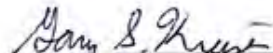


Soil and Site Evaluation For  
Wastewater Treatment and Dispersal Systems  
Lewis Road  
Mt Gilead, NC  
(PIN: 7545 00 14 4153)

January 23, 2024

  
Gary S. Kreiser



**Findings:** Based on the soil and site evaluation, there is a high degree of certainty that a conventional septic system could be installed, and the lot could be used for residential development. This system would require a shallow trench depth (12-16 inches), and potentially a soil cap and pump tank.

No opinions are made regarding the following:

- Areas not evaluated;
- Applicable zoning requirements;
- House location;
- Specific septic system layout/components; and
- Horizontal setbacks required from septic systems.

## INTRODUCTION

Soil & Septic Solutions performed an on-site subsurface wastewater system investigation on a portion of 13.69 acres (PIN: 7545 00 14 4153) located on Lewis Road in Mt Gilead, Montgomery County, North Carolina on January 20, 2024. The property was evaluated in accordance with 15A NCAC 18E "Wastewater Treatment and Dispersal Systems". The purpose of this investigation was to perform an analysis of parcel capacity for a three bedroom home.

At the time of the survey, the review area was wooded.

## 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  $\geq 48$  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, six (6) hand auger borings were made on the property, logged, and their locations are shown in the Soil Boring Location Exhibit. Soil Boring logs are attached.

The limiting condition encountered was depth to weathered rock (See Soil Boring Logs). The texture of the soil was typically silty clay loam. Based on the evaluation two areas were found to have approximately 38,000 ft<sup>2</sup> and 16,000 ft<sup>2</sup> of suitable soil (see attached Soil Boring Location Exhibit).

Based on the soil texture a long-term acceptance rate (LTAR) of 0.3 gpd/ft<sup>2</sup> is recommended.

## 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.

Based on the depth of the limiting condition (28-30 inches), a wastewater system could be installed and meet the required 12 inch vertical separation. Based on the slope of 5-10% there is enough soil depth to correct for slope. Depending on the location of the system a trench bottom of 12-16 inches is recommended.

For a 3 bedroom system, the design flow is 360 gallons per day (gpd). When the design flow is divided by the LTAR (using 0.3), the area of trench bottom can be calculated, which is 1,200 ft<sup>2</sup>. 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.

Septic lines are laid on contour - 9 feet apart from the center. The minimum area needed is approximately 3,600 ft<sup>2</sup>. This area assumes an even linear slope with parallel septic lines. Additionally, septic systems need a designated repair area. At a minimum there needs to be approximately 7,200 ft<sup>2</sup> for both the initial and repair area. This area can be reduced by using approved systems that allow for a 25% reduction in trench length.

Horizontal setbacks (wells, property lines etc.,) were not considered in the soil that could be used for a conventional system. These setbacks will affect the overall area that can be used.

Depending on the house location, the system may need to have a pump tank to pump to the septic system. Depending on the trench depth, a soil cap may be required to meet the required 6 inches of soil cover. The soil cap will need to extend 5 feet beyond the trenches.

Permitting of the septic system may be done through the County Environmental Health Department or through the private permitting option. 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

In the area evaluated, the limiting condition was depth to weathered rock. It is estimated that these areas are approximately 38,000 ft<sup>2</sup> and 16,000 ft<sup>2</sup> of suitable soil . After correcting for slope, the required 12 inch separation can be met by placing the trench bottom at a depth around 12 to 16 inches.

Based on the LTAR it is estimated that the required area for a 3 bedroom home would be approximately 7,200 ft<sup>2</sup>. The exact location of the system and potential layout as well as house location and horizontal setbacks were not calculated or defined. Careful consideration as to house location and other improvements will need to be evaluated to maximize the potential septic area.

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. Additionally, only the area evaluated was considered in this report, no opinion is made on areas not evaluated.

It is Soil & Septic Solutions' professional opinion that this 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





GRAPHIC SCALE



1 inch = 150 ft.

**NOTES:**

- 1) NOT A SURVEY - PROPERTY LINES BASED ON GIS DATA, BORING LOCATIONS BASED ON GPS.
- 2) DO NOT CUT, FILL OR ALTER DRAINFIELD OR REPAIR AREA.
- 3) NE - AREA NOT EVALUATED - ADDITIONAL INVESTIGATION MAY REVEAL ADDITIONAL SUITABLE AREAS.
- 4) SOIL AND SITE EVALUATION NOT FOR ISSUANCE OF PERMIT, CONCURRENCE FROM COUNTY WILL BE REQUIRED OR ADDITIONAL WORK NEEDED FOR ISSUANCE OF PRIVATE PERMIT.

SUITABLE SEPTIC AREA

B6

B1

B5

B2

B4

B3

NE

NE



LEWIS ROAD  
(PIN: 7545 00 14 4153)

MT GILEAD

MONTGOMERY COUNTY

NORTH CAROLINA

SOIL BORING LOCATIONS

SOIL & SEPTIC SOLUTIONS



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

OWNER: \_\_\_\_\_ DATE EVALUATED: \_1/20/24\_  
ADDRESS: \_Lewis Rd (PIN 7545 00 14 4153)\_  
PROPOSED FACILITY: \_house\_ PROPOSED DESIGN FLOW (.0400): \_360\_ PROPERTY SIZE: \_13.69\_  
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 CONSISTENC E/ MINERALOG Y	.0504 SOIL WETNESS/ COLOR	.0505 SOIL DEPTH	.0506 SAPRO CLASS	.0507 RESTR HORIZ		
1	L 15%	0-16	SBK/SiCL	FI/SS/SP/SEXP	2.5Y 5/6	U	-	-	U	-
		16-AR	AUGER REFUSAL							
2	L 10%	0-4	GR/SiL	FR/SS/SP/SEXP	10YR 4/4  2.5Y 5/6	S	-	-	S 0.3	3.6"
		4-33	SBK/SiCL	FR/SS/SP/SEXP						
		33-AR	AUGER REFUSAL							
3	L 10%	0-4	GR/SiL	FR/SS/SP/SEXP	10YR 4/4  2.5Y 5/6	S	-	-	S 0.3	3.6"
		4-33	SBK/SiCL	FR/SS/SP/SEXP						
		33-AR	AUGER REFUSAL							
4	L 5%	0-30	SBK/SiCL	FR/SS/SP/SEXP	2.5Y 5/6	S	-	-	S 0.3	1.8"
		30-AR	AUGER REFUSAL							

DESCRIPTION	INITIAL SYSTEM	REPAIR SYSTEM	SITE CLASSIFICATION (.0509): __SUITABLE_____ EVALUATED BY: ____GARY KREISER_____ OTHER(S) PRESENT: _____
Available Space (.0508)	Y	Y	
System Type(s)	IIA	IIA	
Site LTAR	0.3	0.3	
Maximum Trench Depth	14-16	14-16	

Comments: \_\_\_\_WEATHERED SLATE FRAGMENTS PRESENT\_IN SOIL. WEATHERED ROCK ENCOUNTERED AT AUGER REFUSAL\_\_\_\_

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)						
S (Shoulder slope)		IV				SC (Sandy clay)	0.1 - 0.4	0.05 - 0.2
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: 1/20/24  
COUNTY: MONTGOMERY

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	.0505 SOIL DEPTH	.0506 SAPRO CLASS	.0507 RESTR HORIZ		
5	L 5%	0-28	SBK/SiCL	FR/SS/SP/SEXP	2.5Y 5/6	S	-	-	S 0.3	1.8"
		28-AR	AUGER REFUSAL							
6	L 5%	0-30	SBK/SiCL	FR/SS/SP/SEXP	2.5Y 5/6	S	-	-	S 0.3	1.8"
		30-AR	AUGER REFUSAL							