





Mitigation PlanDraft

May 1, 2015

Maney Farm Mitigation Project

Chatham County, NC DENR Contract No. 005793 DMS ID No. 96314

Cape Fear River Basin HUC 03030002

PREPARED BY:



312 West Millbrook Road Suite 225 Raleigh, NC 27609

PREPARED FOR:

NC Department of Environment and Natural Resources Division of Mitigation Services

1652 Mail Service Center Raleigh, NC 27699-1652

DRAFT MITIGATION PLAN

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PREPARED BY:



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May 1, 2015

EXECUTIVE SUMMARY

Wildlands Engineering, Inc. (Wildlands) is completing a full delivery project at the Many Farm Stream Mitigation Site (Site) for the North Carolina Division of Mitigation Services (NCDMS) to restore and enhance a total of 6,092 linear feet (LF) of perennial and intermittent stream in Chatham County, NC. The Site is proposed to generate 4,922 Stream Mitigation Units (SMUs). The streams proposed for restoration and enhancement are all unnamed tributaries (UT) to South Fork Cane Creek (SF) and are referred to herein as UTSF, UT1A, UT1B, UT1C, UT2A, UT2B, UT3A, UT3B, UT4A, UT4B, and UT5. This site is located in the Cape Fear River Basin 8-Digit Hydrologic Unit Code (HUC) 03030002. The Site is also within the Cane Creek Targeted Local Watershed (TLW) (HUC 03030002050050), which flows into Cane Creek and eventually into the Haw River.

The proposed Site is located within the Cane Creek Targeted Local Watershed (TLW) which is discussed in NCDMS's 2009 Cape Fear River Basin Restoration Priorities (RBRP). This document identifies the need to improve aquatic conditions and habitats as well as promoting good riparian conditions in the Cane Creek watershed and notes that there are currently 51 active animal operations in the watershed. The Maney Farm Site is currently maintained as cattle pasture and is one of the 51 animal operations referenced in the RBRP.

The Site drains to the Haw River, which flows to B. Everett Jordan Lake (Jordan Lake). The 2005 NCDWR Cape Fear River Basinwide Water Quality Plan indicates that Jordan Lake is a drinking water supply (WS-IV), a primary area for recreation, and a designated Nutrient Sensitive Water which calls for reduction of non-point source pollution. The water supply watershed boundary for Jordan Lake is just six miles downstream from the Site. The Cape Fear watershed is also discussed in the 2005 North Carolina Wildlife Resource Commission's Wildlife Action Plan where sedimentation is noted as a major issue in the basin. Maps within the Wildlife Action Plan indicate that Priority Species are present along Cane Creek. Restoration at the Site will directly address non-point source stressors by removing cattle from the streams, creating stable stream banks, restoring a riparian corridor, and placing 16.7 acres of land under permanent conservation easement.

The proposed project will help meet the goals for the watershed and provide numerous ecological benefits within the Cape Fear River Basin. While many of these benefits are limited to the Maney Farm project area, others, such as pollutant removal, reduced sediment loading, and improved aquatic and terrestrial habitat, have farther-reaching effects. In addition, protected parcels downstream of this site promote cumulative project benefits within the watershed.

This mitigation plan has been written in conformance with the requirements of the following documents that govern NCDMS operations and procedures for the delivery of compensatory mitigation.

- Federal rule for compensatory mitigation project sites as described in the Federal Register Title 33 Navigation and Navigable Waters Volume 3 Chapter 2 Section § 332.8 paragraphs (c)(2) through (c)(14).
- NCDENR Division of Mitigation Services In-Lieu Fee Instrument signed and dated July 28, 2010.

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1.0 RESTORATION PROJECT GOALS AND OBJECTIVES

The Maney Farm Stream Mitigation Site (referred to herein as Site or Project) is located in the Cane Creek Watershed within the Jordan Lake Water Supply Watershed which has been designated a Nutrient Sensitive Water. The project streams flow into South Fork Cane Creek which flows into Cane Creek. Cane Creek flows to the Haw River and eventually into the Jordan Lake Reservoir. The Site's watershed is within 14-Digit Hydrologic Unit Code (HUC) 03030002050050 which was identified as a Cape Fear 02 Targeted Local Watershed (TLW) in NCDMS's 2009 Cape Fear River Basin Restoration Priority (RBRP) plan. The parcel immediately downstream of the Site is currently under both a Farmland Preservation Trust Fund Easement and a Piedmont Land Conservancy Easement. The restored stream reach and riparian corridor will further extend the protected wildlife habitat within these two parcels. DMS also maintains easements on adjacent parcels (i.e., the Hadley Newlin site) promoting cumulative project benefits within the watershed.

The proposed Site is located within the Cane Creek TLW and is discussed in DMS's 2009 Cape Fear River Basin Restoration Priorities (RBRP). This document identifies the need to improve aquatic conditions and habitats as well as promoting good riparian conditions in the Cane Creek watershed and notes that there are currently 51 active animal operations in the watershed. The Maney Farm Site is currently maintained as cattle pasture and is one of the 51 animal operations referenced in the RBRP.

The Site drains to the Haw River, which flows to B. Everett Jordan Lake (Jordan Lake). The 2005 NC Division of Water Resources (NCDWR) Cape Fear River Basinwide Water Quality Plan indicates that Jordan Lake is a drinking water supply, a primary area for recreation, and a designated Nutrient Sensitive Water which calls for reduction of non-point source pollution. The water supply watershed boundary for Jordan Lake is just six miles downstream from the Site. The Cape Fear watershed is also discussed in the 2005 North Carolina Wildlife Resource Commission's Wildlife Action Plan where sedimentation is noted as a major issue in the basin. Maps within the Wildlife Action Plan indicate that Priority Species are present along Cane Creek. Restoration at the Site will directly address non-point source stressors by removing cattle from the streams, creating stable stream banks, restoring a riparian corridor, and placing 16.7 acres of land under permanent conservation easement.

The Project will help meet the functional goals described in the Cape Fear River Basin Restoration Priorities through stream restoration and enhancement activities and riparian buffer reestablishment. Project goals are desired project outcomes and are verifiable through visual assessment and/or measurement. Objectives are activities that will result in the accomplishment of goals. The project will be monitored after construction to demonstrate success as described in Section 12. The project goals and related objectives are described in Table 1.

Table 1: Mitigation Goals and Objectives *Maney Farm Mitigation Project*

Goal	Objective	Expected Outcomes
		Reduce pollutant inputs including
Exclude cattle from project	Install fencing around conservation	fecal coliform, nitrogen, and
streams	easements adjacent to cattle pastures	phosphorous.

Goal	Objective	Expected Outcomes
Stabilize eroding stream banks	Reconstruct stream channels with stable dimensions. Add bank revetments and in-stream structures to protect restored/enhanced streams.	Reduce inputs of sediment into streams.
Construct stream channels with that are laterally and vertical stable	Construct stream channels that will maintain a stable pattern and profile considering the hydrologic and sediment inputs to the system, the landscape setting, and the watershed conditions.	Return a network of streams to a stable form that is capable of supporting hydrologic, biologic, and water quality functions.
Improve instream habitat	Install habitat features such as constructed riffles and brush toes into restored/enhanced streams. Add woody materials to channel beds. Construct pools of varying depth.	Improve aquatic communities in project streams.
Reconnect channels with floodplains so that floodplains are inundated relatively frequently	Reconstructing stream channels with appropriate bankfull dimensions and depth relative to the existing floodplain.	Raise local groundwater elevations. Inundate floodplain wetlands and vernal pools. Reduce shear stress on channels during larger flow events.
Restore and enhance native floodplain forest	Plant native tree and understory species in riparian zone	Create and improve forested riparian habitats. Provide a canopy to shade streams and reduce thermal loadings. Create a source of woody inputs for streams. Reduce flood flow velocities on floodplain and allow pollutants and sediment to settle.
Permanently protect the project site from harmful uses.	Establish a conservation easement on the site.	Ensure that development and agricultural uses that would damage the site or reduce the benefits of project are prevented.

2.0 PROJECT SITE LOCATION AND SELECTION

2.1 Directions to Project Site

The Site is located in northwestern Chatham County, northwest of Pittsboro and north of Silk Hope (Figure 1).

From Raleigh, NC, take I-40 West towards Durham. Take exit 293A for US-1 / US-64 / West toward Sanford/Asheboro. Travel approximately three miles and take exit 98B for US-64 West. Travel approximately 25 miles, take exit 381 for NC-87 towards Burlington. Travel approximately 1.8 miles on NC-87 North and turn left onto Silk Hope Gum Springs Road. Continue for 8.1 miles to Silk Hope Lindley Mill Road. Take Silk Hope-Lindley Mill Road north 3.6 miles. Turn right on Center Church Road and travel 0.9 miles. The Site is located north of Center Church Road.

2.2 Site Selection and Project Components

The Site has been selected by the NC Division of Mitigation Services (NCDMS) to provide stream mitigation units (SMUs) in the Cape Fear River Basin. It was selected based on the current degraded condition of the on-site streams and the potential for functional restoration and ecological uplift.

The project includes a combination of stream restoration and enhancement. The streams include UT to South Fork Cane Creek (UTSF) and several unnamed tributaries to UTSF (UT1A, UT1B, UT1C, UT2A, UT2B, UT3A, UT3B, UT4A, UT4B, and UT5) (Figure 2). Jurisdictional wetlands are present in the surrounding floodplain that will be enhanced as part of the project but are not proposed for credit at this time. Photographs of the Site are included in Appendix 1.

3.0 SITE PROTECTION INSTRUMENT

The land required for construction, management, and stewardship of this mitigation project includes portions of the parcel listed in Table 2. A conservation easement will be recorded on the parcel to include the streams being restored and enhanced along with their corresponding riparian buffers. The Site protection instrument template is included in Appendix 2.

Table 2: Site Protection Instrument

Maney Farm Mitigation Project

Landowner	PIN	County	Site Protection Instrument	Deed Book and Page Number	Acreage to be Protected
M Darryl Lindley Rev Trustee	8795-99-2158	Chatham	Conservation Easement	TBD	16.7

All site protection instruments require 60-day advance notification to the Corps and the State prior to any action to void, amend, or modify the document. No such action shall take place unless approved by the State.

4.0 BASELINE INFORMATION –PROJECT SITE AND WATERSHED SUMMARY

4.1 Watershed Existing Conditions

Table 3 presents the project information and baseline watershed information. The watershed areas were delineated using a combination of-site existing conditions survey, Chatham County, NC GIS data and USGS 7.5-minute topographic quadrangles (Figure 3).

Table 3: Project and Watershed Information

Project	Chatham
County	
Easement	16.4
Area (acres)	
Project	35°50'18.00"N, 79°20'38.00"W
Coordinates	
Physiographi	Carolina Slate Belt of the Piedmont Physiographic Province
c Region	
Ecoregion	Piedmont
River Basin	Cape Fear
USGS HUC (8	03030002, 03030002050050
digit, 14 digit)	

NCDWR Sub-					03-06-04											
basin																
Reaches	UTSF-R1	UTSF-R2	UT1A	UT1B	UT1C	UT2A/B	UT3A/B	UT4A/B	UT5							
Drainage (Area (acres)	115	211	16	4	19	11	10	20	76							
Drainage Area (miles²)	0.18	0.33	0.02	0.01	0.03	0.02	0.02	0.03	0.12							
		NCCGIA Land Cover Classification (%)														
Hay / Pasture	72	67	74	56	57	67	95	53	64							
Deciduous Forest	25	23	26	0	29	33	1	35	28							
Mixed Forest	0	3	0	0	0	0	4	7	2							
Developed	0	3	0	44	13	0	0	0	0							
Cultivated Crops	3	2	0	0	0	0	0	0	4							
Scrub / Shrub	0	1	0	0	0	0	0	0	2							
Herbaceous	0	1	0	0	1	0	0	5	0							

4.2 Watershed Historical Land Use and Development Trends

The UTSF watershed (Figure 3) is located in the rural countryside approximately four miles north of Silk Hope, NC. Topography can be described as somewhat hilly to gently rolling. The stream valleys within the watershed and on-site are characterized by relatively narrow floodplains and moderately steep side slopes.

A review of historical aerials of the Site and immediately adjacent parcels from 1973, 1983, and 1993 (Appendix 3) revealed that the Site has been used for hay production and/or agricultural livestock production since before 1973. The limits of riparian buffer and agricultural land have remained consistent over that time. Further investigation was done on landuse throughout the entire watershed using the aerial photographs listed above and additional aerials from Google EarthTM (1972-2014). The most common historical and current land use types are agricultural livestock production and grazing, silviculture, and agricultural cropland.

Wildlands conducted a watershed reconnaissance visit to verify current land uses observed in aerial photography and to identify potential watershed stressors that could impact streams on-site. Land use in the UTSF watershed was found to be consistent with information depicted in aerial photography. Disturbed areas within the watershed consist primarily of agricultural landuses. As this is a long-term, on-going practice (dating to before 1973) it is not considered a new stressor to the watershed. There are no evident signs of impending land use changes or development pressure that would impact the project in the UTSF watershed. The drainage upstream of the project site consists of a network in small ditches which have been maintained in the current locations and alignments since at least 1973. Sediment supply from the upstream watershed is small and likely to remain stable. The Conservation Easement to be placed around the Site will eliminate potential for future development or agricultural use in the immediate vicinity of the on-site streams.

4.3 Physiography, Geology, and Soils

The project is located in the Slate Belt of the Piedmont Physiographic Province. The Piedmont Province is characterized by gently rolling, well rounded hills with long low ridges, with elevations ranging from 300 – 1,500 feet above sea level. The Carolina Slate Belt consists of heated and deformed volcanic and sedimentary rocks. Specifically, the proposed project is located in felsic metavolcanic rock (mapped CZfv) of the Carolina Slate Belt, which corresponds to the Uwharrie

Formation's felsic voncaniclastic rocks and portions of the Cid Formation's rhyolitic-rhyodactic units. This unit consists of light gray to greenish gray, felsic metavolcanic rock interbedded with mafic and intermediate metavolcanic rock and is composed primarily of feldspar, quartz, sericite, chlorite meta-argillite, and metamudstone (NCGS, 1985). Note: This information was obtained from geologic mapping no field investigations of rock lithology were performed.

Due to the lack of bed control (e.g., bedrock, etc.), fluvial erosion, and cattle trampling, the stream has downcut along portions of the reach. The remainder of the Site has relatively confined valleys, which constrict the floodplain, and limited alluvial deposits. Soils in these areas are typical of the gently to moderately sloping upland areas of the Piedmont.

Soil mapping units are based on the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Soil Survey for Chatham County. Soil types within the study area were mapped with the NRCS Web Soil Survey and are described below in Table 4. A soils map based on this information is provided in Figure 4. Note: no field mapping of soils was performed for this project.

Table 4: Project Soil Types and Descriptions

Maney Farm Mitigation Project

Soil Name	Location	Description
Cid Silt Loam (6-10%)	UT2	Cid silt loam is a strongly sloping, moderately deep and moderately well drained soil found on upland and interfluves. The soil forms in residuum from Carolina Slate Belt rock and other fine grained rocks.
Cid-Lignum Complex (2-6%)	UTSF, UT1, UT 1B, and UT5	Cid-Lignum is found on gently sloping areas of the upland. It is moderately well drained to somewhat poorly drained. These soils have a loamy surface layer and clayey subsoil.
Nanford-Badin Complex (2-6%)	UT4	Nanford-Badin complex is a well drained soil with low flood potential. It is found on upland, hill slopes, and ridges and consists of residuum weathered from slate. Bedrock is within 40 to 60 inches of this soil.
Nanford-Badin Complex (6-10%)	UTSF, UT1, UT2 UT3 and UT4	Nanford-Badin complex at 6-10% slopes is found on strong slopes on the side slopes of uplands. This soil is deep and well drained. Bedrock is within 20 to 40 inches of this soil.

Source: Chatham County Soil Survey, USDA-NRCS, http://efotg.nrcs.usda.gov

4.4 Valley Classification

The topography of the Site and surrounding area consist of gently rolling hills interspersed with narrow valleys (Figure 5). The stream valleys have slopes ranging from 0.2-1.6% and valley side slopes ranging from 5%-10%. UTSF has a narrow alluvial valley that expands and constricts between widths of 150 and 250 feet. UT1, UT2, UT3, and UT4 transition from a constricted valley (<100 feet) within the headwaters to a wider valley (>150 feet) as they approach the confluence with UTSF. UT5 valley widths range between 150 and 200 feet.

4.5 Surface Water Classification and Water Quality

On May 28 and 29, 2014 Wildlands investigated on-site jurisdictional waters of the U.S. using the U.S. Army Corps of Engineers (USACE) Routine On-Site Determination Method. This method is defined in the 1987 Corps of Engineers Wetlands Delineation Manual and subsequent Eastern Mountain and Piedmont Regional Supplement. Determination methods include stream classification utilizing the NCDWR Stream Identification Form and the USACE Stream Quality Assessment Worksheet. Potential jurisdictional wetland areas were classified using the USACE Wetland Determination Data Form (refer to Section 5.1 below for more information on jurisdictional wetlands).

The results of the on-site field investigation indicate that there are seven jurisdictional stream channels located within the proposed project area that are all unnamed tributaries to South Fork Cane Creek. The stream reaches include UT to South Fork Cane Creek (UTSF) and several unnamed tributaries to UTSF (UT1A, UT1B, UT1C, UT2A, UT2B, UT3A, UT3B, UT4A, UT4B, and UT5). Figure 6 shows the hydrologic features of the Site. Stream classification forms representative of on-site jurisdictional channels have been enclosed in Appendix 4 (SCP1-SCP10). Site photographs are included in Appendix 1. There is currently no best usage classification assigned by the NCDWR for streams on this Site.

4.6 Existing Stream Condition

An existing conditions assessment was performed in May and June, 2014. The purpose of the assessment was to characterize the existing morphology of the Site; identify incision, bank erosion, lack of native vegetation, sedimentation, and poor habitat conditions; and to provide a basis for developing a design to enhance the ecological function of the Site. The locations of the project reaches and surveyed cross-sections are shown in Figure 6. Existing conditions geomorphic survey data are included in Appendix 5. The reach summary information for each stream is summarized in Table 5 and the existing geomorphic conditions are summarized in Table 6.

4.6.1 UT to South Fork Cane Creek

UTSF is divided into two sections for existing conditions analysis. The channel slope and valley slope for UTSF are typical for Piedmont streams in similar valley types (Table 6). The bed of UTSF is predominately characterized by runs, with a few log/debris jams creating isolated pools. Livestock have direct access to the stream, which has resulted in heavily trampled banks and an actively eroding channel. The active scour zones and wallow areas are contributing to the fining of bed material as evidenced by the reach-wide sediment characterization. Pebble-counts and sieve analysis of sediment samples were utilized to characterize sediment within the existing channel and to identify the predominant substrate as silt and sand. The channel classifies as a Rosgen E5. Results of the existing conditions morphologic survey of UTSF Reach 1 and 2 are summarized in Table 6 and the survey data is included in Appendix 5.

Vegetative buffers along the reach range from areas of mature trees to open pasture. The forested buffer from the upstream extent to the confluence with UT2 averages 75 feet on each bank. However, cattle have extensively grazed and trampled the understory resulting in limited vegetative regeneration and ground cover within this reach. The forested buffer from the confluence with UT2 to the downstream extent is intermittent and disconnected. Canopy species include American elm (*Ulmus americana*), sweetgum (*Liquidambar styraciflua*), green ash (*Fraxinus pennsylvanica*), red maple (*Acer rubrum*), willow oak (Quercus phellos), and southern red oak (*Quercus falcata*). Understory and herbaceous species were limited but include eastern red cedar

(Juniperus virginiana), coralberry (Symphoricarpos orbiculatus), Chinese privet (Ligustrum sinense), soft rush (Juncus effusus), Japanese honeysuckle (Lonicera japonica), and Nepalese browntop (Microstegium vimineum).

4.6.2 UT1

The UT1 drainage area is an intermittent system that is divided into three reaches for existing conditions analysis. The majority of the drainage area to UT1 is primarily used for livestock grazing. Livestock have direct access to the stream reaches, which has resulted in heavily trampled banks and an actively eroding channel. The active scour zones and wallow areas are contributing to the fining of bed material. Channel incision ranges from slight to moderate throughout the reaches. The UT1 reaches classify as Rosgen B5 channel types. Results of the existing conditions morphologic survey of UT1 are summarized in Table 6 and the survey data is included in Appendix 5.

Riparian vegetation along the UT1A reach is predominately managed herbaceous species comprised of fescue (*Fetsuca sp.*), blackberry (*Rubus sp.*), coralberry, white clover (*Trifolium repens*), buttercup species (*Ranunculus spp.*), and multiflora rose (*Rosa multiflora*). UT1B contains mature trees within the riparian zone, but several mature trees were noted as stressed or dying presumably as a result of root compaction from cattle trampling. The UT1C reach contains a narrow corridor of mature trees with little to no middle and understory due to cattle grazing. Tree species within the UT1 reaches include American elm, green ash, red maple, white oak (*Quercus alba*), sweetgum, and willow oak.

4.6.3 UT2

UT2 begins as an intermittent stream and develops into a perennial system prior to its confluence with UTSF. While UT2 has an intact mature riparian corridor, cattle have open access to the entire reach and have heavily impacted the understory and herbaceous layers. While the majority of the upper reach is impacted by cattle, the reach is relatively stable. The lower reach prior to the confluence with UTSF has been heavily trampled by cattle. The UT2 reach classifies as Rosgen B5 channel types. Results of the existing conditions morphologic survey of UT2 are summarized in Table 6 and the survey data is included in Appendix 5.

The vegetative buffers along the reach are approximately 200 feet on each bank and are predominately comprised of mature trees. Canopy species along UT2 include American elm, green ash, red maple, eastern red cedar, willow oak, white oak, hickory sp. (*Carya sp.*), and tulip poplar (*Liriodendron tulipifera*). Understory and herbaceous species were limited but include coralberry, Chinese privet, Japanese honeysuckle, and Nepalese browntop.

4.6.4 UT3

UT3 is an intermittent system within an active cattle pasture. While the entire reach is impacted by cattle, the majority of the stream reach is relatively stable. The stream channel is no longer discernable along the lower reach due to cattle trampling. The UT3 reach classifies as Rosgen E5b channel type. Results of the existing conditions morphologic survey of UT3 are summarized in Table 6 and the survey data is included in Appendix 5.

Riparian vegetation along the reach is predominately comprised of managed herbaceous layers including fescue, white clover, Nepalese browntop, horseweed, and buttercup species. Scattered canopy trees are present primarily within the upper extent of the reach and include red maple, sugarberry (*Celtis laevigata*), willow oak, and tulip poplar. An isolated stand of green ash and sugarberry with an understory of Chinese privet is located near the confluence with UTSF.

Table 5: Reach Summary Information

Maney Farm Mitigation Project

maney raim mangation reject	UTSF R1	UTSF R2	UT1A	UT1B	UT1C	UT2A	UT2B	UT3A	UT3B	UT4A	UT4B	UT5
Existing Length (LF)	2,298	1,209	390	102	166	485	44	418	84	217	40	778
Valley Slope (feet/ foot)	0.0131	0.0086	0.0187	0.0396	0.0187	0.0366	0.0366	0.0377	0.0377	0.0232	0.0232	0.0139
Drainage Area (acres)	115	211	16	4	19	11	11	10	10	20	20	76
Drainage Area (miles²)	0.18	0.33	0.02	0.01	0.03	0.02	0.02	0.02	0.02	0.03	0.03	0.12
NCDWR Stream ID Score	27/37	37	21	25.5	28	26/30	30	20.75	20.75	22.5	22.5	32.5
Perennial (P) or Intermittent (I)	I/P	Р	I	I	I	I/P	Р	I	I	I	I	Р
NCDWR Classification						N,	/A					
Rosgen Classification of Existing Conditions	E5	E5	B5	-	B5	B5	B5	E5b	E5b	E5b	E5b	E5
Simon Evolutionary Stage	II/IV	II/IV	III	V	II/IV	II/V	II/V	V/VI	V/VI	II/V	II/V	11/111
FEMA Zone Classification)	X					

Note: The Rosgen classification system is for natural streams. These channels have been heavily manipulated and impacted by livestock trampling and therefore the Rosgen classification system is used to describe an approximate description of stream type only.

Table 6: Stream Existing Conditions

Maney Farm Mitigation Project			UTS	E_R1	LITC	F-R2	UT	1Λ		UT1B	LIT	1C	117	⁻ 2A		JT2B	1.17	73A	115	ТЗВ	117	T4A	11	T4B	UT	T5																																								
Parameter	Notation	Units	min	max	min	max	min	max	miı	1	min	max	min	max	min	_	min	max	min	max	min	max	min	max	min	max																																								
stream type			E			:5	В:			-	В			35		B5		5b		5b		5b	E5b			5 5																																								
drainage area	DA	sq mi	0.	18	0.	33	0.0	02		0.01	0.0	03	0.	02	(0.02	0.	02	0	.02	0	.03	0.03		0.1	12																																								
bankfull cross-sectional area	Abkf	SF	4.1	7.1	5.4	5.6	2.	1		-	2.	.1	1	.1		1.1	1	.1	1	1.1	1	1.9	1.9		3.5																																									
avg velocity during bankfull event	V bkf	fps	2.8	4.8	3.4	3.6	3.	1		-	3.	.0	3	.4		3.4	3	.2	3	3.2	3	3.0	3.0		2.1																																									
width at bankfull	W bkf	feet	3.2	12.0	4.7	8.2	5.	8		-	4.	.1	2	.6		2.6	2	.2	2	2.2	4	1.4	4	1.4	5.	.7																																								
maximum depth at bankfull	d _{max}	feet	1.2	2.0	1	.5	0.	6		-	0.	.8	0	.5		0.5	0	.8	C).8	1	1.0	1	1.0	1.	.2																																								
mean depth at bankfull	d _{bkf}	feet	0.6	1.3	0.7	1.2	0.	4		-	0.	.5	0	.4		0.4	0	.5	().5	C).4	().4	0.	.6																																								
bankfull width to depth ratio	w _{bkf} /d _{bkf}		2.5	20.4	4.0	12.3	15	.9		-	8.	.1	6	.2		6.2	4	.6	4	1.6	g	9.9	Ç	9.9	9.	.1																																								
low bank height		feet	2.6	2.7	2.1	2.9	1.	5		-	1.	.8	2	.9		2.9	1	.7	1	L.7	1	1.4	1	1.4	1.	.6																																								
bank height ratio	BHR		1.3	2.2	1.4	1.9	2.	3		-	2.	.3	5	.4		5.4	2	.2	2	2.2	1	1.4	1.4		1.	.4																																								
max pool depth at bankfull	d _{pool}	feet	1.5	1.8	1.8	2.0	-	•		-	-	-		-		-		-		-		-		-	1.4																																									
pool depth ratio	d _{pool} /d _{bkf}		1.4	2.5	1.7	2.6	-	•		-	-	-		-		-		-		-		-		- 2.3		.3																																								
pool width at bankfull	W _{pool}	feet	5.6	7.2	7.0	7.5	-			-	-	-		-		-		-		-		-		- 3.		.7																																								
pool width ratio	Wpool/Wbkf		0.6	1.8	0.9	1.5	-			-	-	-		-		-		-				-		-	0.7																																									
Bkf pool cross-sectional area	A _{pool}	SF	6.6	7.2	8.5	11.1	-			-	-	-		-		-		-		-		-		-	3.	.4																																								
pool area ratio	A _{pool} /A _{bkf}		1.0	1.6	1.6	2.0	-			-	-	-		-		-		-				-		-	1.	.0																																								
floodprone area width	W fpa	feet	15.2	50.0	69.8	82.0	10	.6		-	5.3 4.4			4.4	1:	11.4		11.4		11.4		11.4		11.4		11.4		11.4		11.4		11.4		11.4		11.4		11.4		11.4		11.4		11.4		11.4		11.4		11.4		11.4		11.4		11.4		11.4		1.4	2	3.3	2	3.3	40).0
entrenchment ratio	ER		1.4	12.5	10.0	14.8	1.	8		-	1.	.3	1	.7		1.7	5	.1	5	5.1	5	5.3	5.3		7.	.1																																								
valley slope	Svalley	feet/ foot	0.0	131	0.0	086	0.01	187		0.0396	0.03	187	0.0	366	0.	.0366	0.0	377	0.0)377	0.0)232	0.0	0232	0.01	139																																								
channel slope	Schannel	feet/ foot	0.0	090	0.0	057	0.01	282		0.0323	0.03	186	0.0	195	0.0157		0.0	383	0.0291		0.0259		0.0651		0.01	112																																								
sinuosity	К		1.3	34	1.	33	1.1	10		1.16	1.17		1.12		1.12 1.04		1.04 1.09		1.09		1.09		1.09		1.09		1	.00	1	.14	1	.06	1.3	34																																
belt width	Wblt	feet	5	42	10	37	8	22	6	9	10	18	4	26	1	2	26	27	-	-	4	13	2	3	3	18																																								
meander width ratio	Wblt/Wbkf		1.6	3.5	2.1	4.5	1.4	3.8		-	2.4	4.4	1.5	10.0	0.4	0.8	11.8	12.3	-	-	0.9	3.0	0 0.5 0.7		0.5	3.2																																								



Dougrandou	Notation	Units	UTS	F-R1	UTS	F-R2	UT	Γ1A	U.	Г1В	UT	1C	U	Г2А	U	⁻ 2B	UT	3A	UT	3B	UT	'4A	UI	Г4В	U	T5
Parameter	Notation	Units	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max
meander length	L _m	feet	18	100	21	59	47	155	28	36	54	63	5	15	1	.2	131	131	-	-	29	44	11	22	16	58
meander length ratio	L _m /w _{bkf}		5.6	8.3	4.5	7.2	8.1	26.7		-	13.2	15.4	1.9	5.8	4	.6	60.0	72.7	-	-	6.6	10.0	2.5	5.0	2.8	10.2
radius of curvature	Rc	feet	4	25	5	13	6	20	7	9	9	16	3	16	1	3	25	25	-	-	3	11	2	3	3	14
radius of curvature ratio	R _c /w _{bkf}		1.3	2.1	1.1	1.6	1.0	3.5		-	2.2	3.9	1.2	6.2	0.4	1.2	11.4	15.0	-	-	0.7	2.5	0.5	0.7	0.5	2.5
				Particle Size Distribution from Reachwide Pebble Count / Sieve Analysis																						
d ₅₀ Description				dium Ind	Silt/	Clay	N	/A	N	I/A	N,	/A	N	/A	N	/A	N	/A	N	/A	N	/A	N	/A	Silt/	/Clay
	d ₁₆	mm	Silt/	'Clay	Silt/	Clay	N	/A	N	I/A	N,	/A	N	/A	N	/A	N	/A	N,	/A	N	/A	N	/A	Silt/	/Clay
	d ₃₅	mm	Very Fi	ne Sand	Silt/	Clay	N	/A	N/A		N,	/A	N	/A	N	/A	N	/A	N,	/A	N	/A	N	/A	Silt/	/Clay
	d ₅₀	mm	Mediu	m Sand	Silt/	Clay	N	/A	N/A		N,	/A	N	/A	N	/A	N,	/A	N,	/A	N,	/A	N	/A	Silt/	/Clay
	d ₈₄	mm	11	.08	6	.1	N	/A	N/A		N,	/A	N	/A	N	N/A N/A		/A	N/A		N/A		N	/A	8	3.9
	d ₉₅	mm	15	.41	28	3.5	N	/A	N/A		N,	N/A N/A		N/A		N/A N/A		N/A N/A		N	/A	N	/A	22	2.6	
	d ₁₀₀	mm	22	2.6	18	30	N	/A	N	I/A	N,	/A	N	/A	N	/A	N	/A	N	/A	N	/A	N	/A	6	54

4.6.5 UT4

Livestock have direct access to UT4 which has resulted in trampled bed and banks throughout the reach. The lower reach near the confluence of UTSF has areas of active headcuts and unstable banks. Vegetative buffers along the reach range from areas with narrow strips of mature trees to open pasture. The UT4 reach classifies as Rosgen E5b channel type. Results of the existing conditions morphologic survey of UT4 are summarized in Table 6 and the survey data is included in Appendix 5.

Canopy species along this reach include white oak, sweetgum, eastern red cedar, and green ash. Understory species include American holly (*Ilex opaca*), eastern red cedar, and American elm. The shrub and herbaceous layer primarily included Chinese privet, coralberry, Nepalese browntop, fescue, white clover, and buttercup.

4.6.6 UT5

UT5 begins in a heavily forested area in which cattle have been excluded. The impacted reach in which cattle have access ranges from areas of mature over-story in the upper extent to managed herbaceous layers near the confluence with UTSF. Deposition of fine material is apparent along the impacted portion of this stream. Results of the existing conditions morphologic survey of UT4 are summarized in Table 6 and the survey data is included in Appendix 5.

Canopy species include American elm, green ash, red maple, willow oak, southern red oak. Understory and herbaceous species were limited but include black willow (*Salix nigra*), eastern red cedar, coralberry, Chinese privet, and Nepalese browntop. Existing condition surveys showed areas of incision along with trampled bed and banks. The incision and cattle trampling have resulted in a fining of bed material with a median particle size of silt/clay. The UT5 reach classifies as Rosgen E5 channel type. Results of the existing conditions morphologic survey of UT4 are summarized in Table 6 and the survey data is included in Appendix 5.

4.7 Channel Evolution

The presence of livestock and agricultural land use practices have prevented the channels from evolving from disturbed to stable conditions. For this reason, the historic condition of the channels is discussed below but a detailed discussion of channel evolution is not warranted.

According to the historical aerial photographs, the land use on-site has been hay or livestock production since 1972. The riparian buffer widths were reduced prior to the early 1970s to maximize the area available for agricultural practices. The extent of riparian buffers on site and within the contributing watershed have remained essentially unchanged since. These historic landscape disturbances likely resulted in higher discharge and sediment loads to project streams which would have perturbed the system and resulted in morphologic changes. However, the land cover alterations likely ceased quickly in which case the channels would have re-stabilized. However, on-going livestock access has resulted in continual trampling of the stream beds and banks and this, along with a lack of riparian vegetation along much of the project stream length, has prevented the channels from progressing to stables forms.

The propagation of headcuts through the project reaches have been arrested by large roots and debris jams which are the primary sources of grade control. However, incision that resulted from headcuts remains along some reaches and contributes to the instability of the system. Bank failures through mass wasting were observed along portions of the project. The channels will not progress

to a stable, equilibrium state until livestock are removed from the streams, stable channel dimensions are established, and incision is corrected.

4.8 Channel Stability

Wildlands utilized a modified version of the Rapid Assessment of Channel Stability as described in Hydrologic Engineering circular (HEC)-20 (Lagasse et al., 2001). The method is semi-qualitative and incorporates 13 stability indicators that are evaluated in the field. In a 2006 publication, the Federal Highway Administration (FHWA) updated the method for HEC-20 by modifying the metrics included in the assessment and incorporating a stream type determination. The result is an assessment method that can be rapidly applied on a variety of stream types in different physiographic settings with a range of bed and bank materials.

The Channel Stability Assessment protocol was designed to evaluate 13 parameters. Once all parameters are scored, the stability of the stream is classified as Excellent, Good, Fair, or Poor. As the protocol was designed to assess stream channel stability near bridges, two minor modifications were made to the methodology to make it more applicable to project specific conditions. The first modification involved adjusting scoring so that naturally meandering streams score lower (better condition) than straight and/or engineered channels. Because straight, engineered channels are hydraulically efficient and necessary for bridge protection, they score low (excellent to good rating) with the original methodology. Secondly, the last assessment parameter – upstream distance to bridge – was removed from the protocol because it relates directly to the potential effects of instability on a bridge and should not influence stability ratings for the streams for this project. The final scores and corresponding ratings were based on the 12 remaining parameters. The rating adjectives were assigned to the streams based on the FHWA guidelines for pool-riffle stream types.

The HEC-20 manual also describes both lateral and vertical components of overall channel stability, which can be separated with this assessment methodology. Some of the parameters described above relate specifically to either vertical or horizontal stability. When all parameter scores for the vertical category or all parameter scores for the horizontal category are summed and normalized by the total possible scores for their respective categories, a vertical or horizontal fraction is produced. These fractions may then be compared to one another to determine if the channel is more vertically or horizontally unstable.

The assessment results for the streams on the Site are shown in Table 7 and the forms are included in Appendix 6. Reaches UT1A, UT1C, UT2A/B, UT3A/B, and UT4A/B were all rated good whereas UTSF R1, UTSF R2, UT1B, and UT5 were all rated as fair. The vertical and lateral fractions for UT1A, UT1C, UT2A/B, UT3A/B, and UT4A/B are similar indicating that the streams are no more laterally unstable than vertically unstable. These reaches are considered fairly stable and enhancement activities are the proposed mitigation approach, though redesign of the downstream ends of each channel is required in order to connect these streams to the restored UTSF reach. For UTSF, UT1B, and UT5 the lateral fraction is larger than the vertical fraction indicating that, although some incision may have occurred, the streams are more laterally unstable than vertically unstable. The lateral instability is related to a combination of factors including livestock trampling, mass wasting, and fluvial erosion. Due to the fairly significant lateral instability of these reaches, a restoration approach is proposed. While UT1B falls within this category of significant lateral instability (almost completely related to livestock trampling), restoration is not proposed for this very small drainage.

Table 7: Existing Conditions Channel Stability Assessment Results

Maney Farm Mitigation Project

Parameter	UTSF R1	UTSF R2	UT1 A & C	UT1B	UT2 A & B	UT3 A & B	UT4 A & B	UT5
1. Watershed characteristics	10	10	11	11	6	6	6	4
2. Flow habit	1	1	7	7	3	3	3	1
3. Channel pattern	8	8	5	7	3	4	4	9
4. Entrenchment	4	4	3	2	7	3	3	6
5. Bed material	8	8	9	10	7	10	7	9
6. Bar development	1	1	3	3	3	3	3	10
7. Obstructions	8	8	4	4	4	2	3	4
8. Bank soil texture and coherence	3	3	4	4	4	3	3	5
9. Average bank slope angle	10	10	6	6	7	7	7	11
10. Bank protection	10	10	7	9	6	4	7	11
11. Bank cutting	11	9	6	9	4	4	4	8
12. Mass wasting or bank failure	9	9	6	9	4	7	4	9
Score	83	81	71	81	58	56	54	87
Ranking	Fair	Fair	Good	Fair	Good	Good	Good	Fair
Lateral Score	43	41	29	37	25	25	25	44
Vertical Score	13	13	15	15	17	16	13	25
Lateral Fraction	72%	68%	48%	62%	42%	42%	42%	73%
Vertical Fraction	36%	36%	42%	42%	47%	44%	36%	69%

4.9 Utilities and Site Access

There are no underground or overhead utilities on the Site. There is an existing culvert under a state maintained road at the upstream end of UTSF and UT1B (Center Church Road). The project will not affect these culverts and they will remain in place in their current configuration. There is one 25 foot wide proposed easement break that will include a culverted crossing. The crossings will be fenced both upstream and downstream to permanently prevent livestock access and provide better protection of the riparian area. This crossing area is not included in the mitigation credit calculation for the Site. The Site is accessible from a farm road and pasture access gates off of Center Church Road.

5.0 REGULATORY CONSIDERATIONS

5.1 401/404

On May 28 and 29, 2014 Wildlands investigated on-site jurisdictional Waters of the U.S. within the proposed project easement area. Jurisdictional areas were delineated using the USACE Routine On-Site Determination Method. This method is defined by the 1987 Corps of Engineers Wetlands Delineation Manual and subsequent Eastern Mountain and Piedmont Regional Supplement. Wetland determination Data Forms representative of on-site jurisdictional areas as well as non-

jurisdictional upland areas have been included in Appendix 7. All jurisdictional waters of the U.S. were surveyed by Turner Land Surveying, PLLC.

The results of the on-site field investigation indicate that there are seven jurisdictional stream channels located within the proposed project area that are all unnamed tributaries to South Fork Cane Creek (UTSF, UT1{Reach A and C}, UT1B, UT2{Reach A and B}, UT3{Reach A and B}, UT4{Reach A and B}, and UT5). UTSF downstream of the confluence with UT1, the lower half of UT2, and UT5 are classified as perennial channels. UT1, UT1B, the upper extent of UT2, UT3, and UT4 are classified as an intermittent stream channels.

Twenty one jurisdictional wetland areas, ranging from 0.003 to 0.203 acres, were identified within or immediately adjacent to the proposed project area (Wetland A-U) and are located within the floodplains of the unnamed tributaries. These 21 areas are considered wetland inclusions in non-wetland soils. Wetlands A, B, D, F, L, and N – U were classified as bottomland hardwood forest using the North Carolina Wetland Assessment Method (NCWAM) classification key and the evaluator's best professional judgment. Wetlands C, E, G-K, and M were classified as seeps. On-site wetland features exhibited saturation within the upper 12 inches of the soil profiles, low chroma soils, drainage patterns, and/or pockets of shallow inundation. Common hydrophytic vegetation included American elm, green ash, shallow sedge, and soft rush. Characteristics of wetlands A-U are described in Table 8.

The design of the Site is focused on minimizing impacts to the wetlands and protecting wetland areas with a conservation easement. All wetland areas inside the limits of disturbance will be flagged with safety fence during construction to prevent unintended impacts. This will be denoted in the final construction plans Erosion and Sediment Control sheets, details and specifications. Potential impacts to existing wetlands will be described in the Pre-Construction Notification, included in the Final Mitigation Plan, and depicted in the final Construction Plans.

Table 8: Wetland Summary Information

	Α	В	С	D	E	F	G
Size of Wetland (acres)	0.006	0.010	0.034	0.005	0.052	0.003	0.008
Wetland Type	Bottomland Hardwood Forest	Bottomland Hardwood Forest	Seep	Bottomland Hardwood Forest	Seep	Bottomland Hardwood Forest	Seep
Mapped Soil Series	Cid-Lignum	Cid-Lignum	Cid-Lignum / Naford-Badin	I (Id-Lightim I - I (Id-Lightim		Cid-Lignum	Cid-Lignum
Drainage Class	Moderately to Somewhat Poorly Drained	Moderately to Somewhat Poorly Drained	Well to Somewhat Poorly Drained	Moderately to Somewhat Poorly Drained	Well to Somewhat Poorly Drained	Moderately to Somewhat Poorly Drained	Moderately to Somewhat Poorly Drained
Soil Hydric Series	Wehadkee, Undrained	Wehadkee, Undrained	Wehadkee, Undrained	Wehadkee, Undrained	Wehadkee, Undrained	Wehadkee, Undrained	Wehadkee, Undrained
Source of Hydrology	Groundwater / Overbank Flooding	Groundwater / Overbank Flooding	Groundwater Seep	Groundwater / Overbank Flooding	Groundwater Seep	Groundwater / Overbank Flooding	Groundwater Seep
Hydrologic Impairment	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Native Vegetation Community	Bottomland Hardwood Forest	Bottomland Hardwood Forest	Bottomland Hardwood Forest	Bottomland Hardwood Forest	Bottomland Hardwood Forest	Bottomland Hardwood Forest	Bottomland Hardwood Forest
% Composition Invasive Species	0%	5%	5%	10%	0%	10%	10%

Table 8: Wetland Summary Information

	Н	ı	J	К	L	M	N
Size of Wetland (acres)	0.012	0.007	0.008	0.203	0.015	0.023	0.029
Wetland Type	Seep	Seep	Seep	Seep	Bottomland Hardwood Forest	Seep	Bottomland Hardwood Forest
Mapped Soil Series	Cid-Lignum	Naford-Badin	Naford-Badin	Naford-Badin	Cid-Lignum / Cid Silt Loam	Cid-Lignum	Cid-Lignum
Drainage Class	Moderately to Somewhat Poorly Drained	Well Drained	Well Drained	Well Drained	Moderately Well to Somewhat Poorly Drained	Moderately to Somewhat Poorly Drained	Moderately to Somewhat Poorly Drained
Soil Hydric Series	Wehadkee, Undrained	N/A	N/A	N/A	Wehadkee, Undrained	Wehadkee, Undrained	Wehadkee, Undrained
Source of Hydrology	Groundwater Seep	Groundwater Seep	Groundwater Seep	Groundwater Seep	Groundwater / Overbank Flooding	Groundwater Seep	Groundwater / Overbank Flooding
Hydrologic Impairment	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Native Vegetation Community	Bottomland Hardwood Forest	Bottomland Hardwood Forest	Bottomland Hardwood Forest	Bottomland Hardwood Forest	Bottomland Hardwood Forest	Bottomland Hardwood Forest	Bottomland Hardwood Forest
% Composition Invasive Species	5%	5%	5%	1%	10%	5%	10%

Table 8: Wetland Summary Information

	0	Р	Q	R	S	Т	U
Size of Wetland (acres)	0.029	0.014	0.176	0.019	0.005	0.009	0.010
Wetland Type	Bottomland Hardwood Forest	Bottomland Hardwood Forest	Bottomland Hardwood Forest	Bottomland Hardwood Forest	Bottomland Hardwood Forest	Bottomland Hardwood Forest	Bottomland Hardwood Forest
Mapped Soil Series	Cid-Lignum	Cid-Lignum	Cid-Lignum	Cid-Lignum	Cid-Lignum	Cid-Lignum	Cid-Lignum
Drainage Class	moderately to Somewhat to Sor Poorly Po Drained Dra Wehadkee Weh		Moderately to Somewhat Poorly Drained				
Soil Hydric Series	Wehadkee, Undrained	Wehadkee, Undrained	Wehadkee, Undrained	Wehadkee, Undrained	Wehadkee, Undrained	Wehadkee, Undrained	Wehadkee, Undrained
Source of Hydrology	Groundwater / Overbank Flooding	Groundwater / Overbank Flooding	Groundwater / Overbank Flooding	Groundwater / Overbank Flooding	Groundwater / Overbank Flooding	Groundwater / Overbank Flooding	Groundwater / Overbank Flooding
Hydrologic Impairment	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Native Vegetation Community % Composition	Bottomland Hardwood Forest	Bottomland Hardwood Forest	Bottomland Hardwood Forest	Bottomland Hardwood Forest	Bottomland Hardwood Forest	Bottomland Hardwood Forest	Bottomland Hardwood Forest
Invasive Species	10%	15%	10%	0%	10%	15%	5%

5.2 Threatened and Endangered Species

5.2.1 Site Evaluation Methodology

The Endangered Species Act (ESA) of 1973, amended (16 U.S.C. 1531 et seq.), defines protection for species with Federal Classification of Threatened (T) or Endangered (E). An "Endangered Species" is defined as "any species which is in danger of extinction throughout all or a significant portion of its range" and a "Threatened Species" is defined as "any species which is likely to become an Endangered Species within the foreseeable future throughout all or a significant portion of its range" (16 U.S.C. 1532).

Wildlands utilized the US Fish and Wildlife Service (USFWS) and NC Natural Heritage Program (NHP) databases to search for federally listed threatened and endangered plant and animal species in Chatham County, NC. Four federally listed species; the red-cockaded woodpecker (Picoides borealis), the bald eagle (Haliaeetus leucocephalus), Cape Fear shiner (Notropis mekistocholas), and harperella (Ptilimnium nodosum) are currently listed in Chatham County (Table 8). The Categorical Exclusion (included in Appendix 8) has been approved by the Federal Highway Administration.

Table 9: Listed Threatened and Endangered Species in Chatham County, NC

Maney Farm Mitigation Project

Species	Federal Status	Habitat	Biological Conclusions
	,	Vertebrate	
Red-cockaded woodpecker (Picoides borealis)	E	Open stands of mature pines	No affect
Bald eagle (Haliaeetus leucocephalus)	BGPA	Near large open water bodies: lakes, marshes, seacoasts, and rivers	May affect, but not likely to adversely affect
Cape Fear shiner (Notropis mekistocholas)	E	Pools, riffles, and runs of rocky, clean freshwater streams	No affect
	Va	ascular Plant	
Harperella (Ptilimnium nodosum)	E	Rocky or gravely sholas of clear swift-moving streams	May affect, but not likely to adversely affect

BGPA = Bald and Golden Eagle Protection Act

5.2.2 Threatened and Endangered Species Descriptions

Red-cockaded woodpecker

The red-cockaded woodpecker is a medium-sized woodpecker species (8 to 9 inches in length). Distinctive coloration includes black and white feathers with a large white cheek patch and a black back with a white barred pattern. This species is typically found year-round in large open stands of pines with mature trees of 60+ years in age. The foraging habitat for this species may include pine hardwood stands of longleaf and southern pine, 30+ years in age. Occurrences of the red-cockaded woodpecker are listed as historic within Chatham County.

Bald eagle

The bald eagle is a very large raptor species, typically 28 to 38 inches in length. Adult individuals are brown in color with a very distinctive white head and tail. Bald eagles typically live near large bodies of open water with suitable fish habitat including lakes, marshes, seacoasts, and rivers. This species generally requires tall, mature tree species for nesting and roosting. Bald eagles were delisted from the Endangered Species List in June 2007; however, this species remains under the protection of the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act (BGPA). This species is known to occur in every U.S. state except Hawaii.

Cape Fear shiner

The Cape Fear shiner is a small minnow fish species, typically 2 inches in length. This species is pale silvery yellow in color with a black stripe along each side and yellow fins. Water willow beds in flowing areas of creeks and rivers appear to be part of the essential habitat for this species. Individuals can be found in pools, riffles, and slow runs of clean, rocky streams composed of gravel, cobble, and boulder substrates. Critical habitat for this species within Chatham County includes approximately 4.1 miles of the Rocky River from the NC-902 bridge downstream to the County Road 1010 Bridge. Additional critical habitat includes 0.5 mile of Bear Creek from the County Road 2156 bridge downstream to the Rocky River and 4.2 miles downstream within the Rocky River to 2.6 miles of the Deep River.

Harparella

Harperella is an obligate, annual vascular plant ranging in height from 6 to 36 inches. This plant exhibits small white clusters of flowers at the stem tops similar to Queen Anne's lace. This species typically flowers from May until the first frost. Ideal habitat for this species includes pond and riverine areas with gravelly shoals of clear, swift-flowing streams. These areas typically require moderately intensive spring floods to scour gravel bars and rock crevices to remove any competing vegetation. Known population occurrences of harperella have been observed in Chatham County within the past 20 years.

5.2.3 Biological Conclusions

Based on a pedestrian survey of the Site that was performed on May 28 and 29, 2014; no individual species or critical habitat was found to exist on the Site.

Wildlands requested comment on the project from both the USFWS and the North Carolina Wildlife Resource Commission (NCWRC) on February 26, 2014. NCWRC responded on March 14, 2014 and stated they "do not anticipate the project to result in significant adverse impacts to aquatic and terrestrial resources." The USFWS responded on April 4, 2014 and concurred with NCWRC stating that "the proposed action is not likely to adversely affect any federally-listed endangered or threatened species, their formally designated critical habitat, or species currently proposed for listing under the Act." All correspondence is located in Appendix 8.

5.3 Cultural Resources

5.3.1 Site Evaluation Methodology

The National Historic Preservation Act (NHPA) of 1966, as amended (16 U.S.C. 470), defines the policy of historic preservation to protect, restore, and reuse districts, sites, structures, and objects significant in American history, architecture, and culture. Section 106 of the NHPA mandates that

federal agencies take into account the effects of their undertakings on any property that is included in, or is eligible for inclusion in, the National Register of Historic Places.

5.3.2 SHPO/THPO Concurrence

Wildlands requested review and comment from the State Historic Preservation Office (SHPO) with respect to any archeological and architectural resources related to the Site on February 26, 2014. The SHPO responded on March 24, 2014 and stated they were not aware of any historic resources that would be affected by the project. All correspondence related to this is located in Appendix 8.

5.4 FEMA Floodplain Compliance and Hydrologic Trespass

The Site is represented on the Chatham County Flood Insurance Rate Map Panels 8784 and 8796 (Figure 7). There are no FEMA regulated floodplain areas on the Site. Email correspondence with the Chatham County Public Works Director pertaining to floodplain development permitting is included in Appendix 9 along with the FEMA / DMS checklist.

The project will be designed so that any increase in flooding will be contained on the Site and will not extend upstream to adjacent parcels, so hydrologic trespass will not be a concern. The proposed restoration has been designed to transition back to the existing boundary conditions in a gradual manner.

6.0 REFERENCE SITES

6.1 Reference Streams

Reference streams provide geomorphic parameters of a stable system, which can be used to design stable channels of similar stream types in similar landscapes and watersheds. Four reference reaches were identified near the Site and used to support the design of the proposed restoration (Figure 8). A range of reference reach metrics were utilized in order to properly tie in the enhancement reach confluences with the restoration reaches. These reference reaches were chosen because of their similarities to the project streams to be restored including drainage area, valley slope, morphology, and bed material. The reference reaches are within the Carolina Slate Belt region of the Piedmont. Geomorphic parameters for these reference reaches are summarized in Table 10.

6.2 Channel Morphology and Classification of Reference Streams

The Agony Acres reference reach (UT1A – Reach 1) is located in northeast Guildford County, NC. It was identified as a high quality preservation area on the Agony Acres Mitigation Site in the mitigation plan submitted in March, 2014 and was used as a reference reach for that project. Wildlands performed a detailed morphologic survey in March of 2013. The Agony Acres reference reach has a drainage area of 0.3 square miles and is classified as a Rosgen E4 stream type. While the slope range on the reference reach is slightly higher than the design reach, this reference site was specifically chosen because of a similar drainage area and discharge as that of UTSF.

The UT to Cane Creek reference reach is located in southern Alamance County and is classified as a Rosgen E4 stream type. Wildlands conducted a site visit and surveyed an additional cross section typical of the reference reach in 2012. The reach has a drainage area of 0.28 square miles and flows through a mature forest. The site is similar to stream reaches at Maney Farm in valley type and slope.

The UT to Varnals reference reach is located in south central Alamance County, NC near the Cane Creek Mountains. The site was identified by EcoLogic Associates and used as a reference reach for the Reedy Branch stream restoration site (EcoLogic Associates, 2002). Wildlands visited UT to Varnals in September, 2014 and visually confirmed that the land use is unchanged from reported conditions and that the stream is laterally and vertically stable. Wildlands conducted a detailed morphological survey in October, 2014. UT to Varnals has a drainage area of 0.41 square miles and is classified as a Rosgen E4 stream type for the majority of the reach. There are portions of the stream where the valley constricts reducing the entrenchment ratio below those typical for Rosgen type E channels and more towards those typical for Rosgen B type channels. This shift between a B and E type channels suits the design for tying in the UT1, UT2, UT3, and UT4 reaches to UTSF.

Table 10: Summary of Reference Reach Geomorphic Parameters

	Notation	Units	Agony Acres I	JT1A - Reach 1	UT to Ca	ne Creek	UT to Var	nals Creek	
			Min	Max	Min	Max	Min	Max	
stream type			E	E 4	(C4	E	E 4	
drainage area	DA	sq mi	0.	30	0.	.29	0.41		
design discharge	Q	cfs	2	5.3	40	0.0	5-	4.0	
bankfull cross-sectional area	Abkf	SF	10.7	11.3	8.9	12.2	10.3	12.3	
average velocity during bankfull event	V bkf	fps	2.2	2.4	3	.8	4.4	5.2	
width at bankfull	Wbkf	feet	9.1	10.4	11.5	12.3	9.3	10.5	
maximum depth at bankfull	d_{max}	feet	1	.8	1.2 1.6		1.5	1.7	
mean depth at bankfull	d _{bkf}	feet	1.0	1.2	0.8	1.0	1.1	1.2	
bankfull width to depth ratio	W _{bkf} /d _{bkf}		7.3	10.1	12.3	14.4	8.1	9.3	
depth ratio	d _{max} /d _{bkf}	feet	1	8	1.5 1.6		1	.4	
bank height ratio	BHR		1	.0	N/A		0.9	1.0	
floodprone area width	W fpa	feet	>	36	3	31	20	64	
entrenchment ratio	ER		>:	3.9	2.5	2.7	1.9	6.1	
valley slope	Svalley	feet/foot	0.010	0.034	0.0	026	0.	020	
channel slope	Schnl	feet/foot	0.004	0.028	0.0	015	0.	017	
riffle slope	Sriffle	feet/foot	N	/A	0.0188	0.0704	0.024	0.057	
riffle slope ratio	S_{riffle}/S_{chnl}		N	/A	1.3	4.7	1.4	3.4	
pool slope	Sp	feet/foot	N/A		0.001	0.011	0.000	0.015	
pool slope ratio	S _p /S _{chnl}		N/A		0.0	0.7	0.0	0.9	
pool-to-pool spacing	L _{p-p}	feet	N	/A	27	73	8	82	
pool spacing ratio	L_{p-p}/W_{bkf}		N	/A	2.3	6.1	0.5	5.6	

	Notation	Units	Agony Acres l	JT1A - Reach 1	UT to Ca	ne Creek	UT to Varnals Creek		
			Min	Max	Min	Max	Min	Max	
pool cross-sectional area	Apool	SF	14	4.5	11	.9	22.0	22.7	
pool area ratio	Apool/Abkf		1	.3	1.0	1.3	1.8	1.9	
maximum pool depth	d _{pool}	feet	2	.5	1.8 2.3		2.5	2.6	
pool depth ratio	d _{pool} /d _{bkf}		2	.3	2	.3	3.0	3.1	
pool width at bankfull	Wpool	feet	9	.4	8	.5	15.1	18.6	
pool width ratio	Wpool/Wbkf		1	.0	0	.7	1.0	1.3	
sinuosity	K		1.	35	1.40		1.	20	
belt width	Wblt	feet	21	93	102		15	45	
meander width ratio	W _{blt} /W _{bkf}		2.3	8.9	8.3	8.9	1.0	3.0	
meander length	Lm	feet							
meander length ratio	L _m /W _{bkf}								
radius of curvature	R _c	feet	14	60	23	38	8	47	
radius of curvature ratio	R _c / W _{bkf}		1.5	5.8	2.0	3.1	0.6	3.2	

7.0 DETERMINATION OF CREDITS

Mitigation credits presented in Table 11 are projections based on site design. Upon completion of site construction, the project components and credits data will be revised to be consistent with the as-built condition.

Table 11: Determination of Credits

	Mitigation Credits												
	Stream Riparian Wetland				Non-ri _l wetl		Buffer	Nitrogen Nutrient Offset	Phosphorus Nutrient Offset				
Туре	R	RE	R	RE	R RE								
Totals	4,922	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A				

			Project Co	mponents			
Project Component or Reach ID	Existing Footage/ Acreage	Proposed Stationing Location	Approach (P1, P2, etc)	Restoration (R) or Restoration Equivalent (RE)	Restoration Footage or Acreage	Mitigation Ratio	Proposed Credit
UTSF-R1	2,298	100+00-121+63	P1	R	2,122	1:1	2,122
UTSF-R2	1,209	121+63 - 132+24	P1	R	1,061	1:1	1,061
UT1A	390	250+00 - 253+90	E2	R	390	2.5:1	156
UT1B	101	199+08 - 200+00	E2	R	92	2.5:1	37
UT1C	166	200+00 - 202+60	E1	R	260	1.5:1	173
UT2A	485	295+15 - 300+00	E2	R	484	2.5:1	194
UT2B	44	300+00 - 300+74	E1	R	73	1.5:1	49
UT3A	418	395+79 - 400+00	E2	R	421	2.5:1	168
UT3B	84	400+00 - 401+63	E1	R	162	1.5:1	108
UT4A	217	497+87 - 500+00	E2	R	212	2.5:1	85
UT4B	40	500+00 - 501+38	E1	R	138	1.5:1	92
UT5	778	602+00 - 608+77	P1	R	677	1:1	677
			Component	Summation			
Restoratio	on Level	Stream (LF)	Riparian Wetland (Acres)	Non-Riparian V	Vetland (AC)	Buffer (sq.ft.)	Upland (AC)
Restora	ntion	3,860	N/A	N/A	\	N/A	N/A
Enhance	ment	N/A	N/A	N/A	1	N/A	N/A
Enhance	ment I	633	N/A	N/A	1	N/A	N/A
Enhancer	ment II	1,599	N/A	N/A		N/A	N/A
Creat	ion	N/A	N/A	N/A		N/A	N/A
Preserv	ation	N/A	N/A	N/A	1	N/A	N/A

8.0 CREDIT RELEASE SCHEDULE

All credit releases will be based on the total credit generated as reported by the as-built survey of the mitigation site. Under no circumstances shall any mitigation project be debited until the necessary DA authorization has been received for its construction or the District Engineer (DE) has otherwise provided written approval for the project in the case where no DA authorization is required for construction of the mitigation project. The DE, in consultation with the Interagency Review Team (IRT), will determine if performance standards have been satisfied sufficiently to meet the requirements of the release schedules below. In cases where some performance standards have not been met, credits may still be released depending on the specifics of the case. Monitoring may be required to restart or be extended, depending on the extent to which the Site fails to meet the specified performance standard. The release of project credits will be subject to the criteria described in Table 12.

Table 12: Credit Release Schedule - Stream Credits

Maney Farm Mitigation Project

Monitoring Year	Credit Release Activity	Interim Release	Total Released
0	Initial Allocation – see requirements below	30%	30%
1	First year monitoring report demonstrates performance standards are being met	10%	40%
2	Second year monitoring report demonstrates performance standards are being met	10%	50% (60%*)
3	Third year monitoring report demonstrates performance standards are being met	10%	60% (70%*)
4	Fourth year monitoring report demonstrates performance standards are being met	5%	65% (75%*)
5	Fifth year monitoring report demonstrates performance standards are being met	10%	75% (85%*)
6	Sixth year monitoring report demonstrates performance standards are being met	5%	80% (90%)
7	Seventh year monitoring report demonstrates performance standards are being met and the project has received closeout approval	10%	90% (100%)

^{*}Accounts for the 10% of credits that are withheld until two bankfull events have occurred. Refer to Section 8.2.

8.1 Initial Allocation of Released Credits

The initial allocation of released credits, as specified in the mitigation plan, can be released by the NCDMS without prior written approval of the DE upon satisfactory completion of the following activities:

- a. Approval of the Final Mitigation Plan
- b. Recordation of the preservation mechanism, as well as a title opinion acceptable to the USACE covering the property.
- c. Completion of project construction (the initial physical and biological improvements to the mitigation site) pursuant to the mitigation plan; Per the NCDMS instrument, construction

means that a mitigation site has been constructed in its entirety, to include planting, and an as-built report has been produced. As-built reports must be sealed by and engineer prior to project closeout, if appropriate but not prior to the initial allocation of released credits.

d. Receipt of necessary DA permit authorization or written DA approval for project where DA permit issuance is not required.

8.2 Subsequent Credit Releases

All subsequent credit releases must be approved by the DE and in consultation with the IRT and are based on a determination that required performance standards have been achieved. For stream projects a reserve of 15% of a site's total stream credits shall be released after two bankfull events have occurred in separate years, provided the channel is stable and all other performance standards are met. In the event that less than two bankfull events occur during the monitoring period, release of these reserve credits shall be at the discretion of the IRT. As projects approach milestones associated with the credit release, the NCDMS will submit a request for credit release to the DE along with documentation substantiating achievement of criteria required for release to occur. This documentation will be included with the annual monitoring report.

9.0 PROJECT SITE MITIGATION PLAN

9.1 Justification for Proposed Intervention

The primary project goals and objectives described in Section 1.0 are focused on improving the ecological function of the Site including a reduction in sedimentation and fecal coliform concentrations. The existing conditions assessment demonstrates that the tributaries to UT to South Fork Cane Creek on-site have been degraded due to livestock access and the removal of riparian vegetation. The bedforms of the tributaries' channels are highly degraded due to trampling by cattle and a fining of bed material from bank erosion and mass wasting of bank material. The riparian vegetation has been heavily altered along the streambanks.

9.2 Stream Restoration and Enhancement Design Overview

Intervention is needed to rectify these problems. Wildlands proposes to utilize a restoration approach along UTSF and UT5. Short downstream reaches of UT1C, UT2, UT3, and UT4 will be reconstructed to stabilize these reaches and connect them to UTSF (the proposed credit ratio for these short reaches is comparable to Enhancement 1). Restoration will treat unstable pattern, bank instability and head cuts while the EI approach will result in stable confluences. Minimal intervention (Enhancement II) is being proposed along the majority of the tributary channels (i.e., the upper reaches of UT1A, UT1B, UT2A, UT3A, and UT4A). An Enhancement II approach will prevent cattle from accessing these tributaries, will support the reestablishment of functioning stream and riparian ecosystems, and will protect those ecosystems from further damage. In addition, planting activities will reestablish a thriving riparian buffer. Mitigation activities are illustrated in the enclosed Figure 9.

9.3 Design Discharge Analysis

Multiple methods (e.g., regional curves, hydraulic geometry relationships, regional flood frequency analysis, etc.) were used to develop estimates for each of the project restoration reaches of either the bankfull discharge or a discharge corresponding to a return interval similar to the theoretical return interval of the bankfull discharge. The resulting values were compared and concurrence

between the estimates was assessed. The purpose of using multiple methods to estimate bankfull discharge is to eliminate reliance on a single method as the basis of channel design. However, the methods commonly produce significantly different results so professional judgement must be used to select a design discharge. For this analysis the greatest weight was placed on the Wildlands Flood Frequency Regression equation for the 1.2-yr discharge and the two sets of published regional curve data. Each of methods used to estimate discharge are described below and the results are summarized in Table 13 and on Figure 10.

9.3.1 NC Rural Piedmont Regional Curve Predictions

The published NC rural Piedmont Curve (Harman et al., 1999) was used to estimate discharge based on the drainage area for each design reach.

9.3.2 Provisional Updated NC Piedmont/Mountain Regional Curve Predictions

Design discharges using the draft updated curve for rural Piedmont and mountain streams (Walker, unpublished) were estimated based on drainage area for each design reach.

9.3.3 Regional Flood Frequency Analysis

Five USGS stream gage sites were identified within reasonable proximity of the project site for use in development of a project specific regional flood frequency analysis. The Hosking and Walls homogeneity test was performed in R^{\otimes} to identify the most appropriate gages (Hosking and Walls, 1993). The gages used were:

- USGS 02096740 Gun Branch near Alamance, NC (DA = 4.06 mi²)
- USGS 02096846 Cane Creek near Orange Grove, NC (DA = 7.54 mi²)
- USGS 02097010 Robeson Creek near Pittsboro, NC (DA = 1.71 mi²)
- USGS 02101030 Falls Creek near Bennett, NC (DA = 3.43 mi²)
- USGS 0210166029 Rocky River at SR1300 near Crutchfield Crossroads, NC (DA = 7.42 mi²)

Flood frequency curves were developed for the 1.2-year and 1.5-year recurrence interval discharges. These relationships can be used to estimate discharge of those recurrence intervals for ungauged streams in the same hydrologic region and were solved for discharge with the drainage area for each project reach as the input.

9.3.4 USGS Flood Frequency Equations for Rural Watersheds in North Carolina

USGS flood frequency equations for rural watersheds in North Carolina (Weaver et al., 2009) were used to estimate peak discharges for each reach for floods with a recurrence interval of two years.

Table 13, below, shows results for all of the aforementioned methods of calculating a design discharge as well as the design discharge chosen for each reach.

Table 13: Summary of Design Bankfull Discharge Analysis

Maney Farm Mitigation Project (unit of measurement is CFS unless otherwise noted)

		UTSF-R1	UTSF-R2	UT1C	UT2B	UT3B	UT4B	UT5
	DA (acres)	115	211	22	11	11	20	76
	DA (sq. mi.)	0.18	0.33	0.03	0.02	0.02	0.03	0.12
Wildlands Flood Frequency	1-yr event	6	10	2	1	1	1	4
Regression Equation	1.2-yr event	22	34	6	4	4	6	16
Estimates	1.5-yr event	32	50	10	6	6	9	24
	1.8-yr event	39	61	12	7	7	11	29
	2-yr event	43	67	13	8	8	12	32
Manning's equation results	XS1			4.1				
at surveyed XS	XS2			5.7				
	XS3	4.8						
	XS4	8.0			7.3			
	XS5	Pool				12		
	XS6	Pool			6.9			
	XS7					7.8	5.5	
	XS8		11					
	XS9		6.9					
	XS10						4.1	9.6
	XS11		10					5.4
	XS12		Pool					8.9
	XS13							11.0
	XS14		Pool					9.3
Piedmont Regional Curve	Bankfull	26	40	8	5	5	7	19
Alan Walker Curve	Bankfull	15	23	4	2	2	4	10
Lowther Curve	Bankfull	33	38	21	18	18	21	30
Regional Flood Frequency	1.2-yr event	12	18	3	2	2	3	8
Analysis	1.5-yr event	18	29	5	3	3	5	13
	1.8-yr event	24	37	7	4	4	6	17
	inal Design Q	19	29	6	3.6	3.5	5.3	14

Note: Units for all discharge estimates are cubic feet per second.

9.4 Design Channel Morphologic Parameters

Design parameters were developed for restoration reaches based on the design bankfull discharge, dimensionless ratios from the reference reach data, and professional judgment of the designers. The restoration reaches were designed to be similar to type C streams according to the Rosgen classification system (Rosgen, 1996). Type C streams are slightly entrenched, meandering streams with access to the floodplain (entrenchment ratios >2.2), and channel slopes of 2% or less. They occur within a wide range of valley types and are appropriate for the project landscape. The design morphological parameters are shown in Table 14.

Table 14: Design Morphological Parameters

	Notation	Units	UTS	F-R1	UTS	F-R2	דט	1 C	UT	⁻ 2B	UT	3B	UT	'4В	U	Т5
			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
stream type			(C	(<u> </u>	(2	(<u> </u>	С		C		С	
drainage area	DA	sq mi	0.	18	0.	33	0.	03	0.	02	0.0	02	0.03		0.12	
design discharge	Q	cfs	19	9.0	29	9.0	5	.6	3	.6	3.	.5	5	.3	11	0
bankfull cross-sectional area	A _{bkf}	SF	6	.5	10).2	5	.2	1	.5	1.	.5	1	.9	4	.1
average velocity during bankfull event	V bkf	fps	3	.0	2	.8	1	.1	3	.1	3.	.3	3	.3	2	.9
width at bankfull	W bkf	feet	9	.5	12	2.1	8	.1	4	.0	4.	.0	5	.0	7	.2
maximum depth at bankfull	d _{max}	feet	1.0	1.2	1.2	1.5	0.9	1.2	0.5	0.7	0.5	0.7	0.5	0.7	0.8	1.0
mean depth at bankfull	d _{bkf}	feet	0	.7	0	.8	0	.6	0	.4	0.	.4	0	.4	0	.6
bankfull width to depth ratio	Wbkf/dbkf		14	1.0	14	1.0	13	3.0	1	1	1	1	1	3	13	3.0
depth ratio		feet	1.4	1.8	1.4	1.8	1.4	1.8	1.4	1.8	1.4	1.8	1.4	1.8	1.4	1.8
bank height ratio	BHR		0.9	1.1	0.9	1.1	0.9	1.1	0.9	1.1	0.9	1.1	0.9	1.1	0.9	1.1
floodprone area width	W _{fpa}	feet	21	48	27	61	18	41	9	20	9	20	11	25	16	36
entrenchment ratio	ER		2.2	5.0	2.2	5.0	2.2	5.0	2.2	5.0	2.2	5.0	2.2	5.0	2.2	5.0
valley slope	S _{valley}	feet/ foot	0.0	129	0.0	114	0.0083		0.0	080	0.0170		0.0	073	0.0138	
channel slope	Schnl	feet/ foot	0.0092	0.0108	0.0081	0.0095	0.0066	0.0075	0.0064	0.0073	0.0147	0.0167	0.0058	0.0066	0.0099	0.0115
riffle slope	Sriffle	feet/ foot	0.0120	0.0505	0.0106	0.0447	0.0086	0.0355	0.0083	0.0342	0.0191	0.0786	0.0088	0.0312	0.0128	0.0541
riffle slope ratio	Sriffle/Schnl		1.3	4.7	1.3	4.7	1.3	4.7	1.3	4.7	1.3	4.7	1.3	4.7	1.3	4.7
pool slope	Sp	feet/ foot	0.0000	0.0044	0.0000	0.0029	0.0000	0.0007	0.0000	0.0114	0.0000	0.0126	0.0000	0.0119	0.0000	0.0053
pool slope ratio	S _p /S _{chnl}		0.00	0.40	0.00	0.40	0.00	0.40	0.00	0.40	0.00	0.40	0.00	0.40	0.00	0.40
pool-to-pool spacing	L _{p-p}	feet	3	67	4	85	2	44	1	24	1	24	2	31	2	44
pool spacing ratio	L _{p-p} /w _{bkf}		0.3	7.0	0.3	7.0	0.3	6.1	0.3	6.1	0.3	6.1	0.3	6.1	0.3	6.1
pool cross-sectional area		SF	8.5	13.0	13.3	20.4	6.7	10.4	2.0	3.0	2.0	3.0	2.4	3.8	5.3	8.2
pool area ratio			1.3	2.0	1.3	2.0	1.3	2.0	1.3	2.0	1.3	2.0	1.3	2.0	1.3	2.0
maximum pool depth		feet	1.1	2.1	1.3	2.6	0.9	1.8	0.6	1.2	0.6	1.2	0.6	1.2	0.9	1.8
pool depth ratio			1.6	3.1	1.6	3.1	1.6	3.1	1.6	3.1	1.6	3.1	1.6	3.1	1.6	3.1
pool width at bankfull		feet	10.5	14.3	13.3	18.2	7.9	10.8	4.4	6.0	4.4	6.0	5.5	7.5	7.9	10.8
pool width ratio			1.1	1.5	1.1	1.5	1.1	1.5	1.1	1.5	1.1	1.5	1.1	1.5	1.1	1.5

	Notation	Units	UTS	F-R1	UTS	F-R2	UT	г1С	דט	Г2В	UT	ЗВ	υτ	'4В	U	Т5
			Min	Max												
sinuosity	К		1.2	1.4	1.2	1.4	1.1	1.25	1.1	1.25	1.1	1.25	1.1	1.25	1.2	1.4
belt width	Wblt	feet	15	85	19	108	13	72	6	36	6	36	8	45	12	64
meander width ratio	Wblt/Wbkf		1.6	8.9	1.6	8.9	1.6	8.9	1.6	8.9	1.6	8.9	1.6	8.9	1.6	8.9
meander length		feet	29	156	36	198	24	133	12	66	12	66	15	82	22	118
meander length ratio			3.0	16.4	3.0	16.4	3.0	16.4	3.0	16.4	3.0	16.4	3.0	16.4	3.0	16.4
radius of curvature	Rc	feet	17	55	22	70	11	47	5	23	5	23	7	29	13	42
radius of curvature ratio	R _c / W _{bkf}		1.8	5.8	1.8	5.8	1.3	5.8	1.3	5.8	1.3	5.8	1.3	5.8	1.3	5.8

9.5 Sediment Transport Analysis

Wildlands assessed the watershed and stream channels to gain an understanding of the quantity of sediment supplied to the design reaches and how this supply has changed over time, and may change in the future. This was necessary to qualitatively understand the sediment supply for the design system. In unstable or rapidly changing watersheds or for streams with visual signs of high bedload supply, a detailed analysis including field data collection and capacity calculations may be necessary for proper design.

The watershed study, detailed in Sections 4.1 and 4.2, included an assessment of historical land use changes, an evaluation of existing stream conditions, and a forecast of future land use changes during the life of the project. The results of this assessment indicate the land use on-site and within the contributing watershed has been utilized for hay or livestock production since 1972. The riparian buffer was reduced the prior to 1972 to maximize the area available to agricultural practices. The land cover patterns and land uses have been consistent for at least the past 40 years and based on the rural setting of this project the watershed is expected to remain stable for the foreseeable future. The sediment supply from the contributing watershed upstream of the project site is expected to remain small and stable. UTSF does shows signs of sediment deposition and aggradation, (visual observations of sediment accumulation and reported d50 values for the pavement and sub-pavement samples of less than 2mm). However, this sediment can be largely attributed to local bank erosion within the project site. Degradation of the project tributaries can be attributed to cattle trampling and the propagation of head cuts from the main stem. These observations suggest that the sediment load is predominately contributed by local factors within the project corridor and the sediment load contributed by the upstream watershed is relatively low. Restoration activities and cattle exclusion will address the local factors but the watershed conditions are not anticipated to change drastically due to the rural setting and consistent land use practices.

9.5.1 Capacity Analysis

Based on the watershed assessment described above, the project streams currently appear to be supply limited (e.g. have capacity to move a sediment load greater than the supplied load). There is no reason to believe that the watershed will be altered in the future to increase the sediment yield. The restoration reaches have been designed to maintain or exceed the capacity of the existing channels and grade control structures (detailed in Section 9.6) have been utilized to prevent future incision.

9.5.2 Competence Analysis

In natural streams, the shear stress in a channel increases corresponding to an increase in discharge until the point at which the stream is flowing full (bankfull) and gains access to the floodplain. The floodplain access disperses the flow and prevents further increases in shear stress within the channel. This relationship of shear stress, channel dimension and discharge influences erosion potential within the channel and the channels ability to transport certain sizes of sediment (competence). To support the competence analysis, the calculated shear stresses, for both exsiting and proposed conditions, were compared to determine if the proposed stream will be able to move the bed material within the channel and to support material sizing within the constructed riffles. The competence analysis for each project reach is described below and the results are included in Table 15.

UT to SF Reach 1

Sieve analysis results (Appendix 5) of a pavement sample at indicate a d_{50} of 0.1 and a d_{85} of 1.7. The subpavement results for the d_{50} and d_{85} were 0.02 mm and 0.46 mm respectively. These results along with field observations indicate that, as a result of cattle trampling the stream bed, fine sediment has accumulated and covered the legacy bed material along UTSF Reach 1. The results of the UTSF Reach 1 shear stress analysis indicate that this reach has the competence to entrain particles up to 28.9 mm in size, much larger than the current substrate in the channel. This shear stress creates excess capacity which has contributed to incision that has been noted along the reach.

UT to SF Reach 2

Results of the sieve analysis for UTSF Reach 2 indicate a pavement layer d_{50} of 19.0 mm and a d_{85} of 35.8 mm. The subpavement d_{50} indicated by the analysis is 5.7 mm and the d_{85} is 17.2 mm. The results of the UTSF Reach 2 shear stress analysis indicate that this reach has the competence to entrain particles up to 34.2 mm in size. This shear stress creates excess capacity which has contributed to incision along the reach.

UT5

Results of the sieve analysis for UT5 suggest a d_{50} of 15.5 mm and a d_{85} of 30.8 for the pavement layer and a d_{50} of 0.4 mm and a d_{85} of 7.6 mm for the subpavement. The existing channel shear stress indicates that UT5 has the competence to entrain particles up to 14 mm. This shear stress does not indicate excess capacity for this reach and some deposition was observed along this reach.

Table 15: Sediment Transport Competence Analysis

Maney Farm Mitigation Project

Parameter	UTS	F-R1	UTS	F-R2	UTS		
Particle Size from sub- pavement Sediment Sample	Pavement	Sub-Pavement pavement		Sub- pavement	Pavement	Sub- pavement	
D ₅₀ (mm)	0.1	0.02	19.0	5.7	15.5	0.4	
D ₈₅ (mm)	1.7	1.7 0.5		35.8 17.2		7.7	
Existing Shear Stress (lb/ft²)	0.39		0.	45	0.19		
Movable Particle Size (mm) Shield curve	28	3.9	34	1.2	14.0		
Proposed Shear Stress (lb/ft²)	0.4	42	0.	44	0.37		
Movable Particle Size (mm) Shield curve	31	7	33	3.0	27.5		

Sediment Transport Design Considerations

Based on the results of the watershed analysis and the proposed design which will eliminate the major sediment source (fines from on-side bank erosion and livestock trampling of streams) it is safe to assume that the design restoration reaches will have enough capacity to move the supplied sediment load. This assumption is based on the following:

- The upstream watershed has remained stable for decades and is drained by a network of small agricultural ditches that do not supply much sediment.
- The upstream watershed is rural and landuse is not expected to change in the coming years or even decades.
- The major sediment supply is derived from onsite reaches and this supply will be reduced due to the restoration.
- The system does not appear to have a substantial bedload of coarse material.

Based on this qualitative analysis a threshold channel design is appropriate and no further monitoring or modeling of bedload supply and transport capacity is warranted.

The results of the competence analysis were utilized to support the design of the restoration reaches. Based on the data presented in Table 15, the competence of UTSF reaches 1 and 2 will remain essentially the same. Once the cattle are removed from the streams, the bed material will coarsen somewhat. However, the channels have the competence to move particles in the coarse gravel to small cobble size classes so additional aggradation is not expected to occur. Constructed riffles of coarse material (ranging from cobble to small boulders) and log sills will be used for grade control to prevent incision. For SF5 the shear stress will increase substantially. Signs of aggradation of small particle material have been observed in portions of this reach. The increase in shear stress should be enough to move this material while constructed riffles and log sills will also be used in this reach for grade control.

In order to mimic the historic conditions and to discourage and /or prevent future incision, native rock material will be harvested from both the hill slope and the existing channel. Natural bed material will be harvested along UTSF Reach 2 and UT5 prior to backfilling the existing channel. This native material will be utilized to construct the proposed riffles along the design reaches, along with coarser material harvested from the hill slope. The gravel harvested from the hill slope is expected to fall within the range of 8 to 64 mm with an average d_{50} size of approximately 36 mm. It should be noted that, although the upstream sediment supply is not expected to change, fine bed materials from fluvial erosion and trampling of the banks will be eliminated or reduced after construction resulting in coarsening of the bed material.

9.6 Project Implementation

9.6.1 Grading and Installation of Structures

UTSF and UT5 reaches will be improved through Priority I restoration techniques. New channels will be constructed offline with stable meander patterns mimicking natural Piedmont streams, and the beds of the channels will be raised so that the floodplains are inundated during flow events larger than the design bankfull discharge. Where necessary, floodplain grading will be conducted to slightly lower floodplain elevations resulting in a more natural exchange of organic matter and sediment between the stream and floodplain ecotones. The streambeds will be composed of alternating riffle-pool sequences to provide habitat and flow diversity. The cross-sectional dimensions of the channels will be reconstructed as designed with stable side slopes that are matted and planted with native vegetation for long-term stability. Brush toe built from on-site materials and sod mats harvested on-site will be used to protect banks and provide aquatic habitat.

Enhancement I techniques will be used on UT1C, UT2B, UT3B, and UT4B. This approach will enhance bed features and reduce the level of incision of the existing channels and allow these reaches to be tied into the UTSF Priority I restoration reach.

UT1A, UT1B, UT2A, UT3A, and UT4A will be improved through Enhancement II techniques. Treatment for these areas will include replanting the riparian buffer with native tree species, fencing out livestock, and treatment of any invasive species. There will be no alteration of floodplain grades or channel dimensions for these sections of stream.

Additionally, streambanks at existing cattle crossings and wallow areas will be reconstructed, matted with coir fiber matting and planted with live stakes to improve stability and reduce scour. The entire riparian buffer will be planted with native vegetation, livestock will be fenced out, and invasive species will be treated.

Instream structures will primarily include constructed riffles and log sills. Several types of constructed riffles will be utilized in the restoration reaches to establish a varied flow pattern, habitat, and grade control while providing a source of carbon for nutrient cycling. Native rock of various sizes (cobble, gravel, and fines) harvested on site will be used as much as possible to create these types of riffles. Types of riffles proposed for this site include:

- Chunky riffles with larger (small boulder and large cobble) rock embedded throughout the length of the native rock riffle to provide additional habitat as well as grade control for steeper riffles.
- Native material riffles to re-establish a large gravel substrate to the channels.
- Woody riffles with brush and logs compacted into the bed of native rock to increase woody material in the channel.
- Rock and Roll riffles to incorporate larger woody debris and meander the thalweg within longer riffles.

9.6.2 Riparian Planting

As a final stage of construction, riparian buffers of restoration and enhancement reaches will be seeded and planted with early successional native vegetation chosen to create a Piedmont Bottomland Forest community. The specific species composition to be planted was selected based on the community type, observations of the occurrence of species in the existing buffer, and best professional judgment on species establishment and anticipated site conditions in the early years following project implementation. Species chosen for the planting plan are listed in Table 16.

The riparian buffer areas will be planted with bare root seedlings. Areas within the riparian zone which currently support mature overstory will be enhanced through a supplemental planting of shade tolerant shrub species. In addition, the stream banks will be planted with live stakes and the channel toe will be planted with plugs. Permanent herbaceous seed will be placed on stream banks, floodplain areas, and all disturbed areas within the project easement. Proposed planting zones and the associated species are shown in the construction plan set.

Species planted as bare roots within the open pasture areas will be spaced at an initial density of 605 plants per acre based on 12-ft by 6-ft spacing (targeted densities after monitoring year 3 are 320 woody stems per acre). The supplemental shrub species planting will be spaced at an initial density of 300 plants per acre based on a 24-ft by 12-ft spacing. Live stakes will be planted on channel banks at a 2-ft to 3-ft spacing on the outside of meander bends and a 6-ft to 8-ft spacing on tangent sections.

To help ensure tree growth and survival, soil amendments may be added to areas of floodplain cut. Soil tests will be performed in areas of cut and fertilizer and lime will be applied based on the results. Additionally, topsoil will be stockpiled, reapplied, and disked before permanent seeding and planting activities take place.

Invasive species within the riparian buffers will be treated and/or removed at the time of construction. The extent of invasive species coverage will be monitored, mapped and controlled as necessary throughout the required monitoring period.

Table 16: Planting List *Maney Farm Mitigation Project*

Streambank Plant	ing Zone (Live Stakes)					
Species	Common Name					
Salix nigra	Black Willow					
Cornus ammomum	Silky Dogwood					
Salix sericea	Silky Willow					
Physocarpos opulifolius	Ninebark					
Streambank Planting	Zone (Herbaceous Plugs)					
Juncus effusus	Common Rush					
Carex alata Broadwing Sedge						
Panicum virgatum	Switchgrass					
Buffer Planting	g Zone (Bare Root)					
Alnus serrulata	Tag Alder					
Quercus phellos	Willow Oak					
Platanus occidentalis	Sycamore					
Betula nigra	River Birch					
Acer rubrum	Red Maple					
Liriodendron tulipifera	Tulip Poplar					
Quercus palustris	Pin Oak					
Fraxinus pennsylvanica	Green Ash					
Carpinus caroliniana	American Hornbeam					
Viburnum prunifolium	Blackhaw Viburnum					
Calycanthus floridus	Sweetshrub					
Callicarpa americana	American Beautyberry					
Symphoricarpos orbiculatus	Coralberry					
Permanent F	Riparian Seeding					
Panicum rigidulum	Redtop Panicgrass					
Agrostis hyemalis	Winter Bentgrass					
Chasmanthium latifolium	River Oats					
Rudbeckia hirta	Blackeyed Susan					
Coreopsis lanceolata	Lanceleaf Coreopsis					
Carex vulpinoidea	Fox Sedge					
Panicum clandestinum	Deertongue					
Elymus virginicus	Virginia Wild Rye					
Asclepias syrica	Common Milkweed					
Baptisia australis	Blue False Indigo					
Gaillardia pulchella	Annual Gaillardia					
Echinacea purpurea	Pale Purple Coneflower					

10.0 MAINTENANCE PLAN

The Site shall be monitored on a regular basis and a physical inspection of the Site shall be conducted at a minimum of once per year throughout the post-construction monitoring period until performance standards are met. These site inspections may identify the site components and features that require routine maintenance. Routine maintenance should be expected most often in the first two years following site construction and may include the following features listed in Table 17 below.

Table 17: Maintenance Plan

Maney Farm Mitigation Project

Component / Feature	Maintenance Through Project Close-Out
Stream	Routine channel maintenance and repair activities may include chinking of in-stream structures to prevent piping, securing loose coir matting, and supplemental installations of live stakes and other target vegetation along the channel. Areas where stormwater and floodplain flows intercept the channel may also require maintenance to prevent bank failures and head-cutting. Beaver dams that inundate the streams channels shall be removed and the beaver shall be trapped.
Vegetation	Vegetation shall be maintained to ensure the health and vigor of the targeted community. Routine vegetation maintenance and repair activities may include supplemental planting, pruning, mulching, and fertilizing. Exotic invasive plant species shall be controlled by mechanical and/or chemical methods. Any vegetation control requiring herbicide application will be performed in accordance with the NC Department of Agriculture (NCDA) rules and regulations.
Site Boundary	Site boundaries shall be identified in the field to ensure clear distinction between the mitigation site and adjacent properties. Boundaries may be identified by fence, marker, bollard, post, tree-blazing, or other means as allowed by site conditions and/or conservation easement. Boundary markers disturbed, damaged, or destroyed will be repaired and/or replaced on an as-needed basis.

11.0 PERFORMANCE STANDARDS

The stream and buffer performance criteria for the Site will follow approved performance criteria presented in the DMS Mitigation Plan Template (version 2.2, 06/08/2012), the DMS Monitoring Requirements and Performance Standards for Stream and/or Wetland Mitigation (11/7/2011), and the Stream Mitigation Guidelines issued in April 2003 by the USACE and NCDWR. Annual monitoring and semi-annual site visits will be conducted to assess the condition of the finished project. The stream restoration and enhancement sections and the buffer restoration sections of the project will be assigned specific performance criteria components for stream morphology, hydrology, and vegetation. Performance criteria will be evaluated throughout the seven year post-construction monitoring. If all performance criteria have been successfully met and two bankfull events have occurred during separate years, Wildlands may propose to terminate stream and/or vegetation monitoring. An outline of the performance criteria components follows.

11.1 Streams

11.1.1 Dimension

Riffle cross-sections on the restoration reaches should be stable and should show little change in bankfull area, maximum depth ratio, and width-to-depth ratio. Per DMS guidance, bank height ratios shall not exceed 1.2 and entrenchment ratios shall be at least 2.2 for restored channels to be considered stable. Reach riffle cross-section dimension means should fall within the parameters defined for channels of the appropriate Rosgen stream type. If any changes do occur, these

changes will be evaluated to assess whether the stream channel is showing signs of instability. Indicators of instability include a trend in vertical incision or eroding channel banks over the monitoring period. Remedial action would not be taken if channel changes indicate a movement toward stability.

11.1.2 Pattern and Profile

Visual assessments and photo documentation should indicate that streams are remaining stable and do not indicate a trend toward vertical or lateral instability.

11.1.3 Substrate

Substrate materials in the restoration reaches should indicate a progression towards or the maintenance of coarser materials in the riffle features and smaller particles in the pool features.

11.1.4 Bankfull Events

Two bankfull flow events must be documented on the restoration reaches within the seven-year monitoring period. The two bankfull events must occur in separate years. Stream monitoring will continue until success criteria in the form of two bankfull events in separate years have been documented.

11.1.5 Photo Documentation

Photographs should illustrate vegetative and morphological stability on an annual basis at the Site. Cross-section photos should demonstrate no excessive erosion or degradation of the banks. Longitudinal photos should indicate the absence of persistent bars within the channel or vertical incision. Grade control structures should remain stable. Deposition of sediment on the bank side of vane arms is preferable. Maintenance of scour pools on the channel side of vane arms is expected.

11.1.6 Vegetation

The final vegetative success criteria for the stream restoration and enhancement areas will be the survival of 210 planted stems per acre in the riparian corridor at the end of the required monitoring period (year seven). The interim measure of vegetative success will be the survival of at least 320 planted stems per acre at the end of the third monitoring year and at least 260 stems per acre at the end of the fifth year of monitoring. Planted vegetation must average 10 feet in height in each plot at the end of the seventh year of monitoring. If this performance standard is met by year five and stem density is trending towards success (i.e., no less than 260 five year old stems/acre), monitoring of vegetation on the Site may be terminated with written approval by the USACE in consultation with the NC Interagency Review Team. The extent of invasive species coverage will also be monitored and controlled as necessary throughout the required monitoring period.

11.1.7 Visual Assessment

Visual assessments should support the specific performance standards for each metric as described above.

12.0 MONITORING PLAN

Annual monitoring data will be reported using the DMS Monitoring Report Template (version 1.5, 06/08/2012). The monitoring report shall provide project data chronology that will facilitate and understanding of project status and trends, population of DMS databases for analysis, research purposes, and assist in decision making regarding close-out. The monitoring period will extend

seven years beyond completion of construction or until performance criteria have been met. All survey will be tied to grid. Project monitoring requirements in the sections above are described below and summarized in Table 18 and illustrated in Figure 11.

12.1 Streams

12.1.1 Dimensions

In order to monitor the channel dimension, permanent cross-sections will be installed along riffle and pool sections according to DMS guidance. Two permanent cross-section will be installed per 1,000 feet of channel along the restored streams. Each cross-section will be permanently marked with pins to establish its location. Cross-section surveys will include points measured at all breaks in slope, including top of bank, bankfull, edge of water, and thalweg. Cross-sections will be surveyed annually for the seven year monitoring period.

12.1.2 Pattern and Profile

The as-built survey will include a longitudinal profile for the baseline monitoring report. Longitudinal profile surveys will not be conducted during the seven year monitoring period unless other indicators during the annual monitoring indicate a trend towards vertical and/or lateral instability. If a longitudinal profile is deemed necessary, monitoring will follow standards as described in the DMS Monitoring Requirements and Performance Standards for Stream and/or Wetland Mitigation (11/07/2011) and the 2003 USACE and NCDWR Stream Mitigation Guidance for the necessary reaches.

12.1.3 Substrate

A reach-wide pebble count will be performed in each restoration and enhancement level I reach (UTSF-R1, UTSF-R2, UT1C, UT2B, UT3B, UT4B, and UT5) each year for classification purposes. A pebble count will be performed at each surveyed riffle to characterize the bed material during the years of the cross-section survey.

12.1.4 Bankfull Events

Bankfull events will be documented using a crest gage, photographs, and visual assessments such as debris lines. Three crest gages will be installed: one on UTSF-R1, UTSF-R2, and UT5. The crest gages will be installed within one of the surveyed riffle cross-sections. The gages will be checked at each site visit to determine if a bankfull event has occurred. Photographs will be used to document occurrences of debris lines and sediment deposition.

12.1.5 Photo Documentation

Photographs will be taken once a year to visually document stability for seven years following construction. Permanent markers will be established and located with GPS equipment so that the same locations and view directions on the Site are photographed each year. Photos will be used to monitor stream restoration and enhancement reaches as well as vegetation plots.

Longitudinal reference photos will be established at the tail of riffles approximately every 200 LF along the channel by taking a photo looking upstream and downstream. Cross-sectional photos will be taken of each permanent cross-section looking upstream and downstream. Reference photos will also be taken for each of the vegetation plots. Representative digital photos of each permanent photo point, cross-section and vegetation plot will be taken on the same day the stream and vegetation surveys are conducted. The photographer will make every effort to consistently maintain the same area in each photo over time.

Table 18: Monitoring Requirements.

Maney Farm Mitigation Project

	Monitoring Feature	Quantity/Length by Reach													
Parameter		UTSF-R1	UTSF-R2	UT1A	UT1B	UT1C	UT2A	UT2B	UT3A	UT3B	UT4A	UT4B	UT5	Frequency	Notes
Dimension	Riffle Cross-Section	2	2	N/A	N/A	1	N/A	1	N/A	1	N/A	1	1	- Annual	1
	Pool Cross-Section	2	1	N/A	N/A	1	N/A	1	N/A	1	N/A	1	1		1
Pattern	Pattern	N/A										N/A	2		
Profile	Longitudinal Profile		N/A										N/A	2	
Substrate	Reach-Wide (RW) Riffle (RF) 100 Pebble Count	1 RW 2 RF	1 RW 2 RF	N/A	N/A	1 RW 1 RF	1 RW 1 RF	Annual							
Hydrology	Crest Gage	1	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	Annual	3
Vegetation	Vegetation Plots		14										Annual		
Visual Assessment	All Streams		Υ										Bi-annual		
Exotic and Nuisance Vegetation														Annual	4
Project Boundary										Annual	5				
Reference Photos	Photos	32										Annual	6		

Notes:

- 1. Cross-sections will be permanently marked with rebar to establish location. Surveys will include points measured at all breaks in slope, including top of bank, bankfull, edge of water, and thalweg. The number of cross-sections proposed was established using the small stream guidance of two per 1,000 feet of stream.
- 2. Entire profile will be surveyed during the as-built for all project streams.
- 3. One crest gage will be installed along each stream. Devices will be inspected quarterly or semi-annually, evidence of bankfull will be documented with a photo.
- 4. Locations of exotic and nuisance vegetation will be recorded using a GPS and mapped.
- 5. Locations of fence damage, vegetation damage, boundary encroachments, etc. will be recorded using a GPS and mapped.
- 6. Markers will be established and recorded using a GPS so that the same locations and view directions on the Site are monitored.

12.1.6 Vegetation

Vegetation monitoring plots will be installed and evaluated within the restoration and enhancement areas to measure the survival of the planted trees. The number of monitoring quadrants required is based on the DMS monitoring guidance document (version 1.4, 11/17/11). The size of individual quadrants will be 100 square meters for woody tree species and shrubs. Vegetation assessments will be conducted following the Carolina Vegetation Survey (CVS) Level 2 Protocol for Recording Vegetation (2006).

The initial baseline survey will be conducted within 21 days from completion of site planting and used for subsequent monitoring year comparisons. The first annual vegetation monitoring activities will commence at the end of the first growing season, during the month of September. The restoration and enhancement sites will then be evaluated each subsequent year between June 1 and September 31. Species composition, density, and survival rates will be evaluated on an annual basis by plot and for the entire Site. Individual plot data will be provided and will include height, density, vigor, damage (if any), and survival. Planted woody stems will be marked annually as needed and given a coordinate, based off a known origin, so they can be found in succeeding monitoring years. Mortality will be determined from the difference between the previous year's living planted stems and the current year's living planted stems.

12.1.7 Visual Assessment

Visual assessments will be performed along all stream and buffer restoration areas on a semiannual basis during the seven year monitoring period. Problem areas will be noted such as channel instability (e.g. lateral and/or vertical instability, in-stream structure failure/instability and/or piping, headcuts), vegetation health (e.g. low stem density, vegetation mortality, invasive species or encroachment, beaver activity, or livestock access). Areas of concern will be mapped and photographed accompanied by a written description in the annual report. Problem areas will be reevaluated during each subsequent visual assessment. Should remedial actions be required, recommendations will be provided in the annual monitoring report.

13.0 LONG-TERM MANAGEMENT PLAN

Upon approval for close-out by the Interagency Review Team (IRT), the Site will be transferred to the NCDENR Division of Natural Resource Planning and Conservation's Stewardship Program. This party shall be responsible for periodic inspection of the Site to ensure that restrictions required in the conservation easement or the deed restriction document(s) are upheld. Endowment funds required to uphold easement and deed restrictions shall be negotiated prior to site transfer to the responsible party.

The NCDENR Division of Natural Resource Planning and Conservation's Stewardship Program currently houses DMS stewardship endowments within the non-reverting, interest-bearing Conservation Lands Stewardship Endowment Account. The use of funds from the Endowment Account is governed by North Carolina General Statute GS 113A-232(d)(3). Interest gained by the endowment fund may be used only for the purpose of stewardship, monitoring, stewardship administration, and land transaction costs, if applicable. The NCDENR Stewardship Program intends to manage the account as a non-wasting endowment. Only interest generated from the endowment funds will be used to steward the compensatory mitigation sites. Interest funds not used for those purposes will be re-invested in the Endowment Account to offset losses due to inflation.

14.0 ADAPTIVE MANAGEMENT PLAN

Upon completion of site construction, DMS will implement the post-construction monitoring protocols previously defined in this document. Project maintenance will be performed as described previously in this document. If, during the course of annual monitoring it is determined the Site's ability to achieve site performance standards are jeopardized, DMS will notify the USACE of the need to develop a Plan of Corrective Action. The Plan of Corrective Action may be prepared using in-house technical staff or may require engineering and consulting services. Once the Corrective Action Plan is prepared and finalized DMS will:

- Notify the USACE as required by the Nationwide 27 permit general conditions.
- Revise performance standards, maintenance requirements, and monitoring requirements as necessary and/or required by the USACE.
- Obtain other permits as necessary.
- Implement the Corrective Action Plan.

Provide the USACE a Record Drawing of Corrective Actions. This document shall depict the extent and nature of the work performed.

15.0 FINANCIAL ASSURANCES

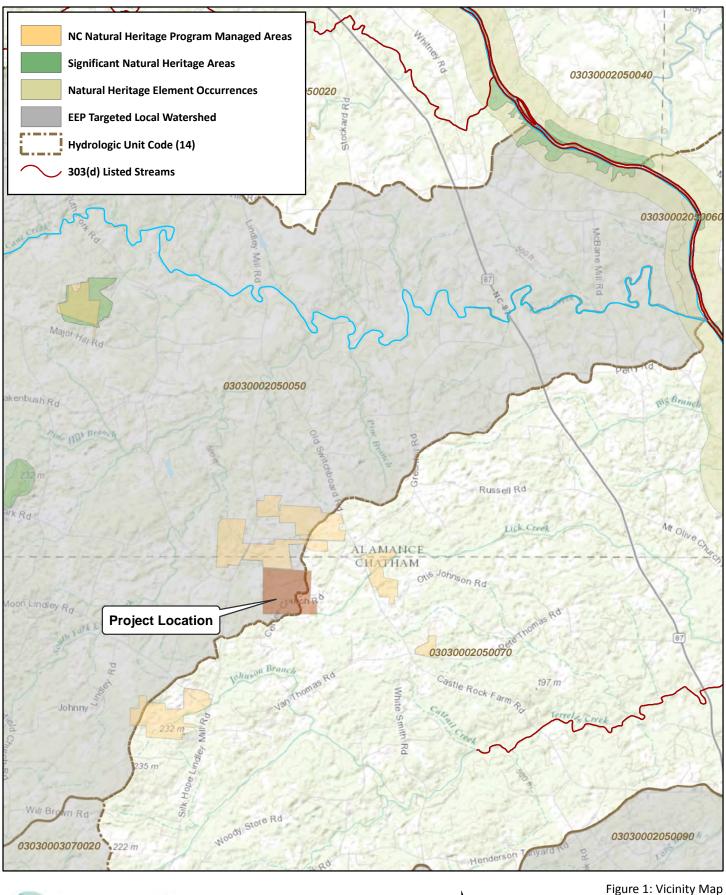
Pursuant to Section IV and Appendix III of the Division of Mitigation Services In-Lieu Fee Instrument dated July 28, 2010, the North Carolina Department of Environment and Natural Resources has provided the US Army Corps of Engineers Wilmington District with a formal commitment to fund projects to satisfy mitigation requirements assumed by DMS. This commitment provides financial assurance for all mitigation projects implemented by the program.

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0 0.5 1 Miles

Figure 1: Vicinity Map Maney Farm Stream Mitigation Site Mitigation Plan Cape Fear River Basin (03030002)

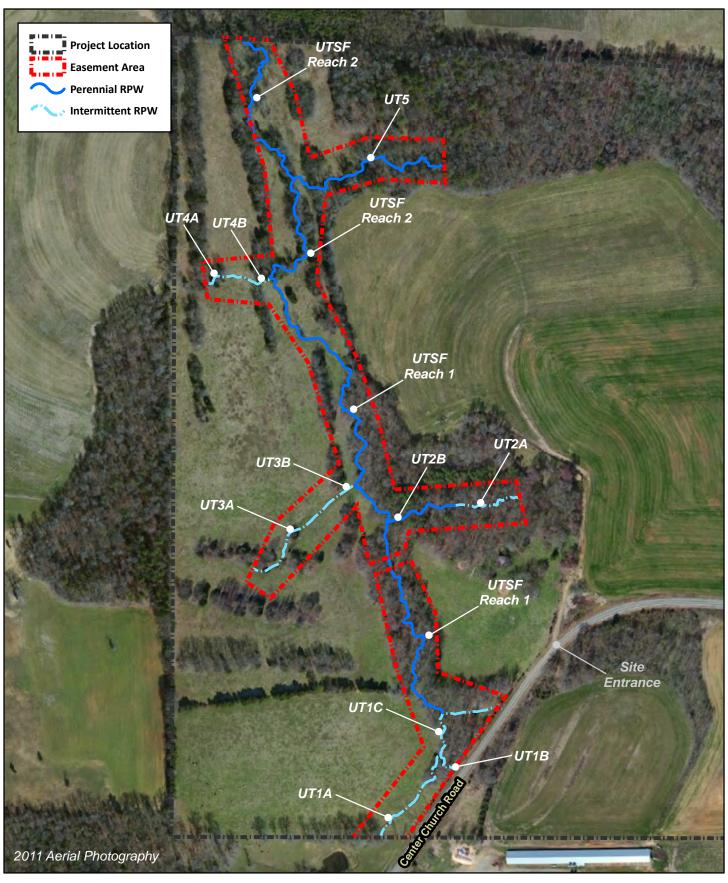






Figure 2: Site Map Maney Farm Mitigation Project Cape Fear River Basin 03030002

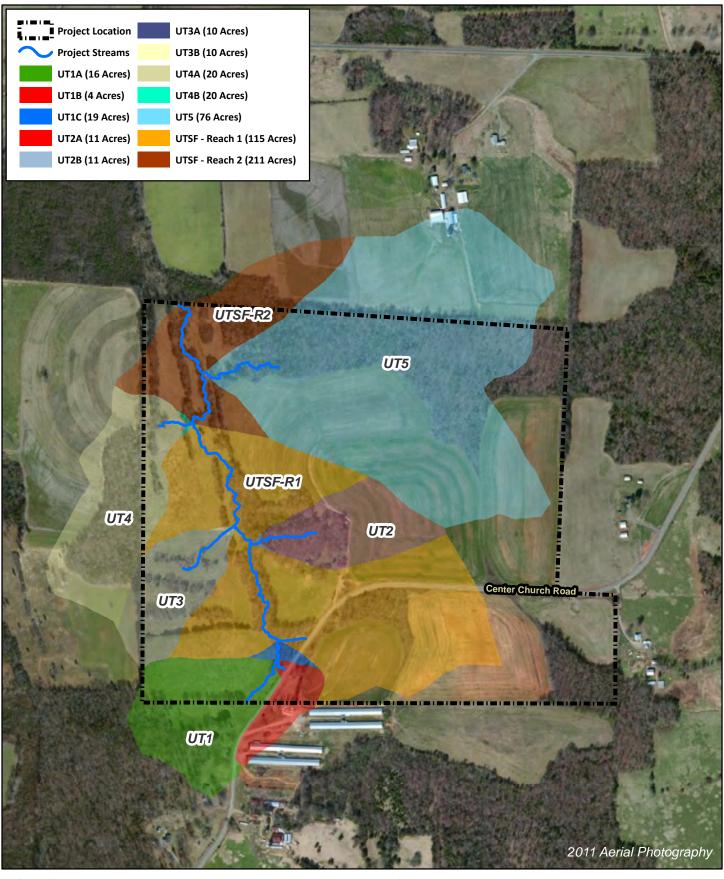
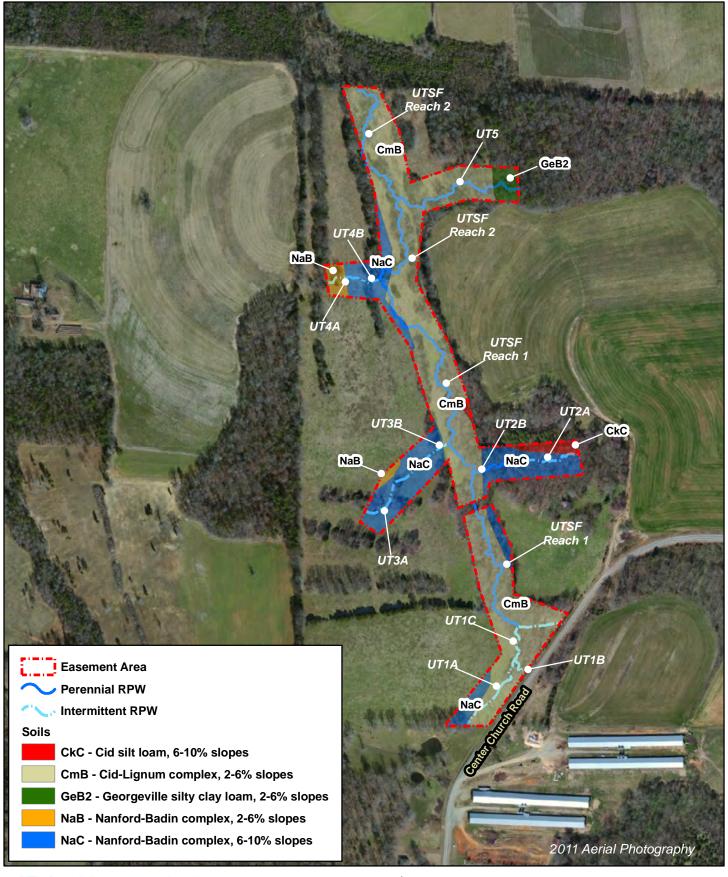








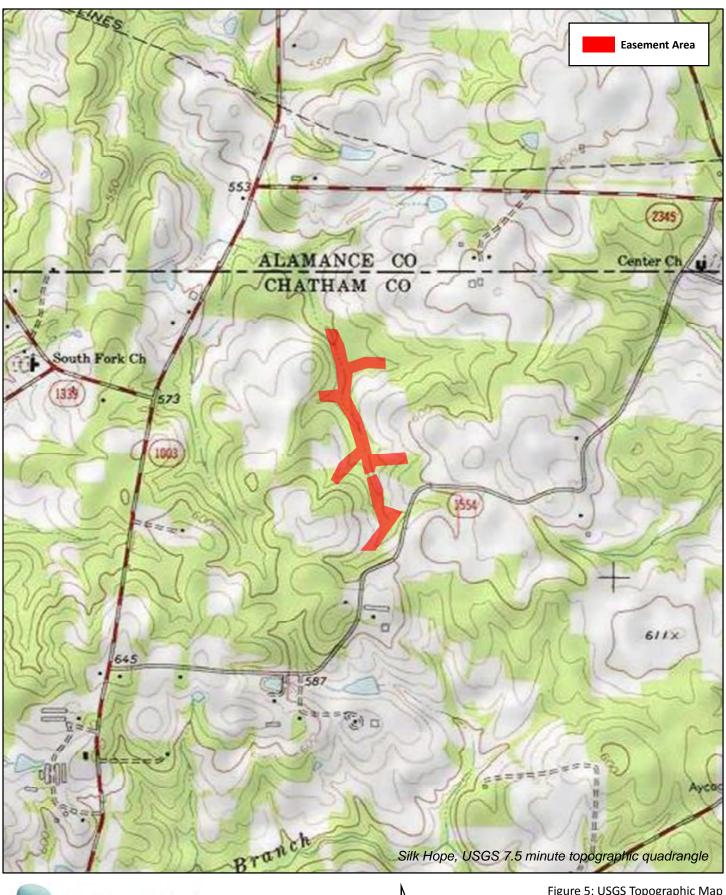
Figure 3: Watershed Map Maney Farm Stream Mitigation Site Cape Fear River Basin 03030002





350 Feet

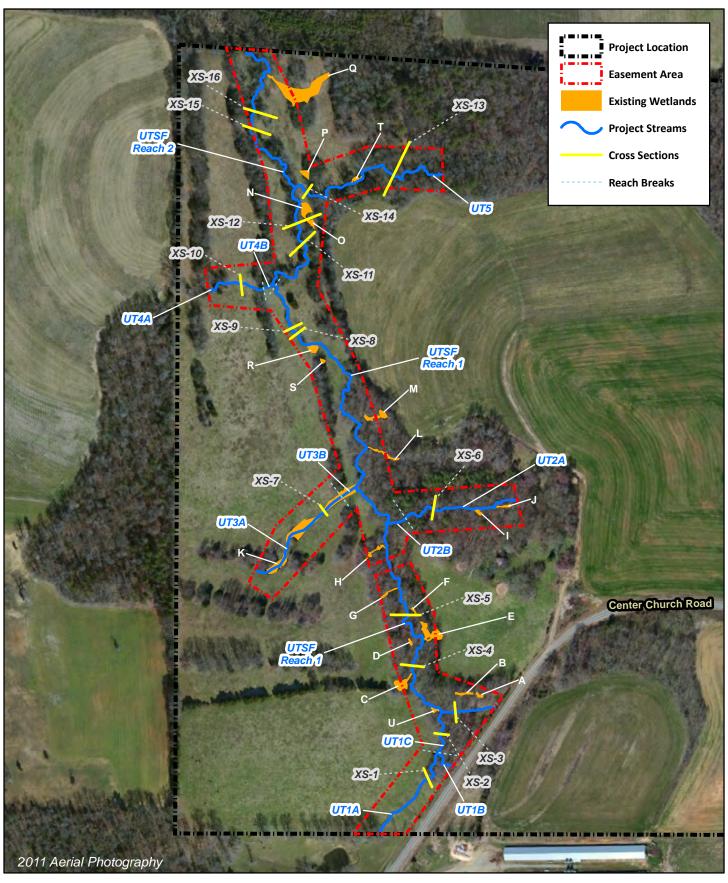
h V Figure 4: Soils Map Maney Farm Stream Mitigation Site Cape Fear River Basin 03030002





0 1,200 Feet

Figure 5: USGS Topographic Map Maney Farm Stream Mitigation Site Cape Fear River Basin 03030002





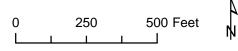
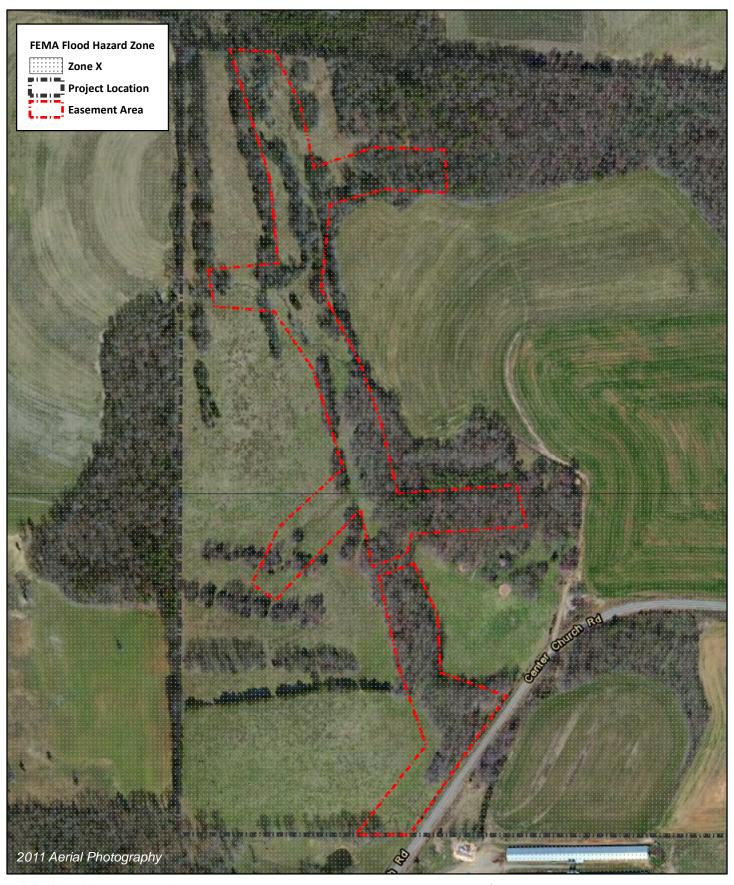


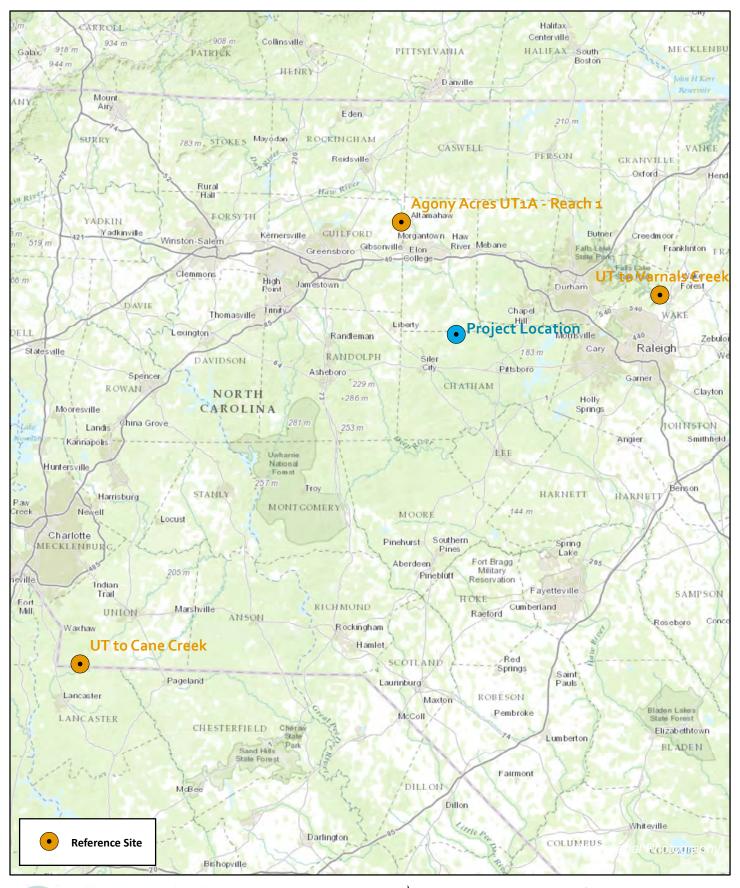
Figure 6: Hydrologic Features Map Maney Farm Stream Mitigation Site Cape Fear River Basin 03030002





0 250 500 Feet

Figure 7: FEMA Flood Map Maney Farm Stream Mitigation Site Cape Fear River Basin 03030002





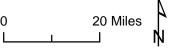
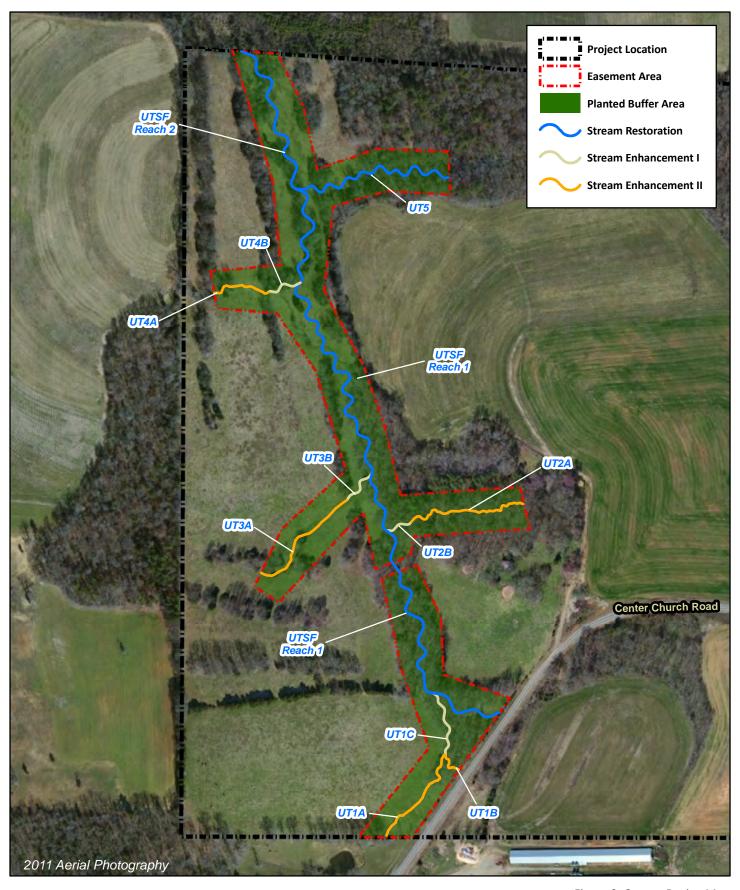


Figure 8: Reference Reach Vicinity Map Maney Farm Stream Mitigation Site Cape Fear River Basin 03030002





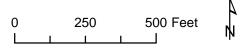
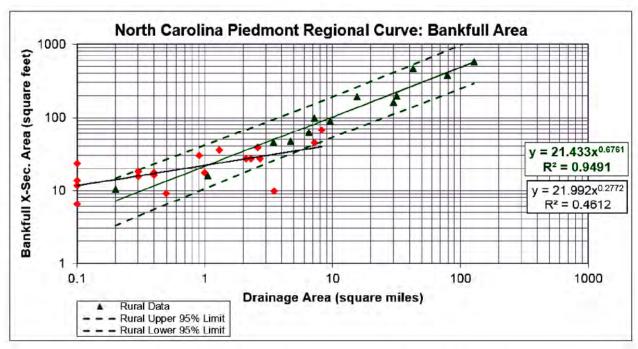


Figure 9: Conept Design Map Maney Farm Stream Mitigation Site Cape Fear River Basin 03030002



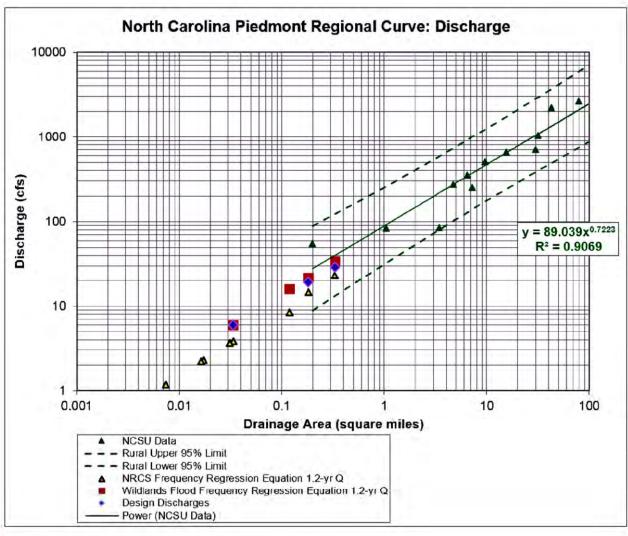
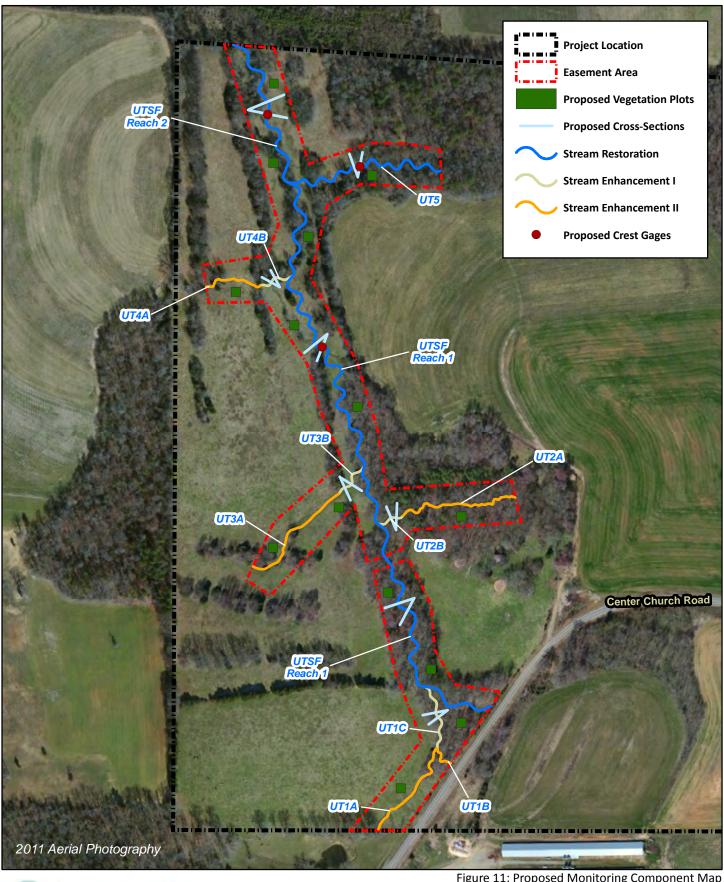




Figure 10: NC Piedmont Regional Curves with Project Data Overlay

Maney Farm Stream Mitigation Site

Cape Fear River Basin 03030002





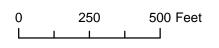


Figure 11: Proposed Monitoring Component Map

Maney Farm Stream Mitigation Site

Cape Fear River Basin 03030002









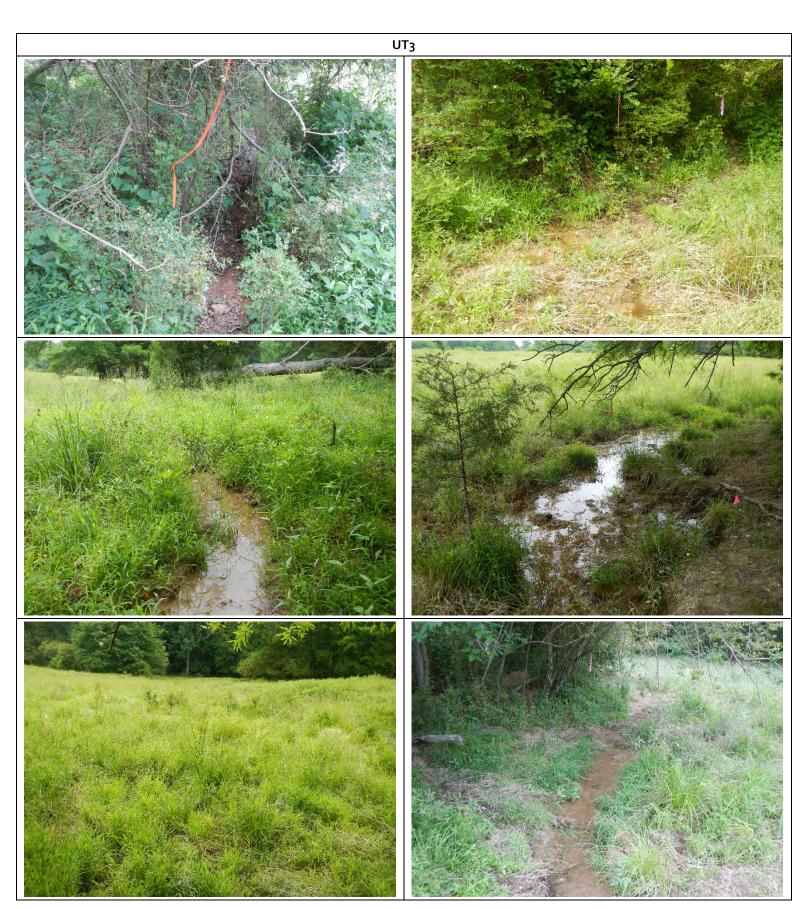


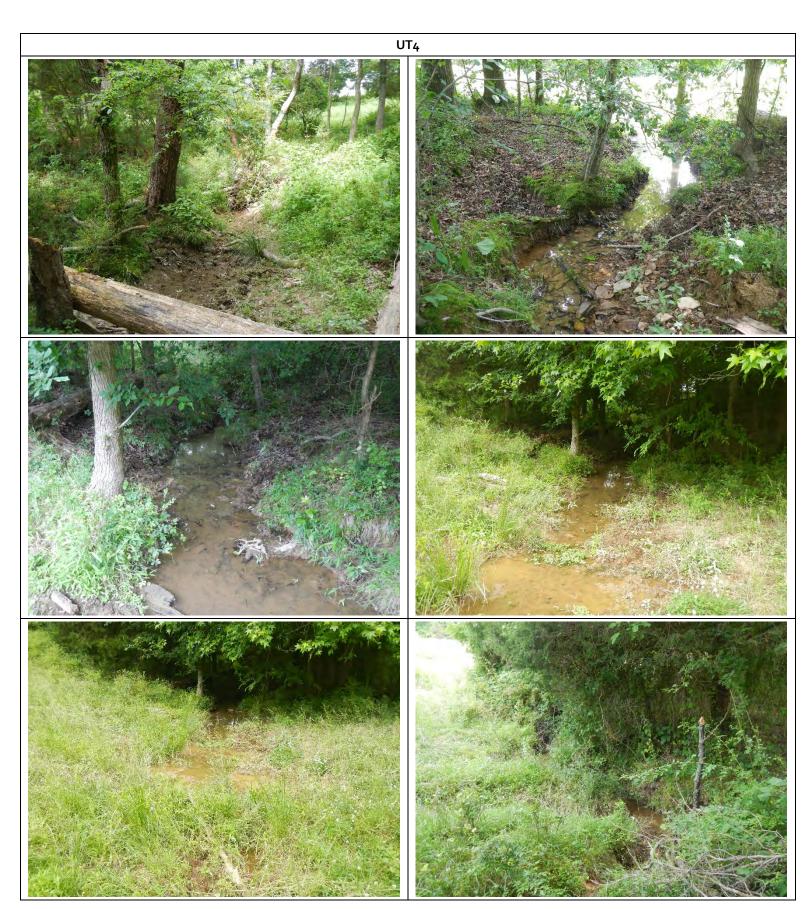
















SITE PROTECTION INSTRUMENT

The land required for the construction, management, and stewardship of this mitigation project includes portions of the following parcels. A copy of the land protection instrument(s) is included in the appendices.

	Landowner	PIN	County	Site Protection Instrument	Deed Book and Page Number	Acreage protected
Parcel A						
Parcel B						
Parcel C						
Parcel D, etc.						

When available, the recorded document(s) will be provided. If the recorded document(s) are not available, the template documents will be provided.

All site protection instruments require 60-day advance notification to the Corps and the State prior to any action to void, amend, or modify the document. No such action shall take place unless approved by the State.

	Site Protection Instrument Figure	
NOTE: figur	re must be in either 8.5"x11" –or- 11"	'x17" format
NOTE: Consultant provides pla	an view of site with parcel boundaries oundaries; date of photograph require	s and site protection instrument
	1 1 3 1	
Scale	Site Name	North Arrow



Maney Farm

Center Church Rd Pittsboro, NC 27312

Inquiry Number: 3754315.1

October 11, 2013

The EDR Aerial Photo Decade Package



EDR Aerial Photo Decade Package

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

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Date EDR Searched Historical Sources:

Aerial Photography October 11, 2013

Target Property:

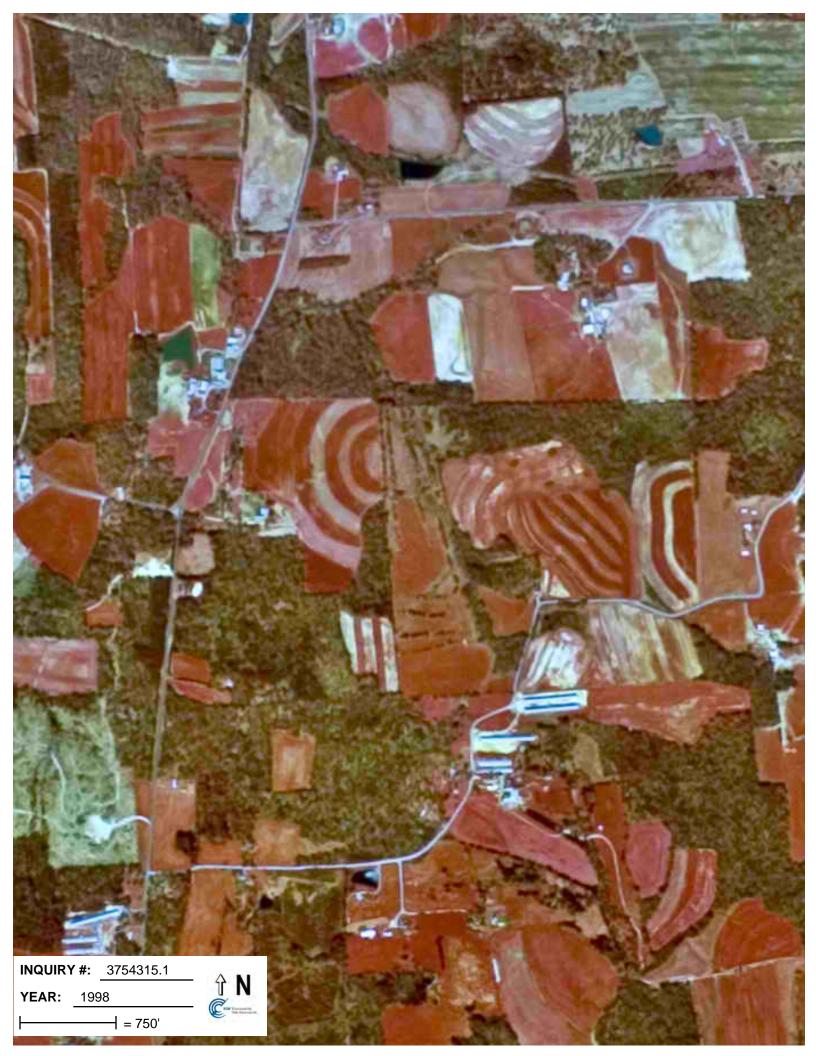
Center Church Rd Pittsboro, NC 27312

<u>Year</u>	<u>Scale</u>	<u>Details</u>	<u>Source</u>
1973	Aerial Photograph. Scale: 1"=500'	Panel #: 35079-G3, Silk Hope, NC;/Flight Date: March 23, 1973	EDR
1983	Aerial Photograph. Scale: 1"=500'	Panel #: 35079-G3, Silk Hope, NC;/Flight Date: April 12, 1983	EDR
1993	Aerial Photograph. Scale: 1"=500'	Panel #: 35079-G3, Silk Hope, NC;/DOQQ - acquisition dates: January 30, 1993	EDR
1998	Aerial Photograph. Scale: 1"=750'	Panel #: 35079-G3, Silk Hope, NC;/Flight Date: April 02, 1998	EDR
2005	Aerial Photograph. Scale: 1"=500'	Panel #: 35079-G3, Silk Hope, NC;/Flight Year: 2005	EDR
2006	Aerial Photograph. Scale: 1"=500'	Panel #: 35079-G3, Silk Hope, NC;/Flight Year: 2006	EDR
2008	Aerial Photograph. Scale: 1"=500'	Panel #: 35079-G3, Silk Hope, NC;/Flight Year: 2008	EDR
2009	Aerial Photograph. Scale: 1"=500'	Panel #: 35079-G3, Silk Hope, NC;/Flight Year: 2009	EDR
2010	Aerial Photograph. Scale: 1"=500'	Panel #: 35079-G3, Silk Hope, NC;/Flight Year: 2010	EDR
2012	Aerial Photograph. Scale: 1"=500'	Panel #: 35079-G3, Silk Hope, NC;/Flight Year: 2012	EDR













NC DWQ Stream Identification Form Version 4.11 Date: Project/Site: Maney Site Latitude: 35.835577° Evaluator: I. Eckardt Longitude: 79.342380°W County: / **Total Points:** Stream Determination (circle one) Ephemeral (intermittent) Perennial Other SCPI - Mainsten Stream is at least intermittent e.g. Quad Name: above UTI if ≥ 19 or perennial if ≥ 30* A. Geomorphology (Subtotal = 10.5) Absent Weak Moderate Strong 1a. Continuity of channel bed and bank 0 2 3 2. Sinuosity of channel along thalweg 0 <u>a</u> 2 3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence 0 1 (2) 3 4. Particle size of stream substrate 0 1 5. Active/relict floodplain 2 3 0 2 1 3 6. Depositional bars or benches (O) 1 3 7. Recent alluvial deposits 6 1 2 3 8. Headcuts 0 1 2 3 9. Grade control 0 0.5 1 1.5 10. Natural valley 0.5 1 1.5 11. Second or greater order channel (No = 0 Yes = 3 artificial ditches are not rated; see discussions in manual B. Hydrology (Subtotal = 12. Presence of Baseflow 2 **(3**) 13. Iron oxidizing bacteria (O) 1 2 3 14. Leaf litter 1.5 7 0.5 0 15. Sediment on plants or debris 0 0.5) 1 16. Organic debris lines or piles 1.5 0 0.5 1 17. Soil-based evidence of high water table? 1.5 No = 0Yes = 3 C. Biology (Subtotal = 18. Fibrous roots in streambed (3) 1 0 19. Rooted upland plants in streambed 3 2 1 0 20. Macrobenthos (note diversity and abundance) (1)2 3 21. Aquatic Mollusks ത 2 3 22. Fish (0) 0.5 1 1.5 23. Crayfish 0 (0.5) 1 1.5 24. Amphibians 0 0.5 7 1.5 25. Algae (0) 0.5 1.5 26. Wetland plants in streambed FACW = 0.75; OBL = 1.5 (Other = 0 *perennial streams may also be identified using other methods. See p. 35 of manual. Notes: Sketch:

NC DWQ Stream Identification Form Version 4.11 Date: Project/Site: Many Site Latitude: 35,835720 °N I. Eckardt Evaluator: County: Chatham Longitude: 79,343009°W **Total Points:** Stream Determination (circle one) Stream is at least intermittent Other 5CP2 - Mainster Ephemeral Intermittent Perennial if ≥ 19 or perennial if ≥ 30* e.g. Quad Name: below UTI A. Geomorphology (Subtotal = 19.5) Absent Weak Moderate Strong 1^{a.} Continuity of channel bed and bank 1 (3) 2. Sinuosity of channel along thalweg 0 1 (2) 3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence 0 1 (2) 3 4. Particle size of stream substrate 0 (T) 2 3 5. Active/relict floodplain 0 2 6. Depositional bars or benches 3 (1 0 7. Recent alluvial deposits 3 0 1 8. Headcuts 3 0 2 9. Grade control 3 0 0.5 7 1.5 10. Natural valley 0 0.5 1 (1.5) 11. Second or greater order channel No = 0artificial ditches are not rated; see discussions in manual Yes = 3 B. Hydrology (Subtotal = 8.5 12. Presence of Baseflow 2 (3) 13. Iron oxidizing bacteria (0) 2 3 14. Leaf litter T 1.5 0.5 15. Sediment on plants or debris 0 0 0.5 1 1.5 16. Organic debris lines or piles 0 0.5 1 17. Soil-based evidence of high water table? 1.5 No = 0Yes = 3 C. Biology (Subtotal = 18. Fibrous roots in streambed 2 1 19. Rooted upland plants in streambed 0 (3)2 1 0 20. Macrobenthos (note diversity and abundance) 0 . (1)2 3 21. Aquatic Mollusks (O) 2 3 22. Fish 0) 0.5 1 1.5 23. Crayfish 0 0.5 (A) 1.5 24. Amphibians 0 0.5 1) 1.5 25. Algae (D) 0.5 1.5 26. Wetland plants in streambed FACW = 0.75; OBL = 1.5 Other = 0 *perennial streams may also be identified using other methods. See p. 35 of manual. Notes: Sketch:

NC DWQ Stream Identification Form Version 4.11 Date: Project/Site: Many Site Latitude: 35,8345629N Evaluator: County: Chatham Longitude: 79,343422°W **Total Points:** Other SCP3 - UTI Stream Determination (circle one) Stream is at least intermittent 21 Ephemeral Intermitten Perennial e.g. Quad Name: (Upstern if ≥ 19 or perennial if ≥ 30* A. Geomorphology (Subtotal = Absent Weak Moderate Strong 1⁸ Continuity of channel bed and bank 0 1 2 2. Sinuosity of channel along thalweg 0 (1) 2 3. In-channel structure: ex. riffle-pool, step-pool, 0 ripple-pool sequence (1)2 3 4. Particle size of stream substrate 0 (1) 2 3 5. Active/relict floodplain 0 2 6. Depositional bars or benches 3 9 2 7. Recent alluvial deposits 3 1 2 8. Headcuts 3 0 1 2 9. Grade control 3 0 0.5 1 1.5 10. Natural valley 0 0.5 1 (1.5) 11. Second or greater order channel (No = 0) artificial ditches are not rated; see discussions in manual Yes = 3 B. Hydrology (Subtotal = 12. Presence of Baseflow 2 3 13. Iron oxidizing bacteria 0 2 3 14. Leaf litter 1.5) 0.5 15. Sediment on plants or debris 0 0) 0.5 16. Organic debris lines or piles 1 1.5 0.5) 1 17. Soil-based evidence of high water table? 1.5 No = 0Yes = 3 C. Biology (Subtotal = 18. Fibrous roots in streambed 1 19. Rooted upland plants in streambed 0 3 2 1 0 20. Macrobenthos (note diversity and abundance) 0 . (T) 2 3 21. Aquatic Mollusks 0 2 3 22. Fish (O) 0.5 1 1.5 23. Crayfish 0 0.5 1 1.5 24. Amphibians 0 0.5 1 1.5 25. Algae 0 0.5) 26. Wetland plants in streambed 1.5 FACW = 0.75; OBL = 1.5 Other = 0 *perennial streams may also be identified using other methods. See p. 35 of manual. Notes: Sketch:

NC DWQ Stream Identification Form Version 4.11 Date: Project/Site: Maney Site Latitude: 35,835360° N I. Eckardt Evaluator: County: Chatham Longitude: -79.342781 W **Total Points:** Stream Determination (circle one) Stream is at least intermittent Other SCP4 - UTI e.g. Quad Name: (between UTIB) if ≥ 19 or perennial if ≥ 30* Ephemeral (Intermittent) Perennial mainstam) A. Geomorphology (Subtotal = Absent Weak Moderate Strong 1^{a.} Continuity of channel bed and bank 1 2 3 2. Sinuosity of channel along thalweg 0 (1) 2 3. In-channel structure: ex. riffle-pool, step-pool, 0 ripple-pool sequence ന 2 3 4. Particle size of stream substrate 0 2 3 5. Active/relict floodplain 0 7 2 3 6. Depositional bars or benches 0 2 3 7. Recent alluvial deposits **(6)** 2 3 8. Headcuts 0 1 2 3 9. Grade control 0 (0.5) 1 1.5 10. Natural valley 0 1 (1.5)11. Second or greater order channel No = 0Yes = 3 artificial ditches are not rated; see discussions in manual B. Hydrology (Subtotal = 12. Presence of Baseflow (1)2 3 13. Iron oxidizing bacteria (0) 2 3 14. Leaf litter 1.5 (1) 0.5 0 15. Sediment on plants or debris 0 0.5 1 1.5 16. Organic debris lines or piles 0 0.5 (1) 1.5 17. Soil-based evidence of high water table? No = 0(Yes = 3) C. Biology (Subtotal = 18. Fibrous roots in streambed 8 2 1 0 19. Rooted upland plants in streambed 2 1 0 20. Macrobenthos (note diversity and abundance) 0 . (1) 2 3 21. Aquatic Mollusks 0 2 3 22. Fish (0) 0.5 1 1.5 23. Crayfish 0 (0.5) 1 1.5 24. Amphibians 0 0.5 1 1.5 25. Algae 0 0.5 1.5 26. Wetland plants in streambed FACW = 0.75; OBL = 1.5 (Other = 0 *perennial streams may also be identified using other methods. See p. 35 of manual. Notes: Sketch:

NC DWQ Stream Identification Form Version 4.11 Date: Project/Site: Maney Site Latitude: 35.835077 I. Eckardt Evaluator: County: Chatham Longitude: -79,342686 W **Total Points:** Stream Determination (circle one) Ephemeral (Intermittent Perennial Other SCP 5 - UTIB Stream is at least intermittent 25.5 if ≥ 19 or perennial if ≥ 30* A. Geomorphology (Subtotal = Absent Weak Moderate Strong 1^{a.} Continuity of channel bed and bank 0 2 3 2. Sinuosity of channel along thalweg 0 a a 2 3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence 0 (1) 2 3 4. Particle size of stream substrate 0 2 3 5. Active/relict floodplain 0 2 3 6. Depositional bars or benches (0) 2 3 7. Recent alluvial deposits 0 1 2 3 8. Headcuts 0 1 2 3 9. Grade control 0 (0.5) 1 1.5 10. Natural valley 0 0.5 1 1.5 11. Second or greater order channel No = O Yes = 3 artificial ditches are not rated; see discussions in manual B. Hydrology (Subtotal = 12. Presence of Baseflow (3) 13. Iron oxidizing bacteria ത 1 2 3 14. Leaf litter (1.5) 0.5 15. Sediment on plants or debris 0 0.51 16. Organic debris lines or piles 1.5 0 (0.5) 1 1.5 17. Soil-based evidence of high water table? No = 0Yes = 3 C. Biology (Subtotal = 18. Fibrous roots in streambed 2 1 0 19. Rooted upland plants in streambed 3 2 1 0 20. Macrobenthos (note diversity and abundance) 0 . 1 2 3 21. Aquatic Mollusks ത 2 3 22. Fish (0) 0.5 1 1.5 23. Crayfish Co 0.5 1 1.5 24. Amphibians 0 **(15)** 1 1.5 25. Algae 0 0.5) 1.5 26. Wetland plants in streambed FACW = 0.75; OBL = 1.5 Other = 0 *perennial streams may also be identified using other methods. See p. 35 of manual. Notes: Sketch:

NC DWQ Stream Identification Form Version 4.11 Date: Project/Site: Maney Site Latitude: 35,837559 N Evaluator: Eckardt County: Chatham Longitude: 79.342859°W **Total Points:** Stream is at least intermittent Stream Determination (circle one) 30 Other SCP6-UT2 if ≥ 19 or perennial if ≥ 30* Ephemeral Intermitten Perennial e.g. Quad Name: Downstream A. Geomorphology (Subtotal = Absent Weak Moderate 1ª Continuity of channel bed and bank Strong 0 2. Sinuosity of channel along thalweg 1 3 0 3. In-channel structure: ex. riffle-pool, step-pool, 1 (2) ripple-pool sequence 0 1 (2) 3 4. Particle size of stream substrate 0 5. Active/relict floodplain 1 (2) 3 0 α 6. Depositional bars or benches 3 (0) 7. Recent alluvial deposits 2 3 ത 1 8. Headcuts 2 3 0 9 2 9. Grade control 3 0 (0.5)1 Natural valley 1.5 0 0.5 11. Second or greater order channel 1 (1.5) artificial ditches are not rated; see discussions in manual (No = 0 Yes = 3 B. Hydrology (Subtotal = 12. Presence of Baseflow 1 13. Iron oxidizing bacteria (3 (CO) 1 2 14. Leaf litter 3 1.5 (1) 0.5 15. Sediment on plants or debris 0 0 0.5 16. Organic debris lines or piles 1 1.5 0 17. Soil-based evidence of high water table? (0.5)1 1.5 No = 0Yes = 3 C. Biology (Subtotal = 18. Fibrous roots in streambed 19. Rooted upland plants in streambed 1 0 ত্ত্ব 2 20. Macrobenthos (note diversity and abundance) 1 0 0 . 1 21. Aquatic Mollusks 2 3 (0) 22. Fish 2 3 (D) 0.5 23. Crayfish 1 1.5 0 0.5 4 24. Amphibians 1.5 0 0.5 25. Algae 1.5 (O) 0.5 26. Wetland plants in streambed 1.5 FACW = 0.75; OBL = 1.5 (Other = 0 *perennial streams may also be identified using other methods. See p. 35 of manual. Notes: Sketch:

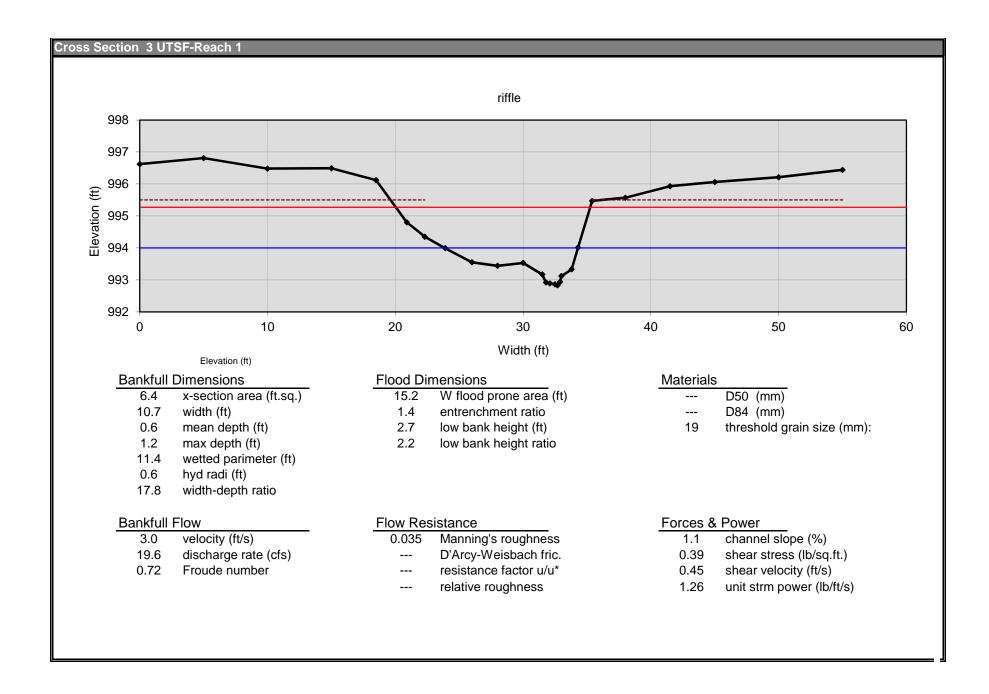
NC DWQ Stream Identification Form Version 4.11 Date: 10 / Project/Site: Maney Site Latitude: 35.837746° Evaluator: County: Chatham Longitude: -79,3421370W **Total Points:** 26 Stream Determination (circle one) Ephemeral (intermittent)Perennial Stream is at least intermittent Other SCP 7 if ≥ 19 or perennial if ≥ 30* e.g. Quad Name: Upstrea A. Geomorphology (Subtotal = // Absent Weak Moderate Strong 1^a Continuity of channel bed and bank 0 2 2. Sinuosity of channel along thalweg (3) 0 (T) 3. In-channel structure: ex. riffle-pool, step-pool, 2 3 ripple-pool sequence 0 1 2 3 4. Particle size of stream substrate 0 2 3 Active/relict floodplain 0 2 6. Depositional bars or benches 3 (O) 2 3 7. Recent alluvial deposits O 1 2 8. Headcuts 3 3 9. Grade control 0 0.5 1 1.5 10. Natural valley 0 0.5 1 11. Second or greater order channel 1.5 No = 0) artificial ditches are not rated; see discussions in manual Yes = 3 B. Hydrology (Subtotal = 12. Presence of Baseflow 2 (3 13. Iron oxidizing bacteria (O) 2 3 14. Leaf litter 1.5 1 0.5 15. Sediment on plants or debris 0 0 (6.5)16. Organic debris lines or piles 1 1.5 0 (0.5) 1 17. Soil-based evidence of high water table? 1.5 No = 0Yes = 3 C. Biology (Subtotal = 18. Fibrous roots in streambed 3 2 19. Rooted upland plants in streambed 3 2 1 20. Macrobenthos (note diversity and abundance) 0 0 . (1) 2 3 21. Aquatic Mollusks 0 2 3 22. Fish (D) 0.5 1 1.5 23. Crayfish ത 0.5 1 1.5 24. Amphibians 6 0.5 1 25. Algae 1.5 0.5 1.5 26. Wetland plants in streambed FACW = 0.75; OBL = 1.5 Other = 0 *perennial streams may also be identified using other methods. See p. 35 of manual. Notes: Sketch:

NC DWQ Stream Identification Form Version 4.11 Date: 10-11-13 Project/Site: Maney Site Latitude: 35,837421° N Evaluator: I. Eckard+ County: Longitude: **Total Points:** Stream Determination (circle one) Stream is at least intermittent 20.75 if ≥ 19 or perennial if ≥ 30* Ephemeral (Intermittent) Perennial e.g. Quad Name: A. Geomorphology (Subtotal = Absent Weak Moderate Strong 1a. Continuity of channel bed and bank 0 2 2. Sinuosity of channel along thalweg 0 1 2 3. In-channel structure: ex. riffle-pool, step-pool, 3 0 ripple-pool sequence 1 2 3 4. Particle size of stream substrate (O) 2 3 5. Active/relict floodplain 2 3 6. Depositional bars or benches 0 2 3 7. Recent alluvial deposits 0 1 2 3 8. Headcuts 9 1 2 3 9. Grade control 0) 0.5 1 1.5 10. Natural valley 0.5 (1) 1.5 Second or greater order channel (No = 0 Yes = 3 artificial ditches are not rated; see discussions in manual B. Hydrology (Subtotal = 12. Presence of Baseflow 0 2 3 13. Iron oxidizing bacteria (1) 2 3 14. Leaf litter (1.5 0.5 0 15. Sediment on plants or debris 0 0.5 1 1.5 16. Organic debris lines or piles 0 (0.5) 1 1.5 17. Soil-based evidence of high water table? No = 0Yes = 3 C. Biology (Subtotal = 18. Fibrous roots in streambed 3 19. Rooted upland plants in streambed 0 3 (2) 0 20. Macrobenthos (note diversity and abundance) 0 . T 2 3 21. Aquatic Mollusks 2 3 22. Fish (O) 0.5 1 1.5 23. Crayfish 0 0.5) 1 1.5 24. Amphibians 0 (0.5) 1 1.5 25. Algae 0 (0.5) 1.5 26. Wetland plants in streambed (FACW = 0.75; OBL = 1.5 Other = 0 *perennial streams may also be identified using other methods. See p. 35 of manual. is heavily trampled. Observed Channel black Sketch:

NC DWQ Stream Identification Form Version 4.11 Date: 10/11/13 Latitude: 35.839738° Project/Site: Maney Site County: Chatham Longitude: -79.345245°W I. Eckard+ Evaluator: **Total Points:** Stream Determination (circle one) 22.5 Stream is at least intermittent Ephemeral Intermittent Perennial e.g. Quad Name: if ≥ 19 or perennial if ≥ 30* A. Geomorphology (Subtotal = Absent Weak Moderate Strong 1a. Continuity of channel bed and bank 0 (2) 3 2. Sinuosity of channel along thalweg 0 3 7 3. In-channel structure: ex. riffle-pool, step-pool, $^{\circ}$ 0 2 3 ripple-pool sequence 4. Particle size of stream substrate 0 2 3 5. Active/relict floodplain 0 (1)2 3 6. Depositional bars or benches 0 2 3 7. Recent alluvial deposits Ó 2 3 1 8. Headcuts $\overline{0}$ 1 2 3 9. Grade control 0.5 0 1.5 10. Natural valley 0 0.5 1.5 11. Second or greater order channel (No = 0) Yes = 3 artificial ditches are not rated; see discussions in manual B. Hydrology (Subtotal = 0 12. Presence of Baseflow 0 2 3 (T) 13. Iron oxidizing bacteria 0 2 3 14. Leaf litter 1.5 0.5 0 15. Sediment on plants or debris 0.5 1 1.5 0 16. Organic debris lines or piles 0 1 0.5 1.5 Yes = 3 17. Soil-based evidence of high water table? No = 0C. Biology (Subtotal = 7.5 18. Fibrous roots in streambed 3 1 0 19. Rooted upland plants in streambed 3 0 1 20. Macrobenthos (note diversity and abundance) 0 2 3 0 21. Aquatic Mollusks 1 2 3 22. Fish (<u>o</u> 0.5 1.5 1 23. Crayfish 0) 0.5 1.5 1 24. Amphibians (0.5) 1.5 0 1 25. Algae 0 (0.5) 1.5 26. Wetland plants in streambed 26. Wetland plants in streambed Ludwigia Sp. *perennial streams may also be identified using other methods. See p. 35 of manual. FACW = 0.75(OBL = 1.5) Other = 0 Notes: Sketch:

NC DWQ Stream Identification Form Version 4.11 Latitude: 35.8408220 N 10-11-13 Project/Site: Maney Site Date: County: Chatham Longitude: -79,8408220W Evaluator: I. Eckard+ **Total Points:** Other SCP 10 - UTS e.g. Quad Name: Stream Determination (circle one) 32.5 Stream is at least intermittent Ephemeral Intermittent (Perennial) if ≥ 19 or perennial if ≥ 30* A. Geomorphology (Subtotal = 13.5) Absent Weak Moderate Strong 1^a Continuity of channel bed and bank 0 1 2 3) 2. Sinuosity of channel along thalweg 0 (2 3 1 3. In-channel structure: ex. riffle-pool, step-pool, (2) 0 1 3 ripple-pool sequence 4. Particle size of stream substrate 2 3 0 1 5. Active/relict floodplain 0 2 3 1 6. Depositional bars or benches 0 1 3 7. Recent alluvial deposits (D) 2 3 8. Headcuts 2 (0) 3 1 9. Grade control (0.5)0 1 1.5 10. Natural valley 0 (1)0.5 1.5 11. Second or greater order channel No = 0Yes = 3 artificial ditches are not rated; see discussions in manual 8.5 B. Hydrology (Subtotal = 12. Presence of Baseflow 0 2 (3) 1 13. Iron oxidizing bacteria $\overline{\Omega}$ 0 2 3 14. Leaf litter 1.5 (0.5) 0 15. Sediment on plants or debris 0.50 1 1.5 16. Organic debris lines or piles 0 0.5 1 1.5 17. Soil-based evidence of high water table? No = 0(Yes = 3 C. Biology (Subtotal = 10.5 18. Fibrous roots in streambed 3 2 1 0 3 19. Rooted upland plants in streambed 2 1 0 20. Macrobenthos (note diversity and abundance) 7 2 0 3 21. Aquatic Mollusks 0 1) 2 3 22. Fish (0) 0.5 1 1.5 23. Crayfish 0.5 1 1.5) 0 24. Amphibians 0.5 0 1 1.5 25. Algae 0 0.5 1 1.5 26. Wetland plants in streambed FACW = 0.75; OBL = 1.5 Other = 0 *perennial streams may also be identified using other methods. See p. 35 of manual. Notes: Sketch:

Appendix 5: Existing Geomorphic Survey Data



Cross Section 4 UTSF-Reach 1 riffle 997 996 Elevation (ft) 995 994 993 992 5 10 15 20 25 30 35 40 45 Width (ft) **Bankfull Dimensions** Flood Dimensions Materials 4.1 x-section area (ft.sq.) 40.0 W flood prone area (ft) D50 (mm) 3.2 width (ft) 12.5 entrenchment ratio D84 (mm) low bank height (ft) 1.3 mean depth (ft) 2.6 threshold grain size (mm): 1.9 max depth (ft)

Bankfull Flow

5.7

0.7 2.5

4.8	velocity (ft/s)
19.9	discharge rate (cfs)
4 00	Frauda numbar

Froude number 1.00

hyd radi (ft)

wetted parimeter (ft)

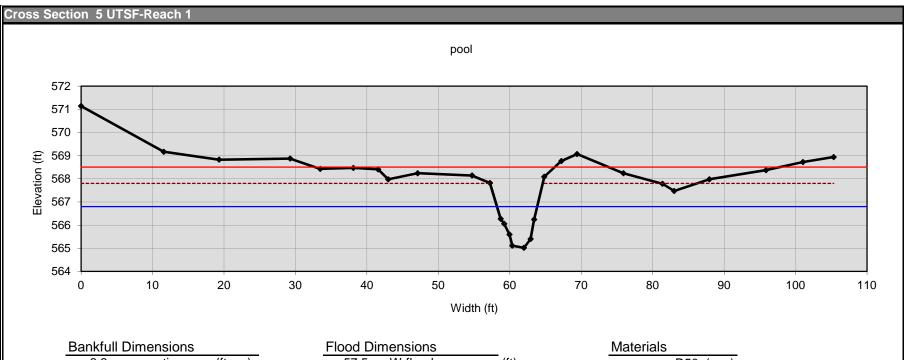
width-depth ratio

1.4 low bank height ratio

Flow Resistance

0.035	Manning's roughness
	D'Arcy-Weisbach fric.
	resistance factor u/u*
	relative roughness

2	channel slope (%)
0.90	shear stress (lb/sq.ft.)
0.68	shear velocity (ft/s)
7.8	unit strm power (lb/ft/s)



- 6.6 x-section area (ft.sq.)
- 5.6 width (ft)
- 1.2 mean depth (ft)
- 1.8 max depth (ft)
- 7.1 wetted parimeter (ft)
- 0.9 hyd radi (ft)
- 4.8 width-depth ratio

- 57.5 W flood prone area (ft)
- 10.2 entrenchment ratio
- 2.8 low bank height (ft)
- 1.6 low bank height ratio

- --- D50 (mm)
 - -- D84 (mm)
- --- threshold grain size (mm):

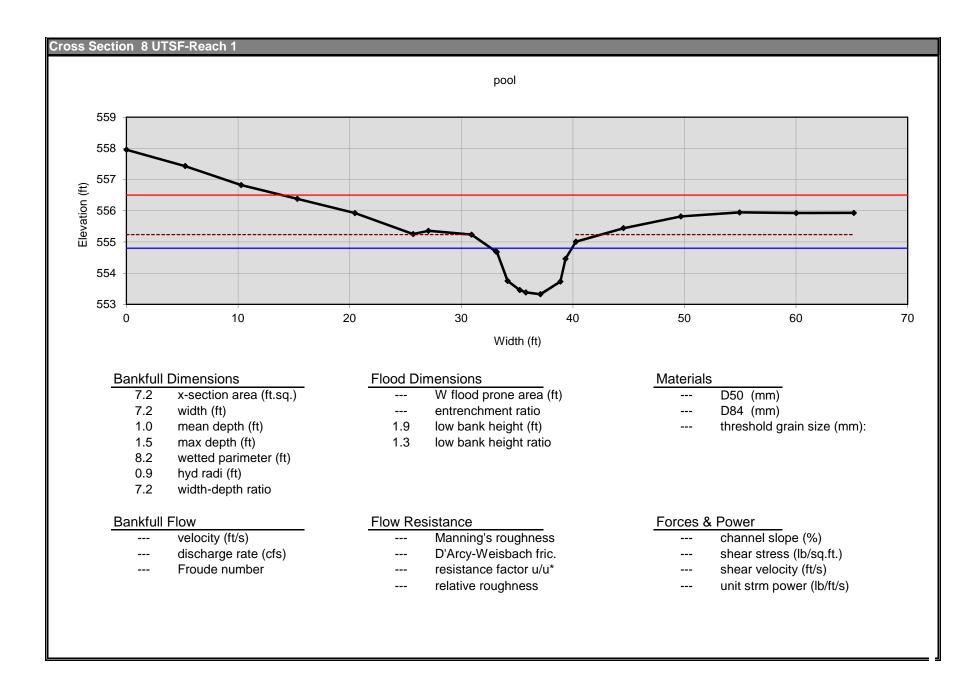
Bankfull Flow

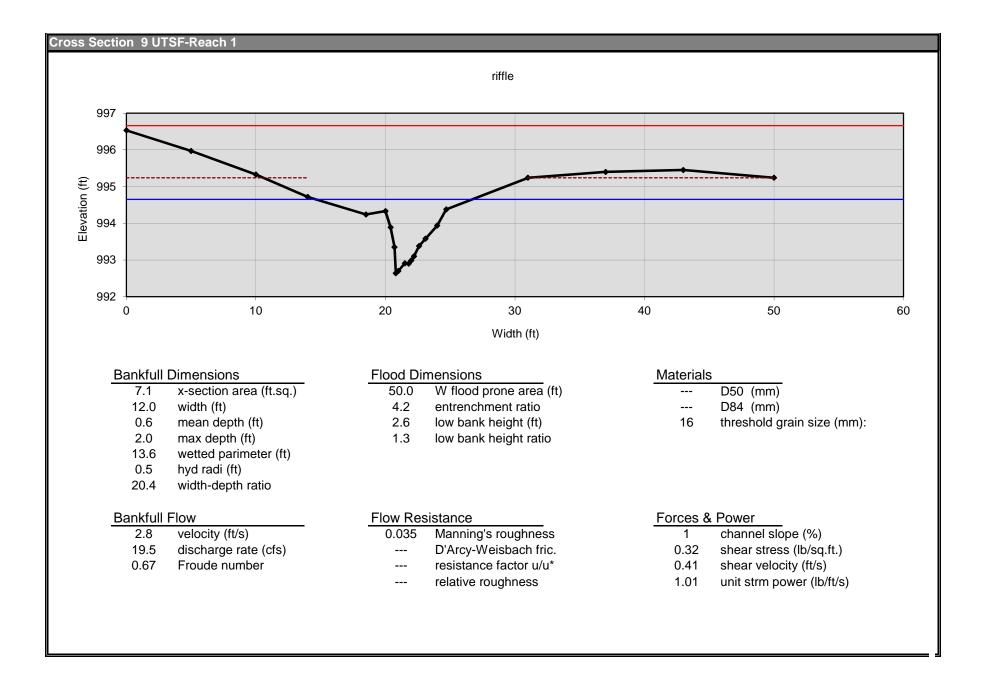
- --- velocity (ft/s)
- --- discharge rate (cfs)
- --- Froude number

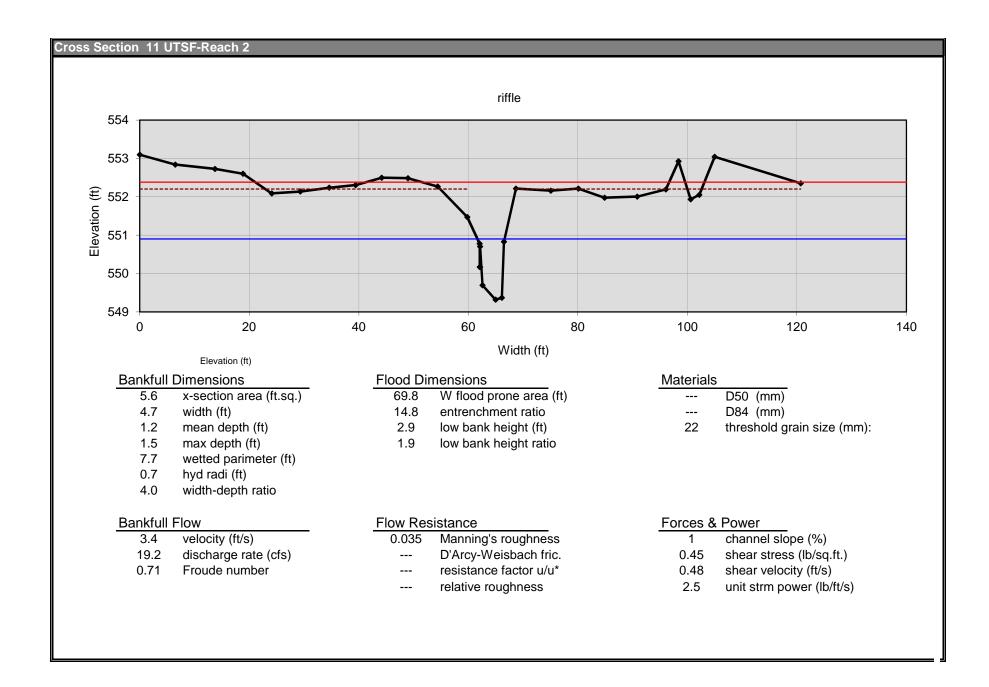
Flow Resistance

- --- Manning's roughness
- --- D'Arcy-Weisbach fric.
- --- resistance factor u/u*
- --- relative roughness

- --- channel slope (%)
- --- shear stress (lb/sq.ft.)
- --- shear velocity (ft/s)
- --- unit strm power (lb/ft/s)

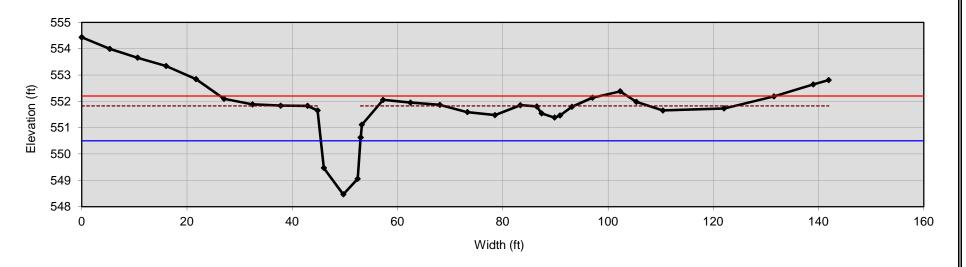






Cross Section 12 UTSF-Reach 2

pool



Bankfull Dimensions

11.1	x-section area	(ft.sq.)
		111.04.	,

- 7.5 width (ft)
- 1.5 mean depth (ft)
- 2.0 max depth (ft)
- 9.3 wetted parimeter (ft)
- 1.2 hyd radi (ft)
- 5.1 width-depth ratio

Flood Dimensions

- W flood prone area (ft) 100.3
- 13.4 entrenchment ratio
- 3.4 low bank height (ft)
- 1.7 low bank height ratio

Materials

- D50 (mm)
- D84 (mm)
- threshold grain size (mm):

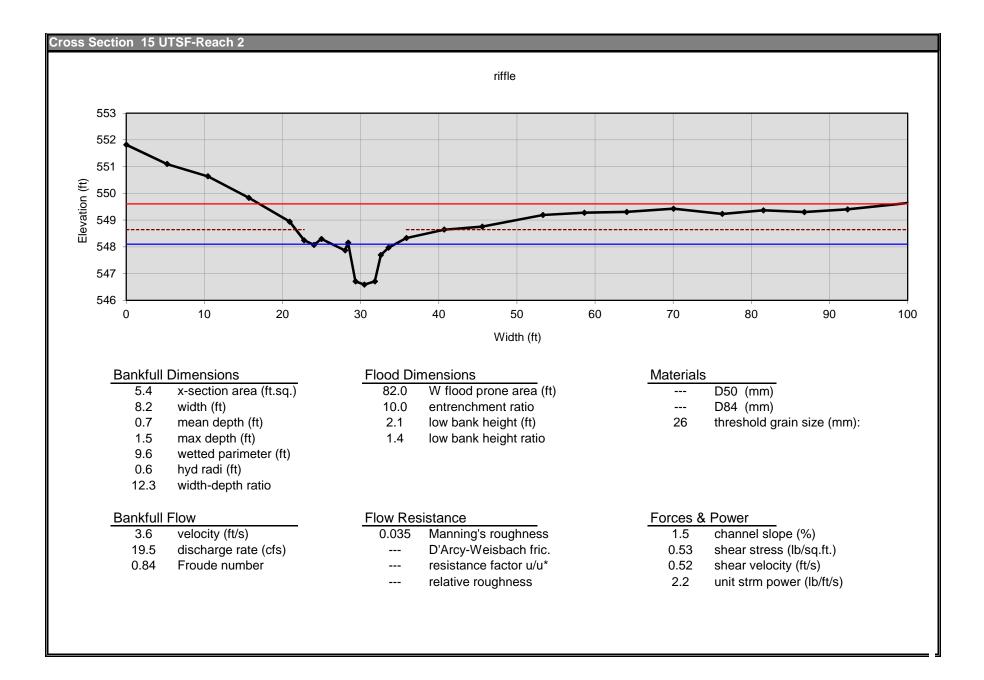
Bankfull Flow

- velocity (ft/s)
 - discharge rate (cfs)
- Froude number

Flow Resistance

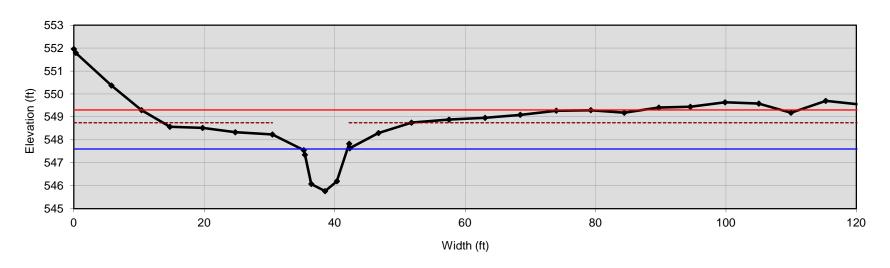
- Manning's roughness
- D'Arcy-Weisbach fric.
- resistance factor u/u*
- relative roughness

- channel slope (%)
 - shear stress (lb/sq.ft.)
- shear velocity (ft/s)
- unit strm power (lb/ft/s)









_		_	
Ban	ktull	Dime	ensions

8.5	x-section area	(ft ca)	١
0.0	x-section area	แเรน.	,

- width (ft) 7.0
- 1.2 mean depth (ft)
- 1.8 max depth (ft)
- wetted parimeter (ft) 8.3
- hyd radi (ft) 1.0
- 5.8 width-depth ratio

Flood Dimensions

- W flood prone area (ft) 79.7
- 11.4 entrenchment ratio
- low bank height (ft) 3.0
- 1.6 low bank height ratio

Materials

- D50 (mm)
- D84 (mm)
- threshold grain size (mm):

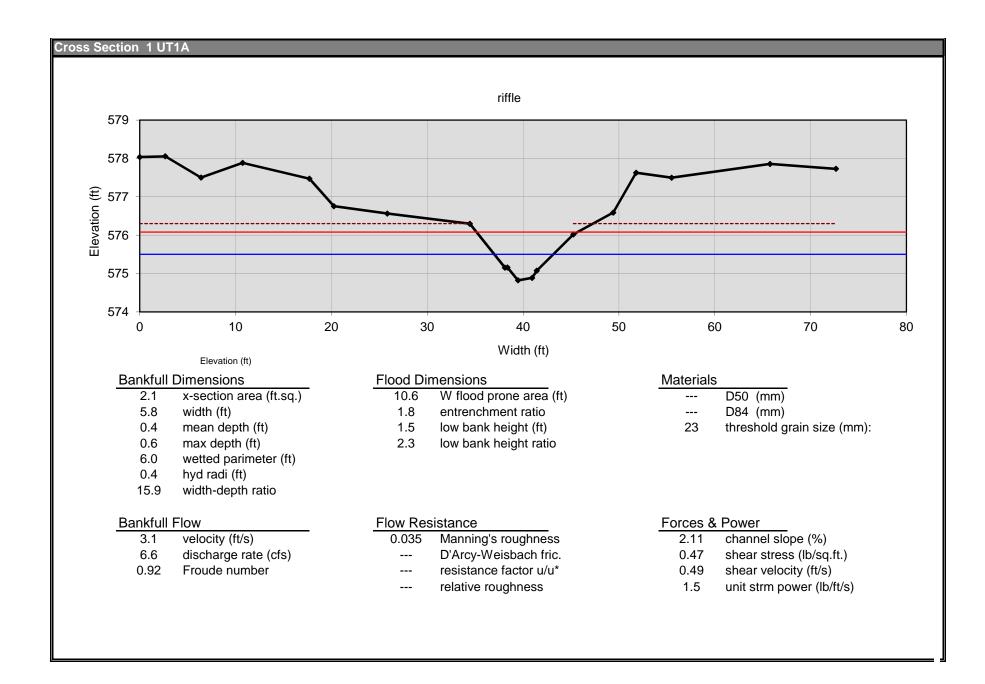
Bankfull Flow

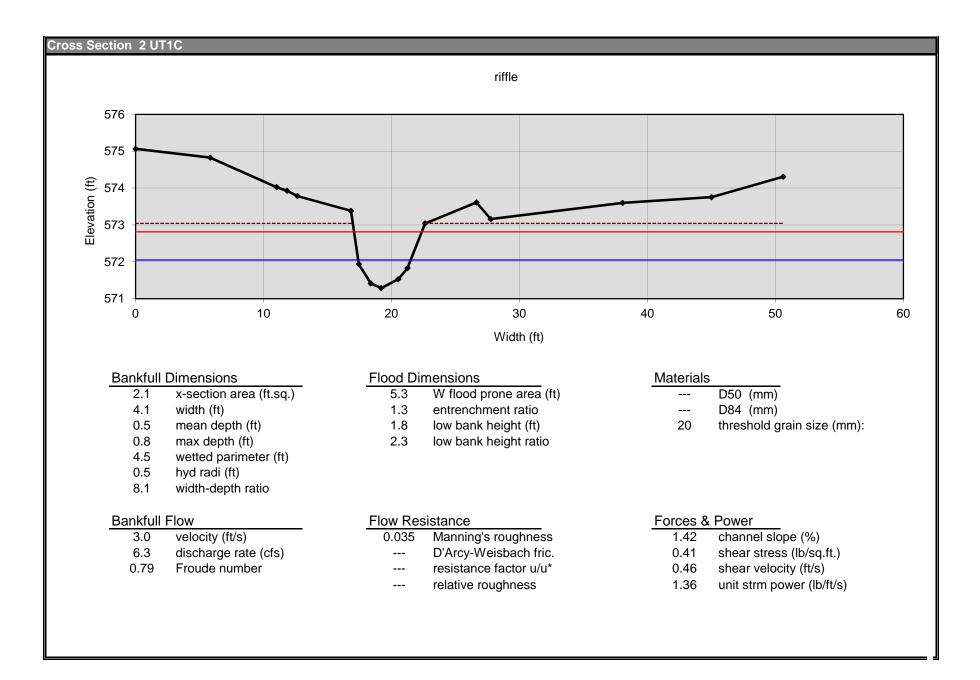
- velocity (ft/s)
- discharge rate (cfs)
- Froude number

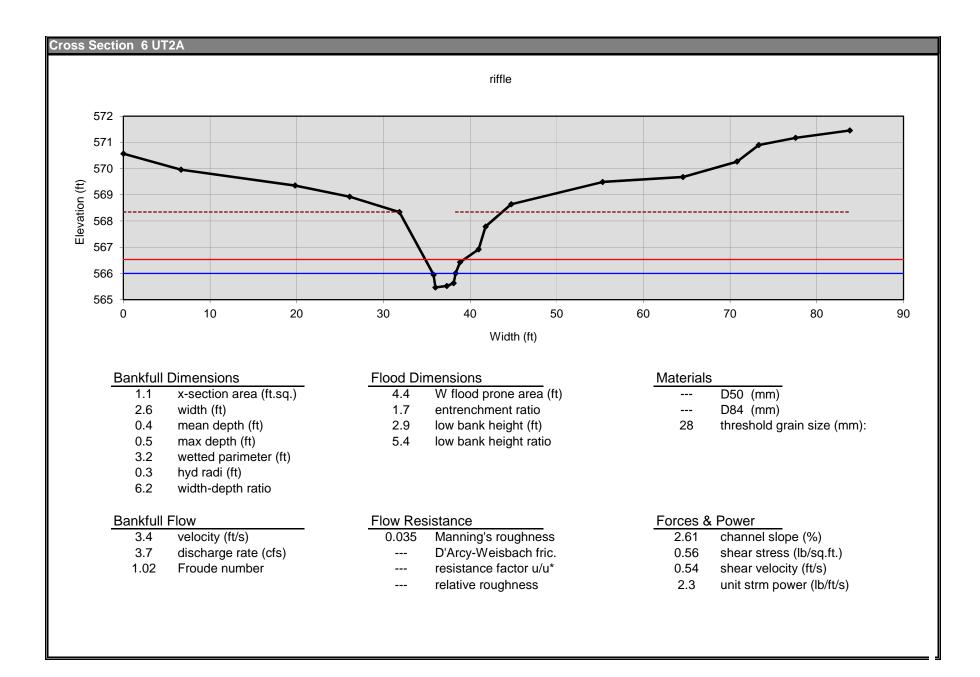
Flow Resistance

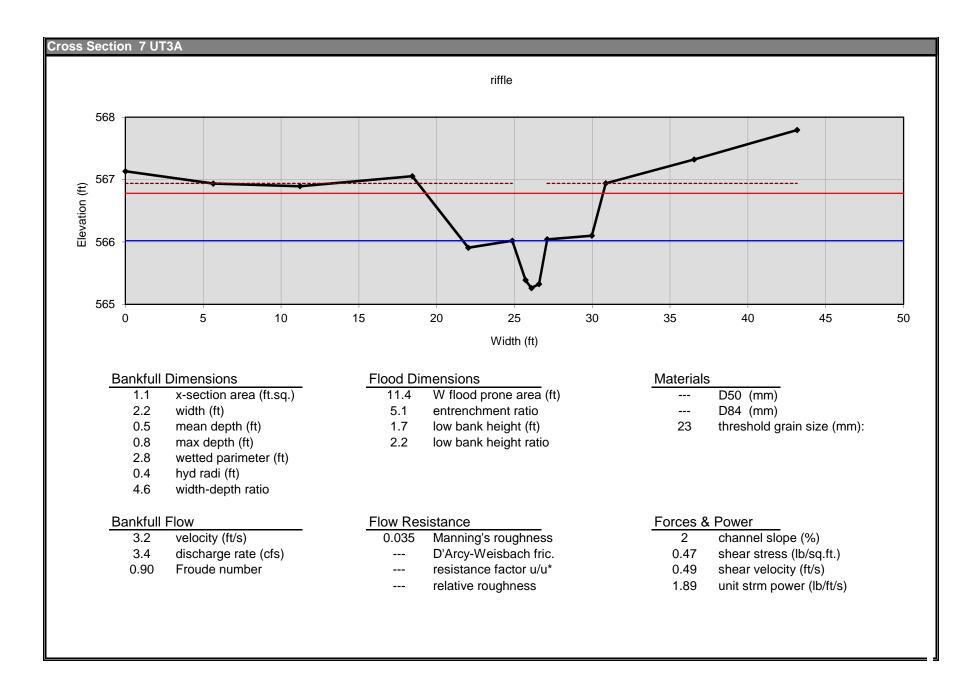
- Manning's roughness
 - D'Arcy-Weisbach fric.
 - resistance factor u/u*
- relative roughness

- channel slope (%)
- shear stress (lb/sq.ft.)
- shear velocity (ft/s)
- unit strm power (lb/ft/s)



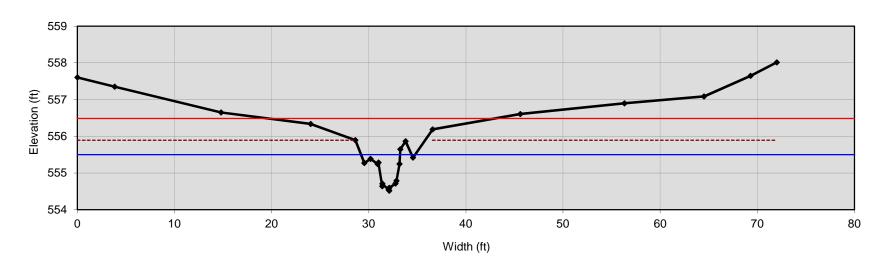






Cross Section 10 UT4A





1.9	x-section area	(ft.sq	.))
	A COCHOII GIOG	(• 1	ł

- 4.4 width (ft)
- 0.4 mean depth (ft)
- 1.0 max depth (ft)
- 5.5 wetted parimeter (ft)
- 0.4 hyd radi (ft)
- 9.9 width-depth ratio

Flood Dimensions

23.3 W flood prone area (ft)

- 5.3 entrenchment ratio
- 1.4 low bank height (ft)
- 1.4 low bank height ratio

Materials

 D50	(mm)

- --- D84 (mm)
- threshold grain size (mm):

Bankfull Flow

3.0 velocity (ft/s

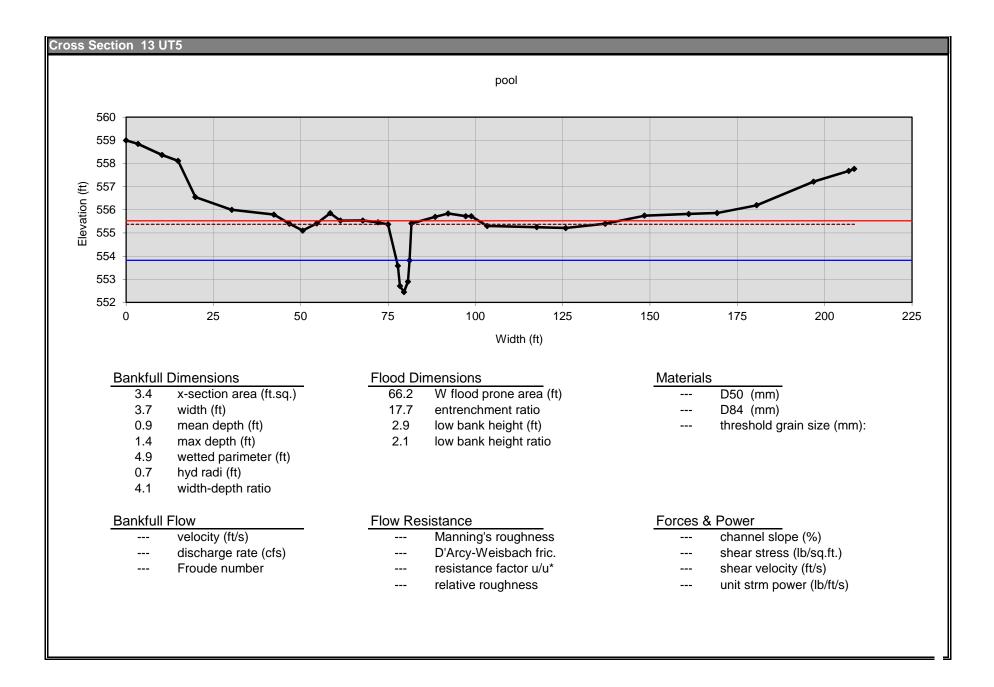
- 5.8 discharge rate (cfs)
- 0.89 Froude number

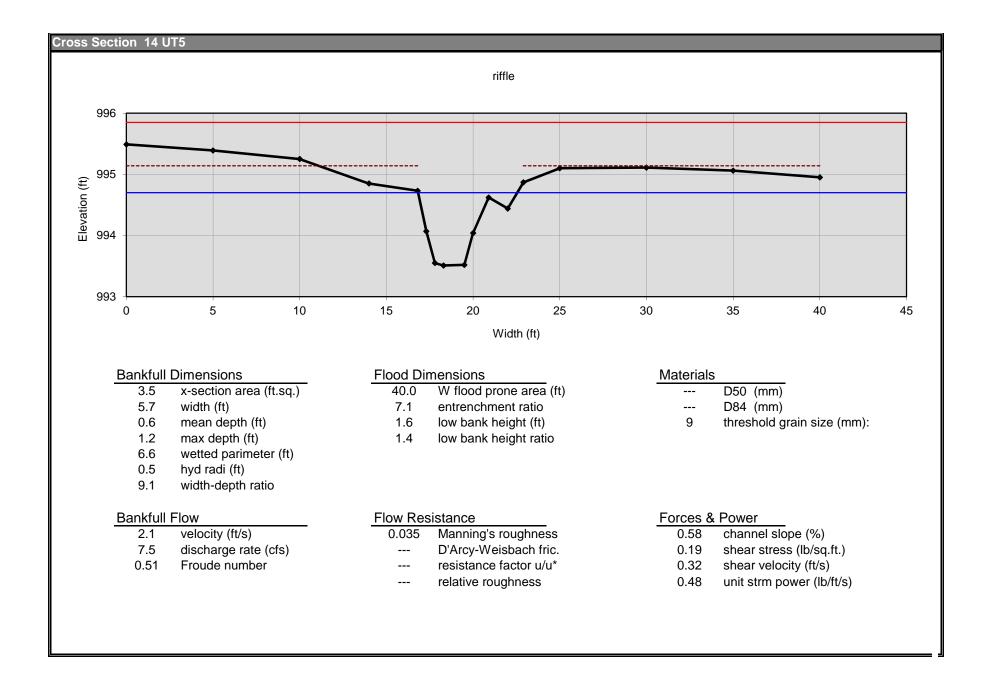
Flow Resistance

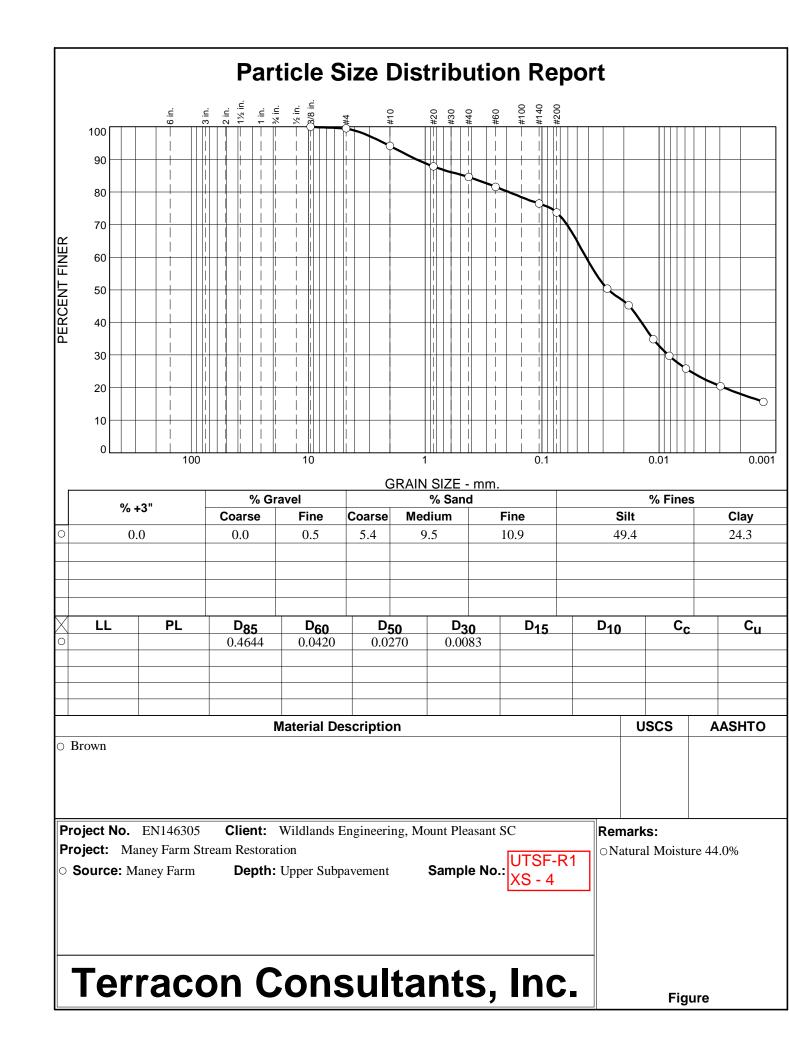
- 0.035 Manning's roughness
- --- D'Arcy-Weisbach fric.
- --- resistance factor u/u*
- --- relative roughness

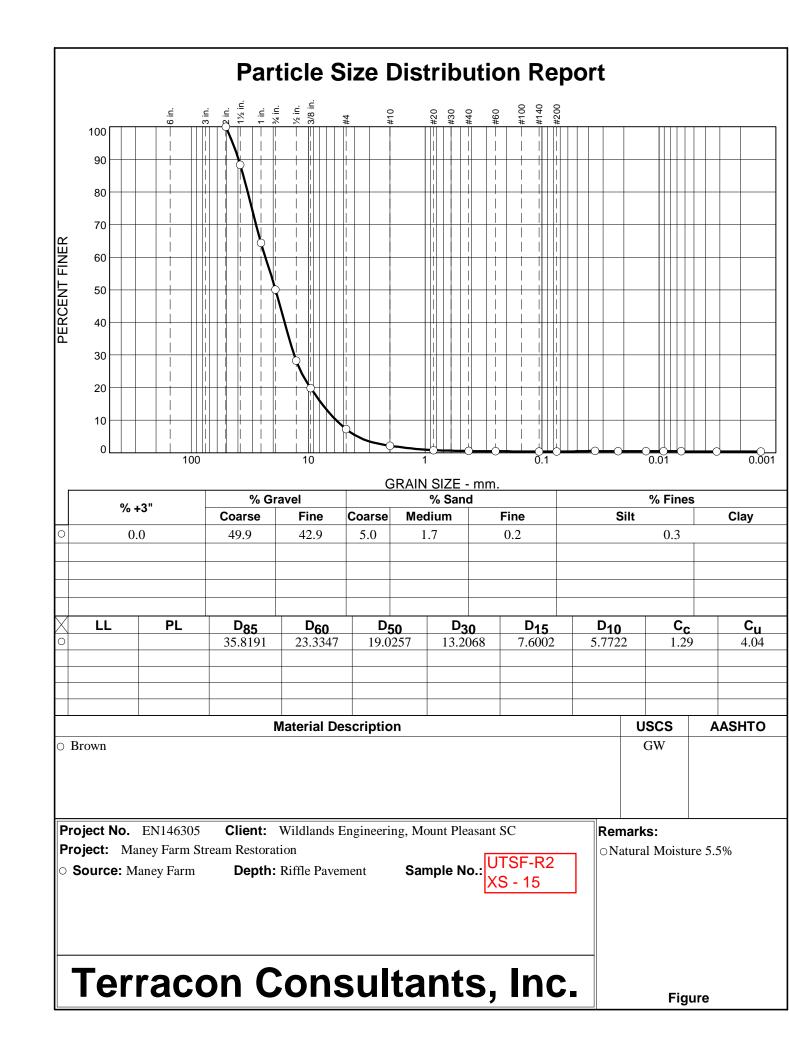
Forces & Power

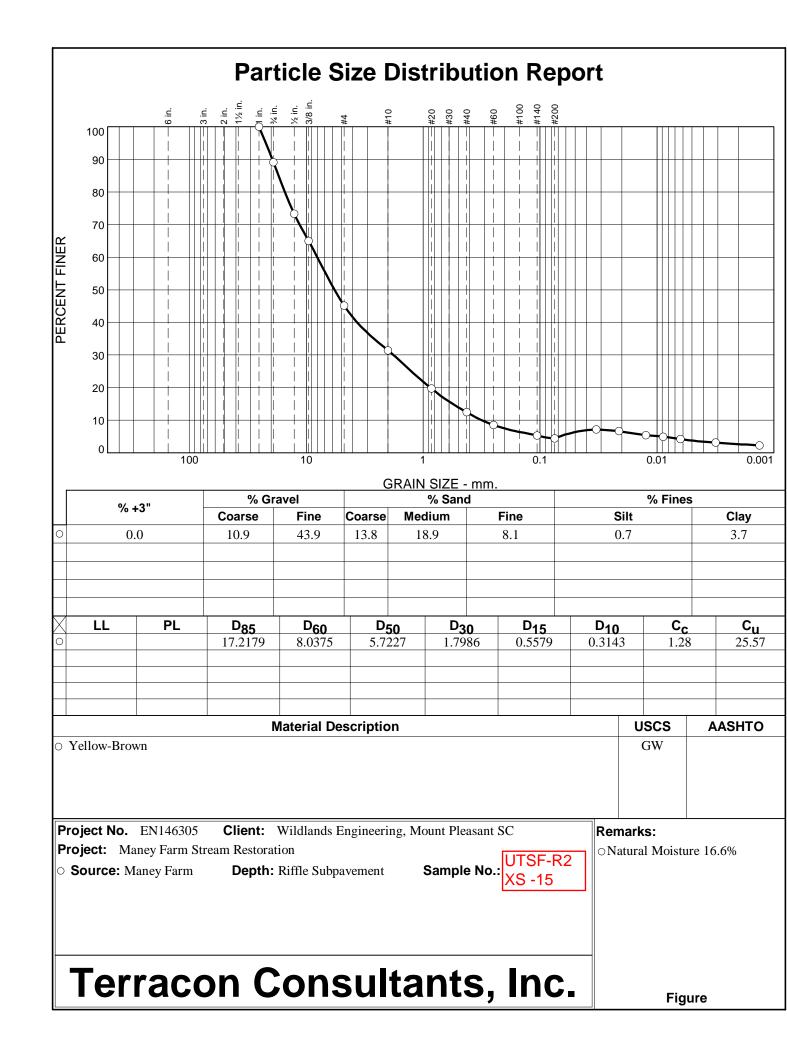
- 2.01 channel slope (%)
- 0.44 shear stress (lb/sq.ft.)
- 0.48 shear velocity (ft/s)
- 1.67 unit strm power (lb/ft/s)

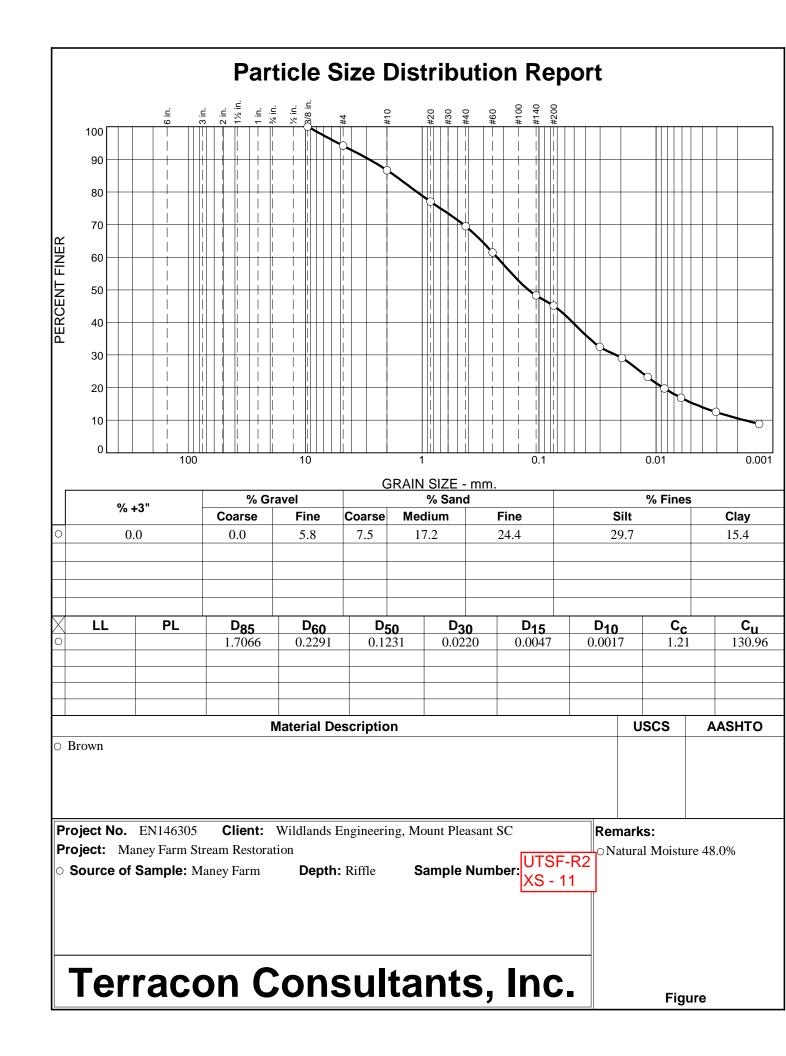


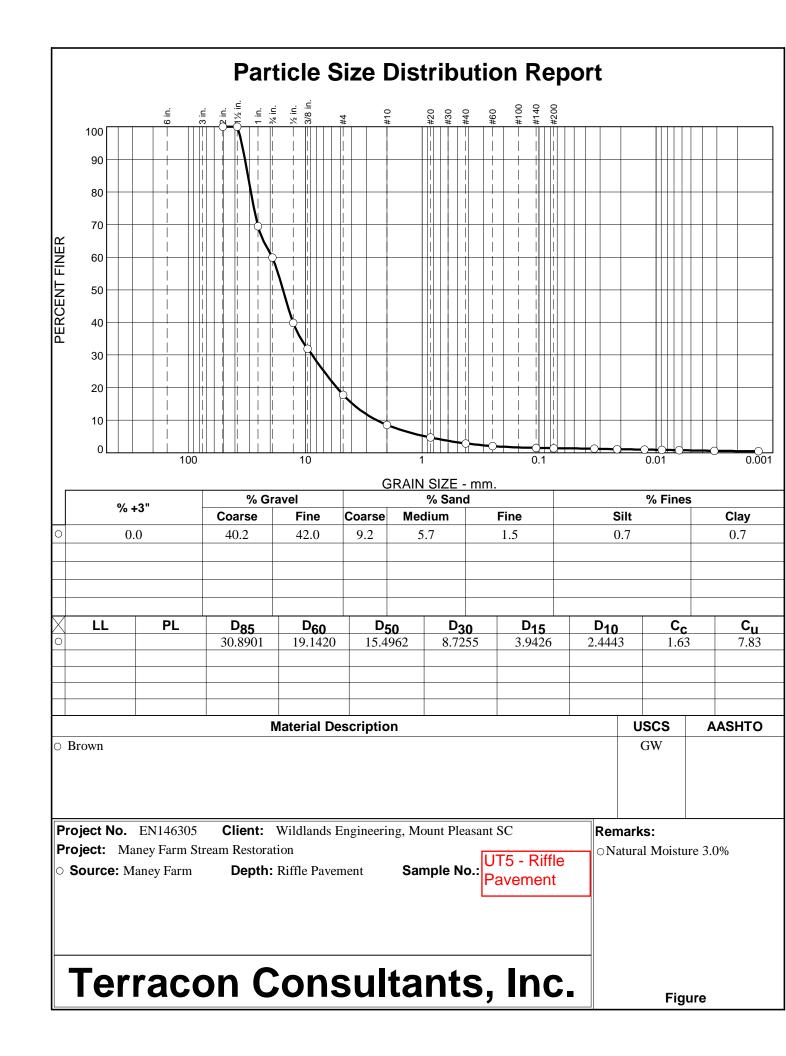


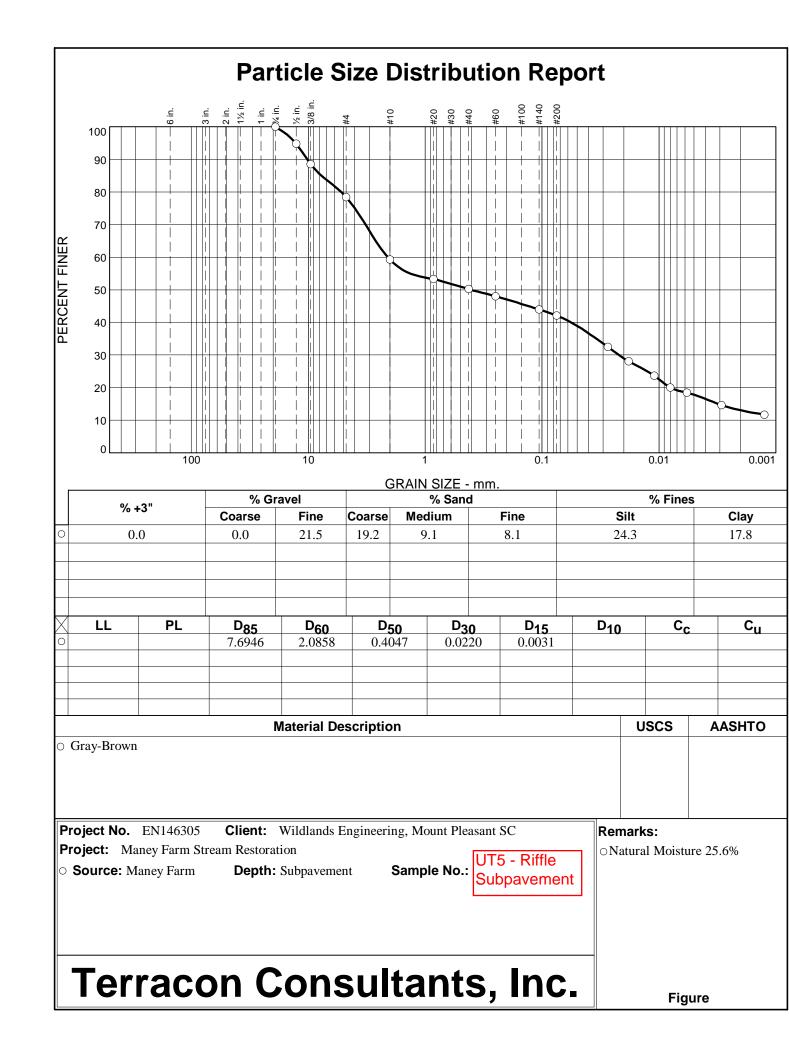


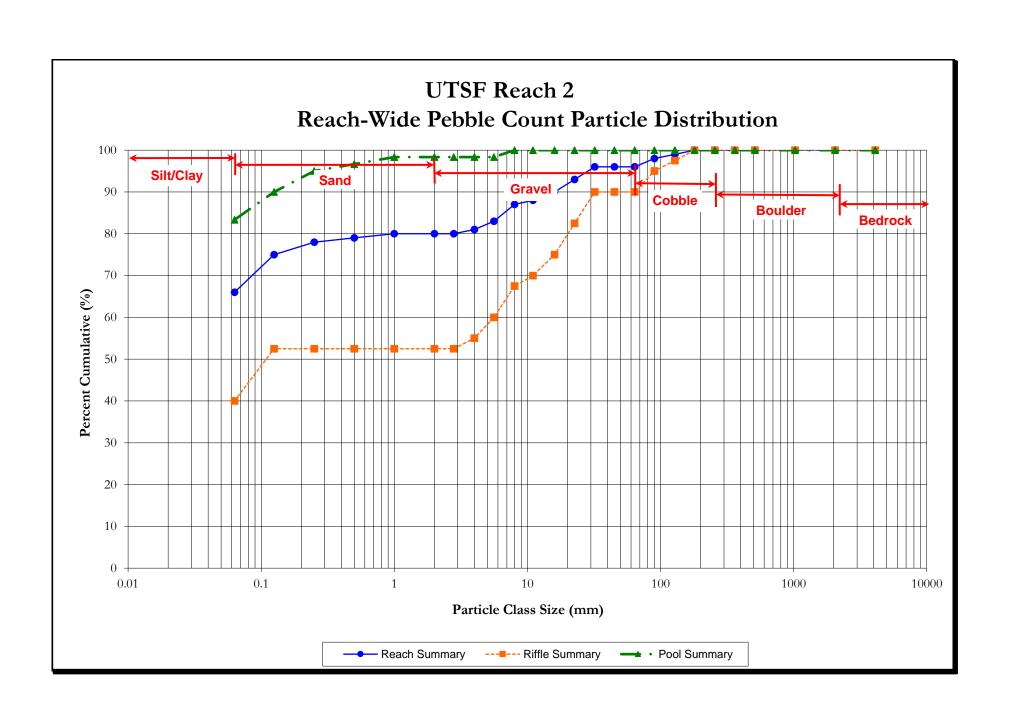


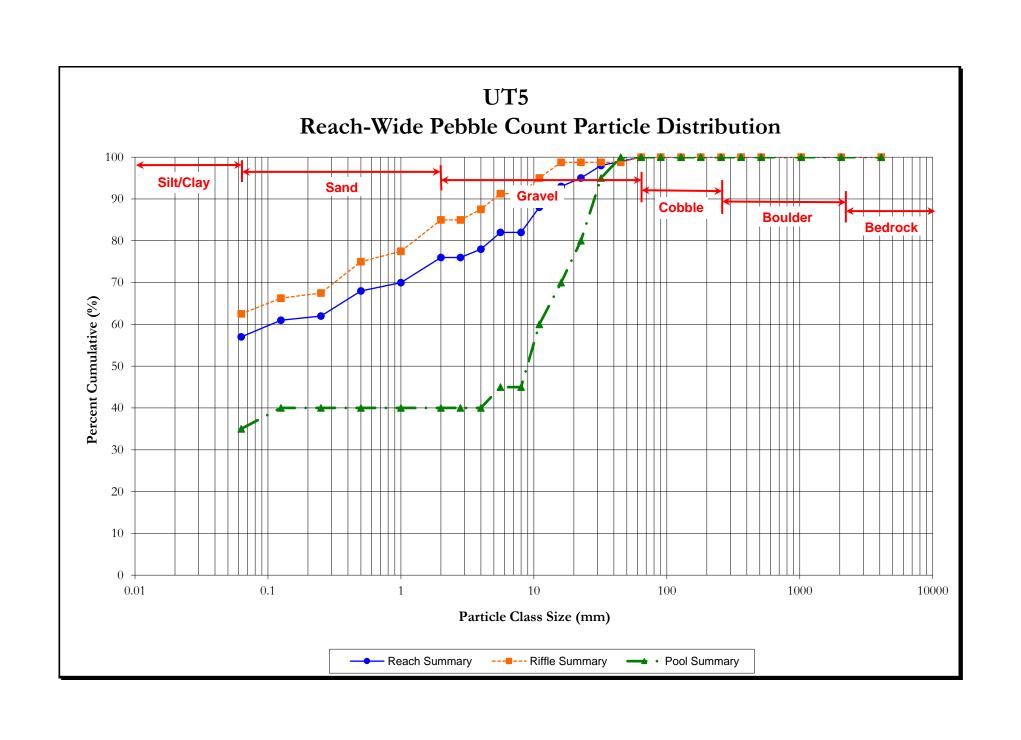












Appendix 6: HEC-20 Channel Stability Assessment Data

Stream: UTSF Reach: Reach I Date: Weather: Cloudy, 75°

Observers: T. Eckard+ Project Making Farm Site Drainage Area: Stream Type

No evidence of Chundinalia Score 0 00 00 00 1 mining, logging, farming, or construction of buildings, roads, or other infrastructure. Highly urbanized or adjusting (laterally and/or vertically) with Very loose assortment with no packing. Large amounts of material < 4 mm. Fs > 70% Frequent and often unstable, causing a continual shift of sediment and flow.

Traps are easily filled, causing channel to migrate and/or widen Extremely flashly, flash floods prevalent mode of discharge; ephemeral stream other than first-order stream banks ration small; deeply confined; no are composed of extensive deposits of nfrastructure; channel-width-to-top-of-Bar widths are generally greater than 1/2 the stream width at low flow. Bars little to no vegetation. No bars for S < active flood plain; levees are high and The particles up to coarse gravel with watershed. Significant cattle activity, ew bends. Straight, unstable reach. landslides, channel sand or gravel Appears to have previously been Knickpoints visible downstream; exposed water lines or other channefzed, Stream is actively Continual disturbances in the rapidly urbanizing watershed Poor (10-12) along the channel edge 0.02 and w/y > 12 Loose assortment with no apparent overlap. Small to medium amounts of material < 4 mm, 50 < Fs < 70% construction of buildings, roads, or other infrastructure. Urbanization over plain abandoned; levees are moderate in size and have minimal setback from vegetated. Bars forming for S > 0.02 and w/y < 12 newly deposited coarse sand to small For S < 0.02 and w/y > 12, bar widths Moderately frequent and occasionally Considerable sediment accumulation behind obstructions Perennial or intermittent stream with flashy behavior watershed, including callle activity, andslides, channel sand or gravel around bends. Straightened, stable infrastructure; terraces exist; flood Moderate confinement in valley or tend to be wide and composed of channelized. Stream is actively adjusting (meandering); localized areas of instability and/or erosion channel walls; some exposure of noticeable erosion of the channel. Appears to have previously been cobbles, but minimal recent growth of cobbles and/or may be sparsely bar evident by lack of vegetation vegetated. Bars forming for S > on portions of the bar, For S > 0.02 and w/y < 12 significant portion of watershed Frequent disturbances in the unstable obstructions, cause mining, logging, farming, or Fair (7 - 9) the river Occasional minor disturbances in the watershed, including cattle activity exposed; levees are low and set well back from the river stable. Channel has some meanders Active flood plain abandoned, but is currently rebuilding; minimal channel Moderately packed with some overlapping. Very small amounts of material < 4 mm, 20 < Fs < 50% Perennial stream or ephemeral first-order stream with slightly increased due to previous channel adjustment. construction, logging, or other minor deforestation. Limited agricultural Occasional, causing cross currents and minor bank and bottom erosion (grazing and/or access to stream), For S < 0.02 and w/y > 12, bars channelized. Stream is relatively Appears to have previously been and why <12, no bars are evident may have vegetation and/or be confinement; infrastructure not composed of coarse gravel to Good (4-6) rate of flooding activities Assorted sized tightly packed, overlapping, and possibly imbricated. Most material > 4 mm. Fs < 20% For S < 0.02 and w/y > 12, bars are cobbles. For S > 0.02 and wly are < 12,(no bars are evident.) width at low flow, well-vegetated, straight (step-pool system, narrow valley), stable channel. and composed of coarse gravel to mature, namow relative to stream Active flood plain exists at top of Perennial stream with no flashy behavior No evidence of channelization, Meandering, stable channel or banks; no sign of undercutting Stable, forested, undisturbed Excellent (1 3) infrastructure; no levees Rare or not present Bed material
 Fs = approximate portion of sand in the 4. Entrenchment channel confinement 1. Watershed and flood plain activity Obstructions, including bedrock revetments, dikes or vanes, riprap outcrops, armor layer, LED jams, grade control, bridge bed paving, Stability Indicator Bar development and characteristics 3, Channel pattern 2, Flow habit

Stability Indicator	Excellent (1 -3)	Good (4-6)	Fair (7 - 9)	Poor (10 - 12)	Score
8. Bank soil texture and coherence	Ciay and sliry ciay; cohesive material	Clay loam to sandy clay loam; minor amounts of noncohesive or unconsolidated mixtures; layers may exist, but are cohesive materials	Sandy day to sandy loam; unconsoldated mktures of glacial or other materials; small layers and lenses of noncohesive or unconsoldated mktures	Loamy sand to sand; noncohestve material; unconsolidated mixtures of glacial or other materials; layers of lenses that include noncohesive sands and gravels.	m
9. Average bank slope angle (where so is a vertical bank)	Bank slopes < 3H:1V (18*) for noncohesive or unconsolidated malerials to < 1:1 (45*) in clays on both sides	Bank slopes up to 2H:1V (27*) in noncohesive or unconsolidated materials to 0.8:1 (50*) in clays on one or occasionally both banks	Bank slopes to 1H:1V (45°) in noncohesive or unconsolidated materials to 0.6:1 (60°) in days common on one or both banks	Bank slopes over 45° in noncohesive or unconsolidated materials or over 60° in days common on one or both banks	0
10. Vegetative or engineered bank protection	Wide band of woody vegetation with at least 99% density and cover. Primarity hard wood, leafy, deciduous trees with meture, healthy, and diverse vegetation located on the bank. Woody vegetation oriented vertically. In absence of vegetation, both banks are lined or heavily armored.	Medium band of woody vegetation with 70-80% plant density and cover, A majority of hard wood, leafy, deciduous frees with maturing, diverse vegetation located on the bank. Wood vegetation oriented 80-90% from horizontal with minimal root exposure. Partial filming or armoring of one or both banks	Small band of woody vegetation with SD-70% plant density and cover. A majority of soft wood, piney, conferous trees with young or old vegetation lacking in diversity located on or near the top of bank. Woody vegetation oriented at 70-80% from horizontal, often with evident root exposure. No fining of banks, but some armoring may be in place on one bank	Woody vegetation band may vary depending on age and health with less than 50% plant density and cover. Primarily soft wood, piney, conflictures with very young, old and dying, and/or monostand vegetation located off of the bank. Woody vegetation oriented at less than 70% from horizontal with extensive root exposure. No lithing or armoring of banks \[\begin{array}{c} \text{Array} & Arra	10
11. Bank cutting	Little or none evident. Infrequent raw banks, insignificant percentage of total bank.	Some intermittently along channel Significant and frequent on both ban bends and at prominent constrictions. Raw banks comprise large portion of Raw banks comprise minor portion of bank in vertical direction. Root mat bank in vertical direction	Significant and frequent on both banks. Raw banks comprise large portion of bank in vertical direction. Root mat overflangs	Almost continuor some extending banks. Undercul overhangs	=
12. Mass wasting or bank failure	No or little evidence of potential or very small amounts of mass wasting. Uniform channel width over the entire reach	Evidence of infrequent and/or minor mass wasting. Mostly healed over with vegetation. Relatively constant channet width and minimal scalloping of banks.	Evidence of frequent and/or significant occurances of mass wasting that can be aggravated by higher flows, which may cause undercutting and mass wasting of unstable banks. Channel width quite irregular, and scalloping of banks is avident.	Frequent and extensive mass wasting. The potential for bank failure, as evidenced by tension cracks, massive undercutings, and bank slumping is considerable. Channel width is highly irregular, and banks are scalloped	σ
13 - Upsircam distance to bridge from mander fripact politi and algument	More than 35 m. bridge is well- aligned with river riow	20.35 m; bridge is allgned with flow	10-20 m. bridge is skowed to flow, or flow digament is enterwise rol contend beyealth triding	Less than 10 m; ordge (5 poorly algned with flow	
- Producedny VIII regulated Ep or freedom		oh ratio			

H= horizontal, V= vertical, Fs= fraction of sand, S= slope, wy= width-to-depth ratio Total Score

PA T

83

Stream: UTSF
Reach: Reach: 2
Date: 5/30/14
Weather: Partily Claudy; 750
Location:

Observers: I. Eckardt Project Manery Firm Site Drainage Area: Stream Type

			Streen doesn't appear when a local by a frequent	For earthall Empley. 511, At confinement. Ant much empere of Connection to Playsol	Cie. workeldier bayout		
Score	0	1	90		00	-	00
Poor (10 - 12)	Continual disturbances in the watershed. Significant cattle activity, tandsides, channel sand or gravel mining, loggley, farming, or construction of buildings, roads, or other infrastructure. Highly urbanized or rapidly urbanized or rapidly urbanized	Extremely flashy, flash floods prevalent mode of discharge; ephemeral stream other than first-order stream	Appears to have previously been channelized. Stream is actively adjusting (laterally and/or verically) with few bends. Straight, unstable reach.	Knickpoints visible downstream; exposed water lines or other infrastructure; channel-width-to-top-of- banks ration small, deeply confined; no active flood plain; levees are high and along the channel edge	Very loose assortment with no packing. Large amounts of material < 4 mm. Fs	Bar widths are generally greater than 1/2 the stream width at low flow. Bars are composed of extensive deposits of fine particles up to coarse gravel with little to no vegetation. No bars for S < 0.02 and wty > 12	Frequent and often unstable, causing a continual shift of sediment and flow. Traps are easily filled, causing channel to migrate and/or widen
Fair (7 - 9)	Frequent disturbances in the watershed, including cattle activity, watershed, including cattle activity, landsides, charnel sand or gravel mining, logging, farming, or construction of buildings, roads, or other infrastructure. Urbanization over significant portion of watershed	Perennial or intermittent stream with flasty behavior	Appears to have previously been channelized. Stream is actively adjusting (meandering); localized areas of instability and/or erosion around bends. Straightened, stable channel.	Moderate confinement in valley or channel walls; some exposure of infrastructure; terraces exist; flood plain abandoned; levees are moderate in size and have minimal setback from the river	Loose assortment with no apparent overlap. Small to medium amounts of material < 4 mm, 50 < Fs < 70%	For S < 0.02 and w/y > 12, bar widths tend to be wide and composed of newly deposited coarse sand to small cobbles and/or may be sparsely vegetated. Bars forming for S > 0.02 and w/y < 12	Moderately frequent and occasionally in mistable obstructions, cause noticeable erosion of the channel. Considerable sediment accumulation behind obstructions Debrie Jana Ste
(4-6)	Occasional minor disturbances in the watershed, including catte activity (grazing and/or access to stream), construction, logging, or other minor deforestation. Limited agricultural activities	Perennial stream or aphemeral first- order stream with slightly increased rate of flooding	Appears to have previously been channelized. Stream is relatively stable. Channel has some meanders due to previous channel adjustment.	Active flood plain abandoned, but is currently rebuilding; minimal channel confinement; infrastructure not exposed; levees are low and set well back from the river	Moderately pecked with some overfapolng. Very small amounts of material < 4 mm. 20 < Fs < 50%	For S < 0.02 and w/y > 12, bars may have vegetation and/or be composed of caarse gravel to cobbies, but minimal recent growth of bar evident by lack of vegetation on portions of the bar, For S > 0.02 and w/y <12, no bars are evident	Occasional, causing cross currents and minor bank and bottom erosion
Excellent (1 -3)	Stable, forested, undisturbed watershed	Perennial stream with no flashy behavior	No evidence of channelization, Meandering, stable channel or straight (step-pool system, narrow valley), stable channel.	Active flood plain exists at top of banks; no sign of undercutting infrastructura; no levees	Assorted sized tightly packed, overtapping, and possibly imbricated. Most material > 4 mm, Fs < 20%	For S < 0.02 and wyy > 12, bars are mature, narrow relative to stream width at low flow, well-vegetated, and composed of coarse gravel to cobbles, For S > 0.02 and wyy are < 12, no bars are eviden.	Rare or not present
Scapility indicator	Watershed and flood plain activity and characteristics	2. Flow habit	3, Channel pattern	4. Entrenchment channel confinement	 Sed material Fs = approximate portion of sand in the overlapping, and possibly imbricated. bed Most material > 4 mm, Fs < 20% 	6. Bar development	7. Obstructions, including bedrock outcrops, armor layer, LED jams, grade control, bridge bed paving, revetments, dikes or vanes, riprap

Stability Indicator	- 1	Good (4 - 6)	Fair (7 - 9)	Poor (10 - 12)	Score
8. Bank soll texture and coherence	Clay and slity clay, cohesive material	Clay loam to sandy clay loam; minor amounts of noncohesive or unconsolidated mixtures; layers may exist, but are cohesive materials	Sandy day to sandy loam; unconsolidated mixtures of glacial or other materials; small layers and lenses of noncohesive or unconsolidated mixtures	Loamy sand to sand; noncothesive material; unconsolidated mixtures of glacial or other materials; layers of lenses that include noncothesive sands and gravets	W
9. Average bank slope angle (where 90" is a vertical bank)	Bank slopes < 3H:1V (18°) for noncohesive or unconsolidated malerials to < 1:1 (45°) in days on both sides	Bank slopes up to 2H:1V (27*) in noncohosive or unconsolidated materials to 0.8:1 (50*) in clays on one or occasionally both banks	Bank slopes to 1H:1V (45°) in noncohesive or unconsolidated materials to 0.6:1 (60°) in days common on one or both banks	Bank slopes over 45° in noncohesive or unconsolidated materials or over 60° in clays common on one or both banks	0
10. Vegetative or engineered bank protection	Wide band of woody vegetation with at least 90% density and cover. Primarily hard wood, leafy, deciduous trees with mature, healthy, and diverse vegetation located on the bank. Woody vegetation oriented vertically. In absence of vegetation, both banks are lined or heavily armored.	Medium band of woody vegetation with 72-60% plant density and cover. A majority of hard wood, leafy, deciduous trees with maturing, diverse vegetation localed on the bank. Wood vegetation oriented 80-80% from horizontal with minimal root exposure. Partial lining or armoring of one or both banks.	Small band of woody vegetation with Scrosi band density and cover. A majority of soft wood, piney, conferous troes with young or old vegetation lacking in diversity located on or near the top of bank. Woody vegetation or	Woody vegetation band may vary observance of plant density and cover. Primarily soft wood, piney, conflorous trees with very young, old and dying, and/or monostand vegetation located off off the bank. Woody vegetation oriented at less than 70% from horizontal with extensive root exposure. No lining or armoring of banks \$50.000.	<u>5</u>
11. Bank cutting	Little or none evident. Infrequent raw banks, Insignificant percentage of total bank	Some intermittently along channel bends and at prominent constrictions. Raw banks comprise minor portion of bank in vertical direction	Significant and frequent on both banks. Raw banks comprise large portion of bank in vertical direction. Root mat overflangs	Almost continuous cuts on both banks, some extending over most of the banks. Undercutting and sod-root overhangs	0
12. Mass wasting or bank failure	No or little evidence of potential or very small amounts of mass wasting, Uniform channel width over the entire reach	Evidence of infrequent and/or minor mass wasting. Mostly healed over with vegetation. Relatively constant channel width and minimal scalloping of banks.	Evidence of frequent and/or significant occurrences of mass wasting that can be aggravated by higher flows, which may cause undercutting and mass wasting of unstable banks. Channel width qute irregular, and scalloping of banks is evident	Frequent and extensive mass wasting. The potential for bank failure, as evidenced by tension cracks, massive undercutings, and bank sumping is considerable. Channel width is highly irregular, and banks are scalloped	0-
13. Upstream distance to bridge from maandertimpset; politi and alignment	More than 35 m, bridge is well- aligned with fiver flow	20-35 m; bridge is aligned with flow	10.20 m; bridge is skewed to flow or flow augment is cincurviso not denieved beneall tridge.	Less than 10 m. bridge is poorly algned.	

Observers: I. Eckard+ Project Marky Farm Side Drainage Area: Stream Type

Stream: UT)
Reach: 5/29/14
Weather: Portity Cloudy, 80 %
Location:

F

Stability Indicator	Excellent (1-3)		Fair (7 - 9)	Poor (10-12)	Score
8. Bank soil texture and coherence	Clay and sllty day; cohesive material	Cley loam to sandy clay loam; minor amounts of noncohesive or unconsolidated mixtures; layers may exist, but are cohesive materials	Sendy day to sandy loam; unconsolidated mixtures of gladal or other materials; small layers and lenses of noncohesive or unconsolidated mixtures	Loamy sand to sand; noncohesive material; unconsolldated mixtures of glacial or other materials; layers of lenses that include noncohesive sands and gravels.	エ
9. Average bank slope angle (where sof is a vertical bank)	Bank slopes < 3H:1V (18*) for noncohesive or unconsolidated materials to < 1:1 (45*) in days on both sides	Bank slopes up to 2H:1V (27*) in noncohesive or unconsolidated materials to 0.8:1 (50*) in clays on one or occasionally both banks	Bank slopes to 1H:1V (45°) in noncohesive or unconsolidated materials to 0.6:1 (60°) in clays common on one or both banks	Bank slopes over 45° in noncohesive or unconsolidated materials or over 60° in clays common on one or both banks	9
10. Vegetative or engineered bank protection	Wide band of woody vegetation with at least 90% density and cover. Primarily hard wood, keafy, deciduous trees with mature, healthy, and diverse vegetation iocated on the bank. Woody vegetation ordented vertically. In absence of vegetation, both banks are lined or heavily armored.	Medium band of woody vegetation with 70-90% plant density and cover. A majority of hard wood, leafy, dedicutous trees with maturing, diverse vegetation located on the bank. Wood vegetation oriented 80-90% from horizontal with minimal root exposure. Partial liting or armoring of one or both banks.	Small band of woody vegetation with So-70% plant density and cover. A depending on age and health with majorly of soft wood, piney, conflerous than 50% plant density and cover. Trees with young or old vegetation or near the top of bank. Woody vegetation oriented at 70-80% from horizontal, often with evident root exposure. No oriented at 150-80% from finhing of banks, but some armoring horizontal with extensive root exportant may be in place on one bank.	Woody vegetation band may vary depending on age and health with less than 50% plant density and cover. Frimanly soft wood, piney, conferous fries with very young, old and dying, and/or monostand vegetation located oif of the bank. Woody vegetation oriented at less than 70% from horizontal with extensive root exposure. No lining or armoring of banks	1
11. Bank outling	Little or none evident. Infrequent raw banks, insignificant percentage of total bank	Some intermittently along channel Significant and frequent on both ban bends and at prominent constrictions. Raw banks comprise large portion of bank in vertical direction. Root mat bank in vertical direction	Significant and frequent on both banks. Ray banks comprise large portion of bank in vertical direction. Root mat overhangs	Almost continuous cuts on both banks, some extending over most of the banks. Undercutting and sod-root overhangs	ف
12. Mass wasting or bank failure	No or little evidence of potential or very small amounts of mass wasting. Uniform channel width over the entire reach	Evidence of infrequent and/or minor mass wasting. Mostly heated over with vegetation. Relatively constant channel width and minimal scalloping of banks.	Evidence of frequent and/or significant occurrences of mass wasting that can be aggravated by higher flows, which may cause undercutting and mass wasting of usustable banks. Channel width quite irregular, and scalloping of banks is evident	Frequent and extensive mass wasting. The potential for bank failure, as evidenced by tension cracks, massive undercuttings, and bank slumping is considerable. Channel width is highly irregular, and banks are scalloped	0
13. Upsiream distance to bridge from macinder impact polot and alignment	More than 35 m. bridge is Well- aligned Will: river flow	20-35 m; bridge 3c aligned with Illow.	10-20 m; bridge is skewed to flow, or flow, signment is patientwise not depicted byterall this jud.	10:20 m; briggets skewed to flow, or - Lees, than 10 m; bridge to poorly aligned flow alignment is outerwise rol - with flow concept between traffice.	

sand, S = slope, w/y = width-to-deptir fatto H = horizontal, V = vertical, FS = fraction Total Score

Stream: UTI B Reach: Date: 5 /24/1H Weather: Portiling Chausy, 803

Observers: I., Eckard L Project Manuel Form Side Drainage Area: Stream Type

1. Watershed and flood plain activity	Stable, forested, undisturbed	Occasional minor disturbances in the	Frequent disturbances in the	Continual disturbances in the	L
and characteristics	watershed	watershed, including cattle activity (grazing and/or access to stream), construction, logging, or other minor deforestation, Limited agricultural activities			
2. Flow habit	Perennial stream with no flashy behavior	Pererulial stream or ephemeral first- order stream with slightly increased rate of flooding	Perennial or intermittent stream with flashy behavior	Extremely flashly, flash floods prevalent, mode of discharge; ephemeral stream other than first-order stream	-9468
3, Channel pattem	No evidence of chamelization. Meandering, stable channel or straight (step-pool system, narrow valley), stable channel.	Appears to have previously been channelized. Stream is relatively stable. Channel has some meanders due to previous channel adjustment,	Appears to have previously been charnelized. Stream is actively adjusting (meandering); localized areas of instability and/or erosion around bends. Straightened, stable channel.	Appears to have previously been channelized. Stream is actively adjusting (taterally and/or vertically) with few bends. Straight, unstable reach.	1.
4. EntrenchmenV channel confinement	Active flood plain exists at top of banks; no sign of undercutting infrastructure; no levees	Active flood plain abandoned, but is currently rebuilding; minimal channel confinement; infrastructure not exposed; levees are low and set well back from the river	Moderate confinement in valley or channel walls; some exposure of infrastructure; terraces exist; flood plain abandoned; levees are moderate in size and have minimal setback from the river	Knickpoints visible downstream; exposed water lines or other infrastructure; channel-width-to-top-of-banks ration small; deeply confined; no active flood plain; levees are high and along the channel edge	(0
5. Bed material Fs = approximate portion of sand in the bed	Assorted sized tightly packed, overtapping, and possibly imbricated. Most material > 4 mm, Fs < 20%	Moderately packed with some overlapping. Very small amounts of material < 4 mm. 20 < Fs < 50%	Loose assortment with no apparent overlap. Small to medium amounts of material < 4 mm, 50 < Fs < 70%	Very loose assortment with no packing. Large amounts of material < 4 mm. Fs > 70%	2
6. Bar development.	For S < 0.02 and wny > 12, bars are malure, narrow relative to stream width at low flow, well-vegetared, and composed of coarse gravel to cobbles. For S > 0.02 and wny are < 12, no bars are evident	For S < 0.02 and wyy > 12, bars may have vegetation and/or be composed of casts gravel to cobbles, but minimal recent growth of bar evident. By lack of vegetation on portions of the bar. For S > 0.02 and wy <12, no bars are evident.	For S < 0.02 and wly > 12, bar widths tend to be wide and composed of newly deposited coarse sand to small cobbles and/or may be sparsely vegetated. Bars forming for \$ > 0.02 and wly < 12	Bar widths are generally greater than 1/2 the stream width at low flow. Bars are composed of extensive deposits of fine particles up to coarse gravel with little to no vegetation. No bars for S < 0.02 and w/y > 12	(A)
7. Obstructions, including bedrock outcrops, armor layer, LED jams, grade control, bridge bed pavling, revetiments, dikes or vanes, riprap	Rare or not present	Occasional, causing cross currents and minor bank and bottom erosion	Moderately frequent and occasionally unstable obstructions, cause noticeable erosion of the channel. Considerable sediment accumulation behind obstructions	Frequent and often unstable, causing a continual shift of sediment and flow. Traps are easily filled, causing channel to nigrate and/or widen	J

Stability Indicator	Excellent (1-3)	Good (4 - 6)	Fair (7 - 9)	Poor (10 - 12)	Score
8, Bank soll texture and coherence	Clay and slity clay, cohesive material	Clay foam to sandy clay loam; minor amounts of noncohesive or unconsolidated mixtures; layers may exist, bur are cohesive materials	Sandy day to sandy loam; unconsolidated mixtures of glacial or other materials; small layers and lenses of noncohesive or unconsolidated mixtures	Loamy sand to sand, noncohesive material; unconsolidated mixtures of gladal or other materials; layers of lenses that include noncohesive sands and gravels	J
9. Average bank slope angle (where 90° is a vertical bank)	Bank slopes < 3H:1V (18*) for noncohesive or unconsolidated malerials to < 1:1 (45*) in days on both sides	Bank slopes up to 2H:1V (27*) in noncohesive or unconsolidated materials to 0.8:1 (50*) in days on one or occasionally both banks	Bank slopes to 1H:1V (45°) in noncohesive or unconsolidated materials to 0.6:1 (80°) in clays common on one or both banks	Bank slopes over 45° in noncohesive or unconsolidated materials or over 60° in days common on one or both banks	٥
10. Vegetative or engineered bank protection	Wide band of woody vegetation with at least 90% density and cover. Primarily hard wood, leafy, decladust trees with maure, healthy, and diverse vegetation located on the bank. Woody vegetation oriented vertically. In absence of vegetation, both banks are lined or heavily.	Medium band of woody vegetation with 70-80% plant density and cover. A majority of hard wood, leafy, deciduous trees with maruring, diverse vegetation localed on the bank. Wood vegetation oriented 80-80% from horizontal with minimal root opposure. Partial lining or armoring of one or both banks.	Small band of woody vegetation with SG-70% plant density and cover. A depending on age and health with with majority of soft wood, piney, conferous than 50% plant density and cover. The service of the	Woody vegetation band may vary depending on age and health with less than 50% plant density and cover. Primanly soft wood, piney, confereus trees with very young, old and dying, and/or monostand vegetation located off of the bank. Woody vegetation oriented at bank. Woody vegetation oriented at bank when your cost exposure. No lining or armoring of banks.	0
11. Bank cutting	Little or none evident. Infrequent raw banks, insignificant percentage of total bank	Some intermittently along channel bends and at prominent constrictions. Raw banks comprise minor portion of bank in vertical direction	Significant and frequent on both banks. Raw banks comprise large portion of bank in vertical direction. Root mat overhangs	Almost continuous cuts on both banks, some extending over most of the banks. Undercutting and sod-root overhangs	0
12. Mass wasting or bank failure	No or little evidence of potential or very small amounts of mass vasting. Uniform channel width over the entire reach	Evidence of infrequent and/or minor mass wasting. Mostly healed over with vegetation. Relatively constant channel width and minimal scalloping of banks.	Evidence of frequent and/or significant occurrences of mass wasting that can be aggravated by higher flows, which may cause undercuting and mass wasting of unstable banks. Channel width quite irregular, and scalloping of banks is evident	Frequent and extensive mass wasting. The potential for bank failure, as evidenced by lension cracks, massive underoutings, and bank slumping is considerable. Channel width is highly irregular, and banks are scalloped	0-
13. Upstream distance to bridge from meander Impact politi and altomorki	More than 35 m, bridge is well- aligned with river now	20.35 im; bridge is aligned with itow	10.20 m. bridge is skewed to flow, or flow bridgement is onterwise not centered between bridge centered between bridge.	10:20 m; bridge is skewed to flow, or . Lees than 10 m; bridge is poorty aligned flow alignment is otherwise not with tow centered beneath things.	

H = horizontal, V = vertical, Fs = fraction of sand, S = slope, wry = width-to-depth ratio Total Score

51-16

Project Muney Farm

Drainage Area; Stream Type

Observers: I. Eckardt

Score 0 (1) 3 7 M Appears to have previously been channelized. Stream is actively adjusting (taterally and/or vertically) with Very loose assortment with no packing. Large amounts of material < 4 mm. Fs > 70% mining, logging, farming, or construction Frequent and often unstable, causing a continual shift of sediment and flow.

Traps are easily filled, causing channel to migrate and/or widen Extremely flashy, flash floods prevalent banks ration small; deeply confined; no are composed of extensive deposits of mode of discharge; ephemeral stream infrastructure; channel-width-to-top-oflittle to no vegetation. No bars for S < active flood plain; levees are high and Bar widths are generally greater than 1/2 the stream width at low flow. Bars fine particles up to coarse gravel with watershed. Significant cattle activity few bends. Straight, unstable reach infrastructure. Highly urbanized or landslides, channel sand or gravel Knickpoints visible downstream; Continual disturbances in the rapidly urbanizing watershed Poor (10-12) of buildings, roads, or other other than first-order stream exposed water lines or other along the channel edge 0.02 and w/y > 12 construction of buildings, roads, or other infrastructure. Urbanization over plain abandoned; levees are moderate in size and have minimal setback from Loose assortment with no apparent overlap. Small to medium amounts of material < 4 mm. 50 < Fs < 70% cobbles, but minimal recent growth of cobbles and/or may be sparsely har evident by lack of vegetation vegetated. Bars forming for S > 0.02 For S < 0.02 and w/y > 12, bar widths tend to be wide and composed of newly deposited coarse sand to small Moderately frequent and occasionally unstable obstructions, cause Considerable sediment accumulation Perennial or infermittent stream with flashy behavior around bends. Straightened, stable infrastructure; terraces exist; flood watershed, Including cattle activity landslides, channel sand or gravel Moderate confinement in valley or adjusting (meandering); localized noticeable erosion of the channel, areas of instability and/or erosion channel walls; some exposure of Appears to have previously been channelized. Stream is actively significant portion of watershed Frequent disturbances in the mining, logging, farming, or Fair (7 - 9) behind obstructions and w/y < 12 the river channel. Active flood plain abandoned, but is currently rebuilding; minimal channel confinement; infrastructure not exposed; levees are low and set well Moderately packed with some overlapping. Very small amounts of material < 4 mm. 20 < Fs < 50% stable. Channel has some meanders on portions of the bar. For S > 0.02 Occasional minor disturbances in the Perennial stream or ephemeral first-order stream with slightly increased construction, logging, or other minor deforestation. Limited agricultural due to previous channel adjustment. Occasional, causing cross currents and minor bank and bottom erosion watershed, Including cattle activity (grazing and/or access to stream). For S < 0.02 and w/y > 12, bars may have vegetation and/or be channelized. Stream is relatively and w/y <12, no bars are evident Appears to have previously been composed of coarse gravel to Good (4-6) back from the river rate of flooding activities Assorted sized lightly packed, overlapping, and possibly imbricated. Most material > 4 mm. Fs < 20% For S < 0.02 and w/y > 12, bars are cobbles. For S > 0.02 and w/y are < width at low flow, well-vegetated, and composed of coarse gravel to straight (step-pool system, narrow mature, narrow relative to stream Active flood plain exists at top of banks; no sign of undercutting reach Perennial stream with no flashy Meandering, stable channel or No evidence of channelization. Stable, forested, undisturbed Excellent (1-3) infrastructure; no levees Low half of 12, no bars are evident raffey), stable channel. 15 popernice Rare or not present watershed behavior Fs = approximate portion of sand in the 4. Entrenchment channel confinement 1. Watershed and flood plain activity Obstructions, including bedrock revetments, dikes or vanes, riprap outcrops, armor layer, LED jams, grade control, bridge bed paving. Stability Indicator 6. Bar development and characteristics 3. Channel pattern Bed material roats 2. Flow habit peq

The contraction of contraction of contractions of majors and contraction of contractions of co	Stability Indicator	Excellent (1-3)	Good (4 - 8)	Fair (7 - 9)	Poor (10 - 12)	Score
Bank slopes < 3H:TV (197) for monochesive or unconsolidated monochesive or unconsolidated materials to 2H:TV (197) in monochesive or 1100 for the 2H:T	8. Bank soil texture and coherence	Clay and slity clay, cohesive material		Sandy day to sandy loam; unconsolidated mixtures of glacial or other materials; small layers and lenses of noncohesive or unconsolidated mixtures	Loamy sand to sand; noncohestive material; unconsolidated mixtures of glacial or other materials; layers of lenses that include noncohesive sands and gravels.	Ŧ
Wide band of woody vegetation with Modrum band of woody vegetation with Modrum band of woody vegetation with Modrum band of woody vegetation with with The Strain density and cover. With The Strain density and the strain density and the strain of the strai	9. Average bank slope angle (where 90" is a vertical bank)	Bank slopes < 3H:1V (18°) for noncohesive or unconsolidated materials to < 1:1 (45°) in days on both sides	Bank slopes up to 2H:1V (27*) in noncohesive or unconsolidated materials to 0.8:1 (50*) in clays on one or occasionally both banks	Bank slopes to 1H:1V (45°) in noncohesive or unconsolidated materials to 0.6:1 (80°) in clays common on one or both banks	Bank slopes over 45° in noncohesive or unconsolidated materials or over 60° in clays common on one or both banks	140
Little or name evident. Infrequent raw Some infermittently along channel banks, lastinificant percentage of the bends and at prominent constrictions. Raw banks comprise large portion of some extending over most of the Raw banks comprise large portion of some extending over most of the Raw banks comprise large portion of some extending over most of the Raw banks comprise large portion of some extending over most of the Raw banks comprise large portion of some extending over most of the Raw banks comprise large portion of some extending over most of the Natural amounts of mass washing, mass wealthey, mass washing, mass washing mass washing mass washing, mass washing mass washing, mass washing m	10. Vegetative or engineered bank protection	Wide band of woody vegetation with at least 90% density and cover. Primarity hard wood, leafy, deciduous trees with mature, healthy, and diverse vegetation located on the bank. Woody vegetation oriented vertically. In absence of vegetation, both banks are lined or heavily armored.				-9
No or little evidence of potential or very small amounts of mass wasting. No or little evidence of potential or very small amounts of mass wasting. No or little evidence of potential or very small amounts of mass wasting. Massly healed over the smaller with vegatation. Relatively constant reach reach reach channel width over the entire with vegatation. Relatively constant reach reach reach reach channel width and minimal scalloping of the smaller properties of the potential for bank smaller, as evidenced by little and panks are scalloped banks. Channel width shiply width quite frequient and scalloping of panks is evident. Note: than 35 m.; bridge is aligned with intow of sand, S = slope, wwy = width-to-depth ratio.	11, Bank cutting	Little or none evident. Infrequent raw banks, insignificant percentage of total bank		Significant and frequent on both banks. Raw banks comprise large portion of bank in vertical direction. Root mat overtiangs		4
More than 35 m; bridge is well- aligned with river flow. 20.35 m; bridge is aligned with river flow. 10-20 m; bridge is alewed to flow, or. Uses than 10 m; pridge is poorty aligned To increase that To increase that is allowed to flow. To increase the flow or increase that is allowed to flow or increase that is allowed to flow or increase that is allowed to flow or increase the flow or increase that is allowed to flow or increase that is allowed to flow or increase the flow or increase that is allowed to flow or increase that is allowed to flow or increase that is allowed to flow or increase the flow of the flow or increase that is allowed to flow or increase the flow	12. Mass wasting or bank failure	No or little evidence of potential or very small amounts of mass wasting. Uniform channel width over the entire reach		Evidence of frequent and/or significant occurrances of mass wasting that can be aggravated by higher flows, which may cause undercutting and mass wasting of unstable banks. Channel width quite irregular, and scalloping of banks is evident	Frequent and extensive mass wasting. The potential for bank failure, as evidenced by tension cracks, massive undercuttings, and bank slumping is considerable. Channel width is highly irregular, and banks are scalloped	#
= slope, w/y = width-to-depth ratio	13. Upstream distance to bridge from mounter import politi and dishunehi	(SOCIALIST SE	建筑的校长是3	10-20 m; bridge is skewed to flow, or flow algument is solucion/les rol context beyond the flow of the	Less than 10 m, andge is poorly aligned. With this	
	H = horizontal, V = vertical, Fs = fracti	THE SECOND IN	oth ratio			8,58

H=horizontal, V=vertical, Fs=fraction of sand, S=slope, wly=width-to-depth rattoTotal Score

Stream: UT3
Reach:
Date: 5/30/IH
Weather: Claudy, 750

Observers: I., Eckard + Project Maney Furm Site Drainage Area: Stream Type

			Channel 1: He pullen due to across valley. Channel politon	due to extrant			
	9	a)	in the	m	9	M	6
	Continual disturbances in the watershed. Significant cattle activity, landslides, channel sand or gravel mining, logglug, farming, or construction of buildings, roads, or other infrastructure, Highly urbanized or rapidly urbanized or rapidly urbanizing watershed	Extremely flashy, flash floods prevalent mode of discharge; ephemeral stream other than first-order stream	Appears to have previously been channelized. Stream is actively adjusting (laterally and/or vertically) with few bends. Straight, unstable reach.	Knickpoints visible downstream; exposed water lines or other infrastructure; channel-width-to-top-of- banks ration small; deeply confined; no active flood plain; levees are high and along the channel edge	Very loose assorment with no packing. Large amounts of material < 4 mm. Fs > 70%	Bar widths are generally greater than 1/2 the stream width at low flow. Bars are composed of extensive deposits of fine particles up to coarse gravel with little to no vegetation. No bars for S < 0.02 and wiy > 12	Frequent and often unstable, causing a continual shift of sediment and flow. Traps are easily filled, causing channel to migrate and/or widen
The same of the same of the same of	requent disturbances in the watershed, including cattle activity, landssides, channel sand or gravel mining, logging, farming, or construction of buildings, roads, or other infrastructure. Urbanization over significant portion of watershed	Perennial or intermittent stream with flashy behavior	Appears to have previously been channelized. Stream is actively adjusting (meandering); localized areas of instablity and/or erosion around bends. Straightened, stable channel.	Moderate confinement in valley or channel walls; some exposure of infrastructure; terraces exist; flood plain abandoned; levees are moderate in size and have minimal setback from the river	Loose assortment with no apparent overlap. Small to medium amounts of material < 4 mm, 50 < Fs < 70%	For S < 0.02 and w/y > 12, bar widths tend to be wide and composed of newly deposited coarse sand to small cobbles and/or may be sparsely vegetated. Bars forming for S > 0.02 and w/y < 12	Moderately frequent and occasionally unstable obstructions, cause noticeable erosion of the channel. Considerable sediment accumulation behind obstructions
Consequence of the same of the last	Occasional minor disturbances in the vocasional including cattle activity (grazing and/or access to stream), construction, logging, or other minor deforestation. Limited agricultural activities	Perennial stream or ephemeral first- order stream with slightly increased rate of flooding	Appears to have previously been channelized. Stream is relatively stable. Channel has some meanders due to previous channel adjustment.	Active flood plain abandoned, but is currently rebuilding; minimal channel confinement; infrastructure not exposed; levees are low and set well back from the river	Moderately packed with some overfapping. Very small amounts of material < 4 mm. 20 < Fs < 50%	For S < 0.02 and wyy > 12. bars may have vegetation and/or be composed of coarse gravel to cobbles, but minimal recent growth of bar evident. by lack of vegetation on portions of the bar. For S > 0.02 and w/y <12. no bars are evident	Occasional, causing cross currents and minor bank and bottom erosion
Cinkle described medicinities	Stable, jorested, undisturbed watershed	Denemial stream with no flashy behavior A to will be to the control of the contr	No evidence of channelization, Meandering, stable channel or straight (step-pool system, narrow valley), stable channel.	Active flood plain exists at top of banks; no sign of undercutting infrastructure; no levees	Assorted sized tightly packed, overtapping, and possibly imbricated. Most material > 4 mm. Fs < 20%	For S < 0.02 and wny > 12, bars are mature, narrow relative to stream width at low flow, well-vegetaried, and composed of coarse gravel to cobbles. For S > 0.02 and wny are < 12, no bars are evident.	Rare or not present
1 Waterchard and Board alole needule.	i. Watersted and those plain activity and characteristics	2. Flow habit	3, Channel pattern	4. Entrenchment channel confinement.	5. Bed material Fs = approximate portion of sand in the overlapping, and possibly imbricated. bed Most material > 4 mm, Fs < 20%.	6. Bar development	7. Obstructions, including bedrock outcrops, armor layer, LED jams, grade control, bridge bed pavling, revetments, dikes or vanes, riprap

-	- 5
3	335
1	2 1
S)
0	73
2	9
0	6 5
	-1

Stability Indicator	Excellent (1-3)		Fair (7 - 9)	Poor (10-12)	Score
8. Bank soll texture and coherence	Glay and slily clay, cohesive material	Clay loam to sandy day loam; minor amounts of noncohesive or unconsolidated mkfures; layers may exist, but are cohesive materials	Sandy day to sandy loam; unconsolidated mixtures of gladal or other materials; small layers and lenses of noncohesive or unconsolidated mixtures	Loamy sand to sand; noncohestve material; unconsolidated mixtures of gladal or other materials; layers of lenses that include noncohesive sands and gravels	3
9. Average bank slope angle (where 90° is a vertical bank)	Bank slopes < 3H:1V (181) for noncohesive or unconsolidated materials to < 1:1 (45") in clays on both sides	Bank slopes up to 2H:1V (27.) in noncohesive or uncorsolidated materials to 0.8:1 (50°) in clays on one or occasionally both banks	Bank slopes to 1H:1V (45°) in noncohesive or unconsolidated materials to 0.6:1 (60°) in clays common on one or both banks	Bank slopes over 45° in noncohesive or unconsolidated materials or over 60° in clays common on one or both banks	17
10. Vegetative or engineered bank protection	Wide band of woody vegetation with the teast 90% density and cover. An inactive hardy and cover. Find and wood, leafy, deciduous trees with mature, healthy, and diverse vegetation located on the bank. Woody vegetation oriented bank, woody vegetation of experiment both banks are lined or heavily armored.	Medium band of woody vegotation with 70-80% plant density and cover. A majority of hard wood, leafy, deciduous trees with maturing, diverse vegetation located on the bank. Wood vegetation oriented 60-80% from horizontal with minimal root exposure. Partial lining or armoting of one or both banks	Small band of woody vegetation with SG-70% plant density and cover. A depending on age and health with majority of soft wood, piney, conferous than 50% plant density and cover. Three with young or old vegetation lacking in diversity located on or near trees with very young, old and dyin the top of banks. Woody vegetation of the bank. Woody vegetation of the banks and the bank. Woody vegetation of the wood woody vegetation of the wood woody vegetation of the wood wood wood wood wood wood wood woo	Woody vegetation band may vary obspending on age and health with less than 50% plant density and cover. Primanly soft wood, piney, confarous trees with very young, old and dying, and/or monostand vegetation located olf of the bank. Woody vegetation orfinted at less than 70% from horizontal with extensive root exposure. No lining or armoring of banks	ゴ
11. Bank cutting	Little or none evident, infrequent raw banks, insignificant percentage of total bank	Some intermittentity along channel Significant and frequent on both ban bends and at prominent constrictions. Raw banks comprise large portion of Raw banks comprise minor portion of bank in vertical direction. Root mat overflangs	Significant and frequent on both banks. Raw banks comprise large portion of bank in vertical direction. Root mat overflangs	Almost continuous cuts on both banks, some extending over most of the banks. Undercuting and sod-root overhangs	力
12. Mass wasting or bank fallure	No or little evidence of potential or very small amounts of mass wasting. Uniform channel width over the entire reach	Evidence of infrequent and/or minor mass wasting. Mostly healed over with vegetation. Relatively constant charnel width and minimal scalloping of banks.	Evidence of frequent and/or significant occurrences of mass wasting that can be aggravated by higher flows, which may cause undercutting and mass wasting of unstable banks. Channel width quite freguler, and scalloping of banks is evident	Frequent and extensive mass wasting. The potential for bank failure, as evidenced by tension cracks, massive undercuttings, and bank slumping is considerable. Channel width is highly irregular, and banks are scalloped	1+
13. Upsiream distance to bridge from meander impact polici and Bilgiment	More than 35 m. bridge is well: aligned with river flow	20.35 in: bridge is aligned with flow	10-20 m; bridge is skewed to flow or. Nov diginmen! is eliterwise not contend beveall; bridge	Less than 10 m; bridge is poorly algned Wills flow.	
H = horizontal V = vertical. Fs = fraction of sand. S = stope, w/v = width-to-depth ratio	ond S a slone with a width-to-dep	th make			

Observers; I. Eckard+ Project Mancy Farm Drainage Area; Stream Type

Weather Parely Classy, 75

Location:

Date: 5/30/14 Stream: UTH

Reach:

5116

Score 0 pri 1 00 3 M mining, togging, farming, or construction of buildings, roads, or other infrastructure, Highly urbanized or Extremely flashy, flash floods prevalent mode of discharge, ephemeral stream other than first-order stream adjusting (taterally and/or vertically) with Very loose assortment with no packing. Large amounts of material < 4 mm. Fs > 70% banks ration small; deeply confined; no Frequent and often unstable, causing a continual shift of sediment and flow. Traps are easily filled, causing channel to migrate and/or widen infrastructure; channel-width-to-top-ofare composed of extensive deposits of active flood plain; levees are high and Bar widths are generally greater than 1/2 the stream width at low flow. Bars little to no vegetation. No bars for S < fine particles up to coarse gravel with watershed, Significant cattle activity lew bends. Straight, unstable reach, andslides, channel sand or gravel Appears to have previously been channefized. Stream is actively Knickpoints visible downstream; Poor (10-12) Continual disturbances in the rapidly urbanizing watershed exposed water lines or other along the channel edge 0.02 and w/y > 12 other infrastructure. Urbanization over plain abandoned; levees are moderate Loose assortment with no apparent overlap. Small to medium amounts of material < 4 mm. 50 < Fs < 70% n size and have minimal selback from cobbles, but minimal recent growth of cobbles and/or may be sparsely bar evident by lack of vegetation vegetated. Bars forming for \$> 0.02 on portions of the bar, For \$> 0.02 and wiy < 12 and wiy < 12. newly deposited coarse sand to small For S < 0.02 and w/y > 12, bar widths Perennial of Intermittent stream with flashy behavior Moderately frequent and occasionally Considerable sediment accumulation construction of buildings, roads, or around bends. Straightened, stable watershed, including cattle activity, landslides, channel sand or gravel Moderate confinement in valley or nfrastructure; terraces exist; flood adjusting (meandering); localized areas of instability and/or erosion tend to be wide and composed of channel walls; some exposure of Appears to have previously been noticeable erosion of the channel. channelized. Stream is actively significant portion of watershed mining, logging, farming, or unstable obstructions, cause Fair (7 - 9) behind obstructions he river Active flood plain abandoned, but is M currently rebuilding; minimal channel confinement; infrastructure not exposed; levees are low and set well pib back from the river. Appears to have previously been channelized. Stream is relatively stable. Channel has some meanders Occasional minor disturbances in the construction, logging, or other minor overlapping. Very small amounts of material < 4 mm. 20 < Fs < 50% Perennial stream or ephemeral firstdue to previous channel adjustment. order stream with slightly increased Occasional, causing cross currents and minor bank and bottom erosion (grazing and/or access to stream), deforestation. Limited agricultural watershed, including cattle activity For S < 0.02 and w/y > 12, bars may have vegetation and/or be composed of coarse gravel to Moderately packed with some Good (4-6) rate of flooding activities overlapping, and possibly imbricated. For S < 0.02 and w/y > 12, bars are cobbles. For S > 0.02 and w/y are < 12. (no bars are evident) mature, narrow relative to stream width at low flow, well-vegetated, and composed of coarse gravel to straight (step-pool system, narrow valley), stable channel. Most material > 4 mm, Fs < 20% Active flood plain exists at top of banks; no sign of undercutting Perennial stream with no flashy behavior No evidence of channelization, Meandering, stable channel or Assorted sized tightly packed, Stable, forested, undisturbed Excellent (1-3) infrastructure; no levees ナーナーカナンド not tolady Rare or not present vatershed Fs = approximate portlon of sand in the 4. Entrenchment/ channel confinement 1. Watershed and flood plain activity 7. Obstructions, including bedrock outcrops, armor layer, LED jams, grade control, bridge bed paving. revetments, dikes or vanes, riprap Stability Indicator and characteristics Bar development . Channel pattern Bed material 2. Flow habit

300

8. Bank soil texture and coherence	Ciay and siliy day, collesive material	Clay loam to sandy day loam; minor amounts of norcohesive or unconsolidated mixtures; layers may exist, but are cohesive materials	and yearly to sandy loam; unconsolidated mixtures of gladal or other materials; small layers and lenses of noncohesive or unconsolidated mixtures	Loamy sand to sand; honconesive material; unconsolidated mixtures of glacial or other materials; layers of lenses that include noncohesive sands and gravels.	3
9. Average bank slope angle (where 90° is a vertical bank)	Bank stopes < 3H:1V (18°) for monophesive or unconsolidated materials to < 1:1 (45°) in days on both sides	Bank slopes up to 2H:1V (27") in noncohesive or unconsolidated materials to 0.8:1 (50") in clays on one or occasionally both banks	Bank slopes to 1H:1V (45°) in noncohesive or unconsolidated materials to 0.5:1 (80°) in clays common on one or both banks	Bank slopes over 45° in noncohesive or unconsolidated materials or over 60° in days common on one or both banks	1+
10. Vegetative or engineered bank protection	Wide band of woody vegetation with at least 90% density and cover. Primarily hard wood, leafy, decidious trees with mature, healthy, and diverse vegetation located on the bank. Woody vegetation oriented verifically. In absence of vegetation, both banks are lined or heavily armored.	Medium band of woody vegetation with 70-90% plant density and cover. A majority of hard wood, leafy, deciduous trees with maturing, diverse vegetation located on the bank. Wood vegetation oriented 80-90% from horizontal with minimal root exposure, Partial lining or armoring of one or both banks	Smail band of woody vegetation with 50-70% ptant density and cover. A majority of soft wood, piney, confereus trees with young or of vegetation lacking in diversity located on or near the top of bank. Woody vegetation oriented at 70-80% from horizontal, often with evident root exposure. No fining of banks, but some armoring may be in place on one bank	Woody vegetation band may vary depending on age and health with less than 50% plant density and cover. Primarily soft wood, piney, confereus Fures with very young, old and dying, and/or monostand vegetation located off of the bank. Woody vegetation oriented at less than 70% from horizontal with extensive root exposure. No lining or armoring of banks	1+
11. Bank cutting	Little or none evident. Infrequent raw banks, insignificant percentage of total bank	Some intermittently along channal Significant and frequent on both ban bends and at prominent constrictions. Raw banks comprise large portion of Raw banks comprise minor portion of bank in vertical direction. Root mat overhangs	Significant and frequent on both banks. Raw banks comprise large portion of bank in vertical direction. Root mat overhangs	Almost continuous culs on both banks, some extending over most of the banks. Undercutting and sod-root.	7
12. Mass wasting or bank failure	No or little evidence of potential or very small amounts of mass wasting. Uniform channel width over the entire reach	Evidence of infrequent and/or minor mass wasting. Mostly healed over with vegetation. Relatively constant channet width and minimal scalloping of banks.	Evidence of frequent and/or significant occurrences of mass wasting that can be aggravated by higher flows, which may cause undercutting and mass wasting of unstable banks. Channel width quite fregular, and scalloping of banks is evident	Frequent and extensive mass wasting. The potential for bank failure, as evidenced by tension cracks, massive undercuttings, and bank slumping is considerable. Channel width is highly irregular, and banks are scalloped	T
13. Upstream distance to bridge from mander impact politizard alignment	More than 35 m. bridge is well- aligned with river flow	20.35 m.: bridge: is alligned with flow	10-20 m; pridge is skowed lo flow, or flow argument is outerwise not conford beyealth tribing	Lessithan 10 m bridge is poorly algned with flow.	
H = horizontal, V = vertical, Fs = fraction of sand, S = slope, w/y = width-to-depth ratio	on of sand. S = slope. w/v = width-to-del	oth ratio		,	

Stream: UTS Reach: Date: 5/29/14 Weather: $P_{\rm ord}$ Clary, $P_{\rm O}$ Location:

Observers: I. Eckardt Project: Markey Farm Site Drainage Area: Stream Type

			Church Meaning of but has actus of acosing protections	Upper hade every Lower hade every			
Score	#	-	07	و	o ⁺	01	I
Poor (10 - 12)	Continual disturbances in the watershed. Significant cattle activity, landsides, channel sand or gravel mining, logging, farming, or construction of buildings, roads, or other infrastructure. Highly urbanized or rapidly urbanizing watershed	Extremely flashy, flash floods prevalent mode of discharge; ephemeral stream other than first-order stream	Appears to have previously been channelized. Stream is actively adjusting (laterally and/or vertically) with few bends. Straight, unstable reach.	Knickpoints visible downstream; exposed water lines or other Infrastructure; channel-width-to-top-of- banks ration small; deeply confined; no active flood plain; levees are high and along the channel edge	Very loose assortment with no packing. Large amounts of material < 4 mm. Fs > 70%	Bar widths are generally greater than 1/2 the stream width at low flow. Bars are composed of extensive deposits of fine particles up to coarse gravel with little to no vegetation. No bars for S < 0.02 and w/y > 12	Frequent and often unstable, causing a continual shift of sediment and flow. Traps are easily filled, causing channel to migrate and/or widen
(C-1) (ID-1	Frequent disturbances in the watershed, including cattle activity, landsides, channel and or gravel mining, logging, farming, or construction of buildings, roads, or other infrastructure. Urbanization over significant portion of watershed	Perennial or intermittent stream with flastry behavior	Appears to have previously-been channelized. Stream is actively adjusting (meandering); localized areas of instability and/or erosion around bends. Straightened, stable channel.	Moderate confinement in valley or channel walls; some exposure of infrastructure; terraces exist; flood plain abandoned; levees are moderate in size and have minimal setback from the river	Loose assortment with no apparent overlap. Small to medium amounts of material < 4 mm. 50 < Fs < 70%	For S < 0.02 and w/y > 12, bar widths tend to be wide and composed of newly deposited coarse sand to small cobbles and/or may be sparsely vegetated. Bars forming for S > 0.02 and w/y < 12	Moderately frequent and occasionally unstable obstructions, cause noticeable erosion of the channel. Considerable sediment accumulation behind obstructions
	Occasional minor disturbances in the watersheet, including cattle activity (grazing andro access to stream), construction, logging, or other minor deforestation. Limited agricultural activities	Perennial stream or ephemeral first- order stream with slightly increased rate of flooding	Appears to have previously been channelized. Stream is relatively stable. Channel has some meanders due to previous channel adjustment.	Active flood plain abandoned, but is currently rebuilding; minimal channel confinement; infrastructure not exposed; levees are low and set well back from the river	Modorately packed with some overlapping. Very small amounts of material < 4 mm. 20 < Fs < 50%	For S < 0.02 and wy> 12, bars may have vegetation and/or be composed of coarse gravel to cobbles, but minimal recent growth of bar evident. by lack of vegetation on portions of the bar. For S > 0.02 and wy <12, no bars are evident.	Occasional, causing cross currents and minor bank and bottom erosion
Cycellell (1 %)	Stable, forested, undisturbed watershed	Perennial stream with no flashy behavior	No evidence of channelization, Meandering, stable channel or straight (step-pool system, narrow valley), stable channel.	Active flood plain exists at top of banks; no sign of undercutting infrastructure; no levees	Assorted sized tightly packed, overlapping, and possibly imbricated. Most material > 4 mm. Fs < 20%	For S < 0.02 and w/y > 12. bars are mature, narrow relative to stream width at low flow, well-vegetated, and composed of coarse gravel to cobbles. For S > 0.02 and w/y are < 12. no bars are evident	Rare or not present
Stability indicator	Watershed and flood plain activity and characteristics	2. Flow habit	3. Channel pattern	4. Entrendiment channel confinement	5. Bed material Assorted sized tightly packed, Fs = approximate portion of sand in the overlapping, and possibly imbricated. bed Man. Fs < 20%	6. Bar development	7. Obstructions, including bedrock outcrops, armor layer, LED jams, grade control, bridge bed paving, revelments, dikes or varies, riprap

8. Bank soll texture and coherence	Clay and slity clay, cohesive material	Clay loam to sandy clay loam; minor amounts of noncohesive or unconsolidated mixtures; layers may exist, but are cohesive materials	Sandy clay to sandy loom; unconsolidated mbtures of glacial or other materials; smal layers and lenses of noncohasive or unconsolidated mbtures	Loamy sand to sand; noncohesive material; unconsolidated mixtures of glacial or other materials; layers of lenses that include noncohesive sands and gravels	70	
9. Average bank slope angle (where 90° is a vertical bank)	Bank slopes < 3H:1V (18°) for noncohesive or unconsolidated materials to < 1:1 (45°) in days on both sides	Bank slopes up to 2H:1V (27*) in noncohesive or unconsolidated materials to 0.8:1 (50*) in clays on one or occasionally both banks	Bank slopes to 1H:1V (45°) in nonoblesive or unconsolidated materials to 0.6:1 (50°) in clays common on one or both banks	Bank slopes over 45° in noncohesive or unconsolidated materials or over 60° in clays common on one or both banks	Ξ	
10. Vegetative or engineered bank protection	Wide band of woody vegetation with at least 90% density and cover. Primarily hard wood, leafy, dedduous trees with mature, healthy, and diverse vegetation located on the bank. Woody vegetation oriented vertically, in absence of vegetation, both banks are lined or heavily armored.	Medium band of woody vegetation with 70-80% plant density and cover. A majority of hard wood, leafy, deciduous trees with maturing, diverse vegetation located on the bank. Wood vegetation oriented 80-80% from horizontal with minimal root exposure. Partial lining or armoring of one or both banks.	Small band of woody vegetation with 50-70% plant density and cover. A majority of soft wood, piney, confereus troes with young or old vegetation lacking in diversity located on or near the top of bank. Woody vegetation oriented at 70-80% from horizontal, often with endent root exposure. No inhay of banks, but some armoring may be in place on one bank	Woody vegetation band may vary depending on age and health with less than 50% plant density and cover. Primarily soft wood, piney, confloraus trees with very young, old and dying, and/or monostand vegetation located off of the bank. Woody vegetation ordented at less than 70% from horizontal with extensive root exposure. No lining or armoring of banks	=	
11. Bank cutting	Little or none evident. Infrequent raw banks, insignificant percentage of total bank	Some intermittently along channel Significant and frequent on both bar bends and at prominent constrictions. Raw banks comprise large portion of Raw banks comprise minor portion of bank in vertical direction. Rook mat overhangs	Significant and frequent on both banks. Raw banks comprise large portion of bank in vertical direction. Rook mat overhangs.	Almost continuous outs on both banks, some extending over most of the banks. Undercutting and sod-root overhangs	00	Extensive bundle cotting
12. Mass wasting or bank failure	No or little evidence of potential or very small amounts of mass wasting. Uniform channel width over the entire reach	Evidence of infrequent and/or minor mass wasting. Mostly healed over with vegetation. Relatively constant channel width and minimal scalloping of banks.	Evidence of frequent and/or significant occurrences of mass wasting that can be aggravated by higher flows, which may cause undercutting and mass wasting of unstable banks. Channel width quite irregular, and scalloping of banks is evident	Frequent and extensive mass vasting. The potential for bank failure, as evidenced by lension cracks, massive undercutings, and bank slumping is considerable. Channel width is highly irregular, and banks are scalloped	6	Extensive mass washing in upper
13. Upstream distance to bridge from mander impoct point and alignment	More than 35 m. bridge is well- aligned with river flow.	20-35 m; barge is allaned with tlow.	10-20 m; bridgets askewed to flow, or flow alignment is entirevise not contend betreath bridge.	Less than 10 m; oridge is poorly aligned with how.		
= horizontal, V = vertical, Fs = fractio	H = horizontal, V = vertical, Fs = fraction of sand, S = slope, w/y = width-to-deptn ratio	û ratio		1-11	7	

Appendix 7: USACE Routine Wetland Determination, NCWAM Data Forms, and Jurisdictional Determination

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Maney Farm Stream Mitigation Site	City/County: Chatham	ı	Sampling Date: 5/28/14
Applicant/Owner: Wildlands Engineering	City/County: Chatham	State: NC	Sampling Point: Wetland A - DP1
Investigator(s): Ian Eckardt and Win Taylor			camping rount.
Landform (hillslope, terrace, etc.): floodplain			Slone (%). 0
Subsection (LDD or MLDA): MLRA 136	N 35.835745	W 79.342343	Slope (70)
Subregion (LRR or MLRA): MLRA 136 Lat: Soil Map Unit Name: Cid-Lignum complex, 2-6% st	lopes (CmB)	J. NIA/I alaasifi	Datum
Are climatic / hydrologic conditions on the site typical fo			/
Are Vegetation, Soil, or Hydrology			present? Yes No <u>▼</u>
Are Vegetation, Soil, or Hydrology	naturally problematic? (If nee	eded, explain any answe	ers in Remarks.)
SUMMARY OF FINDINGS - Attach site m	ap showing sampling point lo	ocations, transects	s, important features, etc.
Hydric Soil Present? Yes✓	No Is the Sampled within a Wetland	Area d? Yes <u>✓</u>	No
Sampling point located in floodplain and have disturbed/trampled much o	-		ne sampling location
HYDROLOGY			
Wetland Hydrology Indicators:			ators (minimum of two required)
Primary Indicators (minimum of one is required; check		Surface Soil	
	True Aquatic Plants (B14)		getated Concave Surface (B8)
	Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres on Living Roots	Drainage Pa s (C3) Moss Trim L	
	Presence of Reduced Iron (C4)		Water Table (C2)
	Recent Iron Reduction in Tilled Soils (C		
	Thin Muck Surface (C7)		isible on Aerial Imagery (C9)
	Other (Explain in Remarks)	· · · · · · · · · · · · · · · · · · ·	Stressed Plants (D1)
Iron Deposits (B5)		✓ Geomorphic	Position (D2)
Inundation Visible on Aerial Imagery (B7)		Shallow Aqu	iitard (D3)
✓ Water-Stained Leaves (B9)		Microtopogra	aphic Relief (D4)
Aquatic Fauna (B13)		FAC-Neutra	I Test (D5)
Field Observations:			
	Depth (inches):		
	Depth (inches):		
Saturation Present? Yes No (includes capillary fringe)	Depth (inches): Wet	tland Hydrology Presei	nt? Yes <u> </u>
Describe Recorded Data (stream gauge, monitoring w	ell, aerial photos, previous inspections)	, if available:	
Remarks:			

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: Wetland A - DP1

· · · · · · · · · · · · · · · · · · ·	Absolute	Dominant		Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: 30'	% Cover	Species?	Status	Number of Dominant Species
1. Quercus phellos	40	yes	FAC	That Are OBL, FACW, or FAC: $\frac{2}{}$ (A)
2. Ulmus americana	30	yes	FACW	Total Number of Dominant
3. Fraxinus pennsylvanica	10	no	FACW	Species Across All Strata: 5 (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 40% (A/B)
6				Prevalence Index worksheet:
7				Total % Cover of: Multiply by:
8	0.0			OBL species 0 $x 1 = 0$
Sapling/Shrub Stratum (Plot size: 15')	80	= Total Cov	/er	FACW species 45 x 2 = 90
1. Symphoricarpos orbiculatus	5	yes	FACU	FAC species 40 x 3 = 120
2.				FACU species 40 x 4 = 160
3.				UPL species $0 \times 5 = 0$
4.				Column Totals: 125 (A) 370 (B)
5.				
6.				Prevalence Index = B/A = 2.96
7.				Hydrophytic Vegetation Indicators:
8.				1 - Rapid Test for Hydrophytic Vegetation
9.				2 - Dominance Test is >50%
10				3 - Prevalence Index is ≤3.0¹ 1.7
	5	= Total Cov	/er	4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
Herb Stratum (Plot size: 5')			~: 611	Problematic Hydrophytic Vegetation¹ (Explain)
1. Amaranthus palmeri	25	yes	FACU	residuate rijaroprijae vegetatem (Explain)
2. Festuca sp.	_ 10	yes	FACU	¹ Indicators of hydric soil and wetland hydrology must
3. Juncus effusus	5	no	FACW	be present, unless disturbed or problematic.
4				Definitions of Four Vegetation Strata:
5				Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or
6				more in diameter at breast height (DBH), regardless of
7				height.
8				Sapling/Shrub – Woody plants, excluding vines, less
9				than 3 in. DBH and greater than 3.28 ft (1 m) tall.
10				Herb – All herbaceous (non-woody) plants, regardless
11				of size, and woody plants less than 3.28 ft tall.
12	40			Woody vine – All woody vines greater than 3.28 ft in
Woody Vine Stratum (Plot size: ³⁰ ')	40	= Total Cov	/er	height.
1				
2.				
3				
4				
5.				Hydrophytic
6.				Vegetation Present? Yes No
o		= Total Cov	/er	· · · · · · · · · · · · · · · · · · ·
Remarks: (Include photo numbers here or on a separate		- 10tai 00v		
	,	4 h a a h a		7 - 4'-1 - 4 4 (1 1- 4) 1 (11-

Feature is located in a concave depression that has been heavily disturbed (trampled) by cattle. Sapling and herb stratum's significantly impacted within sampling area.

SOIL Sampling Point: Wetland A - DP1

Profile Desc	ription: (Describe	to the de	pth needed to docu	ment the	indicator	or confirn	n the absence of indicators.)	
Depth	Matrix	0/		x Feature		1 2	Teachan	
(inches) 0-2	Color (moist) 7.5YR 3/2	<u>%</u> 100	Color (moist)	<u>%</u>	Type ¹	_Loc ²	<u>Texture</u> <u>Remarks</u> silt loam	
2-8	10YR 4/1	95	5YR 4/6	5		 PL		_
	-		_	- —			silt loam	_
8-12	10YR 4/1	85	5YR 4/6	15	<u>C</u>	PL	loam	_
								_
				_				_
				-				
	-			_	_			
	-	_	-		- · · · · · · · · · · · · · · · · · · ·	·		_
	-	_		-	-	· ——		_
1- 0.0							2	_
Hydric Soil		pletion, RN	1=Reduced Matrix, M	S=Maske	d Sand Gi	ains.	² Location: PL=Pore Lining, M=Matrix. Indicators for Problematic Hydric Soils ³ :	
Histosol			Dark Surface	(97)			2 cm Muck (A10) (MLRA 147)	
	oipedon (A2)		Polyvalue Be		ace (S8) (I	VILRA 147,		
Black Hi			Thin Dark Su				(MLRA 147, 148)	
	en Sulfide (A4)		Loamy Gleye		(F2)		Piedmont Floodplain Soils (F19)	
	d Layers (A5)		✓ Depleted Ma		F0)		(MLRA 136, 147)	
	ick (A10) (LRR N) d Below Dark Surfa	ce (A11)	Redox Dark Depleted Da				Red Parent Material (TF2) Very Shallow Dark Surface (TF12)	
	ark Surface (A12)	30 (7111)	Redox Depre				Other (Explain in Remarks)	
	lucky Mineral (S1)	LRR N,	Iron-Mangan		ses (F12)	LRR N,		
	A 147, 148)		MLRA 13				3	
	Gleyed Matrix (S4) Redox (S5)		Umbric Surfa Piedmont Flo				³ Indicators of hydrophytic vegetation and wetland hydrology must be present,	
-	Matrix (S6)		Fledition(Fit	Joupiairi	3011S (F 19)	(WILKA 14	unless disturbed or problematic.	
	Layer (if observed)):					lines distance of procedure.	
Type:								
Depth (inc	ches):						Hydric Soil Present? Yes No	_
Remarks:								

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Maney Farm Stream Mitigation Site	City/County: Chatham	า	Sampling Date: 5/28/14
Applicant/Owner: Wildlands Engineering			Sampling Point: Upland A/B - DP2
Investigator(s): Ian Eckardt and Win Taylor			
Landform (hillslope, terrace, etc.): floodplain	Local relief (concave, conv	_{/ex, none):} none	Slope (%): 0
Subregion (LRR or MLRA): MLRA 136 Lat: N 35	.835725 Lond	g. W 79.342426	Datum:
Soil Map Unit Name: Cid-Lignum complex, 2-6% slopes	(CmB)	9 NWI classific	cation:
Are climatic / hydrologic conditions on the site typical for this t			
Are Vegetation, Soil, or Hydrology sig			present? Yes No _✓
Are Vegetation, Soil, or Hydrology nat	urally problematic? (If ne	eded, explain any answe	ers in Remarks.)
SUMMARY OF FINDINGS - Attach site map si	nowing sampling point lo	ocations, transects	s, important features, etc.
Hydrophytic Vegetation Present? Yes No Hydric Soil Present? Yes No Wetland Hydrology Present? Yes No Remarks:	within a Wetlan	Area nd? Yes	No_ √
Sampling point is representative of a nor project site.	n-jurisdictional upland	area located in t	he floodplain of the
HYDROLOGY			
Wetland Hydrology Indicators:		Secondary Indica	ators (minimum of two required)
Primary Indicators (minimum of one is required; check all that	at apply)	Surface Soil	Cracks (B6)
Surface Water (A1) True A	quatic Plants (B14)	Sparsely Ve	getated Concave Surface (B8)
High Water Table (A2) Hydro	gen Sulfide Odor (C1)	Drainage Pa	atterns (B10)
	ed Rhizospheres on Living Roots	s (C3) Moss Trim L	ines (B16)
· · ·	nce of Reduced Iron (C4)		Water Table (C2)
Sediment Deposits (B2) Recer	t Iron Reduction in Tilled Soils (C		
Drift Deposits (B3) Thin N	luck Surface (C7)	Saturation V	isible on Aerial Imagery (C9)
	(Explain in Remarks)		Stressed Plants (D1)
Iron Deposits (B5)			Position (D2)
Inundation Visible on Aerial Imagery (B7)		Shallow Aqu	
Water-Stained Leaves (B9)		· -	aphic Relief (D4)
Aquatic Fauna (B13)		FAC-Neutra	l Test (D5)
Field Observations:			
Surface Water Present? Yes No Depti			
Water Table Present? Yes No Depti			
Saturation Present? Yes No ✓ Depti	n (inches): We	tland Hydrology Prese	nt? Yes No
(includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, ae	rial photos, previous inspections), if available:	
Remarks:			

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: Upland A/B - DP2

	Absolute	Dominant	Indicator	Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: 30')		Species?		Number of Dominant Species
1. Ulmus americana	35	yes	FACW	That Are OBL, FACW, or FAC: 1 (A)
2. Fraxinus pennsylvanica	10	no	FACW	Total Number of Dominant
3. Acer rubrum	10	no	FAC	Species Across All Strata: 5 (B)
4				
5				Percent of Dominant Species That Are OBL, FACW, or FAC: 20% (A/B)
6.				That Are OBE, I AGW, OF I AG.
7.				Prevalence Index worksheet:
8.				Total % Cover of: Multiply by:
·	55	= Total Cov		OBL species $0 x 1 = 0$
Sapling/Shrub Stratum (Plot size: 15')		- Total Cov	Ci	FACW species <u>50</u> x 2 = <u>100</u>
1. Rosa multiflora	10	yes	FACU	FAC species $\underline{10}$ $x 3 = \underline{30}$
2 Symphoricarpos orbiculatus	5	yes	FACU	FACU species $\frac{40}{40}$ $x = \frac{160}{1}$
3.				UPL species $0 \times 5 = 0$
				Column Totals: 100 (A) 290 (B)
4				(1)
5				Prevalence Index = B/A = 2.9
6				Hydrophytic Vegetation Indicators:
7				1 - Rapid Test for Hydrophytic Vegetation
8				2 - Dominance Test is >50%
9				✓ 3 - Prevalence Index is ≤3.0 ¹
10				4 - Morphological Adaptations ¹ (Provide supporting
	15	= Total Cov	er	data in Remarks or on a separate sheet)
Herb Stratum (Plot size: 5')	15	1/00	FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
1. Trifolium repens	_ 15	yes		
2. Fragaria virginiana	_ 10	yes	FACU	¹ Indicators of hydric soil and wetland hydrology must
3. Boehmeria cylindrica	5	no	FACW	be present, unless disturbed or problematic.
4				Definitions of Four Vegetation Strata:
5				
6				Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or
7				more in diameter at breast height (DBH), regardless of height.
8.				
9.				Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
10.				than 3 iii. DBH and greater than 3.20 it (1 iii) taii.
11				Herb – All herbaceous (non-woody) plants, regardless
				of size, and woody plants less than 3.28 ft tall.
12	30	T-4-1 O-1		Woody vine – All woody vines greater than 3.28 ft in
Woody Vine Stratum (Plot size: 30')		= Total Cov	er	height.
· · · · · · · · · · · · · · · · · · ·				
1				
2				
3				
4				Hydrophytic
5				Vegetation
				Present? Yes _ * No
6		= Total Cov		
				Present? Yes No

Sampling Point: Upland A/B - DP2

SOIL

Profile Desc	ription: (Describe	to the de	oth needed to docu	ment the	indicator	or confirm	n the abs	ence of indicate	ors.)	
Depth Matrix			Redo	Redox Features						
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Textu	re	Remarks	
0-4	7.5YR 4/6	90	7.5YR 3/2	10	С	PL	loam			
4-12	7.5YR 4/6	100					sandy lo	oam		
		- ——	-							
	-									
					_					_
	-							 -		
	-	. ——								
					_	- ——				
	-									
		oletion, RM	I=Reduced Matrix, M	IS=Maske	d Sand G	rains.		n: PL=Pore Lini		3
Hydric Soil I	ndicators:						I	ndicators for P	roblematic Hy	dric Soils ³ :
Histosol			Dark Surfac	. ,			_		A10) (MLRA 1	47)
	pipedon (A2)		Polyvalue B				148) _		e Redox (A16)	
Black His			Thin Dark S			147, 148)		(MLRA 14		
Hydrogen Sulfide (A4)			Loamy Gley		(F2)		-		oodplain Soils	(F19)
Stratified Layers (A5)			Depleted Ma		50)			(MLRA 13		
	ck (A10) (LRR N)	Redox Dark				-		Material (TF2)	(TE12)	
Depleted Below Dark Surface (A11)				_ Depleted Dark Surface (F7)					v Dark Surface	
Thick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N,				Redox Depressions (F8) Other (Explain in Remarks) Iron-Manganese Masses (F12) (LRR N,						
	147, 148)	LIXIX IV,	MLRA 13		303 (1 12)	(LIXIX IX,				
	leyed Matrix (S4)			•	(MLRA 1	36. 122)		³ Indicators of h	vdrophytic ved	etation and
	edox (S5)			 Umbric Surface (F13) (MLRA 136, 122) Piedmont Floodplain Soils (F19) (MLRA 148) wetland hydrology must be pres 						
-	Matrix (S6)			•	•	, (,		bed or probler	•
Restrictive L	ayer (if observed)	:							-	
Type:										
	ches):						Hydric	Soil Present?	Yes	No_✓
Remarks:							1.7			
ixemaiks.										

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Maney Farm Stream Mitigation Site	City/County: Chatham	1	Sampling Date: 5/28/14			
Applicant/Owner: Wildlands Engineering	City/County: Chatham	State: NC	Sampling Point: Wetland B - DP3			
Investigator(s): Ian Eckardt and Win Taylor	Section Township Ran	ude.				
Landform (hillslope, terrace, etc.): floodplain			Slone (%). 0			
Subragion (LBB or MLBA): MLRA 136	N 35.835766	W 79.34253	Olope (70)			
Subregion (LRR or MLRA): MLRA 136 Lat: Soil Map Unit Name: Cid-Lignum complex, 2-6% sl	opes (CmB)	y. NVA/I alaasifi	Datum			
Are climatic / hydrologic conditions on the site typical for			1			
Are Vegetation, Soil, or Hydrology			oresent? Yes No <u></u> ✓			
Are Vegetation, Soil, or Hydrology	naturally problematic? (If nee	eded, explain any answe	ers in Remarks.)			
SUMMARY OF FINDINGS - Attach site ma	ap showing sampling point lo	ocations, transects	, important features, etc.			
Hydric Soil Present? Yes✓	No Is the Sampled within a Wetlan	Area d? Yes <u>√</u>	No			
Sampling point located in floodplain a and have disturbed/trampled much o	-		le sampling location			
Wetland Hydrology Indicators:		Secondary Indica	ators (minimum of two required)			
Primary Indicators (minimum of one is required; check	all that apply)		Surface Soil Cracks (B6)			
Surface Water (A1)		Sparsely Vegetated Concave Surface (B8) Drainage Patterns (B10)				
High Water Table (A2)						
Saturation (A3)	Oxidized Rhizospheres on Living Roots	s (C3) Moss Trim L				
	Presence of Reduced Iron (C4)					
	Recent Iron Reduction in Tilled Soils (C		Crayfish Burrows (C8)			
Drift Deposits (B3)		Saturation Visible on Aerial Imagery (C9)				
Algal Mat or Crust (B4)		Stunted or Stressed Plants (D1)				
Iron Deposits (B5)			✓ Geomorphic Position (D2)			
Inundation Visible on Aerial Imagery (B7) ✓ Water-Stained Leaves (B9)			Shallow Aquitard (D3) Microtopographic Relief (D4)			
Aquatic Fauna (B13)		FAC-Neutral				
Field Observations:			(20)			
	Depth (inches):					
	Depth (inches):		_			
		tland Hydrology Presei	nt? Yes No			
(includes capillary fringe) Describe Recorded Data (stream gauge, monitoring w	oll parial photos, provious inspections) if available:				
Describe Recorded Data (stream gauge, monitoring w	en, aeriai priotos, previous irispections)), ii avaliable.				
Remarks:						

Sampling Point: Wetland B - DP3

- 20'	Absolute	Dominant		Dominance Test worksheet:
Tree Stratum (Plot size: 30')		Species?		Number of Dominant Species
1. Acer rubrum	40	yes	FAC	That Are OBL, FACW, or FAC: $\frac{3}{}$ (A)
2. Quercus phellos	30	yes	FAC	Total Number of Dominant
3. Ulmus americana	10		FACW	Species Across All Strata: 4 (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 75% (A/B)
6				Prevalence Index worksheet:
7				
8				Total % Cover of: Multiply by:
451	80	= Total Cov	/er	OBL species x 1 =
Sapling/Shrub Stratum (Plot size: 15')				FACW species x 2 =
1				FAC species x 3 =
2				FACU species x 4 =
3				UPL species x 5 =
4				Column Totals: (A) (B)
5				Dravalance Index - D/A -
6				Prevalence Index = B/A =
7				Hydrophytic Vegetation Indicators:
8				1 - Rapid Test for Hydrophytic Vegetation
9				✓ 2 - Dominance Test is >50%
10.				3 - Prevalence Index is ≤3.0¹
5'		= Total Cov	/er	4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
Herb Stratum (Plot size: 5') 1. Festuca sp.	40	VOC	FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
	15	yes	FAC	
2. Microstegium vimineum	5	yes		¹ Indicators of hydric soil and wetland hydrology must
3. Dichanthelium clandestinum			FAC	be present, unless disturbed or problematic.
4				Definitions of Four Vegetation Strata:
5				Tree Woody plants evaluding vines 2 in (7.6 cm) or
6				Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of
7				height.
8				Sapling/Shrub – Woody plants, excluding vines, less
9				than 3 in. DBH and greater than 3.28 ft (1 m) tall.
10				Howh All howh account (non-viscoshi) whente we condition
11				Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
12				
20	60	= Total Cov	/er	Woody vine – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: 30')				
1				
2				
3				
4	<u> </u>			Hydrophytic
5				Variation
6				Present? Yes No
		= Total Cov	/er	
Remarks: (Include photo numbers here or on a separate	sheet.)			1
Feature is located in a concave depres	•	t has he	en hea	vily disturbed (trampled) by cattle

Feature is located in a concave depression that has been heavily disturbed (trampled) by cattle. Sapling and herb stratum's significantly impacted within sampling area.

SOIL Sampling Point: Wetland B - DP3

Profile Desc	ription: (Describe	to the de	oth needed to docu	ment the	indicator	or confirm	n the absence	of indicators.)	
Depth	Matrix		Redo	x Feature	es				
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Rem	narks
0-5	10YR 2/2	100					loam		
5-12	2.5YR 4/1	95	7.5YR 4/6	5	С	PL	loam		<u> </u>
-	-						-	-	
				-					
						- ——			
		oletion, RM	=Reduced Matrix, M	S=Maske	d Sand G	rains.		L=Pore Lining, M=M	
Hydric Soil	ndicators:						Indic	ators for Problema	itic Hydric Soils³:
Histosol	(A1)		Dark Surface	e (S7)			2	2 cm Muck (A10) (MI	LRA 147)
Histic Ep	pipedon (A2)		Polyvalue Be	elow Surfa	ace (S8) (MLRA 147,	148) (Coast Prairie Redox	(A16)
Black Hi	stic (A3)		Thin Dark S	urface (S9) (MLRA	147, 148)		(MLRA 147, 148)	
Hydroge	n Sulfide (A4)		Loamy Gley	ed Matrix	(F2)		F	Piedmont Floodplain	Soils (F19)
Stratified	l Layers (A5)		✓ Depleted Ma	ıtrix (F3)				(MLRA 136, 147)	
	ck (A10) (LRR N)		Redox Dark	•	,			Red Parent Material	
	d Below Dark Surfac	ce (A11)	Depleted Da					ery Shallow Dark S	
	ark Surface (A12)		Redox Depr				(Other (Explain in Rei	marks)
	lucky Mineral (S1) (LRR N,	Iron-Mangar		ses (F12)	(LRR N,			
	147, 148)		MLRA 13				3.		
	Sleyed Matrix (S4)		Umbric Surfa					dicators of hydrophy	_
-	ledox (S5)		Piedmont Fl	oodplain S	Soils (F19) (MLRA 14		wetland hydrology m	
	Matrix (S6)						L L	unless disturbed or p	problematic.
	_ayer (if observed)	:							
Type:									,
Depth (inc	ches):						Hydric Soi	I Present? Yes _	No
Remarks:									

Project/Site: Maney Farm Stream Mitigation Sit	e _{City/C}	ounty: Chatham		Sampling Date: 5/28/14	
Applicant/Owner: Wildlands Engineering		,	State: NC	Sampling Date: 5/28/14 Sampling Point: Wetland C - DP4	
Investigator(s): Ian Eckardt and Win Taylor					
Landform (hillslope, terrace, etc.): floodplain				Slone (%): 0	
Subregion (LRR or MLRA): MLRA 136 La Soil Map Unit Name: Cid-Lignum complex, 2-6% slope	s (CmB) / Nanford-Badin	complex, 6-10% slopes (N	aC) NWI classific	cation:	
Are climatic / hydrologic conditions on the site typical	for this time of year? Y	es	(If no, explain in R	Remarks.)	
Are Vegetation, Soil, or Hydrology				,	
Are Vegetation, Soil, or Hydrology					
SUMMARY OF FINDINGS – Attach site					
Hydrophytic Vegetation Present? Yes/	No				
	No	Is the Sampled Area within a Wetland?	Vos V	No	
	No	within a Wetland:	163		
Remarks:					
Cattle have access to the sampling sampling point.	, location and ne	ave distarbed/tra	impied the s	ariace area at the	
HYDROLOGY					
Wetland Hydrology Indicators:				ators (minimum of two required)	
Primary Indicators (minimum of one is required; che			Surface Soil		
	_ True Aquatic Plants (Sparsely Vegetated Concave Surface (B8)		
	_ Hydrogen Sulfide Odd		Drainage Pa		
	Oxidized RhizospherePresence of Reduced		Moss Trim L	Water Table (C2)	
	_ Recent Iron Reductio		Crayfish Bur		
	Thin Muck Surface (C		-	isible on Aerial Imagery (C9)	
	_ Other (Explain in Ren			itressed Plants (D1)	
✓ Iron Deposits (B5)	_	,		Position (D2)	
Inundation Visible on Aerial Imagery (B7)			Shallow Aqu	itard (D3)	
Water-Stained Leaves (B9)			Microtopogra	aphic Relief (D4)	
Aquatic Fauna (B13)			FAC-Neutral	Test (D5)	
Field Observations:	1.0				
	Depth (inches): 1.0				
	Depth (inches): 0-12			./	
Saturation Present? Yes ✓ No (includes capillary fringe)	Depth (inches): 0-12	Wetland H	lydrology Preser	nt? Yes <u>v</u> No	
Describe Recorded Data (stream gauge, monitoring	well, aerial photos, pre	vious inspections), if ava	ilable:		
Remarks:					

Sampling Point: Wetland C - DP4

201	Absolute	Dominant	Indicator	Dominance Test worksheet:	
<u>Tree Stratum</u> (Plot size: 30')		Species?		Number of Dominant Species	
1. Fraxinus pennsylvanica	_ 50	yes	FACW	That Are OBL, FACW, or FAC: 3	(A)
2. Ulmus americana		no	FACW	Total Number of Dominant	
3				Species Across All Strata: 3	(B)
4				Percent of Dominant Species	
5					(A/B)
6				Prevalence Index worksheet:	
7				Total % Cover of: Multiply by:	
8					_
- · · · · · · · · · · · · · · · · · · ·	60	= Total Cov	er	OBL species x 1 =	
Sapling/Shrub Stratum (Plot size: 15')				FACW species x 2 =	
1				FAC species x 3 =	
2				FACU species x 4 =	
3				UPL species x 5 =	-
4				Column Totals: (A)	(B)
5				Dravalance Index = P/A =	
6				Prevalence Index = B/A =	-
7				Hydrophytic Vegetation Indicators:	
8				1 - Rapid Test for Hydrophytic Vegetation	
9.				✓ 2 - Dominance Test is >50%	
10.				3 - Prevalence Index is ≤3.0 ¹	
Herb Stratum (Plot size: 5')		= Total Cov	er	 4 - Morphological Adaptations¹ (Provide supp data in Remarks or on a separate sheet) 	orting
1 Polygonum pensylvanicum	30	yes	FACW	Problematic Hydrophytic Vegetation ¹ (Explain	1)
2. Carex lurida	25	yes	OBL		
3. Microstegium vimineum	10	no	FAC	¹ Indicators of hydric soil and wetland hydrology m	ust
4 Fragaria virginiana	2	no	FACU	be present, unless disturbed or problematic.	
5. Ranunculus hispidus		no	FAC	Definitions of Four Vegetation Strata:	
**-		110	1710	Tree – Woody plants, excluding vines, 3 in. (7.6 c	m) or
				more in diameter at breast height (DBH), regardle	
7				height.	
8				Sapling/Shrub – Woody plants, excluding vines,	less
9				than 3 in. DBH and greater than 3.28 ft (1 m) tall.	
10				Herb – All herbaceous (non-woody) plants, regard	dless
11				of size, and woody plants less than 3.28 ft tall.	1000
12				Was described. All over the colors are small and the colors of	G. 1
Woody Vine Stratum (Plot size: 30')	69	= Total Cov	er	Woody vine – All woody vines greater than 3.28 height.	rt in
1.					
2.			•		
3					
4				Hydrophytic	
5				Vegetation Present? Yes No	
6				Present? Yes No	
		= Total Cov	er		
Remarks: (Include photo numbers here or on a separate	sheet.)				
Feature is located in a seep area that I	has beer	n disturb	ed (trai	mpled) by cattle. Sapling and herb	

Feature is located in a seep area that has been disturbed (trampled) by cattle. Sapling and herb stratum's significantly impacted within sampling area.

Sampling Point: _____

(inches) Color (moist) % Type* Loc* Texture Remarks 3-8 5Y 4/1 90 7.5YR 4/6 10 C PL silt loam 8-12 5GY 6/2 95 10YR 4/6 5 C PL silt loam 8-12 5GY 6/2 95 10YR 4/6 5 C PL silt loam "Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. **Location: PL=Pore Lining, M=Matrix Hydric Soil Indicators: Histosci (A1) Dark Surface (S7) *Location: PL=Pore Lining, M=Matrix Hydric Soil Indicators: Dark Surface (S7) 2 mMuck (A10) (MLRA 147) 2 cm Muck (A10) (MLRA 147) Hydric Soil Indicators: Dark Surface (S7) Polyvalue Below Surface (S8) (MLRA 147, 148) Coast Frain Redox (A11) Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F3) Piedmont Floodplain Soil (MLRA 147, 148) Piedmont Floodplain Soil (MLRA 147, 148) Stratified Layers (A5) Depleted Dark Surface (F1) Red Parent Material (F1) Red Parent Material (F1) Piedmont Floodplain Soils (F19) (MLRA 148) Other (Explain in Remark <	
3-8 5Y 4/1 90 7.5YR 4/6 10 C PL silt loam	
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Thidicators for Problematic Indicators (S1) (MLRA 147, 148) This Dark Surface (S7) Type Sandy Mucky (A10) (MLRA 147, 148) Sandy Gleyed Matrix (F3) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Sandy Redox (S6) Sa	
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. PL=Pore Lining, M=Matrix Pydric Soil Indicators: Indicators for Problematic I Histosol (A1) Histic Epipedon (A2) Polyvalue Below Surface (S8) (MLRA 147, 148) Coast Prairie Redox (A1) Black Histic (A3) Thin Dark Surface (S9) (MLRA 147, 148) Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Piedmont Floodplain Soil Stratified Layers (A5) Pepleted Matrix (F3) Redox Dark Surface (F6) Red Parent Material (TF2 Very Shallow Dark Surfa Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) MLRA 147, 148) MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Gleyed Matrix (S4) Umbric Surface (F13) (MLRA 136, 122) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 148) wetland hydrology must I stripped Matrix (S6) Redox Dark Surface (F19) (MLRA 148) Wetland hydrology must I unless disturbed or problematic II Hydric Soil Present? Yes	
Histosol (A1) Histosol (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Stripped Matrix (S6) Depleted Indicators for Problematic Indicators of Problematic Indicators Indic	
Histosol (A1)	
ydric Soil Indicators: Histosol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) 2 cm Muck (A10) (MLRA 147, 148) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Estrictive Layer (if observed): Type: Depth (inches): Dark Surface (S7) Dark Surface (S8) (MLRA 147, 148) Loamy Gleyed Surface (S9) (MLRA 147, 148) Loamy Gleyed Matrix (F2) Piedmont Floodplain Soi (MLRA 136, 147) Pepleted Matrix (F3) (MLRA 136, 147) Pepleted Dark Surface (F6) Red Parent Material (TF3) Very Shallow Dark Surface (TF3) Other (Explain in Remark Iron-Manganese Masses (F12) (LRR N, MLRA 136, 122) Jandicators of hydrophytic very wetland hydrology must be unless disturbed or problematic of the property of t	
ydric Soil Indicators: Histosol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) 2 cm Muck (A10) (MLRA 147, 148) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Estrictive Layer (if observed): Type: Depth (inches): Dark Surface (S7) Dark Surface (S8) (MLRA 147, 148) Loamy Gleyed Surface (S9) (MLRA 147, 148) Loamy Gleyed Matrix (F2) Piedmont Floodplain Soi (MLRA 136, 147) Pepleted Matrix (F3) (MLRA 136, 147) Pepleted Dark Surface (F6) Red Parent Material (TF3) Very Shallow Dark Surface (TF3) Other (Explain in Remark Iron-Manganese Masses (F12) (LRR N, MLRA 136, 122) Jandicators of hydrophytic very wetland hydrology must be unless disturbed or problematic of the property of t	
ydric Soil Indicators: Histosol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) 2 cm Muck (A10) (MLRA 147, 148) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Estrictive Layer (if observed): Type: Depth (inches): Dark Surface (S7) Dark Surface (S8) (MLRA 147, 148) Loamy Gleyed Surface (S9) (MLRA 147, 148) Loamy Gleyed Matrix (F2) Piedmont Floodplain Soi (MLRA 136, 147) Pepleted Matrix (F3) (MLRA 136, 147) Pepleted Dark Surface (F6) Red Parent Material (TF3) Very Shallow Dark Surface (TF3) Other (Explain in Remark Iron-Manganese Masses (F12) (LRR N, MLRA 136, 122) Jandicators of hydrophytic very wetland hydrology must be unless disturbed or problematic of the property of t	
Histosol (A1)	
Histosol (A1)	
ydric Soil Indicators: Histosol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) 2 cm Muck (A10) (MLRA 147, 148) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Estrictive Layer (if observed): Type: Depth (inches): Dark Surface (S7) Dark Surface (S8) (MLRA 147, 148) Loamy Gleyed Surface (S9) (MLRA 147, 148) Loamy Gleyed Matrix (F2) Piedmont Floodplain Soi (MLRA 136, 147) Pepleted Matrix (F3) (MLRA 136, 147) Pepleted Dark Surface (F6) Red Parent Material (TF3) Very Shallow Dark Surface (TF3) Other (Explain in Remark Iron-Manganese Masses (F12) (LRR N, MLRA 136, 122) Jandicators of hydrophytic very wetland hydrology must be unless disturbed or problematic of the property of t	
Histosol (A1)	
Histosol (A1)	
Histic Epipedon (A2)	_
	,
Stratified Layers (A5)	s (F19)
Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Sandy Gleyed Matrix (S4) Stripped Matrix (S6) Stripped Matrix (S6) Estrictive Layer (if observed): Type: Depth (inches): Depth (
Thick Dark Surface (A12)	
_ Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)	
MLRA 147, 148) _ Sandy Gleyed Matrix (S4) _ Sandy Redox (S5) _ Stripped Matrix (S6) _ Stripped Ma	3)
_ Sandy Gleyed Matrix (S4) Umbric Surface (F13) (MLRA 136, 122)	
Stripped Matrix (S6) unless disturbed or problestrictive Layer (if observed): Type: Depth (inches): Hydric Soil Present? Yes✓	getation and
Type: Depth (inches): Hydric Soil Present? Yes✓	e present,
Type: Depth (inches):	matic.
Depth (inches): Hydric Soil Present? Yes	
emarks:	No

Project/Site: Maney Farm Stream Mitigation Site	City/County: C	hatham		Sampling Date: 5/28/14	
Applicant/Owner: Wildlands Engineering			State: NC	Sampling Date: 5/28/14 Sampling Point: Upland C - DP5	
Investigator(s): Ian Eckardt and Win Taylor					
Landform (hillslope, terrace, etc.): floodplain				Slone (%): 0	
Subregion (LRR or MLRA): MLRA 136 Lat:				Datum:	
Soil Map Unit Name: Nanford-Badin complex, 6-10)% slopes (NaC)	Long	NIVACI - L 150	Datum	
Are climatic / hydrologic conditions on the site typical fo				,	
Are Vegetation, Soil, or Hydrology				oresent? Yes No <u>✓</u>	
Are Vegetation, Soil, or Hydrology	naturally problematic?	(If needed, o	explain any answe	ers in Remarks.)	
SUMMARY OF FINDINGS - Attach site m	ap showing sampling p	oint location	ons, transects	s, important features, etc.	
Hydrophytic Vegetation Present? Yes	No ✓ Is the S	II A			
	No /	ampled Area Wetland?	Yes	No <u> </u>	
Wetland Hydrology Present? Yes		Welland:	163		
Remarks:					
at the sampling point.					
HYDROLOGY					
Wetland Hydrology Indicators:				ators (minimum of two required)	
Primary Indicators (minimum of one is required; check	* * * *		Surface Soil		
	True Aquatic Plants (B14)		Sparsely Vegetated Concave Surface (B8)Drainage Patterns (B10)		
	Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres on Livi	na Poote (C3)	Drainage Pa		
	Presence of Reduced Iron (C4			Water Table (C2)	
	Recent Iron Reduction in Tilled		Crayfish Bur		
	Thin Muck Surface (C7)	, ,	-	isible on Aerial Imagery (C9)	
Algal Mat or Crust (B4)	Other (Explain in Remarks)		Stunted or S	tressed Plants (D1)	
Iron Deposits (B5)			Geomorphic	Position (D2)	
Inundation Visible on Aerial Imagery (B7)			Shallow Aqu		
Water-Stained Leaves (B9)			· -	aphic Relief (D4)	
Aquatic Fauna (B13)			FAC-Neutral	Test (D5)	
Field Observations: Surface Water Present? Yes No ✓	Depth (inches):				
	Depth (inches):				
	Depth (inches):		Hydrology Preser	nt? Yes No ✓	
(includes capillary fringe)				11: 163 <u> </u>	
Describe Recorded Data (stream gauge, monitoring w	vell, aerial photos, previous insp	ections), if ava	ailable:		
Damarka					
Remarks:					

Sampling Point: Upland C - DP5

<u>Tree Stratum</u> (Plot size: 30')	Absolute	Dominant	Indicator	Dominance Test worksheet:
	% Cover	Species?	Status	Number of Dominant Species
1. Acer rubrum	60	yes	FAC	That Are OBL, FACW, or FAC: 3 (A)
2. Quercus phellos	20	yes	FAC	
3. Fraxinus pennsylvanica	5	no	FACW	Total Number of Dominant Species Across All Strata: 6 (B)
4.				(E)
				Percent of Dominant Species That Are OBL FACW or FAC: 50% (A/B)
5				That Are OBL, FACW, or FAC: 50% (A/B)
6				Prevalence Index worksheet:
7				Total % Cover of: Multiply by:
8				OBL species $0 \times 1 = 0$
0 1: (0) 1 0: (1) (15)	85	= Total Cov	er	FACW species $\frac{5}{}$ $\times 2 = \frac{10}{}$
Sapling/Shrub Stratum (Plot size: 15')	2	1/00	EACH	
1. Symphoricarpos orbiculatus	2	yes	FACU	1 AC species x 3 =
2. Juniperus virginiana	2	yes	FACU	FACU species $\frac{6}{2}$ $\times 4 = \frac{24}{2}$
3. Ligustrum sinense	2	yes	FACU	UPL species $0 \times 5 = 0$
4				Column Totals: <u>96</u> (A) <u>289</u> (B)
5				
6.				Prevalence Index = $B/A = \frac{3.01}{}$
7				Hydrophytic Vegetation Indicators:
				1 - Rapid Test for Hydrophytic Vegetation
8				2 - Dominance Test is >50%
9				3 - Prevalence Index is ≤3.0 ¹
10				4 - Morphological Adaptations ¹ (Provide supporting
Hank Stratum (Diet sings 5'	6	= Total Cov	er	data in Remarks or on a separate sheet)
Herb Stratum (Plot size: 5')	5	1/00	EAC	Problematic Hydrophytic Vegetation ¹ (Explain)
1. Microstegium vimineum	5	yes	FAC	
2				¹ Indicators of hydric soil and wetland hydrology must
3				be present, unless disturbed or problematic.
4				Definitions of Four Vegetation Strata:
5				Definitions of Four Vegetation Strata.
6				Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or
				more in diameter at breast height (DBH), regardless of
7				height.
8.				Sapling/Shrub – Woody plants, excluding vines, less
9				than 3 in. DBH and greater than 3.28 ft (1 m) tall.
10				Herb – All herbaceous (non-woody) plants, regardless
11				of size, and woody plants less than 3.28 ft tall.
12				
	5	= Total Cov	er	Woody vine – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: 30')				neight.
1				
2				
3.				
34.				Hydrophytic
4				
4				Vegetation Present? Ves No
4				Vegetation Present? Yes No

Sampling Point: Upland C - DP5

Profile Desc	ription: (Describe	to the de	pth needed to docu	ment the	indicator	or confirm	n the ab	sence of indicato	ors.)	
Depth	Matrix		Redo	ox Feature	<u>s</u>					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Text	ture	Remarks	
0-4	7.5YR 4/4	100					loam			
4-12	2.5YR 5/4	90	7.5YR 4/6	10	С	PL	loam			
		-			-					
							-			
	-		-							
					-					
			-			· ——				
		oletion, RM	1=Reduced Matrix, M	S=Maske	d Sand G	rains.	² Locati	on: PL=Pore Linir		
Hydric Soil I	ndicators:							Indicators for Pi	oblematic Hy	dric Soils³:
Histosol	(A1)		Dark Surfac	e (S7)				2 cm Muck (/	410) (MLRA 1	47)
Histic Ep	pipedon (A2)		Polyvalue B				148)	Coast Prairie	Redox (A16)	
Black His			Thin Dark S			147, 148)		(MLRA 14		
	n Sulfide (A4)		Loamy Gley		(F2)				oodplain Soils	(F19)
	l Layers (A5)		Depleted Ma					(MLRA 13		
	ck (A10) (LRR N)		Redox Dark						Material (TF2)	
	Below Dark Surfac	e (A11)	Depleted Da						Dark Surface	
	ark Surface (A12)	. DD M	Redox Depr			// DD N		Other (Expla	in in Remarks)	1
	lucky Mineral (S1) (I	LRR N,	Iron-Mangar		ses (F12)	(LRR N,				
	147, 148) Sleyed Matrix (S4)		MLRA 13	•	/MI DA 4	26 422\		³ Indicators of h	udrophytic voc	otation and
	ledox (S5)		Piedmont FI				10\		ology must be	
	Matrix (S6)		Fledition(F)	oouplalii	פווס (ו ויפ	(IVILNA 14	+0)		bed or probler	
	_ayer (if observed)	-						unicss distui	bed of problem	iatio.
	zayer (ii observea)	•								
Type:	-L \.							! - O - !! D 40	W	N
	ches):						Hyar	ic Soil Present?	Yes	No <u>√</u>
Remarks:										

Project/Site: Maney Farm Stream Mitigation Site	City/County: Chatha	m	Sampling Date: 5/28/14			
Applicant/Owner: Wildlands Engineering	City/County: Chatha	State: NC	Sampling Point: Wetland D - DP6			
Investigator(s): Ian Eckardt and Win Taylor	Section Township R	ange:	Gamping Forms			
Landform (hillslope, terrace, etc.): floodplain			Slone (%). 0			
Subsection (LDD or MLDA): MLRA 136	N 35.836258	ng. W 79.34318	Slope (70)			
Subregion (LRR or MLRA): MLRA 136 Lat: Soil Map Unit Name: Cid-Lignum complex, 2-6% st	lones (CmB)	ng. NW sleesifi	Datum			
Are climatic / hydrologic conditions on the site typical fo			/			
Are Vegetation, Soil, or Hydrology			present? Yes No <u>▼</u>			
Are Vegetation, Soil, or Hydrology	naturally problematic? (If n	eeded, explain any answe	ers in Remarks.)			
SUMMARY OF FINDINGS - Attach site m	ap showing sampling point	locations, transects	s, important features, etc.			
Hydric Soil Present? Yes✓	No Is the Sample within a Wetla	d Area und? Yes <u>✓</u>	No			
Sampling point located in floodplain and have disturbed/trampled much o	•		he sampling location			
HYDROLOGY Wetland Hydrology Indicators:		Socondary India	ators (minimum of two required)			
Primary Indicators (minimum of one is required; check	all that anniv)					
	True Aquatic Plants (B14)		Surface Soil Cracks (B6)Sparsely Vegetated Concave Surface (B8)			
<u> </u>	Hydrogen Sulfide Odor (C1)		Sparsely vegetated Concave Surface (B8) Drainage Patterns (B10)			
	Oxidized Rhizospheres on Living Roc					
	Presence of Reduced Iron (C4)		Water Table (C2)			
	Recent Iron Reduction in Tilled Soils	(C6) Crayfish Bui	rows (C8)			
Drift Deposits (B3)	Thin Muck Surface (C7)	Saturation V	isible on Aerial Imagery (C9)			
	Other (Explain in Remarks)		Stressed Plants (D1)			
Iron Deposits (B5)		<u>√</u> Geomorphic				
Inundation Visible on Aerial Imagery (B7)		Shallow Aqu				
✓ Water-Stained Leaves (B9)			aphic Relief (D4)			
Aquatic Fauna (B13) Field Observations:		FAC-Neutra	T Test (D5)			
	Depth (inches):					
	Depth (inches):					
		etland Hydrology Prese	nt? Yes ✓ No			
(includes capillary fringe)			100			
Describe Recorded Data (stream gauge, monitoring w	ell, aerial photos, previous inspection	s), if available:				
Remarks:						
Remarks.						

Sampling Point: Wetland D - DP6

	Absolute	Dominant	Indicator	Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: 30'	% Cover	Species?		Number of Dominant Species
1. Acer rubrum	50	yes	FAC	That Are OBL, FACW, or FAC: 3 (A)
2. Ulmus americana	5	no	FACW	Total Number of Dominant
3				Species Across All Strata: 4 (B)
4				Description of Description
5				Percent of Dominant Species That Are OBL, FACW, or FAC: 75% (A/B)
6.				, , ,
7.				Prevalence Index worksheet:
8.	·			Total % Cover of: Multiply by:
	55	= Total Cov	er	OBL species $\frac{0}{x}$ $x = \frac{0}{x}$
Sapling/Shrub Stratum (Plot size: 15')				FACW species $\frac{7}{2}$ $\times 2 = \frac{14}{2}$
1. Ulmus americana	2	no	FACW	FAC species <u>85</u> x 3 = <u>255</u>
2				FACU species 30 x 4 = 120
3				UPL species <u>0</u> x 5 = <u>0</u>
4				Column Totals: <u>122</u> (A) <u>389</u> (B)
5.				Prevalence Index = B/A = 3.19
6				
7				Hydrophytic Vegetation Indicators:
8				1 - Rapid Test for Hydrophytic Vegetation
9				✓ 2 - Dominance Test is >50%
10	- <u> </u>			3 - Prevalence Index is ≤3.0 ¹
	2	= Total Cov	er	4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
Herb Stratum (Plot size: 5')	0.5		-40	Problematic Hydrophytic Vegetation ¹ (Explain)
1. Microstegium vimineum	25	yes	FAC	
2. Polygonum pensylvanicum	15	yes	FACW	¹ Indicators of hydric soil and wetland hydrology must
3. Festuca sp.	15	yes	FACU	be present, unless disturbed or problematic.
4. Ranunculus hispidus	10		FAC	Definitions of Four Vegetation Strata:
5				
6				Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of
7				height.
8				Sapling/Shrub – Woody plants, excluding vines, less
9				than 3 in. DBH and greater than 3.28 ft (1 m) tall.
10				
11				Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
12.	- <u> </u>			
	65	= Total Cov	er	Woody vine – All woody vines greater than 3.28 ft in
Woody Vine Stratum (Plot size: 30')				height.
1				
2				
3				
4				l
5				Hydrophytic Vegetation
6	- <u> </u>			Present? Yes No
	, <u> </u>	= Total Cov	er	
Remarks: (Include photo numbers here or on a separate s	sheet.)			
_ , , , , , , , , , , , , , , , , , , ,			_	

Feature is located in a concave depression that has been heavily disturbed (trampled) by cattle. Sapling and herb stratum's significantly impacted within sampling area.

Sampling Point: Wetland D - DP6

Profile Desc	ription: (Describe	to the de	pth needed to docu	ment the	indicator	or confirn	n the ab	sence of indicato	ors.)	
Depth	Matrix		Redo	ox Feature	es					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Text	ture	Remarks	
0-3	10YR 4/3	100					loam			
3-6	5Y 5/1	90	7.5YR 4/6	10	С	PL	loam			
6-8	5Y 5/1	100		_	-		loam			
8-12	5Y 6/2	90	7.5YR 4/6	10	С	PL	loam			
						<u> </u>		<u></u>		
	-						-			
	-									
					_	-				_
			-	_				·		
1			A. Dankarani Matria M				21 4:	- Di Bara Linia	NA NA-4	
Hydric Soil		pletion, RN	1=Reduced Matrix, M	IS=Maske	d Sand G	rains.	Locati	on: PL=Pore Linir Indicators for Pr		Iric Soils ³ :
=			D	- (07)					_	
Histosol			Dark Surfac Polyvalue B		200 (89) (MI DA 147	140\	2 cm Muck (A	A10) (MLRA 14	(1)
Black Hi	oipedon (A2)		Thin Dark S				, 140)	(MLRA 14		
	n Sulfide (A4)		Loamy Gley			147, 140)			n, 140) Iodplain Soils (I	=19)
	d Layers (A5)		✓ Depleted Ma		(-)			(MLRA 13		.0)
	ick (A10) (LRR N)		Redox Dark		F6)				Naterial (TF2)	
	d Below Dark Surfac	e (A11)	Depleted Da	ark Surface	e (F7)				Dark Surface	(TF12)
Thick Da	ark Surface (A12)		Redox Depr	essions (F	8)			Other (Explain	n in Remarks)	
	lucky Mineral (S1) (LRR N,	Iron-Mangar		ses (F12)	(LRR N,				
	147, 148)		MLRA 13	•				3		
	Gleyed Matrix (S4)		Umbric Surf				40\	³ Indicators of hy		
-	ledox (S5) Matrix (S6)		Piedmont FI	oodplain s	501IS (F19) (MLRA 14	48)		ology must be placed or problem	
	_ayer (if observed)							uniess distur	bed or problem	alic.
	-ayer (ii observed)	•								
Type:	-h \.						l localm	in Call Dunnant2	Yes ✓	Na
Depth (inc	cnes):						Hyar	ic Soil Present?	res <u> </u>	No
Remarks:										

Project/Site: Maney Farm Stream Mitigation Sit	e City/C	_{ounty:} Chatham		Sampling Date: 5/28/14		
Applicant/Owner: Wildlands Engineering		,	State: NC	Sampling Date: 5/28/14 Sampling Point: Upland D - DP7		
Investigator(s): Ian Eckardt and Win Taylor				<u> </u>		
Landform (hillslope, terrace, etc.): floodplain				Slone (%): 0		
Subragion (LBB or MLBA): MLRA 136	N 35.836272	Lange W 7	9.343252	Dotum:		
Subregion (LRR or MLRA): MLRA 136 L Soil Map Unit Name: Nanford-Badin complex, 6-	·10% slopes (NaC)	Long	NIMI alaasifia	Datum		
		,				
Are climatic / hydrologic conditions on the site typica						
Are Vegetation, Soil, or Hydrology				oresent? Yes No		
Are Vegetation, Soil, or Hydrology	naturally problema	itic? (If needed, e	explain any answe	rs in Remarks.)		
SUMMARY OF FINDINGS - Attach site	map showing sam	pling point location	ons, transects	, important features, etc.		
Hydrophytic Vogotation Propent?	No					
	No No/	Is the Sampled Area		🗸		
	No	within a Wetland?	Yes	No <u> </u>		
Remarks:						
Sampling point is representative of	f a non-iurisdictio	nal unland area	located in t	he floodolain of the		
	i a non jungaloud	mai upiana arca	iocatca iii ti	ne noodplain of the		
project site.						
HYDROLOGY						
Wetland Hydrology Indicators:			Secondary Indica	ators (minimum of two required)		
Primary Indicators (minimum of one is required; che	ack all that annly)					
			Surface Soil Cracks (B6) Sparsely Vegetated Concave Surface (B8)			
	True Aquatic Plants (IHydrogen Sulfide Odd		Sparsely veg			
	Oxidized Rhizosphere		Moss Trim L			
	Presence of Reduced			Water Table (C2)		
	Recent Iron Reduction		Crayfish Bur			
	Thin Muck Surface (C			isible on Aerial Imagery (C9)		
	 _ Other (Explain in Rem			tressed Plants (D1)		
Iron Deposits (B5)				Position (D2)		
Inundation Visible on Aerial Imagery (B7)			Shallow Aqu	itard (D3)		
✓ Water-Stained Leaves (B9)			Microtopogra	aphic Relief (D4)		
Aquatic Fauna (B13)			FAC-Neutral	Test (D5)		
Field Observations:						
	Depth (inches):					
Water Table Present? Yes No✓	Depth (inches):			,		
	Depth (inches):	Wetland H	lydrology Preser	nt? Yes <u> </u>		
(includes capillary fringe) Describe Recorded Data (stream gauge, monitoring	g well, aerial photos, pre	l vious inspections), if ava	ilable:			
		. ,				
Remarks:						

Sampling Point: Upland D - DP7

0.01	Absolute	Dominant		Dominance Test worksheet:				
<u>Tree Stratum</u> (Plot size: 30'		Species?		Number of Dominant Species				
1. Acer rubrum	40	yes	FAC	That Are OBL, FACW, or FAC: 3	(A)			
2. Ulmus americana	25	yes	FACW	Total Number of Dominant				
3				A	(B)			
4								
5.				Percent of Dominant Species That Are OBL, FACW, or FAC: 75%	(A/B)			
6.				That Ale OBE, I AOW, OI I AO.	(700)			
7				Prevalence Index worksheet:				
8	·			Total % Cover of: Multiply by:	_			
0	65	= Total Cov	or	OBL species x 1 =	_			
Sapling/Shrub Stratum (Plot size: 15')		- Total Cov	EI	FACW species x 2 =				
1 Fraxinus pennsylvanica	2	no	FACW	FAC species x 3 =				
2. Juniperus virginiana	1	no	FACU	FACU species x 4 =				
3. Symphoricarpos orbiculatus	1	no	FACU	UPL species x 5 =				
4 Ulmus americana	1	no	FACW	Column Totals: (A)				
··-	· —			Column Totals (A)	(0)			
5				Prevalence Index = B/A =				
6				Hydrophytic Vegetation Indicators:				
7	. ———			1 - Rapid Test for Hydrophytic Vegetation				
8				✓ 2 - Dominance Test is >50%				
9				3 - Prevalence Index is ≤3.0 ¹				
10				4 - Morphological Adaptations¹ (Provide supp	ortina			
51	5	= Total Cov	er	data in Remarks or on a separate sheet)	orung			
Herb Stratum (Plot size: 5')				Problematic Hydrophytic Vegetation¹ (Explain				
1. Microstegium vimineum	25	yes	FAC	i robiematio riyarophytic vegetation (Explain	''			
2. Festuca sp.	15	yes	FACU	The disease of headrings if you decorate and headre have a	4			
3. Ranunculus hispidus	5		FAC	 Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. 				
4				Definitions of Four Vegetation Strata:				
5.				Definitions of Four Vegetation Strata.				
6.				Tree – Woody plants, excluding vines, 3 in. (7.6 c				
7				more in diameter at breast height (DBH), regardle height.	ss of			
				Height.				
8				Sapling/Shrub – Woody plants, excluding vines,	less			
9				than 3 in. DBH and greater than 3.28 ft (1 m) tall.				
10				Herb – All herbaceous (non-woody) plants, regard	dless			
11				of size, and woody plants less than 3.28 ft tall.				
12				Woody vine – All woody vines greater than 3.28 f	ft in			
Manda Nina Charles (Diet sine, 30'	45	= Total Cov	er	height.				
Woody Vine Stratum (Plot size: 30') 1 Lonicera japonica	2	no	FAC					
		110	TAC					
2	. ———							
3								
4				Hydrophytic				
5				Vegetation				
6				Present? Yes No				
	2	= Total Cov	er					
Remarks: (Include photo numbers here or on a separate s	sheet)							
Tremands. (moldae prioto numbers here of on a separate c	incci.)							

Sampling Point: Upland D - DP7

Profile Des	cription: (Describe	to the de	pth needed to docu	ment the	indicator	or confirm	n the abse	ence of indicat	ors.)	
Depth	Matrix			x Feature		. 2				
(inches)	Color (moist)		Color (moist)	%	Type ¹	Loc ²	<u>Textur</u>	<u> </u>	Remarks	<u> </u>
0-3	2.5Y 4/3	100			_		loam			
3-12	2.5Y 5/3	90	5YR 4/6	10	<u>C</u>	PL	loam			
		_	·	-	_	-				
						-	-			
							-			
							-			
				_						
		_		_	_		-			
1 _{Tymor} C=C	`anapatration D=Day	alation DN	4-Dadusad Matrix M	C=Maaka	d Cond C		2l continu	. Di =Doro i ini	na M-Matrix	
	Indicators:	pietion, Ri	M=Reduced Matrix, M	S=Maske	d Sand Gi	ains.		: PL=Pore Lini		
Histoso			Dark Surface	(\$7)				_ 2 cm Muck (-
	pipedon (A2)		Polyvalue Be		ace (S8) (I	MLRA 147.		Coast Prairie		
	listic (A3)		Thin Dark S		. , .		, , _	(MLRA 14	•	,,
	en Sulfide (A4)		Loamy Gley			, ,		•	oodplain Soil	s (F19)
	d Layers (A5)		Depleted Ma					(MLRA 1		
2 cm M	uck (A10) (LRR N)		Redox Dark	Surface (F6)		_		Material (TF2	
	ed Below Dark Surface	ce (A11)	Depleted Da				_		v Dark Surfac	
	ark Surface (A12)		Redox Depr				_	_ Other (Expla	ain in Remark	s)
	Mucky Mineral (S1) (LRR N,	Iron-Mangar		ses (F12)	(LRR N,				
	A 147, 148) Gleyed Matrix (S4)		MLRA 13	-	(MI DA 1	36 122\		³ Indicators of h	vdrophytic ve	agetation and
	Redox (S5)		Piedmont Fl				48)		rology must b	-
	d Matrix (S6)		1 leathont 1	оочрын	30113 (1°10)	(INILITY I	10)		rbed or proble	
	Layer (if observed)):							<u> </u>	
Type:										
Depth (in	nches):						Hydric	Soil Present?	Yes	No _ ✓
Remarks:										

Project/Site: Maney Farm Stream Mitigation Site	City/County: Chat	ham		Sampling Date: 5/28/14			
Applicant/Owner: Wildlands Engineering	City/County: Chat		State: NC	Sampling Point: Wetland E - D			
Investigator(s): Ian Eckardt and Win Taylor				Camping Font.			
Landform (hillslope, terrace, etc.): floodplain				Slone (%): 0			
Subregion (LRR or MLRA): MLRA 136 Lat:							
Soil Map Unit Name: Cid-Lignum complex, 2-6% slopes (CmB) / Nanford-Badin complex 6-10	Long: <u>** /</u> % slones (Na	3C)	Datum:			
· · · · · · · · · · · · · · · · · · ·	,		<u>-</u>				
Are climatic / hydrologic conditions on the site typical fo	•						
Are Vegetation, Soil, or Hydrology	significantly disturbed?	Are "Normal	Circumstances" p	resent? Yes No 🗸			
Are Vegetation, Soil, or Hydrology	naturally problematic? (If needed, e	xplain any answe	rs in Remarks.)			
SUMMARY OF FINDINGS - Attach site m	ap showing sampling poi	nt locatio	ns, transects	, important features, etc			
Hydrophytic Vegetation Present? Yes ✓	No Is the Same						
	- NO Is the Samp		Vos ✓	No			
	No	tuanu :	163	NO			
Remarks:	1						
Cattle have access to the sampling I at the sampling point.	ocation and have distu	bed/trai	npied much	of the surface area			
HYDROLOGY							
Wetland Hydrology Indicators:			Secondary Indica	tors (minimum of two required)			
Primary Indicators (minimum of one is required; check	all that apply)		Surface Soil Cracks (B6)				
	True Aquatic Plants (B14)			getated Concave Surface (B8)			
	Hydrogen Sulfide Odor (C1)		Drainage Pat				
	Oxidized Rhizospheres on Living F	Roots (C3)	Moss Trim Li				
	Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled So	ils (C6)	Crayfish Burr	Water Table (C2)			
	Thin Muck Surface (C7)	110 (00)	-	sible on Aerial Imagery (C9)			
	Other (Explain in Remarks)			tressed Plants (D1)			
Iron Deposits (B5)			Geomorphic	Position (D2)			
Inundation Visible on Aerial Imagery (B7)			Shallow Aqui	tard (D3)			
Water-Stained Leaves (B9)			Microtopogra	phic Relief (D4)			
Aquatic Fauna (B13)	_		FAC-Neutral	Test (D5)			
Field Observations:	10						
Surface Water Present? Yes No							
Water Table Present? Yes ✓ No		M/-41111		40 V V.			
Saturation Present? Yes No	Depth (inches): 0-12	Wetland H	ydrology Presen	t? Yes <u>Y</u> No			
Describe Recorded Data (stream gauge, monitoring w	rell, aerial photos, previous inspect	ions), if avai	lable:				
Remarks:							
Remarks.							

Sampling Point: Wetland E - DP8

	Absolute			Dominance Test worksheet:			
<u>Tree Stratum</u> (Plot size: <u>30'</u>)		Species?		Number of Dominant Species			
1. Quercus phellos		yes	FAC	That Are OBL, FACW, or FAC: $\frac{3}{}$ (A)			
2. Fraxinus pennsylvanica		yes	FACW	Total Number of Dominant			
3				Species Across All Strata: 4 (B)			
4				Percent of Dominant Species			
5				That Are OBL, FACW, or FAC: 75% (A/B)			
6				Prevalence Index worksheet:			
7				Total % Cover of: Multiply by:			
8	0.0			OBL species x 1 =			
Sapling/Shrub Stratum (Plot size: 15')	30	= Total Cov	er	FACW species x 2 =			
				FAC species x 3 =			
1				FACU species x 4 =			
2				UPL species x 5 =			
3				Column Totals: (A) (B)			
4				Coldinii Totals (A) (B)			
5				Prevalence Index = B/A =			
6				Hydrophytic Vegetation Indicators:			
7				1 - Rapid Test for Hydrophytic Vegetation			
8				✓ 2 - Dominance Test is >50%			
9				3 - Prevalence Index is ≤3.0 ¹			
10		= Total Cov	er	4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)			
Herb Stratum (Plot size: 5')			E4011	Problematic Hydrophytic Vegetation ¹ (Explain)			
1. Festuca sp.	55	yes	FACU				
2. Carex lurida		yes	OBL	¹ Indicators of hydric soil and wetland hydrology must			
3. Juncus effusus	_ 10	no	FACW	 be present, unless disturbed or problematic. 			
4. Ranunculus hispidus	_ 5	no	FAC	Definitions of Four Vegetation Strata:			
5. Polygonum pensylvanicum		no	FACW	Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or			
6				more in diameter at breast height (DBH), regardless of			
7				height.			
8				Sapling/Shrub – Woody plants, excluding vines, less			
9				than 3 in. DBH and greater than 3.28 ft (1 m) tall.			
10				Herb – All herbaceous (non-woody) plants, regardless			
11				of size, and woody plants less than 3.28 ft tall.			
12							
W 1 V: 01 4 (D) 4 : 30'	100	= Total Cov	er	Woody vine – All woody vines greater than 3.28 ft in height.			
Woody Vine Stratum (Plot size: 30')				- 3			
1							
2							
3							
4				Hydrophytic			
5				Vocatation			
6				Present? Yes No			
		= Total Cov	er				
Remarks: (Include photo numbers here or on a separate	sheet.)						
Feature is located in a seen area that	hae haar	dieturh	ad (trai	mnled) by cattle Sanling and herb			

Feature is located in a seep area that has been disturbed (trampled) by cattle. Sapling and herb stratum's significantly impacted within sampling area.

Sampling Point: Wetland E - DP8

1-7 5Y 3/1 98 10YR 4/6 2 C PL silt loam	Depth (inches)	Matrix Color (moist)	%	Color (moist)	ox Feature %	es Type ¹	Loc ²	Texture	e Remarks
Fype: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. PL=Pore Lining, M=Matrix.	(inches) 0-1			Color (IIIOISt)		_ гуре	LUC		REMAIKS
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Figure	1-7		98	10YR 4/6	2	С	PI		
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Figure Soil Indicators: Indicators for Problematic Hydric Soil Mistic Epipedon (A2) Polyvalue Below Surface (S8) (MLRA 147, 148) Coast Prairie Redox (A16) (MLRA 147)		-				-	· 		<u> </u>
Indicators for Problematic Hydric Soil Histosol (A1)	7-12	31 3/2	_ = ===================================	311 4/0			<u></u>	IUaiii	
Indicators for Problematic Hydric Soil Histosol (A1)		<u> </u>				<u> </u>			
ydric Soil Indicators: Histosol (A1) Dark Surface (S7) Histic Epipedon (A2) Polyvalue Below Surface (S8) (MLRA 147, 148) Black Histic (A3) Thin Dark Surface (S9) (MLRA 147, 148) Hydrogen Sulfide (A4) Stratified Layers (A5) Depleted Matrix (F2) Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Depth (inches): Depth (inches): Depth (inches): Dark Surface (S7) Dark Surface (S8) (MLRA 147, 148) Loamy Gleyed Matrix (F2) Depleted Selow Surface (A14, 148) Mura 147, 148) Depleted Matrix (F3) Redox Dark Surface (F6) Depleted Dark Surface (F7) Redox Depressions (F8) Iron-Manganese Masses (F12) (LRR N, MLRA 136, 122) Piedmont Floodplain Soils (F19) (MLRA 148) Wetland hydrology must be present, unless disturbed or problematic. Hydric Soil Present? Yes ✓ No		_							
ydric Soil Indicators: Histosol (A1) Dark Surface (S7) Polyvalue Below Surface (S8) (MLRA 147, 148) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Depleted Matrix (S6) Depleted Matrix (F3) MLRA 136, 122) Piedmont Floodplain Soils (F19) (MLRA 136, 147) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) **Indicators for Problematic Hydric Soils* (MLRA 147, 148) (MLRA 147, 148) Piedmont Floodplain Soils (F19) (MLRA 136, 147) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) **Indicators of hydrophytic vegetation ar wetland hydrology must be present, unless disturbed or problematic. **estrictive Layer (if observed):** Type: Depth (inches): Hydric Soil Present? Yes No No **No Hydric Soil Present? Yes No No **No **No				·		_			
ydric Soil Indicators: Histosol (A1) Dark Surface (S7) Polyvalue Below Surface (S8) (MLRA 147, 148) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Depleted Matrix (S6) Depleted Matrix (F3) MLRA 136, 122) Piedmont Floodplain Soils (F19) (MLRA 136, 147) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) **Indicators for Problematic Hydric Soils* (MLRA 147, 148) (MLRA 147, 148) Piedmont Floodplain Soils (F19) (MLRA 136, 147) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) **Indicators of hydrophytic vegetation ar wetland hydrology must be present, unless disturbed or problematic. **estrictive Layer (if observed):** Type: Depth (inches): Hydric Soil Present? Yes No No **No Hydric Soil Present? Yes No No **No **No									
ydric Soil Indicators: Histosol (A1) Dark Surface (S7) Polyvalue Below Surface (S8) (MLRA 147, 148) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Depleted Matrix (S6) Depleted Matrix (F3) MLRA 136, 122) Piedmont Floodplain Soils (F19) (MLRA 136, 147) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) **Indicators for Problematic Hydric Soils* (MLRA 147, 148) (MLRA 147, 148) Piedmont Floodplain Soils (F19) (MLRA 136, 147) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) **Indicators of hydrophytic vegetation ar wetland hydrology must be present, unless disturbed or problematic. **estrictive Layer (if observed):** Type: Depth (inches): Hydric Soil Present? Yes No No **No Hydric Soil Present? Yes No No **No **No									
ydric Soil Indicators: Histosol (A1) Dark Surface (S7) Polyvalue Below Surface (S8) (MLRA 147, 148) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Depleted Matrix (S6) Depleted Matrix (F3) MLRA 136, 122) Piedmont Floodplain Soils (F19) (MLRA 136, 147) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) **Indicators for Problematic Hydric Soils* (MLRA 147, 148) (MLRA 147, 148) Piedmont Floodplain Soils (F19) (MLRA 136, 147) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) **Indicators of hydrophytic vegetation ar wetland hydrology must be present, unless disturbed or problematic. **estrictive Layer (if observed):** Type: Depth (inches): Hydric Soil Present? Yes No No **No Hydric Soil Present? Yes No No **No **No			_		_				
ydric Soil Indicators: Histosol (A1) Dark Surface (S7) Polyvalue Below Surface (S8) (MLRA 147, 148) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Depleted Matrix (S6) Depleted Matrix (F3) MLRA 136, 122) Piedmont Floodplain Soils (F19) (MLRA 136, 147) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) **Indicators for Problematic Hydric Soils* (MLRA 147, 148) (MLRA 147, 148) Piedmont Floodplain Soils (F19) (MLRA 136, 147) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) **Indicators of hydrophytic vegetation ar wetland hydrology must be present, unless disturbed or problematic. **estrictive Layer (if observed):** Type: Depth (inches): Hydric Soil Present? Yes No No **No Hydric Soil Present? Yes No No **No **No		- -				-	· 	-	
ydric Soil Indicators: Histosol (A1) Dark Surface (S7) Histic Epipedon (A2) Polyvalue Below Surface (S8) (MLRA 147, 148) Black Histic (A3) Thin Dark Surface (S9) (MLRA 147, 148) Hydrogen Sulfide (A4) Stratified Layers (A5) Depleted Matrix (F2) Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Depleted Matrix (F3) MLRA 136, 147) Redox Dark Surface (F7) Depleted Dark Surface (F7) Depleted Dark Surface (F8) MLRA 136, 147) Depleted Dark Surface (F7) Depleted Dark Surface (F7) MLRA 147, 148) MLRA 147, 148) Sandy Mucky Mineral (S1) (LRR N, MLRA 136) Sandy Redox (S5) Stripped Matrix (S4) Stripped Matrix (S6) Estrictive Layer (if observed): Type: Depth (inches): Hydric Soil Present? Yes No No	- 0 (2, ,,	
Histosol (A1)			pletion, RN	/I=Reduced Matrix, M	IS=Maske	d Sand G	ains.		
Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) estrictive Layer (if observed): Type: Depth (inches): Hydrogen Sulfide (A4) Thin Dark Surface (S9) (MLRA 147, 148) Coast Prairie Redox (A16) (MLRA 147, 148) (MLRA 147, 148) Piedmont Floodplain Soils (F19) (MLRA 136, 147) Redox Dark Surface (F6) Depleted Dark Surface (F7) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) Iron-Manganese Masses (F12) (LRR N, MLRA 136, 122) Piedmont Floodplain Soils (F19) (MLRA 148) Wetland hydrology must be present, unless disturbed or problematic. Hydric Soil Present? Yes ✓ No	-			Dark Surfac	e (S7)			•••	
					. ,	ace (S8) (I	VILRA 147	. 148) —	
Stratified Layers (A5)								. , _	
_ 2 cm Muck (A10) (LRR N)						(F2)		_	
_ Depleted Below Dark Surface (A11) Depleted Dark Surface (F7) Very Shallow Dark Surface (TF12) Thick Dark Surface (A12) Redox Depressions (F8) Other (Explain in Remarks) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Iron-Manganese Masses (F12) (LRR N, MLRA 136) Sandy Gleyed Matrix (S4) Umbric Surface (F13) (MLRA 136, 122) 3Indicators of hydrophytic vegetation ar wetland hydrology must be present, unless disturbed or problematic. Petrictive Layer (if observed): Type: Depth (inches): Hydric Soil Present? Yes No					. ,				
Thick Dark Surface (A12)			oo (A11)		,	,		_	
Sandy Mucky Mineral (S1) (LRR N,			ce (ATT)					_	
MLRA 147, 148) _ Sandy Gleyed Matrix (S4) _ Sandy Redox (S5) _ Stripped Matrix (S6) estrictive Layer (if observed): Type: _ Depth (inches): _ MLRA 136) _ Umbric Surface (F13) (MLRA 136, 122) _ Piedmont Floodplain Soils (F19) (MLRA 148) _ wetland hydrology must be present, unless disturbed or problematic. Hydric Soil Present? Yes ✓ No			LRR N,				(LRR N,		
Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 148) wetland hydrology must be present, unless disturbed or problematic. estrictive Layer (if observed): Type: Depth (inches): Hydric Soil Present? Yes✓ No	-					, ,	•		
Stripped Matrix (S6) unless disturbed or problematic. estrictive Layer (if observed): Type: Depth (inches): Hydric Soil Present? Yes ✓ No									Indicators of hydrophytic vegetation and
estrictive Layer (if observed): Type: Depth (inches): Hydric Soil Present? Yes ✓ No	-			Piedmont FI	oodplain	Soils (F19	(MLRA 1	48)	
Type:			<u>. </u>					1	unless disturbed or problematic.
Depth (inches): Hydric Soil Present? Yes ✓ No	esuicuve	Lavel III observed	١٠						
emairs:	Туре:							Hydric	Soil Brosont? Vos V
	Type: Depth (in			<u> </u>				Hydric	Soil Present? Yes <u>√</u> No
	Type: Depth (ii							Hydric s	Soil Present? Yes <u>√</u> No
	Type: Depth (ii							Hydric	Soil Present? Yes <u>√</u> No
	Type: Depth (ii							Hydric s	Soil Present? Yes <u>√</u> No
	Type: Depth (ii							Hydric 9	Soil Present? Yes <u>√</u> No <u></u>
	Type: Depth (ii							Hydric	Soil Present? Yes <u>√</u> No
	Type: Depth (ii							Hydric s	Soil Present? Yes <u>√</u> No <u></u>
	Type: Depth (ii							Hydric S	Soil Present? Yes <u>√</u> No <u></u>
	Type: Depth (in							Hydric :	Soil Present? Yes <u>√</u> No <u></u>
	Type: Depth (ii							Hydric s	Soil Present? Yes <u>√</u> No <u></u>
	Type: Depth (ii							Hydric s	Soil Present? Yes <u>√</u> No
	Type: Depth (ii							Hydric S	Soil Present? Yes <u>√</u> No
	Type: Depth (ii							Hydric 3	Soil Present? Yes <u>√</u> No
	Type: Depth (ii							Hydric	Soil Present? Yes <u>√</u> No
	Type: Depth (ii							Hydric	Soil Present? Yes <u>√</u> No
	Type: Depth (ii							Hydric	Soil Present? Yes <u>√</u> No
	Type: Depth (ii							Hydric	Soil Present? Yes ✓ No
	Type: Depth (ii							Hydric	Soil Present? Yes ✓ No
	Type: Depth (ii							Hydric	Soil Present? Yes ✓ No
	Type: Depth (ii							Hydric	Soil Present? Yes ✓ No
	Type: Depth (ii							Hydric	Soil Present? Yes ✓ No
	Type: Depth (in							Hydric	Soil Present? Yes ✓ No

Project/Site: Maney Farm Stream Mitigation Site	City/County: Chatham		Sampling Date: 5/28/14		
Applicant/Owner: Wildlands Engineering			Sampling Point: Upland E - DP9		
Investigator(s): Ian Eckardt and Win Taylor					
Landform (hillslope, terrace, etc.): floodplain			Slope (%): 0		
Subregion (LRR or MLRA): MLRA 136 Lat: N 35.	336325 Long: W	/ 79.3 <mark>42763</mark>	Datum:		
Soil Map Unit Name: Nanford-Badin complex, 6-10% slo	pes (NaC)	NWI classifica	ition:		
Are climatic / hydrologic conditions on the site typical for this til					
Are Vegetation, Soil, or Hydrology sign	ificantly disturbed? Are "Norm	nal Circumstances" pr	esent? Yes No _		
Are Vegetation, Soil, or Hydrology natu	rally problematic? (If needed	d, explain any answers	s in Remarks.)		
SUMMARY OF FINDINGS - Attach site map sh	owing sampling point locat	tions, transects,	important features, etc.		
Hydrophytic Vegetation Present? Yes No Hydric Soil Present? Yes No Wetland Hydrology Present? Yes No Remarks:	within a Wetland?	a Yes	_ No <u> </u>		
Sampling point is representative of a non project site.	-jurisdictional upland are	ea located in th	e floodplain of the		
HYDROLOGY					
Wetland Hydrology Indicators:		Secondary Indicat	ors (minimum of two required)		
Primary Indicators (minimum of one is required; check all that	apply)	Surface Soil C			
Surface Water (A1) True A	quatic Plants (B14)	Sparsely Vegetated Concave Surface (B8)			
	en Sulfide Odor (C1)	Drainage Patterns (B10)			
	d Rhizospheres on Living Roots (C3				
	ce of Reduced Iron (C4)	Dry-Season Water Table (C2)			
	Iron Reduction in Tilled Soils (C6)	Crayfish Burro			
	uck Surface (C7)		ible on Aerial Imagery (C9)		
	Explain in Remarks)		ressed Plants (D1)		
Iron Deposits (B5)		Geomorphic F	· · ·		
Inundation Visible on Aerial Imagery (B7)		Shallow Aquit			
Water-Stained Leaves (B9)		Microtopograp	phic Relief (D4)		
Aquatic Fauna (B13)	1	FAC-Neutral	Test (D5)		
Field Observations: Surface Water Present? Yes No ✓ Depth	(inches):				
		d Handwala an i Dua a and	? Yes No✓		
Saturation Present? Yes No✓ Depth (includes capillary fringe)	(inches): Wetiand	d Hydrology Present	? Yes No		
Describe Recorded Data (stream gauge, monitoring well, aer	al photos, previous inspections), if a	vailable:			
Remarks:					

Sampling Point: Upland E - DP9

221	Absolute	Dominant		Dominance Test worksheet:	
<u>Tree Stratum</u> (Plot size: 30')		Species?		Number of Dominant Species	
1. Fraxinus pennsylvanica	40	yes	FACW	That Are OBL, FACW, or FAC: $\frac{1}{2}$	۹)
2				Total Number of Dominant	
3				Species Across All Strata: 2 (E	3)
4					,
5.				Percent of Dominant Species That Are OBL, FACW, or FAC: 50%	4/B)
6.				That Are OBL, FACW, or FAC.	√ (D)
				Prevalence Index worksheet:	
7			-	Total % Cover of: Multiply by:	
8	40			OBL species $0 \times 1 = 0$	
Sapling/Shrub Stratum (Plot size: 15')	40	= Total Cov	/er	FACW species $\frac{40}{40}$ x 2 = $\frac{80}{40}$	
				FAC species 10 $\times 3 = 30$	
1				FACU species $\frac{75}{}$ x 4 = $\frac{300}{}$	
2.					
3					(D)
4				Column Totals: 125 (A) 410	(B)
5				Prevalence Index = B/A = 3.28	
6				Hydrophytic Vegetation Indicators:	
7					
8				1 - Rapid Test for Hydrophytic Vegetation	
9				2 - Dominance Test is >50%	
10.				3 - Prevalence Index is ≤3.0 ¹	
		= Total Cov	/er	4 - Morphological Adaptations¹ (Provide suppo	rting
Herb Stratum (Plot size: 5')		10101 001		data in Remarks or on a separate sheet)	
1. Festuca sp.	60	yes	FACU	Problematic Hydrophytic Vegetation ¹ (Explain)	
2. Trifolium repens	15	no	FACU		
Ranunculus hispidus	5	no	FAC	¹ Indicators of hydric soil and wetland hydrology mus	st
4 Rumex crispus	5	no	FAC	be present, unless disturbed or problematic.	
¬				Definitions of Four Vegetation Strata:	
5				Tree – Woody plants, excluding vines, 3 in. (7.6 cm	ı) or
6				more in diameter at breast height (DBH), regardless	
7				height.	
8				Sapling/Shrub – Woody plants, excluding vines, le	ess
9				than 3 in. DBH and greater than 3.28 ft (1 m) tall.	
10				Harb All harbassaus (non woody) plants, regardly	000
11				Herb – All herbaceous (non-woody) plants, regardle of size, and woody plants less than 3.28 ft tall.	255
12					
	85	= Total Cov	/er	Woody vine – All woody vines greater than 3.28 ft	in
Woody Vine Stratum (Plot size: 30')				height.	
1					
2					
3					
4					
5.				Hydrophytic	
6				Vegetation Present? Yes No	
· .		= Total Cov	/or		
Deposition (Include abote growthere house or an account		- 10tal C01	/ CI		
Remarks: (Include photo numbers here or on a separate	sneet.)				

Sampling Point: Upland E - DP9

Profile Desc	ription: (Describe	to the dep	oth needed to docu	ment the	indicator	or confirm	the ab	sence of indica	tors.)	
Depth	Matrix		Redo	ox Feature	es					
(inches)	Color (moist)	<u>%</u>	Color (moist)	%	Type ¹	Loc ²		ture	Remarks	
0-12	10YR 6/4	90	7.5YR 4/6	10	С	PL	loam			
				_						
					_					
						- ——	-			
	-		-							
			-			- ——	-			
	oncentration, D=Dep	letion, RM	=Reduced Matrix, M	IS=Maske	d Sand G	rains.	² Locati	on: PL=Pore Lin		
Hydric Soil I	Indicators:							Indicators for F	Problematic Hy	dric Soils':
Histosol			Dark Surfac	. ,					(A10) (MLRA 1	47)
	pipedon (A2)		Polyvalue B		. , .		148)		e Redox (A16)	
Black Hi			Thin Dark S	•	, .	147, 148)		(MLRA 1		
	n Sulfide (A4)		Loamy Gley		(F2)				loodplain Soils	(F19)
	d Layers (A5) ick (A10) (LRR N)		Depleted Ma		E6)			(MLRA 1		
	d Below Dark Surfac	- (Δ11)	Redox Dark Depleted Da						Material (TF2) w Dark Surface	(TF12)
	ark Surface (A12)	C (A11)	Redox Depr						ain in Remarks	
	lucky Mineral (S1) (I	LRR N.	Iron-Mangar			(LRR N.		Other (Exp.	animirtomanto	,
	\ 147, 148)	,	MLRA 1		()	(=::::,				
	Gleyed Matrix (S4)		Umbric Surf	•	(MLRA 1	36, 122)		³ Indicators of	hydrophytic veg	etation and
	Redox (S5)		Piedmont FI				I 8)		drology must be	
	Matrix (S6)							-	irbed or probler	
Restrictive I	_ayer (if observed)									
Type:										
Depth (inc	ches):						Hydr	ic Soil Present?	Yes	No <u> </u>
Remarks:							1			

Project/Site: Maney Farm Stream Mitigation Site	City/County: Chathai	m	Sampling Date: 5/28/14				
Applicant/Owner: Wildlands Engineering	City/County: Chathar	State: NC	Sampling Point: Wetland F - DP10				
Investigator(s): Ian Eckardt and Win Taylor			Gamping Forms				
Landform (hillslope, terrace, etc.): floodplain			Slone (%). 0				
Subregion (LRR or MLRA): MLRA 136 Lat:	N 35.836573	W 79.343145	Slope (70)				
Soil Map Unit Name: Cid-Lignum complex, 2-6% sl	opes (CmB)	Ig. NIA/I alaasifi	Datum				
Are climatic / hydrologic conditions on the site typical fo			/				
Are Vegetation, Soil, or Hydrology			present? Yes No <u>▼</u>				
Are Vegetation, Soil, or Hydrology	naturally problematic? (If n	eeded, explain any answe	ers in Remarks.)				
SUMMARY OF FINDINGS - Attach site m	ap showing sampling point	locations, transects	s, important features, etc.				
Hydric Soil Present? Yes <u>✓</u>	No Is the Sampler within a Wetla	d Area nd? Yes <u>√</u>	No				
Sampling point located in floodplain and have disturbed/trampled much o	•		he sampling location				
HYDROLOGY		Casandan India	atawa (mainina uma af tura manuina di				
Wetland Hydrology Indicators:	all that apply)		ators (minimum of two required)				
Primary Indicators (minimum of one is required; check			Surface Soil Cracks (B6) Sparsely Vegetated Concave Surface (B8)				
	True Aquatic Plants (B14) Hydrogen Sulfide Odor (C1)	Sparsery ve Drainage Pa					
	Oxidized Rhizospheres on Living Roo						
	Presence of Reduced Iron (C4)		Moss Trim Lines (B16) Dry-Season Water Table (C2)				
	Recent Iron Reduction in Tilled Soils (
	Thin Muck Surface (C7)		isible on Aerial Imagery (C9)				
Algal Mat or Crust (B4)	Other (Explain in Remarks)	Stunted or S	Stressed Plants (D1)				
Iron Deposits (B5)		✓ Geomorphic	Position (D2)				
Inundation Visible on Aerial Imagery (B7)		Shallow Aqu					
✓ Water-Stained Leaves (B9)			aphic Relief (D4)				
Aquatic Fauna (B13)		FAC-Neutra	T Test (D5)				
Field Observations: Surface Water Present? Yes No ✓	Depth (inches):						
	Depth (inches):						
		etland Hydrology Prese	nt? Yes ✓ No				
(includes capillary fringe)			iit: TesNO				
Describe Recorded Data (stream gauge, monitoring w	ell, aerial photos, previous inspections	s), if available:					
Damarka							
Remarks:							

Sampling Point: Wetland F - DP10

· · · · · · · · · · · · · · · · · · ·	Absolute	Dominant		Dominance Test worksheet:			
<u>Tree Stratum</u> (Plot size: 30'		Species?		Number of Dominant Species			
1. Ulmus americana	65	yes	FACW	That Are OBL, FACW, or FAC: 2 (A)			
2. Fraxinus pennsylvanica	15	no	FACW	Total Number of Dominant			
3. Acer rubrum	_ 2	no	FAC	Species Across All Strata: 3 (B)			
4				Percent of Dominant Species			
5				That Are OBL, FACW, or FAC: 66% (A/B)			
6				Prevalence Index worksheet:			
7				Total % Cover of: Multiply by:			
8	00			OBL species x 1 =			
Sapling/Shrub Stratum (Plot size: 15')	82	= Total Cov	er	FACW species x 2 =			
1. Rosa multiflora	10	yes	FACU	FAC species x 3 =			
2.				FACU species x 4 =			
3				UPL species x 5 =			
4				Column Totals: (A) (B)			
5				(-)			
6.				Prevalence Index = B/A =			
				Hydrophytic Vegetation Indicators:			
7				1 - Rapid Test for Hydrophytic Vegetation			
				✓ 2 - Dominance Test is >50%			
9				3 - Prevalence Index is ≤3.0 ¹			
10	10	- Total Cov		4 - Morphological Adaptations ¹ (Provide supporting			
Herb Stratum (Plot size: 5')		= Total Cov	ei	data in Remarks or on a separate sheet)			
1. Microstegium vimineum	5	yes	FAC	Problematic Hydrophytic Vegetation ¹ (Explain)			
2. Polygonum pensylvanicum	2	no	FACW				
3.				 Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. 			
4.				Definitions of Four Vegetation Strata:			
5				Deminions of Four Vegetation Strata.			
6				Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or			
7.				more in diameter at breast height (DBH), regardless of height.			
8				One line of Ohere her Wander and a section of the s			
9				Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.			
10							
11				Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.			
12							
Woody Vine Stratum (Plot size: ³⁰ ')	7	= Total Cov	er	Woody vine – All woody vines greater than 3.28 ft in height.			
1							
2.							
3.							
4							
5.				Hydrophytic			
6				Vegetation Present? Yes No			
o		= Total Cov	er	135			
Remarks: (Include photo numbers here or on a separate		10101 001					
· · ·	,	4 1 1		والمعالم والم والمعالم والمعالم والمعالم والمعالم والمعالم والمعالم والمعال			
Feature is located in a concave depres	ssion tha	ι nas be	en nea	iviiv disturbed (trambled) by cattle.			

Feature is located in a concave depression that has been heavily disturbed (trampled) by cattle. Sapling and herb stratum's significantly impacted within sampling area.

Sampling Point: Wetland F - DP10

Profile Desc	ription: (Describe	to the de	oth needed to docu	ment the	indicator	or confirm	the ab	sence of indicato	ors.)	
Depth	Matrix		Redo	ox Feature	es					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Text	ture	Remarks	
0-4	5Y 5/2	90	7.5YR 4/6	10	С	PL	loam			
4-12	10YR 6/8	100					loam			_
			-							
	-			_	_					
	-		-							_
	-									
					_					
						·				_
			-							_
				_	_					
		letion, RM	I=Reduced Matrix, M	IS=Maske	d Sand G	rains.	² Locati	on: PL=Pore Linir		2
Hydric Soil I	ndicators:							Indicators for Pr	roblematic Hyd	dric Soils³:
Histosol			Dark Surfac						A10) (MLRA 14	7)
Histic Ep	pipedon (A2)		Polyvalue B				148)	Coast Prairie	Redox (A16)	
Black Hi			Thin Dark S			147, 148)		(MLRA 14		
	n Sulfide (A4)		Loamy Gley		(F2)				oodplain Soils (l	F19)
	Layers (A5)		✓ Depleted Ma					(MLRA 13		
	ck (A10) (LRR N)	(8.4.4)	Redox Dark	,	,				Material (TF2)	(TE40)
	d Below Dark Surfac	e (A11)	Depleted Da		. ,			-	Dark Surface	(TF12)
	ark Surface (A12)	DD N	Redox Depr Iron-Mangar			(I DD N		Other (Expla	in in Remarks)	
	lucky Mineral (S1) (l \ 147, 148)	LKK N,	MLRA 1		ses (F12)	(LKK N,				
	Sleyed Matrix (S4)		Umbric Surf	•	(MIRA 1	36 122)		³ Indicators of h	vdronhytic vege	etation and
	ledox (S5)		Piedmont FI				l8)		ology must be i	
	Matrix (S6)		1 100111011(11	оочрічні	30110 (1 10	, (_	,	-	bed or problem	
	_ayer (if observed)	!						4000 4.014.	200 0. p.00.0	<u> </u>
Type:	,									
	ches):						Hydr	ic Soil Present?	Yes ✓	No
	Jiles)						пуш	ic 30ii Fleseiit!	165	140
Remarks:										

Project/Site: Maney Farm Stream Mitigation Site	City/County: Chatham		Sampling Date: 5/28/14			
Applicant/Owner: Wildlands Engineering	City/County: Chatham	State: NC	Sampling Point: Upland F - DP11			
Investigator(s): Ian Eckardt and Win Taylor			<u> </u>			
Landform (hillslope, terrace, etc.): floodplain			Slone (%): 0			
Subregion (LRR or MLRA): MLRA 136 Lat:						
Soil Map Unit Name: Cid-Lignum complex, 2-6% sli	opes (CmB)	NIVA/I alaasifi	Datum			
	,					
Are climatic / hydrologic conditions on the site typical for			1			
Are Vegetation, Soil, or Hydrology			present? Yes No			
Are Vegetation, Soil, or Hydrology	naturally problematic? (If need	ed, explain any answe	ers in Remarks.)			
SUMMARY OF FINDINGS - Attach site ma	ap showing sampling point loc	ations, transects	s, important features, etc.			
Hydrophytic Vegetation Present? Yes✓	No Is the Sampled Ar					
	No Is the Sampled Ar within a Wetland?	ea Yes	No <u> </u>			
Wetland Hydrology Present? Yes	No <u>✓</u>	163				
Remarks:						
Sampling point is representative of a project site.	non-junsaictional upland al	rea located in t	ne noodplain of the			
HYDROLOGY						
Wetland Hydrology Indicators:		Secondary Indic	ators (minimum of two required)			
Primary Indicators (minimum of one is required; check	all that apply)	Surface Soi				
	Γrue Aquatic Plants (B14)		Sparsely Vegetated Concave Surface (B8)			
	Hydrogen Sulfide Odor (C1)		atterns (B10)			
	Oxidized Rhizospheres on Living Roots (C		Moss Trim Lines (B16)			
	Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soils (C6)		Dry-Season Water Table (C2) Crayfish Burrows (C8)			
	Thin Muck Surface (C7)		/isible on Aerial Imagery (C9)			
	Other (Explain in Remarks)		Stressed Plants (D1)			
Iron Deposits (B5)	,		Position (D2)			
Inundation Visible on Aerial Imagery (B7)		Shallow Aqu				
Water-Stained Leaves (B9)		Microtopogr	aphic Relief (D4)			
Aquatic Fauna (B13)		FAC-Neutra	l Test (D5)			
Field Observations:						
	Depth (inches):					
	Depth (inches):		./			
Saturation Present? Yes No (includes capillary fringe)	Depth (inches): Wetla	nd Hydrology Prese	nt? Yes <u>*</u> No			
Describe Recorded Data (stream gauge, monitoring we	ell, aerial photos, previous inspections), if	f available:				
Remarks:						

Sampling Point: Upland F - DP11

001	Absolute	Dominant		Dominance Test worksheet:				
<u>Tree Stratum</u> (Plot size: 30'		Species?		Number of Dominant Species				
1. Ulmus americana	75	yes	FACW	That Are OBL, FACW, or FAC: 2	(A)			
2				Total Number of Deminent				
3				Total Number of Dominant Species Across All Strata: 2 ((B)			
4.					(-)			
5				Percent of Dominant Species That Are OBL FACW or FAC: 100%	(A (D)			
				That Are OBL, FACW, or FAC: 100%	(A/B)			
6				Prevalence Index worksheet:				
7			-	Total % Cover of: Multiply by:				
8				OBL species x 1 =				
Continue/Church Charterne / Plat since 15'	75	= Total Cov	er					
Sapling/Shrub Stratum (Plot size: 15')				FACW species x 2 =				
1				FAC species x 3 =				
2				FACU species x 4 =				
3	- 			UPL species x 5 =				
4				Column Totals: (A)	(B)			
5				December on Indian DIA				
6				Prevalence Index = B/A =				
7				Hydrophytic Vegetation Indicators:				
8.				1 - Rapid Test for Hydrophytic Vegetation				
				✓ 2 - Dominance Test is >50%				
9				3 - Prevalence Index is ≤3.0 ¹				
10				4 - Morphological Adaptations ¹ (Provide suppo	orting			
Herb Stratum (Plot size: 5')		= Total Cov	er	data in Remarks or on a separate sheet)	_			
1 Microstegium vimineum	65	yes	FAC	Problematic Hydrophytic Vegetation ¹ (Explain))			
2 Fragaria virginiana	2	no	FACU					
2. Polygonum pensylvanicum	2		FACW	¹ Indicators of hydric soil and wetland hydrology mu	ust			
••	- —	no		be present, unless disturbed or problematic.				
4	- 			Definitions of Four Vegetation Strata:				
5				- w	,			
6				Tree – Woody plants, excluding vines, 3 in. (7.6 cr more in diameter at breast height (DBH), regardles				
7				height.	30 01			
8								
9.				Sapling/Shrub – Woody plants, excluding vines, lethan 3 in. DBH and greater than 3.28 ft (1 m) tall.	ess			
10				than o in. BBT and greater than 0.20 it (1 iii) tail.				
11.				Herb – All herbaceous (non-woody) plants, regard	less			
12.				of size, and woody plants less than 3.28 ft tall.				
12.	69			Woody vine – All woody vines greater than 3.28 ff	t in			
Woody Vine Stratum (Plot size: 30')		= Total Cov	ei	height.				
1								
	- ——							
2.								
3.			-					
4				Hydrophytic				
5	- 			Vegetation				
6				Present? Yes No				
		= Total Cov	er					
Remarks: (Include photo numbers here or on a separate s	sheet.)							

Sampling Point: Upland F - DP11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)										
Depth	Matrix		Redo	ox Feature	es					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		ture	Remarks	
0-12	2.5Y 6/4	85	7.5YR 4/6	15	С	PL	loam			
				_	-					
		-			_			-		
							-			
	-		-							
	-					- ——	-			
			-							
	oncentration, D=Dep	letion, RM	=Reduced Matrix, M	IS=Maske	d Sand G	rains.	² Locati	on: PL=Pore Lin		3
Hydric Soil I								Indicators for F	_	
Histosol			Dark Surfac	. ,					(A10) (MLRA 1	47)
	pipedon (A2)		Polyvalue B		. , .		148)		e Redox (A16)	
Black His			Thin Dark S	•	, .	147, 148)		(MLRA 1		(540)
	n Sulfide (A4)		Loamy Gley		(F2)				loodplain Soils	(F19)
	l Layers (A5) ick (A10) (LRR N)		Depleted Ma		E6)			(MLRA 1		
	d Below Dark Surfac	o (Δ11)	Redox Dark Depleted Da					Very Shallo	Material (TF2)	(TF12)
	ark Surface (A12)	C (ATT)	Redox Depr						ain in Remarks	
	lucky Mineral (S1) (I	RR N.	Iron-Mangar			(LRR N.		Other (Exp.	ani ni ritornarito	,
	\ 147, 148)	,	MLRA 1		()	(=::::,				
	leyed Matrix (S4)		Umbric Surf	•	(MLRA 1	36, 122)		³ Indicators of I	nydrophytic veg	etation and
	ledox (S5)		Piedmont FI				I 8)		Irology must be	
	Matrix (S6)							-	rbed or probler	
Restrictive L	_ayer (if observed):									
Type:										
Depth (inc	ches):						Hydr	ic Soil Present?	Yes	No <u> </u>
Remarks:							1			

Project/Site: Maney Farm Stream Mitigation Site	City/County: Chatham		Sampling Date: 5/28/14			
Applicant/Owner: Wildlands Engineering	City/County: Chatham	State: NC	Sampling Point: Wetland G - DP12			
Investigator(s): Ian Eckardt and Win Taylor			Camping Form.			
Landform (hillslope, terrace, etc.): floodplain			Slone (%). 0			
Subregion (LRR or MLRA): MLRA 136 Lat:	W 79.343491	Slope (70)				
Soil Map Unit Name: Cid-Lignum complex, 2-6% slo	opes (CmB)	NIVA/I alaasifis	Datum			
Are climatic / hydrologic conditions on the site typical for			1			
Are Vegetation, Soil, or Hydrology			present? Yes No <u>▼</u>			
Are Vegetation, Soil, or Hydrology	naturally problematic? (If need	led, explain any answe	rs in Remarks.)			
SUMMARY OF FINDINGS - Attach site ma	ap showing sampling point loo	ations, transects	, important features, etc.			
Hydrophytic Vegetation Present? Yes Hydric Soil Present? Yes ✓ Yes ✓	No.	rea 🗸	No			
	No within a Wetland	r res	NO			
Remarks:						
Cattle have access to the sampling loat the sampling point.						
HYDROLOGY						
Wetland Hydrology Indicators:			ators (minimum of two required)			
Primary Indicators (minimum of one is required; check			Surface Soil Cracks (B6)			
	rue Aquatic Plants (B14)		getated Concave Surface (B8)			
	Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres on Living Roots (Drainage Pa				
	Presence of Reduced Iron (C4)					
	Recent Iron Reduction in Tilled Soils (C6		Dry-Season Water Table (C2) Crayfish Burrows (C8)			
	Thin Muck Surface (C7)		isible on Aerial Imagery (C9)			
	Other (Explain in Remarks)		tressed Plants (D1)			
Iron Deposits (B5)		Geomorphic Position (D2)				
Inundation Visible on Aerial Imagery (B7)		Shallow Aquitard (D3)				
Water-Stained Leaves (B9)			aphic Relief (D4)			
Aquatic Fauna (B13)		FAC-Neutral	Test (D5)			
Field Observations: Surface Water Present? Yes ✓ No	Donth (inches): 1.0					
Water Table Present? Yes ✓ No						
Saturation Present? Yes No		and Hydrology Preser	nt? Yes ✓ No			
(includes capillary fringe)			100			
Describe Recorded Data (stream gauge, monitoring we	ell, aerial photos, previous inspections), i	f available:				
Remarks:						
Terrano.						

Sampling Point: Wetland G - DP12

Ulmus americana 60 yes FACW That Are OBL, FACW or FAC: 2 (A)		Absolute	Dominant		Dominance Test worksheet:
2 Quercus phelios 3, Acer unbrum 10 no FAC 3, Acer unbrum 10 no FAC 4	<u>Tree Stratum</u> (Plot size: 30'	% Cover	Species?		Number of Dominant Species
10		60	yes	FACW	That Are OBL, FACW, or FAC: $\frac{2}{}$ (A)
3. Acer unbrum		15	no	FAC	Total Number of Dominant
Percent of Dominant Species 100% (A/B)	3. Acer rubrum	10	no	FAC	
That Are OBL, FACW, or FAC: 100% (A/B)	4				Percent of Dominant Species
Prevalence Index worksheet: Sapling/Shrub Stratum (Plot size: 15')	5				
Total % Cover of: Multiply by:	6				Provolence Index worksheet:
Sapiling/Shrub Stratum (Plot size: 15" 1	7				
Sapiling/Shrub Stratum (Plot size: 15') 1, Juniperus virginiana 1 no FACU FAC species x 2 =	8				
1. Juniperus virginiana 2. Rosa multiflora 3. Symphoricarpos orbiculatus 4.	451	85	= Total Cov	er	
2 Rosa multiflora 1 no FACU FACU species x 4 =		4		EAGU	
3. Symphoricarpos orbiculatus					
4			no		
Prevalence Index = B/A = 2.96	3. Symphoricarpos orbiculatus	1	no	FACU	UPL species x 5 =
6.	4				Column Totals: (A) (B)
7.					Prevalence Index = B/A = 2.96
1 - Rapid Test for Hydrophytic Vegetation 2 - Dominance Test is >50% 3 - Prevalence Index is ≤3.0¹ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet) 2 - Total Cover 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet) 2 - Total Cover 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet) 2 - Total Cover Problematic Hydrophytic Vegetation¹ (Explain) 1 - Tree - Woody Plants excluding vines, a sin. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb - All herbaceous (non-woody) plants, regardless of size, and woody vines greater than 3.28 ft in height. Woody vine - All woody vines greater than 3.28 ft in height. Hydrophytic Vegetation Hydrophytic Vegetation Hydrophytic Vegetation Hydrophytic Vegetation 1 - No FAC Hydrophytic Vegetation Herb - All woody vines greater than 3.28 ft in height. Hydrophytic Vegetation Hydrop					Hydrophytic Vegetation Indicators:
S					
9					
10.	9				
Stratum (Plot size: 5)	10				<u> </u>
1. Microstegium vimineum 2. Carex lurida 3. Ranunculus hispidus 4. Festuca sp. 5.	Horh Stratum (Plot size: 5'	3	= Total Cov	er	
2 Carex lurida 3 Ranunculus hispidus 4 Festuca sp. 5		40	ves	FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
Ranunculus hispidus Eestuca sp. Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, 8 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody vine yless than 3.28 ft tall. Woody Vine Stratum (Plot size: 30') Lonicera japonica Taxicodendron radicans In no FAC Taxicodendron radicans Hydrophytic Vegetation	··	2		OBL	
4 Festuca sp. 1 no FACU 5.		2	no		
5		- - -			
Free — Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub — Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb — All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody Vine Stratum (Plot size: 30') Lonicera japonica 1 no FAC Taxicodendron radicans 1 no FAC Taxicodendron radicans 1 no FAC Hydrophytic Vegetation	···	<u> </u>			Definitions of Four Vegetation Strata:
7					
8					
9					
10					
11					
12					
Moody Vine Stratum (Plot size: 30' 1 no FAC Taxicodendron radicans 1 no FAC 1 Moody vine - All woody vines greater than 3.28 ft in height. Moody vine - All woody vine - All woody vines greater than 3.28 ft in height. Moody vine - All woody vines greater than 3.28 ft in height. Moody vine - All woody vines greater than 3.28 ft in height. Moody vine - All woody vines greater than 3.28 ft in height. Moody vine - All woody vines greater than 3.28 ft in height. Moody vine - All woody vine - All	12				of size, and woody plants less than 3.26 it tall.
Woody Vine Stratum (Plot size: 30') negnt. 1. Lonicera japonica 1 no FAC 2. Taxicodendron radicans 1 no FAC 3.		45	= Total Cov	er	, ,
2. Taxicodendron radicans 1	Woody Vine Stratum (Plot size: 30')		10101 001	0.	height.
3	1. Lonicera japonica	1	no	FAC	
4	2. Taxicodendron radicans	1	no	FAC	
4	3				
5. Hydrophytic Vegetation					
vegetation v	5.				
·				-	Present? Yes No
2 = Total Cover	··	2	= Total Cov	er	
Remarks: (Include photo numbers here or on a separate sheet.)	Remarks: (Include photo numbers here or on a separate				

Feature is located in a seep area that has been disturbed (trampled) by cattle. Sapling and herb stratum's significantly impacted within sampling area.

Sampling Point: Wetland G - DP12

Profile Desc	ription: (Describe	to the de	oth needed to docu	ment the	indicator	or confirm	n the ab	sence of indicate	ors.)	
Depth	Matrix		Redo	x Feature	s					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Text	ure	Remarks	
0-2	7.5YR 4/2	100					silt			
2-12	5Y 5/1	95	10YR 5/8	5	С	PL	silt loa	am		_
		-				- (-			
		· 	_							
	-			-						-
		. ——								
								<u></u>		
		· ——	-		-					
		· 	_							
		letion, RM	I=Reduced Matrix, M	S=Maske	d Sand G	rains.	² Locati	on: PL=Pore Lini		
Hydric Soil I	ndicators:							Indicators for P	roblematic Hyd	dric Soils³:
Histosol	(A1)		Dark Surface	e (S7)				2 cm Muck (A10) (MLRA 1 4	7)
Histic Ep	pipedon (A2)		Polyvalue Be	elow Surfa	ace (S8) (I	MLRA 147,	148)	Coast Prairie	e Redox (A16)	
Black His	stic (A3)		Thin Dark S	urface (S9) (MLRA	147, 148)		(MLRA 14	17, 148)	
	n Sulfide (A4)		Loamy Gley		(F2)				oodplain Soils (F19)
	l Layers (A5)		✓ Depleted Ma					(MLRA 13		
	ck (A10) (LRR N)		Redox Dark	•					Material (TF2)	
	Below Dark Surfac	e (A11)	Depleted Da						v Dark Surface	(TF12)
	ark Surface (A12)		Redox Depr					Other (Expla	in in Remarks)	
	lucky Mineral (S1) (L	.RR N,	Iron-Mangar		ses (F12)	(LRR N,				
	147, 148)		MLRA 13	•	/MLDA 4	26 422\		3Indicators of b	vdranhvtia vasa	station and
	eleyed Matrix (S4) edox (S5)		Umbric Surfa				10\		ydrophytic vege rology must be	
	Matrix (S6)		Fledillolit Fi	ooupiairi	ouis (F 19) (IVILKA 14	+0)		rbed or problem	
	_ayer (if observed):							uniess distu	bed of problem	alic.
	Layer (ii Observed).									
Type:							1		/	
	ches):						Hydr	ic Soil Present?	Yes <u></u>	No
Remarks:										

Project/Site: Maney Farm Stream Mitigation Site	City/County: Chat	ham	Sampling Date: 5/28/14		
Applicant/Owner: Wildlands Engineering			Sampling Point: Upland G - DP13		
Investigator(s): Ian Eckardt and Win Taylor			<u> </u>		
Landform (hillslope, terrace, etc.): floodplain			Slope (%): 0		
Subregion (LRR or MLRA): MLRA 136 Lat: N			Datum:		
Soil Map Unit Name: Cid-Lignum complex, 2-6% slc	opes (CmB)	NWI classif	ication:		
Are climatic / hydrologic conditions on the site typical for					
Are Vegetation, Soil, or Hydrology			present? Yes No _ ✓		
Are Vegetation, Soil, or Hydrology	_ naturally problematic? (lf needed, explain any answ	ers in Remarks.)		
SUMMARY OF FINDINGS - Attach site ma	p showing sampling poi	nt locations, transect	s, important features, etc.		
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? Remarks:	No within a We	oled Area etland? Yes			
Sampling point is representative of a project site.	non-jurisdictional upla	nd area located in	the floodplain of the		
HYDROLOGY					
Wetland Hydrology Indicators:		Secondary India	cators (minimum of two required)		
Primary Indicators (minimum of one is required; check a	all that apply)	Surface So			
	rue Aquatic Plants (B14)	Sparsely Vegetated Concave Surface (B8)			
	lydrogen Sulfide Odor (C1)		atterns (B10)		
	oxidized Rhizospheres on Living F				
i i	resence of Reduced Iron (C4)	Dry-Season Water Table (C2)			
	Recent Iron Reduction in Tilled Soi				
	hin Muck Surface (C7)	Saturation Visible on Aerial Imagery (C9)			
	Other (Explain in Remarks)		Stressed Plants (D1)		
Iron Deposits (B5)			c Position (D2)		
Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9)		Shallow Aq			
Aquatic Fauna (B13)		Microtopog	raphic Relief (D4)		
Field Observations:		1 AC-Neutra	ar rest (D3)		
	Donth (inches):				
	Depth (inches): Depth (inches):				
		w	ent? Yes No✓		
Saturation Present? Yes No [(includes capillary fringe)	Depth (inches):	Wetland Hydrology Prese	ent? Yes No		
Describe Recorded Data (stream gauge, monitoring we	II, aerial photos, previous inspect	ions), if available:			
Remarks:					

Sampling Point: Upland G - DP13

0.01	Absolute	Dominant	Indicator	Dominance Test worksheet:				
<u>Tree Stratum</u> (Plot size: 30')		Species?		Number of Dominant Species				
1. Quercus phellos	40	yes	FAC	That Are OBL, FACW, or FAC: 4	(A)			
2. Ulmus americana	30	yes	FACW	Total Number of Dominant				
3. Fraxinus pennsylvanica	5	no	FACW		(B)			
4.	· <u></u>				(-)			
5.				Percent of Dominant Species That Are OBL FACW or FAC: 80%	(A (D)			
				That Are OBL, FACW, or FAC: 80%	(A/B)			
6				Prevalence Index worksheet:				
7.				Total % Cover of: Multiply by:				
8				OBL species x 1 =				
Continue/Church Chartery / Diet sings 15'	75	= Total Cov	er					
Sapling/Shrub Stratum (Plot size: 15') 1 Ulmus americana	10	yes	FACW	FACW species x 2 =				
				FAC species x 3 =				
2				FACU species x 4 =				
3				UPL species x 5 =				
4				Column Totals: (A)	(B)			
5				B 1 1 1 B/A				
6.				Prevalence Index = B/A =	_			
7.				Hydrophytic Vegetation Indicators:				
8.				1 - Rapid Test for Hydrophytic Vegetation				
				∠ 2 - Dominance Test is >50%				
9				3 - Prevalence Index is ≤3.0 ¹				
10	10			4 - Morphological Adaptations ¹ (Provide supp	orting			
Herb Stratum (Plot size: 5')	10	= Total Cov	er	data in Remarks or on a separate sheet)	_			
1 Microstegium vimineum	25	yes	FAC	Problematic Hydrophytic Vegetation ¹ (Explain	า)			
2 Festuca sp.	10	yes	FACU					
		<u> </u>	1700	¹ Indicators of hydric soil and wetland hydrology m	nust			
3				be present, unless disturbed or problematic.				
4				Definitions of Four Vegetation Strata:				
5					,			
6				Tree – Woody plants, excluding vines, 3 in. (7.6 cmore in diameter at breast height (DBH), regardle				
7				height.	.33 01			
8								
9.				Sapling/Shrub – Woody plants, excluding vines, than 3 in. DBH and greater than 3.28 ft (1 m) tall.	less			
10				than 3 in. DDIT and greater than 3.20 it (1 in) tail.				
11.				Herb – All herbaceous (non-woody) plants, regar	dless			
				of size, and woody plants less than 3.28 ft tall.				
12	35			Woody vine – All woody vines greater than 3.28	ft in			
Woody Vine Stratum (Plot size: 30')		= Total Cov	er	height.				
1 Lonicera japonica	2	no	FAC					
2.								
3								
4				Hydrophytic				
5				Vegetation				
6				Present? Yes No				
	2	= Total Cov	er					
Remarks: (Include photo numbers here or on a separate s	heet.)							
` '	,							

Sampling Point: _

Profile Desc	ription: (Describe	to the depth	needed to docum	ent the indicator	or confirm	the ab	sence of indicato	ors.)	
Depth	Matrix		Redox	Features					
(inches)	Color (moist)	%	Color (moist)	% Type ¹	Loc ²	Text	ure	Remarks	
0-3	10YR 4/4	100				loam			
3-12	10YR 6/6	100				loam			
	-					-			
									
		. —— -							
	-								
¹ Type: C=Co	oncentration, D=Dep	oletion, RM=F	Reduced Matrix, MS	=Masked Sand G	ains.	² Location	on: PL=Pore Linir	ng, M=Matrix.	
Hydric Soil I			<u> </u>				Indicators for Pr		dric Soils³:
Histosol	(A1)		Dark Surface	(S7)			2 cm Muck (A	410) (MLRA 1 4	17)
	pipedon (A2)			ow Surface (S8) (I	MLRA 147,	148)	Coast Prairie		•
Black His				face (S9) (MLRA		,	(MLRA 14		
	n Sulfide (A4)		Loamy Gleyed	. , .	•			odplain Soils (F19)
	Layers (A5)		Depleted Matr				(MLRA 13		•
2 cm Mu	ck (A10) (LRR N)		Redox Dark S	Surface (F6)			Red Parent N	Material (TF2)	
Depleted	d Below Dark Surfac	e (A11)	Depleted Dark	Surface (F7)			Very Shallow	Dark Surface	(TF12)
Thick Da	ark Surface (A12)		Redox Depres	ssions (F8)			Other (Explain	in in Remarks)	
	lucky Mineral (S1) (I	LRR N,	Iron-Mangane	ese Masses (F12)	LRR N,				
	A 147, 148)		MLRA 136	•					
	lleyed Matrix (S4)			ce (F13) (MLRA 1			³ Indicators of hy		
	edox (S5)		Piedmont Floo	odplain Soils (F19)	(MLRA 14	8)	-	ology must be	
	Matrix (S6)						unless distur	bed or problem	natic.
Restrictive L	_ayer (if observed):	:							
Type:									
Depth (inc	ches):					Hydri	c Soil Present?	Yes	No <u> </u>
Remarks:						1			

Project/Site: Maney Farm Stream Mitigation S	Site City/C	county: Chatham		Sampling Date: 5/28/14			
Applicant/Owner: Wildlands Engineering			State: NC	Sampling Date: 5/28/14 Sampling Point: Wetland H - DP14			
Investigator(s): Ian Eckardt and Win Taylor				<u> </u>			
Landform (hillslope, terrace, etc.): floodplain				Slone (%): 0			
Subrogian (LBB or MLBA): MLRA 136	Lat: N 35.836717	Long: W 7	9.343491	Datum:			
Subregion (LRR or MLRA): MLRA 136 Soil Map Unit Name: Cid-Lignum complex, 2-6	% slopes (CmB)	Long	NWI classific	ation:			
Are climatic / hydrologic conditions on the site typic		,					
Are Vegetation, Soil, or Hydrology	-			oresent? Yes No _			
Are Vegetation, Soil, or Hydrology			explain any answe				
SUMMARY OF FINDINGS – Attach sit							
Hydrophytic Vegetation Present? Yes	✓ No	In the Country of Auron					
	✓ No	Is the Sampled Area within a Wetland?	Yes ✓	No			
	✓ No	Within a frotana.	.00				
Remarks:	•						
Cattle have access to the sampling at the sampling point.							
HYDROLOGY							
Wetland Hydrology Indicators:				tors (minimum of two required)			
Primary Indicators (minimum of one is required; o			Surface Soil				
	True Aquatic Plants (Sparsely Vegetated Concave Surface (B8)Drainage Patterns (B10)				
	Hydrogen Sulfide Odd						
	Oxidized RhizospherePresence of Reduced		Moss Trim Li				
Sediment Deposits (B2)	Recent Iron Reductio		Dry-Season Water Table (C2) bils (C6) Crayfish Burrows (C8)				
Orift Deposits (B3)	Thin Muck Surface (C		Saturation Visible on Aerial Imagery (C9)				
Algal Mat or Crust (B4)	Other (Explain in Ren			tressed Plants (D1)			
Iron Deposits (B5)	` ` '	,		Position (D2)			
Inundation Visible on Aerial Imagery (B7)			Shallow Aqui	tard (D3)			
Water-Stained Leaves (B9)			Microtopogra	phic Relief (D4)			
Aquatic Fauna (B13)			FAC-Neutral	Test (D5)			
Field Observations:	1.0						
	Depth (inches): 1.0						
	Depth (inches): 0-12			./			
Saturation Present? Yes No (includes capillary fringe)	Depth (inches): 0-12	Wetland H	lydrology Presen	t? Yes <u>Y</u> No			
Describe Recorded Data (stream gauge, monitori	ng well, aerial photos, pre	vious inspections), if ava	ilable:				
Remarks:							

Sampling Point: Wetland H - DP14

	Absolute	Dominant	Indicator	Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: 30')		Species?		Number of Dominant Species
1. Acer rubrum	40	yes	FAC	That Are OBL, FACW, or FAC: 2 (A)
2. Ulmus americana	35	yes	FACW	Total Number of Dominant
3				Species Across All Strata: 3 (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 66% (A/B)
6				Prevalence Index worksheet:
7				Total % Cover of: Multiply by:
8				OBL species x 1 =
Combined Charles Charles (Plat sings 15)	75	= Total Cov	er	
Sapling/Shrub Stratum (Plot size: 15') 1 Rosa multiflora	2	no	FACU	FACW species x 2 = FAC species x 3 =
2. Acer rubrum	1	no	FAC	
2. Ligustrum japonicum	1	no	UPL	FACU species x 4 =
				UPL species x 5 =
4				Column Totals: (A) (B)
5				Prevalence Index = B/A = $\frac{2.96}{}$
6				Hydrophytic Vegetation Indicators:
7				1 - Rapid Test for Hydrophytic Vegetation
8			-	✓ 2 - Dominance Test is >50%
9				3 - Prevalence Index is ≤3.0 ¹
10	4			4 - Morphological Adaptations ¹ (Provide supporting
Herb Stratum (Plot size: 5')		= Total Cov	er	data in Remarks or on a separate sheet)
1. Festuca sp.	30	yes	FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
2. Microstegium vimineum	5		FAC	
3. Ranunculus hispidus	5		FAC	¹ Indicators of hydric soil and wetland hydrology must
4.				be present, unless disturbed or problematic.
5.				Definitions of Four Vegetation Strata:
6.				Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or
7				more in diameter at breast height (DBH), regardless of height.
8.				
9.				Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
10.				(IIdii 3 III. Don and greater than 3.20 it (1 iii) taii.
11				Herb – All herbaceous (non-woody) plants, regardless
12.				of size, and woody plants less than 3.28 ft tall.
12.	40	= Total Cov	er	Woody vine – All woody vines greater than 3.28 ft in
Woody Vine Stratum (Plot size: 30')		- 10101 00.	Ci	height.
1. Smilax sp.	2	no	FAC	
2. Lonicera japonica	1	no	FAC	
3. Taxicodendron radicans	1	no	FAC	
4				l
5				Hydrophytic Vegetation
6.				Present? Yes No
	4	= Total Cov	er	
Remarks: (Include photo numbers here or on a separate s	heet.)			

Feature is located in a seep area that has been disturbed (trampled) by cattle. Sapling and herb stratum's significantly impacted within sampling area.

Sampling Point: Wetland H - DP14

Profile Desc	ription: (Describe	to the de	oth needed to docu	ment the	indicator	or confirm	n the ab	sence of indicat	ors.)	
Depth	Matrix		Redo	ox Feature	s					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Text	ure	Remarks	
0-2	10YR 3/3	100					silt lo	am_		
2-12	2.5Y 6/1	95	10YR 5/6	5	С	PL	silt lo	 am		_
					-	- (-			
						- ——				
	-	-								-
						-, (<u></u> -				
	-	-	-							
		letion, RM	I=Reduced Matrix, M	IS=Maske	d Sand G	rains.	² Locati	on: PL=Pore Lini		
Hydric Soil I	ndicators:							Indicators for P	roblematic Hyd	dric Soils³:
Histosol	(A1)		Dark Surface	e (S7)				2 cm Muck (A10) (MLRA 1 4	7)
Histic Ep	pipedon (A2)		Polyvalue B	elow Surfa	ice (S8) (I	MLRA 147,	148)	Coast Prairie	e Redox (A16)	
Black His	stic (A3)		Thin Dark S	urface (S9) (MLRA	147, 148)		(MLRA 14	17, 148)	
	n Sulfide (A4)		Loamy Gley		(F2)				oodplain Soils (F19)
	l Layers (A5)		✓ Depleted Ma					(MLRA 1		
	ck (A10) (LRR N)		Redox Dark	•					Material (TF2)	
	Below Dark Surfac	e (A11)	Depleted Da						v Dark Surface	(TF12)
	ark Surface (A12)		Redox Depr			// DD 11		Other (Expla	in in Remarks)	
	lucky Mineral (S1) (L	LKK N,	Iron-Mangar		ses (F12)	(LRR N,				
	147, 148)		MLRA 13	•	/MLDA4	26 422\		3Indicators of b	dranbutia.uaaa	station and
	eleyed Matrix (S4) edox (S5)		Umbric Surfa Piedmont FI				10\		ydrophytic vege rology must be	
	Matrix (S6)		Fledilloni Fi	ooupiaiii s	oolis (F 19) (IVILKA 14	+0)		rbed or problem	
	_ayer (if observed):							uniess distu	ibed of problem	alic.
	Layer (ii Observed).	•								
Type:										
	ches):		 -				Hydr	ic Soil Present?	Yes <u></u>	No
Remarks:										

Project/Site: Maney Farm Stream Mitigation Site	City/County: Chatham		Sampling Date: 5/28/14			
Applicant/Owner: Wildlands Engineering	City/County: Chatham	State: NC	Sampling Point: Upland H - DP15			
Investigator(s): Ian Eckardt and Win Taylor			<u> </u>			
Landform (hillslope, terrace, etc.): floodplain			Slone (%): 0			
Subregion (LRR or MLRA): MLRA 136 Lat:	N 35 837121	W 79 34373	Slope (70).			
Soil Map Unit Name: Cid-Lignum complex, 2-6% sl	ones (CmR)		Datum:			
Are climatic / hydrologic conditions on the site typical for			,			
Are Vegetation, Soil, or Hydrology		ormal Circumstances"	present? Yes No _			
Are Vegetation, Soil, or Hydrology	naturally problematic? (If need	ded, explain any answ	ers in Remarks.)			
SUMMARY OF FINDINGS - Attach site ma	ap showing sampling point loc	ations, transect	s, important features, etc.			
Hydric Soil Present? Yes Wetland Hydrology Present? Yes	No Is the Sampled A within a Wetland?	rea ? Yes	No_ <u>√</u>			
Remarks:						
Sampling point is representative of a project site.	non-junsuictional upianu a	rea located in	the noodplain of the			
HYDROLOGY						
Wetland Hydrology Indicators:		Secondary Indic	cators (minimum of two required)			
Primary Indicators (minimum of one is required; check	all that apply)	Surface Soi				
	Γrue Aquatic Plants (B14)		Sparsely Vegetated Concave Surface (B8)			
	Hydrogen Sulfide Odor (C1)		atterns (B10)			
	Oxidized Rhizospheres on Living Roots (· · · ·			
	Presence of Reduced Iron (C4)		Dry-Season Water Table (C2)			
	Recent Iron Reduction in Tilled Soils (C6)		Crayfish Burrows (C8)			
	Thin Muck Surface (C7) Other (Explain in Remarks)		Visible on Aerial Imagery (C9)			
Algal Mat or Crust (B4) (Iron Deposits (B5)	other (Explain in Remarks)	Stunted or Stressed Plants (D1) Geomorphic Position (D2)				
Inundation Visible on Aerial Imagery (B7)		Shallow Aq				
Water-Stained Leaves (B9)			raphic Relief (D4)			
Aquatic Fauna (B13)		FAC-Neutra				
Field Observations:						
	Depth (inches):					
	Depth (inches):					
		and Hydrology Prese	ent? Yes No			
(includes capillary fringe)						
Describe Recorded Data (stream gauge, monitoring we	ell, aerial photos, previous inspections), i	f available:				
Remarks:						

Sampling Point: Upland H - DP15

0.01	Absolute	Dominant		Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: 30')		Species?		Number of Dominant Species
1. Ulmus americana	50	yes	FACW	That Are OBL, FACW, or FAC: $\frac{4}{}$ (A)
2. Acer rubrum	35	yes	FAC	Total Number of Dominant
3				Species Across All Strata: 6 (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 66% (A/B)
6				
7				Prevalence Index worksheet:
8				Total % Cover of: Multiply by:
	85	= Total Cov	er	OBL species x 1 =
Sapling/Shrub Stratum (Plot size: 15')			.	FACW species x 2 =
1. Ulmus americana	5	yes	FACW	FAC species x 3 =
2. Rosa multiflora	5	yes	FACU	FACU species x 4 =
3 Juniperus virginiana	2	no	FACU	UPL species x 5 =
			•	Column Totals: (A) (B)
4				(1)
5				Prevalence Index = B/A =
6				Hydrophytic Vegetation Indicators:
7.				1 - Rapid Test for Hydrophytic Vegetation
8				✓ 2 - Dominance Test is >50%
9				3 - Prevalence Index is ≤3.0 ¹
10				4 - Morphological Adaptations ¹ (Provide supporting
e.	12	= Total Cov	er	data in Remarks or on a separate sheet)
Herb Stratum (Plot size: 5')				Problematic Hydrophytic Vegetation ¹ (Explain)
1. Festuca sp.	15	yes	FACU	r robiematio riyarophytic vegetation (Explain)
2. Microstegium vimineum	10	yes	FAC	The disease of booking and continued booking and
3				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
4				
5.				Definitions of Four Vegetation Strata:
6				Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or
				more in diameter at breast height (DBH), regardless of
7.			•	height.
8.			-	Sapling/Shrub – Woody plants, excluding vines, less
9				than 3 in. DBH and greater than 3.28 ft (1 m) tall.
10			-	Herb – All herbaceous (non-woody) plants, regardless
11				of size, and woody plants less than 3.28 ft tall.
12				Mandandra Allumadu de la companya de
201	25	= Total Cov	er	Woody vine – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: 30')			540	noight.
1. Smilax sp.	_ 1	no	FAC	
2				
3				
4				
5				Hydrophytic Vegetation
				Present? Yes No
6	1	= Total Cov	or .	

Sampling Point: Upland H - DP15

inches)	Matrix Color (moist)	%	Color (moist)	Features 7ype1	Loc ²	Texture	Remarks
·12	10YR 4/4	100	Color (moist)		LUC		Nemarks
12	10114/4	100				loam	
						-	
							· -
					·		
						-	· -
							-
vne: C=C	oncentration D=Der	oletion RM	=Reduced Matrix, MS	=Masked Sand G	raine	² Location: P	L=Pore Lining, M=Matrix.
	Indicators:	JICHOH, IXIVI	-iteaucea matrix, mo	-Masked Sand Oi	airis.	Indic	cators for Problematic Hydric Soils ³ :
			Davis Confess	(07)			
_ Histosol			Dark Surface		MI DA 447	· · · · · · · · · · · · · · · · · · ·	2 cm Muck (A10) (MLRA 147)
	oipedon (A2)			ow Surface (S8) (I		148)	Coast Prairie Redox (A16)
	stic (A3)			face (S9) (MLRA	147, 148)		(MLRA 147, 148)
	en Sulfide (A4)		Loamy Gleyed			'	Piedmont Floodplain Soils (F19)
	d Layers (A5)		Depleted Matr				(MLRA 136, 147)
	ick (A10) (LRR N)		Redox Dark S				Red Parent Material (TF2)
	d Below Dark Surfac	e (A11)	Depleted Dark	, ,			Very Shallow Dark Surface (TF12)
	ark Surface (A12)		Redox Depres			'	Other (Explain in Remarks)
-	Mucky Mineral (S1) (LRR N,		se Masses (F12)	(LRR N,		
	A 147, 148)		MLRA 136			3.	
	Sleyed Matrix (S4)			ce (F13) (MLRA 1			dicators of hydrophytic vegetation and
-	Redox (S5)		Piedmont Floo	odplain Soils (F19)	(MLRA 14		wetland hydrology must be present,
	Matrix (S6)						unless disturbed or problematic.
estrictive	Layer (if observed)	:					
Type:							
Depth (in	ches):					Hydric So	il Present? Yes No <u>√</u>
emarks:							

Project/Site: Maney Farm Stream Mitigation S	Site City/C	ounty: Chatham		Sampling Date: 5/28/14
Applicant/Owner: Wildlands Engineering			State: NC	Sampling Date: 5/28/14 Sampling Point: Wetland I - DP16
Investigator(s): Ian Eckardt and Win Taylor				<u> </u>
Landform (hillslope, terrace, etc.): floodplain				Slope (%): 0
Subregion (LRR or MLRA): MLRA 136	Lat. N 35.837536	Long: W 7	9.342393	Datum:
Subregion (LRR or MLRA): MLRA 136 Soil Map Unit Name: Nanford-Badin complex,	6-10% slopes (NaC)	Long	NWI classific	ation:
Are climatic / hydrologic conditions on the site typic		,		
Are Vegetation ✓, Soil, or Hydrology				oresent? Yes No _
Are Vegetation, Soil, or Hydrology			explain any answe	
SUMMARY OF FINDINGS – Attach sit				
Hydrophytic Vegetation Present? Yes	✓ No			
	✓ No	Is the Sampled Area within a Wetland?	Vos ✓	No
	✓ No	within a Wetland:	165	
Remarks:	l			
at the sampling point.				
HYDROLOGY				
Wetland Hydrology Indicators:				tors (minimum of two required)
Primary Indicators (minimum of one is required; of			Surface Soil	
✓ Surface Water (A1)	True Aquatic Plants (getated Concave Surface (B8)
High Water Table (A2) ✓ Saturation (A3)	Hydrogen Sulfide OddOxidized Rhizosphere		Drainage Pa	
Water Marks (B1)	Presence of Reduced			Water Table (C2)
Sediment Deposits (B2)	Recent Iron Reductio		Crayfish Buri	
Drift Deposits (B3)	Thin Muck Surface (C		-	sible on Aerial Imagery (C9)
Algal Mat or Crust (B4)	Other (Explain in Ren	narks)	Stunted or S	tressed Plants (D1)
Iron Deposits (B5)			Geomorphic	Position (D2)
Inundation Visible on Aerial Imagery (B7)			Shallow Aqui	
Water-Stained Leaves (B9)				aphic Relief (D4)
Aquatic Fauna (B13)			FAC-Neutral	Test (D5)
Field Observations: Surface Water Present? Yes No	Depth (inches): 0.5			
	Depth (inches): 0-12			
	Depth (inches): 0-12		lydrology Presen	nt? Yes ✓ No
(includes capillary fringe)				
Describe Recorded Data (stream gauge, monitor	ing well, aerial photos, pre	vious inspections), if ava	illable:	
Remarks:				
Nomano.				

Sampling Point: Wetland I - DP16

,	Absolute	Dominant	Indicator	Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: 30')		Species?		Number of Dominant Species
1. Acer rubrum	60	yes	FAC	That Are OBL, FACW, or FAC: $\frac{3}{}$ (A)
2. Ulmus americana	_ 10	no	FACW	Total Number of Dominant
3. Quercus phellos	_ 10	no	FAC	Species Across All Strata: 3 (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 100% (A/B)
6				Boundary Indonesia Indonesia
7				Prevalence Index worksheet:
8				Total % Cover of: Multiply by:
	00	= Total Cov	er er	OBL species x 1 =
Sapling/Shrub Stratum (Plot size: 15')				FACW species x 2 =
1				FAC species x 3 =
2				FACU species x 4 =
3				UPL species x 5 =
4				Column Totals: (A) (B)
5				
6				Prevalence Index = B/A =
7.				Hydrophytic Vegetation Indicators:
8.				1 - Rapid Test for Hydrophytic Vegetation
9.				✓ 2 - Dominance Test is >50%
10.				3 - Prevalence Index is ≤3.0 ¹
		= Total Cov	er	4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
Herb Stratum (Plot size: 5')	15	VOC	FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
1. Microstegium vimineum		yes	FACW	
2. Polygonum pensylvanicum	_ 10	yes		¹ Indicators of hydric soil and wetland hydrology must
3. Festuca sp.	_ 1	no	FACU	be present, unless disturbed or problematic.
4				Definitions of Four Vegetation Strata:
5				Tree Weedy plants evaluding vines 2 in (7.6 cm) or
6				Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of
7				height.
8				Sapling/Shrub – Woody plants, excluding vines, less
9				than 3 in. DBH and greater than 3.28 ft (1 m) tall.
10				Harb All barbassas (non woods) rights regardless
11				Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
12				
Woody Vine Stratum (Plot size: ^{30'})	26	= Total Cov	ver	Woody vine – All woody vines greater than 3.28 ft in height.
1				
2				
			-	
4				Hydrophytic
5				Vegetation Present? Yes No
6				Present? Yes No
		= Total Cov	er er	
Remarks: (Include photo numbers here or on a separate	sheet.)		·	
Feature is located in a seep area that I	nas beer	n disturb	ed (trai	mpled) by cattle. Sapling and herb

Feature is located in a seep area that has been disturbed (trampled) by cattle. Sapling and herb stratum's significantly impacted within sampling area.

Sampling Point: Wetland I - DP16

Depth	Matrix	%		ox Feature	S T 1	1.5.2	т	u ro	Damester	
(<u>inches)</u> 0-2	Color (moist) 7.5YR 3/1		Color (moist)	%	Type ¹	Loc ²	Text	ure	Remarks	
			10)(D 1/0							
2-12	10YR 4/1	98	10YR 4/6	_ 2	С	PL	loam			
	_									
	-		-		-	<u> </u>				
	_		· 					 -		
					-					
	_			_						
	- '-									
	<u> </u>		· ·		-					
	-		-		-					
		epletion, RN	M=Reduced Matrix, N	IS=Maske	d Sand G	rains.	² Locati	on: PL=Pore Lin	ing, M=Matrix.	1 0 - 11 - 3.
-	I Indicators:		D 10 ((07)				Indicators for F		
_ Histoso			Dark Surfac		· · · · (CO) (MI DA 447	4.40\		(A10) (MLRA 1 4	17)
	Epipedon (A2) Histic (A3)		Polyvalue E Thin Dark S				146)	Coast Prain	e Redox (A16)	
	gen Sulfide (A4)		Loamy Gley			147, 140)			loodplain Soils (F19)
	ed Layers (A5)		Depleted M		(1 2)			(MLRA 1		1 10)
	fuck (A10) (LRR N)		Redox Dark		F6)				Material (TF2)	
	ed Below Dark Surfa		Depleted D	ark Surfac	e (F7)				w Dark Surface	(TF12)
	Dark Surface (A12)		Redox Dep					Other (Expl	ain in Remarks)	
	Mucky Mineral (S1)) (LRR N,	Iron-Manga		es (F12)	(LRR N,				
	RA 147, 148)		MLRA 1	•				3		
	Gleyed Matrix (S4)		Umbric Sur				١٥١		nydrophytic vege	
	Redox (S5) ed Matrix (S6)		Piedmont F	iooapiain s	solis (F18) (IVILKA 14	18)	-	Irology must be rbed or problem	
	Layer (if observed	q).					1	uniess dist	ibed of problem	alic.
Type:		ω <i>)</i> .								
	nches):						Hydr	ic Soil Present?	Yes ✓	No
emarks:	iiciies).						пуш	ic 30ii Fresent:	165	NO
Ciliains.										

Project/Site: Maney Farm Stream Mitigation Site	City/County: Chatham		Sampling Date: 5/28/14
Applicant/Owner: Wildlands Engineering			Sampling Point: Upland I-J - DP17
Investigator(s): Ian Eckardt and Win Taylor			
Landform (hillslope, terrace, etc.): floodplain			Slope (%): 0
Subregion (LRR or MLRA): MLRA 136 Lat: N 35.8	37516 Long: \	N 79.342231	Datum:
Soil Map Unit Name: Nanford-Badin complex, 6-10% slope	es (NaC)	NWI classifica	ation:
Are climatic / hydrologic conditions on the site typical for this tim			
Are Vegetation ✓ , Soil, or Hydrology signif			resent? Yes No _
Are Vegetation, Soil, or Hydrology nature	ally problematic? (If neede	d, explain any answer	s in Remarks.)
SUMMARY OF FINDINGS - Attach site map sho	wing sampling point loca	ations, transects,	important features, etc.
Hydrophytic Vegetation Present? Yes Hydric Soil Present? Yes No Wetland Hydrology Present? Yes No Remarks:	within a Wetland?	ea Yes	No
Sampling point is representative of a non-project site.	urisdictional upland ar	ea located in th	ne floodplain of the
HYDROLOGY			
Wetland Hydrology Indicators:		Secondary Indicat	tors (minimum of two required)
Primary Indicators (minimum of one is required; check all that a	apply)	Surface Soil (Cracks (B6)
Surface Water (A1) True Aqu	uatic Plants (B14)	Sparsely Veg	etated Concave Surface (B8)
High Water Table (A2) Hydroge	n Sulfide Odor (C1)	Drainage Pat	terns (B10)
Saturation (A3) Oxidized	Rhizospheres on Living Roots (C	3) Moss Trim Lir	nes (B16)
Water Marks (B1) Presence	e of Reduced Iron (C4)	Dry-Season V	Vater Table (C2)
Sediment Deposits (B2) Recent I	on Reduction in Tilled Soils (C6)	Crayfish Burr	ows (C8)
Drift Deposits (B3) Thin Muc	ck Surface (C7)	Saturation Vis	sible on Aerial Imagery (C9)
Algal Mat or Crust (B4) Other (E	xplain in Remarks)	Stunted or St	ressed Plants (D1)
Iron Deposits (B5)		Geomorphic I	Position (D2)
Inundation Visible on Aerial Imagery (B7)		Shallow Aquit	tard (D3)
Water-Stained Leaves (B9)			phic Relief (D4)
Aquatic Fauna (B13)		FAC-Neutral	Test (D5)
Field Observations:			
Surface Water Present? Yes No Depth (
Water Table Present? Yes No Depth (i			/
Saturation Present? Yes No ✓ Depth (nches): Wetlan	nd Hydrology Present	t? Yes No
(includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aeria	I photos, previous inspections), if	available:	
Remarks:			

Sampling Point: Upland I-J - DP17

001	Absolute	Dominant	Indicator	Dominance Test worksheet:	
<u>Tree Stratum</u> (Plot size: 30'		Species?	Status	Number of Dominant Species	
1. Ulmus americana	40	yes	FACW	That Are OBL, FACW, or FAC: 3	(A)
2. Acer rubrum	30	yes	FAC	Total Number of Deminent	
3. Fraxinus pennsylvanica	5	no	FACW	Total Number of Dominant Species Across All Strata: 3	(B)
4.					(-)
5.				Percent of Dominant Species That Are OBL FACW or FAC: 100%	(A (D)
				That Are OBL, FACW, or FAC: 100%	(A/B)
6				Prevalence Index worksheet:	
7.				Total % Cover of: Multiply by:	
8				OBL species x 1 =	
Continue/Church Charterne / Plat since 15'	75	= Total Cov	er		
Sapling/Shrub Stratum (Plot size: 15') Ligustrum sinense	2	no	FACU	FACW species x 2 =	
1	1			FAC species x 3 =	
2. Symphoricarpos orbiculatus	- 	no	FACU	FACU species x 4 =	
3				UPL species x 5 =	
4	- 			Column Totals: (A)	(B)
5				B 1 1 1 B/A	
6				Prevalence Index = B/A =	-
7				Hydrophytic Vegetation Indicators:	
8				1 - Rapid Test for Hydrophytic Vegetation	
				∠ 2 - Dominance Test is >50%	
9				3 - Prevalence Index is ≤3.0 ¹	
10	3			4 - Morphological Adaptations ¹ (Provide supp	orting
Herb Stratum (Plot size: 5')		= Total Cov	er	data in Remarks or on a separate sheet)	
1 Microstegium vimineum	25	yes	FAC	Problematic Hydrophytic Vegetation ¹ (Explain	1)
·· _	5	no	FACU		
	1			¹ Indicators of hydric soil and wetland hydrology m	ust
3. Festuca sp.	· · · · · · · · · · · · · · · · · · · 	no	FACU	be present, unless disturbed or problematic.	
4	- 			Definitions of Four Vegetation Strata:	
5					,
6				Tree – Woody plants, excluding vines, 3 in. (7.6 c more in diameter at breast height (DBH), regardle	
7				height.	33 01
8					
9.				Sapling/Shrub – Woody plants, excluding vines, than 3 in. DBH and greater than 3.28 ft (1 m) tall.	less
10.				than 5 m. DBH and greater than 5.25 it (1 m) tail.	
11.				Herb – All herbaceous (non-woody) plants, regard	dless
				of size, and woody plants less than 3.28 ft tall.	
12	31			Woody vine – All woody vines greater than 3.28	ft in
Woody Vine Stratum (Plot size: 30')		= Total Cov	er	height.	
1 Lonicera japonica	2	no	FAC		
···					
2.					
3					
4				Hydrophytic	
5				Vegetation	
6				Present? Yes No	
	2	= Total Cov	er		
Remarks: (Include photo numbers here or on a separate s	sheet.)				
	,				

Sampling Point: Upland I-J - DP17

Profile Desc	ription: (Describe	to the depth	needed to document the	indicator or confirm	n the abs	ence of indicators.)
Depth	Matrix		Redox Feature	es		
(inches)	Color (moist)	%	Color (moist) %	Type ¹ Loc ²	Textu	re Remarks
0-2	7.5YR 3/3	100			loam	
2-8	10YR 4/4	100		_ _ _	loam	
8-12	2.5Y 6/4	100	-		loam	
	2.01 0/1					
					-	
					-	
					-	
¹Type: C=C	oncentration D=Der	oletion RM=F	Reduced Matrix, MS=Maske	ed Sand Grains	² Location	n: PL=Pore Lining, M=Matrix.
Hydric Soil		JICHOH, INIVI-I	veduced Matrix, MO-Maske	d Sand Grains.		Indicators for Problematic Hydric Soils ³ :
Histosol			Dark Surface (S7)			2 cm Muck (A10) (MLRA 147)
	oipedon (A2)		Polyvalue Below Surfa	ace (S8) (MLRA 147.	148)	Coast Prairie Redox (A16)
Black Hi			Thin Dark Surface (SS		,	(MLRA 147, 148)
	n Sulfide (A4)		Loamy Gleyed Matrix			Piedmont Floodplain Soils (F19)
	d Layers (A5)		Depleted Matrix (F3)	•	_	(MLRA 136, 147)
2 cm Mu	ıck (A10) (LRR N)		Redox Dark Surface (F6)	_	Red Parent Material (TF2)
	d Below Dark Surfac	e (A11)	Depleted Dark Surfac		_	Very Shallow Dark Surface (TF12)
	ark Surface (A12)		Redox Depressions (I		-	Other (Explain in Remarks)
	Mucky Mineral (S1) (LRR N,	Iron-Manganese Mas	ses (F12) (LRR N,		
	A 147, 148)		MLRA 136)	(MI DA 400 400)		31 and in a state of the subscript of th
	Gleyed Matrix (S4) Redox (S5)		Umbric Surface (F13) Piedmont Floodplain \$1		10/	³ Indicators of hydrophytic vegetation and wetland hydrology must be present,
-	Matrix (S6)		Fleumont Floodplain	30115 (F19) (WILKA 14	+0)	unless disturbed or problematic.
	Layer (if observed)				1	unicos disturbed of problematic.
Type:	-ayo. (oboo. roa)	•				
	ches):		_		Lludria	Soil Present? Yes No _✓
					пушт	Soil Present? Yes No _✓
Remarks:						

Project/Site: Maney Farm Stream Mitigation Site	City/County: Chat	ham		Sampling Date: 5/28/14
Applicant/Owner: Wildlands Engineering			State: NC	Sampling Date: 5/28/14 Sampling Point: Wetland J - DP18
Investigator(s): Ian Eckardt and Win Taylor				Camping Font.
Landform (hillslope, terrace, etc.): floodplain				Slone (%): 0
Subregion (LRR or MLRA): MLRA 136 Lat: Soil Map Unit Name: Nanford-Badin complex, 6-10	0% slones (NaC)	Long: _vv /	0.012017	Datum:
	_			
Are climatic / hydrologic conditions on the site typical for				/
Are Vegetation, Soil, or Hydrology	significantly disturbed?	Are "Normal	Circumstances" p	resent? Yes No <u></u> ✓
Are Vegetation, Soil, or Hydrology	naturally problematic? (If needed, e	xplain any answe	rs in Remarks.)
SUMMARY OF FINDINGS - Attach site m	nap showing sampling poi	nt locatio	ns, transects	, important features, etc.
Hydrophytic Vegetation Present? Yes	No Is the Samu			
	No No within a We		Vos √	No
	_ No	stianu:	163	
Remarks:	-			
Cattle have access to the sampling at the sampling point.	location and have distu	ibeu/tiai	пріва піасп	of the surface area
HYDROLOGY				
Wetland Hydrology Indicators:			Secondary Indica	tors (minimum of two required)
Primary Indicators (minimum of one is required; chec	k all that apply)		Surface Soil	
	True Aquatic Plants (B14)			getated Concave Surface (B8)
	Hydrogen Sulfide Odor (C1)	D4- (OO)	Drainage Pat	
	Oxidized Rhizospheres on Living F	Roots (C3)	Moss Trim Li	
	Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled So	ile (C6)	Crayfish Burr	Water Table (C2)
	Thin Muck Surface (C7)	113 (00)	-	sible on Aerial Imagery (C9)
	Other (Explain in Remarks)			tressed Plants (D1)
Iron Deposits (B5)			Geomorphic	
Inundation Visible on Aerial Imagery (B7)			Shallow Aqui	
Water-Stained Leaves (B9)			Microtopogra	phic Relief (D4)
Aquatic Fauna (B13)			FAC-Neutral	Test (D5)
Field Observations:	0.5			
Surface Water Present? Yes No				
	Depth (inches): 0-12			
Saturation Present? Yes ✓ No (includes capillary fringe)	Depth (inches): 0-12	Wetland H	ydrology Presen	t? Yes <u>Y</u> No
Describe Recorded Data (stream gauge, monitoring v	vell, aerial photos, previous inspect	ions), if avai	ilable:	
Parada				
Remarks:				

Sampling Point: Wetland J - DP18

	Absolute			Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: 30'		Species?		Number of Dominant Species
1. Ulmus americana	60	yes	FACW	That Are OBL, FACW, or FAC: $\frac{3}{}$ (A)
2. Acer rubrum	10	no	FAC	Total Number of Dominant
3				Species Across All Strata: 4 (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 75% (A/B)
6				Prevalence Index worksheet:
7				
8				Total % Cover of: Multiply by:
15'	70	= Total Cov	/er	OBL species x 1 =
Sapling/Shrub Stratum (Plot size: 15') 1. Ulmus americana	2	no	FACW	FACW species x 2 =
				FACUlargeica x 3 =
2				FACU species x 4 =
3				UPL species x 5 =
4				Column Totals: (A) (B)
5				Prevalence Index = B/A =
6				Hydrophytic Vegetation Indicators:
7				1 - Rapid Test for Hydrophytic Vegetation
8				2 - Dominance Test is >50%
9				✓ 3 - Prevalence Index is ≤3.0 ¹
10				4 - Morphological Adaptations ¹ (Provide supporting
Herb Stratum (Plot size: 5')	2	= Total Cov	rer	data in Remarks or on a separate sheet)
1. Microstegium vimineum	20	yes	FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
2. Festuca sp.	15	yes	FACU	
3. Polygonum pensylvanicum	10	yes	FACW	¹ Indicators of hydric soil and wetland hydrology must
4 Ranunculus hispidus	2		FAC	be present, unless disturbed or problematic.
5. Fragaria virginiana	1		FACU	Definitions of Four Vegetation Strata:
•				Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or
6				more in diameter at breast height (DBH), regardless of
7				height.
8				Sapling/Shrub – Woody plants, excluding vines, less
· ·				than 3 in. DBH and greater than 3.28 ft (1 m) tall.
10			-	Herb – All herbaceous (non-woody) plants, regardless
11				of size, and woody plants less than 3.28 ft tall.
12	48	T (-1.0		Woody vine – All woody vines greater than 3.28 ft in
Woody Vine Stratum (Plot size: ^{30'})	40	= Total Cov	⁄er	height.
1. Smilax sp.	2	no	FAC	
2.				
3.				
4.				
				Hydrophytic
5			-	Vegetation Present? Yes No
6	2			rieseitt: ies No
		= Total Cov	/er	
Remarks: (Include photo numbers here or on a separate	sheet.)	مان بلمائم	1.71	

Feature is located in a seep area that has been disturbed (trampled) by cattle. Sapling and herb stratum's significantly impacted within sampling area.

Profile Des	cription: (Descril	be to the de	pth needed to docu	ment the	indicator	or confirm	n the absence of indicators.)	
Depth (inches)	Matrix Color (moist)	<u>(</u>	Color (moist)	x Feature %	s Type ¹	Loc ²	Texture Remarks	
0-2	2.5Y 3/1	100	Color (moist)		Type	LUC	silt loam	
2-9	2.5Y 4/2	90	7.5YR 4/6	10	<u>C</u>	PL	loam	
9-12	2.5Y 4/2	80	7.5YR 4/6	20	<u> </u>	PL	loam	
<u>J-12</u>	2.51 4/2		7.511(4/0		- —		- Ioani	
					-		·	
								
				-				
								
			<u> </u>					
'Type: C=C Hydric Soil		epletion, RN	M=Reduced Matrix, M	S=Masked	d Sand Gr	ains.	² Location: PL=Pore Lining, M=Matrix. Indicators for Problematic Hydric Soi	e ³ .
Histosol			Dark Surface	e (S7)			2 cm Muck (A10) (MLRA 147)	э.
	pipedon (A2)		Polyvalue Be	` ,	ice (S8) (N	/ILRA 147,		
	istic (A3)		Thin Dark St			147, 148)	(MLRA 147, 148)	
	en Sulfide (A4)		Loamy Gley		(F2)		Piedmont Floodplain Soils (F19)	
	d Layers (A5) uck (A10) (LRR N)		✓ Depleted Ma Redox Dark	. ,	-6)		(MLRA 136, 147) Red Parent Material (TF2)	
	d Below Dark Surf		Depleted Da	•	,		Very Shallow Dark Surface (TF12)	
	ark Surface (A12)	()	Redox Depre				Other (Explain in Remarks)	
Sandy N	Mucky Mineral (S1) (LRR N,	Iron-Mangar	iese Mass	es (F12) (LRR N,		
	A 147, 148)		MLRA 13	•			3	
	Gleyed Matrix (S4) Redox (S5)	l	Umbric Surfa Piedmont Flo				 Indicators of hydrophytic vegetation a wetland hydrology must be present, 	nd
	d Matrix (S6)		i leamont i	Jouplain C	oons (1 19)	(WEIXA 14	unless disturbed or problematic.	
	Layer (if observe	d):						
Type:								
Depth (in	iches):						Hydric Soil Present? Yes No	
Remarks:							•	

Project/Site: Maney Farm Stream Mitigation Site	City/County: Chat	ham		Sampling Date: 5/28/14	
Applicant/Owner: Wildlands Engineering			State: NC	Sampling Date: 5/28/14 Sampling Point: Wetland K - DP19	
Investigator(s): Ian Eckardt and Win Taylor				Gampling Fount.	
Landform (hillslope, terrace, etc.): floodplain				Slone (%): 0	
Subregion (LRR or MLRA): MLRA 136 Lat:					
Soil Map Unit Name: Cid-Lignum complex, 2-6% slopes (CmB) / Nanford-Badin complex 6-10	% slopes (Na	(C) NAW 1 15	Datum:	
· · · · · · · · · · · · · · · · · · ·	,			·	
Are climatic / hydrologic conditions on the site typical for	•				
Are Vegetation, Soil, or Hydrology					
Are Vegetation, Soil, or Hydrology	naturally problematic? (If needed, ex	xplain any answer	rs in Remarks.)	
SUMMARY OF FINDINGS - Attach site m	ap showing sampling poi	nt location	ns, transects	, important features, etc.	
	No Is the Sam	pled Area			
Hydric Soil Present? Yes	No within a We	tland?	Yes	No	
Wetland Hydrology Present? Yes ✓ Remarks:	_ No				
Cattle have access to the sampling I at the sampling point.	oddion and navo diota		mpica maon	or the danage area	
HYDROLOGY					
Wetland Hydrology Indicators:				tors (minimum of two required)	
Primary Indicators (minimum of one is required; check			Surface Soil (
	True Aquatic Plants (B14)		Sparsely Vegetated Concave Surface (B8)		
	Hydrogen Sulfide Odor (C1)	Danta (CO)	Drainage Pat		
	Oxidized Rhizospheres on Living F Presence of Reduced Iron (C4)	(001S (C3)	Moss Trim Li	Nater Table (C2)	
	Recent Iron Reduction in Tilled So	ils (C6)	Crayfish Burr		
	Thin Muck Surface (C7)	10 (00)	-	sible on Aerial Imagery (C9)	
	Other (Explain in Remarks)	-		ressed Plants (D1)	
✓ Iron Deposits (B5)	, ,		Geomorphic		
Inundation Visible on Aerial Imagery (B7)			Shallow Aqui	tard (D3)	
Water-Stained Leaves (B9)			Microtopogra	phic Relief (D4)	
Aquatic Fauna (B13)			FAC-Neutral	Test (D5)	
Field Observations:	5 4 4 4 4 0 5				
Surface Water Present? Yes _ ✓ No					
Water Table Present? Yes _ ✓ No		***		√ »	
Saturation Present? Yes No	Depth (inches): 0-12	Wetland Hy	ydrology Presen	t? Yes <u>Y</u> No	
Describe Recorded Data (stream gauge, monitoring w	vell, aerial photos, previous inspect	ions), if avail	lable:		
Remarks:					
Remarks.					

Sampling Point: Wetland K - DP19

,	Absolute	Dominant	Indicator	Dominance Test worksheet:		
<u>Tree Stratum</u> (Plot size: 30'	% Cover	Species?	Status	Number of Dominant Species		
1. Quercus phellos	1	no	FAC	That Are OBL, FACW, or FAC:	2	(A)
2. Ulmus americana	1	no	FACW	Total Number of Dominant		
3. Fraxinus pennsylvanica	1	no	FACW	Species Across All Strata:	3	(B)
4. Juniperus virginiana	1	no	FACU	Derecht of Deminant Chasins		
5				Percent of Dominant Species That Are OBL, FACW, or FAC:	66%	(A/B)
6			-			
7				Prevalence Index worksheet:		
8.				Total % Cover of:		
		= Total Cov	er	OBL species x	1 =	_
Sapling/Shrub Stratum (Plot size: 15')				FACW species x	2 =	_
1. Ligustrum japonicum	2	no	UPL	FAC species x	3 =	_
2				FACU species x	4 =	_
3				UPL species x	5 =	_
4				Column Totals: (A	.)	_ (B)
5						
6.				Prevalence Index = B/A =		_
7				Hydrophytic Vegetation Indica		
8.				1 - Rapid Test for Hydrophy	tic Vegetation	
9			-	✓ 2 - Dominance Test is >50%	Ď	
10.				3 - Prevalence Index is ≤3.0	1	
10	2	= Total Cov	· · · · · · · · · · · · · · · · · · ·	4 - Morphological Adaptation		porting
Herb Stratum (Plot size: 5')	-	- Total Cov	CI	data in Remarks or on a		
1. Juncus effusus	30	yes	FACW	Problematic Hydrophytic Ve	getation' (Explai	n)
2. Carex lurida	30	yes	OBL			
3. Festuca sp.	20	yes	FACU	¹ Indicators of hydric soil and wet		nust
4 Polygonum pensylvanicum	10	no	FACW	be present, unless disturbed or p		
5. Ranunculus hispidus	2	no	FAC	Definitions of Four Vegetation	Strata:	
6. Amaranthus palmeri	2	no	FACU	Tree - Woody plants, excluding		
7. Trifolium repens	1	no	FACU	more in diameter at breast heigh height.	t (DBH), regardle	ess of
8 Vernonia sp.	1	no	FAC	neight.		
g Mentha sp.	1	no	FACW	Sapling/Shrub – Woody plants,		
10.				than 3 in. DBH and greater than	3.28 π (1 m) tall.	
11.			-	Herb – All herbaceous (non-woo		rdless
				of size, and woody plants less th	an 3.28 ft tall.	
12	97		-	Woody vine – All woody vines of	reater than 3.28	ft in
Woody Vine Stratum (Plot size: 30')		= Total Cov	er	height.		
1						
2			-			
3						
4				Hydrophytic		
5.				Vegetation Present? Yes	No	
6				Present? Yes	No	
		= Total Cov	er			
Remarks: (Include photo numbers here or on a separate s	heet.)					

Feature is located in a seep area that has been disturbed (trampled) by cattle. Sapling and herb stratum's significantly impacted within sampling area.

Sampling Point: Wetland K - DP19

	Matrix			dox Feature		Loc ²	Tauduma	Damarka	
(inches) 0-3	Color (moist) 2.5Y 4/2	% 90	Color (moist) 10YR 4/6	<u>%</u> 10	<u>Type¹</u> C	PL	Texture silt loam	Remarks	
	-								
3-9	2.5Y 4/2	95	7.5YR 4/6	5	<u>C</u>	_ <u>PL</u>	silt loam		
9-12	2.5Y 5/4	80	7.5YR 4/6	20	C	_ <u>PL</u>	loam		
							·		
	-		-						
		· · · · · · · · · · · · · · · · · · ·				_			
	-						·		
			-			_	·		
	<u> </u>		-						
		Depletion, RN	M=Reduced Matrix,	MS=Maske	d Sand G	rains.	² Location: PL=	Pore Lining, M=Matrix.	o 3
•	Indicators:		D 10 f	(0.7)				tors for Problematic Hydric	Soils":
Histoso	Epipedon (A2)		Dark Surfa		ace (S8)	MLRA 147,		cm Muck (A10) (MLRA 147) past Prairie Redox (A16)	
	Histic (A3)		Thin Dark					(MLRA 147, 148)	
	en Sulfide (A4)		Loamy Gle			· · · · · · · · · · · · · · · · · · ·		edmont Floodplain Soils (F19)	
	ed Layers (A5)		✓ Depleted N	latrix (F3)				(MLRA 136, 147)	
	luck (A10) (LRR N		Redox Dar		,			ed Parent Material (TF2)	
	ed Below Dark Sur		Depleted D		. ,			ry Shallow Dark Surface (TF1	2)
	Oark Surface (A12) Mucky Mineral (S1		Redox Dep			(I RR N	Ot	her (Explain in Remarks)	
	A 147, 148)) (L IXIX IX,	MLRA		303 (1 12)	(LIXIX IX,			
	Gleyed Matrix (S4))	Umbric Su		(MLRA 1	36, 122)	³ Indic	cators of hydrophytic vegetation	n and
Sandy	Redox (S5)		Piedmont F	loodplain	Soils (F19) (MLRA 14	18) we	tland hydrology must be pres	ent,
	d Matrix (S6)						un	less disturbed or problematic.	
Restrictive	Layer (if observe	ed):							
_									
Type:								Present? Yes У No	
Depth (ir	nches):						Hydric Soil F		
Depth (ir							Hydric 30ii F		
Depth (ir							Hydric 30ii F		
Depth (ir							riyunc 30ii r		
Depth (ir							Hyunc Son F		
Depth (ir							Hyunc Son F		
Depth (ir							Hyune Son F		
Depth (ir							Hyune Son F		
Depth (ir							Hyunc Son F		
Depth (ir							Hyunc Son A		
Depth (ir							Hyunc Son F		
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Depth (ir							riyunc 30ii r		

Project/Site: Maney Farm Stream Mitigation Site	City/Co	_{ounty:} Chatham		Sampling Date: 5/28/14	
Applicant/Owner: Wildlands Engineering			State: NC	Sampling Date: 5/28/14 Sampling Point: Upland K - DP20	
Investigator(s): Ian Eckardt and Win Taylor				<u> </u>	
Landform (hillslope, terrace, etc.): floodplain				Slope (%): 0	
Subregion (LRR or MLRA): MLRA 136	N 35.837396	Long. W 7	9.344589	Datum:	
Subregion (LRR or MLRA): MLRA 136 Lat: Soil Map Unit Name: Nanford-Badin complex, 6-10					
Are climatic / hydrologic conditions on the site typical for	or this time of year? Ye	es No ((If no, explain in R	Remarks.)	
Are Vegetation, Soil, or Hydrology	significantly disturb	ed? Are "Normal	Circumstances" p	present? Yes No _	
Are Vegetation, Soil, or Hydrology	naturally problemat	tic? (If needed, e	explain any answe	ers in Remarks.)	
SUMMARY OF FINDINGS - Attach site m			ons, transects	s, important features, etc.	
	_ No	Is the Sampled Area		,	
	_ No <u> </u>	within a Wetland?	Yes	No <u> </u>	
	No				
Remarks: Cattle have access to the sampling I					
at the sampling point.					
HYDROLOGY Wetland Hydrology Indicators:			Cacandary Indica	stars (minimum of two required)	
Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check	k all that annly)			ators (minimum of two required) Cracks (B6)	
Primary Indicators (minimum of one is required; check			Surface Soil		
	True Aquatic Plants (E Hydrogen Sulfide Odo		Sparsely Vegetated Concave Surface (B8)Drainage Patterns (B10)		
		es on Living Roots (C3)	Moss Trim L		
	Presence of Reduced			Water Table (C2)	
	Recent Iron Reduction		Crayfish Bur		
	Thin Muck Surface (C			isible on Aerial Imagery (C9)	
	Other (Explain in Rem	iarks)	Stunted or S	tressed Plants (D1)	
Iron Deposits (B5)			Geomorphic	Position (D2)	
Inundation Visible on Aerial Imagery (B7)			Shallow Aqu		
Water-Stained Leaves (B9)				aphic Relief (D4)	
Aquatic Fauna (B13)			FAC-Neutral	Test (D5)	
Field Observations: Surface Water Present? Yes No ✓	Depth (inches):				
<u> </u>	Depth (inches):				
	Depth (inches):		lydrology Preser	nt? Yes No ✓	
(includes capillary fringe)				IL! 165 NO	
Describe Recorded Data (stream gauge, monitoring w	vell, aerial photos, prev	vious inspections), if avail	ilable:		
Remarks:					

Sampling Point: Upland K - DP20

0.01	Absolute	Dominant		Dominance Test worksheet:	
<u>Tree Stratum</u> (Plot size: 30'	% Cover	Species?	Status	Number of Dominant Species	
1				That Are OBL, FACW, or FAC: 3 (A	۹)
2				Total Number of Dominant	
3					В)
4					,
5				Percent of Dominant Species That Are OBL, FACW, or FAC: 60%	A/B)
6.				That Ale OBL, FACW, of FAC.	-VD)
				Prevalence Index worksheet:	
7				Total % Cover of: Multiply by:	
8				OBL species x 1 =	
Sapling/Shrub Stratum (Plot size: 15')		= Total Cov	er	FACW species x 2 =	
1 Symphoricarpos orbiculatus	30	yes	FACU	FAC species x 3 =	
· · · · · · · · · · · · · · · · · · ·	· 	<u> </u>			
2.				FACU species x 4 =	
3				UPL species x 5 =	(D)
4				Column Totals: (A)	(B)
5				Prevalence Index = B/A =	
6				Hydrophytic Vegetation Indicators:	
7				1 - Rapid Test for Hydrophytic Vegetation	
8					
9					
10				3 - Prevalence Index is ≤3.0 ¹	
		= Total Cov	er	4 - Morphological Adaptations ¹ (Provide suppo data in Remarks or on a separate sheet)	rting
Herb Stratum (Plot size: 5')					
1. Festuca sp.	20	yes	FACU	Problematic Hydrophytic Vegetation ¹ (Explain)	
2. Carex lurida	20	yes	OBL	1	
3. Persicaria meisneriana	15	yes	FAC	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	st
4. Ranunculus hispidus	15	yes	FAC	<u> </u>	
5. Juncus effusus	1	no	FACW	Definitions of Four Vegetation Strata:	
•				Tree – Woody plants, excluding vines, 3 in. (7.6 cm	
6				more in diameter at breast height (DBH), regardless	s of
7				height.	
8				Sapling/Shrub – Woody plants, excluding vines, le	ess
9				than 3 in. DBH and greater than 3.28 ft (1 m) tall.	
10				Herb – All herbaceous (non-woody) plants, regardle	ess
11				of size, and woody plants less than 3.28 ft tall.	
12				Weeds vine All weeds vines greater than 2.29 ft	in
	71	= Total Cov	er	Woody vine – All woody vines greater than 3.28 ft height.	III
Woody Vine Stratum (Plot size: 30')					
1	· 				
2					
3					
4				Unidea whistia	
5				Hydrophytic Vegetation	
6				Present? Yes No	
		= Total Cov	er		
Remarks: (Include photo numbers here or on a separate s	sheet.)			1	
Transaction (included printed flat included in the department of					

Sampling Point: Upland K - DP20

SOIL

Profile Desc	ription: (Describe	to the de	oth needed to docu	ment the	indicator	or confirm	n the ab	sence of indicato	rs.)	
Depth	Matrix		Redo	ox Feature	s					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Text	ure	Remarks	
0-4	2.5Y 4/4	100					loam			
4-12	2.5Y 6/4	90	5YR 4/6	10	С	PL	loam			
		-			· 					
					<u> </u>					
		-	-							
		-			·					
							-			
		letion, RM	I=Reduced Matrix, M	S=Maske	d Sand G	rains.	² Locati	on: PL=Pore Linin		
Hydric Soil I	Indicators:							Indicators for Pro	oblematic Hy	dric Soils³:
Histosol	(A1)		Dark Surface	e (S7)				2 cm Muck (A	(10) (MLRA 1 4	17)
	pipedon (A2)		Polyvalue B	elow Surfa	ice (S8) (I	MLRA 147 ,	148)	Coast Prairie		
Black Hi	stic (A3)		Thin Dark S	urface (S9) (MLRA	147, 148)		(MLRA 147	7, 148)	
Hydroge	n Sulfide (A4)		Loamy Gley	ed Matrix	(F2)			Piedmont Flo	odplain Soils (F19)
Stratified	d Layers (A5)		Depleted Ma	atrix (F3)				(MLRA 136	6, 147)	
	ick (A10) (LRR N)		Redox Dark					Red Parent M		
	d Below Dark Surfac	e (A11)	Depleted Da					Very Shallow		
	ark Surface (A12)		Redox Depr					Other (Explain	n in Remarks)	
	lucky Mineral (S1) (L	_RR N,	Iron-Mangar		es (F12)	(LRR N,				
	A 147, 148)		MLRA 13	•		20 400		3, ,, ,		
	Gleyed Matrix (S4)		Umbric Surfa					³ Indicators of hy		
	Redox (S5)		Piedmont FI	oodplain S	Soils (F19) (MLRA 14	18)		ology must be	
	Matrix (S6)							uniess disturb	ed or problem	iatic.
	_ayer (if observed):									
Type:										,
Depth (inc	ches):						Hydr	ic Soil Present?	Yes	No <u>✓</u>
Remarks:										

Project/Site: Maney Farm Stream Mitigation	Site City/C	ounty: Chatham		Sampling Date: 5/28/14
Applicant/Owner: Wildlands Engineering			State: NC	Sampling Date: 5/28/14 Sampling Point: Wetland L - DP21
Investigator(s): Ian Eckardt and Win Taylor				
Landform (hillslope, terrace, etc.): floodplain				Slope (%): 0
Subregion (LRR or MLRA): MLRA 136 Soil Map Unit Name: Cid-Lignum complex, 2-6% s	slopes (CmB) / Cid silt loam, c	complex, 6-10% slopes (C	(kC) NWI classific	eation:
Are climatic / hydrologic conditions on the site typ				
Are Vegetation ✓, Soil, or Hydrology				,
Are Vegetation, Soil, or Hydrology				
SUMMARY OF FINDINGS - Attach s	ite map showing sam	pling point location	ons, transects	, important features, etc.
Hydrophytic Vegetation Present? Yes _	✓ No			
	✓ No	Is the Sampled Area within a Wetland?	Vos V	No
	✓ No	within a Wetland:	165	
Remarks:				
at the sampling point.				
HYDROLOGY				
Wetland Hydrology Indicators:				tors (minimum of two required)
Primary Indicators (minimum of one is required;			Surface Soil	
Surface Water (A1)	True Aquatic Plants (I			getated Concave Surface (B8)
High Water Table (A2) Saturation (A3)	Hydrogen Sulfide OddOxidized Rhizosphere		Drainage Pat	
Water Marks (B1)	Presence of Reduced			Water Table (C2)
Sediment Deposits (B2)	Recent Iron Reduction		Crayfish Burr	
✓ Drift Deposits (B3)	Thin Muck Surface (C			sible on Aerial Imagery (C9)
Algal Mat or Crust (B4)	Other (Explain in Ren			tressed Plants (D1)
Iron Deposits (B5)	_ ` ` `	,		Position (D2)
Inundation Visible on Aerial Imagery (B7)			Shallow Aqui	
✓ Water-Stained Leaves (B9)			Microtopogra	aphic Relief (D4)
Aquatic Fauna (B13)			FAC-Neutral	Test (D5)
Field Observations:	,			
	Depth (inches):			
	Depth (inches):			./
Saturation Present? Yes No _ (includes capillary fringe)	Depth (inches):	Wetland H	Hydrology Presen	nt? Yes <u>Y</u> No
Describe Recorded Data (stream gauge, monitor	oring well, aerial photos, pre-	vious inspections), if ava	ailable:	
Remarks:				

Sampling Point: Wetland L - DP21

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?		Dominance Test worksheet:
Fraxinus pennsylvanica	40	yes	FACW	Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)
Ulmus americana	35	yes	FACW	(,
3.				Total Number of Dominant Species Across All Strata: 7 (B)
4				
5				Percent of Dominant Species That Are OBL, FACW, or FAC: 71% (A/B)
3				
7.				Prevalence Index worksheet:
3.				Total % Cover of: Multiply by:
	75	= Total Cov	/er	OBL species x 1 =
Sapling/Shrub Stratum (Plot size: 15')				FACW species x 2 =
Ligustrum japonicum	5	yes	UPL	FAC species x 3 =
2. Rosa multiflora	5	yes	FACU	FACU species x 4 =
3				UPL species x 5 =
4				Column Totals: (A) (B)
5				Dravelence Index = D/A =
3				Prevalence Index = B/A =
7				Hydrophytic Vegetation Indicators: 1 - Rapid Test for Hydrophytic Vegetation
3				✓ 2 - Dominance Test is >50%
9				
10				3 - Prevalence Index is ≤3.0 ¹
5 1	10	= Total Cov	/er	 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
Herb Stratum (Plot size: 5')	-		EACIA/	Problematic Hydrophytic Vegetation ¹ (Explain)
Juncus effusus	5	yes	FACW	
Polygonum pensylvanicum	<u>5</u> 	yes	FACW	¹ Indicators of hydric soil and wetland hydrology must
3. Microstegium vimineum		yes	FAC	be present, unless disturbed or problematic.
4				Definitions of Four Vegetation Strata:
5				Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or
6				more in diameter at breast height (DBH), regardless of
7				height.
3				Sapling/Shrub – Woody plants, excluding vines, less
9				than 3 in. DBH and greater than 3.28 ft (1 m) tall.
10				Herb – All herbaceous (non-woody) plants, regardless
11				of size, and woody plants less than 3.28 ft tall.
12				Woody vine – All woody vines greater than 3.28 ft in
Noody Vine Stratum (Plot size: 30')	15	= Total Cov	/er	height.
1				
2				
3				
4 -				Hydrophytic
5				Vegetation Present? Yes No
5				Present? fes No
Remarks: (Include photo numbers here or on a separat		= Total Cov	rer	
Jamarka: (Ingluda abata numbara bara ar an a canarat	a abaat \			

Sampling Point: Wetland L - DP21

	Matrix	<u>(</u>		dox Feature		1 2	T 4		Danasadas	
(inches) 0-4	Color (moist) 10YR 4/2		Color (moist) 7.5YR 4/4	<u>%</u> 20	<u>Type¹</u> C	Loc ²	<u>Text</u>	ure	Remarks	
			-				loam			
4-12	2.5Y 6/3	75	7.5YR 4/6	25	<u>C</u>	_ <u>PL</u>	loam			
			-							
	-				_					
			<u> </u>		-					
				_				,		
					_					
vpe: C=C	concentration, D=D	epletion. RN	M=Reduced Matrix, I	MS=Maske	d Sand G	Grains.	² Locatio	on: PL=Pore Lir	ning, M=Matrix.	
	Indicators:	- opiouo,			<u> </u>			Indicators for	Problematic Hy	dric Soils ³ :
_ Histosol	I (A1)		Dark Surfa	ce (S7)					(A10) (MLRA 14	
	pipedon (A2)				ace (S8)	(MLRA 147	, 148)		rie Redox (A16)	
	istic (A3)		Thin Dark S	•	, .	147, 148)			147, 148)	
	en Sulfide (A4)		Loamy Gle		(F2)				loodplain Soils ((F19)
	d Layers (A5)		✓ Depleted M		FC)				136, 147)	
	uck (A10) (LRR N) d Below Dark Surf		Redox Dari	,	,				t Material (TF2) ow Dark Surface	(TF12)
	ark Surface (A12)	(111)	Redox Dep						lain in Remarks)	
	Mucky Mineral (S1)) (LRR N,	Iron-Manga			(LRR N,		_ ` '	,	
	A 147, 148)		MLRA 1							
	Gleyed Matrix (S4)		Umbric Sur						hydrophytic veg	
	Redox (S5)		Piedmont F	loodplain	Soils (F19	9) (MLRA 14	48)	-	drology must be	
	d Matrix (S6)	ما/،					1	unless dist	urbed or problem	natic.
	Layer (if observe	u):								
Type:							l la colori	ia Cail Duanant	. v /	N.
							Hyari	ic Soil Present?	? Yes <u>▼</u>	No
	ohoo):						nyuri	ic Soil Fresent	res <u>·</u>	NO
Depth (in	iches):									
	iches):									
Depth (in	iches):									
Depth (in	iches):									
Depth (in	iches):									
Depth (in	iches):									
Depth (in	iches):									
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Depth (in	iches):									
Depth (in	iches):									
Depth (in	iches):									
Depth (in	iches):									
Depth (in	iches):									
Depth (in	iches):									

Project/Site: Maney Farm Stream Mitigation Site	City/County: Cha	atham	Sampling Date: 5/28/14		
Applicant/Owner: Wildlands Engineering		State: N	Sampling Date: 5/28/14 IC Sampling Point: Upland L - DP22		
Investigator(s): Ian Eckardt and Win Taylor					
Landform (hillslope, terrace, etc.): floodplain					
Subregion (LRR or MLRA): MLRA 136	N 35.838091	Long: W 79.34341	Datum:		
Subregion (LRR or MLRA): MLRA 136 Lat: Soil Map Unit Name: Cid silt loam, complex, 6-10%	slopes (CkC)	NWI c	classification:		
Are climatic / hydrologic conditions on the site typical for					
Are Vegetation, Soil, or Hydrology	significantly disturbed?	Are "Normal Circumsta	nces" present? Yes No		
Are Vegetation, Soil, or Hydrology		(If needed, explain any			
SUMMARY OF FINDINGS – Attach site ma					
Hydrophytic Vegetation Present? Yes✓	No Is the Sar	npled Area			
	No √ within a V	Vetland? Yes	No		
	_ No <u> </u>				
Remarks:					
project site.					
HYDROLOGY					
Wetland Hydrology Indicators:			y Indicators (minimum of two required)		
Primary Indicators (minimum of one is required; check	* * * *		ce Soil Cracks (B6)		
	True Aquatic Plants (B14)		Sparsely Vegetated Concave Surface (B8)Drainage Patterns (B10)		
	Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres on Living		age Patterns (B10) Trim Lines (B16)		
	Oxidized Rhizospheres on Living Presence of Reduced Iron (C4)		eason Water Table (C2)		
	Recent Iron Reduction in Tilled S		ish Burrows (C8)		
	Thin Muck Surface (C7)		ation Visible on Aerial Imagery (C9)		
	Other (Explain in Remarks)		ed or Stressed Plants (D1)		
Iron Deposits (B5)		Geom	norphic Position (D2)		
Inundation Visible on Aerial Imagery (B7)		Shallo	ow Aquitard (D3)		
Water-Stained Leaves (B9)		Micro	topographic Relief (D4)		
Aquatic Fauna (B13)		FAC-I	Neutral Test (D5)		
Field Observations:	5 " "				
	Depth (inches):				
	Depth (inches):	Matlemal Hudnele	Present? Yes No ✓		
Saturation Present? Yes No✓ (includes capillary fringe)	Depth (inches):	wetland Hydrology	Present? Yes No		
Describe Recorded Data (stream gauge, monitoring w	ell, aerial photos, previous inspe	ctions), if available:			
Remarks:					

Sampling Point: Upland L - DP22

001	Absolute	Dominant		Dominance Test worksheet:	
<u>Tree Stratum</u> (Plot size: 30'		Species?		Number of Dominant Species	
1. Ulmus americana	45	yes	FACW	That Are OBL, FACW, or FAC: 3	(A)
Liquidambar styraciflua	40	yes	FAC	Total Number of Dominant	
3				A	(B)
4					
5				Percent of Dominant Species That Are OBL, FACW, or FAC: 75%	(A/B)
6.					(700)
7				Prevalence Index worksheet:	
8				Total % Cover of: Multiply by:	
·	85	= Total Cov		OBL species x 1 =	_
Sapling/Shrub Stratum (Plot size: 15')		- Total Cov	Ci	FACW species x 2 =	_
1. Ligustrum sinense	5	yes	FACU	FAC species x 3 =	
2. Rosa multiflora	2	no	FACU	FACU species x 4 =	
3. Juniperus virginiana	2	no	FACU	UPL species x 5 =	
4 Symphoricarpos orbiculatus	2	no	FACU	Column Totals: (A)	
· · · · · · · · · · · · · · · · · · ·	· 			Column Totals (A)	_ (D)
5				Prevalence Index = B/A =	_
6				Hydrophytic Vegetation Indicators:	
7				1 - Rapid Test for Hydrophytic Vegetation	
8				✓ 2 - Dominance Test is >50%	
9				3 - Prevalence Index is ≤3.0 ¹	
10				4 - Morphological Adaptations ¹ (Provide supp	orting
	11	= Total Cov	er	data in Remarks or on a separate sheet)	orting
Herb Stratum (Plot size: 5')			540	Problematic Hydrophytic Vegetation ¹ (Explain	1)
1. Microstegium vimineum	70	yes	FAC		.,
2. Polygonum pensylvanicum	5	no	FAW	¹ Indicators of hydric soil and wetland hydrology m	unt
3	2	no		be present, unless disturbed or problematic.	นอเ
4				Definitions of Four Vegetation Strata:	
5				Johnson of Four Togotation Chatai	
6				Tree – Woody plants, excluding vines, 3 in. (7.6 c	
7				more in diameter at breast height (DBH), regardle height.	SS Of
8.					
9.				Sapling/Shrub – Woody plants, excluding vines,	less
				than 3 in. DBH and greater than 3.28 ft (1 m) tall.	
10				Herb - All herbaceous (non-woody) plants, regard	dless
11.	· ——			of size, and woody plants less than 3.28 ft tall.	
12	77			Woody vine – All woody vines greater than 3.28 f	ft in
Woody Vine Stratum (Plot size: 30')	77	= Total Cov	er	height.	
1 Parthenocissus quinquefolia	2	no	FACU		
2. Smilax sp.	1	no	FAC		
	· <u>-</u>	110	1710		
3					
4	. ———			Hydrophytic	
5				Vegetation	
6				Present? Yes No	
	3	= Total Cov	er		
Remarks: (Include photo numbers here or on a separate s	sheet.)				
	,				

Sampling Point: Upland L - DP22

Depth	Matrix	%	Redox Features	T4	Daniel de
(inches) 0-4	Color (moist) 10YR 5/4	<u></u>	Color (moist) % Type ¹ Loc ²	Text loam	ure Remarks
4-12	10YR 7/4	100		loam	·
				-	
		_			 -
Type: C=C	Concentration D=D	enletion PM=	Reduced Matrix, MS=Masked Sand Grains.	² Locati	on: PL=Pore Lining, M=Matrix.
	Indicators:	epietion, rawi–	Neduced Matrix, Mo-Masked Sand Stains.	Locati	Indicators for Problematic Hydric Soils ³ :
_ Histoso			Dark Surface (S7)		2 cm Muck (A10) (MLRA 147)
	pipedon (A2)		Polyvalue Below Surface (S8) (MLRA 147)	148)	Coast Prairie Redox (A16)
	listic (A3)		Thin Dark Surface (S9) (MLRA 147, 148)	•	(MLRA 147, 148)
Hydrog	en Sulfide (A4)		Loamy Gleyed Matrix (F2)		Piedmont Floodplain Soils (F19)
	ed Layers (A5)		Depleted Matrix (F3)		(MLRA 136, 147)
	uck (A10) (LRR N)		Redox Dark Surface (F6)		Red Parent Material (TF2)
	ed Below Dark Surf Park Surface (A12)	ace (A11)	Depleted Dark Surface (F7)Redox Depressions (F8)		Very Shallow Dark Surface (TF12)Other (Explain in Remarks)
	Mucky Mineral (S1)	(I RR N	Iron-Manganese Masses (F12) (LRR N,		Other (Explain in Remarks)
	A 147, 148)	(LIXIX IX,	MLRA 136)		
	Gleyed Matrix (S4)		Umbric Surface (F13) (MLRA 136, 122)		³ Indicators of hydrophytic vegetation and
	Redox (S5)		Piedmont Floodplain Soils (F19) (MLRA 14	4 8)	wetland hydrology must be present,
_ Strippe	d Matrix (S6)				unless disturbed or problematic.
		d):			
estrictive	Layer (if observe	- ,			
Type:	-				,
Type:	-		<u> </u>	Hydr	ic Soil Present? Yes No _✓
Type: Depth (ir				Hydri	ic Soil Present? Yes No _✓
Type: Depth (ir				Hydr	ic Soil Present? Yes No _✓
Type: Depth (in				Hydri	ic Soil Present? Yes No _ ✓
Type: Depth (in				Hydri	ic Soil Present? Yes No
Type: Depth (ir				Hydri	ic Soil Present? Yes No _✓
Type: Depth (ir				Hydr	ic Soil Present? Yes No ✓
Type: Depth (in				Hydri	ic Soil Present? Yes No _ ✓
Type: Depth (in				Hydri	ic Soil Present? Yes No
Type: Depth (in				Hydri	ic Soil Present? Yes No _✓
Type: Depth (in				Hydri	ic Soil Present? Yes No
Type: Depth (in				Hydri	ic Soil Present? Yes No _ ✓
Type: Depth (in				Hydri	ic Soil Present? Yes No
Type: Depth (in				Hydri	ic Soil Present? Yes No
Type: Depth (in				Hydri	ic Soil Present? Yes No
Type: Depth (in				Hydri	ic Soil Present? Yes No
Type: Depth (ir				Hydri	ic Soil Present? Yes No
Туре:				Hydri	ic Soil Present? Yes No
Type: Depth (ir				Hydri	ic Soil Present? Yes No
Type: Depth (in				Hydri	ic Soil Present? Yes No
Type: Depth (in				Hydri	ic Soil Present? Yes No
Type: Depth (in				Hydri	ic Soil Present? Yes No
Type: Depth (ir				Hydri	ic Soil Present? Yes No

Project/Site: Maney Farm Stream Mitigation Site	e City/C	county: Chatham		Sampling Date: 5/28/14
Applicant/Owner: Wildlands Engineering			State: NC	Sampling Date: 5/28/14 Sampling Point: Wetland M - DP23
Investigator(s): Ian Eckardt and Win Taylor				<u> </u>
Landform (hillslope, terrace, etc.): floodplain				Slone (%): 0
Subragion (LBB or MLBA): MLRA 136	N 35.838434	Long: W 7	79.343688	Olope (70)
Subregion (LRR or MLRA): MLRA 136 La Soil Map Unit Name: Cid-Lignum complex, 2-6%	slopes (CmB)	Long	NWI classific	cation:
Are climatic / hydrologic conditions on the site typical	for this time of year? Y	es No	(If no, explain in R	Remarks.)
Are Vegetation, Soil, or Hydrology	significantly distur	bed? Are "Norma	l Circumstances" ¡	oresent? Yes No _
Are Vegetation, Soil, or Hydrology			explain any answe	·
SUMMARY OF FINDINGS – Attach site i				
Hydrophytic Vegetation Present? Yes✓	No	Is the Sampled Area		
Hydric Soil Present? Yes✓	No	within a Wetland?	Yes ✓	No
Wetland Hydrology Present? Yes✓	No			
Remarks:				
at the sampling point.				
HYDROLOGY			0	- (
Wetland Hydrology Indicators:	als all that amples			ators (minimum of two required)
Primary Indicators (minimum of one is required; che		D44)	Surface Soil	
	True Aquatic Plants (Hydrogen Sulfide Ode			getated Concave Surface (B8)
		es on Living Roots (C3)	Drainage Pa Moss Trim L	
	Presence of Reduced			Water Table (C2)
	_ Recent Iron Reductio		Crayfish Bur	
	Thin Muck Surface (C			isible on Aerial Imagery (C9)
Algal Mat or Crust (B4)	Other (Explain in Ren	narks)	Stunted or S	tressed Plants (D1)
Iron Deposits (B5)			Geomorphic	Position (D2)
Inundation Visible on Aerial Imagery (B7)			Shallow Aqu	
✓ Water-Stained Leaves (B9)				aphic Relief (D4)
Aquatic Fauna (B13)		<u>, </u>	FAC-Neutral	Test (D5)
Field Observations:	Double (in the ca)			
· · · · · · · · · · · · · · · · · · ·	Depth (inches):			
	Depth (inches): 0-12 Depth (inches): 0-12		Hydrology Preser	nt? Yes ✓ No
(includes capillary fringe)				nt? fes No
Describe Recorded Data (stream gauge, monitoring	well, aerial photos, pre	vious inspections), if ava	ailable:	
Remarks:				

Sampling Point: Wetland M - DP23

<u>Tree Stratum</u> (Plot size: 30')	Absolute			Dominance Test worksheet:
Tree Stratum (Plot size: 30) 1. Acer rubrum	60	Species? yes	FAC	Number of Dominant Species That Are OBL FACW or FAC: 3 (A)
2. Ulmus americana	20	yes	FACW	That Are OBL, FACW, or FAC: $\frac{3}{}$ (A)
0			17.011	Total Number of Dominant Species Across All Strata: 5 (B)
3				Species Across All Strata: 5 (B)
۶				Percent of Dominant Species That Are ORL FACW or FAC: 60% (A/B)
5.				That Are OBL, FACW, or FAC: 60% (A/B)
6				Prevalence Index worksheet:
7				Total % Cover of: Multiply by:
8.	80	= Total Cov	or .	OBL species x 1 =
Sapling/Shrub Stratum (Plot size: 15')		- Total Cov	Ci	FACW species x 2 =
1. Juniperus virginiana	2	no	FACU	FAC species x 3 =
2. Ligustrum japonicum	2	no	UPL	FACU species x 4 =
3. Rosa multiflora	1	no	FACU	UPL species x 5 =
4. Fraxinus pennsylvanica	1	no	FACW	Column Totals: (A) (B)
5.				
6				Prevalence Index = B/A =
7				Hydrophytic Vegetation Indicators:
8.				1 - Rapid Test for Hydrophytic Vegetation
9.				✓ 2 - Dominance Test is >50%
10.				3 - Prevalence Index is ≤3.0¹
Herb Stratum (Plot size: 5')	6	= Total Cov	er	4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
1. Microstegium vimineum	10	yes	FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
2. Festuca sp.	5	yes	FACU	
3. Fragaria virginiana	5	yes	FACU	¹ Indicators of hydric soil and wetland hydrology must
4 Amaranthus palmeri	1	no	FACU	be present, unless disturbed or problematic.
5. Juncus effusus	1	no	FACW	Definitions of Four Vegetation Strata:
				Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or
6				more in diameter at breast height (DBH), regardless of
7	-			height.
8	-			Sapling/Shrub – Woody plants, excluding vines, less
9				than 3 in. DBH and greater than 3.28 ft (1 m) tall.
10	-			Herb – All herbaceous (non-woody) plants, regardless
11				of size, and woody plants less than 3.28 ft tall.
12	22			Woody vine – All woody vines greater than 3.28 ft in
Woody Vine Stratum (Plot size: 30')		= Total Cov	ei	height.
1. Smilax sp.	2	no	FAC	
2.				
3.				
4.				
5.				Hydrophytic
6.				Vegetation Present? Yes No
o	2	= Total Cov	er	100
Remarks: (Include photo numbers here or on a separate	sheet.)			1
Feature is located in a seep area that h		disturb	ed (trai	moled) by cattle. Sanling and herb

Feature is located in a seep area that has been disturbed (trampled) by cattle. Sapling and herb stratum's significantly impacted within sampling area.

Sampling Point: Wetland M - DP23

Depth	Matrix			dox Featu		1 2	T t		Demonstra	
(inches) 0-4	Color (moist) 10YR 4/2	<u>%</u> 95	Color (moist) 10YR 5/8	<u>%</u> 5	Type ¹ C	Loc ²	Texture silt loam		Remarks	
4-12	2.5Y 6/1	95	10YR 5/8	5	_ <u>C</u>	_ <u>PL</u>	loam			
	<u> </u>									
							-			
	· ·		_					<u> </u>		
	· -		- -							
	<u> </u>						-			
	<u> </u>									
Гуре: С=С	Concentration, D=D	epletion, RI	M=Reduced Matrix,	MS=Mask	ed Sand (Grains.	² Location:	PL=Pore Linir	ng, M=Matrix.	
ydric Soil	Indicators:						Inc	dicators for Pr	oblematic Hy	dric Soils ³ :
Histoso			Dark Surfa						A10) (MLRA 1 4	47)
	Epipedon (A2)					(MLRA 147	, 148)	Coast Prairie		
	Histic (A3) en Sulfide (A4)		Thin Dark S Loamy Gle	•	, .	147, 148)		(MLRA 14	7, 148) oodplain Soils (E10)
	ed Layers (A5)		Loanly Gle					MLRA 13		r 19)
	luck (A10) (LRR N))	Redox Dar						Material (TF2)	
	ed Below Dark Surf		Depleted D	ark Surfa	ce (F7)		_		Dark Surface	(TF12)
	Oark Surface (A12)		Redox Dep				_	Other (Expla	in in Remarks)	
	Mucky Mineral (S1)) (LRR N,	Iron-Manga		sses (F12)	(LRR N,				
	A 147, 148) Gleyed Matrix (S4)		MLRA ' Umbric Su	•	e) (MI PA	136 122)	3	Indicators of h	drophytic veg	etation and
	Redox (S5)					136, 122) 9) (MLRA 1			ology must be	
-	d Matrix (S6)		1 100111011111	iooupiuiii	000 (1 1.) (III = 10 t 1	,	-	bed or problem	
	Layer (if observe	d):							· ·	
Type:										
Depth (ir	nches):						Hydric S	Soil Present?	Yes <u>√</u>	No
Remarks:							ı			

Project/Site: Maney Farm Stream Mitigation Site	City/Co	ounty: Chatham		Sampling Date: 5/28/14			
Applicant/Owner: Wildlands Engineering			State: NC	Sampling Date: 5/28/14 Sampling Point: Upland M - DP24			
Investigator(s): Ian Eckardt and Win Taylor				<u> </u>			
Landform (hillslope, terrace, etc.): floodplain				Slone (%): 0			
Subregion (LRR or MLRA): MLRA 136 Lat	. N 35.838501	Long: W 7	9.343591	Olope (70)			
Subregion (LRR or MLRA): MLRA 136 Lat Soil Map Unit Name: Cid-Lignum complex, 2-6% s	slopes (CmB)	Long	NWI classific	cation:			
Are climatic / hydrologic conditions on the site typical f		,					
Are Vegetation _ ✓ _, Soil, or Hydrology	-			present? Yes No _			
Are Vegetation, Soil, or Hydrology			explain any answe	ers in Remarks.)			
SUMMARY OF FINDINGS – Attach site n	nap showing sam	pling point location	ons, transects	s, important features, etc.			
Hydrophytic Vegetation Present? Yes/	No						
	No. /	Is the Sampled Area within a Wetland?	Voc	No <u></u> ✓			
	No <u></u> ✓	within a Wetland:	163				
Remarks:							
Sampling point is representative of project site.	a non junoulou	mar apiana aroa	Todatod III t				
HYDROLOGY							
Wetland Hydrology Indicators:				ators (minimum of two required)			
Primary Indicators (minimum of one is required; chec			Surface Soil				
	True Aquatic Plants (E		Sparsely Vegetated Concave Surface (B8)				
	Hydrogen Sulfide Odo		Drainage Patterns (B10)				
	Oxidized Rhizosphere Presence of Reduced		Roots (C3) Moss Trim Lines (B16) Dry-Season Water Table (C2)				
	Recent Iron Reduction						
	Thin Muck Surface (C		-	isible on Aerial Imagery (C9)			
	Other (Explain in Rem			itressed Plants (D1)			
Iron Deposits (B5)	` '	,		Position (D2)			
Inundation Visible on Aerial Imagery (B7)			Shallow Aqu				
Water-Stained Leaves (B9)			Microtopogra	aphic Relief (D4)			
Aquatic Fauna (B13)			FAC-Neutral	Test (D5)			
Field Observations:							
	Depth (inches):						
	Depth (inches):			J			
Saturation Present? Yes No (includes capillary fringe)	_ Depth (inches):	Wetland H	lydrology Preser	nt? Yes No			
Describe Recorded Data (stream gauge, monitoring)	well, aerial photos, prev	vious inspections), if ava	ilable:				
Remarks:							

Sampling Point: Upland M - DP24

	Absolute	Dominant	Indicator	Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: <u>30'</u>)	% Cover	Species?	Status	Number of Dominant Species
1. Acer rubrum	40	yes	FAC	That Are OBL, FACW, or FAC: 4 (A)
2. Fraxinus pennsylvanica	20	yes	FACW	Total Number of Dominant
3. Ulmus americana	15	no	FACW	Species Across All Strata: 7 (B)
4. Ilex opaca	10	no	FACU	
5.				Percent of Dominant Species That Are OBL, FACW, or FAC: 57% (A/B)
6.				(A/B)
7				Prevalence Index worksheet:
				Total % Cover of: Multiply by:
8	95	= Total Cov		OBL species x 1 =
Sapling/Shrub Stratum (Plot size: 15')		- Total Cov	EI	FACW species x 2 =
1 Rosa multiflora	5	yes	FACU	FAC species x 3 =
2 Symphoricarpos orbiculatus	5	yes	FACU	FACU species x 4 =
				UPL species x 5 =
3				Column Totals: (A) (B)
4				Column Totals (A) (B)
5				Prevalence Index = B/A =
6				Hydrophytic Vegetation Indicators:
7				1 - Rapid Test for Hydrophytic Vegetation
8				✓ 2 - Dominance Test is >50%
9				3 - Prevalence Index is ≤3.0 ¹
10				4 - Morphological Adaptations ¹ (Provide supporting
	10	= Total Cov	er	data in Remarks or on a separate sheet)
Herb Stratum (Plot size: 5')	25		FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
1. Microstegium vimineum	_ 35	yes	FAC	
2. Festuca sp.	_ 1	no	FACU	¹ Indicators of hydric soil and wetland hydrology must
3				be present, unless disturbed or problematic.
4				Definitions of Four Vegetation Strata:
5				
6				Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of
7				height.
8.				
9.				Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
10.				than 3 iii. DBH and greater than 3.20 it (1 iii) taii.
11				Herb – All herbaceous (non-woody) plants, regardless
				of size, and woody plants less than 3.28 ft tall.
12	36	T-4-1 O		Woody vine – All woody vines greater than 3.28 ft in
Woody Vine Stratum (Plot size: 30')		= Total Cov	er	height.
1 Lonicera japonica	10	yes	FAC	
2. Parthenocissus quinquefolia	5	yes	FACU	
3. Smilax sp.	1	no	FAC	
3. <u>ax-sp.</u>	- 			
				Hydrophytic
4				
4 5				Vegetation
		= Total Cov		Vegetation Present? Yes No

Sampling Point: Upland M - DP24

SOIL

Profile Desc	ription: (Describe	to the de	oth needed to docu	ment the	indicator	or confirm	n the ab	sence of indicate	ors.)	
Depth	Matrix		Redo	ox Feature	<u>s</u>					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Text	ture	Remarks	
0-4	10YR 4/3	100					loam			
4-12	2.5Y 5/4	90	7.5YR 5/8	10	С	PL	loam			
		-			-					
			_							
				_						
	-	-	-							
			-							
						· ——	-			
		letion, RM	I=Reduced Matrix, M	IS=Maske	d Sand G	rains.	² Locati	on: PL=Pore Lini		
Hydric Soil I	ndicators:							Indicators for P	roblematic Hy	dric Soils³:
Histosol	(A1)		Dark Surfac	e (S7)				2 cm Muck (A10) (MLRA 1	47)
Histic Ep	pipedon (A2)		Polyvalue B	elow Surfa	ace (S8) (I	MLRA 147,	148)	Coast Prairie	e Redox (A16)	
Black Hi	stic (A3)		Thin Dark S	urface (S9) (MLRA	147, 148)		(MLRA 14	17, 148)	
	n Sulfide (A4)		Loamy Gley		(F2)				oodplain Soils	(F19)
	l Layers (A5)		Depleted Ma	atrix (F3)				(MLRA 13		
	ck (A10) (LRR N)		Redox Dark						Material (TF2)	
	d Below Dark Surfac	e (A11)	Depleted Da						v Dark Surface	
	ark Surface (A12)		Redox Depr					Other (Expla	in in Remarks))
	lucky Mineral (S1) (I	LRR N,	Iron-Mangar		ses (F12)	(LRR N,				
	147, 148)		MLRA 13	•				3, ,, ,		
	Sleyed Matrix (S4)		Umbric Surf					³ Indicators of h		
	ledox (S5)		Piedmont FI	oodplain S	Soils (F19) (MLRA 14	18)		ology must be	
	Matrix (S6)						1	uniess distur	bed or probler	natic.
	_ayer (if observed):									
Type:										,
Depth (inc	ches):						Hydr	ic Soil Present?	Yes	No
Remarks:										

Project/Site: Maney Farm Stream Mitigation Site	City/County: Chatham	1	Sampling Date: 5/28/14				
Applicant/Owner: Wildlands Engineering	City/County: Chatham	State: NC	Sampling Point: Wetland N - DP25				
Investigator(s): Ian Eckardt and Win Taylor			Oampling Form.				
Landform (hillslope, terrace, etc.): floodplain			Slone (%). 0				
Cubassias (LDD as MLDA), MLRA 136	N 35.840448	W 79.344473	Slope (70)				
Subregion (LRR or MLRA): MLRA 136 Lat: Soil Map Unit Name: Cid-Lignum complex, 2-6% s	lopes (CmB)	J. NIA/I alaasifi	Datum				
Are climatic / hydrologic conditions on the site typical fo			,				
Are Vegetation, Soil, or Hydrology			present? Yes No _				
Are Vegetation, Soil, or Hydrology	naturally problematic? (If nee	eded, explain any answe	ers in Remarks.)				
SUMMARY OF FINDINGS - Attach site m	ap showing sampling point lo	ocations, transects	s, important features, etc.				
Hydric Soil Present? Yes✓	No Is the Sampled within a Wetland	Area d? Yes <u></u> ✓	No				
Sampling point located in floodplain and have disturbed/trampled much of https://exampled.com/	-		ne sampling location				
		Socondary Indica	ators (minimum of two required)				
Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check	all that apply)						
			Surface Soil Cracks (B6) Sparsely Vegetated Concave Surface (B8)				
<u> </u>	True Aquatic Plants (B14) Hydrogen Sulfide Odor (C1)	Drainage Pa					
	Oxidized Rhizospheres on Living Roots						
	Presence of Reduced Iron (C4)		Water Table (C2)				
	Recent Iron Reduction in Tilled Soils (C						
	Thin Muck Surface (C7)		isible on Aerial Imagery (C9)				
Algal Mat or Crust (B4)	Other (Explain in Remarks)	Stunted or S	tressed Plants (D1)				
Iron Deposits (B5)		Geomorphic	Position (D2)				
Inundation Visible on Aerial Imagery (B7)		Shallow Aqu					
✓ Water-Stained Leaves (B9)			aphic Relief (D4)				
Aquatic Fauna (B13)		FAC-Neutra	Test (D5)				
Field Observations: Surface Water Present? Yes No	Donth (inches): 1.0						
Water Table Present? Yes ✓ No							
Saturation Present? Yes No		tland Hydrology Prese	nt? Yes ✓ No				
(includes capillary fringe)	Deptil (inches).	lialiu nyurology Presei	it! fes NO				
Describe Recorded Data (stream gauge, monitoring w	rell, aerial photos, previous inspections)), if available:					
Remarks:							

Sampling Point: Wetland N - DP25

201	Absolute	Dominant	Indicator	Dominance Test worksheet:	
<u>Tree Stratum</u> (Plot size: 30')		Species?		Number of Dominant Species	
1. Acer rubrum	20	yes	FAC	That Are OBL, FACW, or FAC: 4	(A)
2. Ulmus americana	20	yes	FACW	Total Number of Dominant	
3				Species Across All Strata: 6	(B)
4				Percent of Dominant Species	
5				That Are OBL, FACW, or FAC: 67%	(A/B)
6				Prevalence Index worksheet:	
7					
8					
15'	40	= Total Cov	er	OBL species x 1 =	
Sapling/Shrub Stratum (Plot size: 15') 1. Ligustrum japonicum	15	V00	LIDI	FACW species x 2 =	
	15	yes	UPL	FAC species x 3 =	
2.				FACU species x 4 =	
3				UPL species x 5 =	
4				Column Totals: (A)	(B)
5				Prevalence Index = B/A =	
6				Hydrophytic Vegetation Indicators:	
7				1 - Rapid Test for Hydrophytic Vegetation	1
8				✓ 2 - Dominance Test is >50%	•
9				3 - Prevalence Index is ≤3.0¹	
10				4 - Morphological Adaptations ¹ (Provide:	supporting
Harb Chartura (Diet sine), 5'	15	= Total Cov	er	data in Remarks or on a separate she	
Herb Stratum (Plot size: 5' Microstegium vimineum	20	yes	FAC	Problematic Hydrophytic Vegetation ¹ (Ex	plain)
2. Festuca sp.	10	yes	FACU		
	10	yes	FACW	¹ Indicators of hydric soil and wetland hydrolog	gy must
A second by a selection	2	no	FACU	be present, unless disturbed or problematic.	
4. Amarantnus paimeri 5. Carex lurida	2	no	OBL	Definitions of Four Vegetation Strata:	
6. Ranunculus hispidus	2	no	FAC	Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or
···	- =			more in diameter at breast height (DBH), rega	
7				height.	
8				Sapling/Shrub – Woody plants, excluding vir	
9				than 3 in. DBH and greater than 3.28 ft (1 m)	tall.
10			-	Herb – All herbaceous (non-woody) plants, re	
11.				of size, and woody plants less than 3.28 ft tal	l.
12	46			Woody vine – All woody vines greater than 3	3.28 ft in
Woody Vine Stratum (Plot size: 30')	-10	= Total Cov	er	height.	
1					
2.			-		
3.					
4					
				Hydrophytic	
5				Vegetation Present? Yes No	
6		= Total Cov	er.	16510	_
Pomorko: (Include photo numbers here or on a service		- 10tal C0V	<u>C1</u>		
Remarks: (Include photo numbers here or on a separate	,	+ ba= b=		vilve diatembard (transported) by the	l a

Feature is located in a concave depression that has been heavily disturbed (trampled) by cattle. Sapling and herb stratum's significantly impacted within sampling area.

Sampling Point: Wetland N - DP25

unches)	Matrix			lox Feature		1 = 52	T	iro.	Dama and a	
(inches) 0-5	Color (moist) 2.5Y 4/2	<u> </u>	Color (moist) 7.5YR 4/4	<u>%</u> 15	<u>Type¹</u> C	Loc ²	Texto silt loa		Remarks	
			-					 		
5-12	2.5Y 5/2	95	7.5YR 4/4	5	<u>C</u>	_ <u>PL</u>	loam			
			_							
			-				-			
			-				-			
							'			
							2, ,,			
	indicators:	epietion, Ri	M=Reduced Matrix, I	VIS=Maske	d Sand G	irains.	Locatio	on: PL=Pore Lin Indicators for F	ing, M=Matrix. Problematic Hy	dric Soils ³ :
Histosol			Dark Surfa	20 (\$7)					(A10) (MLRA 1 4	
	pipedon (A2)				ace (S8) i	MLRA 147,	148)	Coast Prairi		+1)
	listic (A3)		Thin Dark S				, 140,	(MLRA 1		
	en Sulfide (A4)		Loamy Gle	•	, .	, -,			loodplain Soils (F19)
	d Layers (A5)		✓ Depleted M					(MLRA 1		
2 cm Mı	uck (A10) (LRR N))	Redox Dar	k Surface (F6)				Material (TF2)	
	d Below Dark Surf		Depleted D						w Dark Surface	
	ark Surface (A12)		Redox Dep			# DD N		Other (Expl	ain in Remarks)	
	Mucky Mineral (S1 A 147, 148)) (LRR N,	Iron-Manga MLRA 1		ses (F12)	(LRR N,				
	Gleyed Matrix (S4)	1	Umbric Sur	-	(MIRA 1	36 122)		³ Indicators of I	nydrophytic vege	etation and
	Redox (S5)	1				9) (MLRA 14	1 8)		Irology must be	
-	d Matrix (S6)		1 loamone 1	Todapiani	30110 (1-10	, (III-IO (I	.0,	-	rbed or problem	
	Layer (if observe	ed):							,	
Type:										
	nches):						Hydri	c Soil Present?	Yes ✓	No
	,									
Remarks:										

Project/Site: Maney Farm Stream Mitigation Site	City/County: Chatha	m	Sampling Date: 5/28/14
Applicant/Owner: Wildlands Engineering			Sampling Point: Upland N-O - DP26
Investigator(s): Ian Eckardt and Win Taylor			<u> </u>
Landform (hillslope, terrace, etc.): floodplain			Slope (%): 0
Subregion (LRR or MLRA): MLRA 136 Lat: N 35			Datum:
Soil Map Unit Name: Cid-Lignum complex, 2-6% slopes	(CmB)	NWI classifi	cation:
Are climatic / hydrologic conditions on the site typical for this			
Are Vegetation, Soil, or Hydrology sig			present? Yes No
Are Vegetation, Soil, or Hydrology na	turally problematic? (If n	eeded, explain any answ	ers in Remarks.)
SUMMARY OF FINDINGS – Attach site map s	howing sampling point	locations, transect	s, important features, etc.
Hydrophytic Vegetation Present? Yes No Hydric Soil Present? Yes No Wetland Hydrology Present? Yes No Remarks:	within a Wetla	d Area ind? Yes	
Sampling point is representative of a non project site.	n-jurisdictional upland	l area located in t	the floodplain of the
HYDROLOGY			
Wetland Hydrology Indicators:		Secondary Indic	ators (minimum of two required)
Primary Indicators (minimum of one is required; check all the	at apply)	Surface Soi	
	Aquatic Plants (B14)		egetated Concave Surface (B8)
	ogen Sulfide Odor (C1)		atterns (B10)
	zed Rhizospheres on Living Roo		
	ence of Reduced Iron (C4)		Water Table (C2)
	nt Iron Reduction in Tilled Soils		
	Muck Surface (C7)		/isible on Aerial Imagery (C9)
	(Explain in Remarks)		Stressed Plants (D1)
Iron Deposits (B5)			c Position (D2)
Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9)		Shallow Aqu	
Aquatic Fauna (B13)		Wilcrotopogi	raphic Relief (D4)
Field Observations:		1 AC-Neulla	ii Test (D3)
	th (inches)		
			nt? Yes No ✓
Saturation Present? Yes No Dept (includes capillary fringe)	n (inches): w	etland Hydrology Prese	nt? Yes No
Describe Recorded Data (stream gauge, monitoring well, as	erial photos, previous inspection	s), if available:	
Remarks:			

Sampling Point: Upland N-O - DP26

	Absolute	Dominant	Indicator	Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: 30')		Species?		Number of Dominant Species
1. Ulmus americana	40	yes	FACW	That Are OBL, FACW, or FAC: 6 (A)
2. Liquidambar styraciflua	20	yes	FAC	Total Number of Dominant
3. Acer rubrum	20	yes	FAC	Species Across All Strata: 6 (B)
4				
5				Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)
6				That Are OBE, I AGW, OFF AG.
7				Prevalence Index worksheet:
				Total % Cover of: Multiply by:
8	80	= Total Cov		OBL species x 1 =
Sapling/Shrub Stratum (Plot size: 15')		- Total Cov	CI	FACW species x 2 =
1 Ligustrum sinense	2	no	FACU	FAC species x 3 =
2. Rosa multiflora	2	no	FACU	FACU species x 4 =
3. Juniperus virginiana	2	no	FACU	UPL species x 5 =
4 Symphoricarpos orbiculatus		no	FACU	
··· 	_ =		1700	Column Totals: (A) (B)
5				Prevalence Index = B/A =
6				Hydrophytic Vegetation Indicators:
7				1 - Rapid Test for Hydrophytic Vegetation
8				✓ 2 - Dominance Test is >50%
9				1
10				3 - Prevalence Index is ≤3.0 ¹
	8	= Total Cov	er	4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
Herb Stratum (Plot size: 5')				
1. Microstegium vimineum	60	yes	FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
2. Polygonum pensylvanicum	5	no	FAW	_
3				¹ Indicators of hydric soil and wetland hydrology must
4.				be present, unless disturbed or problematic.
				Definitions of Four Vegetation Strata:
5				Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or
6.				more in diameter at breast height (DBH), regardless of
7				height.
8				Sapling/Shrub – Woody plants, excluding vines, less
9				than 3 in. DBH and greater than 3.28 ft (1 m) tall.
10				Harb All berbasseus (non woody) plants, regardless
11				Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
12				
	65	= Total Cov	er	Woody vine – All woody vines greater than 3.28 ft in
Woody Vine Stratum (Plot size: 30')				height.
1. Toxicodendron radicans	5	yes	FAC	
2. Smilax sp.	5	yes	FAC	
3.				
4				
				Hydrophytic
5				Vegetation Present? Yes No
5				110001111 100 110
5	10	= Total Cov		

Sampling Point: Upland N-O - DP26

Profile Desc	ription: (Describe	to the de	oth needed to docu	ment the	indicator	or confirm	n the ab	sence of indicat	ors.)	
Depth	Matrix		Redo	x Feature	es					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Text	ture	Remarks	
0-7	2.5Y 5/3	85	7.5YR 4/6	15	С	PL	loam			
7-12	2.5Y 6/4	90	7.5YR 4/6	10	С	PL	loam			
		-	-	_			-			
					-					
				_						
	-	-								
		· 	-							
										_
1Typo: C=C	ncontration D=Dor	olotion DM	I=Reduced Matrix, M	S-Macko	d Sand G	raine	² L ocati	on: PL=Pore Lini	na M-Matrix	
Hydric Soil		Dietion, Riv	i-Reduced Matrix, M	3-Maske	u Sanu G	Iallis.	Lucan	Indicators for P		dric Soils ³
-			Dark Surface	. (87)					_	
Histosol	oipedon (A2)		Polyvalue Be	, ,	200 (58) (MI DA 147	149)		A10) (MLRA 1 e Redox (A16)	47)
Black Hi			Folyvaide Be				140)	(MLRA 14		
	n Sulfide (A4)		Loamy Gley	•	, .	147, 140)			oodplain Soils	(F10)
	l Layers (A5)		Depleted Ma		(1 2)			(MLRA 1		(1 19)
	ck (A10) (LRR N)		Redox Dark		F6)				Material (TF2)	
	Below Dark Surfac	e (A11)	Depleted Da	,				Very Shallov		(TF12)
	ark Surface (A12)	, ,	Redox Depre						in in Remarks)	
	lucky Mineral (S1) (I	LRR N,	Iron-Mangar			(LRR N,		` ` .	,	
	A 147, 148)		MLRA 13							
Sandy G	leyed Matrix (S4)		Umbric Surfa	ace (F13)	(MLRA 1	36, 122)		³ Indicators of h	ydrophytic veg	etation and
Sandy R	ledox (S5)		Piedmont Flo	oodplain S	Soils (F19) (MLRA 1 4	1 8)	wetland hyd	rology must be	present,
	Matrix (S6)							unless distu	rbed or probler	natic.
Restrictive I	ayer (if observed)	:								
Type:										_
Depth (inc	ches):						Hydr	ic Soil Present?	Yes	No <u> </u>
Remarks:							ı			

Project/Site: Maney Farm Stream Mitigation Site	City/County: Chatham	Sampling Date: 5/28/14				
Applicant/Owner: Wildlands Engineering		Sampling Date: 5/28/14 State: NC Sampling Point: Wetland O - DP27				
Investigator(s): Ian Eckardt and Win Taylor						
Landform (hillslope, terrace, etc.): floodplain						
Subsection (LDD or MLDA): MLRA 136	N 35.840323	/ 79.344366 Detum:				
Subregion (LRR or MLRA): MLRA 136 Lat: Soil Map Unit Name: Cid-Lignum complex, 2-6% st	lopes (CmB)	Datum				
Are climatic / hydrologic conditions on the site typical fo		,				
Are Vegetation, Soil, or Hydrology		nal Circumstances" present? Yes No _▼				
Are Vegetation, Soil, or Hydrology	naturally problematic? (If needed	l, explain any answers in Remarks.)				
SUMMARY OF FINDINGS - Attach site m	ap showing sampling point loca	tions, transects, important features, etc.				
Hydric Soil Present? Yes✓	No Is the Sampled Area within a Wetland?					
Sampling point located in floodplain and have disturbed/trampled much of https://exampled.com/	•	. •				
Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)				
Primary Indicators (minimum of one is required; check	all that apply)	Secondary Indicators (minimum of two required) Surface Soil Cracks (B6)				
· · · · · · · · · · · · · · · · · · ·	True Aquatic Plants (B14)	✓ Sparsely Vegetated Concave Surface (B8)				
<u> </u>	Hydrogen Sulfide Odor (C1)	Drainage Patterns (B10)				
	Oxidized Rhizospheres on Living Roots (C3					
	Presence of Reduced Iron (C4)	Dry-Season Water Table (C2)				
	Recent Iron Reduction in Tilled Soils (C6)	Crayfish Burrows (C8)				
✓ Drift Deposits (B3)	Thin Muck Surface (C7)	Saturation Visible on Aerial Imagery (C9)				
	Other (Explain in Remarks)	Stunted or Stressed Plants (D1)				
Iron Deposits (B5)		Geomorphic Position (D2)				
Inundation Visible on Aerial Imagery (B7)		Shallow Aquitard (D3)				
✓ Water-Stained Leaves (B9)		Microtopographic Relief (D4)				
Aquatic Fauna (B13) Field Observations:		FAC-Neutral Test (D5)				
	Depth (inches):					
	Depth (inches):					
		l Hydrology Present? Yes No				
(includes capillary fringe)						
Describe Recorded Data (stream gauge, monitoring w	ell, aerial photos, previous inspections), if a	vailable:				
Remarks:						
Remarks.						

Sampling Point: Wetland O - DP27

	Absolute	Dominant		Dominance Test worksheet:	
<u>Tree Stratum</u> (Plot size: 30'		Species?		Number of Dominant Species	
1. Ulmus americana	60	yes	FACW	That Are OBL, FACW, or FAC: $\frac{2}{}$ (A	۲)
2. Liquidambar styraciflua		no	FAC	Total Number of Dominant	
3. Ligustrum sinense	10	no	FACU	Species Across All Strata: 3 (B	;)
4				Percent of Dominant Species	
5					VB)
6				Prevalence Index worksheet:	
7				Total % Cover of: Multiply by:	
8	0.5			OBL species x 1 =	
Sapling/Shrub Stratum (Plot size: 15')	85	= Total Cov	er	FACW species x 2 =	
1. Ligustrum sinense	10	yes	FACU	FAC species x 3 =	
2.				FACU species x 4 =	
3				UPL species x 5 =	
				Column Totals: (A) (B)
4				(1)	ر کی
5				Prevalence Index = B/A =	
6				Hydrophytic Vegetation Indicators:	
7				1 - Rapid Test for Hydrophytic Vegetation	
8				✓ 2 - Dominance Test is >50%	
9				3 - Prevalence Index is ≤3.0 ¹	
10	10	- Total Cov		4 - Morphological Adaptations ¹ (Provide support	ting
Herb Stratum (Plot size: 5')		= Total Cov	еі	data in Remarks or on a separate sheet)	
1				Problematic Hydrophytic Vegetation ¹ (Explain)	
2.					
3.				¹ Indicators of hydric soil and wetland hydrology mus be present, unless disturbed or problematic.	t
4.					
5.				Definitions of Four Vegetation Strata:	
6.				Tree – Woody plants, excluding vines, 3 in. (7.6 cm)	
7.				more in diameter at breast height (DBH), regardless height.	of
8.					
9.				Sapling/Shrub – Woody plants, excluding vines, les than 3 in. DBH and greater than 3.28 ft (1 m) tall.	3S
10.				than 3 iii. DDi i and greater than 3.20 it (1 iii) tail.	
11.				Herb – All herbaceous (non-woody) plants, regardle	SS
12.				of size, and woody plants less than 3.28 ft tall.	
		= Total Cov	er	Woody vine - All woody vines greater than 3.28 ft in	n
Woody Vine Stratum (Plot size: 30')		10101 001	0.	height.	
1. Smilax sp.	5	yes	FAC		
2					
3					
4					
5				Hydrophytic Vegetation	
6				Present? Yes No	
	5	= Total Cov	er		
Remarks: (Include photo numbers here or on a separate	sheet.)			1	
Feature is located in a concave depres	sion tha	t has be	en hea	vily disturbed (trampled) by cattle	

Feature is located in a concave depression that has been heavily disturbed (trampled) by cattle. Sapling and herb stratum's significantly impacted within sampling area.

Sampling Point: Wetland O - DP27

Depth	Matrix			dox Featur		1 2	Taretrea	_	Damadia	
(inches) 0-4	Color (moist) 2.5Y 4/2	<u> </u>	Color (moist) 10YR 5/6	<u>%</u> 5	<u>Type</u> C	Loc ² PL	<u>Texture</u> loam	<u>e</u>	Remarks	
				_						
4-12	5Y 5/3	85	5YR 4/6	15	<u>C</u>	_ <u>PL</u>	loam			
	· ·									
			-					· ·		
		·			_					
	-						-	-		
							-			
	. .		_							
Γvpe: C=C	Concentration. D=D	Depletion. RI	M=Reduced Matrix,	MS=Maske	ed Sand 0	Frains.	² Location	: PL=Pore Lini	ng. M=Matrix.	
	Indicators:		,				In	dicators for P	roblematic Hy	dric Soils ³ :
Histoso	l (A1)		Dark Surfa	ce (S7)				_ 2 cm Muck (A10) (MLRA 1 4	47)
_ Histic E	pipedon (A2)					(MLRA 147	, 148) _	_ Coast Prairie	e Redox (A16)	
	listic (A3)		Thin Dark	•	, .	147, 148)		(MLRA 14		
	en Sulfide (A4)		Loamy Gle		(F2)		_		oodplain Soils ((F19)
	ed Layers (A5) uck (A10) (LRR N)	`	✓ Depleted M Redox Dar		(EG)			(MLRA 13	3 6, 147) Material (TF2)	
	ed Below Dark Surf		Redox Dai		` '		_		v Dark Surface	(TF12)
	ark Surface (A12)		Redox Dep				_	-	in in Remarks)	
	Mucky Mineral (S1		Iron-Manga			(LRR N,				
	A 147, 148)		MLRA '	•				_		
	Gleyed Matrix (S4))	Umbric Su						ydrophytic veg	
-	Redox (S5)		Piedmont F	Floodplain	Soils (F1	9) (MLRA 1 4	48)	-	rology must be	
	d Matrix (S6) Layer (if observe	\d\.						uniess distu	rbed or problem	natic.
Type:		a).								
							Lludria	Sail Bracant?	Vaa √	No
	icries).						пуштіс	Son Present?	res <u> </u>	МО
Depth (in Remarks:	nches):						Hydric	Soil Present?	Yes <u>√</u>	No _

Project/Site: Maney Farm Stream Mitigation Site	City/County: Chatham		Sampling Date: 5/28/14
Applicant/Owner: Wildlands Engineering	City/County: Chatham	State: NC	Sampling Point: Wetland P - DP28
Investigator(s): Ian Eckardt and Win Taylor			Oampling Form.
Landform (hillslope, terrace, etc.): floodplain			Slone (%). 0
Subsection (LDD or MLDA): MLRA 136	N 35.840818	79.344466	Slope (70)
Subregion (LRR or MLRA): MLRA 136 Lat: Soil Map Unit Name: Cid-Lignum complex, 2-6% sl	ones (CmB)	NNA(1 - 1 25)	Datum:
	_		
Are climatic / hydrologic conditions on the site typical for			,
Are Vegetation, Soil, or Hydrology		nal Circumstances" p	present? Yes No <u>✓</u>
Are Vegetation, Soil, or Hydrology	naturally problematic? (If needed	, explain any answe	ers in Remarks.)
SUMMARY OF FINDINGS - Attach site ma	ap showing sampling point locat	ions, transects	s, important features, etc.
Hydric Soil Present? Yes✓	No Is the Sampled Area within a Wetland?	Yes	No
Sampling point located in floodplain a and have disturbed/trampled much o	-		ne sampling location
HYDROLOGY			
Wetland Hydrology Indicators:			ators (minimum of two required)
Primary Indicators (minimum of one is required; check		✓ Surface Soil	
	Frue Aquatic Plants (B14)		getated Concave Surface (B8)
	Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres on Living Roots (C3	 Drainage Pa) Moss Trim L	
	Presence of Reduced Iron (C4)		Water Table (C2)
	Recent Iron Reduction in Tilled Soils (C6)	Crayfish Bur	
	Γhin Muck Surface (C7)		isible on Aerial Imagery (C9)
	Other (Explain in Remarks)		tressed Plants (D1)
Iron Deposits (B5)		Geomorphic	Position (D2)
Inundation Visible on Aerial Imagery (B7)		Shallow Aqu	itard (D3)
✓ Water-Stained Leaves (B9)		Microtopogra	aphic Relief (D4)
Aquatic Fauna (B13)		FAC-Neutral	Test (D5)
Field Observations:			
	Depth (inches):		
	Depth (inches):		
Saturation Present? Yes No (includes capillary fringe)	Depth (inches): Wetland	l Hydrology Preser	nt? Yes <u>v</u> No
Describe Recorded Data (stream gauge, monitoring we	ell, aerial photos, previous inspections), if a	vailable:	
Remarks:			

Sampling Point: Wetland P - DP28

Absolute Dominant Indicator Species? Status yes FACW 1. Ulmus americana Absolute Dominant Indicator Species? Status yes FACW Total Number of Dominant Species? That Are OBL, FACW, or FACW Total Number of Dominant Species?	cies
1. Ulmus americana 10 yes FACW That Are OBL, FACW, or F 2. Total Number of Dominant	
Total Number of Dominani	FAC: <u>1</u> (A)
	t
3 Species Across All Strata:	2
4.	a!a.a
5. Percent of Dominant Spec	
6	
7. Prevalence Index worksi	
8	
$\frac{10}{\sqrt{15}} = \text{Total Cover} \qquad \frac{\text{OBL species}}{\sqrt{15}}$	x 1 = 0
	x 2 = 30
	x 3 = 60
2. Fraxinus pennsylvanica 5 no FACW FACU species 72	x 4 = <u>288</u>
3 UPL species 50	x 5 = <u>250</u>
4 Column Totals: <u>157</u>	(A) <u>628</u> (B)
5.	D/A 4
6.	
7. Hydrophytic Vegetation	
8 1 - Rapid Test for Hyd	
9. 2 - Dominance Test is	
10.	
55 Tatal Cause 4 - Morphological Ada	aptations ¹ (Provide supporting r on a separate sheet)
Herb Stratum (Plot size: 5')	
1. Testuca sp. 1A00	/tic vegetation (Explain)
2. Microstegium vimineum 15 no FAC	and constitute and be colored a second
3. Polygonum pensylvanicum 10 no FACW be present, unless disturbed.	nd wetland hydrology must ed or problematic.
4. Ranunculus hispidus 5 no FAC Definitions of Four Vege	
5. Amaranthus palmeri 1 no FACU	tation otrata.
	luding vines, 3 in. (7.6 cm) or
7 height.	t height (DBH), regardless of
8.	
9. Sapling/Shrub – Woody p	plants, excluding vines, less
10.	T than 3.20 ft (T fil) tall.
Herb – All herbaceous (no	on-woody) plants, regardless
12. of size, and woody plants	less than 3.28 ft tall.
	vines greater than 3.28 ft in
Woody Vine Stratum (Plot size: 30' height.	
1	
2.	
3.	
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
4	
4 Hydrophytic	/
5 Hydrophytic Vegetation	No ♥
5. Hydrophytic Vegetation 6. Present? Yes _	No <u> </u>
5 Hydrophytic Vegetation 6 = Total Cover Yes _	No <u>*</u>
5. Hydrophytic Vegetation 6. Present? Yes _	

Sampling Point: Wetland P - DP28

	Matrix	(		lox Feature		12	T 4		Damada	
(inches) 0-4	Color (moist) 5Y 5/2	<u>%</u> 75	Color (moist) 7.5YR 4/6	<u>%</u> 25	<u>Type¹</u> C	Loc ²	Text	ure	Remarks	
	<del>-</del> -		-							
4-12	2.5Y 6/3	95	7.5YR 5/8	5	<u>C</u>		loam			
	<u> </u>							<del></del> , <u></u>		
		<del></del>	· ·				-			
	-							<del></del>		
Type: C=C	Concentration, D=D	epletion. RN	M=Reduced Matrix, N	MS=Maske	d Sand G	Grains.	² Locatio	on: PL=Pore Lir	ing, M=Matrix.	
	I Indicators:	- op. ou. o ,						Indicators for I	Problematic Hy	dric Soils ³ :
Histoso	ol (A1)		Dark Surfac	ce (S7)					(A10) (MLRA 14	
	Epipedon (A2)				ace (S8)	MLRA 147,	, 148)		ie Redox (A16)	
	Histic (A3)		Thin Dark S	•	, .	147, 148)		(MLRA 1		
	gen Sulfide (A4)		Loamy Gle		(F2)				loodplain Soils (	F19)
	ed Layers (A5)		✓ Depleted M		FC)			(MLRA 1		
	luck (A10) <b>(LRR N)</b> ed Below Dark Surf		Redox Dark Depleted D		,				Material (TF2) w Dark Surface	(TF12)
	Dark Surface (A12)	400 (7111)	Redox Dep						ain in Remarks)	
	Mucky Mineral (S1	) (LRR N,	Iron-Manga			(LRR N,		` .	,	
	RA 147, 148)		MLRA 1							
	Gleyed Matrix (S4)		Umbric Sur						hydrophytic veg	
	Redox (S5)		Piedmont F	loodplain	Soils (F19	9) (MLRA 14	48)	-	drology must be	
	ed Matrix (S6)	al\.					1	unless disti	urbed or problem	iatic.
	Layer (if observe	u):								
11/00:							Liveini	o Soil Drocont?	V × √	No
Type:							пуагі	c Soil Present?	Yes	No
Depth (ir	nches):									
Depth (ir										
Depth (ir										
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Applicant/Owner: Wildlands Engineering  Investigator(s): Ian Eckardt and Win Taylor  Local relief (concave, convex, none): none  Slope (%): 0  Subregion (LRR or MLRA): MLRA 136  Lat: N 35.840979  Long: W 79.344571  Datum:  Soil Map Unit Name: Cid-Lignum complex, 2-6% slopes (CmB)  Are climatic / hydrologic conditions on the site typical for this time of year? Yes	Project/Site: Maney Farm Stream Mitigation Site	City/County: Chatham		Sampling Date: 5/28/14		
Investigator(s): Ian Eckardt and Win Taylor		, , ,	State: NC	Sampling Point Upland P - DP29		
Landform (hillslope, terrace, etc.). floodplain	• •			<u> </u>		
Subregion (LRR or MLRA); MLRA 136  Lat; N 35.840979  Long; W 79.344571  Datum:  Soil Map Unit Name: Cid-Lignum complex, 2-69k slopes (CmB)  NWI classification:  Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  Are Vegetation  Soil  or Hydrology  significantly disturbed?  Are "Normal Circumstances" present? Yes  No  Are Vegetation  Soil  or Hydrology  Inaturally 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  No  Soil  Is the Sampled Area  Within a Wetland?  Yes  No  No  No  No  No  No  No  No  No  N				Slone (%): 0		
Soil Map Unit Name: Cid-Lignum complex, 2-6% slopes (CmB) Are climatic / hydrologic conditions on the site typical for this time of year? Yes	Culturation (IRR and IRA). MI RA 136	N 35 840979	W 79 344571	Slope (70).		
Are Vegetation	Subregion (LRR of MLRA): Lat:	ones (CmR)		Datum:		
Are Vegetation V Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No V 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 No Welfand Hydrology Indicators:  Sampling point is representative of a non-jurisdictional upland area located in the floodplain of the project site.  HYDROLOGY  Welfand Hydrology Indicators:  Secondary Indicators (minimum of two required)  Surface Water (A1) True Aquatic Plants (B14) Sparsely Vegetated Concave Surface (B8)  High Water Table (A2) Hydrogen Sulfide Odor (C1) Drainage Patterns (B10)  Saturation (A3) Oxidized Rhizospheres on Living Roots (C3) Moss Trim Lines (B16)  Water Marks (B1) Presence of Reduced Iron (C4) Saturation Visible on Aerial Imagery (C9)  Alayal Mat or Crust (B4) Other (Explain in Remarks) Suurface or Stressed Plants (D1)  Iron Deposits (B3) Thin Muck Surface (C7) Shallow Aquaticr Position (D2)  Inundation Visible on Aerial Imagery (B7) Microtopographic Relief (D4)  Aquatic Fauna (B13) FAC-Neutral Test (D5)  Filed Observations:  Surface Water Present? Yes No Depth (inches):  Water Table Present? Yes No Depth (inches):  Saturation Prosent? Yes No Popth (inches):  Wetland Hydrology Present? Yes No Popth (inches):  Saturation Present? Yes No Popth (inches):  Wetland Hydrology Present? Yes No						
Are Vegetation	_			,		
SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.    Hydrophytic Vegetation Present?			ormal Circumstances"	present? Yes No		
Hydrophytic Vegetation Present? Yes No Wetland Hydrology Indicators:    Secondary Indicators (minimum of two required) Primary Indicators (minimum of one is required; check all that apply) Surface Soil Cracks (B6)   Surface Water (A1) True Aquatic Plants (B14) Sparsely Vegetated Concave Surface (B8) High Water Table (A2) Hydrogen Sulfide Odor (C1) Drainage Patterns (B10) Presence of Reduced Iron (C4) Dry-Season Water Table (C2) Sediment Deposits (B2) Recent Iron Reduction in Tilled Soils (C6) Crayfish Burrows (C8) Sediment Deposits (B3) Thin Muck Surface (C7) Saturation Visible on Aerial Imagery (C9) Aqaal Mat or Crust (B4) Other (Explain in Remarks) Shallow Aquitard (D3) Microtopographic Relief (D4) FAC-Neutral Test (D5)   Field Observations: Surface Water Present? Yes No Depth (inches): Water Table (Present? Yes No Depth (inches): Wetland Hydrology Present? Y	Are Vegetation, Soil, or Hydrology	naturally problematic? (If need	led, explain any answ	ers in Remarks.)		
Hydric Soil Present? Yes No Within a Wetland? Yes No Wetland Hydrology Present? Yes No You Depth (inches): Wetland Hydrology Pres	SUMMARY OF FINDINGS - Attach site ma	ap showing sampling point loc	cations, transect	s, important features, etc.		
Sampling point is representative of a non-jurisdictional upland area located in the floodplain of the project site.    Wetland Hydrology Indicators:   Secondary Indicators (minimum of two required)   Surface Soil Cracks (B6)	Hydric Soil Present? Yes  Wetland Hydrology Present? Yes	No Is the Sampled A within a Wetland	rea ? Yes	No		
HYDROLOGY  Wetland Hydrology Indicators:  Primary Indicators (minimum of one is required; check all that apply)  Surface Soil Cracks (B6)  Surface S						
Wetland Hydrology Indicators:       Secondary Indicators (minimum of two required)         Primary Indicators (minimum of one is required; check all that apply)       Surface Soil Cracks (B6)         Surface Water (A1)       True Aquatic Plants (B14)       Sparsely Vegetated Concave Surface (B8)         High Water Table (A2)       Hydrogen Sulfide Odor (C1)       Drainage Patterns (B10)         Saturation (A3)       Oxidized Rhizospheres on Living Roots (C3)       Moss Trim Lines (B16)         Water Marks (B1)       Presence of Reduced Iron (C4)       Dry-Season Water Table (C2)         Sediment Deposits (B2)       Recent Iron Reduction in Tilled Soils (C6)       Crayfish Burrows (C8)         Drift Deposits (B3)       Thin Muck Surface (C7)       Saturation Visible on Aerial Imagery (C9)         Algal Mat or Crust (B4)       Other (Explain in Remarks)       Stunted or Stressed Plants (D1)         Iron Deposits (B5)       Geomorphic Position (D2)         Inundation Visible on Aerial Imagery (B7)       Shallow Aquitard (D3)         Water-Stained Leaves (B9)       Microtopographic Relief (D4)         Aquatic Fauna (B13)       FAC-Neutral Test (D5)         Field Observations:         Surface Water Present?       Yes       No / Depth (inches):         Water Table Present?       Yes       No / Depth (inches):         Saturation Pr	project site.	non-junsaictional upland a	rea localed in	the noodplain of the		
Primary Indicators (minimum of one is required; check all that apply)  Surface Water (A1)  High Water Table (A2)  Hydrogen Sulfide Odor (C1)  Saturation (A3)  Water Marks (B1)  Presence of Reduced Iron (C4)  Dry-Season Water Table (C2)  Sediment Deposits (B2)  Algal Mat or Crust (B4)  Iron Deposits (B5)  Inundation Visible on Aerial Imagery (B7)  Water-Stained Leaves (B9)  Aquatic Fauna (B13)  Field Observations:  Surface Water Marks (B1)  Dry-Season Water Table (C2)  Seturation (C4)  Dry-Season Water Table (C2)  Crayfish Burrows (C8)  Crayfish	HYDROLOGY					
Surface Water (A1)	Wetland Hydrology Indicators:		Secondary Indic	cators (minimum of two required)		
High Water Table (A2)	Primary Indicators (minimum of one is required; check	all that apply)				
Saturation (A3) Oxidized Rhizospheres on Living Roots (C3) Moss Trim Lines (B16) Water Marks (B1) Presence of Reduced Iron (C4) Dry-Season Water Table (C2) Sediment Deposits (B2) Recent Iron Reduction in Tilled Soils (C6) Crayfish Burrows (C8) Drift Deposits (B3) Thin Muck Surface (C7) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Other (Explain in Remarks) Stunted or Stressed Plants (D1) Iron Deposits (B5) Geomorphic Position (D2) Shallow Aquitard (D3) Water-Stained Leaves (B9) Aquatic Fauna (B13) FAC-Neutral Test (D5) FAC-Neutral Test (D5) Water Table Present? Yes No Depth (inches): Water Table Present? Yes No Depth (inches): Wetland Hydrology Present? Yes No Depth (inches):						
Water Marks (B1) Presence of Reduced Iron (C4) Dry-Season Water Table (C2) Sediment Deposits (B2) Recent Iron Reduction in Tilled Soils (C6) Crayfish Burrows (C8) Drift Deposits (B3) Thin Muck Surface (C7) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Other (Explain in Remarks) Stunted or Stressed Plants (D1) Iron Deposits (B5) Geomorphic Position (D2) Inundation Visible on Aerial Imagery (B7) Shallow Aquitard (D3) Water-Stained Leaves (B9) Microtopographic Relief (D4) Shallow Aquitard (D3) Microtopographic Relief (D4) FAC-Neutral Test (D5) FAC-Neutral Test (D5) Water Table Present? Yes No Depth (inches): Water Table Present? Yes No Depth (inches): Water Table Present? Yes No Depth (inches): Water Table Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:						
Sediment Deposits (B2) Recent Iron Reduction in Tilled Soils (C6) Crayfish Burrows (C8) Drift Deposits (B3) Thin Muck Surface (C7) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Other (Explain in Remarks) Stunted or Stressed Plants (D1) Iron Deposits (B5) Geomorphic Position (D2) Inundation Visible on Aerial Imagery (B7) Shallow Aquitard (D3) Water-Stained Leaves (B9) Microtopographic Relief (D4) Aquatic Fauna (B13) FAC-Neutral Test (D5)  Field Observations: Surface Water Present? Yes No Depth (inches): Water Table Present? Yes No Depth (inches): Saturation Present? Yes No Depth (inches): Wetland Hydrology Present? Yes No Obescribe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:						
Drift Deposits (B3) Thin Muck Surface (C7) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Other (Explain in Remarks) Stunted or Stressed Plants (D1) Iron Deposits (B5) Geomorphic Position (D2) Shallow Aquitard (D3) Shallow Aquitard (D3) Water-Stained Leaves (B9) Aquatic Fauna (B13) FAC-Neutral Test (D5) Field Observations: Surface Water Present? Yes No Depth (inches): Water Table Present? Yes No Depth (inches): Water Table Present? Yes No Depth (inches): Wetland Hydrology Present? Yes No Depth (inches): Yes No April Depth (inches): Yes Yes Yes Yes Yes Yes Yes Y						
Algal Mat or Crust (B4) Other (Explain in Remarks) Stunted or Stressed Plants (D1) Iron Deposits (B5) Geomorphic Position (D2) Inundation Visible on Aerial Imagery (B7) Shallow Aquitard (D3) Microtopographic Relief (D4) Aquatic Fauna (B13) FAC-Neutral Test (D5) FIELD Moservations:  Surface Water Present? Yes No Depth (inches): Water Table Present? Yes No Depth (inches): Wetland Hydrology Present? Yes No Depth (inches): Wetland Hydrology Present? Yes No Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:						
Iron Deposits (B5) Geomorphic Position (D2) Inundation Visible on Aerial Imagery (B7) Shallow Aquitard (D3) Water-Stained Leaves (B9) Aquatic Fauna (B13) FAC-Neutral Test (D5) FAC-Neutral Test (D5) Water Table Present? Yes No Depth (inches): Water Table Present? Yes No Depth (inches): Saturation Present? Yes No Depth (inches): Wetland Hydrology Present? Yes No Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	<del></del>					
Inundation Visible on Aerial Imagery (B7) Shallow Aquitard (D3) Water-Stained Leaves (B9) Aquatic Fauna (B13) FAC-Neutral Test (D5) Factorial Gallows and the state of the stat		Other (Explain in Remarks)				
Water-Stained Leaves (B9) Aquatic Fauna (B13) FAC-Neutral Test (D5)  Field Observations: Surface Water Present? Yes No Depth (inches): Water Table Present? Yes No Depth (inches): Saturation Present? Yes No Depth (inches): (includes capillary fringe)  Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	1 · · · · ·					
Aquatic Fauna (B13) FAC-Neutral Test (D5)  Field Observations:  Surface Water Present? Yes No / _ Depth (inches):  Water Table Present? Yes No / Depth (inches):  Saturation Present? Yes No / Depth (inches):  (includes capillary fringe)  Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:						
Field Observations:  Surface Water Present? Yes No Depth (inches):  Water Table Present? Yes No Depth (inches):  Saturation Present? Yes No Depth (inches):  (includes capillary fringe)  Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:						
Surface Water Present? Yes No Depth (inches): Water Table Present? Yes No Depth (inches): Saturation Present? Yes No Depth (inches): (includes capillary fringe)  Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			FAC-Neutra	ar rest (D5)		
Water Table Present? Yes No Depth (inches): Saturation Present? Yes No Depth (inches): Wetland Hydrology Present? Yes No Depth (inches): Depth		Donth (inches):				
Saturation Present? Yes No Depth (inches): Wetland Hydrology Present? Yes No Depth (includes capillary fringe)  Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:						
(includes capillary fringe)  Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:						
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		Depth (inches): Wetia	and Hydrology Prese	ent? Yes No		
Remarks:		ell, aerial photos, previous inspections), i	if available:			
Remarks:						
	Remarks:					

Sampling Point: Upland P - DP29

001	Absolute	Dominant		Dominance Test worksheet:	
Tree Stratum (Plot size: 30')	% Cover	Species?	Status	Number of Dominant Species	
1				That Are OBL, FACW, or FAC: $\frac{3}{}$ (A	۹)
2				Total Number of Dominant	
3				•	В)
4					,
5.				Percent of Dominant Species That Are OBL, FACW, or FAC: 100%	A/B)
6.				That Ale OBL, FACW, of FAC.	-VD)
				Prevalence Index worksheet:	
7				Total % Cover of: Multiply by:	
8				OBL species x 1 =	
Sapling/Shrub Stratum (Plot size: 15' )		= Total Cov	er	FACW species x 2 =	
1 Rosa palustris	20	yes	OBL	FAC species x 3 =	
2 Fraxinus pennsylvanica	5	yes	FACW	FACU species x 4 =	
	- —	<u> </u>			
3				UPL species x 5 =	
4				Column Totals: (A)	(B)
5				Prevalence Index = B/A =	
6				Hydrophytic Vegetation Indicators:	
7					
8				1 - Rapid Test for Hydrophytic Vegetation	
9				✓ 2 - Dominance Test is >50%	
10.				3 - Prevalence Index is ≤3.0 ¹	
	25	= Total Cov	er	4 - Morphological Adaptations ¹ (Provide suppo	rting
Herb Stratum (Plot size: 5' )		- Total Gov	Ci	data in Remarks or on a separate sheet)	
1. Juncus effusus	40	yes	FACW	Problematic Hydrophytic Vegetation ¹ (Explain)	
2. Ranunculus hispidus	10	no	FAC		
3. Polygonum pensylvanicum	10	no	FACW	¹ Indicators of hydric soil and wetland hydrology mu	st
4 Carex vulpinoidea	5	no	OBL	be present, unless disturbed or problematic.	
5. Carex lurida	5	no	OBL	Definitions of Four Vegetation Strata:	
6. Festuca sp.	- 1	no	FACU	Tree – Woody plants, excluding vines, 3 in. (7.6 cm	n) or
	- <del></del>			more in diameter at breast height (DBH), regardles	
7				height.	
8				Sapling/Shrub – Woody plants, excluding vines, le	ess
9				than 3 in. DBH and greater than 3.28 ft (1 m) tall.	
10				Harb All harbassaus (non woody) plants, regardly	000
11				<b>Herb</b> – All herbaceous (non-woody) plants, regardl of size, and woody plants less than 3.28 ft tall.	655
12					
	71	= Total Cov	er	<b>Woody vine</b> – All woody vines greater than 3.28 ft	in
Woody Vine Stratum (Plot size: 30' )				height.	
1					
2					
3					
4					
5				Hydrophytic	
6				Vegetation Present? Yes No	
0		= Total Cov		100 100	
Daniel de la desente de la completa del completa de la completa de la completa del completa de la completa del completa de la completa de la completa del completa de la completa del compl		- Total Cov	CI		
Remarks: (Include photo numbers here or on a separate	sheet.)				

Sampling Point: Upland P - DP29

SOIL

Profile Desc	ription: (Describe	to the de	oth needed to docu	ment the	indicator	or confirm	n the ab	sence of indicate	ors.)	
Depth	Matrix		Redo	ox Feature	s					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Text	ture	Remarks	
0-3	2.5Y 5/4	100					loam			
3-12	2.5Y 6/4	95	10YR 5/8	5	С	PL	loam			_
		-		<del></del>	-					_
			_							
	-	-	-							
	-									
		-			-					
		-			-					
		letion, RM	I=Reduced Matrix, M	IS=Maske	d Sand G	rains.	² Locati	on: PL=Pore Linir		
Hydric Soil	Indicators:							Indicators for Pr	roblematic Hy	dric Soils³:
Histosol	(A1)		Dark Surfac	e (S7)				2 cm Muck (	A10) <b>(MLRA 1</b> 4	47)
Histic Ep	oipedon (A2)		Polyvalue B	elow Surfa	ice (S8) <b>(</b> I	MLRA 147,	148)	Coast Prairie	e Redox (A16)	
Black Hi	stic (A3)		Thin Dark S	urface (S9	) (MLRA	147, 148)		(MLRA 14	17, 148)	
	n Sulfide (A4)		Loamy Gley		(F2)				oodplain Soils	(F19)
	d Layers (A5)		Depleted Ma					(MLRA 13		
	ick (A10) (LRR N)		Redox Dark						Material (TF2)	
	d Below Dark Surfac	e (A11)	Depleted Da					Very Shallow		
	ark Surface (A12)	DD 11	Redox Depr			// DD N		Other (Expla	in in Remarks)	
	lucky Mineral (S1) (L	LKK N,	Iron-Mangar		ses (F12)	(LRR N,				
	<b>A 147, 148)</b> Gleyed Matrix (S4)		MLRA 13	•	/MI DA 4	26 422\		³ Indicators of h	vdrophytic voa	otation and
	ledox (S5)		Piedmont FI				10)		ology must be	
-	Matrix (S6)		Fledition(Fl	oouplalii	פווס (ו ויפ	(IVILNA 14	10)		bed or problen	
	_ayer (if observed):	1						unicss distai	bed of problem	iatic.
	zayor (ii observeu).	1								
Type:	-l\-								W	N = 1
	ches):						Hyar	ic Soil Present?	Yes	No <u></u>
Remarks:										

Project/Site: Maney Farm Stream Mitigation Site	City/County: Chatham	Sampling Date: 5/28/14			
Applicant/Owner: Wildlands Engineering		State:         NC         Sampling Date:         5/28/14           Sampling Point:         Wetland Q	- DP30		
Investigator(s): Ian Eckardt and Win Taylor					
Landform (hillslope, terrace, etc.): floodplain					
Subsection (LDB or MLDA), MLRA 136	35.8416	79.344402 Detum:			
Subregion (LRR or MLRA): $\frac{\text{MLRA 136}}{\text{Soil Map Unit Name:}}$ $\frac{\text{Cid-Lignum complex, 2-6\% slope}}{\text{Cid-Lignum complex, 2-6\% slope}}$	es (CmB)	Datum.			
	-				
Are climatic / hydrologic conditions on the site typical for this			./		
Are Vegetation, Soil, or Hydrologys		I Circumstances" present? Yes No _			
Are Vegetation, Soil, or Hydrologyn	aturally problematic? (If needed,	explain any answers in Remarks.)			
SUMMARY OF FINDINGS - Attach site map	showing sampling point locati	ons, transects, important features,	etc.		
Hydrophytic Vegetation Present?  Hydric Soil Present?  Wetland Hydrology Present?  Yes	within a Wetland?	Yes No			
Sampling point located in floodplain adj and have disturbed/trampled much of the hydrology		, ,			
Wetland Hydrology Indicators:		Secondary Indicators (minimum of two require	ed)		
Primary Indicators (minimum of one is required; check all t	hat apply)	Surface Soil Cracks (B6)			
✓ Surface Water (A1) True	Aquatic Plants (B14)	Sparsely Vegetated Concave Surface (B8)			
	rogen Sulfide Odor (C1)	Drainage Patterns (B10)			
	lized Rhizospheres on Living Roots (C3)	Moss Trim Lines (B16)			
	sence of Reduced Iron (C4)	Dry-Season Water Table (C2)			
	ent Iron Reduction in Tilled Soils (C6)	Crayfish Burrows (C8)			
	Muck Surface (C7)	<ul><li>Saturation Visible on Aerial Imagery (C9)</li><li>Stunted or Stressed Plants (D1)</li></ul>	'		
Algal Mat or Crust (B4) Othe	er (Explain in Remarks)	Geomorphic Position (D2)			
Inundation Visible on Aerial Imagery (B7)		Shallow Aquitard (D3)			
Water-Stained Leaves (B9)		Microtopographic Relief (D4)			
Aquatic Fauna (B13)		FAC-Neutral Test (D5)			
Field Observations:					
Surface Water Present? Yes No Dep					
Water Table Present? Yes _ ✓ No Dep		,			
Saturation Present? Yes _ Vo Dep	oth (inches): 0-12 Wetland	lydrology Present? Yes No			
(includes capillary fringe)  Describe Recorded Data (stream gauge, monitoring well, a	aerial photos, previous inspections), if ava	ailable:			
Remarks:					

Sampling Point: Wetland Q - DP30

	Absolute	Dominant	Indicator	Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: 30'		Species?	· -	Number of Dominant Species _
1. Platanus occidentalis	20	yes	FACW	That Are OBL, FACW, or FAC: 7 (A)
2. Ulmus americana	20	yes	FACW	Total Number of Dominant
3. Fraxinus pennsylvanica	15	yes	FACW	Species Across All Strata: 9 (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 78% (A/B)
6				Presidence Index workshoots
7				Prevalence Index worksheet:
8				
15'	55	= Total Cov	er	OBL species x 1 =
Sapling/Shrub Stratum (Plot size: 15' )	E	: 100	EACH	FACW species x 2 =
1. Rosa multiflora	<u>5</u>	yes	FACU	FAC species x 3 =
2. Ligustrum sinense	5	yes	FACU	FACU species x 4 =
3. Rosa palustris	2	no	OBL	UPL species x 5 =
4				Column Totals: (A) (B)
5				Prevalence Index = B/A =
6				Hydrophytic Vegetation Indicators:
7				1 - Rapid Test for Hydrophytic Vegetation
8				✓ 2 - Dominance Test is >50%
9	- ——			3 - Prevalence Index is ≤3.0 ¹
10	12			4 - Morphological Adaptations ¹ (Provide supporting
Herb Stratum (Plot size: 5' )	12	= Total Cov	er	data in Remarks or on a separate sheet)
1. Carex vulpinoidea	20	yes	OBL	Problematic Hydrophytic Vegetation ¹ (Explain)
2. Carex lurida	20	yes	OBL	
3. Polygonum pensylvanicum	20	yes	FACW	¹ Indicators of hydric soil and wetland hydrology must
4. Microstegium vimineum	20	yes	FAC	be present, unless disturbed or problematic.
5. Juncus effusus	10	no	FACW	Definitions of Four Vegetation Strata:
6	• ——			Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or
7				more in diameter at breast height (DBH), regardless of height.
8.				
9.				Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
10				
11				Herb – All herbaceous (non-woody) plants, regardless
12.				of size, and woody plants less than 3.28 ft tall.
	90	= Total Cov	er	Woody vine – All woody vines greater than 3.28 ft in
Woody Vine Stratum (Plot size: 30' )			01	height.
1. Smilax sp.		no	FAC	
2				
3				
4				l
5				Hydrophytic Vegetation
6.				Present? Yes No
	1	= Total Cov	er	
Remarks: (Include photo numbers here or on a separate s	sheet.)			1

Feature is located in a concave depression that has been heavily disturbed (trampled) by cattle. Sapling and herb stratum's significantly impacted within sampling area.

Wetland Q - DP30

SOIL								Sampling Point:
Profile Desc	ription: (Describe	to the de	oth needed to docum	ent the	indicator	or confirm	n the absence	of indicators.)
Depth	Matrix		Redox	. Feature				
(inches) 0-1	Color (moist) 2.5Y 4/2	<u>%</u> 100	Color (moist)	%	Type ¹	Loc ²	<u>Texture</u> silt	Remarks
1-8	5Y 5/1	95	7.5YR 4/6	5	С	PL	loam	
8-12	5Y 6/1	90	7.5YR 4/6	10	С	PL	loam	
- 12	01 0/1		7.0110			<u></u>	100111	
					· ·			
-				-	•			<del></del>
-								
		letion, RM	I=Reduced Matrix, MS	=Maske	d Sand Gr	ains.		L=Pore Lining, M=Matrix.
Hydric Soil I								ators for Problematic Hydric Soils ³ :
Histosol			Dark Surface					2 cm Muck (A10) (MLRA 147)
	ipedon (A2)		Polyvalue Bel				148) (	Coast Prairie Redox (A16)
Black His	, ,		Thin Dark Su			147, 148)	_	(MLRA 147, 148) Piedmont Floodplain Soils (F19)
	n Sulfide (A4) I Layers (A5)		Loamy Gleye  ✓ Depleted Mat		(FZ)			(MLRA 136, 147)
	ck (A10) <b>(LRR N)</b>		Redox Dark S	. ,	<del>-</del> 6)		F	Red Parent Material (TF2)
	Below Dark Surface	e (A11)	Depleted Dark					/ery Shallow Dark Surface (TF12)
	rk Surface (A12)	, ,	Redox Depre					Other (Explain in Remarks)
	lucky Mineral (S1) <b>(L</b>	.RR N,	Iron-Mangane		es (F12)	LRR N,		
	147, 148)		MLRA 136	-			9.	
-	leyed Matrix (S4)		Umbric Surfac					dicators of hydrophytic vegetation and
-	edox (S5)		Piedmont Flo	odplain S	Soils (F19)	(MLRA 14		vetland hydrology must be present,
	Matrix (S6)  ayer (if observed):						T	inless disturbed or problematic.
Depth (inc	shae).						Hydric Soil	I Present? Yes ✓ No
Remarks:							Tiyunc 30h	rriesent: res No
Remarks:								

Project/Site: Maney Farm Stream Mitigation Site	City/Co	_{unty:} Chatham		Sampling Date: 5/28/14		
Applicant/Owner: Wildlands Engineering			State: NC	Sampling Date: 5/28/14  Sampling Point: Upland Q - DP31		
Investigator(s): Ian Eckardt and Win Taylor				<u> </u>		
Landform (hillslope, terrace, etc.): floodplain				Slone (%): 0		
Subragion (LRB or MLRA). MLRA 136	N 35.841588	Long: W 7	9.344856	Olope (70)		
Subregion (LRR or MLRA): MLRA 136 Lat Soil Map Unit Name: Cid-Lignum complex, 2-6% s	slopes (CmB)	Long	NWI classific	cation:		
Are climatic / hydrologic conditions on the site typical f		,				
Are Vegetation, Soil, or Hydrology				oresent? Yes No		
Are Vegetation, Soil, or Hydrology			explain any answe			
SUMMARY OF FINDINGS – Attach site n						
Hydrophytic Vegetation Present? Yes	No					
	No. /	Is the Sampled Area within a Wetland?	Yes	No <u></u> ✓		
	No <u> </u>	Willim a Wolland.	100			
Remarks:						
Sampling point is representative of project site.	u non janea.e.e.	nui upidira area.	1000100	no noodplain e. a.e		
HYDROLOGY						
Wetland Hydrology Indicators:				ators (minimum of two required)		
Primary Indicators (minimum of one is required; chec			Surface Soil			
	True Aquatic Plants (B		<ul><li>Sparsely Vegetated Concave Surface (B8)</li><li>Drainage Patterns (B10)</li></ul>			
	Hydrogen Sulfide Odor Oxidized Rhizospheres		Drainage Pa			
	Presence of Reduced I			Water Table (C2)		
	Recent Iron Reduction		Crayfish Bur			
	Thin Muck Surface (C7		-	isible on Aerial Imagery (C9)		
	Other (Explain in Rema			tressed Plants (D1)		
Iron Deposits (B5)			Geomorphic	Position (D2)		
Inundation Visible on Aerial Imagery (B7)			Shallow Aqu	itard (D3)		
Water-Stained Leaves (B9)			Microtopogra	aphic Relief (D4)		
Aquatic Fauna (B13)			FAC-Neutral	Test (D5)		
Field Observations:						
	_ Depth (inches):					
	_ Depth (inches):					
Saturation Present? Yes No  (includes capillary fringe)	_ Depth (inches):	Wetland F	lydrology Preser	nt? Yes No		
Describe Recorded Data (stream gauge, monitoring	well, aerial photos, previ	ious inspections), if ava	ilable:			
Remarks:						

Sampling Point: Upland Q - DP31

001	Absolute	Dominant		Dominance Test worksheet:				
<u>Tree Stratum</u> (Plot size: 30' )		Species?		Number of Dominant Species				
1. Platanus occidentalis	10	yes	FACW	That Are OBL, FACW, or FAC: $\frac{3}{}$	(A)			
2				Total Number of Dominant				
3					(B)			
4.					,			
5.				Percent of Dominant Species That Are OBL, FACW, or FAC: 75% (	(A/B)			
6.				That Ale OBL, FACW, of FAC.	(A/D)			
				Prevalence Index worksheet:				
7				Total % Cover of: Multiply by:				
8	10			OBL species x 1 =				
Sapling/Shrub Stratum (Plot size: 15' )	10	= Total Cov	er	FACW species x 2 =				
1 Rosa palustris	20	yes	OBL	FAC species x 3 =				
B. b. a service	20	ves	FAC	FACU species x 4 =				
2. Rubrus arvensis 3. Rosa multiflora	5	no	FACU					
				UPL species x 5 =				
4				Column Totals: (A)	(B)			
5				Prevalence Index = B/A =				
6				Hydrophytic Vegetation Indicators:				
7								
8				1 - Rapid Test for Hydrophytic Vegetation				
9				✓ 2 - Dominance Test is >50%				
10.				3 - Prevalence Index is ≤3.0 ¹				
	45	= Total Cov	er	4 - Morphological Adaptations¹ (Provide suppo	orting			
Herb Stratum (Plot size: 5' )		10101 001	O.	data in Remarks or on a separate sheet)				
1. Festuca sp.	30	yes	FACU	Problematic Hydrophytic Vegetation ¹ (Explain)	)			
2. Microstegium vimineum	10	no	FAC					
3. Ranunculus hispidus	5	no	FAC	¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
4 Trifolium repens	5	no	FACU					
5. Juncus effusus	5	no	FACW	Definitions of Four Vegetation Strata:				
6. Solanum carolinense	5	no	FACU	Tree – Woody plants, excluding vines, 3 in. (7.6 cm	n) or			
···	- —			more in diameter at breast height (DBH), regardles				
7				height.				
8				Sapling/Shrub – Woody plants, excluding vines, le	ess			
9				than 3 in. DBH and greater than 3.28 ft (1 m) tall.				
10				Harb All barbassaus (non woody) plants, regard	looo			
11				Herb – All herbaceous (non-woody) plants, regard of size, and woody plants less than 3.28 ft tall.	1622			
12								
	60	= Total Cov	er	<b>Woody vine</b> – All woody vines greater than 3.28 ft	in			
Woody Vine Stratum (Plot size: 30' )				height.				
1								
2								
3								
4								
5				Hydrophytic Vegetation				
6.				Present? Yes No				
·		= Total Cov						
Demonstrate (Include whate muschaus house as an accounts		- Total Cov	Ci					
Remarks: (Include photo numbers here or on a separate	sneet.)							

SOIL Sampling Point: Upland Q - DP31

Profile Desc	ription: (Describe	to the de	pth needed to docur	nent the	indicator	or confirn	n the absence	of indicate	ors.)	
Depth	Matrix		Redo	x Feature	s .					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture		Remarks	3
0-3	2.5Y 5/4	100					loam			
3-12	2.5Y 6/4	90	7.5YR 4/6	10	С	PL	loam			
		-		-	-					
	-		· -		-	· ——		-		
	-							-		
	-	-	<del></del>							
¹ Type: C=Co	oncentration, D=Dep	letion, RN	/I=Reduced Matrix, M	S=Maske	d Sand Gr	ains.	² Location: P	L=Pore Linii	ng, M=Matrix	, 
Hydric Soil I	ndicators:						Indic	ators for P	roblematic H	Hydric Soils³:
Histosol	(A1)		Dark Surface	e (S7)			2	cm Muck (	A10) <b>(MLRA</b>	147)
Histic Ep	pipedon (A2)		Polyvalue Be	elow Surfa	ice (S8) <b>(l</b>	<b>VLRA 147</b> ,	148) (	Coast Prairie	e Redox (A16	3)
Black Hi			Thin Dark Su					(MLRA 14		
Hydroge	n Sulfide (A4)		Loamy Gleye	ed Matrix	(F2)		F	Piedmont Flo	oodplain Soil	s (F19)
Stratified	l Layers (A5)		Depleted Ma	trix (F3)				(MLRA 13	36, 147)	
	ck (A10) (LRR N)		Redox Dark	•	,				Material (TF2	
	d Below Dark Surfac	e (A11)	Depleted Da						v Dark Surfac	
	ark Surface (A12)		Redox Depre				(	Other (Expla	in in Remark	(s)
	lucky Mineral (S1) (I	_RR N,	Iron-Mangan		ses (F12) (	(LRR N,				
	147, 148)		MLRA 13	•			3.			
	Bleyed Matrix (S4)		Umbric Surfa							egetation and
	ledox (S5)		Piedmont Flo	oodplain S	soils (F19)	(MLRA 14			rology must b	
	Matrix (S6)						Τ	iniess distui	bed or probl	ematic.
	_ayer (if observed):									
Type:			<del></del>							,
Depth (inc	ches):						Hydric Soi	I Present?	Yes	No <u> </u>
Remarks:										

Project/Site: Maney Farm Stream Mitigation Site	City/County: Chat	ham		Sampling Date: 5/29/14		
Applicant/Owner: Wildlands Engineering			State: NC	Sampling Date: 5/29/14 Sampling Point: Wetland R - DP32		
Investigator(s): Ian Eckardt and Win Taylor				Camping Form.		
Landform (hillslope, terrace, etc.): floodplain				Slone (%). 0		
Subregion (LRR or MLRA): MLRA 136 Lat:	W 7	9.344336	Slope (70)			
Soil Map Unit Name: Cid-Lignum complex, 2-6% sl	lones (CmB)	Long:		Datum:		
	_					
Are climatic / hydrologic conditions on the site typical for				,		
Are Vegetation, Soil, or Hydrology		Are "Normal	Circumstances" p	present? Yes No _✓		
Are Vegetation, Soil, or Hydrology	naturally problematic? (	If needed, e	xplain any answe	rs in Remarks.)		
SUMMARY OF FINDINGS - Attach site ma	ap showing sampling poi	nt locatio	ns, transects	, important features, etc.		
Hydric Soil Present? Yes✓	No Is the Sam within a We		Yes <u>√</u>	No		
Sampling point located in floodplain and have disturbed/trampled much of the hydrology	•					
Wetland Hydrology Indicators:			Secondary Indica	ators (minimum of two required)		
Primary Indicators (minimum of one is required; check	all that apply)		Surface Soil	Cracks (B6)		
✓ Surface Water (A1)	True Aquatic Plants (B14)		Sparsely Ve	getated Concave Surface (B8)		
	Hydrogen Sulfide Odor (C1)		Drainage Patterns (B10)			
	Oxidized Rhizospheres on Living F	Roots (C3)	Moss Trim Lines (B16)			
	Presence of Reduced Iron (C4)	:1- (00)	Dry-Season Water Table (C2)			
	Recent Iron Reduction in Tilled So Thin Muck Surface (C7)	iis (C6)	Crayfish Burrows (C8)			
	Other (Explain in Remarks)		<ul><li>Saturation Visible on Aerial Imagery (C9)</li><li>Stunted or Stressed Plants (D1)</li></ul>			
✓ Iron Deposits (B5)	(=		Startled of Stressed Flattis (D1) Geomorphic Position (D2)			
Inundation Visible on Aerial Imagery (B7)			Shallow Aqu			
Water-Stained Leaves (B9)			Microtopogra	aphic Relief (D4)		
Aquatic Fauna (B13)			FAC-Neutral	Test (D5)		
Field Observations:	0.5					
Surface Water Present? Yes No						
Water Table Present? Yes No						
Saturation Present? Yes <u>✓</u> No (includes capillary fringe)	Depth (inches): U-12	Wetland H	ydrology Preser	nt? Yes <u>Y</u> No		
Describe Recorded Data (stream gauge, monitoring w	rell, aerial photos, previous inspect	ions), if avai	lable:			
Domorko						
Remarks:						

Sampling Point: Wetland R - DP32

	Absolute	Dominant	Indicator	Dominance Test worksheet:			
<u>Tree Stratum</u> (Plot size: <u>30'</u> )		Species?		Number of Dominant Species			
1				That Are OBL, FACW, or FAC: $\frac{2}{}$ (A)			
2				Total Number of Deminent			
3				Total Number of Dominant Species Across All Strata:  3 (B)			
4.							
5.				Percent of Dominant Species That Are OBL, FACW, or FAC: 66% (A/B)			
6.				That Are Obe, I AGW, OF I AG.			
7.				Prevalence Index worksheet:			
8.				Total % Cover of: Multiply by:			
<u> </u>		= Total Cov	er	OBL species x 1 =			
Sapling/Shrub Stratum (Plot size: 15' )	-	10101 001	0.	FACW species x 2 =			
1. Rosa palustris	2	no	OBL	FAC species x 3 =			
2				FACU species x 4 =			
3				UPL species x 5 =			
4.				Column Totals: (A) (B)			
5.							
6.				Prevalence Index = B/A =			
7.				Hydrophytic Vegetation Indicators:			
8.				1 - Rapid Test for Hydrophytic Vegetation			
9.				✓ 2 - Dominance Test is >50%			
10.				3 - Prevalence Index is ≤3.0 ¹			
	2	= Total Cov	er	4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)			
Herb Stratum (Plot size: 5' )	20		OBL	Problematic Hydrophytic Vegetation ¹ (Explain)			
1. Carex lurida	30	yes	OBL				
2. Festuca sp.	20	yes	FACU	¹ Indicators of hydric soil and wetland hydrology must			
3. Ranunculus hispidus	20	yes	FAC	be present, unless disturbed or problematic.			
4. Polygonum pensylvanicum	10	no	FACW	Definitions of Four Vegetation Strata:			
5. Juncus effusus	10	no	FACW	Tree Mandy plants evaluating vines 2 in (7.0 cm) or			
6. Amaranthus palmeri	5	no	FACU	Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of			
7. Mentha sp.	2	no	FACW	height.			
8				Sapling/Shrub – Woody plants, excluding vines, less			
9				than 3 in. DBH and greater than 3.28 ft (1 m) tall.			
10				Herb – All herbaceous (non-woody) plants, regardless			
11				of size, and woody plants less than 3.28 ft tall.			
12				Woody vine – All woody vines greater than 3.28 ft in			
Woody Vine Stratum (Plot size: 30' )	97	= Total Cov	er	height.			
1							
2							
3.							
4.							
5.				Hydrophytic			
6.				Vegetation			
<u> </u>		= Total Cov	er				
Remarks: (Include photo numbers here or on a separate s		Total COV	<u>.</u>				
·	•						
Feature is located in a concave depress			en nea	vily disturbed (trampled) by cattle.			

Sapling and herb stratum's significantly impacted within sampling area.

Sampling Point: Wetland R - DP32

Depth	Matrix	(		dox Featur		12	T t	Damada
(inches) 0-3	Color (moist) 10YR 4/2	<u>%</u> 75	Color (moist) 7.5YR 4/6	<u>%</u> 25	<u>Type</u> ¹ C	Loc ²	Texture silt loam	Remarks
	_							
3-5	2.5Y 5/1	98	7.5YR 4/6	_ 2	<u>C</u>	_ <u>PL</u>	silt loam	
5-12	5Y 5/2	95	7.5YR 4/6	5	_ <u>C</u>	_ <u>PL</u>	silt loam	
	_							
	<u> </u>				_			-
					_			
	_		-					
	Concentration, D=D	epletion, RN	/I=Reduced Matrix,	MS=Maske	ed Sand C	Grains.	² Location: Pl	L=Pore Lining, M=Matrix.
•	il Indicators:		D 10 f	(07)				ators for Problematic Hydric Soils ³ :
	ol (A1) Epipedon (A2)		Dark Surfa		(82) eac	(MLRA 147,		2 cm Muck (A10) <b>(MLRA 147)</b> Coast Prairie Redox (A16)
	Histic (A3)		Thin Dark				, 140) (	(MLRA 147, 148)
	gen Sulfide (A4)		Loamy Gle			· · · · · · · · · · · · · · · · · · ·	F	Piedmont Floodplain Soils (F19)
	ed Layers (A5)		✓ Depleted N	latrix (F3)				(MLRA 136, 147)
	/luck (A10) (LRR N)		Redox Dar		. ,			Red Parent Material (TF2)
	ed Below Dark Surf	ace (A11)	Depleted D		. ,			/ery Shallow Dark Surface (TF12)
	Dark Surface (A12) Mucky Mineral (S1	) (I RR N	Redox Dep			(I RR N	_ '	Other (Explain in Remarks)
-	RA 147, 148)	) (LIXIX IV,	MLRA		3C3 (1 12)	(LIXIX IV,		
	Gleyed Matrix (S4)		Umbric Su	•	(MLRA	136, 122)	³ Inc	dicators of hydrophytic vegetation and
	Redox (S5)					9) <b>(MLRA 1</b> 4		vetland hydrology must be present,
	ed Matrix (S6)						U	unless disturbed or problematic.
	Layer (if observe	d):						
Type: _								
	inches):						Hydric Soil	I Present? Yes <u></u> No
emarks:								

Project/Site: Maney Farm Stream Mitigation Site	City/County: Chatham		Sampling Date: 5/29/14		
Applicant/Owner: Wildlands Engineering			Sampling Point: Upland R-S - DP33		
Investigator(s): Ian Eckardt and Win Taylor					
Landform (hillslope, terrace, etc.): floodplain			Slope (%): 0		
Subregion (LRR or MLRA): MLRA 136 Lat: N 35.			Datum:		
Soil Map Unit Name: Cid-Lignum complex, 2-6% slopes	(CmB)	NWI classification	ation:		
Are climatic / hydrologic conditions on the site typical for this ti					
Are Vegetation, Soil, or Hydrology sign			resent? Yes No _		
Are Vegetation, Soil, or Hydrology natu	urally problematic? (If needed	l, explain any answer	rs in Remarks.)		
SUMMARY OF FINDINGS - Attach site map sh	owing sampling point loca	tions, transects	, important features, etc.		
Hydrophytic Vegetation Present? Yes   Hydric Soil Present? Yes   No   Wetland Hydrology Present? Yes   No   Remarks:	within a Wetland?	a Yes	_ No_ <u>√</u>		
Sampling point is representative of a non project site.	-jurisdictional upland are	ea located in th	ne floodplain of the		
HYDROLOGY					
Wetland Hydrology Indicators:		Secondary Indica	tors (minimum of two required)		
Primary Indicators (minimum of one is required; check all that	t apply)	Surface Soil (	Cracks (B6)		
Surface Water (A1) True A	quatic Plants (B14)	Sparsely Veg	etated Concave Surface (B8)		
High Water Table (A2) Hydrog	en Sulfide Odor (C1)	Drainage Pat	terns (B10)		
Saturation (A3) Oxidize	ed Rhizospheres on Living Roots (C3				
Water Marks (B1) Presen	ce of Reduced Iron (C4)	Dry-Season Water Table (C2)			
Sediment Deposits (B2) Recent	Iron Reduction in Tilled Soils (C6)	oils (C6) Crayfish Burrows (C8)			
Drift Deposits (B3) Thin M	uck Surface (C7)	Saturation Visible on Aerial Imagery (C9)			
Algal Mat or Crust (B4) Other (	Explain in Remarks)	Stunted or Stressed Plants (D1)			
Iron Deposits (B5)		Geomorphic Position (D2)			
Inundation Visible on Aerial Imagery (B7)		Shallow Aqui	tard (D3)		
Water-Stained Leaves (B9)			phic Relief (D4)		
Aquatic Fauna (B13)		FAC-Neutral	Test (D5)		
Field Observations:					
Surface Water Present? Yes No Depth					
Water Table Present? Yes No ✓ _ Depth			/		
Saturation Present? Yes No Depth	(inches): Wetland	d Hydrology Presen	t? Yes No		
(includes capillary fringe)  Describe Recorded Data (stream gauge, monitoring well, aer	ial photos, previous inspections), if a	vailable:			
Remarks:					

Sampling Point: Upland R-S - DP33

	Absolute	Dominant	Indicator	Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: 30' )	% Cover	Species?	Status	Number of Dominant Species
1				That Are OBL, FACW, or FAC: 2 (A)
2.				
				Total Number of Dominant Species Across All Strata: 4 (B)
3				Species Across All Strata: 4 (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 50% (A/B)
6				
7				Prevalence Index worksheet:
8				Total % Cover of: Multiply by:
<u> </u>		= Total Cov	or	OBL species $31$ $x 1 = 31$
Sapling/Shrub Stratum (Plot size: 15' )		- Total Cov	Ci	FACW species $0   x 2 = 0$
1. Symphoricarpos orbiculatus	10	yes	FACU	FAC species 20 x 3 = 60
o Rosa nalustris	_ <del></del>	no	OBL	FACU species 50 x 4 = 200
	_ <del>·</del>			1 A00 species X +
3				OFL species x 3 =
4				Column Totals: 101 (A) 291 (B)
5				5 50 20
6				Prevalence Index = B/A = 2.9
7.				Hydrophytic Vegetation Indicators:
				1 - Rapid Test for Hydrophytic Vegetation
8				2 - Dominance Test is >50%
9				✓ 3 - Prevalence Index is ≤3.0 ¹
10				4 - Morphological Adaptations¹ (Provide supporting
-	11	= Total Cov	er	data in Remarks or on a separate sheet)
Herb Stratum (Plot size: 5' )				Problematic Hydrophytic Vegetation ¹ (Explain)
1. Carex lurida	30	yes	OBL	Problematic Hydrophytic Vegetation (Explain)
2. Festuca sp.	30	yes	FACU	
3. Ranunculus hispidus	20	yes	FAC	¹Indicators of hydric soil and wetland hydrology must
4 Trifolium repens	5	no	FACU	be present, unless disturbed or problematic.
т	_ <del>5</del>		FACU	Definitions of Four Vegetation Strata:
5. Amaranthus palmeri	_ =	no	FACU	Tree Moody plants evaluding vines 2 in (7.6 cm) or
6				<b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of
7				height.
8				
9.				Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
10.				than 3 in. DBH and greater than 3.20 it (1 in) tall.
				Herb – All herbaceous (non-woody) plants, regardless
11				of size, and woody plants less than 3.28 ft tall.
12				Woody vine – All woody vines greater than 3.28 ft in
20'	90	= Total Cov	er	height.
Woody Vine Stratum (Plot size: 30' )				
1				
2				
3				
4.				
				Hydrophytic
				Vegetation Present? Yes No
5				Present? Yes No
				11636Ht: 163 NO
5		= Total Cov		11636Ht: 163 HO

Sampling Point: Upland R-S - DP33

Depth	Matrix			ox Feature		. 2	_	vituro D		
(inches)	Color (moist)	<u>%</u>	Color (moist)	%_	Type ¹		Text	ture	Remarks	
)-7 - 10	2.5Y 5/3	85	7.5YR 4/6	_ 15	<u>C</u>	_ <u>PL</u>	loam			
7-12	2.5Y 6/4	90	7.5YR 4/6	10	<u>C</u>	PL	loam			
	<u> </u>		<u> </u>							
	•			_						
			·							
	<u> </u>		· .							
	<del>.</del>		<u> </u>							
					_					
		epletion, RN	M=Reduced Matrix, N	/IS=Maske	d Sand C	Grains.	² Locati	on: PL=Pore Lin		
•	Indicators:							Indicators for F		
Histoso			Dark Surfac		(00)	(BAL DA 447	4.40\		(A10) <b>(MLRA</b>	
	Epipedon (A2) Histic (A3)		Polyvalue E Thin Dark S		, ,	•	, 148)	Coast Prairi (MLRA 1		)
	en Sulfide (A4)		Loamy Gley			147, 140)		Piedmont F		(F19)
	ed Layers (A5)		Depleted M		(/			(MLRA 1		(- ( )
	luck (A10) (LRR N)		Redox Dark		,				Material (TF2)	
	ed Below Dark Surfa	ace (A11)	Depleted D						w Dark Surfac	
	Oark Surface (A12) Mucky Mineral (S1)	/I DD N	Redox Dep Iron-Manga			/I DD N		Other (Expl	ain in Remarks	S)
	A 147, 148)	(LKK N,	MLRA 1		SES (1 12)	(LKK N,				
	Gleyed Matrix (S4)		Umbric Sur	•	(MLRA	136, 122)		³ Indicators of I	nydrophytic ve	getation and
	Redox (S5)		Piedmont F				<b>4</b> 8)		Irology must b	-
	d Matrix (S6)							unless distu	irbed or proble	matic.
	Layer (if observed	d):								
Type:										,
Depth (ir	nches):						Hydr	ic Soil Present?	Yes	_ No <u></u>
emarks:										

Project/Site: Maney Farm Stream Mitigation Site	City/County: Chatham		Sampling Date: 5/29/14				
Applicant/Owner: Wildlands Engineering	City/County: Chatham	State: NC	Sampling Point: Wetland S - DP34				
Investigator(s): Ian Eckardt and Win Taylor			Gamping Forms				
Landform (hillslope, terrace, etc.): floodplain			Slone (%). 0				
Cubassian (LDD and DA), MI RA 136	79.344243	Slope (70)					
Subregion (LRR or MLRA): MLRA 136 Lat: Soil Map Unit Name: Cid-Lignum complex, 2-6% sl	ones (CmR)		Datum:				
	_						
Are climatic / hydrologic conditions on the site typical for			/				
Are Vegetation, Soil, or Hydrology		nal Circumstances"	present? Yes No <u></u> ✓				
Are Vegetation, Soil, or Hydrology	naturally problematic? (If needed	d, explain any answe	ers in Remarks.)				
SUMMARY OF FINDINGS - Attach site ma	ap showing sampling point loca	tions, transects	s, important features, etc.				
Hydric Soil Present? Yes✓	No Is the Sampled Are within a Wetland?	a Yes <u></u> ✓	No				
Sampling point located in floodplain a and have disturbed/trampled much o	•		ne sampling location				
		Casandaniladia	atawa (mainina ma affina ma annina d)				
Wetland Hydrology Indicators:	all that apply)		Secondary Indicators (minimum of two required)				
Primary Indicators (minimum of one is required; check		Surface Soil					
	Frue Aquatic Plants (B14) Hydrogen Sulfide Odor (C1)		<ul><li>Sparsely Vegetated Concave Surface (B8)</li><li>Drainage Patterns (B10)</li></ul>				
	Oxidized Rhizospheres on Living Roots (C						
	Presence of Reduced Iron (C4)	Dry-Season Water Table (C2)					
	Recent Iron Reduction in Tilled Soils (C6)	Crayfish Bur					
	Thin Muck Surface (C7)	Saturation V	isible on Aerial Imagery (C9)				
✓ Algal Mat or Crust (B4)	Other (Explain in Remarks)	Stunted or S	Stressed Plants (D1)				
Iron Deposits (B5)		Geomorphic Position (D2)					
Inundation Visible on Aerial Imagery (B7)		Shallow Aquitard (D3)					
✓ Water-Stained Leaves (B9)			aphic Relief (D4)				
Aquatic Fauna (B13)		FAC-Neutra	I Test (D5)				
Field Observations:	Double (inches)						
	Depth (inches): Depth (inches):						
		d Hydrology Prese					
Saturation Present? Yes No  (includes capillary fringe)	Depth (inches): Wetlan	a Hydrology Prese	nt? Yes <u>Y</u> No				
Describe Recorded Data (stream gauge, monitoring we	ell, aerial photos, previous inspections), if a	available:					
Remarks:							

Sampling Point: Wetland S - DP34

	Absolute	Dominant	Indicator	Dominance Test worksheet:	
<u>Tree Stratum</u> (Plot size: 30'	% Cover	Species?	Status	Number of Dominant Species	
1. Acer rubrum	25	yes	FAC	·	(A)
2				Total Number of Dominant	
3				_	(B)
4				Descent of Descinant Conscion	
5				Percent of Dominant Species That Are OBL, FACW, or FAC: 60%	(A/B)
6					(,,,,
7.				Prevalence Index worksheet:	
8.				Total % Cover of: Multiply by:	
	25	= Total Cov	er	OBL species x 1 =	
Sapling/Shrub Stratum (Plot size: 15' )				FACW species x 2 =	
1. Ligustrum japonicum	50	yes	UPL	FAC species x 3 =	
2. Rosa multiflora	5	no	FACU	FACU species x 4 =	
3				UPL species x 5 =	
4				Column Totals: (A)	(B)
5.					
6.				Prevalence Index = B/A =	
7.				Hydrophytic Vegetation Indicators:	
8.				1 - Rapid Test for Hydrophytic Vegetation	
9.				✓ 2 - Dominance Test is >50%	
10.				3 - Prevalence Index is ≤3.0 ¹	
	55	= Total Cov	er	4 - Morphological Adaptations ¹ (Provide support data in Remarks or on a separate sheet)	orting
Herb Stratum (Plot size: 5' )				Problematic Hydrophytic Vegetation¹ (Explain	`
1. Carex lurida	40	yes	OBL	1 Toblemano Tryarophyno Vegetation (Explain)	,
2. Festuca sp.	20	yes	FACU	¹ Indicators of hydric soil and wetland hydrology mu	ıct
3. Ranunculus hispidus	20	yes	FAC	be present, unless disturbed or problematic.	มอเ
4. Trifolium repens	5	no	FACU	Definitions of Four Vegetation Strata:	
5. Juncus effusus	5	no	FACW		
6				Tree – Woody plants, excluding vines, 3 in. (7.6 cr more in diameter at breast height (DBH), regardles	
7				height.	30 01
8				Continue/Observe Was designed associations visually	
9				Sapling/Shrub – Woody plants, excluding vines, I than 3 in. DBH and greater than 3.28 ft (1 m) tall.	ess
10					
11.				Herb – All herbaceous (non-woody) plants, regard of size, and woody plants less than 3.28 ft tall.	less
12.				of size, and woody plants less than 3.20 it tall.	
	90	= Total Cov	er	Woody vine – All woody vines greater than 3.28 ft	t in
Woody Vine Stratum (Plot size: 30' )				height.	
1					
2					
3					
4					
5.				Hydrophytic Vegetation	
6.				Present? Yes No	
		= Total Cov	er		
Remarks: (Include photo numbers here or on a separate		10101 001			
Footure is located in a concave depres	,	t boo bo	on hoo	willy disturbed (trampled) by settle	

Feature is located in a concave depression that has been heavily disturbed (trampled) by cattle. Sapling and herb stratum's significantly impacted within sampling area.

Sampling Point: Wetland S - DP34

Depth	Matrix			ox Feature		. 2	<b>-</b> :	_	ъ.	
(inches) 0-4	Color (moist)		Color (moist) 10YR 4/6		Type ¹		Texture silt loan		Remarks	
	2.5YR 5/2	90		10	_ <u>C</u>	_ <u>PL</u>	-			
4-12	5Y 5/2	85	5YR 4/6	15	<u>C</u>	_ <u>PL</u>	silt loan	n		
							-			
							-			
			<u> </u>				-			
_		· ·								
Tyne: C=C	oncentration D=D	enletion RN	/I=Reduced Matrix, M	 IS=Maske	d Sand (		² Location	: PL=Pore Linii	ng M=Matrix	
	Indicators:	opiction, rei	Treadoca Matrix, IV	io maone	a Garia C	oranio.		ndicators for P		dric Soils ³ :
Histosol			Dark Surfac	e (S7)					A10) <b>(MLRA 1</b> 4	
	pipedon (A2)		Polyvalue B		ace (S8)	(MLRA 147	, 148) <u> </u>	Coast Prairie	, ,	,
	istic (A3)		Thin Dark S	•	, .	147, 148)		(MLRA 14		
	en Sulfide (A4)		Loamy Gley		(F2)		_	Piedmont Flo		F19)
	d Layers (A5)		Depleted Ma		<b>5</b> 0)			(MLRA 13		
	uck (A10) <b>(LRR N)</b> d Below Dark Surfa		Redox Dark Depleted Da				_		Material (TF2) v Dark Surface	(TE12)
	ark Surface (A12)	ace (ATT)	Redox Depr				_		in in Remarks)	(11 12)
	Mucky Mineral (S1)	(LRR N,	Iron-Mangai			(LRR N,	_	01.101 (Explo	iii iii r tomanto,	
	A 147, 148)	,	MLRA 1		` '	,				
	Gleyed Matrix (S4)		Umbric Surf	ace (F13)	(MLRA	136, 122)		³ Indicators of h	ydrophytic vege	etation and
-	Redox (S5)		Piedmont Fl	loodplain	Soils (F19	9) <b>(MLRA 1</b> 4	48)	-	rology must be	
	d Matrix (S6)							unless distur	bed or problem	natic.
	Layer (if observed	d):								
Type:			<del></del>						/	
	ches):						Hydric	Soil Present?	Yes <u>√</u>	No
lemarks:										

Project/Site: Maney Farm Stream Mitigation Site	City/C	ounty: Chatham		Sampling Date: 5/29/14			
Applicant/Owner: Wildlands Engineering			State: NC	Sampling Point: Wetland T - DP35			
Investigator(s): Ian Eckardt and Win Taylor				<u> </u>			
Landform (hillslope, terrace, etc.): floodplain				Slone (%): 0			
Subragion (LBB or MLBA): MLRA 136	Lange W 7	9.343849	Olope (70)				
Subregion (LRR or MLRA): MLRA 136 Lat: Soil Map Unit Name: Cid-Lignum complex, 2-6% s	lopes (CmB)	Long	NWI classific	cation:			
Are climatic / hydrologic conditions on the site typical fo	r this time of year? Ye	es _ <b>√</b> No (	(If no, explain in F	Remarks.)			
Are Vegetation, Soil, or Hydrology	significantly disturt	ped? Are "Normal	Circumstances"	present? Yes No _			
Are Vegetation, Soil, or Hydrology	naturally problema	itic? (If needed, e	explain any answe	ers in Remarks.)			
SUMMARY OF FINDINGS – Attach site m				,			
Hydrophytic Vegetation Present? Yes✓	is the Sampled Area						
	_ No	within a Wetland?	Yes ✓	No			
Wetland Hydrology Present? Yes✓	_ No						
Remarks:							
and have disturbed/trampled much of	of the surface a	area at the samp	ling point.				
HYDROLOGY							
Wetland Hydrology Indicators:				ators (minimum of two required)			
Primary Indicators (minimum of one is required; check			Surface Soil				
	True Aquatic Plants (E			getated Concave Surface (B8)			
	Hydrogen Sulfide Odd		Drainage Pa				
	Presence of Reduced	es on Living Roots (C3)					
	Recent Iron Reduction		Dry-Season Water Table (C2)				
	Thin Muck Surface (C		coils (C6) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9)				
	Other (Explain in Rem		Saturation visible on Aerial imagery (C9) Stunted or Stressed Plants (D1)				
Iron Deposits (B5)		iao,		Position (D2)			
Inundation Visible on Aerial Imagery (B7)			Shallow Aqu				
✓ Water-Stained Leaves (B9)			Microtopographic Relief (D4)				
Aquatic Fauna (B13)			FAC-Neutra				
Field Observations:							
Surface Water Present? Yes No/							
Water Table Present? Yes No	Depth (inches):			,			
Saturation Present? Yes No	Depth (inches):	Wetland H	lydrology Presei	nt? Yes <u> </u>			
(includes capillary fringe)  Describe Recorded Data (stream gauge, monitoring w	vell. aerial photos, pre	vious inspections), if ava	ilable:				
33.,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,,					
Remarks:							

Sampling Point: Wetland T - DP35

,	Absolute	Dominant	Indicator	Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: 30' )		Species?		Number of Dominant Species
1. Salix nigra	_ 30	yes	OBL	That Are OBL, FACW, or FAC: 4 (A)
2. Fraxinus pennsylvanica		yes	FACW	Total Number of Dominant
3				Species Across All Strata: 5 (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 80% (A/B)
6				Prevalence Index worksheet:
7				Total % Cover of: Multiply by:
8	<b>50</b>			OBL species x 1 =
Sapling/Shrub Stratum (Plot size: 15' )	50	= Total Cov	/er	FACW species x 2 =
1 Ligustrum japonicum	35	yes	UPL	FAC species x 3 =
2.				FACU species x 4 =
3.				UPL species x 5 =
				Column Totals: (A) (B)
4				(5)
5				Prevalence Index = B/A =
6				Hydrophytic Vegetation Indicators:
7				1 - Rapid Test for Hydrophytic Vegetation
8				✓ 2 - Dominance Test is >50%
9		<del></del>		3 - Prevalence Index is ≤3.0 ¹
10	35	= Total Cov		4 - Morphological Adaptations ¹ (Provide supporting
Herb Stratum (Plot size: 5' )		- Total Cov	<i>(</i> C)	data in Remarks or on a separate sheet)
1. Microstegium vimineum	40	yes	FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
2. Polygonum pensylvanicum	15	yes	FACW	1
3				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
4				Definitions of Four Vegetation Strata:
5				Seminone of Four Vegetation official.
6				Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of
7				height.
8				Continue/Church Monday plants expluding vines less
0				Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
10				
11				Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
12				
201	55	= Total Cov	/er	Woody vine – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: 30' )				noight.
1				
2				
3				
4				Hydrophytic
5				Venetation
6				Present? Yes No
		= Total Cov	/er	
Remarks: (Include photo numbers here or on a separate	sheet.)			
Feature is located in a concave depres	ssion tha	t has be	en hea	vily disturbed (trampled) by cattle

Feature is located in a concave depression that has been heavily disturbed (trampled) by cattle. Sapling and herb stratum's significantly impacted within sampling area.

Sampling Point: Wetland T - DP35

(inches)	Matrix			dox Feature		1 2	T 4		Damanda	
0-3	2.5Y 5/1	<u>%</u> 80	Color (moist) 7.5YR 4/6	<u>%</u> 20	Type ¹ C	Loc ²	<u>Text</u> loam	ure	Remarks	
			-							
3-12	5Y 5/2	90	7.5YR 4/6	10	<u>C</u>	_ <u>PL</u>	loam			
					-		-			
	<u> </u>				-		-			
			<u> </u>				-			
	-		· .		_		-			
	_, <u></u>				_					
Type: C=C	Concentration, D=D	Depletion, RN	M=Reduced Matrix, I	MS=Maske	d Sand G	Grains.	² Locatio	n: PL=Pore Lin	ing. M=Matrix.	
	I Indicators:	- opiouo, . u			<u> </u>			Indicators for F	Problematic Hy	dric Soils ³ :
Histoso	ol (A1)		Dark Surfa	ce (S7)					(A10) <b>(MLRA 1</b> 4	
	Epipedon (A2)				ace (S8)	(MLRA 147	, 148)	Coast Prair		
	Histic (A3)		Thin Dark S	•	, .	147, 148)		(MLRA 1		
	gen Sulfide (A4)		Loamy Gle		(F2)				loodplain Soils (	F19)
	ed Layers (A5)		✓ Depleted M		FC\			(MLRA 1		
	luck (A10) <b>(LRR N</b> ) ed Below Dark Surf		Redox Dari	,	,				Material (TF2) w Dark Surface	(TF12)
	Dark Surface (A12)		Redox Dep						ain in Remarks)	(11 12)
	Mucky Mineral (S1		Iron-Manga			(LRR N,		` '	,	
	RA 147, 148)		MLRA 1							
	Gleyed Matrix (S4)	)	Umbric Sur						hydrophytic veg	
-	Redox (S5)		Piedmont F	loodplain (	Soils (F19	9) <b>(MLRA 1</b> 4	48)	-	drology must be	
	ed Matrix (S6)	.al\.					1	unless disti	irbed or problem	atic.
Type:	Layer (if observe	ou):								
Type.							Llvedei	a Cail Dragget?	V 1	No
	noboo).						пуагі	c Soil Present?	Yes	No
	nchee).						Tiyun	C Jon Present:	163	<u> </u>
Depth (in	nches):									
Depth (in	nches):									
Depth (in	nches):									
Depth (in	nches):									
Depth (in	nches):									
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Depth (in	nches):									
Depth (in	nches):									
Depth (in	nches):									
Depth (in	nches):									
Depth (in	nches):									

Project/Site: Maney Farm Stream Mitigation Site	City/Co	_{unty:} Chatham		Sampling Date: 5/29/14		
Applicant/Owner: Wildlands Engineering			State: NC	Sampling Date: 5/29/14 Sampling Point: Upland T - DP36		
Investigator(s): Ian Eckardt and Win Taylor				<u> </u>		
Landform (hillslope, terrace, etc.): floodplain				Slone (%): 0		
Subragion (LRB or MLRA): MLRA 136	N 35.840808	Long: W 7	9.343892	Olope (70)		
Subregion (LRR or MLRA): MLRA 136 Lat Soil Map Unit Name: Cid-Lignum complex, 2-6% s	slopes (CmB)	Long	NWI classific	cation:		
Are climatic / hydrologic conditions on the site typical for		,				
Are Vegetation ✓, Soil, or Hydrology				present? Yes No _		
Are Vegetation, Soil, or Hydrology			explain any answe			
SUMMARY OF FINDINGS - Attach site n						
Hydrophytic Vegetation Present? Yes/	No					
	No /	Is the Sampled Area within a Wetland?	Voc	No <u></u> ✓		
	No <u> </u>	within a wettand:	163			
Remarks:						
Sampling point is representative of a project site.	,					
HYDROLOGY						
Wetland Hydrology Indicators:				ators (minimum of two required)		
Primary Indicators (minimum of one is required; chec	* * * * *		Surface Soil Cracks (B6)			
	True Aquatic Plants (B		Sparsely Vegetated Concave Surface (B8)			
	Hydrogen Sulfide Odor		Drainage Pa			
	Oxidized Rhizospheres Presence of Reduced I		Moss Trim L	ines (B16) Water Table (C2)		
	Recent Iron Reduction		Crayfish Bur			
	Thin Muck Surface (C7		-	isible on Aerial Imagery (C9)		
	Other (Explain in Rema			itressed Plants (D1)		
Iron Deposits (B5)	C. 1. C. (2. p. c. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.			Position (D2)		
Inundation Visible on Aerial Imagery (B7)			Shallow Aqu			
Water-Stained Leaves (B9)				aphic Relief (D4)		
Aquatic Fauna (B13)			FAC-Neutral	Test (D5)		
Field Observations:						
	_ Depth (inches):					
	Depth (inches):			1		
	Depth (inches):	Wetland F	lydrology Preser	nt? Yes No		
(includes capillary fringe)  Describe Recorded Data (stream gauge, monitoring v	well, aerial photos, previ	ous inspections), if ava	ilable:			
, , , , ,		. ,				
Remarks:						

Sampling Point: Upland T - DP36

0.01	Absolute	Dominant	Indicator	Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: 30'		Species?		Number of Dominant Species
1. Fraxinus pennsylvanica	40	yes	FACW	That Are OBL, FACW, or FAC: $\frac{3}{}$ (A)
2. Salix nigra	15	yes	OBL	Total Number of Dominant
3				Species Across All Strata: 4 (B)
4				
5				Percent of Dominant Species That Are OBL, FACW, or FAC: 75% (A/B)
6.				That Ale OBE, I AOW, OF I AO.
7				Prevalence Index worksheet:
				Total % Cover of: Multiply by:
8	55			OBL species x 1 =
Sapling/Shrub Stratum (Plot size: 15')		= Total Cov	er	FACW species x 2 =
1 Ligustrum japonicum	20	yes	UPL	FAC species x 3 =
· · · <u></u>				FACU species x 4 =
2				UPL species x 5 =
3				
4				Column Totals: (A) (B)
5	<del></del>			Prevalence Index = B/A =
6	<del></del>			Hydrophytic Vegetation Indicators:
7				
8				1 - Rapid Test for Hydrophytic Vegetation
9				✓ 2 - Dominance Test is >50%
10.				3 - Prevalence Index is ≤3.0 ¹
	20	= Total Cov	er	4 - Morphological Adaptations ¹ (Provide supporting
Herb Stratum (Plot size: 5' )				data in Remarks or on a separate sheet)
1. Microstegium vimineum	70	yes	FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
2. Amaranthus palmeri	10	no	FACU	
3. Festuca sp.	5	no	FACU	¹ Indicators of hydric soil and wetland hydrology must
4.				be present, unless disturbed or problematic.
				Definitions of Four Vegetation Strata:
5				Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or
6				more in diameter at breast height (DBH), regardless of
7				height.
8				Sapling/Shrub – Woody plants, excluding vines, less
9				than 3 in. DBH and greater than 3.28 ft (1 m) tall.
10				Herb – All herbaceous (non-woody) plants, regardless
11				of size, and woody plants less than 3.28 ft tall.
12				
	85	= Total Cov	er	<b>Woody vine</b> – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: 30')				neight.
1				
2				
3				
4				
5				Hydrophytic Vegetation
6.				Present? Yes No
		= Total Cov	er	
Remarks: (Include photo numbers here or on a separate :		10101 001	-	
Remarks. (include prioto numbers here of off a separate s	sileet.)			

Sampling Point: Upland T - DP36

Depth	Matrix		Redox Features		
(inches)	Color (moist)	%	Color (moist) % Type ¹ Loc ²	Text	ure Remarks
0-2	2.5Y 4/4	100		loam	
2-12	2.5Y 6/4	100		loam	
		<u> </u>			<del></del> -
					·
Type: C=C	Concentration D=De	enletion PM=	Reduced Matrix, MS=Masked Sand Grains.	² Locatio	on: PL=Pore Lining, M=Matrix.
	Indicators:	epiedon, rawi–	reduced Matrix, Mo-Masked Garid Grains.		Indicators for Problematic Hydric Soils ³ :
Histoso			Dark Surface (S7)		2 cm Muck (A10) (MLRA 147)
	pipedon (A2)		Polyvalue Below Surface (S8) (MLRA 147,	148)	Coast Prairie Redox (A16)
Black H	listic (A3)		Thin Dark Surface (S9) (MLRA 147, 148)		(MLRA 147, 148)
	en Sulfide (A4)		Loamy Gleyed Matrix (F2)		Piedmont Floodplain Soils (F19)
	ed Layers (A5)		Depleted Matrix (F3)		(MLRA 136, 147)
	uck (A10) <b>(LRR N)</b> ed Below Dark Surfa	ace (A11)	Redox Dark Surface (F6) Depleted Dark Surface (F7)		<ul><li>Red Parent Material (TF2)</li><li>Very Shallow Dark Surface (TF12)</li></ul>
	ark Surface (A12)	acc (ATT)	Redox Depressions (F8)		Other (Explain in Remarks)
	Mucky Mineral (S1)	(LRR N,	Iron-Manganese Masses (F12) (LRR N,		
	A 147, 148)		MLRA 136)		
	Gleyed Matrix (S4)		Umbric Surface (F13) (MLRA 136, 122)		³ Indicators of hydrophytic vegetation and
-	Redox (S5)		Piedmont Floodplain Soils (F19) (MLRA 14	8)	wetland hydrology must be present,
	d Matrix (S6)  Layer (if observed	4/.		1	unless disturbed or problematic.
Type:	Layer (II Observed	<i>u</i> ).			
	nches):		<del></del>	Hydri	ic Soil Present? Yes No _✓
Remarks:	iciles).		<del></del>	nyun	ic son Fresent: Tes No
cinains.					

Project/Site: Maney Farm Stream Mitigation Site	City/County: Chatham		Sampling Date: 11/5/14					
Applicant/Owner: Wildlands Engineering	City/County: Chatham	State: NC	Sampling Point: Wetland U					
			Gamping Fount.					
	Section, Township, Range	ov none). concave	Slone (%). 0					
Landform (hillslope, terrace, etc.): floodplain   Local relief (concave, convex, none): concave   Slope (%): 0   Subregion (LRR or MLRA): MLRA 136   Lat: N 35.835613   Long: W 79.34288   Datum:								
Soil Map Unit Name: Cid-Lignum complex, 2-6% sl	opes (CmB)	NIVALI alaasifis	Datum					
Are climatic / hydrologic conditions on the site typical for			1					
Are Vegetation, Soil, or Hydrology			oresent? Yes No <u>▼</u>					
Are Vegetation, Soil, or Hydrology	naturally problematic? (If nee	eded, explain any answe	ers in Remarks.)					
SUMMARY OF FINDINGS - Attach site ma	ap showing sampling point lo	cations, transects	, important features, etc.					
Hydric Soil Present? Yes✓	No Is the Sampled A within a Wetland	Area d? Yes <u>√</u>	No					
Sampling point located in floodplain a and have disturbed/trampled much o	-		ne sampling location					
HYDROLOGY								
Wetland Hydrology Indicators:		Secondary Indica	ators (minimum of two required)					
Primary Indicators (minimum of one is required; check		Surface Soil Cracks (B6)						
	Frue Aquatic Plants (B14)	Sparsely Vegetated Concave Surface (B8)						
	Hydrogen Sulfide Odor (C1)	Drainage Pa						
	Oxidized Rhizospheres on Living Roots Presence of Reduced Iron (C4)		Water Table (C2)					
	Recent Iron Reduction in Tilled Soils (C							
	Thin Muck Surface (C7)		isible on Aerial Imagery (C9)					
	Other (Explain in Remarks)		tressed Plants (D1)					
Iron Deposits (B5)	(	✓ Geomorphic						
Inundation Visible on Aerial Imagery (B7)		Shallow Aqu	itard (D3)					
✓ Water-Stained Leaves (B9)		Microtopogra	aphic Relief (D4)					
Aquatic Fauna (B13)		FAC-Neutral	Test (D5)					
Field Observations:								
	Depth (inches):							
	Depth (inches):							
	Depth (inches): Wet	land Hydrology Preser	nt? Yes <u> </u>					
(includes capillary fringe)  Describe Recorded Data (stream gauge, monitoring wo	ell, aerial photos, previous inspections),	if available:						
Remarks:								

Sampling Point: Wetland U

(	Absolute	Dominant	Indicator	Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: 30')		Species?		Number of Dominant Species
1. Acer rubrum	40	yes	FAC	That Are OBL, FACW, or FAC: $\frac{3}{}$ (A)
2. Quercus phellos	30	yes	FAC	Total Number of Dominant
3. Ulmus americana	10		FACW	Species Across All Strata: 4 (B)
<del>-</del>				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 75% (A/B)
6				Prevalence Index worksheet:
7				Total % Cover of: Multiply by:
8				OBL species x 1 =
Sapling/Shrub Stratum (Plot size: 15' )	80	= Total Cov	er	FACW species x 2 =
1				FAC species x 3 =
2.	<del></del>			FACU species x 4 =
				UPL species x 5 =
3				Column Totals: (A) (B)
4				Column Totals (A) (B)
5				Prevalence Index = B/A =
6				Hydrophytic Vegetation Indicators:
7				1 - Rapid Test for Hydrophytic Vegetation
8				✓ 2 - Dominance Test is >50%
9				3 - Prevalence Index is ≤3.0 ¹
10.		= Total Cov	er	4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
Herb Stratum (Plot size: 5' )  1. Festuca sp.	40	V00	FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
Microstegium vimineum	15	yes	FAC	
2. Dichanthelium clandestinum	5	yes	FAC	¹ Indicators of hydric soil and wetland hydrology must
··-			FAC	be present, unless disturbed or problematic.
4				Definitions of Four Vegetation Strata:
5				Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or
6				more in diameter at breast height (DBH), regardless of
7				height.
8				Sapling/Shrub – Woody plants, excluding vines, less
9	<del></del>			than 3 in. DBH and greater than 3.28 ft (1 m) tall.
10	<del></del>			Herb – All herbaceous (non-woody) plants, regardless
11.				of size, and woody plants less than 3.28 ft tall.
12	60			Woody vine – All woody vines greater than 3.28 ft in
Woody Vine Stratum (Plot size: 30' )	00	= Total Cov	er	height.
1				
2				
3				
4				
5.				Hydrophytic Vegetation
6.				Present? Yes No
		= Total Cov	er	
Remarks: (Include photo numbers here or on a separate s				1
Feature is located in a concave depres	,	t has ho	an haa	wily disturbed (trampled) by cattle
Sanling and herh stratum's significantly				` ' '

Sampling Point: Wetland U

Profile Desc	ription: (Describe	to the de	oth needed to docu	ment the	indicator	or confirm	the ab	sence of indicato	ors.)	
Depth	Matrix		Redo	x Feature	s					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Text	ture	Remarks	
0-5	10YR 2/2	100					loam			
5-12	2.5YR 4/1	95	7.5YR 4/6	5	С	PL	loam			
				- <del></del>	· —	· <del></del>				
					-	-				_
			-					-		_
						<del></del>				
										_
	-							<del></del> -		
					-					
¹ Type: C=Co	oncentration. D=Der	oletion. RM	I=Reduced Matrix, M	S=Maske	d Sand G	rains.	² Locati	on: PL=Pore Linin	ng. M=Matrix.	
Hydric Soil		,	, , , , , , , , , , , , , , , , , , , ,					Indicators for Pr		dric Soils³:
Histosol			Dark Surface	e (S7)					A10) <b>(MLRA 14</b>	
	pipedon (A2)		Polyvalue B		ce (S8) (I	MLRA 147.	148)	Coast Prairie		,
Black Hi			Thin Dark S				,	(MLRA 14		
	n Sulfide (A4)		Loamy Gley			,,			odplain Soils (l	F19)
	Layers (A5)		✓ Depleted Ma		,			(MLRA 13		- /
	ck (A10) (LRR N)		Redox Dark		F6)				Material (TF2)	
	Below Dark Surfac	e (A11)	Depleted Da	ırk Surface	e (F7)				Dark Surface	(TF12)
Thick Da	ark Surface (A12)		Redox Depr	essions (F	·8)			Other (Explai	in in Remarks)	
Sandy M	lucky Mineral (S1) (I	LRR N,	Iron-Mangar	nese Mass	ses (F12)	(LRR N,				
	A 147, 148)		MLRA 13	36)						
Sandy G	leyed Matrix (S4)		Umbric Surfa					³ Indicators of hy	ydrophytic vege	etation and
	edox (S5)		Piedmont FI	oodplain S	Soils (F19)	) <b>(MLRA 1</b> 4	l8)		ology must be p	
	Matrix (S6)							unless distur	bed or problem	atic.
Restrictive I	ayer (if observed)	:								
Type:										
Depth (inc	ches):						Hydri	ic Soil Present?	Yes <u>√</u>	No
Remarks:							1			

Project/Site: Maney Farm Stream Mitigation Site	City/County: Chat	ham	Sampling Date: 5/28/14		
Applicant/Owner: Wildlands Engineering			Sampling Point: Upland U - DP2		
Investigator(s): Ian Eckardt and Win Taylor					
Landform (hillslope, terrace, etc.): floodplain	Local relief (concave,	convex, none): none	Slope (%): 0		
Subregion (LRR or MLRA): MLRA 136 Lat:	N 35.835725	Long: W 79.342426	Datum:		
Soil Map Unit Name: Cid-Lignum complex, 2-6% sl	opes (CmB)	NWI classif	ication:		
Are climatic / hydrologic conditions on the site typical for					
Are Vegetation, Soil, or Hydrology	significantly disturbed?	Are "Normal Circumstances"	present? Yes No _		
Are Vegetation, Soil, or Hydrology	naturally problematic? (	lf needed, explain any answ	ers in Remarks.)		
SUMMARY OF FINDINGS - Attach site m	ap showing sampling poi	nt locations, transect	s, important features, etc.		
Hydric Soil Present? Yes	No   Is the Samp   within a We	oled Area etland? Yes	No <b>✓</b>		
Sampling point is representative of a project site.	non-jurisdictional upla	nd area located in	the floodplain of the		
HYDROLOGY					
Wetland Hydrology Indicators:		Secondary India	cators (minimum of two required)		
Primary Indicators (minimum of one is required; check	all that apply)	Surface So	il Cracks (B6)		
Surface Water (A1)	True Aquatic Plants (B14)	Sparsely Vegetated Concave Surface (B8)			
High Water Table (A2)	Hydrogen Sulfide Odor (C1)	Drainage P	atterns (B10)		
Saturation (A3)	Oxidized Rhizospheres on Living F	Roots (C3) Moss Trim	Lines (B16)		
Water Marks (B1)	Presence of Reduced Iron (C4)	Dry-Seasor	n Water Table (C2)		
Sediment Deposits (B2)	Recent Iron Reduction in Tilled So	ils (C6) Crayfish Bu	rrows (C8)		
Drift Deposits (B3)	Thin Muck Surface (C7)	Saturation `	Visible on Aerial Imagery (C9)		
	Other (Explain in Remarks)		Stressed Plants (D1)		
Iron Deposits (B5)			c Position (D2)		
Inundation Visible on Aerial Imagery (B7)		Shallow Aq			
Water-Stained Leaves (B9)		· -	raphic Relief (D4)		
Aquatic Fauna (B13)	<del>_</del>	FAC-Neutra	al Test (D5)		
Field Observations:					
	Depth (inches):				
	Depth (inches):		./		
Saturation Present? Yes No  (includes capillary fringe)	Depth (inches):	Wetland Hydrology Prese	ent? Yes No		
Describe Recorded Data (stream gauge, monitoring w	ell, aerial photos, previous inspect	ions), if available:			
Remarks:					

Sampling Point: Upland U - DP2

	Absolute	Dominant	Indicator	Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: 30')		Species?		Number of Dominant Species
1. Ulmus americana	35	yes	FACW	That Are OBL, FACW, or FAC: 1 (A)
2. Fraxinus pennsylvanica	10	no	FACW	Total Number of Dominant
3. Acer rubrum	10	no	FAC	Species Across All Strata: 5 (B)
4				
5				Percent of Dominant Species That Are OBL, FACW, or FAC: 20% (A/B)
6.				That Are OBE, I AGW, OF I AG.
7.				Prevalence Index worksheet:
8.				Total % Cover of: Multiply by:
·	55	= Total Cov		OBL species $0   x 1 = 0$
Sapling/Shrub Stratum (Plot size: 15' )		- Total Cov	Ci	FACW species <u>50</u> x 2 = <u>100</u>
1. Rosa multiflora	10	yes	FACU	FAC species $\underline{10}$ $x 3 = \underline{30}$
2 Symphoricarpos orbiculatus	5	yes	FACU	FACU species $\frac{40}{40}$ $x = \frac{160}{1}$
3.				UPL species $0 \times 5 = 0$
				Column Totals: 100 (A) 290 (B)
4				(1)
5				Prevalence Index = B/A = 2.9
6				Hydrophytic Vegetation Indicators:
7				1 - Rapid Test for Hydrophytic Vegetation
8				2 - Dominance Test is >50%
9				✓ 3 - Prevalence Index is ≤3.0 ¹
10				4 - Morphological Adaptations ¹ (Provide supporting
	15	= Total Cov	er	data in Remarks or on a separate sheet)
Herb Stratum (Plot size: 5' )	15	1/00	FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
1. Trifolium repens	_ 15	yes		
2. Fragaria virginiana	_ 10	yes	FACU	¹ Indicators of hydric soil and wetland hydrology must
3. Boehmeria cylindrica	5	no	FACW	be present, unless disturbed or problematic.
4				Definitions of Four Vegetation Strata:
5				
6				Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or
7				more in diameter at breast height (DBH), regardless of height.
8.				
9.				Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
10.				than 3 iii. DBH and greater than 3.20 it (1 iii) taii.
11				Herb – All herbaceous (non-woody) plants, regardless
				of size, and woody plants less than 3.28 ft tall.
12	30	T-4-1 O		Woody vine – All woody vines greater than 3.28 ft in
Woody Vine Stratum (Plot size: 30')		= Total Cov	er	height.
· · · · · · · · · · · · · · · · · · ·				
1				
2				
3				
4				Hydrophytic
5				Vegetation
				Present? Yes _ * No
6		= Total Cov		
				Present? Yes No

Sampling Point: Upland U - DP2

Profile Desc	cription: (Describe	to the de	pth needed to docu	ment the	indicator	or confirn	n the absence	of indicate	ors.)	
Depth	Matrix	0/		ox Feature			<b>-</b> .			
(inches) 0-4	Color (moist)	<u>%</u>	Color (moist)	<u>%</u> 10	Type ¹ C	Loc ²	<u>Texture</u>		Remarks	
	7.5YR 4/6	90	7.5YR 3/2	_ 10		PL	loam			
4-12	7.5YR 4/6	100					sandy loam	-		
		_			-			-		
		_	-		-	· ——				
			-		_					
	-	_	<u></u>							
¹ Type: C=C	oncentration D=De	oletion RN	/=Reduced Matrix, M	 IS=Maske	d Sand Gr	raine	² Location: P	I =Pore I ini	na M=Matrix	
Hydric Soil		JIELIOII, INI	i-Reduced Matrix, IV	IO-IVIASNE	u Sanu Gi	airis.				lydric Soils³:
Histosol			Dark Surfac	e (S7)					A10) <b>(MLRA</b>	•
	pipedon (A2)		Polyvalue B	, ,	ace (S8) <b>(I</b>	VILRA 147,		,	e Redox (A16	•
	istic (A3)		Thin Dark S				, <u>—</u>	(MLRA 14	•	,
	en Sulfide (A4)		Loamy Gley	ed Matrix	(F2)		F		oodplain Soils	s (F19)
	d Layers (A5)		Depleted Ma	. ,				(MLRA 13		
	uck (A10) (LRR N)	(8.4.4)	Redox Dark						Material (TF2	
	d Below Dark Surfac ark Surface (A12)	œ (A11)	Depleted Da						v Dark Surfac iin in Remark	
	Mucky Mineral (S1) (	I RR N	Iron-Manga			I RR N	— '	Julei (Expla	IIII III Neillaik	5)
	A 147, 148)	,	MLRA 1		, oo ( <u>-</u> ) ,					
	Gleyed Matrix (S4)		Umbric Surf	•	(MLRA 1	36, 122)	³ Inc	dicators of h	ydrophytic ve	getation and
Sandy F	Redox (S5)		Piedmont F	loodplain S	Soils (F19)	(MLRA 14	<b>48)</b> v	vetland hydi	rology must b	e present,
	d Matrix (S6)						ι	ınless distur	bed or proble	ematic.
	Layer (if observed)									
										/
	ches):						Hydric Soi	I Present?	Yes	No <u></u>
Remarks:										

SOIL

#### NC WAM WETLAND ASSESSMENT FORM Accompanies User Manual Version 4.1 Rating Calculator Version 4.1

Wetland Site Name Maney Farm - Wetalnd A	<b>Date</b> 5/28/2014							
Wetland Type Bottomland Hardw ood Forest	Assessor Name/Organization IE & WT Wildlands Eng							
Level III Ecoregion Piedmont	Nearest Named Water Body South Fork Cane Creek							
River Basin Cape Fear	USGS 8-Digit Catalogue Unit 03030002							
Yes No Precipitation within 48 hrs? Latitude/Longitude (deci-degrees) N 35.835745 W 79.342343								
Evidence of stressors affecting the assessment area (may not be a Please circle and/or make note on last page if evidence of stressors is appropriate, in recent past (for instance, approximately within 10 years) to the following.  • Hydrological modifications (examples: ditches, dams, beaver defended and sub-surface discharges into the wetland (examples septic tanks, underground storage tanks (USTs), hog lagoons, defended as Signs of vegetation stress (examples: vegetation mortality, inseed the Habitat/plant community alteration (examples: mowing, clear-community).	apparent. Consider departure from reference, if ). Noteworthy stressors include, but are not limited lams, dikes, berms, ponds, etc.) s: discharges containing obvious pollutants, presence of nearby etc.) ect damage, disease, storm damage, salt intrusion, etc.)							
Is the assessment area intensively managed?    Yes  No	0							
Regulatory Considerations (select all that apply to the assessment Anadromous fish  Federally protected species or State endangered or threatened NCDWQ riparian buffer rule in effect  Abuts a Primary Nursery Area (PNA)  Publicly owned property  N.C. Division of Coastal Management Area of Environmental Composition of SA or supplement Designated NCNHP reference community  Abuts a 303(d)-listed stream or a tributary to a 303(d)-listed stream or a tributary to a 303(d)-listed stream or a tributary to a 303(d)-listed stream or a seasonated with the wetland, if any supplement Stream is associated with the wetland, if any supplement Stream is associated with the wetland, if any supplement Stream is associated with the wetland, if any supplement Stream is associated with the wetland, if any supplement Stream is associated with the wetland, if any supplement Stream is associated with the wetland, if any supplement Stream is associated with the wetland, if any supplement Stream is associated with the wetland, if any supplement Stream is associated with the wetland, if any supplement Stream is associated with the wetland, if any supplement Stream is associated with the wetland, if any supplement Stream is associated with the wetland, if any supplement Stream is associated with the wetland, if any supplement Stream is associated with the wetland, if any supplement Stream is associated with the wetland, if any supplement Stream is associated with the wetland, if any supplement Stream is associated with the wetland, if any supplement Stream is associated with the wetland, if any supplement Stream is associated with the wetland, if any supplement Stream is associated with the wetland, if any supplement Stream is associated with the wetland, if any supplement Stream is associated with the wetland is associated wit	species  oncern (AEC) (including buffer) ental classifications of HQW, ORW, or Trout eam ? (check all that apply)							
Is the assessment area on a coastal island?								
Is the assessment area's surface water storage capacity or duration								
sedimentation, fire-plow lanes, skidder tracks, bed	nt area condition metric surface (GS) in the assessment area and vegetation structure plicable (see User Manual). If a reference is not applicable,  at area (ground surface alteration examples: vehicle tracks, excessive dding, fill, soil compaction, obvious pollutants) (vegetation structure bicides, salt intrusion [where appropriate], exotic species, grazing,							
2. Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the current NRCS lateral effect of ditching guidance for North Carolina hydric soils (see USACE Wilmington District website) for the zone of influence of ditches in hydric soils. A ditch ≤ 1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and ditch sub-surface water. Consider tidal flooding regime, if applicable. Surf Sub <ul> <li>A A Water storage capacity and duration are not altered.</li> <li>B B Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation).</li> <li>C C C Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: draining, flooding, soil compaction, filling, excessive sedimentation, underground utility lines).</li> </ul>								
type (WT).  AA WT  3a. A A Majority of wetland with depressions able to page 1.5 B Majority of wetland with depressions able to page 2.5 B B Majority of wetland with depressions able to page 3.5 B B Majority of wetland with depressions able to page 3.5 B B Majority of wetland with depressions able to page 3.5 B B Majority of wetland with depressions able to page 3.5 B B Majority of wetland with depressions able to page 3.5 B B B Majority of wetland with depressions able to page 3.5 B B B B Majority of wetland with depressions able to page 3.5 B B B B B B B B B B B B B B B B B B B	e appropriate storage for the assessment area (AA) and the wetland  pond water > 1 foot deep  pond water 6 inches to 1 foot deep							
C Majority of wetland with depressions able to p D Depressions able to pond water < 3 inches d  3b. A Evidence that maximum depth of inundation is greate Evidence that maximum depth of inundation is between	eep er than 2 feet							

4.		Structure – assessment area condition metric from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape
	feature. Mak	e soil observations within the 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for
	regional indic 4a. A	ators. Sandy soil
		Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres)
		Loamy or clayey soils not exhibiting redoximorphic features Loamy or clayey gleyed soil
		Histosol or histic epipedon
		Soil ribbon < 1 inch
		Soil ribbon ≥ 1 inch
	1.000	No peat or muck presence A peat or muck presence
5.		to Wetland – opportunity metric
		in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.
	Surf Sub	sub-surface discharges include presence of hearby septic tank, underground storage tank (001), etc.
	CA CA	Little or no evidence of pollutants or discharges entering the assessment area
	⊕B ⊜B	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
	CC CC	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and
		potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation, odor)
6.	Land Use - o	ppportunity metric
		at apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources a sessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the
	•	area (5M), and within 2 miles <u>and</u> within the watershed draining to the assessment area (2M). Effective riparian buffers
		d to be 50 feet wide in the Coastal Plain and Piedmont ecoregions and 30 feet wide in the Blue Ridge Mountains ecoregion.
	WS 5M □ A □ A	2M  ☐ A ≥ 10% impervious surfaces
	▼B ▼B	▼ B < 10% impervious surfaces
		<ul> <li>C Confined animal operations (or other local, concentrated source of pollutants)</li> <li>D ≥ 20% coverage of pasture</li> </ul>
	□E □E	E ≥ 20% coverage of agricultural land (regularly plowed land)
	☑F ☑F □G □G	F ≥ 20% coverage of maintained grass/herb G ≥ 20% coverage of clear-cut land
	ПН ПН	☐ H Little or no opportunity to improve water quality. Lack of opportunity may result from hydrologic alterations
		that prevent drainage or overbank flow from affecting the assessment area.
7.	7a. Is asses	ing as Vegetated Buffer – assessment area/wetland complex condition metric sment area within 50 feet of a tributary or other open water?
	Yes Wetland	No If Yes, continue to 7b. If No, skip to Metric 8.  I buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland.
	Record	a note if a portion of the buffer has been removed or disturbed.
		ch of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer. ≥ 50 feet
		From 30 to < 50 feet
	760	From 15 to < 30 feet From 5 to < 15 feet
	201	< 5 feet or buffer bypassed by ditches
		y width. If the tributary is anastomosed, combine widths of channels/braids for a total width.
	-	feet wide
		No     No
		ary or other open water sheltered or exposed? ered – adjacent open water with width < 2500 feet <u>and</u> no regular boat traffic.
		sed – adjacent open water with width ≥ 2500 feet <u>or</u> regular boat traffic.
8.		Ith at the Assessment Area – wetland type/wetland complex metric (evaluate for riparian wetlands only)
		in each column. Select the average width for the wetland type at the assessment area (WT) nd complex at the assessment areas (WC). See User Manual for WT and WC boundaries.
	WT WC	
	CA CA	≥ 100 feet From 80 to < 100 feet
	CC CC	From 50 to < 80 feet
	CD CD	From 40 to < 50 feet From 30 to < 40 feet
	OF OF	From 15 to < 30 feet
	GG GG	From 5 to < 15 feet
	CH CH	< 5 feet

9.	Inundation Duration – assessment area condition metric
	Answer for assessment area dominant landform.
	A Evidence of short-duration inundation (< 7 consecutive days)
	B Evidence of saturation, without evidence of inundation
	C Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)
10.	Indicators of Deposition – assessment area condition metric
	Consider recent deposition only (no plant growth since deposition).
	A Sediment deposition is not excessive, but at approximately natural levels.
	B Sediment deposition is excessive, but not overwhelming the wetland.
	C Sediment deposition is excessive and is overwhelming the wetland.
11	Wetland Size – wetland type/wetland complex condition metric
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the
	size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User
	Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column.
	WT WC FW (if applicable)
	CA CA A ≥ 500 acres
	CB CB From 100 to < 500 acres
	C C C From 50 to < 100 acres
	CD CD From 25 to < 50 acres
	CE CE From 10 to < 25 acres
	CF CF From 5 to < 10 acres
	CG CG From 1 to < 5 acres
	CH CH From 0.5 to < 1 acre
	CI CI From 0.1 to < 0.5 acre
	G J G J From 0.01 to < 0.1 acre
	K K K < 0.01 acre or assessment area is clear-cut
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)
	C A Pocosin is the full extent (≥ 90%) of its natural landscape size.
	B Pocosin is < 90% of the full extent of its natural landscape size.
12	Connectivity to Other Natural Areas – landscape condition metric
13.	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This
	evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous
	metric naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility
	line corridors the width of a four-lane road or wider, urban landscapes, fields (pasture open and agriculture), or water > 300 feet wide.
	Well Loosely
	CA CA ≥ 500 acres
	B B From 100 to < 500 acres
	C C From 50 to < 100 acres
	CE CE < 10 acres
	F F Wetland type has a poor or no connection to other natural habitats
	13b. Evaluate for marshes only.
	Yes No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.
4.4	Edge Effect westend time condition matric (akin for all marches)
14.	Edge Effect – wetland type condition metric (skip for all marshes)  May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include
	non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors and clear-cuts.
	Consider the eight main points of the compass.
	A No artificial edge within 150 feet in all directions
	B No artificial edge within 150 feet in four (4) to seven (7) directions
	C An artificial edge occurs within 150 feet in more than four (4) directions or assessment area is clear-cut
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)
	A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate
	species, with exotic plants absent or sparse within the assessment area.
	Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species
	characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
	Considering it also includes communities with exotics present, but not dominant, over a large portion of the expected strata.  Considering it also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
	characteristic species or at least one stratum inappropriately composed of a single species). Exotic species are dominant in
	at least one stratum.
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)
	A Vegetation diversity is high and is composed primarily of native species (<10% cover of exotics).
	B Vegetation diversity is low or has > 10% to 50% cover of exotics.
	C Vegetation is dominated by exotic species (>50% cover of exotics).

17.	. Vegetative Structure – assessment area/wetland type condition metric 17a. Is vegetation present?  No If Yes, continue to 17b. If No, skip to Metric 18.		
	17b. Evaluate percent coverage of assessment area vegetation <b>for all marshes only</b> . Skip to 17c for non-marsh wetlands.  C A ≥ 25% coverage of vegetation  B < 25% coverage of vegetation		
	17c. Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.  AA WT		
	A Canopy closed, or nearly closed, with natural gaps associated with natural processes B Canopy present, but opened more than natural gaps C C C Canopy sparse or absent		
	Fig. A A Dense mid-story/sapling layer  O B B Moderate density mid-story/sapling layer  O C C Mid-story/sapling layer sparse or absent		
	G A C A Dense shrub layer  B C B Moderate density shrub layer  C C Shrub layer sparse or absent		
	GACA Dense herb layer  BCB Moderate density herb layer  CCCC Herb layer sparse or absent		
18.	Snags – wetland type condition metric  A Large snags (more than one) are visible (> 12-inches DBH, or large relative to species present and landscape stability).  B Not A		
19.	Diameter Class Distribution – wetland type condition metric  A Majority of canopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are present.		
	Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12-inch DBH.  C Majority of canopy trees are < 6 inches DBH or no trees.		
20.	Large Woody Debris – wetland type condition metric Include both natural debris and man-placed natural debris.  A Large logs (more than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).  B Not A		
21.	Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)		
	Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.  • A  • B  • C  • D		
22.	Hydrologic Connectivity – assessment area condition metric (evaluate for riparian wetlands only)  Examples of activities that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, and stream incision.  A Overbank and overland flow are not severely altered in the assessment area.  Overbank flow is severely altered in the assessment area.  Overland flow is severely altered in the assessment area.  Both overbank and overland flow are severely altered in the assessment area.		

Wetland Site Name	Maney Farm - Wetalnd A	Date	5/28/2014
Wetland Type	Bottomland Hardwood Forest	Assessor Name/Organization IE &	WT Wildlands Eng
Notes on Field Assess	ment Form (Y/N)		NO
Presence of regulatory	considerations (Y/N)		NO
Wetland is intensively	managed (Y/N)		NO
Assessment area is lo	cated within 50 feet of a natural tributary or other	er open water (Y/N)	YES
Assessment area is su	ubstantially altered by beaver (Y/N)		NO
Assessment area expe	eriences overbank flooding during normal rainfa	Il conditions (Y/N)	NO
Assessment area is or	n a coastal island (Y/N)		NO
Sub-function Rating			
Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	MEDIUM
	Sub-Surface Storage and Retention	Condition	MEDIUM
Water Quality	Pathogen Change	Condition	MEDIUM
		Condition/Opportunity	MEDIUM
		Opportunity Presence? (Y/N)	NO
	Particulate Change	Condition	MEDIUM
		Condition/Opportunity	MEDIUM
		Opportunity Presence? (Y/N)	NO
	Soluble Change	Condition	MEDIUM
		Condition/Opportunity	MEDIUM
		Opportunity Presence? (Y/N)	NO
	Physical Change	Condition	LOW
		Condition/Opportunity	LOW
		Opportunity Presence? (Y/N)	NO
	Pollution Change	Condition	NA
	G	Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
Habitat	Physical Structure	Condition	HIGH
	Landscape Patch Structure	Condition	LOW
	Vegetation Composition	Condition	MEDIUM
Function Rating Sum Function	Metrics/Notes		Rating
Hydrology	Condition		MEDIUM
Water Quality	Condition		MEDIUM
	Condition/Opportunity		MEDIUM
	Opportunity Presence?	(Y/N)	NO
Habitat	Conditon	•	MEDIUM

Wetland Site Name Maney Farm - Wetland B	
	<b>Date</b> <u>5/28/2014</u>
Wetland Type Bottomland Hardwood Forest	Assessor Name/Organization IE & WT Wildlands Eng
Level III Ecoregion Piedmont	Nearest Named Water Body South Fork Cane Creek
River Basin Cape Fear	USGS 8-Digit Catalogue Unit 03030002
	Latitude/Longitude (deci-degrees) N 35.835766 W 79.34253
Evidence of stressors affecting the assessment area (may not be with Please circle and/or make note on last page if evidence of stressors is apprapropriate, in recent past (for instance, approximately within 10 years). Note the following.  • Hydrological modifications (examples: ditches, dams, beaver dams • Surface and sub-surface discharges into the wetland (examples: disceptic tanks, underground storage tanks (USTs), hog lagoons, etc.) • Signs of vegetation stress (examples: vegetation mortality, insect definition to the description of t	arent. Consider departure from reference, if of oteworthy stressors include, but are not limited , dikes, berms, ponds, etc.) ocharges containing obvious pollutants, presence of nearby amage, disease, storm damage, salt intrusion, etc.)
Regulatory Considerations (select all that apply to the assessment are	a)
Anadromous fish Federally protected species or State endangered or threatened species or State endangered or State endange	cies ern (AEC) (including buffer)
What type of natural stream is associated with the wetland, if any? (ch	eck all that apply)
Blackwater	ook an that apply)
Brownwater Tidal (if tidal, check one of the following boxes) Lunar	Wind Both
	Willia
Is the assessment area on a coastal island? Yes No	
Is the assessment area's surface water storage capacity or duration s	ubstantially altered by beaver?
Does the assessment area experience overbank flooding during norm	
acception and experience overbank needing during norm	al rainfall conditions?
1. Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surfa (VS) in the assessment area. Compare to reference wetland if application then rate the assessment area based on evidence of an effect.  GS VS  A Not severely altered  B Severely altered over a majority of the assessment are sedimentation, fire-plow lanes, skidder tracks, bedding	ea condition metric ace (GS) in the assessment area and vegetation structure
<ol> <li>Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surfa (VS) in the assessment area. Compare to reference wetland if application then rate the assessment area based on evidence of an effect.</li> <li>GS VS</li> <li>A A Not severely altered</li> <li>B Severely altered over a majority of the assessment are sedimentation, fire-plow lanes, skidder tracks, bedding alteration examples: mechanical disturbance, herbicide</li> </ol>	ea condition metric ace (GS) in the assessment area and vegetation structure ble (see User Manual). If a reference is not applicable,  ea (ground surface alteration examples: vehicle tracks, excessive fill, soil compaction, obvious pollutants) (vegetation structure es, salt intrusion [where appropriate], exotic species, grazing,
<ol> <li>Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if application then rate the assessment area based on evidence of an effect.</li> <li>GS VS</li> <li>A A Not severely altered</li> <li>B Severely altered over a majority of the assessment area sedimentation, fire-plow lanes, skidder tracks, bedding alteration examples: mechanical disturbance, herbicid less diversity [if appropriate], hydrologic alteration)</li> <li>Surface and Sub-Surface Storage Capacity and Duration – assess Check a box in each column. Consider surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. North Carolina hydric soils (see USACE Wilmington District website) for ≤ 1 foot deep is considered to affect surface water only, while a ditch sub-surface water. Consider tidal flooding regime, if applicable. Surf Sub</li> <li>A A Water storage capacity and duration are not altered.</li> <li>B B Water storage capacity or duration are altered, but not C C Water storage capacity or duration are substantially altered.</li> </ol>	ea condition metric ace (GS) in the assessment area and vegetation structure ble (see User Manual). If a reference is not applicable,  ea (ground surface alteration examples: vehicle tracks, excessive fill, soil compaction, obvious pollutants) (vegetation structure fill, soil compaction in the see appropriate), exotic species, grazing,  ment area condition metric fill duration (Surf) and sub-surface storage capacity and
<ol> <li>Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if application then rate the assessment area based on evidence of an effect.</li> <li>GS VS</li> <li>A A Not severely altered</li> <li>B Severely altered over a majority of the assessment area sedimentation, fire-plow lanes, skidder tracks, bedding alteration examples: mechanical disturbance, herbicid less diversity [if appropriate], hydrologic alteration)</li> <li>Surface and Sub-Surface Storage Capacity and Duration – assess Check a box in each column. Consider surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. North Carolina hydric soils (see USACE Wilmington District website) for ≤ 1 foot deep is considered to affect surface water only, while a ditch sub-surface water. Consider tidal flooding regime, if applicable. Surf Sub</li> <li>A A Water storage capacity and duration are not altered.</li> <li>B B Water storage capacity or duration are altered, but not C C Water storage capacity or duration are substantially altered.</li> </ol>	ea condition metric ace (GS) in the assessment area and vegetation structure ble (see User Manual). If a reference is not applicable,  ea (ground surface alteration examples: vehicle tracks, excessive ground surface alteration symbol (vegetation structure ground surface appropriate), exotic species, grazing,  ment area condition metric ground duration (Surf) and sub-surface storage capacity and greater to the current NRCS lateral effect of ditching guidance for ground surface of ditches in hydric soils. A ditch substantially (typically, not sufficient to change vegetation).  substantially (typically, not sufficient to result in vegetation ground surface and ditch substantially (typically, alteration sufficient to result in vegetation ground surface and vegetation ground surface alteration sufficient to result in vegetation ground surface alteration surface is not applicable.
<ol> <li>Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if application then rate the assessment area based on evidence of an effect.</li> <li>GS VS</li> <li>A A Not severely altered</li> <li>B Severely altered over a majority of the assessment area sedimentation, fire-plow lanes, skidder tracks, bedding alteration examples: mechanical disturbance, herbicideless diversity [if appropriate], hydrologic alteration)</li> <li>Surface and Sub-Surface Storage Capacity and Duration – assess Check a box in each column. Consider surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. North Carolina hydric soils (see USACE Wilmington District website) for ≤ 1 foot deep is considered to affect surface water only, while a ditch sub-surface water. Consider tidal flooding regime, if applicable. Surf Sub</li> <li>A A Water storage capacity and duration are not altered.</li> <li>B B Water storage capacity or duration are altered, but not C C Water storage capacity or duration are substantially alchange) (examples: draining, flooding, soil compaction check a box in each column for each group below. Select the approximate the support of the sub-surface water column for each group below.</li> </ol>	ea condition metric ace (GS) in the assessment area and vegetation structure ble (see User Manual). If a reference is not applicable,  ea (ground surface alteration examples: vehicle tracks, excessive ground surface alteration surfucture ground surface appropriate], exotic species, grazing,  ment area condition metric ground duration (Surf) and sub-surface storage capacity and ground surface and ditch ground surface of ditches in hydric soils. A ditch ground surface and surface and ditch ground surface and ditch ground surface alteration surface and ditch ground surface alteration surface and vegetation and surface and ditch ground surface and vegetation and surface and ditch ground surface alteration surface and vegetation and surface and ditch ground surface and surface and vegetation and surface and ditch ground surface and vegetation and surface and vegetation and surface and vegetation and surface and vegetation
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<ol> <li>Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if application then rate the assessment area based on evidence of an effect. GS VS</li></ol>	ace (GS) in the assessment area and vegetation structure ble (see User Manual). If a reference is not applicable,  a (ground surface alteration examples: vehicle tracks, excessive fill, soil compaction, obvious pollutants) (vegetation structure es, salt intrusion [where appropriate], exotic species, grazing,  ment area condition metric duration (Surf) and sub-surface storage capacity and defer to the current NRCS lateral effect of ditching guidance for or the zone of influence of ditches in hydric soils. A ditches a foot deep is expected to affect both surface and ditches usubstantially (typically, not sufficient to change vegetation).  Substantially (typically, not sufficient to result in vegetation and influence (typically, alteration sufficient to result in vegetation and influence (typically, alteration sufficient to result in vegetation and influence (typically, alteration sufficient to result in vegetation and influence (typically, alteration sufficient and the vegetation and the
<ol> <li>Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if application then rate the assessment area based on evidence of an effect.</li> <li>GS VS</li> <li>A A Not severely altered</li> <li>B B Severely altered over a majority of the assessment are sedimentation, fire-plow lanes, skidder tracks, bedding alteration examples: mechanical disturbance, herbicides diversity [if appropriate], hydrologic alteration)</li> <li>Surface and Sub-Surface Storage Capacity and Duration – assess Check a box in each column. Consider surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Report North Carolina hydric soils (see USACE Wilmington District website) for 1 foot deep is considered to affect surface water only, while a ditch sub-surface water. Consider tidal flooding regime, if applicable. Surface water storage capacity and duration are not altered. B B Water storage capacity or duration are altered, but not C C C Water storage capacity or duration are altered, but not change) (examples: draining, flooding, soil compaction)</li> <li>Water Storage/Surface Relief – assessment area/wetland type cor Check a box in each column for each group below. Select the apply type (WT).  AA WT  3a. A Majority of wetland with depressions able to pond</li> </ol>	ace (GS) in the assessment area and vegetation structure ble (see User Manual). If a reference is not applicable,  a (ground surface alteration examples: vehicle tracks, excessive fill, soil compaction, obvious pollutants) (vegetation structure es, salt intrusion [where appropriate], exotic species, grazing,  ment area condition metric duration (Surf) and sub-surface storage capacity and defer to the current NRCS lateral effect of ditching guidance for or the zone of influence of ditches in hydric soils. A ditches a foot deep is expected to affect both surface and ditches usubstantially (typically, not sufficient to change vegetation).  Substantially (typically, not sufficient to result in vegetation and influence (typically, alteration sufficient to result in vegetation and influence (typically, alteration sufficient to result in vegetation and influence (typically, alteration sufficient to result in vegetation and influence (typically, alteration sufficient and the vegetation and the

4.		Structure – assessment area condition metric from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape
	feature. Mak	e soil observations within the 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for
	regional indic 4a. A	ators. Sandy soil
		Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres)
		Loamy or clayey soils not exhibiting redoximorphic features Loamy or clayey gleyed soil
		Histosol or histic epipedon
		Soil ribbon < 1 inch
		Soil ribbon ≥ 1 inch
	1.000	No peat or muck presence A peat or muck presence
5.		to Wetland – opportunity metric
		in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.
	Surf Sub	sub-surface discharges include presence of hearby septic tank, underground storage tank (001), etc.
	CA CA	Little or no evidence of pollutants or discharges entering the assessment area
	⊕B ⊜B	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
	CC CC	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and
		potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation, odor)
6.	Land Use - o	ppportunity metric
		at apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources a sessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the
	•	area (5M), and within 2 miles <u>and</u> within the watershed draining to the assessment area (2M). Effective riparian buffers
		d to be 50 feet wide in the Coastal Plain and Piedmont ecoregions and 30 feet wide in the Blue Ridge Mountains ecoregion.
	WS 5M □ A □ A	2M  ☐ A ≥ 10% impervious surfaces
	▼B ▼B	▼ B < 10% impervious surfaces
		<ul> <li>C Confined animal operations (or other local, concentrated source of pollutants)</li> <li>D ≥ 20% coverage of pasture</li> </ul>
	□E □E	E ≥ 20% coverage of agricultural land (regularly plowed land)
	☑F ☑F □G □G	F ≥ 20% coverage of maintained grass/herb G ≥ 20% coverage of clear-cut land
	ПН ПН	☐ H Little or no opportunity to improve water quality. Lack of opportunity may result from hydrologic alterations
		that prevent drainage or overbank flow from affecting the assessment area.
7.	7a. Is asses	ing as Vegetated Buffer – assessment area/wetland complex condition metric sment area within 50 feet of a tributary or other open water?
	Yes Wetland	No If Yes, continue to 7b. If No, skip to Metric 8.  I buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland.
	Record	a note if a portion of the buffer has been removed or disturbed.
		ch of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer. ≥ 50 feet
		From 30 to < 50 feet
	760	From 15 to < 30 feet From 5 to < 15 feet
	201	< 5 feet or buffer bypassed by ditches
		y width. If the tributary is anastomosed, combine widths of channels/braids for a total width.
	-	feet wide
		No     No
		ary or other open water sheltered or exposed? ered – adjacent open water with width < 2500 feet <u>and</u> no regular boat traffic.
		sed – adjacent open water with width ≥ 2500 feet <u>or</u> regular boat traffic.
8.		Ith at the Assessment Area – wetland type/wetland complex metric (evaluate for riparian wetlands only)
		in each column. Select the average width for the wetland type at the assessment area (WT) nd complex at the assessment areas (WC). See User Manual for WT and WC boundaries.
	WT WC	
	CA CA	≥ 100 feet From 80 to < 100 feet
	CC CC	From 50 to < 80 feet
	CD CD	From 40 to < 50 feet From 30 to < 40 feet
	OF OF	From 15 to < 30 feet
	GG GG	From 5 to < 15 feet
	CH CH	< 5 feet

9.	Inundation Duration – assessment area condition metric
	Answer for assessment area dominant landform.  • A Evidence of short-duration inundation (< 7 consecutive days)
	B Evidence of saturation, without evidence of inundation
	C Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)
10.	Indicators of Deposition – assessment area condition metric
	Consider recent deposition only (no plant growth since deposition).
	<ul> <li>A Sediment deposition is not excessive, but at approximately natural levels.</li> <li>B Sediment deposition is excessive, but not overwhelming the wetland.</li> </ul>
	B Sediment deposition is excessive, but not overwhelming the wetland. C Sediment deposition is excessive and is overwhelming the wetland.
	Occument deposition is excessive and is overwhelming the wettand.
11.	Wetland Size – wetland type/wetland complex condition metric
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the
	size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User
	Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column.  WT WC FW (if applicable)
	WT WC FW (if applicable)  CA CA ≥ 500 acres
	CB CB From 100 to < 500 acres
	C C C From 50 to < 100 acres
	CD CD From 25 to < 50 acres
	CECE From 10 to < 25 acres
	CF CF From 5 to < 10 acres
	G G G From 1 to < 5 acres
	CH CH From 0.5 to < 1 acre
	CI CI From 0.1 to < 0.5 acre
	G J G J From 0.01 to < 0.1 acre
	K K K < 0.01 acre or assessment area is clear-cut
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)
	Pocosin is the full extent (≥ 90%) of its natural landscape size.
	B Pocosin is < 90% of the full extent of its natural landscape size.
13.	Connectivity to Other Natural Areas – landscape condition metric
	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This
	evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous
	metric naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility
	line corridors the width of a four-lane road or wider, urban landscapes, fields (pasture open and agriculture), or water > 300 feet wide.
	Well Loosely  C A C A ≥ 500 acres
	C B C B From 100 to < 500 acres
	C C From 50 to < 100 acres
	© D From 10 to < 50 acres
	CE CE < 10 acres
	F F Wetland type has a poor or no connection to other natural habitats
	13b. Evaluate for marshes only.
	Yes No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.
11	Edge Effect – wetland type condition metric (skip for all marshes)
1	May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include
	non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors and clear-cuts.
	Consider the eight main points of the compass.
	A No artificial edge within 150 feet in all directions
	No artificial edge within 150 feet in four (4) to seven (7) directions
	C An artificial edge occurs within 150 feet in more than four (4) directions or assessment area is clear-cut
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)
	A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate
	species, with exotic plants absent or sparse within the assessment area.
	Fig. 8 Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species
	characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or
	clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
	C Vegetation severely altered from reference in composition. Expected species are unnaturally absent (planted stands of non-
	characteristic species or at least one stratum inappropriately composed of a single species). Exotic species are dominant in
	at least one stratum.
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)
	A Vegetation diversity is high and is composed primarily of native species (<10% cover of exotics).
	Vegetation diversity is low or has > 10% to 50% cover of exotics.      Vegetation in deprinated by exotic process (s. 50% cover of exotics).
	C Vegetation is dominated by exotic species (>50% cover of exotics).

17.	. Vegetative Structure – assessment area/wetland type condition metric 17a. Is vegetation present?  No If Yes, continue to 17b. If No, skip to Metric 18.		
	17b. Evaluate percent coverage of assessment area vegetation <b>for all marshes only</b> . Skip to 17c for non-marsh wetlands.  C A ≥ 25% coverage of vegetation  B < 25% coverage of vegetation		
	17c. Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.  AA WT		
	A Canopy closed, or nearly closed, with natural gaps associated with natural processes B Canopy present, but opened more than natural gaps C C C Canopy sparse or absent		
	Fig. A A Dense mid-story/sapling layer  O B B Moderate density mid-story/sapling layer  O C C Mid-story/sapling layer sparse or absent		
	G A C A Dense shrub layer  B C B Moderate density shrub layer  C C Shrub layer sparse or absent		
	GACA Dense herb layer  BCB Moderate density herb layer  CCCC Herb layer sparse or absent		
18.	Snags – wetland type condition metric  A Large snags (more than one) are visible (> 12-inches DBH, or large relative to species present and landscape stability).  B Not A		
19.	Diameter Class Distribution – wetland type condition metric  A Majority of canopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are present.		
	Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12-inch DBH.  C Majority of canopy trees are < 6 inches DBH or no trees.		
20.	Large Woody Debris – wetland type condition metric Include both natural debris and man-placed natural debris.  A Large logs (more than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).  B Not A		
21.	Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)		
	Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.  • A  • B  • C  • D		
22.	Hydrologic Connectivity – assessment area condition metric (evaluate for riparian wetlands only)  Examples of activities that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, and stream incision.  A Overbank and overland flow are not severely altered in the assessment area.  Overbank flow is severely altered in the assessment area.  Overland flow is severely altered in the assessment area.  Both overbank and overland flow are severely altered in the assessment area.		

Wetland Site Name	Maney Farm - Wetland B	Date	5/28/2014
Wetland Type	Bottomland Hardwood Forest	Assessor Name/Organization IE &	WT Wildlands Eng
Notes on Field Assess	ment Form (Y/N)		NO
Presence of regulatory	considerations (Y/N)		NO
Wetland is intensively	managed (Y/N)		NO
Assessment area is lo	cated within 50 feet of a natural tributary or othe	er open water (Y/N)	YES
Assessment area is su	ubstantially altered by beaver (Y/N)		NO
Assessment area expe	eriences overbank flooding during normal rainfa	II conditions (Y/N)	NO
Assessment area is or	a coastal island (Y/N)		NO
Sub-function Rating			
Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	MEDIUM
	Sub-Surface Storage and Retention	Condition	MEDIUM
Water Quality	Pathogen Change	Condition	MEDIUM
		Condition/Opportunity	MEDIUM
		Opportunity Presence? (Y/N)	NO
	Particulate Change	Condition	MEDIUM
		Condition/Opportunity	MEDIUM
		Opportunity Presence? (Y/N)	NO
	Soluble Change	Condition	MEDIUM
		Condition/Opportunity	MEDIUM
		Opportunity Presence? (Y/N)	NO
	Physical Change	Condition	LOW
		Condition/Opportunity	LOW
		Opportunity Presence? (Y/N)	NO
	Pollution Change	Condition	NA
	Ç	Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
Habitat	Physical Structure	Condition	HIGH
	Landscape Patch Structure	Condition	LOW
	Vegetation Composition	Condition	MEDIUM
Function Rating Sum Function	Metrics/Notes		Rating
Hydrology	Condition		MEDIUM
Water Quality	Condition		MEDIUM
Quanty	Condition/Opportunity		MEDIUM
	Opportunity Presence?	(Y/N)	NO
Habitat	Conditon	,	MEDIUM

	rating Calcula	itor version 4.1	
Wetland Site Name	Maney Farm - Wetland C	Date	5/28/2014
Wetland Type	Seep	Assessor Name/Organization	IE & WT Wildlands Eng
Level III Ecoregion	Piedmont	■ Nearest Named Water Body	South Fork Cane Creek
River Basin	Cape Fear	■ USGS 8-Digit Catalogue Unit	03030002
	Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	N 35.835844 W 79.34328
Please circle and/or ma appropriate, in recent pa to the following.  • Hydrological mo • Surface and sub septic tanks, und • Signs of vegetat	s affecting the assessment area (may not be with ake note on last page if evidence of stressors is appeast (for instance, approximately within 10 years). In ordifications (examples: ditches, dams, beaver damples: discharges into the wetland (examples: orderground storage tanks (USTs), hog lagoons, etc. tion stress (examples: vegetation mortality, insect mmunity alteration (examples: mowing, clear-cutting).	parent. Consider departure from referer Noteworthy stressors include, but are no ns, dikes, berms, ponds, etc.) discharges containing obvious pollutants, c.) damage, disease, storm damage, salt ir	t limited presence of nearby
Is the assessment are	ea intensively managed? Yes No		
Anadromous fisl Federally protect NCDWQ riparial Abuts a Primary Publicly owned p N.C. Division of Abuts a stream Designated NCN	cted species or State endangered or threatened sp n buffer rule in effect v Nursery Area (PNA)	cern (AEC) (including buffer) tal classifications of HQW, ORW, or Trou	ut
Blackwater Brownwater Tidal (if tidal, che	etream is associated with the wetland, if any? (or seck one of the following boxes)	Check all that apply)	
Is the assessment are	ea on a coastal island? Pes No		
Is the assessment are	ea's surface water storage capacity or duration	substantially altered by beaver?	Yes No
Does the assessment	area experience overbank flooding during nor	mal rainfall conditions?	Yes No
Check a box in ea (VS) in the assess then rate the asses GS VS A A A No B B Se sec	Condition/Vegetation Condition – assessment a ach column. Consider alteration to the ground su ment area. Compare to reference wetland if applications area based on evidence of an effect.  It severely altered everely altered over a majority of the assessment adimentation, fire-plow lanes, skidder tracks, beddingeration examples: mechanical disturbance, herbication examples: mechanical disturbance, herbication evamples: mechanical disturbance ev	rface (GS) in the assessment area and vecable (see User Manual). If a reference in the second	is not applicable,  : vehicle tracks, excessive is) (vegetation structure
Check a box in eaduration (Sub). Co North Carolina hyd ≤ 1 foot deep is con sub-surface water. Surf Sub A A Wa B B Wa C C C Wa	Surface Storage Capacity and Duration – assessment column. Consider surface storage capacity a consider both increase and decrease in hydrology. It is soils (see USACE Wilmington District website) insidered to affect surface water only, while a ditch Consider tidal flooding regime, if applicable.  atter storage capacity and duration are not altered, atter storage capacity or duration are altered, but no atter storage capacity or duration are substantially ange) (examples: draining, flooding, soil compactions)	nd duration (Surf) and sub-surface storage Refer to the current NRCS lateral effect for the zone of influence of ditches in hy 1 > 1 foot deep is expected to affect both ot substantially (typically, not sufficient to altered (typically, alteration sufficient to refer to the substantially (typically, alteration sufficient to refer to the substantially (typically, alteration sufficient to refer to the sufficient to	of ditching guidance for dric soils. A ditch surface and ditch change vegetation).
	Majority of wetland with depressions able to por Depressions able to pond water < 3 inches dee	oppropriate storage for the assessment ar and water > 1 foot deep and water 6 inches to 1 foot deep and water 3 to 6 inches deep	
3b. CA Evide	ence that maximum depth of inundation is greater to ence that maximum depth of inundation is between	than 2 feet	

4.		Structure – assessment area condition metric
		from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape
		e soil observations within the 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for
	regional indic	Sandy soil
		Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres)
		Loamy or clayey soils not exhibiting redoximorphic features
		Loamy or clayey gleyed soil
	CE	Histosol or histic epipedon
		Soil ribbon < 1 inch
		Soil ribbon ≥ 1 inch
	1.000	No peat or muck presence A peat or muck presence
5.		to Wetland – opportunity metric
		in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub).
	Surf Sub	sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.
	CA CA	Little or no evidence of pollutants or discharges entering the assessment area
	СВ СВ	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the
	55. = 6.11 =	treatment capacity of the assessment area
	00 00	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and
		potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive
		sedimentation, odor)
6.	I and Use - o	opportunity metric
٠.		at apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources
		sessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the
	assessment a	area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers
	are considere	ed to be 50 feet wide in the Coastal Plain and Piedmont ecoregions and 30 feet wide in the Blue Ridge Mountains ecoregion.
	WS 5M	<u>2M</u>
		A ≥ 10% impervious surfaces
	☑B ☑B	B < 10% impervious surfaces
		C Confined animal operations (or other local, concentrated source of pollutants)
		<ul> <li>✓ D ≥ 20% coverage of pasture</li> <li>✓ E ≥ 20% coverage of agricultural land (regularly plowed land)</li> </ul>
	F F	☐ F ≥ 20% coverage of maintained grass/herb
	□G □G	☐ G ≥ 20% coverage of clear-cut land
	ПН ПН	H Little or no opportunity to improve water quality. Lack of opportunity may result from hydrologic alterations
		that prevent drainage or overbank flow from affecting the assessment area.
7.	Wetland Acti	ing as Vegetated Buffer – assessment area/wetland complex condition metric
		ssment area within 50 feet of a tributary or other open water?
	Yes	No If Yes, continue to 7b. If No, skip to Metric 8.
	Wetland	buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland.
		a note if a portion of the buffer has been removed or disturbed.
		uch of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.
	200	≥ 50 feet From 30 to < 50 feet
		From 15 to < 30 feet
	-	From 5 to < 15 feet
	The state of the s	< 5 feet <u>or</u> buffer bypassed by ditches
		y width. If the tributary is anastomosed, combine widths of channels/braids for a total width.
		feet wide
		s of assessment area vegetation extend into the bank of the tributary/open water?
	200	No
		ary or other open water sheltered or exposed? ered – adjacent open water with width < 2500 feet <u>and</u> no regular boat traffic.
		sed – adjacent open water with width ≥ 2500 feet <u>or</u> regular boat traffic.
8.		Ith at the Assessment Area – wetland type/wetland complex metric (evaluate for riparian wetlands only)
		in each column. Select the average width for the wetland type at the assessment area (WT)
	WT WC	and complex at the assessment areas (WC). See User Manual for WT and WC boundaries.
	CA CA	≥ 100 feet
	CB CB	From 80 to < 100 feet
	00 00	From 50 to < 80 feet
	CD CD	From 40 to < 50 feet
	CE CE	From 30 to < 40 feet
	CF CF	From 15 to < 30 feet
	<b>©</b> G <b>©</b> G	From 5 to < 15 feet
	CH CH	< 5 feet

9.	Inundation Duration – assessment area condition metric
	Answer for assessment area dominant landform.
	A Evidence of short-duration inundation (< 7 consecutive days)
	Evidence of saturation, without evidence of inundation
	C Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)
10.	Indicators of Deposition – assessment area condition metric
	Consider recent deposition only (no plant growth since deposition).
	A Sediment deposition is not excessive, but at approximately natural levels.
	B Sediment deposition is excessive, but not overwhelming the wetland.
	C Sediment deposition is excessive and is overwhelming the wetland.
11	Wetland Size – wetland type/wetland complex condition metric
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the
	size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User
	Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column.
	WT WC FW (if applicable)
	CA CA CA ≥ 500 acres
	CB CB From 100 to < 500 acres
	C C C From 50 to < 100 acres
	CD CD From 25 to < 50 acres
	CE CE From 10 to < 25 acres
	CF CF From 5 to < 10 acres
	CG CG From 1 to < 5 acres
	CH CH From 0.5 to < 1 acre
	CI CI From 0.1 to < 0.5 acre
	<b>©</b> J <b>©</b> J From 0.01 to < 0.1 acre
	K K < 0.01 acre or assessment area is clear-cut
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)
	Pocosin is the full extent (≥ 90%) of its natural landscape size.
	B Pocosin is < 90% of the full extent of its natural landscape size.
12	Connectivity to Other Natural Areas – landscape condition metric
13.	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This
	evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous
	metric naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility
	line corridors the width of a four-lane road or wider, urban landscapes, fields (pasture open and agriculture), or water > 300 feet wide.
	Well Loosely
	CA CA ≥ 500 acres
	B B From 100 to < 500 acres
	C C From 50 to < 100 acres
	CD D From 10 to < 50 acres
	F F Wetland type has a poor or no connection to other natural habitats
	13b. Evaluate for marshes only.
	Yes No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.
4.4	Edge Effect westend time condition matric (akin for all marches)
14.	Edge Effect – wetland type condition metric (skip for all marshes)  May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include
	non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors and clear-cuts.
	Consider the eight main points of the compass.
	A No artificial edge within 150 feet in all directions
	An artificial edge occurs within 150 feet in more than four (4) directions or assessment area is clear-cut
4.5	
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)
	A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate
	species, with exotic plants absent or sparse within the assessment area.
	Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or
	clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
	Considering the association of the expected strate.
	characteristic species or at least one stratum inappropriately composed of a single species). Exotic species are dominant in
	at least one stratum.
4.0	
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)
	<ul> <li>A Vegetation diversity is high and is composed primarily of native species (&lt;10% cover of exotics).</li> <li>B Vegetation diversity is low or has &gt; 10% to 50% cover of exotics.</li> </ul>
	<ul> <li>✓ B Vegetation diversity is low or has &gt; 10% to 50% cover of exotics.</li> <li>✓ C Vegetation is dominated by exotic species (&gt;50% cover of exotics).</li> </ul>

17.	Vegetative Structure – assessment area/wetland type condition metric
	17a. Is vegetation present?  • Yes No If Yes, continue to 17b. If No, skip to Metric 18.
	17b. Evaluate percent coverage of assessment area vegetation <b>for all marshes only</b> . Skip to 17c for non-marsh wetlands.  ☐ A ≥ 25% coverage of vegetation ☐ B < 25% coverage of vegetation
	17c. Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately. AA WT
	G A G A Canopy closed, or nearly closed, with natural gaps associated with natural processes B G B Canopy present, but opened more than natural gaps C C C Canopy sparse or absent
	C C C Mid-story/sapling layer sparse or absent
	G C A C A Dense shrub layer  B C B Moderate density shrub layer  C C C Shrub layer sparse or absent
	A CA Dense herb layer B B B Moderate density herb layer C C C Herb layer sparse or absent
	Snags – wetland type condition metric  A Large snags (more than one) are visible (> 12-inches DBH, or large relative to species present and landscape stability).  Not A
	Diameter Class Distribution – wetland type condition metric  Majority of canopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are present.  Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12-inch DBH.
	© C Majority of canopy trees are < 6 inches DBH or no trees.
20.	Large Woody Debris – wetland type condition metric Include both natural debris and man-placed natural debris.  A Large logs (more than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).  Not A
21.	Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)  Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.  A  C  C  D
22.	Hydrologic Connectivity – assessment area condition metric (evaluate for riparian wetlands only)  Examples of activities that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, and stream incision.  A Overbank and overland flow are not severely altered in the assessment area.  B Overbank flow is severely altered in the assessment area.

- Overland flow is severely altered in the assessment area. Both overbank <u>and</u> overland flow are severely altered in the assessment area.

Wetland Site Name _	Maney Farm - Wetland C	Date	5/28/2014	
Wetland Type	Seep	Assessor Name/Organization IE & \	VT Wildlands Eng	
Natas an Field Assessmen	and France (MAI)		NO	
Notes on Field Assessm			NO	
Presence of regulatory			NO	
Wetland is intensively m		. 0700	NO YES	
Assessment area is located within 50 feet of a natural tributary or other open water (Y/N)				
	estantially altered by beaver (Y/N)		NO NO	
•	iences overbank flooding during normal rainfa	Il conditions (Y/N)	NO	
Assessment area is on a	a coastal island (Y/N)		NO	
Sub-function Rating S	ummary			
Function	Sub-function	Metrics	Rating	
Hydrology	Surface Storage and Retention	Condition	NA	
	Sub-Surface Storage and Retention	Condition	NA	
Water Quality	Pathogen Change	Condition	NA	
		Condition/Opportunity	NA	
		Opportunity Presence? (Y/N)	NA	
	Particulate Change	Condition	NA	
		Condition/Opportunity	NA	
		Opportunity Presence? (Y/N)	NA	
	Soluble Change	Condition	NA	
	-	Condition/Opportunity	NA	
		Opportunity Presence? (Y/N)	NA	
	Physical Change	Condition	NA	
	, c	Condition/Opportunity	NA	
		Opportunity Presence? (Y/N)	NA	
	Pollution Change	Condition	NA	
	3	Condition/Opportunity	NA	
		Opportunity Presence? (Y/N)	NA NA	
Habitat	Physical Structure	Condition	MEDIUM	
	Landscape Patch Structure	Condition	LOW	
	Vegetation Composition	Condition	MEDIUM	
Function Rating Sumn				
Function Rating Summ	Metrics/Notes		Rating	
Hydrology	Condition		HIGH	
Water Quality	Condition		MEDIUM	
	Condition/Opportunity		NA	
	Opportunity Presence?	(Y/N)	NA	
Habitat	Conditon		LOW	

Wetland Site Name Maney Farm - Wetland D	
	<b>Date</b> 5/28/2014
Wetland Type Bottomland Hardwood Forest	Assessor Name/Organization IE & WT Wildlands Eng
Level III Ecoregion Piedmont	Nearest Named Water Body South Fork Cane Creek
River Basin Cape Fear	USGS 8-Digit Catalogue Unit 03030002
	Latitude/Longitude (deci-degrees) N 35.836258 W 79.34318
Please circle and/or make note on last page if evidence of stressors is apprapropriate, in recent past (for instance, approximately within 10 years). Note the following.  • Hydrological modifications (examples: ditches, dams, beaver dams)  • Surface and sub-surface discharges into the wetland (examples: discharges into the wetland (examples: discharge)  • Signs of vegetation stress (examples: vegetation mortality, insect described in the surface of stressors is appropriately appropriately.	arent. Consider departure from reference, if of oteworthy stressors include, but are not limited , dikes, berms, ponds, etc.) ocharges containing obvious pollutants, presence of nearby amage, disease, storm damage, salt intrusion, etc.)
Regulatory Considerations (select all that apply to the assessment are	a)
Anadromous fish Federally protected species or State endangered or threatened species or State endangered or State endangere	cies ern (AEC) (including buffer)
What type of natural stream is associated with the wetland, if any? (ch	eck all that apply)
Blackwater	
Brownwater Tidal (if tidal, check one of the following boxes) Lunar	Assessor Name/Organization
	Willia
WII 52	
	ubstantially altered by beaver?
Does the assessment area experience overbank flooding during norm	al rainfall conditions?
<ol> <li>Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surfa (VS) in the assessment area. Compare to reference wetland if application then rate the assessment area based on evidence of an effect.</li> <li>GS VS</li> <li>A A Not severely altered</li> <li>B Severely altered over a majority of the assessment are sedimentation, fire-plow lanes, skidder tracks, bedding alteration examples: mechanical disturbance, herbicide</li> </ol>	ea condition metric ace (GS) in the assessment area and vegetation structure ble (see User Manual). If a reference is not applicable, ea (ground surface alteration examples: vehicle tracks, excessive fill, soil compaction, obvious pollutants) (vegetation structure
1. Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if application then rate the assessment area based on evidence of an effect.  GS VS  A A Not severely altered B Severely altered over a majority of the assessment are sedimentation, fire-plow lanes, skidder tracks, bedding alteration examples: mechanical disturbance, herbicing less diversity [if appropriate], hydrologic alteration)	ea condition metric ace (GS) in the assessment area and vegetation structure ble (see User Manual). If a reference is not applicable,  ea (ground surface alteration examples: vehicle tracks, excessive fill, soil compaction, obvious pollutants) (vegetation structure es, salt intrusion [where appropriate], exotic species, grazing,
<ol> <li>Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if application then rate the assessment area based on evidence of an effect.</li> <li>GS VS</li> <li>A A Not severely altered</li> <li>B Severely altered over a majority of the assessment area sedimentation, fire-plow lanes, skidder tracks, bedding alteration examples: mechanical disturbance, herbicid less diversity [if appropriate], hydrologic alteration)</li> <li>Surface and Sub-Surface Storage Capacity and Duration – assess Check a box in each column. Consider surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. North Carolina hydric soils (see USACE Wilmington District website) for ≤ 1 foot deep is considered to affect surface water only, while a ditch sub-surface water. Consider tidal flooding regime, if applicable. Surf Sub</li> <li>A A Water storage capacity and duration are not altered.</li> <li>B B Water storage capacity or duration are altered, but not C C Water storage capacity or duration are substantially altered.</li> </ol>	pa condition metric ace (GS) in the assessment area and vegetation structure ble (see User Manual). If a reference is not applicable,  ace (ground surface alteration examples: vehicle tracks, excessive ace, fill, soil compaction, obvious pollutants) (vegetation structure aces, salt intrusion [where appropriate], exotic species, grazing,  ment area condition metric action duration (Surf) and sub-surface storage capacity and action (Surf) and sub-surface storage capacity and action to the current NRCS lateral effect of ditching guidance for are the zone of influence of ditches in hydric soils. A ditch and a ditch action of the surface and ditch action of the surfa
<ol> <li>Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if application then rate the assessment area based on evidence of an effect.</li> <li>GS VS</li> <li>A A Not severely altered</li> <li>B Severely altered over a majority of the assessment area sedimentation, fire-plow lanes, skidder tracks, bedding alteration examples: mechanical disturbance, herbicideless diversity [if appropriate], hydrologic alteration)</li> <li>Surface and Sub-Surface Storage Capacity and Duration – assess Check a box in each column. Consider surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. North Carolina hydric soils (see USACE Wilmington District website) for ≤ 1 foot deep is considered to affect surface water only, while a ditch sub-surface water. Consider tidal flooding regime, if applicable. Surf Sub</li> <li>A A Water storage capacity and duration are not altered.</li> <li>B B Water storage capacity or duration are altered, but not change) (examples: draining, flooding, soil compaction</li> </ol>	ea condition metric ace (GS) in the assessment area and vegetation structure ble (see User Manual). If a reference is not applicable,  ea (ground surface alteration examples: vehicle tracks, excessive ground surface alteration symbol (vegetation structure ground surface appropriate), exotic species, grazing,  ment area condition metric ground duration (Surf) and sub-surface storage capacity and greater to the current NRCS lateral effect of ditching guidance for ground surface of ditches in hydric soils. A ditch substantially (typically, not sufficient to change vegetation).  substantially (typically, not sufficient to result in vegetation ground surface and ditch substantially (typically, alteration sufficient to result in vegetation ground surface and vegetation ground surface alteration sufficient to result in vegetation ground surface alteration surface is not applicable.
<ol> <li>Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if application then rate the assessment area based on evidence of an effect.</li> <li>GS VS</li> <li>A A Not severely altered</li> <li>B Severely altered over a majority of the assessment area sedimentation, fire-plow lanes, skidder tracks, bedding alteration examples: mechanical disturbance, herbicideless diversity [if appropriate], hydrologic alteration)</li> <li>Surface and Sub-Surface Storage Capacity and Duration – assess Check a box in each column. Consider surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. North Carolina hydric soils (see USACE Wilmington District website) for ≤ 1 foot deep is considered to affect surface water only, while a ditch sub-surface water. Consider tidal flooding regime, if applicable. Surf Sub</li> <li>A A Water storage capacity and duration are not altered.</li> <li>B B Water storage capacity or duration are altered, but not C C Water storage capacity or duration are substantially alchange) (examples: draining, flooding, soil compaction check a box in each column for each group below. Select the approximate the support of the sub-surface water column for each group below.</li> </ol>	ea condition metric ace (GS) in the assessment area and vegetation structure ble (see User Manual). If a reference is not applicable,  ea (ground surface alteration examples: vehicle tracks, excessive ground surface alteration surfucture ground surface appropriate], exotic species, grazing,  ment area condition metric ground duration (Surf) and sub-surface storage capacity and ground surface and ditch ground surface of ditches in hydric soils. A ditch ground surface and surface and ditch ground surface and ditch ground surface alteration surface and ditch ground surface alteration surface and vegetation and surface and ditch ground surface and vegetation and surface and ditch ground surface alteration surface and vegetation and surface and ditch ground surface and surface and vegetation and surface and ditch ground surface and vegetation and surface and vegetation and surface and vegetation and surface and vegetation
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<ol> <li>Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if application then rate the assessment area based on evidence of an effect. GS VS</li></ol>	ace (GS) in the assessment area and vegetation structure ble (see User Manual). If a reference is not applicable,  a (ground surface alteration examples: vehicle tracks, excessive fill, soil compaction, obvious pollutants) (vegetation structure es, salt intrusion [where appropriate], exotic species, grazing,  ment area condition metric duration (Surf) and sub-surface storage capacity and defer to the current NRCS lateral effect of ditching guidance for or the zone of influence of ditches in hydric soils. A ditches a foot deep is expected to affect both surface and ditches usubstantially (typically, not sufficient to change vegetation).  Substantially (typically, not sufficient to result in vegetation and influence (typically, alteration sufficient to result in vegetation and influence (typically, alteration sufficient to result in vegetation and influence (typically, alteration sufficient to result in vegetation and influence (typically, alteration sufficient and the vegetation and the
<ol> <li>Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if application then rate the assessment area based on evidence of an effect.</li> <li>GS VS</li> <li>A A Not severely altered</li> <li>B B Severely altered over a majority of the assessment are sedimentation, fire-plow lanes, skidder tracks, bedding alteration examples: mechanical disturbance, herbicides diversity [if appropriate], hydrologic alteration)</li> <li>Surface and Sub-Surface Storage Capacity and Duration – assess Check a box in each column. Consider surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Report North Carolina hydric soils (see USACE Wilmington District website) for 1 foot deep is considered to affect surface water only, while a ditch sub-surface water. Consider tidal flooding regime, if applicable. Surface water storage capacity and duration are not altered. B B Water storage capacity or duration are altered, but not C C C Water storage capacity or duration are altered, but not change) (examples: draining, flooding, soil compaction)</li> <li>Water Storage/Surface Relief – assessment area/wetland type cor Check a box in each column for each group below. Select the apply type (WT).  AA WT  3a. A Majority of wetland with depressions able to pond</li> </ol>	ace (GS) in the assessment area and vegetation structure ble (see User Manual). If a reference is not applicable,  a (ground surface alteration examples: vehicle tracks, excessive fill, soil compaction, obvious pollutants) (vegetation structure es, salt intrusion [where appropriate], exotic species, grazing,  ment area condition metric duration (Surf) and sub-surface storage capacity and defer to the current NRCS lateral effect of ditching guidance for or the zone of influence of ditches in hydric soils. A ditches a foot deep is expected to affect both surface and ditches usubstantially (typically, not sufficient to change vegetation).  Substantially (typically, not sufficient to result in vegetation and influence (typically, alteration sufficient to result in vegetation and influence (typically, alteration sufficient to result in vegetation and influence (typically, alteration sufficient to result in vegetation and influence (typically, alteration sufficient and the vegetation and the

4.	Check a box feature. Mak regional indic 4a. A B C	/Structure – assessment area condition metric a from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape are soil observations within the 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for actors.  Sandy soil  Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres)  Loamy or clayey gleyed soil
		Histosol or histic epipedon Soil ribbon < 1 inch
	СВ	Soil ribbon ≥ 1 inch  No peat or muck presence
	СВ	A peat or muck presence
5.	Check a box	nto Wetland – opportunity metric in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.
	CA CA	Little or no evidence of pollutants or discharges entering the assessment area  Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the  treatment capacity of the assessment area
	ac ac	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation, odor)
6.	Check all the draining to as assessment	at apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources a sessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers and to be 50 feet wide in the Coastal Plain and Piedmont ecoregions and 30 feet wide in the Blue Ridge Mountains ecoregion.  2M  A ≥ 10% impervious surfaces
	B	<ul> <li>✓ B &lt; 10% impervious surfaces</li> <li>C Confined animal operations (or other local, concentrated source of pollutants)</li> <li>✓ D ≥ 20% coverage of pasture</li> <li>E ≥ 20% coverage of agricultural land (regularly plowed land)</li> <li>F ≥ 20% coverage of maintained grass/herb</li> <li>G ≥ 20% coverage of clear-cut land</li> <li>H Little or no opportunity to improve water quality. Lack of opportunity may result from hydrologic alterations that prevent drainage or overbank flow from affecting the assessment area.</li> </ul>
7.		ing as Vegetated Buffer – assessment area/wetland complex condition metric ssment area within 50 feet of a tributary or other open water?
	Tes Wetland Record  7b. How mu  A B C D E  7c. Tributar  ✓ ≤ 15-  7d. Do root  ✓ Yes  7e. Is tribut  ✓ Shelt	No If Yes, continue to 7b. If No, skip to Metric 8.  d buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland. a note if a portion of the buffer has been removed or disturbed.  uch of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.  ≥ 50 feet  From 30 to < 50 feet  From 15 to < 30 feet  From 5 to < 15 feet  < 5 feet or buffer bypassed by ditches  y width. If the tributary is anastomosed, combine widths of channels/braids for a total width.  feet wide  > 15-feet wide  Other open water (no tributary present)  s of assessment area vegetation extend into the bank of the tributary/open water?
8.		of that the Assessment Area – wetland type/wetland complex metric (evaluate for riparian wetlands only) at in each column. Select the average width for the wetland type at the assessment area (WT)
	and the wetla WT WC A A B B C C D D E E F F G G G	and complex at the assessment areas (WC). See User Manual for WT and WC boundaries.  ≥ 100 feet From 80 to < 100 feet From 50 to < 80 feet From 40 to < 50 feet From 30 to < 40 feet From 15 to < 30 feet From 5 to < 15 feet
	CH CH	< 5 feet

9.	Inundation Duration – assessment area condition metric
	Answer for assessment area dominant landform.
	A Evidence of short-duration inundation (< 7 consecutive days)
	B Evidence of saturation, without evidence of inundation
	C Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)
10.	Indicators of Deposition – assessment area condition metric
	Consider recent deposition only (no plant growth since deposition).
	A Sediment deposition is not excessive, but at approximately natural levels.
	B Sediment deposition is excessive, but not overwhelming the wetland.
	C Sediment deposition is excessive and is overwhelming the wetland.
11	Wetland Size – wetland type/wetland complex condition metric
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the
	size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User
	Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column.
	WT WC FW (if applicable)
	CA CA CA ≥ 500 acres
	CB CB From 100 to < 500 acres
	C C C From 50 to < 100 acres
	CD CD From 25 to < 50 acres
	CE CE From 10 to < 25 acres
	CF CF From 5 to < 10 acres
	CG CG From 1 to < 5 acres
	CH CH From 0.5 to < 1 acre
	CI CI From 0.1 to < 0.5 acre
	G J G J From 0.01 to < 0.1 acre
	K K K < 0.01 acre or assessment area is clear-cut
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)
	A Pocosin is the full extent (≥ 90%) of its natural landscape size.
	B Pocosin is < 90% of the full extent of its natural landscape size.
13	Connectivity to Other Natural Areas – landscape condition metric
13.	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This
	evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous
	metric naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility
	line corridors the width of a four-lane road or wider, urban landscapes, fields (pasture open and agriculture), or water > 300 feet wide.
	Well Loosely
	CA CA ≥ 500 acres
	B B From 100 to < 500 acres
	C C From 50 to < 100 acres
	C D From 10 to < 50 acres
	F F Wetland type has a poor or no connection to other natural habitats
	13b. Evaluate for marshes only.
	Yes No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.
4.4	Edge Effect westend time condition matric (akin for all marches)
14.	Edge Effect – wetland type condition metric (skip for all marshes)  May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include
	non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors and clear-cuts.
	Consider the eight main points of the compass.
	A No artificial edge within 150 feet in all directions
	B No artificial edge within 150 feet in four (4) to seven (7) directions
	C An artificial edge occurs within 150 feet in more than four (4) directions or assessment area is clear-cut
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)
	A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate
	species, with exotic plants absent or sparse within the assessment area.
	Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species
	characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
	Considering it also includes communities with exotics present, but not dominant, over a large portion of the expected strata.  Considering it also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
	characteristic species or at least one stratum inappropriately composed of a single species). Exotic species are dominant in
	at least one stratum.
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)
	A Vegetation diversity is high and is composed primarily of native species (<10% cover of exotics).
	<ul> <li>✓ B Vegetation diversity is low or has &gt; 10% to 50% cover of exotics.</li> <li>✓ C Vegetation is dominated by exotic species (&gt;50% cover of exotics).</li> </ul>
	1 1 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2

17.	Vegetative Structure – assessment area/wetland type condition metric
	17a. Is vegetation present?  • Yes No If Yes, continue to 17b. If No, skip to Metric 18.
	17b. Evaluate percent coverage of assessment area vegetation <b>for all marshes only</b> . Skip to 17c for non-marsh wetlands.  ☐ A ≥ 25% coverage of vegetation ☐ B < 25% coverage of vegetation
	17c. Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately. AA WT
	G A G A Canopy closed, or nearly closed, with natural gaps associated with natural processes B G B Canopy present, but opened more than natural gaps C C C Canopy sparse or absent
	C C C Mid-story/sapling layer sparse or absent
	G C A C A Dense shrub layer  B C B Moderate density shrub layer  C C C Shrub layer sparse or absent
	A CA Dense herb layer B B B Moderate density herb layer C C C Herb layer sparse or absent
	Snags – wetland type condition metric  A Large snags (more than one) are visible (> 12-inches DBH, or large relative to species present and landscape stability).  Not A
	Diameter Class Distribution – wetland type condition metric  Majority of canopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are present.  Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12-inch DBH.
	© C Majority of canopy trees are < 6 inches DBH or no trees.
20.	Large Woody Debris – wetland type condition metric Include both natural debris and man-placed natural debris.  A Large logs (more than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).  Not A
21.	Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)  Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.  A  C  C  D
22.	Hydrologic Connectivity – assessment area condition metric (evaluate for riparian wetlands only)  Examples of activities that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, and stream incision.  A Overbank and overland flow are not severely altered in the assessment area.  B Overbank flow is severely altered in the assessment area.

- Overland flow is severely altered in the assessment area. Both overbank <u>and</u> overland flow are severely altered in the assessment area.

Wetland Site Name	Maney Farm - Wetland D	Date	5/28/2014		
Wetland Type	Bottomland Hardwood Forest	Assessor Name/Organization IE &	WT Wildlands Eng		
Notes on Field Assess	ment Form (Y/N)		NO		
Presence of regulatory	considerations (Y/N)		NO		
Wetland is intensively		NO			
Assessment area is lo	YES				
Assessment area is su	Assessment area is located within 50 feet of a natural tributary or other open water (Y/N) Assessment area is substantially altered by beaver (Y/N)				
Assessment area expe	eriences overbank flooding during normal rainfa	Il conditions (Y/N)	NO		
Assessment area is or	n a coastal island (Y/N)		NO		
Sub-function Rating					
Function	Sub-function	Metrics	Rating		
Hydrology	Surface Storage and Retention	Condition	MEDIUM		
	Sub-Surface Storage and Retention	Condition	MEDIUM		
Water Quality	Pathogen Change	Condition	MEDIUM		
		Condition/Opportunity	MEDIUM		
		Opportunity Presence? (Y/N)	NO		
	Particulate Change	Condition	MEDIUM		
		Condition/Opportunity	MEDIUM		
		Opportunity Presence? (Y/N)	NO		
	Soluble Change	Condition	MEDIUM		
		Condition/Opportunity	MEDIUM		
		Opportunity Presence? (Y/N)	NO		
	Physical Change	Condition	LOW		
		Condition/Opportunity	LOW		
		Opportunity Presence? (Y/N)	NO		
	Pollution Change	Condition	NA		
	•	Condition/Opportunity	NA		
		Opportunity Presence? (Y/N)	NA		
Habitat	Physical Structure	Condition	HIGH		
	Landscape Patch Structure	Condition	LOW		
	Vegetation Composition	Condition	MEDIUM		
Function Rating Sum					
Function Rating Sun	Metrics/Notes		Rating		
Hydrology	Condition		MEDIUM		
Water Quality	Condition		MEDIUM		
•	Condition/Opportunity		MEDIUM		
	Opportunity Presence?	(Y/N)	NO		
Habitat	Conditon		MEDIUM		

	Rating Calcula	itor version 4.1	
Wetland Site Name	Maney Farm - Wetland E	Date	5/28/2014
Wetland Type	Seep	Assessor Name/Organization	IE & WT Wildlands Eng
Level III Ecoregion	Piedmont	Nearest Named Water Body	South Fork Cane Creek
River Basin	Cape Fear	USGS 8-Digit Catalogue Unit	03030002
	Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	N 35.836342 W 79.342854
Please circle and/or ma appropriate, in recent p to the following.  • Hydrological mo • Surface and sul septic tanks, un • Signs of vegeta	ake note on last page if evidence of stressors is appears (for instance, approximately within 10 years).  Diffications (examples: ditches, dams, beaver dantle b-surface discharges into the wetland (examples: diderground storage tanks (USTs), hog lagoons, etc. tion stress (examples: vegetation mortality, insect	parent. Consider departure from referen Noteworthy stressors include, but are not ns, dikes, berms, ponds, etc.) discharges containing obvious pollutants, c.) damage, disease, storm damage, salt in	limited presence of nearby
Is the assessment are	ea intensively managed? Yes No		
Anadromous fis Federally protect NCDWQ riparia Abuts a Primary Publicly owned N.C. Division of Abuts a stream Designated NCI	ch cted species or State endangered or threatened span buffer rule in effect y Nursery Area (PNA) property Coastal Management Area of Environmental Conwith a NCDWQ classification of SA or supplement NHP reference community	cern (AEC) (including buffer) tal classifications of HQW, ORW, or Trou	t
Blackwater Brownwater Tidal (if tidal, ch	neck one of the following boxes)	check all that apply)  Wind Both	
Is the assessment are	USGS 8-Digit Catalogue Unit 030300002  **No Precipitation within 48 hrs?**  **Latitude/Longitude (deci-degrees) N 35.838342 W 79.342854  **Stressors affecting the assessment area (may not be within the assessment area)  **and/or make note on last page if evidence of stressors is apparent. Consider departure from reference, if a recent past (for instance, approximately within 10 years). Noteworthy stressors include, but are not limited 10, 10, 10, 10, 10, 10, 10, 10, 10, 10,		
Is the assessment are	ea's surface water storage capacity or duration	substantially altered by beaver?	Yes No
Does the assessment	area experience overbank flooding during nor	mal rainfall conditions?	Yes No
Check a box in ear (VS) in the assess then rate the asses GS VS  A A A No B B Se se	ach column. Consider alteration to the ground subsection of the ground subsection area. Compare to reference wetland if applications area based on evidence of an effect.  Out severely altered everely altered over a majority of the assessment abdimentation, fire-plow lanes, skidder tracks, bedditeration examples: mechanical disturbance, herbid	rface (GS) in the assessment area and vicable (see User Manual). If a reference is area (ground surface alteration examples: ng, fill, soil compaction, obvious pollutants	s not applicable,  vehicle tracks, excessive s) (vegetation structure
Check a box in eaduration (Sub). C North Carolina hyd ≤ 1 foot deep is co sub-surface water. Surf Sub A A A W B B B W C C C W	ach column. Consider surface storage capacity a consider both increase and decrease in hydrology. dric soils (see USACE Wilmington District website) ensidered to affect surface water only, while a ditch. Consider tidal flooding regime, if applicable. Pater storage capacity and duration are not altered, eater storage capacity or duration are altered, but not atter storage capacity or duration are substantially	and duration (Surf) and sub-surface storage. Refer to the current NRCS lateral effect of the zone of influence of ditches in hydroxide in the substantially (typically, not sufficient to altered (typically, alteration sufficient to re-	of ditching guidance for dric soils. A ditch surface and ditch change vegetation).
Check a box in eatype (WT).  AA WT  3a. A A	ach column for each group below. Select the approximate Majority of wetland with depressions able to po Majority of wetland with depressions able to po	ppropriate storage for the assessment are nd water > 1 foot deep nd water 6 inches to 1 foot deep nd water 3 to 6 inches deep	
	ence that maximum depth of inundation is greater ence that maximum depth of inundation is betweer		

4.	Chec featur region 4a.	k a box f re. Make nal indicat A S B L	rom each soil obsetors. andy soil oamy or	e – assessment area condition metric ch of the three soil property groups below. Dig soil profile in the dominant assessment area landscape servations within the 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for bil r clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres) r clayey soils not exhibiting redoximorphic features	
				r clayey gleyed soil or histic epipedon	
	4b. (	- Prop.		on < 1 inch on ≥ 1 inch	
	4c. (	-	•	or muck presence r muck presence	
5.	Chec	k a box i	n each d	and – opportunity metric column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). ace discharges include presence of nearby septic tank, underground storage tank (UST), etc.	
	⊕ B	<b>⊙</b> A	Noticea	or no evidence of pollutants or discharges entering the assessment area lable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the lent capacity of the assessment area	
	CC	CC	potentia	able evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and ially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive entation, odor)	
6.	draini asses are co WS	k all that ing to ass ssment ar onsidered 5M	apply (a essment ea (5M), to be 50 2M	<b>Litty metric</b> (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources at area within entire upstream watershed (WS), within 5 miles <u>and</u> within the watershed draining to the and within 2 miles <u>and</u> within the watershed draining to the assessment area (2M). Effective riparian buffers to feet wide in the Coastal Plain and Piedmont ecoregions and 30 feet wide in the Blue Ridge Mountains ecoregions.	jion.
	□ A □ B □ C	□ A ☑ B □ C	□ A ☑ B □ C	≥ 10% impervious surfaces < 10% impervious surfaces Confined animal operations (or other local, concentrated source of pollutants)	
	☑ D □ E □ F □ G	D E F G	D E F G	≥ 20% coverage of pasture ≥ 20% coverage of agricultural land (regularly plowed land) ≥ 20% coverage of maintained grass/herb ≥ 20% coverage of clear-cut land	
	□н	□н	□н	Little or no opportunity to improve water quality. Lack of opportunity may result from hydrologic alterations that prevent drainage or overbank flow from affecting the assessment area.	
7.	7a.		-	egetated Buffer – assessment area/wetland complex condition metric rea within 50 feet of a tributary or other open water?  If Yes, continue to 7b. If No, skip to Metric 8.	
		Wetland I Record a	ouffer ne note if a	eed only be present on one side of the water body. Make buffer judgment based on the average width of the wa a portion of the buffer has been removed or disturbed. first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.	
	0	B F C F	rom 15 t	to < 50 feet to < 30 feet	
	Ĉ	) E <	5 feet <u>o</u>	o < 15 feet or buffer bypassed by ditches If the tributary is anastomosed, combine widths of channels/braids for a total width.	
	(	≤ 15-fe	et wide		
	7e.	ls tributar Shelter	red – adj	er open water sheltered or exposed? ljacent open water with width < 2500 feet <u>and</u> no regular boat traffic. acent open water with width ≥ 2500 feet <u>or</u> regular boat traffic.	
8.				Assessment Area – wetland type/wetland complex metric (evaluate for riparian wetlands only) column. Select the average width for the wetland type at the assessment area (WT)	
				lex at the assessment areas (WC). See User Manual for WT and WC boundaries.	
	C A	C A	≥ 100 f From 8	feet 80 to < 100 feet	
	CC	CC		50 to < 80 feet	
	O D	C D		40 to < 50 feet	
	OF.	OE OE		30 to < 40 feet	
	( G	€ G		15 to < 30 feet 5 to < 15 feet	
	ÖН	ÖН	< 5 fee		

9.	Inundation Duration – assessment area condition metric
	Answer for assessment area dominant landform.
	A Evidence of short-duration inundation (< 7 consecutive days)
	Evidence of saturation, without evidence of inundation
	C Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)
10.	Indicators of Deposition – assessment area condition metric
	Consider recent deposition only (no plant growth since deposition).
	Sediment deposition is not excessive, but at approximately natural levels.
	B Sediment deposition is excessive, but not overwhelming the wetland.
	C Sediment deposition is excessive and is overwhelming the wetland.
11	Wetland Size – wetland type/wetland complex condition metric
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the
	size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User
	Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column.
	WT WC FW (if applicable)
	CA CA CA ≥ 500 acres
	CB CB From 100 to < 500 acres
	C C C From 50 to < 100 acres
	CD CD From 25 to < 50 acres
	CE CE From 10 to < 25 acres
	CF CF From 5 to < 10 acres
	CG CG From 1 to < 5 acres
	CH CH From 0.5 to < 1 acre
	CI CI From 0.1 to < 0.5 acre
	<b>©</b> J <b>©</b> J From 0.01 to < 0.1 acre
	K K < 0.01 acre or assessment area is clear-cut
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)
	Pocosin is the full extent (≥ 90%) of its natural landscape size.
	B Pocosin is < 90% of the full extent of its natural landscape size.
12	Connectivity to Other Natural Areas – landscape condition metric
13.	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This
	evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous
	metric naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility
	line corridors the width of a four-lane road or wider, urban landscapes, fields (pasture open and agriculture), or water > 300 feet wide.
	Well Loosely
	CA CA ≥ 500 acres
	B B From 100 to < 500 acres
	C C From 50 to < 100 acres
	CD D From 10 to < 50 acres
	F F Wetland type has a poor or no connection to other natural habitats
	13b. Evaluate for marshes only.
	Yes No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.
4.4	Edge Effect westend time condition matric (akin for all marches)
14.	Edge Effect – wetland type condition metric (skip for all marshes)  May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include
	non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors and clear-cuts.
	Consider the eight main points of the compass.
	A No artificial edge within 150 feet in all directions
	An artificial edge occurs within 150 feet in more than four (4) directions or assessment area is clear-cut
4.5	
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)
	A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate
	species, with exotic plants absent or sparse within the assessment area.
	Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or
	clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
	Considering the association of the expected strate.
	characteristic species or at least one stratum inappropriately composed of a single species). Exotic species are dominant in
	at least one stratum.
4.0	
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)
	<ul> <li>A Vegetation diversity is high and is composed primarily of native species (&lt;10% cover of exotics).</li> <li>B Vegetation diversity is low or has &gt; 10% to 50% cover of exotics.</li> </ul>
	<ul> <li>✓ B Vegetation diversity is low or has &gt; 10% to 50% cover of exotics.</li> <li>✓ C Vegetation is dominated by exotic species (&gt;50% cover of exotics).</li> </ul>

17.	Vegetative Structure – assessment area/wetland type condition metric
	17a. Is vegetation present?  • Yes No If Yes, continue to 17b. If No, skip to Metric 18.
	17b. Evaluate percent coverage of assessment area vegetation <b>for all marshes only</b> . Skip to 17c for non-marsh wetlands.  ☐ A ≥ 25% coverage of vegetation ☐ B < 25% coverage of vegetation
	17c. Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately. AA WT
	G A G A Canopy closed, or nearly closed, with natural gaps associated with natural processes B G B Canopy present, but opened more than natural gaps C C C Canopy sparse or absent
	C C C Mid-story/sapling layer sparse or absent
	G C A C A Dense shrub layer  B C B Moderate density shrub layer  C C C Shrub layer sparse or absent
	A CA Dense herb layer B B B Moderate density herb layer C C C Herb layer sparse or absent
	Snags – wetland type condition metric  A Large snags (more than one) are visible (> 12-inches DBH, or large relative to species present and landscape stability).  Not A
	Diameter Class Distribution – wetland type condition metric  Majority of canopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are present.  Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12-inch DBH.
	© C Majority of canopy trees are < 6 inches DBH or no trees.
20.	Large Woody Debris – wetland type condition metric Include both natural debris and man-placed natural debris.  A Large logs (more than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).  Not A
21.	Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)  Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.  A  C  C  D
22.	Hydrologic Connectivity – assessment area condition metric (evaluate for riparian wetlands only)  Examples of activities that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, and stream incision.  A Overbank and overland flow are not severely altered in the assessment area.  B Overbank flow is severely altered in the assessment area.

- Overland flow is severely altered in the assessment area. Both overbank <u>and</u> overland flow are severely altered in the assessment area.

Wetland Site Name _	Maney Farm - Wetland E	Date	5/28/2014
Wetland Type _	Seep	Assessor Name/Organization IE & \	WT Wildlands Eng
Natas an Field Assessmen	and France (MAI)		NO
Notes on Field Assessm			NO
Presence of regulatory of			NO
Wetland is intensively m		OVAN	NO NO
	ated within 50 feet of a natural tributary or other	er open water (Y/N)	YES
	estantially altered by beaver (Y/N)	Harris P.Conner (AZAN)	NO NO
•	iences overbank flooding during normal rainfa	il conditions (Y/N)	NO NO
Assessment area is on a	a coastal island (Y/N)		NO
Sub-function Rating S	ummary		
Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	NA
	Sub-Surface Storage and Retention	Condition	NA
Nater Quality	Pathogen Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Particulate Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Soluble Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Physical Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Pollution Change	Condition	NA
	· ·	Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
-labitat	Physical Structure	Condition	MEDIUM
	Landscape Patch Structure	Condition	LOW
	Vegetation Composition	Condition	MEDIUM
Function Rating Sumn	narv		
unction Rating Summ	Metrics/Notes		Rating
Hydrology	Condition		HIGH
Nater Quality	Condition		MEDIUM
	Condition/Opportunity		NA
	Opportunity Presence?	(Y/N)	NA
-labitat	Conditon		LOW

Wetland Site Name Maney Farm - Wetland F	<b>Date</b> 5/28/2014				
Wetland Type Bottomland Hardwood Forest	Assessor Name/Organization IE & WT Wildlands Eng				
Level III Ecoregion Piedmont	Nearest Named Water Body South Fork Cane Creek				
River Basin Cape Fear	USGS 8-Digit Catalogue Unit 03030002				
Yes No Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees) N 35.836573 W 79.343145				
Evidence of stressors affecting the assessment area (may not be within the assessment area)  Please circle and/or make note on last page if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, approximately within 10 years). Noteworthy stressors include, but are not limited to the following.  • Hydrological modifications (examples: ditches, dams, beaver dams, dikes, berms, ponds, etc.)  • Surface and sub-surface discharges into the wetland (examples: discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc.)  • Signs of vegetation stress (examples: vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc.)  • Habitat/plant community alteration (examples: mowing, clear-cutting, exotics, etc.)					
Is the assessment area intensively managed? Yes No					
Regulatory Considerations (select all that apply to the assessment area Anadromous fish Federally protected species or State endangered or threatened spec NCDWQ riparian buffer rule in effect Abuts a Primary Nursery Area (PNA) Publicly owned property N.C. Division of Coastal Management Area of Environmental Concer Abuts a stream with a NCDWQ classification of SA or supplemental Designated NCNHP reference community Abuts a 303(d)-listed stream or a tributary to a 303(d)-listed stream	rn (AEC) (including buffer)				
What type of natural stream is associated with the wetland, if any? (che	eck all that apply)				
Blackwater	33. aa. app. 3)				
Brownwater Tidal (if tidal, check one of the following boxes) Lunar	Wind Both				
Is the assessment area on a coastal island?	Time South				
Is the assessment area's surface water storage capacity or duration su	hatastially altared by harver2				
is the assessment area's surface water storage capacity or duration su					
1. Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if applicate then rate the assessment area based on evidence of an effect.  GS VS  A A Not severely altered  B Severely altered over a majority of the assessment area sedimentation, fire-plow lanes, skidder tracks, bedding,	al rainfall conditions?  Yes No  a condition metric  (CGS) in the assessment area and vegetation structure				
<ol> <li>Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if applicate then rate the assessment area based on evidence of an effect.         GS VS</li></ol>	a condition metric ce (GS) in the assessment area and vegetation structure ble (see User Manual). If a reference is not applicable, a (ground surface alteration examples: vehicle tracks, excessive fill, soil compaction, obvious pollutants) (vegetation structure es, salt intrusion [where appropriate], exotic species, grazing, ment area condition metric duration (Surf) and sub-surface storage capacity and efer to the current NRCS lateral effect of ditching guidance for r the zone of influence of ditches in hydric soils. A ditch				
<ol> <li>Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if applicate then rate the assessment area based on evidence of an effect.         GS VS</li></ol>	a condition metric ce (GS) in the assessment area and vegetation structure cle (SE) in the assessment area and vegetation structure cle (SE) in the assessment area and vegetation structure cle (SE) in the assessment area and vegetation structure cle (SE) in the assessment area and vegetation structure cle (SE) in the appropriate in the compaction of the compaction in the compaction of th				

4.	Check a bo	e/Structure – assessment area condition metric ix from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape like soil observations within the 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for icators.  Sandy soil  Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres)  Loamy or clayey gleyed soil			
	<ul><li>← E</li><li>4b.</li></ul>	Histosol or histic epipedon Soil ribbon < 1 inch			
	<ul><li>C B</li><li>4c.</li></ul>	Soil ribbon ≥ 1 inch  No peat or muck presence			
	СВ	A peat or muck presence			
5.	Discharge into Wetland – opportunity metric Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub).  Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.  Surf Sub				
	CA CA	· · · · · · · · · · · · · · · · · · ·			
	GC GC	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation, odor)			
6.	Check all the draining to a assessment	_			
	B	C Confined animal operations (or other local, concentrated source of pollutants)  ≥ 20% coverage of pasture  ≥ 20% coverage of agricultural land (regularly plowed land)  F ≥ 20% coverage of maintained grass/herb  G ⊆ G ≥ 20% coverage of clear-cut land			
7.		esting as Vegetated Buffer – assessment area/wetland complex condition metric essment area within 50 feet of a tributary or other open water?			
	© Yes Wetlar Record 7b. How m A B C C D E 7c. Tributa © ≤ 15 7d. Do roo © Yes 7e. Is tribut © She	No If Yes, continue to 7b. If No, skip to Metric 8.  Ind buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland do a note if a portion of the buffer has been removed or disturbed.  Inuch of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.  ≥ 50 feet  From 30 to < 50 feet  From 15 to < 30 feet  From 5 to < 15 feet  < 5 feet or buffer bypassed by ditches  ary width. If the tributary is anastomosed, combine widths of channels/braids for a total width.  5-feet wide			
8.		idth at the Assessment Area – wetland type/wetland complex metric (evaluate for riparian wetlands only) is in each column. Select the average width for the wetland type at the assessment area (WT)			
		land complex at the assessment areas (WC). See User Manual for WT and WC boundaries.  ≥ 100 feet From 80 to < 100 feet From 50 to < 80 feet From 40 to < 50 feet From 30 to < 40 feet From 15 to < 30 feet From 5 to < 15 feet			
	Act III Act I	1 01001			

9. Inundation Duration – assessment area condition metric				
Answer for assessment area dominant landform.				
	A Evidence of short-duration inundation (< 7 consecutive days)			
	B Evidence of saturation, without evidence of inundation			
	C Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)			
10.	Indicators of Deposition – assessment area condition metric			
	Consider recent deposition only (no plant growth since deposition).			
	Sediment deposition is not excessive, but at approximately natural levels.			
	B Sediment deposition is excessive, but not overwhelming the wetland.			
	C Sediment deposition is excessive and is overwhelming the wetland.			
11	Wetland Size – wetland type/wetland complex condition metric			
• • • •	<b>Check a box in each column.</b> Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the			
	size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User			
	Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column.			
	WT WC FW (if applicable)			
	CA CA ≥ 500 acres			
	C B C B From 100 to < 500 acres			
	C C C From 50 to < 100 acres			
	C D C D From 25 to < 50 acres			
	C E C E From 10 to < 25 acres			
	F F From 5 to < 10 acres			
	G G G From 1 to < 5 acres			
	CH CH From 0.5 to < 1 acre			
	CI CI From 0.1 to < 0.5 acre			
	GJ GJ From 0.01 to < 0.1 acre			
	K K K < 0.01 acre or assessment area is clear-cut			
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)			
	A Pocosin is the full extent (≥ 90%) of its natural landscape size.			
	B Pocosin is < 90% of the full extent of its natural landscape size.			
13	Connectivity to Other Natural Areas – landscape condition metric			
	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This			
	evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous			
metric naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly				
	line corridors the width of a four-lane road or wider, urban landscapes, fields (pasture open and agriculture), or water > 300 feet wide.			
	Well Loosely			
	CA CA ≥ 500 acres			
	C C From 50 to < 100 acres			
	D D From 10 to < 50 acres			
	© E © E < 10 acres			
	F F Wetland type has a poor or no connection to other natural habitats			
	13b. Evaluate for marshes only.			
	Yes No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.			
14	Edge Effect – wetland type condition metric (skip for all marshes)			
	May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include			
	non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors and clear-cuts.			
	Consider the eight main points of the compass.			
	A No artificial edge within 150 feet in all directions			
	B No artificial edge within 150 feet in four (4) to seven (7) directions			
	C An artificial edge occurs within 150 feet in more than four (4) directions or assessment area is clear-cut			
15	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)			
15.	A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate			
	species, with exotic plants absent or sparse within the assessment area.			
	© B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species			
	characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or			
	clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.			
	C Vegetation severely altered from reference in composition. Expected species are unnaturally absent (planted stands of non-			
	characteristic species or at least one stratum inappropriately composed of a single species). Exotic species are dominant in			
	at least one stratum.			
16	Vegetative Diversity - assessment area condition metric (evaluate for Non-tidal Freshwater March only)			
10.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)  A Vegetation diversity is high and is composed primarily of native species (<10% cover of exotics).			
	We be Vegetation diversity is high and is composed primarily of flative species (< 10% cover of exotics).  Vegetation diversity is low or has > 10% to 50% cover of exotics.			
	C Vegetation is dominated by exotic species (>50% cover of exotics).			
	- · · · · · · · · · · · · · · · · · · ·			

17.	Vegetative Structure – assessment area/wetland type condition metric					
	17a. Is vegetation present?  Proof Yes Proof No If Yes, continue to 17b. If No, skip to Metric 18.					
	17b. Evaluate percent coverage of assessment area vegetation <b>for all marshes only</b> . Skip to 17c for non-marsh wetlands.  C A ≥ 25% coverage of vegetation  B < 25% coverage of vegetation					
	17c. Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.  AA WT					
	G A G A Canopy closed, or nearly closed, with natural gaps associated with natural processes B G B Canopy present, but opened more than natural gaps C C C Canopy sparse or absent					
	C C C Mid-story/sapling layer sparse or absent					
	G C A C A Dense shrub layer  B C B Moderate density shrub layer  C C C Shrub layer sparse or absent					
	A CA Dense herb layer B B B Moderate density herb layer C C C Herb layer sparse or absent					
	Snags – wetland type condition metric  A Large snags (more than one) are visible (> 12-inches DBH, or large relative to species present and landscape stability).  Not A					
	Diameter Class Distribution – wetland type condition metric  Majority of canopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are present.  B Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12-inch DBH.					
	© C Majority of canopy trees are < 6 inches DBH or no trees.					
20.	Large Woody Debris – wetland type condition metric Include both natural debris and man-placed natural debris.  A Large logs (more than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).  Not A					
21.	Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)  Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.  A  C  C  D					
22.	Hydrologic Connectivity – assessment area condition metric (evaluate for riparian wetlands only)  Examples of activities that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, and stream incision.  A Overbank and overland flow are not severely altered in the assessment area.  B Overbank flow is severely altered in the assessment area.					

- Overland flow is severely altered in the assessment area. Both overbank <u>and</u> overland flow are severely altered in the assessment area.

Wetland Site Name	Maney Farm - Wetland F	Date	5/28/2014		
Wetland Type	Bottomland Hardwood Forest	Assessor Name/Organization IE &	WT Wildlands Eng		
Notes on Field Assess	ment Form (Y/N)		NO		
Presence of regulatory	Presence of regulatory considerations (Y/N) Wetland is intensively managed (Y/N) Assessment area is located within 50 feet of a natural tributary or other open water (Y/N) Assessment area is substantially altered by beaver (Y/N)				
Wetland is intensively					
Assessment area is lo					
Assessment area is su					
Assessment area experiences overbank flooding during normal rainfall conditions (Y/N)					
Assessment area is or	n a coastal island (Y/N)		NO		
Sub-function Rating	Summary				
Function	Sub-function	Metrics	Rating		
Hydrology	Surface Storage and Retention	Condition	MEDIUM		
	Sub-Surface Storage and Retention	Condition	MEDIUM		
Water Quality	Pathogen Change	Condition	MEDIUM		
·		Condition/Opportunity	MEDIUM		
		Opportunity Presence? (Y/N)	NO		
	Particulate Change	Condition	MEDIUM		
	un en	Condition/Opportunity	MEDIUM		
		Opportunity Presence? (Y/N)	NO		
	Soluble Change	Condition	MEDIUM		
	Colubio Charigo	Condition/Opportunity	MEDIUM		
		Opportunity Presence? (Y/N)	NO		
	Physical Change	Condition	LOW		
	Thyologi Change	Condition/Opportunity	LOW		
		Opportunity Presence? (Y/N)	NO		
	Pollution Change	Condition	NA NA		
	1 Glidtion Gharige	Condition/Opportunity	NA NA		
		Opportunity Presence? (Y/N)	NA NA		
Habitat	Physical Structure	Condition	HIGH		
Tiabitat	Landscape Patch Structure	Condition	LOW		
	Vegetation Composition	Condition	MEDIUM		
Function Betime Com					
Function Rating Sum Function	Metrics/Notes		Rating		
Hydrology	Condition		MEDIUM		
Water Quality	Condition  Condition/Opportunity		MEDIUM		
•			MEDIUM		
	Opportunity Presence?	(Y/N)	NO		
Habitat Conditon		MEDIUM			

	Rating Calcula	itor version 4.1			
Wetland Site Name Maney Farm	- Wetland G	Dat	<b>e</b> 5/28/2014		
Wetland Type Seep		Assessor Name/Organization	n IE & WT Wildlands Eng		
Level III Ecoregion Piedmont		▼ Nearest Named Water Bod	y South Fork Cane Creek		
River Basin Cape Fear		▼ USGS 8-Digit Catalogue Uni	it 03030002		
	ion within 48 hrs?	Latitude/Longitude (deci-degrees	N 35.836717 W 79.343491		
Evidence of stressors affecting the assessment area (may not be within the assessment area)  Please circle and/or make note on last page if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, approximately within 10 years). Noteworthy stressors include, but are not limited to the following.  • Hydrological modifications (examples: ditches, dams, beaver dams, dikes, berms, ponds, etc.)  • Surface and sub-surface discharges into the wetland (examples: discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc.)  • Signs of vegetation stress (examples: vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc.)  • Habitat/plant community alteration (examples: mowing, clear-cutting, exotics, etc.)					
Is the assessment area intensivel	y managed? Yes No				
Anadromous fish Federally protected species NCDWQ riparian buffer rule Abuts a Primary Nursery Are Publicly owned property N.C. Division of Coastal Mar Abuts a stream with a NCDV Designated NCNHP reference	a (PNA)  agement Area of Environmental Cond /Q classification of SA or supplement	cern (AEC) (including buffer) tal classifications of HQW, ORW, or Tro	out		
What type of natural stream is as: Blackwater Brownwater Tidal (if tidal, check one of the stream is as:		CWind Both			
	W1 52	aubatantially altered by bassar2	C Vac C Na		
	water storage capacity or duration		Yes No		
1. Ground Surface Condition/Ve Check a box in each column. (VS) in the assessment area. (then rate the assessment area GS VS A A Not severely all B B Severely altere sedimentation, alteration examples.	Compare to reference wetland if applicated on evidence of an effect.  Bered  d over a majority of the assessment affire-plow lanes, skidder tracks, bedding		e is not applicable, es: vehicle tracks, excessive ents) (vegetation structure		
Check a box in each column. duration (Sub). Consider both North Carolina hydric soils (see ≤ 1 foot deep is considered to a sub-surface water. Consider tid Surf Sub  A A Water storage B B Water storage C C Water storage	increase and decrease in hydrology. USACE Wilmington District website) ffect surface water only, while a ditch al flooding regime, if applicable.  capacity and duration are not altered. capacity or duration are altered, but no capacity or duration are substantially	and duration (Surf) and sub-surface stor Refer to the current NRCS lateral effect for the zone of influence of ditches in h > 1 foot deep is expected to affect both	et of ditching guidance for hydric soils. A ditch th surface and ditch to change vegetation).		
Check a box in each column type (WT).  AA WT  3a. A A Majority o B B Majority o C C C Majority o D D Depression		nd water 6 inches to 1 foot deep nd water 3 to 6 inches deep			
3b. A Evidence that ma	kimum depth of inundation is greater	than 2 feet			

4.	Check a box feature. Mak regional indic 4a. A B C	/Structure – assessment area condition metric a from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape are soil observations within the 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for actors.  Sandy soil  Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres)  Loamy or clayey gleyed soil
		Histosol or histic epipedon Soil ribbon < 1 inch
	СВ	Soil ribbon ≥ 1 inch  No peat or muck presence
	СВ	A peat or muck presence
5.	Check a box	nto Wetland – opportunity metric in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.
	CA CA	Little or no evidence of pollutants or discharges entering the assessment area  Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
	ac ac	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation, odor)
6.	Check all the draining to as assessment	at apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources a sessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers and to be 50 feet wide in the Coastal Plain and Piedmont ecoregions and 30 feet wide in the Blue Ridge Mountains ecoregion.  2M  A ≥ 10% impervious surfaces
	B	<ul> <li>✓ B &lt; 10% impervious surfaces</li> <li>C Confined animal operations (or other local, concentrated source of pollutants)</li> <li>✓ D ≥ 20% coverage of pasture</li> <li>E ≥ 20% coverage of agricultural land (regularly plowed land)</li> <li>F ≥ 20% coverage of maintained grass/herb</li> <li>G ≥ 20% coverage of clear-cut land</li> <li>H Little or no opportunity to improve water quality. Lack of opportunity may result from hydrologic alterations that prevent drainage or overbank flow from affecting the assessment area.</li> </ul>
7.		ing as Vegetated Buffer – assessment area/wetland complex condition metric ssment area within 50 feet of a tributary or other open water?
	Tes Wetland Record  7b. How mu  A B C D E  7c. Tributar  ✓ ≤ 15-  7d. Do root  ✓ Yes  7e. Is tribut  ✓ Shelt	No If Yes, continue to 7b. If No, skip to Metric 8.  d buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland. a note if a portion of the buffer has been removed or disturbed.  uch of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.  ≥ 50 feet  From 30 to < 50 feet  From 15 to < 30 feet  From 5 to < 15 feet  < 5 feet or buffer bypassed by ditches  y width. If the tributary is anastomosed, combine widths of channels/braids for a total width.  feet wide > 15-feet wide Other open water (no tributary present)  s of assessment area vegetation extend into the bank of the tributary/open water?
8.		of that the Assessment Area – wetland type/wetland complex metric (evaluate for riparian wetlands only) at in each column. Select the average width for the wetland type at the assessment area (WT)
	and the wetla WT WC A A B B C C D D E E F F G G G	and complex at the assessment areas (WC). See User Manual for WT and WC boundaries.  ≥ 100 feet From 80 to < 100 feet From 50 to < 80 feet From 40 to < 50 feet From 30 to < 40 feet From 15 to < 30 feet From 5 to < 15 feet
	CH CH	< 5 feet

9.	Inundation Duration – assessment area condition metric
	Answer for assessment area dominant landform.
	A Evidence of short-duration inundation (< 7 consecutive days)
	© B Evidence of saturation, without evidence of inundation
	C Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)
10.	Indicators of Deposition – assessment area condition metric
	Consider recent deposition only (no plant growth since deposition).
	A Sediment deposition is not excessive, but at approximately natural levels.
	B Sediment deposition is excessive, but not overwhelming the wetland.
	C Sediment deposition is excessive and is overwhelming the wetland.
11.	Wetland Size – wetland type/wetland complex condition metric Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the
	size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User
	Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column.
	WT WC FW (if applicable)
	CA CA ≥ 500 acres
	CB CB From 100 to < 500 acres
	CC CC From 50 to < 100 acres
	CD CD From 25 to < 50 acres
	CE CE From 10 to < 25 acres
	CF CF From 5 to < 10 acres
	CG CG From 1 to < 5 acres
	CH CH From 0.5 to < 1 acre
	CI CI From 0.1 to < 0.5 acre
	CJ CJ From 0.01 to < 0.1 acre
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)
	A Pocosin is the full extent (≥ 90%) of its natural landscape size.
	B Pocosin is < 90% of the full extent of its natural landscape size.
12	Connectivity to Other Natural Areas – landscape condition metric
13.	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This
	evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous
	metric naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility
	line corridors the width of a four-lane road or wider, urban landscapes, fields (pasture open and agriculture), or water > 300 feet wide.
	Well Loosely
	C A C A ≥ 500 acres
	□ B From 100 to < 500 acres
	C C From 50 to < 100 acres
	C D From 10 to < 50 acres
	F F Wetland type has a poor or no connection to other natural habitats
	13b. Evaluate for marshes only.
	Yes No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.
11	Edge Effect – wetland type condition metric (skip for all marshes)
14.	May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include
	non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors and clear-cuts.
	Consider the eight main points of the compass.
	A No artificial edge within 150 feet in all directions
	B No artificial edge within 150 feet in four (4) to seven (7) directions
	C An artificial edge occurs within 150 feet in more than four (4) directions or assessment area is clear-cut
45	
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)
	A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area.
	B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species
	characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or
	clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
	C Vegetation severely altered from reference in composition. Expected species are unnaturally absent (planted stands of non-
	characteristic species or at least one stratum inappropriately composed of a single species). Exotic species are dominant in
	at least one stratum.
16	
10.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)  A Vegetation diversity is high and is composed primarily of native species (<10% cover of exotics).
	Vegetation diversity is high and is composed primarily of native species (<10% cover of exotics).      Vegetation diversity is low or has > 10% to 50% cover of exotics.
	C Vegetation is dominated by exotic species (>50% cover of exotics).

17.	Vegetative Structure – assessment area/wetland type condition metric				
	17a. Is vegetation present?  • Yes • No If Yes, continue to 17b. If No, skip to Metric 18.				
	17b. Evaluate percent coverage of assessment area vegetation <b>for all marshes only</b> . Skip to 17c for non-marsh wetlands.  ☐ A ≥ 25% coverage of vegetation ☐ B < 25% coverage of vegetation				
	<ul> <li>17c. Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.</li> <li>AA WT</li> </ul>				
	G A G A Canopy closed, or nearly closed, with natural gaps associated with natural processes B G B Canopy present, but opened more than natural gaps C C C Canopy sparse or absent				
	C C C Mid-story/sapling layer sparse or absent				
	G C A C A Dense shrub layer  B C B Moderate density shrub layer  C C C Shrub layer sparse or absent				
	A CA Dense herb layer B B B Moderate density herb layer C C C Herb layer sparse or absent				
	Snags – wetland type condition metric  A Large snags (more than one) are visible (> 12-inches DBH, or large relative to species present and landscape stability).  Not A				
	Diameter Class Distribution – wetland type condition metric  Majority of canopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are present.  Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12-inch DBH.				
	© C Majority of canopy trees are < 6 inches DBH or no trees.				
20.	Large Woody Debris – wetland type condition metric Include both natural debris and man-placed natural debris.  A Large logs (more than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).  Not A				
21.	Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)  Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.  A  C  C  D				
22.	Hydrologic Connectivity – assessment area condition metric (evaluate for riparian wetlands only)  Examples of activities that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, and stream incision.  A Overbank and overland flow are not severely altered in the assessment area.  B Overbank flow is severely altered in the assessment area.				

- Overland flow is severely altered in the assessment area. Both overbank <u>and</u> overland flow are severely altered in the assessment area.

Wetland Site Name _	Maney Farm - Wetland G	Date	5/28/2014
Wetland Type	Seep	Assessor Name/Organization IE & \)	NT Wildlands Eng
Notes on Field Assessm	pont Form (V/N)		NO
Notes on Field Assessm			NO NO
Presence of regulatory			NO
Wetland is intensively m		or onen water (V/N)	YES
	ated within 50 feet of a natural tributary or other	er open water (17/N)	
	estantially altered by beaver (Y/N)	Il conditions (V/N)	NO NO
•	iences overbank flooding during normal rainfa	il Conditions (1/14)	NO
Assessment area is on a	a coastai isiano (1714)		
Sub-function Rating S	ummary		
Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	NA
	Sub-Surface Storage and Retention	Condition	NA
Water Quality	Pathogen Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Particulate Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Soluble Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Physical Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Pollution Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
Habitat	Physical Structure	Condition	MEDIUM
	Landscape Patch Structure	Condition	LOW
	Vegetation Composition	Condition	MEDIUM
Function Rating Sumn	narv		
Function	Metrics/Notes		Rating
Hydrology	Condition		HIGH
Water Quality	Condition		MEDIUM
	Condition/Opportunity		NA
	Opportunity Presence?	(Y/N)	NA
Habitat	Conditon		LOW

Wetland Site Name Maney Farm - Wetland H Date 5/28/2014	
Wetland Type Seep ■ Assessor Name/Organization IE & WT Wildlands Eng	
Level III Ecoregion Piedmont Nearest Named Water Body South Fork Cane Creek	
River Basin Cape Fear USGS 8-Digit Catalogue Unit 03030002	
Evidence of stressors affecting the assessment area (may not be within the assessment area)  Please circle and/or make note on last page if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, approximately within 10 years). Noteworthy stressors include, but are not limited to the following.  • Hydrological modifications (examples: ditches, dams, beaver dams, dikes, berms, ponds, etc.)  • Surface and sub-surface discharges into the wetland (examples: discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc.)  • Signs of vegetation stress (examples: vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc.)  • Habitat/plant community alteration (examples: mowing, clear-cutting, exotics, etc.)  Is the assessment area intensively managed?  — Yes  • No  Regulatory Considerations (select all that apply to the assessment area)  — Anadromous fish  Federally protected species or State endangered or threatened species  NCDWQ riparian buffer rule in effect	
Abuts a Primary Nursery Area (PNA)  Publicly owned property  N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)  Abuts a stream with a NCDWQ classification of SA or supplemental classifications of HQW, ORW, or Trout Designated NCNHP reference community  Abuts a 303(d)-listed stream or a tributary to a 303(d)-listed stream	
What type of natural stream is associated with the wetland, if any? (check all that apply)  Blackwater  Brownwater  Tidal (if tidal, check one of the following boxes)  Lunar  Wind  Both	
Is the assessment area on a coastal island?	
Is the assessment area's surface water storage capacity or duration substantially altered by beaver?	
Does the assessment area experience overbank flooding during normal rainfall conditions? Yes No  1. Ground Surface Condition/Vegetation Condition − assessment area condition metric Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual). If a reference is not applicable, then rate the assessment area based on evidence of an effect.  GS VS  A A Not severely altered  B Severely altered over a majority of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], hydrologic alteration)	
2. Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the current NRCS lateral effect of ditching guidance for North Carolina hydric soils (see USACE Wilmington District website) for the zone of influence of ditches in hydric soils. A ditch ≤ 1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and ditch sub-surface water. Consider tidal flooding regime, if applicable. Surf Sub A A Water storage capacity and duration are not altered. B B B B C C C C C Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: draining, flooding, soil compaction, filling, excessive sedimentation, underground utility lines).	
<ul> <li>3. Water Storage/Surface Relief – assessment area/wetland type condition metric (answer for non-marsh wetlands only) Check a box in each column for each group below. Select the appropriate storage for the assessment area (AA) and the wetland type (WT).  AA WT  3a. A A Majority of wetland with depressions able to pond water &gt; 1 foot deep B B Majority of wetland with depressions able to pond water 6 inches to 1 foot deep C C Majority of wetland with depressions able to pond water 3 to 6 inches deep D D Depressions able to pond water &lt; 3 inches deep</li> <li>3b. A Evidence that maximum depth of inundation is greater than 2 feet Evidence that maximum depth of inundation is between 1 and 2 feet</li> </ul>	

4.	Check a box feature. Mak regional indic 4a. A B C	/Structure – assessment area condition metric a from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape are soil observations within the 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for actors.  Sandy soil  Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres)  Loamy or clayey gleyed soil
		Histosol or histic epipedon Soil ribbon < 1 inch
	СВ	Soil ribbon ≥ 1 inch  No peat or muck presence
	СВ	A peat or muck presence
5.	Check a box	nto Wetland – opportunity metric in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.
	CA CA	Little or no evidence of pollutants or discharges entering the assessment area  Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
	ac ac	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation, odor)
6.	Check all the draining to as assessment	at apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources a sessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers and to be 50 feet wide in the Coastal Plain and Piedmont ecoregions and 30 feet wide in the Blue Ridge Mountains ecoregion.  2M  A ≥ 10% impervious surfaces
	B	<ul> <li>✓ B &lt; 10% impervious surfaces</li> <li>C Confined animal operations (or other local, concentrated source of pollutants)</li> <li>✓ D ≥ 20% coverage of pasture</li> <li>E ≥ 20% coverage of agricultural land (regularly plowed land)</li> <li>F ≥ 20% coverage of maintained grass/herb</li> <li>G ≥ 20% coverage of clear-cut land</li> <li>H Little or no opportunity to improve water quality. Lack of opportunity may result from hydrologic alterations that prevent drainage or overbank flow from affecting the assessment area.</li> </ul>
7.		ing as Vegetated Buffer – assessment area/wetland complex condition metric ssment area within 50 feet of a tributary or other open water?
	Tes Wetland Record  7b. How mu  A B C D E  7c. Tributar  ✓ ≤ 15-  7d. Do root  ✓ Yes  7e. Is tribut  ✓ Shelt	No If Yes, continue to 7b. If No, skip to Metric 8.  d buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland. a note if a portion of the buffer has been removed or disturbed.  uch of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.  ≥ 50 feet  From 30 to < 50 feet  From 15 to < 30 feet  From 5 to < 15 feet  < 5 feet or buffer bypassed by ditches  y width. If the tributary is anastomosed, combine widths of channels/braids for a total width.  feet wide > 15-feet wide Other open water (no tributary present)  s of assessment area vegetation extend into the bank of the tributary/open water?
8.		of that the Assessment Area – wetland type/wetland complex metric (evaluate for riparian wetlands only) at in each column. Select the average width for the wetland type at the assessment area (WT)
	and the wetla WT WC A A B B C C D D E E F F G G G	and complex at the assessment areas (WC). See User Manual for WT and WC boundaries.  ≥ 100 feet From 80 to < 100 feet From 50 to < 80 feet From 40 to < 50 feet From 30 to < 40 feet From 15 to < 30 feet From 5 to < 15 feet
	CH CH	< 5 feet

9.	Inundation Duration – assessment area condition metric
	Answer for assessment area dominant landform.
	A Evidence of short-duration inundation (< 7 consecutive days)
	© B Evidence of saturation, without evidence of inundation
	C Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)
10.	Indicators of Deposition – assessment area condition metric
	Consider recent deposition only (no plant growth since deposition).
	A Sediment deposition is not excessive, but at approximately natural levels.
	B Sediment deposition is excessive, but not overwhelming the wetland.
	C Sediment deposition is excessive and is overwhelming the wetland.
11	Wetland Size – wetland type/wetland complex condition metric
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the
	size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User
	Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column.
	WT WC FW (if applicable)
	CA CA CA ≥ 500 acres
	CB CB From 100 to < 500 acres
	C C C From 50 to < 100 acres
	CD CD From 25 to < 50 acres
	CE CE From 10 to < 25 acres
	CF CF From 5 to < 10 acres
	CG CG From 1 to < 5 acres
	CH CH From 0.5 to < 1 acre
	G J G J From 0.01 to < 0.1 acre
	K K K < 0.01 acre or assessment area is clear-cut
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)
	B Pocosin is < 90% of the full extent of its natural landscape size.
12	Connectivity to Other Natural Areas – landscape condition metric
13.	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This
	evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous
	metric naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility
	line corridors the width of a four-lane road or wider, urban landscapes, fields (pasture open and agriculture), or water > 300 feet wide.
	Well Loosely
	CA CA ≥ 500 acres
	B B From 100 to < 500 acres
	C C From 50 to < 100 acres
	C D From 10 to < 50 acres
	F F Wetland type has a poor or no connection to other natural habitats
	13b. Evaluate for marshes only.
	Yes No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.
4.4	Edge Effect westend time condition metric (akin for all marches)
14.	Edge Effect – wetland type condition metric (skip for all marshes)  May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include
	non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors and clear-cuts.
	Consider the eight main points of the compass.
	A No artificial edge within 150 feet in all directions
	B No artificial edge within 150 feet in four (4) to seven (7) directions
	An artificial edge occurs within 150 feet in more than four (4) directions or assessment area is clear-cut
4.5	
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)
	A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate
	species, with exotic plants absent or sparse within the assessment area.  Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species
	characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or
	clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
	C Vegetation severely altered from reference in composition. Expected species are unnaturally absent (planted stands of non-
	characteristic species or at least one stratum inappropriately composed of a single species). Exotic species are dominant in
	at least one stratum.
4.0	
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)
	<ul> <li>A Vegetation diversity is high and is composed primarily of native species (&lt;10% cover of exotics).</li> <li>B Vegetation diversity is low or has &gt; 10% to 50% cover of exotics.</li> </ul>
	<ul> <li>Vegetation diversity is low or has &gt; 10% to 50% cover of exotics.</li> <li>Vegetation is dominated by exotic species (&gt;50% cover of exotics).</li> </ul>

17.	Vegetative Structure – assessment area/wetland type condition metric				
	17a. Is vegetation present?  • Yes • No If Yes, continue to 17b. If No, skip to Metric 18.				
	17b. Evaluate percent coverage of assessment area vegetation <b>for all marshes only</b> . Skip to 17c for non-marsh wetlands.  ☐ A ≥ 25% coverage of vegetation ☐ B < 25% coverage of vegetation				
	<ul> <li>17c. Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.</li> <li>AA WT</li> </ul>				
	G A G A Canopy closed, or nearly closed, with natural gaps associated with natural processes B G B Canopy present, but opened more than natural gaps C C C Canopy sparse or absent				
	C C C Mid-story/sapling layer sparse or absent				
	G C A C A Dense shrub layer  B C B Moderate density shrub layer  C C C Shrub layer sparse or absent				
	A CA Dense herb layer B B B Moderate density herb layer C C C Herb layer sparse or absent				
	Snags – wetland type condition metric  A Large snags (more than one) are visible (> 12-inches DBH, or large relative to species present and landscape stability).  Not A				
	Diameter Class Distribution – wetland type condition metric  Majority of canopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are present.  Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12-inch DBH.				
	© C Majority of canopy trees are < 6 inches DBH or no trees.				
20.	Large Woody Debris – wetland type condition metric Include both natural debris and man-placed natural debris.  A Large logs (more than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).  Not A				
21.	Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)  Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.  A  C  C  D				
22.	Hydrologic Connectivity – assessment area condition metric (evaluate for riparian wetlands only)  Examples of activities that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, and stream incision.  A Overbank and overland flow are not severely altered in the assessment area.  B Overbank flow is severely altered in the assessment area.				

- Overland flow is severely altered in the assessment area. Both overbank <u>and</u> overland flow are severely altered in the assessment area.

Wetland Site Name	Maney Farm Stream Mitigation Site	Date	5/28/2014
Wetland Type	Seep	Assessor Name/Organization ckard	t / W. Taylor Wildla
Notes on Field Assessm	ent Form (V/N)		NO
Presence of regulatory c			NO
Wetland is intensively managed			NO
	ted within 50 feet of a natural tributary or othe	or open water (V/NI)	YES
	stantially altered by beaver (Y/N)	er open water (1714)	NO
		Il conditions (V/N)	
· ·	ences overbank flooding during normal rainfa	ii conditions (17N)	NO NO
Assessment area is on a	coastaristand (Y/N)		NO
Sub-function Rating Su	ımmary		
Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	NA
	Sub-Surface Storage and Retention	Condition	NA
Water Quality	Pathogen Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Particulate Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Soluble Change	Condition	NA
	•	Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Physical Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Pollution Change	Condition	NA
	3	Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
Habitat	Physical Structure	Condition	MEDIUM
	Landscape Patch Structure	Condition	LOW
	Vegetation Composition	Condition	MEDIUM
	-		
Function Rating Summ Function	Metrics/Notes		Rating
Hydrology	Condition		HIGH
Water Quality	Condition		MEDIUM
,	Condition/Opportunity		NA
	Opportunity Presence?	(Y/N)	NA
Habitat	Conditon		LOW

**MEDIUM** 

**Overall Wetland Rating** 

Wetland Site Name Maney Farm - Wetland I				
Mediand Time	Wetland Site Name Maney Farm - Wetland I Date 5/28/2014			
Wetland Type Seep	Assessor Name/Organization IE & WT Wildlands Eng			
Level III Ecoregion Piedmont	Nearest Named Water Body South Fork Cane Creek			
River Basin Cape Fear	USGS 8-Digit Catalogue Unit 03030002			
Yes No Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees) N 35.837536 W 79.342393			
Evidence of stressors affecting the assessment area (may not be with Please circle and/or make note on last page if evidence of stressors is apprappropriate, in recent past (for instance, approximately within 10 years). Note the following.  Hydrological modifications (examples: ditches, dams, beaver dams: Surface and sub-surface discharges into the wetland (examples: discharges into the wetland (examples: discharges). Signs of vegetation stress (examples: vegetation mortality, insection in the surface of the s	parent. Consider departure from reference, if Noteworthy stressors include, but are not limited s, dikes, berms, ponds, etc.) ischarges containing obvious pollutants, presence of nearby ) damage, disease, storm damage, salt intrusion, etc.)			
Is the assessment area intensively managed? Pes No				
Regulatory Considerations (select all that apply to the assessment ar  Anadromous fish  Federally protected species or State endangered or threatened species or State endangered endang	ecies  ern (AEC) (including buffer) al classifications of HQW, ORW, or Trout			
What type of natural stream is associated with the wetland, if any? (c				
Blackwater				
Brownwater Tidal (if tidal, check one of the following boxes)  C Lunar	Wind Both			
Is the assessment area on a coastal island?	Till Doub			
Is the assessment area's surface water storage capacity or duration s	substantially altered by beaver?			
Does the assessment area experience overbank flooding during norn				
Ground Surface Condition/Vegetation Condition – assessment at Check a box in each column. Consider alteration to the ground surf (VS) in the assessment area. Compare to reference wetland if application than rate the assessment area based on evidence of an effect.  GS VS	rea condition metric face (GS) in the assessment area and vegetation structure			
<ul> <li>♠ A</li> <li>♠ B</li> <li>♠ B</li> <li>Not severely altered</li> <li>Severely altered over a majority of the assessment ar sedimentation, fire-plow lanes, skidder tracks, beddin</li> </ul>	rea (ground surface alteration examples: vehicle tracks, excessive g, fill, soil compaction, obvious pollutants) (vegetation structure des, salt intrusion [where appropriate], exotic species, grazing,			
<ul> <li>A A Not severely altered</li> <li>B B Severely altered over a majority of the assessment ar sedimentation, fire-plow lanes, skidder tracks, beddin alteration examples: mechanical disturbance, herbiciless diversity [if appropriate], hydrologic alteration)</li> <li>Surface and Sub-Surface Storage Capacity and Duration – assess Check a box in each column. Consider surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. North Carolina hydric soils (see USACE Wilmington District website) if ≤ 1 foot deep is considered to affect surface water only, while a ditch sub-surface water. Consider tidal flooding regime, if applicable. Surf Sub</li> <li>A A Water storage capacity and duration are not altered.</li> <li>B B Water storage capacity or duration are altered, but no C C Water storage capacity or duration are substantially and control of the cont</li></ul>	g, fill, soil compaction, obvious pollutants) (vegetation structure des, salt intrusion [where appropriate], exotic species, grazing,  sment area condition metric and duration (Surf) and sub-surface storage capacity and  Refer to the current NRCS lateral effect of ditching guidance for for the zone of influence of ditches in hydric soils. A ditch			
<ul> <li>A A Not severely altered</li> <li>B B Severely altered over a majority of the assessment ar sedimentation, fire-plow lanes, skidder tracks, beddin alteration examples: mechanical disturbance, herbiciless diversity [if appropriate], hydrologic alteration)</li> <li>Surface and Sub-Surface Storage Capacity and Duration – assess Check a box in each column. Consider surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. North Carolina hydric soils (see USACE Wilmington District website) if ≤ 1 foot deep is considered to affect surface water only, while a ditch sub-surface water. Consider tidal flooding regime, if applicable. Surf Sub</li> <li>A A Water storage capacity and duration are not altered.</li> <li>B B Water storage capacity or duration are altered, but no C C Water storage capacity or duration are substantially and control of the cont</li></ul>	g, fill, soil compaction, obvious pollutants) (vegetation structure des, salt intrusion [where appropriate], exotic species, grazing,  sment area condition metric and duration (Surf) and sub-surface storage capacity and Refer to the current NRCS lateral effect of ditching guidance for for the zone of influence of ditches in hydric soils. A ditch > 1 foot deep is expected to affect both surface and ditch  of substantially (typically, not sufficient to change vegetation).  Intered (typically, alteration sufficient to result in vegetation on, filling, excessive sedimentation, underground utility lines).  Indition metric (answer for non-marsh wetlands only)  propriate storage for the assessment area (AA) and the wetland  and water > 1 foot deep and water 6 inches to 1 foot deep and water 3 to 6 inches deep			

4.	Check a box feature. Mak regional indic 4a. A B C	/Structure – assessment area condition metric a from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape are soil observations within the 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for actors.  Sandy soil  Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres)  Loamy or clayey gleyed soil
		Histosol or histic epipedon Soil ribbon < 1 inch
	СВ	Soil ribbon ≥ 1 inch  No peat or muck presence
	СВ	A peat or muck presence
5.	Check a box	nto Wetland – opportunity metric in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.
	CA CA	Little or no evidence of pollutants or discharges entering the assessment area  Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
	ac ac	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation, odor)
6.	Check all the draining to as assessment	at apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources a sessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers and to be 50 feet wide in the Coastal Plain and Piedmont ecoregions and 30 feet wide in the Blue Ridge Mountains ecoregion.  2M  A ≥ 10% impervious surfaces
	B	<ul> <li>✓ B &lt; 10% impervious surfaces</li> <li>C Confined animal operations (or other local, concentrated source of pollutants)</li> <li>✓ D ≥ 20% coverage of pasture</li> <li>E ≥ 20% coverage of agricultural land (regularly plowed land)</li> <li>F ≥ 20% coverage of maintained grass/herb</li> <li>G ≥ 20% coverage of clear-cut land</li> <li>H Little or no opportunity to improve water quality. Lack of opportunity may result from hydrologic alterations that prevent drainage or overbank flow from affecting the assessment area.</li> </ul>
7.		ing as Vegetated Buffer – assessment area/wetland complex condition metric ssment area within 50 feet of a tributary or other open water?
	Tes Wetland Record  7b. How mu  A B C D E  7c. Tributar  ✓ ≤ 15-  7d. Do root  ✓ Yes  7e. Is tribut  ✓ Shelt	No If Yes, continue to 7b. If No, skip to Metric 8.  d buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland. a note if a portion of the buffer has been removed or disturbed.  uch of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.  ≥ 50 feet  From 30 to < 50 feet  From 15 to < 30 feet  From 5 to < 15 feet  < 5 feet or buffer bypassed by ditches  y width. If the tributary is anastomosed, combine widths of channels/braids for a total width.  feet wide > 15-feet wide Other open water (no tributary present)  s of assessment area vegetation extend into the bank of the tributary/open water?
8.		of that the Assessment Area – wetland type/wetland complex metric (evaluate for riparian wetlands only) at in each column. Select the average width for the wetland type at the assessment area (WT)
	and the wetla WT WC A A B B C C D D E E F F G G G	and complex at the assessment areas (WC). See User Manual for WT and WC boundaries.  ≥ 100 feet From 80 to < 100 feet From 50 to < 80 feet From 40 to < 50 feet From 30 to < 40 feet From 15 to < 30 feet From 5 to < 15 feet
	CH CH	< 5 feet

9.	Inundation Duration – assessment area condition metric
	Answer for assessment area dominant landform.
	A Evidence of short-duration inundation (< 7 consecutive days)
	Evidence of saturation, without evidence of inundation
	C Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)
10.	Indicators of Deposition – assessment area condition metric
	Consider recent deposition only (no plant growth since deposition).
	A Sediment deposition is not excessive, but at approximately natural levels.
	B Sediment deposition is excessive, but not overwhelming the wetland.
	C Sediment deposition is excessive and is overwhelming the wetland.
11	Wetland Size – wetland type/wetland complex condition metric
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the
	size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User
	Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column.
	WT WC FW (if applicable)
	CA CA CA ≥ 500 acres
	CB CB From 100 to < 500 acres
	C C C From 50 to < 100 acres
	CD CD From 25 to < 50 acres
	CE CE From 10 to < 25 acres
	CF CF From 5 to < 10 acres
	CG CG From 1 to < 5 acres
	CH CH From 0.5 to < 1 acre
	CI CI From 0.1 to < 0.5 acre
	G J G J From 0.01 to < 0.1 acre
	K K K < 0.01 acre or assessment area is clear-cut
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)
	B Pocosin is < 90% of the full extent of its natural landscape size.
12	Connectivity to Other Natural Areas – landscape condition metric
13.	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This
	evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous
	metric naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility
	line corridors the width of a four-lane road or wider, urban landscapes, fields (pasture open and agriculture), or water > 300 feet wide.
	Well Loosely
	CA CA ≥ 500 acres
	B B From 100 to < 500 acres
	C C From 50 to < 100 acres
	C D From 10 to < 50 acres
	F F Wetland type has a poor or no connection to other natural habitats
	13b. Evaluate for marshes only.
	Yes No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.
4.4	Edge Effect westend time condition matric (akin for all marches)
14.	Edge Effect – wetland type condition metric (skip for all marshes)  May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include
	non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors and clear-cuts.
	Consider the eight main points of the compass.
	A No artificial edge within 150 feet in all directions
	B No artificial edge within 150 feet in four (4) to seven (7) directions
	An artificial edge occurs within 150 feet in more than four (4) directions or assessment area is clear-cut
4.5	
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)
	A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate
	species, with exotic plants absent or sparse within the assessment area.  Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species
	characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or
	clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
	Considering it also includes communities with exotics present, but not dominant, over a large portion of the expected strata.  Considering it also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
	characteristic species or at least one stratum inappropriately composed of a single species). Exotic species are dominant in
	at least one stratum.
4.0	
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)
	<ul> <li>A Vegetation diversity is high and is composed primarily of native species (&lt;10% cover of exotics).</li> <li>B Vegetation diversity is low or has &gt; 10% to 50% cover of exotics.</li> </ul>
	<ul> <li>Vegetation diversity is low or has &gt; 10% to 50% cover of exotics.</li> <li>Vegetation is dominated by exotic species (&gt;50% cover of exotics).</li> </ul>

17.	Vegetative Structure – assessment area/wetland type condition metric
	17a. Is vegetation present?  • Yes • No If Yes, continue to 17b. If No, skip to Metric 18.
	17b. Evaluate percent coverage of assessment area vegetation <b>for all marshes only</b> . Skip to 17c for non-marsh wetlands.  ☐ A ≥ 25% coverage of vegetation ☐ B < 25% coverage of vegetation
	17c. Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately. AA WT
	G A G A Canopy closed, or nearly closed, with natural gaps associated with natural processes B G B Canopy present, but opened more than natural gaps C C C Canopy sparse or absent
	C C C Mid-story/sapling layer sparse or absent
	G C A C A Dense shrub layer  B C B Moderate density shrub layer  C C C Shrub layer sparse or absent
	A CA Dense herb layer B B B Moderate density herb layer C C C Herb layer sparse or absent
	Snags – wetland type condition metric  A Large snags (more than one) are visible (> 12-inches DBH, or large relative to species present and landscape stability).  Not A
	Diameter Class Distribution – wetland type condition metric  Majority of canopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are present.  Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12-inch DBH.
	© C Majority of canopy trees are < 6 inches DBH or no trees.
20.	Large Woody Debris – wetland type condition metric Include both natural debris and man-placed natural debris.  A Large logs (more than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).  Not A
21.	Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)  Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.  A  C  C  D
22.	Hydrologic Connectivity – assessment area condition metric (evaluate for riparian wetlands only)  Examples of activities that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, and stream incision.  A Overbank and overland flow are not severely altered in the assessment area.  B Overbank flow is severely altered in the assessment area.

- Overland flow is severely altered in the assessment area. Both overbank <u>and</u> overland flow are severely altered in the assessment area.

Wetland Site Name _	Maney Farm - Wetland I	Date	5/28/2014
Wetland Type _	Seep	Assessor Name/Organization IE & V	NT Wildlands En
Natas au Field Assess			NO
Notes on Field Assessm			NO
Presence of regulatory			NO
Wetland is intensively m			NO
	ated within 50 feet of a natural tributary or other	er open water (Y/N)	YES
	estantially altered by beaver (Y/N)	Harris P.Conner (AZAN)	NO NO
•	iences overbank flooding during normal rainfa	il conditions (Y/N)	NO
Assessment area is on a	a coastal island (Y/N)		NO
Sub-function Rating S	ummary		
Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	NA
	Sub-Surface Storage and Retention	Condition	NA
Water Quality	Pathogen Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Particulate Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Soluble Change	Condition	NA
	· ·	Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Physical Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Pollution Change	Condition	NA
	ğ	Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
Habitat	Physical Structure	Condition	MEDIUM
	Landscape Patch Structure	Condition	LOW
	Vegetation Composition	Condition	MEDIUM
Function Rating Sumn	nary		
Function Rating Sumn	Metrics/Notes		Rating
Hydrology	Condition		HIGH
Water Quality	Condition		MEDIUM
	Condition/Opportunity		NA
	Opportunity Presence?	(Y/N)	NA
Habitat	Conditon		LOW

Wetland Site Name Maney Farm - Wetland J	
	<b>Date</b> 5/28/2014
Wetland Type Seep	Assessor Name/Organization IE & WT Wildlands Eng
Level III Ecoregion Piedmont	Nearest Named Water Body South Fork Cane Creek
River Basin Cape Fear	USGS 8-Digit Catalogue Unit 03030002
	Latitude/Longitude (deci-degrees) N 35.837545 W 79.342047
Please circle and/or make note on last page if evidence of stressors is appraappropriate, in recent past (for instance, approximately within 10 years). Note the following.  • Hydrological modifications (examples: ditches, dams, beaver dams)  • Surface and sub-surface discharges into the wetland (examples: disseptic tanks, underground storage tanks (USTs), hog lagoons, etc.)  • Signs of vegetation stress (examples: vegetation mortality, insect described in the surface of stressors is appropriately appr	arent. Consider departure from reference, if oteworthy stressors include, but are not limited , dikes, berms, ponds, etc.) charges containing obvious pollutants, presence of nearby amage, disease, storm damage, salt intrusion, etc.)
Regulatory Considerations (select all that apply to the assessment are	ra)
Anadromous fish Federally protected species or State endangered or threatened species or State endangered or State endangere	cies ern (AEC) (including buffer)
Wetland Type Soop Powel III Ecoregion Redurant Nearest Named Water Body South Fork Cane Creek New Basin Cape Fear Vet III Ecoregion Redurant River Basin Cape Fear Vet III Cape Vet III Conglitude Viscos Poligic Catalogue unit vi Cogo Vet III Cape Vet II	
Blackwater	11.37
521	Wind Both
	2,120
611 52	the tentially elieved by heaver?
is the assessment area's surface water storage capacity or duration si	
Does the assessment area experience overbank flooding during norm	
<ol> <li>Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if application then rate the assessment area based on evidence of an effect.</li> <li>GS VS</li> <li>A A Not severely altered</li> <li>B Severely altered over a majority of the assessment are sedimentation, fire-plow lanes, skidder tracks, bedding alteration examples: mechanical disturbance, herbicide</li> </ol>	al rainfall conditions?  Yes No  Pace condition metric  Ace (GS) in the assessment area and vegetation structure  ble (see User Manual). If a reference is not applicable,  Pace (ground surface alteration examples: vehicle tracks, excessive  and (ground surface alteration examples: vehicle tracks, excessive  by fill, soil compaction, obvious pollutants) (vegetation structure
<ol> <li>Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if application then rate the assessment area based on evidence of an effect.</li> <li>GS VS</li> <li>A A Not severely altered</li> <li>B Severely altered over a majority of the assessment area sedimentation, fire-plow lanes, skidder tracks, bedding alteration examples: mechanical disturbance, herbicid less diversity [if appropriate], hydrologic alteration)</li> <li>Surface and Sub-Surface Storage Capacity and Duration – assess Check a box in each column. Consider surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Report Carolina hydric soils (see USACE Wilmington District website) for the sub-surface water. Considered to affect surface water only, while a ditch sub-surface water. Consider tidal flooding regime, if applicable. Surf Sub</li> <li>A A Water storage capacity and duration are not altered.</li> <li>B B Water storage capacity or duration are altered, but not C C Water storage capacity or duration are substantially altered.</li> </ol>	ea condition metric ace (GS) in the assessment area and vegetation structure ble (see User Manual). If a reference is not applicable,  ea (ground surface alteration examples: vehicle tracks, excessive ground in the solid compaction, obvious pollutants) (vegetation structure ground in trusion [where appropriate], exotic species, grazing,  exament area condition metric ground duration (Surf) and sub-surface storage capacity and greater to the current NRCS lateral effect of ditching guidance for ear the zone of influence of ditches in hydric soils. A ditch example of the surface and ditch  substantially (typically, not sufficient to change vegetation).  substantially, alteration sufficient to result in vegetation
<ol> <li>Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if applicate then rate the assessment area based on evidence of an effect.</li> <li>GS VS</li> <li>A A Not severely altered</li> <li>B Severely altered over a majority of the assessment area sedimentation, fire-plow lanes, skidder tracks, bedding alteration examples: mechanical disturbance, herbicidal less diversity [if appropriate], hydrologic alteration)</li> <li>Surface and Sub-Surface Storage Capacity and Duration – assess Check a box in each column. Consider surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Report North Carolina hydric soils (see USACE Wilmington District website) for 1 foot deep is considered to affect surface water only, while a ditch sub-surface water. Consider tidal flooding regime, if applicable. Surf Sub</li> <li>A A Water storage capacity and duration are not altered. B B B Water storage capacity or duration are altered, but not C C C Water storage capacity or duration are substantially alterange) (examples: draining, flooding, soil compaction</li> <li>Water Storage/Surface Relief – assessment area/wetland type continuation.</li> </ol>	Pace condition metric ace (GS) in the assessment area and vegetation structure ace (GS) in the assessment area and vegetation structure ace (GS) in the assessment area and vegetation structure ace (GS) in the assessment area and vegetation structure ace (GS) in the assessment area and vegetation structure ace (GS) in the assessment area and vegetation structure ace (GS) in the assessment area and vegetation structure ace (GS) in the assessment area and vegetation structure ace, salt intrusion (Surface appropriate), exotic species, grazing, and a duration (Surf) and sub-surface storage capacity and acefer to the current NRCS lateral effect of ditching guidance for are the zone of influence of ditches in hydric soils. A ditches and the control of the surface and ditches acceptation and the control of the control of the surface and ditches acceptation and the control of the control
<ol> <li>Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if applicate then rate the assessment area based on evidence of an effect.</li> <li>GS VS</li> <li>A A Not severely altered</li> <li>B B Severely altered over a majority of the assessment area sedimentation, fire-plow lanes, skidder tracks, bedding alteration examples: mechanical disturbance, herbicid less diversity [if appropriate], hydrologic alteration)</li> <li>Surface and Sub-Surface Storage Capacity and Duration – assess Check a box in each column. Consider surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Rorth Carolina hydric soils (see USACE Wilmington District website) for ≤ 1 foot deep is considered to affect surface water only, while a ditch sub-surface water. Consider tidal flooding regime, if applicable. Surf Sub</li> <li>A A Water storage capacity and duration are not altered.</li> <li>B B Water storage capacity or duration are altered, but not change) (examples: draining, flooding, soil compaction change) (examples: draining, flooding, soil compactions).</li> <li>Water Storage/Surface Relief – assessment area/wetland type concheck a box in each column for each group below. Select the appoint of the column for each group below.</li> </ol>	Pace condition metric ace (GS) in the assessment area and vegetation structure ace (GS) in the assessment area and vegetation structure ace (GS) in the assessment area and vegetation structure ace (GS) in the assessment area and vegetation structure ace (GS) in the assessment area and vegetation structure ace (GS) in the assessment area and vegetation structure ace (GS) in the assessment area and vegetation structure ace (GS) in the assessment area and vegetation structure ace, salt intrusion (Surface appropriate), exotic species, grazing, and a duration (Surf) and sub-surface storage capacity and acefer to the current NRCS lateral effect of ditching guidance for are the zone of influence of ditches in hydric soils. A ditches and the control of the surface and ditches acceptation and the control of the control of the surface and ditches acceptation and the control of the control
<ol> <li>Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if applicate then rate the assessment area based on evidence of an effect.</li> <li>GS VS</li> <li>A A Not severely altered</li> <li>B Severely altered over a majority of the assessment area sedimentation, fire-plow lanes, skidder tracks, bedding alteration examples: mechanical disturbance, herbicid less diversity [if appropriate], hydrologic alteration)</li> <li>Surface and Sub-Surface Storage Capacity and Duration – assess Check a box in each column. Consider surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. R North Carolina hydric soils (see USACE Wilmington District website) for ≤ 1 foot deep is considered to affect surface water only, while a ditch sub-surface water. Consider tidal flooding regime, if applicable. Surf Sub</li> <li>A A Water storage capacity and duration are not altered. B B B Water storage capacity or duration are altered, but not C C C Water storage capacity or duration are substantially altochange) (examples: draining, flooding, soil compaction Check a box in each column for each group below. Select the apply type (WT).</li> </ol>	Pace condition metric ace (GS) in the assessment area and vegetation structure ace (GS) in the assessment area and vegetation structure ace (GS) in the assessment area and vegetation structure ace (GS) in the assessment area and vegetation structure ace (GS) in the assessment area and vegetation structure ace (GS) in the assessment area and vegetation structure ace (GS) in the assessment area and vegetation structure ace (GS) in the assessment area and vegetation structure ace, salt intrusion (Surface appropriate), exotic species, grazing, and a duration (Surf) and sub-surface storage capacity and acefer to the current NRCS lateral effect of ditching guidance for are the zone of influence of ditches in hydric soils. A ditches and the control of the surface and ditches acceptation and the control of the control of the surface and ditches acceptation and the control of the control
<ol> <li>Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if applicate then rate the assessment area based on evidence of an effect. GS VS</li></ol>	Pace condition metric ace (GS) in the assessment area and vegetation structure ble (see User Manual). If a reference is not applicable,  ace (Ground surface alteration examples: vehicle tracks, excessive ace, fill, soil compaction, obvious pollutants) (vegetation structure aces, salt intrusion [where appropriate], exotic species, grazing,  ment area condition metric acefer to the current NRCS lateral effect of ditching guidance for are the zone of influence of ditches in hydric soils. A ditch and the total deep is expected to affect both surface and ditch  substantially (typically, not sufficient to change vegetation).  substantially (typically, not sufficient to result in vegetation and the substantially (typically, not sufficient to result in vegetation and the substantial of the
1. Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if applicate then rate the assessment area based on evidence of an effect.  GS VS  A A Not severely altered  B Severely altered over a majority of the assessment are sedimentation, fire-plow lanes, skidder tracks, bedding alteration examples: mechanical disturbance, herbicid less diversity [if appropriate], hydrologic alteration)  2. Surface and Sub-Surface Storage Capacity and Duration – assess Check a box in each column. Consider surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Report North Carolina hydric soils (see USACE Wilmington District website) for ≤ 1 foot deep is considered to affect surface water only, while a ditch sub-surface water. Consider tidal flooding regime, if applicable. Surf Sub  A A Water storage capacity and duration are not altered. B B Water storage capacity or duration are altered, but not C C Water storage capacity or duration are substantially alterations (examples: draining, flooding, soil compactions) (examples: draining, floo	ea condition metric ace (GS) in the assessment area and vegetation structure ble (see User Manual). If a reference is not applicable,  ea (ground surface alteration examples: vehicle tracks, excessive fill, soil compaction, obvious pollutants) (vegetation structure es, salt intrusion [where appropriate], exotic species, grazing,  ment area condition metric diduration (Surf) and sub-surface storage capacity and efer to the current NRCS lateral effect of ditching guidance for or the zone of influence of ditches in hydric soils. A ditch 1 foot deep is expected to affect both surface and ditch  substantially (typically, not sufficient to change vegetation). tered (typically, alteration sufficient to result in vegetation filling, excessive sedimentation, underground utility lines).  dition metric (answer for non-marsh wetlands only) ropriate storage for the assessment area (AA) and the wetland
1. Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if applicate then rate the assessment area based on evidence of an effect.  GS VS  A A Not severely altered  B Severely altered over a majority of the assessment are sedimentation, fire-plow lanes, skidder tracks, bedding alteration examples: mechanical disturbance, herbicid less diversity [if appropriate], hydrologic alteration)  2. Surface and Sub-Surface Storage Capacity and Duration – assess Check a box in each column. Consider surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Report North Carolina hydric soils (see USACE Wilmington District website) for ≤ 1 foot deep is considered to affect surface water only, while a ditch sub-surface water. Consider tidal flooding regime, if applicable. Surf Sub  A A Water storage capacity and duration are not altered. B B Water storage capacity or duration are altered, but not C C Water storage capacity or duration are substantially alterations (examples: draining, flooding, soil compactions) (examples: draining, floo	ea condition metric ace (GS) in the assessment area and vegetation structure ble (see User Manual). If a reference is not applicable,  ea (ground surface alteration examples: vehicle tracks, excessive fill, soil compaction, obvious pollutants) (vegetation structure es, salt intrusion [where appropriate], exotic species, grazing,  ment area condition metric diduration (Surf) and sub-surface storage capacity and efer to the current NRCS lateral effect of ditching guidance for or the zone of influence of ditches in hydric soils. A ditch 1 foot deep is expected to affect both surface and ditch  substantially (typically, not sufficient to change vegetation). tered (typically, alteration sufficient to result in vegetation filling, excessive sedimentation, underground utility lines).  dition metric (answer for non-marsh wetlands only) ropriate storage for the assessment area (AA) and the wetland

4.	Check a box feature. Mak regional indic 4a. A B C	/Structure – assessment area condition metric a from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape are soil observations within the 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for actors.  Sandy soil  Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres)  Loamy or clayey gleyed soil
		Histosol or histic epipedon Soil ribbon < 1 inch
	СВ	Soil ribbon ≥ 1 inch  No peat or muck presence
	СВ	A peat or muck presence
5.	Check a box	nto Wetland – opportunity metric in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.
	CA CA	Little or no evidence of pollutants or discharges entering the assessment area  Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
	ac ac	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation, odor)
6.	Check all the draining to as assessment	at apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources a sessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers and to be 50 feet wide in the Coastal Plain and Piedmont ecoregions and 30 feet wide in the Blue Ridge Mountains ecoregion.  2M  A ≥ 10% impervious surfaces
	B	<ul> <li>✓ B &lt; 10% impervious surfaces</li> <li>C Confined animal operations (or other local, concentrated source of pollutants)</li> <li>✓ D ≥ 20% coverage of pasture</li> <li>E ≥ 20% coverage of agricultural land (regularly plowed land)</li> <li>F ≥ 20% coverage of maintained grass/herb</li> <li>G ≥ 20% coverage of clear-cut land</li> <li>H Little or no opportunity to improve water quality. Lack of opportunity may result from hydrologic alterations that prevent drainage or overbank flow from affecting the assessment area.</li> </ul>
7.		ing as Vegetated Buffer – assessment area/wetland complex condition metric ssment area within 50 feet of a tributary or other open water?
	Tes Wetland Record  7b. How mu  A B C D E  7c. Tributar  ✓ ≤ 15-  7d. Do root  ✓ Yes  7e. Is tribut  ✓ Shelt	No If Yes, continue to 7b. If No, skip to Metric 8.  d buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland. a note if a portion of the buffer has been removed or disturbed.  uch of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.  ≥ 50 feet  From 30 to < 50 feet  From 15 to < 30 feet  From 5 to < 15 feet  < 5 feet or buffer bypassed by ditches  y width. If the tributary is anastomosed, combine widths of channels/braids for a total width.  feet wide > 15-feet wide Other open water (no tributary present)  s of assessment area vegetation extend into the bank of the tributary/open water?
8.		of that the Assessment Area – wetland type/wetland complex metric (evaluate for riparian wetlands only) at in each column. Select the average width for the wetland type at the assessment area (WT)
	and the wetla WT WC A A B B C C D D E E F F G G G	and complex at the assessment areas (WC). See User Manual for WT and WC boundaries.  ≥ 100 feet From 80 to < 100 feet From 50 to < 80 feet From 40 to < 50 feet From 30 to < 40 feet From 15 to < 30 feet From 5 to < 15 feet
	CH CH	< 5 feet

9.	Inundation Duration – assessment area condition metric
	Answer for assessment area dominant landform.
	A Evidence of short-duration inundation (< 7 consecutive days)
	Evidence of saturation, without evidence of inundation
	C Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)
10.	Indicators of Deposition – assessment area condition metric
	Consider recent deposition only (no plant growth since deposition).
	Sediment deposition is not excessive, but at approximately natural levels.
	B Sediment deposition is excessive, but not overwhelming the wetland.
	C Sediment deposition is excessive and is overwhelming the wetland.
11	Wetland Size – wetland type/wetland complex condition metric
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the
	size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User
	Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column.
	WT WC FW (if applicable)
	A A A ≥ 500 acres
	C B C B From 100 to < 500 acres
	C C C From 50 to < 100 acres
	C D C D From 25 to < 50 acres
	C E C E From 10 to < 25 acres
	F F From 5 to < 10 acres
	G G G From 1 to < 5 acres
	CH CH From 0.5 to < 1 acre
	CI CI From 0.1 to < 0.5 acre
	G J G J From 0.01 to < 0.1 acre
	K K < 0.01 acre or assessment area is clear-cut
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)
	A Pocosin is the full extent (≥ 90%) of its natural landscape size.
	B Pocosin is < 90% of the full extent of its natural landscape size.
13	Connectivity to Other Natural Areas – landscape condition metric
	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This
	evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous
	metric naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility
	line corridors the width of a four-lane road or wider, urban landscapes, fields (pasture open and agriculture), or water > 300 feet wide.
	Well Loosely
	CA CA ≥ 500 acres
	C C From 50 to < 100 acres
	C D From 10 to < 50 acres
	© E
	F F Wetland type has a poor or no connection to other natural habitats
	13b. Evaluate for marshes only.
	Yes No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.
14	Edge Effect – wetland type condition metric (skip for all marshes)
	May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include
	non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors and clear-cuts.
	Consider the eight main points of the compass.
	A No artificial edge within 150 feet in all directions
	B No artificial edge within 150 feet in four (4) to seven (7) directions
	C An artificial edge occurs within 150 feet in more than four (4) directions or assessment area is clear-cut
15	Vogetative Composition – assessment area condition metric (skin for all marshes and Bine Flat)
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)  A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate
	species, with exotic plants absent or sparse within the assessment area.
	© B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species
	characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or
	clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
	C Vegetation severely altered from reference in composition. Expected species are unnaturally absent (planted stands of non-
	characteristic species or at least one stratum inappropriately composed of a single species). Exotic species are dominant in
	at least one stratum.
16	Vegetative Diversity - assessment area condition metric (evaluate for Non-tidal Freshwater March only)
10.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)  A Vegetation diversity is high and is composed primarily of native species (<10% cover of exotics).
	Vegetation diversity is high and is composed primarily of flative species (< 10% cover of exotics).      Vegetation diversity is low or has > 10% to 50% cover of exotics.
	C Vegetation is dominated by exotic species (>50% cover of exotics).
	- · · · · · · · · · · · · · · · · · · ·

17.	Vegetative Structure – assessment area/wetland type condition metric
	17a. Is vegetation present?  • Yes • No If Yes, continue to 17b. If No, skip to Metric 18.
	17b. Evaluate percent coverage of assessment area vegetation <b>for all marshes only</b> . Skip to 17c for non-marsh wetlands.  ☐ A ≥ 25% coverage of vegetation ☐ B < 25% coverage of vegetation
	17c. Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately. AA WT
	G A G A Canopy closed, or nearly closed, with natural gaps associated with natural processes B G B Canopy present, but opened more than natural gaps C C C Canopy sparse or absent
	C C C Mid-story/sapling layer sparse or absent
	G C A C A Dense shrub layer  B C B Moderate density shrub layer  C C C Shrub layer sparse or absent
	A CA Dense herb layer B B B Moderate density herb layer C C C Herb layer sparse or absent
	Snags – wetland type condition metric  A Large snags (more than one) are visible (> 12-inches DBH, or large relative to species present and landscape stability).  Not A
	Diameter Class Distribution – wetland type condition metric  Majority of canopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are present.  Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12-inch DBH.
	© C Majority of canopy trees are < 6 inches DBH or no trees.
20.	Large Woody Debris – wetland type condition metric Include both natural debris and man-placed natural debris.  A Large logs (more than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).  Not A
21.	Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)  Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.  A  C  C  D
22.	Hydrologic Connectivity – assessment area condition metric (evaluate for riparian wetlands only)  Examples of activities that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, and stream incision.  A Overbank and overland flow are not severely altered in the assessment area.  B Overbank flow is severely altered in the assessment area.

- Overland flow is severely altered in the assessment area. Both overbank <u>and</u> overland flow are severely altered in the assessment area.

Wetland Site Name _	Maney Farm - Wetland J	Date	5/28/2014
Wetland Type	Seep	Assessor Name/Organization IE & V	WT Wildlands Eng
	. 5 0/00		NO
Notes on Field Assessm	, ,		NO NO
Presence of regulatory of			NO
Wetland is intensively m			NO
	ated within 50 feet of a natural tributary or other	er open water (Y/N)	YES
	stantially altered by beaver (Y/N)		NO
•	iences overbank flooding during normal rainfa	Il conditions (Y/N)	NO
Assessment area is on a	a coastal island (Y/N)		NO
Sub-function Rating S	ummary		
Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	NA
	Sub-Surface Storage and Retention	Condition	NA
Water Quality	Pathogen Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Particulate Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Soluble Change	Condition	NA
	, and the second	Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Physical Change	Condition	NA
	,	Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Pollution Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
Habitat	Physical Structure	Condition	MEDIUM
	Landscape Patch Structure	Condition	MEDIUM
	Vegetation Composition	Condition	MEDIUM
Frantian Bating Summ			
Function Rating Sumn Function	Metrics/Notes		Rating
Hydrology	Condition		HIGH
Water Quality	Condition		MEDIUM
	Condition/Opportunity		NA
	Opportunity Presence?	(Y/N)	NA
Habitat	Conditon		MEDIUM

	Rating Calcu	nator version 4.1
Wetland Site Name	Maney Farm - Wetland K	<b>Date</b> 5/28/2014
Wetland Type	Seep	▼ Assessor Name/Organization IE & WT Wildlands Eng
Level III Ecoregion	Piedmont	Nearest Named Water Body South Fork Cane Creek
River Basin	Cape Fear	■ USGS 8-Digit Catalogue Unit 03030002
Yes	lo Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees) N 35.837326 W 79.344558
Please circle and/or mappropriate, in recent to the following.  • Hydrological m  • Surface and suseptic tanks, un  • Signs of vegeta  • Habitat/plant co	nodifications (examples: ditches, dams, beaver daub-surface discharges into the wetland (examples: nderground storage tanks (USTs), hog lagoons, eation stress (examples: vegetation mortality, inseommunity alteration (examples: mowing, clear-cu	apparent. Consider departure from reference, if  Noteworthy stressors include, but are not limited  ams, dikes, berms, ponds, etc.)  discharges containing obvious pollutants, presence of nearby etc.)  ect damage, disease, storm damage, salt intrusion, etc.)  utting, exotics, etc.)
Is the assessment ar	rea intensively managed? Tes No	
Anadromous fis Federally prote NCDWQ riparia Abuts a Primar Publicly owned N.C. Division o Abuts a stream Designated NC	ected species or State endangered or threatened s an buffer rule in effect ry Nursery Area (PNA)	species  oncern (AEC) (including buffer) ental classifications of HQW, ORW, or Trout
Blackwater Brownwater Tidal (if tidal, cl	heck one of the following boxes)  Lunar	C Wind Both
	rea on a coastal island?	
	ea's surface water storage capacity or duratio	
Does the assessmen	at area experience overbank flooding during no	ormal rainfall conditions? Yes No
Check a box in e (VS) in the assess then rate the asses GS VS A A A N B B S se	sment area. Compare to reference wetland if appearsment area based on evidence of an effect.  lot severely altered severely altered over a majority of the assessment edimentation, fire-plow lanes, skidder tracks, bedo	surface (GS) in the assessment area and vegetation structure olicable (see User Manual). If a reference is not applicable,  t area (ground surface alteration examples: vehicle tracks, excessive ding, fill, soil compaction, obvious pollutants) (vegetation structure bicides, salt intrusion [where appropriate], exotic species, grazing,
Check a box in eduration (Sub). Control Carolina hy ≤ 1 foot deep is consub-surface water Surf Sub Control Co	Consider both increase and decrease in hydrology or consider both increase and decrease in hydrology or considered to affect surface water only, while a dite or. Consider tidal flooding regime, if applicable.  Vater storage capacity and duration are not altered vater storage capacity or duration are altered, but vater storage capacity or duration are substantially	v and duration (Surf) and sub-surface storage capacity and y. Refer to the current NRCS lateral effect of ditching guidance for ree) for the zone of influence of ditches in hydric soils. A ditch ch > 1 foot deep is expected to affect both surface and ditch
		condition metric (answer for non-marsh wetlands only) appropriate storage for the assessment area (AA) and the wetland
AA WT 3a. A A B B C C C C	Majority of wetland with depressions able to p Majority of wetland with depressions able to p Majority of wetland with depressions able to p	pond water 6 inches to 1 foot deep bond water 3 to 6 inches deep

4.	Check a box feature. Mak regional indic 4a. A B C	/Structure – assessment area condition metric a from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape are soil observations within the 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for actors.  Sandy soil  Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres)  Loamy or clayey gleyed soil
		Histosol or histic epipedon Soil ribbon < 1 inch
	СВ	Soil ribbon ≥ 1 inch  No peat or muck presence
	СВ	A peat or muck presence
5.	Check a box	nto Wetland – opportunity metric in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.
	CA CA	Little or no evidence of pollutants or discharges entering the assessment area  Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the  treatment capacity of the assessment area
	ac ac	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation, odor)
6.	Check all the draining to as assessment	at apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources a sessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers and to be 50 feet wide in the Coastal Plain and Piedmont ecoregions and 30 feet wide in the Blue Ridge Mountains ecoregion.  2M  A ≥ 10% impervious surfaces
	B	<ul> <li>✓ B &lt; 10% impervious surfaces</li> <li>C Confined animal operations (or other local, concentrated source of pollutants)</li> <li>✓ D ≥ 20% coverage of pasture</li> <li>E ≥ 20% coverage of agricultural land (regularly plowed land)</li> <li>F ≥ 20% coverage of maintained grass/herb</li> <li>G ≥ 20% coverage of clear-cut land</li> <li>H Little or no opportunity to improve water quality. Lack of opportunity may result from hydrologic alterations that prevent drainage or overbank flow from affecting the assessment area.</li> </ul>
7.		ing as Vegetated Buffer – assessment area/wetland complex condition metric ssment area within 50 feet of a tributary or other open water?
	Tes Wetland Record  7b. How mu  A B C D E  7c. Tributar  ✓ ≤ 15-  7d. Do root  ✓ Yes  7e. Is tribut  ✓ Shelt	No If Yes, continue to 7b. If No, skip to Metric 8.  d buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland. a note if a portion of the buffer has been removed or disturbed.  uch of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.  ≥ 50 feet  From 30 to < 50 feet  From 15 to < 30 feet  From 5 to < 15 feet  < 5 feet or buffer bypassed by ditches  y width. If the tributary is anastomosed, combine widths of channels/braids for a total width.  feet wide > 15-feet wide Other open water (no tributary present)  s of assessment area vegetation extend into the bank of the tributary/open water?
8.		of that the Assessment Area – wetland type/wetland complex metric (evaluate for riparian wetlands only) at in each column. Select the average width for the wetland type at the assessment area (WT)
	and the wetla WT WC A A B B C C D D E E F F G G G	and complex at the assessment areas (WC). See User Manual for WT and WC boundaries.  ≥ 100 feet From 80 to < 100 feet From 50 to < 80 feet From 40 to < 50 feet From 30 to < 40 feet From 15 to < 30 feet From 5 to < 15 feet
	CH CH	< 5 feet

9.	Inundation Duration – assessment area condition metric
	Answer for assessment area dominant landform.
	A Evidence of short-duration inundation (< 7 consecutive days)
	© B Evidence of saturation, without evidence of inundation
	C Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)
10.	Indicators of Deposition – assessment area condition metric
	Consider recent deposition only (no plant growth since deposition).
	A Sediment deposition is not excessive, but at approximately natural levels.
	B Sediment deposition is excessive, but not overwhelming the wetland.
	C Sediment deposition is excessive and is overwhelming the wetland.
11	Wetland Size – wetland type/wetland complex condition metric
• • • •	<b>Check a box in each column.</b> Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the
	size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User
	Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column.
	WT WC FW (if applicable)
	CA CA ≥ 500 acres
	C B C B From 100 to < 500 acres
	C C C From 50 to < 100 acres
	C D C D From 25 to < 50 acres
	CECE From 10 to < 25 acres
	CF CF From 5 to < 10 acres
	G G G From 1 to < 5 acres
	CH CH From 0.5 to < 1 acre
	G J G J From 0.01 to < 0.1 acre
	K K < 0.01 acre or assessment area is clear-cut
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)
	C A Pocosin is the full extent (≥ 90%) of its natural landscape size.
	B Pocosin is < 90% of the full extent of its natural landscape size.
12	Connectivity to Other Natural Areas – landscape condition metric
13.	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This
	evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous
	metric naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility
	line corridors the width of a four-lane road or wider, urban landscapes, fields (pasture open and agriculture), or water > 300 feet wide.
	Well Loosely
	CA CA ≥ 500 acres
	CB CB From 100 to < 500 acres
	C C From 50 to < 100 acres
	C D From 10 to < 50 acres
	CECE < 10 acres
	F F Wetland type has a poor or no connection to other natural habitats
	13b. Evaluate for marshes only.
	Yes No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.
4.4	Educ Effect westered time condition meeting (elsin for all more book
14.	Edge Effect – wetland type condition metric (skip for all marshes)  May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include
	non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors and clear-cuts.
	Consider the eight main points of the compass.  C A No artificial edge within 150 feet in all directions
	B No artificial edge within 150 feet in four (4) to seven (7) directions
	• C An artificial edge occurs within 150 feet in more than four (4) directions or assessment area is clear-cut
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)
	A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate
	species, with exotic plants absent or sparse within the assessment area.
	© B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species
	characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or
	clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.  © C Vegetation severely altered from reference in composition. Expected species are unnaturally absent (planted stands of non-
	characteristic species or at least one stratum inappropriately composed of a single species). Exotic species are dominant in
	at least one stratum.
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)
	A Vegetation diversity is high and is composed primarily of native species (<10% cover of exotics).
	© B Vegetation diversity is low or has > 10% to 50% cover of exotics. C Vegetation is dominated by exotic species (>50% cover of exotics).
	C Vegetation is dominated by exotic species (>50% cover of exotics).

17.	Vegetative Structure – assessment area/wetland type condition metric 17a. Is vegetation present?
	Yes No If Yes, continue to 17b. If No, skip to Metric 18.
	17b. Evaluate percent coverage of assessment area vegetation <b>for all marshes only</b> . Skip to 17c for non-marsh wetlands.  ☐ A ≥ 25% coverage of vegetation ☐ B < 25% coverage of vegetation
	17c. Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately. AA WT
	A Canopy closed, or nearly closed, with natural gaps associated with natural processes B CB Canopy present, but opened more than natural gaps C C Canopy sparse or absent
	Fig. A A Dense mid-story/sapling layer  O B B Moderate density mid-story/sapling layer  O C C Mid-story/sapling layer sparse or absent
	G A C A Dense shrub layer B C B Moderate density shrub layer C C C Shrub layer sparse or absent
	A A Dense herb layer B B Moderate density herb layer C C C Herb layer sparse or absent
18.	Snags – wetland type condition metric  A Large snags (more than one) are visible (> 12-inches DBH, or large relative to species present and landscape stability).  Not A
19.	Diameter Class Distribution – wetland type condition metric  A Majority of canopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are present.  B Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12-inch DBH.
	© C Majority of canopy trees are < 6 inches DBH or no trees.
20.	Large Woody Debris – wetland type condition metric Include both natural debris and man-placed natural debris.  A Large logs (more than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).  B Not A
21.	Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)  Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.  A  B  C  D
22.	Hydrologic Connectivity – assessment area condition metric (evaluate for riparian wetlands only)  Examples of activities that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, and stream incision.  A Overbank and overland flow are not severely altered in the assessment area.  Output  Output  Description:

- Overland flow is severely altered in the assessment area.

  Both overbank <u>and</u> overland flow are severely altered in the assessment area.

Wetland Site Name _	Maney Farm - Wetland K	Date	5/28/2014
Wetland Type _	Seep	Assessor Name/Organization IE &	WT Wildlands Eng
Notes on Field Assessr	nent Form (Y/N)		NO
Presence of regulatory			NO
Wetland is intensively r			NO
	ated within 50 feet of a natural tributary or other	er open water (Y/N)	YES
	ostantially altered by beaver (Y/N)	( )	NO
	riences overbank flooding during normal rainfa	Il conditions (Y/N)	NO
Assessment area is on		· ,	NO
Sub-function Rating S			
Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	NA NA
	Sub-Surface Storage and Retention	Condition	NA NA
Water Quality	Pathogen Change	Condition	NA NA
		Condition/Opportunity	NA NA
	D (1) 1 ( O)	Opportunity Presence? (Y/N)	NA NA
	Particulate Change	Condition	NA NA
		Condition/Opportunity	NA NA
		Opportunity Presence? (Y/N)	NA NA
	Soluble Change	Condition	NA NA
		Condition/Opportunity	NA NA
		Opportunity Presence? (Y/N)	NA NA
	Physical Change	Condition	NA NA
		Condition/Opportunity	NA NA
		Opportunity Presence? (Y/N)	NA NA
	Pollution Change	Condition	NA NA
		Condition/Opportunity	NA NA
1.12.4	Di i i i i i i i i i i i i i i i i i i	Opportunity Presence? (Y/N)	NA NA
Habitat	Physical Structure	Condition	MEDIUM
	Landscape Patch Structure	Condition	LOW
	Vegetation Composition	Condition	LOW
Function Rating Sumi			
Function	Metrics/Notes		Rating
Hydrology	Condition		HIGH
Water Quality	Condition		LOW
	Condition/Opportunity	()/()	NA NA
Habitat	Opportunity Presence? Conditon	( Y/IN)	NA L <b>OW</b>
เลมแลเ	Condition		LUVV

Wetland Site Name Maney Farm - Wetland L	
··· · =	Date 5/28/2014
Wetland Type Bottomland Hardwood Forest	Assessor Name/Organization IE & WT Wildlands Eng
Level III Ecoregion Piedmont	Nearest Named Water Body South Fork Cane Creek
River Basin Cape Fear	USGS 8-Digit Catalogue Unit 03030002
	Latitude/Longitude (deci-degrees) N 35.838041 W 79.343368
Evidence of stressors affecting the assessment area (may not be with Please circle and/or make note on last page if evidence of stressors is apprapropriate, in recent past (for instance, approximately within 10 years). Note the following.  • Hydrological modifications (examples: ditches, dams, beaver dams • Surface and sub-surface discharges into the wetland (examples: disceptic tanks, underground storage tanks (USTs), hog lagoons, etc.) • Signs of vegetation stress (examples: vegetation mortality, insect definition to the description of t	arent. Consider departure from reference, if oteworthy stressors include, but are not limited in dikes, berms, ponds, etc.) scharges containing obvious pollutants, presence of nearby lamage, disease, storm damage, salt intrusion, etc.)
Regulatory Considerations (select all that apply to the assessment are	ea)
Anadromous fish Federally protected species or State endangered or threatened species of NCDWQ riparian buffer rule in effect Abuts a Primary Nursery Area (PNA) Publicly owned property N.C. Division of Coastal Management Area of Environmental Conce Abuts a stream with a NCDWQ classification of SA or supplemental Designated NCNHP reference community Abuts a 303(d)-listed stream or a tributary to a 303(d)-listed stream	cies ern (AEC) (including buffer)
What type of natural stream is associated with the wetland, if any? (ch	neck all that apply)
Blackwater	
Brownwater Tidal (if tidal, check one of the following boxes) Lunar	Wind Both
	Wild
Is the assessment area on a coastal island? Yes No	
Is the assessment area's surface water storage capacity or duration s	
Does the assessment area experience overbank flooding during norm	al rainfall conditions?
	al rainfall conditions?
sedimentation, fire-plow lanes, skidder tracks, bedding	ea condition metric ace (GS) in the assessment area and vegetation structure
Check a box in each column. Consider alteration to the ground surfactive (VS) in the assessment area. Compare to reference wetland if application then rate the assessment area based on evidence of an effect.  GS VS  A A Not severely altered B Severely altered over a majority of the assessment area sedimentation, fire-plow lanes, skidder tracks, bedding alteration examples: mechanical disturbance, herbicing less diversity [if appropriate], hydrologic alteration)	ea condition metric ace (GS) in the assessment area and vegetation structure able (see User Manual). If a reference is not applicable, ea (ground surface alteration examples: vehicle tracks, excessive g, fill, soil compaction, obvious pollutants) (vegetation structure les, salt intrusion [where appropriate], exotic species, grazing,
Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if application then rate the assessment area based on evidence of an effect.  GS VS  A A Not severely altered  B Severely altered over a majority of the assessment are sedimentation, fire-plow lanes, skidder tracks, bedding alteration examples: mechanical disturbance, herbicic less diversity [if appropriate], hydrologic alteration)  2. Surface and Sub-Surface Storage Capacity and Duration — assess Check a box in each column. Consider surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Rorth Carolina hydric soils (see USACE Wilmington District website) fc ≤ 1 foot deep is considered to affect surface water only, while a ditch sub-surface water. Consider tidal flooding regime, if applicable. Surf Sub  A A Water storage capacity and duration are not altered.  B B Water storage capacity or duration are altered, but not C C C Water storage capacity or duration are substantially altered.	ea condition metric ace (GS) in the assessment area and vegetation structure able (see User Manual). If a reference is not applicable,  ea (ground surface alteration examples: vehicle tracks, excessive g, fill, soil compaction, obvious pollutants) (vegetation structure des, salt intrusion [where appropriate], exotic species, grazing,  sment area condition metric d duration (Surf) and sub-surface storage capacity and defer to the current NRCS lateral effect of ditching guidance for or the zone of influence of ditches in hydric soils. A ditch
Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if application then rate the assessment area based on evidence of an effect.  GS VS  A A Not severely altered  B Severely altered over a majority of the assessment are sedimentation, fire-plow lanes, skidder tracks, bedding alteration examples: mechanical disturbance, herbicic less diversity [if appropriate], hydrologic alteration)  2. Surface and Sub-Surface Storage Capacity and Duration — assess Check a box in each column. Consider surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Rorth Carolina hydric soils (see USACE Wilmington District website) fc ≤ 1 foot deep is considered to affect surface water only, while a ditch sub-surface water. Consider tidal flooding regime, if applicable. Surf Sub  A A Water storage capacity and duration are not altered.  B B Water storage capacity or duration are altered, but not C C C Water storage capacity or duration are substantially altered.	ea condition metric ace (GS) in the assessment area and vegetation structure able (see User Manual). If a reference is not applicable,  ea (ground surface alteration examples: vehicle tracks, excessive g, fill, soil compaction, obvious pollutants) (vegetation structure les, salt intrusion [where appropriate], exotic species, grazing,  ement area condition metric d duration (Surf) and sub-surface storage capacity and lefer to the current NRCS lateral effect of ditching guidance for or the zone of influence of ditches in hydric soils. A ditch 1 foot deep is expected to affect both surface and ditch  e substantially (typically, not sufficient to change vegetation). Itered (typically, alteration sufficient to result in vegetation in, filling, excessive sedimentation, underground utility lines).
<ul> <li>Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if application then rate the assessment area based on evidence of an effect.</li> <li>GS VS</li> <li>A A Not severely altered</li> <li>B Severely altered over a majority of the assessment are sedimentation, fire-plow lanes, skidder tracks, bedding alteration examples: mechanical disturbance, herbicid less diversity [if appropriate], hydrologic alteration)</li> <li>Surface and Sub-Surface Storage Capacity and Duration – assess Check a box in each column. Consider surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. North Carolina hydric soils (see USACE Wilmington District website) for ≤ 1 foot deep is considered to affect surface water only, while a ditch sub-surface water. Consider tidal flooding regime, if applicable. Surf Sub</li> <li>A A Water storage capacity and duration are not altered.</li> <li>B B Water storage capacity or duration are altered, but not C C C Water storage capacity or duration are substantially all change) (examples: draining, flooding, soil compaction change) (examples: draining, flooding, soil compaction check a box in each column for each group below. Select the approach if application are column for each group below.</li> </ul>	ea condition metric ace (GS) in the assessment area and vegetation structure able (see User Manual). If a reference is not applicable,  ea (ground surface alteration examples: vehicle tracks, excessive g, fill, soil compaction, obvious pollutants) (vegetation structure les, salt intrusion [where appropriate], exotic species, grazing,  ement area condition metric d duration (Surf) and sub-surface storage capacity and lefer to the current NRCS lateral effect of ditching guidance for or the zone of influence of ditches in hydric soils. A ditch 1 foot deep is expected to affect both surface and ditch  e substantially (typically, not sufficient to change vegetation).  It is substantially (typically, alteration sufficient to result in vegetation n, filling, excessive sedimentation, underground utility lines).  Indition metric (answer for non-marsh wetlands only)
<ul> <li>Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if application then rate the assessment area based on evidence of an effect.</li> <li>GS VS</li> <li>A A Not severely altered</li> <li>B Severely altered over a majority of the assessment are sedimentation, fire-plow lanes, skidder tracks, bedding alteration examples: mechanical disturbance, herbicid less diversity [if appropriate], hydrologic alteration)</li> <li>Surface and Sub-Surface Storage Capacity and Duration – assess Check a box in each column. Consider surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. North Carolina hydric soils (see USACE Wilmington District website) for ≤ 1 foot deep is considered to affect surface water only, while a ditch sub-surface water. Consider tidal flooding regime, if applicable. Surf Sub</li> <li>A A Water storage capacity and duration are not altered.</li> <li>B B Water storage capacity or duration are altered, but not C C Water storage capacity or duration are substantially alchange) (examples: draining, flooding, soil compaction</li> <li>Water Storage/Surface Relief – assessment area/wetland type cor</li> </ul>	ea condition metric ace (GS) in the assessment area and vegetation structure able (see User Manual). If a reference is not applicable,  ea (ground surface alteration examples: vehicle tracks, excessive g, fill, soil compaction, obvious pollutants) (vegetation structure les, salt intrusion [where appropriate], exotic species, grazing,  ement area condition metric d duration (Surf) and sub-surface storage capacity and lefer to the current NRCS lateral effect of ditching guidance for or the zone of influence of ditches in hydric soils. A ditch 1 foot deep is expected to affect both surface and ditch  e substantially (typically, not sufficient to change vegetation).  It is substantially (typically, alteration sufficient to result in vegetation n, filling, excessive sedimentation, underground utility lines).  Indition metric (answer for non-marsh wetlands only)
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			Structure – assessment area condition metric
			from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape soil observations within the 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for
		nal indica	· · · · · · · · · · · · · · · · · · ·
	4a.		Sandy soil
	1		oamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres)
	(	C L	oamy or clayey soils not exhibiting redoximorphic features
			oamy or clayey gleyed soil
	(	CE E	fistosol or histic epipedon
	4b.	<b>⊚</b> A S	Soil ribbon < 1 inch
	(	C B S	Soil ribbon ≥ 1 inch
	4c.	( A (	lo peat or muck presence
		ARREST TO SERVICE AND ADDRESS OF THE PERSON NAMED IN COLUMN TO SERVICE AND ADDRESS OF	A peat or muck presence
5.			o Wetland – opportunity metric
<b>J</b> .		-	in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub).
			ub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.
	Surf	Sub	\(\frac{1}{2}\)
	CA	A	Little or no evidence of pollutants or discharges entering the assessment area
	B	CB	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the
			treatment capacity of the assessment area
	CC	CC	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and
			potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive
			sedimentation, odor)
6.			pportunity metric
			t apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources
		-	sessment area within entire upstream watershed (WS), within 5 miles <u>and</u> within the watershed draining to the
			rea (5M), and within 2 miles <u>and</u> within the watershed draining to the assessment area (2M). Effective riparian buffers
	are co	onsidered 5M	I to be 50 feet wide in the Coastal Plain and Piedmont ecoregions and 30 feet wide in the Blue Ridge Mountains ecoregion.  2M
	ΠA		□ A ≥ 10% impervious surfaces
	₽ B	₩ B	▼ B < 10% impervious surfaces
	ПС	ПС	C Confined animal operations (or other local, concentrated source of pollutants)
	<b>▽</b> D	<b>▼</b> D	✓ D ≥ 20% coverage of pasture
	□E	□ E	☐ E ≥ 20% coverage of agricultural land (regularly plowed land)
	□F	□F	☐ F ≥ 20% coverage of maintained grass/herb
	$\Box$ G	□ G	☐ G ≥ 20% coverage of clear-cut land
	□н	□н	Little or no opportunity to improve water quality. Lack of opportunity may result from hydrologic alterations
			that prevent drainage or overbank flow from affecting the assessment area.
	Wath	and Aati	ng as Vegetated Buffer – assessment area/wetland complex condition metric
7.			·
7.	7a.	Is assess	sment area within 50 feet of a tributary or other open water?
7.	7a.	Is assess	sment area within 50 feet of a tributary or other open water?  No If Yes, continue to 7b. If No, skip to Metric 8.
7.	7a.	Is assess Yes Wetland	sment area within 50 feet of a tributary or other open water?  No If Yes, continue to 7b. If No, skip to Metric 8.  buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland.
7.	7a.	Is assess Yes Wetland Record a	sment area within 50 feet of a tributary or other open water?  No If Yes, continue to 7b. If No, skip to Metric 8.  buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland. note if a portion of the buffer has been removed or disturbed.
7.	7a. 7b.	Is assess Yes Wetland Record a How muc	sment area within 50 feet of a tributary or other open water?  No If Yes, continue to 7b. If No, skip to Metric 8.  buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland.
7.	7a. 7b.	Is assess Yes Wetland Record a How muc	sment area within 50 feet of a tributary or other open water?  No If Yes, continue to 7b. If No, skip to Metric 8.  buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland. note if a portion of the buffer has been removed or disturbed.  ch of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.
7.	7a.	Is assess Yes Wetland Record a How mud A B F C F	sment area within 50 feet of a tributary or other open water?  No If Yes, continue to 7b. If No, skip to Metric 8.  buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland. In note if a portion of the buffer has been removed or disturbed.  The of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.  To 50 feet from 30 to < 50 feet  Trom 30 to < 30 feet
7.	7a.	Is assess Yes Wetland Record a How muc A B F C F D F	sment area within 50 feet of a tributary or other open water?  No If Yes, continue to 7b. If No, skip to Metric 8.  buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland. note if a portion of the buffer has been removed or disturbed.  ch of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.  50 feet  From 30 to < 50 feet  From 15 to < 30 feet  From 5 to < 15 feet
7.	7a.	Is assess Yes Wetland Record a How much A ≥ B F C F D F	sment area within 50 feet of a tributary or other open water?  No If Yes, continue to 7b. If No, skip to Metric 8.  buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland. In note if a portion of the buffer has been removed or disturbed.  The of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.  The form 30 to < 50 feet  The from 30 to < 50 feet  The from 5 to < 15 feet
7.	7a. 7b. 7c.	Is assess Yes Wetland Record a How muc A B F C F D F E Tributary	sment area within 50 feet of a tributary or other open water?  No If Yes, continue to 7b. If No, skip to Metric 8.  buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland. In note if a portion of the buffer has been removed or disturbed.  The of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.  To feet from 30 to < 50 feet  To m 30 to < 50 feet  To m 5 to < 30 feet  To m 5 to < 15 feet  To buffer bypassed by ditches  Width. If the tributary is anastomosed, combine widths of channels/braids for a total width.
7.	7a. 7b. 7c.	Is assess Yes Wetland Record a How muc A ≥ B F C F D F E < Tributary	sment area within 50 feet of a tributary or other open water?  No If Yes, continue to 7b. If No, skip to Metric 8.  buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland. In note if a portion of the buffer has been removed or disturbed.  The of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.  To feet from 30 to < 50 feet  To m 30 to < 50 feet  To m 5 to < 30 feet  To m 5 to < 15 feet  To buffer bypassed by ditches  Width. If the tributary is anastomosed, combine widths of channels/braids for a total width.
7.	7a. 7b. 7c. 7d.	Is assess Yes Wetland Record a How muc A ≥ B F C F D F E < Tributary	sment area within 50 feet of a tributary or other open water?  No If Yes, continue to 7b. If No, skip to Metric 8.  buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland. In note if a portion of the buffer has been removed or disturbed.  ch of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.  50 feet  from 30 to < 50 feet  from 15 to < 30 feet  from 5 to < 15 feet  5 feet or buffer bypassed by ditches  width. If the tributary is anastomosed, combine widths of channels/braids for a total width.  set wide > 15-feet wide Other open water (no tributary present)  of assessment area vegetation extend into the bank of the tributary/open water?
7.	7a. 7b. 7c. 7d. 7e.	Is assess  Yes  Wetland Record a  How much A B B C F D Tributary  ≤ 15-fo Do roots  Yes Is tributa	sment area within 50 feet of a tributary or other open water?  No If Yes, continue to 7b. If No, skip to Metric 8.  buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland.  In note if a portion of the buffer has been removed or disturbed.  It of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.  If to < 30 feet from 30 to < 50 feet  If orm 15 to < 30 feet from 5 to < 15 feet  If the tributary is anastomosed, combine widths of channels/braids for a total width.  If the tributary is anastomosed, combine widths of the tributary present)  of assessment area vegetation extend into the bank of the tributary/open water?  No  ny or other open water sheltered or exposed?
7.	7a. 7b. 7c. 7d. 7e.	Is assess  Yes  Wetland Record a  How much A B B C F D Tributary  ≤ 15-fc Do roots  Yes Is tributa  Shelte	sment area within 50 feet of a tributary or other open water?  No If Yes, continue to 7b. If No, skip to Metric 8.  buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland. In note if a portion of the buffer has been removed or disturbed.  ch of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.  50 feet  from 30 to < 50 feet  from 15 to < 30 feet  from 5 to < 15 feet  5 feet or buffer bypassed by ditches  width. If the tributary is anastomosed, combine widths of channels/braids for a total width.  bet wide > 15-feet wide Other open water (no tributary present)  of assessment area vegetation extend into the bank of the tributary/open water?  No  ny or other open water sheltered or exposed?  red – adjacent open water with width < 2500 feet and no regular boat traffic.
7.	7a. 7b. 7c. 7d. 7e.	Is assess  Yes  Wetland Record a  How much A B B C F D Tributary  ≤ 15-fc Do roots  Yes Is tributa  Shelte	sment area within 50 feet of a tributary or other open water?  No If Yes, continue to 7b. If No, skip to Metric 8.  buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland.  In note if a portion of the buffer has been removed or disturbed.  It of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.  If to < 30 feet from 30 to < 50 feet  If orm 15 to < 30 feet from 5 to < 15 feet  If the tributary is anastomosed, combine widths of channels/braids for a total width.  If the tributary is anastomosed, combine widths of the tributary present)  of assessment area vegetation extend into the bank of the tributary/open water?  No  ny or other open water sheltered or exposed?
<b>7</b> .	7a. 7b. 7c. 7d. 7e.	Is assess  Yes  Wetland  Record a  How muc  A  B  C  F  D  F  E     Tributary   ≤ 15-fc   Do roots   Yes   Is tributa   Shelte   Expose	sment area within 50 feet of a tributary or other open water?  No If Yes, continue to 7b. If No, skip to Metric 8.  buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland. In note if a portion of the buffer has been removed or disturbed.  ch of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.  50 feet  from 30 to < 50 feet  from 15 to < 30 feet  from 5 to < 15 feet  5 feet or buffer bypassed by ditches  width. If the tributary is anastomosed, combine widths of channels/braids for a total width.  bet wide > 15-feet wide Other open water (no tributary present)  of assessment area vegetation extend into the bank of the tributary/open water?  No  ny or other open water sheltered or exposed?  red – adjacent open water with width < 2500 feet and no regular boat traffic.
	7a. 7b. 7c. 7d. 7e. Wetla	Is assess Yes Wetland Record a How muc A B B C F D Tributary S 15-fi Do roots Yes Is tributa Shelte Expos  and Widt k a box	Siment area within 50 feet of a tributary or other open water?  No If Yes, continue to 7b. If No, skip to Metric 8.  buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland. In note if a portion of the buffer has been removed or disturbed.  ch of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.  50 feet  from 30 to < 50 feet  from 15 to < 30 feet  from 15 to < 30 feet  from 5 to < 15 feet  is 5 feet or buffer bypassed by ditches  width. If the tributary is anastomosed, combine widths of channels/braids for a total width.  eet wide > 15-feet wide Other open water (no tributary present)  of assessment area vegetation extend into the bank of the tributary/open water?  No  ny or other open water sheltered or exposed?  red – adjacent open water with width < 2500 feet and no regular boat traffic.  ed – adjacent open water with width ≥ 2500 feet or regular boat traffic.  th at the Assessment Area – wetland type/wetland complex metric (evaluate for riparian wetlands only) in each column. Select the average width for the wetland type at the assessment area (WT)
	7a. 7b. 7c. 7d. 7e. Wetla	Is assess Yes Wetland Record a How muc A B B C F D Tributary S 15-f Do roots Yes Is tributa Shelte Expos  and Widt k a box he wetlar	Siment area within 50 feet of a tributary or other open water?  No If Yes, continue to 7b. If No, skip to Metric 8.  buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland. In note if a portion of the buffer has been removed or disturbed.  ch of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.  50 feet  from 30 to < 50 feet  from 15 to < 30 feet  from 15 to < 15 feet  5 feet or buffer bypassed by ditches  width. If the tributary is anastomosed, combine widths of channels/braids for a total width.  bet wide > 15-feet wide Other open water (no tributary present)  of assessment area vegetation extend into the bank of the tributary/open water?  No  ry or other open water sheltered or exposed?  red – adjacent open water with width ≥ 2500 feet and no regular boat traffic.  the at the Assessment Area – wetland type/wetland complex metric (evaluate for riparian wetlands only)
	7a. 7b. 7c. 7d. 7e. Wetla Chec and the WT	Is assess Yes Wetland Record a How muc A B B C F D Tributary S 15-f Do roots Yes Is tributa Shelte Expos  And Widt k a box he wetlar WC	If Yes, continue to 7b. If No, skip to Metric 8.  buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland. In once if a portion of the buffer has been removed or disturbed.  the of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.  50 feet  from 30 to < 50 feet  from 15 to < 30 feet  from 5 to < 15 feet  so feet or buffer bypassed by ditches  width. If the tributary is anastomosed, combine widths of channels/braids for a total width.  set wide
	7a. 7b. 7c. 7d. 7e. Wetla Check and the WT	Is assess Yes Wetland Record a How muc A B B C F D F E S Tributary S 15-fi Do roots Yes Is tributa Shelte Expos  and Widt k a box he wetlar WC A	If Yes, continue to 7b. If No, skip to Metric 8.  buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland. In ote if a portion of the buffer has been removed or disturbed.  In of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.  If of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.  If of of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.  If of of the first 50 feet from 15 to < 30 feet from 15 to < 30 feet from 15 to < 15 feet feet or buffer bypassed by ditches from 15 to < 15 feet or buffer bypassed by ditches for the tributary is anastomosed, combine widths of channels/braids for a total width.  If the tributary is anastomosed, combine widths of channels/braids for a total width.  If the tributary is anastomosed, combine widths of channels/braids for a total width.  If the tributary is anastomosed, combine widths of channels/braids for a total width.  If the tributary is anastomosed, combine widths of channels/braids for a total width.  If the tributary is anastomosed, combine widths of channels/braids for a total width.  If the discription is anastomosed, combine widths of channels/braids for a total width.  If the tributary is anastomosed, combine widths of channels/braids for a total width.  If the tributary is anastomosed, combine widths of channels/braids for a total width.  If the tributary is anastomosed, combine widths of channels/braids for a total width.  If the tributary is anastomosed, combine widths of channels/braids for a total width.  If the tributary is anastomosed, combine widths of channels/braids for a total width.  If the tributary is anastomosed, combine widths of channels/braids for a total width.  If the tributary is anastomosed, combine widths of channels/braids for a total width.  If the tributary is anastomosed
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	7a. 7b. 7c. 7d. 7e. Wetla Check and the WT	Is assess Yes Wetland Record a How muc A B B C F D Tributary S 15-fi Do roots Yes Is tributa Shelte Expos  and Widt k a box he wetlar WC A B C B C C	ment area within 50 feet of a tributary or other open water?  No If Yes, continue to 7b. If No, skip to Metric 8. buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland. In of the first 50 feet from the buffer has been removed or disturbed. In of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer. In 50 feet from 30 to < 50 feet from 15 to < 30 feet from 5 to < 15 feet feet from 5 to < 5 feet from 5 to < 5 feet feet from 5 to < 5 feet feet from 5 to < 5 feet from 5 feet feet from 5 f
	7a. 7b. 7c. 7d. 7e. Wetla Check and the WT A B C	Is assess Yes Wetland Record a How muc A B B C F D Tributary S Shelte Expos  A B Shelte Expos  A B B C Tributary A B C A B B B C C A B B B C C A B B B C C A B B B C C A B B B B	Sment area within 50 feet of a tributary or other open water?  No If Yes, continue to 7b. If No, skip to Metric 8.  buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland. In of the first 50 feet from the buffer has been removed or disturbed. The first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.  50 feet from 30 to < 50 feet from 30 to < 30 feet from 5 to < 15 feet from 5 feet from 5 to < 15 feet from 5
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9.	Inundation Duration – assessment area condition metric
	Answer for assessment area dominant landform.
	A Evidence of short-duration inundation (< 7 consecutive days)
	Evidence of saturation, without evidence of inundation
	C Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)
10.	Indicators of Deposition – assessment area condition metric
	Consider recent deposition only (no plant growth since deposition).
	Sediment deposition is not excessive, but at approximately natural levels.
	B Sediment deposition is excessive, but not overwhelming the wetland.
	C Sediment deposition is excessive and is overwhelming the wetland.
11	Wetland Size – wetland type/wetland complex condition metric
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the
	size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User
	Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column.
	WT WC FW (if applicable)
	CA CA CA ≥ 500 acres
	CB CB From 100 to < 500 acres
	C C C From 50 to < 100 acres
	CD CD From 25 to < 50 acres
	CE CE From 10 to < 25 acres
	CF CF From 5 to < 10 acres
	CG CG From 1 to < 5 acres
	CH CH From 0.5 to < 1 acre
	CI CI From 0.1 to < 0.5 acre
	<b>©</b> J <b>©</b> J From 0.01 to < 0.1 acre
	K K < 0.01 acre or assessment area is clear-cut
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)
	Pocosin is the full extent (≥ 90%) of its natural landscape size.
	B Pocosin is < 90% of the full extent of its natural landscape size.
12	Connectivity to Other Natural Areas – landscape condition metric
13.	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This
	evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous
	metric naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility
	line corridors the width of a four-lane road or wider, urban landscapes, fields (pasture open and agriculture), or water > 300 feet wide.
	Well Loosely
	CA CA ≥ 500 acres
	CB CB From 100 to < 500 acres
	C C From 50 to < 100 acres
	CD D From 10 to < 50 acres
	F F Wetland type has a poor or no connection to other natural habitats
	13b. Evaluate for marshes only.
	Yes No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.
4.4	Edge Effect westend time condition matric (akin for all marches)
14.	Edge Effect – wetland type condition metric (skip for all marshes)  May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include
	non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors and clear-cuts.
	Consider the eight main points of the compass.
	A No artificial edge within 150 feet in all directions
	An artificial edge occurs within 150 feet in more than four (4) directions or assessment area is clear-cut
4.5	
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)
	A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate
	species, with exotic plants absent or sparse within the assessment area.
	Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or
	clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
	Considering the above the stands of non-
	characteristic species or at least one stratum inappropriately composed of a single species). Exotic species are dominant in
	at least one stratum.
4.0	
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)
	<ul> <li>A Vegetation diversity is high and is composed primarily of native species (&lt;10% cover of exotics).</li> <li>B Vegetation diversity is low or has &gt; 10% to 50% cover of exotics.</li> </ul>
	<ul> <li>✓ B Vegetation diversity is low or has &gt; 10% to 50% cover of exotics.</li> <li>✓ C Vegetation is dominated by exotic species (&gt;50% cover of exotics).</li> </ul>

17.	Vegetative Structure – assessment area/wetland type condition metric 17a. Is vegetation present?
	Yes No If Yes, continue to 17b. If No, skip to Metric 18.
	17b. Evaluate percent coverage of assessment area vegetation <b>for all marshes only</b> . Skip to 17c for non-marsh wetlands.  ☐ A ≥ 25% coverage of vegetation ☐ B < 25% coverage of vegetation
	17c. Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately. AA WT
	A Canopy closed, or nearly closed, with natural gaps associated with natural processes B CB Canopy present, but opened more than natural gaps C C C Canopy sparse or absent
	Fig. A A Dense mid-story/sapling layer  O B B Moderate density mid-story/sapling layer  O C C Mid-story/sapling layer sparse or absent
	G A C A Dense shrub layer B C B Moderate density shrub layer C C C Shrub layer sparse or absent
	GACA Dense herb layer  BBB Moderate density herb layer  CCCC Herb layer sparse or absent
18.	Snags – wetland type condition metric  A Large snags (more than one) are visible (> 12-inches DBH, or large relative to species present and landscape stability).  Not A
19.	Diameter Class Distribution – wetland type condition metric  A Majority of canopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are present.
	<ul> <li>B Majority of canopy trees have stems between 6 and 12 inches DBH, few are &gt; 12-inch DBH.</li> <li>C Majority of canopy trees are &lt; 6 inches DBH or no trees.</li> </ul>
20.	Large Woody Debris – wetland type condition metric Include both natural debris and man-placed natural debris.  A Large logs (more than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).  B Not A
21.	Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)  Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.  A  B  C  C  D
22.	Hydrologic Connectivity – assessment area condition metric (evaluate for riparian wetlands only)  Examples of activities that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, and stream incision.  A Overbank and overland flow are not severely altered in the assessment area.  Output  Output  Description:

- Overland flow is severely altered in the assessment area.

  Both overbank <u>and</u> overland flow are severely altered in the assessment area.

Wetland Site Name	Maney Farm - Wetland L	Date	5/28/2014
Wetland Type	Bottomland Hardwood Forest	Assessor Name/Organization IE &	WT Wildlands Eng
Notes on Field Assess	ment Form (Y/N)		NO
Presence of regulatory	considerations (Y/N)		NO
Wetland is intensively	managed (Y/N)		NO
Assessment area is lo	cated within 50 feet of a natural tributary or othe	er open water (Y/N)	YES
Assessment area is su	ubstantially altered by beaver (Y/N)		NO
Assessment area expe	eriences overbank flooding during normal rainfa	Il conditions (Y/N)	NO
Assessment area is or	n a coastal island (Y/N)		NO
Sub-franction Detina	S		
Sub-function Rating Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	MEDIUM
,	Sub-Surface Storage and Retention	Condition	MEDIUM
Water Quality	Pathogen Change	Condition	HIGH
Trator addity	r amogen enange	Condition/Opportunity	HIGH
		Opportunity Presence? (Y/N)	YES
	Particulate Change	Condition	HIGH
	r artiodiate charige	Condition/Opportunity	HIGH
		Opportunity Presence? (Y/N)	YES
	Soluble Change	Condition	MEDIUM
	Goldbie Grange	Condition/Opportunity	HIGH
		Opportunity Presence? (Y/N)	YES
	Physical Change	Condition	MEDIUM
	1 Hysical Change	Condition/Opportunity	HIGH
		Opportunity Presence? (Y/N)	YES
	Pollution Change	Condition	NA NA
	1 Shation Change	Condition/Opportunity	NA NA
		Opportunity Presence? (Y/N)	NA NA
Habitat	Physical Structure	Condition	HIGH
- Idolidi	Landscape Patch Structure	Condition	LOW
	Vegetation Composition	Condition	MEDIUM
		00.10.110.11	
Function Rating Sum Function	mary Metrics/Notes		Rating
Hydrology	Condition		MEDIUM
Water Quality	Condition		HIGH
,	Condition/Opportunity		HIGH
	Opportunity Presence?	(Y/N)	YES
Habitat	Conditon	•	MEDIUM

Wetland Site Name Maney Farm - Wetland M	
	<b>Date</b> <u>5/28/2014</u>
Wetland Type Seep	Assessor Name/Organization IE & WT Wildlands Eng
Level III Ecoregion Piedmont	Nearest Named Water Body South Fork Cane Creek
River Basin Cape Fear	USGS 8-Digit Catalogue Unit 03030002
	Latitude/Longitude (deci-degrees) N 35.838434 W 79.343688
Evidence of stressors affecting the assessment area (may not be with Please circle and/or make note on last page if evidence of stressors is app appropriate, in recent past (for instance, approximately within 10 years). Note the following.  • Hydrological modifications (examples: ditches, dams, beaver dams) • Surface and sub-surface discharges into the wetland (examples: discharges into the wetland (examples: discharges into the wetland (examples: discharges) • Signs of vegetation stress (examples: vegetation mortality, insect of Habitat/plant community alteration (examples: mowing, clear-cutting)  Is the assessment area intensively managed?	arent. Consider departure from reference, if of oteworthy stressors include, but are not limited , dikes, berms, ponds, etc.) ocharges containing obvious pollutants, presence of nearby amage, disease, storm damage, salt intrusion, etc.)
Regulatory Considerations (select all that apply to the assessment are	ea)
Anadromous fish Federally protected species or State endangered or threatened spe NCDWQ riparian buffer rule in effect Abuts a Primary Nursery Area (PNA) Publicly owned property N.C. Division of Coastal Management Area of Environmental Conce Abuts a stream with a NCDWQ classification of SA or supplementa Designated NCNHP reference community Abuts a 303(d)-listed stream or a tributary to a 303(d)-listed stream	cies ern (AEC) (including buffer)
What type of natural stream is associated with the wetland, if any? (cl	neck all that apply)
Blackwater	
Brownwater Tidal (if tidal, check one of the following boxes)  C Lunar	Wind Both
	willid
Is the assessment area on a coastal island?	
Is the assessment area's surface water storage capacity or duration s	ubstantially altered by beaver?
1	
Does the assessment area experience overbank flooding during norm	
<ol> <li>Ground Surface Condition/Vegetation Condition – assessment ar Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if application then rate the assessment area based on evidence of an effect.</li> <li>GS VS</li> <li>A A Not severely altered</li> <li>B Severely altered over a majority of the assessment are sedimentation, fire-plow lanes, skidder tracks, bedding</li> </ol>	al rainfall conditions?  Exact Yes  No  Rea condition metric  Acc (GS) in the assessment area and vegetation structure
1. Ground Surface Condition/Vegetation Condition – assessment ar Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if application then rate the assessment area based on evidence of an effect.  GS VS  A A Not severely altered B Severely altered over a majority of the assessment are sedimentation, fire-plow lanes, skidder tracks, bedding alteration examples: mechanical disturbance, herbicides.	ea condition metric ace (GS) in the assessment area and vegetation structure ble (see User Manual). If a reference is not applicable, ea (ground surface alteration examples: vehicle tracks, excessive g, fill, soil compaction, obvious pollutants) (vegetation structure les, salt intrusion [where appropriate], exotic species, grazing,
<ol> <li>Ground Surface Condition/Vegetation Condition – assessment ar Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if application then rate the assessment area based on evidence of an effect.</li> <li>GS VS</li> <li>A A Not severely altered</li> <li>B Severely altered over a majority of the assessment are sedimentation, fire-plow lanes, skidder tracks, bedding alteration examples: mechanical disturbance, herbicides diversity [if appropriate], hydrologic alteration)</li> <li>Surface and Sub-Surface Storage Capacity and Duration – assess Check a box in each column. Consider surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. North Carolina hydric soils (see USACE Wilmington District website) for surface water. Considered to affect surface water only, while a ditch sub-surface water. Consider tidal flooding regime, if applicable. Surf Sub</li> <li>A A Water storage capacity and duration are not altered.</li> <li>B B Water storage capacity or duration are altered, but not C C Water storage capacity or duration are substantially altered.</li> </ol>	ea condition metric ace (GS) in the assessment area and vegetation structure able (see User Manual). If a reference is not applicable,  ea (ground surface alteration examples: vehicle tracks, excessive g, fill, soil compaction, obvious pollutants) (vegetation structure les, salt intrusion [where appropriate], exotic species, grazing,  ement area condition metric d duration (Surf) and sub-surface storage capacity and lefer to the current NRCS lateral effect of ditching guidance for our the zone of influence of ditches in hydric soils. A ditch
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<ol> <li>Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if application then rate the assessment area based on evidence of an effect. GS VS</li></ol>	ea condition metric ace (GS) in the assessment area and vegetation structure able (see User Manual). If a reference is not applicable,  ea (ground surface alteration examples: vehicle tracks, excessive ace, fill, soil compaction, obvious pollutants) (vegetation structure aces, salt intrusion [where appropriate], exotic species, grazing,  ement area condition metric action duration (Surf) and sub-surface storage capacity and active to the current NRCS lateral effect of ditching guidance for active to the current process of ditches in hydric soils. A ditch active to affect both surface and ditch  substantially (typically, not sufficient to change vegetation).  tered (typically, alteration sufficient to result in vegetation and filling, excessive sedimentation, underground utility lines).  addition metric (answer for non-marsh wetlands only) aropriate storage for the assessment area (AA) and the wetland  at water > 1 foot deep at water 6 inches to 1 foot deep
<ol> <li>Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if application then rate the assessment area based on evidence of an effect.</li> <li>GS VS</li> <li>A A Not severely altered</li> <li>B B Severely altered over a majority of the assessment are sedimentation, fire-plow lanes, skidder tracks, bedding alteration examples: mechanical disturbance, herbicides diversity [if appropriate], hydrologic alteration)</li> <li>Surface and Sub-Surface Storage Capacity and Duration – assess Check a box in each column. Consider surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. For North Carolina hydric soils (see USACE Wilmington District website) for ≤ 1 foot deep is considered to affect surface water only, while a ditch sub-surface water. Consider tidal flooding regime, if applicable. Surfor Sub</li> <li>A A Water storage capacity and duration are not altered. B B Water storage capacity or duration are altered, but not C C C Water storage capacity or duration are substantially all change) (examples: draining, flooding, soil compaction)</li> <li>Water Storage/Surface Relief – assessment area/wetland type concheck a box in each column for each group below. Select the appropriate (WT).  AA WT  3a. A Majority of wetland with depressions able to pond</li> </ol>	ea condition metric ace (GS) in the assessment area and vegetation structure able (see User Manual). If a reference is not applicable,  ea (ground surface alteration examples: vehicle tracks, excessive ace, fill, soil compaction, obvious pollutants) (vegetation structure aces, salt intrusion [where appropriate], exotic species, grazing,  ement area condition metric action duration (Surf) and sub-surface storage capacity and active to the current NRCS lateral effect of ditching guidance for active to the current process of ditches in hydric soils. A ditch active to affect both surface and ditch  substantially (typically, not sufficient to change vegetation).  tered (typically, alteration sufficient to result in vegetation and filling, excessive sedimentation, underground utility lines).  addition metric (answer for non-marsh wetlands only) aropriate storage for the assessment area (AA) and the wetland  at water > 1 foot deep at water 6 inches to 1 foot deep

4.		re/Structure – assessment area condition metric	
		ox from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape ake soil observations within the 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for	
	regional in		
	4a. A	Sandy soil	
	⊕ B	Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres)	
	CC	Loamy or clayey soils not exhibiting redoximorphic features	
	CD	Loamy or clayey gleyed soil	
	€ E	Histosol or histic epipedon	
	4b. 🕟 A	Soil ribbon < 1 inch	
	○ B	Soil ribbon ≥ 1 inch	
	4c. 🕟 A	No peat or muck presence	
	СВ	A peat or muck presence	
5.		into Wetland – opportunity metric	
Э.	_	<b>bx in each column.</b> Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub).	
		of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.	
	Surf Su		
	CA C	A Little or no evidence of pollutants or discharges entering the assessment area	
	⊕ B  ←		
		treatment capacity of the assessment area	
	00 0		
		potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive	
		sedimentation, odor)	
6.		- opportunity metric	
		that apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources	
	_	assessment area within entire upstream watershed (WS), within 5 miles <u>and</u> within the watershed draining to the	
		at area (5M), and within 2 miles <u>and</u> within the watershed draining to the assessment area (2M). Effective riparian buffers	
	ws 5M	ered to be 50 feet wide in the Coastal Plain and Piedmont ecoregions and 30 feet wide in the Blue Ridge Mountains ecoregic 2M	on.
	VB V		
	V D V		
		· v	
	□н□		
		that prevent drainage or overbank flow from affecting the assessment area.	
7.		cting as Vegetated Buffer – assessment area/wetland complex condition metric	
		ressment area within 50 feet of a tributary or other open water?	
			land
		ind buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wet a note if a portion of the buffer has been removed or disturbed.	ianu.
		nuch of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.	
	CA	≥ 50 feet	
	○ B	From 30 to < 50 feet	
	CC	From 15 to < 30 feet	
	<u>@</u> D	From 5 to < 15 feet	
	C E	< 5 feet or buffer bypassed by ditches	
	7c. Tribut	ary width. If the tributary is anastomosed, combine widths of channels/braids for a total width.	
	7c. Tribut	ary width. If the tributary is anastomosed, combine widths of channels/braids for a total width.  5-feet wide	
	7c. Tribut	ary width. If the tributary is anastomosed, combine widths of channels/braids for a total width.	
	7c. Tribut	ary width. If the tributary is anastomosed, combine widths of channels/braids for a total width. 5-feet wide  > 15-feet wide  Other open water (no tributary present) ots of assessment area vegetation extend into the bank of the tributary/open water? s  No utary or other open water sheltered or exposed?	
	7c. Tribut	ary width. If the tributary is anastomosed, combine widths of channels/braids for a total width. 5-feet wide  > 15-feet wide  Other open water (no tributary present) ots of assessment area vegetation extend into the bank of the tributary/open water? s  No utary or other open water sheltered or exposed? eltered – adjacent open water with width < 2500 feet and no regular boat traffic.	
	7c. Tribut	ary width. If the tributary is anastomosed, combine widths of channels/braids for a total width. 5-feet wide  > 15-feet wide  Other open water (no tributary present) ots of assessment area vegetation extend into the bank of the tributary/open water? s  No utary or other open water sheltered or exposed?	
8.	7c. Tribut	ary width. If the tributary is anastomosed, combine widths of channels/braids for a total width. 5-feet wide  > 15-feet wide  Other open water (no tributary present) ots of assessment area vegetation extend into the bank of the tributary/open water? s  No utary or other open water sheltered or exposed? eltered – adjacent open water with width < 2500 feet and no regular boat traffic.	
8.	7c. Tribut	ary width. If the tributary is anastomosed, combine widths of channels/braids for a total width.  5-feet wide	
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8.	7c. Tribut	ary width. If the tributary is anastomosed, combine widths of channels/braids for a total width.  5-feet wide > 15-feet wide Other open water (no tributary present) ots of assessment area vegetation extend into the bank of the tributary/open water?  No utary or other open water sheltered or exposed? eltered – adjacent open water with width < 2500 feet and no regular boat traffic.  bosed – adjacent open water with width ≥ 2500 feet or regular boat traffic.  Fidth at the Assessment Area – wetland type/wetland complex metric (evaluate for riparian wetlands only) ox in each column. Select the average width for the wetland type at the assessment area (WT) tland complex at the assessment areas (WC). See User Manual for WT and WC boundaries.  A ≥ 100 feet From 80 to < 100 feet From 50 to < 80 feet From 40 to < 50 feet From 30 to < 40 feet From 15 to < 30 feet	

9.	Inundation Duration – assessment area condition metric
	Answer for assessment area dominant landform.
	A Evidence of short-duration inundation (< 7 consecutive days)
	Evidence of saturation, without evidence of inundation
	C Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)
10.	Indicators of Deposition – assessment area condition metric
	Consider recent deposition only (no plant growth since deposition).
	Sediment deposition is not excessive, but at approximately natural levels.
	B Sediment deposition is excessive, but not overwhelming the wetland.
	C Sediment deposition is excessive and is overwhelming the wetland.
11	Wetland Size – wetland type/wetland complex condition metric
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the
	size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User
	Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column.
	WT WC FW (if applicable)
	CA CA CA ≥ 500 acres
	CB CB From 100 to < 500 acres
	C C C From 50 to < 100 acres
	CD CD From 25 to < 50 acres
	CE CE From 10 to < 25 acres
	CF CF From 5 to < 10 acres
	CG CG From 1 to < 5 acres
	CH CH From 0.5 to < 1 acre
	CI CI From 0.1 to < 0.5 acre
	<b>©</b> J <b>©</b> J From 0.01 to < 0.1 acre
	K K < 0.01 acre or assessment area is clear-cut
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)
	Pocosin is the full extent (≥ 90%) of its natural landscape size.
	B Pocosin is < 90% of the full extent of its natural landscape size.
12	Connectivity to Other Natural Areas – landscape condition metric
13.	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This
	evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous
	metric naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility
	line corridors the width of a four-lane road or wider, urban landscapes, fields (pasture open and agriculture), or water > 300 feet wide.
	Well Loosely
	CA CA ≥ 500 acres
	B B From 100 to < 500 acres
	C C From 50 to < 100 acres
	CD D From 10 to < 50 acres
	F F Wetland type has a poor or no connection to other natural habitats
	13b. Evaluate for marshes only.
	Yes No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.
4.4	Edge Effect westend time condition matric (akin for all marches)
14.	Edge Effect – wetland type condition metric (skip for all marshes)  May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include
	non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors and clear-cuts.
	Consider the eight main points of the compass.
	A No artificial edge within 150 feet in all directions
	An artificial edge occurs within 150 feet in more than four (4) directions or assessment area is clear-cut
4.5	
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)
	A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate
	species, with exotic plants absent or sparse within the assessment area.
	Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or
	clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
	Considering the association of the expected strate.
	characteristic species or at least one stratum inappropriately composed of a single species). Exotic species are dominant in
	at least one stratum.
4.0	
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)
	<ul> <li>A Vegetation diversity is high and is composed primarily of native species (&lt;10% cover of exotics).</li> <li>B Vegetation diversity is low or has &gt; 10% to 50% cover of exotics.</li> </ul>
	<ul> <li>✓ B Vegetation diversity is low or has &gt; 10% to 50% cover of exotics.</li> <li>✓ C Vegetation is dominated by exotic species (&gt;50% cover of exotics).</li> </ul>

17.	Vegetative Structure – assessment area/wetland type condition metric 17a. Is vegetation present?
	Yes No If Yes, continue to 17b. If No, skip to Metric 18.
	17b. Evaluate percent coverage of assessment area vegetation <b>for all marshes only</b> . Skip to 17c for non-marsh wetlands.  ☐ A ≥ 25% coverage of vegetation ☐ B < 25% coverage of vegetation
	17c. Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.  AA WT
	A Canopy closed, or nearly closed, with natural gaps associated with natural processes B CB Canopy present, but opened more than natural gaps C C C Canopy sparse or absent
	Fig. A A Dense mid-story/sapling layer  O B B Moderate density mid-story/sapling layer  O C C Mid-story/sapling layer sparse or absent
	G C G C Shrub layer sparse or absent
	CA CA Dense herb layer B CB Moderate density herb layer C C C Herb layer sparse or absent
18.	Snags – wetland type condition metric  A Large snags (more than one) are visible (> 12-inches DBH, or large relative to species present and landscape stability).  B Not A
19.	Diameter Class Distribution – wetland type condition metric  A Majority of canopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are present.
	Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12-inch DBH.  Majority of canopy trees are < 6 inches DBH or no trees.
20.	Large Woody Debris – wetland type condition metric Include both natural debris and man-placed natural debris.  A Large logs (more than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).  B Not A
21.	Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)  Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.  A  B  C  C  D
	A B C C D D D D D D D D D D D D D D D D D
22.	Hydrologic Connectivity – assessment area condition metric (evaluate for riparian wetlands only)  Examples of activities that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, and stream incision.  A Overbank and overland flow are not severely altered in the assessment area.  Overbank flow is severely altered in the assessment area.

- Overland flow is severely altered in the assessment area.

  Both overbank <u>and</u> overland flow are severely altered in the assessment area.

Wetland Site Name	Maney Farm - Wetland M	Date	5/28/2014
Wetland Type	Seep	Assessor Name/Organization IE &	WT Wildlands En
Notes on Field Assessr	ment Form (Y/N)		NO
Presence of regulatory	considerations (Y/N)		NO
Wetland is intensively r	managed (Y/N)		NO
Assessment area is loc	cated within 50 feet of a natural tributary or other	er open water (Y/N)	YES
Assessment area is sul	bstantially altered by beaver (Y/N)		NO
Assessment area expe	riences overbank flooding during normal rainfa	Il conditions (Y/N)	NO
Assessment area is on	a coastal island (Y/N)		NO
Sub-function Rating S	Summary		
Function	Sub-function Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	NA
	Sub-Surface Storage and Retention	Condition	NA
Water Quality	Pathogen Change	Condition	NA
·		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Particulate Change	Condition	NA
	3	Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Soluble Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Physical Change	Condition	NA
	yerea. enange	Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Pollution Change	Condition	NA
	Tollation Change	Condition/Opportunity	NA NA
		Opportunity Presence? (Y/N)	NA NA
Habitat	Physical Structure	Condition	MEDIUM
	Landscape Patch Structure	Condition	LOW
	Vegetation Composition	Condition	MEDIUM
Function Rating Sum	mary		
Function Rating Sum	Metrics/Notes		Rating
Hydrology	Condition		HIGH
Water Quality	Condition		MEDIUM
	Condition/Opportunity		NA
	Opportunity Presence?	(Y/N)	NA
Habitat	Conditon		LOW

Motland Cita Nama Maray Farms Matland N	
Wetland Site Name Maney Farm - Wetland N	Date 5/28/2014
Wetland Type Bottomland Hardwood Forest  ▼	Assessor Name/Organization IE & WT Wildlands Eng
Level III Ecoregion Piedmont	Nearest Named Water Body South Fork Cane Creek
River Basin Cape Fear	USGS 8-Digit Catalogue Unit 03030002
	Latitude/Longitude (deci-degrees) N 35.840448 W 79.344473
Evidence of stressors affecting the assessment area (may not be within Please circle and/or make note on last page if evidence of stressors is apparappropriate, in recent past (for instance, approximately within 10 years). Note to the following.  • Hydrological modifications (examples: ditches, dams, beaver dams, surface and sub-surface discharges into the wetland (examples: discharges into the wetland (examples: discharge) septic tanks, underground storage tanks (USTs), hog lagoons, etc.)  • Signs of vegetation stress (examples: vegetation mortality, insect date that the surface discharges in the wetland (examples: mowing, clear-cutting)	dikes, berms, ponds, etc.) charges containing obvious pollutants, presence of nearby
Is the assessment area intensively managed?   Yes  No	
Regulatory Considerations (select all that apply to the assessment area Anadromous fish  Federally protected species or State endangered or threatened species NCDWQ riparian buffer rule in effect  Abuts a Primary Nursery Area (PNA)  Publicly owned property  N.C. Division of Coastal Management Area of Environmental Conceled Abuts a stream with a NCDWQ classification of SA or supplemental Designated NCNHP reference community  Abuts a 303(d)-listed stream or a tributary to a 303(d)-listed stream	rn (AEC) (including buffer)
What type of natural stream is associated with the wetland, if any? (che	eck all that apply)
Blackwater	a a app.y/
Brownwater  Tidal (if tidal, check one of the following boxes)  Lunar	Wind Both
Is the assessment area on a coastal island?	Wild Country and the Country a
Is the assessment area's surface water storage capacity or duration su	bstantially altered by beaver?
is the assessment area's surface water storage capacity or duration su	
Does the assessment area experience overbank flooding during norma	
sedimentation, fire-plow lanes, skidder tracks, bedding,	al rainfall conditions? Yes No  Pa condition metric  Ce (GS) in the assessment area and vegetation structure
<ol> <li>Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surfat (VS) in the assessment area. Compare to reference wetland if applicate then rate the assessment area based on evidence of an effect. GS VS</li></ol>	al rainfall conditions?  Yes No  Ta condition metric  The ce (GS) in the assessment area and vegetation structure  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a referenc
<ol> <li>Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surfat (VS) in the assessment area. Compare to reference wetland if applicate then rate the assessment area based on evidence of an effect. GS VS</li></ol>	a condition metric ce (GS) in the assessment area and vegetation structure cle (see User Manual). If a reference is not applicable, a (ground surface alteration examples: vehicle tracks, excessive fill, soil compaction, obvious pollutants) (vegetation structure es, salt intrusion [where appropriate], exotic species, grazing,  ment area condition metric duration (Surf) and sub-surface storage capacity and efer to the current NRCS lateral effect of ditching guidance for r the zone of influence of ditches in hydric soils. A ditch of 1 foot deep is expected to affect both surface and ditch  substantially (typically, not sufficient to change vegetation). ered (typically, alteration sufficient to result in vegetation of filling, excessive sedimentation, underground utility lines).  dition metric (answer for non-marsh wetlands only) ropriate storage for the assessment area (AA) and the wetland  water > 1 foot deep water 6 inches to 1 foot deep

4.	Check a box feature. Mak regional indic 4a. A B C	/Structure – assessment area condition metric a from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape are soil observations within the 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for actors.  Sandy soil  Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres)  Loamy or clayey gleyed soil
		Histosol or histic epipedon Soil ribbon < 1 inch
	СВ	Soil ribbon ≥ 1 inch  No peat or muck presence
	СВ	A peat or muck presence
5.	Check a box	nto Wetland – opportunity metric in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.
	CA CA	Little or no evidence of pollutants or discharges entering the assessment area  Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the  treatment capacity of the assessment area
	ac ac	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation, odor)
6.	Check all the draining to as assessment	at apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources a sessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers and to be 50 feet wide in the Coastal Plain and Piedmont ecoregions and 30 feet wide in the Blue Ridge Mountains ecoregion.  2M  A ≥ 10% impervious surfaces
	B	<ul> <li>✓ B &lt; 10% impervious surfaces</li> <li>C Confined animal operations (or other local, concentrated source of pollutants)</li> <li>✓ D ≥ 20% coverage of pasture</li> <li>E ≥ 20% coverage of agricultural land (regularly plowed land)</li> <li>F ≥ 20% coverage of maintained grass/herb</li> <li>G ≥ 20% coverage of clear-cut land</li> <li>H Little or no opportunity to improve water quality. Lack of opportunity may result from hydrologic alterations that prevent drainage or overbank flow from affecting the assessment area.</li> </ul>
7.		ing as Vegetated Buffer – assessment area/wetland complex condition metric ssment area within 50 feet of a tributary or other open water?
	Tes Wetland Record  7b. How mu  A B C D E  7c. Tributar  ✓ ≤ 15-  7d. Do root  ✓ Yes  7e. Is tribut  ✓ Shelt	No If Yes, continue to 7b. If No, skip to Metric 8.  d buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland. a note if a portion of the buffer has been removed or disturbed.  uch of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.  ≥ 50 feet  From 30 to < 50 feet  From 15 to < 30 feet  From 5 to < 15 feet  < 5 feet or buffer bypassed by ditches  y width. If the tributary is anastomosed, combine widths of channels/braids for a total width.  feet wide > 15-feet wide Other open water (no tributary present)  s of assessment area vegetation extend into the bank of the tributary/open water?
8.		of that the Assessment Area – wetland type/wetland complex metric (evaluate for riparian wetlands only) at in each column. Select the average width for the wetland type at the assessment area (WT)
	and the wetla WT WC A A B B C C D D E E F F G G G	and complex at the assessment areas (WC). See User Manual for WT and WC boundaries.  ≥ 100 feet From 80 to < 100 feet From 50 to < 80 feet From 40 to < 50 feet From 30 to < 40 feet From 15 to < 30 feet From 5 to < 15 feet
	CH CH	< 5 feet

9.	Inundation Duration – assessment area condition metric
	Answer for assessment area dominant landform.
	A Evidence of short-duration inundation (< 7 consecutive days)
	Evidence of saturation, without evidence of inundation
	C Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)
10.	Indicators of Deposition – assessment area condition metric
	Consider recent deposition only (no plant growth since deposition).
	Sediment deposition is not excessive, but at approximately natural levels.
	B Sediment deposition is excessive, but not overwhelming the wetland.
	C Sediment deposition is excessive and is overwhelming the wetland.
11	Wetland Size – wetland type/wetland complex condition metric
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the
	size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User
	Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column.
	WT WC FW (if applicable)
	CA CA CA ≥ 500 acres
	CB CB From 100 to < 500 acres
	C C C From 50 to < 100 acres
	CD CD From 25 to < 50 acres
	CE CE From 10 to < 25 acres
	CF CF From 5 to < 10 acres
	CG CG From 1 to < 5 acres
	CH CH From 0.5 to < 1 acre
	CI CI From 0.1 to < 0.5 acre
	<b>©</b> J <b>©</b> J From 0.01 to < 0.1 acre
	K K < 0.01 acre or assessment area is clear-cut
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)
	Pocosin is the full extent (≥ 90%) of its natural landscape size.
	B Pocosin is < 90% of the full extent of its natural landscape size.
12	Connectivity to Other Natural Areas – landscape condition metric
13.	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This
	evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous
	metric naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility
	line corridors the width of a four-lane road or wider, urban landscapes, fields (pasture open and agriculture), or water > 300 feet wide.
	Well Loosely
	CA CA ≥ 500 acres
	B B From 100 to < 500 acres
	C C From 50 to < 100 acres
	CD D From 10 to < 50 acres
	F F Wetland type has a poor or no connection to other natural habitats
	13b. Evaluate for marshes only.
	Yes No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.
4.4	Edge Effect westend time condition matric (akin for all marches)
14.	Edge Effect – wetland type condition metric (skip for all marshes)  May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include
	non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors and clear-cuts.
	Consider the eight main points of the compass.
	A No artificial edge within 150 feet in all directions
	An artificial edge occurs within 150 feet in more than four (4) directions or assessment area is clear-cut
4.5	
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)
	A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate
	species, with exotic plants absent or sparse within the assessment area.
	Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or
	clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
	Considering the association of the expected strate.
	characteristic species or at least one stratum inappropriately composed of a single species). Exotic species are dominant in
	at least one stratum.
4.0	
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)
	<ul> <li>A Vegetation diversity is high and is composed primarily of native species (&lt;10% cover of exotics).</li> <li>B Vegetation diversity is low or has &gt; 10% to 50% cover of exotics.</li> </ul>
	<ul> <li>✓ B Vegetation diversity is low or has &gt; 10% to 50% cover of exotics.</li> <li>✓ C Vegetation is dominated by exotic species (&gt;50% cover of exotics).</li> </ul>

17.	Vegetative Structure – assessment area/wetland type condition metric 17a. Is vegetation present?
	Yes No If Yes, continue to 17b. If No, skip to Metric 18.
	17b. Evaluate percent coverage of assessment area vegetation <b>for all marshes only</b> . Skip to 17c for non-marsh wetlands.  ☐ A ≥ 25% coverage of vegetation ☐ B < 25% coverage of vegetation
	17c. Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately. AA WT
	Canopy closed, or nearly closed, with natural gaps associated with natural processes  B G B Canopy present, but opened more than natural gaps  C C C Canopy sparse or absent
	Fig. A A Dense mid-story/sapling layer  O B B Moderate density mid-story/sapling layer  O C C Mid-story/sapling layer sparse or absent
	G C G C Shrub layer sparse or absent
	A CA Dense herb layer  B B Moderate density herb layer  C C C Herb layer sparse or absent
18.	Snags – wetland type condition metric  A Large snags (more than one) are visible (> 12-inches DBH, or large relative to species present and landscape stability).  Not A
19.	Diameter Class Distribution – wetland type condition metric  Majority of canopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are present.
	Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12-inch DBH.  Majority of canopy trees are < 6 inches DBH or no trees.
20.	Large Woody Debris – wetland type condition metric
	Include both natural debris and man-placed natural debris.  A Large logs (more than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).  B Not A
21.	Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater
	Marsh only) Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned
	areas indicate vegetated areas, while solid white areas indicate open water.  A  C  D
22.	Hydrologic Connectivity – assessment area condition metric (evaluate for riparian wetlands only)  Examples of activities that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, and stream incision.  A Overbank and overland flow are not severely altered in the assessment area.  Overland flow is severely altered in the assessment area.

- C Overland flow is severely altered in the assessment area.

  Both overbank <u>and</u> overland flow are severely altered in the assessment area.

Wetland Site Name _	Maney Farm - Wetland N	Date	5/28/2014
Wetland Type	Bottomland Hardwood Forest	Assessor Name/Organization IE &	WT Wildlands Eng
Notes on Field Assessm	nent Form (Y/N)		NO
Presence of regulatory	considerations (Y/N)		NO
Wetland is intensively m	nanaged (Y/N)		NO
Assessment area is loca	ated within 50 feet of a natural tributary or othe	er open water (Y/N)	YES
Assessment area is sub	stantially altered by beaver (Y/N)		NO
Assessment area exper	iences overbank flooding during normal rainfa	Il conditions (Y/N)	NO
Assessment area is on	a coastal island (Y/N)		NO
Sub-function Rating S Function	Sub-function	Metrics	Poting
		Condition	Rating LOW
Hydrology	Surface Storage and Retention		
Matan Ovality	Sub-Surface Storage and Retention	Condition	MEDIUM
Water Quality	Pathogen Change	Condition	MEDIUM
		Condition/Opportunity	MEDIUM
	De die late Olesse	Opportunity Presence? (Y/N)	NO NO
	Particulate Change	Condition	LOW
		Condition/Opportunity	LOW
		Opportunity Presence? (Y/N)	NO
	Soluble Change	Condition	LOW
		Condition/Opportunity	LOW
		Opportunity Presence? (Y/N)	NO
	Physical Change	Condition	LOW
		Condition/Opportunity	LOW
		Opportunity Presence? (Y/N)	NO
	Pollution Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
Habitat	Physical Structure	Condition	MEDIUM
	Landscape Patch Structure	Condition	LOW
	Vegetation Composition	Condition	MEDIUM
Function Rating Sumn	nary		
Function	Metrics/Notes		Rating
Hydrology	Condition		LOW
Water Quality	Condition		LOW
	Condition/Opportunity		LOW
	Opportunity Presence?	(Y/N)	NO
Habitat	Conditon		LOW

Watland Site Name Manay Form Watland O	
Wetland Site Name Maney Farm - Wetland O	Date 5/28/2014
Wetland Type Bottomland Hardwood Forest  ▼	Assessor Name/Organization IE & WT Wildlands Eng
Level III Ecoregion Piedmont	Nearest Named Water Body South Fork Cane Creek
River Basin Cape Fear	USGS 8-Digit Catalogue Unit 03030002
Yes No Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees) N 35.840323 W 79.344366
Evidence of stressors affecting the assessment area (may not be within Please circle and/or make note on last page if evidence of stressors is apparappropriate, in recent past (for instance, approximately within 10 years). Note to the following.  • Hydrological modifications (examples: ditches, dams, beaver dams, surface and sub-surface discharges into the wetland (examples: discharges into the wetland (examples: discharges tanks, underground storage tanks (USTs), hog lagoons, etc.)  • Signs of vegetation stress (examples: vegetation mortality, insect date that the surface is the surface of the surface discharges in the wetland (examples: discharges).	dikes, berms, ponds, etc.) charges containing obvious pollutants, presence of nearby
Is the assessment area intensively managed? Yes No	
Regulatory Considerations (select all that apply to the assessment area Anadromous fish  Federally protected species or State endangered or threatened species NCDWQ riparian buffer rule in effect  Abuts a Primary Nursery Area (PNA)  Publicly owned property  N.C. Division of Coastal Management Area of Environmental Concerdabuts a stream with a NCDWQ classification of SA or supplemental Designated NCNHP reference community  Abuts a 303(d)-listed stream or a tributary to a 303(d)-listed stream	rn (AEC) (including buffer)
What type of natural stream is associated with the wetland, if any? (che	eck all that apply)
Blackwater	
Brownwater  Tidal (if tidal, check one of the following boxes)  Lunar	Wind Both
Is the assessment area on a coastal island?	
Is the assessment area's surface water storage capacity or duration su	bstantially altered by beaver?
is the assessment area's surface water storage capacity or duration su	
Does the assessment area experience overbank flooding during norma	
sedimentation, fire-plow lanes, skidder tracks, bedding,	al rainfall conditions? Yes No  a condition metric ce (GS) in the assessment area and vegetation structure
<ol> <li>Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surfat (VS) in the assessment area. Compare to reference wetland if applicate then rate the assessment area based on evidence of an effect.         GS VS</li></ol>	al rainfall conditions?  Yes No  Ta condition metric  The ce (GS) in the assessment area and vegetation structure  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a reference is not applicable,  The cole (see User Manual). If a referenc
<ol> <li>Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surfat (VS) in the assessment area. Compare to reference wetland if applicate then rate the assessment area based on evidence of an effect.         GS VS</li></ol>	a condition metric ce (GS) in the assessment area and vegetation structure cle (see User Manual). If a reference is not applicable, a (ground surface alteration examples: vehicle tracks, excessive fill, soil compaction, obvious pollutants) (vegetation structure es, salt intrusion [where appropriate], exotic species, grazing,  ment area condition metric duration (Surf) and sub-surface storage capacity and efer to the current NRCS lateral effect of ditching guidance for r the zone of influence of ditches in hydric soils. A ditch of 1 foot deep is expected to affect both surface and ditch  substantially (typically, not sufficient to change vegetation). ered (typically, alteration sufficient to result in vegetation of filling, excessive sedimentation, underground utility lines).  dition metric (answer for non-marsh wetlands only) ropriate storage for the assessment area (AA) and the wetland  water > 1 foot deep water 6 inches to 1 foot deep

4.	featur region 4a.	k a box fire. Make hal indicator S	rom each soil obsetors. andy soitoamy or	e – assessment area condition metric ch of the three soil property groups below. Dig soil profile in the dominant assessment area landscape ervations within the 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for iil clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres) clayey soils not exhibiting redoximorphic features	
		D L	oamy or	clayey gleyed soil or histic epipedon	
	4b. (	The .		n < 1 inch n ≥ 1 inch	
	4c. (	Mary Control of the C	•	or muck presence muck presence	
5.	Chec	k a box i	n each d	nd – opportunity metric column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). ce discharges include presence of nearby septic tank, underground storage tank (UST), etc.	
	⊕ A ⊕ B	€ A G B	Noticea	r no evidence of pollutants or discharges entering the assessment area able evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the ent capacity of the assessment area	
	CC	CC	potentia	able evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and ially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive entation, odor)	
6.	draining assess are co	k all that ng to assessment are onsidered 5M	apply (a essment ea (5M), to be 50 2M	ity metric at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources t area within entire upstream watershed (WS), within 5 miles <u>and</u> within the watershed draining to the , and within 2 miles <u>and</u> within the watershed draining to the assessment area (2M). Effective riparian buffers 0 feet wide in the Coastal Plain and Piedmont ecoregions and 30 feet wide in the Blue Ridge Mountains ecoregion	۱.
	□ A I B □ C I D	□С	□ A □ B □ C □ D	<ul> <li>≥ 10% impervious surfaces</li> <li>&lt; 10% impervious surfaces</li> <li>Confined animal operations (or other local, concentrated source of pollutants)</li> <li>≥ 20% coverage of pasture</li> </ul>	
	□ E □ F □ G □ H	□ E □ F □ G	□E □F □G □H	≥ 20% coverage of agricultural land (regularly plowed land) ≥ 20% coverage of maintained grass/herb ≥ 20% coverage of clear-cut land Little or no opportunity to improve water quality. Lack of opportunity may result from hydrologic alterations that prevent drainage or overbank flow from affecting the assessment area.	
7.	7a. I	ls assess	ment are	egetated Buffer – assessment area/wetland complex condition metric ea within 50 feet of a tributary or other open water?	
	7b. I	Record a How muc A ≥	note if a h of the 50 feet	If Yes, continue to 7b. If No, skip to Metric 8.  eed only be present on one side of the water body. Make buffer judgment based on the average width of the wetla a portion of the buffer has been removed or disturbed.  first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.	ınd.
	0	C F	rom 15 t	to < 50 feet to < 30 feet o < 15 feet	
	7c.		width. If	or buffer bypassed by ditches  f the tributary is anastomosed, combine widths of channels/braids for a total width.  > 15-feet wide  Other open water (no tributary present)	
	7d. [	Do roots o	of asses	ssment area vegetation extend into the bank of the tributary/open water?	
	(	Shelter	ed – adj	er open water sheltered or exposed? jacent open water with width < 2500 feet <u>and</u> no regular boat traffic. acent open water with width ≥ 2500 feet <u>or</u> regular boat traffic.	
8.	Chec	k a box i	n each d	Assessment Area – wetland type/wetland complex metric (evaluate for riparian wetlands only) column. Select the average width for the wetland type at the assessment area (WT) ex at the assessment areas (WC). See User Manual for WT and WC boundaries.	
	WT	WC		• •	
	O A	C A	≥ 100 f	feet 30 to < 100 feet	
	CC	CC		50 to < 80 feet	
	CD	CD		40 to < 50 feet	
	ΩE.	€ E		30 to < 40 feet	
	C F	C F		15 to < 30 feet	
	<b>⊚</b> G	<b>⊚</b> G	< 5 fee	5 to < 15 feet et	
	The second second				

9.	Inundation Duration – assessment area condition metric
	Answer for assessment area dominant landform.
	A Evidence of short-duration inundation (< 7 consecutive days)
	Evidence of saturation, without evidence of inundation
	C Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)
10.	Indicators of Deposition – assessment area condition metric
	Consider recent deposition only (no plant growth since deposition).
	Sediment deposition is not excessive, but at approximately natural levels.
	B Sediment deposition is excessive, but not overwhelming the wetland.
	C Sediment deposition is excessive and is overwhelming the wetland.
11	Wetland Size – wetland type/wetland complex condition metric
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the
	size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User
	Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column.
	WT WC FW (if applicable)
	CA CA CA ≥ 500 acres
	CB CB From 100 to < 500 acres
	C C C From 50 to < 100 acres
	CD CD From 25 to < 50 acres
	CE CE From 10 to < 25 acres
	CF CF From 5 to < 10 acres
	CG CG From 1 to < 5 acres
	CH CH From 0.5 to < 1 acre
	CI CI From 0.1 to < 0.5 acre
	<b>©</b> J <b>©</b> J From 0.01 to < 0.1 acre
	K K < 0.01 acre or assessment area is clear-cut
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)
	Pocosin is the full extent (≥ 90%) of its natural landscape size.
	B Pocosin is < 90% of the full extent of its natural landscape size.
12	Connectivity to Other Natural Areas – landscape condition metric
13.	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This
	evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous
	metric naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility
	line corridors the width of a four-lane road or wider, urban landscapes, fields (pasture open and agriculture), or water > 300 feet wide.
	Well Loosely
	CA CA ≥ 500 acres
	B B From 100 to < 500 acres
	C C From 50 to < 100 acres
	CD D From 10 to < 50 acres
	F F Wetland type has a poor or no connection to other natural habitats
	13b. Evaluate for marshes only.
	Yes No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.
4.4	Edge Effect westend time condition matric (akin for all marches)
14.	Edge Effect – wetland type condition metric (skip for all marshes)  May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include
	non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors and clear-cuts.
	Consider the eight main points of the compass.
	A No artificial edge within 150 feet in all directions
	An artificial edge occurs within 150 feet in more than four (4) directions or assessment area is clear-cut
4.5	
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)
	A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate
	species, with exotic plants absent or sparse within the assessment area.
	Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or
	clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
	Considering the association of the expected strate.
	characteristic species or at least one stratum inappropriately composed of a single species). Exotic species are dominant in
	at least one stratum.
4.0	
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)
	<ul> <li>A Vegetation diversity is high and is composed primarily of native species (&lt;10% cover of exotics).</li> <li>B Vegetation diversity is low or has &gt; 10% to 50% cover of exotics.</li> </ul>
	<ul> <li>✓ B Vegetation diversity is low or has &gt; 10% to 50% cover of exotics.</li> <li>✓ C Vegetation is dominated by exotic species (&gt;50% cover of exotics).</li> </ul>

17.	Vegetative Structure – assessment area/wetland type condition metric 17a. Is vegetation present?
	Yes No If Yes, continue to 17b. If No, skip to Metric 18.
	17b. Evaluate percent coverage of assessment area vegetation <b>for all marshes only</b> . Skip to 17c for non-marsh wetlands.  ☐ A ≥ 25% coverage of vegetation ☐ B < 25% coverage of vegetation
	17c. Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately. AA WT
	A Canopy closed, or nearly closed, with natural gaps associated with natural processes B B Canopy present, but opened more than natural gaps C C C Canopy sparse or absent
	Fig. A A Dense mid-story/sapling layer  O B B Moderate density mid-story/sapling layer  O C C Mid-story/sapling layer sparse or absent
	A CA Dense shrub layer  B B Moderate density shrub layer  C C Shrub layer sparse or absent
	A C A Dense herb layer  B B Moderate density herb layer  C C C Herb layer sparse or absent
18.	Snags – wetland type condition metric  A Large snags (more than one) are visible (> 12-inches DBH, or large relative to species present and landscape stability).  Not A
19.	Diameter Class Distribution – wetland type condition metric  A Majority of canopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are present.  B Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12-inch DBH.
	C Majority of canopy trees are < 6 inches DBH or no trees.
20.	Large Woody Debris – wetland type condition metric Include both natural debris and man-placed natural debris.  A Large logs (more than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).  Not A
21.	Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)  Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.  A  B  C  D
22.	Hydrologic Connectivity – assessment area condition metric (evaluate for riparian wetlands only)  Examples of activities that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, and stream incision.  A Overbank and overland flow are not severely altered in the assessment area.  Overbank flow is severely altered in the assessment area.

- C Overland flow is severely altered in the assessment area.

  Both overbank <u>and</u> overland flow are severely altered in the assessment area.

Wetland Site Name	Maney Farm - Wetland O	Date	5/28/2014
Wetland Type	Bottomland Hardwood Forest	Assessor Name/Organization IE &	WT Wildlands En
Notes on Field Assessi	ment Form (Y/N)		NO
Presence of regulatory	considerations (Y/N)		NO
Wetland is intensively r	managed (Y/N)		NO
Assessment area is loc	cated within 50 feet of a natural tributary or other	er open water (Y/N)	YES
Assessment area is su	bstantially altered by beaver (Y/N)		NO
Assessment area expe	riences overbank flooding during normal rainfa	II conditions (Y/N)	NO
Assessment area is on	a coastal island (Y/N)		NO
Sub function Dating 6	Summary		
Sub-function Rating Services Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	LOW
,	Sub-Surface Storage and Retention	Condition	MEDIUM
Water Quality	Pathogen Change	Condition	MEDIUM
Trailor Quanty	. amogen enange	Condition/Opportunity	MEDIUM
		Opportunity Presence? (Y/N)	NO
	Particulate Change	Condition	LOW
	r articulate Charige	Condition/Opportunity	LOW
		Opportunity Presence? (Y/N)	NO
	Soluble Change	Condition	LOW
	Coldbic Change	Condition/Opportunity	LOW
		Opportunity Presence? (Y/N)	NO
	Physical Change	Condition	LOW
	Thyologi Change	Condition/Opportunity	LOW
		Opportunity Presence? (Y/N)	NO
	Pollution Change	Condition	NA NA
	1 ollation change	Condition/Opportunity	NA NA
		Opportunity Presence? (Y/N)	NA NA
Habitat	Physical Structure	Condition	HIGH
· rabitat	Landscape Patch Structure	Condition	LOW
	Vegetation Composition	Condition	MEDIUM
		00.101.101.1	
Function Rating Sum Function	mary Metrics/Notes		Rating
Hydrology	Condition		LOW
Water Quality	Condition		LOW
	Condition/Opportunity		LOW
	Opportunity Presence?	(Y/N)	NO
Habitat	Conditon	•	MEDIUM

	Rating Calcul	ator version 4.1
Wetland Site Na	ame Maney Farm - Wetland P	<b>Date</b> 5/28/2014
Wetland T	Sottomland Hardwood Forest	Assessor Name/Organization IE & WT Wildlands Eng
Level III Ecoreg	gion Piedmont	Nearest Named Water Body South Fork Cane Creek
River Ba	asin Cape Fear	<b>USGS 8-Digit Catalogue Unit</b> 03030002
Yes (	No Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees) N 35.840448 W 79.344473
Please circle and/c appropriate, in rece to the following.  • Hydrologica  • Surface and septic tanks  • Signs of ve	s, underground storage tanks (USTs), hog lagoons, et	pparent. Consider departure from reference, if Noteworthy stressors include, but are not limited  ms, dikes, berms, ponds, etc.) discharges containing obvious pollutants, presence of nearby c.) et damage, disease, storm damage, salt intrusion, etc.)
Is the assessmen	nt area intensively managed?	
Anadromou Federally p NCDWQ rip Abuts a Pri Publicly ow N.C. Divisic Abuts a stre Designated	iderations (select all that apply to the assessment as the first protected species or State endangered or threatened superian buffer rule in effect imary Nursery Area (PNA) when the property on of Coastal Management Area of Environmental Corream with a NCDWQ classification of SA or supplement NCNHP reference community (3(d)-listed stream or a tributary to a 303(d)-listed stream	pecies  ncern (AEC) (including buffer)  ntal classifications of HQW, ORW, or Trout
Blackwater Brownwate Tidal (if tidal	al, check one of the following boxes)	(check all that apply)  Wind Both
Is the assessmen	nt area on a coastal island? Yes No	
Is the assessmen	nt area's surface water storage capacity or duration	n substantially altered by beaver?
Does the assessn	ment area experience overbank flooding during no	rmal rainfall conditions? Yes No
Check a box (VS) in the as:	ssessment area. Compare to reference wetland if appl assessment area based on evidence of an effect.  Not severely altered Severely altered over a majority of the assessment sedimentation, fire-plow lanes, skidder tracks, bedd	area condition metric urface (GS) in the assessment area and vegetation structure icable (see User Manual). If a reference is not applicable,  area (ground surface alteration examples: vehicle tracks, excessive ing, fill, soil compaction, obvious pollutants) (vegetation structure icides, salt intrusion [where appropriate], exotic species, grazing,
Check a box duration (Sub North Carolina ≤ 1 foot deep	b). Consider both increase and decrease in hydrology, a hydric soils (see USACE Wilmington District website is considered to affect surface water only, while a ditcivater. Consider tidal flooding regime, if applicable. Water storage capacity and duration are not altered Water storage capacity or duration are altered, but I Water storage capacity or duration are substantially	and duration (Surf) and sub-surface storage capacity and . Refer to the current NRCS lateral effect of ditching guidance for .) for the zone of influence of ditches in hydric soils. A ditch h > 1 foot deep is expected to affect both surface and ditch
Check a box type (WT). AA \ 3a. A B		ond water 6 inches to 1 foot deep and water 3 to 6 inches deep
3b. 🦱 A 🛭	Evidence that maximum depth of inundation is greater Evidence that maximum depth of inundation is betwee	than 2 feet

4.		Structure – assessment area condition metric
		from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape
		e soil observations within the 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for
	regional indic	Sandy soil
		Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres)
		Loamy or clayey soils not exhibiting redoximorphic features
		Loamy or clayey gleyed soil
	CE	Histosol or histic epipedon
		Soil ribbon < 1 inch
		Soil ribbon ≥ 1 inch
	1.000	No peat or muck presence A peat or muck presence
5.		to Wetland – opportunity metric
		in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub).
	Surf Sub	sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.
	CA CA	Little or no evidence of pollutants or discharges entering the assessment area
	СВ СВ	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the
	55. = 6.11 =	treatment capacity of the assessment area
	00 00	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and
		potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive
		sedimentation, odor)
6.	I and Use - o	opportunity metric
٠.		at apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources
		sessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the
	assessment a	area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers
	are considere	ed to be 50 feet wide in the Coastal Plain and Piedmont ecoregions and 30 feet wide in the Blue Ridge Mountains ecoregion.
	WS 5M	<u>2M</u>
		A ≥ 10% impervious surfaces
	☑B ☑B	B < 10% impervious surfaces
		C Confined animal operations (or other local, concentrated source of pollutants)
		<ul> <li>✓ D ≥ 20% coverage of pasture</li> <li>✓ E ≥ 20% coverage of agricultural land (regularly plowed land)</li> </ul>
	F F	☐ F ≥ 20% coverage of maintained grass/herb
	□G □G	☐ G ≥ 20% coverage of clear-cut land
	ПН ПН	H Little or no opportunity to improve water quality. Lack of opportunity may result from hydrologic alterations
		that prevent drainage or overbank flow from affecting the assessment area.
7.	Wetland Acti	ing as Vegetated Buffer – assessment area/wetland complex condition metric
		ssment area within 50 feet of a tributary or other open water?
	Yes	No If Yes, continue to 7b. If No, skip to Metric 8.
	Wetland	buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland.
		a note if a portion of the buffer has been removed or disturbed.
		uch of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.
	200	≥ 50 feet From 30 to < 50 feet
		From 15 to < 30 feet
	-	From 5 to < 15 feet
	The state of the s	< 5 feet or buffer bypassed by ditches
		y width. If the tributary is anastomosed, combine widths of channels/braids for a total width.
		feet wide
		s of assessment area vegetation extend into the bank of the tributary/open water?
	200	No
		ary or other open water sheltered or exposed? ered – adjacent open water with width < 2500 feet <u>and</u> no regular boat traffic.
		sed – adjacent open water with width ≥ 2500 feet <u>or</u> regular boat traffic.
8.		Ith at the Assessment Area – wetland type/wetland complex metric (evaluate for riparian wetlands only)
		in each column. Select the average width for the wetland type at the assessment area (WT)
	WT WC	and complex at the assessment areas (WC). See User Manual for WT and WC boundaries.
	CA CA	≥ 100 feet
	CB CB	From 80 to < 100 feet
	00 00	From 50 to < 80 feet
	CD CD	From 40 to < 50 feet
	CE CE	From 30 to < 40 feet
	CF CF	From 15 to < 30 feet
	<b>©</b> G <b>©</b> G	From 5 to < 15 feet
	CH CH	< 5 feet

9.	Inundation Duration – assessment area condition metric
	Answer for assessment area dominant landform.
	A Evidence of short-duration inundation (< 7 consecutive days)
	Evidence of saturation, without evidence of inundation
	C Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)
10.	Indicators of Deposition – assessment area condition metric
	Consider recent deposition only (no plant growth since deposition).
	Sediment deposition is not excessive, but at approximately natural levels.
	B Sediment deposition is excessive, but not overwhelming the wetland.
	C Sediment deposition is excessive and is overwhelming the wetland.
11	Wetland Size – wetland type/wetland complex condition metric
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the
	size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User
	Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column.
	WT WC FW (if applicable)
	CA CA CA ≥ 500 acres
	CB CB From 100 to < 500 acres
	C C C From 50 to < 100 acres
	CD CD From 25 to < 50 acres
	CE CE From 10 to < 25 acres
	CF CF From 5 to < 10 acres
	CG CG From 1 to < 5 acres
	CH CH From 0.5 to < 1 acre
	CI CI From 0.1 to < 0.5 acre
	<b>©</b> J <b>©</b> J From 0.01 to < 0.1 acre
	K K < 0.01 acre or assessment area is clear-cut
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)
	Pocosin is the full extent (≥ 90%) of its natural landscape size.
	B Pocosin is < 90% of the full extent of its natural landscape size.
12	Connectivity to Other Natural Areas – landscape condition metric
13.	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This
	evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous
	metric naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility
	line corridors the width of a four-lane road or wider, urban landscapes, fields (pasture open and agriculture), or water > 300 feet wide.
	Well Loosely
	CA CA ≥ 500 acres
	B B From 100 to < 500 acres
	C C From 50 to < 100 acres
	CD D From 10 to < 50 acres
	F F Wetland type has a poor or no connection to other natural habitats
	13b. Evaluate for marshes only.
	Yes No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.
4.4	Edge Effect westend time condition matric (akin for all marches)
14.	Edge Effect – wetland type condition metric (skip for all marshes)  May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include
	non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors and clear-cuts.
	Consider the eight main points of the compass.
	A No artificial edge within 150 feet in all directions
	An artificial edge occurs within 150 feet in more than four (4) directions or assessment area is clear-cut
4.5	
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)
	A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate
	species, with exotic plants absent or sparse within the assessment area.
	Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or
	clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
	Considering the above the stands of non-
	characteristic species or at least one stratum inappropriately composed of a single species). Exotic species are dominant in
	at least one stratum.
4.0	
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)
	<ul> <li>A Vegetation diversity is high and is composed primarily of native species (&lt;10% cover of exotics).</li> <li>B Vegetation diversity is low or has &gt; 10% to 50% cover of exotics.</li> </ul>
	<ul> <li>✓ B Vegetation diversity is low or has &gt; 10% to 50% cover of exotics.</li> <li>✓ C Vegetation is dominated by exotic species (&gt;50% cover of exotics).</li> </ul>

17.	Vegetative Structure – assessment area/wetland type condition metric 17a. Is vegetation present?
	Yes No If Yes, continue to 17b. If No, skip to Metric 18.
	17b. Evaluate percent coverage of assessment area vegetation <b>for all marshes only</b> . Skip to 17c for non-marsh wetlands.  □ A ≥ 25% coverage of vegetation □ B < 25% coverage of vegetation
	17c. Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately. AA WT
	Canopy closed, or nearly closed, with natural gaps associated with natural processes  BCBC Canopy present, but opened more than natural gaps  CCCC Canopy sparse or absent
	G A C A Dense mid-story/sapling layer  G B B Moderate density mid-story/sapling layer  C C C Mid-story/sapling layer sparse or absent
	CA CA Dense shrub layer  B CB Moderate density shrub layer  C C Shrub layer sparse or absent
	GACA Dense herb layer  B GB Moderate density herb layer  C C C Herb layer sparse or absent
18.	Snags – wetland type condition metric  A Large snags (more than one) are visible (> 12-inches DBH, or large relative to species present and landscape stability).  Not A
19.	Diameter Class Distribution – wetland type condition metric  A Majority of canopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are present.  B Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12-inch DBH.
	Majority of canopy trees are < 6 inches DBH or no trees.
20.	Large Woody Debris – wetland type condition metric Include both natural debris and man-placed natural debris.  A Large logs (more than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).  B Not A
21.	Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only) Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.
	CA CB CC CD
22.	Hydrologic Connectivity – assessment area condition metric (evaluate for riparian wetlands only)  Examples of activities that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, and stream incision.  A Overbank and overland flow are not severely altered in the assessment area.  Overbank flow is severely altered in the assessment area.

- Overland flow is severely altered in the assessment area.

  Both overbank <u>and</u> overland flow are severely altered in the assessment area.

Wetland Site Name	e Maney Farm - Wetland P	Date	5/28/2014
Wetland Type	Bottomland Hardwood Forest	Assessor Name/Organization IE &	WT Wildlands En
Notes on Field Asses	sment Form (Y/N)		NO
Presence of regulator	ry considerations (Y/N)		NO
Wetland is intensively	y managed (Y/N)		NO
Assessment area is lo	ocated within 50 feet of a natural tributary or othe	er open water (Y/N)	YES
Assessment area is s	substantially altered by beaver (Y/N)		NO
Assessment area exp	periences overbank flooding during normal rainfa	Il conditions (Y/N)	NO
Assessment area is o	on a coastal island (Y/N)		NO
Sub-function Rating	Summary		
Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	LOW
	Sub-Surface Storage and Retention	Condition	MEDIUM
Water Quality	Pathogen Change	Condition	MEDIUM
		Condition/Opportunity	MEDIUM
		Opportunity Presence? (Y/N)	NO
	Particulate Change	Condition	LOW
		Condition/Opportunity	LOW
		Opportunity Presence? (Y/N)	NO
	Soluble Change	Condition	LOW
		Condition/Opportunity	LOW
		Opportunity Presence? (Y/N)	NO
	Physical Change	Condition	LOW
		Condition/Opportunity	LOW
		Opportunity Presence? (Y/N)	NO
	Pollution Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
Habitat	Physical Structure	Condition	LOW
	Landscape Patch Structure	Condition	LOW
	Vegetation Composition	Condition	MEDIUM
Function Rating Sur	mmary		
Function	Metrics/Notes		Rating
Hydrology	Condition		LOW
Water Quality	Condition		LOW
	Condition/Opportunity	0.10.0	LOW
11.15.4	Opportunity Presence?	(Y/N)	NO
Habitat	Conditon		LOW

	Rating Calcula	tor version 4.1	
Wetland Site Name Maney Farm	- Wetland Q	Date	5/28/2014
Wetland Type Bottomland	Hardw ood Forest	Assessor Name/Organization	IE & WT Wildlands Eng
Level III Ecoregion Piedmont		Nearest Named Water Body	South Fork Cane Creek
River Basin Cape Fear		USGS 8-Digit Catalogue Unit	03030002
	on within 48 hrs?	Latitude/Longitude (deci-degrees)	N 35.840448 W 79.344473
appropriate, in recent past (for instant to the following.  • Hydrological modifications (experiments) • Surface and sub-surface discipled septic tanks, underground storage of vegetation stress (experiments) • Signs of vegetation stress (experiments)	st page if evidence of stressors is ap ce, approximately within 10 years). It camples: ditches, dams, beaver dam harges into the wetland (examples: dirage tanks (USTs), hog lagoons, etc amples: vegetation mortality, insect ation (examples: mowing, clear-cutti	parent. Consider departure from referent Noteworthy stressors include, but are not	ot limited , presence of nearby
Is the assessment area intensively	- WII 53		
NCDWQ riparian buffer rule in Abuts a Primary Nursery Area Publicly owned property N.C. Division of Coastal Mana Abuts a stream with a NCDW Designated NCNHP reference	r State endangered or threatened sponeffect a (PNA) agement Area of Environmental Cond Q classification of SA or supplement	ecies cern (AEC) (including buffer) al classifications of HQW, ORW, or Tro	ut
What type of natural stream is assortion  Blackwater  Brownwater	ociated with the wetland, if any? (o	check all that apply)	
Tidal (if tidal, check one of the		Wind Both	
Is the assessment area on a coast	W11 52		
Is the assessment area's surface w			Yes No
Check a box in each column.  (VS) in the assessment area. C then rate the assessment area b GS VS  A A A Not severely altered sedimentation, finalteration example.	getation Condition – assessment a Consider alteration to the ground sur ompare to reference wetland if applic assed on evidence of an effect.  ered over a majority of the assessment a ire-plow lanes, skidder tracks, beddir		is not applicable,  : vehicle tracks, excessive ts) (vegetation structure
Check a box in each column. duration (Sub). Consider both in North Carolina hydric soils (see ≤ 1 foot deep is considered to af sub-surface water. Consider tida Surf Sub A A Water storage C B B Water storage C C C Water storage C	ncrease and decrease in hydrology. USACE Wilmington District website) fect surface water only, while a ditch of looding regime, if applicable.  Apacity and duration are not altered. apacity or duration are altered, but no apacity or duration are substantially apacity or duration are substantially apacity or duration are substantially apacity.	ssment area condition metric and duration (Surf) and sub-surface stora Refer to the current NRCS lateral effect for the zone of influence of ditches in hy > 1 foot deep is expected to affect both out substantially (typically, not sufficient to altered (typically, alteration sufficient to on, filling, excessive sedimentation, under	of ditching guidance for varic soils. A ditch a surface and ditch contact cont
Check a box in each column for type (WT).  AA WT  3a. A A Majority of B B Majority of C C Majority of	wetland with depressions able to por	nd water 6 inches to 1 foot deep and water 3 to 6 inches deep	
3b. A Evidence that maxi	ns able to pond water < 3 inches dee imum depth of inundation is greater t imum depth of inundation is between	han 2 feet	

4.	<ol> <li>Soil Texture/Structure – assessment area condition metric</li> <li>Check a box from each of the three soil property groups below. Dig soil profile in the dominant assessment area land</li> </ol>	scape
	feature. Make soil observations within the 12 inches. Use most recent National Technical Committee for Hydric Soils guid regional indicators.	ance for
	4a. CA Sandy soil	
	B Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres)	
	C Loamy or clayey soils not exhibiting redoximorphic features	
	D Loamy or clayey gleyed soil	
	E Histosol or histic epipedon	
	4b. A Soil ribbon < 1 inch	
	B Soil ribbon ≥ 1 inch	
	4c.  A No peat or muck presence B A peat or muck presence	
5.		
٠.	Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges	(Sub).
	Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.	
	Surf Sub	
	A Little or no evidence of pollutants or discharges entering the assessment area	ib o
	B Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming t treatment capacity of the assessment area	ne .
	C C Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessmen	t area and
	potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excess	
	sedimentation, odor)	
6.	6. Land Use – opportunity metric	
	Check all that apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider	r sources
	draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the	
	assessment area (5M), and within 2 miles <u>and</u> within the watershed draining to the assessment area (2M). Effective riparia	
	are considered to be 50 feet wide in the Coastal Plain and Piedmont ecoregions and 30 feet wide in the Blue Ridge Mounta WS 5M 2M	ains ecoregion.
	□ A □ A ≥ 10% impervious surfaces	
	▼ B ▼ B < 10% impervious surfaces	
	C C Confined animal operations (or other local, concentrated source of pollutants)	
	✓ D ✓ D ≥ 20% coverage of pasture	
	<ul><li>E</li><li>E</li><li>E</li><li>E</li><li>E</li><li>20% coverage of agricultural land (regularly plowed land)</li><li>F</li><li>F</li><li>F</li><li>F</li><li>E</li><li>F</li><li>E</li><li>C</li><li>C</li><li>C</li><li>C</li><li>D</li><li>D</li><li>D</li><li>E</li><li>C</li><li>D</li><li>E</li><li>C</li><li>D</li><li>E</li><li>C</li><li>D</li><li>E</li><li>C</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li><li>D</li></ul>	
	□ G □ G ≥ 20% coverage of clear-cut land	
	H H Little or no opportunity to improve water quality. Lack of opportunity may result from hydrologic al	terations
	that prevent drainage or overbank flow from affecting the assessment area.	
7.	7. Wetland Acting as Vegetated Buffer – assessment area/wetland complex condition metric 7a. Is assessment area within 50 feet of a tributary or other open water?	
	Yes No If Yes, continue to 7b. If No, skip to Metric 8.	
	Wetland buffer need only be present on one side of the water body. Make buffer judgment based on the average wid	th of the wetland.
	Record a note if a portion of the buffer has been removed or disturbed.	
	7b. How much of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass	the buffer.
	C A ≥ 50 feet C B From 30 to < 50 feet	
	C From 15 to < 30 feet	
	D From 5 to < 15 feet	
	E < 5 feet or buffer bypassed by ditches	
	7c. Tributary width. If the tributary is anastomosed, combine widths of channels/braids for a total width.	
	7d. Do roots of assessment area vegetation extend into the bank of the tributary/open water?	
	7e. Is tributary or other open water sheltered or exposed?	
	Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic. Exposed – adjacent open water with width ≥ 2500 feet or regular boat traffic.	
	Exposed – adjacent open water with width 2 2500 feet of regular boat trainc.	
8.	· · · · · · · · · · · · · · · · · · ·	<i>(</i> )
	Check a box in each column. Select the average width for the wetland type at the assessment area (WT) and the wetland complex at the assessment areas (WC). See User Manual for WT and WC boundaries.	
	WT WC	
	C A C A ≥ 100 feet	
	B B From 80 to < 100 feet	
	C C From 50 to < 80 feet	
	D D From 40 to < 50 feet E From 30 to < 40 feet	
	E E From 30 to < 40 feet F F From 15 to < 30 feet	
	G G From 5 to < 15 feet	
	CH CH < 5 feet	

9.	Inundation Duration – assessment area condition metric
	Answer for assessment area dominant landform.
	A Evidence of short-duration inundation (< 7 consecutive days)
	B Evidence of saturation, without evidence of inundation
	C Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)
10.	Indicators of Deposition – assessment area condition metric
	Consider recent deposition only (no plant growth since deposition).
	A Sediment deposition is not excessive, but at approximately natural levels.
	B Sediment deposition is excessive, but not overwhelming the wetland.
	C Sediment deposition is excessive and is overwhelming the wetland.
11.	Wetland Size – wetland type/wetland complex condition metric
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the
	size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User
	Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column.
	WT WC FW (if applicable)
	A A A A ≥ 500 acres
	C B C B From 100 to < 500 acres
	C C C From 50 to < 100 acres
	C D C D From 25 to < 50 acres
	F F From 5 to < 10 acres
	G G G From 1 to < 5 acres
	☐ H ☐ H From 0.5 to < 1 acre
	6   6   From 0.1 to < 0.5 acre
	G J G J From 0.01 to < 0.1 acre
	K K K < 0.01 acre or assessment area is clear-cut
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)
	A Pocosin is the full extent (≥ 90%) of its natural landscape size.
	B Pocosin is < 90% of the full extent of its natural landscape size.
10.	Connectivity to Other Natural Areas – landscape condition metric  13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous metric naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility line corridors the width of a four-lane road or wider, urban landscapes, fields (pasture open and agriculture), or water > 300 feet wide.  Well Loosely  A A ≥ 500 acres
	B B From 100 to < 500 acres
	C C From 50 to < 100 acres
	D D From 10 to < 50 acres
	© E
	F F Wetland type has a poor or no connection to other natural habitats
	13b. Evaluate for marshes only.
	Yes No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.
14.	Edge Effect – wetland type condition metric (skip for all marshes)  May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include
	non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors and clear-cuts.
	Consider the eight main points of the compass.
	A No artificial edge within 150 feet in all directions
	B No artificial edge within 150 feet in four (4) to seven (7) directions C An artificial edge occurs within 150 feet in more than four (4) directions or assessment area is clear-cut
	C An artificial edge occurs within 150 feet in more than four (4) directions or assessment area is clear-cut
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)
	A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate
	species, with exotic plants absent or sparse within the assessment area.
	B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species
	characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or
	clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
	© C Vegetation severely altered from reference in composition. Expected species are unnaturally absent (planted stands of non-
	characteristic species or at least one stratum inappropriately composed of a single species). Exotic species are dominant in
	at least one stratum.
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)
	A Vegetation diversity is high and is composed primarily of native species (<10% cover of exotics).
	§ B Vegetation diversity is low or has > 10% to 50% cover of exotics.
	C Vegetation is dominated by exotic species (>50% cover of exotics).

17.	Vegetative Structure – assessment area/wetland type condition metric 17a. Is vegetation present?
	Yes No If Yes, continue to 17b. If No, skip to Metric 18.
	17b. Evaluate percent coverage of assessment area vegetation <b>for all marshes only</b> . Skip to 17c for non-marsh wetlands.  ☐ A ≥ 25% coverage of vegetation ☐ B < 25% coverage of vegetation
	17c. Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately. AA WT
	Canopy closed, or nearly closed, with natural gaps associated with natural processes  BCBCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
	G A A Dense mid-story/sapling layer  G B B Moderate density mid-story/sapling layer  C C G C Mid-story/sapling layer sparse or absent
	CA CA Dense shrub layer  B CB Moderate density shrub layer  C C Shrub layer sparse or absent
	CA CA Dense herb layer  B CB Moderate density herb layer  CC CC Herb layer sparse or absent
	Snags – wetland type condition metric  A Large snags (more than one) are visible (> 12-inches DBH, or large relative to species present and landscape stability).  Not A
19.	Diameter Class Distribution – wetland type condition metric  A Majority of canopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are present.  B Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12-inch DBH.
	© C Majority of canopy trees are < 6 inches DBH or no trees.
20.	Large Woody Debris – wetland type condition metric Include both natural debris and man-placed natural debris.  A Large logs (more than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).  B Not A
21.	Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)  Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.  A  B  C  D
	Hydrologic Connectivity – assessment area condition metric (evaluate for riparian wetlands only)  Examples of activities that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, and stream incision.  A Overbank and overland flow are not severely altered in the assessment area.  Overbank flow is severely altered in the assessment area.

- Overland flow is severely altered in the assessment area.

  Both overbank <u>and</u> overland flow are severely altered in the assessment area.

Wetland Site Name	Maney Farm - Wetland Q	Date	5/28/2014
Wetland Type	Bottomland Hardwood Forest	Assessor Name/Organization IE &	WT Wildlands Eng
Notes on Field Assess			NO
Presence of regulatory			NO
Wetland is intensively			NO
Assessment area is loc	cated within 50 feet of a natural tributary or othe	er open water (Y/N)	YES
Assessment area is su	sbstantially altered by beaver (Y/N)		NO
Assessment area expe	eriences overbank flooding during normal rainfa	II conditions (Y/N)	NO
Assessment area is on	a coastal island (Y/N)		NO
Sub-function Rating S	Summary		
Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	LOW
	Sub-Surface Storage and Retention	Condition	MEDIUM
Water Quality	Pathogen Change	Condition	MEDIUM
		Condition/Opportunity	MEDIUM
		Opportunity Presence? (Y/N)	NO
	Particulate Change	Condition	LOW
	·	Condition/Opportunity	LOW
		Opportunity Presence? (Y/N)	NO
	Soluble Change	Condition	MEDIUM
	Ç	Condition/Opportunity	MEDIUM
		Opportunity Presence? (Y/N)	NO
	Physical Change	Condition	LOW
	,	Condition/Opportunity	LOW
		Opportunity Presence? (Y/N)	NO
	Pollution Change	Condition	NA
	1 Glidden Griange	Condition/Opportunity	NA NA
		Opportunity Presence? (Y/N)	NA NA
Habitat	Physical Structure	Condition	LOW
	Landscape Patch Structure	Condition	LOW
	Vegetation Composition	Condition	MEDIUM
Function Rating Sum	mary		
Function Rating Sum	Metrics/Notes		Rating
Hydrology	Condition		LOW
Water Quality	Condition		LOW
-	Condition/Opportunity		LOW
	Opportunity Presence?	(Y/N)	NO
Habitat	Conditon		LOW

	Rating Calculate	or version 4.1
Wetland Site Name	Maney Farm - Wetland R	<b>Date</b> 5/28/2014
Wetland Typ	Bottomland Hardwood Forest	Assessor Name/Organization IE & WT Wildlands Eng
Level III Ecoregion	n Piedmont	Nearest Named Water Body South Fork Cane Creek
River Basi	in Cape Fear	USGS 8-Digit Catalogue Unit 03030002
Yes	No Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees) N 35.840448 W 79.344473
Please circle and/or r appropriate, in recent to the following.  • Hydrological n  • Surface and s septic tanks, t  • Signs of veget	ors affecting the assessment area (may not be with make note on last page if evidence of stressors is apply to past (for instance, approximately within 10 years). Note modifications (examples: ditches, dams, beaver dams sub-surface discharges into the wetland (examples: discharger to the wetland (examples: distance) distances to the discharges to the wetland (examples: distance) distances (examples: vegetation mortality, insect of community alteration (examples: mowing, clear-cutting)	parent. Consider departure from reference, if loteworthy stressors include, but are not limited s, dikes, berms, ponds, etc.) scharges containing obvious pollutants, presence of nearby damage, disease, storm damage, salt intrusion, etc.)
Is the assessment a	area intensively managed?   Yes No	
Anadromous f Federally prot NCDWQ ripar Abuts a Prima Publicly owne N.C. Division Abuts a strear Designated N	tected species or State endangered or threatened spe rian buffer rule in effect ary Nursery Area (PNA)	ern (AEC) (including buffer) al classifications of HQW, ORW, or Trout
Blackwater Brownwater Tidal (if tidal, o	check one of the following boxes)	heck all that apply)  Wind Both
Is the assessment a	area on a coastal island? Yes No	
Is the assessment a	area's surface water storage capacity or duration s	substantially altered by beaver?
Does the assessmen	ent area experience overbank flooding during norm	nal rainfall conditions? Yes No
Check a box in (VS) in the asses then rate the ass GS VS A A B B S	ssment area. Compare to reference wetland if applicates sessment area based on evidence of an effect.  Not severely altered Severely altered over a majority of the assessment are sedimentation, fire-plow lanes, skidder tracks, bedding	rea condition metric face (GS) in the assessment area and vegetation structure fable (see User Manual). If a reference is not applicable,  ea (ground surface alteration examples: vehicle tracks, excessive g, fill, soil compaction, obvious pollutants) (vegetation structure des, salt intrusion [where appropriate], exotic species, grazing,
Check a box in duration (Sub).  North Carolina h ≤ 1 foot deep is a sub-surface wate Surf Sub  A A A A B B B A C C C A	Consider both increase and decrease in hydrology. In a soils (see USACE Wilmington District website) for considered to affect surface water only, while a ditcher. Consider tidal flooding regime, if applicable.  Water storage capacity and duration are not altered. Water storage capacity or duration are altered, but no Water storage capacity or duration are substantially all	sment area condition metric and duration (Surf) and sub-surface storage capacity and Refer to the current NRCS lateral effect of ditching guidance for for the zone of influence of ditches in hydric soils. A ditch > 1 foot deep is expected to affect both surface and ditch  It substantially (typically, not sufficient to change vegetation). Itered (typically, alteration sufficient to result in vegetation in, filling, excessive sedimentation, underground utility lines).
	each column for each group below. Select the app  T  A Majority of wetland with depressions able to pone	·
□ D	C Majority of wetland with depressions able to pone	·

4.	Check a bo	e/Structure – assessment area condition metric ix from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape like soil observations within the 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for icators.  Sandy soil  Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres)  Loamy or clayey gleyed soil
	<ul><li>← E</li><li>4b.</li></ul>	Histosol or histic epipedon Soil ribbon < 1 inch
	<ul><li>C B</li><li>4c.</li></ul>	Soil ribbon ≥ 1 inch  No peat or muck presence
	СВ	A peat or muck presence
5.	Check a bo	into Wetland – opportunity metric  ix in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub).  If sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.
	CA CA	· · · · · · · · · · · · · · · · · · ·
	GC GC	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation, odor)
6.	Check all the draining to a assessment	_
	B	C Confined animal operations (or other local, concentrated source of pollutants)  ≥ 20% coverage of pasture  ≥ 20% coverage of agricultural land (regularly plowed land)  F ≥ 20% coverage of maintained grass/herb  G ⊆ G ≥ 20% coverage of clear-cut land
7.		esting as Vegetated Buffer – assessment area/wetland complex condition metric essment area within 50 feet of a tributary or other open water?
	© Yes Wetlar Record 7b. How m A B C C D E 7c. Tributa © ≤ 15 7d. Do roo © Yes 7e. Is tribut © She	No If Yes, continue to 7b. If No, skip to Metric 8.  Ind buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland do a note if a portion of the buffer has been removed or disturbed.  Inuch of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.  ≥ 50 feet  From 30 to < 50 feet  From 15 to < 30 feet  From 5 to < 15 feet  < 5 feet or buffer bypassed by ditches  ary width. If the tributary is anastomosed, combine widths of channels/braids for a total width.  5-feet wide
8.		idth at the Assessment Area – wetland type/wetland complex metric (evaluate for riparian wetlands only) is in each column. Select the average width for the wetland type at the assessment area (WT)
		land complex at the assessment areas (WC). See User Manual for WT and WC boundaries.  ≥ 100 feet From 80 to < 100 feet From 50 to < 80 feet From 40 to < 50 feet From 30 to < 40 feet From 15 to < 30 feet From 5 to < 15 feet
	Act III Act I	1 01001

9.	Inundation Duration – assessment area condition metric
	Answer for assessment area dominant landform.
	A Evidence of short-duration inundation (< 7 consecutive days)
	© B Evidence of saturation, without evidence of inundation
	C Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)
10.	Indicators of Deposition – assessment area condition metric
	Consider recent deposition only (no plant growth since deposition).
	A Sediment deposition is not excessive, but at approximately natural levels.
	B Sediment deposition is excessive, but not overwhelming the wetland.
	C Sediment deposition is excessive and is overwhelming the wetland.
11	Wetland Size – wetland type/wetland complex condition metric
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the
	size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User
	Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column.
	WT WC FW (if applicable)
	CA CA CA ≥ 500 acres
	CB CB From 100 to < 500 acres
	C C C From 50 to < 100 acres
	CD CD From 25 to < 50 acres
	CE CE From 10 to < 25 acres
	CF CF From 5 to < 10 acres
	CG CG From 1 to < 5 acres
	CH CH From 0.5 to < 1 acre
	CI CI From 0.1 to < 0.5 acre
	<b>⑥</b> J <b>⑥</b> J From 0.01 to < 0.1 acre
	K K < 0.01 acre or assessment area is clear-cut
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)
	B Pocosin is < 90% of the full extent of its natural landscape size.
12	Connectivity to Other Natural Areas – landscape condition metric
13.	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This
	evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous
	metric naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility
	line corridors the width of a four-lane road or wider, urban landscapes, fields (pasture open and agriculture), or water > 300 feet wide.
	Well Loosely
	CA CA ≥ 500 acres
	B B From 100 to < 500 acres
	C C From 50 to < 100 acres
	C D From 10 to < 50 acres
	F F Wetland type has a poor or no connection to other natural habitats
	13b. Evaluate for marshes only.
	Yes No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.
4.4	Edge Effect westend time condition metric (akin for all marches)
14.	Edge Effect – wetland type condition metric (skip for all marshes)  May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include
	non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors and clear-cuts.
	Consider the eight main points of the compass.
	A No artificial edge within 150 feet in all directions
	B No artificial edge within 150 feet in four (4) to seven (7) directions
	© C An artificial edge occurs within 150 feet in more than four (4) directions or assessment area is clear-cut
4.5	Venetable Organish and and analysis and black and Black Flat
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)
	A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate
	species, with exotic plants absent or sparse within the assessment area.
	Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or
	clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
	C Vegetation severely altered from reference in composition. Expected species are unnaturally absent (planted stands of non-
	characteristic species or at least one stratum inappropriately composed of a single species). Exotic species are dominant in
	at least one stratum.
4.0	
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)
	<ul> <li>A Vegetation diversity is high and is composed primarily of native species (&lt;10% cover of exotics).</li> <li>B Vegetation diversity is low or has &gt; 10% to 50% cover of exotics.</li> </ul>
	<ul> <li>Vegetation diversity is low or has &gt; 10% to 50% cover of exotics.</li> <li>Vegetation is dominated by exotic species (&gt;50% cover of exotics).</li> </ul>

17.	Vegetative Structure – assessment area/wetland type condition metric 17a. Is vegetation present?
	Yes No If Yes, continue to 17b. If No, skip to Metric 18.
	17b. Evaluate percent coverage of assessment area vegetation <b>for all marshes only</b> . Skip to 17c for non-marsh wetlands.  □ A ≥ 25% coverage of vegetation □ B < 25% coverage of vegetation
	17c. Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately. AA WT
	Canopy closed, or nearly closed, with natural gaps associated with natural processes  BCBC Canopy present, but opened more than natural gaps  CCCC Canopy sparse or absent
	G A C A Dense mid-story/sapling layer  G B B Moderate density mid-story/sapling layer  C C C Mid-story/sapling layer sparse or absent
	CA CA Dense shrub layer  B CB Moderate density shrub layer  C C Shrub layer sparse or absent
	GACA Dense herb layer  B GB Moderate density herb layer  C C C Herb layer sparse or absent
18.	Snags – wetland type condition metric  A Large snags (more than one) are visible (> 12-inches DBH, or large relative to species present and landscape stability).  Not A
19.	Diameter Class Distribution – wetland type condition metric  A Majority of canopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are present.  B Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12-inch DBH.
	Majority of canopy trees are < 6 inches DBH or no trees.
20.	Large Woody Debris – wetland type condition metric Include both natural debris and man-placed natural debris.  A Large logs (more than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).  B Not A
21.	Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only) Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.
	CA CB CC CD
22.	Hydrologic Connectivity – assessment area condition metric (evaluate for riparian wetlands only)  Examples of activities that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, and stream incision.  A Overbank and overland flow are not severely altered in the assessment area.  Overbank flow is severely altered in the assessment area.

- Overland flow is severely altered in the assessment area.

  Both overbank <u>and</u> overland flow are severely altered in the assessment area.

Wetland Site Name _	Maney Farm - Wetland R	Date	5/28/2014
Wetland Type	Bottomland Hardwood Forest	Assessor Name/Organization IE &	WT Wildlands Eng
Notes on Field Assessr	nent Form (Y/N)		NO
Presence of regulatory	considerations (Y/N)		NO
Wetland is intensively r	nanaged (Y/N)		NO
Assessment area is loc	ated within 50 feet of a natural tributary or othe	er open water (Y/N)	YES
Assessment area is sub	ostantially altered by beaver (Y/N)		NO
Assessment area expe	riences overbank flooding during normal rainfa	Il conditions (Y/N)	NO
Assessment area is on	a coastal island (Y/N)		NO
Sub-function Rating S	Summary		
Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	LOW
	Sub-Surface Storage and Retention	Condition	MEDIUM
Water Quality	Pathogen Change	Condition	MEDIUM
•	0 0	Condition/Opportunity	MEDIUM
		Opportunity Presence? (Y/N)	NO
	Particulate Change	Condition	LOW
	3	Condition/Opportunity	LOW
		Opportunity Presence? (Y/N)	NO
	Soluble Change	Condition	LOW
	Coluzio Change	Condition/Opportunity	LOW
		Opportunity Presence? (Y/N)	NO
	Physical Change	Condition	LOW
	Thyologi Chango	Condition/Opportunity	LOW
		Opportunity Presence? (Y/N)	NO
	Pollution Change	Condition	NA NA
	1 Gliddon Ghange	Condition/Opportunity	NA NA
		Opportunity Presence? (Y/N)	NA NA
Habitat	Physical Structure	Condition	LOW
rabitat	Landscape Patch Structure	Condition	LOW
	Vegetation Composition	Condition	MEDIUM
Francisco Batina Comm			
Function Rating Sumr Function	Metrics/Notes		Rating
Hydrology	Condition		LOW
Water Quality	Condition		LOW
•	Condition/Opportunity		LOW
	Opportunity Presence?	(Y/N)	NO
Habitat	Conditon		LOW

Wetland Site Name Maney Farm - Wetland S	<b>Date</b> 5/28/2014
Wetland Type Bottomland Hardwood Forest  ▼	Assessor Name/Organization IE & WT Wildlands Eng
Level III Ecoregion Piedmont	Nearest Named Water Body South Fork Cane Creek
River Basin Cape Fear	USGS 8-Digit Catalogue Unit 03030002
Yes No Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees) N 35.840448 W 79.344473
Evidence of stressors affecting the assessment area (may not be within Please circle and/or make note on last page if evidence of stressors is apparanged appropriate, in recent past (for instance, approximately within 10 years). Note to the following.  • Hydrological modifications (examples: ditches, dams, beaver dams, surface and sub-surface discharges into the wetland (examples: discusseptic tanks, underground storage tanks (USTs), hog lagoons, etc.)  • Signs of vegetation stress (examples: vegetation mortality, insect date.)  • Habitat/plant community alteration (examples: mowing, clear-cutting)	dikes, berms, ponds, etc.) charges containing obvious pollutants, presence of nearby amage, disease, storm damage, salt intrusion, etc.)
Is the assessment area intensively managed? Yes No	
Regulatory Considerations (select all that apply to the assessment area Anadromous fish  Federally protected species or State endangered or threatened species NCDWQ riparian buffer rule in effect  Abuts a Primary Nursery Area (PNA)  Publicly owned property  N.C. Division of Coastal Management Area of Environmental Concert Abuts a stream with a NCDWQ classification of SA or supplemental Designated NCNHP reference community  Abuts a 303(d)-listed stream or a tributary to a 303(d)-listed stream	rn (AEC) (including buffer)
What type of natural stream is associated with the wetland, if any? (che	eck all that apply)
Blackwater	
Brownwater  Tidal (if tidal, check one of the following boxes)  Lunar	Wind Both
Is the assessment area on a coastal island?	
Is the assessment area's surface water storage capacity or duration su	Company Company
is the assessinent area's surface water storage capacity or unration so	shetantially altered by heaver?
1. Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if applicate then rate the assessment area based on evidence of an effect.  GS VS  A A Not severely altered  B Severely altered over a majority of the assessment area sedimentation, fire-plow lanes, skidder tracks, bedding,	al rainfall conditions? Yes No  ra condition metric ce (GS) in the assessment area and vegetation structure
<ol> <li>Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if applicate then rate the assessment area based on evidence of an effect. GS VS A A Not severely altered</li> <li>B B Severely altered over a majority of the assessment area sedimentation, fire-plow lanes, skidder tracks, bedding, alteration examples: mechanical disturbance, herbicide less diversity [if appropriate], hydrologic alteration)</li> <li>Surface and Sub-Surface Storage Capacity and Duration – assessing Check a box in each column. Consider surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Reversity and the column of the colum</li></ol>	al rainfall conditions?  Yes No  No  Ta condition metric  In the assessment area and vegetation structure  Total (see User Manual). If a reference is not applicable,  In a (ground surface alteration examples: vehicle tracks, excessive  In fill, soil compaction, obvious pollutants) (vegetation structure  Test, salt intrusion [where appropriate], exotic species, grazing,  The area condition metric  In duration (Surf) and sub-surface storage capacity and  The area condition in the correct of the current NRCS lateral effect of ditching guidance for  The zone of influence of ditches in hydric soils. A ditch
<ol> <li>Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if applicate then rate the assessment area based on evidence of an effect. GS VS A A Not severely altered</li> <li>B B Severely altered over a majority of the assessment area sedimentation, fire-plow lanes, skidder tracks, bedding, alteration examples: mechanical disturbance, herbicide less diversity [if appropriate], hydrologic alteration)</li> <li>Surface and Sub-Surface Storage Capacity and Duration – assessing Check a box in each column. Consider surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Reversity and the column of the colum</li></ol>	a condition metric a condition metric a condition metric a (GS) in the assessment area and vegetation structure a (ground surface alteration examples: vehicle tracks, excessive a (ground surface alteration splutants) (vegetation structure as, salt intrusion [where appropriate], exotic species, grazing,  ment area condition metric a duration (Surf) and sub-surface storage capacity and after to the current NRCS lateral effect of ditching guidance for a the zone of influence of ditches in hydric soils. A ditch a foot deep is expected to affect both surface and ditch  substantially (typically, not sufficient to change vegetation).  a substantially (typically, not sufficient to result in vegetation b (typically, alteration sufficient to change vegetation) b (typically, alteration su

4.	Check a	box fr Make s indicate A Sa B Lo C Lo	om each soil observers. Andy soil oamy or oamy or	e – assessment area conc h of the three soil prope ervations within the 12 inch l clayey soils exhibiting reductayey soils not exhibiting clayey gleyed soil	rty groups below. nes. Use most rece oximorphic features	ent National Tech	nical Committee	for Hydric Soils g	•
	C	∃ Hi	stosol o	r histic epipedon					
	4b. 🕝 A			n < 1 inch n ≥ 1 inch					
	4c. 💽 A		•	r muck presence muck presence					
5.	Check a Example Surf	box ins of subsubstitution in the subsum in	each o	nd – opportunity metric column. Consider surface te discharges include pres	ence of nearby sep	tic tank, undergro	ound storage tank	_	es (Sub).
	760	В	Noticea	no evidence of pollutants ble evidence of pollutants ent capacity of the assessr	or discharges ente	-		not overwhelmin	g the
	CC C		potentia	able evidence of pollutants ally overwhelming the treat ntation, odor)				-	
6.	check a draining assessmare cons WS	II that a to assement are idered 5M	apply (a essment ea (5M),	ty metric at least one box in each of area within entire upstrea and within 2 miles and with a feet wide in the Coastal F ≥ 10% impervious surface	m watershed (WS), thin the watershed o Plain and Piedmont	, within 5 miles <u>a</u> draining to the as	<u>nd</u> within the wate sessment area (2	ershed draining to M). Effective ripa	the arian buffers
	B C C C C C C C C C C C C C C C C C C C	B C D E F	B C D E F G	< 10% impervious surface Confined animal operatio ≥ 20% coverage of pasture ≥ 20% coverage of agricute ≥ 20% coverage of mainter ≥ 20% coverage of clear- Little or no opportunity to	es ns (or other local, c re iltural land (regular) ained grass/herb cut land	y plowed land)		lt from hydrologic	alterations
7.				that prevent drainage or ogetated Buffer – assessn	nent area/wetland	complex condit			
	We Red Tb. How I I I I I I I I I I I I I I I I I I I	Yes etland b cord a r w much A ≥ ! B Fr C Fr D Fr E < ! butary v ≤ 15-fee roots o Yes ributary Sheltere	No uffer ne note if a nof the 150 feet om 30 to om 15 to om 5 feet out width. If et wide f assession or or other ed – adj	ea within 50 feet of a tribute If Yes, continue to 7b. ed only be present on one portion of the buffer has be first 50 feet from the bank  0 < 50 feet 0 < 30 feet < 15 feet c buffer bypassed by ditche the tributary is anastomos > 15-feet wide sment area vegetation exter- ter open water sheltered or acent open water with width	If No, skip to Metric side of the water been removed or disis weltand? Describes es sed, combine widthe other open water end into the bank of exposed?	c 8. ody. Make buffe sturbed. ptor E should be s of channels/bra (no tributary/ope the tributary/ope	selected if ditches ids for a total wids sent) en water?	s effectively bypa	
8.				Assessment Area – wetla olumn. Select the average	• •	•	•		nly)
	and the WT WT A B C C D E F G G	wetland WC A B C D E F	≥ 100 for From 8 From 5 From 4 From 3 From 1 From 5	ex at the assessment area  eet 0 to < 100 feet 0 to < 80 feet 0 to < 50 feet 0 to < 40 feet 5 to < 30 feet to < 15 feet		• • •		, ,	
	CPH (	PH .	< 5 feet	L					

9.	Inundation Duration – assessment area condition metric				
	Answer for assessment area dominant landform.				
	A Evidence of short-duration inundation (< 7 consecutive days)				
	Evidence of saturation, without evidence of inundation				
	C Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)				
10.	Indicators of Deposition – assessment area condition metric				
	Consider recent deposition only (no plant growth since deposition).				
	Sediment deposition is not excessive, but at approximately natural levels.				
	B Sediment deposition is excessive, but not overwhelming the wetland.				
	C Sediment deposition is excessive and is overwhelming the wetland.				
11	Wetland Size – wetland type/wetland complex condition metric				
• • • •	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the				
	size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User				
	Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column.				
	WT WC FW (if applicable)				
	CA CA ≥ 500 acres				
	C B C B From 100 to < 500 acres				
	C C C From 50 to < 100 acres				
	C D C D From 25 to < 50 acres				
	C E C E From 10 to < 25 acres				
	F F From 5 to < 10 acres				
	G G G From 1 to < 5 acres				
	CH CH From 0.5 to < 1 acre				
	CI CI From 0.1 to < 0.5 acre				
	GJ GJ From 0.01 to < 0.1 acre				
	K K K < 0.01 acre or assessment area is clear-cut				
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)				
	A Pocosin is the full extent (≥ 90%) of its natural landscape size.				
	B Pocosin is < 90% of the full extent of its natural landscape size.				
13	Connectivity to Other Natural Areas – landscape condition metric				
	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This				
evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch,					
metric naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly main					
line corridors the width of a four-lane road or wider, urban landscapes, fields (pasture open and agriculture), or water >					
	Well Loosely				
	CA CA ≥ 500 acres				
	C C From 50 to < 100 acres				
	D D From 10 to < 50 acres				
	© E © E < 10 acres				
	F F Wetland type has a poor or no connection to other natural habitats				
	13b. Evaluate for marshes only.				
	Yes No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.				
14	Edge Effect – wetland type condition metric (skip for all marshes)				
	May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include				
	non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors and clear-cuts.				
	Consider the eight main points of the compass.				
	A No artificial edge within 150 feet in all directions				
	B No artificial edge within 150 feet in four (4) to seven (7) directions				
	© C An artificial edge occurs within 150 feet in more than four (4) directions or assessment area is clear-cut				
15	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)				
13.	A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate				
	species, with exotic plants absent or sparse within the assessment area.				
	© B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species				
	characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or				
	clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.				
	C Vegetation severely altered from reference in composition. Expected species are unnaturally absent (planted stands of non-				
	characteristic species or at least one stratum inappropriately composed of a single species). Exotic species are dominant in				
	at least one stratum.				
16	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)				
٠٠.	A Vegetation diversity is high and is composed primarily of native species (<10% cover of exotics).				
	man in a separation and the contract of the co				

17.	Vegetative Structure – assessment area/wetland type condition metric 17a. Is vegetation present?
	Yes No If Yes, continue to 17b. If No, skip to Metric 18.
	17b. Evaluate percent coverage of assessment area vegetation <b>for all marshes only</b> . Skip to 17c for non-marsh wetlands.  ☐ A ≥ 25% coverage of vegetation ☐ B < 25% coverage of vegetation
	17c. Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately. AA WT
	Canopy closed, or nearly closed, with natural gaps associated with natural processes  BCBC Canopy present, but opened more than natural gaps  CCCC Canopy sparse or absent
	Fig. C C Mid-story/sapling layer sparse or absent
	CA CA Dense shrub layer  B CB Moderate density shrub layer  C C Shrub layer sparse or absent
	GACA Dense herb layer  B GB Moderate density herb layer  C C C Herb layer sparse or absent
18.	Snags – wetland type condition metric  A Large snags (more than one) are visible (> 12-inches DBH, or large relative to species present and landscape stability).  Not A
19.	Diameter Class Distribution – wetland type condition metric  A Majority of canopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are present.  B Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12-inch DBH.
	Majority of canopy trees are < 6 inches DBH or no trees.
20.	Large Woody Debris – wetland type condition metric Include both natural debris and man-placed natural debris.  A Large logs (more than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).  B Not A
21.	Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only) Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.
	CA CB CC CD
22.	Hydrologic Connectivity – assessment area condition metric (evaluate for riparian wetlands only)  Examples of activities that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, and stream incision.  A Overbank and overland flow are not severely altered in the assessment area.  Overbank flow is severely altered in the assessment area.

- Overland flow is severely altered in the assessment area.

  Both overbank <u>and</u> overland flow are severely altered in the assessment area.

Notes

# NC WAM Wetland Rating Sheet Accompanies User Manual Version 4.1 Rating Calculator Version 4.1

Wetland Site Name _	Maney Farm - Wetland S	Date	5/28/2014
Wetland Type	Bottomland Hardwood Forest	Assessor Name/Organization IE &	WT Wildlands En
Notes on Field Assessr	nent Form (Y/N)		NO
Presence of regulatory	considerations (Y/N)		NO
Wetland is intensively r	nanaged (Y/N)		NO
Assessment area is loc	ated within 50 feet of a natural tributary or othe	er open water (Y/N)	YES
Assessment area is sub	ostantially altered by beaver (Y/N)		NO
Assessment area expe	riences overbank flooding during normal rainfa	II conditions (Y/N)	NO
Assessment area is on	a coastal island (Y/N)		NO
Sub-function Rating S	Summary		
Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	LOW
	Sub-Surface Storage and Retention	Condition	MEDIUM
Water Quality	Pathogen Change	Condition	MEDIUM
•	0 0	Condition/Opportunity	MEDIUM
		Opportunity Presence? (Y/N)	NO
	Particulate Change	Condition	LOW
	3.	Condition/Opportunity	LOW
		Opportunity Presence? (Y/N)	NO
	Soluble Change	Condition	LOW
	Colubio Change	Condition/Opportunity	LOW
		Opportunity Presence? (Y/N)	NO
	Physical Change	Condition	LOW
	Thysical Change	Condition/Opportunity	LOW
		Opportunity Presence? (Y/N)	NO
	Pollution Change	Condition	NA NA
	Foliation Change	Condition/Opportunity	NA NA
		Opportunity Presence? (Y/N)	NA NA
Habitat	Physical Structure	Condition	LOW
Tiabitat	Landscape Patch Structure	Condition	LOW
	Vegetation Composition	Condition	MEDIUM
Function Rating Sumr Function	Metrics/Notes		Rating
Hydrology	Condition		LOW
Water Quality	Condition		LOW
•	Condition/Opportunity		LOW
	Opportunity Presence?	(Y/N)	NO
Habitat	Conditon		LOW

#### NC WAM WETLAND ASSESSMENT FORM Accompanies User Manual Version 4.1 Rating Calculator Version 4.1

144 A 146 A 14	
Wetland Site Name Maney Farm - Wetland T	<b>Date</b> <u>5/28/2014</u>
Wetland Type Bottomland Hardwood Forest	Assessor Name/Organization IE & WT Wildlands Eng
Level III Ecoregion Piedmont	Nearest Named Water Body South Fork Cane Creek
River Basin Cape Fear	USGS 8-Digit Catalogue Unit 03030002
	Latitude/Longitude (deci-degrees) N 35.840448 W 79.344473
Evidence of stressors affecting the assessment area (may not be with Please circle and/or make note on last page if evidence of stressors is apprapropriate, in recent past (for instance, approximately within 10 years). Note the following.  • Hydrological modifications (examples: ditches, dams, beaver dams • Surface and sub-surface discharges into the wetland (examples: disceptic tanks, underground storage tanks (USTs), hog lagoons, etc.) • Signs of vegetation stress (examples: vegetation mortality, insect definition to the discontinuous examples: mowing, clear-cutting the assessment area intensively managed?  Yes	arent. Consider departure from reference, if oteworthy stressors include, but are not limited , dikes, berms, ponds, etc.) charges containing obvious pollutants, presence of nearby amage, disease, storm damage, salt intrusion, etc.)
Regulatory Considerations (select all that apply to the assessment are	a)
Anadromous fish Federally protected species or State endangered or threatened species or State endangered or State endange	rn (AEC) (including buffer)
What type of natural stream is associated with the wetland, if any? (ch	eck all that apply)
Blackwater	ook all that apply)
Brownwater Tidal (if tidal, check one of the following boxes) Lunar	Wind Both
	Willia
Is the assessment area on a coastal island? Yes No	
Is the assessment area's surface water storage capacity or duration s	
Does the assessment area experience overbank flooding during norm	
1. Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surfa (VS) in the assessment area. Compare to reference wetland if application then rate the assessment area based on evidence of an effect.  GS VS  A A Not severely altered  B Severely altered over a majority of the assessment are sedimentation, fire-plow lanes, skidder tracks, bedding	al rainfall conditions? Yes No ea condition metric ace (GS) in the assessment area and vegetation structure
<ol> <li>Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surfa (VS) in the assessment area. Compare to reference wetland if application then rate the assessment area based on evidence of an effect.</li> <li>GS VS</li> <li>A A Not severely altered</li> <li>B Severely altered over a majority of the assessment are sedimentation, fire-plow lanes, skidder tracks, bedding alteration examples: mechanical disturbance, herbicide</li> </ol>	Para condition metric ace (GS) in the assessment area and vegetation structure ble (see User Manual). If a reference is not applicable, ace (ground surface alteration examples: vehicle tracks, excessive fill, soil compaction, obvious pollutants) (vegetation structure es, salt intrusion [where appropriate], exotic species, grazing,
<ol> <li>Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if application then rate the assessment area based on evidence of an effect.</li> <li>GS VS</li> <li>A A Not severely altered</li> <li>B Severely altered over a majority of the assessment area sedimentation, fire-plow lanes, skidder tracks, bedding alteration examples: mechanical disturbance, herbicid less diversity [if appropriate], hydrologic alteration)</li> <li>Surface and Sub-Surface Storage Capacity and Duration – assess Check a box in each column. Consider surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. North Carolina hydric soils (see USACE Wilmington District website) for ≤ 1 foot deep is considered to affect surface water only, while a ditch sub-surface water. Consider tidal flooding regime, if applicable. Surf Sub</li> <li>A A Water storage capacity and duration are not altered.</li> <li>B B Water storage capacity or duration are altered, but not C C Water storage capacity or duration are substantially altered.</li> </ol>	Para condition metric  ace (GS) in the assessment area and vegetation structure ble (see User Manual). If a reference is not applicable,  ace (ground surface alteration examples: vehicle tracks, excessive fill, soil compaction, obvious pollutants) (vegetation structure es, salt intrusion [where appropriate], exotic species, grazing,  ment area condition metric diduration (Surf) and sub-surface storage capacity and efer to the current NRCS lateral effect of ditching guidance for or the zone of influence of ditches in hydric soils. A ditch
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<ol> <li>Ground Surface Condition/Vegetation Condition – assessment are Check a box in each column. Consider alteration to the ground surface (VS) in the assessment area. Compare to reference wetland if application then rate the assessment area based on evidence of an effect. GS VS A A Not severely altered</li> <li>B B Severely altered over a majority of the assessment are sedimentation, fire-plow lanes, skidder tracks, bedding alteration examples: mechanical disturbance, herbicic less diversity [if appropriate], hydrologic alteration)</li> <li>Surface and Sub-Surface Storage Capacity and Duration – assess Check a box in each column. Consider surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Report Carolina hydric soils (see USACE Wilmington District website) for ≤ 1 foot deep is considered to affect surface water only, while a ditch sub-surface water. Consider tidal flooding regime, if applicable. Surfor Sub</li> <li>A A Water storage capacity and duration are not altered. B B Water storage capacity or duration are altered, but not C C C Water storage capacity or duration are substantially all change) (examples: draining, flooding, soil compaction) (examples: draining, flooding, soil compaction) (examples: draining, flooding, soil compaction) (head with depressions able to pond B B Majority of wetland with depressions able to pond B B Majority of wetland with depressions able to pond B B Majority of wetland with depressions able to pond B B Majority of wetland with depressions able to pond B B Majority of wetland with depressions able to pond B B Majority of wetland with depressions able to pond B B Majority of wetland with depressions able to pond B B Majority of wetland with depressions able to pond B B Majority of wetland with depressions able to pond B B B Majority of wetland with depressions able to pond B B B Majority of wetland with depressions able to pond B B B B B B B B B B B B B B B B B B B</li></ol>	Pace condition metric ace (GS) in the assessment area and vegetation structure ace (GS) in the assessment area and vegetation structure ace (GS) in the assessment area and vegetation structure ace (GS) in the assessment area and vegetation structure ace (GS) in the assessment area and vegetation structure ace (GS) in the assessment area and vegetation structure ace (GS) in the assessive (GS) i
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4.	Check feature regiona 4a.	a box from the state of the sta	rom each soil obse ors. andy soil bamy or bamy or	clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres) clayey soils not exhibiting redoximorphic features	
	C			clayey gleyed soil or histic epipedon	
	4b. 🕝			n < 1 inch n ≥ 1 inch	
	4c.		•	or muck presence muck presence	
5.	Check	a box ir	n each d	nd – opportunity metric column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). ce discharges include presence of nearby septic tank, underground storage tank (UST), etc.	
	750	<b>©</b> A <b>○</b> B	Noticea	r no evidence of pollutants or discharges entering the assessment area able evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the ent capacity of the assessment area	
	CC	CC	potentia	able evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and ally overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive entation, odor)	
6.	check draining assessi are con WS	all that g to assement are sidered 5M	apply (a essment ea (5M),	ity metric at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources t area within entire upstream watershed (WS), within 5 miles <u>and</u> within the watershed draining to the , and within 2 miles <u>and</u> within the watershed draining to the assessment area (2M). Effective riparian buffers 0 feet wide in the Coastal Plain and Piedmont ecoregions and 30 feet wide in the Blue Ridge Mountains ecoregion.	
	▼ B □ C ▼ D	▼ B □ C ▼ D	B C D E	<ul> <li>≥ 10% impervious surfaces</li> <li>&lt; 10% impervious surfaces</li> <li>Confined animal operations (or other local, concentrated source of pollutants)</li> <li>≥ 20% coverage of pasture</li> <li>≥ 20% coverage of agricultural land (regularly plowed land)</li> </ul>	
	□ F □ G	□ F □ G	□ F □ G □ H	≥ 20% coverage of maintained grass/herb ≥ 20% coverage of clear-cut land Little or no opportunity to improve water quality. Lack of opportunity may result from hydrologic alterations that prevent drainage or overbank flow from affecting the assessment area.	
7.	7a. Is	assessi	ment are	egetated Buffer – assessment area/wetland complex condition metric ea within 50 feet of a tributary or other open water?	
	W Re 7b. He	etland becord a cow much	note if a n of the t 50 feet	If Yes, continue to 7b. If No, skip to Metric 8. seed only be present on one side of the water body. Make buffer judgment based on the average width of the wetlan a portion of the buffer has been removed or disturbed. first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.	nd.
	0.00	C Fr	om 15 t	to < 50 feet to < 30 feet o < 15 feet	
			width. If	<u>rr</u> buffer bypassed by ditches  f the tributary is anastomosed, combine widths of channels/braids for a total width.	
	7d. Do	o roots o		> 15-feet wide Other open water (no tributary present) sment area vegetation extend into the bank of the tributary/open water?	
	7e. Is	tributary Shelter	/ or othe ed – adj	er open water sheltered or exposed? jacent open water with width < 2500 feet <u>and</u> no regular boat traffic. acent open water with width ≥ 2500 feet <u>or</u> regular boat traffic.	
8.	Check	a box ir	n each d	Assessment Area – wetland type/wetland complex metric (evaluate for riparian wetlands only) column. Select the average width for the wetland type at the assessment area (WT) ex at the assessment areas (WC). See User Manual for WT and WC boundaries.	
	WT	WC	•		
		C A C B	≥ 100 f From 8	reet 80 to < 100 feet	
	CC	CC		50 to < 80 feet	
	200	C D		10 to < 50 feet 30 to < 40 feet	
	700	œ E		15 to < 30 feet	
	G	G	From 5	5 to < 15 feet	
	CH	CH	< 5 fee	et en	

9.	Inundation Duration – assessment area condition metric			
	Answer for assessment area dominant landform.			
	A Evidence of short-duration inundation (< 7 consecutive days)			
	B Evidence of saturation, without evidence of inundation			
	C Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)			
10.	Indicators of Deposition – assessment area condition metric			
	Consider recent deposition only (no plant growth since deposition).			
	A Sediment deposition is not excessive, but at approximately natural levels.			
	B Sediment deposition is excessive, but not overwhelming the wetland.			
	C Sediment deposition is excessive and is overwhelming the wetland.			
11	Wetland Size – wetland type/wetland complex condition metric			
• • • •	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the			
	size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User			
	Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column.			
	WT WC FW (if applicable)			
	A A A ≥ 500 acres			
	C B C B From 100 to < 500 acres			
	C C C From 50 to < 100 acres			
	C D C D From 25 to < 50 acres			
	CECE From 10 to < 25 acres			
	CF CF From 5 to < 10 acres			
	G G G From 1 to < 5 acres			
	CH CH From 0.5 to < 1 acre			
	CI CI From 0.1 to < 0.5 acre			
	G J G J From 0.01 to < 0.1 acre			
	K K K < 0.01 acre or assessment area is clear-cut			
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)			
	B Pocosin is < 90% of the full extent of its natural landscape size.			
12	Connectivity to Other Natural Areas – landscape condition metric			
13.	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This			
evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch,				
metric naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly m				
line corridors the width of a four-lane road or wider, urban landscapes, fields (pasture open and agriculture), or water > 3				
	Well Loosely			
	CA CA ≥ 500 acres			
	CB CB From 100 to < 500 acres			
	C C From 50 to < 100 acres			
	CECE < 10 acres			
	F F Wetland type has a poor or no connection to other natural habitats			
	13b. Evaluate for marshes only.			
	Yes No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.			
4.4	Edge Effect westend time condition matric (akin for all marches)			
14.	Edge Effect – wetland type condition metric (skip for all marshes)  May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include			
	non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors and clear-cuts.			
	Consider the eight main points of the compass.			
	A No artificial edge within 150 feet in all directions			
	B No artificial edge within 150 feet in four (4) to seven (7) directions			
	C An artificial edge occurs within 150 feet in more than four (4) directions or assessment area is clear-cut			
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)			
	A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate			
	species, with exotic plants absent or sparse within the assessment area.			
	Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species			
	characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or			
	clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.  C Vegetation severely altered from reference in composition. Expected species are unnaturally absent (planted stands of non-			
	characteristic species or at least one stratum inappropriately composed of a single species). Exotic species are dominant in			
	at least one stratum.			
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)			
	A Vegetation diversity is high and is composed primarily of native species (<10% cover of exotics).			
	B Vegetation diversity is low or has > 10% to 50% cover of exotics.			
	C Vegetation is dominated by exotic species (>50% cover of exotics).			

17.	Vegetative Structure – assessment area/wetland type condition metric  17a. Is vegetation present?  Yes No If Yes, continue to 17b. If No, skip to Metric 18.				
	17b. Evaluate percent coverage of assessment area vegetation <b>for all marshes only</b> . Skip to 17c for non-marsh wetlands.  ☐ A ≥ 25% coverage of vegetation ☐ B < 25% coverage of vegetation				
	17c. Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.  AA WT				
	Canopy closed, or nearly closed, with natural gaps associated with natural processes  Canopy present, but opened more than natural gaps  CCCCC Canopy sparse or absent				
	Fig. A A Dense mid-story/sapling layer  O B B Moderate density mid-story/sapling layer  O C C Mid-story/sapling layer sparse or absent				
	G A A Dense shrub layer B B Moderate density shrub layer C C C Shrub layer sparse or absent				
	A C A Dense herb layer  B B B Moderate density herb layer  C C C Herb layer sparse or absent				
18.	Snags – wetland type condition metric  A Large snags (more than one) are visible (> 12-inches DBH, or large relative to species present and landscape stability).  Not A				
19.	Diameter Class Distribution – wetland type condition metric  A Majority of canopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are present.				
	Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12-inch DBH.  Majority of canopy trees are < 6 inches DBH or no trees.				
20.	Large Woody Debris – wetland type condition metric Include both natural debris and man-placed natural debris.  A Large logs (more than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).  Not A				
21.	Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)  Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.  A  B  C  D				
22.	Hydrologic Connectivity – assessment area condition metric (evaluate for riparian wetlands only)  Examples of activities that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, and stream incision.  Overbank and overland flow are not severely altered in the assessment area.  Overbank flow is severely altered in the assessment area.  Overland flow is severely altered in the assessment area.  Both overbank and overland flow are severely altered in the assessment area.				

Notes

# NC WAM Wetland Rating Sheet Accompanies User Manual Version 4.1 Rating Calculator Version 4.1

Wetland Site Name	Maney Farm - Wetland T	Date	5/28/2014
Wetland Type	Bottomland Hardwood Forest	Assessor Name/Organization IE &	WT Wildlands Eng
Notes on Field Assess	ment Form (Y/N)		NO
Presence of regulatory	considerations (Y/N)		NO
Wetland is intensively	managed (Y/N)		NO
Assessment area is loo	cated within 50 feet of a natural tributary or other	er open water (Y/N)	YES
Assessment area is su	bstantially altered by beaver (Y/N)		NO
Assessment area expe	riences overbank flooding during normal rainfa	Il conditions (Y/N)	NO
Assessment area is on	a coastal island (Y/N)		NO
Sub-function Rating	Summary		
Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	MEDIUM
	Sub-Surface Storage and Retention	Condition	MEDIUM
Water Quality	Pathogen Change	Condition	MEDIUM
		Condition/Opportunity	MEDIUM
		Opportunity Presence? (Y/N)	NO
	Particulate Change	Condition	LOW
		Condition/Opportunity	LOW
		Opportunity Presence? (Y/N)	NO
	Soluble Change	Condition	MEDIUM
	Ç	Condition/Opportunity	MEDIUM
		Opportunity Presence? (Y/N)	NO
	Physical Change	Condition	MEDIUM
	,	Condition/Opportunity	MEDIUM
		Opportunity Presence? (Y/N)	NO
	Pollution Change	Condition	NA NA
	. Grandin Griange	Condition/Opportunity	NA NA
		Opportunity Presence? (Y/N)	NA NA
Habitat	Physical Structure	Condition	LOW
Habitat	Landscape Patch Structure	Condition	LOW
	Vegetation Composition	Condition	MEDIUM
	Vogotation composition	Condition	III DIGIII
Function Rating Sum	mary		
Function	Metrics/Notes		Rating
Hydrology	Condition		MEDIUM
Water Quality	Condition		MEDIUM
	Condition/Opportunity	0.40	MEDIUM
11.1%	Opportunity Presence?	(Y/N)	NO NO
Habitat	Conditon		LOW

#### NC WAM WETLAND ASSESSMENT FORM Accompanies User Manual Version 4.1 Rating Calculator Version 4.1

	itating v	Calculator Version 4.1
Wetland Site Nar	me Maney Farm - Wetland U	<b>Date</b> 5/28/2014
Wetland Ty	/pe Bottomland Hardwood Forest	Assessor Name/Organization IE & WT Wildlands Eng
Level III Ecoregi	ion Piedmont	▼ Nearest Named Water Body South Fork Cane Creek
River Bas	sin Cape Fear	■ USGS 8-Digit Catalogue Unit 03030002
Yes	No Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees) N 35.840448 W 79.344473
Please circle and/or appropriate, in rece to the following.  • Hydrological • Surface and septic tanks. • Signs of veg	ent past (for instance, approximately within 10 yell modifications (examples: ditches, dams, bead sub-surface discharges into the wetland (examples), underground storage tanks (USTs), hog lagor	ver dams, dikes, berms, ponds, etc.) mples: discharges containing obvious pollutants, presence of nearby ons, etc.) r, insect damage, disease, storm damage, salt intrusion, etc.)
Is the assessment	t area intensively managed?	€ No
Anadromous Federally pro NCDWQ rips Abuts a Prin Publicly own N.C. Division Abuts a stree Designated	otected species or State endangered or threate varian buffer rule in effect mary Nursery Area (PNA) ned property n of Coastal Management Area of Environmen	tal Concern (AEC) (including buffer) plemental classifications of HQW, ORW, or Trout
Blackwater Brownwater		any? (check all that apply)  Inar Wind Both
Is the assessment	t area on a coastal island?	No
Is the assessment	area's surface water storage capacity or du	uration substantially altered by beaver?
Does the assessm	nent area experience overbank flooding dur	ing normal rainfall conditions? (See No
Check a box in (VS) in the ass then rate the as GS VS	sessment area. Compare to reference wetland assessment area based on evidence of an effect Not severely altered Severely altered over a majority of the assess sedimentation, fire-plow lanes, skidder tracks	bund surface (GS) in the assessment area and vegetation structure if applicable (see User Manual). If a reference is not applicable, etc.  Siment area (ground surface alteration examples: vehicle tracks, excessive is, bedding, fill, soil compaction, obvious pollutants) (vegetation structure is, herbicides, salt intrusion [where appropriate], exotic species, grazing,
Check a box in duration (Sub) North Carolina ≤ 1 foot deep is	Onsider both increase and decrease in hydric soils (see USACE Wilmington District vs. considered to affect surface water only, while ater. Consider tidal flooding regime, if applicable Water storage capacity and duration are not a Water storage capacity or duration are altered Water storage capacity or duration are substance.	pacity and duration (Surf) and sub-surface storage capacity and rology. Refer to the current NRCS lateral effect of ditching guidance for vebsite) for the zone of influence of ditches in hydric soils. A ditche a ditch > 1 foot deep is expected to affect both surface and ditche.
Check a box in type (WT).  AA W  3a. A  C  C  C  D	N each column for each group below. Select  VT  A Majority of wetland with depressions able by Majority of wetland with depressions able column for each group below. Select  A Majority of wetland with depressions able by Depressions able to pond water < 3 inch	le to pond water 6 inches to 1 foot deep le to pond water 3 to 6 inches deep nes deep
	vidence that maximum depth of inundation is vidence that maximum depth of inundation is b	

4.	Check a box feature. Mak regional indic 4a. A B C	/Structure – assessment area condition metric a from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape are soil observations within the 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for actors.  Sandy soil  Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres)  Loamy or clayey gleyed soil
		Histosol or histic epipedon Soil ribbon < 1 inch
	СВ	Soil ribbon ≥ 1 inch  No peat or muck presence
	СВ	A peat or muck presence
5.	Check a box	nto Wetland – opportunity metric in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.
	CA CA	Little or no evidence of pollutants or discharges entering the assessment area  Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the  treatment capacity of the assessment area
	ac ac	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation, odor)
6.	Check all the draining to as assessment	at apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources a sessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers and to be 50 feet wide in the Coastal Plain and Piedmont ecoregions and 30 feet wide in the Blue Ridge Mountains ecoregion.  2M  A ≥ 10% impervious surfaces
	B	<ul> <li>✓ B &lt; 10% impervious surfaces</li> <li>C Confined animal operations (or other local, concentrated source of pollutants)</li> <li>✓ D ≥ 20% coverage of pasture</li> <li>E ≥ 20% coverage of agricultural land (regularly plowed land)</li> <li>F ≥ 20% coverage of maintained grass/herb</li> <li>G ≥ 20% coverage of clear-cut land</li> <li>H Little or no opportunity to improve water quality. Lack of opportunity may result from hydrologic alterations that prevent drainage or overbank flow from affecting the assessment area.</li> </ul>
7.		ing as Vegetated Buffer – assessment area/wetland complex condition metric ssment area within 50 feet of a tributary or other open water?
	Tes Wetland Record  7b. How mu  A B C D E  7c. Tributar  ✓ ≤ 15-  7d. Do root  ✓ Yes  7e. Is tribut  ✓ Shelt	No If Yes, continue to 7b. If No, skip to Metric 8.  d buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland. a note if a portion of the buffer has been removed or disturbed.  uch of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.  ≥ 50 feet  From 30 to < 50 feet  From 15 to < 30 feet  From 5 to < 15 feet  < 5 feet or buffer bypassed by ditches  y width. If the tributary is anastomosed, combine widths of channels/braids for a total width.  feet wide > 15-feet wide Other open water (no tributary present)  s of assessment area vegetation extend into the bank of the tributary/open water?
8.		of that the Assessment Area – wetland type/wetland complex metric (evaluate for riparian wetlands only) at in each column. Select the average width for the wetland type at the assessment area (WT)
	and the wetla WT WC A A B B C C D D E E F F G G G	and complex at the assessment areas (WC). See User Manual for WT and WC boundaries.  ≥ 100 feet From 80 to < 100 feet From 50 to < 80 feet From 40 to < 50 feet From 30 to < 40 feet From 15 to < 30 feet From 5 to < 15 feet
	CH CH	< 5 feet

9.	Inundation Duration – assessment area condition metric			
	Answer for assessment area dominant landform.			
	A Evidence of short-duration inundation (< 7 consecutive days)			
	Evidence of saturation, without evidence of inundation			
	C Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)			
10.	Indicators of Deposition – assessment area condition metric			
	Consider recent deposition only (no plant growth since deposition).			
	Sediment deposition is not excessive, but at approximately natural levels.			
	B Sediment deposition is excessive, but not overwhelming the wetland.			
	C Sediment deposition is excessive and is overwhelming the wetland.			
11	Wetland Size – wetland type/wetland complex condition metric			
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the			
	size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User			
	Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column.			
	WT WC FW (if applicable)			
	CA CA CA ≥ 500 acres			
	CB CB From 100 to < 500 acres			
	C C C From 50 to < 100 acres			
	CD CD From 25 to < 50 acres			
	CE CE From 10 to < 25 acres			
	CF CF From 5 to < 10 acres			
	CG CG From 1 to < 5 acres			
	CH CH From 0.5 to < 1 acre			
	CI CI From 0.1 to < 0.5 acre			
	<b>©</b> J <b>©</b> J From 0.01 to < 0.1 acre			
	K K < 0.01 acre or assessment area is clear-cut			
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)			
	Pocosin is the full extent (≥ 90%) of its natural landscape size.			
	B Pocosin is < 90% of the full extent of its natural landscape size.			
12	Connectivity to Other Natural Areas – landscape condition metric			
13.	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This			
evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch,				
metric naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly m				
line corridors the width of a four-lane road or wider, urban landscapes, fields (pasture open and agriculture), or water				
	Well Loosely			
	CA CA ≥ 500 acres			
	B B From 100 to < 500 acres			
	C C From 50 to < 100 acres			
	CD D From 10 to < 50 acres			
	F F Wetland type has a poor or no connection to other natural habitats			
	13b. Evaluate for marshes only.			
	Yes No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.			
4.4	Edge Effect westend time condition matric (akin for all marches)			
14.	Edge Effect – wetland type condition metric (skip for all marshes)  May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include			
	non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors and clear-cuts.			
	Consider the eight main points of the compass.			
	A No artificial edge within 150 feet in all directions			
	An artificial edge occurs within 150 feet in more than four (4) directions or assessment area is clear-cut			
4.5				
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)			
	A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate			
	species, with exotic plants absent or sparse within the assessment area.			
	Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or			
	clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.			
	Considering the association of the expected strate.			
	characteristic species or at least one stratum inappropriately composed of a single species). Exotic species are dominant in			
	at least one stratum.			
4.0				
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)			
	<ul> <li>A Vegetation diversity is high and is composed primarily of native species (&lt;10% cover of exotics).</li> <li>B Vegetation diversity is low or has &gt; 10% to 50% cover of exotics.</li> </ul>			
	<ul> <li>✓ B Vegetation diversity is low or has &gt; 10% to 50% cover of exotics.</li> <li>✓ C Vegetation is dominated by exotic species (&gt;50% cover of exotics).</li> </ul>			

17.	Vegetative Structure – assessment area/wetland type condition metric  17a. Is vegetation present?  Yes No If Yes, continue to 17b. If No, skip to Metric 18.		
	17b. Evaluate percent coverage of assessment area vegetation <b>for all marshes only</b> . Skip to 17c for non-marsh wetlands.  A ≥ 25% coverage of vegetation B < 25% coverage of vegetation		
	17c. Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately. AA WT		
	Canopy closed, or nearly closed, with natural gaps associated with natural processes  Canopy present, but opened more than natural gaps  Canopy sparse or absent		
	Fig. C A C A Dense mid-story/sapling layer  O B C B Moderate density mid-story/sapling layer  O C C Mid-story/sapling layer sparse or absent		
	G C C Shrub layer sparse or absent		
	A C A Dense herb layer  B B B Moderate density herb layer  C C C Herb layer sparse or absent		
18.	S. Snags – wetland type condition metric  A Large snags (more than one) are visible (> 12-inches DBH, or large relative to species present and landscape stability).  B Not A		
19.	<ul> <li>Diameter Class Distribution – wetland type condition metric</li> <li>A Majority of canopy trees have stems &gt; 6 inches in diameter at breast height (DBH); many large trees (&gt; 12 inches DBH) are present.</li> </ul>		
	Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12-inch DBH.  Majority of canopy trees are < 6 inches DBH or no trees.		
20.	<ul> <li>Large Woody Debris – wetland type condition metric</li> <li>Include both natural debris and man-placed natural debris.</li> <li>A Large logs (more than one) are visible (&gt; 12 inches in diameter, or large relative to species present and landscape stability).</li> <li>B Not A</li> </ul>		
21.	Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)  Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.  A  B  C  D		
22.	Hydrologic Connectivity – assessment area condition metric (evaluate for riparian wetlands only)  Examples of activities that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, and stream incision.  Overbank and overland flow are not severely altered in the assessment area.  Overbank flow is severely altered in the assessment area.  Overland flow is severely altered in the assessment area.  Both overbank and overland flow are severely altered in the assessment area.		

Notes

# NC WAM Wetland Rating Sheet Accompanies User Manual Version 4.1 Rating Calculator Version 4.1

Wetland Site Name	Maney Farm - Wetland U	Date	5/28/2014
Wetland Type	Bottomland Hardwood Forest	Assessor Name/Organization IE &	WT Wildlands En
Notes on Field Assess	ment Form (Y/N)		NO
Presence of regulatory	considerations (Y/N)		NO
Wetland is intensively	managed (Y/N)		NO
Assessment area is lo	cated within 50 feet of a natural tributary or othe	er open water (Y/N)	YES
Assessment area is su	ubstantially altered by beaver (Y/N)		NO
Assessment area expe	eriences overbank flooding during normal rainfa	Il conditions (Y/N)	NO
Assessment area is or	n a coastal island (Y/N)		NO
Out for the Dating	C		
Sub-function Rating	Summary Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	LOW
., 0.09,	Sub-Surface Storage and Retention	Condition	MEDIUM
Water Quality	Pathogen Change	Condition	MEDIUM
Water Quality	r atriogen onlinge	Condition/Opportunity	MEDIUM
		Opportunity Presence? (Y/N)	NO
	Particulate Change	Condition	LOW
	r articulate charige	Condition/Opportunity	LOW
		Opportunity Presence? (Y/N)	NO
	Soluble Change	Condition	LOW
	Soluble Change	Condition/Opportunity	LOW
		Opportunity Presence? (Y/N)	NO
	Physical Change	Condition	LOW
	Filysical Change	Condition/Opportunity	LOW
		Opportunity Presence? (Y/N)	NO
	Pollution Change	Condition	NA
	Foliation Change	Condition/Opportunity	NA NA
	Physical Structure	Opportunity Presence? (Y/N)  Condition	NA LOW
ιωνιαι	Landscape Patch Structure	Condition	LOW
	Vegetation Composition	Condition	MEDIUM
	vegetation composition	Condition	MEDIOM
Function Rating Sum	Metrics/Notes		Doting
Function Hydrology	Metrics/Notes  Condition		Rating LOW
Nater Quality	Condition		LOW
Quality	Condition/Opportunity		LOW
	Opportunity Presence?	(Y/N)	NO
Habitat	Conditon	,	LOW

# U.S. ARMY CORPS OF ENGINEERS WILMINGTON DISTRICT



Action Id. SAW-2014-01825 County: Chatham U.S.G.S. Ouad: NC-SILK HOPE

# NOTIFICATION OF JURISDICTIONAL DETERMINATION

Property Owner:

Mark Lindley

Address:

1140 Moon Lindley Road

Snow Camp, NC, 27349

Telephone Number:

N/A

Size (acres)

Approx. 15

Nearest Town Snow Camp

Nearest Waterway USGS HUC

Lick Creek 3030002

River Basin Coordinates Haw. North Carolina.

Latitude: 35.8383116010056 Longitude: -79.3419056144435

Location description: The site is located approximately 0.40 miles south of the Chatham/Alamance County line and immediately north of Center Church Road, in Chatham County, North Carolina. PIN: 8795-89-5745.

# Indicate Which of the Following Apply:

# A. Preliminary Determination

X Based on preliminary information, there may be wetlands on the above described property. We strongly suggest you have this property inspected to determine the extent of Department of the Army (DA) jurisdiction. To be considered final, a jurisdictional determination must be verified by the Corps. This preliminary determination is not an appealable action under the Regulatory Program Administrative Appeal Process (Reference 33 CFR Part 331). If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also, you may provide new information for further consideration by the Corps to reevaluate the JD.

# B. Approved Determination

- There are Navigable Waters of the United States within the above described property subject to the permit requirements of Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
- There are waters of the U.S. including wetlands on the above described property subject to the permit requirements of Section 404 of the Clean Water Act (CWA)(33 USC § 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
  - We strongly suggest you have the wetlands on your property delineated. Due to the size of your property and/or our present workload, the Corps may not be able to accomplish this wetland delineation in a timely manner. For a more timely delineation, you may wish to obtain a consultant. To be considered final, any delineation must be verified by the Corps.
  - The waters of the U.S. including wetlands on your project area have been delineated and the delineation has been verified by the Corps. We strongly suggest you have this delineation surveyed. Upon completion, this survey should be reviewed and verified by the Corps. Once verified, this survey will provide an accurate depiction of all areas subject to CWA jurisdiction on your property which, provided there is no change in the law or our published regulations, may be relied upon for a period not to exceed five years.
  - The waters of the U.S. including wetlands have been delineated and surveyed and are accurately depicted on the plat signed by the Corps Regulatory Official identified below on _____. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
- There are no waters of the U.S., to include wetlands, present on the above described project area which are subject to the permit requirements of Section 404 of the Clean Water Act (33 USC 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

The property is located in one of the 20 Coastal Counties subject to regulation under the Coastal Area Management Act (CAMA). You should contact the Division of Coastal Management in Morehead City, NC, at (252) 808-2808 to determine their requirements.

Placement of dredged or fill material within waters of the US and/or wetlands without a Department of the Army permit may constitute a violation of Section 301 of the Clean Water Act (33 USC § 1311). If you have any questions regarding this determination and/or the Corps regulatory program, please contact <a href="mailto:Craig Brown">Craig Brown@usace.army.mil</a>.

Craig.J.Brown@usace.army.mil.

C. Basis For Determination: There are streams within the project area that may be relatively permanent waterways (RPW) exhibiting ordinary high water marks & bed and bank features and/or wetlands that may exhibit wetland criteria as defined in the 1987 Corps Wetland Delineation Manual and appropriate Regional Supplement.

D. Remarks: None

# E. Attention USDA Program Participants

This delineation/determination has been conducted to identify the limits of Corps' Clean Water Act jurisdiction for the particular site identified in this request. The delineation/determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA Program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service, prior to starting work.

F. Appeals Information (This information applies only to approved jurisdictional determinations as indicated in B. above)

This correspondence constitutes an approved jurisdictional determination for the above described site. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and request for appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the following address:

US Army Corps of Engineers South Atlantic Division Attn: Jason Steele, Review Officer 60 Forsyth Street SW, Room 10M15 Atlanta, Georgia 30303-8801

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by N/A (Preliminary JD).

**It is not necessary to submit an RFA form to the Division Office if you do not object to the determination in this correspondence.**

Corps Regulatory Official: Craig Brown

Date: January 23, 2015

Expiration Date: N/A (Preliminary JD)

The Wilmington District is committed to providing the highest level of support to the public. To help us ensure we continue to do so, please complete our Customer Satisfaction Survey, located online at <a href="http://regulatory.usacesurvey.com/">http://regulatory.usacesurvey.com/</a>.

# Copy furnished:

Agent:

Win Taylor

Address:

890 Johnnie Dodds Blvd., Suite 205

Wildlands Engineering

Mt. Pleasant, SC 29464

Phone:

843-277-6225 x102

# NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Mark Lindley	File Number: SAW-2014-0	1825	Date: January 23, 2015
Attached is:		See S	Section below
☐ INITIAL PROFFERED PERMIT (Standard	Permit or Letter of permission)		A
PROFFERED PERMIT (Standard Permit or Letter of permission)			В
PERMIT DENIAL			С
☐ APPROVED JURISDICTIONAL DETERM		116	D
PRELIMINARY JURISDICTIONAL DET	ERMINATION		Е

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at <a href="http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits.aspx">http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits.aspx</a> or Corps regulations at 33 CFR Part 331.

## A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final
  authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your
  signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all
  rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the
  permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

# B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final
  authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your
  signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all
  rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the
  permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.
- C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

# D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers
   Administrative Appeal Process by completing Section II of this form and sending the form to the district engineer. This form
   must be received by the division engineer within 60 days of the date of this notice.

preliminary JD. The Preliminary JD is not appealable. If	ION: You do not need to respond to the Corps regarding the you wish, you may request an approved JD (which may be appealed), so you may provide new information for further consideration by the
SECTION II - REQUEST FOR APPEAL or OBJECTION	S TO AN INITIAL PROFESSED PERMIT
REASONS FOR APPEAL OR OBJECTIONS: (Describe proffered permit in clear concise statements. You may atta objections are addressed in the administrative record.)	your reasons for appealing the decision or your objections to an initial such additional information to this form to clarify where your reasons or
record of the appeal conference or meeting, and any supple clarify the administrative record. Neither the appellant nor	a review of the administrative record, the Corps memorandum for the mental information that the review officer has determined is needed to the Corps may add new information or analyses to the record. It is the location of information that is already in the administrative
POINT OF CONTACT FOR QUESTIONS OR INFORMA	ATION:
If you have questions regarding this decision and/or the appeal process you may contact: District Engineer, Wilmington Regulatory Division, Attn: Craig Brown Raleigh Regulatory Field Office 3331 Heritage Trade Drive, Suite 105 Wake Forest, North Carolina 27587	If you only have questions regarding the appeal process you may also contact: Mr. Jason Steele, Administrative Appeal Review Officer CESAD-PDO U.S. Army Corps of Engineers, South Atlantic Division 60 Forsyth Street, Room 10M15 Atlanta, Georgia 30303-8801 Phone: (404) 562-5137
RIGHT OF ENTRY: Your signature below grants the right consultants, to conduct investigations of the project site dur notice of any site investigation, and will have the opportuni	t of entry to Corps of Engineers personnel, and any government ing the course of the appeal process. You will be provided a 15 day ty to participate in all site investigations.

For appeals on Initial Proffered Permits send this form to:

Signature of appellant or agent.

District Engineer, Wilmington Regulatory Division, Attn: Craig Brown, 69 Darlington Avenue, Wilmington, North Carolina 28403

Date:

Telephone number:

For Permit denials, Proffered Permits and approved Jurisdictional Determinations send this form to:

Division Engineer, Commander, U.S. Army Engineer Division, South Atlantic, Attn: Mr. Jason Steele, Administrative Appeal Officer, CESAD-PDO, 60 Forsyth Street, Room 10M15, Atlanta, Georgia 30303-8801 Phone: (404) 562-5137



# Categorical Exclusion Form for Ecosystem Enhancement Program Projects

Version 1.4

Note: Only Appendix A should to be submitted (along with any supporting documentation) as the environmental document.

Part	1: General Project Information		
Project Name:	oject Name: Maney Farm Stream Milligation Site		
County Name:	nty Name: Chatham County		
EEP Number:	96314		
Project Sponsor:	Wildlands Engineering, Inc.		
Project Contact Name:	Andrea S. Eckardt		
Project Contact Address:	1430 S. Mint Street, Suite 104, Charlotte, NC 28203		
Project Contact E-mail:	aeckardt@wildlandseng.com		
EEP Project Manager:	Jeff Schaffer		
	Project Description		
The Maney Farm Stream Mitigation	Site is a stream mitigation project located in Chatham County, NC		
The project is located on UT to S	outh Fork Cane Creek and six unnamed tributaries approximately		
15 miles northwest of the Town of	Pittsboro. The project will provide stream mitigation units		
to NCEEP in the Cape Fear River E	[1] 전 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1		
State State of the	For Official Use Only		
Reviewed By:			
4-17-14	Kittle Corson for se		
Date	EEP Project Manager		
Conditional Approved By:			
Date	For Division Administrator FHWA		
☐ Check this box if there are	outstanding issues		
Final Approval By:	Dhlake		
Date	For Division Administrator FHWA		

Part 2: All Projects	
Regulation/Question	Response
Coastal Zone Management Act (CZMA)	
Is the project located in a CAMA county?	☐ Yes ☑ No
2. Does the project involve ground-disturbing activities within a CAMA Area of Environmental Concern (AEC)?	☐ Yes ☐ No ☑ N/A
3. Has a CAMA permit been secured?	☐ Yes ☐ No ☑ N/A
4. Has NCDCM agreed that the project is consistent with the NC Coastal Management Program?	☐ Yes ☐ No ☑ N/A
Comprehensive Environmental Response, Compensation and Liability Act (C	ERCLA)
1. Is this a "full-delivery" project?	✓ Yes   No
2. Has the zoning/land use of the subject property and adjacent properties ever been designated as commercial or industrial?	☐ Yes ☑ No ☐ N/A
3. As a result of a limited Phase I Site Assessment, are there known or potential hazardous waste sites within or adjacent to the project area?	☐ Yes ☑ No ☐ N/A
4. As a result of a Phase I Site Assessment, are there known or potential hazardous waste sites within or adjacent to the project area?	☐ Yes ☐ No ☑ N/A
5. As a result of a Phase II Site Assessment, are there known or potential hazardous waste sites within the project area?	☐ Yes ☐ No ☑ N/A
6. Is there an approved hazardous mitigation plan?	☐ Yes ☐ No ☑ N/A
National Historic Preservation Act (Section 106)	
<ol> <li>Are there properties listed on, or eligible for listing on, the National Register of Historic Places in the project area?</li> </ol>	☐ Yes ☑ No
2. Does the project affect such properties and does the SHPO/THPO concur?	☐ Yes ☐ No ☑ N/A
3. If the effects are adverse, have they been resolved?	☐ Yes ☐ No ☑ N/A
Uniform Relocation Assistance and Real Property Acquisition Policies Act (Uni	form Act)
1. Is this a "full-delivery" project?	✓ Yes □ No
2. Does the project require the acquisition of real estate?	✓ Yes ☐ No ☐ N/A
3. Was the property acquisition completed prior to the intent to use federal funds?	☐ Yes ☑ No ☐ N/A
<ul> <li>4. Has the owner of the property been informed:</li> <li>* prior to making an offer that the agency does not have condemnation authority; and</li> <li>* what the fair market value is believed to be?</li> </ul>	☑ Yes □ No □ N/A

Part 3: Ground-Disturbing Activities	
Regulation/Question	Response
American Indian Religious Freedom Act (AIRFA)	
1. Is the project located in a county claimed as "territory" by the Eastern Band of Cherokee Indians?	☐ Yes ☑ No
2. Is the site of religious importance to American Indians?	Yes No
	✓ N/A
3. Is the project listed on, or eligible for listing on, the National Register of Historic Places?	☐ Yes ☐ No ☑ N/A
4. Have the effects of the project on this site been considered?	☐ Yes ☐ No
	✓ N/A
Antiquities Act (AA)	_
Is the project located on Federal lands?	☐ Yes ☑ No
2. Will there be loss or destruction of historic or prehistoric ruins, monuments or objects of antiquity?	Yes No
	✓ N/A
3. Will a permit from the appropriate Federal agency be required?	Yes No
4. Has a permit been obtained?	✓ N/A ☐ Yes
	□ No ☑ N/A
Archaeological Resources Protection Act (ARPA)	
Is the project located on federal or Indian lands (reservation)?	☐ Yes ☑ No
2. Will there be a loss or destruction of archaeological resources?	Yes No
Will a permit from the appropriate Federal agency be required?	✓ N/A ☐ Yes
	□ No ☑ N/A
4. Has a permit been obtained?	☐ Yes ☐ No
	₩ N/A
Endangered Species Act (ESA)	
Are federal Threatened and Endangered species and/or Designated Critical Habitat listed for the county?	✓ Yes □ No
Is Designated Critical Habitat or suitable habitat present for listed species?	☐ Yes ✓ No
	□ N/A
3. Are T&E species present or is the project being conducted in Designated Critical Habitat?	☐ Yes ☐ No ☑ N/A
4. Is the project "likely to adversely affect" the species and/or "likely to adversely modify" Designated Critical Habitat?	☐ Yes ☐ No ☑ N/A
5. Does the USFWS/NOAA-Fisheries concur in the effects determination?	Yes No
6. Has the USFWS/NOAA-Fisheries rendered a "jeopardy" determination?	Yes No

Executive Order 13007 (Indian Sacred Sites)			
1. Is the project located on Federal lands that are within a county claimed as "territory" by the EBCI?	☐ Yes ✓ No		
2. Has the EBCI indicated that Indian sacred sites may be impacted by the proposed project?	☐ Yes ☐ No ☑ N/A		
3. Have accommodations been made for access to and ceremonial use of Indian sacred sites?	☐ Yes ☐ No ☑ N/A		
Farmland Protection Policy Act (FPPA)			
1. Will real estate be acquired?	✓ Yes ☐ No		
2. Has NRCS determined that the project contains prime, unique, statewide or locally important farmland?	✓ Yes □ No □ N/A		
3. Has the completed Form AD-1006 been submitted to NRCS?	✓ Yes ☐ No ☐ N/A		
Fish and Wildlife Coordination Act (FWCA)			
1. Will the project impound, divert, channel deepen, or otherwise control/modify any water body?	✓ Yes ☐ No		
2. Have the USFWS and the NCWRC been consulted?	✓ Yes ☐ No ☐ N/A		
Land and Water Conservation Fund Act (Section 6(f))			
1. Will the project require the conversion of such property to a use other than public, outdoor recreation?	☐ Yes ✓ No		
2. Has the NPS approved of the conversion?	☐ Yes ☐ No ☑ N/A		
Magnuson-Stevens Fishery Conservation and Management Act (Essential Fish			
1. Is the project located in an estuarine system?	☐ Yes ☑ No		
2. Is suitable habitat present for EFH-protected species?	☐ Yes ☐ No ☑ N/A		
3. Is sufficient design information available to make a determination of the effect of the project on EFH?	☐ Yes ☐ No ☑ N/A		
4. Will the project adversely affect EFH?	☐ Yes ☐ No ☑ N/A		
5. Has consultation with NOAA-Fisheries occurred?	☐ Yes ☐ No ☑ N/A		
Migratory Bird Treaty Act (MBTA)			
Does the USFWS have any recommendations with the project relative to the MBTA?	☐ Yes ☑ No		
2. Have the USFWS recommendations been incorporated?	☐ Yes ☐ No ☑ N/A		
Wilderness Act	۰,4,4		
Is the project in a Wilderness area?	☐ Yes ☑ No		
2. Has a special use permit and/or easement been obtained from the maintaining federal agency?	☐ Yes ☐ No ☑ N/A		

# Maney Farm Mitigation Site Categorical Exclusion Summary

# Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) provides a Federal "Superfund" to clean up uncontrolled or abandoned hazardous-waste sites as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment.

As the Maney Farm Mitigation Site is a full-delivery project; an EDR Radius Map Report with Geocheck was ordered for the site through Environmental Data Resources, Inc on February 26, 2014. Neither the target property nor the adjacent properties were listed in any of the Federal, State, or Tribal environmental databases searched by EDR. There were no known or potential hazardous waste sites identified within or immediately adjacent to the project area. The Executive Summary of the EDR report is included in the Appendix. The full report is available if needed.

# National Historic Preservation Act (Section 106)

The National Historic Preservation Act declares a national policy of historic preservation to protect, rehabilitate, restore, and reuse districts, sites, buildings, structures, and objects significant in American architecture, history, archaeology, and culture, and Section 106 mandates that federal agencies take into account the effect of an undertaking on a property that is included in, or is eligible for inclusion in, the National Register of Historic Places.

Wildlands Engineering, Inc. (Wildlands) requested review and comment from the State Historic Preservation Office (SHPO) with respect to any archeological and architectural resources related to the Maney Farm Mitigation Site on February 27, 2014. SHPO responded on March 24, 2014 and stated they were aware of no historic resources that would be affected by the project. All correspondence related to Section 106 is included in the Appendix.

# Uniform Relocation Assistance and Real Property Acquisition Policies Act (Uniform Act)

These acts, collectively known as the Uniform Act, provide for uniform and equitable treatment of persons displaced from their homes, businesses, non-profit associations, or farms by federal and federally-assisted programs, and establish uniform and equitable land acquisition policies.

Maney Farm Mitigation Site is a full-delivery project that includes land acquisition. Notification of the fair market value of the project property and the lack of condemnation authority by Wildlands was included in the signed option agreement for the project property. A copy of the relevant section of the option agreement is included in the Appendix.

# **Endangered Species Act (ESA)**

Section 7 of the ESA requires federal agencies, in consultation with and with the assistance of the Secretary of the Interior or of Commerce, as appropriate, to ensure that actions they authorize, fund or carry out are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of critical habitat for these species.

The Chatham County listed endangered species include the bald eagle (Haliaeetus leucocephalus) (BGPA), Cape Fear shiner (Notropis mekistocholas), red-cockaded woodpecker (Picoides

borealis), and harperella (*Ptilimnium nodosum*). The USFWS currently lists Critical Habitat Designations for the Cape Fear Shiner only, out of the four listed species within Chatham County. The identified Critical Habitat is over 12 miles from the site on the Rocky River, which is located in a different watershed than the project site. Wildlands requested review and comment from the United States Fish and Wildlife Service (USFWS) on February 27, 2014 in respect to the Maney Farm Mitigation Site and its potential impacts on threatened or endangered species. USFWS responded on April 4, 2014 and stated the "proposed action is not likely to adversely affect any federally listed endangered or threatened species, their formally designated critical habitat or species currently proposed for listing under the Act". All correspondence with USFWS is included in the Appendix.

As a result of a pedestrian survey conducted on October 11, 2013, no individual species, critical habitat or suitable habitat were found to exist on the site for the federally listed four species. In addition, a review of recorded Natural Heritage Elemental Occurrences was performed. No known species occur within three miles of the site. It was determined that the project would result in "no effect" on any of the listed species.

# Farmland Protection Policy Act (FPPA)

The FPPA requires that, before taking or approving any federal action that would result in conversion of farmland, the agency must examine the effects of the action using the criteria set forth in the FPPA, and, if there are adverse effects, must consider alternatives to lessen them.

The Maney Farm Mitigation Site includes the conversion of prime farmland. As such, Form AD-1006 has been completed and submitted to the Natural Resources Conservation Service (NRCS). The completed form and correspondence documenting its submittal is included in the Appendix.

# Fish and Wildlife Coordination Act (FWCA)

The FWCA requires consultation with the USFWS and the appropriate state wildlife agency on projects that alter or modify a water body. Reports and recommendations prepared by these agencies document project effects on wildlife and identify measures that may be adopted to prevent loss or damage to wildlife resources.

The Maney Farm Mitigation Site includes stream restoration. Wildlands requested comment on the project from both the USFWS and the North Carolina Wildlife Resources Commission (NCWRC) on February 27, 2014. NCWRC responded on March 14, 2014 and stated they "do not anticipate the project to result in significant adverse impacts to aquatic and terrestrial wildlife resources". The USFWS responded on April 4, 2014 and had no objections to the project. All correspondence with the two agencies is included in the Appendix.

# Migratory Bird Treaty Act (MBTA)

The MBTA makes it unlawful for anyone to kill, capture, collect, possess, buy, sell, trade, ship, import, or export any migratory bird. The indirect killing of birds by destroying their nests and eggs is covered by the MBTA, so construction in nesting areas during nesting seasons can constitute a taking.

Wildlands requested comment on the Maney Farm Mitigation Site from the USFWS in regards to migratory birds on February 27, 2014. USFWS responded on April 4, 2014, but had no comments regarding migratory birds. All correspondence with USFWS is included in the Appendix.

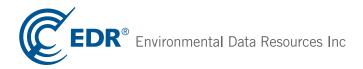
# Maney Farm Mitigation Site Categorical Exclusion Appendix

Maney Farm 585-1181 CENTER CHURCH RD Pittsboro, NC 27312

Inquiry Number: 3865898.2s

February 26, 2014

# The EDR Radius Map™ Report with GeoCheck®



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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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### **EXECUTIVE SUMMARY**

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

#### TARGET PROPERTY INFORMATION

#### **ADDRESS**

585-1181 CENTER CHURCH RD PITTSBORO, NC 27312

#### **COORDINATES**

Latitude (North): 35.8378000 - 35° 50' 16.08" Longitude (West): 79.3440000 - 79° 20' 38.40"

Universal Tranverse Mercator: Zone 17 UTM X (Meters): 649566.5 UTM Y (Meters): 3967024.0

Elevation: 574 ft. above sea level

#### USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map: 35079-G3 SILK HOPE, NC

Most Recent Revision: 1974

#### **AERIAL PHOTOGRAPHY IN THIS REPORT**

Photo Year: 2012 Source: USDA

#### TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

#### **DATABASES WITH NO MAPPED SITES**

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

## STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list	
NPL	National Priority List

## **EXECUTIVE SUMMARY**

Proposed NPL.....Proposed National Priority List Sites NPL LIENS..... Federal Superfund Liens Federal Delisted NPL site list Delisted NPL..... National Priority List Deletions Federal CERCLIS list CERCLIS.... FEDERAL FACILITY..... Federal Facility Site Information listing Federal CERCLIS NFRAP site List CERC-NFRAP..... CERCLIS No Further Remedial Action Planned Federal RCRA CORRACTS facilities list CORRACTS..... Corrective Action Report Federal RCRA non-CORRACTS TSD facilities list RCRA-TSDF...... RCRA - Treatment, Storage and Disposal Federal RCRA generators list RCRA-LQG______RCRA - Large Quantity Generators RCRA-SQG..... RCRA - Small Quantity Generators RCRA-CESQG..... RCRA - Conditionally Exempt Small Quantity Generator Federal institutional controls / engineering controls registries US ENG CONTROLS..... Engineering Controls Sites List US INST CONTROL..... Sites with Institutional Controls LUCIS.....Land Use Control Information System Federal ERNS list ERNS..... Emergency Response Notification System State- and tribal - equivalent NPL NC HSDS..... Hazardous Substance Disposal Site State- and tribal - equivalent CERCLIS SHWS..... Inactive Hazardous Sites Inventory State and tribal landfill and/or solid waste disposal site lists SWF/LF..... List of Solid Waste Facilities OLI...... Old Landfill Inventory State and tribal leaking storage tank lists LUST...... Regional UST Database

## **EXECUTIVE SUMMARY**

LUST TRUST..... State Trust Fund Database

LAST..... Leaking Aboveground Storage Tanks

INDIAN LUST..... Leaking Underground Storage Tanks on Indian Land

#### State and tribal registered storage tank lists

UST...... Petroleum Underground Storage Tank Database

AST..... AST Database

INDIAN UST...... Underground Storage Tanks on Indian Land

FEMA UST..... Underground Storage Tank Listing

#### State and tribal institutional control / engineering control registries

INST CONTROL............. No Further Action Sites With Land Use Restrictions Monitoring

#### State and tribal voluntary cleanup sites

INDIAN VCP..... Voluntary Cleanup Priority Listing

#### State and tribal Brownfields sites

BROWNFIELDS..... Brownfields Projects Inventory

#### ADDITIONAL ENVIRONMENTAL RECORDS

#### Local Brownfield lists

US BROWNFIELDS..... A Listing of Brownfields Sites

#### Local Lists of Landfill / Solid Waste Disposal Sites

DEBRIS REGION 9..... Torres Martinez Reservation Illegal Dump Site Locations

INDIAN ODI...... Report on the Status of Open Dumps on Indian Lands

## Local Lists of Hazardous waste / Contaminated Sites

US CDL..... Clandestine Drug Labs

US HIST CDL..... National Clandestine Laboratory Register

### Local Land Records

LIENS 2..... CERCLA Lien Information

### Records of Emergency Release Reports

HMIRS..... Hazardous Materials Information Reporting System

#### Other Ascertainable Records

RCRA NonGen / NLR...... RCRA - Non Generators

#### **EXECUTIVE SUMMARY**

CONSENT...... Superfund (CERCLA) Consent Decrees

TRIS...... Toxic Chemical Release Inventory System

TSCA...... Toxic Substances Control Act

FTTS....... FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide

Act)/TSCA (Toxic Substances Control Act)

HIST FTTS...... FIFRA/TSCA Tracking System Administrative Case Listing

SSTS..... Section 7 Tracking Systems

ICIS...... Integrated Compliance Information System

PADS PCB Activity Database System
MLTS Material Licensing Tracking System
RADINFO Radiation Information Database

FINDS______Facility Index System/Facility Registry System RAATS______RCRA Administrative Action Tracking System

RMP..... Risk Management Plans

UIC...... Underground Injection Wells Listing

DRYCLEANERS..... Drycleaning Sites

NPDES Facility Location Listing

INDIAN RESERV.....Indian Reservations

SCRD DRYCLEANERS...... State Coalition for Remediation of Drycleaners Listing

2020 COR ACTION...... 2020 Corrective Action Program List

LEAD SMELTERS.....Lead Smelter Sites

US AIRS..... Aerometric Information Retrieval System Facility Subsystem

COAL ASH_____Coal Ash Disposal Sites

US FIN ASSUR..... Financial Assurance Information

COAL ASH EPA..... Coal Combustion Residues Surface Impoundments List

Financial Assurance Information Listing PCB TRANSFORMER PCB Transformer Registration Database

EPA WATCH LIST..... EPA WATCH LIST

#### **EDR HIGH RISK HISTORICAL RECORDS**

#### **EDR Exclusive Records**

EDR MGP..... EDR Proprietary Manufactured Gas Plants EDR US Hist Auto Stat..... EDR Exclusive Historic Gas Stations EDR US Hist Cleaners..... EDR Exclusive Historic Dry Cleaners

#### **EDR RECOVERED GOVERNMENT ARCHIVES**

#### Exclusive Recovered Govt. Archives

#### SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were not identified.

Unmappable (orphan) sites are not considered in the foregoing analysis.

#### **EXECUTIVE SUMMARY**

Due to poor or inadequate address information, the following sites were not mapped. Count: 20 records.

INEZ FOGLEMAN SERVICE

NC DFR-CHATHAM COUNTY OFFICE

**FARM STORE** 

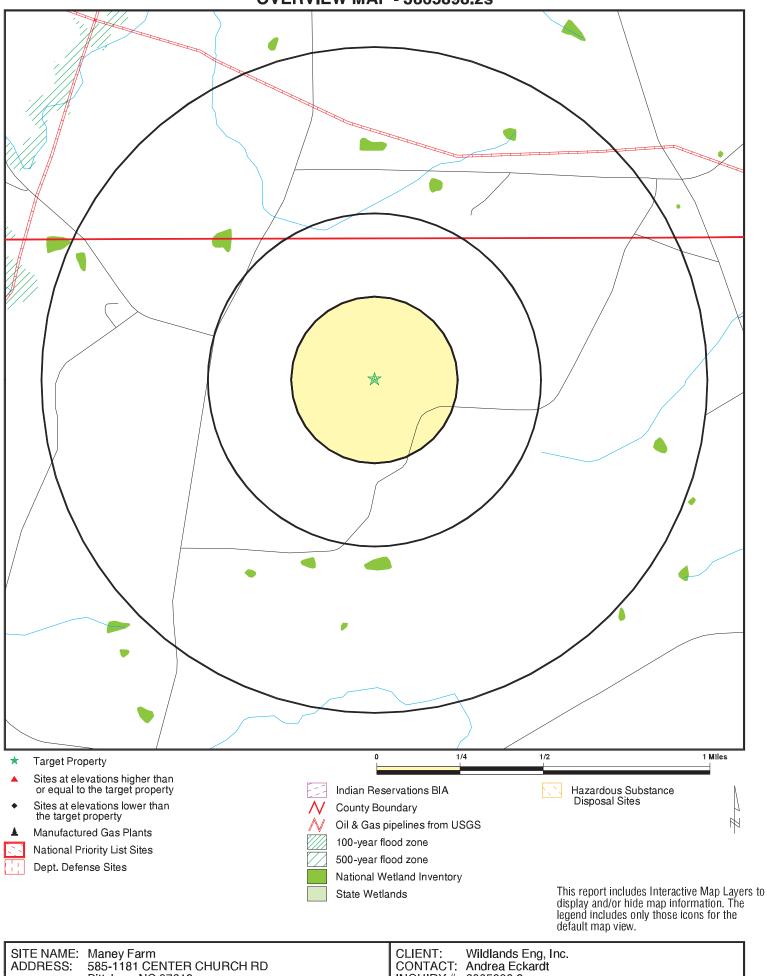
Site Name Database(s) WICKER TRUCKING IMD, LAST SPORTSMAN TRADIN POST (FORMER) LAST JAMES TOMLINSON TRUCKING IMD, LAST CHATHAM CO LDFL **CERC-NFRAP** AT&T CHATHAM FACILITY RCRA NonGen / NLR, FINDS, IMD, LUST, RGA LUST NC DFR-CHATHAM COUNTY OFFICE LUST, RGA LUST RAY'S QUICK STOP LUST KING PROPERTY, EDWARD LUST, RGA LUST DFR - CHATHAM CO. OFFICE **LUST TRUST LUST TRUST** SPORTSMAN'S TRADING POST LUST TRUST C MINI MART #6 JOANNE BURKES UST FRANK PERRY SERVICE STATION UST SPORTSMAN TRADING POST UST UST CHATHAM CO HDQ UST EARL THOMAS GRADING, INC. WALL'S GARAGE UST

UST

IMD

**FINDS** 

#### **OVERVIEW MAP - 3865898.2s**

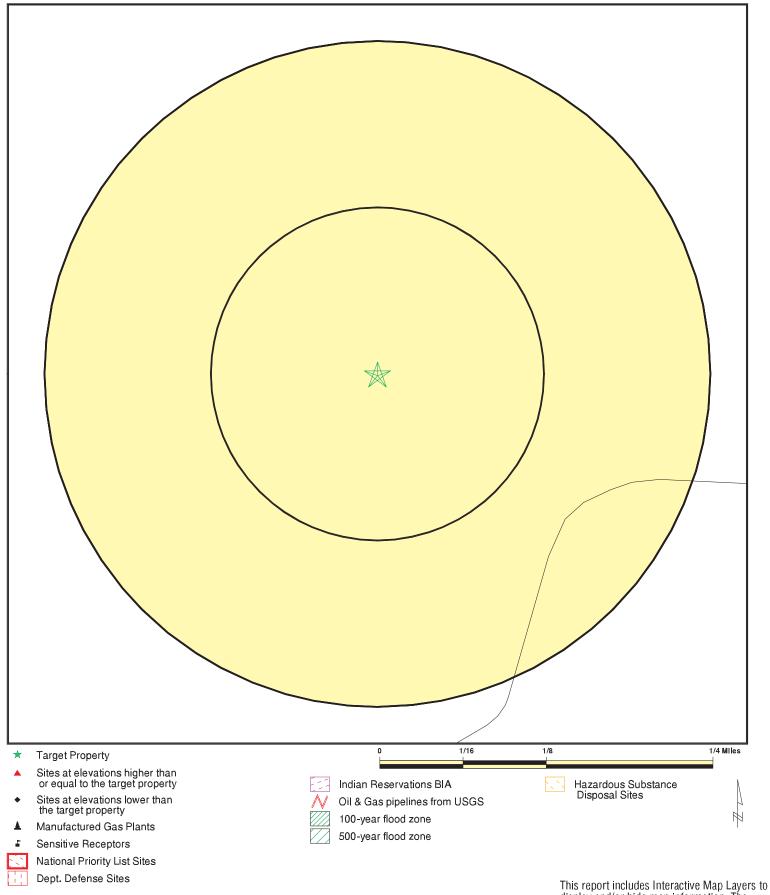


Pittsboro NC 27312 LAT/LONG: 35.8378 / 79.344

CLIENT: Wildlands Eng, I CONTACT: Andrea Eckardt INQUIRY #: 3865898.2s

February 26, 2014 1:30 pm DATE:

### **DETAIL MAP - 3865898.2s**



display and/or hide map information. The legend includes only those icons for the default map view.

LAT/LONG:

SITE NAME: Maney Farm ADDRESS: 585-1181 CENTER CHURCH RD

Pittsboro NC 27312 35.8378 / 79.344

CLIENT: Wildlands Eng, I CONTACT: Andrea Eckardt Wildlands Eng, Inc. INQUIRY#: 3865898.2s

February 26, 2014 1:32 pm DATE:

# **MAP FINDINGS SUMMARY**

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENT	AL RECORDS							
Federal NPL site list								
NPL Proposed NPL NPL LIENS	1.000 1.000 TP		0 0 NR	0 0 NR	0 0 NR	0 0 NR	NR NR NR	0 0 0
Federal Delisted NPL site	e list							
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
CERCLIS FEDERAL FACILITY	0.500 0.500		0 0	0 0	0 0	NR NR	NR NR	0 0
Federal CERCLIS NFRAF	Site List							
CERC-NFRAP	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACT	TS facilities li	st						
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORI	RACTS TSD f	acilities list						
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generator	s list							
RCRA-LQG RCRA-SQG RCRA-CESQG	0.250 0.250 0.250		0 0 0	0 0 0	NR NR NR	NR NR NR	NR NR NR	0 0 0
Federal institutional con engineering controls reg								
US ENG CONTROLS US INST CONTROL LUCIS	0.500 0.500 0.500		0 0 0	0 0 0	0 0 0	NR NR NR	NR NR NR	0 0 0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equiva	lent NPL							
NC HSDS	1.000		0	0	0	0	NR	0
State- and tribal - equiva	lent CERCLIS	3						
SHWS	1.000		0	0	0	0	NR	0
State and tribal landfill a solid waste disposal site								
SWF/LF OLI	0.500 0.500		0 0	0 0	0 0	NR NR	NR NR	0 0
State and tribal leaking s	torage tank li	ists						
LUST	0.500		0	0	0	NR	NR	0

# **MAP FINDINGS SUMMARY**

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LUST TRUST LAST INDIAN LUST	0.500 0.500 0.500		0 0 0	0 0 0	0 0 0	NR NR NR	NR NR NR	0 0 0
State and tribal registere	d storage tar	ık lists						
UST AST INDIAN UST FEMA UST	0.250 0.250 0.250 0.250		0 0 0 0	0 0 0 0	NR NR NR NR	NR NR NR NR	NR NR NR NR	0 0 0
State and tribal institutio control / engineering cor		es						
INST CONTROL	0.500		0	0	0	NR	NR	0
State and tribal voluntary	/ cleanup site	es						
VCP INDIAN VCP	0.500 0.500		0 0	0 0	0 0	NR NR	NR NR	0 0
State and tribal Brownfie	lds sites							
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMEN	TAL RECORDS	<u>s</u>						
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / S Waste Disposal Sites	Colid							
DEBRIS REGION 9 ODI HIST LF SWRCY INDIAN ODI	0.500 0.500 0.500 0.500 0.500		0 0 0 0	0 0 0 0	0 0 0 0	NR NR NR NR NR	NR NR NR NR NR	0 0 0 0
Local Lists of Hazardous Contaminated Sites	waste /							
US CDL US HIST CDL	TP TP		NR NR	NR NR	NR NR	NR NR	NR NR	0 0
Local Land Records								
LIENS 2	TP		NR	NR	NR	NR	NR	0
Records of Emergency R	Release Repo	rts						
HMIRS IMD SPILLS 80 SPILLS 90	TP 0.500 TP TP		NR 0 NR NR	NR 0 NR NR	NR 0 NR NR	NR NR NR NR	NR NR NR NR	0 0 0
Other Ascertainable Rec	ords							
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0

# **MAP FINDINGS SUMMARY**

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
DOT OPS DOD FUDS CONSENT ROD UMTRA US MINES TRIS TSCA FTTS HIST FTTS SSTS ICIS PADS MLTS RADINFO FINDS RAATS RMP UIC DRYCLEANERS NPDES INDIAN RESERV SCRD DRYCLEANERS 2020 COR ACTION LEAD SMELTERS US AIRS PRP COAL ASH DOE COAL ASH US FIN ASSUR COAL ASH EPA Financial Assurance PCB TRANSFORMER EPA WATCH LIST	TP 1.000 1.000 1.000 1.000 0.500 0.250 TP		NOOOOOORRRRRRRRRRRRRROROOORRRROOOORRRRRR	NROOOOONR NR N	NOOOOORRRRRRRRRRRRRRRRROORRRROORRRRRRRR	N 0 0 0 0 R R R R R R R R R R R R R R R		
EDR HIGH RISK HISTORICA	L RECORDS							
EDR Exclusive Records			_	_	_	_		_
EDR MGP EDR US Hist Auto Stat EDR US Hist Cleaners	1.000 0.250 0.250		0 0 0	0 0 0	0 NR NR	0 NR NR	NR NR NR	0 0 0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LUST RGA LF RGA HWS	TP TP TP		NR NR NR	NR NR NR	NR NR NR	NR NR NR	NR NR NR	0 0 0



February 26, 2014

Renee Gledhill-Earley State Historic Preservation Office 4617 Mail Service Center Raleigh, NC 27699-4617

Subject: EEP Stream mitigation project in Chatham County, NC

Maney Farm Stream Mitigation Site

Dear Ms. Gledhill-Earley,

The Ecosystem Enhancement Program (EEP) requests review and comment on any possible issues that might emerge with respect to archaeological or cultural resources associated with a potential stream restoration project on the attached site (USGS site map and aerial map with approximate areas of potential ground disturbance are enclosed).

The Maney Farm site has been identified for the purpose of providing in-kind mitigation for unavoidable stream channel impacts. Several sections of channel have been identified as significantly degraded. The site has historically been disturbed due agricultural use, primarily as cattle pasture. No architectural structures or archaeological artifacts have been observed or noted during preliminary surveys of the site for restoration purposes.

We ask that you review this site based on the attached information to determine the presence of any historic properties.

We thank you in advance for your timely response and cooperation. Please feel free to contact us with any questions that you may have concerning the extent of site disturbance associated with this project.

Sincerely,

Andrea S. Eckardt

Senior Environmental Planner aeckardt@wildlandseng.com

andrea S. Eckardt



# North Carolina Department of Cultural Resources

#### State Historic Preservation Office

Ramona M. Bartos, Administrator

Governor Pat McCrory Secretary Susan Kluttz

Office of Archives and History Deputy Secretary Kevin Cherry

March 24, 2014

Andrea Eckardt Wildlands Engineering 1430 South Mint Street, Suite 104 Charlotte, NC 28203

Re: Maney Farm Stream Mitigation Site, Chatham County, ER 14-0408

Dear Ms. Eckardt:

Thank you for your letter of February 26, 2014, concerning the above project.

We have conducted a review of the project and are aware of no historic resources which would be affected by the project. Therefore, we have no comment on the project as proposed.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919-807-6579 or <a href="mailto:renee.gledhill-earley@ncdcr.gov">renee.gledhill-earley@ncdcr.gov</a>. In all future communication concerning this project, please cite the above referenced tracking number.

Sincerely,

Ramona M. Bartos

Rence Bledhill-Earley

agents and representatives harmless from and against any and all losses, claims, demands, damages, costs and expenses of whatever nature, including, without limitation, attorneys' fees, relating to or arising out of a breach of Optionor's representations and warranties set forth in this Agreement. The covenants contained in this Section 2.7.7 shall survive the Closing.

#### ARTICLE 3

#### MISCELLANEOUS

- Liquidated Damages. Optionee recognizes that the Property will be removed by Optionor from the market during the existence of this agreement. If the purchase of the Conservation Easement is not consummated because of Optionee's default, the parties have determined and agreed that the actual amount of damages that would be suffered by Optionor as a result of any such default would be very difficult or impracticable to determine as of the date of this Agreement. As a result, the parties have agreed that the Option Consideration paid by Optionee to Optionor as of the date of Optionee's default is sufficient to cover any estimated damages that may be incurred by Optionor. For these reasons, the parties agree that if the purchase of the Conservation Easement is not consummated because of Optionee's default, Optionor shall be entitled to retain the Option Consideration paid by Optionee as of the date of Optionee's default as its sole remedy, and Optionor waives any and all right to seek other rights or remedies against Optionee, including without limitation, specific performance. Nothing set forth in this section 3.1 shall preclude any action under any indemnification, defense or hold harmless provision in this Agreement, nor for the award of attorney's fees and costs in conjunction with any action relating to this Agreement.
- 3.2 Notices. All notices required to or permitted to be given pursuant to this Agreement shall be in writing, shall be given only in accordance with the provisions of this Section, shall be addressed to the parties in the manner set forth below, and shall be conclusively deemed to have been properly delivered: (a) upon receipt when hand delivered during normal business hours; (b) upon receipt when sent by facsimile prior to 5:00 p.m. of a given business day; provided, however, that notices given by facsimile shall not be effective unless the sending party's machine provides written confirmation of successful delivery thereof; (c) upon the day of delivery if the notice has been deposited in a authorized receptacle of the United States Postal Service as first-class, registered or certified mail, postage prepaid, with a return receipt requested; or (d) one (1) business day after the notice has been deposited with either FedEx or United Parcel Service to be delivered by overnight delivery. The addresses of the parties to receive notices are as follows:

TO OPTIONEE:

Wildlands Engineering, Inc. 1430 S. Mint Street, Suite 104 Charlotte, North Carolina 28203 Attention: Robert W. Bugg eMail: rbugg@wildlandseng.com Facsimile: (704) 332-3306

TO OPTIONOR:

**Darryl Lindley** 

1140 Moon Lindley Road Snow Camp, NC 27349

Notice of change of address shall be given by written notice in the manner described in this Paragraph.

- 3.3 <u>Assignment.</u> Optionee shall have the right to assign this Agreement without the consent of Optionor. No assignment shall be effective, however, unless the assignee has delivered to Optionor a written assumption of Optionee's obligations under this Agreement. Optionor hereby releases Optionee from any obligations under this Agreement arising after the effective date of any assignment of this Agreement by Optionee.
- 3.4 <u>Binding Effect</u>. The terms and conditions of this Agreement shall apply and bind the heirs, executors, administrators, successors, and assigns of the Optionor and Holder.

-5-

3.5 <u>Value of Conservation Easement; No Power of Eminent Domain</u>. in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Optionee hereby notifies Optionor that: (i) Optionee believes that the fair market value of the Conservation Easement is an amount equal to the Purchase Price; and (ii) Optionee does not have the power of eminent domain.

V: 12-19-12



February 26, 2014

Dale Suiter
US Fish and Wildlife Service
Raleigh Field Office
PO Box 33726
Raleigh, NC 27636

Subject: Maney Farm Stream Mitigation Site

Chatham County, North Carolina

Dear Mr. Suiter,

The Maney Farm Stream Mitigation Site has been identified for the purpose of providing inkind mitigation for unavoidable stream channel impacts. Several sections of stream channels throughout the site have been identified as significantly degraded as a result of agricultural activities, including its use as a cattle pasture.

We have already obtained an updated species list for Chatham County from your web site (http://www.fws.gov/raleigh/species/cntylist/nc_counties.html). The threatened or endangered species for this county are: the bald eagle (*Haliaeetus leucocephalus*) (BGPA), Cape Fear shiner (*Notropis mekistocholas*), red-cockaded woodpecker (*Picoides borealis*), and harperella (*Ptilimnium nodosum*). We are requesting that you please provide any known information for each species in the county. The USFWS will be contacted if suitable habitat for any listed species is found or if we determine that the project may affect one or more federally listed species or designated critical habitat.

Please provide comments on any possible issues that might emerge with respect to endangered species, migratory birds or other trust resources from the construction of a stream restoration project on the subject property. A USGS map showing the approximate area of potential ground disturbance is enclosed. The figure was prepared from the Crutchfield Crossroads, 7.5-Minute USGS Topographic Quadrangle. An aerial map is also attached.

If we have not heard from you in 30 days we will assume that you do not have any comments regarding associated laws and that you do not have any information relevant to this project at the current time.

We thank you in advance for your timely response and cooperation. Please feel free to contact us with any questions that you may have concerning the extent of site disturbance associated with this project.

Sincerely, Andrea S. Eckandt

Andrea S. Eckardt

Senior Environmental Planner



# United States Department of the Interior

FISH AND WILDLIFE SERVICE Raleigh Field Office Post Office Box 33726 Raleigh, North Carolina 27636-3726

April 4, 2014

Andrea Eckardt Wildlands Engineering 1430 South Mint Street, Suite 104 Charlotte, NC 28203

the description for the contract of the state of the

Re: Maney Farm Stream Mitigation Site- Chatham County, NC

Dear Ms. Eckardt:

This letter is to inform you that a list of all federally-protected endangered and threatened species with known occurrences in North Carolina is now available on the U.S. Fish and Wildlife Service's (Service) web page at http://www.fws.gov/raleigh. Therefore, if you have projects that occur within the Raleigh Field Office's area of responsibility (see attached county list), you no longer need to contact the Raleigh Field Office for a list of federally-protected species.

Our web page contains a complete and frequently updated list of all endangered and threatened species protected by the provisions of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.)(Act), and a list of federal species of concern¹ that are known to occur in each county in North Carolina.

Section 7 of the Act requires that all federal agencies (or their designated non-federal representative), in consultation with the Service, insure that any action federally authorized, funded, or carried out by such agencies is not likely to jeopardize the continued existence of any federally-listed endangered or threatened species. A biological assessment or evaluation may be prepared to fulfill that requirement and in determining whether additional consultation with the Service is necessary. In addition to the federally-protected species list, information on the species' life histories and habitats and information on completing a biological assessment or evaluation and can be found on our web page at http://www.fws.gov/raleigh. Please check the web site often for updated information or changes.

1 2 4 4 13 8x2 (19 xm)

¹ The term "federal species of concern" refers to those species which the Service believes might be in need of concentrated conservation actions. Federal species of concern receive no legal protection and their designation does not necessarily imply that the species will eventually be proposed for listing as a federally endangered or threatened species. However, we recommend that all practicable measures be taken to avoid or minimize adverse impacts to federal species of concern.

If your project contains suitable habitat for any of the federally-listed species known to be present within the county where your project occurs, the proposed action has the potential to adversely affect those species. As such, we recommend that surveys be conducted to determine the species' presence or absence within the project area. The use of North Carolina Natural Heritage program data should not be substituted for actual field surveys.

If you determine that the proposed action may affect (i.e., likely to adversely affect or not likely to adversely affect) a federally-protected species, you should notify this office with your determination, the results of your surveys, survey methodologies, and an analysis of the effects of the action on listed species, including consideration of direct, indirect, and cumulative effects, before conducting any activities that might affect the species. If you determine that the proposed action will have no effect (i.e., no beneficial or adverse, direct or indirect effect) on federally listed species, then you are not required to contact our office for concurrence (unless an Environmental Impact Statement is prepared). However, you should maintain a complete record of the assessment, including steps leading to your determination of effect, the qualified personnel conducting the assessment, habitat conditions, site photographs, and any other related articles.

With regard to the above-referenced project, we offer the following remarks. Our comments are submitted pursuant to, and in accordance with, provisions of the Endangered Species Act.

Based on the information provided and other information available, it appears that the proposed action is not likely to adversely affect any federally-listed endangered or threatened species, their formally designated critical habitat, or species currently proposed for listing under the Act at these sites. We believe that the requirements of section 7(a)(2) of the Act have been satisfied for your project. Please remember that obligations under section 7 consultation must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered; (2) this action is subsequently modified in a manner that was not considered in this review; or, (3) a new species is listed or critical habitat determined that may be affected by the identified action.

However, the Service is concerned about the potential impacts the proposed action might have on aquatic species. Aquatic resources are highly susceptible to sedimentation. Therefore, we recommend that all practicable measures be taken to avoid adverse impacts to aquatic species, including implementing directional boring methods and stringent sediment and erosion control measures. An erosion and sedimentation control plan should be submitted to and approved by the North Carolina Division of Land Resources, Land Quality Section prior to construction. Erosion and sedimentation controls should be installed and maintained between the construction site and any nearby down-gradient surface waters. In addition, we recommend maintaining natural, vegetated buffers on all streams and creeks adjacent to the project site.

The North Carolina Wildlife Resources Commission has developed a Guidance Memorandum (a copy can be found on our website at (http://www.fws.gov/raleigh) to address and mitigate secondary and cumulative impacts to aquatic and terrestrial wildlife resources and water quality. We recommend that you consider this document in the development of your projects and in completing an initiation package for consultation (if necessary).

We hope you find our web page useful and informative and that following the process described above will reduce the time required, and eliminate the need, for general correspondence for species' lists. If you have any questions or comments, please contact Emily Jernigan of this office at (919) 856-4520 ext. 25.

Sincerely,

Pete Benjamin Field Supervisor

FA	·			ATING				
PART I (To be completed by Federal Agency	y)	Date Of L	and Evaluation	Request 2/2	26/2014			
Proposed Land Use Stream Restoration  PART II (To be completed by NRCS)  Does the site contain Prime, Unique, Statewide or Local Important Farmland?  (If no, the FPPA does not apply - do not complete additional parts of this form)  Major Crop(s)  Farmable Land In Govt. Jur		Federal A	Date Of Land Evaluation Request 2/26/2014  Federal Agency Involved FHWA - NCEEP					
Proposed Land Use Stream Restoration			nd State Chat					
		Date Rec	quest Received 2/26/2014	Ву	Person C	empleting For	m:	
Does the site contain Prime, Unique, Statewi	de or Local Important Farmland		ES NO	Acres Ir			Farm Size	
(If no, the FPPA does not apply - do not com	plete additional parts of this forr	n)	lacksquare	N/A		96 acre	es :	
Major Crop(s)	Farmable Land In Govt.	Jurisdiction		Amount of Farmland As Defined in FPF				
	Acres: 87 % 3	93,160	acres	Acres: 60 % 273,967 acres				
•			ment System			eturned by NF	RCS	
<u> </u>		/A		2/28/2014				
PART III (To be completed by Federal Agen	cy)			Site A	Alternative Site B	Site Rating Site C	Site D	
A. Total Acres To Be Converted Directly				14.5	0.10 2	00	0.10 2	
B. Total Acres To Be Converted Indirectly								
C. Total Acres In Site				14.5				
PART IV (To be completed by NRCS) Land	Evaluation Information							
A. Total Acres Prime And Unique Farmland				0.40				
B. Total Acres Statewide Important or Local I	Important Farmland			14.10				
C. Percentage Of Farmland in County Or Loc	cal Govt. Unit To Be Converted			0.0053				
D. Percentage Of Farmland in Govt. Jurisdict	tion With Same Or Higher Relat	ive Value		34				
PART V (To be completed by NRCS) Land				86				
Relative Value of Farmland To Be Co		S)	Maximum	Site A	Site B	Site C	Site D	
(Criteria are explained in 7 CFR 658.5 b. For C	Corridor project use form NRCS-	CPA-106)	Points (15)					
Area In Non-urban Use			` ′	15				
Perimeter In Non-urban Use			(10)	10				
5. I credit of the Bellig Fallica			(20)	15				
Protection Provided By State and Local G	overnment		(20)	20				
5. Distance From Urban Built-up Area			(15)	15				
6. Distance To Urban Support Services				15				
7. Size Of Present Farm Unit Compared To	Average		(10)	0				
Creation Of Non-farmable Farmland			(10)	5				
Availability Of Farm Support Services			(5)	3				
10. On-Farm Investments			(20)	0				
11. Effects Of Conversion On Farm Support			(10)	0				
12. Compatibility With Existing Agricultural Use			(10)	0				
TOTAL SITE ASSESSMENT POINTS			160	95	0	0	0	
PART VII (To be completed by Federal Agency)							_	
Relative Value Of Farmland (From Part V)			100	86	0	0	0	
Total Site Assessment (From Part VI above of	or local site assessment)		160	95	0	0	0	
TOTAL POINTS (Total of above 2 lines)			260	181	0	0	0	
Site Selected:	Date Of Selection			Was A Local Site Assessment Used? YES NO				
Reason For Selection:  Name of Federal agency representative compl	eting this form:					ate:		

#### **Andrea Eckardt**

From: Andrea Eckardt

**Sent:** Monday, March 24, 2014 10:39 AM **To:** 'Cortes, Milton - NRCS, Raleigh, NC'

**Subject:** RE: Completed AD1006 for Candy Creek, Holman Mill and Maney Projects **Attachments:** Maney AD1006_completed_NRCS-signed.pdf; Candy_Creek_AD1006

_Completed_by_NRCS-signed.pdf; Holman Mill AD1006_Completed_by_NRCS-

signed.pdf

**Sensitivity:** Confidential

#### Milton-

Attached are the final AD1006 forms for Candy Creek, Holman Mill and Maney Farms Mitigation Sites for your files. I have completed Parts 6 and 7.

Thanks so much for your help.

#### Andrea

Andrea S. Eckardt Wildlands Engineering, Inc. 704-332-7754 ext 101

From: Cortes, Milton - NRCS, Raleigh, NC [mailto:Milton.Cortes@nc.usda.gov]

Sent: Friday, February 28, 2014 4:08 PM

To: Andrea Eckardt

Subject: RE: Completed AD1006 for Candy Creek, Holman Mill and Maney Projects

Importance: High

Sensitivity: Confidential

Hi Andrea;

Attached requested AD1006 for the mentioned projects. If you have any question, please let me know.

You have a great weekend.

#### Milton Cortés

Assistant State Soil Scientist/
NC NRCS Hispanic Special Emphasis Program Manager
Natural Resources Conservation Service

**4407 Bland Rd., Suite 117**Raleigh, NC 27609

(919) 873-2171/ Fax (919) 873-2157

milton.cortes@nc.usda.gov

Helping People Help the Land ...

This electronic message contains information generated by the USDA solely for the intended recipients. Any unauthorized interception of this message or the use or disclosure of the information it contains may violate the



February 26, 2014

Shannon Deaton North Carolina Wildlife Resource Commission Division of Inland Fisheries 1721 Mail Service Center Raleigh, NC 27699

Subject: Maney Farm Stream Mitigation Site

Chatham County, North Carolina

Dear Ms. Deaton,

The purpose of this letter is to request review and comment on any possible issues that might emerge with respect to fish and wildlife issues associated with a potential stream restoration project on the attached site. A USGS map and an aerial map showing the approximate area of potential ground disturbance are enclosed. The topographic figure was prepared from the Crutchfield Crossroads, 7.5-Minute USGS Topographic Quadrangles.

The Maney Farm Mitigation Site has been identified for the purpose of providing inkind mitigation for unavoidable stream channel impacts. There are several stream channels located on the site that have been identified as significantly degraded due to past agricultural activities including its current use as a cattle pasture.

We thank you in advance for your timely response and cooperation. Please feel free to contact us with any questions that you may have concerning the extent of site disturbance associated with this project.

Sincerely,

Andrea S. Eckardt

Senior Environmental Planner

andrea S. Eckardt

Attachment: USGS Topographic Map

Aerial Map



# 

Gordon Myers, Executive Director

14 March 2014

Andrea Eckardt, Senior Environmental Planner Wildlands Engineering 1430 South Mint Street, Suite 104 Charlotte, North Carolina 28203

Subject: Maney Farm Stream Mitigation Site, Chatham County

Dear Ms. Eckardt:

Biologists with the North Carolina Wildlife Resources Commission (NCWRC) have reviewed the subject information. Our comments are provided in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-667e) and North Carolina General Statutes (G.S. 113-131 et seq.).

The proposed project would provide in-kind mitigation for unavoidable stream impacts. Several stream channels have been identified as significantly degraded due to past agricultural activities including use as a cattle pasture. The project site includes unnamed tributaries to South Fork Cane Creek in the Cape Fear River basin.

Stream restoration projects often improve water quality and aquatic habitat. Establishing native, forested buffers in riparian areas will help protect water quality, improve aquatic and terrestrial habitats, and provide a travel corridor for wildlife species. Provided measures are taken to minimize erosion and sedimentation from construction/restoration activities, we do not anticipate the project to result in significant adverse impacts to aquatic and terrestrial wildlife resources.

Thank you for the opportunity to review this proposed project. If we can provide further assistance, please contact our office at (336) 449-7625 or shari.bryant@ncwildlife.org.

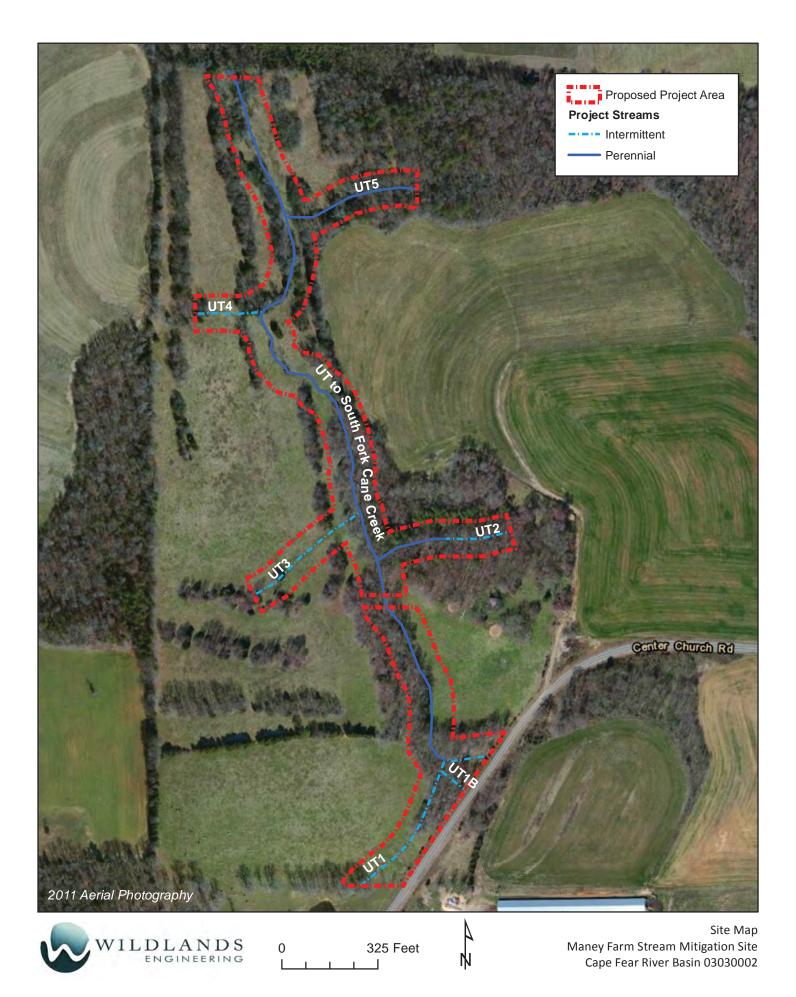
Sincerely,

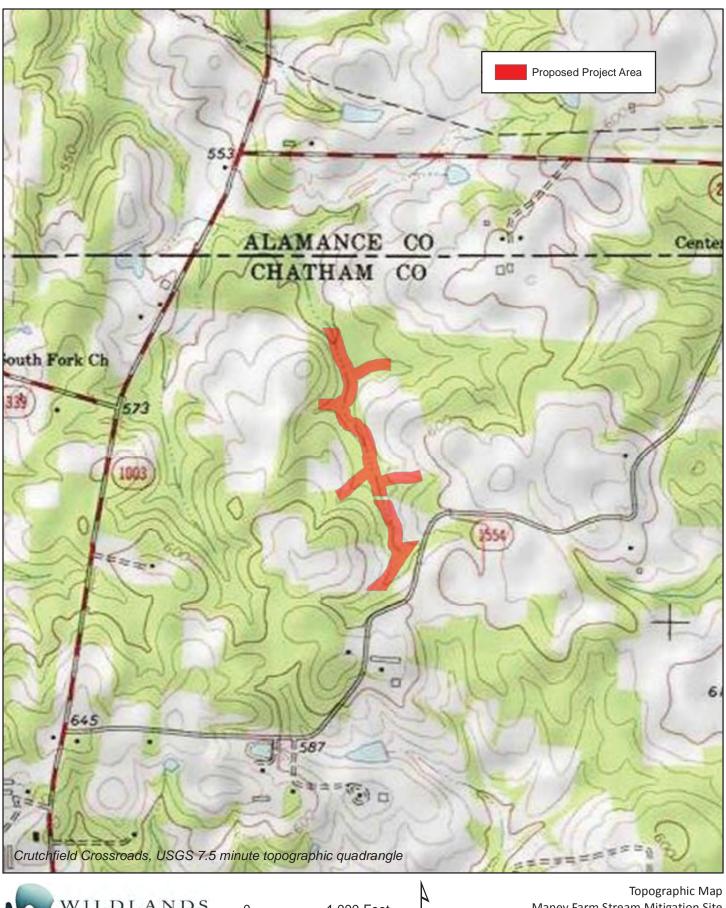
Shari L. Bryant

Piedmont Region Coordinator Habitat Conservation Program

Shau L Bugast

# Maney Farm Mitigation Site Categorical Exclusion Figures





0 1,000 Feet



Topographic Map Maney Farm Stream Mitigation Site Cape Fear River Basin 03030002

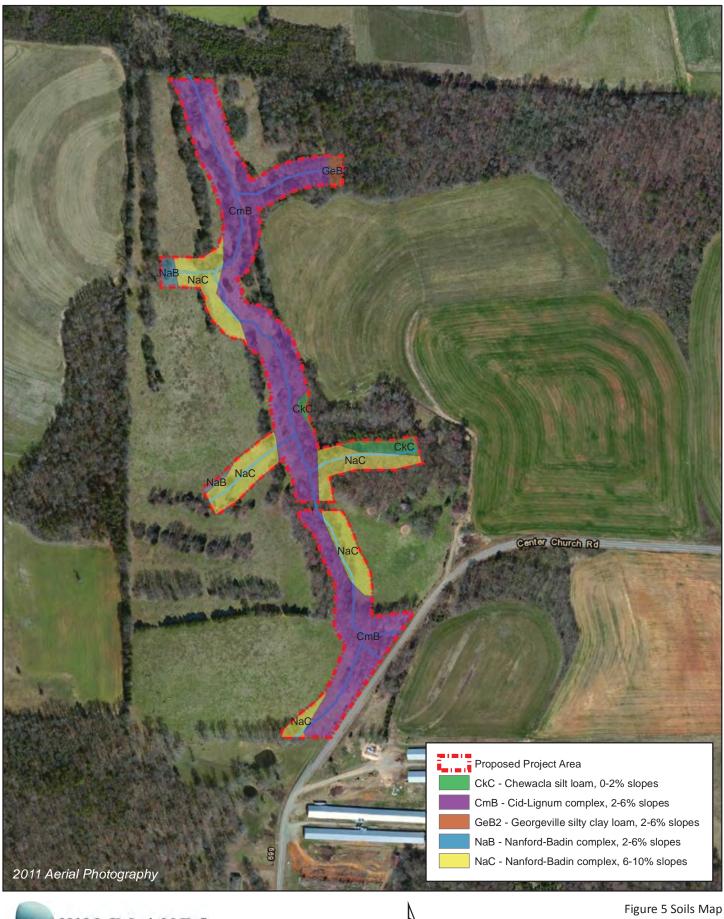






Figure 5 Soils Map Maney Farm Stream Mitigation Site Cape Fear River Basin 03030002

Appendix 9: Floodplain Development Permit Correspondence
Appendix 9: Floodplain Development Permit Correspondence

From: Dan LaMontagne [mailto:dan.lamontagne@chathamnc.org]

Sent: Monday, January 12, 2015 8:31 AM

**To:** Jeff Keaton **Cc:** Daniel Johnson

Subject: RE: Maney Farm Stream Mitigation Site

If you are not doing work in the SFHA, you will not need a Floodplain Development Permit.

Dan J. LaMontagne, P.E. Public Works Director Chatham County 919-545-8531

In keeping with the NC Public Records Law, e-mails, including attachments, may be released to others upon request for inspection and copying.

From: Jeff Keaton [mailto:jkeaton@wildlandseng.com]

Sent: Monday, December 22, 2014 3:30 PM

**To:** Dan LaMontagne **Cc:** Daniel Johnson

Subject: Maney Farm Stream Mitigation Site

#### Dan,

I wanted to get in touch with you about a project Wildlands Engineering, Inc. is doing in coordination with the NC Ecosystem Enhancement Program in Chatham County and decide on what the county will require in the way of floodplain permitting. The project is located approximately 15 miles northwest of the Town of Pittsboro off of Center Church Road (just south of the Alamance County line). The attached map (Figure 1) shows the location of the project. The project will involve restoration of an unnamed tributary (UT) to South Fork (SF) Cane Creek and restoration or enhancement of six tributaries that flow into UT to SF. Our work will entail the construction of a new stream channels for restoration reaches, planting native vegetation adjacent to all project streams, and fencing cattle out of all the streams.

The Site is illustrated on Chatham County Flood Insurance Rate Map Panels 8784 and 8796. The project is not located in a Special Flood Hazard Area (SFHA). In this case, do we need a floodplain development permit? If so, we would like to start that process ASAP. In situations typical to these in the past, we have not been required to do any hydraulic modeling. Please conform that modeling will not be required for this project. Thanks and please let me know if you need additional information.

Diagon fool from			
Please feel free	to contact me at the	number below.	

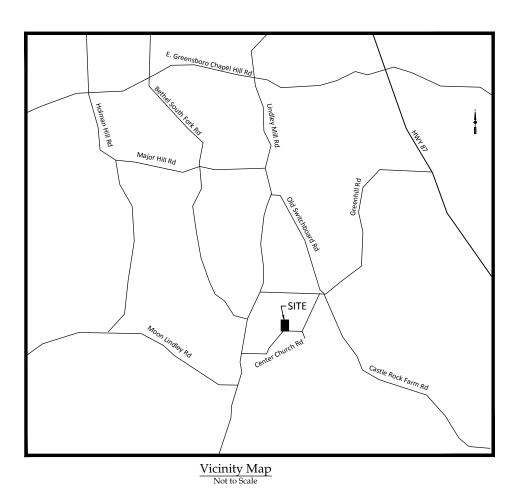
**Jeff Keaton**, PE | *Senior Water Resources Engineer* **O**: 919.851.9986 x103 **M**: 919.302.6919

Wildlands Engineering, Inc.

312 West Millbrook Road, Suite 225 Raleigh, NC 2760

# Maney Farm Stream Mitigation Site

Chatham County, North Carolina for North Carolina Division of Mitigation Services





PRELIMINARY PLANS ISSUED MAY 2015

Sheet Index	
Title Sheet	0.1
Project Overview	0.2
General Notes and Symbols	0.3
Typical Sections	1.1-1.7
Stream Plan and Profile	2.1-2.15
Planting	3.1-3.5
Details	5.1-5.5

# Project Directory

Surveying:
Turner Land Surveying, PLLC
3201 Glenridge Drive
Raleigh, NC 27604
David S. Turner, PLS
919-875-1378

Engineering:
Wildlands Engineering, Inc
License No. F-0831
312 West Millbrook Road, Ste 225
Raleigh, NC 27609
Jeff Keaton, P.E.
919-851-9986

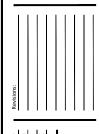
Owne

Ecosystem Enhancement Program
1652 Mail Service Center
Raleigh, NC 27699-1652
Jeff Jurek
919-707-8976

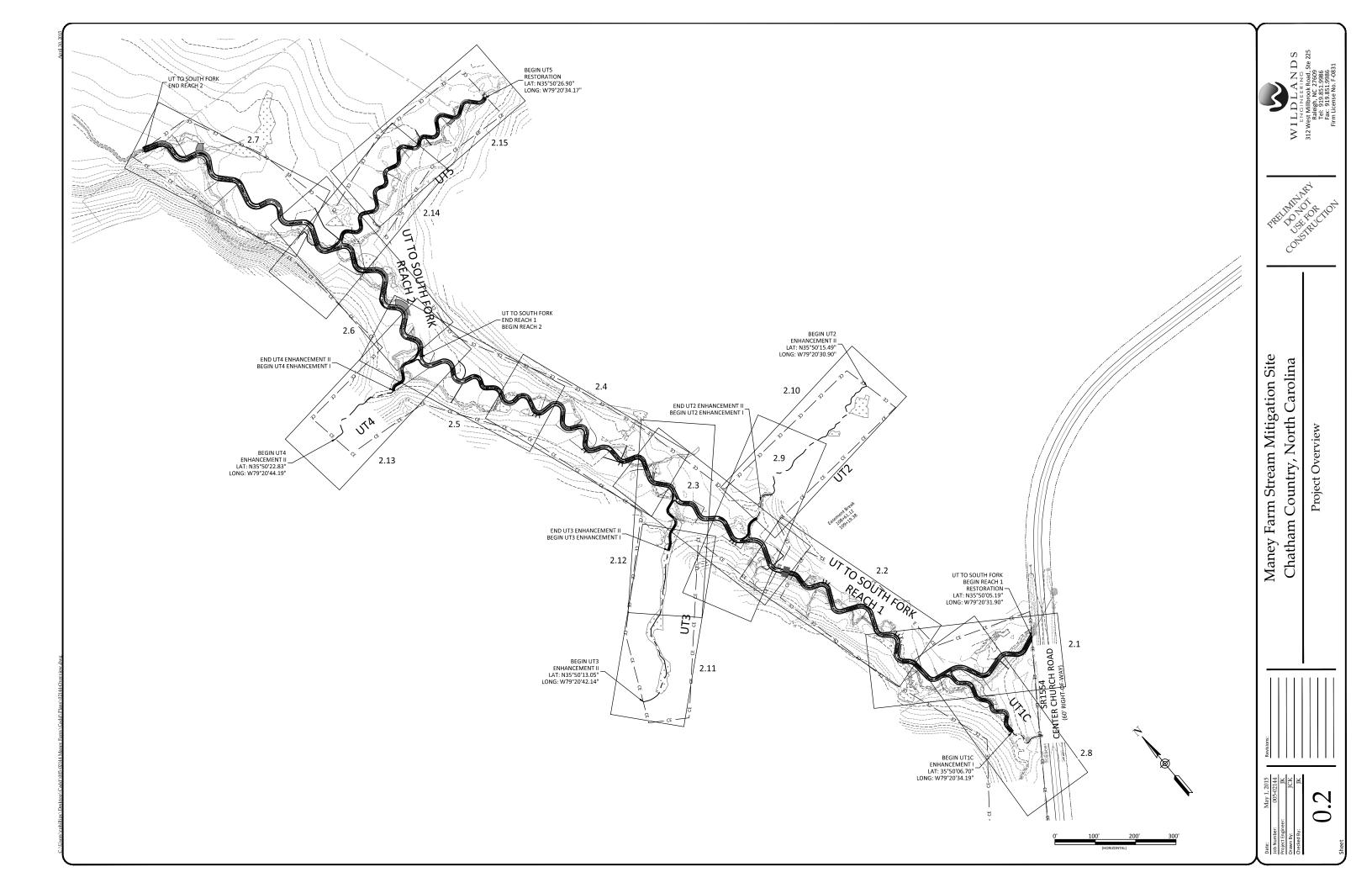
WILDLAND ENGINEERING 312 West Millbrook Road, Ste Raleigh, NG 27609 Tel: 915.831,9886 Far: 919,831,9886 Far: 919,831,9986 Firm License No. F-0831

RELIGIOUS CONSTRUCTION OF THE PROPERTY OF THE

Maney Farm Stream Mitigation Site Chatham Country, North Carolina

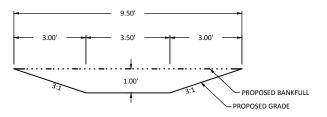




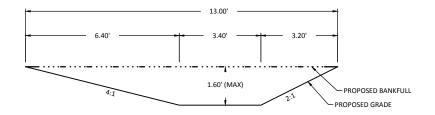


Notes: Maney Farm Stream Mitigation Site Chatham Country, North Carolina General Notes and Symbols Proposed Features Proposed Structures **Erosion and Sediment Control Features Existing Features** CE _____ CE ____ Proposed Conservation Easement _____ Proposed Thalweg Alignment Proposed Bankfull Proposed Root Wad Existing Fenceline Existing Treeline -Proposed Lunker Log Existing Tree Ø Existing Power Pole Proposed Limits Of Disturbance Proposed Various Constructed Riffles Per Sheet 5.1 Proposed Brush Toe Existing Wetlands Proposed Sod Mats Proposed Channel Plug

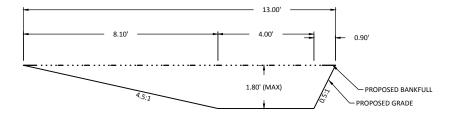
- 1.) Typical sections are provided as reference for in channel grading only.
  2.) Pool depth will vary per profile.
- 3.) All deep pools shall have bank revetments on outside of
- 4.) Typical pool sections are shown as right meander bends only. The flatter side slope is on the inside of the meander bend and for left meander bends should be on the opposite side than shown on the typical sections.



UT to South Fork Reach 1 - Riffle STA: 100+00 - 121+44



UT to South Fork Reach 1 - Shallow Pool STA: 100+00 - 121+44

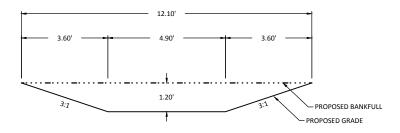


UT to South Fork Reach 1 - Deep Pool STA: 100+00 - 121+44

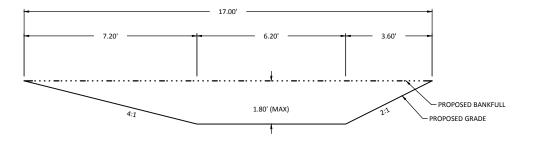
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Maney Farm Stream Mitigation Site Chatham Country, North Carolina UT to South Fork Reach 1 Typical Sections

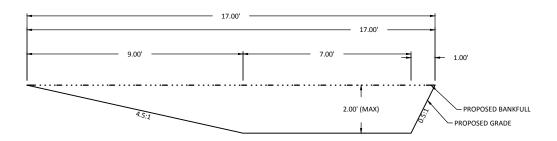
- 1.) Typical sections are provided as reference for in channel grading only.
  2.) Pool depth will vary per profile.
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- 4.) Typical pool sections are shown as right meander bends only. The flatter side slope is on the inside of the meander bend and for left meander bends should be on the opposite side than shown on the typical sections.



UT to South Fork Reach 2 - Riffle STA: 121+44 - 132+24



UT to South Fork Reach 2 - Shallow Pool STA: 121+44 - 132+24



UT to South Fork Reach 2 - Deep Pool STA: 121+44 - 132+24

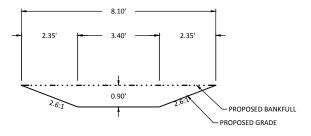
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Maney Farm Stream Mitigation Site Chatham Country, North Carolina UT to South Fork Reach 2 Typical Sections

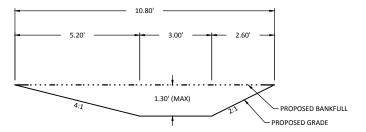
- 1.) Typical sections are provided as reference for in channel
- grading only.

  2.) Pool depth will vary per profile.

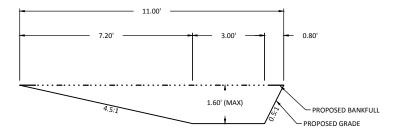
  3.) All deep pools shall have bank revetments on outside of bend.
- 4.) Typical pool sections are shown as right meander bends only. The flatter side slope is on the inside of the meander bend and for left meander bends should be on the opposite side than shown on the typical sections.



UT1C - Riffle STA: 200+00 - 202+51



UT1C - Shallow Pool STA: 200+00 - 202+51



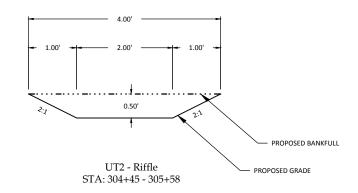
UT1C - Deep Pool STA: 200+00 - 202+51

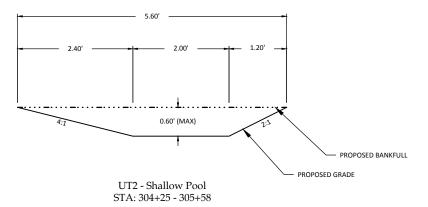
Maney Farm Stream Mitigation Site Chatham Country, North Carolina UT1C Typical Sections

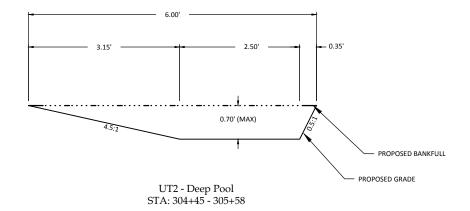
- 1.) Typical sections are provided as reference for in channel
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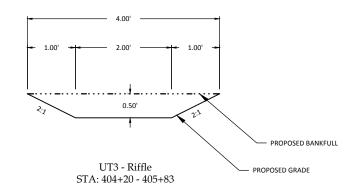
L A N D S
EERING
700k Road, Ste 225
NC 27609
8.851.9986
9.851.9986
se No. F-0831

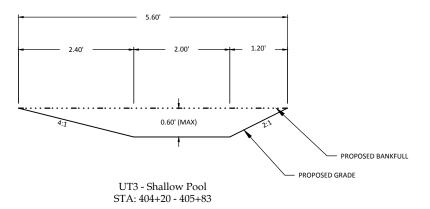
Maney Farm Stream Mitigation Site Chatham Country, North Carolina

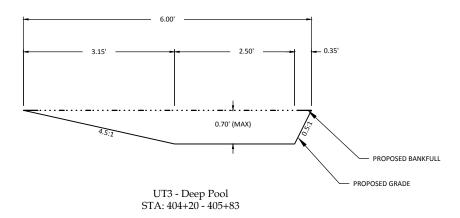
- 1.) Typical sections are provided as reference for in channel
- grading only.

  2.) Pool depth will vary per profile.

  3.) All deep pools shall have bank revetments on outside of bend.
- 4.) Typical pool sections are shown as right meander bends only. The flatter side slope is on the inside of the meander bend and for left meander bends should be on the opposite side than shown on the typical sections.



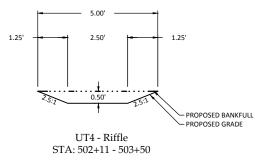


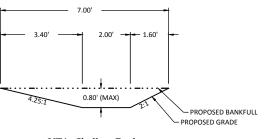


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700k Road, Ste 225
NC 27609
8.851.9986
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se No. F-0831

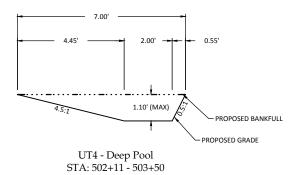
Maney Farm Stream Mitigation Site Chatham Country, North Carolina UT3 Typical Sections

- 1.) Typical sections are provided as reference for in channel grading only.
  2.) Pool depth will vary per profile.
- 3.) All deep pools shall have bank revetments on outside of bend.
- 4.) Typical pool sections are shown as right meander bends only. The flatter side slope is on the inside of the meander bend and for left meander bends should be on the opposite side than shown on the typical sections.





UT4 - Shallow Pool STA: 501+11 - 503+50



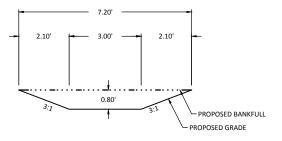
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9.851.9986
se No. F-0831

Maney Farm Stream Mitigation Site Chatham Country, North Carolina UT4 Typical Sections

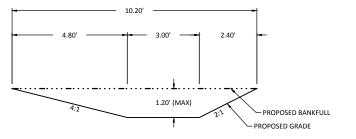
- 1.) Typical sections are provided as reference for in channel
- grading only.

  2.) Pool depth will vary per profile.

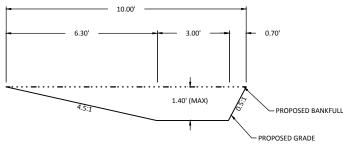
  3.) All deep pools shall have bank revetments on outside of bend.
- 4.) Typical pool sections are shown as right meander bends only. The flatter side slope is on the inside of the meander bend and for left meander bends should be on the opposite side than shown on the typical sections.



UT5 - Riffle STA: 600+00 - 606+77



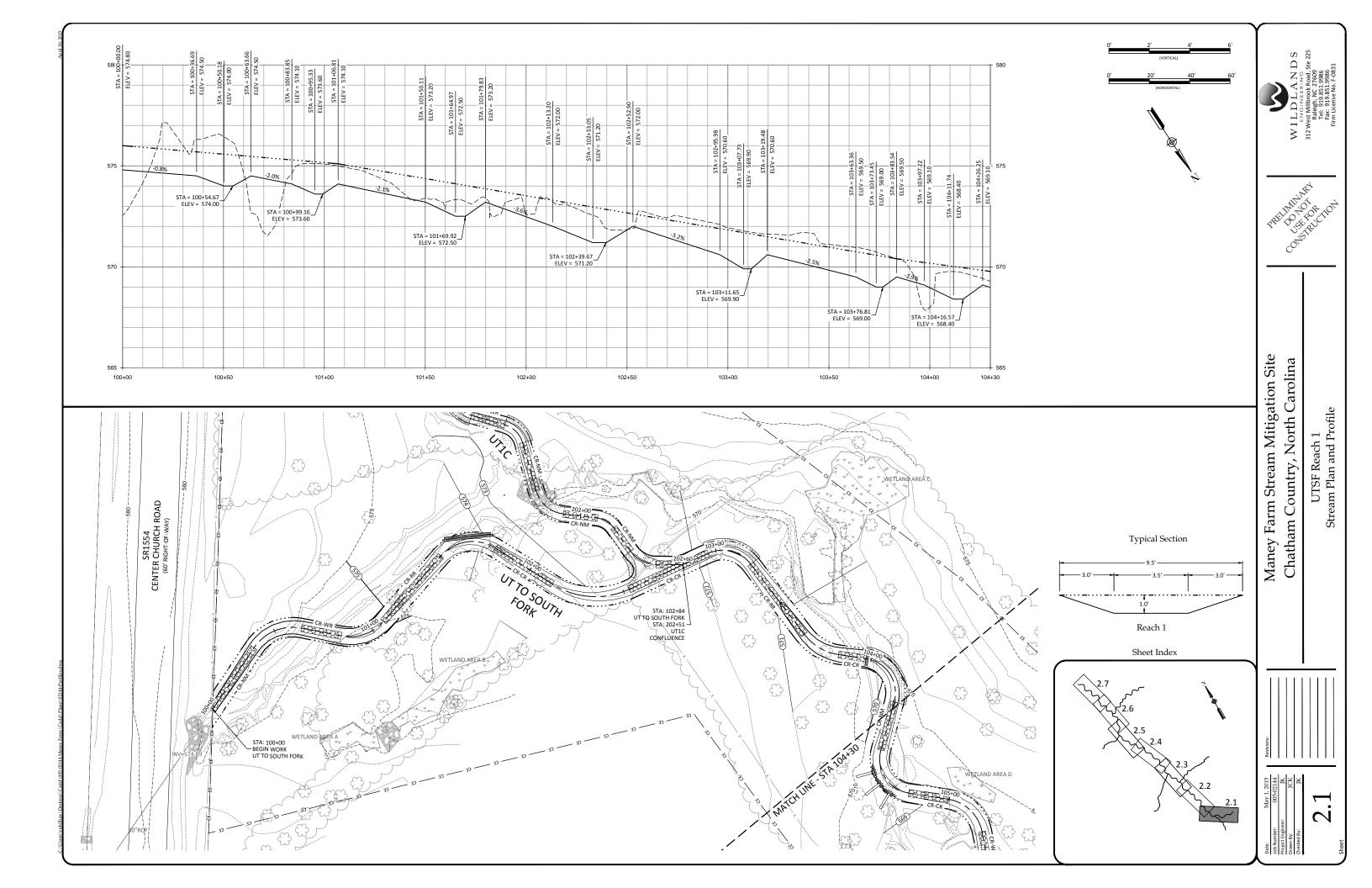
UT5 - Shallow Pool STA: 600+00 - 606+77

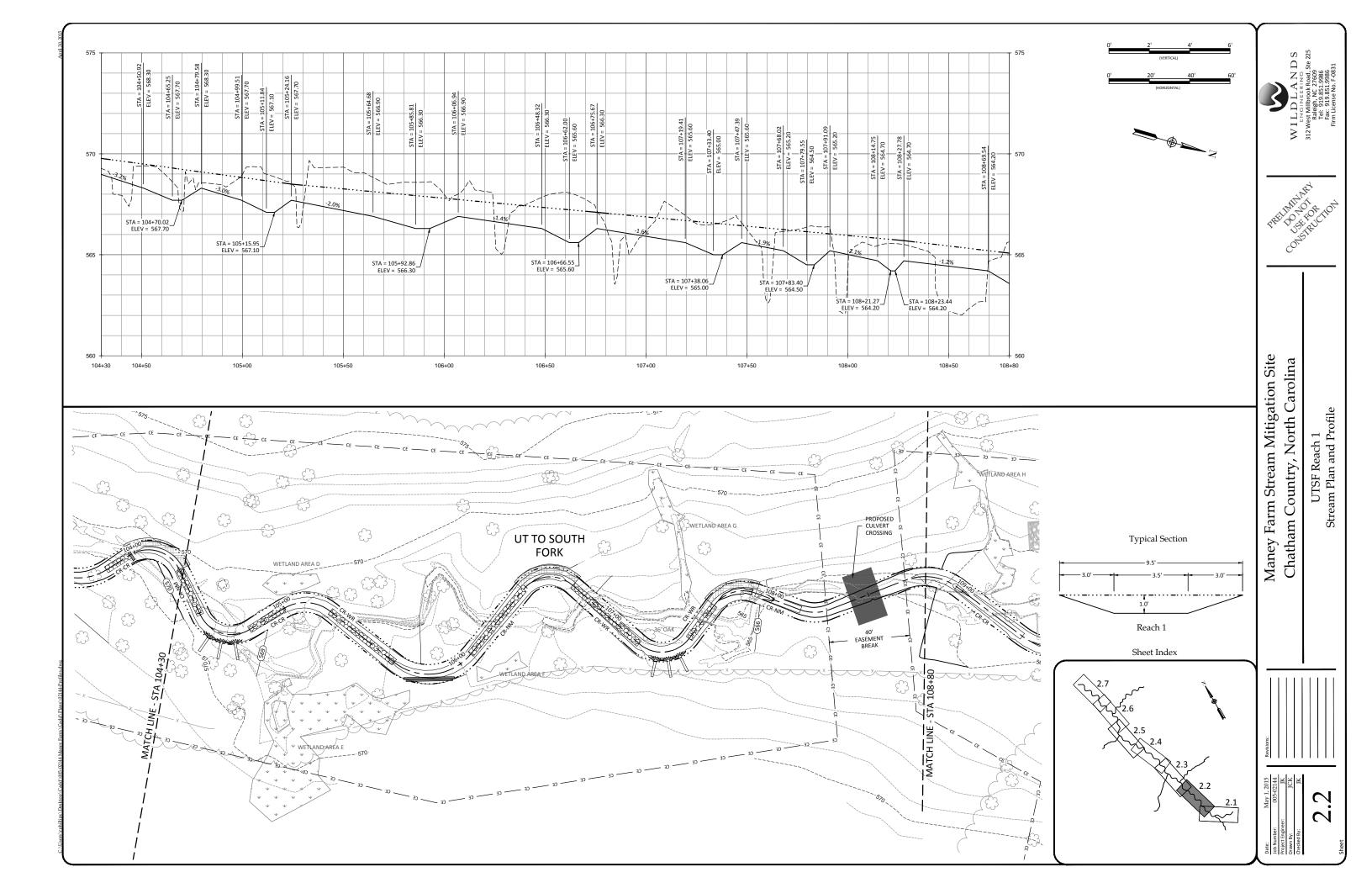


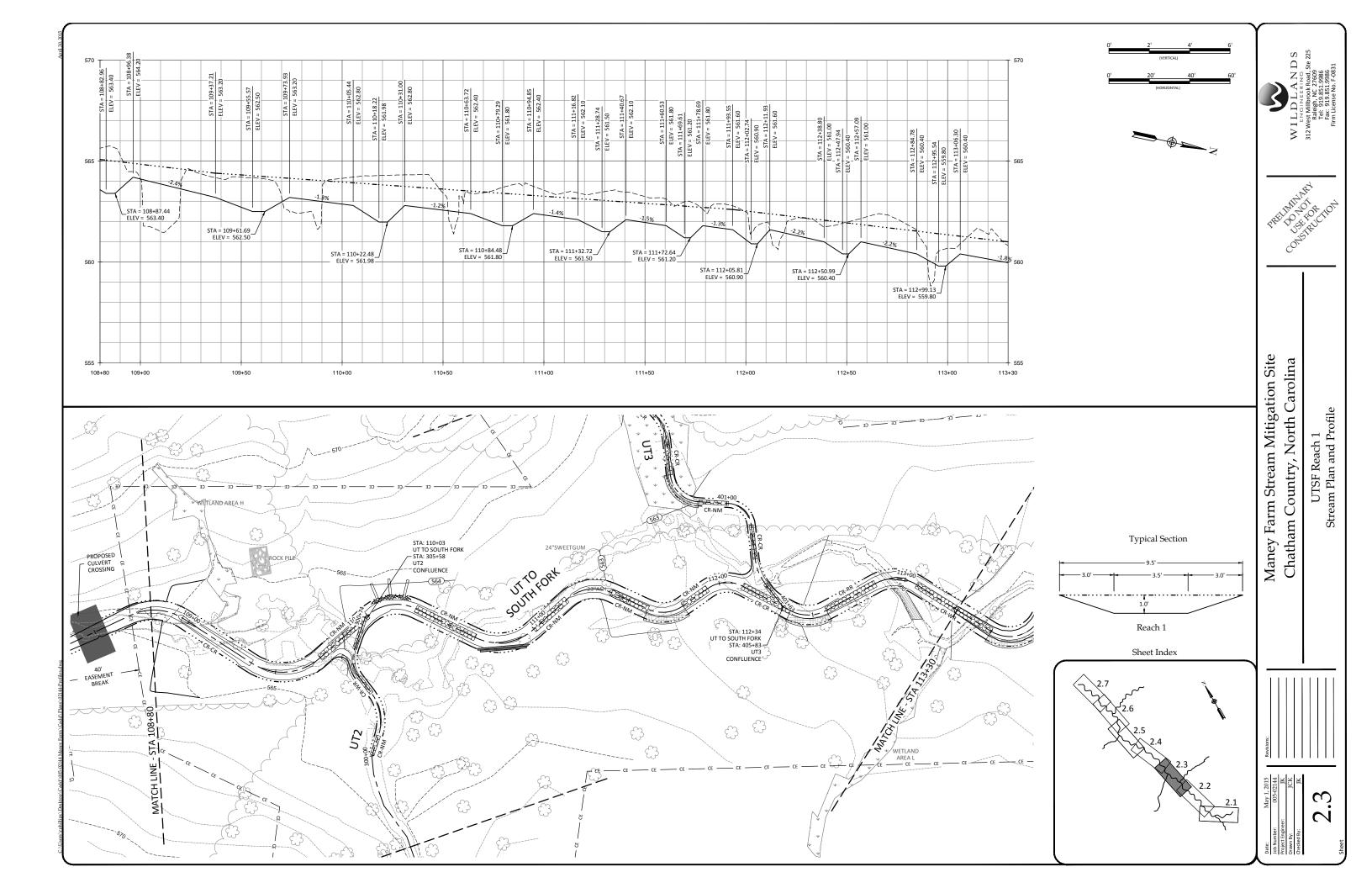
UT5 - Deep Pool STA: 600+00 - 606+77

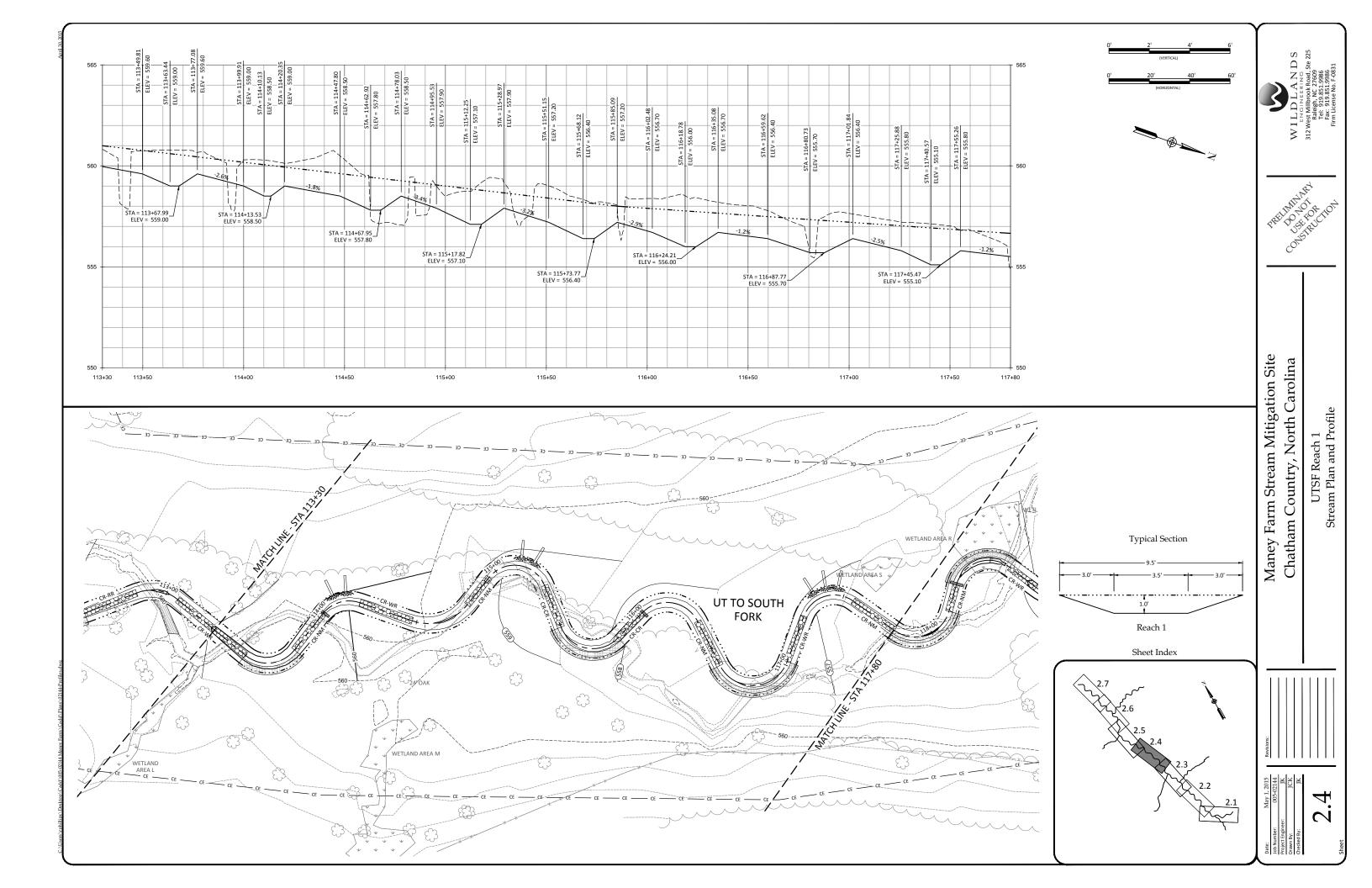
ANDS RN DS Road, Ste 225 27609 1.9986 0. F-0831

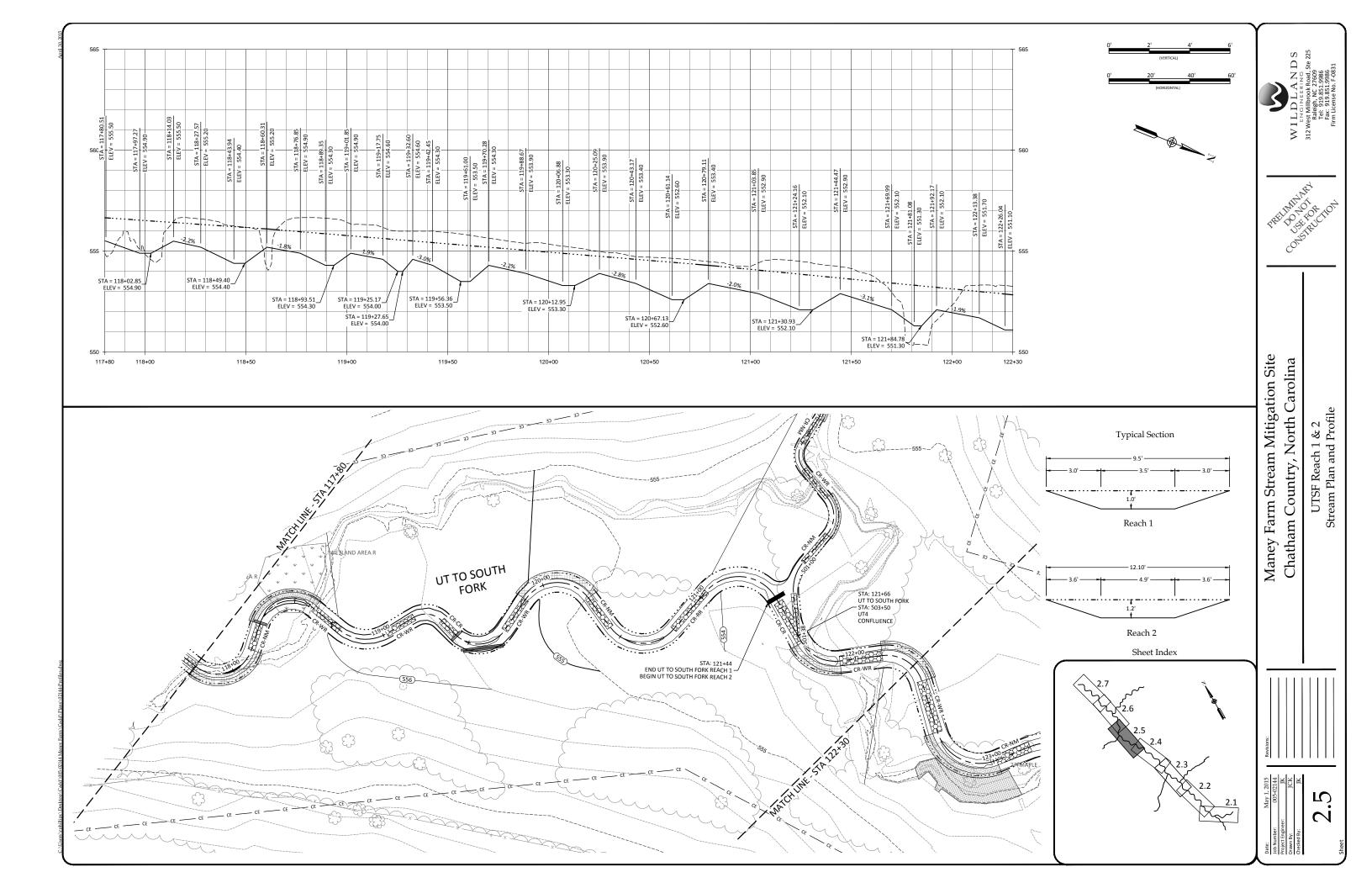
Maney Farm Stream Mitigation Site Chatham Country, North Carolina UT5 Typical Sections

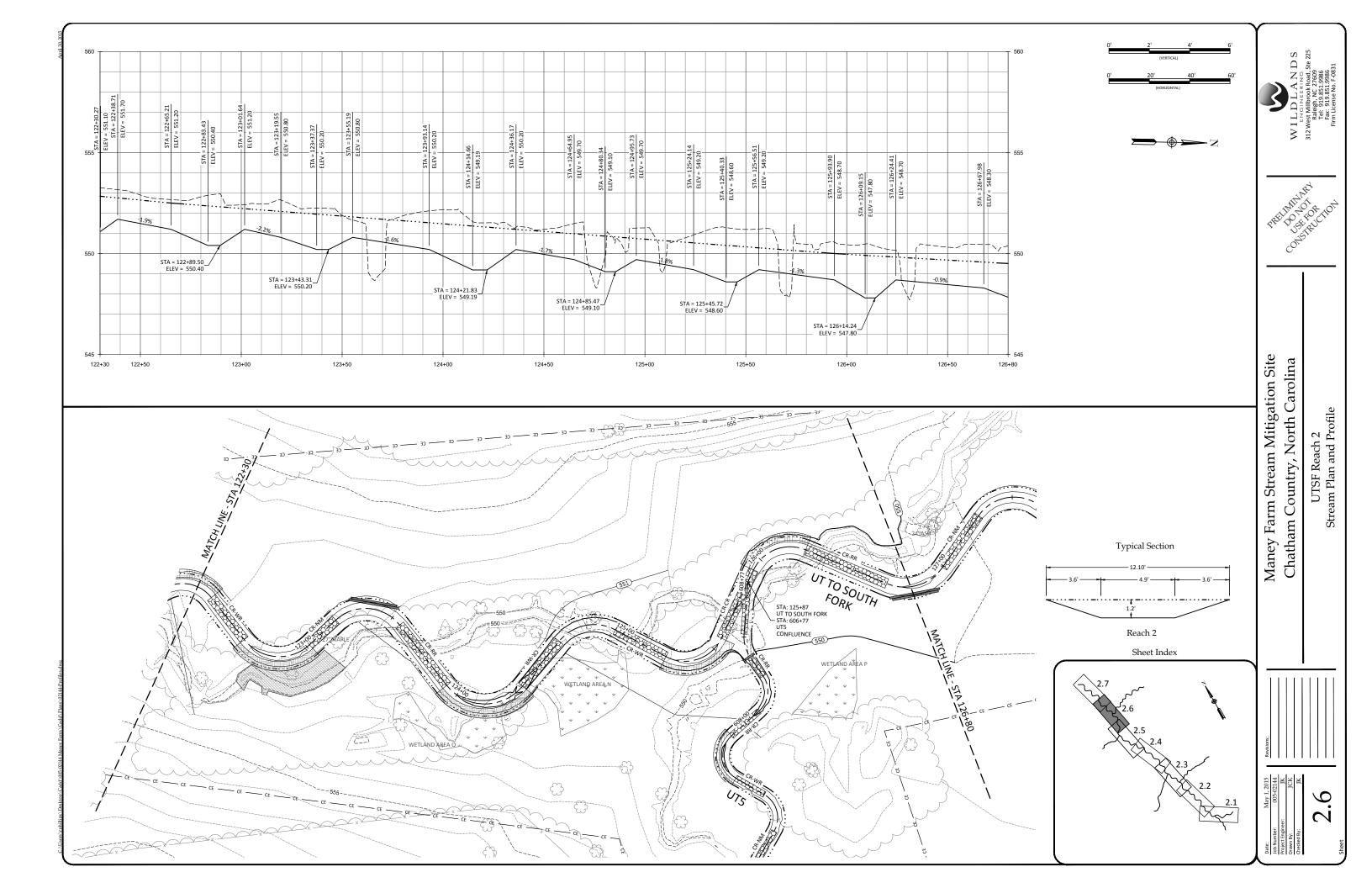


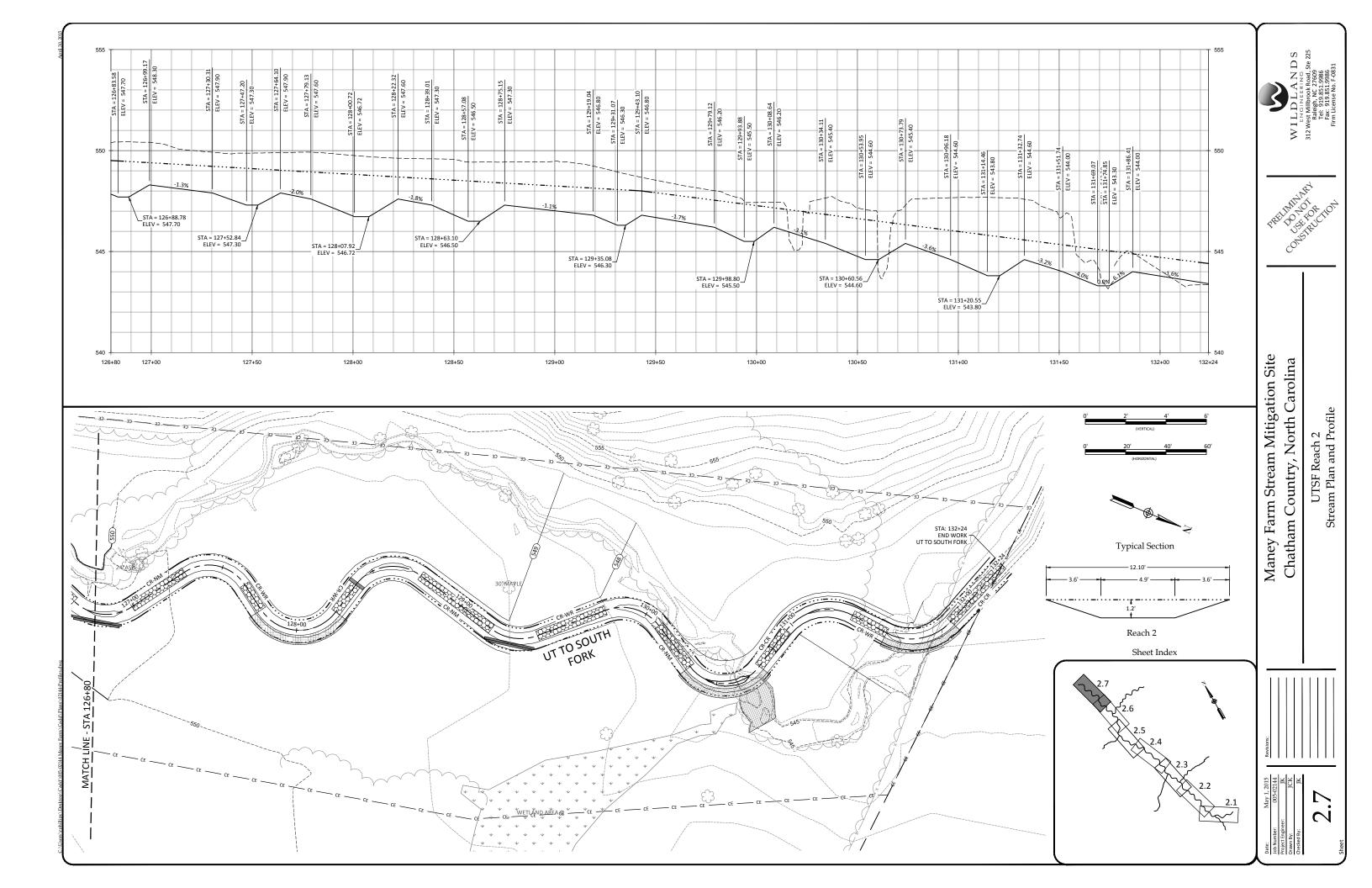


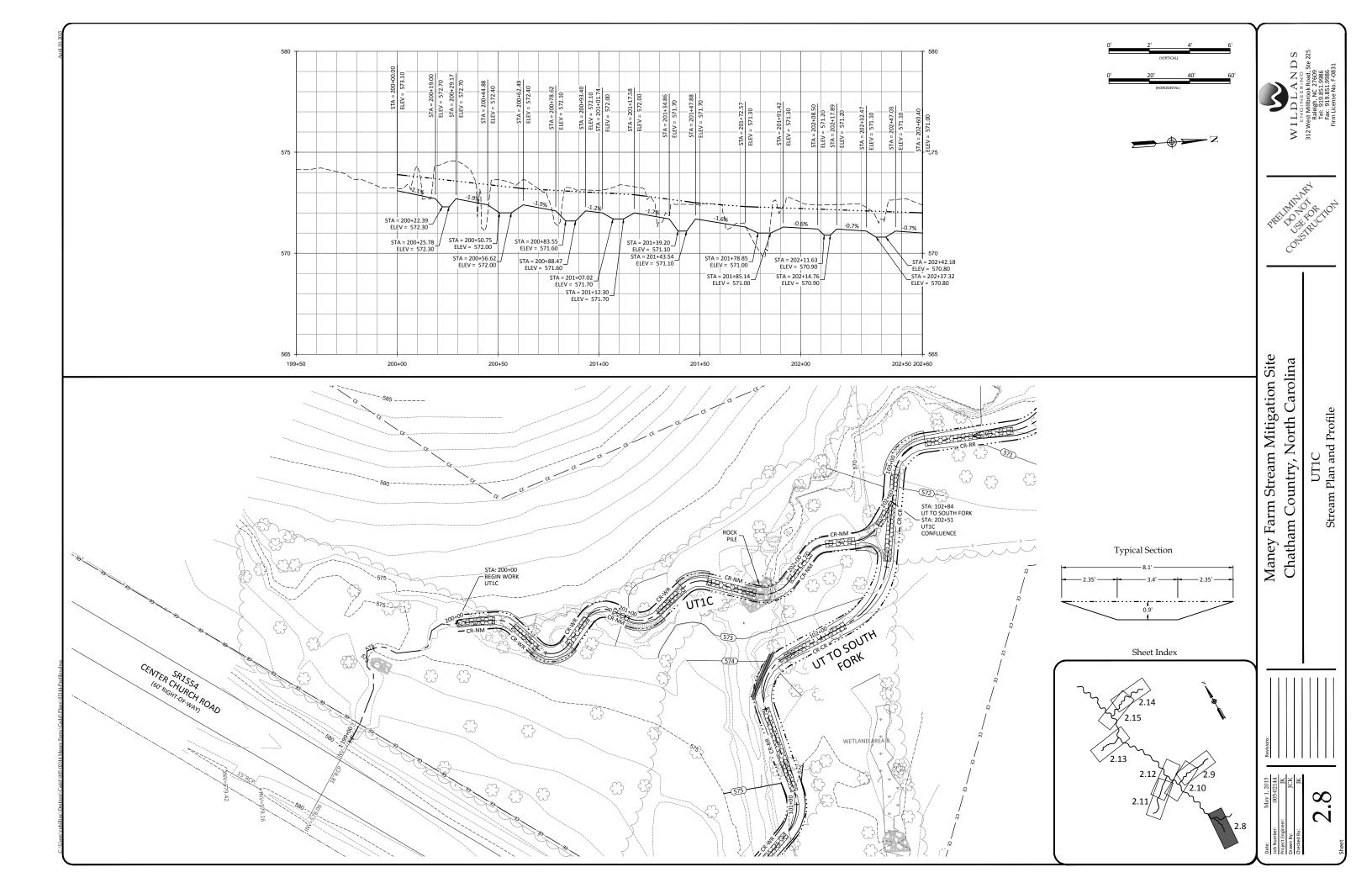


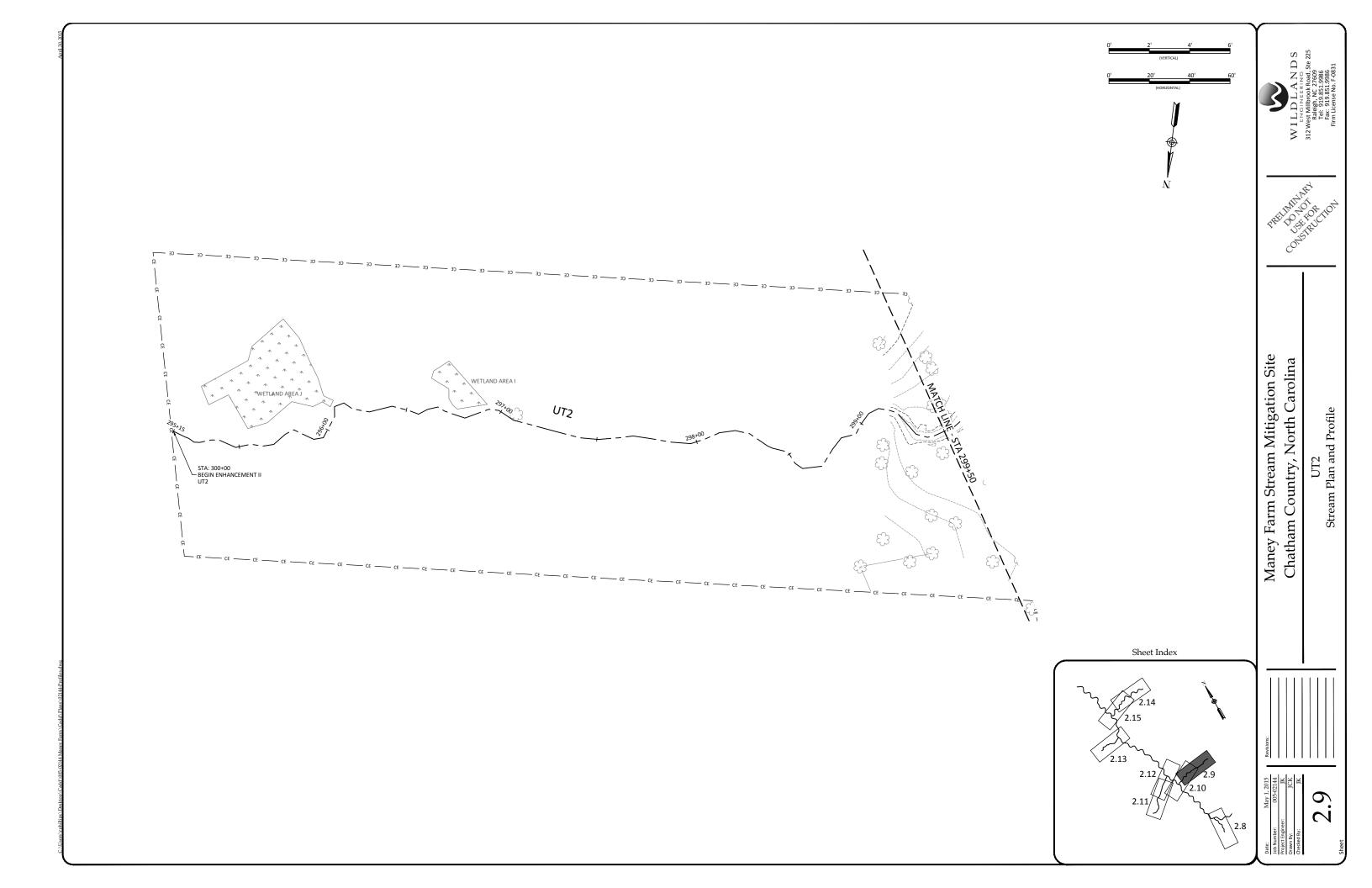


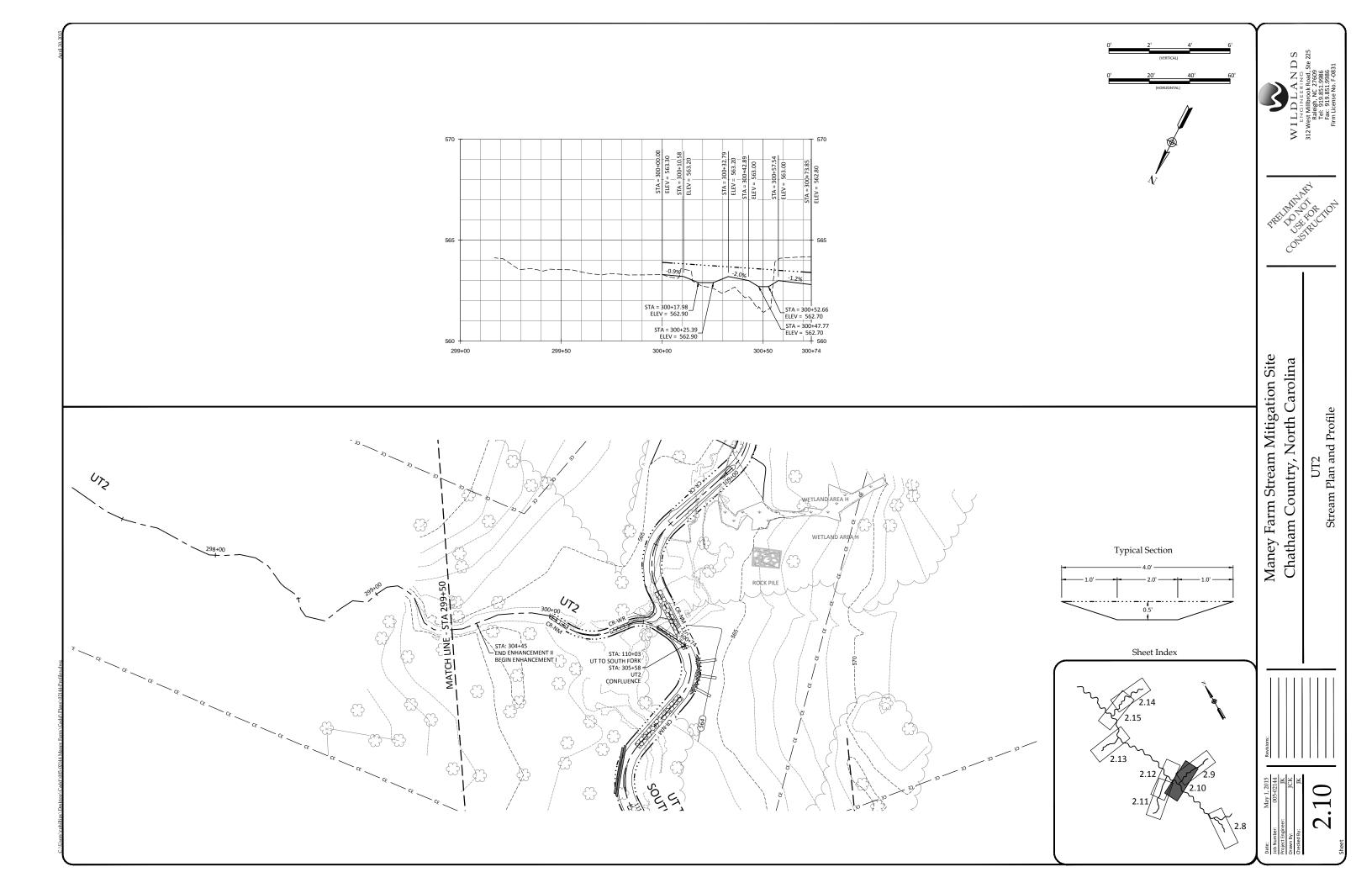


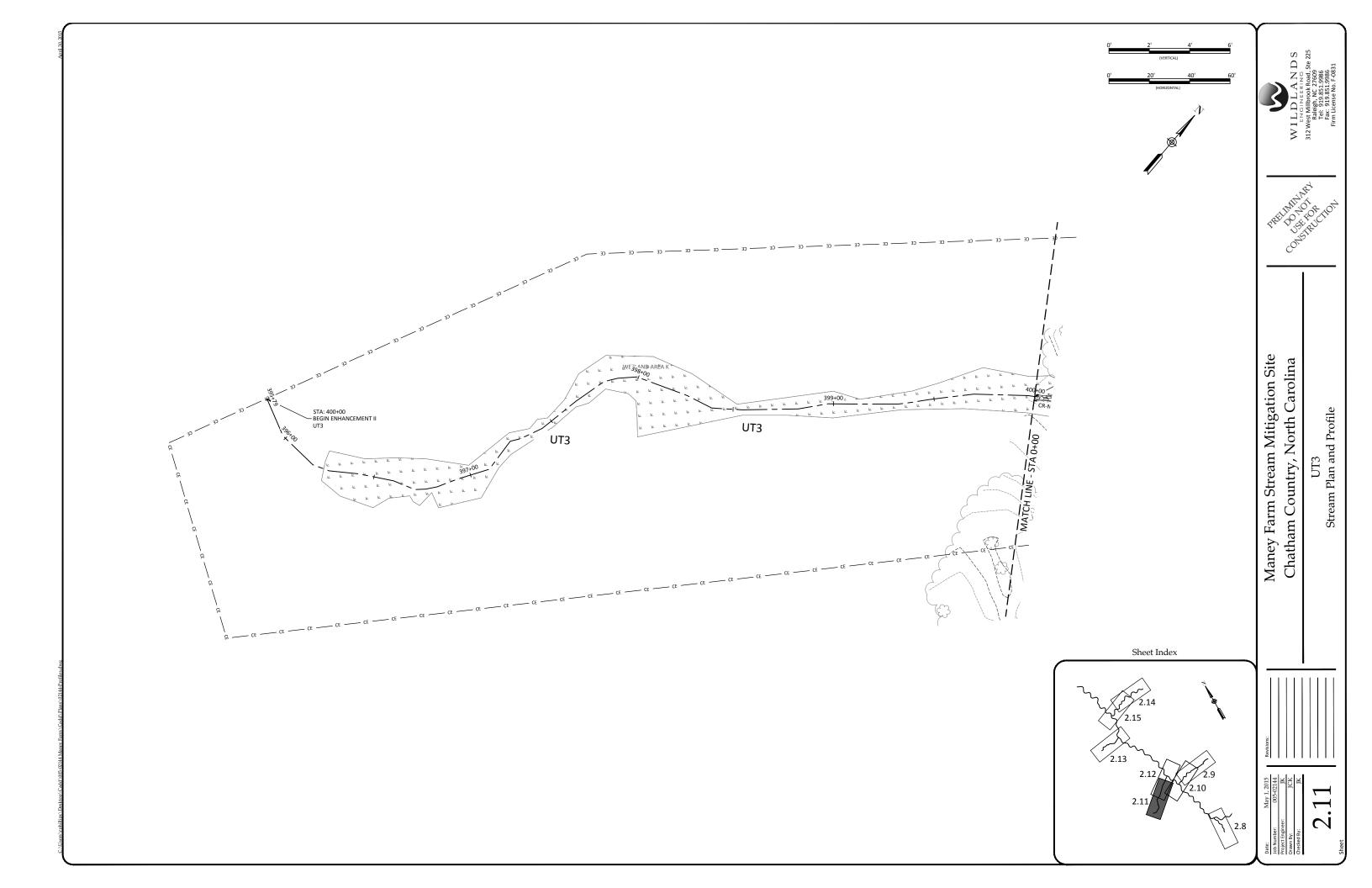


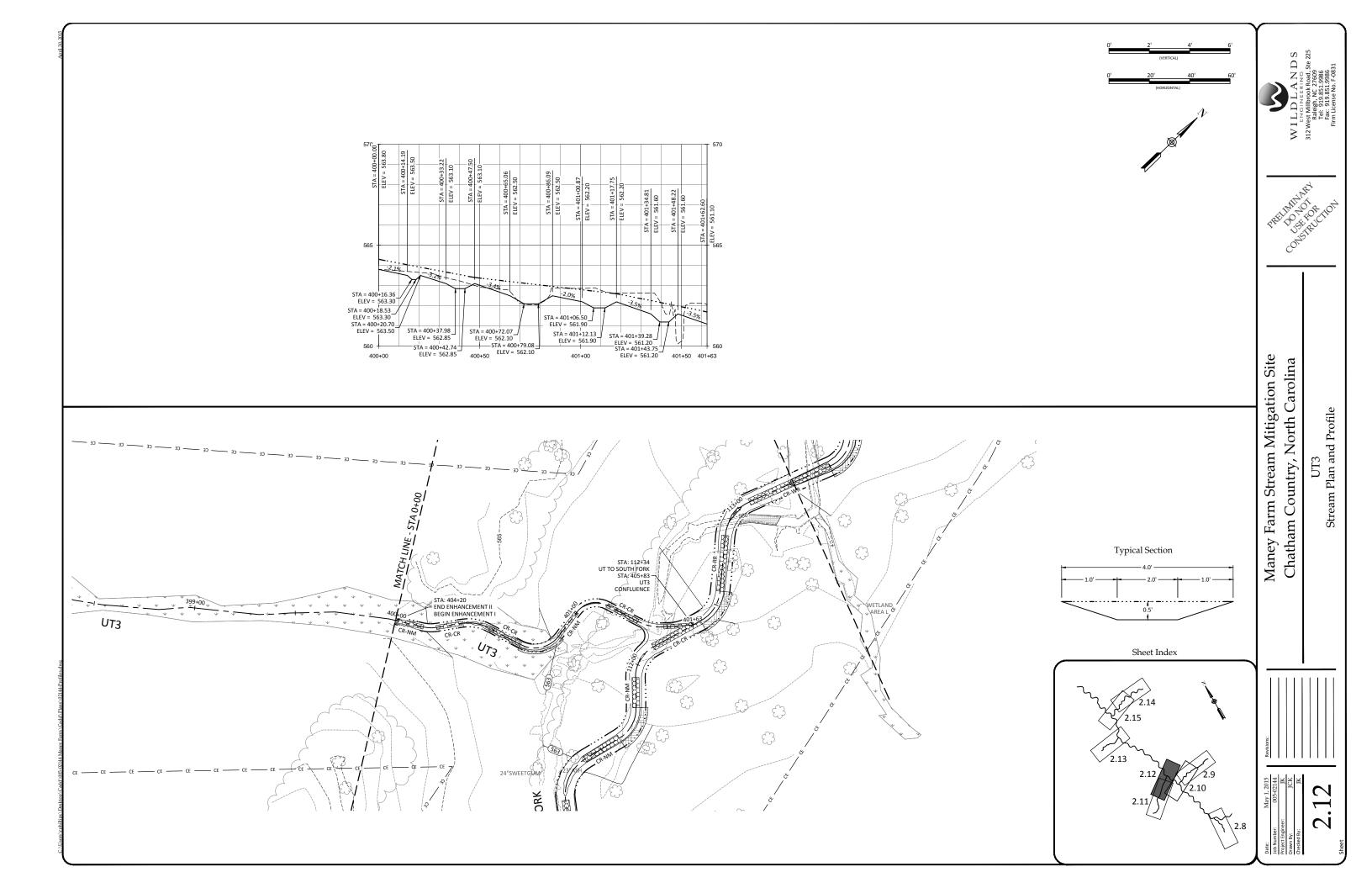


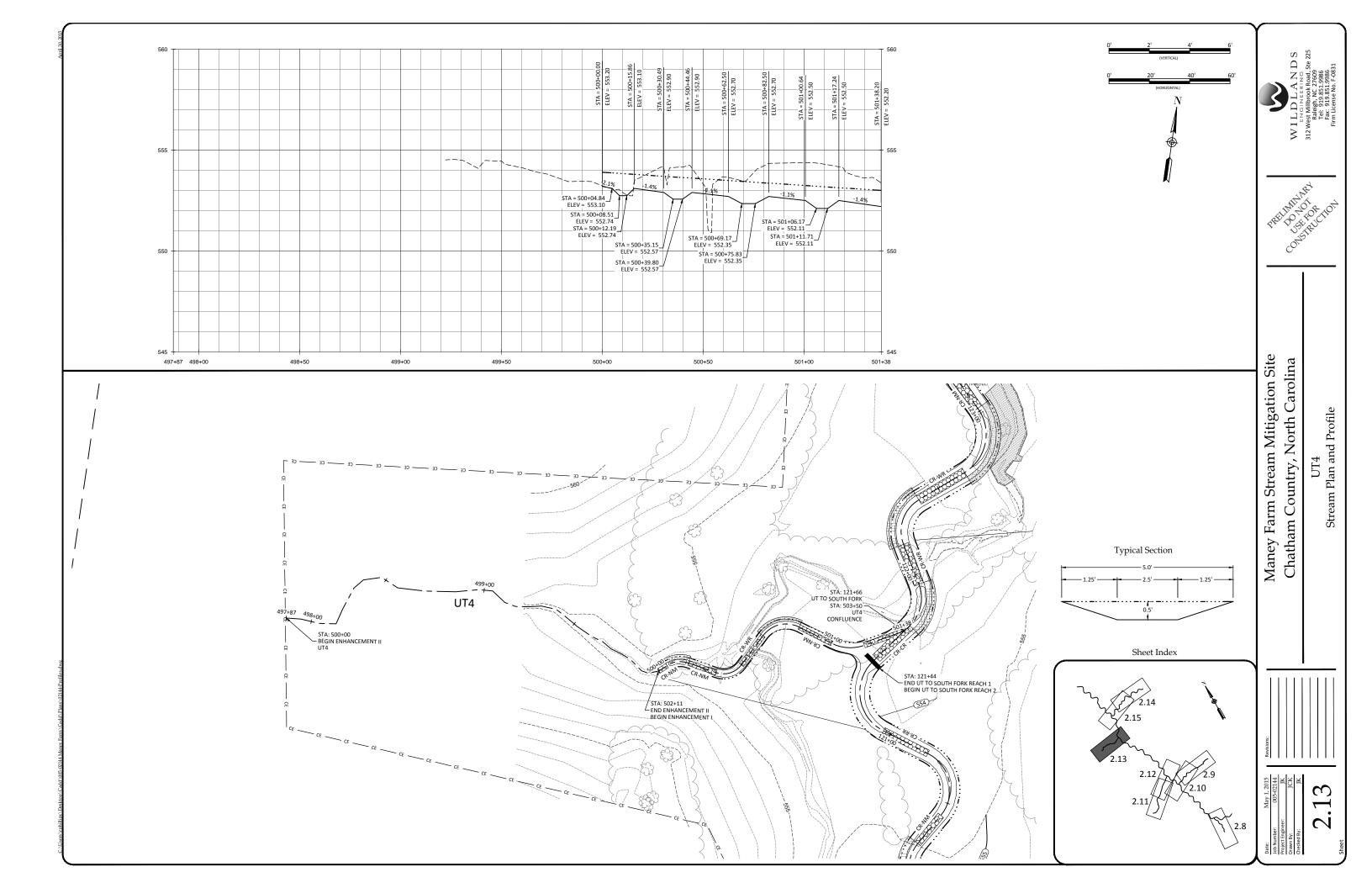


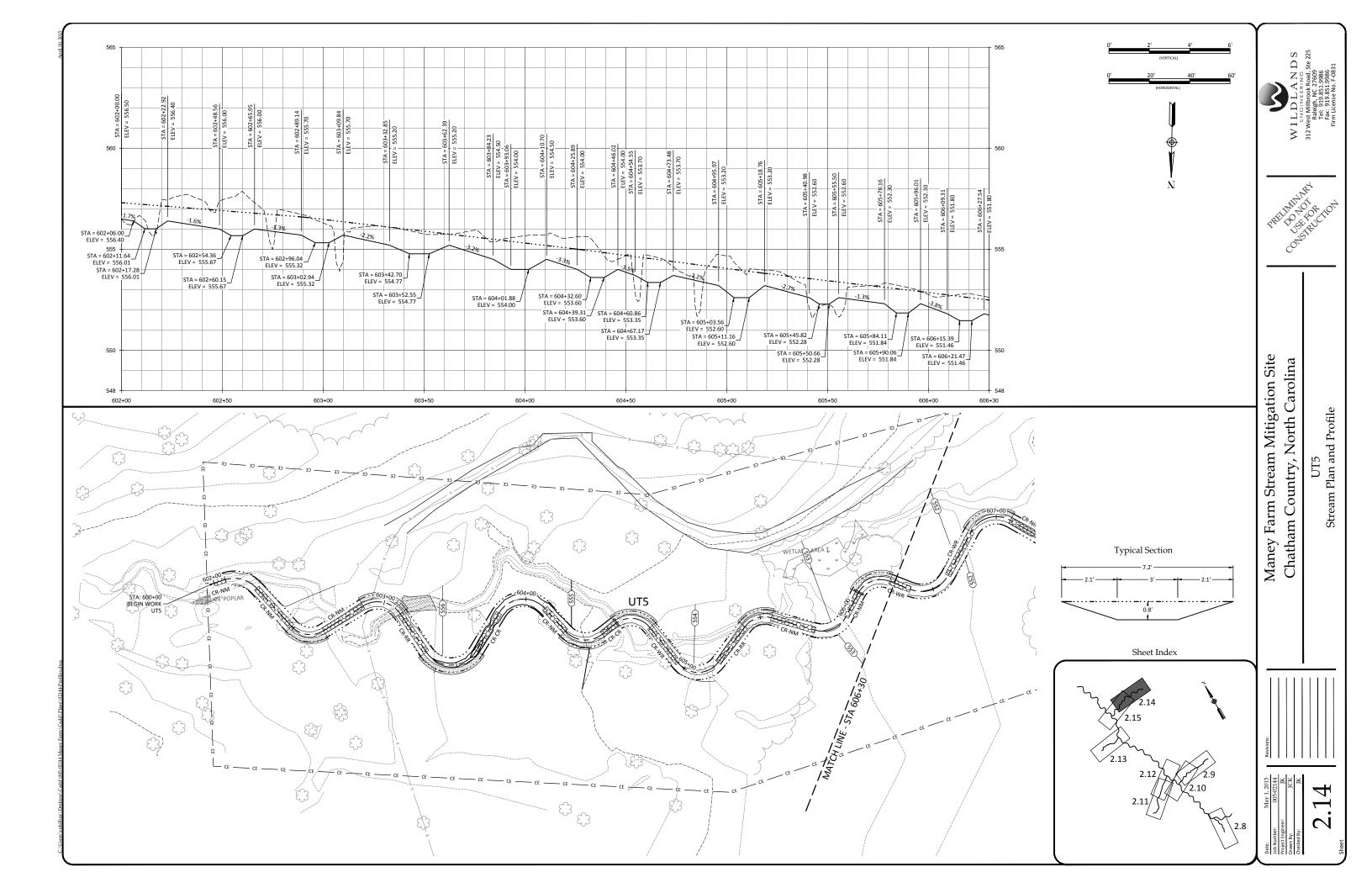


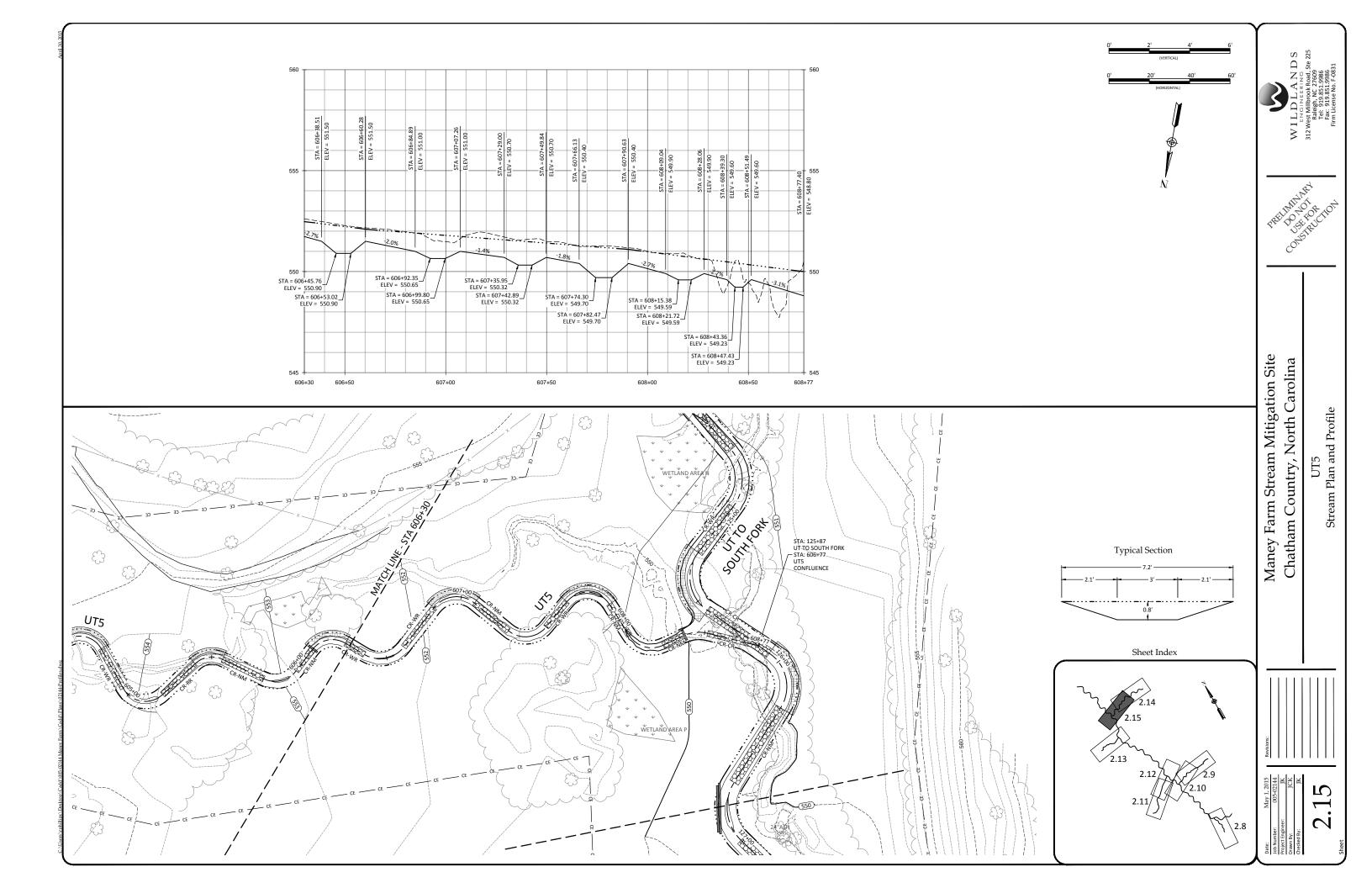












Mitigation Site North Carolina

Maney Farm Stream N	Chatham Country, N

u Cooding		
y Seeding		
ve Seed		
mmon Name	Stratum	Density (lbs/acre)
Rve Grain	Herb	140

		Stream	bank Planting	z Zone		
Live Stakes						
Species	Common Name	Max Spacing	Indiv. Spacing	Min. Size	Stratum	% of Stems
Salix nigra	Black Willow	8 ft.	2-8 ft.	0.5"-1.5" cal.	Shrub	15%
Cornus ammomum	Silky Dogwood	8 ft.	2-8 ft.	0.5"-1.5" cal.	Shrub	35%
Salix sericea	Silky Willow	8 ft.	2-8 ft.	0.5"-1.5" cal.	Shrub	35%
Physocarpos opulifolius	Ninebark	8 ft.	2-8 ft.	0.5"-1.5" cal.	Shrub	15%
		Hei	rbaceous Plug	gs		•
*Juncus effusus	Common Rush	5 ft.	3-5 ft.	1.0"- 2.0" plug	Herb	40%
Carex alata	Broadwing Sedge	5 ft.	3-5 ft.	1.0"- 2.0" plug	Herb	40%
Panicum virgatum	Switchgrass	5 ft.	3-5 ft.	1.0"- 2.0" plug	Herb	20%

*Juncus effusus only to be used in channels within 100' of	f confluence with UT to South Fork Cane Creek.
------------------------------------------------------------	------------------------------------------------

•	Buffer Planting Zone							
	Bare Root							
Species	Common Name	Max Spacing	Indiv. Spacing	Min. Caliper Size	Stratum	# of Stems		
Alnus serrulata	Tag Alder	12 ft.	6-12 ft.	0.25"-1.0"	Canopy	8%		
Quercus phellos	Willow Oak	12 ft.	6-12 ft.	0.25"-1.0"	Canopy	10%		
Platanus occidentalis	Sycamore	12 ft.	6-12 ft.	0.25"-1.0"	Canopy	20%		
Betula nigra	River Birch	12 ft.	6-12 ft.	0.25"-1.0"	Canopy	10%		
Acer rubrum	Red Maple	12 ft.	6-12 ft.	0.25"-1.0"	Canopy	5%		
Liriodendron tulipifera	Tulip Poplar	12 ft.	6-12 ft.	0.25"-1.0"	Canopy	10%		
Quercus palustris	Pin Oak	12 ft.	6-12 ft.	0.25"-1.0"	Canopy	5%		
Fraxinus pennsylvanica	Green Ash	12 ft.	6-12 ft.	0.25"-1.0"	Canopy	20%		

	Bare Root							
Species	Common Name	Max Spacing	Indiv. Spacing	Min. Caliper Size	Stratum	# of Stems		
Carpinus caroliniana	American Hornbeam	24 ft.	12-24 ft.	0.25"-1.0"	Mid-Story	50%		
Viburnum prunifolium	Blackhaw Viburnum	24 ft.	12-24 ft.	0.25"-1.0"	Shrub	10%		
Calycanthus floridus	Sweetshrub	24 ft.	12-24 ft.	0.25"-1.0"	Shrub	15%		
Callicarpa americana	American Beautyberry	24 ft.	12-24 ft.	0.25"-1.0"	Shrub	15%		
Symphoricarpos orbiculatus	Coralberry	24 ft.	12-24 ft.	0.25"-1.0"	Shrub	10%		



ZONE 2 - BUFFER PLATING ZONE

ZONE 1 - STREAM BANK PLANTING ZONE

//	//	//	
1/1	1/1	1/	
1/1	1/1	1/2	

	Dormanont Soc	ding Outside Easer	mont	
Approved Date	Species Name	Common Name	Stratum	Density (lbs/acre)
All Year	Festuca grundingcea	Tall Fescue	Herb	40

Elymus virginicus Virginia Wild Rye

Baptisia australis Blue False Indigo

Permanent Riparian Seeding Pure Live Seed (20 lbs/ acre)

Redtop Panicgrass

Winter Bentgrass

River Oats

Blackeyed Susan

Fox Sedge

Deertongue

Common Milkweed

Annual Gaillardia

Pale Purple Coneflower

Panicum rigidulum

Chasmanthium latifolium

Rudbeckia hirta

Coreopsis lanceolata

Carex vulpinoidea

Asclepias syrica

Gaillardia pulchella

Echinacea purpurea

Approved Date

All Year

All Year

All Year

All Year

All Year

All Year

All Year All Year

All Year

All Year

All Year

All Year

Density (lbs/acre)

1.5

4.0

2.0

1.0

1.0

3.0

3.5

2.0

0.2

0.2

1.0

0.6

Herb

Herb

Herb

Herb

Herb

Herb

Temporary Seeding						
Pure Live Seed						
Approved Date	Species Name	Common Name	Stratum	Density (lbs/acre)		
Aug 15 - May 1	Secale cereale	Rye Grain	Herb	140		
May 1 - Aug 15	Setaria italica	German Millet	Herh	50		



ZONE 3 - SUPPLEMENTAL MID-STORY/SHRUB PLATING ZONE

