



# A Homeowner's Guide to Septic Systems

Septic systems are used when a home cannot be connected to a public sewer system. Although there are many types of systems and the specific design and components vary, the basics of each system are generally the same. The primary function of a septic system is to collect wastewater as it leaves a home, separate the solid waste from the liquid waste, and filter the clean liquid out into a leaching field.

Systems typically consist of a tank that traps the solid waste and then allows the liquid to make its way to an underground leaching field where it will filter out into the groundwater over time. As the liquid moves through the system, it is cleansed through a natural biologic process that decomposes the waste discharged into the tank. While this process treats both water and solids, sludge accumulates in the tank over time and must be periodically removed. How often the tank needs to be pumped depends on factors such as household size, rate that wastewater is produced, and the size and the age of the septic system.

## Main Components of a Typical Septic System

- **Inlet Pipe** – directs waste from the home to the septic tank
- **Septic Tank** – where the liquid effluent separates from the solid sludge
- **Outlet Pipe** – where the separated effluent exits the septic tank
- **Distribution Box** – distributes liquid effluent to leaching lines
- **Leaching Field (Drain Field)** – set of drainage pipes that allow for further filtration of the liquid effluent back into the environment's groundwater

## Conventional Septic System

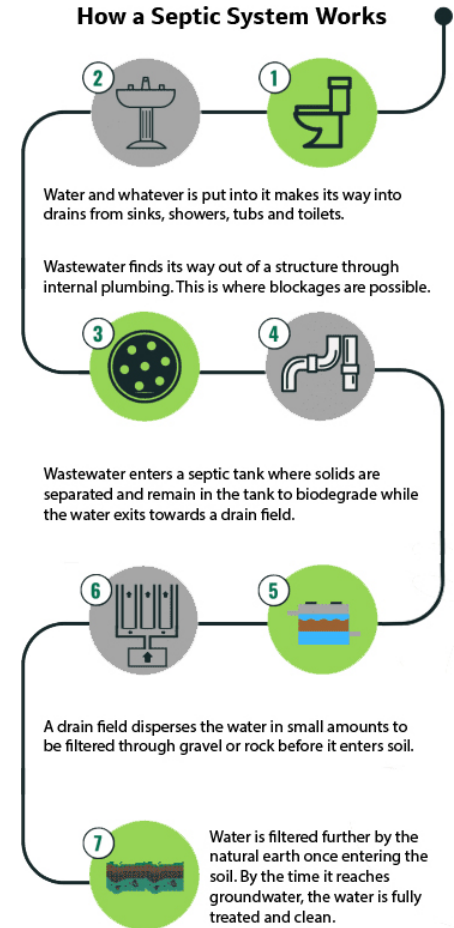
In a conventional septic system, the main sewage line connects the home's plumbing—e.g., toilets, sinks and bathtubs, etc.—to a septic tank that is located underground outside the house. The waste from the home typically reaches the tank by gravity. The tank is usually a watertight rectangular concrete or plastic container. When the waste reaches the tank, solids settle to the bottom of the tank, and as the liquid level rises, it exits the tank through the outlet line. To prevent significant movement in the tank when waste enters, T's or baffles are typically placed on both the inlet and outlet sides of the container. Preventing movement helps solid and liquid waste remain separated in the tank.

There are typically two to three access points to the septic tank itself. These access points are about the size of a sewer cover and will usually be located at the inlet, outlet and occasionally in the middle. During service, the inlet and the outlet covers are exposed and opened for access to the tank. Some people choose to have the level of their cover flush with their yard while others prefer their covers to be a few inches underground. When the covers are a few inches below the surface, it allows grass to grow over the top removing the eyesore from the yard.

Once the waste enters the tank, and the solids and sludge have settled to the bottom, bacteria eat away at the solids. The use of a bacterial additive on a regular basis can help increase the level of healthy bacteria. Over time, however, some solids remain and build up in the tank. This buildup is why regularly pumping is essential for maintaining a healthy septic system.

The liquid effluent makes its way out of the tank into a distribution box. The distribution box distributes the effluent as it leaves the septic tank into the lines of the leaching field. A leaching field is a set of drainage pipes layered with crushed stone and topsoil. The layers allow for further filtration of the effluent before it enters the groundwater.

## How a Septic System Works



## Other Septic System Components

Septic system designs and installations can vary because every property is different. For example, some septic systems require a pump to be installed to help move the liquid waste from one component to the next.

**Pump Chamber/Lift Station** – A pump chamber or lift station is installed in the final chamber of the septic tank in instances where a system is working against gravity to push wastewater along from the distribution box to the leaching field. As the liquid level rises within the chamber, a float activates the pump. Typically, an alarm alerts the homeowner in the event the septic pump chamber malfunctions.

**Vent Pipe** – A vent pipe allows for proper air ventilation for the leaching field. Sometimes, vent pipes can also be installed to run through the home's central plumbing ventilation, but other times a pipe coming out of the ground in the shape of candy cane is necessary to vent the leaching field properly.

**Septic Filter** – Not all systems require a filter, but if a system allows for it, we recommend installing a filter on the outlet pipe of the septic tank. This filter is an additional barrier for solid waste, preventing any solid particles from making their way into the leaching field. In combination with regular septic pumping services and the use of bacterial additives, a filter is one more step in maintaining a healthy septic system.

**Septic Tank Risers** – If a septic system cover is far below ground level, a septic cover riser is typically used. A riser is a wide pipe made of plastic, fiberglass or concrete that extends from the top of the septic tank to ground level making locating, accessing and servicing a septic tank easier. The size of a riser depends on how deep the septic tank is buried and range from as little as five inches to more than 50 inches tall and from 12 to 32 inches in diameter. Some states and local governments require septic tank risers to be installed.

## System Size

Generally, residential septic system tanks are between 1,000 to 2,000 gallons. The size of a residential septic system is usually based on the number of bedrooms that are in the home and when the property was constructed. Pump chambers can also add another 500 to 1,000 gallons to the total size of a septic system. Commercial septic systems vary greatly, ranging from 1,500 gallons to 15,000 gallons.

## System Lifespan

The U.S. Environmental Protection Agency estimates a septic system lasts between 15 and 40 years. The lifespan varies and can be extended if a system is taken care of properly.

## Tank Locating

Finding the septic tank can be difficult without landmarks or a riser present to quickly identify where it is on the property. A map of the property, including the septic tank, should be provided when purchasing a home; but, if not, the local town records departments generally can provide this.

## Tank Pumping

Pumping the tank requires the use of a special vacuum truck. Once the tank lid is located and removed, a service technician will insert a large hose connected to the truck and remove the sludge and solids. When Wind River Environmental technicians service a residential septic system, each component is inspected to make sure the system is in good working condition and any deficiencies are identified.

## Pumping Frequency

The average septic tank requires pumping every one to three years. Many factors will affect the frequency that the septic tank will need to be pumped, such as household size, rate that wastewater is produced, and the size and the age of the septic system. For instance, a household with three occupants typically has a 1,500-gallon tank and likely requires service once every two to three years depending on water usage and if a garbage disposal is present and utilized.

## Septic System vs. Cesspool

A cesspool is simply a perforated concrete or block ring, similar to a well-liner but with holes, buried underground. There is no widespread distribution of effluent. Everything dumps to the cesspool, sludge piles up at the bottom, and effluent and scum drain through the holes directly into the immediate surrounding soil. The cesspool sludge needs to be pumped frequently to keep lower holes open for water flow. If the surrounding soil becomes saturated to the point that wastewater is pooling at the ground surface, the cesspool should be replaced with a modern septic system.

## System Inspections

In many states, it is a law that the septic system passes an inspection before the home can be sold. If the inspection fails, the system must be repaired or replaced. The responsibility to obtain the inspection depends on the state, but in the Florida real estate market it's the buyer's responsibility.

When deciding who to hire for an inspection, be sure to hire a professional septic contractor who is certified by the state and has experienced, licensed inspectors. General home inspectors only perform a limited, visual-only inspection of the septic system.