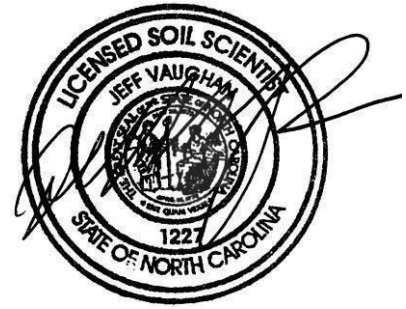




Soil Suitability for Domestic Sewage Treatment and Disposal Systems

Island Creek Estates Rd.
Henderson, NC 27537
Vance County Parcel ID: 0352A02015

Prepared For:	Simple Land Guys
Prepared By:	Jeff Vaughan, Ph.D., L.S.S. Senior Agronomist/Soil Scientist Brent Purdum, Assistant Soil Scientist
Report Date:	September 17, 2024



Agri-Waste Technology, Inc.

501 N Salem Street, Suite 203, Apex, NC 27502

agriwaste.com | 919.859.0669

Soil Suitability for Domestic Sewage Treatment and Disposal Systems

Island Creek Estates Rd. Henderson, NC 27537

(Vance Co. Parcel ID: 0352A02015)

PREPARED FOR: Simple Land Guys

PREPARED BY: Jeff Vaughan
Brent Purdum

DATE: September 17, 2024

Soil suitability for domestic sewage treatment and disposal systems was evaluated on September 13, 2024, for property located at Island Creek Estates Rd. located near Henderson, NC. Brent Purdum of Agri-Waste Technology, Inc. (AWT) conducted the soil evaluation. A detailed soil evaluation of the land area will follow. A property reference map is in Attachment 1. The property map detailing soil suitability for septic systems and soil types can be found in Attachment 2.

Approximately 2.06 acres of the property were evaluated. The property is mostly a fielded area with a pond (Attachment 3).

Soil Suitability for Domestic Sewage Treatment and Disposal Systems

The aerial map in Attachment 2 details the approximate property boundaries, soil boring locations, soil types, and soil areas for septic systems. Approximately 8 soil borings were advanced on the property and the soil evaluated (Attachment 3). A portion of the property contained a pond and disturbed soils, which are unsuitable septic systems. However, this evaluation was merely a preliminary review to determine what potential this land might have for domestic sewage treatment and disposal systems. Therefore, specific types of septic systems, exact locations of future drainfields and repair areas, plus buffers from property lines (current and potential future lot lines), building foundations, wells, etc. are not fully considered. These things will need to be more fully considered as the plans develop for the potential future of this site. It is likely that additional soil evaluations will be required once lot layouts are considered and developed for this property so that septic system types and the location of a septic drainfield can be more fully and appropriately considered.

The purple area (see map in Attachment 3) evaluated on the property exhibited soil characteristics and soil depths (26" or greater) that are suitable for conventional trench systems. The area is approximately 20,545ft².

Typical profile descriptions of the suitable soil for this property are in Attachment 3. One distinct soil profile was observed in the soil borings on the property with conventional soil depths: a deep red subsoil with redoximorphic features.

The suitable soil borings had the following characteristics. No restrictive horizons were found in any suitable soil borings within 26" of the soil surface. Soil texture was suitable and was estimated to be sandy loam near the soil surface (A horizons) and sandy clay loam to clay in the subsoil (B horizons). Soil structure was suitable and was estimated to be granular near the soil surface (A horizons) and subangular in the subsoil (B horizons). Clay mineralogy was suitable with very friable to firm moist soil consistence and non-sticky to sticky and non-plastic to plastic wet soil consistence.

The mapped soil types on this property are predominantly Cecil sandy clay loam (labelled as CeD2). The Web Soil Survey indicates that moderate limitations exist for septic systems installed in these soil types (Attachment 4).

The land area required for a conventional septic system is calculated based on the size of the proposed home and the Long-Term Acceptance Rate (LTAR) of the soil. The LTAR range for the suitable soils on this property is 0.1 – 0.4 GPD/ft² for shallow conventional septic systems based on the most restrictive soil texture in the subsoil. The LTAR suggested by AWT is 0.25 GPD/ft², but the final LTAR for specific septic system types and septic drainfield locations will be set by the Vance County Health Department. The detailed computations are in Attachment 5.

Conclusions

Based on the results of this evaluation, the installation of conventional or drip septic systems seems very probable on this property in the area designated on the map in Attachment 2.

We appreciate the opportunity to assist you in this matter. Please contact us with any questions, concerns, or comments.

ATTACHMENT 1: Property Reference Map



**ATTACHMENT 2: Property Map Detailing Soil Suitability
for Septic Systems and Soil Types**

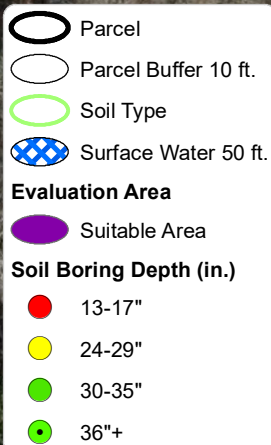
Preliminary Soil Evaluation

Simple Land Guys
Vance Co., NC
PIN: 0352A02015
2.06 acres



Area for Septic:
~20,545 sq.ft.

Soil Types:
CeD2: Cecil sandy clay loam



Drawn By: William Shoeyink
Reviewed By: Brent Purdum
Date: 9/16/2024

0 25 50 100
Feet



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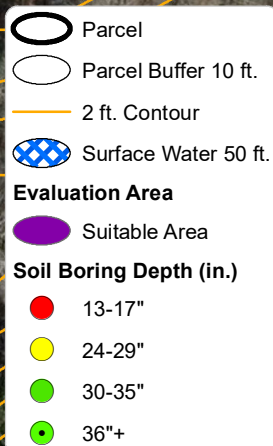
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Drawn By: William Shoeyink
Reviewed By: Brent Purdum
Date: 9/16/2024

0 25 50 100
Feet

**ATTACHMENT 3: Typical Profile Descriptions of
Suitable Soil**

Property ID#: 0352A02015
Property Recorded: _____
County: Vance

**SOIL/SITE EVALUATION
FOR
ON-SITE WASTEWATER SYSTEM**

Applicant: Simple Land Guys
Address: P.O. Box 31319
Alexandria, VA 22310

Buyer: _____ Agent: X Phone: (703) 944-4240
Date Evaluated: 09/13/2024
Proposed Facility: Residential/Commercial
Property Size: Approximately 2.06 acres

Location Site: Island Creek Estates Rd. Henderson, NC 27537

Water Supply: On Site Well X Comm. Well _____ Public _____ Other _____

Evaluation Method: Auger Boring X Pit _____ Cut _____

TYPICAL PROFILE

Horizon/ Depth (IN)	Matrix	Mottles	Mottle Abundance / Contrast	.0503 Texture	.0503 Structure	.0503 Minerology	.0504 Consistence Wet	Consistence Moist
A 0-8"	10YR 4/3	None	None	SL	GR	NEXP	NS, NP	Vfr
Bt1 8-30"	2.5YR 5/8	None	None	C	SBK	SEXP	S, P	Fi
Bt2 30-36"	2.5YR 5/8	5YR 7/8; 5YR 6/2	2, m, D	C	SBK	SEXP	S, P	Fi

.0503 Landscape Pos/Slope %	- Suitable, <15%	Profile LTAR	- 0.25 GPD/ft ²
.0504 Wetness Condition	- Suitable	System Type	- Suitable for conventional systems due to texture, structure, and depth.
.0506 Saprolite	- Suitable		
.0507 Restrictive Horizon	- Suitable		
.0509 Profile Classification	- Suitable		

Comments: This profile represents the Helena soil type and areas 1 and 3.

EVALUATED BY: Brent Purdum

COMMENTS: _____

LEGEND OF ABBREVIATIONS FOR SITE EVALUATION FORM

<u>LANDSCAPE POSITION</u>	<u>TEXTURE GROUP</u>	<u>TEXTURE CLASS</u>	<u>.1955 LTAR</u> (gal/day/sqft)
CC - Concave Slope CV - Convex Slope DS - Debris Slump D - Depression DW - Drainage Way FP - Flood Plain FS - Foot Slope H - Head Slope I - Interflueve L - Linear Slope N - Nose Slope P - Pocosin R - Ridge S - Shoulder T - Terrace	I	S - Sand LS - Loamy Sand	1.2 - .08
	II	SL - Sandy Loam L - Loam	0.8 - 0.6
	III	SCL - Sandy Clay Loam CL - Clay Loam SiL - Silt Loam Si - Silt	0.6 - 0.3
	IV	SiCL - Silt Clay Loam SC - Sandy Clay C - Clay SiC - Silty Clay O - Organic	0.4 - 0.1
<u>STRUCTURE</u>	<u>MOIST CONSISTENCE</u>	<u>MOTTLES</u>	<u>WET CONSISTENCE</u>
G - Single Grain M - Massive CR - Crumb GR - Granular SBK - Subgranular Blocky ABK - Angular Blocky PL - Platy PR - Prismatic	Vfr - Very Friable Fr - Friable Fi - Firm Vfi - Very Firm Efi - Extremely Firm	1 - Few 2 - Common 3 - Many F - Faint D - Distinct P - Prominent f - Fine m - Medium c - Coarse	NS - Non Sticky SS - Slightly Sticky S - Sticky VS - Very Sticky NP - Non Plastic SP - Slightly Plastic P - Plastic VP - Very Plastic

ATTACHMENT 4: Soil Survey Information

Vance County, North Carolina

CeD2—Cecil sandy clay loam, 8 to 15 percent slopes, eroded

Map Unit Setting

National map unit symbol: 3yfs

Elevation: 200 to 1,400 feet

Mean annual precipitation: 37 to 60 inches

Mean annual air temperature: 59 to 66 degrees F

Frost-free period: 200 to 240 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Cecil, moderately eroded, and similar soils: 92 percent

Minor components: 8 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cecil, Moderately Eroded

Setting

Landform: Interfluves

Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Interfluve

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Saprolite derived from granite and gneiss and/or schist

Typical profile

Ap - 0 to 6 inches: sandy clay loam

Bt - 6 to 40 inches: clay

BC - 40 to 55 inches: clay loam

C - 55 to 80 inches: sandy loam

Properties and qualities

Slope: 8 to 15 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water

(Ksat): Moderately high to high (0.57 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: B

Ecological site: F136XY820GA - Acidic upland forest, moist
Hydric soil rating: No

Minor Components

Madison, moderately eroded

Percent of map unit: 5 percent
Landform: Hillslopes on ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Wedowee

Percent of map unit: 3 percent
Landform: Hillslopes on ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Data Source Information

Soil Survey Area: Vance County, North Carolina
Survey Area Data: Version 24, Sep 13, 2023

**ATTACHMENT 5: Septic System Area Computation
Spreadsheets**

Conventional Septic System Area Computation

Client Name:	<i>Simple Land Guys</i>
Number Bedrooms:	3
Design Flow (gal/day):	360 (120 gal/day/bedroom, minimum 240 gal/day/dwelling)
LTAR (gal/day/ft ²):	0.25
Trench Bottom Area (ft ²):	1440 (Design flow/LTAR)
Trench Width (ft):	3
On-center distance between trenches (ft):	9
Trench Bottom Length (ft):	480
Minimum Field Area Required (ft ²):	4320 (Trench Bottom Length*Trench on-center distance)
Minimum Field Area Required (Innovative) (ft ²):	3240 (25% reduction from above)
Total Field Area Required (ft ²) ⁽¹⁾ :	10800 (Minimum field area*2.5)
Total Field Area Required (Innovative) (ft ²) ⁽¹⁾ :	8100 (25% reduction from above)
Total Field Area Required (ft ²) ⁽¹⁾ :	12960 (Minimum field area*3)
Total Field Area Required (Innovative) (ft ²) ⁽¹⁾ :	9720 (25% reduction from above)

(1) Provides for reserve area and soil irregularity, 2.5 to 3 is multiplier.

Client Name:	<i>Simple Land Guys</i>
Number Bedrooms:	4
Design Flow (gal/day):	480 (120 gal/day/bedroom, minimum 240 gal/day/dwelling)
LTAR (gal/day/ft ²):	0.25
Trench Bottom Area (ft ²):	1920 (Design flow/LTAR)
Trench Width (ft):	3
On-center distance between trenches (ft):	9
Trench Bottom Length (ft):	640
Minimum Field Area Required (ft ²):	5760 (Trench Bottom Length*Trench on-center distance)
Minimum Field Area Required (Innovative) (ft ²):	4320 (25% reduction from above)
Total Field Area Required (ft ²) ⁽¹⁾ :	14400 (Minimum field area*2.5)
Total Field Area Required (Innovative) (ft ²) ⁽¹⁾ :	10800 (25% reduction from above)
Total Field Area Required (ft ²) ⁽¹⁾ :	17280 (Minimum field area*3)
Total Field Area Required (Innovative) (ft ²) ⁽¹⁾ :	12960 (25% reduction from above)

(1) Provides for reserve area and soil irregularity, 2.5 to 3 is multiplier.

Client Name:	<i>Simple Land Guys</i>
Number Bedrooms:	5
Design Flow (gal/day):	600 (120 gal/day/bedroom, minimum 240 gal/day/dwelling)
LTAR (gal/day/ft ²):	0.25
Trench Bottom Area (ft ²):	2400 (Design flow/LTAR)
Trench Width (ft):	3
On-center distance between trenches (ft):	9
Trench Bottom Length (ft):	800
Minimum Field Area Required (ft ²):	7200 (Trench Bottom Length*Trench on-center distance)
Minimum Field Area Required (Innovative) (ft ²):	5400 (25% reduction from above)
Total Field Area Required (ft ²) ⁽¹⁾ :	18000 (Minimum field area*2.5)
Total Field Area Required (Innovative) (ft ²) ⁽¹⁾ :	13500 (25% reduction from above)
Total Field Area Required (ft ²) ⁽¹⁾ :	21600 (Minimum field area*3)
Total Field Area Required (Innovative) (ft ²) ⁽¹⁾ :	16200 (25% reduction from above)

(1) Provides for reserve area and soil irregularity, 2.5 to 3 is multiplier.