

Understanding And Caring for Your Sand Filter System

Septic tanks with gravity flow drainfields have been used for many years in areas not served by public sewers. Unfortunately, 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.

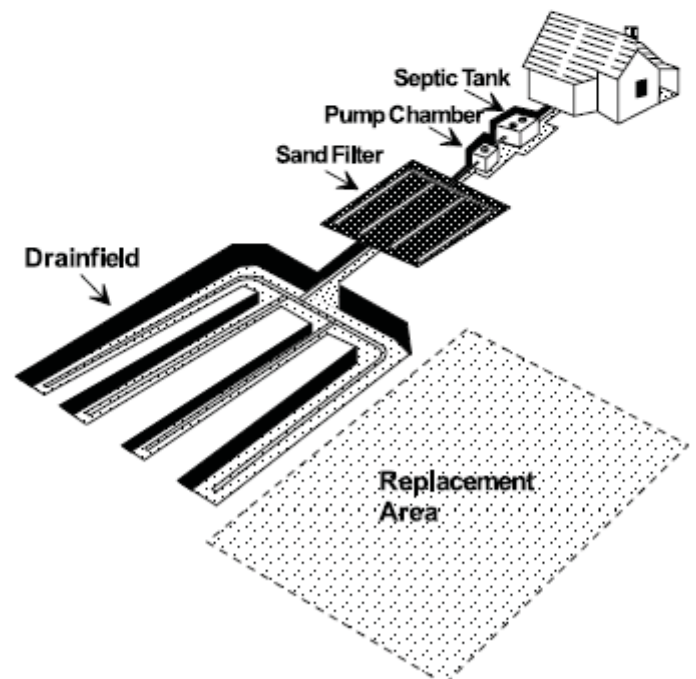
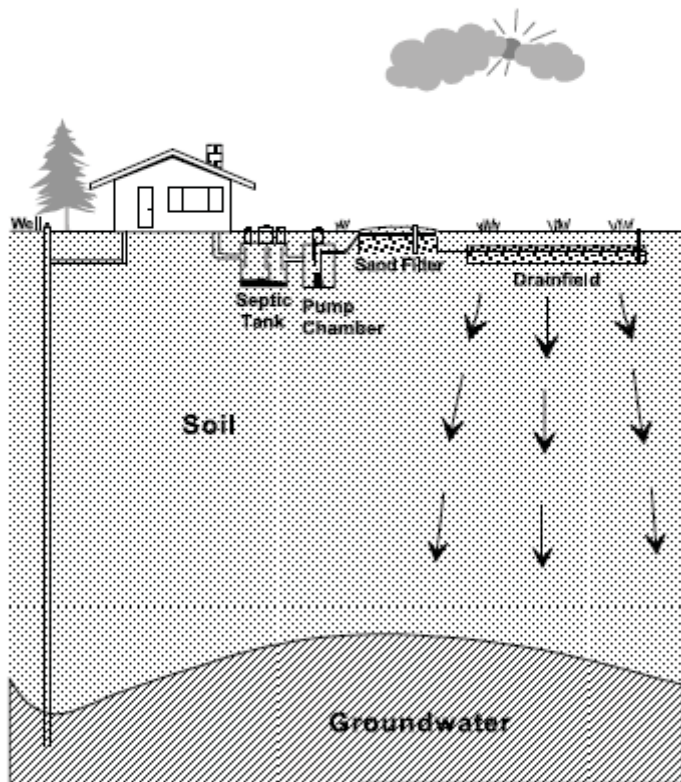
The intermittent sand filter is one alternative, which:

- 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.



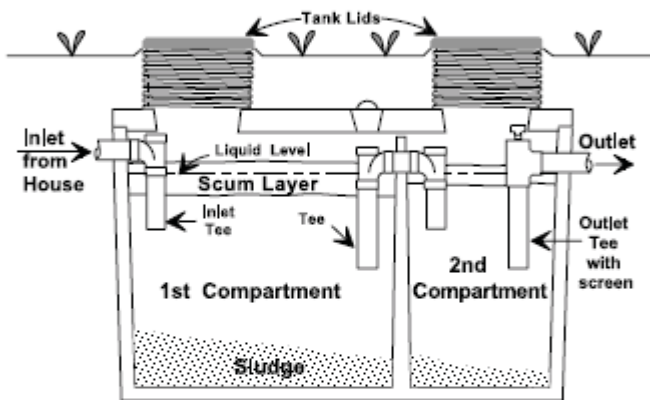
WASHINGTON STATE
DEPARTMENT OF HEALTH

WASHINGTON STATE UNIVERSITY
COOPERATIVE EXTENSION SERVICE

The Septic Tank

The typical 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 grease and oils, rise to the top and form a scum layer.

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



Proper Care Includes:

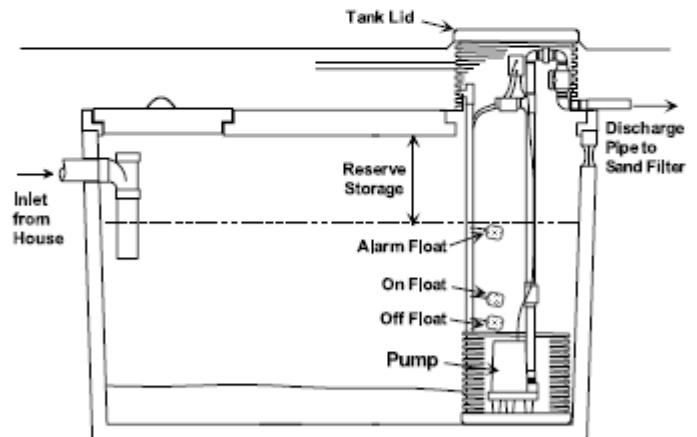
1. **Inspecting your septic tank once every year and pumping it when needed.** If the tank is not pumped periodically, solids escaping from the septic tank will clog the pump, sand filter, and drainfield. Using a garbage disposal will increase the amount of solids entering the tank and require more frequent pumping.
2. **Avoiding the flushing of harmful material into the septic tank.** Never put materials, such as grease, newspapers, paper towels, cigarettes butts, coffee grounds, diapers, sanitary napkins, solvents, oils, paint, and pesticides into the tank. For information on the proper disposal of hazardous household waste, call the Recycle Hotline, 1-800-RECYCLE.
3. **Avoiding the use of any type of chemical or biological septic tank additive.** Such products are not necessary for the proper functioning of a septic tank, nor do they reduce the need for routine tank pumping.

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. The pump action may be controlled either 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 both 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 or system 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.



Proper Care Includes:

1. **Checking the pump chamber, pump and floats every year and replacing or repairing worn or broken parts.** Pump maintenance should follow the manufacturer's recommendations. Check electrical parts and conduits for corrosion. If the alarm panel has a "push-to-test" button, it should be checked regularly.

2. **Installing 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, easy, and prevents costly damage from solids entering the system.
3. **Taking action to protect the sand filter and drainfield after a prolonged power outage or pump failure.** Effluent will continue to collect in the pump chamber until the pump starts. With additional effluent in the chamber, the pump may dose a volume more than the sand filter or drainfield can handle. Once the reserve storage inside the chamber is all used up, the plumbing in your home can backup. When the pump is off for more than 6 hours, the following measures can be taken to help protect your system:

(Timer controls will automatically correct this problem)

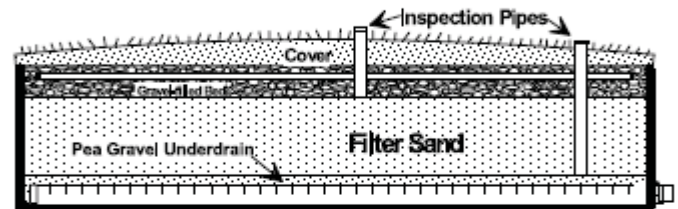
- a. Reduce your water use to a minimum.
- b. Turn off the pump at the control panel.
- c. After power is restored or pump service is completed, switch the pump on and let it run for 5 minutes maximum, and turn it off again. Repeat this manual switching every 6 hours until the effluent drops to the "OFF" float level and the pump turns off automatically. If there is little water use during the outage or pump service, the pump may automatically turn off during the first manual switching.

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

Do not enter the pump chamber. Gases inside pump chambers are poisonous and the lack of air can be fatal. The service or repair of pumps and other electrical equipment must be done by an experienced person.

The Sand Filter

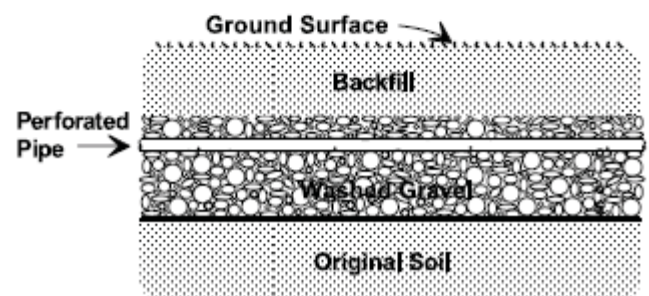
The typical sand filter is a PVC-lined or concrete box filled with a specific sand material. A network of small diameter pipes is placed in a gravel-filled bed on top of the sand. The septic tank effluent is pumped under low pressure through the pipes in controlled doses to insure uniform distribution. 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.



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 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.



Proper Care for a Sand Filter and Drainfield Includes:

1. **Knowing where your system and replacement area are located and protecting 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. **Practicing water conservation and balancing your water use throughout the week to keep from overloading the system.** The more wastewater you produce, the more the sand filter and soil must treat and dispose of. 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. **Diverting 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. **Keeping traffic, such as vehicles, heavy equipment or livestock off your system and replacement area.** The pressure can compact the soil or damage pipes.
5. **Landscaping 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. **Inspecting the sand filter and drainfield areas for odors, wet spots, or surfacing sewage periodically.** 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

More information is available from the following Department of Health publications:

Intermittent Sand Filter Systems—Recommended Standards and Guidance for Performance, Application, Design, and Operation and Maintenance, 2000.

<http://www.doh.wa.gov/ehp/ts/WW/IntSandFilt-2000.pdf>

Understanding and Caring for Your Septic Tank System.

DOH Pub 334-009

http://www3.doh.wa.gov/here/materials/CRA_Detail.aspx?ID=358

Water Conservation Guidelines to Being Waterwise.

DOH Pub 331-120

<http://www4.doh.wa.gov/dw/publications/default.cfm?action=pubdetail&CFID=13680&CFTOKEN=50860812&type=subject&PubId=264>

On-Site Sewage System Regulations, Chapter 246-272 WAC.

DOH Pub 334-006C

<http://www.doh.wa.gov/ehp/ts/WW/OnSiteRegs.doc>

The above publications are available from your county health agency or by writing to:

Washington State Department of Health
Office of Environmental Health and Safety
PO Box 47825
Olympia, WA 98504-7825

Other sources of information include your:

Local Health Agency
Soil Conservation Service Office
Cooperative Extension Office

