

SEPTIC SYSTEM

*Information Pamphlet
for Homeowners*

JR'S
INSPECTION SERVICES
262-629-9925

RECORDS

SEPTIC SYSTEM

Date of Installation _____

Installing Plumber _____

Address _____

Phone _____

Septic Tank Size (gallons) _____

Pump Tank Size (gallons)

Drainfield Size (sq. Ft.) _____

Drainfield Dimensions _____

Number of vents/observation tubes _____

SERVICING

Pumper's Name _____

Address _____

Phone _____

Dates of Servicing

Comments

Out of site, out of mind!

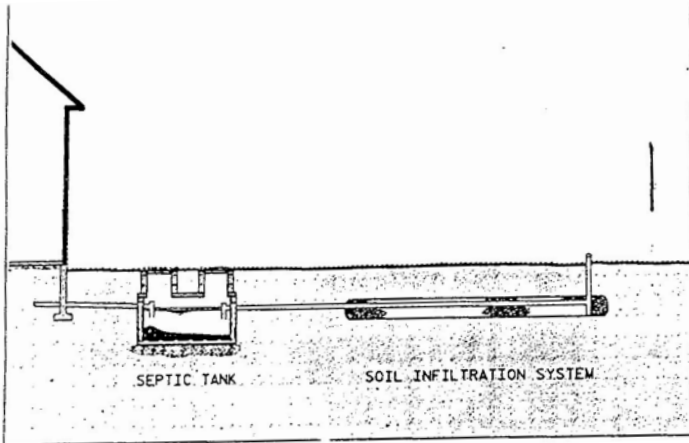
Is this the way you look at your septic system?

But there is more . . .

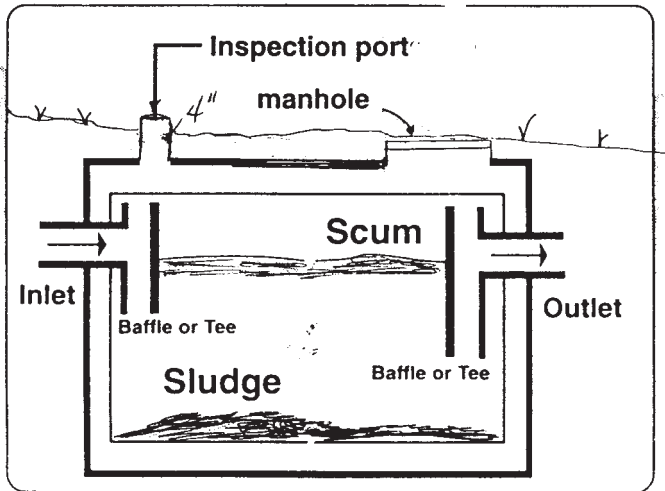
The septic system is really a **Wastewater Recycling System** that utilizes the natural soil to treat the wastewater before returning it to the groundwater basin.



What happens when you flush the toilet? Where does the wastewater go? For those of you not connected to a municipal sewer, the solution lies in the septic tank.



A septic tank is typically the first component of a septic system. A system can be as simple as a septic tank and drainfield or include any number of add-ons, such as an effluent filter, aeration tank, sand filter, pump/siphon chamber or sand mound.



A septic tank looks like the illustration above. The size of the tank depends upon the number of bedrooms in the house, not the number of people or plumbing fixtures. The sizes range from 750 gallons on up and may be configured as one or two septic tanks. Having two septic tanks (or a two compartment septic tank) increases detention time of the waste water, which helps to further reduce the suspended solids that could flow into the drainfield.

The drainfield is the area where the liquid from the septic tank soaks into the ground. The soil & micro-organisms remove viruses, bacteria, and most other contaminants typically found in household wastewater. This drainfield area may consist of one or more trenches that are 5 feet wide or less, a rectangular bed or an above grade design like a mound (as discussed later). One or more observation tubes are placed in the drainfield area to monitor the infiltrative surface.

When the effluent (the technical name for the treated liquid from the septic tank) has to be lifted uphill into a drainfield, another tank is installed after the septic tank. This tank contains a pump with floating on and off switches to send the wastewater into the drainfield at preset intervals. This pump tank (also known as a pump chamber, dosing chamber or lift station) has a high water alarm float switch connected to an alarm to warn

the user when the pump has failed to come on. Since 1980, pump tanks have about a one-day's reserve capacity once the pump fails and the alarm sounds. However, most septic system effluent pumps provide maintenance free service for many years.



The waste entering the septic tank is:

1. Solid waste that settles to the bottom of the tank; (sludge)
2. Grease, fat and floating solid materials which rise to the top of the tank; (scum)
3. A partial clarified liquid zone; effluent

The solid waste is food for anaerobic bacteria, which releases gas and liquid components. The gas dispersed through the plumbing system vents in the house and drainfield vents. Solids do accumulate in the septic tank. The tank must be serviced (pumped out) every 1 to 3 years or whenever the solid component of the tank exceeds 1/3 of the tank volume to reduce the chance of solid material flowing into the drainfield.

Grease and other floating solids are prevented from flowing out of the tank by a baffle or "T" located on the inside of the tank at the outlet end. Another baffle is placed on the inlet side of the septic tank. This forces the incoming waste down into the tank, which prevents short-circuiting across the tank. These baffles can deteriorate over time and must be checked at each tank servicing. In theory, only liquid flows out of the septic tank and into the drainfield, thereby recycling the household waste water into the ground. There are tank effluent filters available that can prevent large suspended particles in wastewater from getting out of the septic tank, which may clog pumps, distribution pipes and soil. These filters are commonly serviced with routine septic tank pumping.

Where there is known to be excessive amounts of grease in the waste, typical with restaurant waste, a minimum two septic tank design is used with the first tank deemed the "grease trap".

Soil Infiltration System

The drainfield (soil infiltration) is the final and most important step of the effluent treatment and dispersal. The size, elevation, location and shape of the drainfield are all relative to the expected usage, & soil characteristics.

The drainfield sizing is determined by the flow from the house (based on number of bedrooms) and the type of soil. Usually the more pervious the soil, the smaller the drainfield, however, a certified soil tester makes this determination based on the many physical features within the soil, such as texture, structure, consistence and layering of the soil. This information is recorded on a "Soil and Site Evaluation Report" form.

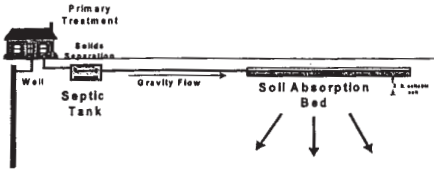
The evaluation and location of the drainfield is determined by the type of soil at various depths and/or the elevation of the seasonal water table, saturation zones with the soil, or bedrock. For systems without pretreatment, it is necessary to maintain a safe vertical distance of 3 feet between the bottom of the drainfield and impervious soil layers; a saturation zone or bedrock for proper treatment and renovation of effluent.

The shape of the drainfield is dependent upon the maximum length of suitable soil available preferably along a level slope line. A drainfield design using trenches or narrow beds has been shown to improve aeration in the soil beneath the gravel thereby enhancing treatment of the effluent and drainfield longevity. When there are several trenches or beds, a distribution box may be incorporated to promote equal distribution of effluent.

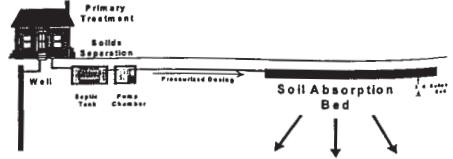
Effluent inside the drainfield is dispersed in two ways - gravity or pressure distribution. Pressure distribution uses small diameter pipes. These systems require a pump to force the effluent into the entire piping network. This force is a precise calibration based on the pump flow, head pressure, lift elevation, distance and perforation diameter and number. When a pressure distribution drainfield is lower in elevation than the septic tank, a siphon may be used to force the effluent through the system instead of a pump. A siphon must be checked periodically to

ensure that it is properly discharging effluent in doses rather than “trickling” effluent into the drainfield.

1. GRAVITY

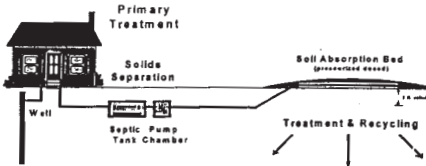


2. PRESSURE



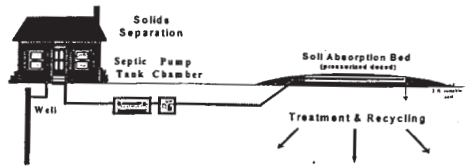
This type of system is used when the soil absorption bed is located higher in the landscape or where pressure distribution is desired.

3. AT GRADE



This system is built on top of the original grade, area is plowed, stone is placed on top of the plowed surface along with the distribution pipes, System is covered with soil and is approximately 2 ft above the grade.

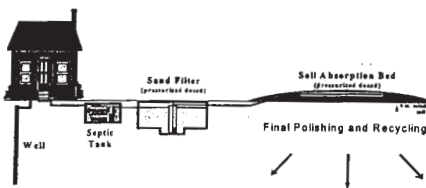
4. MOUND



This system is similar to the At-Grade with washed sand placed on the plowed surface and the drainfield bed constructed in the sand. When finished, this will be approximately 3-4 ft above the grade.

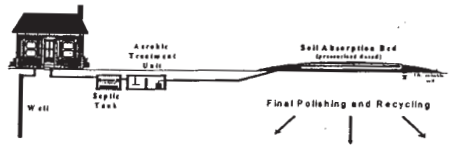
Figures 1-4 depict typical drainfield layouts that are currently used in Wisconsin, Figure 5 & 6 depict advance pretreatment systems.

5. SAND FILTER



This unit treats the effluent at the tank through aerobiceration of the wastewater. This promotes the growth of bacteria that reduces wastewater constituents and produces a higher quality effluent to the soil absorption bed.

6. AEROBIC TREATMENT



Sand filters, utilize a sand media within a containment structure. Wastewater is treated as it passes over bacteria attached films on the sand media. As with the ATU, these units produce a high quality effluent to the soil.

Note: Graphics supplied by the Department of Commerce

Research has shown that a pressure distribution network will effectively disperse the effluent throughout the drainfield evenly thereby delaying the over saturation of any one part of the drainfield. Saturation promotes clogging of the infiltrative surface.

There are circumstances that shorten the life of a drainfield:

1. **Hydraulic Overloading.**

This is a condition where soil beneath the drainfield becomes saturated resulting in ponding. This condition can be caused by:

- A. drainfield is undersized for the current usage
- B. leaking plumbing fixtures
- C. undersized septic tank
- D. surge loading (e.g. doing all the clothes washing on one day) (laundry should be spaced out)

2. **Grease.**

Excessive grease can congeal in the sewer line to the septic tank or inside the tank. The septic tank may accumulate a layer of solid fat, which cannot be readily broken down by bacterial action. Grease should be treated as garbage and kept out of the septic tank whenever possible.

3. **Sanitary napkins, condoms, cotton swabs, dental floss, tampons, handwipes, infant wipes, disposable diapers, and cigarette filters.** These products are made of cellulose, plastic or other non-biodegradable components. They may plug the sewer lines, baffles and drainfield perforations or lodge in the pump,



4. **Antibiotics, other medicines, disinfectants, painting products, gasoline, oil, degreasers and pesticides.** When disposed of through the septic system these chemicals may kill septic tank bacteria. This can result in a severe decline in decomposition of the septic tank solids. It can take several weeks for the bacteria in the septic tank to re-establish.

5. **Clear water discharges.** Building foundation drains, humidifier, and water softener discharges are considered clear water, which may be disposed into the ground separate from the septic system. However, discharge from the softener during the recharge cycle is a salt brine which, in excessive amounts, could have an adverse affect on septic tank bacteria.

6. **Surface drainage**, Roof downspouts, driveway runoff and road ditches should be directed away from the septic system. The finished grade over the septic system should divert surface drainage of water away from the tanks and drainfield.

FREQUENT QUESTIONS AND ANSWERS

Q *Should I add anything to my septic tank?*

A Biological and chemical additives are not needed to aid or accelerate decomposition. At this time, there is no conclusive data to support the effectiveness of enzymes or any chemical treatment to rejuvenate a failing drainfield. These products are approved by the State of Wisconsin only if they do not harm the septic system.

Q *How often should I have my septic tank pumped?*

A Septic tanks require pumping when 1/3 full of scum and sludge. A good pumping interval is every 2 to 3 years.

Q *What are the warning signs of a failing septic system?*

A These signs may be indicators that the drainfield is failing:

1. Any plumbing backups.
2. Grass in the yard growing faster and greener in the area of the drainfield or tank(s).
3. Soft or mushy ground in the area of the drainfield.
4. Sluggish toilet flushing.
5. Septic pump runs constantly
6. Solids accumulating in the drainfield vent or observation tubes.

Q *Can garbage disposals be used with septic systems?*

A Yes. But try to avoid allowing grease or slowly biodegradable products such as coarse fruit and vegetable peelings and bones to get into the disposal.

Q Can I plant trees or shrubs over my drainfield?

A Generally no. Many tree species have roots that will attempt to grow into the drainfield to seek out moisture and nutrients. These may break sewer lines or disrupt the distribution of effluent. There are some trees and shrubbery whose root systems can not stand "wet feet" and are safe to plant over or near drainfields, Your local landscape contractor or garden center is a good source of information.

Q What if liquid is observed in the drainfield vent or observation tubes?

A Liquid observed in the drainfield usually indicates that the soil absorption capability of the drainfield is reduced and ponding is progressing. Many systems begin ponding within the first few years. The ponded state of a drainfield is usually a slowly developing condition. The estimated life of today's drainfields under normal usage is 15 to 25 years, The drainfield is ponded to some degree during most of these years. A consistently rising level of ponding is a possible indicator as to the life expectancy of a drainfield. Sludge in a vent pipe or observation tube is an indicator of a more serious condition.

Many lending institutions have been using the observance of any liquid in a vent or observation tube as the sole criteria for rejecting a septic system from a proposed sale or purchase of a home. As noted above this is a subjective and inaccurate stipulation, A more reasonable condition of sale would be to make sure that there is a suitable replacement drainfield area available for the future if and when the existing drainfield fails. True failure of a septic drainfield is when the effluent is bleeding out onto the ground surface, wastewater backing up into the building (not due to plugged or broken sewer lines) or the existing drainfield was installed less than 3 feet to a saturation zone, groundwater, bedrock or impervious soil.

Q *Can I use my old drainfield later once a new one is installed?*

A In most cases, yes. If the old drainfield was sized appropriately to its current use and there is at least 3 feet of suitable soil as described earlier, then the owner will be able to switch between the two drainfields by means of a diverter valve. It has been estimated that within a few years, an old ponded drainfield can recover much of its infiltrative capacity. For those new homes with soil data completed after 1977 and having a below grade drainfield, a future-replacement area will have already been designated. Once a replacement drainfield is installed the original drainfield will be allowed to rest and rejuvenate. Switching may occur every 1 to 5 years. Your contractor will help you determine the proper time and method for switching drainfields.

Q *What can I do to prolong the life of my drainfield?*

A *There are a variety of things you can do:*

1. Install water-saving devices and be on-guard for leaky fixtures. Water conservation reduces the amount of liquid going into the drainfield.
2. Have the tank(s) pumped/and inspected regularly.
3. Keep surface water away from the septic system area, including the septic and pump tanks.
4. Keep driveways, parked vehicles and buildings off the drainfield area. Soil compaction can cause premature failure by restricting the infiltrative and evaporative capability of the soil.
5. Installing an effluent filter to confine most of the suspended solids to the septic tank.
6. The use of pretreatment components have been shown to improve effluent quality and moderate or reduce ponding.
7. Understand what can and cannot be put into the septic tank.

Q *What is the Wisconsin Fund?*

A The Wisconsin Fund Grant Program provides financial aid incentives to protect and improve water quality in the State of Wisconsin. The fund provides grants to assist homeowners and small businesses in the rehabilitation or replacement of their failing sewage systems.

Certain criteria must be met as to ownership, income levels and degree of failure. Contact your county health or zoning department as to current requirements as these change yearly. Generally this grant must be applied for prior to installation or repair of a septic system.

We hope this pamphlet has informed you about the workings of your septic system. This system needs care and maintenance much like any other component of your home. Installing a new septic system or replacing a drainfield can be expensive, but remember that you now have a modern, economical sanitary waste disposal system, And there is no sewer tax to pay.

The Wisconsin Onsite Waste Disposal Association is a statewide organization of installers, soil testers, manufacturers and related governmental and educational personnel plus firms that service and supply the industry.

Members are dedicated to protecting your health and environment. They strive to improve the quality of septic system products and installation procedures and furnish information to the public and health authorities.

Service Date

Comments

Notes:

Contact:

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262-629-9925

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