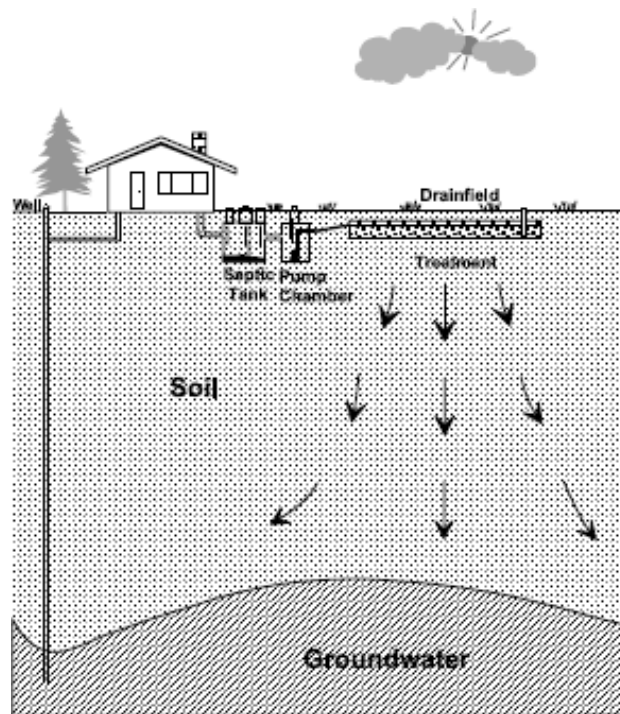


# Geauga Public Health

## Understanding and Caring for Your Septic System



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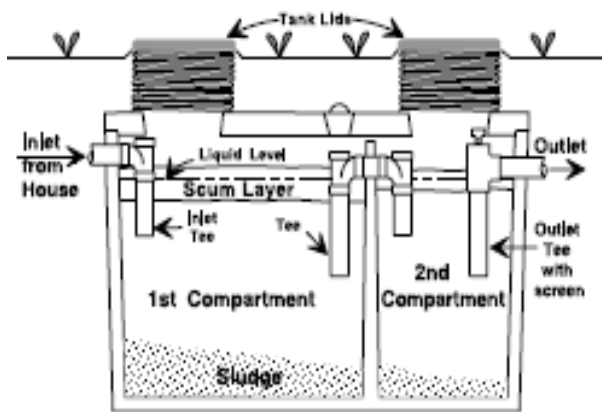
The purpose of a home's subsurface septic system is to dispose of the water generated by the occupants in such a manner that the soils on the property can dispose of it without causing an adverse effect on the ground or surface water and in turn on the public's health. A septic system will serve a home satisfactorily only if it is properly designed, installed, and adequately maintained. Septic systems are designed to separate the solids from the liquids in the wastewater that leaves your home; a soil absorption field then normally acts on the liquids. The solids collect on the bottom of the tanks and the grease rises to the top. The content of the septic tanks are pumped out periodically and disposed of at a sanitary sewer plant.

There are many different types of septic systems designed to fit a wide range of soil and site conditions. The most common system is a conventional septic system which consists of two main parts; the septic tank and the soil drainfield or leach field. The leachfield is a series of underground perforated pipes, which allow the water to dissipate into the ground providing further bacterial treatment and filtration. The following information will help you understand your septic system, and keep it operating safely at the lowest possible cost.

A typical septic system has two or three working parts: 1.) The septic tank. 2.) The pump chamber with the pump. 3.) The leach field with its replacement area

## 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 to the leach field or into the pump chamber, which pumps the effluent into the leachfield.



### *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 and mound. 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. Do not allow the back flush from any type of water softener to discharge into the system. The salt will harm the leach field and can cause early failure. Try to use low sudsing biodegradable detergents and oxygen based bleaches when doing laundry..
- 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.

## Aeration Septic Systems Functions and Maintenance

Aeration septic systems are the second most frequently style of septic system installed for residential systems. Aeration systems were developed to accommodate insufficient soil area size or difficult soil types. An individual home aeration system consists of a multi-chambered tank or tanks, which provide a three stage treatment of household wastewater. The trash trap or septic tank provides separation of solids and grease.

The second chamber, known as the aeration chamber is where air is pumped into the wastewater. This oxidation process promotes the growth of aerobic bacteria, which further treats the wastewater.

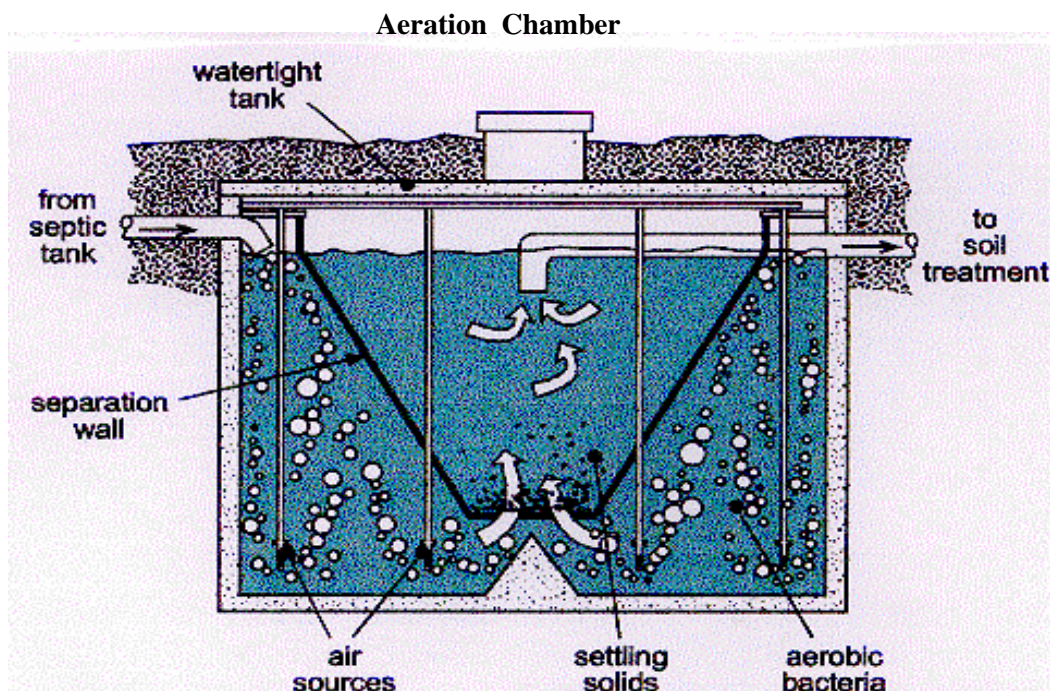
The final chamber filters the treated water before it is discharged to an absorption leach field.

Aeration systems need to be checked on a routine basis to check for warning lights or audible alarms indicating the system is malfunctioning. Check the system for offensive odor, if present call for service. Check the systems control panel for an air supply malfunction or a power supply problem to the system. Check with the manufactures maintenance manual or consult with the manufacture, distributor or a qualified septic installer.

Aeration systems require yearly routine maintenance, which should be performed by the distributor, manufacture or septic installer. Trash traps or septic tanks should be pumped every 2 to 3 years. Motors for the aerator should be checked for overheating, excessive vibrations or unusual noises. If aerator compressor failure is observed, call your service provider for service Some motors need to be checked to ensure that rags and hair are not wrapped around impellers or mechanical devices in the tanks. The filters in the third chamber should be checked and cleaned once a year. Gravel filters should be rinsed with a water hose and pumped out by a septic pumper.

### Damage Prevention

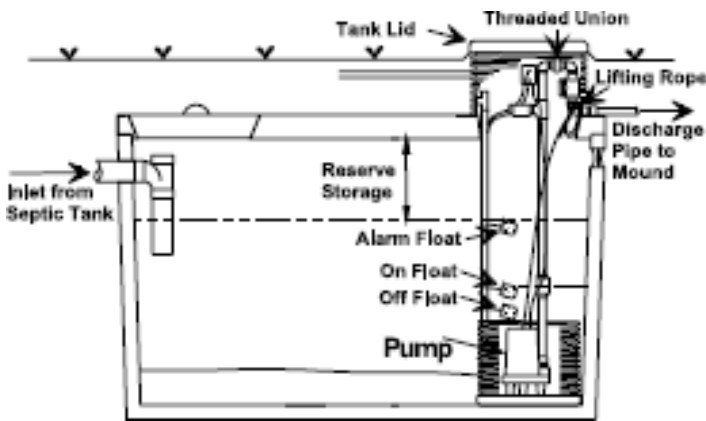
Lack of maintenance or turning of aerator will cause damage to motors, filters and leach systems. Avoid driving heavy equipment over the tank area. Strong disinfectants or bleaches, other than small amounts used in day to day house cleaning can harm bacteria in the aeration chamber.



## 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 noncorrosive material should be attached to the pump for taking the pump in and out of the chamber.



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

### 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 and easy, and prevents costly damage from solids entering the mound system.

3. **Taking action to protect the leachfield from overloading after a prolonged power outage or pump failure.** Effluent will continue to collect in the chamber until the pump starts. With additional effluent in the chamber, the pump may dose a volume more than the leachfield 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 the field: (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 3 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.

4. **Pumps do eventually fail and must be replaced.** The effluent pump for your system was chosen specifically for your site and system design. Contact a service provider to be sure the proper replacement pump is chosen. Records of the original pump are on file at the Health Department.

## What If the Alarm Goes On?

If for any reason the effluent level inside the pump chamber reaches the alarm float (faulty pump, floats, circuit, excessive water use, or another problem), the alarm light and buzzer will start. By using water conservatively (avoid baths, showers, and clothes washing), the reserve storage in the pump chamber should allow you enough time to get the problem corrected. To silence the alarm, push the reset light on the alarm panel. Before calling for service or repair, check to see if the problem could be:

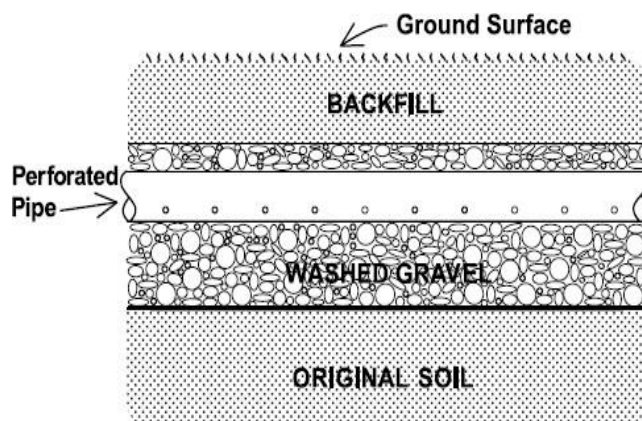
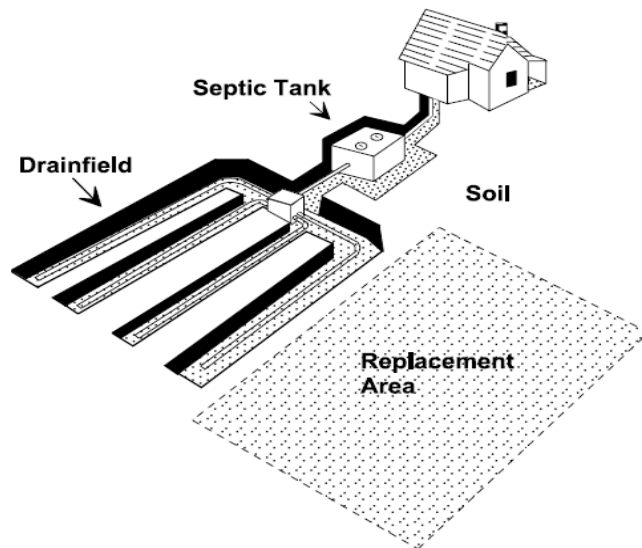
1. **A tripped circuit breaker or blown fuse.** The pump should have a separate circuit with its own breaker or fuse. If it's on a circuit with other equipment, that equipment can cause the breaker to trip.
2. **A pump or float switch power cord plug that has come unplugged.** If electrical connections are the plug-in type, be sure switch and pump plugs are making good contact in their outlet.
3. **Control floats tangled by other parts in the chamber such as the electric power cord, lifting rope, or pump screen.** Be sure floats operate freely in the chamber.
4. **Debris on floats and support cable that is causing the pump to switch off.** Lift the floats out of the chamber and clean.

**Do not enter the pump chamber.** Gases inside pump chambers are poisonous and the lack of air can be fatal. If the problem cannot be located with the above steps, call your pump service person or on-site system contractor for service or repair. The service or repair of pumps and other electrical equipment must be done by an experienced person.

## The Leachfield

The leachfield receives septic tank effluent. It has a network of perforated pipes laid in gravel-filled trenches (1.5 to 3 feet wide) in the soil. Wastewater flows out of the pipes, through the gravel layer, and into the soil. The size and type of drainfield depends on the estimated daily wastewater flow and soil conditions. Every new home's drainfield is required to have a designated replacement area. It must be maintained should the existing system need an addition or repair.

The soil below the drainfield provides the final treatment and disposal of the septic tank effluent. After the effluent has passed into the soil, most of it percolates downward and outward, eventually entering the groundwater. A small percentage is taken up by plants through their roots, or evaporates from the soil. The soil filters effluent as it passes through the pore spaces. Chemical and biological processes treat the effluent before it reaches groundwater, or a restrictive layer, such as hardpan, bedrock, or a clay soils. These processes work best where the soil is somewhat dry, permeable, and contains plenty of air for several feet below the drainfield.

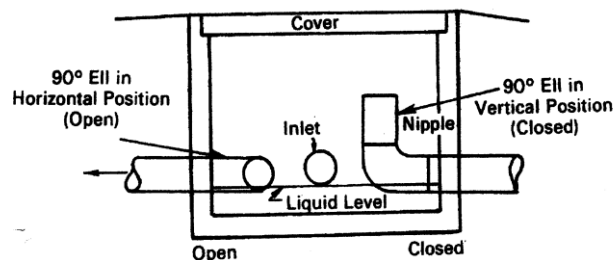


A **Flow Diversion Box (or Zone Valve)** allows you to divert the flow of effluent in order to prolong the life span of the entire septic system. Diverter boxes may be square, round or rectangular in shape and should remain above ground level.

**Maintenance:** Homeowners with a diverter box should alternate the flow of sewage once or twice a year for maximum system life. This is done by moving an elbow. Resting a portion of the septic system for half of the year permits biological activity, which in turn, increases the life span of the entire system.

**Damage Prevention:** Avoid driving heavy equipment over the flow diverter box area. If you are a homeowner who has horses on their property, do not allow them on or around this area. Bails of hay maybe placed over and adjacent to zone valves boxes to prevent freezing in the winter months.

SECTION VIEW OF DIVERSION BOX UTILIZING ADJUSTABLE ELLS



### ***Proper Care Includes:***

1. **Knowing where your system and replacement area are located and protecting them.** 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 leach field must treat and dispose of.
3. **Diverting water from surfaces such as roofs, driveways, or patios away from the mound and replacement area.** The leach field is graded to provide for runoff away from the leaching area. Place structures, ditches, and driveways far enough away so that water movement is away from the leachfield and tanks.
4. **Keeping traffic, such as vehicles, heavy equipment, or livestock off your leach field and replacement area.** The pressure can compact the soil or damage pipes.
5. **Landscaping your system properly.** Do not place impermeable materials over your leach field or replacement area. Materials, such as clayey soil, concrete or plastic reduce evaporation and the supply of air to the soil needed for proper effluent treatment. Do not plant trees over or around your sewage disposal system. Tree roots can cause the system to malfunction by interfering with pipes and leachlines. Grass is the best cover for the leachfield.
6. **Switch the elbow in the diversion box at least once a year .**
7. **Inspecting the leachfield and downslope areas for odors, wet spots, or surfacing sewage periodically.** . This may be an early indication of a problem. Call your local Health Department or a licensed Service Provider/ Installer for assistance.

### **Additional Information**

More information is available from the following:

*Understanding and Caring for Your Septic Tank System*, Washington State Department of Health, 2009, DOH Pub 334-009, <http://here.doh.wa.gov/materials/understanding-and-caring-for-your-septic-tank-system>

*System Type: Septic Tank to a Soil Absorption System*, Ohio Department of Health, 2009, <http://here.doh.wa.gov/materials/understanding-and-caring-for-your-septic-tank-system>

Geauga Public Health, Licensed Service Providers:

<http://www.geaugacountyhealth.org/Portals/27/Resources/Documents/EnvironmentalHealth/Sewage/SEVLIST3-1.pdf>



*Promoting and Protecting Community Health*