SEVERSON SOIL CONSULTING, PLLC

Erik D. Severson, Ph.D., LSS
2714 Blaydon Dr. Raleigh, NC 27606
919-623-6175 seversonsoil@gmail.com

Site Suitability for Domestic Sewage Treatment and Disposal Systems

Westview Road
Gibsonville, NC
Caswell County
Parcel ID#: 0014 189

Prepared for: Pete Reese, ReelVest

Prepared by: Erik Severson, Severson Soil Consulting, PLLC

Report Date: 1/9/2024

SYNOPSIS

This report shows the findings of a preliminary soil and site evaluation of the referenced parcel in Gibsonville, NC. There was an irregularly shaped area of provisionally suitable soils found on the northern part of the property, across a creek. The site evaluation revealed sufficient area for the installation of a conventional septic system for a three-bedroom dwelling. The irregular shaped area may necessitate a special design, such as a pressure manifold, panel block, or low-pressure pipe system. This report is intended to aid the permitting authority to evaluate the site.

Figure 1. Property Location for Lot 1.

Peete, this is a summary of my findings:

Severson Soil Consulting, PLLC (SSC) conducted a preliminary onsite wastewater soil feasibility study on the above referenced parcel to determine the area of soils, suitable for a subsurface onsite wastewater disposal system. The soil and site evaluation were performed by using a hand auger boring during moist soil conditions based on the criteria in the Rules and Laws Governing Onsite Wastewater Systems (1900 rules). From this evaluation, SSC sketched an area suitable for the installation of a septic system. All dimensions, locations are approximate.

Site Description

The 2.85-acre tract was off of Westview Road near Gibsonville, NC (figure 1). The parcel had a stream running through its middle and a powerline easement around its western side. The site lay in the Piedmont region. There was one mapping unit of interest in the NRCS soil map, CuC2, Cullen soils (figure 2), which are typically suitable for conventional septic systems. However, there were prominent gulleys present on both sides of the creek which are unsuitable areas.

Figure 2. Soil map of the of the subject property (SoilWeb).

Soil Borings

Over 29 soil borings and observations were advanced on the parcel as seen in figure 3 below. Their depths to suitable soils categorized the soils: the red dots represent suitable soils to 30" and were the Cullen Soil Series. The brown dots represented eroded Pacolet soils with suitable depths to 20-24 inches. The recommended LTAR (long term acceptance rate) for the Cullen soils are 0.275 gallons per day per foot squared (GPD/ft2). The black dots represented gulleys, which were unsuitable.

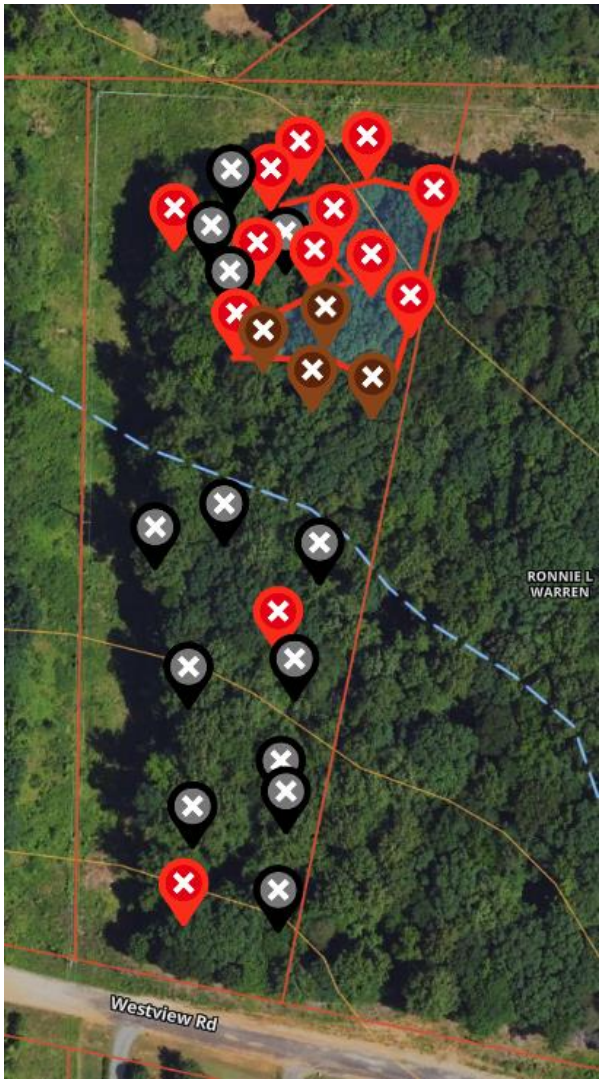


Figure 3. Soil boring locations within the lot as located by the onX Hunt application.

Required Area

The linear footage needed for a conventional accepted status drainfield product is calculated by dividing the flow rate for a three-bedroom dwelling (3-BR= 360 gpd) by the long-term acceptance rate, LTAR (0.275 GPD/ft2). Then dividing that number by a 3' -wide trench bottom and finally multiplying that number by 0.75 (to account for a 25% reduction trench product).

[(360gpd / 0.275 gpd/ft2) / 3ft wide trench)] x 0.75= 327 Linear Feet

The required space of suitable soils was calculated based upon a 3-foot-wide trench and a 9-foot minimum center to center spacing of each trench. The minimum total area required would then be 9,000 ft2 primary and repair area.

Usable Area

The usable area is across a small creek on the northern part of the parcel. All soil observations are suitable for potential installation of a conventional septic system. The usable area was 0.23 acres, or 10,018 ft2. This would be sufficient for the minimum space needed for a potential drainfield and repair for a 3-BR dwelling (see red outline figure 4). The highlighted red area is an irregularly shaped area located on an upland sideslope that sloped gently to the southwest. The black dots were gulleys and they should be avoided. Additionally, any gully over 2 foot in vertical height would need to have a 15-foot setback to a septic system. Due to topographic and space constraints, the irregularly shaped area may necessitate a special design, such as a pressure manifold, panel block, or low-pressure pipe system.

Figure 4. Usable soil area.

Permitting

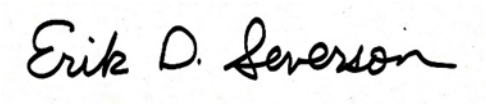
Prior to the issuance of a septic permit, the lot will require a soil and site evaluation by the Caswell County Health Department of other permitting authority. The specific trench product type and soil loading rate will be determined by their assessment. The areas for proposed drainfields shall not be impacted by home sites, pools, garages, nor be mechanically altered from the natural lay of the land. Regulatory setbacks to property lines, roads, wells, etc. are to be maintained.

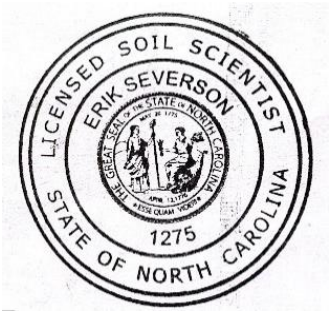
Exact locations of future drainfields, repair areas, buffer from property lines (current and future), building foundations, pools, decks, and well locations are not addressed in this report. Those items should be fully considered as the plans develop for the potential future use of the site. Depending on the position of the house location, house size, property lines and setbacks that may encroach on available usable space, this lot may require a septic system utilizing a pump.

Due to the subjective nature of the permitting process, zoning, variability of naturally occurring soil, and unforeseen circumstances, SSC cannot guarantee that areas delineated as suitable for on-site wastewater disposal systems will be permitted, as the permits are issued by the local governing agency. However, the areas of suitable soil have at least 1 time the needed space for a conventional system and repair depending on the loading rate. This report may be used to assist the local permitting agency to issue a septic permit.

Thank you for your business. Please do not hesitate to ask for more information regarding this report.

Sincerely,





Erik D. Severson, Ph-D., LSS
North Carolina Licensed Soil Scientist #1275