HOMEOWNER'S GUIDE TO ON-SITE SEWAGE SYSTEMS

THE SEPTIC SYSTEMS

The most common wastewater treatment system used in rural areas is the septic tank-soil absorption system. The septic tank removes settleable and floatable solids from the wastewater, and reduces possibility of clogging and premature failure of the soil absorption system. In addition to removing solids, the septic tank also permits digestion of a portion of the solids and stores the undigested portion.

The septic tank removes solids by holding wastewater in the tank, which allows the solids to settle and scum to rise to the top. To accomplish this, wastewater should be held in the tank for at least 24 hours. Some solids retained in the tank are decomposed by anaerobic (without oxygen) digestion. The remaining solids accumulate in the tank as sludge. **Biological and chemical additives are not needed** to aid or accelerate decomposition. They may actually slow the process, contaminate the effluent and groundwater or damage the soil absorption field.

As the septic system is used, sludge continues to accumulate in the bottom of the septic tank. Properly designed tanks have enough space for a few years without interfering with solids removal. When the sludge accumulates, there is less time for it to settle properly before it leaves the tank; thus, some solids may be carried into the soil absorption field. If sludge accumulates too long, no settling occurs before the solids escape directly to the soil absorption area. To prevent this, the tank must be pumped periodically. The material pumped out of the tank is known as "septage" and must be disposed of in accordance with the Clean Water Law. Filters may be inserted directly into the tank's outlet tee and further screen solids from leaving the tank. These filters are inexpensive, highly efficient, easy to install and maintain, and are good added assurance of protecting your soil absorption field.

Pumping Frequency

How often you need to pump your septic tank depends on several factors:

1) Capacity of the septic tank.

2) Flow of wastewater (related to size of household).

3) Volume of solids in wastewater (more solids with garbage disposal).

4) Solids retention time (reduction by digestion).

Table 1 (following page) gives the estimated pumping frequencies according to septic tank capacity and household size. The frequencies were calculated to provide a minimum of 24 hours of wastewater retention assuming 50 percent digestion of the retained solids; 50 gallons of wastewater per person per day; and no garbage disposal.

Table 1. Estimated Septic Tank Pumping Frequencies in Years
(For Year-Round Residents)

	HOUSEHOLD SIZE (Number of People)								
Tank Size (gal)	1	2	3	4	5	6	7	8	9
500	5.8	2.6	1.5	1.0	0.7	0.4	0.3	0.2	0.1
750	9.1	4.2	2.6	1.8	1.3	1.0	0.7	0.6	0.4
1000	12.4	5.9	3.7	2.6	2.0	1.5	1.2	1.0	0.7
1250	15.6	7.5	4.8	3.4	2.6	2.0	1.7	1.4	1.2
1500	18.9	9.1	5.9	4.2	3.3	2.6	2.1	1.8	1.5
1750	22.1	10.7	6.9	5.0	3.9	3.1	2.6	2.2	1.9
2000	25.4	12.4	8.0	5.9	4.5	3.7	3.1	2.6	2.2
2250	28.6	14.0	9.1	6.7	5.2	4.2	3.5	3.0	2.6
2500	31.9	15.6	10.2	7.5	5.9	4.8	4.0	3.5	3.0

Note: More frequent pumping needed if garbage disposal is used.

If six people reside in a three-bedroom house served by a 1,000 gallon tank, the tank should be pumped about every 1.5 years. If the same system serves a family of two, the tank would be ready for pumping every 5.9 years. Note that if a garbage disposal is used, the extra solids introduced into the tank can easily increase the accumulation by more than 50%, requiring up to double the rate of pumping needed for a system without a garbage disposal.

It is important to note that the soil absorption field will not fail immediately when a full tank is not pumped. However, the septic tank is no longer protecting the soil absorption field from solids. Continued neglect will result in failure and the soil absorption field may need to be replaced. In come cases replacement of the absorption area may not be possible due to site limitations.

Cleaning The Tank

Septic tank pump and haul contractors can clean your tank. It is a good idea to supervise cleaning to ensure that it is done properly. To extract all the material from the tank, the scum layer must be broken up and the sludge layers stirred up into a liquid solution in the tank.

This is usually done by alternately siphoning liquid from the tank and reinjecting it into the bottom of the tank. The septic tank should be pumped out through the large central manhole, not the baffle inspection ports. Pumping out a tank through the baffle inspection ports can damage the baffles and usually does not clean out the tank sufficiently.

Before closing the tank, check the condition of the baffles. If they are missing or deteriorated, replace them with sanitary tees. It should **never** be necessary to **enter a septic tank.** Any work to replace the baffles or repair the tank should be made from the outside. The septic tank produces toxic gases that can kill a person in a matter of minutes. When working in a tank, make sure it is well ventilated, a safety harness is used and someone is standing nearby. **Never go into a septic tank to retrieve someone** who fell in and was overcome by toxic gases or the lack of oxygen without a self-contained breathing apparatus (SCBA). If a SCBA is not available the best thing to do is call for emergency services and put a fan at the top of the tank to blow in fresh air.

To facilitate future cleaning and inspection, install risers from the central manhole and inspection ports to the surface or near the surface before burying the tank. Also, mark the location of the tank so it can be easily found.

Use Water Wisely

Water conservation is very important for septic systems because continual saturation of the soil in the drain field can affect the ability of the soil to naturally remove toxins, bacteria, viruses, and other pollutants from the wastewater.

The most effective way to conserve water around the house is to first take stock of how it is being wasted. Immediately repair any leaking faucets or running toilets; use washing machines and dishwashers only when full. There are a lot of little things that can add up to substantial water use savings. For example, avoid letting water run when brushing teeth or shaving; install flow reducers on shower heads; install low-flush toilets, which use about 1 1/2 gallons of water per flush compared to the 3-5 gallons for conventional toilets; use a toilet dam or container filled with rocks in the toilet tank reservoir to reduce water use up to 25%. Try to space out activities requiring heavy water use, such as laundry, over several days rather than on one day.

DO's And DONT'S For Your Septic System

- **DO** have your tank pumped out and system inspected every one to five years by a professional contractor.
- **DO** keep a record of pumping, inspections and other maintenance.
- **DO** practice water conservation. Repair dripping faucets and leaking toilets, run washing machines and dishwashers only when full, avoid long showers. Use water-saving features in faucets, shower heads, and toilets.
- **DO** provide for timely maintenance of your system. Learn the location of your septic system and drain field. Keep a sketch of it handy for service visits.
- **DO** divert roof drains and surface water from driveways and hillsides away from the septic system. Keep sump pumps and house footing drains away from the septic system as well.
- **DO** take leftover hazardous household chemicals to your approved hazardous waste collection center for disposal. Use bleach, disinfectants, and drain and toilet bowl cleaners sparingly and in accordance with product labels.
- **DON'T allow** anyone to drive or park over any part of the system.
- **DON'T** cover the absorption field with a hard surface, such as concrete or asphalt. Grass is the best cover for the field. Grass will not only prevent erosion, but will help remove excess water.
- **DON'T** plant trees or shrubbery in the absorption field area. The roots may get into the drain field lines, plugging them.
- **DON'T** make or allow repairs to your septic system without obtaining the required health department permit. Use professional septic contractors when needed.
- **DON'T** use commercial septic tank additives. These products usually do not help and some may actually hurt your system.
- **DON'T** use your toilet as a trash can by dumping non-biodegradables down your toilets or drains. Also, don't poison your septic system and the ground water by pouring harmful chemicals down the drain. They can kill the beneficial bacteria that treat your wastewater. Keep the following materials out of your septic system:

NONDEGRADABLES-	POISONS-
grease, disposable diapers, feminine hygiene products, cigarette butts, etc.	gasoline, oil, paint thinners, pesticides, antifreeze, etc.

SUMMARY

The septic tank is only one part of an on-site wastewater system. It is designed to remove solids to protect the soil absorption system, provide for the digestion of a portion of those solids and store the remaining solids. Biological and chemical additives are not needed to aid or accelerate decomposition. In fact, some additives may damage your septic tank, disrupt the decomposition. In fact, some additives may damage your septic tank, disrupt the decomposition process, and contribute to clogging of the soil absorption field. Garbage disposals are also not recommended because they impose an additional solids load on the system. Solids must be removed periodically from the septic tank to keep them from entering the soil absorption system. For a properly designed septic system, the tank should be inspected and pumped every one to five years.

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