

**Soil Suitability for Domestic Sewage Treatment and Disposal Systems  
Lot 2 & Lot 3 Bob Daniel Road  
Granville County, North Carolina**

PREPARED FOR: Mr. Michael Satterfield

PREPARED BY: Derrick A. Smith, LSS, REHS

DATE: December 8, 2023

Soil suitability for domestic sewage treatment and disposal systems was evaluated on December 8, 2023 on Lot 2 and Lot 3 near 6174 Bob Daniel Road in Granville County. I, Derrick Smith, a NC licensed soil scientist conducted the soil evaluation. This was performed at your request as part of the preliminary planning process in order to determine an area(s) of soil with potential for an accepted/conventional, subsurface wastewater septic system for a four bedroom single family residence.

I traversed portions of the two properties and observed landforms (slope, drainage patterns, past use, etc.) as well as soil conditions (depth, texture, structure, seasonal wetness, restrictive horizons, etc.) through the use of hand auger borings. The site was evaluated during dry soil conditions. From these observations, an evaluation of the site, relative to subsurface disposal of wastewater, was developed. The soil/site evaluation criteria used is that contained in 15 A NCAC 18A .1900 "Laws and Rules for Sewage Treatment and Disposal Systems".

**FINDINGS**

These two lots consists of open field areas with a pond surrounded by recently timbered hardwood trees and pines. Due to past farming and timbering activities, soil compaction in the upper part of the subsoil is present. The soils on these lots within the areas shown as being provisionally suitable (P.S.) is similar to a Cecil/Wedowee soil series. Please reference the attached site sketch map for the approximate location of the P.S. soil areas. The soils within these areas contained soils with a usable soil depth of at least 24-30+ inches deep that can be utilized for an accepted wastewater system. Soil borings were provisionally suitable with respect to restrictive horizons, i.e. no restrictive horizons were found in any borings within the provisionally suitable soil areas. Soil structure was provisionally suitable and was estimated to be granular near the soil surface and subangular to angular blocky in the subsoil.

The site plan for each lot must ensure that adequate soil area for the system and repair is unaffected by onsite and offsite elements (house placement, driveway, wells, patios, decks, etc.). The area ultimately designated by the Granville County health department on the site plan for the septic system and repair must remain undisturbed (no mechanical clearing, excavation, heavy traffic or other significant site disturbing activities) until authorized by the Granville County health department. A property with initially adequate

useable soil area may be rendered unusable as a result of improper site planning and/or disturbance.

Final site approval for issuance of improvements is based on regulations in force at the time of permitting and is dependent on satisfactory completion of individual site evaluations following application for an improvement permit detailing a specific use.

### **GENERAL WASTEWATER CONSIDERATIONS**

Once potentially useable areas are located through vertical borings and/or backhoe pits, the next consideration is the horizontal extent of those areas. The size and configuration of the useable soil areas dictate the utility of that area. The size of a subsurface disposal field is determined by : 1) the design flow from the source (120 gallons/bedroom/day in residences), and 2) the long term acceptance rate (LTAR) of the soil (based on the hydraulic conductivity of the soil, a functions of the soil's texture, mineralogy, structure, porosity, etc.). The configuration must be such that an efficient layout of disposal lines (on contour) is possible. An additional consideration is the required setbacks for the system from various elements such as wells (100'), streams and ponds (50') or more (depending on watershed regulations), property lines (10'), top of embankment (15'), watershed buffers, etc.

The utility of a potential useable soil area for a subsurface system is most accurately determined by an on-ground layout of the proposed system. The total area needed for system and repair areas will depend upon the system type, the layout of that system and the total design flow (factors mentioned above). A typical area needed for a four bedroom residence is approximately 12,000 to 16,000 ft<sup>2</sup> (could be more depending on site features) or 960 linear feet of accepted line (system and repair). These estimates reference Laws and Rules for Sewage Treatment and Disposal Systems for North Carolina and use a LTAR of 0.25 gpd/ft<sup>2</sup> for conventional septic systems (.1955), and a LTAR of 0.25 gpd/ft<sup>2</sup> for modified conventional septic systems (.1956). The health department will determine the ultimate LTAR after their site evaluation.

This report discusses the general location of potentially useable soils for on-site subsurface wastewater disposal and, of course, does not constitute or imply any approval or permit as needed by the client from the Granville County health department. As a licensed soil scientist, I am hired for my professional opinion in these matters. The rules governing wastewater treatment (interpreted and governed by local and state agencies) are evolving constantly, and in many cases, affected by the opinions of individuals employed by these governing agencies. Because of this, I cannot guarantee that areas delineated and/or systems designed will be permitted by the governing agencies. As always, I recommend that anyone making financial commitments on a lot be fully aware of individual permit requirements prior to final action.

An individual septic system permit will be required for each lot prior to obtaining a building permit. This will involve a detailed evaluation by the Granville County health department, or a licensed soil scientist, to determine, among other things, system size and

layout, well, drive and house location. Only after developing this information can a final determination be made concerning specifics of system design and site utilization. A pump septic system may be required depending on the location of the house in relation to the septic field area. Also be advised that some areas are rocky and contains boulders. Areas not shown as provisionally suitable for an accepted/conventional subsurface septic system may be utilized using a different system technology like subsurface drip. However, additional fieldwork will be required in areas not shown on the map as being provisionally suitable.

Please also be advised that there may be pockets of unsuitable soils not detected during this initial evaluation. I am pleased to be of service in this matter and I look forward to assisting in any site analysis needs you may have in the future. Please feel free to call with any questions or comments.

Sincerely,



12/08/23

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