Q&A How to Maintain Your Drainfield

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Editor's Note: The drainfield is one of the most important parts of your septic system. Maintaining it not only keeps the system functioning properly—which aids in public health—it prevents an expensive repair from damaging your wallet. The average cost of replacing a drainfield can run from $6,000 to more than $12,000. And no one wants a smelly drainfield to ruin outdoor activity. The following Q&A offers advice about preserving your drainfield to provide you with years of uninterrupted service.

What is a drainfield?

There are two main parts to a basic septic system: the septic tank and the drainfield.

A conventional drainfield is an arrangement of perforated pipes or chambers buried underground that channel pretreated wastewater (effluent) from the septic tank out over a large area of the soil for final treatment.

A reserve drainfield, required by many states, is an area on the property that is suitable for a new drainfield system should the current drainfield fail.

How does a drainfield work?

The drainfield is where the real treatment of the wastewater occurs. As the effluent slowly moves through the soil, the drainfield acts as a natural filter by absorbing the organic materials, reducing or removing bacteria and viruses, and removing some nutrients. The naturally purified water is then moved to the groundwater or evaporates from the soil.

What is a drainfield's life expectancy?

Drainfields should last at least 25 to 30 years or more if they are designed, installed and maintained correctly, according to Zane Satterfield, engineering scientist with the National Environmental Services Center.

What causes a drainfield to fail?

The two most common causes of drainfield failure are hydraulic and biological overloading. Hydraulic overloading occurs when too much water is sent to an under-designed system while too much organic matter in the effluent causes biological overloading.

However, there are many and varied causes for drainfield failure, including,

- not maintaining your septic tank;
- solids from the septic system clogging the small holes in the drainfield pipes;
- additives because they can damage the system by breaking up the sludge and scum layers, causing them to flush out of the tank and clog the drainfield;
- flushing fats, oils, greases, chemicals, solvents, paint and other improper substances down the drain;
- improper drainfield siting, design, construction;
- overuse of water-generating appliances;
- garbage disposals because the extra solids introduced into the tank can increase the accumulation of sludge by more than 50 percent;

Signs of impending drainfield failure:

- Sluggish drains and toilets in the home
- Odor of sewage in the house and/or outside

Signs that drainfield failure has occurred:

- Sewage backing up into the home
- Ponding in the yard above or near the drainfield
- Soil sinking or collapsing over any part of the system

- excessive rainfall;
- downspouts, gutters, basement sump pump drains and other rainwater or surface water drainage systems that divert water over the drainfield;
- tree roots that interfere with the drainlines;
- vehicles driving over the drainfield and cracking the pipes, and
- age of the system.

How can I tell if my drainfield is failing?

The most obvious sign of drainfield failure is surfacing effluent. If the soil can no longer absorb the effluent, it will either rise to the ground surface and pool or, if the drainfield isn't flat, it will blow out the end of the last trench. You might also notice muddy soil around your septic system or in your basement, toilet or sink back-ups when you flush or do laundry, or strips of bright green grass growing over the drainfield.

Can I drive on, pave over, or build a structure on my drainfield?

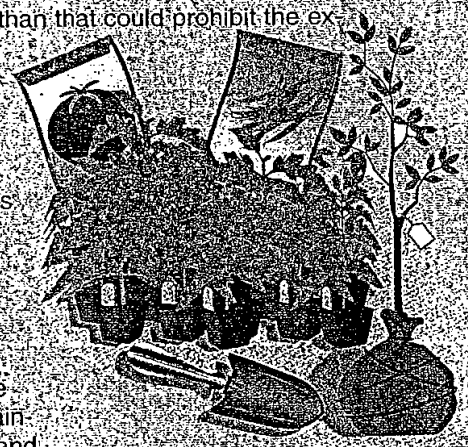
No. These activities can cause the soil to compact, exposing system components and possibly untreated sewage to the ground surface. Paving over all or a portion of a drainfield may prevent air from getting into the soil, impairing the treatment process, as well as limiting access for repairs, maintenance, or inspection.

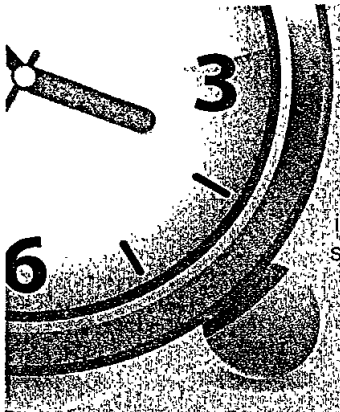
What can be planted over or near a drainfield?

The best covering for your drainfield is grass because it helps to remove water and nutrients from the soil and helps to prevent soil erosion.

Some people may choose to landscape their drainfield because of limited space or because they think it is an eyesore. The challenge is to find plants that will meet your landscaping needs but not clog the drain pipes. Thurston County, Washington, offers the following planting tips:

- The deep roots of some vegetables may damage the drainfield pipes as can digging and rototilling the soil to prepare it for planting vegetables. Hand cultivate only.
- Parts of the system may be only six inches under the surface. Adding two to three inches of topsoil to the drainfield should be fine but more than that could prohibit the exchange of air and water, decreasing the drainfield's ability to treat the wastewater.
- Plants should be low in maintenance and water needs and should be shallow rooted.





Base your plant selection on the amount of sunlight the area receives and the flowers need.

For wildflower seeds, remove grass in small areas (six inches in diameter) and sow the seed in those areas. Keep the grass out of the area until the seed has germinated and is large enough to compete with the grass.

Trees or shrubs should not be planted within 25 feet of the drainfield, according to the North Carolina State University, because their roots could clog or damage the drain lines.

A properly operating drainfield will not contaminate the soil with disease-causing organisms, but it is very difficult to determine if a field is operating as it should, therefore vegetables should not be planted over the drainfield. In addition, vegetables need watering, and excess water in the soil reduces its ability to treat the wastewater.

How can I maintain my drainfield?

Maintenance begins with water use and waste disposal habits. The drainfield does not have an unlimited capacity, so the more water you use, the greater the likelihood of problems with the drainfield. Water conservation practices can help reduce the amount of wastewater generated in the home.

"The drainfield should be inspected, but typically, it is overlooked when it comes to onsite system inspection and maintenance unless there are obvious signs of failure or an inspection is required for property transfer," Satterfield says. "Repair and rejuvenation can be costly, so it is a good idea to maintain your drainfield so small problems can be taken care of before they become bigger problems."

When is the best time to inspect my drainfield?

"Drainfield inspections are most often performed at the same time a septic tank is being inspected or pumped because the outlet of the tank is easier to identify, which makes it easier to locate the piping to the drainfield," explains Satterfield. "This enables the inspector to watch the outlet pipe when the septic tank is pumped to see if any water drains back into the tank from the drainfield."

What happens during a drainfield inspection?

"Inspecting a drainfield is not as straightforward as inspecting a septic tank," explains Craig Mains, engineering scientist, NESC. "Because the drainfield is buried, it is difficult to visually determine its condition. If there are no visible problems, the drainfield inspection consists mostly of locating the drainfield area and checking the soils to make sure the system is designed and installed correctly."

The soil is checked with a soil probe, Mains further explains, which comes in different shapes, sizes, and materials. "The probe helps determine the length of the drainfield and the length and width of its trenches. Checking each of these parameters ensures the proper amount of drainfield area is present."

"The probe is pushed into the ground until it touches the top of the drainfield pipe. Once the pipe is located, the inspector inserts a flag or marker, takes a few steps back, and repeats the procedures.

"The inspector may also want to check the trench lines for biomat growth."

What is a biomat?

A biomat is the black, jelly-like layer that forms along the bottom and sidewalls of the drainfield trench. It is caused by the bacterial growth that develops beneath the distribution lines. Biomats tend to restrict the flow of effluent through the drainfield but are crucial because they filter out viruses and pathogens. Biomat formation cannot, and should not, be prevented, but septic tank filters, proper organic loading, and proper maintenance of the septic tank can slow the rate at which it forms.

Resources:

City of Columbia Health Department. Columbia, Missouri. "Septic Tank and Drainfield Maintenance." Download at: *www.gocolumbiamo.com/Health/Wastewater_Systems/septic_systems.php*

Mains, Craig, Zane Satterfield. Interviews with author in August 2009.

National Environmental Services Center. *Pipeline*. "Drainfield Rehabilitation." Winter 2005. Volume 16, Number 1.

North Carolina State University. "Soil Facts: Septic Systems and Their Maintenance." Download at: *www.soil.ncsu.edu/publications/Soilfacts/AG-439-13/#What_Maintenance_Is_Needed*

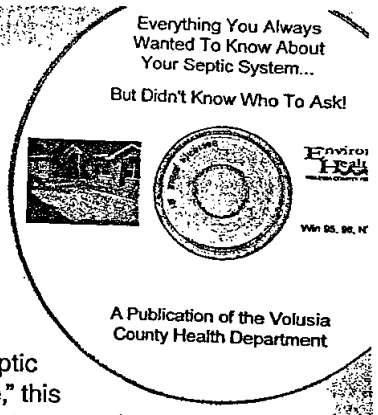
Ibid. "Soil Facts: Why Do Septic Systems Fail?" Download at: *www.soil.ncsu.edu/publications/Soilfacts/AG-439-44/ag439_44.pdf*

Public Health and Social Services, Thurston County, Washington. "Landscape your Drainfield." Download at: *www.soil.ncsu.edu/publications/Soilfacts/AG-439-44/ag439_44.pdf*

U.S. Environmental Protection Agency. "A Homeowner's Guide to Septic Systems." Download at: www.epa.gov/owm/septic/pubs/homeowner_guide_long.pdf

Virginia Cooperative Extension. "Planting on Your Septic Drain Field." Download at: *pubs.ext.vt.edu/426/426-617/426-617.html*

NESC Offers Septic Tank and Drainfield Maintenance Products



NESC offers a CD-ROM titled "Everything You Always Wanted to Know About Septic Systems . . . But Didn't Know Who to Ask!" This interactive CD-ROM targets the homeowner and educates them about conventional onsite systems. Some sections of this product are based on Florida regulations; however, the CD can be edited to reflect regulations and requirements specific to any state or local jurisdiction. To order, call (800) 624-8301 and ask for product number WWCDPE76. Cost: $6.50.

NESC also offers an information package that provides an overview of septic tanks for homeowners. Titled "Homeowner's Septic Tank Information Package," this product includes several brochures on how to maintain a septic tank and how to recognize potential problems. It also includes a record-keeping folder. To order, call (800) 624-8301 and ask for product number WWPKPE28. Cost: $2.25.

Another helpful product that NESC offers is titled "Onsite Wastewater Treatment Systems: Septic Tank/Soil Absorption Field." This factsheet describes septic tank and soil absorption systems for treatment of residential wastewater. Using numeric tables and color diagrams to supplement the text, this factsheet describes the components of the system and how to maintain them. To order, call (800) 624-8301 and ask for product number WWFSGN147. Cost: $1.00.

Water Conservation Practices

For Residents:

- Install faucet aerators in all sinks.
- Fix or replace faucet and toilet leaks.
- Don't let the water run while brushing your teeth or washing the dishes.
- Don't wait for water to run cold. Instead, store water in the refrigerator.
- Take showers instead of baths, and take shorter showers.
- Install water-saving showerheads.
- Use low-flow toilets and urinals or displace water in tanks with plastic jugs filled with water or pebbles.
- After flushing the toilet, make sure the valve has closed and water is not running.
- Only use washing machines and dishwashers when there is a full load.
- Scrape plates clean instead of rinsing.
- Use low-volume washing machines.
- Wrap water heaters with insulation.
- Limit watering outdoor plants and landscaping.
- Water outdoor plants and landscaping in the evening.
- Use rain barrels to collect rainwater and use for plants and landscaping.
- Incorporate native plants into landscaping. They adapt better to the climate.
- Landscape with no- or low-water consuming plants.
- Use mulch around plants and trees to reduce water evaporation.

Source: Public Service Commission of Wisconsin. (psc.wi.gov/consumerinfo/conservation/waterConservation.htm)

For Communities, governments, and utilities:

- Test water meters regularly and check for accuracy.
- Locate and fix leaks in water infrastructure.
- Provide incentives for:
  - o Low-flow toilets
  - o Efficient washing machines
  - o Efficient dishwashers
  - o Rain barrels
  - o Multi-setting sprinkler timers
- Educate customers on where they can get low-interest financing to help purchase conservation equipment.
- Require or encourage retrofitting of toilets and plumbing when building or selling a home.
- Offer home and business water audits for free or at a low cost.
- Educate customers on water conservation and your community's dedication to conservation efforts.
- Use pricing mechanisms that encourage water conservation.

"If your neighbors are complainin', you best get to drainin'."

—Winston Rothchild of Rothchild's Sewage and Septic Sucking Service