SOIL SERVICES, PLLC
PO BOX 91115 ⋄ RALEIGH, NC ⋄ 27675

March 8, 2023
Project No. 2005-1

Bounty Construction
Attn: Chuck D'Armetta
1722 Tarboro Rd
Youngsville, NC 27596

Re: Detailed Soil/Site Evaluation
Marshall Landing Property (Approx. 10.17 Acres)
Hwy 401, Ingelside, Franklin County
PIN No. 2808-94-0723

Dear Mr. D'Armetta:

Soil Services, PLLC completed a detailed soil/site evaluation for the Marshall Landing property was completed on March 6, 2023. The evaluation was performed during moist soil conditions in accordance with 15A NCAC 18A .1900 "Laws and Rules for Sewage Treatment and Disposal Systems" and/or Local Regulations for preliminary planning purposes.

Soil characteristics and landscape suitability relative to on-site wastewater systems were evaluated through hand auger borings and ground-truthing. Auger boring locations and suitable soil lines were flagged in the field with flagging tape. Field data was used to generate the attached Soil/Site Evaluation map. Representative soil borings are attached and were described in accordance with criteria found in the USDA-NRCS "Field Book for Describing and Sampling Soils."

Results

The project site is located in the Piedmont region. The predominant upland soil series found on-site were Cecil and Appling. The Appling & Cecil series has a clay subsurface with a sandy loam surface. These series contain 24-36 inches or more of suitable soil and are potentially suitable for conventional, modified conventional, ultra-shallow or low pressure pipe subsurface septic systems. Soil Services can provide additional information about these systems upon request.

The potentially suitable soil areas are depicted on the Soil/Site Evaluation Map in the hatched areas. The "UN" areas have less than 24 inches of suitable soil depth or contain other unsuitable features such as unsuitable landscape position, fill material, disturbed soil, streams, wetlands, existing structures, etc. These areas are typically considered unsuitable for conventional system types.

The suitable soil area should be taken into account during the planning process. Sufficient suitable soil should be designated for septic system and repair for each lot. Site elements such as house, garage, pool, driveway, walkway, etc. should be located outside of the suitable soil areas designated for the septic system and repair. Additional information about planning can be found in the Recommendations section of this report.

Final site planning and septic system permits are reviewed and obtained from Franklin County Environmental Services. Each lot shall be reviewed and permitted through the Local County Health Department. Suitable soil areas should be protected. Any disturbance to these areas could render them unsuitable. Disturbance of the areas may include but is not limited to grading, filling, paving, tree/stump removal, construction, trafficking, etc. Soil services reserves the right alter the results of this report based on further investigation.

Recommendations

The efficacy of the usable soil area can depend on the size and configuration of the area as well as the location and configuration of the septic drainlines. The septic drainlines must run on contour throughout the length of the entire line (i.e. the septic line must stay on the same elevation throughout the length of the line). Therefore, topographic irregularities can greatly increase the minimum space requirements for any given system. Septic system size also vary based on the intended use of the system as well as the loading rate (LTAR) of the soil the system is cited within. Daily design flow rates are assigned to the intended use of the site and a cumulative design flow rate is used to size the system. The design flow for a single family residence is based on the number of bedrooms in the residence. Therefore a 4-bedroom residence would have a larger system than a 3-bedroom residence assuming all else is the same. The loading rate of a soil or long-term acceptance rate (LTAR) is assigned based upon soil characteristics of the site (texture, structure, mineralogy, porosity, etc.). A lower LTAR means the soil permeability is low which results in a larger system relative to a higher LTAR (more permeable soil). The septic system and repair must also meet all required setbacks from existing and proposed site element (see 15A NCAC 18A .1950 attached) which further increase the minimum space required for the septic system and repair.

A field layout of the system maybe completed to determine whether a suitable soil area(s) can potentially support the proposed intended use of the site. The intended use as well as the factors mentioned previously can be used to estimate the space required for septic system and repair A four-bedroom, single-family residence with a design flow of 480 gallons per day (120 gallons per bedroom per day) requires 12,000 to 16,000 square feet of useable soil area or 1,350 to 1,600 linear feet of conventional drain line (system and repair) or 1,280 to 2,000 linear feet of low pressure pipe (LPP) drain line (system and repair). Estimates reference the “Laws and Rules for Sewage Treatment and Disposal Systems” and are based on an LTAR range of 0.25 to 0.30 gallons per day per square foot (gpd/ft^2) for conventional and modified conventional drain line and 0.10 to 0.15 gpd/ft^2 for LPP drain line. Actual drain field may require more area and/or linear footage of drain line depending upon site conditions. The final LTAR is assigned to a site/lot by the Frnaklin County Environmental Services after their detailed site evaluation.

Conclusion

This report discusses potentially suitable/useable soil areas found on this site and does not guarantee or imply any approval or permit will be given by local, County and/or State governing agencies. Soil Services specializes in the evaluation of soils for the purpose of wastewater treatment/disposal systems as well as the layout and design of such systems. Soil Services is contracted for its professional opinion and cannot ensure the client will obtain any or all of the permit or approvals needed from the local, County and/or State governing agencies.

Anyone making financial investments/commitments should be fully aware of all permit requirements for this tract prior to final dedication. Each lot requires a septic permit prior to obtaining a building permit. The County Health Department will conduct a detailed site evaluation for each lot to

determine the location of site elements as well as septic system and repair type and location. After the detailed site evaluation is complete, the County Health Department will make a final determination. Soil Services can assist you in the field layout of the wastewater treatment system, subdivision recordation, and/or the individual permitting process if requested.

Soil Services, PLLC would be pleased to assist you in any future site analysis needs. Please contact Sarah I. Menser at (919) 745-1928 with any requests, questions or concerns.

Sincerely,
Soil Services, PLLC

3/8/23

Sarah I. Menser, LSS
NC License No. 1304

Attachments:
- Site Analysis Summary
- Soil Profile Description(s)
- Detailed Soil/Site Evaluation Map

Soil/Site Evaluation Summary

15A NCAC 18A

.1940 Slope:

☒ <15% (S) ☐ 15% - 30% (PS) ☐ >30% (U)
☐ Gullies/Ravines (U) ☐ Depression (U)

.1941 (1) Texture Group:

Group I (S):	☐ Sand	☐ Loamy Sand
Group II (S):	☐ Sandy Loam	☐ Loam
Group III (PS):	☐ Silt	☐ Silt Loam
	☐ Sandy Clay Loam	☐ Clay Loam
	☐ Silty Clay Loam	
Group IV (PS):	☐ Sandy Clay	☐ Silty Clay
	☒ Clay	

(2) Structure:

☐ Crumb/Granular (S) ☒ Block Like (PS)
☐ Platy (U) ☐ Prismatic (U)
☐ Single Grain (S) ☐ Massive (U)

(3) Clay Mineralogy:

☒ Slightly Expansive(PS) ☐ Expansive (U)

.1942 Depth to Soil Wetness (Chroma 2 Indicator):

☐ >48" (S) ☒ 36" – 48" (PS) ☐ <36" (U)

.1943 Soil Depth (to rock, saprolite or parent material):

☐ >48" (S) ☒ 36" – 48" (PS) ☐ <36" (U)

.1944 Restrictive Horizon (3" thick or more):

☐ >48" (S) ☒ 36" – 48" (PS) ☐ <36" (U)

.1945 Available Space (only if layout has been done):

System and Repair Available? ☐ Yes ☐ No ☒ NA

.1947 Overall Site Suitability: ☐ S ☒ PS ☐ U

.1950 Location of Sanitary Sewage Systems

(c) Every sanitary sewage treatment and disposal system shall be located at least the minimum horizontal distance from the following:

(1) any private water supply source including a well or spring	100 feet
(2) any public water supply source	100 feet
(3) streams classified as WS-I	100 feet
(4) water classified as S.A.	100 feet from mean high water mark
(5) Other coastal waters	50 feet from mean high water mark
(6) any other stream, canal, marsh, or other surface waters	50 feet
(7) any Class I or Class II reservoir	100 feet from normal pool elevation
(8) any permanent storm water retention pond	50 feet from flood pool elevation
(9) any other lake or pond	50 feet from normal pool elevation
(10) any building foundation	5 feet
(11) any basement	15 feet
(12) any property line	10 feet
(13) top of slope of embankments or cuts of 2 feet or more	
(A) vertical height	15 feet
(14) any water line	10 feet
(15) drainage systems:	
(A) Interceptor drains, foundation drains and storm water diversions	
i. upslope	10 feet
ii. sideslope	15 feet
iii. downslope	25 feet
(B) Groundwater lowering ditched and devices	25 feet
(16) any swimming pool	15 feet
(17) any other nitrification field (except repair area)	20 feet

(A) Ground absorption, sewage treatment and disposal systems may be located closer than 100 feet from a private well supply, except springs and uncased wells located downslope and used as a source of drinking water, repairs, space limitations and other site-planning considerations but shall be located the maximum feasible distance and, in no case, less than 50 feet.

(B) Nitrification fields and repair areas shall not be located under paved areas or areas subject to vehicular traffic. If effluent is to be conveyed under areas subject to vehicular traffic, ductile iron or its equivalent pipe shall be used. However, pipe specified in Rule .1955 (e) may be used if a minimum of 30 inches of compacted cover is provided over the pipe.

Note: Systems over 3000 GPD or an individual nitrification fields with a capacity of 1500 GPD or more have more restrictive setback requirements, see .1950 (a) (17) (d) for specifics.

Appling

Soil Profile Description

HORIZON	DEPTH (in)	MATRIX COLOR (MUNSELL)	MOTTLE COLOR (MUNSELL)	TEXTURE	STRUCTURE
Ap	0-4	10 YR 5/3	-	SL	Wk Med Gr
E	4-8	10 YR 6/4	-	SL	Wk Med Gr
BE	8-12	10 YR 5/6	-	SCL	Wk Med Sbk
Bt	12-36+	7.5 YR 5/6	10 YR 5/6 2.5 YR 4/8	C	Wk Med Sbk

Notes:

1) Soil similar to the Appling Soil Series.
2) Soil described from auger boring.

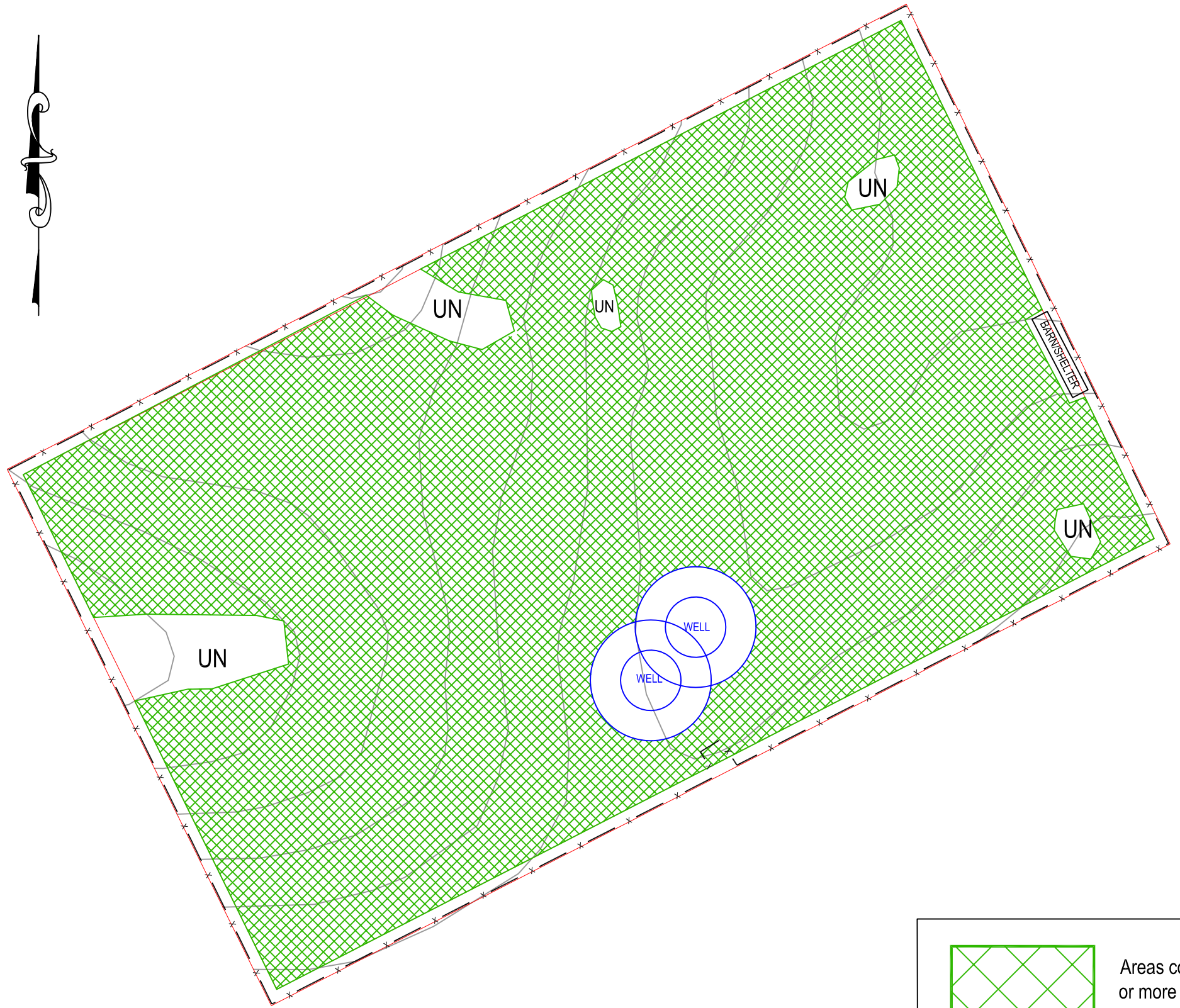
Cecil

Soil Profile Description

HORIZON	DEPTH (in)	MATRIX COLOR (MUNSELL)	MOTTLE COLOR (MUNSELL)	TEXTURE	STRUCTURE
Ap	0-8	10 YR 4/4	-	SL	WK M GR
Bt1	8-26	2.5 YR 4/8	-	C	MO M SBK
Bt2	26-48	2.5YR 4/8	5 YR 5/8	C	MO M SBK

Notes:

1) Soil similar to the Cecil Soil Series.
2) Soil described from auger boring.



GRAPHIC SCALE
1" = 100'

100 0 100 200

DETAILED SOIL/SITE EVALUATION

SUITABLE SOIL AREAS WERE FLAGGED WITH ORANGE FLAGGING TAPE AND LOCATED WITH A GPS RECEIVER. EVALUATION SUITABLE FOR PRELIMINARY PLANNING PURPOSES ONLY. THE SITE WILL REQUIRE APPROVAL BY THE COUNTY HEALTH DEPARTMENT ON A CASE BY CASE BASIS. THIS MAP SHOULD BE USED AS A GENERAL GUIDE , SOME ADJUSTMENTS WILL BE NECESSARY IN THE FIELD DUE TO SOIL VARIABILITY AND TOPOGRAPHIC IRREGULARITIES.
THIS MAP ONLY REFLECTS EXISTING SOIL SUITABILITY FOR ON-SITE SEPTIC SYSTEMS. OTHER CONSIDERATIONS AFFECTING SITE SUITABILITY SHOULD BE ACCOUNTED FOR DURING SITE PLANNING SUCH AS:

1) 10' SETBACK FROM PROPERTY BOUNDARY
2) 15' SETBACK FROM A 2 FOOT CUT BANK
3) 100' SETBACK FROM ANY WELL

THIS IS NOT A SURVEY

LICENSED SOIL SCIENTIST
SARAH ILENE MENSER
THE GREAT SEAL OF THE STATE OF NORTH CAROLINA
1304
STATE OF NORTH CAROLINA

LEGEND

	Areas contain soils similar to Appling & Cecil soil series with 24 inche or more of useable material clay texture) and have the potential for conventional, modified conventional, ultra-shallow or low pressure pipe septic systems . Total Area approximately 15,000sf.
UN	Unsuitable areas due to soil wetness condition, soil depth, clay mineralogy, and/or landscape position.

Project No.: 2005-1
Drawn: SM
Project Manager: SM
Field Work: SM
Scale: 1":100'
Sheet No.: 1 of 1

Sheet Title: DETAILED SOIL/SITE EVALUATION

Project: MARSHALL LANDING

Client: BOUNTY CONSTRUCTION

Location: FRANKLIN CO., NC

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