Proper Septic System Maintenance:

A Guide for Michigan Homeowners

A publication of Tip of the Mitt Watershed Council.

TIP OF THE MITT Watershed Council

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In Michigan, 35% of residents rely on septic systems. This means there are between 1.3 and 1.4 million on-site septic systems throughout the state, and each system generates an average of 300-400 gallons of sewage daily. That means on-site systems in Michigan must treat and dispose of more than 455 million gallons of wastewater each day. In Northern Michigan many of us rely on septic systems for wastewater treatment.

You may already know you have a septic system. If you don't know, here are telltale signs that you probably do:

- You use well water.
- The water line coming into your home doesn't have a meter.
- You don't pay a water bill.
- Your neighbors have a septic system.

Michigan is the only state in the nation without uniform standards for how onsite septic systems are designed, built, installed, and maintained. Public health officials in Michigan believe reported septic system failures represent only a fraction of the total number of failures statewide, and many go undetected or remain unreported for years. Michigan State University (MSU) studies suggest that at least a third of septic systems are not working properly.

A failing or improperly maintained septic system can introduce nutrients, bacteria, viruses, pharmaceuticals, and other pollutants to our lakes, streams, and wetlands. The pollutants found in septic leachate also have the potential to contaminate groundwater.

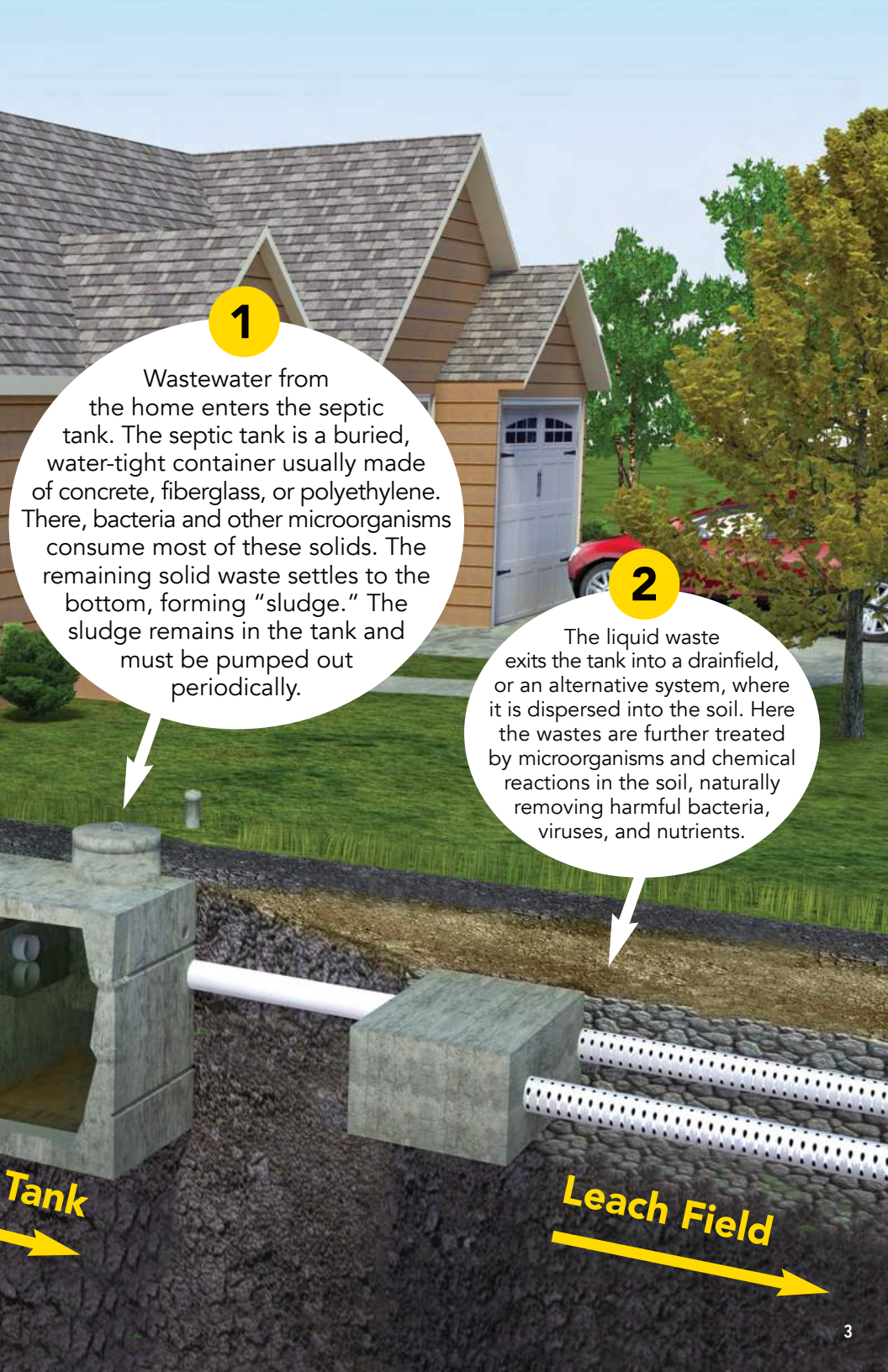
A 2015 study conducted by MSU used microbial source tracking tools, markers for E. coli and the human fecal bacteria B-theta, to show that pollution arising from septic system discharges is likely more severe than previously realized. Results suggest human fecal contamination is affecting 100% of the 64 studied river systems in Michigan's Lower Peninsula.

The impact of a failing septic system may be especially noticeable in the form of increased plant and algae growth in the nearshore area, which can make boating and swimming undesirable. It can also make it unsafe for swimming due to disease-causing bacteria, viruses, parasites, and other pathogens.

How a Septic System Works

Wastewater treatment in septic systems occurs in two stages:

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 requirements from your local sanitarian or septic system contractor.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Wastewater from the home enters the septic tank. The septic tank is a buried, water-tight container usually made of concrete, fiberglass, or polyethylene. There, bacteria and other microorganisms consume most of these solids. The remaining solid waste settles to the bottom, forming "sludge." The sludge remains in the tank and must be pumped out periodically.
2
The liquid waste exits the tank into a drainfield, or an alternative system, where it is dispersed into the soil. Here the wastes are further treated by microorganisms and chemical reactions in the soil, naturally removing harmful bacteria, viruses, and nutrients.
Tank
Leach Field

How to Maintain a Septic System

Protect It and Inspect It: Homeowners should generally have their system inspected and pumped every three to five years, depending on usage, by a qualified professional. The recommended pumping schedule is based on the size of the septic tank, the number of individuals in the household, and the amount of wastewater generated. Heavy or year-round use will necessitate more frequent pumping than light or seasonal use. Overall, septic systems generally have a lifespan of 20-30 years.

Think at the Sink: Avoid pouring fats, grease, and solids down the drain. These substances can clog a system's pipes and drainfield.

Don't Overload the Commode: Only put things in the drain or toilet that belong there. For example, coffee grounds, dental floss, disposable diapers and wipes, feminine hygiene products, cigarette butts, and cat litter can all clog and potentially damage septic systems. Even "septic safe" or "flushable" wet wipes are not always safe for septic systems and should be avoided.

Don't Strain Your Drain: Be water-efficient and spread out water use. Fix plumbing leaks and install faucet aerators and water-efficient products. Spread out laundry and dishwasher loads throughout the day—too much water at once can overload a system that hasn't been pumped recently.

Shield Your Field: Having the right landscaping on and around your system is important. Keep trees and shrubs from growing on or near your drainfield. Roots and heavy items, like cars and livestock, can break drain lines and cause the drainfield to fail, and if the drainfield fails, your system fails.

Pump your Tank: Routinely pumping your tank can prevent your septic system from premature failure, which can lead to groundwater contamination.

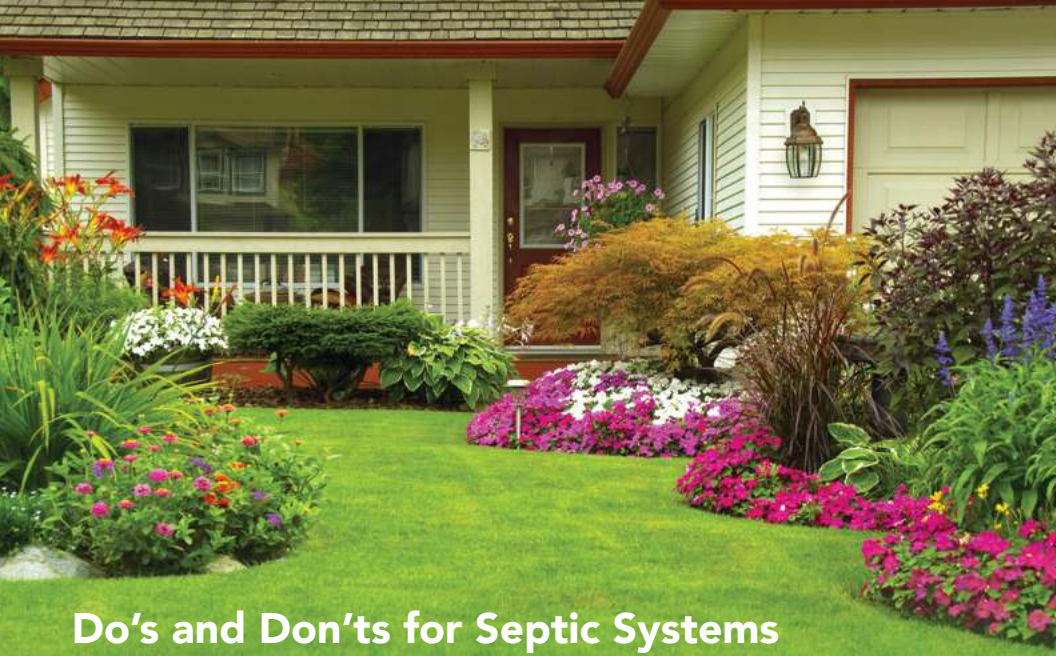
Michigan State University Extension (MSUE) has recommended pumping every 3-5 years, and, in 2008, published the following table as a guideline for when to pump according to tank size and the number of people living in the household:

Estimated Number of Years Between Septic Tank Pumping

	Number of people in your household					
Tank Size (gallons)	**1**	**2**	**3**	**4**	**5**	**6**
500	**5.5**	**2.5**	**1.5**	**1**	**.5**	**.5**
1000	**12**	**5.5**	**3.5**	**2.5**	**2**	**1.5**
1500	**18.5**	**9**	**5.5**	**4**	**3**	**2.5**
2000	**25**	**12**	**8**	**5.5**	**4.5**	**3.5**

Beware of septic tank additives: Some makers of septic tank additives claim their products break down septic tank sludge in order to eliminate the need for pumping. But the effectiveness of additives has not been proven. In fact, many studies show that additives provide no significant benefits on a tank's bacterial populations. Septic tanks already contain the microbes they need for the effective breakdown of household wastewater pollutants. Periodic pumping is the only true way to ensure that septic systems work properly and provide many years of service.

Test Your Drinking Water Well: If septic systems aren't properly maintained, leaks can contaminate well water. Testing your drinking water well is the best way to ensure your water is free from contaminates. Contact your local health department for more information on testing your well water.



Do's and Don'ts for Septic Systems

Do:

- Plant grass or herbaceous plants that are not deep-rooting around the tank and drainfield.
- Direct all surface drainage away from the septic system.
- Avoid water-loving plants and trees.
- Make sure the tank lid is secure.

Don't:

- Plant a vegetable garden on or near the drainfield.
- Put plastic sheets, bark, gravel or other fill over the drainfield.
- Reshape or fill the ground surface over the drainfield (however, adding topsoil is generally OK if it isn't more than a couple of inches).
- Make ponds on or near the septic system and the drainfield.

Signs Your Septic System is Failing

- Bright green, spongy, lush grass around the septic tank and drainfield, even during dry weather.
- A strong, foul odor around the septic tank and drainfield.
- Sinks or toilets backing up or draining slowly, in spite of using plungers and drain cleaner.
- Noticeable algae and plant growth developing in the general vicinity of the drainfield.
- Gurgling sounds coming from your drains or toilet.

What to Do if Your Septic System Fails

Septic system failure does occur and requires prompt action to protect public health and local waters. First, call the local health department. They will be able to provide expert advice and refer you to septic system professionals that can help you solve your problem.

To alleviate the problem, have the septic tank completely pumped out and ask the septic system professional to inspect the tank for cracks or other problems. Pumping may not help if the household piping is clogged or if elevated water tables or saturated soils due to high groundwater are the problem. Reduced water use will help. Also, fence off the wet area around the drainfield to minimize contact with wastewater. Keep in mind that these are only temporary fixes and further action is required to assess and correct the problem.

A permit from the local health department is required for repair, replacement, or new construction of a septic system.

Remember that a permit from the local health department is required for repair, replacement, or new construction of a septic system. Always be sure to follow the requirements of your local sanitary code, and hire only reputable septic system installation contractors.

Septic Systems and Flooding

Flooding events can lead to problems with your septic system, creating hazardous situations that may require immediate attention.

To prepare for a potential flooding event, mark the boundaries of your septic system so that you can avoid the area, and any hazards, until floodwaters recede. You can also reduce the risk of flooding your septic system during heavy precipitation events by ensuring that your rain gutters and downspouts are directed away from the septic field.

What to Do if Your Septic System Floods

- Do not attempt to service the system yourself. Contact your local health department immediately. Septic systems contain dangerous gases and substances that can be hazardous to your health and safety.
- Do not leave the opening to the septic tank uncovered. Make sure that openings are immediately secured, repaired, or replaced if the covers have shifted, broken, or been lost in the flood.
- If you have an electric pump, make sure electricity to the system is turned off to reduce risk of electrocution.
- Be patient and allow the system time to dry out. While you wait, restrict wastewater discharges from the house to prevent backups.
- Do not pump the tank until the surface and groundwater has receded to avoid structural damage to the system.
- Have your septic system and drainfield professionally inspected for any resulting structural damage or clogging. Your local health department can provide you with a list of local professionals that can conduct inspections.
- Remember, if your water well is also impacted by the flooding, it could be contaminated. Contact your local health department for information on water testing to ensure that your water is safe to drink.

Benefits of Maintaining Your Septic System

Proper septic system maintenance protects public health and the environment and saves the homeowner money through avoided costly repairs.

It saves you money: Malfunctioning systems can cost $3,000-$10,000 to repair or replace compared to maintenance costs of about $250-$500 every three to five years. Costs could be higher, upwards of $20,000, depending on the type of septic system, type of absorption field, and the size of the septic tank.

It protects the value of your home: Malfunctioning septic systems can drastically reduce property values, hamper the sale of your home, and even pose a legal liability.

It keeps your water clean and safe: A properly maintained system helps keep your family's drinking water pure and reduces the risk of contaminating community, local, and regional waters.

It keeps the environment clean: Malfunctioning septic systems can harm the environment by polluting nearby surface waters and making it unsafe to swim and recreate.

Tip of the Mitt Watershed Council

Protecting Northern Michigan's water resources since 1979.

Tip of the Mitt Watershed Council
426 Bay Street
Petoskey, MI 49770
Phone: 231-347-1181
Email: info@watershedcouncil.org
www.watershedcouncil.org

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