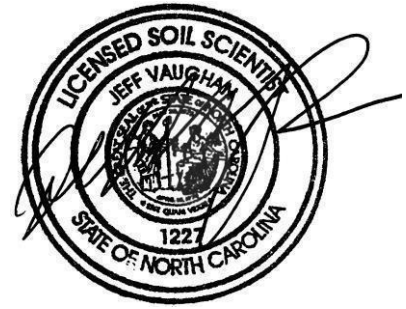




Soil Suitability for Domestic Sewage Treatment and Disposal Systems

NC Hwy 98
Louisburg, NC 27549
Franklin Co. Parcel ID: 003414

Prepared For:	April C Denton, Client
Prepared By:	Jeff Vaughan, Ph.D., L.S.S. Senior Agronomist/Soil Scientist Jordan Harris, Assistant Soil Scientist
Report Date:	July 11, 2025



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
NC Hwy 98, Louisburg, NC 27549 (Franklin County)**

PREPARED FOR: April C Denton, Client

PREPARED BY: Jeff Vaughan
Jordan Harris

DATE: July 11, 2025

Soil suitability for domestic sewage treatment and disposal systems was evaluated on April 22, 2020, for property located at NC Hwy 98 near Louisburg, NC. Jordan Harris and Ash Doyen of Agri-Waste Technology, Inc. (AWT) conducted the soil evaluation. The detailed soil evaluation of the land area will follow. Property reference maps are in Attachment 1. A review of the soil and landscape characteristics that dictate soil suitability for domestic sewage treatment and disposal systems can be found in Attachment 2.

The total property area is approximately 1 acre. The property is partially wooded. There are moderate slopes on the property (Attachment 3).

Soil Suitability for Domestic Sewage Treatment and Disposal Systems

The aerial map in Attachment 3 details the approximate property boundaries, soil boring locations, soil types, and soil areas for septic systems. Approximately 6 soil borings were advanced on the property (Attachment 3). 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.

The purple area (see map in Attachment 3) evaluated on the property exhibited soil characteristics and soil depths (24" or greater) that are suitable for shallow conventional trench or drip septic systems. This area is approximately 23,256ft².

Typical profile descriptions of the suitable soil for this property are in Attachment 4. One distinct soil profile was observed in the soil borings on the property: a brownish yellow clay subsoil.

The suitable soil borings had the following characteristics. No restrictive horizons were found in any soil borings within 24" of the soil surface. Soil texture was suitable and was estimated to be sandy loam near the soil surface (A and E 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 blocky 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. Indications of saprolite were detected in some soil borings, but were not dominant in profiles to a depth of 19" or more.

The mapped soil type on this property is Wedowee sandy loam (map symbols WeC). The Franklin County Soil Survey indicates that somewhat limited limitations exist for septic systems installed in these soils types (Attachment 5).

The land area required for a shallow 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 Franklin County Health Department. The detailed computations are in Attachment 6.

The land area required for a drip 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 0.05 – 0.15 GPD/ft² for drip septic systems based on the most restrictive soil texture in the subsoil. The LTAR suggested by AWT is 0.1 GPD/ft², but the final LTAR for specific septic system types and septic drainfield locations will be set by the Franklin County Health Department and possibly will be based on saturated hydraulic conductivity tests. The detailed computations are in Attachment 6.

Typically, the area required for a septic system is 3,000 – 5,000 ft² (initial and repair) per bedroom.

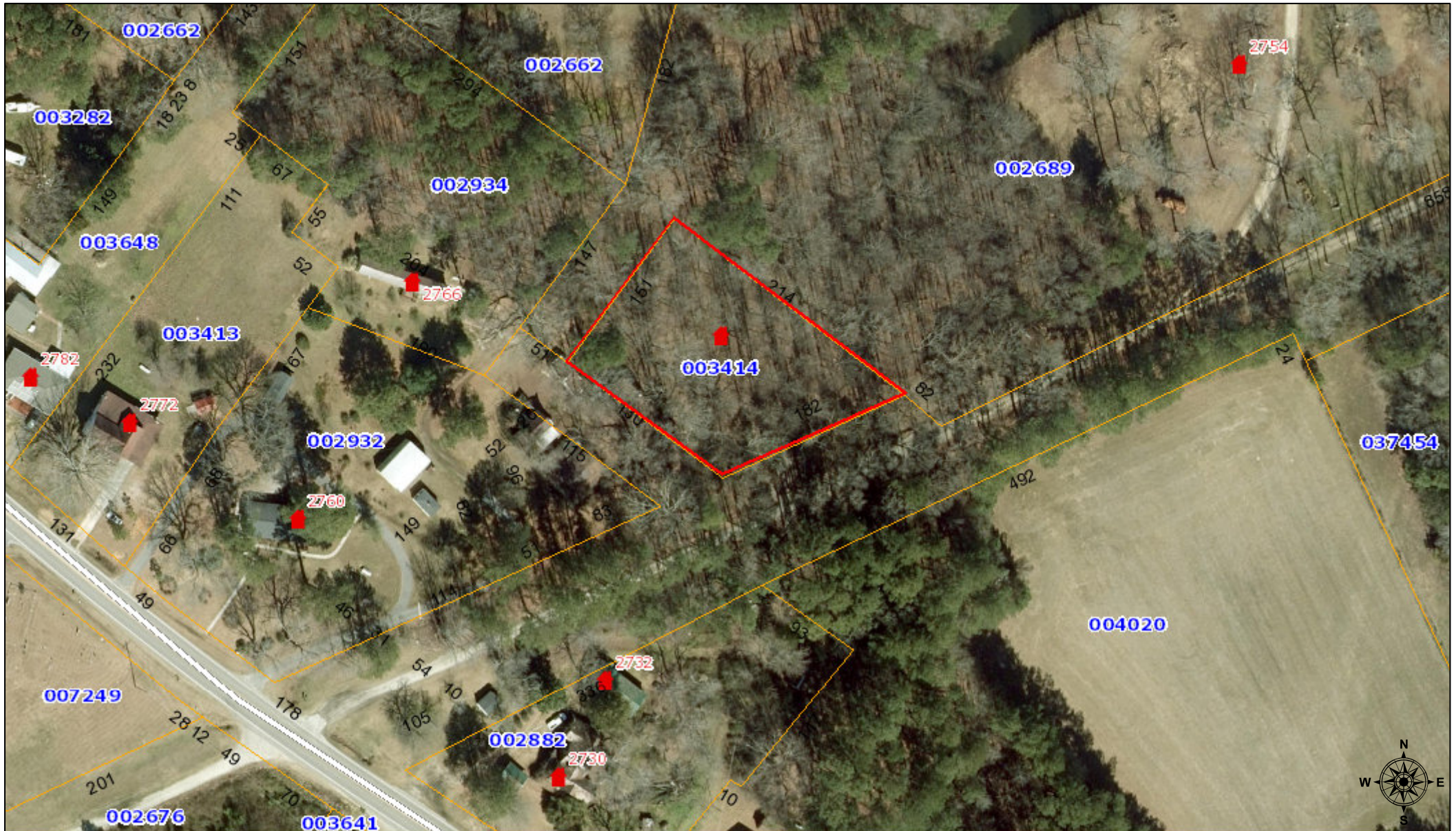
Conclusions

Based on the results of this evaluation, the installation of shallow conventional or drip septic systems seems very probable on this property in the area designated on the map in Attachment 3.

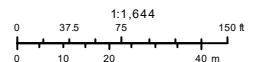
We appreciate the opportunity to assist you in this matter. Please contact us with any questions, concerns, or comments.

ATTACHMENT 1: Property Reference Map

GoMaps



July 10, 2025



WARNING: THIS IS NOT A SURVEY.
 This map is prepared for the inventory of real property found within this jurisdiction, and is compiled from recorded deeds, plats, and other public records and data. Users of this map are hereby notified that the aforementioned public primary information sources shown here, Garmin, Inc. OpenStreetMap contributors and the GIS User Community assume no legal responsibility for the information contained on this map.
 Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

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



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Preliminary Soil Evaluation

April C Denton
Franklin Co., NC
PIN: 003414
NC Hwy 98

GIS Acres: ~0.69



Area for Septic:

~23,256 sq. ft.

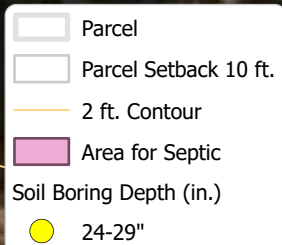
Soil Types:

WeC- Wedowee sandy loam
VaB- Vance sandy loam

Notes:

In Tar Pamlico Riparian Buffer
No USGS/Soil Survey waters
No mapped NWI Wetlands

Drawn By: Clara Frickmann
Reviewed By: Jordan Harris
Date: 7/9/2025



0 10 20 40
Feet



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Preliminary Soil Evaluation

April C Denton
Franklin Co., NC
PIN: 003414
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~23,256 sq. ft.

Soil Types:

WeC- Wedowee sandy loam
VaB- Vance sandy loam

Notes:

In Tar Pamlico Riparian Buffer
No USGS/Soil Survey waters
No mapped NWI Wetlands

Drawn By: Clara Frickmann
Reviewed By: Jordan Harris
Date: 7/9/2025

-  Parcel
-  Parcel Setback 10 ft.
-  Soil Type
-  Area for Septic
-  Soil Boring Depth (in.)
24-29"

0 10 20 40
Feet

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

Property ID#: 003414
Property Recorded: yes
County: Franklin

SOIL/SITE EVALUATION FOR ON-SITE WASTEWATER SYSTEM

Applicant: April C Denton
Address: 1002 Cooke Rd
Louisburg NC 27549

Buyer:___ Agent: X Phone: (919)630-2367
Date Evaluated: 07/2/2025
Proposed Facility: Residential
Property Size: Approximately 1 acres

Location Site: NC Hwy 98, Louisburg NC 27549

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	(a)(1) Tex- ture	(a)(2) Structure	(a)(3) Minerology	Consistence Wet	Consistence Moist
A 0-6"	10YR 4/3	None	None	SL	GR	SEXP	NS, NP	Vfr
E 6-14"	2.5YR 6/6	None	None	SCL	SBK	SEXP	SS, SP	Fr
Bt 14-28"+	10R 5/6	None	None	CL	SBK	SEXP	SS, SP	Fi

.1940 Landscape Pos/Slope %	- Suitable, <15%	Profile LTAR	- 0.1 GPD/ft ²
.1942 Wetness Condition	- Suitable	System Type	- Provisionally suitable for drip systems due to texture, structure, and depth.
.1943/.1956 Saprolite	- Suitable		
.1944 Restrictive Horizon	- Suitable		
.1948 Profile Classification	- Provisionally suitable		

Comments:

TYPICAL PROFILE

Horizon/ Depth (IN)	Matrix	Mottles	Mottle Abundance /Contrast	(a)(1) Tex- ture	(a)(2) Structure	(a)(3) Minerology	Consistence Wet	Consistence Moist
A 0-6"	10YR 4/3	None	None	SL	GR	SEXP	NS, NP	Vfr
E 6-14"	2.5YR 6/6	None	None	SCL	SBK	SEXP	SS, SP	Fr
Bt 14-28"+	10R 5/6	None	None	CL	SBK	SEXP	SS, SP	Fi

.1940 Landscape Pos/Slope %	- Suitable, <15%	Profile LTAR	- 0.25 GPD/ft ²
.1942 Wetness Condition	- Suitable	System Type	- Provisionally suitable for shallow conventional systems due to texture, structure, and depth.
.1943/.1956 Saprolite	- Suitable		
.1944 Restrictive Horizon	- Suitable		
.1948 Profile Classification	- Provisionally suitable		

Comments:

EVALUATED BY: Jordan Harris
COMMENTS: _____

LEGEND OF ABBREVIATIONS FOR SITE EVALUATION FORM

LANDSCAPE POSITION

CC - Concave Slope
CV - Convex Slope
DS - Debris Slump
D - Depression
DW - Drainage Way
FP - Flood Plain
FS - Foot Slope
H - Head Slope
I - Interfluvium
L - Linear Slope
N - Nose Slope
P - Pocosin
R - Ridge
S - Shoulder
T - Terrace

MOIST CONSISTENCE

Vfr - Very Friable
Fr - Friable
Fi - Firm
Vfi - Very Firm
Efi - Extremely Firm

TEXTURE CLASS

S - Sand
LS - Loamy Sand

SL - Sandy Loam
L - Loam

SCL - Sandy Clay Loam
CL - Clay Loam
SiL - Silt Loam
Si - Silt
SiCL - Silt Clay Loam

SC - Sandy Clay
C - Clay
SiC - Silty Clay
O - Organic

.1955 LTAR
(gal/day/sqft)
1.2 - .08

0.8 - 0.6

0.6 - 0.3

0.4 - 0.1

STRUCTURE

G - Single Grain
M - Massive
CR - Crumb
GR - Granular
SBK - Subgranular Blocky
ABK - Angular Blocky
PL - Platy
PR - Prismatic

MOTTLES

1 - Few
2 - Common
3 - Many

F - Faint
D - Distinct
P - Prominent

f - Fine
m - Medium
c - Coarse

WET CONSISTENCE

NS - Non Sticky
SS - Slightly Sticky
S - Sticky
VS - Very Sticky

NP - Non Plastic
SP - Slightly Plastic
P - Plastic
VP - Very Plastic

TEXTURE GROUP

I

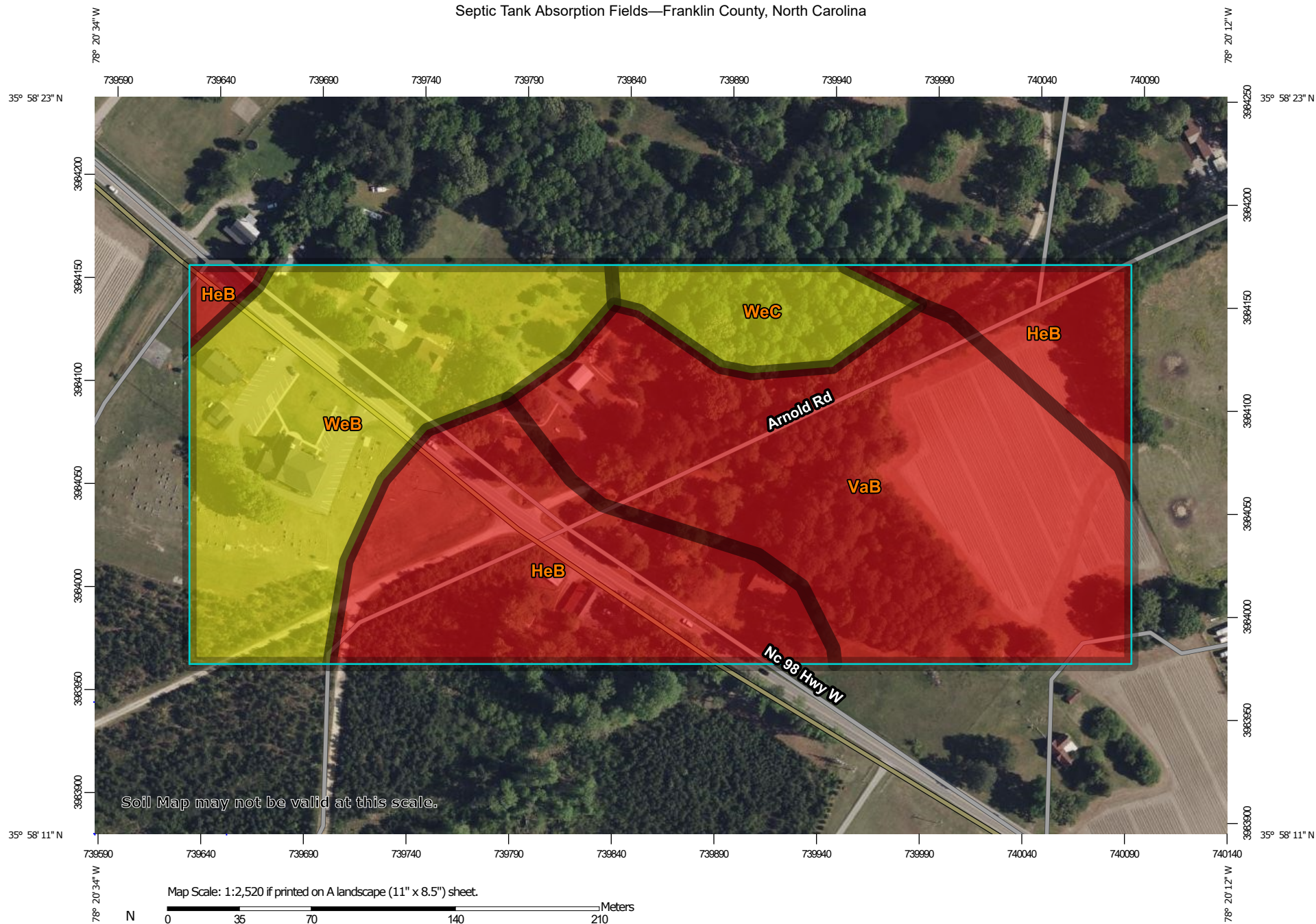
II

III

IV

ATTACHMENT 4: Soil Survey Information

Septic Tank Absorption Fields—Franklin County, North Carolina



**Natural Resources
Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

7/10/2025
Page 1 of 5

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Background

 Aerial Photography

Soils

Soil Rating Polygons

-  Very limited
-  Somewhat limited
-  Not limited
-  Not rated or not available

Soil Rating Lines

-  Very limited
-  Somewhat limited
-  Not limited
-  Not rated or not available

Soil Rating Points

-  Very limited
-  Somewhat limited
-  Not limited
-  Not rated or not available

Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Franklin County, North Carolina
Survey Area Data: Version 28, Sep 9, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 24, 2022—May 9, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Septic Tank Absorption Fields

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
HeB	Helena sandy loam, 2 to 6 percent slopes	Very limited	Helena (90%)	Depth to saturated zone (1.00)	6.6	29.8%
				Slow water movement (1.00)		
			Worsham, undrained (1%)	Depth to saturated zone (1.00)		
				Slow water movement (1.00)		
VaB	Vance sandy loam, 2 to 6 percent slopes	Very limited	Vance (85%)	Slow water movement (1.00)	8.4	38.0%
				Seepage, bottom layer (1.00)		
WeB	Wedowee sandy loam, 2 to 6 percent slopes	Somewhat limited	Wedowee (94%)	Slow water movement (0.82)	5.7	26.0%
WeC	Wedowee sandy loam, 6 to 10 percent slopes	Somewhat limited	Wedowee (85%)	Slow water movement (0.82)	1.4	6.3%
Totals for Area of Interest					22.0	100.0%

Rating	Acres in AOI	Percent of AOI
Very limited	14.9	67.8%
Somewhat limited	7.1	32.2%
Totals for Area of Interest	22.0	100.0%

Description

ENG - Engineering

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Saturated hydraulic conductivity (Ksat), depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to

validate these interpretations and to confirm the identity of the soil on a given site.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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

Conventional Septic System Area ComputationCreated by: JH
Created on: 7/11/2025

Client Name: *Denton*
Number Bedrooms: **3**
Design Flow (gal/day): 360 (120 gal/day/bedroom, minimum 240 gal/day/dwelling)
LTAR (gal/day/ft²): 0.25
Trench Bottom Area (ft²): 1440 (Design flow/LTAR)
Trench Width (ft): 3
On-center distance between trenches (ft): 9
Trench Bottom Length (ft): 480 (Conventional - Pipe & Gravel)

Minimum Field Area Required (ft²): 4320 (Trench Bottom Length*Trench on-center distance)
Minimum Field Area Required (Innovative) (ft²): 3240 (25% reduction)
Minimum Field Area Required (Panel Block) (ft²): 2160 (50% reduction)
Total Field Area Required (ft²)⁽¹⁾: 10800 (Minimum field area*2.5)
Total Field Area Required (Innovative) (ft²)⁽¹⁾: 8100 (25% reduction from above)
Total Field Area Required (Panel Block) (ft²)⁽¹⁾: 5400 (50% reduction)
Total Field Area Required (ft²)⁽¹⁾: 12960 (Minimum field area*3)
Total Field Area Required (Innovative) (ft²)⁽¹⁾: 9720 (25% reduction from above)
Total Field Area Required (Panel Block) (ft²)⁽¹⁾: 6480 (50% reduction)

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

Client Name: *Denton*
Number Bedrooms: **4**
Design Flow (gal/day): 480 (120 gal/day/bedroom, minimum 240 gal/day/dwelling)
LTAR (gal/day/ft²): 0.25
Trench Bottom Area (ft²): 1920 (Design flow/LTAR)
Trench Width (ft): 3
On-center distance between trenches (ft): 9
Trench Bottom Length (ft): 640 (Conventional - Pipe & Gravel)

Minimum Field Area Required (ft²): 5760 (Trench Bottom Length*Trench on-center distance)
Minimum Field Area Required (Innovative) (ft²): 4320 (25% reduction from above)
Minimum Field Area Required (Panel Block) (ft²): 2880 (50% reduction)
Total Field Area Required (ft²)⁽¹⁾: 14400 (Minimum field area*2.5)
Total Field Area Required (Innovative) (ft²)⁽¹⁾: 10800 (25% reduction from above)
Total Field Area Required (Panel Block) (ft²)⁽¹⁾: 7200 (50% reduction)
Total Field Area Required (ft²)⁽¹⁾: 17280 (Minimum field area*3)
Total Field Area Required (Innovative) (ft²)⁽¹⁾: 12960 (25% reduction from above)
Total Field Area Required (Panel Block) (ft²)⁽¹⁾: 8640 (50% reduction)

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

Client Name: *Denton*
Number Bedrooms: **5**
Design Flow (gal/day): 600 (120 gal/day/bedroom, minimum 240 gal/day/dwelling)
LTAR (gal/day/ft²): 0.25
Trench Bottom Area (ft²): 2400 (Design flow/LTAR)
Trench Width (ft): 3
On-center distance between trenches (ft): 9
Trench Bottom Length (ft): 800 (Conventional - Pipe & Gravel)

Minimum Field Area Required (ft²): 7200 (Trench Bottom Length*Trench on-center distance)
Minimum Field Area Required (Innovative) (ft²): 5400 (25% reduction from above)
Minimum Field Area Required (Panel Block) (ft²): 3600 (50% reduction)
Total Field Area Required (ft²)⁽¹⁾: 18000 (Minimum field area*2.5)
Total Field Area Required (Innovative) (ft²)⁽¹⁾: 13500 (25% reduction from above)
Total Field Area Required (Panel Block) (ft²)⁽¹⁾: 9000 (50% reduction)
Total Field Area Required (ft²)⁽¹⁾: 21600 (Minimum field area*3)
Total Field Area Required (Innovative) (ft²)⁽¹⁾: 16200 (25% reduction from above)
Total Field Area Required (Panel Block) (ft²)⁽¹⁾: 10800 (50% reduction)

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

Drip Septic System Area Computation

Created by: JH
Created on: 7/2/2025
Updated on: 7/11/2025

Client Name: *Denton*
Number Bedrooms: 3
Design Flow (gal/day): 360 (120 gal/day/bedroom, minimum 240 gal/day/dwelling)
LTAR (gal/day/ft²): 0.1
Trench Bottom Area (ft²): 3600 (Design flow/LTAR)
Trench Width (ft): 0
On-center distance between trenches (ft): 2
Trench Bottom Length (ft): 1800

Minimum Field Area Required (ft²): 3600 (Trench Bottom Length*Trench on-center distance)
Total Field Area Required (ft²)⁽¹⁾: 9000 (Minimum field area*2.5)
Total Field Area Required (ft²)⁽¹⁾: 10800 (Minimum field area*3)

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

Client Name: *Denton*
Number Bedrooms: 4
Design Flow (gal/day): 480 (120 gal/day/bedroom, minimum 240 gal/day/dwelling)
LTAR (gal/day/ft²): 0.1
Trench Bottom Area (ft²): 4800 (Design flow/LTAR)
Trench Width (ft): 0
On-center distance between trenches (ft): 2
Trench Bottom Length (ft): 2400

Minimum Field Area Required (ft²): 4800 (Trench Bottom Length*Trench on-center distance)
Total Field Area Required (ft²)⁽¹⁾: 12000 (Minimum field area*2.5)
Total Field Area Required (ft²)⁽¹⁾: 14400 (Minimum field area*3)

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

Client Name: *Denton*
Number Bedrooms: 5
Design Flow (gal/day): 600 (120 gal/day/bedroom, minimum 240 gal/day/dwelling)
LTAR (gal/day/ft²): 0.1
Trench Bottom Area (ft²): 6000 (Design flow/LTAR)
Trench Width (ft): 0
On-center distance between trenches (ft): 2
Trench Bottom Length (ft): 3000

Minimum Field Area Required (ft²): 6000 (Trench Bottom Length*Trench on-center distance)
Total Field Area Required (ft²)⁽¹⁾: 15000 (Minimum field area*2.5)
Total Field Area Required (ft²)⁽¹⁾: 18000 (Minimum field area*3)

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