

Soil and Site Evaluation For
Wastewater Treatment and Dispersal Systems
Kelly Plantation Road
Carthage, NC
(PIN: 866000811949)
Moore County

March 2, 2025



Findings: Based on the soil and site evaluation, there is a high degree of certainty that there is suitable soil for a conventional type of septic system and that the lot could be used for residential development. Due to the depth to limiting conditions a shallow placed system is recommended which would require a soil cap.

No opinions are made regarding the following:

- Applicable zoning requirements;
- House location; and
- Specific septic system layout/components

INTRODUCTION

Soil & Septic Solutions performed an on-site subsurface wastewater system investigation on a 5.7 acre parcel (PIN: 866000811949) located on Kelly Plantation Road, Carthage, Moore County, North Carolina on February 22, 2025. The property was evaluated in accordance with 15A NCAC 18E "Wastewater Treatment and Dispersal Systems". The purpose of this investigation was to evaluate the potential suitability for a 3 bedroom conventional septic system on the parcel.

At the time of the survey, the lot had been timbered a couple of years ago and dense vegetation was regrowing.

INVESTIGATION METHODOLOGY

Soil borings were made with a hand-turned auger in the study area. Observations of the landscape (slope, drainage patterns, past use, etc.) as well as soil properties (depth, texture, structure, seasonal wetness, restrictive horizons, etc.) to a depth ≥ 48 inches when possible were recorded. Soil color was determined with a Munsell Soil Color Chart. From these observations, potentially suitable areas for wastewater disposal were identified.

A handheld global positioning system (GPS) with sub-meter accuracy was used to locate each soil boring as well as other pertinent site features.

FINDINGS

On the day of the field investigation, nine (9) hand auger borings were made, logged, and their locations are shown in the Soil Boring Location Exhibit. Soil Boring logs are attached.

Depth to saprolite and wetness were the limiting soil factors (See Soil Boring Logs). In the area of suitable soil, borings had at least 28 inches to a limiting condition. Two suitable areas for a septic system were estimated to be 8,000 ft² and 35,000 ft². The small area to the south of Coles Mill Road was not evaluated.

The typical subsoil texture was clay loam and slopes typically ranged from 2 to 10 percent.

Based on the soil texture and depth to restrictive horizon, a long-term acceptance rate (LTAR) of 0.30 gpd/ft² is recommended. Depending on the location of the system, trench depth is recommended to be between 14 and 20 inches.

GENERAL DESIGN AND INSTALLATION CRITERIA

Wastewater systems can be used when there is at least 12 inches of naturally occurring soil between the bottom of the trench and the limiting condition.

For a 3 bedroom system, the design flow is 360 gallons per day (gpd). When the design flow is divided by the LTAR (using 0.30), the area of trench bottom can be calculated, which is 1,200 ft². The total length of trenches can be calculated by dividing the trench bottom area by 3 feet (which is the maximum trench width). Using these calculations, a 3 bedroom home would need 400 linear feet of trench.

Based on the depth to a limiting condition in the suitable soil area and the slope, there is enough soil depth to install a conventional placed septic system when there is at least 28 inches to a limiting condition.

Traditional gravel trenches are laid on contours 9 feet from the center. Assuming 4 - 100 foot lines, the minimum area need is approximately 3,000 ft². This area assumes an even linear slope with parallel septic lines.

Additionally, septic systems need a designated repair area. The minimum area needed is at least 6,000 ft² for both the initial and repair systems. This area could be reduced by using approved systems that allow for a 25% reduction in trench length.

Required horizontal setbacks (wells, etc.,) were not considered in the soil that could be used for a septic system. These setbacks will affect the overall area that can be used.

Permitting the septic system may be done through the County Environmental Health Department or through the private permitting option. Additionally, careful placement of the house and other improvements will need to be considered as to maximum the area of soil that can be used for septic.

CONCLUSIONS

Depth to saprolite and wetness were the limiting soil conditions. There are two areas of soil that has enough depth to correct for slope and still maintains the required 12 inch vertical separation. Due to the depth of the limiting conditions, the system will most likely be a shallow placed conventional system and would require a soil cap. Depending on the location of the home, a pump tank may be required.

The findings presented herein represent Soil & Septic Solutions' soil and site evaluation and knowledge of the current laws and regulations governing on-site wastewater systems in North Carolina. This report discusses the general location of suitable soils and site conditions that are favorable for septic systems and does not constitute or imply any approval or permit as needed from the County Health Department. Any concurrence with the findings of this report would be made during the County's site evaluation. Soil & Septic Solutions could also perform additional work for the issuance of private permits.

It is Soil & Septic Solutions' professional opinion that the lot can be used for residential development. Any concurrence with the findings of this report would be made during the County's site evaluation. Additionally, do not clear or grub any land until the County has granted the appropriate approvals.

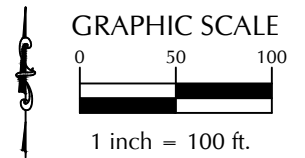
Sincerely,



Attachments:

- 1) Soil boring Location Exhibit
- 2) Soil Boring Logs

Gary S. Kreiser
Gary S. Kreiser



SUITABLE SOIL AREA

B7
B8
B1
B2
B3
B5
B6
B4
B9

NOTES:

- 1) NOT A SURVEY - PROPERTY LINES FROM NC ONEMAP, BORING LOCATIONS BASED ON GPS.
- 2) MAP NOT VALID WITHOUT REPORT.
- 3) COMPLY WITH ALL SETBACKS.
- 4) DO NOT CUT, FILL OR ALTER DRAINFIELD OR REPAIR AREA.
- 5) SOIL AND SITE EVALUATION NOT FOR ISSUANCE OF PERMIT. CONCURRENCE FROM COUNTY WILL BE REQUIRED OR ADDITIONAL WORK NEEDED FOR PRIVATE PERMIT.

KELLY PLANTATION ROAD
PIN: 866000811949

SOIL BORING LOCATIONS

SOIL & SEPTIC SOLUTIONS

SOIL/SITE EVALUATION for ON-SITE WASTEWATER SYSTEM
(Complete all fields in full)

OWNER: _____ DATE EVALUATED: 2/22/25
ADDRESS: _____
PROPOSED FACILITY: _____ PROPOSED DESIGN FLOW (.0400): _____ PROPERTY SIZE: _____
LOCATION OF SITE: _____ PROPERTY RECORDED: _____
WATER SUPPLY: ☐ Public ☐ Single Family Well ☐ Shared Well ☐ Spring ☐ Other _____ WATER SUPPLY SETBACK: _____
EVALUATION METHOD: ☒ Auger Boring ☐ Pit ☐ Cut TYPE OF WASTEWATER: ☐ Domestic ☐ High Strength ☐ IPWW

P R O F I L E #	.0502 LANDSCAPE POSITION/ SLOPE %	HORIZON DEPTH (IN.)	SOIL MORPHOLOGY		OTHER PROFILE FACTORS				.0509 PROFILE CLASS & LTAR*	.0502(d) SLOPE CORRE CTION
			.0503 STRUCTURE/ TEXTURE	.0503 CONSISTENCE/ MINERALOGY	.0504 SOIL WETNESS/ COLOR	.0505 SOIL DEPTH	.0506 SAPRO CLASS	.0507 RESTR HORIZ		
1	L 5- 10%	0-36	SBK/CL	FR/SS/SP/SEXP	10YR 5/8	S	-	-	S 0.3	1.8-3.6
					10YR 6/2 @ 30"					
2	L5%	0-10	SBK/SCL	FR/SS/SP/SEXP	10YR 4/4	S	-	-	S 0.3	1.8
		10-28	SBK/CL	FR/SS/SP/SEXP	10YR 5/8 10YR 6/2 @ 28"					
		28-36	M/CL	FR/SS/SP/SEXP						
3	L 3-5%	0-36	SBK/CL	FR/SS/SP/SEXP	10YR 5/8	S	-	-	S 0.3	1.1-3.6
					10YR 6/2@ 33"					
4	L 15%	0-22	SBK/CL	FR/SS/SP/SEXP	10YR 5/8	U	-	-	UN	
		22-24	M/CL	FR/SS/SP/SEXP						
		24-AR	AUGER REFUSAL							

DESCRIPTION	INITIAL SYSTEM	REPAIR SYSTEM	SITE CLASSIFICATION (.0509): _____ EVALUATED BY: GARY KREISER OTHER(S) PRESENT: _____
Available Space (.0508)	Y	Y	
System Type(s)	CONVENTIONAL	CONVENTIONAL	
Site LTAR	0.3	0.3	
Maximum Trench Depth	14-20	14-20	

Comments: TRENCH DEPTH DEPENDS ON LOCATION OF SYSTEM. SOIL CAP WILL BE REQUIRED

LEGEND

LANDSCAPE POSITION	SOIL GROUP	SOIL TEXTURE	CONVENTIONAL LTAR (gpd/ft²)	SAPROLITE LTAR (gpd/ft²)	LPP LTAR (gpd/ft²)	MINERALOGY/ CONSISTENCE		STRUCTURE			
CC (Concave slope)	I	S (Sand)	0.8 - 1.2	0.6 - 0.8	0.4 -0.6	MOIST	WET	SG (Single grain)			
CV (Convex Slope)		LS (Loamy sand)		0.5 -0.7		Lo (Loose)	NS (Non-sticky)	M (Massive)			
D (Drainage way)	II	SL (Sandy loam)	0.6 - 0.8	0.4 -0.6	0.3 - 0.4	VFR (Very friable)	SS (Slightly sticky)	GR (Granular)			
FP (Flood plain)		L (Loam)		0.2 - 0.4		FR (Friable)	S (Sticky)	SBK (Subangular blocky)			
FS (Foot slope)	III	SiL (Silt loam)	0.3 - 0.6	0.1 - 0.3	0.15 - 0.3	FI (Firm)	VS (Very sticky)	ABK (Angular blocky)			
H (Head slope)		SCL (Sandy clay loam)		0.05 - 0.15**		VFI (Very firm)	NP (Non-plastic)	PR (Prismatic)			
L (Linear Slope)		CL (Clay loam)		None		EFI (Extremely firm)	SP (Slightly plastic)	PL (Platy)			
N (Nose slope)		SiCL (Silty clay loam)							P (Plastic)		
R (Ridge/summit)		Si (Silt)							VP (Very plastic)		
S (Shoulder slope)		IV				SC (Sandy clay)	0.1 - 0.4	0.05 - 0.2	SEXP (Slightly expansive)		
T (Terrace)						SiC (Silty clay)			EXP (Expansive)		
TS (Toe Slope)	C (Clay)										
		O (Organic)	None								

* Adjust LTAR due to depth, consistence, structure, soil wetness, landscape, position, wastewater flow and quality.

**Sandy clay loam saprolite can only be used with advanced pretreatment in accordance with 15A NCAC 18E .1200.

HORIZON DEPTH

In inches below natural soil surface

DEPTH OF FILL

In inches from land surface

RESTRICTIVE HORIZON

Thickness and depth from land surface

SAPROLITE

S(suitable) or U(unsuitable); Evaluation of saprolite shall be by pits.

SOIL WETNESS

Inches from land surface to free water or inches from land surface to soil colors with chroma 2 or less - record Munsell color chip designation

CLASSIFICATION

S (Suitable) or U (Unsuitable)

Show profile locations and other site features (dimensions, reference or benchmark, and North).

SOIL/SITE EVALUATION

(Continuation Sheet-Complete all field in full)

Page 2 of 2

DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH
ENVIRONMENTAL HEALTH SECTION
ON-SITE WATER PROTECTION BRANCH

PROPERTY ID #: _____
DATE OF EVALUATION: 2/22/25
COUNTY: MOORE _____

P R O F I L E #	.0502 LANDSCAPE POSITION/ SLOPE %	HORIZON DEPTH (IN.)	SOIL MORPHOLOGY		OTHER PROFILE FACTORS				.0509 PROFILE CLASS & LTAR*	.0503 SLOPE CORRE CTION
			.0503 STRUCTURE/ TEXTURE	.0503 CONSISTENCE/ MINERALOGY	.0504 SOIL WETNESS/ COLOR	.0506 SOIL DEPTH	.0507 SAPRO CLASS	.0508 RESTR HORIZ		
5	L 3-5%	0-22	SBK/CL	FR/SS/SP/SEXP	10 YR 5/8	U	-	-	UN	
		22-30	M/CL	FR/SS/SP/SEXP						
6	L 5-10%	0-20	SBK/CL	FR/SS/SP/SEXP	10 YR 5/8 10YR 6/2 @ 20"	U	-	-	UN	
		20-30	M/CL	FR/SS/SP/SEXP						
7	L 3-5%	0-36	SBK/CL	FR/SS/SP/SEXP	10YR 5/8 10YR 7/4 10YR 6/2 @ 28"	S	-	-	S 0.3	1.1-1.8
8	L 3-5%	0-36	SBK/CL	FI/SS/SP/SEXP	10YR 5/8	S	-	-	S 0.3	1.1-1.8
		36+	M/CL	FI/SS/SP/SEXP						
9	L 2%	0-26	SBK/CL	FI/SS/SP/SEXP	10YR 5/8 10YR 6/2@ 26"	S	-	-	S 0.3	.72
		26-36	M/CL	FI/SS/SP/SEXP						

COMMENTS: _____

