

# Onsite Program

## Septic Systems: How They Work

Every home produces sewage. Every time a toilet is flushed, water goes down a drain or you do a load of laundry, you are sending sewage to your septic system. Septic systems are designed to collect and treat the water that goes down the drains in your home.

The term septic system is used for many different types of septic system designs. The septic system that you have at your home will depend on a number of factors. For example, the size of the lot, the type of soils that are present on the lot, and the depth to the groundwater table are all taken into consideration when choosing the right type of septic system for a specific home.

### Septic Systems: Basic Components

#### Septic Tank:

The septic tank is designed to collect all of the sewage that comes from your home. For example, every time you do a load of laundry, you are creating sewage that travels to your septic tank. When sewage enters the septic tank, the solids or sludge sink to the bottom of the tank and oils or scum float to the top of the tank. All of the liquid between the sludge and scum layers is called sewage. Once the tank is full, sewage is displaced from the septic tank to the drainfield. Over time, the scum and sludge levels in the tank increase to a point when the tank needs to be pumped by a licensed sewage disposal service to remove the solids.

#### Soil Absorption Field:

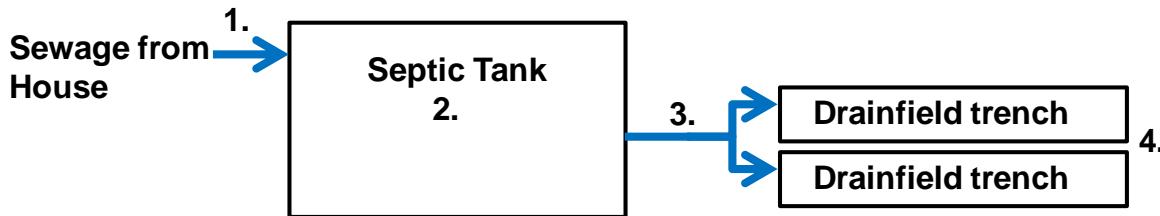
The soil absorption field may be a drainfield (also called leach field) or a seepage bed. The soil absorption field consists of a series of trenches that sit below the ground. These trenches are filled with a porous material and covered with soil. Sewage from the septic tank is dispersed into the trenches. Microbes then break down the sewage, as it moves down through the soil profile below the trenches.

### Types of Septic Systems

#### Simple Gravity-flow Septic Systems

The most basic type of septic system is a simple gravity-flow system. Understanding how this type of septic system works is the first step in understanding how other types of septic systems work. A gravity-flow septic system consists of two main parts: the septic tank and the soil absorption field. The numbers listed below correspond to the numbered steps shown in the figure below.

1. Sewage from the home enters the septic tank.
2. Solids, greases and oils settle out of the sewage in the tank.
3. Sewage flows to the soil absorption field (drainfield).
4. Sewage moves down through the soil absorption field trenches into the soil beneath the trenches. Microbes living in the soil oxidize and break down pathogens and impurities in the wastewater.



## Simple Gravity-flow Septic System



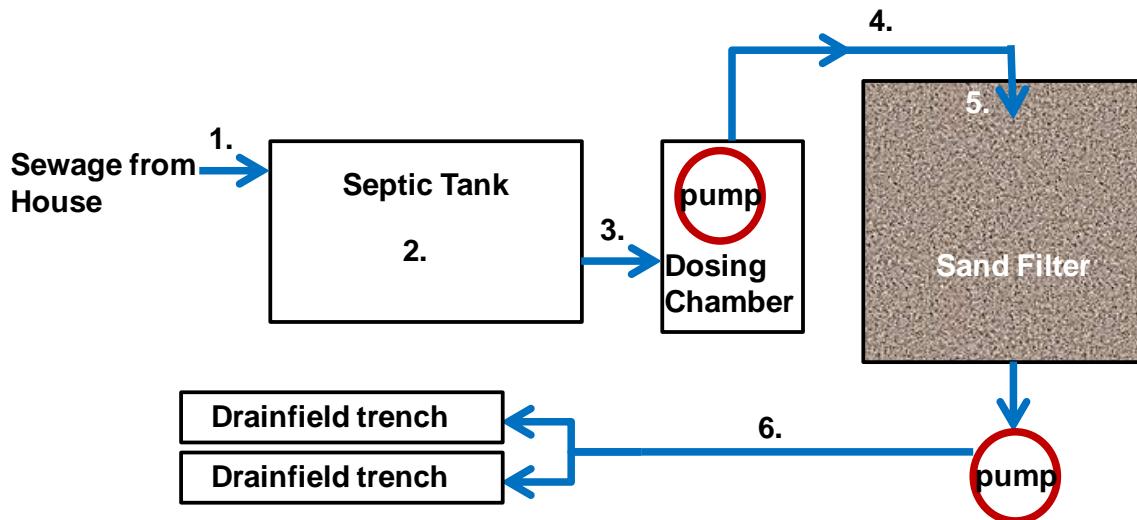
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## Sand Filter Septic Systems

A sand filter septic system works very much like a simple gravity-flow septic system except for two main differences: 1) pumps are required to move sewage and 2) there is a large sand filter that provides preliminary sewage treatment prior to being dispersed in the soil absorption field. The numbers listed below correspond to the numbered steps shown in the figure.

1. Sewage from the home enters the septic tank.
2. Solids, greases and oils settle out of the sewage in the tank.
3. Sewage flows into a dosing chamber and is pumped to pipes at the top of the sand filter.
4. Sewage flows through the sand filter, and microbes in the sand oxidize and break down pathogens and impurities in the wastewater.
5. Sewage is collected in pipes (these pipes are called “under drains”) and will gravity-flow or be pumped to the soil absorption field (drainfield) trenches.
6. Sewage moves down through the soil beneath the soil absorption field trenches, and soil-dwelling microbes oxidize and break down any remaining impurities in the wastewater.
7. Sometimes, during step 5 above, sewage is collected and pumped back through the sand filter a second time.



## Sand Filter Septic System

### Alternative Treatment Technology Systems

Currently, there are five manufacturers with alternative treatment technology systems approved for use in Oregon. These systems are typically installed when a gravity-flow system is not a viable option for effective sewage treatment at a particular location. Alternative treatment systems are specific to the manufacturer and typically have more components than gravity-flow septic systems.

If you are interested in learning more about [septic systems that use alternative treatment technology](#), and which [alternative systems are available in Oregon](#), please visit [DEQ's website](#). Click on the links above or enter the term “Alternative Treatment” in the search feature at the top right corner.

### Alternative formats

Documents can be provided upon request in an alternate format for individuals with disabilities or in a language other than English for people with limited English skills. To request a document in another format or language, call DEQ in Portland at 503-229-5696, or toll-free in Oregon at 800-452-4011, ext. 5696; or email [deqinfo@deq.state.or.us](mailto:deqinfo@deq.state.or.us).