

Septic Tank Maintenance

J.A. Moore

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 the soil absorption field filters and treats the clarified septic tank effluent. Removing the solids from the wastewater protects the soil absorption system from clogging and premature failure. In addition to removing solids, the septic tank also stores the settled solids, and permits digestion of a portion of them.

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. Up to 50 percent of the solids retained in the tank decompose. The remaining solids accumulate in the tank. **Biological and chemical additives are not needed to aid or accelerate settling or decomposition.**

As the septic system is used, sludge continues to accumulate in the bottom of

the septic tank. Properly designed tanks have enough surface space for up to 3 years' safe accumulation of sludge. When the sludge level increases beyond this point, sewage has inadequate time in the tank to allow proper settling before leaving the tank.

As the sludge level increases, more solids escape into the absorption area. If too much sludge accumulates, no settling occurs before the sewage flows to the soil absorption area. To prevent this, the settled solids in the tank must be pumped periodically. The material pumped out of the tank is known as "septage."

The frequency of pumping depends on several factors:

- Capacity of septic tank
- Flow of wastewater
- Volume of solids in wastewater (more solids if garbage disposal is used)

Table 1 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.

In Oregon, a 1,000-gallon septic tank is used for a home with three bedrooms. If six people reside in a three-bedroom house, the tank should be pumped every 1.5 years. If the same system serves a family of two, the tank would be ready for pumping every 5.9 years. Systems installed before the current rules and regulations may have smaller septic tanks. As shown in Table 1, some tanks may need to be pumped more often than once a year.

It's 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

James A. Moore, Extension agricultural engineer, Oregon State University.

Table 1.—Estimated septic tank pumping frequencies in years (for year-round residence).

Tank Size (gal)	Household Size (Number of People)									
	1	2	3	4	5	6	7	8	9	10
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	0.3
1,000	12.4	5.9	3.7	2.6	2.0	1.5	1.2	1.0	0.8	0.7
1,250	15.6	7.5	4.8	3.4	2.6	2.0	1.7	1.4	1.2	1.0
1,500	18.9	9.1	5.9	4.2	3.3	2.6	2.1	1.8	1.5	1.3
1,750	22.1	10.7	6.9	5.0	3.9	3.1	2.6	2.2	1.9	1.6
2,000	25.4	12.4	8.0	5.9	4.5	3.7	3.1	2.6	2.2	2.0
2,250	28.6	14.0	9.1	6.7	5.2	4.2	3.5	3.0	2.6	2.3
2,500	31.9	15.6	10.2	7.5	5.9	4.8	4.0	4.0	3.0	2.6

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



failure of the soil absorption field, and it may need to be replaced. In some cases, replacement of the absorption area may not be possible due to site limitations.

Cleaning the tank

Septic tank pump-and-haul contractors can empty and clean your tank. It's a good idea to supervise cleaning to ensure that it's 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 portion of the tank (see Figure 1). This usually is 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.

Before closing the tank, check the condition of the baffles. If they are missing or deteriorated, replace them with sanitary tees.

Never enter a septic tank. Any work to replace the baffles or repair the tank should be done from the outside. The septic tank produces toxic gases that can kill a person in a matter of minutes. When working on a tank from the

outside, make sure the area is well ventilated and someone is standing by.

Never go into a septic tank to retrieve someone who was overcome by toxic gases or the lack of oxygen, without a self-contained breathing apparatus (SCBA). If an 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 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 these openings can be located easily.

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, and to store and provide for the digestion of a portion of those solids. Biological and chemical additives are not needed to aid or accelerate decomposition. Garbage disposals are 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 1 to 5 years.

Related OSU Extension publications

Holding Tanks, EC 1342 (Reprinted 1992). No charge.

Septic Tank-Soil Absorption Systems, EC 1341 (Reprinted 1993). 50¢

Why Do Septic Systems Fail?, EC 1340 (Reprinted April 2000). No charge.

Ordering instructions

To order copies of the above publications or additional copies of EC 1343, *Septic Tank Maintenance*, write or fax:

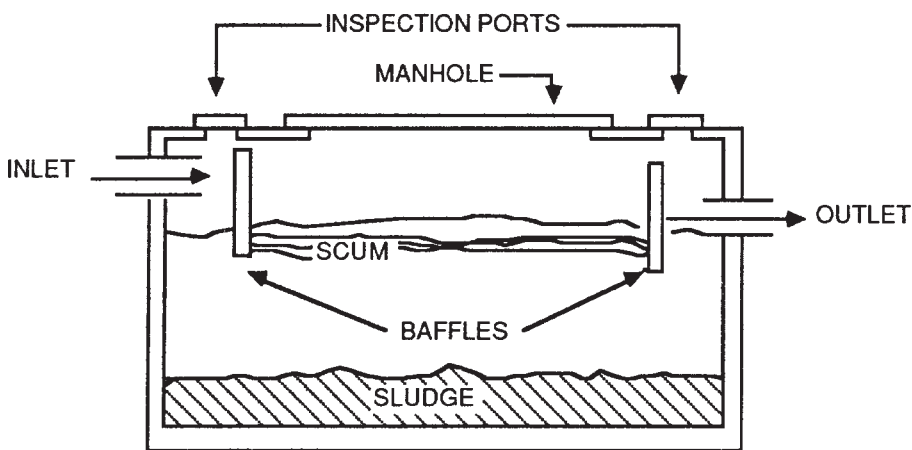
Publication Orders
Extension & Station Communications
Oregon State University
422 Kerr Administration
Corvallis, OR 97331-2119
Fax: 541-737-0817

You may order up to six no-charge publications without charge. If you request seven or more no-charge publications, include 25 cents for each publication beyond six.

World Wide Web

Our Educational Materials catalog and many of our publications are available on the Web at eesc.orst.edu

Figure 1.—Cross section of a septic tank.



Provided through a grant from the Farmers Home Administration. The material is the result of tax-supported research and as such is not copyrightable. It may be freely reprinted with the customary crediting of the source.

Produced and distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914. Extension work is a cooperative program of Oregon State University, the U.S. Department of Agriculture, and Oregon counties.

Oregon State University Extension Service offers educational programs, activities, and materials—without regard to race, color, religion, sex, sexual orientation, national origin, age, marital status, disability, and disabled veteran or Vietnam-era veteran status—as required by Title VI of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, and Section 504 of the Rehabilitation Act of 1973. Oregon State University Extension Service is an Equal Opportunity Employer.