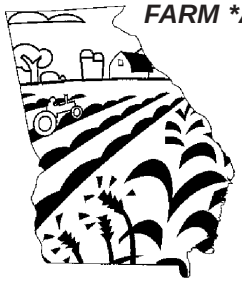
GEORGIA
FARM *A*SYST/ HOME *A* SYST



FARM ASSESSMENT SYSTEM

IMPROVING HOUSEHOLD WASTEWATER TREATMENT

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PRE-ASSESSMENT:

Why Should I Be Concerned?

Many rural and suburban homes and virtually all farmsteads use a septic system or similar onsite wastewater treatment system. While these systems are generally economical and safe, household wastewater can contain contaminates that degrade water quality for such uses as drinking, stock watering, food preparation and cleaning. A properly designed, installed, and maintained system minimizes the impact of that system on ground water and surface water. Potential contaminates in household waste water include disease-causing bacteria, infections viruses, household chemicals and excess nutrients. Viruses can infect the liver, causing hepatitis. They can also infect the lining of the intestine, causing gastroenteritis (vomiting and diarrhea). If coliform organisms (a group of indicator bacteria) are found in your well water, they show that the water is potentially dangerous for drinking and food preparation. Your septic system is one potential source of contaminants, along with livestock yards and other sources. The quantity of wastewater entering your septic system can also present an environmental concern. Too much water entering the system reduces it efficiency and can shorten its life. Your drinking water is least likely to be contaminated if you follow appropriate management procedures for your septic system and learn to recognize and correct problems when they occur.

How Does This Assessment Help Protect Drinking Water and the Environment?

- This assessment allows you to evaluate the environmental soundness of your farm and operational practices relating to your household wastewater.
- You are encouraged to work through the entire document and use all eight areas when completing the assessment.
- The assessment asks a series of questions about your household wastewater.
- The assessment evaluation uses your answers (rankings) to identify practices or structures that are at risk and should be modified to prevent pollution.
- The household wastewater application facts give an overview of sound environmental practices that may be used to prevent pollution caused directly by household wastewater.
- You are encouraged to develop an action plan based on your needs as identified by the assessment. The household wastewater facts, reference and publication list can provide alternatives to current practices.
- Farm *A*Syst is a voluntary program.
- The Assessment should be conducted by you for your use.
- No information from this assessment needs to leave your farm.

** Words found in italics are defined in the glossary.*

ASSESSMENT:

Assessing Your Household Wastewater Treatment System

For each category listed on the left, read across to the right and circle the statement that best describes conditions on your home and/or property. If a category does not apply, for example, if you don't have a well, then skip the distance question. Once you have decided on the most appropriate answer, look above that description to find your rank number (4,3,2 or 1) and enter that number in the "RANK" column. The entire assessment should take less than 30 minutes. A glossary is on page 11 to clarify words found in italics throughout this assessment.

IMPROVING HOUSEHOLD WASTE WATER TREATMENT					
	Low Risk (rank 4)	**Low-Mod Risk (rank 3)**	**Mod-High Risk (rank 2)**	**High Risk (rank 1)**	**Rank**
SYSTEM LOCATION					
In relation to well	Septic tank is more than 50 feet and drain field is more than 100 feet down gradient from the well.	Septic tank is more than 50 feet and drain field is more than 100 feet away and at grade or up gradient from the well.	Septic tank is less than 50 feet or drain field is less than 100 feet away and down gradient from the well.	Septic tank is less than 50 feet or drain field is less than 100 feet away and at grade or up gradient from the well.	
In relation to trees	No trees within 50 feet of absorption field.	Big trees within 25 to 50 feet of absorption field.	Big trees within 10 to 25 feet of absorption field.	Trees or shrubs within 10 feet of absorption field.	
In relation to soils under absorption field trenches	Medium or fine-textured soils (sandy clay loam, sandy clay)	Medium to coarse-textured soils (sandy loams, loamy sands, sand, fine sand, very fine sand).	Coarse sand, gravel.	Limerock	
SYSTEM MAINTENANCE					
Pumping out septic tank	Check scum and sludge levels each year or pump out every 3-5 years.	Check scum and sludge levels every 2 years or pump out every 4 to 6 years.	More than 6 years between pumpouts.	Don't know if ever pumped out or don't remember the year it was done.	
Traffic over system	Never driven vehicles or farm equipment over system.	Only occasionally drive light vehicles over system but never heavy farm equipment.	Frequently drive over system with light vehicles or occasionally with heavy farm equipment.	Routinely drive over system with heavy farm equipment.	
Roots plugging lines	Never had a problem with roots in system lines.	Have had one experience with roots pluggin lines.	Have had occasional experiences with roots plugging lines.	have had frequent experiences with roots pluggin lines.	
HOUSEHOLD PRACTICES					
Water use	Have water-saving fixtures, good maintenance of fixture leaks, and follow most water conservation recommendations.	Have some water-saving fixtures, fair maintenance of fixture leaks, but follow some water conservation recommendations.	No water-saving fixtures, poor maintenance of fixture leaks, but follow some water conservation recommendations.	No water-saving fixtures, poor maintenance of fixture leaks, and don't follow any water conservation recommendations.	

IMPROVING HOUSEHOLD WASTE WATER TREATMENT					
	Low Risk (rank 4)	**Low-Mod Risk (rank 3)**	**Mod-High Risk (rank 2)**	**High Risk (rank 1)**	**Rank**
HOUSEHOLD PRACTICES					
Garbage disposal	Don't use.	Minimum use (1-2 times weekly).	Medium use (3-5 times weekly).	Dailyi use.	
Kitchen sink	No disposal of grease, oil, fat or coffee grounds.	Minimum disposal of grease, oil, fat, or coffee grounds (1 time per week).	Moderate disposal of grease, oil, fat or coffee grounds (2-3 times per week).	Extensive disposal of grease, oil, fat or coffee grounds (almost daily).	
Toxic substances	Never dispose of paints, solvents, pesticides, etc., in system.			Disposal of paints, solvents, pesticides, etc., in system 1-3 times per year.	
Toilet	No disposal of paper towels, sanitary napkins, disposable diapers, cigarette butts, etc.	Occasionally dispose of paper towels, sanitary napkins, disposable diapers, cigarette butts, etc. (1-3 times per month).	Frequently dispose of paper towels, sanitary napkins, disposable diapers, cigarette butts, etc. (3-4 times per month).	Disposal of paper towels, sanitary napkins, disposable diapers, cigarette butts, etc. in toilet (more than 4 times per month).	
CONCERNS					
Septic system age	Less than 10 years old.	10-21 years old.	21-30 years old.	Over 30 years old.	
Sewer backkup into house of fiztures drain slowly	Never.	Sometimes--once per year or less.	Occasionally--1 to 3 times per year.	Frequently--more than 3 times per year.	
Sink, tub, shower, and wash water/grey water disposal	Goes into the main household septic system or into its own septic system.	***Piped to an outlet downgradient and 100 feet from any water source.*** **	***Piped to an outlet up gradient and greater than 100 feet from any water source.*** **	***Piped to an outlet up gradient from and within 100 feet of a water source.*** **	
Surfacing of sewage	Never notice.	Notice 1-2 times per year.	Notice more than 2 times per year.	Green grass, septic smell, and wet soil conditions exist around absorption field nearly all the time.	

***These conditions are in violation of state and/or federal law.**

Number of Areas Ranked _____
(Number of questions answered. there are a total of 15 questions.)

Ranking Total _____
(Sum of all numbers in the "RANK" column)

ASSESSMENT EVALUATION:

What Do I Do with These Rankings?

STEP 1: Identify Areas That Have Been Determined to be at Risk

Low risk practices (4s) are ideal and should be your goal. Low to moderate risk practices (3s) provide reasonable protection. Moderate to high risk practices (2s) provide inadequate protection in may circumstances. High risk practices (1s) are inadequate and pose a high risk for causing environmental, health, economic, or regulatory problems.

High risk practices, rankings of "1" require immediate attention. Some may only require little effort to correct, while others could be major time commitments or costly to modify. These may require planning or prioritizing before you take action. All activities identified as "high risk" or "1s" should be listed in the recommended action plan. Rankings of "2s" should be examined in greater detail to determine the exact level of risk and attention given accordingly.

STEP 2: Determine Your Wastewater Risk Ranking

The Waste Water Treatment Risk Ranking provides a general idea of how your household wastewater production practices might be affecting your ground and surface water or contaminating your soil.

Use the rankings total and the total number of areas ranked on page 3 to determine the Waste Water Treatment Risk Ranking.

RANKINGS TOTAL ÷ TOTAL NUMBER OF AREAS RANKED = WASTEWATER RISK RANKING

_____ ÷ _____ = _____

WASTEWATER RISK RANKING	LEVEL OF RISK
3.6 to 4	Low Risk
2.6 to 3.5	Low to Moderate Risk
1.6 to 2.5	Moderate Risk
1.0 to 1.5	High Risk

This ranking gives you an idea of how your wastewater treatment system and management practices might be affecting soil, surface and ground water. This ranking should serve only as a very general guide, and not as a precise diagnosis since it represents the average of many individual rankings.

STEP 3: Read the Information/Fact Section on Improving Your Wastewater.

While reading, think how you could modify your practices to address some of your moderate and high risk areas. If you have any questions that are not addressed in the Wastewater Treatment Facts portion of this assessment, consult the references in the back of the publication or contact your county Extension agent for more information.

STEP 4: Transfer Information to the Total Farm Assessment

If you are completing this assessment as part of a "Total Farm Assessment," also transfer your Wastewater Treatment Ranking and your identified high risk practices to the overall farm assessment

WASTEWATER TREATMENT FACTS:
Household Septic Systems

A properly installed and maintained system for treating and disposing of household wastewater minimizes the impact of that system on ground water and surface water. State and local codes specify how wastewater systems must be designed, installed and maintained. For example, Chapter 290-5-26 of the Rules of the Georgia Department of Human Resources, Division of Public Health sets forth the rules for siting, design, installation, and management of onsite wastewater treatment and disposal (septic) systems.

At a minimum, follow the code, but also consider whether the minimum requirement is sufficient for your site.

Septic tank/soil absorption system: The most common system

- The most common onsite wastewater treatment is a septic tank/drain field. In this system, wastewater flows from the household into an underground septic tank.
- There the waste components are separate—the heavier solids (sludge) settle to the bottom; the grease and fatty solids (scum) float to the top.
- Bacteria partially decompose and liquify the solids.
- Baffles in the tank provide maximum retention of solids, help prevent inlet and outlet plugging, and prevent rapid flow of wastewater through the tank, which allows for improved treatment.
- The more liquid portion (effluent) flows through an outlet to the soil-absorption field.
- The absorption field (i.e., drain field) is usually a series of parallel trenches, each containing a distribution pipe or tile embedded in drain field ravel or rock. A larger gravel-filled "bed" with several distribution lines within the gravel, called an "absorption bed," is also common.
- The effluent leaks out through holes in the pipe, then down through the drain field gravel or rock and into the soil.
- The soil removes remaining minute solids and pathogens (disease-producing microorganisms), provides treatment to remove pollutants, and dissolved substances percolate slowly down to ground water.

Figure 1 shows a typical household system for wastewater generation, collection, treatment and disposal.

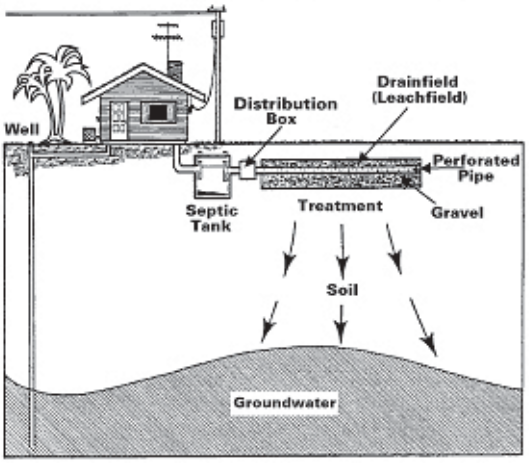

Figure 1. Farmstead or Home Septic Tank System (Adapted from Arkansas Farm*A*Syst)

QUANTITY OF WASTEWATER

Strategy: Minimizing household-wastewater volume.

Reducing the volume of wastewater entering the treatment system is important because: less flow (volume) means better treatment, longer system life and less chance of overflow. For holding tanks, less volume reduces costs by decreasing the number of times the tank has to be emptied. Water quantity used depends upon the number of people in the dwelling, water use, and water supply system maintenance. Average water use in rural households is 40-50 gallons per person per day. With low-use fixtures and individual awareness and concern, a reduction to fewer than 25 gallons

per person per day is possible. However, even conservative use by several people may exceed the capacity of the wastewater treatment system.

Consider the following ways to minimize water use:

- Eliminate non-functional uses, such as flushing toilets to dispose of tissues or other wastes that should be handled as solid waste. Turn off water between uses, fix plumbing leaks, and try to eliminate sources of clear water and infiltration into the system. (For example, divert roof drains away from the soil-absorption field.)

- Consider which actions use the most water. Toilet flushing usually ranks highest. Low flow models could decrease water use by more than half. In the United Sates, most states have plumbing codes that require 1.5 gallon or less toilets on all new construction. Composting toilets allow even greater reductions, but they can present other waste disposal challenges.

- Bathing and clothes washing are next in order of water use. For bathing, consider such reduction options as low-flow or controlled-flow showerheads, which give good cleaning with less water; shorter showers; and "wet-down-soap-up-without-water-then-rinse showers.

- For clothes washing, use a suds saver and run full loads. Front-loading washing machines use much less water. When running small loads, be sure to use the reduced water-level setting.

- Modern, efficient plumbing fixtures, including 0.5 to 1.5 gallon toilets, 0.5-2.0 gallons per minute (gpm) showerheads, faucets of 1.5 gpm or less, and front-loading washing machines of 20-27 gallons per 10-12 pound dry load offer the potential of substantial reduction in residential water use and wastewater generation. These reductions have commonly amounted to between 30 and 70 percent of total in-house water use (see Table 1).

Table 1: Water Use by Conventional Fixtures and Devices

Conventional Fixture	Gallons Used	Water-Saving Fixture/Device*	Gallons Used
Toilet	4-6 per flush	Air assisted toilet	0.5/flush
Faucets: Bathroom and Kitchen	4-6 per min.	Faucet flow-control aerators: Bathroom and Kitchen	0.5/min 1.5/min
Top loading clothes washer	40-55 per load	Front loading clothes washer	23-33/l-oad
Shower Head	4-6/min	Low flow shower head	2.0/min

** Installation of all these water-saving devices could reduce water use by about 35%. Source: Pennsylvania State Cooperative Extension Circular 302*

- In hard-water areas, the water softener may be a significant user of water. Proper adjustment and timing of the softener's regeneration mechanism can reduce excessive water use.

- Awareness of your family's water consumption and how each of you can reduce it is as important as the use of water conservation devices.

QUALITY OF WASTEWATER

Strategy: Minimize the amount and complexity of wastewater contaminates.

The quality of water refers to what is in the water, not the water itself. Even wastewater is more than "99.44% pure" water. Waste water usually contains relatively small amounts of contaminates, but they make a big difference in water's usefulness.

Contaminates found in wastewater include:

- Bacteria and viruses, some of which can cause disease in humans. These microorganisms are large enough to be removed by settling or through filtration in soil. Many die from the adverse conditions or aging in the system.

- Suspended solids, particles that are more dense (*sludge*) or less dense (*scum*) than

water. Most can be separated from liquid waste by allowing enough time in a relatively calm tank. Grease and fats are part of the suspended solids. Filtration beds and absorption systems can be clogged by wastewater high in suspended solids.

- Oxygen demand. The microorganisms that decompose organic wastes use oxygen. The amount of oxygen required to "stabilize" wastewater is measured as biochemical and chemical "oxygen demand." Wastes such as blood, mild residues, and garbage grindings have high oxygen demand. In the presence of oxygen and organisms, aerations and digestion processes produce stable, low-odor wastewater when given enough time. Wastewater with excess oxygen demand can cause problems of soil absorption fields, ground water, streams and lakes by reducing levels of oxygen.

- Organic solvents from cleaning agents and fuels may not be degraded or removed through treatment and can pass along with the wastewater back into the water supply.

- Nutrients. Nitrogen from human wastes and phosphorus from machine dishwashing detergents and some chemical water conditioners are the most notable. Nitrate-nitrogens are common ground water contaminates and phosphorus over fertilizes surface water.

Consider the following ways to improve wastewater quality:

- Minimize use of the garbage disposal unit. Garbage disposal use contributes a large load of suspended solids and organic matter to wastewater, as well as using additional water. (Georgia regulations require that *septic tank* capacity be increased by 50% where garbage disposal units are used.)

- Do not put items down drains that may clog septic tanks (fats, grease, coffee grounds, paper towels, sanitary napkins, tampons, disposable diapers).

- Do not put toxic substances in drains that might end up in the ground water, (solvents, degreasers, acids, oils, paints, disinfectants and pesticides.) Georgia regulations prohibit the use of strong bases, acids or organic solvents in the operation of a septic system. (This does not include bleach for disinfecting laundry or washing clothes worn for pesticide applications.)

- Do not use chemicals to clean or "sweeten" your system. They may interfere with the biological action in the tank, clog the *drain field* by flushing *sludge* and *scum* into the field or add toxic chemicals to ground water.

COLLECTION OF WASTEWATER

Strategy: Collect all wastes that need treatment.

Minimize loss of untreated waste. Exclude from the treatment system water that doesn't need treatment or disposal.

Leaking piping or treatment tanks ("leakage losses") can allow wastewater to return to the local water supply without adequate treatment. Infiltration of clear water overloads the system and dilutes the wastes. Don't allow water that doesn't need treatment (basement floor drain sumps, foundation drains, infiltration of rainwater, roof drainage) to add to your waste volume. Divert clear water, which doesn't require treatment away from the house well and wastewater treatment system.

PRETREATMENT SYSTEM

Septic tanks retain most of the suspended solids (*sludge* and *scum*) from wastewater. In the tank, bacteria digest and compact the *sludge*. The partially treated water moves on to additional treatment and disposal in the *drain field*. Design and construction of septic tanks influence their water tightness and effectiveness of retaining *sludge* and *scum*. Multiple tanks or chambers in series can improve *sludge* and *scum* removal.

Gas deflectors and filter screens or inclined-plate settling units help to minimize solids carryover. Tanks should be sized to accommodate at least 24 hours of wastewater flow, while still allowing for *sludge* and *scum* retention. Pumping the tank before it is more than one-third filled with *scum* and *sludge* improves system functioning. When the tank is pumped, you should also check the baffles and tank for leaks.

Aerobic (oxygen-using) biological systems and sand filters provide more extensive treatment of wastewater than the typical anaerobic (no oxygen) septic units. Aerobic biological systems improve solids separation, release volatile chemicals and reduce *sludge* volume. These systems are, however, more expensive to operate and maintain, and are more subject to problems caused by changes in wastewater quality or environmental conditions.

Holding tanks collect and hold the entire wastewater flow. Disposal is generally done by a licensed contractor who spreads the waste on the land at an approved site or hauls it to a municipal wastewater treatment facility. Tank size should allow for ample capacity to accommodate plumage and disposal at convenient and appropriate times especially for land spreading. When pumped, the tank should be checked for leaks.

ADDITIONAL TREATMENT

Strategy: Reduce concentration and amount of contaminates in the wastewater to expand options for appropriate disposal.

Aerobic systems and sand filters, described previously, provide a higher level of treatment for *sewage*. This yields a better-quality *effluent* suitable for a wider range of treatment options.

Sand filters improve the quality of wastewater after *septic tank* pretreatment. Effective treatment involves aerobic biochemical activity as well as physical filtration. Filters consist of 2 to 5 feet of sand (or other media) in a bed equipped with a distribution and collection system. Wastewater is applied by dosing, and may be recirculated to improve treatment.

Wastewater treated in sand filter systems is generally lower in bacteria, nitrogen, phosphorus, oxygen demand, suspended solids and organic matter than from a septic tank. The reduction amount depends on system design.

Pretreatment and quality of wastewater, hydraulic loading rate, depth and type of filter media, dosing frequency, temperature and distribution, and collection systems are all important considerations in designing filters. Maintenance includes resting, occasional raking, removal of clogged and crusted surface media, filter media replacement and attention to dosing equipment. These systems are used mainly in large volume applications, and are not normally used for households.

Nitrogen removal can be achieved through denitrification (conversion of nitrate to nitrogen gas) or ion exchange. Denitrification requires anaerobic conditions in the presence of more decomposable organic matter for bacteria to reduce nitrate to nitrogen gas for removal from wastewater. Denitrification and ion-exchange processes are not used extensively now because they are quite expensive to install, operate and maintain.

Disinfection systems kill disease-causing microorganisms in wastewater and are used where discharge to surface water is permitted. Chlorine, iodine, ozone and ultraviolet light systems are available for treament to good-quality effluents, such as those from properly functioning aerobic units and sand filters.

DISPOSAL OF WASTESWATER AND PUMPAGE (Septage)

Strategy: Disperse wastes, take advantage of additional treatment afforded by soil contact, and minimize opportunity for waste to contaminate water supplies.

Off-site disposal of wastewater (connecting to a municipal *sewage* system, hauling to a municipal treatment facility or land spreading) can help protect the local farmstead water supply. Discharging treated wastes to surface water from private systems is not permitted in Georgia. Improper management of waste on the farm site can endanger the health of others in your community. Also, it may eventually contribute to poor water quality at your well.

Subsurface treatment and disposal using soil absorption is the common practice for household wastewater following pretreatment in a *septic tank* or aerobic system. There are, however, sites where soil-absorption systems are not acceptable because of high or low soil permeability, depth to bedrock or the saturated zone, or to other factors.

Soils and separation from the water supply are important disposal factors. Unsaturated soils allow movement of air, helping keep the wastewater aerobic. A minimum of 2 feet of unsaturated soils is required for removal of bacteria. Finer-textured soils (clay loams and sandy clay loams, for example) retain water better than coarse textured soils such as sands or loamy sands. This allows plant roots to take up wastewater and nutrients, and allowing increased die-off of microorganisms. Coarse sandy soils may allow *effluent* to flow too quickly downward to ground water, which does not provide adequate time for filtering solids and pathogens from the liquid. Disposal sites that are more distant and down gradient from your well increase the isolation of your water supply from potentially contaminated ground water.

Disposal of pumpage from septic tanks and other treatment systems on site should follow similar rules as for wastewater. Sludges are more concentrated than treated wastewater, so lower application rates are recommended. The disposal methods and site are strictly regulated by Chapter 290-5-26 of the Rules of the Georgia Department of Human Resources, Division of Public Health. Land application of wastewater and *sludge* can only be done on permitted sites by approved companies. Approved sites for land application must meet requirements found in state and county codes and ordinances, including those for soil, depth to water table or bedrock, slope and distance from wells and residences. Matching nutrient applications to crop needs is critical. Contact your county Extension agent or private crop consultant for assistance in developing a waste-use plan.

ASSISTANCE WITH FAILING SYSTEMS OR NEW DESIGNS

If you suspect your household wastewater treatment system is backing up or your distribution system is clogged, first contact your plumber or *septic tank* installer, who may have suggestions for extending the life of your system. Your county health department is the office that permits repairs or replacements of wastewater treatment and disposal systems. Ensure that any contractor doing such a job has a state license, complies with state code and obtains the proper permit for such work.

Other suggestions:

- Do not use septic-tank cleaners that contain degreasing solvents like trichloroethylene (TCE). They can contaminate ground water.

- Do not place more soil over a soil-absorption field experiencing problems; this does not fix the system, and the *effluent* will soon surface again.

- Piping the *sewage* to the road ditch, storm sewer, stream or farm drain tile is illegal in Georgia because it pollutes the water and creates a health hazard.

- Running the *sewage* into a sinkhole or drainage well is illegal in Georgia and creates a health hazard by polluting ground water.

- Do not wait for the system to fail before pumping the *septic tank*. Once a system fails, it is not too late to pump the tank but the *drain field* may have to be replaced.

A properly designed, built and maintained septic system can treat wastewater effectively for many years. For more information on septic systems, contact your local health department (listed under county government), your county extension agent, your soil and water conservation district; and/or the state registered septic system contractors in you area.

If you need advice on alternative wastewater treatment systems, such as mounds, at-grades, graveless systems, sand filters and aerobic units, or if you would like to explore experimental systems, contact your county health department.

GLOSSARY:

Improving Household Wastewater

Absorption Field: The system for the finial treatment of the *septic tank effluent* and return of the treated wastewater to the hydrologic cycle. The *drain field* system includes the lateral lines or *sewage* disposal line, the perforated pipes, the rock or other aggregate material, and the *drain field* trenches or bed.

Drain field: An absorption field system for the final treatment of the *septic tank effluent* and return of the treated wastewater to the hydrologic cycle. The drain field system includes the lateral lines or *sewage* disposal line, the perforated pipes, the rock or other aggregate material, and the drain field trenches or bed.

Effluent: Liquid discharged from a *septic tank* or other treatment tank.

Scum: The accumulated floating material, including grease and other light solids, in a septic tank.

Septic tank: A single tank or series of tanks in which two processes take place: settling of the solids and the digestion of some of the accumulated solids.

Sewage: Any liquid wastes containing animal or vegetable matter in suspension or solution, including liquid wastes from toilets, kitchen sinks, lavatories, washing machines, and other plumbing fixtures.

Sludge: The settled solids that have separated from the liquid in a septic tank.

ACTION PLAN:

An action plan is a tool that allows you to take the needed steps to modify the areas of concern as identified by your assessment. The outline provided below is a basic guide for developing an action plan. Feel free to expand your plan if you feel the need for detail or additional areas not included. Consult the list of references on the next page if additional assistance is needed to develop a detailed action plan.

Area of Concern	Risk Ranking	Planned Action to Address Concern	Time Frame	Estimated Cost

REFERENCES:

CONTACTS AND REFERENCES			
Organization	**Responsibilities**	**Address**	**Phone Number**
Georgia Department of Human Resources, Environmental Health Section	Questions regarding state regulations related to on-site wastewater treatment systems.	2 Peachtree Street, NW 5th Floor Annex Atlanta, GA 30303	404-657-6534
County Health Department	Evaluate sites and issue permits for onsite wastewater treatment systems.	Location near you	Listed in local phone book under county government
Biological & Agricultural Engineering Department, University of Georgia	Questions related to septic systems and drinking water quality.	Extension Unit Landrum Box 8112, GSU Statesboro, GA 30460	912-681-5653
National Small Flows Clearinghouse	General information regarding on-site wastewater treatment and alternative technologies.	West Virginia University P.O. Box 6064 Morgantown, WV 26506	800-624-8301
Crop and Soil Sciences Department, University of Georgia	Questions related to the impact of farming practices on water quality.	Extension Water Qualilty Coordinator Plant Sciences Building Athens, GA 30602	706-542-9072

PUBLICATIONS:

Environmental Protection Agency (EPA)
Information Center
401 M Street SW
Washington, DC 20460

- Design Manual: Onsite Wastewater Treatment and Disposal Systems. 1980. U.S. Environmental Protection
- Agency. EPA Technology Transfer 625/1-80-012

University of Georgia
Cooperative Extension Service
Athens, GA 30602

- Septic Tank Design and Construction, Circular 819-2
- Septic Tank Maintenance and Care, Circular 819-3

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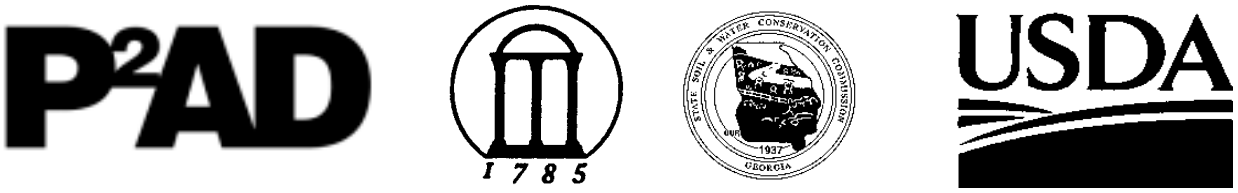

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