



May 30, 2018

Mr. Luke Rogers
Friesian Holdings Solar, LLC
1125 East Morehead Street, Suite 202
Charlotte, North Carolina 28204

Reference: Wetland Delineation
Friesian Holdings Solar Farm
Approximate 688 Acre Tract
Leisure Road
Laurinburg, Scotland County, North Carolina
Pilot Project 3536

Dear Mr. Rogers:

Pilot Environmental, Inc. (Pilot) is pleased to submit this report of the wetland delineation for the approximate 688 acre tract located west of Leisure Road in Laurinburg, Scotland County, North Carolina.

Background

Wetlands are defined by the United States Army Corps of Engineers (USACE) and the United States Environmental Protection Agency (EPA) as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances, do support a prevalence of vegetation typically adapted for life in saturated soil conditions." In order for an area to be classified as wetland, hydrophytic vegetation, hydric soils, and wetland hydrology indicators must be present.

Section 404 of the Clean Water Act regulates the discharge of dredge and fill materials into waters of the United States (lakes, rivers, ponds, streams, etc.), including wetlands. Waters of the United States include the territorial seas, navigable coastal and inland lakes, rivers and streams, intermittent streams, and wetlands. The EPA and the USACE jointly administer the Section 404 program. Section 401 of the Clean Water Act grants each state the authority to approve, condition, or deny any Federal permits that could result in a discharge to State waters.

Jurisdictional features include wetlands, open waters, ponds, lakes and perennial/intermittent streams. Jurisdictional features are regulated by the USACE and North Carolina Department of Environmental Quality-Division of Water Resources (NCDEQ-DWR). Permits are required prior to impacting any jurisdictional features. The type of permit required is specific to the type, location and amount of impacts. Stormwater management plans and/or mitigation for proposed impacts could be a requirement of the permit approval process.

The findings and conclusions found in this report are our opinions based on field conditions encountered at the time of the site visit. Changes including, but not limited to, regulations, weather, timber/vegetation removal and usage/development of the site or nearby properties can alter the findings and opinions presented in this report. We recommend that this report only be used for preliminary planning purposes. Agency verifications, followed by a survey of jurisdictional features are required to determine the exact extent and locations of jurisdictional features and are valid for a period of up to five years following issuance of a USACE Jurisdictional Determination (JD) and/or NCDEQ-DWR Site Determination Letter.

Global Positioning System (GPS) location of jurisdictional features has been conducted by Pilot personnel in the field utilizing a Trimble handheld GPS unit capable of sub-meter accuracy. Field GPS data has been post-processed by Pilot personnel and digitally provided to the client for assistance with preliminary planning. Pilot expresses no warranties or liabilities to accuracy of GPS locations and/or provided GPS data.

Scope of Services

Pilot was contracted to perform a wetland delineation for the approximate 688 acre tract located west of Leisure Road in Laurinburg, Scotland County, North Carolina. The site includes five parcels identified by the Scotland County Geographical Information System (GIS) as Parcel Numbers 04019601060, 04019601059, 04019604008, 04019601018 and 040193A01001. The site is being evaluated for proposed development with a solar farm. The scope of services included a delineation of jurisdictional features (streams, wetlands and other surface waters) located on the site. The site boundaries were not marked at the time of our field delineation. Pilot was provided the site boundary in a Google Earth digital file.

Literature Review

We reviewed the U.S. Geological Survey (USGS) Topographic Map, the U.S. Department of Agriculture (USDA) Soil Survey of Scotland County, the U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) Map and the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM).

- The USGS Topographic Map (Drawing 1) identifies Bear Creek and associated wetlands along the western site boundary. An unnamed tributary to Bear Creek is depicted along the southeastern site boundary. An unnamed tributary to Gum Swamp is depicted near the northeastern site boundary. Several Carolina Bay depressions are depicted across the site. Additional drainage swales that could contain surface waters or wetlands are depicted on the site.

- The USDA Web Soil Survey of Scotland County (Drawing 2) depicts the following soil mapping units on the site:

Map unit symbol	Map unit name	Rating (% Hydric by Component)	Acres	Percent of Site
AeC	Ailey loamy sand, 8 to 15 percent slopes	3	10.9	1.6%
AuB	Autryville sand, 0 to 6 percent slopes	0	37.6	5.4%
BaA	Bibb soils, 0 to 2 percent slopes, frequently flooded	90	2.9	0.4%
BIC	Blanton sand, 8 to 15 percent slopes	0	17.8	2.6%
CoA	Coxville loam, 0 to 2 percent slopes	95	2.6	0.4%
DbA	Dunbar fine sandy loam, 0 to 2 percent slopes	4	25.5	3.7%
DpA	Duplin sandy loam, 0 to 2 percent slopes	5	23.2	3.4%
GoA	Goldsboro loamy sand, 0 to 2 percent slope	0	18.7	2.7%
GrC	Gritney sandy loam, 6 to 10 percent slopes	3	0.4	0.1%
JmA	Johnston soils, 0 to 2 percent slopes, frequently flooded	100	83.2	12.0%
LyA	Lynchburg sandy loam, 0 to 2 percent slopes	8	2.6	0.4%
McA	McColl loam, 0 to 1 percent slopes, ponded	90	9.5	1.4%
NcA	Noboco loamy sand, 0 to 2 percent slopes	0	132.7	19.2%
NcB	Noboco loamy sand, 2 to 6 percent slopes	0	16.6	2.4%
NoA	Norfolk loamy sand, 0 to 2 percent slopes	0	92.4	13.4%
NoB	Norfolk loamy sand, 2 to 6 percent slopes	0	41.0	5.9%
PuA	Plummer and Osier soils, 0 to 2 percent slopes	70	0.5	0.1%
WaB	Wagram loamy sand, 0 to 6 percent slopes	5	168.8	24.4%
Subtotals for Soil Survey Area			686.8	99.5%

Pilot also reviewed the last published USDA Soil Survey of Scotland County (Drawing 2A). Bear Creek is identified on the western portion of the site. Surface waters or wetlands are not depicted on the site.

- The USFWS NWI Map (Drawing 3) identifies freshwater ponds and forested/shrub and emergent wetlands around the perimeter of the site. A linear riverine feature is depicted on the southeastern portion of the site.

- The FEMA FIRM (Drawing 4) indicates that the majority of the site is located within Zone X, an area outside the 100-year floodplain. A small area on the southern portion of the site is identified as being located within the 100-year floodplain.

Field Delineation

Pilot personnel conducted the field delineation on March 20, 2018. The site contains wooded land and fields. Structures are not located on the site. Neither ponds nor streams are located on the site.

Wetlands are located within several areas around the perimeter of the site. The wetlands are separated from uplands by distinct breaks in topography, soils and/or vegetation. USACE Wetland Determination Data Forms, documenting our findings, are included as attachments. The wetlands were flagged in the field with red and white striped surveyor flagging and located with a handheld Trimble GPS unit.

Watershed Classification/Buffer Requirements

According to the NCDEQ-DWR, the site is located in the Lumber River Basin. The site drains to Bear Creek (Class C; Swamp waters) and Gum Swamp (Class B; Swamp waters). In accordance with 15A NCAC 02B .0200, state riparian buffer regulations are not applicable to surface waters located on or adjacent to the site.

Pilot reviewed the Scotland County Zoning Ordinance and contacted the Scotland County Planning Department to inquire about surface water and/or wetland buffer regulations. According to Ms. Joy Nolan, Zoning Official with the Scotland County Zoning Department, Scotland County buffer regulations are generally consistent with the state. Consultation with Scotland County is recommended to determine development specific buffer requirements.

According to the NCDEQ-DWR Interactive Stormwater Map, the site is located in an area identified as "No Program - Verify Locally." Consultation with Scotland County is recommended to determine site and development specific setbacks from surface waters for compliance with state and local stormwater requirements.

Agency Verification

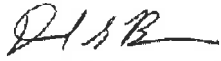
The delineation was verified in the field by Ms. Rachel Capito, Regulatory Specialist with the USACE, on May 23, 2018. Ms. Capito concurred with the delineation as depicted on the attached Drawing 5. Drawing 5 shows the results of the delineation as verified by the USACE and is intended for preliminary planning purposes. We understand that jurisdictional features will be surveyed to determine their exact extents and locations. A preliminary Jurisdictional Determination (PJD) has been requested and will be provided upon receipt from the USACE.

Wetland Delineation
Pilot Project 3536
May 30, 2018

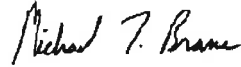
Closing

We appreciate the opportunity to provide our services to you. Please contact us at (336) 310-4527 if you have questions or require additional information.

Sincerely,



David S. Brame, PWS
Project Manager



Michael T. Brame, PWS
Principal

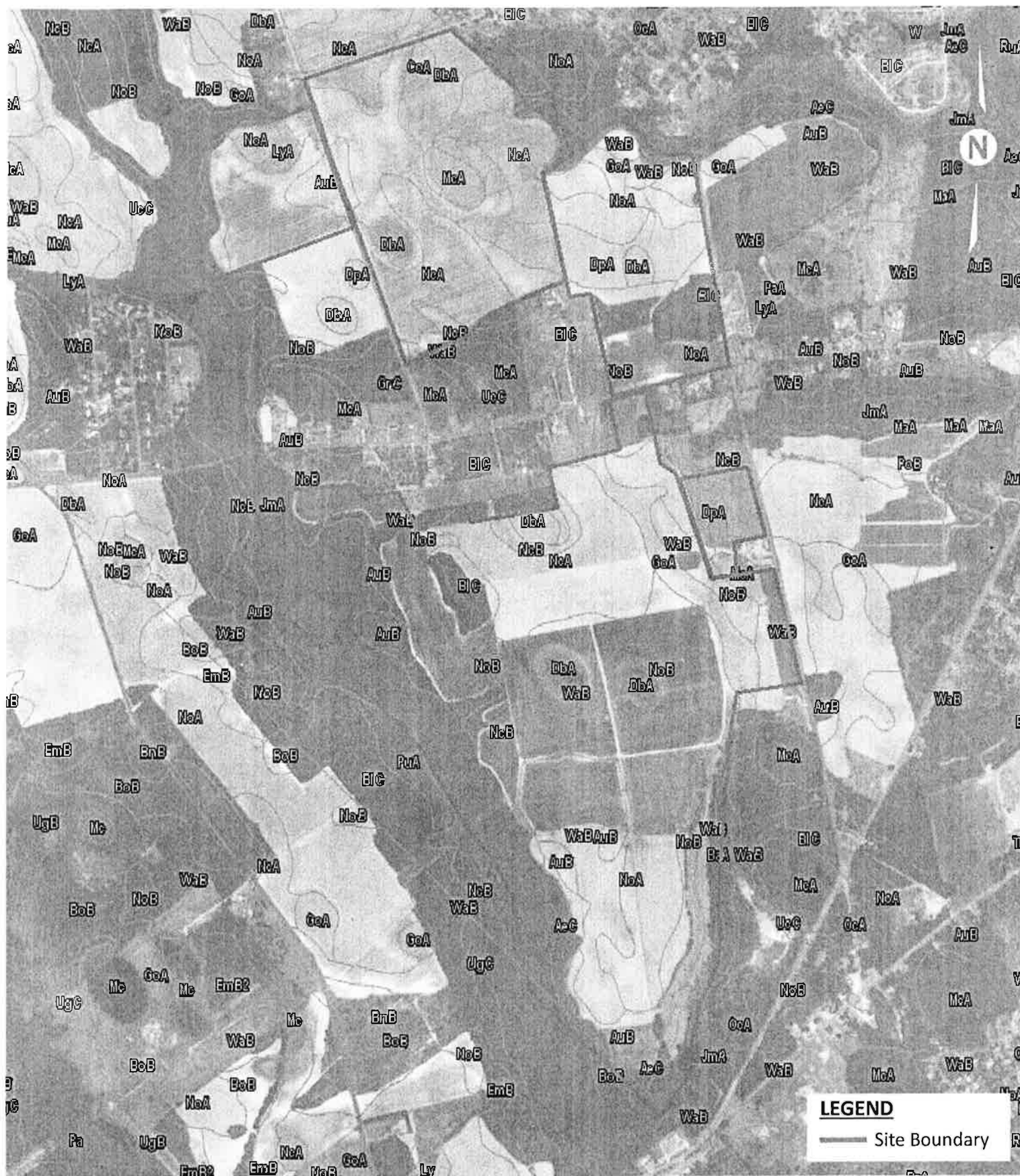
Attachments: Drawing 1 – USGS Topographic Map
Drawing 2 – Web Soil Map
Drawing 2A – Published Soil Map
Drawing 3 – NWI Map
Drawing 4 – FEMA FIRM
Drawing 5 – Wetland Map
Wetland Determination Data Forms



Drawing 1
USGS Topographic Map
McColl, SC Quadrangle
Scale: 1" = 2,000'



USGS Topographic Map
Friesian Holdings
Approximate 688 Acre Tract
Laurinburg, Scotland County, NC
Pilot Project 3536



Drawing 2
USDA Web Soil Survey
of Scotland County NC
Scale: 1" = 1,250'



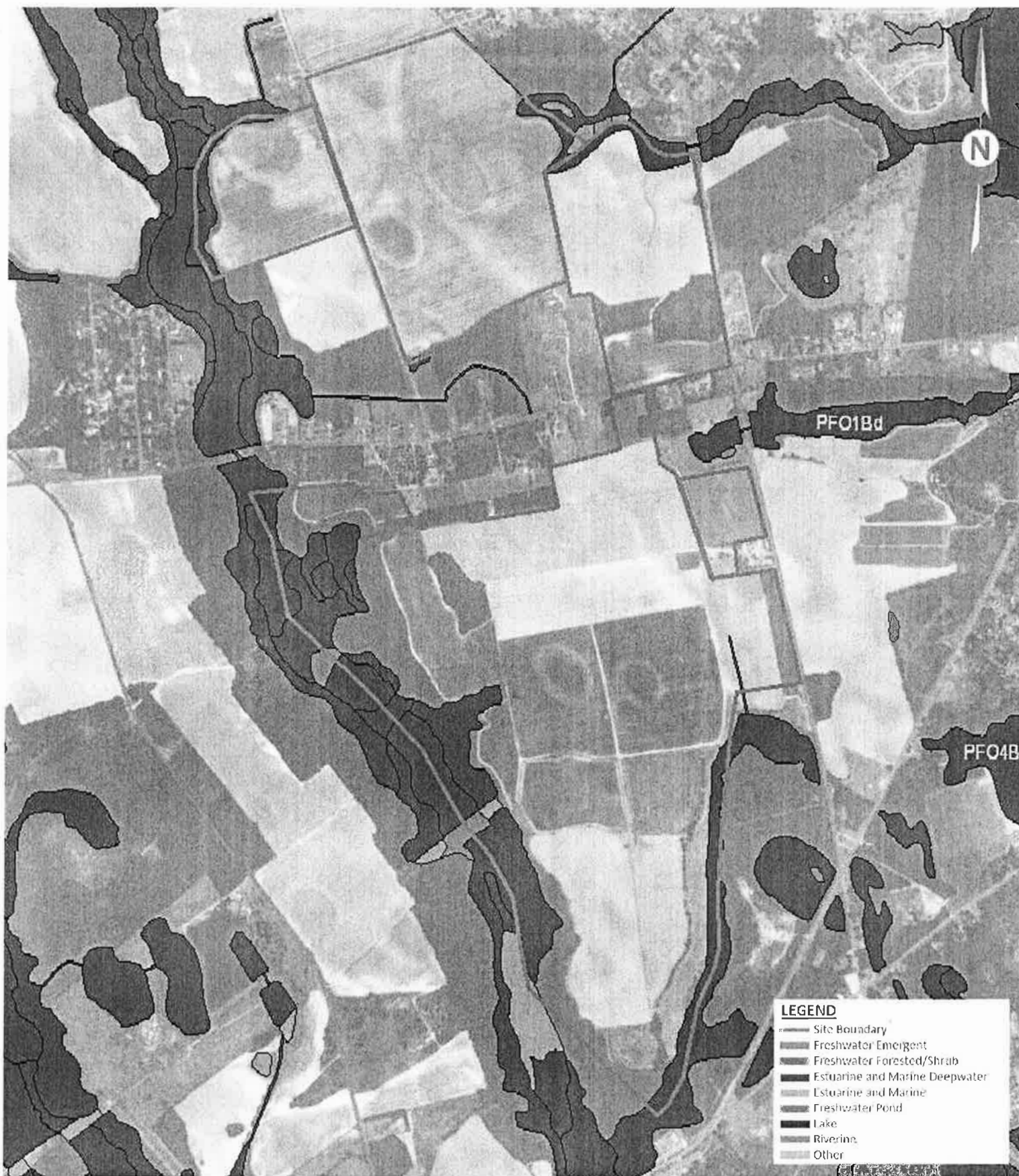
Web Soil Map
Friesian Holdings
Approximate 688 Acre Tract
Laurinburg, Scotland County, NC
Pilot Project 3536



Drawing 2A
USDA Soil Survey
of Scotland County, NC
Published 2006, Sheet 27
Scale: 1" = 1,250'



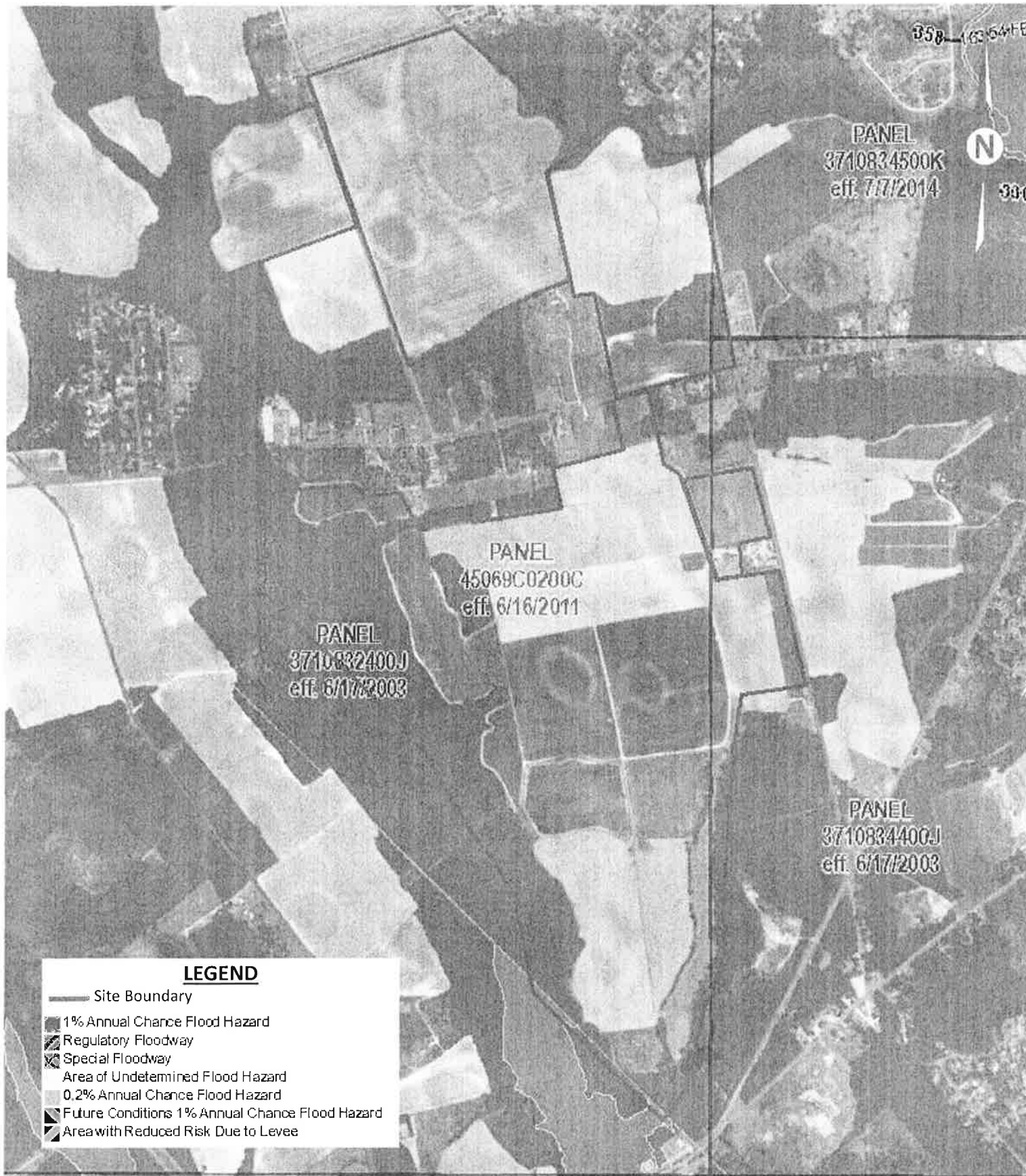
Published Soil Map
Friesian Holdings
Approximate 688 Acre Tract
Laurinburg, Scotland County, NC
Pilot Project 3536



Drawing 3
USFWS NWI
Wetlands Mapper
Scale: 1" = 1,250'



NWI Map
Friesian Holdings
Approximate 688 Acre Tract
Laurinburg, Scotland County, NC
Pilot Project 3536



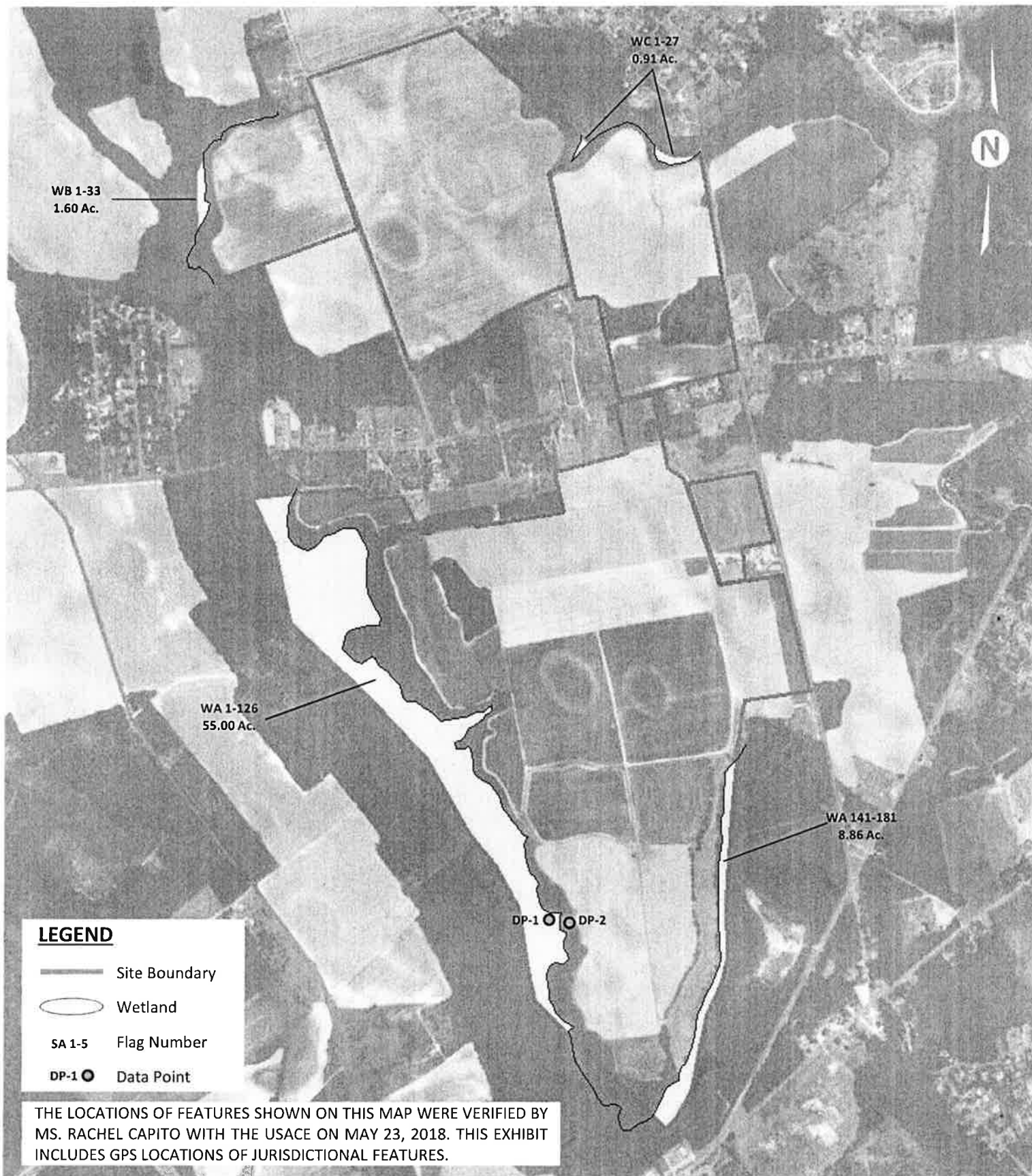
LEGEND

- Site Boundary
- 1% Annual Chance Flood Hazard
- ▨ Regulatory Floodway
- ▩ Special Floodway
- Area of Undetermined Flood Hazard
- 0.2% Annual Chance Flood Hazard
- ▨ Future Conditions 1% Annual Chance Flood Hazard
- ▩ Area with Reduced Risk Due to Levee

Drawing 4
National Flood Hazard Layer
from FEMA Web Map Service
Scale: 1" = 1,250'



FEMA FIRM
Friesian Holdings
Approximate 688 Acre Tract
Laurinburg, Scotland County, NC
Pilot Project 3536



Drawing 5

Aerial Imagery from ESRI
and Pilot GPS Data
Scale: 1" = 1,250'
Date: 3.22.18
Revised: 5.29.18



Wetland Map
Friesian Holdings
Approximate 688 Acre Tract
Laurinburg, Scotland County, NC
Pilot Project 3536

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Friesian Holdings City/County: McColl/Scotland & Marlboro Sampling Date: 03.20.2018
 Applicant/Owner: Birdseye Renewables State: NC Sampling Point: DP-1
 Investigator(s): Brame Section, Township, Range: NA
 Landform (hillslope, terrace, etc.) Floodplain Local relief (concave, convex, none): Flat Slope (%): 1
 Subregion (LRR or MLRA): T Lat: 34.694708 Long: -79.537743 Datum: WGS 84
 Soil Map Unit Name: Johnston soils (JmA) NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> Hydric Soil Present? Yes <u>X</u> No <u> </u> Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Remarks: This data point is representative of all the wetlands on the site.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) <u>X</u> High Water Table (A2) <u>X</u> Saturation (A3) ___ Water Marks (B1) ___ Sediment Deposits (B2) ___ Drift Deposits (B3) ___ Algal Mat or Crust (B4) ___ Iron Deposits (B5) ___ Inundation Visible on Aerial Imagery (B7) <u>X</u> Water-Stained Leaves (B9) ___ Aquatic Fauna (B13) ___ Marl Deposits (B15) (LRR U) ___ Hydrogen Sulfide Odor (C1) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Presence of Reduced Iron (C4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Thin Muck Surface (C7) ___ Other (Explain in Remarks)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Sparsely Vegetated Concave Surface (B8) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) <u>X</u> Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) <u>X</u> Geomorphic Position (D2) ___ Shallow Aquitard (D3) <u>X</u> FAC-Neutral Test (D5) <u>X</u> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> Water Table Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>10</u> Saturation Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>1</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No <u> </u>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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VEGETATION (Five Strata) - Use scientific names of plants.

Sampling Point DP-1

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: <u>30</u>)			
1. <u>Liquidambar styraciflua</u>	<u>40</u>	<u>Y</u>	<u>FAC</u>
2. <u>Acer rubrum</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>
3. <u>Nyssa biflora</u>	<u>10</u>	<u>Y</u>	<u>OBL</u>
4. _____			
5. _____			
6. _____			
	<u>40</u>	<u>= Total Cover</u>	
50 % of total cover: <u>20</u>		20 % of total cover: <u>8</u>	

	Absolute % Cover	Dominant Species?	Indicator Status
Sapling Stratum (Plot size: <u>30</u>)			
1. <u>Lyonia lucida</u>	<u>10</u>	<u>Y</u>	<u>FACW</u>
2. <u>Persea borbonia</u>	<u>5</u>	<u>Y</u>	<u>FACW</u>
3. _____			
4. _____			
5. _____			
6. _____			
	<u>15</u>	<u>= Total Cover</u>	
50 % of total cover: <u>7.5</u>		20 % of total cover: <u>3</u>	

	Absolute % Cover	Dominant Species?	Indicator Status
Shrub Stratum (Plot size: <u>30</u>)			
1. <u>Ligustrum sinense</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
	<u>10</u>	<u>= Total Cover</u>	
50 % of total cover: <u>5</u>		20 % of total cover: <u>2</u>	

	Absolute % Cover	Dominant Species?	Indicator Status
Herb Stratum (Plot size: <u>30</u>)			
1. <u>Arundinaria gigantea</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>
2. <u>Woodwardia areolata</u>	<u>5</u>	<u>Y</u>	<u>OBL</u>
3. <u>Rosa palustris</u>	<u>5</u>	<u>Y</u>	<u>OBL</u>
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
	<u>20</u>	<u>= Total Cover</u>	
50 % of total cover: <u>10</u>		20 % of total cover: <u>4</u>	

	Absolute % Cover	Dominant Species?	Indicator Status
Woody Vine Stratum (Plot size: <u>30</u>)			
1. <u>Smilax glauca</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>
2. <u>Smilax rotundifolia</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>
3. _____			
4. _____			
5. _____			
	<u>10</u>	<u>= Total Cover</u>	
50 % of total cover: <u>5</u>		20 % of total cover: <u>2</u>	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 11 (A)

Total Number of Dominant Species Across All Strata: 11 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____	(A) _____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

1 – Rapid Test for Hydrophytic Vegetation

2 – Dominance Test is > 50%

3 – Prevalence Test is ≤ 3.0¹

Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
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Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: DP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 3/2	100					Loam	
3-18	2.5Y 4/1	95	10YR 4/6	5	C	M	Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Mucky Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Gleyed Matrix (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of Hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Friesian Holdings City/County: McColl/Scotland & Marlboro Sampling Date: 03.20.2018
 Applicant/Owner: Birdseye Renewables State: NC Sampling Point: DP-2
 Investigator(s): Brame Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Side Slope Local relief (concave, convex, none): Gentle Slope Slope (%): 2-3
 Subregion (LRR or MLRA): T Lat: 34.694679 Long: -79.537117 Datum: WGS 84
 Soil Map Unit Name: Ailey loamy sand (AeC) NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u> X </u> No <u> </u> Hydric Soil Present? Yes <u> </u> No <u> X </u> Wetland Hydrology Present? Yes <u> </u> No <u> X </u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u> X </u>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Aquatic Fauna (B13) ___ High Water Table (A2) ___ Marl Deposits (B15) (LRR U) ___ Saturation (A3) ___ Hydrogen Sulfide Odor (C1) ___ Water Marks (B1) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Sediment Deposits (B2) ___ Presence of Reduced Iron (C4) ___ Drift Deposits (B3) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Algal Mat or Crust (B4) ___ Thin Muck Surface (C7) ___ Iron Deposits (B5) ___ Other (Explain in Remarks) ___ Inundation Visible on Aerial Imagery (B7) ___ Water-Stained Leaves (B9)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Sparsely Vegetated Concave Surface (B8) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ FAC-Neutral Test (D5) ___ Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <u> </u> No <u> X </u> Depth (inches): <u> </u> Water Table Present? Yes <u> </u> No <u> X </u> Depth (inches): <u> </u> Saturation Present? Yes <u> </u> No <u> X </u> Depth (inches): <u> </u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u> </u> No <u> X </u>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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May 15 2019

VEGETATION (Five Strata) - Use scientific names of plants.

Sampling Point DP-2

Tree Stratum (Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Liquidambar styraciflua</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>
2. <u>Liriodendron tulipifera</u>	<u>20</u>	<u>Y</u>	<u>FACU</u>
3. <u>Pinus taeda</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
	<u>60</u> = Total Cover		
50 % of total cover: <u>30</u>	20 % of total cover: <u>12</u>		

Sapling Stratum (Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Juniperus virginiana</u>	<u>5</u>	<u>Y</u>	<u>FACU</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
	<u>5</u> = Total Cover		
50 % of total cover: <u>2.5</u>	20 % of total cover: <u>1</u>		

Shrub Stratum (Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Ligustrum sinense</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
	<u>10</u> = Total Cover		
50 % of total cover: <u>5</u>	20 % of total cover: <u>2</u>		

Herb Stratum (Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Allium canadense</u>	<u>5</u>	<u>Y</u>	<u>FACU</u>
2. <u>Microstegium nepal</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>
3. <u>Smilax rotundifolia</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
	<u>20</u> = Total Cover		
50 % of total cover: <u>10</u>	20 % of total cover: <u>4</u>		

Woody Vine Stratum (Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Vitis rotundifolia</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
	<u>10</u> = Total Cover		
50 % of total cover: <u>5</u>	20 % of total cover: <u>2</u>		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____	(A) _____ (B) _____

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

 1 – Rapid Test for Hydrophytic Vegetation

X 2 – Dominance Test is > 50%

 3 – Prevalence Test is ≤ 3.0¹

 Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: DP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 4/3	100					Loam	
4-18	2.5Y 4/4	100					Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Mucky Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Gleyed Matrix (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of Hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks: