

Septic System Maintenance

K. Mancl and J. A. Moore

The most common wastewater treatment system used in rural areas is the septic tank-soil absorption system. The septic tank removes those solids that both settle and float from the wastewater, and then 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 portion and permits digestion of a portion of those solids.

The septic tank removes solids by holding wastewater in the tank to allow the solids to settle and scum to rise to the top. Wastewater should be held in the tank for at least 24 hours. Up to 50 percent of the solids retained in the tank decompose and 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 space for up to three years safe accumulation of sludge. When the sludge level increases beyond this point, the tank does not retain the sewage long enough to allow proper settling before the sewage enters the drainfield. As the sludge level increases, more solids escape into the absorption area with less and less settling time. 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 3-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 on Table 1, some tanks may need to be pumped more often than once a year.

Table 1. ESTIMATED SEPTIC TANK PUMPING FREQUENCIES IN YEARS (FOR YEAR-ROUND RESIDENCES)

Tank Size	1	2	3	4	5	6	7	8
------------------	----------	----------	----------	----------	----------	----------	----------	----------

(gallons)
vs. Number
of residents

500	5.8	2.6	1.5	1	0.7	0.4	0.3	0.2
1000	12.4	5.9	3.7	2.6	2	1.5	1.2	1
1250	15.6	7.5	4.8	3.4	2.6	2	1.7	1.4
1500	18.9	9.1	5.9	4.2	3.3	2.6	2.1	1.8
2000	25.4	12.4	8	5.9	4.5	3.7	3.1	2.6

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 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 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 portion of 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.

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 made from the outside. The septic tank produces toxic gases which 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 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 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 easily located.

Conclusion

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, 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.