

## MAINTAINING YOUR ONSITE WASTEWATER LAGOON SYSTEM

### DO

**Do** obtain necessary permits from the appropriate local agency before doing any construction or repairs.

**Do** use professional certified installers when needed.

**Do** keep your septic tank accessible for pumping and adjustment. Install risers if necessary. The covers should be locked or of sufficient weight to prevent a child from lifting them.

**Do** have your septic tank inspected annually and tank pumped out every 2 to 5 years by a professional contractor.

**Do** keep a detailed record of repairs, pumpings, inspections, permits issued and other maintenance activities.

**Do** conserve water to avoid overloading the system. Repair dripping faucets and leaking toilets, avoid long showers, and run washing machines and dishwashers only when full. Use water-saving features in faucets, shower heads and toilets.

**Do** divert other sources of water, like roof drains, house footing drains, and sump pump outlets, and driveway and hillside runoff away from the lagoon system. Use curtain drains, terraces, downspout extensions, retaining walls, etc. to divert water.

**Do** take leftover hazardous household chemicals to an approved hazardous waste collection center for disposal. Use bleach, disinfectants and a drain and toilet bowl cleaners sparingly and in accordance with product labels.

**Do** remove vegetation growing in lagoon. Trees, shrubs, cattails, and weeds reduces the capacity of the lagoon which can reduce quality of treatment.

**Do** maintain a 5' high fence around lagoon.

### DON'T

**Don't** go down into a septic tank for any reason. Toxic gases in the tank can be explosive and can cause asphyxiation.

**Don't** allow anyone to drive or park over any part of the system.

**Don't** allow the overflow from the lagoon to leave your property, even during wet weather. A grass cover will not only prevent erosion, but will help dispose of excess water.

**Don't** plant trees or shrubbery near the lagoon. This could cause shading, sludge buildup and increased odor levels. Decaying vegetation can lead to voids in lagoon berm and promote berm leakage.

**Don't** make or allow repairs to your lagoon system without obtaining the necessary permits.

**Don't** pour into drains any grease, cooking fats, chemical drain openers, paint, varnishes, solvents, fuels, waste oil, photographic solutions, pesticides, pharmaceuticals or other organic chemicals. These materials can upset the bacterial action in the septic tank or lagoon and pollute groundwater.

**Don't** use your toilet for trash as a trash can. Keep out coffee grounds, bones, cigarette butts, disposable diapers, feminine hygiene products, paper towels, facial tissues and other materials that decompose very slowly.

**Don't** add enzyme or yeast additives to the septic tank or lagoon in hopes of improving bacterial action. None have been proven beneficial and some actually cause damage to soil and vegetation and may pollute groundwater.

## MAINTAINING YOUR ONSITE WASTEWATER LAGOON SYSTEM



*Proper maintenance protects your family's health, saves you money, and guards area water quality*

### WHY A LAGOON SYSTEM FOR YOUR PROPERTY?

#### WHY MAINTAIN YOUR SYSTEM

**The first and most important reason to maintain your system is to protect the health of your family, your community and the environment.** Untreated wastewater from a failing system can contaminate nearby wells, groundwater, and drinking water sources.

**Significant health risks include hepatitis A, diarrhea, salmonella, giardiasis, tetanus, hookworm, cholera, dysentery, typhoid fever, and staphylococcal infections.**

**The second reason is money.** Failing systems are expensive to repair or replace, and poor maintenance is a common cause of premature system failure. Routine preventive maintenance costs very little compared to a system replacement. For example, a system inspection and maintenance, including pumping the tanks, costs from \$150-\$300. In contrast, replacing a failing system with a new one typically costs from \$4,500 to \$30,000, assuming you have enough property to install the replacement system. In addition, property values may drop when a system fails.

**The third reason is lack of alternatives.** A lagoon system was specified for your building location because of some limiting factor(s) in the soil or space constraints. You need to care for the system to keep it operating because there may not be any other legal and healthy ways to handle sewage at your location.



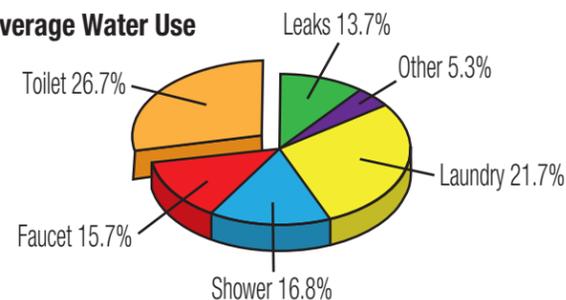
Many building sites are unsuitable for conventional septic tank systems because of a high water table, shallow depth to rock, heavy clay content, or restrictive layers in the soil.

A properly sized lagoon system can overcome these limitations because it permits treatment of effluent in the most cost effective method.

### IF YOU HAVE PROBLEMS

Even with the best maintenance some systems will eventually have problems. Call the Greene County Resource Management Department 868-4147 for advice on ways to address these problems.

#### National Average Water Use



Source: American Water Works Association Research Foundation. "Residential End Users of Water" 1997.

One of the best things you can do for your lagoon system is to reduce the amount of water flowing into it.

A typical family of four uses 250-300 gallons of water every day. You can reduce this figure with simple conservation measures.

- Repair leaking faucets or running toilets.
- Use clothes and dish washers only when full.
- Reduce length of showers and lower water level in baths.
- Turn off unneeded water when washing hands and brushing teeth.
- Install water saver fittings in faucets and shower heads.
- Install a low-flush toilet or toilet dam.
- Use water efficient appliances

Production of this fact sheet partially paid for by



Portions of the information contained in this fact sheet obtained through the National Small Flows Clearinghouse, West Virginia University, Morgantown, WV 265206-6064

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## How Does A Lagoon System Work?

A lagoon system consists of two components: a septic tank and a small earthen pond with a uniform 3-foot depth. A septic tank is a large, watertight, corrosion-resistant, buried container that receives raw sewage from the plumbing drains of the home. In it, solids are separated out of the raw sewage and are partially digested by anaerobic (oxygen-lacking) bacteria. After primary treatment in the septic tank, liquid effluent flows to the lagoon through a watertight pipe and discharges near the center of the lagoon bottom. Here the wastewater is further processed by aerobic (oxygen-loving) bacteria. Depending on weather conditions, the lagoon may discharge excess liquid, which must be disposed of on the property from which it originates. A grassed area surrounding the lagoon takes up these liquids, minimizing the potential for ground or surface water pollution.

## Sizing The Septic Tank and Lagoon

Septic tanks come in rectangular, oval or round shapes. The shape of the tank has little to do with its performance, but tank size is important. The retention capacity allows time for solids to properly separate from the liquids before the liquids pass into the lagoon. The minimum tank size is based on the number of bedrooms in the dwelling. If the dwelling has a hot tub or whirlpool, it is wise to add one bedroom of capacity for each of these fixtures present.

Minimum tank sizes will be adequate to handle all household wastes, including water from the toilet and kitchen drains, referred to as blackwater, and water from the bathtub, shower, sinks and laundry, which is called graywater. Larger tanks allow longer intervals between tank clean-out operations.

Lagoon size is determined by the number of bedrooms in the dwelling, but it should have a minimum water surface area of at least 440 square feet per bedroom or 900 square feet, whichever is greater, at a 3-foot operating level. When a properly sized septic tank precedes the lagoon, the lagoon water surface area may be reduced by up to 20 percent if approved by the regulatory agency.

If properly designed, installed and maintained, a lagoon system can effectively treat household wastewater for many years.

## Site Selection

Lagoons may be used where there are significant limitations related to groundwater and the soils are known to be impermeable. Many soils in Missouri have a high clay content, making them ideal construction materials for a lagoon. Some soils in southwest and south central Missouri contain a dense soil layer called a fragipan, underlain by extremely porous, cherty gravel and/or fractured bedrock. Use extra care in these soils not to breach the fragipan, or lagoon leakage could easily contaminate regional groundwater.

The process that takes place in a lagoon is a natural one, with microscopic plants and animals coexisting and dependent on each other. Lagoons should be located in open areas to allow sunlight and wind to provide oxygen for better treatment.

Eliminating unwanted vegetation (trees, cattails, brush) around your onsite wastewater lagoon stabilization pond is vital to the performance at the system. Vegetation roots can penetrate the pond's seal and cause leakage and contamination.

Figure 1

This Plan Shows A Square Lagoon; A Circular Shape Will Work Equally Well

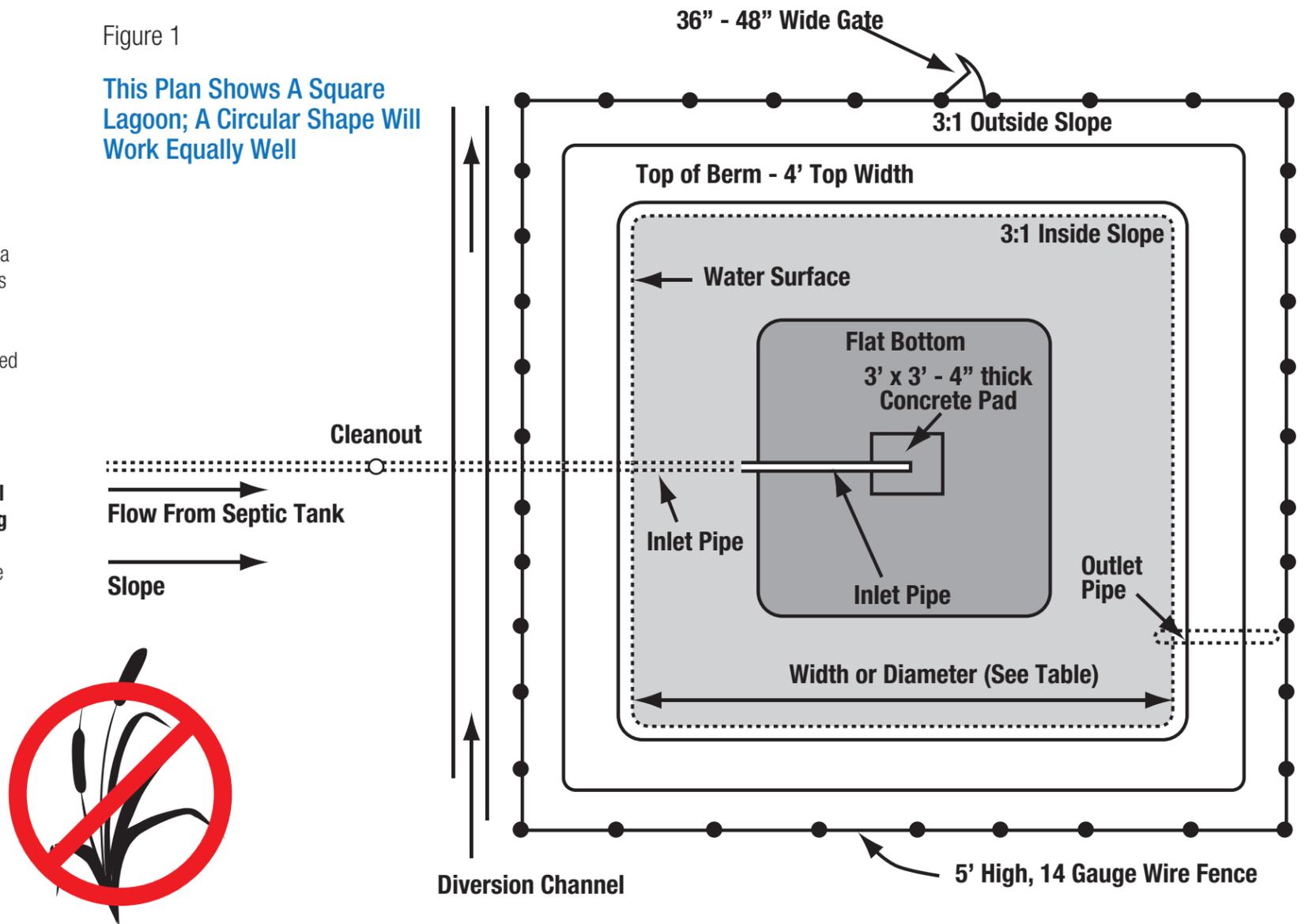


Figure 2

