

London Grove Township On-lot Sewage Management Program

Public Education Series #8:

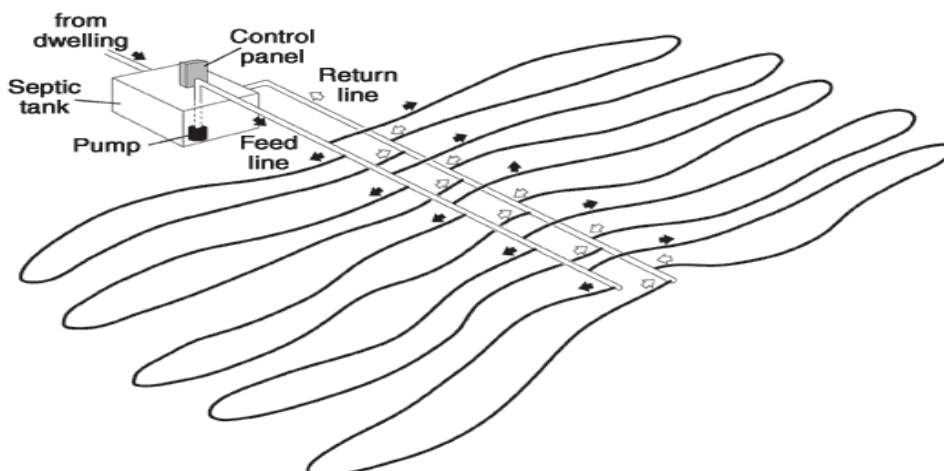
Alternate On-lot Sewage System Technologies

The type of on-lot sewage system which may be needed on any given lot is dependent upon many factors. Given the option, most homeowners would likely choose the least expensive system, while meeting the minimum regulatory criteria necessary for the site. However, ongoing efforts to overcome a wide variety of site constraints have resulted in new technologies for wastewater treatment. In Pennsylvania, the regulations contain specific criteria which apply to the use of these systems. Mostly, these “alternate” technologies, as they are referred to by Pennsylvania Department of Environmental Protection (DEP) regulations, require more intensive operation and maintenance efforts than a typical septic tank / drainfield system (i.e., “conventional” system). This is due to the fact that alternate systems typically employ more sophisticated treatment components, which are specially designed in order to overcome limitations such as poor soils, shallow bedrock, steep slopes, and limited space, among others.

DEP considers alternate systems as those which generally have a proven track record, but are not currently described in the regulations governing sewage treatment facilities. There is also a category for “experimental” systems, which are considered for the purpose of testing and observation. The use of any “experimental” system is highly regulated, and generally limited to the most severe situations, often in cases where no other feasible repair can be made for an existing house. A few of the more common alternate systems which have been approved for use in Pennsylvania are discussed below.

Drip Irrigation

This technology employs the use of small diameter flexible tubing to distribute effluent into the upper 12 inches of the soil at a controlled rate. Its primary advantage is applicability for sites that may otherwise require an elevated sand mound. In these cases, many homeowners prefer the buried drip tubing for aesthetic reasons. Other advantages include use on steeper slopes with marginal soils, and increased soil oxygen (due to shallow tubing depth) for more efficient renovation.



Schematic of Typical Drip Field Installation

Drip irrigation typically requires more advanced treatment technologies than a conventional septic tank. The advanced treatment component(s) and the drip irrigation itself often require regular maintenance oversight by a qualified contractor.

Leaching (“Graveless”) Chambers

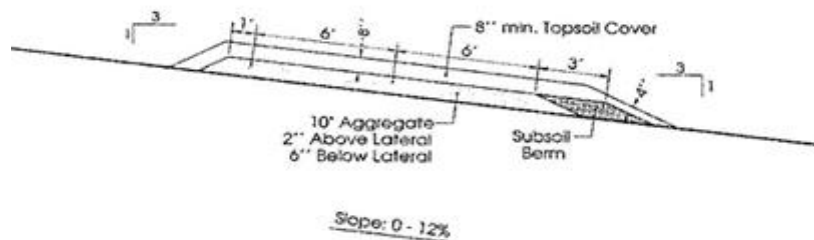
These chambers are sometimes installed in lieu of the traditional stone/gravel around piping in a drainfield. Instead of the wastewater being distributed to the soil by voids in the gravel or stone of a conventional drainfield, the chambers are connected in series and placed with the open face down to provide a large open area for wastewater to spread over the soil at the bottom of a drainfield excavation. Advantages include a possible reduction in the square footage of a drainfield and use for sites where access is difficult – the plastic chambers are much easier to transport than truckloads of stone.



At-Grade Absorption Areas

These are a variation on the conventional elevated sand mound system, whereby the use of a pre-treatment filter (sometimes a peat filter) can allow the elimination of the sand. Lowering the height of a sand mound, by eliminating the sand, can have both cost and aesthetic benefits.

A sloping at-grade, shown below, is a variation where the finished grade of the mound follows the existing grade.



Cross Section of Sloping At-grade

Peat Filters

A peat filter is typically an enclosed unit which contains specially harvested peat. Peat is the byproduct of the partial decomposition of organic matter, in an oxygen-poor environment. It contains an abundance of carbon, and is very effective in wastewater treatment. Peat filters are large tanks typically installed downstream of a treatment tank,

and before the disposal area, to “clean up” the wastewater more than a conventional system. Regular maintenance is crucial, as the peat typically must be replaced after a number of years for the filter to function correctly.

Additional Information

There are additional alternate systems which are approved for use in Pennsylvania, depending on the particular situation. DEP maintains the “Alternate Systems Guidance Document”, which is available on the DEP website (document number 362-0300-007) and describes these technologies and applications in depth.

Homeowners are advised of the necessity to conduct any and all on-lot permitting activities in close association with the Chester County Health Department Sewage Enforcement Officer (SEO) assigned to London Grove Township. The SEO can provide additional guidance on the need for any specific alternate technology.

For further information, you may contact:

Chester County Health Department

Government Services Center

601 Westtown Road, Suite 288

West Chester, PA 19380-0990

Phone: 610-344-6526

<http://dsf.chesco.org/health> (click on “sewage and water”)

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