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 pump out your septic tank?

If properly designed, constructed and maintained, your septic system can provide long-term, effective treatment of household waste. If you septic system isn't maintained, you might need to replace it, costing thousands of dollars. A malfunctioning system can contaminate groundwater that might be a source of drinking water. And, if you sell your home, your septic system must be in good working order.

This guide can help you care for your septic system, understand how your system works and steps you can take as a homeowner to ensure your system will work properly.

Top 4 Things you can do to Protect your Septic System

- Regularly inspect your system and pump your tank as necessary
- Use water efficiently
- Don't dispose of household hazardous wastes in sinks or toilets
- Care for your drainfield

How does it work?

Components

A typical septic system has four (4) main components:

- Pipe from the home
- Septic tank
- Drainfield, and
- Soil

Microbes in the soil digest or remove most contaminants from wastewater before it eventually reaches groundwater.

Finding Your System

Your septic tank, drainfield and reserve drainfield should clearly be designated on the "As Built" drawing for your home. An "As Built" drawing is a line drawing that accurately portrays the buildings on your property and is usually filed at your local County Environmental Health office. You might also see lids or manhole covers for your septic tank. Older tanks are harder to find because there are no visible parts. An inspector or pumper can possibly help you locate your septic system if your septic tank has no risers.

Pipe from the home

All of your household wastewater exits your home through a pipe to the septic tank.

Septic tank

The septic tank is a buried, watertight container typically made of concrete, fiberglass or polyethylene. It holds the wastewater long enough to allow solids to settle out (forming sludge) and oil and grease to float to the surface (as scum). It also allows partial decomposition of the solid materials. Compartments and a T-shaped outlet in the septic tank prevent the sludge and scum from leaving the tank and traveling into the drainfield area.

Newer tanks generally have risers with lids at the ground surface to allow easy location, inspection and pumping of the tank.

Tip: To prevent buildup, sludge and floating scum need to be removed through periodic pumping of the septic tank. Regular inspections and pumping are the best and cheapest way to keep your septic system in good working order.

Drainfield

The wastewater exits the septic tank and is discharged into the drainfield for further treatment by 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.

A reserve drainfield, required by many states, 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 area.

Soil

Septic tank wastewater flows to the drainfield, where it percolates into the soil, which provides final treatment by removing harmful bacteria, viruses, and nutrients. Suitable soil is necessary for successful wastewater treatment.

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 technology to improve the treatment process and might require special care and maintenance. Some alternative systems used are sand, peat or plastic media instead of soil to promote wastewater treatment. Other systems might use wetlands, lagoons or aerators. Float switches, pumps and other electrical or mechanical components are often used in alternative systems. Alternative systems should be inspected annually. Check with your local environmental health department or a state certified installer for more information on operation and maintenance needs if you have or need an alternative system.

Why should I maintain my septic system?

When septic systems are properly designed, installed and maintained they effectively reduce or eliminate most human health or environmental threats posed by pollutants in household wastewater, such as spread of infection and disease. They do require regular maintenance or they can fail. Septic systems should be monitored to ensure that they work properly throughout their service lives.

Saving money

To save money is the key reason to maintaining your septic system. A failing septic system is expensive to repair or replace and poor maintenance is often the culprit. Your septic system will need pumping depending on how many people live in the house and the size of the system. An unusable septic system or one in disrepair can lower your property value or pose a legal liability.

Protecting health and environment

Typical pollutants in household wastewater are nitrogen, phosphorus and disease causing bacteria and viruses. A septic system that is working properly will effectively removed most of these pollutants.

With one fourth of the U.S. homes being on 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 cause ground water contamination. Posing a significant threat to our drinking water and human health because it can contaminate drinking water wells and cause diseases and infections in both people and animals. Improperly treated sewage that contaminates nearby surface waters also increase the change of swimmers contracting a variety of infectious diseases, ranging from eye and ear infections, gastrointestinal illness and diseases like hepatitis.

How do I maintain my septic system?

You should have a typical septic system inspected at least every three (3) years and pumped, generally every three (3) to five (5) years, both performed by a state certified professional.

What does an Inspection include?

- Locate your septic system
- Uncover access holes
- Flush toilets
- Check for signs of back up
- Measure scum and sludge layers
- Check for and identify any leaks
- Inspect any mechanical components
- Pump tank, if necessary

Alternative systems with electrical float or mechanical components need to be inspected more often. Your service provider should inspect for leaks, look at 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 outlet tee, your tank needs to be pumped.

How do I maintain my septic system, cont.?

It's very helpful to have the pumper provide you with a service report noting the % of scum and sludge layers present in your tank, whether the tank is in good condition and if any repairs are completed. This can assist in helping you take care of your system and decide how often to pump your tank in the future.

4 major factors influence frequency of pumping of your septic system:

- Number of people in your household
- Amount of wastewater generated (per number of people in the house and amount of water used)
- Volume of solids in wastewater (use of garbage disposal increases amount of solids)
- Septic tank size

Use water efficiently

Average indoor water use in a typical single family home is nearly 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 that enters the septic system. Efficient water use can improve the operation of a septic system and reduce the risk of failure.

Ways to use water efficiently:

- Install high efficiency showerheads
- Fill bathtub with only as much water as needed
- Turn off faucets while brushing teeth or shaving
- Run dishwasher and washing machine only when they're full
- Use toilets to flush sanitary waste only
- Be sure all faucets are completely turned off when not in use
- Maintain plumbing to eliminate leaks

Ways to use water efficiently, cont.:

- Install aerators in your kitchen and bathroom faucets. These help reduce water use and the volume of water entering your septic system.
- Replace old dishwashers, toilets and washing machines with new, high efficiency models.

Toilet use accounts for approximately 30% of household water use. Most older homes have toilets with 3-5 gallon reservoirs while the newer high efficiency toilets use 1.6 gallons or less per flush. If you experience problems with your septic system being flooded with household water consider reducing the volume of water in the toilet tank by replacing any older existing toilets with high efficiency models.

Check to ensure your toilet reservoir isn't leaking into the bowl. You can do this by adding 5 drops of liquid food coloring to the reservoir before bed. If the dye is in the bowl the next morning, the reservoir is leaking and needs repairing.

A small drip from a water fixture or faucet can add gallons of unnecessary water to your system every day. If you have a leak and would like to know how much it 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 will be the total amount of unnecessary, clean water being put into your septic system each day from a little leak.

What goes down the drain can have a major impact on how well your system works.

Waste Disposal – What you shouldn't flush down your toilet:

- Feminine hygiene products
- Condoms
- Dental floss
- Diapers
- Cotton swabs
- Cigarette butts
- Coffee grounds

Waste Disposal – What you shouldn't flush down your toilet, cont.:

- Cat litter
- Paper towels
- Toilettes or handi-wipes
- Any other bathroom or kitchen items that can clog and potentially damage your septic system
- Fats, oils or grease
- Household chemicals
- Gasoline
- Oil
- Pesticides
- Anti-freeze
- Paint, paint thinner or wood stains

Flushing items listed above can destroy the biological treatment taking place in your system and contaminate surface and ground waters. If your septic pumper expresses concern regarding quickly accumulating scum layers, reduce the flow of floatable materials, like fats, oils and grease into your tank.

Washing Machines

Washing small loads of laundry on large load cycle wastes water and energy. Selecting the property load size and running only full loads of laundry will reduce water waste.

Doing all your household laundry in one day may seem like a time –saver but can be harmful to your septic system. Doing load after load doesn't allow your septic tank time to adequately treat the waste. You could be flooding your drainfield without allowing sufficient recovery time. Spreading water usage throughout the week will help tremendously. New energy star washing machines use 50% less water and 35% less energy than a standard model machine.

Care for your drainfield

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

- Plant only grass over and near your septic system. Roots from nearby trees or shrubs can clog and damage the drainfield.
- Don't drive or park vehicles on any part of your septic system. This can compact the soil in your drainfield area, damage the pipes, septic tank or other system components.
- Keep downspouts, 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 can even stop the treatment process and can cause plumbing fixtures to back up in the house.

What can make a septic system fail?

Excessive water usage. If the amount of wastewater entering your system is more than the system can handle, the wastewater will back up into the house or yard and create a health hazard.

A system failure can be suspected not only when a foul odor is emitted but when partially treated wastewater flows up to the ground surface. By the time you smell or see a problem, the damage might already be done.

Limiting your water use, can reduce the amount of wastewater your system must treat. By having your system inspected and/or pumped, by a State licensed, certified professional, you can reduce the chance of system failure.

Other Failure Risks

- System installed in unsuitable soils
- Tree roots
- Tanks that are inaccessible for maintenance
- Paved or parked on drainfields
- Defective components can interfere with the treatment process

Failure Symptoms

The most obvious septic system failures are easy to spot. **Stop, Look and Smell!**

Here are a few signs of failure:

- Slow drains or sewage backing up into the house.
- Check to see if your toilets or sinks back up when you flush the toilet or do laundry.
- Surfacing effluent on the ground surface. Check for pooling water or muddy soil around your septic system or in the basement
- Check for strips of bright green grass over the drainfield
- Smell of sewage odor.

Septic systems can also fail when partially treated wastewater comes into contact with groundwater. This isn't as easy to detect but can result in pollution of wells, nearby streams or other bodies of water. If you suspect such a failure, check with a State licensed, certified professional or your local environmental health department.

Failure Causes

- Household toxics – oil based or latex paints, wood stains, solvents, toxic cleaners. If you have a utility sink in your house, don't use to clean out paint rollers or brushes. Squeeze all excess paint or stain from brushes or rollers on several layers of newspaper before rinsing. Leftover paints and wood stains should be taken to your local household hazardous waste collection center.

Remember your septic system contains a living collection of organisms that digest and treat waste.

- Household cleaners – your septic system's bacteria should recover quickly after small amounts of household cleaning products have entered the system. Some cleaning products are less toxic to your system than others. Labels can help key you into the potential toxicity of various products. Such as, "Danger" or "Poison" indicates the product is highly hazardous. "Warning" indicates the product is moderately hazardous and "Caution" indicates the product is slightly hazardous.

Remember "Nontoxic" or "Septic Safe" are terms created by advertisers to sell products and regardless of the type of product, use it only in moderation or in the amounts shown on the label instructions to minimize the amount discharged into your septic system.

Failure Causes, cont.

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

- 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. You can check with your licensed plumbing professional about alternative routing for such freshwater treatment systems.

- Hot Tubs – are a great way to relax. Unfortunately, your septic system was not designed to handle large qualities of water from your hot tub. Emptying hot tub water in your septic system stirs the solids in the tank and pushes them out into the drainfield, causing it to clog and the system to 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 area. Remember to use same caution when draining your swimming pool. And, as in accordance with local regulations.

- Improper Design or Installation – some soils provide excellent wastewater treatment; others don't. For this reason, the design of a septic system is based on the results of a 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.

Failure Causes, cont.

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.

Septic System Dos and Don'ts

Dos:

- Use water efficiently to avoid overloading system
- Repair any leaky faucets or toilets
- Use high efficiency fixtures
- Use laundry detergents in moderation
- Use bathroom cleaners in moderation or use baking soda to clean toilets, sinks, showers or tubs. Many prefer to clean their toilets, sinks, showers and tubs with a mild detergent or baking soda.
- Keep a record of all information pertaining to your septic system, including permit, repairs, pumpings, maintenance records. A copy of your septic system can be obtained from the local county environmental health department. The inspection should show type and location of septic system. Keep record of all information pertaining to your septic system.
- Know the location of your entire septic system and keep a sketch of it with all your septic information.
- Plant only grass over or near your septic systems. Roots can clog or damage your system.
- Have system inspected and/or pumped as needed by a licensed, State certified professional. Generally every three (3) to five (5) years.

Don'ts:

- Don't put or flush feminine hygiene products, condoms, dental floss, diapers, cotton swabs, cigarette butts, coffee grounds, cat litter, paper towels, toilettes or handi-wipes, fats, oils, grease, household chemicals, gasoline, oil, pesticides, anti-freeze, paint, paint thinner or wood stains.
- Don't use caustic drain opens for a clogged drain. Use boiling water or a drain snake to open clogs.
- Don't drive or park vehicles on any part of your septic system. Doing so can compact soils in your drainfield area, damage the pipes, septic tank or other components of your septic system.

Estimated Septic Tank Pumping Frequency
(year round residences)

Recommended pumping frequency for pumping out septic tanks can be estimated based on assuming a wastewater retention time of 24 hours and assuming 50% of the solids are digested by bacterial action in the tank. The following table can be used as a guide for average home water usage without a garbage disposal.

Household Size (Number of People)

Tank Size (gal)	1	2	3	4	5	6	7	8	9	10
1000	12 Years	5.9 Years	3.7 Years	2.6 Years	2.0 Years	1.7 Years	1.2 Years	1.0 Years	0.8 Years	0.7 Years
1500	19 Years	9.1 Years	5.9 Years	4.2 Years	3.3 Years	2.6 Years	2.1 Years	1.8 Years	1.5 Years	1.3 Years
2000	25 Years	12 Years	8.0 Years	5.9 Years	4.5 Years	3.7 Years	3.1 Years	2.6 Years	2.2 Years	2.3 Years
2500	32 Years	16 Years	10 Years	7.5 Years	5.9 Years	4.8 Years	4.0 Years	4.0 Years	3.0 Years	2.6 Years