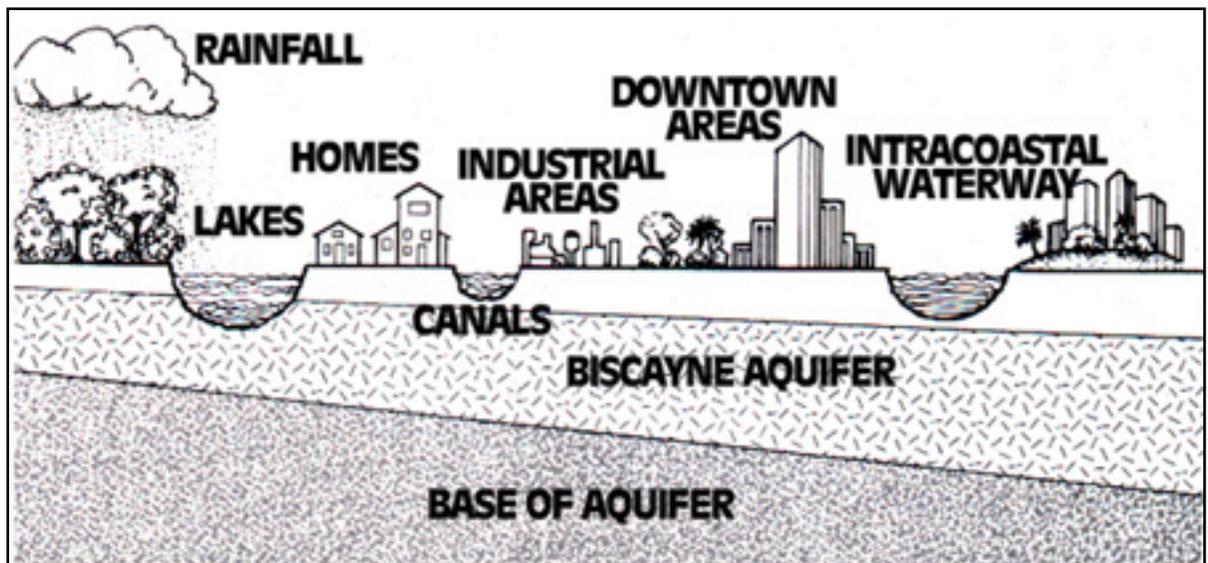


# You and Your Septic Tank

## A Guide to the Proper Operation and Maintenance of a Septic Tank System

### INTRODUCTION

In South Florida, our sole source of drinking water is just a few feet beneath the surface of the land and is called the Biscayne Aquifer. All that separates us from this underground water supply is a thin layer of sand. Consequently, our water supply is extremely vulnerable to contamination from our activities both at work and at home.



One potential source of contamination to our water supply is wastewater from the use of septic tanks. The wastewater that is discharged from septic tanks is diluted by mixing with underlying ground-water (the source of our drinking water supply). Groundwater contaminated by septic tanks can also seep into nearby canals, rivers, and waterways.

The proper operation and maintenance of septic tank systems is critical to minimizing the impact on our health and water resources.

Proper disposal and treatment of domestic wastewater is crucial for protecting our groundwater and preventing exposure to water borne diseases.

### SEWAGE TREATMENT AND DISPOSAL

In Broward County approximately 92% of domestic sewage is collected by sanitary sewer systems and treated at wastewater treatment plants. The wastewater is treated to meet State and County standards and is either discharged to the Atlantic Ocean via ocean outfall, injected deep into the earth, or re-used for irrigation or industrial uses.

The remaining eight percent of the wastewater is treated in individual septic tank systems and discharged to groundwater. Today there are roughly 67,000 homes and businesses in the County mainly in rural areas and in older, urban areas. Domestic wastewater from these homes and businesses, after being treated by septic tanks, is discharged through soil absorption drain fields to groundwater, the source of our drinking water supply.

Proper disposal and treatment of domestic wastewater is crucial for protecting our groundwater and preventing exposure to water borne diseases.

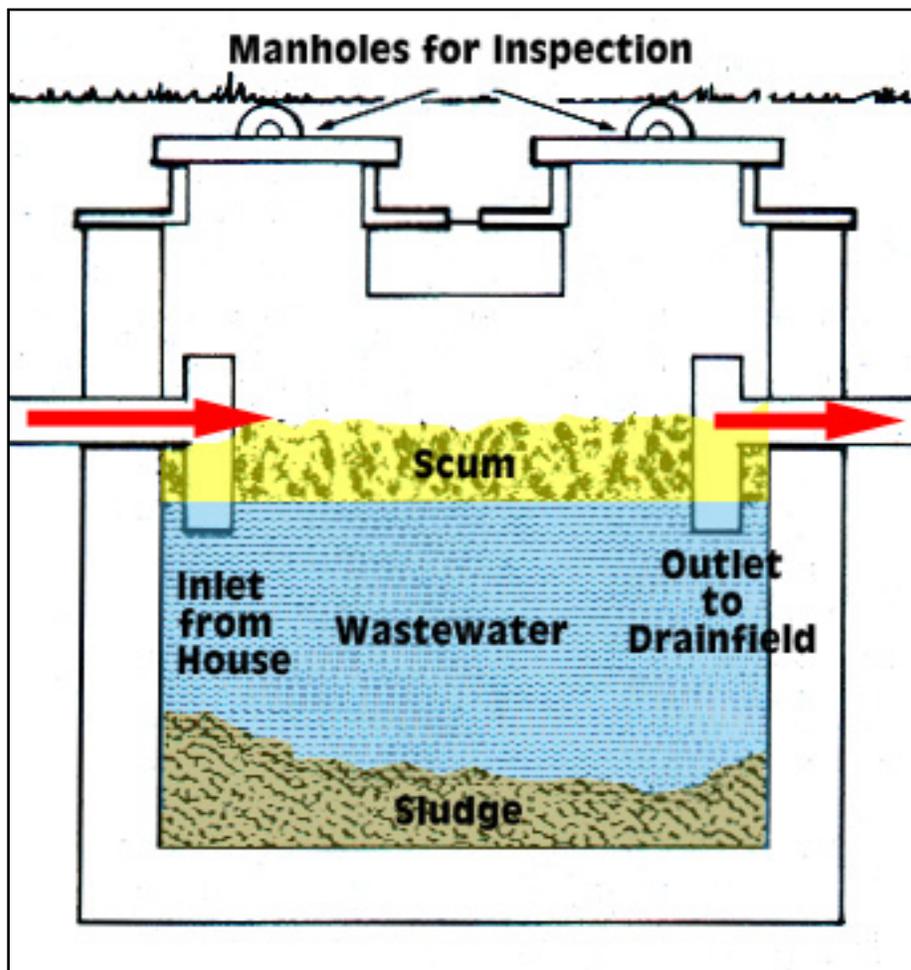
### HOW A SEPTIC TANK SYSTEM WORKS

Wastewater leaves your house via the plumbing system and enters the septic tank. The tank holds wastes for the primary treatment, that is the separation of solids and liquids by gravity. The heavy solids, commonly called sludge,

accumulate at the bottom of the tank. The lighter greases and oils, called scum, float to the top of the liquid. Bacteria partially decompose the sludge in the tank and reduce the amount of solid material by about 60%. Gases generated as a natural part of the decomposition process are released through plumbing vents.

The liquid in the tank, called effluent, flows by gravity to a distribution box. The distribution box evenly distributes the effluent from the septic tank to the absorption drain-field. The drainfield is a system of perforated pipes set underground in a bed of crushed rock that allows the effluent to seep slowly into the ground. The effluent undergoes further treatment in the absorption bed. Naturally occurring bacteria and the filtering action of the sand reduces, but does not eliminate, the pollutants and levels of potentially harmful bacteria and viruses. The effluent continues percolating down through the soils until it reaches the groundwater. The effluent is then diluted by mixing with the groundwater and flows away from the site with the underground flow of water.

The treatment efficiency of a septic tank-soil absorption drainfield system is approximately 50% as compared to 90% for wastewater treatment plants. Many chemicals pass through the system without being reduced in concentration. Toxic organic and inorganic chemicals, bacteria and viruses in the effluent are released to the groundwater system. Many household chemicals can not be treated by septic tank systems and should not be disposed of down the drain. For example, gasoline, paints, and pesticides.



In Broward County, many non-sewered industries have been found to have contaminated the groundwater with toxic chemicals. DPEP has been investigating the impact to ground and surface water from septic tank systems. In one recent study, high levels of contaminants were found in the groundwater underlying an industrial area and a residential area serviced by septic tanks.

What can you as a home owner do to help protect our water resources and the public health? As a home owner you can 1) determine if you have a septic tank system; 2) properly maintain your system; and 3) properly use your system.

### **DO YOU HAVE A SEPTIC TANK SYSTEM?**

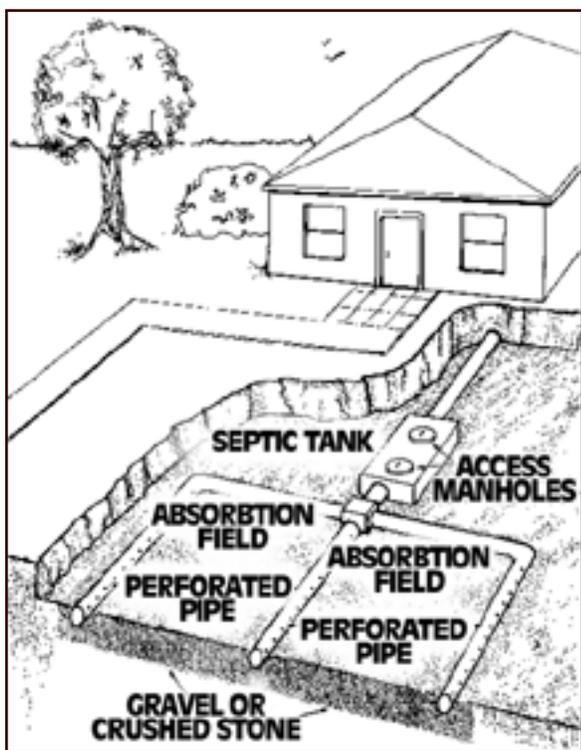
A little investigation may be necessary to find out if you have a septic tank system.

1. Contact the Department of Planning and Environment Protection. Please call 5191270. Maps of known septic tank areas have been recently completed; we should be able to tell you if you are on a septic tank.
2. Check your utility bill to see if you are being charged for wastewater treatment. If you are not, then you most likely have a septic tank system.

If you are being charged for sewers, it means that your servicing utility has installed a sanitary sewer collection system in your area and sanitary sewers are available for your property. In most cities connection to sanitary sewers is required and enforced. Contact the collection services division of the local servicing utility. Ask for their assistance in determining if your property is connected to a sanitary sewer. Ask if connections are required and if that requirement is enforced by your utility. If not enforced, then you may still be using a septic tank system and should continue your investigation as suggested below. If you determine that you do have a septic tank and sewers are available you should call your utility customer service and inquire about getting connected to sanitary sewers.

3. Contact your local building department. They may be able to provide a record of the building permit that was required for the plumbing work needed to connect to the sanitary sewer lines.
4. Hire a qualified and state registered septic tank contractor to assist you in your investigation. The Broward County Public Health Unit maintains a list of the registered contractors. The contractor can physically determine if you have a septic tank system and conduct an inspection to determine if it is in good operational condition.
5. Or find it your self.

Generally, septic tanks are located at a depth of two to four feet. The tank must be at least five feet away from the foundation of the house. Look in an area that is not obstructed by large trees, property lines, patios, etc. By probing the ground with a metal rod, you can usually locate the typical concrete septic tank. If the concrete is broken up into pieces, chances are that the tank has been intentionally destroyed, as required, and connection to the sewer main has been made.



### SEPTICTANK SYSTEM PROBLEMS

A major advantage of the septic tank is that it has no moving parts and needs very little routine maintenance. If properly operated and maintained the system should work for about 10 years to 20 years. But there are problems that may show up in the house plumbing, the septic tank, distribution pipes, and the soil absorption drainfield over time or if the system is improperly operated or maintained.

### DRAINFIELD FAILURE — THE MOST COMMON PROBLEM

The most common problem with septic tank systems is a failure of the soil absorption drainfield. The symptoms of a failed drainfield are many.

Sewage backups in the house plumbing or sluggish flow is either caused by a clogged pipe or a failed drainfield. Even if the sewage does not back up in the house plumbing, a drainfield that may not be functioning properly and the effluent may rise to the surface of the ground or enter the groundwater at too fast a rate. In either case, these types of failures can also be a threat to public health and potentially cause degradation of the water quality of nearby lakes, canals, and groundwater. For example, pooled effluent in your yard can be a health hazard to your children playing in the area. Also, it can be washed into nearby lakes, canals, rivers, and waterways where it may cause a hazard for those swimming' there. It may also impact the ecology of the water body.

It is estimated by the Environmental Protection Agency that as many as one-half of all existing septic tank-soil absorption systems in the United States are not operating satisfactorily. Over time, all drainfields will fail because the capacity of the soil to absorb effluent has been exceeded. The soil becomes clogged and the effluent will rise to the surface of the ground. However, premature failure most often results from failure of the home owner to periodically pump out the sludge from the tank. Sludge builds up in the tank and is eventually carried into the drain-field where it clogs the drain-field pipe. Water then backs up in the system or rises to the surface of the ground.

Failure of the soil absorption drainfield may also occur without any visible symptoms. In this case soils are rapidly overloaded with organic and inorganic chemicals and bacteria, which permits rapid movement of contaminants to groundwater.

## **WARNING SIGNS OF DRAINFIELD FAILURE OTHER PROBLEMS**

Leaks directly from the septic tank may be less apparent than failed drainfields but can also lead to problems. If tank leakage causes the level of the scum layer to drop below the level of outlet structure, excessive scum discharges can cause failure of the drainfield. In the extreme case, the sludge layer in the bottom of the tank will dry out and compact, and normal tank cleaning practices will not remove it. Another problem occurs when the tank is not watertight and allows rain water to seep into the tank. This causes an overloading of the tank and can lead to a clogged drainfield by the rain water pushing the solids into the drainfield pipe.

1. Low spots in the area above or near the drainfield.
2. Obnoxious odors ranging from a musty odor to a rotten egg odor to raw sewage odor.
3. The grass is much greener and lush above or near the drainfield.
4. Soggy grass in the area above or near the drainfield during dry periods.
5. Gurgling sounds in the plumbing.
6. Sluggish flow when flushing the toilet.
7. Backup of sewage in house plumbing.

## **WHO DO I CALL FOR HELP IF I HAVE A PROBLEM?**

If you need an inspection or repairs to an existing septic tank system, a state registered septic tank contractor or a state certified plumber should be called. The Broward County Public Health Unit maintains lists of State registered contractors and requires permits for all repairs and installations.

## **WHAT CAN I DO TO PREVENT PROBLEMS?**

Proper operation and maintenance is required to prevent problems and reduce the potential for groundwater contamination. These procedures are simply a matter of controlling the substances that enter the septic tank system. Every septic tank system is designed to handle a certain volume of flow and is able to treat only certain types of wastes. If a home owner is not aware of these limitations or does not operate the system properly, septic tank system failure and/ or groundwater contamination can result.

## **PROPER SEPTIC TANK OPERATION INCLUDES THE FOLLOWING:**

1. Do not over load the septic system. Systems are designed for a specified number of users and waste flow. Typically, septic tanks are sized according to the square footage of the home and the number of bedrooms, which relates to the number of people using the system and the amount of waste flow.
2. Dispose only domestic waste in a septic system. Standard septic systems are designed to handle flow from showers, washing machines, toilets, and sinks. Eliminating or reducing the amount of waste discharged to the septic tank will extend the life of the soil absorption drain-field, save money over the long run, and decrease the possibility of a system failure.
3. Septic tank systems are not able to treat pesticides and other household hazardous wastes such as paint products, stain removers, petroleum products, and cleaners. These chemicals will pass through the system and may contaminate ground water. Do not dispose of these substances down your sink, but take them to an authorized disposal center. Call Broward County Office of Integrated Waste Management (OIWM) at 765-4999 for the nearest location.
4. If you have a garbage disposal unit attached to your kitchen sink, don't use it or otherwise reduce it's use by discarding to your carry-out garbage such things grease, fats, coffee grounds, and waste foods. These wastes contribute to the buildup of solids in your tank and may increase the frequency with which your tank will need to be pumped.
5. Use "septic tank safe " products and eliminate wastes that don't easily degrade, such as paper towels, facial tissues, wet- strength towels, sanitary napkins, disposable diapers, and cigarette butts. Dispose of these

items in your carry-out garbage. Don't use your toilets as trash cans.

6. Eliminate the use of detergents with phosphorus and other filler solids. Install "suds-savers" in laundry machines. Ordinary amounts of non-chlorinated bleaches, lyes, caustics, soaps, detergents, and drain cleaners do not harm the system. However, some stronger household cleaning chemicals can damage the bacteria that treat and degrade wastes.
7. Special additives are not needed to improve or assist tank operation once it is under way. Some of these additives, which claim to eliminate the need for septic tank pumping, are not necessary for proper septic tank operations. There is no scientific evidence that biological and chemical additives aid or accelerate decomposition in the septic tanks; some additives may in fact be detrimental to the septic system or may contaminate groundwater.
8. Reduce the amount of water entering the system by installing water saving devices in your home. Reducing the amount of water that enters your septic tank will extend the life of the system. These devices may include:
  - low water-use toilets;
  - composting toilets;
  - reduced-flow shower heads and sink faucets;
  - clothes and dishwashers with adjustable cycles.
9. Consider installing a separate septic tank/drainfield system for the washing machine.
10. Reduce your water use by improving your water-use habits. For example, take shorter showers, turn off the water while brushing your teeth, and wash full loads in the dishwasher and washing machine.
11. Keep plumbing in good repair by eliminating all leaks and drips.
12. Maintain the minimum water pressure needed in the house so that appliances function properly, but no more than necessary.
13. Do not divert rain water from gutters or storm drains into septic tank systems.

## **PROPER MAINTENANCE**

Septic system owners must ensure that their systems are maintained properly. Even a well-designed and properly operating septic tank system will eventually fail if it is not also maintained. Regular maintenance can prevent failures such as clogging of the soil absorption drainfield and sewage backup into the home.

Tank maintenance involves measuring, pumping, and hauling sludge and scum from the septic tank system to a disposal facility.

Septic tanks should be inspected every two years to determine if solids need to be pumped out. An excess buildup of solids, scum and sludge, in the tank can lead to a clogged drainfield.

To ensure that the layer of solids has not exceeded "safe" levels, the amounts of scum and sludge should be measured. Regular inspections allow for a quick check of the structural integrity of the septic tank and will reveal whether tank pumping is necessary. State registered septic tank contractors or state certified plumbers can conduct these inspections.

A septic tank generally needs to be pumped if the scum layer is within eight inches of the bottom of the tank outlet device; and/or the sludge line is within 18 inches of the outlet device. A septic tank and drainfield will usually work satisfactorily until the sludge fills over 40% of the volume of the tank or the scum fills the available air space in the tank.

If inspections are not done every two years then the tank should be pumped out once every three to five years. The costs for pumping out your septic tank will vary depending upon the size of the tank. In Broward County the fees are between \$150 and \$300. Smaller tanks or more heavily used ones should be pumped out more frequently. You should only use a DPEP licensed septic hauler to ensure proper disposal of the waste. All DPEP licensed haulers display the license number on the rear of the truck.

**Other things that you can do to ensure a properly functioning system include:**

- know where your septic tank and drainfield are located;
- do not plant trees or shrubs on top of the septic tank or drain fields because roots can clog the drainfield and thereby reduce its ability to drain the septic tank effluent;
- do not park vehicles on top of the septic tank or drain-field, (this may damage the tank or crush the drainfield pipes);
- do not build structures or pave over the septic tank or drainfield (drainfields need to get air and do not function if they are sealed over);
- do not be careless and apathetic, doing so may require to replace a system before the end of its useful life, (10 to 20 years for soil absorption drainfield); and
- do not let your property value decline by letting underground and/or nearby lakes and canals become polluted from your poorly operated or maintained septic tank system.

## **PERMITTING PROCEDURES**

In Broward County, the Public Health Unit / Florida Department of Health and Rehabilitative Services conducts a septic tank system construction / repair permit program based upon Florida Administrative Code Chapter 10D-6. In this rule septic tank systems are generically referred to as "onsite sewage disposal systems (OSDS)". They also maintain a current listing of FHRS registered septic tank contractors. Guidelines for completing the application are given in [Table 1](#).

## **IT IS UP TO YOU.**

Responsible property owners who are educated in proper operation and maintenance practices of septic tank systems, and who are familiar with the consequences of system failures, make a positive contribution to the protection of our public health and environment. An added benefit to proper maintenance and operation is that you may also save money and maximize the lifetime of your septic tank system.

## **IMPORTANT PHONE NUMBERS**

For additional information, please contact the Department of Planning and Environmental Protection, at (954) 519-1400 or the Environmental Engineering Division of the Broward County Public Health Unit at (954) 467-4920

For information about Household Hazardous Waste Collection Centers, please call the Office of Integrated Waste Management at 765-4999

## **REMEMBER!**

### **DO:**

- conserve water
- pump tank regularly
- inspect system each time tank is pumped
- direct gutters away from drain field
- use registered septic tank contractors

### **DON'T:**

- use additives
- scrub or disinfect tank
- drive, plant trees, or build anything over the drainfield
- dispose of anything besides toilet wastes and the water used for bathing, laundry, and dish washing into your septic tank system

## Septic Tank Permit Checklist

### Construction Plans

Site plans need to be stamped by BCPHU office and DPEP prior to review by the local building department.

### HRS Form 4015

"Application for Onsite Sewage Disposal Construction Permit". Page 1 - "General/Building Information" completed by applicant and page 2, "Site Evaluation and System Specifications" completed by an engineer, BCPHU employee, or other qualified person.

The following attachments (17"x 14" maximum) must accompany the application:

#### Site Plan

Drawn to scale showing proposed size and location of the septic tank, drainfield, and unobstructed reserve area. Surface waters and existing / proposed wells must be shown.

#### Property Survey

Must specify Sea Level Datum reference point, elevation of adjacent road(s) crown, and site elevation. Location/distance of wells, septic systems, or surface waters within 75 ft. of the property must be noted. The survey must have a seal of a registered land surveyor.

#### Building Floor Plan

Residential buildings must show number of bedrooms and square footage of the building area. Non-residential buildings must show square footage, plumbing drains and fixture types, and any other information necessary to determine sewage flow.

#### New Commercial and Industrial Properties

must include a letter from appropriate utility specifying distance to nearest available sanitary sewer.

In addition to payment of an application fee, those areas with private water systems require an additional permit.

Questions regarding these permit guidelines should be addressed to the BCPHU Environmental Engineering Section at 467-4920.

*\*(Source of Information - Broward County Public Health Unit (BCPHU) / Florida Health and Rehabilitative Services.)*