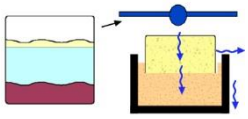
PECONIC GREEN GROWTH
TECH INFO SHEET

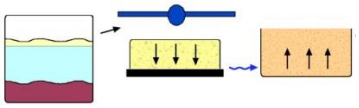
Firm: Non-proprietary system

System: Nitrogen Removing Biofilter; Layer Cake; Soil-based Treatment with an Anoxic Component

Category:



SHALLOW DRAINFIELD over A LAYER of SAND over a Either a LINED SAND/SAWDUST MIXTURE

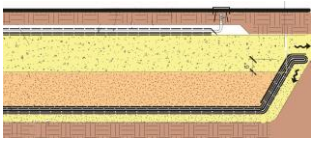


or channeled to an UPFLOW ANOXIC TANK

Process: Wastewater exiting a septic tank enters a dosing tank, from which it is intermittently sent to a shallow dispersal system, usually a GeoMat™, a drip dispersal system, or a shallow narrow drainfield. Below this a 12" – 18" layer of loamy sand provides an aerobic environment supporting nitrification. Some denitrification occurs in this layer due to moisture/bacteria adhesion to the particles. Due to the shallow configuration, microorganisms in the root zone help process the wastewater, while plants provide additional uptake of nutrients. Beneath this layer there are two basic approaches to creating the anoxic environment conducive to denitrification:

1) A lined layer, 18" deep composed of 50% sand/50% sawdust. The treated effluent can either pass to a pump chamber for reuse as irrigation water, or be designed to overflow, recharging at the sides and/or under the liner.
2) A liner encapsulating the aerated layer drains effluent to an upflow tank containing woodchips of a volume designed for the wastewater load. From here the wastewater can either enter an existing dispersal system or be pumped for additional irrigation needs.

System: A two-chamber septic tank with a filter on the outflow is required ahead of the system. A dosing tank with pump, shallow distribution system, and sawdust/sand layers with liners comprise the system, with an optional tank for up-flow denitrification. There are multiple dispersal options.

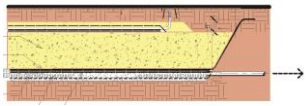


1) Lined Layer Cake

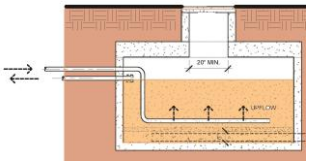
Flow Range: Adaptable to any size.

Tests: The configuration has been tested at the MASSTC and will be tested as part of the Suffolk County Pilot 2

Cost: $10,000 - $13,000, septic tank not included



3) Lined Sand Layer to



Up-flow Reactor

Credit: Peconic Green Growth

Energy: Pump, 15 KWh/month; estimated cost: $7/mon.

Tanks: Concrete, plastic or fiberglass if a pump chamber and/or upflow reactor are used, locally sourced

Venting: None

Depth: 3-4 feet

Footprint: At a loading rate of 0.5 – 0.7 gallons/day/SF, a typical house would need roughly 600 SF. Treated effluent can be used to expand the irrigation area.

Life Cycle: Pump, 3-7 years (Cost: $500)

Warranty: None

Maintenance: Annually, ($200), pump-outs as required.

Notes: Of issue is the longevity of the carbon source (sawdust). Academic analyses indicate that it could last 30-50 years. The up-flow option provides access to the media for observation/replacement. The mixing of sawdust in the aerated layer could help denitrification, as temporary anoxic conditions exist in this layer as well.

Installations: MASSTC, State of Florida, and Suffolk County Pilot 2

Treatment: Expected levels of denitrification are 85-95%. A study of the impacts of shallow distribution conducted by MASSTC has shown that contaminants of emerging concern, such as pharmaceuticals and personal care products, are treated to levels far surpassing those processed at sewage treatment plants.

Advantages:

- Treats to the highest levels achievable
- Treats contaminants of emerging concern
- Relatively low cost
- Energy use is low
- Replaces irrigation and use of fertilizer

Disadvantages:

- Area should be protected from root intrusion and vehicular loading
- Once installed, is not easy to repair the field
- Large footprint
- Life of media is uncertain