

HOMEOWNER'S TIP

Do you enjoy the convenience of an **automatic garage door opener**? Is yours safe? Will it stop if a child is under it? Your opener should reverse automatically if it encounters resistance. Also, all new openers must include an infrared detector that will reverse the motion if someone or something disrupts the beam. You should test your garage door opener monthly.

IN THIS ISSUE

- ✓ SEPTIC SYSTEMS
- ✓ OTHER WASTE WATER SYSTEMS
- ✓ RENOVATION & REMODELING ALERT

FOR MORE INFORMATION

Call our local office or visit our Web site at:
www.criterium-engineers.com

Septic Systems

Approximately 25% of the housing units in the United States are served by septic tanks or cesspools (private, subsurface wastewater systems), according to a 1995 American housing survey by the U.S. Census Bureau. That means there are currently more than 25 million septic systems in the United States. Further, each year about 400,000 new systems are built. In Canada, there are about 3 million active septic systems and about 40,000 new systems built each year.

The following is a brief summary of some things you should know about septic systems. For more information, a particularly good publication is *The Septic System Owner's Manual* by Lloyd Kahn, Blair Allen, and Julie Jones. It is published by Shelter Publications of Bolinas, California. Their Web site is www.shelterpub.com. Or you can go directly to information about this publication at http://www.shelterpub.com/_shelter/ssom_book.html.

That publication is equally applicable in Canada. However, the *Septic System Owner's Manual*, a different publication made possible through the Ontario Ministry of Environment and Energy's Environmental Education and Awareness Program, is also helpful.

A typical septic system consists of two basic components: a septic tank and an underground disposal field. Wastewater flows from the house to the septic tank. Effluent, after the solids have settled out of the wastewater, flows from the tank to the drainage field.

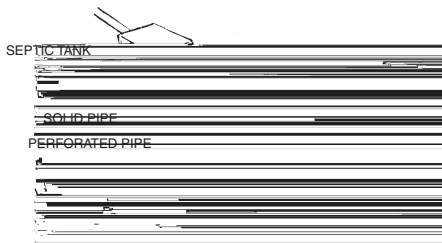
Most septic systems operate by gravity. Thus, it is a passive system, perhaps one of the best passive systems we have to serve our homes.

For various reasons (typically, site topography and soil characteristics), some septic systems will require a pump (an effluent pump) to pump effluent from the septic tank to the drainage field. Others may require a pump (sewage ejection or grinder pump) to pump the wastewater from the

(Continued on next page)



house to the septic tank. The simpler system is the one using an effluent pump. A sewage ejection or grinder pump is a more complex piece of equipment that requires more maintenance. Dual ejection pumps are sometimes installed so one can serve as a backup in the event of a problem. Both types of pump should be equipped with a high-water alarm to alert you if there is any problem with the system. All septic system pumps should be maintained on regular basis.



Fundamentally, the septic tank has several functions:

1. To receive all wastewater from the house.
2. To allow solids to settle from the wastewater.
3. To facilitate decomposition of the accumulated solids.
4. To provide storage for accumulated solids.
5. To allow the wastewater without the solids (the effluent) to flow to the drainage field.

For most single-family homes, the septic tank will range from 500 to 1,500 gallons in capacity. Most modern septic tanks are concrete, fiberglass, or plastic. The majority of tanks are prefabricated units. Most older tanks are wood or steel.

The disposal field is sometimes called a drainage field, leach field, or absorption field. It is intended to purify and disperse the effluent flowing from the septic tank. Disposal fields typically consist of either perforated distribution pipe or chambers. Chambers are typically concrete or plastic. The type of soil in which the drainage field is located and how well it will absorb the effluent will dictate the size and configuration of the disposal field. Also, in most states and provinces, the number of bedrooms dictates the minimum system size of the septic tank and disposal field. There are many regional variations of the components of and configuration used for disposal fields. Some even include the ability to chemically treat the effluent to facilitate purification and recycling.

Ultimately, the water and nutrients from the effluent will recycle back into the environment to nurture plant growth and/or evaporate into the atmosphere.

The most serious problem for a septic system occurs when solids flow into the disposal field. This can cause a backup of the system because the drainage field becomes blocked. To minimize the risk of damaging the drainage field, it's important to pump out the septic tank on a regular basis. In most areas of North America, it is recommended that a septic tank be pumped out every 3 to 5 years. In some areas, however, a 10-year cycle is possible based on how the system is used, the type of soil, and other factors. At a minimum, we recommend opening the tank and inspecting it every 3 to 5 years and then pumping when evidence indicates a need. A qualified technician should do the inspection. Those qualifications vary regionally.

Other Waste Water Systems

You should check with the state or county plumbing inspector for more information. In Canada, call the Municipal Office, Health Department, Environmental Canada, or any licensed sewage contractor listed in the yellow pages.

Here is a summary of key points regarding your septic system:

1. Open and inspect the tank every 3–5 years.
2. Expect to replace a wood or steel septic tank soon.
3. Pump the septic tank every 5–10 years, depending on inspection findings.
4. Most disposal fields will last 20–30 years or more, depending on soil type and use.
5. Effluent pumps will typically last 20–30 years, assuming normal use and regular maintenance.
6. Sewage ejection (grinder) pumps will last 10–20 years, assuming normal use and regular maintenance.
7. If you want to add a bedroom, you may have to enlarge your septic system.

Septic systems are natural, effective, reliable, and passive systems for disposing of wastewater. With proper maintenance, most will serve for many, many years. For more information, we recommend *The Septic Systems Owner's Manual* noted above.

Wastewater systems come in many forms. While the most common is the septic system described above, there are alternatives. For various reasons, most often unacceptable soil characteristics, ledge or high ground water, several alternative systems have been developed. These include gray water systems, composting toilets, pressure-dosed systems, mound systems, and sand filters.

Gray Water Systems

In some areas, wastewater from laundry, bathtubs, and showers is called gray water and is diverted into secondary disposal systems. This can reduce the load on the septic tank and provide alternative wastewater disposal. In many parts of the United States and Canada, gray water systems are no longer legal. If a home you're considering (or your own home) has a gray water system you should check to be sure that it complies with local ordinances. Also, you should determine what regular maintenance might be needed. Some gray water systems include the equivalent of a septic tank.

Composting Toilet Systems

There are a variety of systems that will compost the waste rather than process it through a traditional septic system. These are preferable where soil quality or geological characteristics prevent a traditional septic system,

the property is close to a body of water, water for flushing is unavailable or expensive, or personal ecological priorities prefer this type of system. There are pros and cons to a composting system. Gray water and the composted waste must still be disposed of separately.

Pressure-Dosed System

The pressure-dosed system includes a pump chamber and pumps the effluent into the distribution field on prescribed dosage frequency. This is often more affective depending on the characteristics of the soil. It also requires more mechanical components.

Mound System

The mound system raises the distribution bed above ground water, bedrock and/or poor soils. In effect, it is creating a new layer of soil into which the effluent can drain. Typically, unless site characteristics are favorable, a mound system requires a pump, to pump effluent from the septic tank to the drainage field. Mound systems are effective but may impact the esthetics of the site by creating a large “mound” above the natural slope.

Sand Filters

Sand filters introduce an intermediate step in a typical septic system. Effluent is fed through the sand filter where bacteria digest the waste as the water percolates through that area. The treated, filtered effluent is then collected and flows to a drain field. Sand filters are affective in a variety of soil types and, in effect, purify the septic effluent before it goes to the drain field.

Renovation & Remodeling Alert

Typically, throughout the United States, if you renovate or remodel your home (especially if you enlarge it), you may need to replace your septic system to comply with the current regulations. You should check with your local plumbing inspector.

In Canada, government regulations specifically prohibit any renovations or additions to a home which are likely to affect the operation or effectiveness of a sewage system. If you are on a septic system, adding a bedroom to your house (even without adding a bathroom) might mean having to increase the size of your tank and field. The regulations further state that any construction or alteration of a septic requires a Certificate of Approval issued by the Ministry or department responsible.

For the office
nearest you, call
1-800-242-1969

YOUR HOME is your link to the nation's oldest inspection service, with affiliate offices staffed exclusively by registered engineers and architects — professionals committed to serving your needs. CRITERIUM ENGINEERS was founded in 1957.

Copyright © 2003 by CRITERIUM ENGINEERS. Reproductions in any form without express, written consent are prohibited. For additional copies or more information, contact CRITERIUM ENGINEERS, 22 Monument Square - Suite 600, Portland, ME 04101.

