



Agri-Waste Technology, Inc.  
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# *Soil Suitability for Domestic Sewage Treatment and Disposal Systems*

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568/580 South Windward  
Drive SW,  
Supply, NC  
Brunswick County

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Prepared For: Liberty Land Buyers, LLC

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Clara Frickmann  
GIS Technician

Report Date: June 3, 2025



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568/580 South Windward Drive SW, Supply, NC (Brunswick County)**

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Soil suitability for domestic sewage treatment and disposal systems was evaluated on May 26, 2025, for property located at 568/580 South Windward Drive SW in Supply, NC. Jeff Vaughan of Agri-Waste Technology, Inc. (AWT) conducted the soil evaluation. The detailed soil evaluation of the land area will follow. A property reference map is in Attachment 1. The total property area is approximately 0.5 acres. The property is wooded and planted in grass. There is a drainage feature along 2 property lines with slight slopes on the property (Attachment 2).

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. Soil borings were flagged in the field with blue ribbon (suitable). Approximately 5 soil borings were advanced within the suitable soils area on the property (Attachment 2). A portion of the property contained drainage features, complex topography, and/or unsuitable soils and, thus, are unsuitable for 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 possible 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.

One area (see map in Attachment 2) exhibited soil characteristics and soil depths (36” or greater) that is suitable for conventional trench septic systems. This area is approximately 10,522ft<sup>2</sup>.

Typical profile descriptions of the suitable soil for this property are in Attachment 3. The typical soil profile observed in the soil borings on the property was a deep yellowish red sand to sandy loam subsoil (most restrictive horizon).

The suitable soil borings had the following characteristics. No restrictive horizons were found in any soil borings within 36” of the soil surface. Soil texture was suitable and was estimated to be sand near the soil surface (A and E horizons) and sandy loam to sandy clay loam in the subsoil (B horizons). Soil structure was suitable and was estimated to be single grained near the soil surface (A and E horizons) and subangular blocky in the subsoil (B horizons). Clay mineralogy was suitable with very friable to friable moist soil consistence and non-sticky to slightly sticky and non-plastic to slightly plastic wet soil consistence.

The major soil type mapped on this property is Onslow fine sandy loam (map symbol On). The Brunswick County Soil Survey indicates that severe limitations exist for septic systems installed in these soils 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 0.6 – 1.2 GPD/ft<sup>2</sup> based on the most restrictive soil texture in the subsoil. Table 1 below presents estimated conventional septic system land area requirements for several home sizes and LTAR’s on this property. The LTAR suggested by AWT for a majority of the provisionally suitable soil is 0.8 GPD/ft<sup>2</sup>, but the final LTAR for specific septic system types and septic drainfield locations may be set by the Brunswick County Health Department. The detailed computations are in Attachment 5.

Table 1. Estimated Conventional Septic System Land Requirements (including repair area) for Several Home Sizes and Long-Term Acceptance Rates (LTAR) on this Property.

<u>House Size</u>	<u>Long-Term Acceptance Rate (LTAR)</u>	<u>Area Required for Conventional Septic System</u>	<u>Minimum Area Required for Innovative Conventional Septic System</u>
	-----GPD/ft <sup>2</sup> -----	-----ft <sup>2</sup> -----	-----ft <sup>2</sup> -----
3 bedrooms	0.8	~4,050	~3,038
4 bedrooms	0.8	~5,400	~4,050
5 bedrooms	0.8	~6,750	~5,063

Conclusions

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

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

libertylandbuyers

**ATTACHMENT 1: Property Reference Map**

NORTH  
WINDWARD  
DR SW

1195

200BB004

200B3005

588

200BB006

580

610

200BB007

200BB008

610

SOUTH WINDWARD DR SW

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



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### Preliminary Soil Evaluation

Liberty Land Buyers  
Brunswick Co., NC  
PIN: 200BB005  
and 200BB006

GIS Acres: ~0.25



#### Area for Septic:

~10,522 sq. ft.

#### Soil Types:

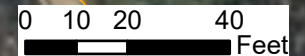
On- Onslow fine sandy loam

#### Notes:

Not in NC Riparian Buffer  
No USGS/Soil Survey waters  
No NWI mapped wetlands

	Parcel
	Parcel Setback 10 ft.
	2 ft. Contour
	Well
	Well Setback 50 ft.
<b>Evaluation</b>	
	Area for Septic
<b>Soil Boring Depth (in.)</b>	
	48"+

Drawn By: Clara Frickmann  
Reviewed By: Jeff Vaughan  
Date: 6/2/2025



\*Surface water and/or bad topo areas have not been officially evaluated for stream ID according to local regulatory requirements. This map is intended for preliminary purposes only and not to be used as a plat/survey or can it be assumed all streams are identified on this property.\*



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### Preliminary Soil Evaluation

Liberty Land Buyers  
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PIN: 200BB005  
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#### Area for Septic:

~10,522 sq. ft.

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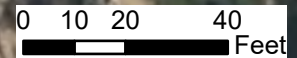
On- Onslow fine sandy loam

#### Notes:

Not in NC Riparian Buffer  
No USGS/Soil Survey waters  
No NWI mapped wetlands

- Parcel
  - Parcel Setback 10 ft.
  - Soil Type
  - Well
  - Well Setback 50 ft.
- Evaluation
- Area for Septic
- Soil Boring Depth (in.)
- 48"+

Drawn By: Clara Frickmann  
Reviewed By: Jeff Vaughan  
Date: 6/2/2025



\*Surface water and/or bad topo areas have not been officially evaluated for stream ID according to local regulatory requirements. This map is intended for preliminary purposes only and not to be used as a plat/survey or can it be assumed all streams are identified on this property.\*

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

**ATTACHMENT 4: Soil Survey Information**

TABLE 13.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
On----- Onslow	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: seepage, wetness.	Fair: wetness.
PaA----- Pactolus	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: too sandy.
Pn----- Pantego	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Pt. Pits					
Ra----- Rains	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, seepage.	Poor: wetness.
Tm----- Tomahawk	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness, seepage.	Severe: seepage, wetness.	Poor: thin layer.
To----- Torhunta	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: wetness.
Ur. Urban land					
WaB----- Wando	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
WdB: Wando-----	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Urban land.					
Wo----- Woodington	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: wetness.
YaB----- Yaupon	Severe: percs slowly, wetness.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack.

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

## Conventional Septic System Area Computation

Created by: JV  
Created on: 6/20/2001  
Updated on: 6/3/2025

Client Name: 568/580 South Windward Dr SW  
Number Bedrooms: 3  
Design Flow (gal/day): 360 (120 gal/day/bedroom, minimum 240 gal/day/dwelling)  
LTAR (gal/day/ft<sup>2</sup>): 0.8  
Trench Bottom Area (ft<sup>2</sup>): 450 (Design flow/LTAR)  
Trench Width (ft): 3  
On-center distance between trenches (ft): 9  
Trench Bottom Length (ft): 150

Minimum Field Area Required (ft<sup>2</sup>): 1350 (Trench Bottom Length\*Trench on-center distance)  
Minimum Field Area Required (Innovative) (ft<sup>2</sup>): 1012.5 (25% reduction from above)  
Total Field Area Required (ft<sup>2</sup>)<sup>(1)</sup>: 3375 (Minimum field area\*2.5)  
Total Field Area Required (Innovative) (ft<sup>2</sup>)<sup>(1)</sup>: 2531.25 (25% reduction from above)  
Total Field Area Required (ft<sup>2</sup>)<sup>(1)</sup>: 4050 (Minimum field area\*3)  
Total Field Area Required (Innovative) (ft<sup>2</sup>)<sup>(1)</sup>: 3037.5 (25% reduction from above)

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

Client Name: 568/580 South Windward Dr SW  
Number Bedrooms: 3  
Design Flow (gal/day): 360 (120 gal/day/bedroom, minimum 240 gal/day/dwelling)  
LTAR (gal/day/ft<sup>2</sup>): 1  
Trench Bottom Area (ft<sup>2</sup>): 360 (Design flow/LTAR)  
Trench Width (ft): 3  
On-center distance between trenches (ft): 9  
Trench Bottom Length (ft): 120

Minimum Field Area Required (ft<sup>2</sup>): 1080 (Trench Bottom Length\*Trench on-center distance)  
Minimum Field Area Required (Innovative) (ft<sup>2</sup>): 810 (25% reduction from above)  
Total Field Area Required (ft<sup>2</sup>)<sup>(1)</sup>: 2700 (Minimum field area\*2.5)  
Total Field Area Required (Innovative) (ft<sup>2</sup>)<sup>(1)</sup>: 2025 (25% reduction from above)  
Total Field Area Required (ft<sup>2</sup>)<sup>(1)</sup>: 3240 (Minimum field area\*3)  
Total Field Area Required (Innovative) (ft<sup>2</sup>)<sup>(1)</sup>: 2430 (25% reduction from above)

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

## Conventional Septic System Area Computation

Created by: JV  
Created on: 6/20/2001  
Updated on: 6/3/2025

Client Name: 568/580 South Windward Dr SW  
Number Bedrooms: 4  
Design Flow (gal/day): 480 (120 gal/day/bedroom, minimum 240 gal/day/dwelling)  
LTAR (gal/day/ft<sup>2</sup>): 0.8  
Trench Bottom Area (ft<sup>2</sup>): 600 (Design flow/LTAR)  
Trench Width (ft): 3  
On-center distance between trenches (ft): 9  
Trench Bottom Length (ft): 200

Minimum Field Area Required (ft<sup>2</sup>): 1800 (Trench Bottom Length\*Trench on-center distance)  
Minimum Field Area Required (Innovative) (ft<sup>2</sup>): 1350 (25% reduction from above)  
Total Field Area Required (ft<sup>2</sup>)<sup>(1)</sup>: 4500 (Minimum field area\*2.5)  
Total Field Area Required (Innovative) (ft<sup>2</sup>)<sup>(1)</sup>: 3375 (25% reduction from above)  
Total Field Area Required (ft<sup>2</sup>)<sup>(1)</sup>: 5400 (Minimum field area\*3)  
Total Field Area Required (Innovative) (ft<sup>2</sup>)<sup>(1)</sup>: 4050 (25% reduction from above)

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

Client Name: 568/580 South Windward Dr SW  
Number Bedrooms: 4  
Design Flow (gal/day): 480 (120 gal/day/bedroom, minimum 240 gal/day/dwelling)  
LTAR (gal/day/ft<sup>2</sup>): 1  
Trench Bottom Area (ft<sup>2</sup>): 480 (Design flow/LTAR)  
Trench Width (ft): 3  
On-center distance between trenches (ft): 9  
Trench Bottom Length (ft): 160

Minimum Field Area Required (ft<sup>2</sup>): 1440 (Trench Bottom Length\*Trench on-center distance)  
Minimum Field Area Required (Innovative) (ft<sup>2</sup>): 1080 (25% reduction from above)  
Total Field Area Required (ft<sup>2</sup>)<sup>(1)</sup>: 3600 (Minimum field area\*2.5)  
Total Field Area Required (Innovative) (ft<sup>2</sup>)<sup>(1)</sup>: 2700 (25% reduction from above)  
Total Field Area Required (ft<sup>2</sup>)<sup>(1)</sup>: 4320 (Minimum field area\*3)  
Total Field Area Required (Innovative) (ft<sup>2</sup>)<sup>(1)</sup>: 3240 (25% reduction from above)

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

## Conventional Septic System Area Computation

Created by: JV  
Created on: 6/20/2001  
Updated on: 6/3/2025

Client Name: 568/580 South Windward Dr SW  
Number Bedrooms: 5  
Design Flow (gal/day): 600 (120 gal/day/bedroom, minimum 240 gal/day/dwelling)  
LTAR (gal/day/ft<sup>2</sup>): 0.8  
Trench Bottom Area (ft<sup>2</sup>): 750 (Design flow/LTAR)  
Trench Width (ft): 3  
On-center distance between trenches (ft): 9  
Trench Bottom Length (ft): 250

Minimum Field Area Required (ft<sup>2</sup>): 2250 (Trench Bottom Length\*Trench on-center distance)  
Minimum Field Area Required (Innovative) (ft<sup>2</sup>): 1687.5 (25% reduction from above)  
Total Field Area Required (ft<sup>2</sup>)<sup>(1)</sup>: 5625 (Minimum field area\*2.5)  
Total Field Area Required (Innovative) (ft<sup>2</sup>)<sup>(1)</sup>: 4218.75 (25% reduction from above)  
Total Field Area Required (ft<sup>2</sup>)<sup>(1)</sup>: 6750 (Minimum field area\*3)  
Total Field Area Required (Innovative) (ft<sup>2</sup>)<sup>(1)</sup>: 5062.5 (25% reduction from above)

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

Client Name: 568/580 South Windward Dr SW  
Number Bedrooms: 5  
Design Flow (gal/day): 600 (120 gal/day/bedroom, minimum 240 gal/day/dwelling)  
LTAR (gal/day/ft<sup>2</sup>): 1  
Trench Bottom Area (ft<sup>2</sup>): 600 (Design flow/LTAR)  
Trench Width (ft): 3  
On-center distance between trenches (ft): 9  
Trench Bottom Length (ft): 200

Minimum Field Area Required (ft<sup>2</sup>): 1800 (Trench Bottom Length\*Trench on-center distance)  
Minimum Field Area Required (Innovative) (ft<sup>2</sup>): 1350 (25% reduction from above)  
Total Field Area Required (ft<sup>2</sup>)<sup>(1)</sup>: 4500 (Minimum field area\*2.5)  
Total Field Area Required (Innovative) (ft<sup>2</sup>)<sup>(1)</sup>: 3375 (25% reduction from above)  
Total Field Area Required (ft<sup>2</sup>)<sup>(1)</sup>: 5400 (Minimum field area\*3)  
Total Field Area Required (Innovative) (ft<sup>2</sup>)<sup>(1)</sup>: 4050 (25% reduction from above)

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