

PRELIMINARY SOIL AND SITE EVALUATION

Cabarrus County Parcel: 55593055400000
4182 Heathcliff Road
Concord, NC 28025

Prepared For:

Carolina Acres LLC
2925 River Vista Way
Mount Pleasant, SC 29466

Prepared By:



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PO Box 541
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December 14, 2024



INTRODUCTION & SITE DESCRIPTION

This Soil and Site Evaluation was performed on a portion of a 67.57-acre tract located at 4182 Heathcliff Road, Concord, North Carolina (Cabarrus County Parcel Number: 55593055400000).

Thompson Environmental Consulting, Inc. (TEC) was retained to determine whether the soils and/or saprolite were suitable for onsite subsurface wastewater treatment and disposal. The property was evaluated in accordance with North Carolina statutes for waste disposal (“Laws and Rules for Sewage Treatment and Disposal Systems”, effective January 1, 2024).

INVESTIGATION METHODOLOGY & SITE PHYSICAL CHARACTERISTICS

Individual pits were evaluated, and soil color was determined with a Munsell Soil Color Chart. Observations of the landscape (slope, drainage patterns, etc.) as well as soil properties (depth, texture, structure, seasonal wetness, restrictive horizons, etc.) were recorded.

The project study is currently a mixed-use property with acreage being in agricultural production and sections being vegetated with deciduous forest. Multiple drainage ways and old excavations are located on the property and their approximate locations are depicted in the attached Figure 1.

FINDINGS

Field surveys were conducted on October 28, 2024 and December 13, 2024. Twenty-two pits were advanced with compact excavator and twenty-four soil borings were advanced with hand-held augers. Their locations noted in the attached Figure.

Suitable for Conventional Type Systems. Pits rated as “Suitable” for Conventional Systems may include Gravel, Accepted, Alternative, Shallow-Placed, and Prefabricated Permeable Block Panel Systems and are denoted in the attached Figure as green squares within green polygons. While the particulars and costs between the system types can vary considerably, these are generally the preferred system types. This soil appeared adequate to support a long-term acceptance rate (LTAR) of 0.3 GPD/sq-ft.

Provisionally Suitable for Subsurface Drip Systems. Subsurface Drip systems require a minimum of 13 inches of suitable soil. Soil with a restriction of less than 17 inches will require the septic system to include a pretreatment unit that treats the wastewater to Treatment Standards II. Subsurface Drip systems are substantially more costly to install than Conventional Type and Low-Profile Chamber Systems. Long term acceptance rates (LTARs) often need to be confirmed via in-situ hydraulic conductivity measurements, but these are expected to support an LTAR of 0.10 GPD/sq-ft. These pits and borings are depicted in the attached Figure as purple points within purple polygons.

Unsuitable. Pits, borings and features classified as being Unsuitable for Subsurface Drip systems exhibited restrictive horizons within 12 inches of the ground surface and are depicted in the attached Figure as red squares or red dashed lines.

DISCUSSION

Soils derived from volcanic rock of the Carolina Slate Belt are highly variable in depth which can lead to drastic changes in soil suitability for wastewater treatment and disposal in a very small area.

It is estimated that 7,000 square feet of suitable soil area would need to be allocated and left completely available for the installation of an Accepted System installation serving a 4-bedroom single-family residence in the general area of pits showing suitable soil depth (green squares within the green polygons). These soil areas are limited in size and may need to be combined to obtain a single permit for a conventional-type system. Another potential option would be to use each area for an initial system while designating the proposed repair system types as subsurface drip dispersal systems.

The soils that are classified as “Provisionally Suitable” for subsurface drip dispersal (purple points and squares within the purple polygons) would require additional soil work to determine a suitable LTAR (saturated hydraulic conductivity testing); however, based on previous work performed in similar soils, it is estimated that approximately 10,500 square feet of suitable soil area would need to be allocated and left completely available for each Subsurface Drip Dispersal System installation serving a 4-bedroom single-family residence.

CONCLUSION

The findings presented herein represent TEC’s professional opinion based on our Soil and Site Evaluation and knowledge of the current laws and rules governing on-site wastewater systems in North Carolina. Soils naturally change across a landscape and contain many inclusions. As such, attempts to quantify them are not always precise and exact. Due to this inherent variability of soils and the subjectivity when determining limiting factors, there is no guarantee that a regulating authority will agree with the findings of this report.

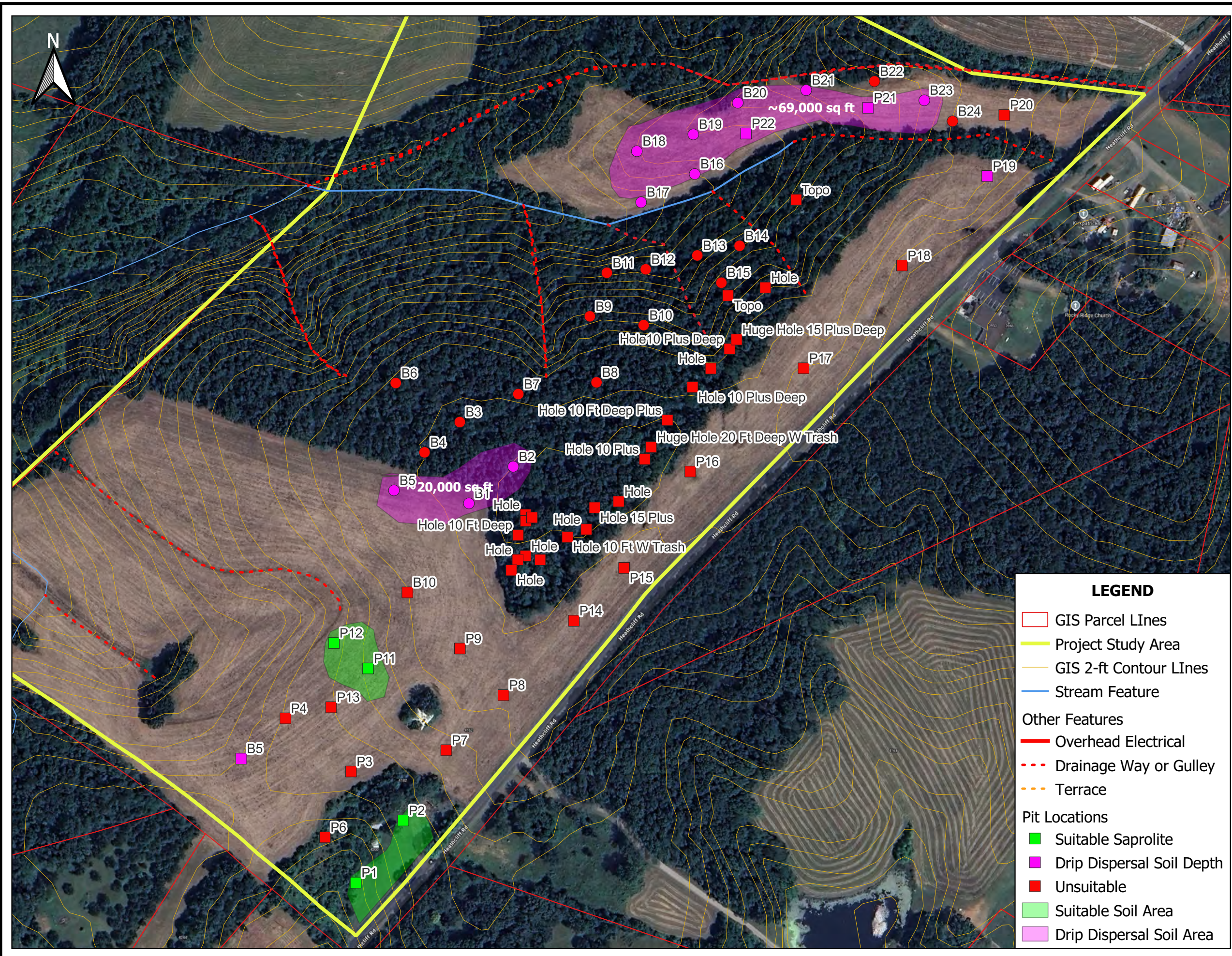


FIGURE 1

Prepared For:
Carolina Acres LLC

Soil and Site Evaluation

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Cabarrus County

LEGEND

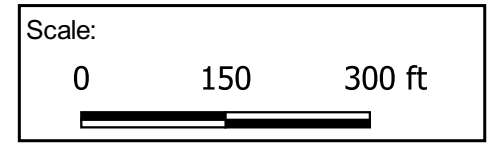
- GIS Parcel Lines
- Project Study Area
- GIS 2-ft Contour Lines
- Stream Feature

Other Features

- Overhead Electrical
- Drainage Way or Gully
- Terrace

Pit Locations

- Suitable Saprolite
- Drip Dispersal Soil Depth
- Unsuitable
- Suitable Soil Area
- Drip Dispersal Soil Area



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