conditions. For the upgrade or replacement of an existing failed or nonconforming system, all installed Systems shall also comply with the Notice requirement of paragraph II(23) and the transferee notification requirements of paragraph IV(1) of the Standard Conditions. The proposed use of the System shall also comply with any other Standard Conditions which pertain wholly or in part to upgrades of existing systems.

3. SAS Design - For the upgrade or replacement of an existing failed or nonconforming system, Systems sited in soils with a percolation rate of 60 minutes or less per inch, the size of the SAS shall be sized with 40 percent less effective leaching area than required when using the loading rates for gravity systems of 310 CMR 15.242(1)(a). For soils with a recorded percolation rate of between 60 and 90 minutes per inch, the size of the SAS shall be sized with 40 percent less effective leaching area than required when using the loading rate of 0.15 gpd/square foot as specified by 310 CMR 15.245(4).
   No reduction greater than 40% in the required effective leaching area is allowed, including any reductions under a LUA or a variance.

   The required effective leaching area of the SAS shall be reduced in accordance with the above requirements, except a minimum of 400 square feet of effective leaching area shall be provided if any proposed reduction in the leaching area would result in less than 400 square feet of effective leaching area. Where 400 square feet of effective leaching is not feasible, the greatest effective leaching area shall be installed provided that no more than a 40 percent reduction is taken.

4. The System may be installed in soils with a percolation rate of up to 90 minutes per inch (MPI). The System shall not be installed in Class IV soils as defined in 310 CMR 15.243.

5. Effluent loading rates shall be as specified in 310 CMR 15.242(1)(a) and (b) with exception of Class IV soils.

6. The System does not require a five foot over dig as indicated at 310 CMR 15.255(5).

7. The dispersal area shall not be installed under a paved surface, or in areas of routine traffic, parking or storage of heavy equipment. In addition no planting or soil excavation shall be done in or within 5 feet of the GeoMat distribution area after its installation. The system may be designed to allow for installation of GeoMat distribution line up to five feet from a building cellar wall.

8. Alternative Design Standards - Provided that the Designer demonstrates that the impact of the proposed Alternative System has been considered and the design requirements of 310 CMR 15.000 have been varied to the least degree necessary so as to allow for both the best feasible upgrade within the borders of the lot and the least effect on public health, safety, welfare and the environment, the local approving authority may allow any combination of the following alternative design standards without the need for granting a variance under 310 CMR 15.400 or obtaining Department approval:

   a) If a reduction in the depth to groundwater required by 310 CMR 15.212 is necessary, the depth to groundwater may be reduced by up to 2 feet, resulting in a minimum separation distance of two feet in soils with a recorded percolation rate of more than two minutes per inch and three feet in soils with a recorded percolation rate of two minutes or less per inch, measured from the bottom of the soil absorption system to the high groundwater elevation, only if;

      i. An approved Soil Evaluator who is a member or agent of the local Approving Authority determines the high groundwater elevation;

      ii. No reduction is granted under LUA for setbacks from public or private wells, bordering vegetated wetlands, surface waters, salt marshes, coastal banks, certified vernal pools, water supply lines, surface water supplies or tributaries to surface water supplies, or drains which discharge to surface water supplies or their tributaries, is allowed; and

      iii. In accordance with 310 CMR 15.212(2), for systems with a design flow of 2,000 gpd or greater, the separation to high groundwater as required by 310 CMR 15.212(1) shall be calculated after adding the effect of groundwater mounding to the high groundwater elevation as determined pursuant to 310 CMR 15.103(3).

   b) If a reduction in the depth of the naturally occurring pervious material layer is necessary, a proposed reduction of up to 2 feet may be allowed in the four feet of naturally occurring pervious material layer required by 310 CMR 15.240(1) provided that it has been demonstrated that no greater depth in naturally occurring pervious material can be met anywhere on the site.

9. In no case, shall the reductions in the effective leaching area, depth to groundwater, and depth of naturally occurring pervious material allowed under this Approval be made less stringent. Any reductions in the effective leaching area, depth to groundwater, and depth of naturally occurring pervious material allowed under this Approval shall not be combined with any reduction that may allowed under the procedures of Local Upgrade Approval or the variance procedures of 310 CMR 15.401-413. The local Approving Authority may vary other design requirements under the LUA provisions of 310 CMR 15.405 or under the variance procedures of 310 CMR 15.411.

10. The System can be installed in trench or bed or field configuration, as defined in 310 CMR 15.251 and 15.252. The effective leaching area shall be as presented "GeoMat™ Leaching System Installation Manual".

11. System component material specifications for the pipe, plastic components, fabric and sand shall comply with the specifications identified in the initial I/A technology approval. Prior approval from the Department for any change from these specifications shall be requested in writing.

12. Any changes to the approved plans must receive Local Approving Authority (LAA) approval prior to any changes. Before a Certificate of Compliance can be issued by the LAA the System Designer must include any changes to the approved plan into the as-built plans.