Texas Agricultural Extension Service
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On-site wastewater treatment systems

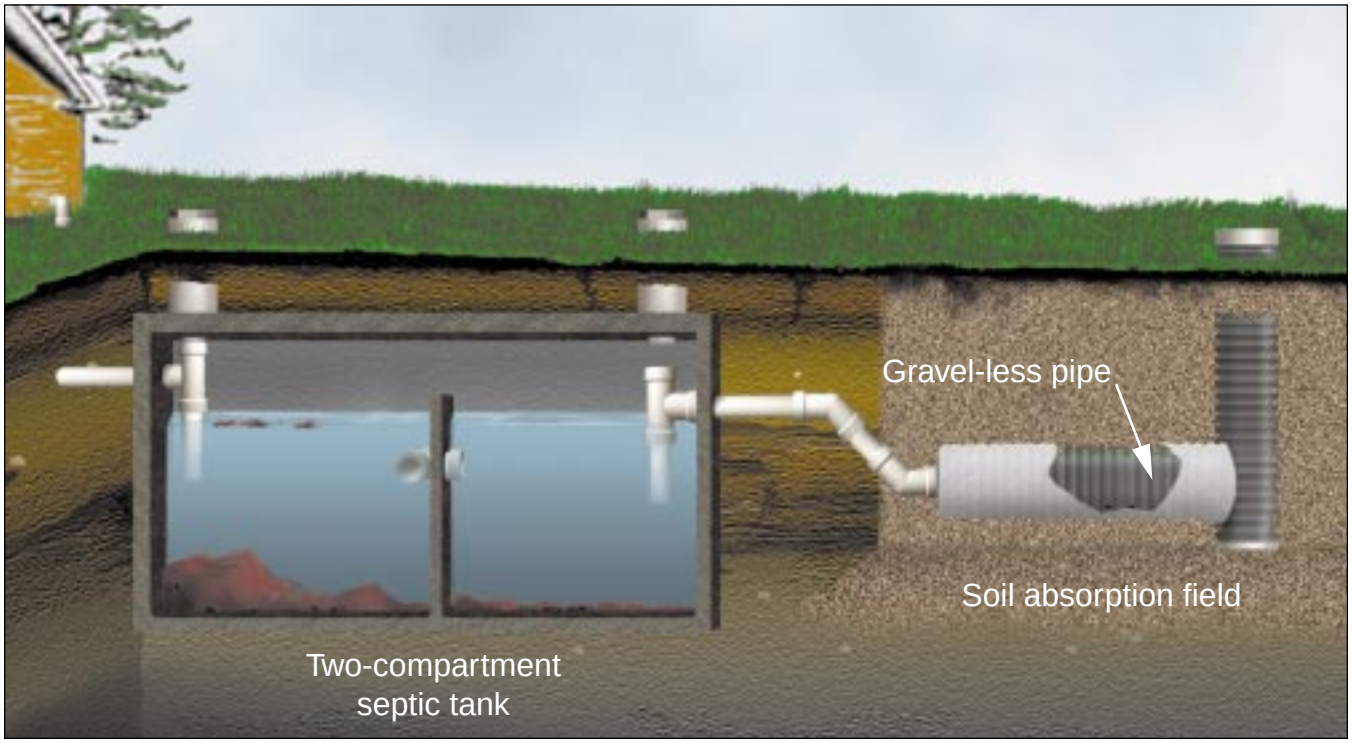

Figure 1: Gravel-less pipe is flexible and can be placed in curved trenches on a sloping site.

Gravel-less pipe

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Gravel-less pipe systems distribute treated wastewater into the soil. They are like conventional gravel-filled trench systems, except that gravel-less pipes are surrounded by geotextile fabric instead of gravel.

A gravel-less pipe system includes:

- ✓ A treatment device, generally a septic tank, but it can be an advanced treatment system.
- ✓ Gravel-less pipe, which is made of corrugated, perforated polyethylene and is commercially available in 8- and 10-inch diameters. The pipe is wrapped with geotextile fabric.
- ✓ Pipe trenches, which are 2 feet wide and no more than 150 feet long.

In a gravel-less pipe system, wastewater flows from a home into a treatment device, where settleable and floatable solids are removed. From there the wastewater moves into a drain field through gravel-less pipes. The wastewater is stored inside the pipes until it exits through two rows of holes along the pipe bottom. It moves through the geotextile fabric and enters the soil, where microorganisms consume the rest of the wastes in the water.

In these systems, the gravel-less pipe is placed in a trench. The trench for an 8-inch-diameter pipe must be the same length as that required for a 2-foot-wide conventional system trench. A 10-inch-diameter pipe must be as long as a 2.5-foot-wide conventional trench. Multiple trenches are connected with a solid 4-inch-diameter pipe. If there are only two trenches, they can be looped or connected together on the ends with

the gravel-less pipe rather than the solid 4-inch-diameter pipe. Each trench must also have a clean-out/inspection port to allow sludge to be pumped out and air to enter the pipe.

Advantages

Gravel-less pipe is made of a lightweight material and can easily be carried to an excavated trench. The pipe is flexible, which enables it to be placed in curved trenches excavated to a specified elevation on a sloping site.

Gravel-less pipe requires only a septic tank to pretreat the wastewater.

Disadvantages

A gravel-less pipe system requires a well-aerated soil. It cannot be installed in clay. The geotextile fabric surrounding the pipe must remain aerated to keep it from becoming clogged.

The gravel-less pipe also requires a 2-foot separation distance from the bottom of the pipe to a restrictive horizon or groundwater.

How to keep it working

Gravel-less pipe is a proprietary product, so please follow the manufacturer's recommendations for maintaining the system. Other guidelines include:

✓ Have the treatment tanks pumped out every 2 to 3 years to reduce the risk of solids entering the gravel-less pipe.

✓ Maintain a grass cover over the trenches to help remove water from the soil.

✓ Do not place any solid materials over the ground surface that could prevent air from moving into the soil in the drain field.

✓ Check the cleanout/vent pipe in the trenches. If sludge has accumulated in the gravel-less pipe, a licensed septic system pumper can remove the sludge.

✓ Implement water conservation practices to prevent the drain field from becoming flooded.

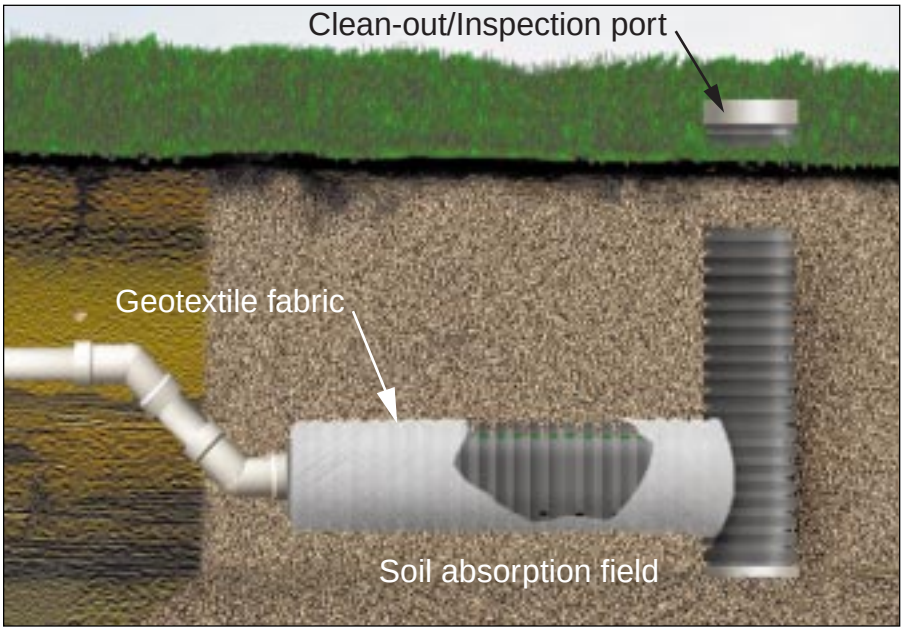

Figure 2: Gravel-less pipe is surrounded by geotextile fabric instead of gravel.

Estimated costs

The cost to install a gravel-less pipe system ranges from $2,000 to $6,000, depending on the soil type, house size and other factors.

Septic tank maintenance averages about $75 per year, if you have it pumped out every 3 years. More frequent maintenance increases the yearly cost.

The On-Site Wastewater Treatment Systems series of publications is a result of collaborative efforts of various agencies, organizations and funding sources. We would like to acknowledge the following collaborators:

Texas State Soil and Water Conservation Board
Texas On-Site Wastewater Treatment Research Council
Texas Natural Resource Conservation Commission
USDA Water Quality Demonstration Projects
Consortium of Institutes for Decentralized Wastewater Treatment
USEPA 319(h) Program
Texas Agricultural Extension Service
Texas Agricultural Experiment Station
Texas On-Site Wastewater Association
USDA Natural Resources Conservation Service

Produced by Agricultural Communications, The Texas A&M University System

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