

# **PROPOSED GUIDELINES FOR LAND APPLICATION OF DOMESTIC SEPTAGE AT AGRONOMIC RATES**

## **INTRODUCTION**

Septage, which has been properly pretreated, may be beneficially used, as these solids are nutrient-rich organic materials that will provide nitrogen and phosphorus as well as trace amounts of micronutrients. The Georgia Environmental Protection Division (EPD) may permit the land application of domestic septage (septage) under controlled conditions. However, septage may contain pathogens or other contaminants that could potentially harm plants, animals, or humans if applied at too great a rate, or if managed improperly. Therefore, the objective of these guidelines is to allow for the utilization of the nutrients and other beneficial properties of septage while ensuring that the health and welfare of the population is protected.

These Guidelines address the permitting of septage application to land with a low potential for public exposure (i.e., agricultural land) based on nutrient (in most cases nitrogen) uptake of the crop, unless the application is limited by other parameters. The type and the condition of the soil and cover crop, topography, and other properties of the septage will determine the application rate. The septage must meet pollutant concentration limits, pathogen reduction, and vector attraction reduction requirements located in Federal Regulations 40 CFR Part 503 and State of Georgia Rules Chapter 391-3-6-.23. In addition to this, the septage must be screened and stabilized prior to land application.

## **REQUIRED INFORMATION**

When an applicant proposes to land apply septage, they must submit the following to EPD's Permitting, Compliance & Enforcement Program (PCEP):

1. A proposed septage management plan;
2. An executed trust indenture, if the treatment system is privately owned;
3. A proposed plan for closure of the site; and
4. A signed Notice of Intent for Coverage Under General Permit GAG620000 for Land Disposal of Domestic Septage.

Upon receipt of the required information, a site inspection to determine the general acceptability of the proposed site will be conducted by EPD or its representative. Following the site inspection, the complete information will be reviewed and if it is found to be acceptable, a Public Notice will be sent to the applicant by PCEP to publish in one or more newspapers of general circulation in the area of the project. A public notice of this proposal will be included on EPD's Public Advisory (a mail out) and a statewide public notice will also be posted by PCEP at [www.gaepd.org](http://www.gaepd.org). After review of all comments received during the public notice comment period, a decision will be made either to hold a public hearing, or to formally proceed with issuance, modification or denial of coverage under the septage general land application permit (general permit). If the permit coverage for this facility is appealed, coverage under the general permit is void until the appeal is resolved and a final

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permit is issued.

Please note that while the complete application package should be submitted to PCEP to initiate the permit process, review of the septage management plan and closure plan is by EPD's Engineering & Technical Support Program (ETSP), and that comments furnished to the applicant by ETSP require a response to ETSP. See the comment letter for the name of the ETSP engineer to which responses should be sent.

## SEPTAGE MANAGEMENT PLAN

1. **Maps.** Provide a detailed site map that includes the location of the proposed land application site(s), and a topographic map with 2-foot contours that indicates the following:
  - a. Property boundaries of the application site(s) showing buffer areas and distances;
  - b. All roads, both adjacent and internal to the site;
  - c. 100-year flood plain elevation and contour, and documentation as to how it was determined that these sites were not within the 100-year flood plain;
  - d. Location of residences and other buildings on or within 1,000 feet of the proposed site(s);
  - e. Location of any wells, public and private, on-site or within 1,000 feet of the proposed site(s);
  - f. All surface water (ponds, lakes, rivers, streams, etc.);
  - g. Surface water intakes downstream of the land application sites;
  - h. Natural or manmade drainage areas, including intermittent streams/ditches;
  - i. All proposed public access areas;
  - j. Total and useable acreage (excluding buffer areas and unsuitable soils) of the site;
  - k. GPS coordinates of the property corners; and
  - l. Location of the pretreatment system, property boundaries, and the pretreatment system's relationship to the land application site(s).
  
2. **Soils information.** Provide a site specific soils survey map with the site clearly located with the following information:
  - a. Soils series. Describe the name of the soil series determined at the site, texture, permeability (absorption rate for each horizon), slope, drainage, depth to seasonal high water table, and erodibility.
  
  - b. Soils report. Include the site soil boring/test pit logs that document the texture, color, soil structure shape and grade, and consistency of each observed soil horizon. Each horizon shall be designated using master horizon nomenclature (i.e., O, A, E, B, C, R) with appropriate subordinate distinctions (e.g., t, v, g, x, h). The slope and landscape position at each soil

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boring/test pit shall be indicated on the log. The seasonal high groundwater table, bedrock or other impervious soil layer of the septage disposal site must be a minimum of 42 inches from the undisturbed ground surface. The soils investigation shall be performed by a Georgia professional engineer, professional geologist, or certified soils scientist, and shall bear the seal (if appropriate) and signature of the responsible individual in charge.

3. **Soil analytical results.** Enclose a copy of the soils analysis report (completed within the last six months) for the items listed below. For the soil analysis, a minimum of one (1) composite soil sample for each 15 acres must be provided. A composite soil sample should consist of a minimum of 15 soil cores. The soil cores should be collected randomly over the sample area and spaced out to get accurate soils representation. All soil borings must be bored to a depth of 72 inches, unless a refusal layer is encountered. If an area contains more than one soil type, collect a composite sample from each soil type. The soil analysis must be performed by a certified wastewater laboratory or in a commercial environmental laboratory that is approved under EPD's Rules for Commercial Environmental Laboratories. The laboratory results must be on the laboratory's letterhead, and the specific analytical method must be shown. A copy of the lab data sheets may also be required, if requested by EPD.

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|-----------------------------|--------------------|
| a. pH, standard units       | i. Chromium, mg/kg |
| b. Total Nitrogen, %        | j. Copper, mg/kg   |
| c. Total Phosphorus as P, % | k. Lead, mg/kg     |
| d. Total Potassium as K, %  | l. Mercury, mg/kg  |
| e. Calcium mg/kg            | m. Nickel, mg/kg   |
| f. Magnesium, mg/kg         | n. Selenium, mg/kg |
| g. Arsenic, mg/kg           | o. Zinc mg/kg      |
| h. Cadmium, mg/kg           |                    |

4. **Septage analytical results.** Include a summary table (Table 1, attached) of the laboratory results of a representative sample of septage and a copy of the laboratory letterhead showing the specific analytical methods used in the testing. The testing must be performed by a certified wastewater laboratory or in a commercial environmental laboratory that is approved under EPD's Rules for Commercial Environmental Laboratories. A copy of the lab data sheets may also be required, if requested by EPD.
5. **Methods of pathogen control and vector attraction reduction.** Specify the means to be used to demonstrate compliance with the pathogen control and vector attraction reduction requirements [Rules and Regulations for Water Quality Control, Chapter 391-3-6-.23 (8) and (9)]. Provide supporting documentation.

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6. **Endangered species determination.** Provide the results of an evaluation as to whether or not the applied septage or any construction associated with the septage facility will adversely affect any threatened or endangered species, or its designated critical habitat as addressed in Section 4 of the Federal Endangered Species Act and Georgia's Endangered Wildlife Act.
7. **Septage characterization.** Describe the sources of the domestic septage from each establishment. These can include waste from toilets, baths, showers, sinks, garbage disposals, dishwashers, and washing machines.
8. **Quantity of septage to be applied each year.** Include a planting and harvesting basis for specific crop types and calculations of the agronomic application rate. For application of liquid septage, the quantity should be reported in gallons per acre per year with the percent solids being specified. For dewatered septage, the quantity should be reported in pounds per acre per year on a dry weight basis with the percent solids being specified. In no case may septage be applied in a manner that will allow it to run off-site or run into the waters of the State.
9. **Previous land use statement.** Indicate if municipal biosolids, industrial biosolids, solid waste, chicken litter, etc., have been applied/disposed of at this site. If so, provide the date and quantity of the most recent application.
10. **Future land use statement.** State if the land will be used for grazing. If not, state the future use of the land.
11. **Notarized letter.** Include a notarized letter of agreement between the applicant and the site owner(s) that includes any site restrictions. The address of the property, contact name and phone numbers of the applicant and the site owner(s) must be included in the letter.
12. **Method of applying the septage and description of operational procedures.** Provide the method that will be used to transport the septage to the application site and the route to be taken. Indicate whether roads are paved, gravel, or dirt. State the truck size, type, and the range of possible application rates. State whether the septage will be injected or incorporated, and how that will be accomplished. State how the septage will be distributed without compacting the soils of the application areas.
13. **Description of pretreatment.** At a minimum, the following pretreatment must be provided at the land disposal site:
  - a. **Screening.** Provide a 1/4-inch maximum screen size. No grinding of the septage will be permitted. Provide a letter from the landfill that indicates they are willing to accept the screenings.

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- b. Lime stabilization. All septage must undergo stabilization within six hours of arrival at the facility. A minimum of 50 lbs. of lime/1000 gallons is to be used. Address lime storage and mixing. Describe lime storage in detail, including the tankage size with the type and size of the mixer. Stabilization does not take the place of the pathogen and vector attraction reduction requirements delineated in Chapter 391-3-6-.23(8) and (9).

**Note:** Hydrated lime is calcium hydroxide that is roughly 70% calcium oxide and 25% chemically combined water. Quicklime is 100% calcium oxide. It is more corrosive than hydrated lime and is reactive when mixed with water, producing excessive heat. Quicklime should never be added to a septic tank or pumper truck for this reason. Agricultural lime (calcium carbonate) does not have the strength or potency needed to condition septage. Hydrated lime is typically preferred to condition and/or stabilize septage because of its availability, low cost, and ease of handling.

14. **Facility diagrams.** Provide a process flow diagram and site layout of the facility. Show and describe the specific disposal location of all decant and dewatering streams.
15. **Description of facility equipment.** All storage vessels and areas where septage is exposed must be enclosed, and ventilated at a minimum of 6 air changes per hour (based on empty volume) through an odor control system. Describe the odor control system in detail and give the size and model numbers of the proposed equipment. Include odor control for the storage vessels and the screenings.

Equipment must be permanently installed on appropriate foundations. Piping must be firmly and permanently supported. Provide detailed information on the unloading, treatment, storage and offloading equipment. Address the unloading of septage to the treatment facility and the means provided to minimize spillage. Tankage must be provided with containment. Address on-site storage facilities for inclement weather. Include the size of the tankage and calculations that support the size selection.

Address safety items such as emergency eyewashes, potable water service, and backflow protection.

16. **Description of truck access.** Truck offloading and loading areas shall be equipped with concrete or asphalt pads and wash down water. These pads shall be sloped to drain and any storm water and/or spillage that occurs on the pad must be collected

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and treated or disposed of in a manner approved by the Division. Submit details of how this water will be handled.

17. **Description of method used to restrict access.** State that the site(s) will be fenced or explain the means that will be used to restrict access to the land application site(s) and pretreatment facility.
18. **Groundwater well map.** Attach a map that includes numerical identification of all proposed groundwater monitoring wells and their location, and defines the boundaries of the site(s). Subsurface geology and the direction of groundwater flow determine the placement and depth of the monitoring wells. A minimum of 1 upgradient and 3 downgradient wells is required. Groundwater monitoring wells should be identified by the following symbols: Upgradient wells - U1, U2, U3, etc; midfield wells - M1, M2, M3 etc; downgradient wells - D1, D2, D3, etc. All monitoring wells must extend to sufficient depth to sample seasonal fluctuations of the unconfined water table. Monitoring wells must be provided with casings and screens. The casing must be backfilled and sealed to prevent the entry of surface water. This seal should include a concrete apron that slopes from the center to the edge surrounding the well at the surface. Monitoring wells must be numbered and locked.
19. **Public meeting minutes and proof of advertisement.** At least one public meeting to inform the public about the proposed project must be held by the applicant with the purpose of discussing the land application of septage. The meeting must be advertised in the local newspaper in the county where the site(s) is proposed, at least thirty days prior to the date of the meeting. Furnish proof of advertisement, an attendance list, any comments received, and the response to comments to ETSP for review.
20. **Certification and signature of the applicant.** The certification must be signed by the applicant, and must include the printed name of the applicant, their title, and the date of signature. Include the following:

"I certify under penalty of law that this document and all attachments were prepared under direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

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21. **Engineer's seal and signature.** The engineering material in the Septage Management Plan must be signed and sealed by a professional engineer registered in the State of Georgia.

### RECHARGE AREAS, KARST TOPOGRAPHY, AND FLOOD PLAIN

Septage may not be applied to sites that contain areas with karst topography or sinkholes, or "most significant groundwater recharge areas." Refer to the Georgia Department of Natural Resource Hydrologic Atlases 18 & 20 to map groundwater recharge areas. Septage may not be land applied within the 100-year flood plain, and septage facilities may not be located within a 100-year flood plain.

### SLOPE

Topography and soil types influence the amount of soil erosion and potential runoff of applied septage. No septage may be applied to slopes greater than 10%. In no case may septage be applied in a manner that will allow it to run off-site or run into the waters of the State.

### TRANSPORTATION

Those vehicles that are to be used for the transportation of liquid septage (from the point of origin to the application site) must be permitted by a county health department in accordance with the Department of Human Resources Public Health rules and/or guidelines. All septage must be transported and applied to a permitted site in a manner as outlined in the septage management plan and as permitted by EPD.

### APPLICATION AND STORAGE

The rate of septage application must be adjusted as necessary to prevent run-off of septage into buffer areas or waters of the State. Septage shall not be applied to a site that is frozen, flooded, snow-covered, or without an established cover crop. If rain is imminent or if the soil is saturated, then septage application must be delayed. If the septage must be stored due to weather or operational concerns, it may be stored only in accordance with the approved septage management plan and for a period not to exceed 15 days. Storage must not result in runoff, odor complaints, or other environmental problems.

### SITE ACCESS AND CROP RESTRICTIONS

Details of the restrictions can be found in Chapter 391-3-6-.23.

1. Food crop harvesting restrictions depend upon crop type. Feed and fiber crops also have restrictions.
2. No grazing shall be allowed on the site for 30 days after septage application. Before grazing is permitted, a cover crop must be established.
3. Turf grown on land on which septage is applied shall not be harvested for one year after application of septage.
4. Public access to the site shall be restricted for 30 days after septage application. The restriction shall be by fencing or other means approved by the Division.

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5. The site shall be posted with "No Trespassing" signs as specified in the regulations.
6. Additional restrictions may be added at EPD's discretion.

### BUFFERS

An undisturbed vegetative buffer strip at least 50 feet wide shall be maintained along all streams and drainage ditches within or adjacent to the land application site. If a publicly accessible site is within 1,000 feet of the facility and/or application site, a vegetative barrier (e.g., trees) shall be planted and maintained at the property border that reduces neighbors' views and to minimize transport of odor due to wind pattern changes. The following chart shall be used to determine the normal buffer zone requirements for other items:

Public Use Land	Property Line	Waters of the State <sup>(1)</sup>	Wells, Public/Private <sup>(2)</sup>	Exterior Roadways	Dwellings
300 feet	300 feet	300 feet	500 feet	300 feet	300 feet

(1) Waters of the State are defined in Chapter 391-3-6-.03 as any and all rivers, streams, creeks, branches, lakes, reservoirs, ponds, drainage systems, springs, wells, wetlands, and all other bodies of surface or subsurface water, natural or artificial, lying or forming a part of the boundaries of the State which are not entirely confined and retained completely upon the property of a single individual, partnership, or corporation.

(2) All wells within 1,000 feet of the site must be identified. Additional buffer areas may be required in accordance with the Wellhead Protection Act. Deviations may be approved by EPD on a case-by-case basis.

### OTHER PERMITS

Other permits (local, state, and federal, as applicable) may be required, such as, building permit, land disturbance permit, etc.

**NOTE:** The need for additional information will be determined on a case-by-case basis, and EPD reserves the right to make a final decision after all requested information has been submitted.

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**Table 1, Septage Representative Sample Analytical Results**

Sample Date  _____	Pollutant Concentrations  Wet Weight	Pollutant Concentrations  Dry Weight
Arsenic, mg/kg		
Cadmium, mg/kg		
Chromium mg/kg		
Copper, mg/kg		
Lead, mg/kg		
Mercury, mg/kg		
Nickel, mg/kg		
Selenium, mg/kg		
Zinc, mg/kg		
Total Suspended Solids, mg/l		
Ammonia as N, %		
Nitrate as N, %		
Total Kjeldahl Nitrogen, %		
Total Nitrogen,%		
Total Phosphorus as P, %		
Total Potassium as K, %		
Total Solids, %		
Volatile Solids, %		
pH, standard units		