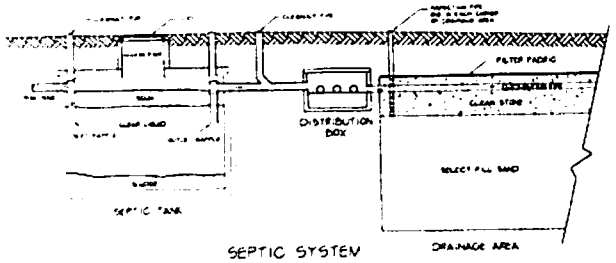
What is a septic system?

A sub-surface sewage disposal system, commonly known as a septic system, consists of two main components; the septic tank, also known as the treatment tank, and the drainage area, often referred to as the leach field. The system also includes a main sewer line which connects all plumbing fixtures to the septic tank and a distribution box which connects the septic tank to the drainage field. The septic tank is usually buried approximately 10-20 feet from the dwelling.

The purpose of a septic system is to treat and dispose of wastewater generated by the occupants. When properly installed and adequately maintained, septic systems are more economical than sanitary sewers and just as efficient.



SEPTIC SYSTEM CROSS SECTION

How your system works

All wastewater generated from the dwelling enters the septic tank where primary treatment occurs. Anaerobic bacteria (bacteria found in environments without oxygen) thrive in the septic tank where they organically break down solids, creating sludge. Lighter materials such as grease and soap float to the top of the tank and form a layer called scum. This simple settling process allows virtually all of the wastewater (effluent) to flow out of the septic tank free of grease, soap and solids. It is important to remember that the septic tank inlet and outlet pipes are near the top of the tank. Thus, the septic tank always appears full.

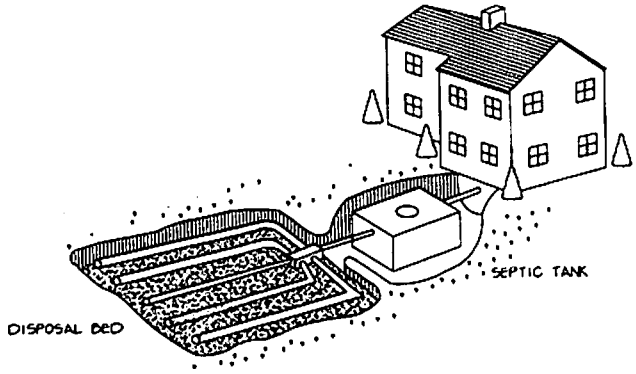
The relatively clear wastewater exits the septic tank outlet and flows into the distribution box (D-box). The purpose of the distribution box is to evenly distribute the wastewater flow throughout the drainage field. Once in the drainage field, the wastewater passes through perforated lateral pipes, a layer of crushed stone and finally through several feet of unsaturated soil. As the treated wastewater travels through the soil, bacteria die off and the water is purified.

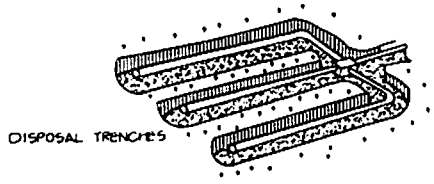
What a septic system looks like

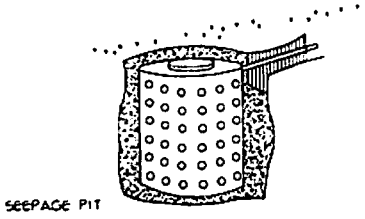
While property and lot sizes differ, most septic systems include a treatment (septic) tank, distribution box and drainage area (disposal bed, trench system, seepage pit, etc.). Some older systems have a cesspool instead of a tank and drainage area. Septic tanks, distribution boxes and seepage pits are commonly made of precast concrete. The perforated pipes in the drainage field are often made of P.V.C. pipe which lay buried in several feet of crushed stone.

Town regulations, health codes and soil conditions often govern the system design in your area. You may want to contact municipal offices to obtain specific codes or a copy of the property survey.

Typical system layouts
(Local regulations vary)



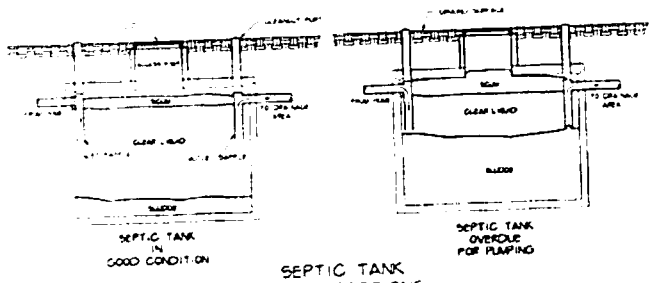




Septic system maintenance

Periodic maintenance is the key to extending the life of your septic system and preventing costly repairs. When the combined depth of the sludge and scum layers equal one-third of the septic tank capacity, the tank should be pumped. The accumulated sludge and scum from the septic tanks should be pumped a minimum of every three years, or more frequently if your household consists of four people or more.

A general rule for locating your septic tank is to probe with a shale bar or steel rod 10-15 feet from where the main sewer line exits the foundation of the dwelling. Patience and determination will help you locate the outer edges of the tank. Once located, dig a hole toward the center to expose the main cover only, usually 24" in diameter.



SEPTIC TANK CROSS SECTIONS

Drain fields

The drain field is the most important component of the septic system. When properly installed and sized, it will accommodate treated wastewater (effluent) from your septic tank for many years. Your drain field requires no maintenance; however you may want to consider locating and uncovering the distribution box and having it cleaned if your system is older than ten years. In addition, consider following these precautions to best care for your drainage field:

- Periodic septic tank pumping will prevent sludge and scum from contaminating the drain field.
- Keep the following items off the drain field:
  - Automobiles
  - Heavy vehicles
  - Accumulated storm water
  - Stockpiles of snow and soil
- Mark the boundaries of the drain field as a permanent reminder
- Avoid planting trees and deep-rooted shrubs in the vicinity of your drain field.

Answers to your questions

We have provided the following explanations for commonly asked questions:

Additives

Most household wastewater supplies bacteria for proper septic tank operation. Use of laundry detergents and small amounts of bleach will not harm the naturally occurring bacteria found in the tank. If you use excessive amounts of cleansers and detergents, you may want to consider using a biological enhancer. Russell Reid provides bacteria culture specifically designed to replace and enhance the bacteriological environment.

Yeast

Case studies have determined that yeast is not an effective additive for a septic tank.

Garbage disposals

If a garbage disposal is used in a home with a septic tank, the tank solids will accumulate more rapidly than homes without a disposal. This facilitates the need for annual septic pumping.

Ejector pits & pump tanks

Pump tanks or ejector pits are used when the elevation of the septic tank or drainage area is located in a higher elevation where a gravity feed is not possible. These systems should be periodically inspected including the pump, floats and electrical connections.

Knowing when to pump your septic tank

Residential septic tanks should be pumped every 18 to 30 months and should never exceed 36 months.* It is important to remember that it is the amount of sludge in the tank that determines the need for pumping.

Tips

- Know where your septic system is located
- Install a riser on the main cover for easy access
- Pump your tank regularly
- Fix all leaking faucets and toilets
- Never put harmful material into your septic tank

* University of Minnesota, College of Agriculture, Food and Environmental Services, 1997.