

# Managing Your Septic System

E-3350 • Updated August 2017

Prepared by

Dr. Eckhart Dersch, Michigan State University (MSU) Extension Specialist in Water Management (retired), Professor Emeritus, Department of Community Sustainability; Bindu Bhakta, MSU Extension Educator, Natural Resources; Terry Gibb, Senior MSU Extension Educator, Natural Resources/ Government and Public Policy; Dr. Ted Loudon, Professor Emeritus, MSU Department of Biosystems and Agricultural Engineering; Dr. Steve Safferman, Associate Professor, MSU Department of Biosystems and Agricultural Engineering

**H**ouseholds that are not served by public sewers usually depend on some form of on-site wastewater treatment and dispersal system. A conventional septic system is one form.

When your septic system is correctly placed, adequately designed, carefully installed and properly managed, you will have a wastewater treatment and dispersal system that is simple, economical, effective, safe and long lasting. A failing system may result in property damage, odor, surface and possibly groundwater pollution, disease potential and costly repairs or replacement.

## MANAGEMENT IS THE KEY TO A LASTING WASTEWATER TREATMENT AND DISPERSAL SYSTEM.

This file contains information that will help you manage your septic system. It also provides a place to record and to store vital information about your system, such as the local health department permit and pumping records. Keep it with other documents about your home and property.

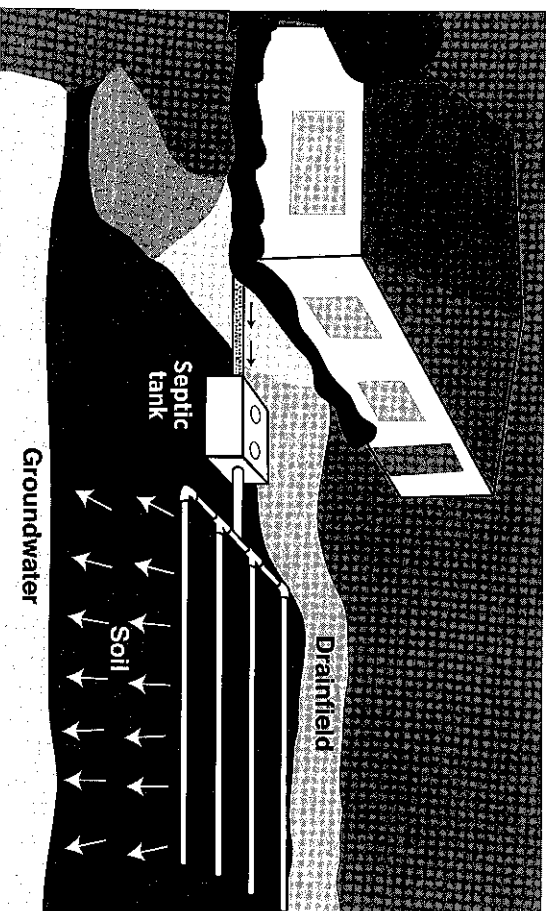


Figure 1. A typical on-site waste disposal system.

## Septic System Components

A septic system has two basic parts: a **septic tank** designed to intercept, hold and partially treat wastewater coming from the home and a **drainfield**, or soil absorption field, which facilitates treatment and dispersal of clarified wastewater after it leaves the septic tank. (See Figure 1.)

## Helpful Sources of Assistance and Additional Information

Questions and concerns about your septic system can be directed to the sanitarian in your county or regional health department, to a septic system contractor or to your local Michigan State University Extension office. Additional information:

### Publications

- National Environmental Service Center (<http://www.nesc.wvu.edu/subpages/septic.cfm>)
- What is a Septic System? How Do I Maintain One?
- Part 1: So... Now You Own a Septic System
- Part 2: The Care and Feeding of Your Septic System
- Part 3: Groundwater Protection and Your Septic System

- University of Wisconsin Extension
  - Care and Maintenance of Residential Septic Systems (<http://learningstore.uwex.edu/assets/pdfs/B3583.pdf>)

### Websites

- Michigan State University Extension: Septic System Education ([http://msue.anr.msu.edu/program/info/septic\\_system\\_education](http://msue.anr.msu.edu/program/info/septic_system_education))
- National Onsite Wastewater Recycling Association (NOWRA) (<http://www.nowra.org/>)
- U.S. Environmental Protection Agency: Septic Systems (Onsite/Decentralized Systems) (<https://www.epa.gov/septic>)
- University of Minnesota Extension: Onsite Sewage Treatment Program (<http://septic.umn.edu/>)

## How the Septic Tank Functions

The typical septic tank is a large, buried, rectangular or cylindrical container made of concrete, fiberglass or polyethylene usually located 10 or more feet from the point where the sanitary drain leaves the house. Wastewater from your bathroom, kitchen and laundry flows into the septic tank. There, heavy solids settle to the bottom where bacterial action partially decomposes the solids into sludge and gases. The lighter solids, such as fats and greases, rise to the top and form a scum layer. The partially treated **effluent** (wastewater) then leaves the septic tank and flows to the drainfield. Septic tanks have one or two compartments specifically designed to capture the solids and prevent them from entering the drainfield. Two-compartment tanks do a better job of capturing the solids and may be required in new installations. (See Figure 2.) **Tees** and **baffles** are essential parts of the septic tank. The **outlet tee**, or **baffle**, prevents floating solids or scum from leaving the tank and then clogging the drainfield. Some tanks are also equipped with an effluent filter to further prevent the movement of solids into the drainfield. All septic tanks should have accessible covers for checking the condition of the baffles and for pumping out the accumulated sludge and scum mat. If accumulated solids are not regularly removed from the septic tank, they will overflow into the drainfield and cause it to fail prematurely, resulting in costly repairs or replacement.

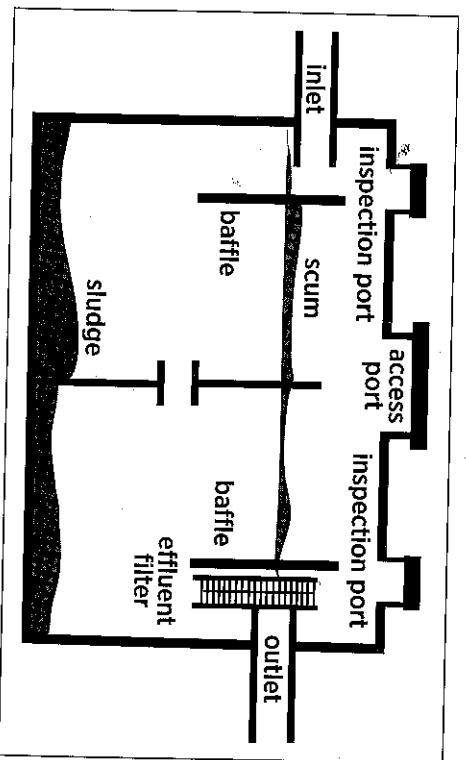


Figure 2. Cross-section of a two-compartment septic tank. Inlet baffles are not common in Michigan.

## Servicing the Septic Tank

Regular servicing of the septic tank is the single most important maintenance requirement of a septic system. Required frequency of service depends on the size of the septic tank and the number of persons in the household. It also depends on whether occupants are minimizing the release of unnecessary solids into the wastewater. Most septic tanks should be pumped every 3 to 5 years.

### How do I determine when to pump?

Michigan State University recommends that homeowners use a licensed, reputable septic tank pumping firm. Its representative will periodically check your system to determine the rate of solids accumulation and design a pumping schedule tailored to your situation. As a general rule, the tank will require pumping when any of the following occurs:

- The top of the sludge deposit is within 12 inches of the bottom of the outlet baffle.
- The bottom of the floating scum mat is within 6 inches of the bottom of the outlet baffle.
- The top of the floating scum mat is within 1 inch of the top of the outlet baffle, or
- The floating scum mat is more than 12 inches thick.

### Should I use special products to enhance the operation of my septic tank?

No. Although many products claim to improve septic tank performance or reduce the need for routine pumping, they have not been found to make a significant difference. Some of these products can actually cause solids to be carried into the drainfield and lead to premature clogging. Other products containing organic solvents can contribute to groundwater contamination.

### Where is my septic tank located?

The tank is usually located about 10 feet from the point where the sanitary drain leaves the house. You can find it by gently inserting a steel rod (soil probe) into the ground where the tank is most likely to be. You can also wait for a light snowfall in the winter and observe where the snow first melts. If you cannot locate it, contact your local health department. Depending on the age of your system, many health departments have records on the septic system layout of individual homes.

## How the Drainfield Functions

The drainfield receives partially treated effluent from the septic tank. It consists of a network of perforated pipes laid in gravel-filled trenches about 2 or 3 feet wide or in beds that are more than 3 feet wide and 6 to 18 inches (or more) deep. The size and type of drainfield are determined by the estimated daily wastewater flow and soil conditions at the site. Wastewater trickles out of the perforated pipes, through the gravel layer and into the soil. (See Figure 3.)

Physical and biological purification processes take place as the effluent percolates through the soil toward groundwater. These processes work best where the soil is somewhat dry and permeable and contains plenty of oxygen for several feet below the drainfield. Some systems include a distribution box in the pipe leading from the septic tank to the drainfield for regulating the distribution of wastewater into the

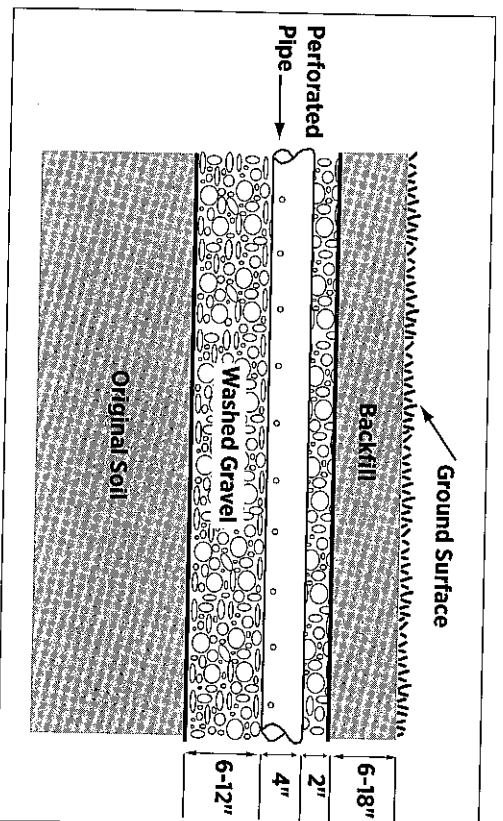


Figure 3. Side view of drainfield.

drainfield. This promotes optimal treatment and dispersal of the water and prolongs the life of the drainfield. The lifespan of a well-maintained system can be 20 to 30 years or more.

### Signs of system malfunction

- Surfacing sewage, wet spots, odors, or lush vegetation on or near the drainfield
- Plumbing or septic tank backups
- Slow-draining fixtures throughout the house
- Gurgling sounds in the plumbing system

If you notice any of these signs or if you suspect any other problems with your septic system, contact your county or regional health department, or your septic system contractor for assistance.

### Alternative systems

In some situations, it may be possible or necessary to treat and disperse effluent from the septic tank using something other than only a drainfield. Alternative systems in use today include sand or manufactured media filters, mounds\*, wetlands, gravelless drainfields, pressure dosing and aerobic units. Servicing requirements for these systems vary; you can obtain them from your local sanitarian or septic system contractor.

*\*The State of Michigan also has good publications on mound systems.*

## Safety Considerations

Certain features of the septic tank can cause serious injury or death, so the tank should be treated with extreme caution.

- Never enter the septic tank. It may contain life-threatening gases and little oxygen.
- Take care when near the septic tank. Explosion or electrical shock can occur when lights, appliances or tools are used in or near the septic tank. Smoking can also trigger an explosion.
- Avoid contact with liquids and solids in the septic tank as they spread infectious diseases.
- Secure exposed manhole covers and inspection ports to prevent tampering or entry.
- Maintain riser lids to make sure they are secure and not damaged.
- Keep children and pets away when the septic system is being maintained or excavated.
- If you smell strong odors, evacuate the building.

## Recommendations

These suggestions will help you prolong the life of your septic system, and protect your health and the environment.

- **Minimize the amount of water entering the septic system.** Practice water conservation. Install low-flow water-saving fixtures in your home, using the least amount of water to get the job done. Repair leaky faucets and toilets, keep water softener backwash out of the septic system and spread laundry loads throughout the week.
- **Avoid using a garbage disposal unit.** Make compost out of vegetable wastes, coffee grounds, eggshells and other compostable kitchen waste.
- **Eliminate release of nondegradable materials,** such as fats, oils, paper towels, hair, personal care products, disposable diapers and flushable wipes.
- **Never release toxic chemicals,** such as solvents, disinfectants, oils, paints, paint thinner, medications and pesticides. Use boiling water and a drain snake to open clogged drains instead of caustic drain-openers. Use commercial bathroom cleaners in moderation. Use mild detergent or baking soda when possible.
- **Avoid release of medications and chemotherapy drugs** as they can disrupt necessary microbial activity in the system or produce antibiotic-resistant pathogens. Some drugs and pathogens can travel great distances in groundwater. Some local pharmacies, health departments and police departments provide safe disposal. If you can't avoid releasing drugs, consider pumping your septic system at least once a year.
- **Pump the septic tank regularly,** usually once every 3 to 5 years.
- **Keep the surface of the drainfield properly drained** by slightly mounding the soil over it, redirecting downspouts and sump pump outflow away from the drainfield and not stockpiling snow over the area.
- **Avoid impermeable or compacted surfaces over the drainfield,** such as concrete, asphalt, plastic or compacted soil from vehicular traffic. Do not drive anything heavier than a lawn mower over your system.
- **Consider adding an effluent filter** to your septic tank to further protect your drainfield. (See Figure 2 on page 2.)
- **Stay away from additives.** Their benefits have not been demonstrated, and some may actually harm your system and contaminate groundwater.
- **If there are observation ports in your drainfield,** look in them during wet weather in the spring as well as during dry weather to determine the depth of any pooled water. Over time, records will help you forecast and solve any developing problems.
- **Contact an onsite wastewater professional association for recommendations** on installers and pumpers, such as the Michigan Septic Tank Association at [www.MSTA.BIZ](http://www.MSTA.BIZ) or NOWRA's Septic Locator at [septiclocator.org](http://septiclocator.org).
- **Avoid using antibacterial soaps and detergents.** They can kill the bacteria you want in the tank.
- **Do NOT:**
  - Install automatic lawn sprinklers over the tank and drainfield.
  - Plant water-loving or deep-rooted plants.
  - Apply fertilizers over the drainfield.

MSU Extension and Michigan Onsite Wastewater Recycling Association partnered to develop a short video about your onsite septic system. The video describes the components, use and maintenance of the system to protect your family, your investment and the environment: <http://bit.ly/2uCoCPG>

