

Septic systems have been used for many years in areas not served by public sewers. However, not all soil and site conditions are well suited for these conventional systems. To protect public health and water quality, alternative systems are often used in areas where conventional systems cannot assure safe sewage treatment.

The intermittent sand filter is one alternative which:

- Can be constructed above or below the ground.
- Provides a high level of wastewater treatment.

The following information will help you understand your sand filter system and keep it operating safely at the lowest possible cost.

A typical sand filter system has four working parts:

1. The septic tank.
2. The pump chamber with the pump.
3. The sand filter.
4. The disposal component, including a drainfield (or possibly a mound) with its replacement area.

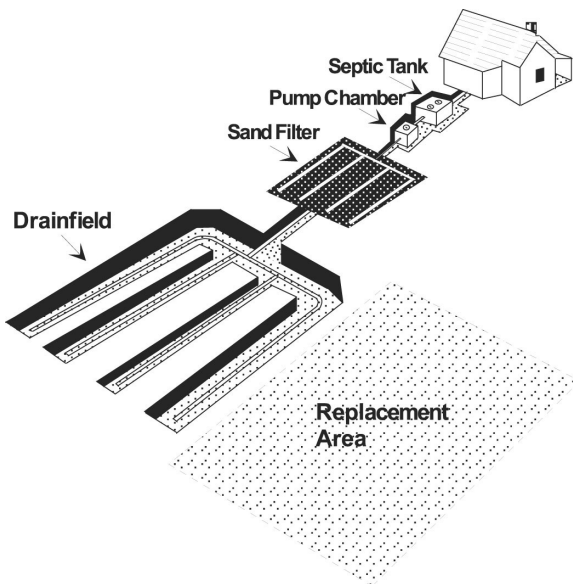


Image: Diagram of a basic septic system.

## The Septic Tank

The septic tank is a large buried container made of concrete, fiberglass, or polyethylene. Wastewater from your home flows into the tank. Heavy solids settle to the bottom where bacterial action partially decomposes them. Most of the lighter solids, such as fats and grease, rise to the top and form a scum layer.

The liquid wastewater leaving the septic tank is called effluent. It has been partially treated but still contains disease-causing bacteria and other pollutants. The effluent flows by gravity to the pump chamber from the tank.

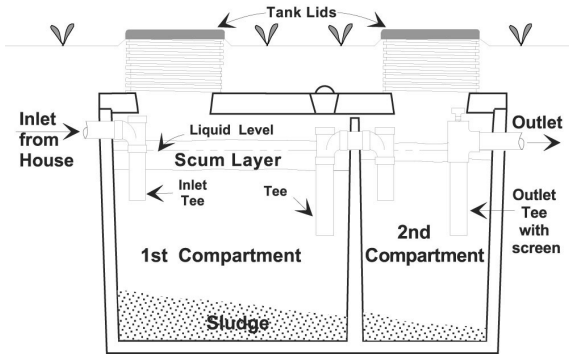


Image: Inside the septic

### To Properly Care for Your Septic Tank:

1. **Inspect your septic tank once every year and pump it when needed.** If the tank is not pumped periodically, solids will mound to a height where they can escape from the septic tank. This will clog the pump and mound. Using garbage disposals increases the amount of solids entering the tank and require more frequent pumping.
2. **Do not flush harmful material into the septic tank.** Never allow materials such as grease, newspapers, paper towels, cigarettes butts, coffee grounds, diapers, sanitary napkins, solvents, oils, paint, or pesticides to enter the system. For information on the proper disposal of hazardous household waste, call the Washington Recycle Hotline at 1-800-RECYCLE.
3. **Avoid using chemical or biological septic tank additives.** Additives are not necessary for the proper functioning of a septic tank, nor do they reduce the need for routine tank pumping. In fact, they can harm your system.

## The Pump Chamber

The pump chamber is a concrete, fiberglass, or polyethylene container that collects the septic tank effluent. The chamber contains a pump, pump control floats, and a high-water alarm float. Pump action can be controlled by the use of control floats or by timer controls. Control floats are set to turn the pump “ON” and “OFF” at levels for pumping a specific volume of effluent per dose. Timer controls are set to produce the length of the dose and the interval or rest period between doses.

The high water alarm float starts an alarm to warn you of any pump malfunction. If pump timer controls are used, the alarm also will warn you of excessive water use in the home. The float is set to start when the effluent in the pump chamber rises above the “ON” float. The alarm should consist of a buzzer and an easily visible light. It should be on an electrical circuit separate from the pump.

The pump discharge pipe should have a union and valve for easy removal of the pump. A piece of nylon rope or other non-corrosive material should be attached to the pump for taking the pump in and out of the chamber.

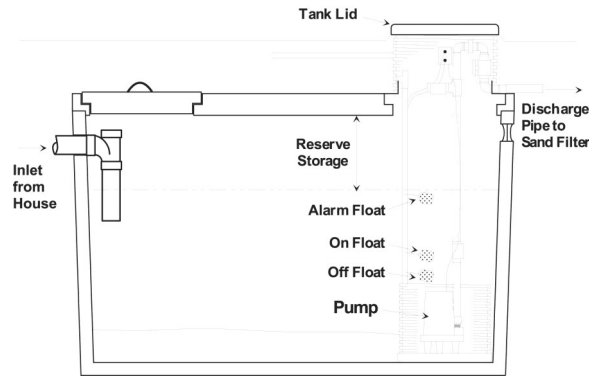


Image: Diagram of a pump tank.

### To Properly Care for Your Pump System:

1. **Check the pump chamber, pump, and floats every year. Replace or repair worn or broken parts.** Pump maintenance should follow the manufacturer’s guidance. Check electrical parts and conduits for corrosion. If the alarm panel has a “push-to-test” button, it should be checked regularly.

2. **Install a septic tank effluent filter or pump screen if your system does not have one.** Screening or filtering the septic tank effluent provides an effective way of preventing solids from clogging the pump and pipes. Inspecting a screen or filter, and cleaning it when necessary, is quick and easy and prevents costly damage from solids entering the mound system.
3. **Protect the drainfield from overloading after a prolonged power outage or pump failure.** Effluent will continue to collect in the pump chamber until the pump starts operation. With additional effluent in the chamber, the pump may dose a volume more than the drainfield can handle. If all of the reserve storage in the chamber is used, the plumbing in your home can backup. When the pump is controlled by float controls and is off for more than 6 hours, the following measures can be taken to help protect the drainfield (timer controls will automatically correct this problem):
  - a. Reduce your water use to a minimum.
  - b. Turn off the pump at the control panel.
  - c. After power is restored or pump service is completed, switch the pump on and let it run for 5 minutes maximum, and turn it off again. Repeat this manual switching every 6 hours until the effluent drops to the “OFF” float level and the pump turns off automatically. If there is little water use during the problem, the pump may automatically turn off during the first manual switching.

Do not enter the pump chamber. Gases inside pump chambers are poisonous and the lack of oxygen can be fatal. The service or repair of pumps and other electrical equipment must be done by a licensed professional.

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

## The Sand Filter

The typical sand filter is a PVC-lined or concrete box filled with a specific sand material. A network of small diameter pipes is placed in a gravel-filled bed on top of the sand. The septic tank effluent is pumped under low pressure through the pipes in controlled doses to ensure uniform distribution. The effluent leaves the pipes, trickles downward through the gravel, and is treated as it filters through the sand. A gravel underdrain collects and moves the treated wastewater to either a second pump chamber for discharge to a pressure distribution drainfield or to a gravity flow drainfield. The second pump chamber may be located in the sand filter.

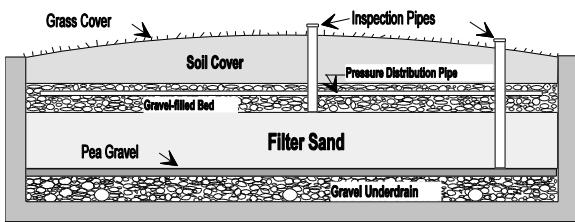


Image: Sand filter diagram

## The Drainfield

The drainfield receives the treated sand filter effluent for disposal. It has a network of pipes placed in gravel-filled trenches (2-3 feet wide) or beds (up to 10 feet wide) in the soil. The effluent leaves the pipes, trickles downward through the gravel, and is discharged into the soil.

Every new drainfield is required to have a designated replacement area. This area is similar to the size of your existing drainfield. It must be protected should the existing system need an addition or repair.

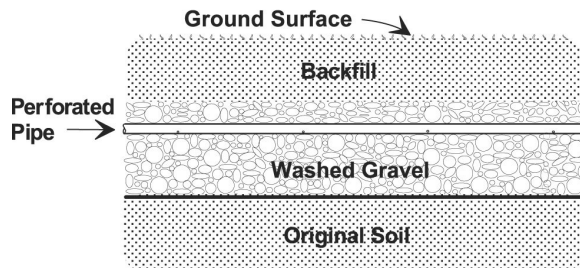


Image: Example layers in the drainfield

## To Properly Care for a Sand Filter and Drainfield:

1. **Know where your system and replacement area are located and protect them from damage.** Before you plant a garden, construct a building, or install a pool, check on the location of your system and replacement area.
2. **Practice water conservation and balance your water use throughout the week to keep from overloading the system.** The more wastewater you produce, the more wastewater the sand filter and soil must treat and dispose. You can reduce your water use by installing water-saving devices, repairing leaky plumbing fixtures, taking shorter showers, and washing only full loads of dishes and laundry.
3. **Divert water from surfaces, such as roofs, driveways, or patios away from the system and replacement area.** Soil over your system should be slightly mounded to help surface water runoff. Sprinkler systems do not belong in the area of the sand filter or drainfield.
4. **Keep traffic such as vehicles, heavy equipment, or livestock off your system and replacement area.** The pressure can compact the soil or damage pipes.
5. **Landscape your system properly.** Do not place impermeable materials over your system or replacement area. Materials such as concrete or plastic reduce evaporation and the supply of air to the soil needed for proper effluent treatment. Grass is the best cover for your entire system.
6. **Periodically inspect the sand filter and drainfield areas for odors, wet spots, or surfacing sewage.** Check your system's inspection pipes regularly to see if there is a liquid level continually over 6 inches. This may be an early indication of a problem. Call your local health agency for assistance.

## Additional Information

For more information about caring for your septic system and to learn more about different system types, please visit: [www.doh.wa.gov/septic](http://www.doh.wa.gov/septic)

On-Site Sewage System Regulations (Chapter 246-272A WAC)  
<https://doh.wa.gov/wastewater-rules-and-regulations>

Water Conservation and Droughts

<https://doh.wa.gov/community-and-environment/drinking-water-emergencies/drought>

Publications on the Department of Health's webpages are available by writing to:

Washington State Department of Health  
 Wastewater Management Section  
 PO Box 47824  
 Olympia, WA 98504-7824

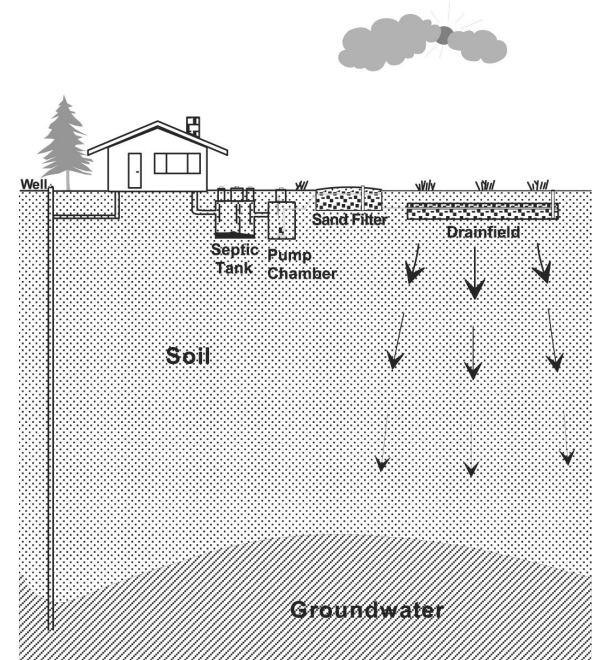
### Other sources of information include your:

Local Health Agency  
 Soil Conservation Service Office  
 Cooperative Extension Office

DOH 337-089 (September 2023)

To request this document in another format, call 1-800-525-0127. Deaf or hard of hearing customers, please call 711 (Washington Relay) or email [civil.rights@doh.wa.gov](mailto:civil.rights@doh.wa.gov).

# Understanding And Caring For Your Sand Filter System



WASHINGTON STATE  
 DEPARTMENT OF HEALTH

WASHINGTON STATE UNIVERSITY  
 COOPERATIVE EXTENSION SERVICE

