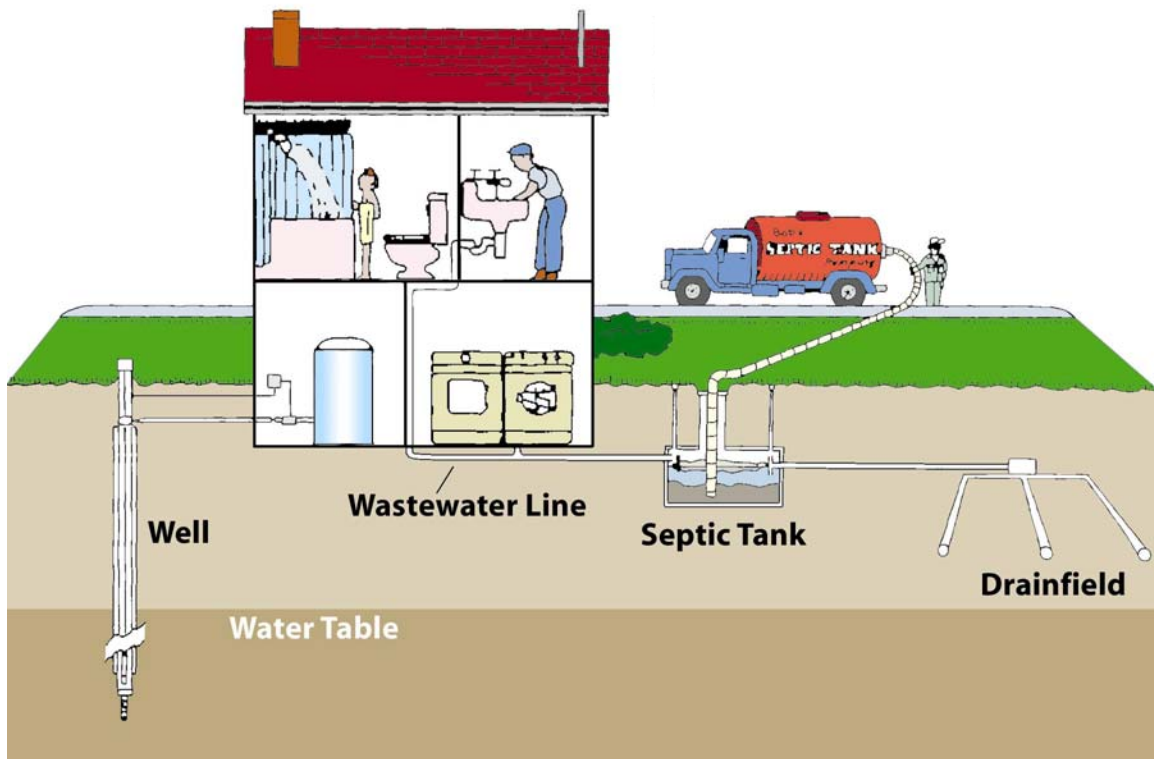


A MONTANA HOMEOWNER'S GUIDE TO SEPTIC SYSTEMS



March 22, 2010

Notice and Acknowledgements

This document was originally reviewed and published in accordance with U.S. Environmental Protection Agency policy.

Copies of the original document can be obtained from:

U.S. EPA Publications Clearinghouse
P.O. Box 42419
Cincinnati, OH 45241

Telephone: 800-490-9198
Fax: 513-489-8695

Office of Water
U.S. Environmental Protection Agency

The original document was modified and reviewed for use in the state of Montana by the Montana Department of Environmental Quality, Solid Waste Section, Septic Tank Pumper Program.

Table of Content

Your septic system is your responsibility	1
How does it work?	2
Why should I maintain my septic system?	6
Septic System Best Management Practices.....	7
What can make my system fail?	11
Protect you septic system from freezing.....	14
What can I do about odor issues with my septic system?	15
What if the alarm goes on?.....	17
Sketch your system	18
System information.....	19
Inspection & Maintenance Record.....	20
For more information	21

Your Septic System is your responsibility!

Did you know that as a homeowner you're responsible for maintaining your septic system? Did you know that maintaining your septic system protects your investment in your home? Did you know that you should periodically inspect your system and, if necessary, pump out your septic tank?

If properly designed, constructed and maintained, your septic system can provide long-term, effective treatment of household wastewater. However, if your septic system is not maintained, you may need to replace it, costing you thousands of dollars. A malfunctioning system can contaminate groundwater, a source of drinking water. If you sell your home, your septic system must be in good working order.

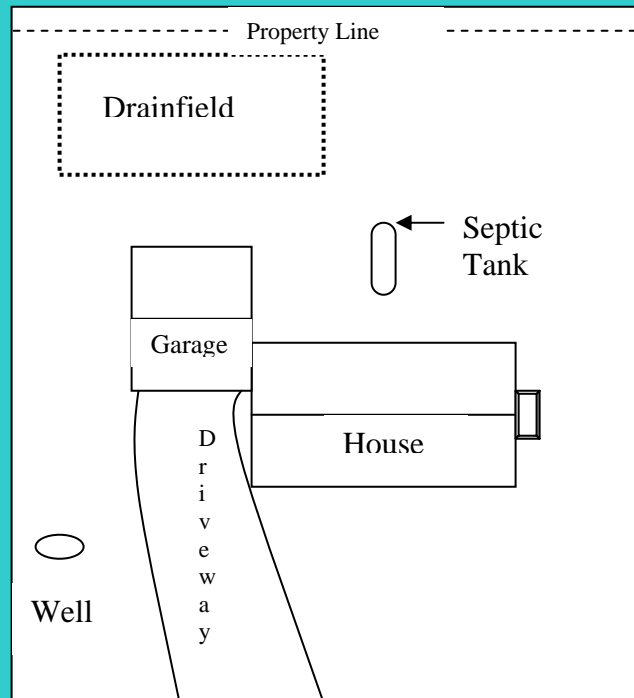
Top Four Things You can Do to Protect Your Septic System

- 1. Inspect your system (every year) and pump your tank as necessary (generally every 3 to 5 years).**
- 2. Use water efficiently.**
- 3. Don't dispose of household hazardous wastes in sinks or toilets.**
- 4. Care for your drainfield.**

This homeowner's guide will help you care for your septic system. It will help you understand how your system works and what steps you can take, to ensure your system will work properly. A checklist is also included at the end of the guide to help you keep track of your septic system maintenance.

Finding Your System

Your septic tank and drainfield area(s) should be clearly designated on the "as-built" drawing for your system. (An "as-built" drawing is a line drawing that accurately portrays the system on your property and is usually filed with your local Health Department.) You might also see lids or manhole covers for your septic tank. Older tanks are often hard to find because there are no visible parts. If your septic tank has no risers visible, contact an inspector or service professional to help you locate your septic system.



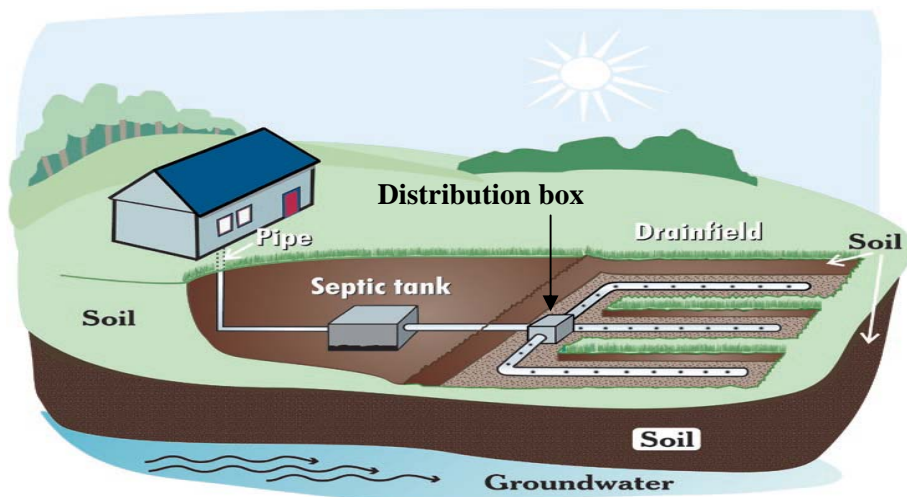
How does it work?

A "septic system," receives waste water and solids from a building's plumbing facilities (bathrooms, kitchens, shower, laundry), treats, and then disposes of the effluent from this waste, by permitting it to absorb into soils at the property.

Septic effluent treatment is accomplished by bacterial action in the "septic" or "treatment" tank and it is mostly accomplished by bacteria (microbes) in the soil around and below the effluent absorption system, or "drain field." This bacterial action is needed to reduce the level of pathogens in the effluent discharges from the waste system into the soil.

Septic systems aliases:

- ◆ On-lot system
- ◆ Onsite system
- ◆ Individual sewage disposal system
- ◆ Onsite sewage disposal system
- ◆ Onsite wastewater treatment system



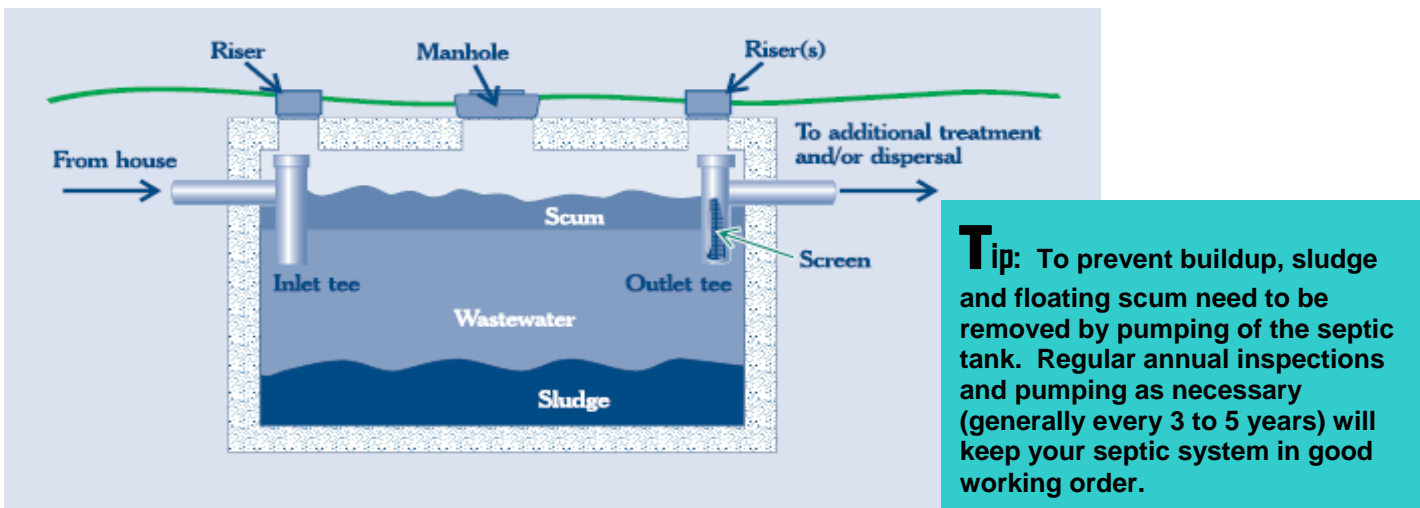
Typical septic system components are:

- **Piping connecting the home to the treatment tank**
- **A septic or treatment tank which retains solid waste** -The septic tank is a buried, watertight container typically made of precast concrete, fiberglass, or polyethylene. The tank can be a single or double compartment tank. When household waste material enters the tank, several things occur:
 - 1). Organic solid material floats to the surface and forms a layer that is commonly called "scum." Bacteria in the septic tank set about to biologically convert this material into liquid.
 - 2). Inorganic or inert solid materials that cannot be biologically converted, and the by-products of bacterial digestion, sink to the bottom of the tank and form a layer commonly called "sludge."

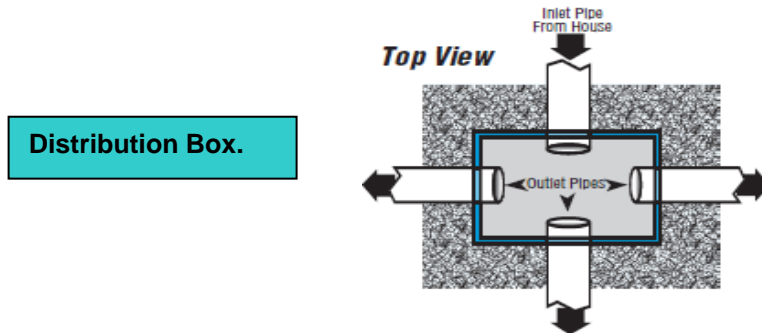
3). A cloudy liquid lies between the two layers and is the only ingredient that should overflow into the "soil absorption area" (drainfield). This liquid can percolate down through the drainfield to ground water.

Baffles and/or a T-shaped outlet in the septic tank prevent the sludge and scum from leaving the tank and traveling into the drainfield area. Screens or filters are also recommended to keep solids from entering the drainfield. Newer tanks generally have risers with lids at the ground surface to allow easy location, inspection, and pumping of the tank. If your tank does not have risers you can have them installed. The lid must be secure/closed at all times unless the tank is being serviced. If any of the lids become damaged replace them immediately to ensure animals or children do not fall into the tank.

Typical single-compartment septic tank with ground-level inspection risers and screen



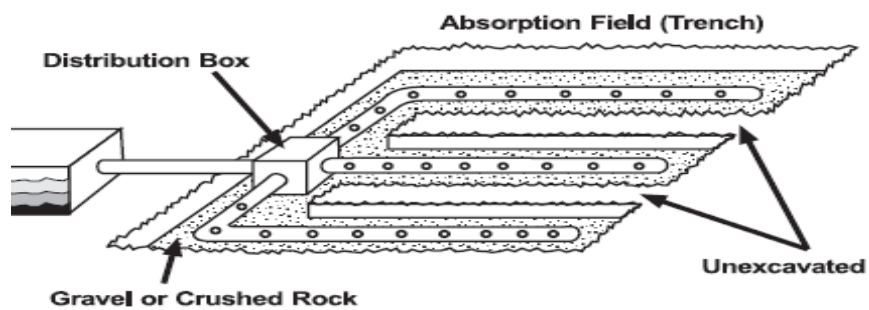
- **Piping connecting and conducting clarified effluent from the treatment tank to a distribution box**
- **A distribution box connecting the effluent line from the tank to the absorption system or "drain field"** – A distribution box is a tank-like box with as many outlets as there are pipes or lines in the drainfield. The effluent, or partially treated wastewater, from the septic tank flows into the box and through the different outlets to the drainfield. Advantages of this distribution method include equal distribution, easy inspection (the top of the box opens), and the option of capping outlets to give certain drainfield trenches a chance to rest.



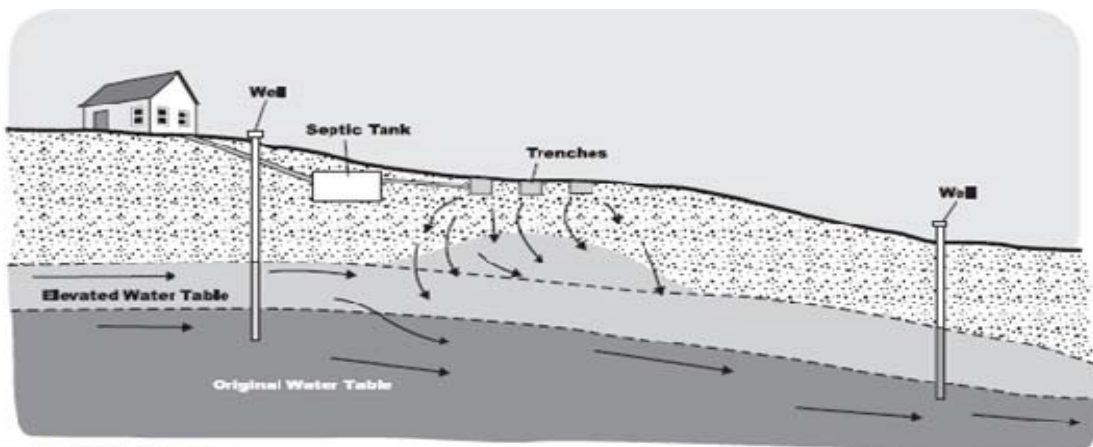
- **An absorption system which permits effluent to drain to soils below** - The wastewater exits the septic tank/distribution box and is discharged into the drainfield, sometimes called the leach field, absorption field or treatment field. There, it travels through perforated pipes to a bed of gravel or other similar material, and then into the soil. The partially treated wastewater is pushed along into the drainfield for further treatment every time new wastewater enters the tank.

If the drainfield is overloaded with too much liquid, it will flood, causing sewage to flow to the ground surface or create backups in plumbing fixtures and prevent treatment of all wastewater. This means you cannot flush your toilet.

A reserve drainfield, required in some locations, is an area on your property suitable for a new drainfield system if your current drainfield fails. Treat this area with the same care as your septic system.



- **A bio-mat or bio-mass of pathogen-digesting bacteria which forms in soil below the absorption system.** – Septic tank wastewater (Also known as effluent) flows to the drainfield, where it percolates through the gravel, sand, peat, or plastic media into the soil, which provides final treatment where microorganisms consume more of the contaminants, by removing harmful bacteria, viruses, and nutrients. The water then moves through the soil and evaporates, is used by plants, or moves to groundwater. Suitable soil is necessary for successful wastewater treatment.



Source: Adapted from NSFC diagram.

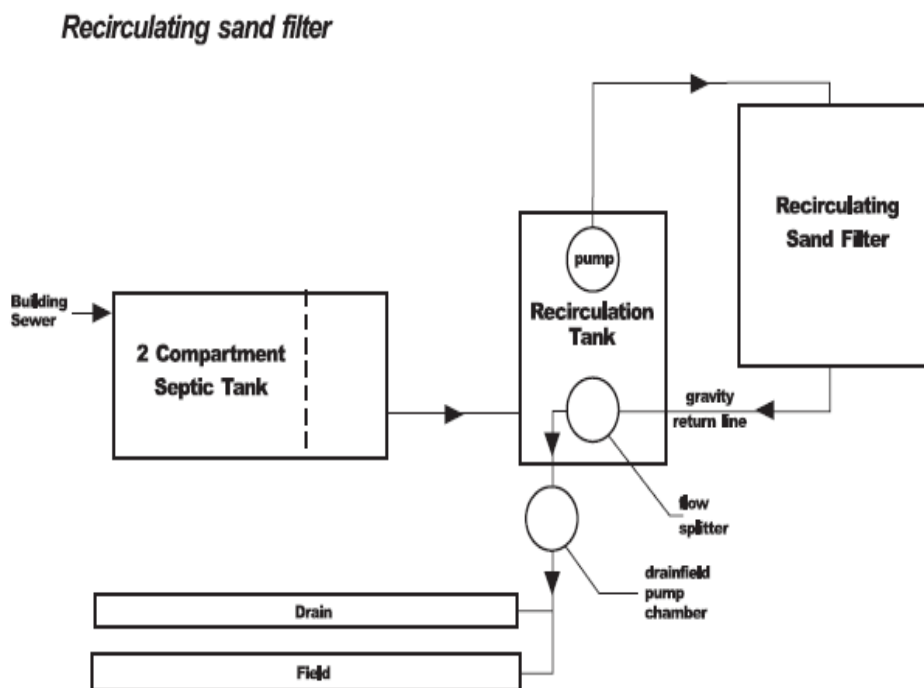
Treatment systems

Septic systems come in many types and sizes. Each one's operation and maintenance requirements depend on:

- ♦ The treatment method used to remove contaminants from the wastewater.
- ♦ The amount, or volume, of wastewater the system must handle.
- ♦ The strength of the wastewater or the amount of contaminants it contains. Wastewater contains organic matter, solids, nutrients, and pathogens (disease-causing microorganisms). A residence typically has an average strength of wastewater, while businesses such as restaurants and convenience stores may have high strength wastewater.

Alternative systems

Because many areas don't have soils suitable for typical septic systems, you might have or need an alternative system. You might also have or need an alternative system if there are too many typical septic systems in one area or the systems are too close to groundwater or surface waters. Alternative septic systems use new technology to improve treatment processes and might need special care and maintenance. Some alternative systems use sand, peat, or plastic media instead of soil to promote wastewater treatment. Some systems might use aerators, disinfection devices, float switches, pumps, and other electrical or mechanical components. Inspection schedules for alternative systems can vary. Check with your local health department or installer for more information on operation and maintenance needs if you have an alternative system. One example:



Why should I maintain my septic system?

A septic system, just like an automobile or farm equipment must be properly operated and maintained to ensure long-term, cost effective service. When septic systems are properly designed, constructed, and maintained, they effectively reduce or eliminate most human health or environmental threats posed by pollutants in household wastewater. Onsite septic systems are a mini water recycling plant in the back yard. They clean our wastewater and return safe water to the groundwater system. If a septic system is not functioning properly, clean water is not returned to the groundwater.

Septic systems require regular maintenance or they can fail. Septic systems need to be monitored to ensure that they work properly throughout their service lives. Many septic systems are installed and forgotten. After all, they're buried in the yard, "out of sight -- out of mind." Licensed professionals design and install septic systems, but often uninformed homeowners are responsible for their operation and maintenance.

Saving money

A key reason to maintain your septic system is to save money! Failing septic systems are expensive to repair or replace, and poor maintenance is often the culprit. Having your septic system inspected regularly is a bargain when you consider the cost of replacing the entire system, which can cost thousands of dollars. Your system will need pumping (generally every 3 to 5 years), depending on the number of people living in the home, water usage in the home and the size of the system. An unusable septic system or one in disrepair will lower your property value and could pose a legal liability.

Protecting health and the environment

Other good reasons for safe treatment of sewage include preventing the spread of infection and disease and protecting water resources. Typical pollutants in household wastewater are nitrogen, phosphorus, bacteria, and viruses, some can cause illnesses. If a septic system is working properly, it will effectively remove most of these pollutants.

With one-fourth of U.S. homes using septic systems, more than 4 billion gallons of wastewater per day is dispersed below the ground's surface. Inadequately treated sewage from septic systems can be a cause of groundwater contamination. It poses a significant threat to drinking water and human health because it can contaminate drinking water wells and cause diseases and infections in people and animals. Improperly treated sewage that contaminates nearby surface waters also increases the chance of swimmers contracting a variety of infectious diseases. These range from eye and ear infections to acute gastrointestinal illnesses and diseases like hepatitis. The key here is to take care of your system.

Septic System Best Management Practices

Control Water Use

Average indoor water use in the typical single-family home is almost 70 gallons per person per day. Leaky toilets can waste as much as 200 gallons each day. The more water a household conserves, the less water enters the septic system. Efficient water use can improve the operation of the septic system and reduce the risk of failure.

- Repair all leaky faucets, fixtures and appliances immediately.
 - Install low water use appliances.
- Toilet use accounts for 25 to 30 percent of household water use. Do you know how many gallons of water your toilet uses to empty the bowl? Most older homes have toilets with 3.5- to 5-gallon reservoirs, while newer high-efficiency toilets use 1.6 gallons of water or less per flush. If you have problems with your septic system being flooded with household water, consider reducing the volume of water in the toilet tank if you don't have a high-efficiency model. Plastic containers (such as ½-gallon plastic milk jugs) can be filled with small rocks and placed in a toilet tank to reduce the amount of water used per flush. (Be sure that the plastic containers do not interfere with the flushing mechanisms or the flow of water.) You'll save about ½ gallon of water per flush! You might also consider replacing your existing toilet with a high-efficiency model to achieve even more water savings. Check to make sure your toilet's tank isn't leaking into the bowl. Add five drops of liquid food coloring to the reservoir before bed. If the dye is in the bowl the next morning, the tank is leaking and repairs are needed.
 - By selecting the proper load size on your washing machine, you'll reduce water waste. Washing small loads of laundry on the large-load cycle wastes precious water and energy. If you can't select load size, run only full loads of laundry. Doing all the household laundry in one day might seem like a time-saver, but it could be harmful to your septic system. Doing load after load does not allow your septic tank time to adequately treat wastes. You could be flooding your drainfield without allowing sufficient recovery time. Try to spread water usage throughout the week. A new Energy Star clothes washer uses 35 percent less energy and 50 percent less water than a standard model.



- Install low water use fixtures. Faucet aerators help reduce water use and the volume of water entering your septic system. High-efficiency showerheads, shower flow restrictors, and reducing time in the shower also decreases water use. A small drip from a faucet adds many gallons of unnecessary water to your system every day. To see how much a leak adds to your water usage, place a cup under the drip for 10 minutes. Multiply the amount of water in the cup by 144 (the number of minutes in 24 hours, divided by 10). This is the total amount of clean water traveling to your septic system each day from that little leak.

- Watch your drains because what goes down the drain can have a major impact on how well your septic system works.
 - What shouldn't you flush down your toilet? Dental floss, feminine hygiene products, condoms, diapers, cotton swabs, cigarette butts, coffee grounds, cat litter, paper towels, and other kitchen and bathroom items that can clog and potentially damage septic system components if they become trapped. Flushing household chemicals, gasoline, oil, pesticides, antifreeze, and paint can stress or destroy the biological treatment taking place in the system or might contaminate surface waters and groundwater. If your septic tank pumper is concerned about quickly accumulating scum layers, reduce the flow of floatable materials like fats, oils, and grease into your tank or be prepared to pay for more frequent inspections and pumping.
- Do not empty roof drains and sump pump water into the septic system; channel away.
- Reroute water softener and iron filter recharge water out of septic system.
- Spread water uses evenly throughout the day and week.

Inspecting your system

You should have your septic system inspected at least yearly by a professional if you are unable to conduct the inspection yourself. You should also have your tank pumped as necessary which is generally every 3 to 5 years. The following should be inspected:

- Inspect for leaks and look at the scum and sludge layers in your septic tank. If the bottom of the scum layer is within 6 inches of the bottom of the outlet tee or the top of the sludge layer is within 12 inches of the bottom of the outlet tee, your tank needs to be pumped. Remember to note the sludge and scum levels determined by your service provider in your operation and maintenance records. This information will help you decide how often pumping is necessary. (See the checklist included at the end of the booklet.)



- Systems with electrical float switches, pumps, or mechanical components, alarms also need to be inspected.
 - If your system has effluent filters they should be cleaned or replaced regularly. An effluent screen will prevent most solids from reaching the soil treatment area. Install and clean according to manufacturer recommendations.
- The service professional should inspect the tank to make sure baffles are in place and functioning properly.
- The service professional should note any repairs completed and whether the tank is in good condition. Service

What Does an Inspection include?

- **Locating the system.**
- **Uncovering access holes.**
- **Flushing the toilets.**
- **Checking for signs of backup.**
- **Measuring scum and sludge layers.**
- **Identifying any leaks.**
- **Inspecting mechanical components.**
- **Filter maintenance.**
- **Pumping the tank if necessary.**

Professionals cleaning the tank through four or six "inspection pipes" often do not remove all solids and may damage baffles. Insist that the individual cleans the tank through the manhole. Most tanks have one or two manholes that are often buried below the ground surface. A little digging may be necessary to find them. If the service professional recommends additional repairs he or she cannot perform, hire someone to make the repairs as soon as possible. Install risers on the manhole covers to allow easier access. Insulate the cover and secure tightly.

After working on any part of the septic system:

- Wash hands thoroughly.
- Wash hands before eating, drinking or smoking.
- Change clothes before entering homes, food stores, restaurants, etc.

Pump frequently

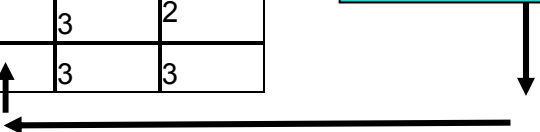
Four major factors influence the frequency of pumping: the number of people in your household, the amount of wastewater generated (based on the number of people in the household and the amount of water used), septic tank size, and the volume of solids in the wastewater (for example, using a garbage disposal increases the amount of solids).

In new homes, clean it prior to occupation. Clean it again within six to twelve months to make sure it is functioning properly. Wastewater from painting, varnishing and other construction activities can reduce bacterial activity in new systems. Once a system is operating properly, the tank should be cleaned on a regular basis.

The following chart is a suggested pumping interval chart in years:

Tank Size in Gallons	Number of Persons Living in Home					
	1	2	3	4	5	6
1000	12	6	4	3	2	2
1250	16	8	5	3	3	2
1500	19	9	6	4	3	3

1500 gallon tank with 4 persons living in the home would be every 4-years. This can change depending on the amount of water used etc.



When the tank is pumped it removes the scum and sludge. Liquid contents are pumped back and forth from the truck to the tank until all solids are liquefied and removed. If floating scum is left in the tank, solids may enter the drainfield. Cleaning leaves a black film on the sides of the tank and a small amount of liquid on the bottom. These contain bacteria, which allow the tank to begin working again. There is no need to add a starter after cleaning.

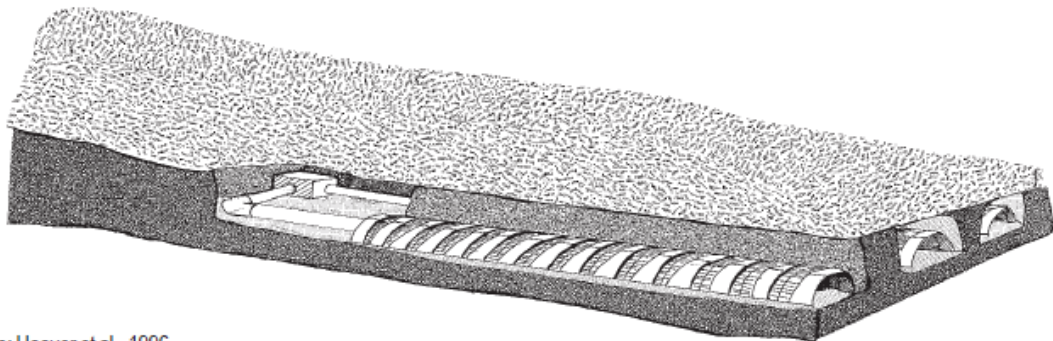
Some makers of septic tank additives claim that their products break down the sludge in septic tanks so the tanks never need to be pumped. Not everyone agrees on the effectiveness of additives. In fact, septic tanks already contain the microbes they need for effective treatment and some additives

may actually hamper treatment. Good management practices and periodic pumping is a much better way to ensure that septic systems work properly and provide many years of service. Regardless, every septic tank requires periodic pumping.

Care for your drainfield

Your drainfield is an important part of your septic system. Here are a few things you should do to maintain it:

- Avoid planting water-loving shrubs with deep root systems or trees near the drain field, as roots could damage the pipes, or they could change moisture levels within the soil causing it to be less effective. Plant only grass over and near your septic system. Roots from nearby trees or shrubs might clog and damage the drainfield. Mow, but do not fertilize, burn or over-water this area.
- Keep all vehicles, bikes, snowmobiles, etc. off the tank, pipes and soil treatment area (drainfield or mound). Doing so can compact the soil in your drainfield or damage the pipes, tank, or other septic system components. The only exception is the lawn mower.
- Keep roof drains, basement sump pump drains, and other rainwater or surface water drainage systems away from the drainfield. Flooding the drainfield with excessive water slows down or stops treatment processes and can cause plumbing fixtures to back up.
- If the amount of wastewater entering the system is more than the system can handle, the wastewater backs up into the house or yard and creates a health hazard.
- Stop cutting the grass over the soil treatment area a couple weeks before the rest of the lawn. The extra growth will help insulate the area, and will help prevent freezing. Follow practices to prevent freezing, including mulching the entire system if needed.



Source: Hoover et al., 1996.

What can make my system fail?

Failure symptoms

The most obvious septic system failures are easy to spot. Check for pooling water or muddy soil around your septic system or in your basement. Notice whether your toilet or sink backs up when you flush or do laundry. You might also notice strips of bright green grass over the drainfield. Septic systems also fail when partially treated wastewater comes into contact with groundwater. This type of failure is not easy to detect, but it can result in the pollution of wells, nearby streams, or other bodies of water. Check with a septic system professional and the local health department if you suspect such a failure, and remember to have your septic system inspected by a professional at least every 3 years.



Failure causes

Household toxics

Does someone in your house use the utility sink to clean out paint rollers or flush toxic cleaners? Oil-based paints, solvents, and large volumes of toxic cleaners should not enter your septic system. Even latex paint cleanup waste should be minimized. Squeeze all excess paint and stain from brushes and rollers on several layers of newspaper before rinsing. Dispose of solvents, paints, toxic cleaner through other means such as hazardous waste disposals and exchanges. Remember that your septic system contains a living collection of organisms that digest and treat waste.



Medications

Medications are a part of daily life for many people. Normal use of many medications including over the counter drugs will not harm your septic system. However, antibiotics and certain strong medications such as those used in chemotherapy can affect the operation of your system. High concentrations of antibiotics or chemicals can kill or retard the growth of the bacteria in your septic tank and soil treatment area (drainfield or mound). If the tank bacteria are destroyed, solids accumulate in the tank much faster and can create problems in the soil treatment area. Do not flush leftover medications into your septic system. Some pharmacists will dispose of the medication for you if you return it to them.

There are many possible solutions to deal with medication use and septic systems. They start with simple techniques, but get more sophisticated as the problem increases.

- Minimize the use of antibacterial soap, cleaners and bleach, as these products further stress the bacteria in the system.
- Increased maintenance of your system may be required if you are taking certain strong medications, such as chemotherapy drugs. Your tank may have to be pumped more often to remove solids that are accumulating rapidly due to the loss of beneficial bacteria.
- If your septic tank gets too toxic, it may be necessary to use your tank as a holding tank during a prescribed treatment.
- Fill the septic tank with clean water after pumping to dilute the concentrations of the medicines at the restart of the system.
- Certain design changes may be necessary to protect your drain field. These changes could include adding an effluent screen, which is placed on the outlet of the septic tank to limit solids exiting the tank. The effluent screen will need to be cleaned frequently if the septic tank is upset. An alarm is a critical part of an effluent filter installation as it will indicate when the filter needs to be cleaned.
- An effluent screen is particularly helpful if you expect a lot of hair loss; prevent hair from being washed into the septic system. It can remain suspended in the wastewater and get carried to the drain field, where it could plug the soil and cause drain field failure.
- Adding additional septic tanks or a pretreatment device are other possible design changes.

Household cleaners

For the most part, your septic system's bacteria should recover quickly after small amounts of household cleaning products have entered the system. Of course, some cleaning products are less toxic to your system than others. Labels can help key you into the potential toxicity of various products. The word "Danger" or "Poison" on a label indicates that the product is highly hazardous. "Warning" tells you the product is moderately hazardous. "Caution" means the product is slightly hazardous. ("Nontoxic" and "Septic Safe" are terms created by advertisers to sell products.) Regardless of the type of product, use it only in the amounts shown on the label instructions and minimize the amount discharged into your septic system.

Hot tubs

Hot tubs are a great way to relax. Unfortunately, your septic system was not designed to handle large quantities of water from your hot tub. Emptying hot tub water into your septic system stirs the solids in the tank and pushes them out into the drainfield, causing it to clog and fail. Draining your hot tub into a septic system or over the drainfield can overload the system. Instead, drain cooled hot tub water onto turf or landscaped areas well away from the septic tank and drainfield, and in accordance with local regulations. Use the same caution when draining your swimming pool.

Water Purification Systems

Some freshwater purification systems, including water softeners, unnecessarily pump water into the septic system. This can contribute hundreds of gallons of water to the septic tank, causing agitation of solids and excess flow to the drainfield. Check with your licensed plumbing professional about alternative routing for such freshwater treatment systems.

Garbage disposals

Eliminating the use of a garbage disposal can reduce the amount of grease and solids entering the septic tank and possibly clogging the drainfield. A garbage disposal grinds up kitchen scraps, suspends them in water, and sends the mixture to the septic tank. Once in the septic tank, some of the materials are broken down by bacterial action, but most of the grindings have to be pumped out of the tank. Using a garbage disposal frequently can significantly increase the accumulation of sludge and scum in your septic tank, resulting in the need for more frequent pumping.

Improper design or installation

Some soils provide excellent wastewater treatment; others don't. For this reason, the design of the drainfield of a septic system is based on the results of soil analysis. Homeowners and system designers sometimes underestimate the significance of good soils or believe soils can handle any volume of wastewater applied to them. Many failures can be attributed to having an undersized drainfield or high seasonal groundwater table. Undersized septic tanks—another design failure—allow solids to clog the drainfield and result in system failure. If a septic tank isn't watertight, water can leak into and out of the system. Usually, water from the environment leaking into the system causes hydraulic overloading, taxing the system beyond its capabilities and causing inadequate treatment and sometimes sewage to flow up to the ground surface. Water leaking out of the septic tank is a significant health hazard because the leaking wastewater has not yet been treated. Even when systems are properly designed, failures due to poor installation practices can occur. If the drainfield is not properly leveled, wastewater can overload the system. Heavy equipment can damage the drainfield during installation which can lead to soil compaction and reduce the wastewater infiltration rate. And if surface drainage isn't diverted away from the field, it can flow into and saturate the drainfield.

Additives

It is not necessary to use additives to enhance the performance of a properly operating septic system. If bacterial activity is low, it is because disinfectants and other products are killing the bacteria. Reducing or eliminating the use or disposal of these in the system will allow the bacteria to re-establish. Some additives cause solids to become suspended in the liquids. These solids will end up in the drain field, causing significant damage. Starters, feeders and particularly cleaners are unnecessary, and may be harmful to your system.

Protect your septic system from freezing

Common reasons septic systems freeze are a lack of snow cover and cold temperatures, combined with construction or "use" issues. These can include a waterlogged system, cold air entering the system, compacted soil or lack of plant cover. Others include irregular use of the system, leaking plumbing fixtures or a pipe that does not have the proper change of elevation.

If the soil over a pipe is compacted, the elevation of the pipe may shift, causing a loss of gravity flow. This results in water left standing in pipes, which can freeze easily. If your system has frozen, you should contact a service professional.

Here are some precautions:

- Stop mowing the grass over the drainfield in early fall. Let it grow stronger to trap more snow.
- Add a layer of mulch (8-12 inches) over the pipes, tank and soil treatment area to provide insulation. A mulch of loose hay or straw works well, as do leaves. The key is to keep it loose to form air pockets, which act as the insulators. This is particularly important if your system is new, and vegetative cover has not been well established.
- Use normal amounts of water; the warmer the better. Spread out your laundry schedule to one warm/hot load per day, year around.
- Don't leave water running all the time to prevent freezing. A slow trickle could freeze, while a steady stream could overload the system with water.
- Fix any leaky plumbing. The small trickles of water going into the system can freeze as thin ice layers within pipes, and eventually close them.
- Don't add antifreeze to the system.
- Reroute the drip water from your furnace. This slow drip can freeze in the pipes. Route this clean water into the sump or a bucket.
- Make sure all risers, inspection pipes and manholes have tight covers. Adding insulation is a good idea. Check for any cracks in the covers in the fall.
- Keep an eye on your system. If any seeping or ponding occurs, contact an onsite professional.
- Keep all vehicles (including ATV's and snowmobiles) and high-traffic people activities off the system, all year.
- If you plan to be gone for more than a day or two, plan accordingly. Have someone visit and use water regularly. If you are going to be gone for an extended period (weeks or months), pumping the tank before leaving may be the best option.

What can I do about odor issues with my septic system?

Occasionally homeowners complain about odors from their septic system. Although most people understand that sewage has a particular odor, steps can be taken to limit these odors in the home and yard. Gases from a septic system that can be a problem include hydrogen sulfide, carbon dioxide and methane. Within a home these gases can be irritating, toxic and explosive. In a yard they are not typically found in high enough concentrations to be dangerous, but are still a nuisance.

There are several locations within a septic system where odor can be an issue.

- In the home
- Near the septic tank
- Near a pretreatment unit
- Near the drainfield
- In the yard

Odors in the Home

Septic odors inside the house are both annoying and can be a health problem. Odors in a home are typically an indication of a plumbing problem. A very common problem is the drying out of a trap in a basement floor drain allowing gases from the septic tank to vent back into the home. This can be corrected by making sure all floor drain traps are periodically filled with water. Also, the cleanout access plug inside a drain may be loose and could allow for sewer gas to escape. A plumber or service professional that provides line cleaning could check this out.

A second common problem is the plumbing vent located on the roof. It is necessary to allow the pressure in the drainpipes to equalize as wastewater flows through them. Without this vent, sinks, tubs, and toilets would gurgle, traps dry out and odors come into the home. These plumbing vents can freeze closed during prolonged cold periods or get clogged with leaves or other debris. A warm day or two will thaw out the frozen pipe but leaves will need to be cleaned out. The pipe can be unfroze using a jetter or warm water. Always take special precautions when working on a slippery or steep roof.

A third common plumbing problem is an improperly sealed cover on an ejector sump pump basket in the basement. The cover should be checked and a new seal applied to prevent leaks.

Odors near the septic tank

An occasional weak odor near the septic tank may be quite normal but if there is a particularly strong odor around the septic tank(s) the first step should be to make sure all manholes and risers are securely covered. Typically a concrete lid covers the tank manhole, although other materials such as plastic and metal lids are used. The septic tank manhole can be covered with a maximum of 12" of soil or can come to the surface, while any manhole on a tank with a pump must come to surface to allow for repair or replacement of the pump. The newer plastic lids have a rubber seal which helps keep odors in the tank. They must also be properly secured in place with lag screws or other fasteners. If a concrete lid is leaking odors out of the manhole, weather stripping or other materials can be used to create a temporary seal that will contain odors but still allow for proper maintenance of the tank. This seal will need to be replaced after maintenance.

Odors near a pretreatment unit

There is a growing use of pretreatment units in onsite sewage treatment systems. The most common pretreatment devices are aerobic treatment units, constructed wetlands and peat, recirculating, sand and textile filters. If an odor is persistent around one of these pretreatment units a licensed onsite professional trained to maintain the specific type of unit should be called.

Odors near the soil treatment area

If there are strong odors in the soil treatment area (around an in-ground drain field, bed or mound), it can indicate a problem with that part of the system. All inspection pipes should be checked to make sure the pipes are not broken and they are covered. A visual inspection of the entire area should be performed to determine if there are any wet or spongy soil areas indicating that sewage is coming to the surface. If any of these conditions are found, humans and animals can come in contact with it. This can cause health concerns and should be corrected immediately.

Odors in the Yard

If the yard in general smells of septic gas, it may be that the plumbing vent pipe on your house or a neighbor's house needs to be extended to diffuse the odors. Homes located in valleys, forested areas or low areas may not have appropriate wind patterns to carry the odors away from the living areas and the yard. As the wind blows over the house, the air currents that are supposed to carry the gases up and away can instead carry the sewer gas down into the yard. Extending the vent pipe can help diffuse the odors carrying them away from the yard. Carbon filters can also be placed on the top of the vent to help control odor. The filters do need to be changed regularly (every 1 to 5 years) to be effective.

What if the alarm goes on?

Not all septic systems have alarms. If your system has a pump chamber you should have an alarm associated with your system. During your inspection of your system determine if you have an alarm system and alarm panel. The alarm panel may be in your basement or on the exterior of your house near your septic system.

If, for any reason, the effluent level inside the pump chamber reaches the alarm float (due to a faulty pump, floats, circuit, or another problem), the alarm light and buzzer will start. By using water conservatively (avoid baths, showers, and clothes washing), the reserve storage in the pump chamber should allow you enough time to get the problem corrected. To silence the alarm, push the reset light on the alarm panel. Before calling for service or repair, check to see if the problem could be:

- A tripped circuit breaker or blown fuse. The pump should have a separate circuit with its own breaker or fuse. If it's on a circuit with other equipment, that equipment can cause the breaker to trip.
- A pump or float switch power cord that has come unplugged. If electrical connections are the plug-in type, make sure that switch and pump plugs are making good contact in the outlets.
- Control floats tangled by other parts in the chamber such as the electric power cord, lifting rope, or pump screen. Make sure that floats operate freely in the chamber.
- Debris on floats and support cable that is causing the pump to switch off. Lift the floats out of the chamber and clean.

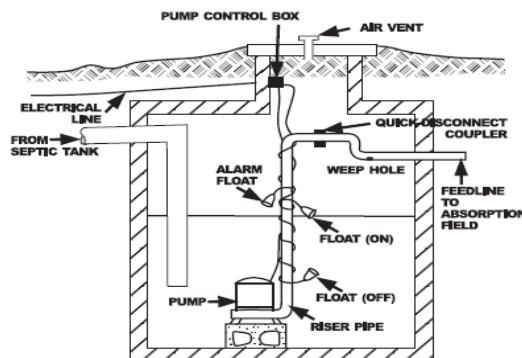
Do not enter the pump chamber. Gases inside pump chambers are poisonous and the lack of oxygen can be fatal.

If the problem cannot be located with the above steps, call your service professional or on-site system installer for service or repair. The service of pumps and other electrical equipment must be done by an experienced person.

Caution!

Always turn off the power supply at the circuit breaker, and unplug all power cords before handling the pump or floats.

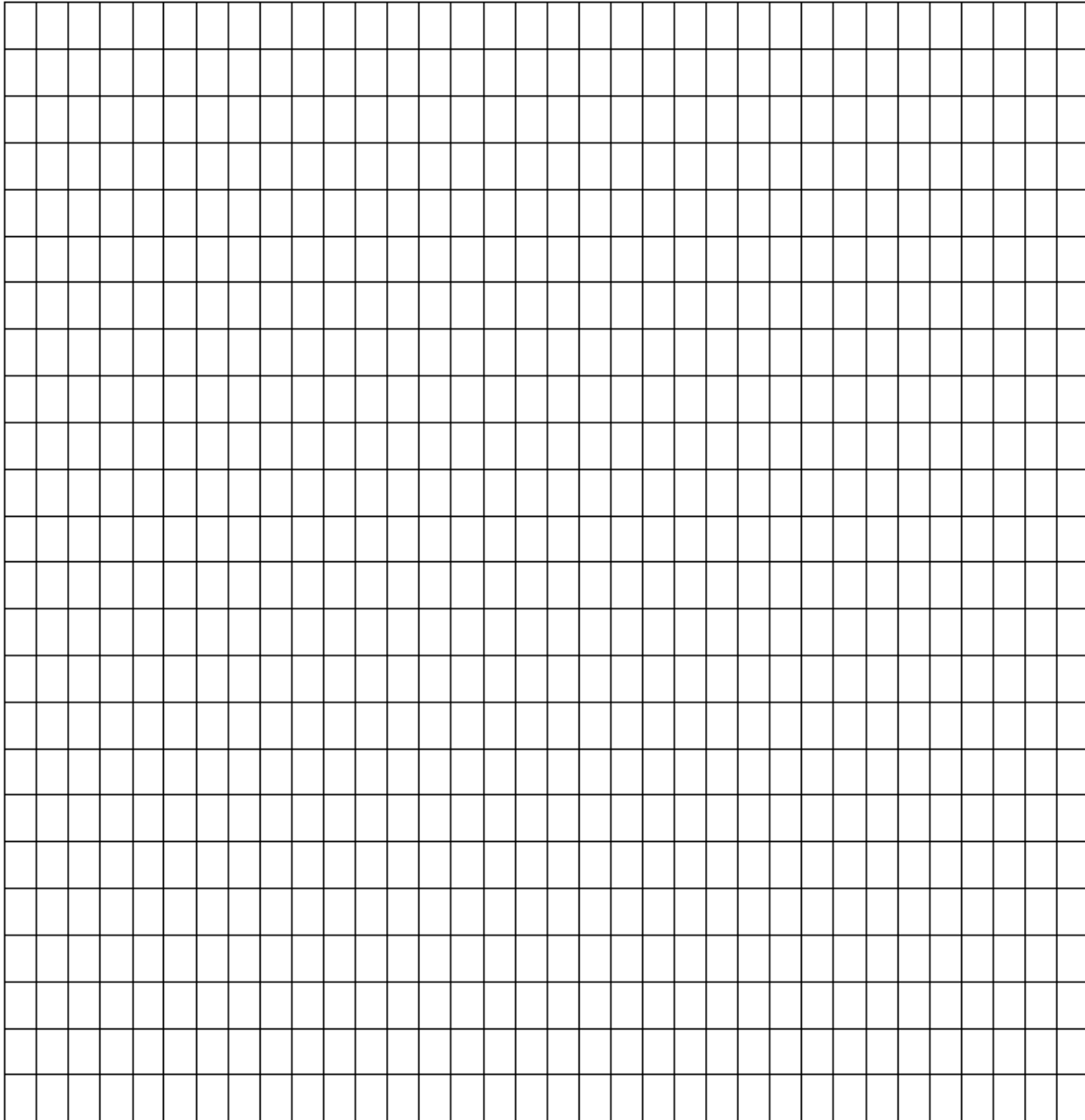
Pumping tank (generic)



Source: Purdue University, 1990

MY SEPTIC SYSTEM

Sketch the location of your home, septic tank and all components, water supply, driveway, and other landscape features. Alternatively, you may obtain a sketch from your onsite professional or local health department.

A large grid of graph paper, consisting of 20 columns and 20 rows of small squares, intended for sketching the layout of a septic system and other landscape features.

SYSTEM INFORMATION

SYSTEM DESCRIPTION:

Septic Tank Size (Gallons): _____ Pump Tank Size (Gallons): _____

Drainfield Type: • Trenches • Bed • Mound
• LPP • At-Grade • Leaching
• Chambers • Other: _____

Drainfield Dimensions: _____

Components: • Effluent Filter • Diversion Valve • Siphon • Pump
• Distribution Box • Other: _____

IMPORTANT CONTACTS:

Installer: Name: _____ Telephone: _____

Address: _____

Designer/Engineer: Name: _____ Telephone: _____

Address: _____

Service Professional/Pumper/Operation & Maintenance Provider:

Name: _____ Telephone: _____

Address: _____

Local Health Department:

Name: _____ Telephone: _____

Address: _____

For more information

Local Health Department

All residential septic systems are approved by your local Health Department. Prior to installation. Contact the County Sanitarian for questions regarding your system.

EPA Onsite/Decentralized Management Homepage

cfpub.epa.gov/owm/septic/index.cfm

EPA developed this Web site to provide tools for communities investigating and implementing onsite/decentralized management programs. The Web site contains fact sheets, program summaries, case studies, links to design and other manuals, and a list of state health department contacts that can put you in touch with your local health department.

National Small Flows Clearinghouse

www.nesc.wvu.edu

Funded by grants from EPA, the NSFC helps America's small communities and individuals solve their wastewater problems. Its activities include a Web site, online discussion groups, a toll-free assistance line (800-624-8301), informative publications, and a free quarterly newsletter and magazine.

Rural Community Assistance Program

www.rcap.org

RCAP is a resource for community leaders and others looking for technical assistance services and training related to rural drinking water supply and wastewater treatment needs, rural solid waste programs, housing, economic development, comprehensive community assessment and planning, and environmental regulations.

National Onsite Wastewater Recycling Association, Inc.

www.nowra.org

NOWRA is a national professional organization to advance and promote the onsite wastewater industry. The association promotes the need for regular service and educates the public on the need for properly designed and maintained septic systems.

Septic Yellow Pages

www.septicyellowpages.com

The Septic Yellow Pages provides listings by state for professional septic pumpers, installers, inspectors, and tank manufacturers throughout the United States. This Web site is designed to answer simple septic system questions and put homeowners in contact with local septic system professionals.

National Association of Wastewater Transporters

www.nawt.org

NAWT offers a forum for the wastewater industry to exchange ideas and concerns. The NAWT Web site lists state associations and local inspectors and pumpers. EPA-832-B-02-005