

April 10, 2026

TO: Tyler Broughton
315 Dawson St.
Wilmington, NC 28401

RE: Preliminary soil and site suitability evaluation of the 1.09 ac parcel off Gurganus Rd., Maple Hill, Onslow County, NC. Parcel #: 061952. Job #:P.ENV0007722

Dear Tyler,

On Wednesday April 1st , 2026, Davey Resource Group (DRG) evaluated the 1.09 acre parcel off Gurganus Rd. in Maple Hill, NC. The purpose of the evaluation was to determine the suitability of the soil resources for onsite wastewater for the possible subdivision for the possibility of two residential dwelling on the property. Multiple shallow auger borings were observed, and limited soil information was collected. The property corners were not marked in the field. Accordingly, a GIS tax parcel boundary along with a hand-held GPS was utilized to determine the location of review during the evaluation. We utilized the 15A NCAC 18E laws and rules for subsurface wastewater application and the Southeast Regional Supplement to the US Army Corps of Engineers Wetland Manual as guides. Per NC State regulations, soil evaluations include and must meet the following for a location to be deemed suitable for subsurface onsite septic systems- landscape position, soil characteristics (structure, color, and mineralogy), soil wetness condition (SWC), restrictive horizons, and available space. The findings for this evaluation are cursory only. This information is our best professional judgement on whether septic system(s) for residential home(s) are feasible for this property. Accordingly, I offer the following guidance.

Generalized Septic System Requirements

Each septic system drain field type requires different soil characteristics and has limiting soil conditions. In sandy soils a shallow conventional gravel system, chambers, and EZ Flow polystyrene require 30 inches of suitable soil and depth to the soil wetness condition (SWC). Loamy or clayey soils require 24 inches to the SWC for conventional systems. Low pressure pipe (LPP) requires 24 inches to SWC. T&J Panel Block is an alternative gravel aggregate that reduces the drain field area by 50% and requires 26 inches to SWC for all soil types. Fill mounds for both gravel, T&J Panels, or LPP require 12 inches to SWC and 18 inches of suitable structure. Drip irrigation requires 13 inches to SWC and 18 inches of suitable structure. Additional note on drip irrigation systems: while they can be a way to maximize the suitable soil area on a lot, also they are costly to maintain, require a pump and bi-yearly maintenance contract.

Reduction systems and configurations such as T&J Panels, Chambers, EZ Flow, or bed configurations may be considered to reduce the overall size of the drain field. These system types can reduce the amount of linear line length and field area by 25% to 50%.

A residential structure will have a flow rate of 120 gallons per day (gpd) per bedroom. For example, a 3-bedroom home will have a residential flow rate of 360 gpd. Any lot in North Carolina recorded after January 1, 1983, requires area for an initial system to be installed and repair field area to be set aside in the instance of failure of the initial. The gpd of a home along with the estimated long-term acceptance rate (LTARs) and depth to the soil wetness condition (SWC) of the soil are used to calculate the size and parameters of a system for the different soils identified on the lot that will be described below.

Description

The tract that was evaluated is approximately 1.09 acres and shown in the red outline in Figure 1. The property contained moderate vegetation with mature hardwoods and sparse to thick understory in some places. The topography of the tract consisted of a higher region towards the southeastern property corner. Potential wells were identified within the property to the north and east. Adjacent property well records show no wells on the site and no wells within 50ft of this site. This should be confirmed with neighboring property owners prior to planning.

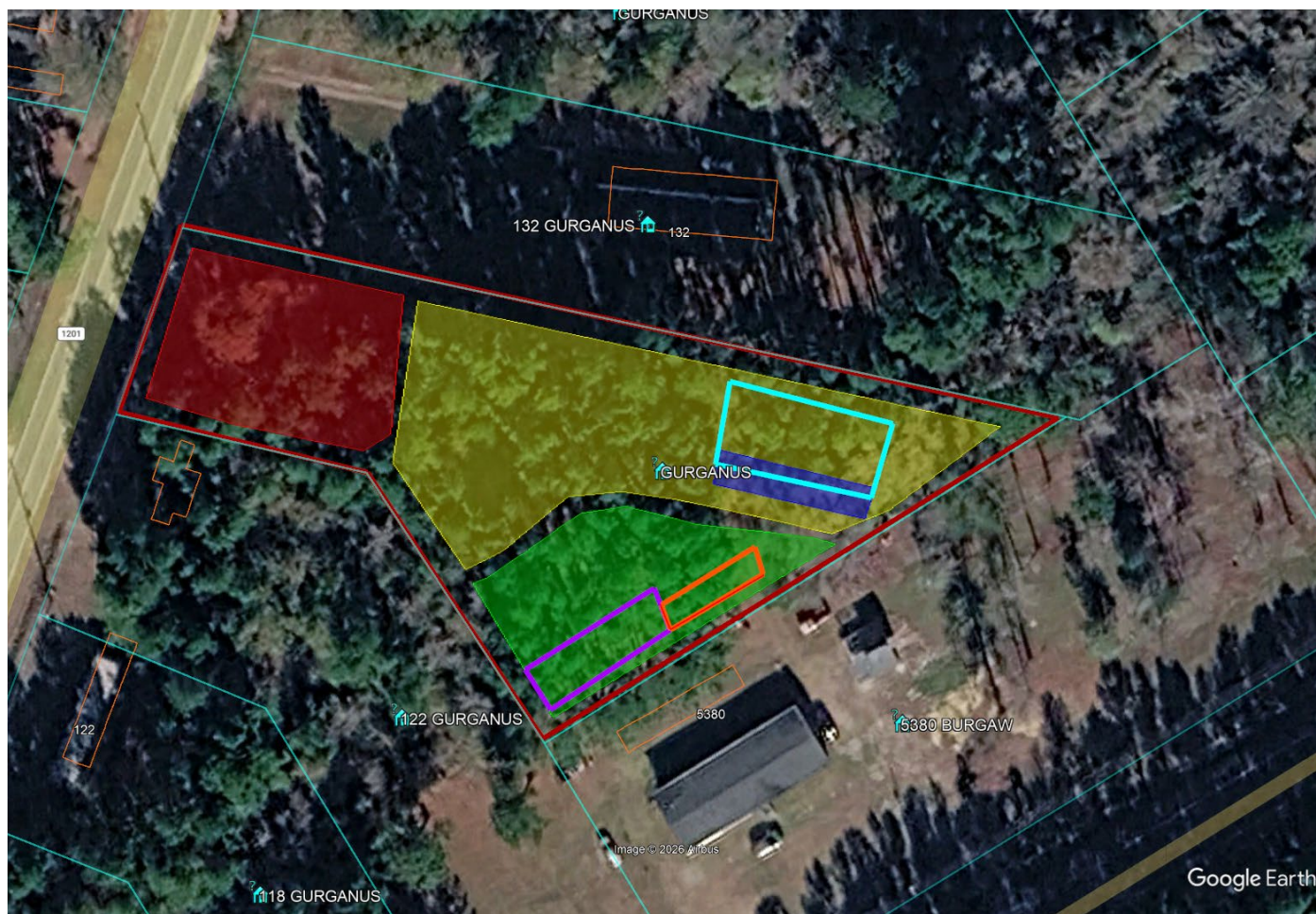
Soil Evaluation

The soils identified on the site can generally be grouped into 3 types identified by the green, yellow, and red map units as seen in Figure 1. Suitable soils for any type of onsite wastewater are only within the green and yellow units. Soils in the green unit are coarse and fine loams with a 24-30in depth to soil wetness condition (SWC) from the existing surface. This unit of soil has an estimated long-term acceptance rate (LTAR) of 0.6-0.8 gpd/ft² and 24 in to the SWC being the most common. Soils in the yellow unit are coarse and fine loams

with a 12-24in depth to SWC from the existing surface. This unit of soil has an estimated LTAR of 0.6-.07 gpd/ft².

The red soil map unit would be considered unsuitable for onsite wastewater and portions of this unit may contain jurisdictional wetlands. This map unit contained soils that did not appear to meet the minimum separation to the SWC and/or contained restrictive soil horizons. Portions of this soil were sands over coarse loams that had soil colors of 2 or less chroma or contained restrictive horizons and are unsuitable for any type of subsurface wastewater system design. These soils would be considered unsuitable for any onsite wastewater system as per rules .0504 and/or .0507.

Figure 1: Property boundary, soil map units, and potential general septic system footprint



Source: Google Earth Imagery with DRG Overlay

Project Discussion

The green soil map unit may provide a good option for an onsite wastewater system and represents soils that may be suitable for shallow conventional septic systems and other innovative systems. A shallow conventional gravel system for a 3-bedroom system, designed with the most limiting LTAR for the green map unit on site (0.6 gpd/ft² LTAR) would be approximately 21ft x 67ft for (3), 67ft gravel drain lines for a full-sized

initial and the same area set aside for the repair. This area can be represented as the purple rectangle in Figure 1. To reduce the area needed a T&J Panel Block system could likely be utilized on the lot for either both initial and repair or as the repair area only. T&J Panel Block is an alternative gravel aggregate that reduces the drain field area by 50%. A T&J Panel Block system sized for a 3- bedroom home on this site 12ft x 50 ft for (2), 50ft lines. A T&J panel block system for repair is shown as the orange Rectangle in Figure 1. Systems of this type can likely be placed anywhere within the green map unit with respect to parcel boundary setbacks and topography. Our office can assist with permitting if desired, however, no guarantees can be made without a more detailed site investigation.

The soil in the yellow map unit may provide potential options for an onsite wastewater system and may be suitable for modified fill mound systems. This area would have to be utilized to subdivide the parcel. A T&J panel block in fill system for a 3-bedroom home would be sized at 36 ft X 74 ft for 2 50ft T&J panel lines in a fill mound configuration. The Aqua rectangles in figure 1 represent the area needed for initial. A drip system may be utilized for repair to save space and can be seen as the blue rectangle in Figure 1. A Drip system for repair would be sized at 1,200 sq ft. Systems of this type can likely be placed anywhere within the yellow map unit with respect to parcel boundary setbacks and topography. Our office can assist with permitting if desired, however, no guarantees can be made without a more detailed site investigation.

While it may be possible to subdivide this parcel it will depend heavily on local zoning and building requirements. Space is extremely limited on this lot and a subdivision would only be feasible with extremely careful planning. Given the specific setbacks and space requirements it is possible that only a single property will ultimately work on this site. A more detailed site investigation would be required before the lots defiant potential is confirmed.

Summary

In summary the parcel off Gurganus Rd. in Maple Hill was evaluated for the possible subdivision of the property for two 3-bedroom residences. It is possible with careful planning to ensure all setbacks can be met that this parcel will support the subdivision of the parcel for two 3-bedroom residences . Any proposed well must maintain 50 feet from adjacent septic systems and components and 25 feet from any house foundation. The findings listed in this report are based upon limited ground truthing, available records and our best professional judgement. This report does not guarantee a wastewater permit as all areas are subject to review and approval by the appropriate local and/or state permitting agency. Please be advised that editing a document sealed by a licensed soil scientist is illegal and may result in legal action. Any unauthorized modification, alteration, or revision of a sealed document is strictly prohibited per NC Code Chapter 89F-19 (a). If you have any questions about this report or need any additional information, I may be reached at 910-524-9761, or at Shannon.bradley@davey.com .



Sincerely,

Mason Freeman

Mason Freeman
Environmental Scientist

Shannon N. Bradley

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NC Licensed Soil Scientist #1365