MITIGATION PLAN

Loflin Dairy Buffer
Mitigation Site
Randolph County, North Carolina
DENR Contract 003995

Randleman Lake Watershed
Cape Fear River Basin
HUC 03030003

Prepared for:

NC Department of Environment and Natural Resources
Ecosystem Enhancement Program
1652 Mail Service Center
Raleigh, NC 27699-1652

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EXECUTIVE SUMMARY

The Loflin Dairy Buffer Mitigation Site is a full-delivery riparian buffer restoration project for the North Carolina Ecosystem Enhancement Program (NCEEP) in Randolph County, NC. The project includes the restoration of riparian buffers along several unnamed tributaries and ephemeral ditches to Bob Branch. The project is being completed to provide buffer mitigation units (BMUs) in the Cape Fear River Basin and will include 9.1 acres of buffer restoration. The project is located within the Hydrologic Unit Code (HUC) 03030003010060 and North Carolina Department of Water Quality (NCDWQ) Sub-basin 03-06-08.

Table ES.1 Project Components
Loflin Dairy Buffer Mitigation Site

Area	Management Objectives	Type of Mitigation	Area (acres)	Ratio	Mitigation Units (BMUs)
Area A	Restore riparian buffer. Remove cattle from buffer.	Buffer Restoration	2.4	1:1	2.4
Area B	Restore riparian buffer. Remove crop production and nutrient application.	Buffer Restoration	6.7	1:1	6.7
		Total	**9.1 acres**	**- - -**	**9.1 BMUs**

The Loflin Dairy Buffer Mitigation Site is located in the 03030003 Catalog Unit (CU), in the Cape Fear River Basin. The Deep River is the primary river in this HUC and flows into the Randleman Reservoir. The project site streams flow to Bob Branch, which flows directly into the reservoir as well. The newly created reservoir is a regional water supply and stream buffer protection rules are in place throughout the watershed (http://portal.ncdenr.org/web/wq/swp/ws/401/riparianbuffers/rules). The Cape Fear shiner, a federally endangered species, is found in the Deep River. Protection of this species and improving the water quality of the waters draining to the Randleman Reservoir are included as recommendations in the NCEEP 2009 Cape Fear River Basin Restoration Priorities Report (http://www.nceep.net /services/lwps/cape_fear/RBRP%20Cape%20Fear%202008.pdf). The Loflin Diary Buffer Mitigation Site was identified as a buffer mitigation opportunity to improve water quality and habitat within the CU.

The major goals of the proposed buffer restoration project are to provide ecological and water quality enhancements to the Randleman Lake watershed of the Cape Fear River Basin by creating a functional riparian corridor and restoring a Piedmont Bottomland Forest as described by Schafale and Weakley (1990). Specific enhancements to water quality and ecological processes are outlined below in Table ES.2.

Table ES.2 Ecological and Water Quality Goals of the Mitigation Project
Loflin Dairy Buffer Mitigation Site

Water Quality Goals	
Decrease nutrient and fecal coliform levels	Nutrient and fecal coliform input will be decreased by filtering runoff from the dairy farm and agricultural fields through restored native buffer zones. The off-site nutrient input will also be absorbed on-site by filtering flood flows through restored riparian buffer areas, where flood flows can disperse through native vegetation.
Decrease sediment input	Sediment from off-site sources will be captured by deposition on restored riparian areas where native vegetation will slow overland flow velocities.
Decrease water temperature and increase dissolved oxygen concentrations	Establishment and maintenance of riparian buffers will create long-term shading of the channel flow to minimize thermal heating.
Ecological Goals	
Create appropriate terrestrial habitat	Buffer areas will be restored by removing invasive vegetation and planting native vegetation. Some bank sloping, matting, and planting will occur in isolated locations. Native vegetation will provide cover and food for terrestrial creatures.

This mitigation plan has been written in conformance with the requirements of the following:

- 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 Ecosystem Enhancement Program In-Lieu Fee Instrument signed and dated July 28, 2010.

These documents govern NCEEP operations and procedures for the delivery of compensatory mitigation.

Loflin Dairy Buffer Mitigation Site
Mitigation Plan

TABLES

FIGURES

APPENDICES

1.0 Restoration Project Goals and Objectives

The Loflin Dairy Buffer Mitigation Site is located in the 03030003 Catalog Unit (CU), in the Cape Fear River Basin. The Deep River is the primary river in this HUC and flows into the Randleman Reservoir. The project site streams flow to Bob Branch, which flows directly into the reservoir as well. The newly created reservoir is a regional water supply and stream buffer protection rules are in place throughout the watershed (http://portal.ncdenr.org/web/wq/swp/ws/401/riparianbuffers/rules). The Cape Fear shiner, a federally endangered species, is found in the Deep River. Protection of this species and improving the water quality of the waters draining to the Randleman Reservoir are included as recommendations in the NCEEP 2009 Cape Fear River Basin Restoration Priorities Report (http://www.nceep.net /services/lwps/cape_fear/RBRP%20Cape%20Fear%202008.pdf). The Loflin Diary Buffer Mitigation Site was identified as a buffer mitigation opportunity to improve water quality and habitat within the CU.

The goals of the Loflin Dairy Buffer Mitigation Project address water quality improvements identified in the Cape Fear River Basin Restoration Priorities Report and include the following:

- Remove harmful nutrients from creek flow;
- Reduce pollution of creek by excess sediment;
- Restore terrestrial habitat; and
- Improve aesthetics.

The project goals will be addressed through the following project objectives:

- Riparian areas will be fenced off from adjacent agricultural activities and runoff will be filtered through buffer zones. Flood flows will be filtered through restored riparian areas, where flood flow will spread through native vegetation. Vegetation will uptake excess nutrients.
- Stream bank erosion which contributes sediment load to the creek will be greatly reduced, if not eliminated, in the project area. Eroding streambanks will be stabilized by increased woody root mass in banks and reducing channel incision. Storm flow containing grit and fine sediment will be filtered through restored riparian buffer areas, where flow will spread through native vegetation.
- The establishment and maintenance of riparian buffers will create long-term shading of the channel bed, reducing thermal heating and improving aquatic habitat.
- Adjacent buffer and riparian habitats will be restored with native vegetation and invasive species will be treated as part of the project. Native vegetation will provide cover and food for terrestrial creatures.

2.0 Site Selection

2.1 Directions

The Loflin Dairy Buffer Mitigation Site can be accessed from Loflin Dairy Road, which is located approximately 6 miles southeast of the intersection of Interstate 85 and Highway 311. The proposed project is surrounded by fields that are used for a dairy farm and agriculture use.

2.2 Site Selection

Wildlands Engineering, Inc. (WEI) proposes to restore 9.1 acres of riparian buffer in Randolph County, NC. The site is comprised of two areas on one parcel of land along several unnamed tributaries and ephemeral ditches to Bob Branch. One of the easement areas, Area A, is located within an active dairy farm (Figure 4). The second easement area, Area B, is surrounded by open agricultural fields. The project is being completed to provide buffer mitigation units (BMUs) in the Cape Fear River Basin. The project design will cause no adverse impacts to streams or wetlands. The streams and ditches within the project area flow into Bob Branch which ultimately flows into the Randleman Reservoir.

2.3 Vicinity Map

The project site is located within the Randleman Reservoir watershed (NCDWQ Subbasin 03-06-08) of the Cape Fear River Basin (USGS Hydrologic Unit Code 03030003010060) as shown in Figure 1. On-site stream channels are unnamed tributaries to Bob Branch (NCDWQ Index No. 17-9.6-(1)). The North Carolina Division of Water Quality (NCDWQ) assigns best usage classifications to State Waters that reflect water quality conditions and potential resource usage. Bob Branch is classified as Class WS-IV waters. Class WS-IV waters are used as sources of water supply for drinking or food processing purposes where a more restrictive WS-I, WS-II, or WS-III classification is not feasible. These waters are also protected for Class C uses such as secondary recreation, fishing, wildlife, fish and aquatic life propagation and survival, and agriculture. WS-IV waters are generally in moderately to highly-developed watersheds or Protected Areas.

2.4 Watershed Map

The project is located on several unnamed tributaries to Bob Branch in a rural area of Randolph County in the Randleman Lake Watershed. Figure 2 shows the watershed boundaries for Areas A and B. Each of the buffer area watersheds is primarily agriculture, with some forested use. The watershed areas and current land use are summarized in Table 1 below.

Table 1. Drainage Areas and Associated Land Use
Loflin Dairy Buffer Mitigation Site

Section Name	Existing Reach Length (feet)	NCDWQ Stream Identification Form Scores*	Stream Watershed Area (acres)	Buffer Watershed Area (acres)	Predominant Land Use of Buffer Watershed Area
Area A	Reach A1 : 917 Reach A2 : 155	A1 : 24/ 34.5 A2 : 23.25	A1 : 61 A2 : 6.5	18	Agriculture 82% and Forested 18%
Area B	Reach B1 : 1489 Reach B2 : 866 Reach B3 : 486	B1 : 27.25/ 35.5 B2 : 20.75 B3 : 22.75	B1 : 230 B2 : 26 B3 : 22	59	Agriculture 94% and Forested 6%
*NCDWQ Stream Identification Forms are included in Appendix B					

2.5 Soil Survey

The proposed project areas are mapped by the Randolph County Soil Survey. Soils along the Loflin Dairy Buffer Mitigation project area are primarily mapped as Mecklenburg loam and Wynott-Enon complex. Project Area B also includes a small section of Mecklenburg clay loam. These soils are described below in Table 2. A soils map is provided in Figure 3.

Table 2. Project Soil Types and Descriptions
Loflin Dairy Buffer Mitigation Site

Soil Name	Location	Description
Mecklenburg loam, 8-15% slopes	Majority of Area B	These soils are found on hillslopes and uplands. They are well drained and their shrink-swell potential is low. These soils are not subject to frequent flooding.

Table 2. Project Soil Types and Descriptions
Loflin Dairy Buffer Mitigation Site

Soil Name	Location	Description
Wynott-Enon complex, 8-15% slopes	Area A	These soils are a composite of 40% Wynott soils and 35% Enon soils. Both soil types are well drained. Shrink-swell potential is moderate and the soils are not flooded or ponded. They are found on uplands and ridges.
Mecklenburg clay loam, 2-8% slopes, moderately eroded	Portion of Area B.	These soils are well drained and generally found on interfluves and uplands. Shrink-swell potential is moderate and the soil is neither flooded nor ponded.
Source: Randolph County Soil Survey, USDA-NRCS, http://efotg.nrcs.usda.gov		

2.6 Current Condition Plan View

On September 25, 2009, WEI 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. Determination methods included stream classification utilizing the NCDWQ Stream Identification Form and the USACE Stream Quality Assessment Worksheet. Potential jurisdictional wetland areas as well as typical upland areas were classified using the USACE Routine Wetland Determination Data Form. All USACE forms are included in Appendix B.

The results of the on-site field investigation indicate that there are five jurisdictional stream channels located within the proposed project area: Reaches A1, A2, B1, B2 and B3 (Figure 4). No jurisdictional wetland areas were identified within the proposed project area. There are also two ephemeral ditches located in Area A: a portion of Reach A2 and Reach A3. The NCDWQ has approved all seven project reaches as appropriate for buffer mitigation as related to the rules set forth in the Randleman Lake Water Supply Watershed: Mitigation Program for Protection and Maintenance of Existing Riparian Buffers (15ANCAC02B.0252). The approval letter from NCDWQ is included in Appendix B as are all NCDWQ Stream Classification Forms.

2.7 Historical Condition Plan View

The Loflin Dairy Site has historically been used for agricultural purposes. Historic aerial photos are included in Appendix B and date back to 1948. The current property owner has confirmed that Area A has been used as an active dairy farm since 1947 and Area B has been surrounded by agricultural fields since the late 1920s.

2.8 Site Photographs

See Appendix B for site photographs of the Loflin Dairy Buffer Mitigation Site.

3.0 Site Protection Instrument

3.1 Site Protection Instruments Summary Information

The land required for construction, management, and stewardship of the mitigation project includes portions of the parcel listed in Table 3. The proposed conservation easement on this property has not yet been recorded. A copy of the draft land protection instrument is included in the Appendix A.

Table 3. Site Protection Instrument
Loflin Dairy Buffer Mitigation Site

Landowner	PIN	County	Site Protection Instrument	Deed Book and Page Number	Acreage to be Protected
Clifford W. Loflin	7746-14-0261	Randolph	Conservation Easement	To Be Recorded	9.8

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.

3.2 Site Protection Instrument Figure

See Figure 5 for the Site Protection Instrument Figure for the Loflin Dairy Buffer Mitigation Site.

4.0 Baseline Information

Table 4 summarizes the attributes of the overall project and of the project reaches.

Table 4. Baseline Information
Loflin Dairy Buffer Mitigation Site

Project Information		
Project Name	Loflin Dairy Buffer Mitigation Site	
County	Randolph County	
Project Area (acres)	9.8 acres	
Project Coordinates (latitude and longitude)	35° 50' 44.082"N, 79° 52' 22.487"W	
Project Watershed Summary Information		
Physiographic Province	Carolina Slate Belt of the Piedmont	
River Basin	Cape Fear	
USGS Hydrologic Unit 8-digit	03030003	
USGS Hydrologic Unit 14-digit	03030003010060	
DWQ Sub-basin	Deep River Watershed, 03-06-08	
	Area A	**Area B**
Project Drainage Area (acres)	18	59
Project Drainage Area Percentage of Impervious Area	<1%	
CGIA Land Use Classification	82% Cultivated Land and 18% Forested Land	45% Cultivated Land, 40% Forested Land, 10% Residential, and 5 % Commercial

Summary Information		
Parameters	**Area A**	**Area B**
Length of reach (linear feet)	Reach A1 : 917 Reach A2 : 155 Reach A2(ephem):180 Reach A3 : 120	Reach B1 : 1489 Reach B2 : 866 Reach B3 : 486
Drainage area (acres)	Reach A1 : 61 Reach A2 : 6.5 Reach A3 : 1.0	Reach B1 : 230 Reach B2 : 26 Reach B3 : 22
NCDWQ stream identification score	Reach A1 : 24/ 34.5 Reach A2 : 23.25 Reach A3 : N/A	Reach B1 : 27.25/ 35.5 Reach B2 : 20.75 Reach B3 : 22.75
Description Intermittent/ Perennial/ Ephemeral	Reach A1 – Per. / Int. Reach A2 – Int. / Ephemeral Ditch Reach A3- Ephemeral Ditch	Reach B1 – Per. / Int. Reach B2 – Int. Reach B3 – Int.
Underlying mapped soils	Wynott-Enon complex, 8-15% slopes	Mecklenburg loam, 8-15% slopes; Mecklenburg clay loam, 2-8% slopes
Drainage class	well drained	well drained
Soil Hydric status	No	No
FEMA classfication	no regulated floodplain	no regulated floodplain
Native vegetation community	Bottomland Forest	Bottomland Forest
Percent composition of exotic invasive vegetation	10%	30%

Regulatory Considerations			
Regulation	**Applicable**	**Resolved**	**Supporting Documentation**
Waters of the United States - Section 404	N/A	N/A	N/A
Waters of the United States - Section 401	N/A	N/A	N/A
Endangered Species Act	X	X	See Appendix B
Historic Preservation Act	X	X	See Appendix B
Coastal Zone Management Act (CZMA) / Coastal Area Management Act (CAMA)	N/A	N/A	N/A
FEMA Floodplain Compliance	N/A	N/A	N/A
Essential Fisheries Habitat	N/A	N/A	N/A

4.1 Watershed Summary Information

The Loflin Dairy Buffer Mitigation Site is located within the Randleman Reservoir watershed (NCDWQ Subbasin 03-06-08) of the Cape Fear River Basin (USGS Hydrologic Unit Code 03030003010060). Land use within the watershed is historically rural and is dominated by forestry, agriculture and livestock with approximately 35% of the watershed forested, 53% cultivated/ agriculture, 8% residential, and 4% commercial (Figure 2). Although there is no immediate evidence of increased development within the project site's watersheds; the new NC Highway 311 corridor is being constructed immediately downstream of the project area. This new highway corridor may increase development pressure on the project's watersheds and this area of Randolph County in the future.

NCEEP develops River Basin Restoration Priorities (RBRP) to guide its restoration activities within each of the state's 54 cataloging units. RBRPs delineate specific watersheds that exhibit both the need and opportunity for wetland, stream and riparian buffer restoration. These watersheds are called Targeted Local Watersheds (TLWs) and receive priority for NCEEP planning and restoration project funds. The Loflin Dairy Buffer Mitigation Site is located within a TLW, HUC 03030003010060. The restoration of riparian buffer areas will aid in protecting water quality and endangered species habitat within the Deep River watershed by filtering runoff from adjacent agricultural practices and restoring terrestrial habitat.

4.2 Existing Conditions Summary Information

Reach A1 enters the site as an intermittent channel from an existing pipe system at Loflin Dairy Road. The upstream portion of this reach runs parallel to the western property line and exhibits stable bedform and stream banks throughout. The riparian buffer along the right bank side exhibits no canopy or understory tree species and has been heavily maintained through regular mowing and brush removal. Reach A1 transitions to a perennial channel immediately downstream of an existing crossing and continues to maintain stable bedform and stream banks. This downstream area exhibits a single line of mature trees along the right top of bank; however the remaining riparian buffer zones have been heavily maintained and exhibit no stabilizing understory growth.

Reach A2 is a small intermittent tributary to Reach A1 with an upstream ephemeral section. Although this reach exhibits several understory tree species, the riparian area includes only a few mature canopy trees, indicating the area has been maintained in the past. Due to the topography of this area and the channel's location adjacent to the dairy farm, the majority of the runoff to this reach comes directly from a heavily used cattle pasture. Reach A3 begins within this heavily used pasture and is a short ephemeral ditch leading directly to Reach A2, allowing for concentrated flows of cattle waste to downstream waters.

Reach B1 flows on-site from an adjacent forested area and transitions from an intermittent channel to a perennial channel approximately midway through the project area. This reach exhibits stable channel conditions and shows no signs of active bank erosion or channel incision. The riparian buffer zone along Reach B1 is immediately adjacent to active row crop fields and receives direct runoff from sediment and fertilizer applications. The buffer zone exhibits no mature canopy trees, sporadic understory trees, and an abundance of shrub and vine species including Chinese privet (*Ligustrum sinense*) and Japanese honeysuckle (*Lonicera japonica*).

Reaches B2 and B3 are small intermittent tributaries to Reach B1. These channels have been heavily ditched and maintained in the past; however, they exhibit stable channel conditions with no evidence of active bank erosion or channel incision. The riparian zones have been actively mowed and sprayed due to their locations in an active row crop field and exhibit an abundance of herbaceous vegetation with no mature trees.

4.2.1 Vegetation Survey in Buffer Areas

A vegetation survey was performed by WEI along Reach A2, at the request of the NCDWQ, due to the existence of mature tree and sub-canopy species in this area. This survey involved quantifying the number of trees 5" in diameter or greater and resulted in a density of approximately 77 trees per acre.

These results verify that this area qualifies for buffer restoration, according to NCDWQ guidelines of the Randleman Lake buffer mitigation rules (15A NCAC 02B .0252) in which restoration is defined as converting sparse, non-forested riparian areas (less than 100 trees per acre that are greater than or equal to five inches DBH for trees and greater than two feet in height for shrubs) to a forested riparian buffer. Results from the tree survey performed by WEI are included in Table 5; the tree survey plot location is shown in Figure 4.

Table 5. Riparian Buffer Area Vegetation Plots
Loflin Dairy Buffer Mitigation Site

Plot	Reach	Dimensions (ft.)	Number of Trees ≥ 5" DBH	Tree Density Per Acre
#1	Reach A2	75' x 30'	4	77

4.2.2 Vegetation Community Types Descriptions

Vegetation habitats within the project area are primarily comprised of active row crop fields and open pastures dominated by various graminoid species, with narrow streamside thickets and adjacent forested areas. The riparian zones surrounding Reaches A1, A2, and A3 have been largely maintained through mowing and the majority of these areas are currently being used as active cattle pastures. Typical herbaceous vegetation within these areas includes: Canada goldenrod (*Solidago canadensis*), soft stem rush (*Juncus effusus*), common blackberry (*Rubus argutus*), and various grasses (*Festuca* spp.). Streamside thickets are comprised of few mature tree species including black walnut (*Juglans nigra*), red maple (*Acer rubrum*), American sycamore (*Platanus occidentalis*), and sweetgum (*Liquidambar styraciflua*). These streamside thickets exhibit an abundance of shrub species including common blackberry, invasive Chinese privet, and the invasive vine Japanese honeysuckle.

The riparian zones surrounding Reaches B1, B2, and B3 include maintained herbaceous areas adjacent to active row crop fields and dense streamside thickets. Typical herbaceous vegetation within these areas includes: Canada goldenrod, ragweed (*Ambrosia artemisiifolia*), Nepalese browntop (*Microstegium vimineum*), and various grasses (*Festuca* spp.). No mature canopy trees exist within the streamside thickets and shrub species are dominated by common blackberry and Chinese privet interspersed with Japanese honeysuckle.

4.3 Regulatory Considerations

4.3.1 Endangered and Threatened Species

The Endangered Species Act (ESA) of 1973, amended (16 U.S.C. 1531 et seq.), defines protection for species with the 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).

The US Fish and Wildlife Service (USFWS) and NC Natural Heritage Program (NHP) databases were searched for federally listed threatened and endangered plant and animal species for Randolph County, NC. Two federally listed species, the Cape Fear shiner (*Notropis mekistocholas*) and Schweinitz's sunflower (*Helianthus schweinitzii*) are currently listed in Randolph County (Table 6). A Categorical Exclusion Checklist for the project is included in Appendix B.

Table 6. Listed Threatened and Endangered Species in Randolph County
Loflin Dairy Buffer Mitigation Site

Species	Federal Status	Habitat
Vertebrate		
Cape Fear Shiner (*Notropis mekistocholas*)	E	Pools, riffles, and runs of rocky, clean freshwater streams
Vascular Plants		
Schweinitz's sunflower *(Helianthus schweinitzii)*	E	Open, disturbed areas
E = Endangered; T=Threatened		

Cape Fear Shiner

The Cape Fear shiner is a small minnow fish species, typically six (6) centimeters 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.

Schweinitz's Sunflower

Schweinitz's sunflower is found in open areas where disturbance has occurred such as roadsides, power line clearings, old pastures and woodland openings. This species is generally found growing in shallow, poor, clayey and/or rocky soils.

A pedestrian survey of the site was performed on February 2, 2011. On-site habitat includes active cattle pastures, agricultural cropland, early successional forest, and streamside thickets. No suitable habitat for the Cape Fear shiner exists within the project area. Stream substrates are primarily composed of silt, fine sands, and embedded gravel. A large amount of runoff from agricultural fields has resulted in poor water quality. Additionally, minimal habitat exists for the Schweinitz's sunflower. Much of the cleared areas within the site are actively farmed and heavily maintained. Very few areas of native vegetation exist within the site and these areas typically lack the proper light conditions and soil regimes for this species. As a result of the pedestrian survey, no Federally-listed species were found to exist on the site.

WEI requested review and comment from the United States Fish and Wildlife Service (USFWS) on July 19, 2011, in respect to the Loflin Dairy Buffer Mitigation Site and its potential impacts on threatened or endangered species. Based on a pedestrian survey of the project area, no individual species, critical habitat, or suitable habitat was found to exist on the site. It is WEI's position that for the Randolph County listed endangered species, which include the Cape Fear shiner (*Notropis mekistocholas*) and the Schweinitz's sunflower (*Helianthus schweinitzii*), the Loflin Dairy Buffer Mitigation Site's biological conclusion is "no effect." USFWS responded on August 5, 2011, that, "the proposed action is not likely to adversely affect any federally-listed endangered species or threatened species, their formally designated critical habitat, or species currently proposed for listing." USFWS believes that "the requirements under section 7(a)(2) of the Act have been satisfied." The approved Categorical Exclusion Checklist for the project is included in Appendix B.

4.3.2 Cultural Resources

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.

WEI requested review and comment from the State Historic Preservation Office (SHPO) with respect to any archeological and architectural resources related to the Loflin Dairy Buffer Mitigation Site on July 8, 2011. SHPO responded on July 19, 2011, that they were aware of no historic resources that would be affected by the project. The approved Categorical Exclusion Checklist for the project is included in Appendix B.

5.0 Determination of Credits

Mitigation credits presented in Table 7 are projections based upon 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 7. Determination of Credits
Loflin Dairy Buffer Mitigation Site

Loflin Dairy Buffer Mitigation Site, Randolph County, DENR Contract 003995									
Mitigation Credits									
	Stream		**Riparian Wetland**		**Non-riparian Wetland**		**Buffer**	**Nitrogen Nutrient Offset**	**Phosphorus Nutrient Offset**
Type	R	RE	R	RE	R	RE			
Totals							9.1		

Project Components						
Project Component or Reach ID	**Stationing / Location**	**Existing Footage / Acreage**	**Approach (PI, PII, etc.)**	**Restoration or Restoration Equivalent**	**Restoration Footage or Acreage**	**Mitigation Ratio**
Reach A1	Area A		N/A	Restoration	1.7 ac	1:1
Reach A2	Area A		N/A	Restoration	0.7 ac	1:1
Reach B1	Area B		N/A	Restoration	3.6 ac	1:1
Reach B2	Area B		N/A	Restoration	1.1 ac	1:1
Reach B3	Area B		N/A	Restoration	2.0 ac	1:1

Component Summation						
Restoration Level	**Stream (linear feet)**	**Riparian Wetland (acres)**		**Non-Riparian Wetland (acres)**	**Buffer (square feet)**	**Upland (acres)**
		Riverine	**Non-Riv.**			
Restoration					396,396	
Enhancement						
Enhancement I						
Enhancement II						

Table 7. Determination of Credits
Loflin Dairy Buffer Mitigation Site

Creation						
Preservation						
High Quality Preservation						

6.0 Mitigation Work Plan

Actions required to develop the project site for mitigation include altering current land use practices. Buffer restoration will involve removing invasive vegetation from the restoration area and replanting appropriate native tree species within the buffer corridor. Herbaceous riparian vegetation will also be planted but will generally re-establish naturally. Intensive vegetation management and a rigorous herbicide schedule will be implemented over the first few years of tree establishment in the riparian buffer restoration areas to prevent establishment of invasive species that will attempt to out-compete the planted native vegetation. Any vegetation control requiring herbicide application will be performed in accordance with NC Department of Agriculture (NCDA) rules and regulations. More detailed descriptions of the proposed restoration activity follows.

6.1 Parcel Preparation

The majority of the site slated for buffer restoration has been maintained as a cleared agricultural field. These areas are relatively clear and will require little site preparation other than select herbicide treatments or limited mechanical clearing to remove undesirable brush prior to planting.

WEI will manage vegetation growth by mowing in between planted trees annually during the monitoring period. Additionally, selective applications of a pre-emergent herbicide will be used to control weedy competition. Past project experience has indicated that use of these techniques significantly limits competition from undesirable vegetation and results in significant increases in tree growth.

6.2 Planting

The revegetation plan for the site will include planting of bare root trees and controlling invasive species growth. Bare root trees selected for the site will be native hardwood species typical for typical to the North Carolina Piedmont proven to establish and grow in similar site conditions. Tree species specified for planting on the Loflin Dairy Buffer Mitigation Site are detailed in Table 8.

Table 8. Selected Tree and Shrub Species Appropriate for Buffer Restoration
Loflin Dairy Buffer Mitigation Site

Scientific Name	Common Name	Initial Height (ft)	Total # of stems	Planting Composition (%)
Cercis canadensis	American Redbud	2-3	340	5
Liriodendron tulipifera	Tulip Poplar	2-3	1020	15
Quercus phellos	Willow Oak	2-3	680	10
Platanus occidentalis	Sycamore	2-3	1360	20
Betula nigra	River Birch	2-3	680	10
Carpinus caroliniana	Ironwood	2-3	680	10
Quercus michauxii	Swamp Chestnut Oak	2-3	340	5
Fraxinus pennsylvanica	Green Ash	2-3	1360	20
Quercus rubra	Northern Red Oak	2-3	340	5

Table 8. Selected Tree and Shrub Species Appropriate for Buffer Restoration
Loflin Dairy Buffer Mitigation Site

Scientific Name	Common Name	Initial Height (ft)	Total # of stems	Planting Composition (%)
Totals			**6800**	**100**

"Character Trees" are defined as expected volunteer species identified from a survey of local vegetation on less degraded sections of the specified stream and from reference literature that details native species. A list of Character Tree species is listed in Table 9.

Table 9. Character / Existing Tree and Shrub Species (Piedmont Bottomland Hardwood Communities)
Loflin Dairy Buffer Mitigation Site

Scientific Name	Common Name	Wetland Indicator Status
Juglans nigra	Black Walnut	FACU
Ulmus alata	Winged Elm	FACU+
Acer rubrum	Red Maple	FAC
Liquidambar styraciflua	Sweetgum	FAC+
Pinus taeda	Loblolly Pine	FAC

6.3 Target Plant Communities

Riparian stream buffers will be planted and restored to the dominant natural plant community that exists within the project watershed. This natural community within and adjacent to the project easement is classified as Piedmont Bottomland Forest and was determined based on existing canopy and herbaceous species (Schafale and Weakley, 1990). Proposed plant and seed materials will be placed on stream banks out to the project easement limits. These areas will be planted with bare root trees and a seed mixture of permanent herbaceous vegetation ground cover.

A permanent seed mixture of native herbaceous and grass species will be applied to all areas within the project easement. An herbaceous seed mixture was chosen that will provide rapid stabilization within the easement areas. These species will also provide early habitat value through rapid growth of ground cover to the tops of banks and buffer areas. Proposed herbaceous species are shown in Table 10.

Individual tree and shrub species will be planted throughout the project easement. Species planted as bare roots will be spaced at an initial density of 680 plants per acre (8 feet on center). Targeted densities after monitoring year 5 are 320 woody stems per acre. Proposed tree and shrub species are representative of existing on-site vegetation communities and are typical of Piedmont Bottomland Forests, shown in Table 8.

Table 10. Permanent Riparian Seeding Species
Loflin Dairy Buffer Mitigation Site

Scientific Name	Common Name	Wetland Indicator Status
Agrostis stolonifera	Creeping bentgrass	FACW
Andropogon ternarius	Split beardgrass	FACU
Bouteloua curtipendula	Side oats grama	FACU
Bouteloua gracilis	Blue grama	N/A
Panicum clandestinum	Deer tongue	FACW
Schizachyrium scoparium	Little bluestem	FACU
Sporobolus clandestinus	Rough dropseed	N/A
Vicia villosa	Hairy vetch	N/A
Chasmanthium latifolium	River Oats	FAC-
Carex vulpinoidea	Fox sedge	OBL

6.4 Buffer Project Design Parameters and Design Justification

The project site concept plan is shown in Figure 6. The proposed buffer restoration work will improve water quality and terrestrial habitat throughout the project area. The restoration and planting of a 50-foot riparian buffer zone will improve water quality by allowing for the absorption of nutrient runoff from adjacent pastures and cropland and capture sediment from off-site sources by slowing overland flow velocities. Water temperatures will also be decreased through the creation of long-term shading from established canopy trees. The proposed buffer zones will improve terrestrial habitat for native wildlife and provide further connectivity to existing off-site forested areas and stream riparian zone habitats.

All on-site streams including Reaches A1, A2, A3, B1, B2, and B3 will be planted from the existing top of bank out, providing a full 50-foot buffer zone. As part of this riparian planting, all existing native tree specimens will be preserved and all invasive species and small specimen (< 5" DBH) non-native trees will be removed and maintained.

7.0 Maintenance Plan

WEI will conduct a physical inspection of the site a minimum of once per year throughout the post-construction monitoring period until performance standards are met. These site inspections may identify 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 components listed in Table 11.

Table 11. Maintenance Plan Components
Loflin Dairy Buffer Mitigation Project

Component / Feature	Maintenance Through Project Close-Out
Vegetation	Vegetation shall be maintained to ensure the health and vigor of the targeted plant 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 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.

8.0 Performance Standards

The success criteria for the project site will follow approved success criteria presented in the NCEEP Mitigation Plan Guidance (Version 2.0, 10/01/2010). WEI will oversee annual monitoring of vegetation to assess the condition of the finished project for five years, or until success criteria are met.

The final vegetative success criteria will be the survival of 320 five-year-old planted trees per acre in the riparian buffer at the end of year five of the monitoring period. Along with the stem density requirement, the final planted vegetation community must also include at least two different planted species to be considered successful.

9.0 Monitoring Requirements

Annual monitoring data will be reported using the NCEEP Monitoring Report template (Version 1.3, 11/15/10). The monitoring report shall provide a project data chronology that will facilitate an understanding of project status and trends, population of NCEEP databases for analysis, research purposes, and assist in decision making regarding close-out. Project monitoring requirements are listed in more detail in Table 12.

Table 12. Monitoring Requirements
Loflin Dairy Buffer Mitigation Project

Parameter	Monitoring Feature	Quantity					Frequency
		Reach A1	Reach A2	Reach B1	Reach B2	Reach B3	
Vegetation (CVS Level I)	Vegetation (CVS Level I)	3	3	5	2	3	Annual
Project Boundary							Semi-annual

The extent of invasive species coverage will be monitored and controlled as necessary. At the end of the first growing season, species composition, density, and survival will be evaluated. The site will then be evaluated each subsequent year until the final success criteria are achieved.

Vegetation monitoring plots will be installed across the site to measure the survival of the planted trees. The number of monitoring plots required will be based on the NCEEP methodology for vegetation monitoring. The size of individual plots will be 100 square meters for woody tree species. Individual plot data will be provided each year and will include diameter, height, and density, and coverage quantities. Individual seedlings will be marked so they can be found in succeeding monitoring years. Mortality will be determined from the difference between the previous year's living planted seedlings and the current year's living planted seedlings.

Monitoring will begin at the end of the first growing season. Monitoring in each of the following years will be performed between July and November.

10.0 Long-Term Management Plan

Upon approval for close-out by the NCDWQ, the site will be transferred to the NCDENR Division of Natural Resource Planning and Conservation and 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 NCEEP 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 Statue 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.

11.0 Adaptive Management Plan

Upon completion of site construction WEI 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, WEI will notify NCEEP and NCDWQ of the need to develop a Plan of Corrective Action. Once the Corrective Action Plan is prepared and finalized WEI will:

1. Notify the NCEEP and NCDWQ in writing.
2. Revise performance standards, maintenance requirements, and monitoring requirements as necessary and/or required by the NCDWQ.
3. Obtain other permits as necessary.
4. Implement the Corrective Action Plan.
5. Provide the NCDWQ a Record Drawing of Corrective Actions. This document shall depict the extent and nature of the work performed.

12.0 Financial Assurances

Pursuant to Section IV H and Appendix III of the Ecosystem Enhancement Program's 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 NCEEP. This commitment provides financial assurance for all mitigation projects implemented by the program.

13.0 References

North Carolina Geological Survey (NCGS), 2009. Mineral Resources. http://www.geology.enr.state.nc.us/Mineral%20resources/mineralresources.html

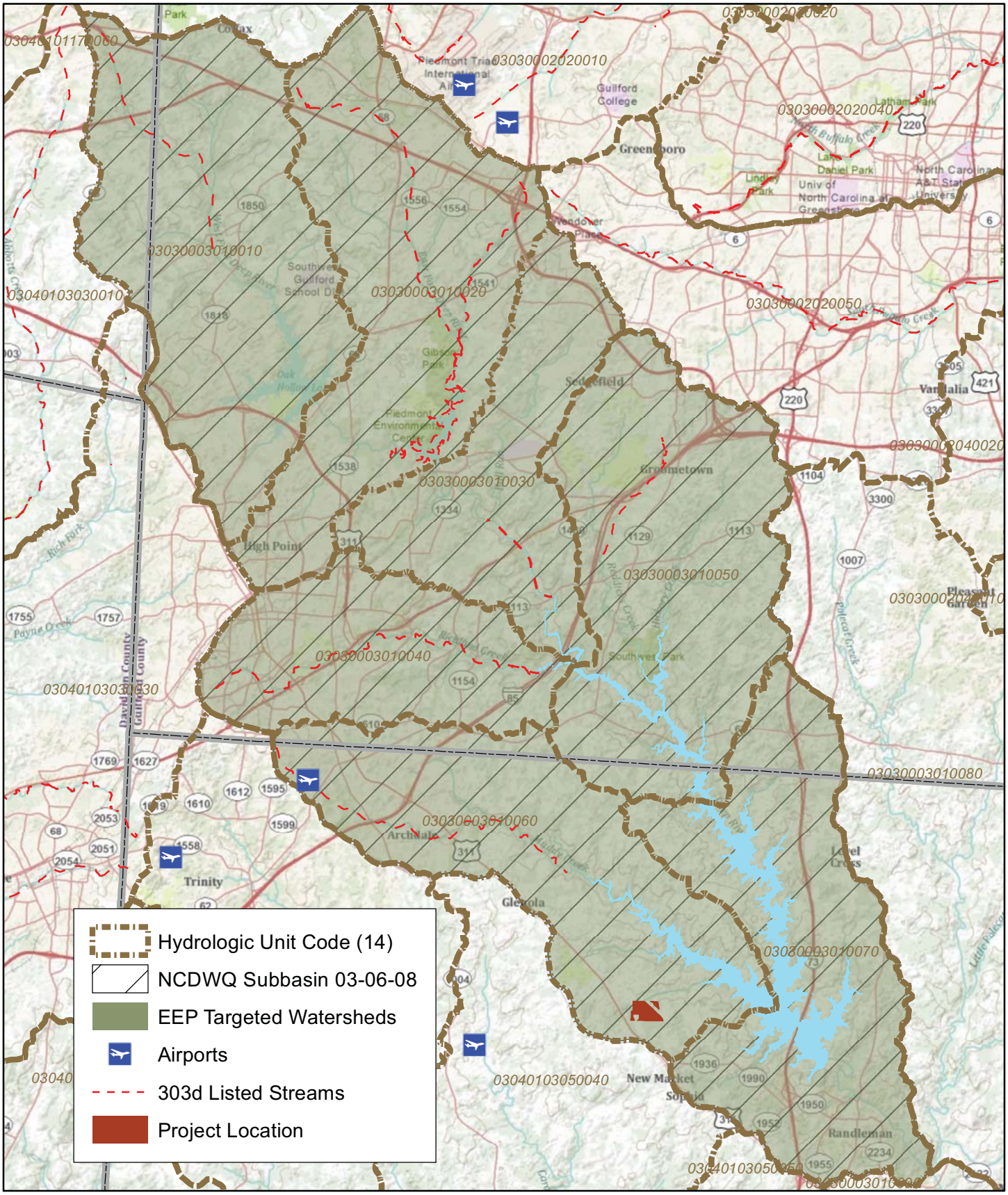
North Carolina Natural Heritage Program (NHP), 2009. Natural Heritage Element Occurrence Database, Chatham County, NC. http://149.168.1.196/nhp/county.html

Schafale, M.P. and A.S. Weakley. 1990. Classification of the Natural Communities of North Carolina, 3rd approx. North Carolina Natural Heritage Program, Raleigh, North Carolina.

United States Department of Agriculture (USDA), 2009. Natural Resources Conservation Service, Soil Survey Geographic (SSURGO) database for Chatham County, North Carolina. http://SoilDataMart.nrcs.usda.gov

United States Fish and Wildlife Service (USFWS), 2008. Endangered Species, Threatened Species, Federal Species of Concern and Candidate Species, Chatham County, NC. http://www.fws.gov/nc-es/es/countyfr.html

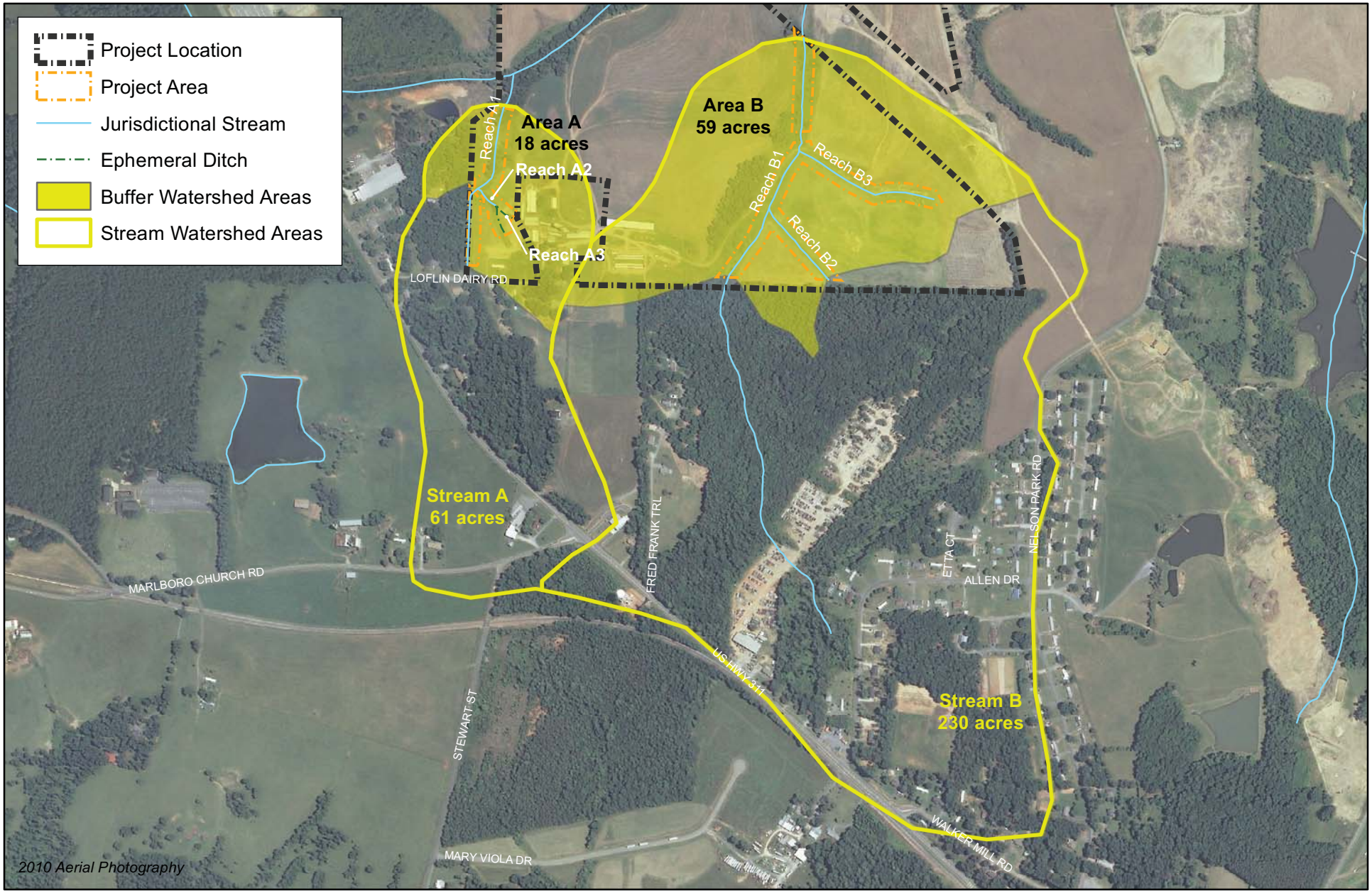
United States Geological Survey (USGS), 1998. North Carolina Geology. http:// http://www.geology.enr.state.nc.us/usgs/carolina.htm



WILDLANDS ENGINEERING

Figure 1 Vicinity Map
Loflin Dairy Buffer Mitigation Site
Cape Fear Basin (03030003)

Randolph County, NC



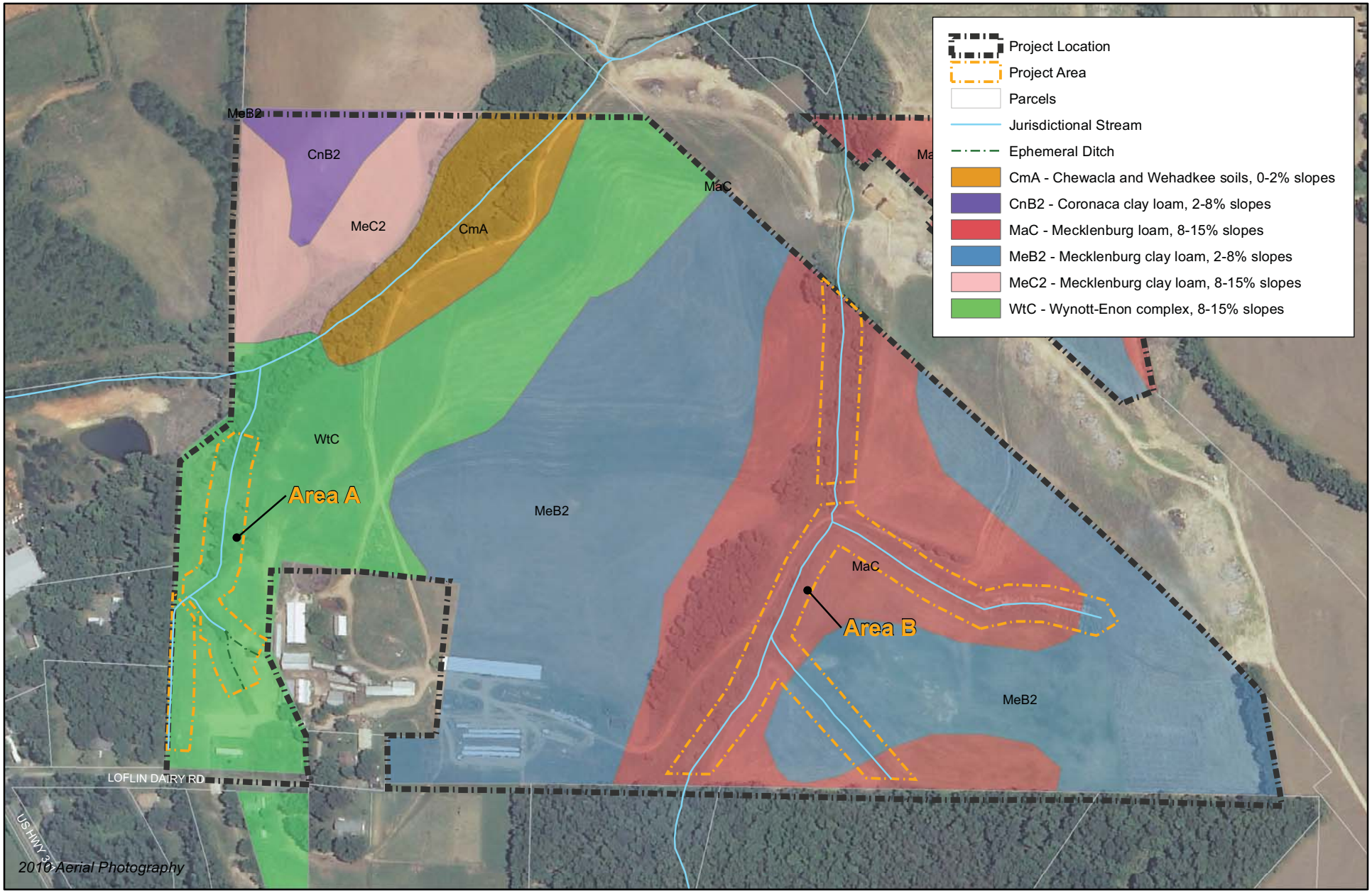
WILDLANDS ENGINEERING

0 400 800 Feet

N

Figure 2 Watershed Map
Loflin Dairy Buffer Mitigation Site
Cape Fear Basin (03030003)

Randolph County, NC



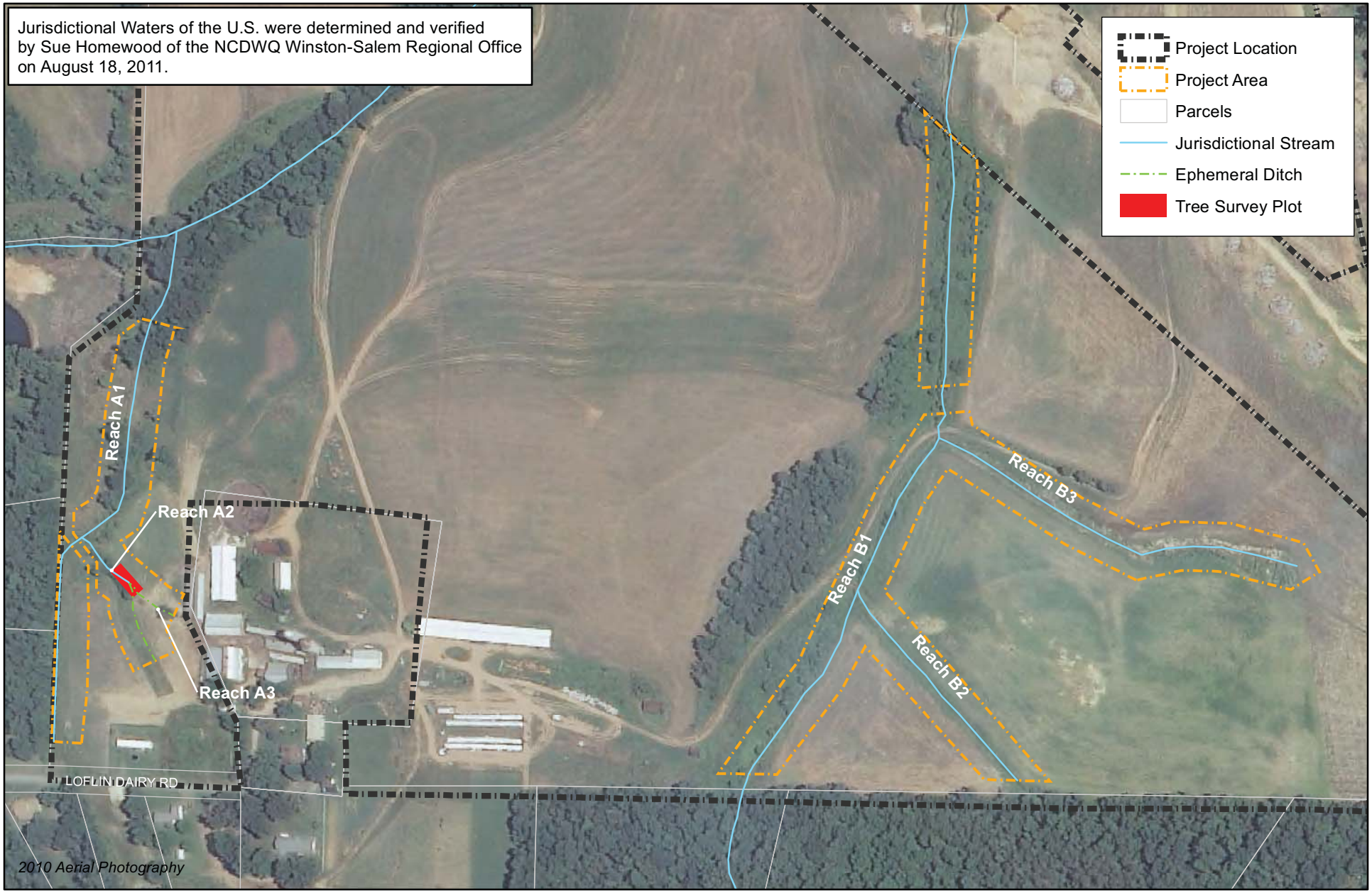
WILDLANDS ENGINEERING

0 200 400 Feet

N

Figure 3 Soils Map
Loflin Dairy Buffer Mitigation Site
Cape Fear Basin (03030003)

Randolph County, NC



WILDLANDS ENGINEERING

0 150 300 Feet

N

Figure 4 Hydrologic Features Map
Loflin Dairy Buffer Mitigation Site
Cape Fear Basin (03030003)

Randolph County, NC

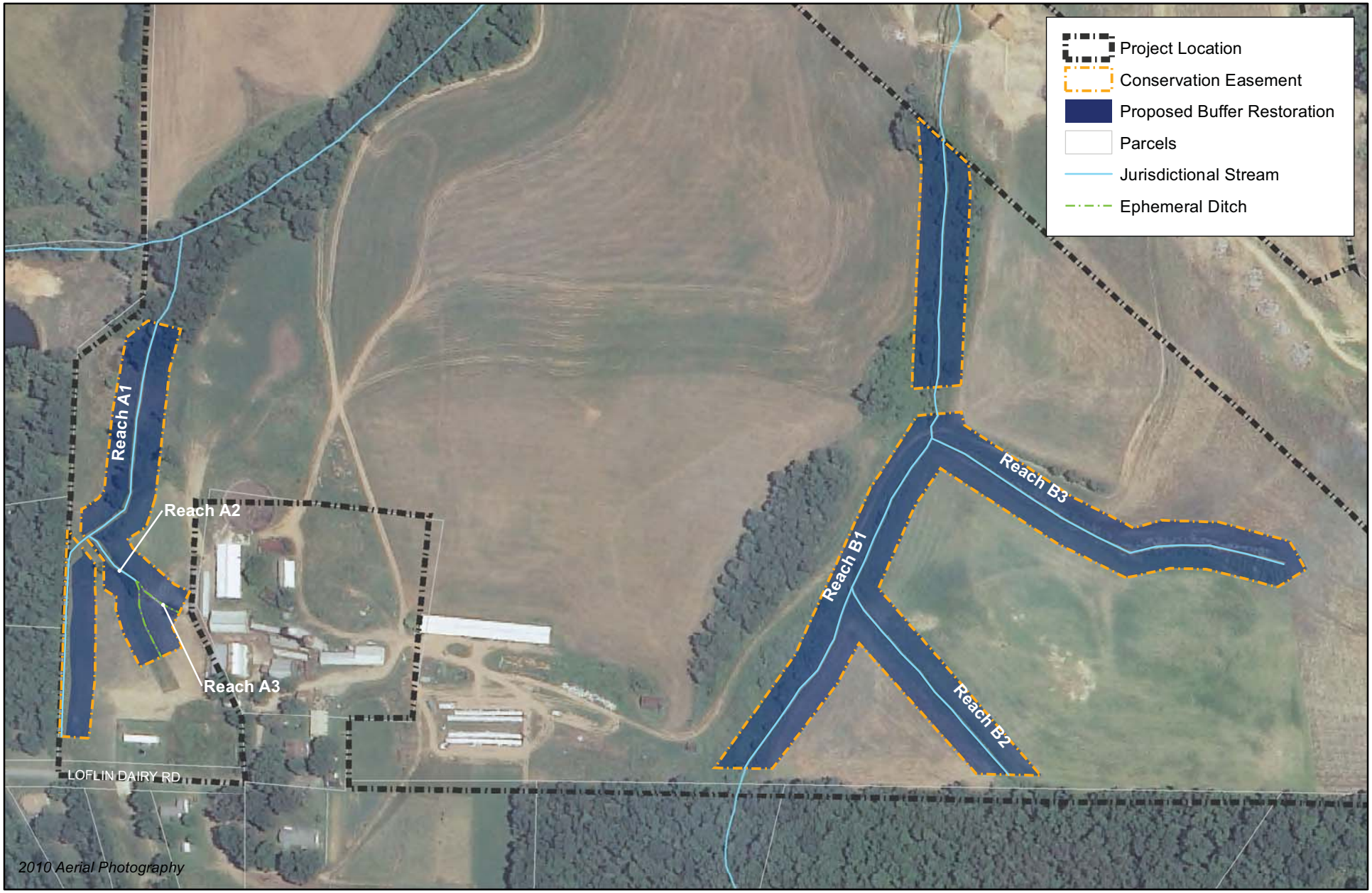
WILDLANDS ENGINEERING

0 150 300 Feet

N

Figure 5 Site Protection Instrument
Loflin Dairy Buffer Mitigation Site
Cape Fear Basin (03030003)

Randolph County, NC



WILDLANDS ENGINEERING

0 150 300 Feet

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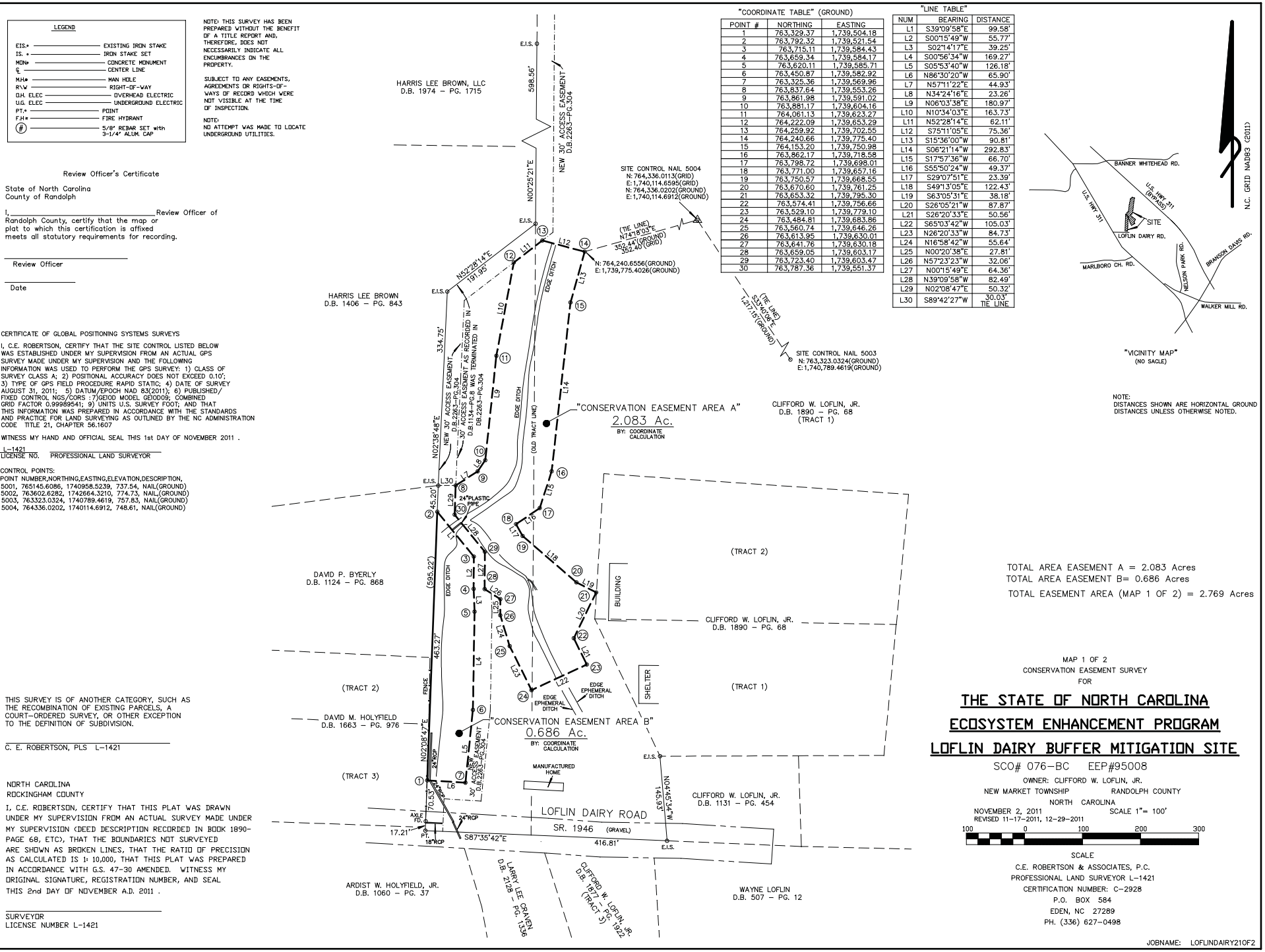
Figure 6 Proposed Concept Plan
Loflin Dairy Buffer Mitigation Site
Cape Fear Basin (03030003)

Randolph County, NC

Appendix A:
Site Protection Instrument


LEGEND
EIS.* EXISTING IRON STAKE
IS. * IRON STAKE SET
MON* CONCRETE MONUMENT
℄ CENTER LINE
M.H.* MAN HOLE
R\W RIGHT-OF-WAY
O.H. ELEC OVERHEAD ELECTRIC
U.G. ELEC UNDERGROUND ELECTRIC
PT.* POINT
F.H.* FIRE HYDRANT
(#) 5/8" REBAR SET with 3-1/4" ALUM. CAP
NOTE: THIS SURVEY HAS BEEN PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT AND, THEREFORE, DOES NOT NECESSARILY INDICATE ALL ENCUMBRANCES ON THE PROPERTY.
SUBJECT TO ANY EASEMENTS, AGREEMENTS OR RIGHTS-OF-WAYS OF RECORD WHICH WERE NOT VISIBLE AT THE TIME OF INSPECTION.
NOTE: NO ATTEMPT WAS MADE TO LOCATE UNDERGROUND UTILITIES.
Review Officer's Certificate
State of North Carolina
County of Randolph
I, _____ Review Officer of Randolph County, certify that the map or plat to which this certification is affixed meets all statutory requirements for recording.
Review Officer
Date
CERTIFICATE OF GLOBAL POSITIONING SYSTEMS SURVEYS
I, C.E. ROBERTSON, CERTIFY THAT THE SITE CONTROL LISTED BELOW WAS ESTABLISHED UNDER MY SUPERVISION FROM AN ACTUAL GPS SURVEY MADE UNDER MY SUPERVISION AND THE FOLLOWING INFORMATION WAS USED TO PERFORM THE GPS SURVEY: 1) CLASS OF SURVEY CLASS A; 2) POSITIONAL ACCURACY DOES NOT EXCEED 0.10'; 3) TYPE OF GPS FIELD PROCEDURE RAPID STATIC; 4) DATE OF SURVEY AUGUST 31, 2011; 5) DATUM/EPOCH NAD 83(2011); 6) PUBLISHED/FIXED CONTROL NGS/CORS :7)GEOID MODEL GEOID09; COMBINED GRID FACTOR 0.99989541; 9) UNITS U.S. SURVEY FOOT; AND THAT THIS INFORMATION WAS PREPARED IN ACCORDANCE WITH THE STANDARDS AND PRACTICE FOR LAND SURVEYING AS OUTLINED BY THE NC ADMINISTRATION CODE TITLE 21, CHAPTER 56.1607
WITNESS MY HAND AND OFFICIAL SEAL THIS 1st DAY OF NOVEMBER 2011 .
L-1421 LICENSE NO. PROFESSIONAL LAND SURVEYOR
CONTROL POINTS:
POINT NUMBER,NORTHING,EASTING,ELEVATION,DESCRIPTION,
5001, 765145.6086, 1740958.5239, 737.54, NAIL(GROUND)
5002, 763602.6282, 1742664.3210, 774.73, NAIL(GROUND)
5003, 763323.0324, 1740789.4619, 757.83, NAIL(GROUND)
5004, 764336.0202, 1740114.6912, 748.61, NAIL(GROUND)
THIS SURVEY IS OF ANOTHER CATEGORY, SUCH AS THE RECOMBINATION OF EXISTING PARCELS, A COURT-ORDERED SURVEY, OR OTHER EXCEPTION TO THE DEFINITION OF SUBDIVISION.
C. E. ROBERTSON, PLS L-1421
NORTH CAROLINA
ROCKINGHAM COUNTY
I, C.E. ROBERTSON, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION (DEED DESCRIPTION RECORDED IN BOOK 1890-PAGE 68, ETC), THAT THE BOUNDARIES NOT SURVEYED ARE SHOWN AS BROKEN LINES, THAT THE RATIO OF PRECISION AS CALCULATED IS 1: 10,000, THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AMENDED. WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER, AND SEAL THIS 2nd DAY OF NOVEMBER A.D. 2011 .
SURVEYOR
LICENSE NUMBER L-1421
HARRIS LEE BROWN, LLC
D.B. 1974 - PG. 1715
HARRIS LEE BROWN
D.B. 1406 - PG. 843
DAVID P. BYERLY
D.B. 1124 - PG. 868
DAVID M. HOLYFIELD
D.B. 1663 - PG. 976
ARDIST W. HOLYFIELD, JR.
D.B. 1060 - PG. 37
LARRY LEE CRAVEN
D.B. 2128 - PG. 1336
CLIFFORD W. LOFLIN, JR.
D.B. 1877 - PG. 1922
(TRACT 5)
WAYNE LOFLIN
D.B. 507 - PG. 12
CLIFFORD W. LOFLIN, JR.
D.B. 1131 - PG. 454
CLIFFORD W. LOFLIN, JR.
D.B. 1890 - PG. 68
(TRACT 1)
(TRACT 2)
(TRACT 3)
"CONSERVATION EASEMENT AREA A"
2.083 Ac.
BY: COORDINATE CALCULATION
"CONSERVATION EASEMENT AREA B"
0.686 Ac.
BY: COORDINATE CALCULATION
NEW 30' ACCESS EASEMENT D.B.2263-PG.304
30' ACCESS EASEMENT AS RECORDED IN D.B.1374-PG.8 WAS TERMINATED IN D.B.2263-PG.304
EDGE DITCH
(OLD TRACT LINE)
EDGE EPHEMERAL DITCH
FENCE
BUILDING
SHELTER
MANUFACTURED HOME
24"PLASTIC PIPE
24"RCP
18"RCP
LOFLIN DAIRY ROAD
SR. 1946 (GRAVEL)
SITE CONTROL NAIL 5004
N: 764,336.0113(GRID)
E:1,740,114.6595(GRID)
N: 764,336.0202(GROUND)
E:1,740,114.6912(GROUND)
SITE CONTROL NAIL 5003
N: 763,323.0324(GROUND)
E:1,740,789.4619(GROUND)
N: 764,240.6556(GROUND)
E:1,739,775.4026(GROUND)
(TIE LINE) N74°18'03"E 362.44'(GROUND) 362.40'(GRID)
(TIE LINE) S33°40'46"E 1,271.15'(GROUND)
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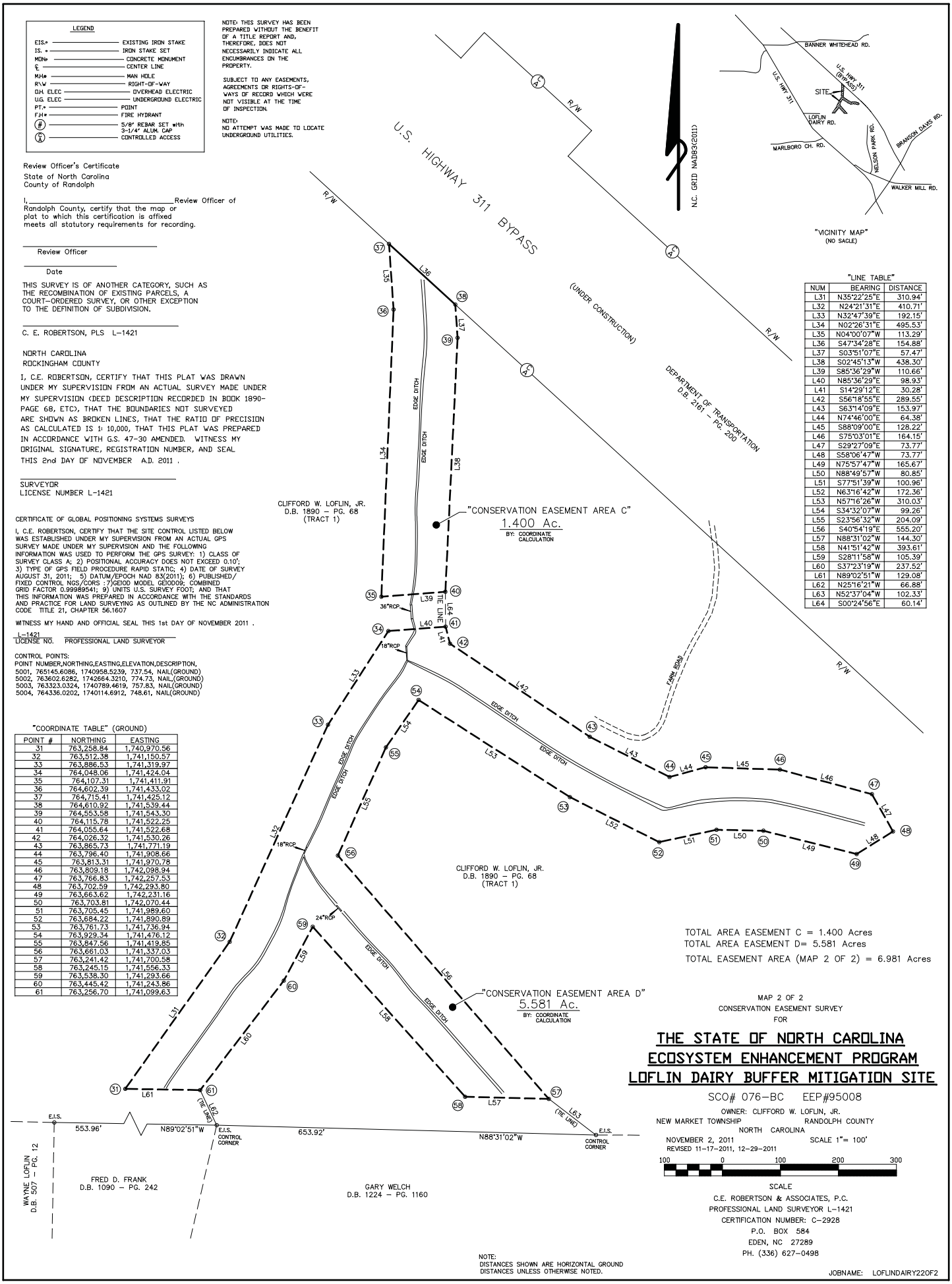
2 | 763,792.32 | 1,739,521.54
3 | 763,715.11 | 1,739,584.43
4 | 763,659.34 | 1,739,584.17
5 | 763,620.11 | 1,739,585.71
6 | 763,450.87 | 1,739,582.92
7 | 763,325.36 | 1,739,569.96
8 | 763,837.64 | 1,739,553.26
9 | 763,861.98 | 1,739,591.02
10 | 763,881.17 | 1,739,604.16
11 | 764,061.13 | 1,739,623.27
12 | 764,222.09 | 1,739,653.29
13 | 764,259.92 | 1,739,702.55
14 | 764,240.66 | 1,739,775.40
15 | 764,153.20 | 1,739,750.98
16 | 763,862.17 | 1,739,718.58
17 | 763,798.72 | 1,739,698.01
18 | 763,771.00 | 1,739,657.16
19 | 763,750.57 | 1,739,668.55
20 | 763,670.60 | 1,739,761.25
21 | 763,653.32 | 1,739,795.30
22 | 763,574.41 | 1,739,756.66
23 | 763,529.10 | 1,739,779.10
24 | 763,484.81 | 1,739,683.86
25 | 763,560.74 | 1,739,646.26
26 | 763,613.95 | 1,739,630.01
27 | 763,641.76 | 1,739,630.18
28 | 763,659.05 | 1,739,603.17
29 | 763,723.40 | 1,739,603.47
30 | 763,787.36 | 1,739,551.37
"LINE TABLE"
NUM | BEARING | DISTANCE
L1 | S39°09'58"E | 99.58'
L2 | S00°15'49"W | 55.77'
L3 | S02°14'17"E | 39.25'
L4 | S00°56'34"W | 169.27'
L5 | S05°53'40"W | 126.18'
L6 | N86°30'20"W | 65.90'
L7 | N57°11'22"E | 44.93'
L8 | N34°24'16"E | 23.26'
L9 | N06°03'38"E | 180.97'
L10 | N10°34'03"E | 163.73'
L11 | N52°28'14"E | 62.11'
L12 | S75°11'05"E | 75.36'
L13 | S15°36'00"W | 90.81'
L14 | S06°21'14"W | 292.83'
L15 | S17°57'36"W | 66.70'
L16 | S55°50'24"W | 49.37'
L17 | S29°07'51"E | 23.39'
L18 | S49°13'05"E | 122.43'
L19 | S63°05'31"E | 38.18'
L20 | S26°05'21"W | 87.87'
L21 | S26°20'33"E | 50.56'
L22 | S65°03'42"W | 105.03'
L23 | N26°20'33"W | 84.73'
L24 | N16°58'42"W | 55.64'
L25 | N00°20'38"E | 27.81'
L26 | N57°23'23"W | 32.06'
L27 | N00°15'49"E | 64.36'
L28 | N39°09'58"W | 82.49'
L29 | N02°08'47"E | 50.32'
L30 | S89°42'27"W | 30.03' TIE LINE
"VICINITY MAP"
(NO SACLE)
BANNER WHITEHEAD RD.
U.S. HWY. 311
U.S. HWY. 311 (BYPASS)
SITE
LOFLIN DAIRY RD.
MARLBORO CH. RD.
NELSON PARK RD.
BRANSON DAMS RD.
WALKER MILL RD.
N.C. GRID NAD83 (2011)
NOTE:
DISTANCES SHOWN ARE HORIZONTAL GROUND DISTANCES UNLESS OTHERWISE NOTED.
TOTAL AREA EASEMENT A = 2.083 Acres
TOTAL AREA EASEMENT B= 0.686 Acres
TOTAL EASEMENT AREA (MAP 1 OF 2) = 2.769 Acres
MAP 1 OF 2
CONSERVATION EASEMENT SURVEY
FOR
THE STATE OF NORTH CAROLINA
ECOSYSTEM ENHANCEMENT PROGRAM
LOFLIN DAIRY BUFFER MITIGATION SITE
SCO# 076-BC EEP#95008
OWNER: CLIFFORD W. LOFLIN, JR.
NEW MARKET TOWNSHIP RANDOLPH COUNTY
NORTH CAROLINA
NOVEMBER 2, 2011 SCALE 1"= 100'
REVISED 11-17-2011, 12-29-2011
100 0 100 200 300
SCALE
C.E. ROBERTSON & ASSOCIATES, P.C.
PROFESSIONAL LAND SURVEYOR L-1421
CERTIFICATION NUMBER: C-2928
P.O. BOX 584
EDEN, NC 27289
PH. (336) 627-0498
JOBNAME: LOFLINDAIRY210F2



Review Officer's Certificate
State of North Carolina
County of Randolph

I, _____ Review Officer of Randolph County, certify that the map or plat to which this certification is affixed meets all statutory requirements for recording.

_____
Review Officer

_____
Date

THIS SURVEY IS OF ANOTHER CATEGORY, SUCH AS THE RECOMBINATION OF EXISTING PARCELS, A COURT-ORDERED SURVEY, OR OTHER EXCEPTION TO THE DEFINITION OF SUBDIVISION.

_____
C. E. ROBERTSON, PLS L-1421

NORTH CAROLINA
ROCKINGHAM COUNTY

I, C.E. ROBERTSON, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION (DEED DESCRIPTION RECORDED IN BOOK 1890-PAGE 68, ETC), THAT THE BOUNDARIES NOT SURVEYED ARE SHOWN AS BROKEN LINES, THAT THE RATIO OF PRECISION AS CALCULATED IS 1: 10,000, THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AMENDED. WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER, AND SEAL THIS 2nd DAY OF NOVEMBER A.D. 2011 .

_____
SURVEYOR
LICENSE NUMBER L-1421

CERTIFICATE OF GLOBAL POSITIONING SYSTEMS SURVEYS

I, C.E. ROBERTSON, CERTIFY THAT THE SITE CONTROL LISTED BELOW WAS ESTABLISHED UNDER MY SUPERVISION FROM AN ACTUAL GPS SURVEY MADE UNDER MY SUPERVISION AND THE FOLLOWING INFORMATION WAS USED TO PERFORM THE GPS SURVEY: 1) CLASS OF SURVEY CLASS A; 2) POSITIONAL ACCURACY DOES NOT EXCEED 0.10'; 3) TYPE OF GPS FIELD PROCEDURE RAPID STATIC; 4) DATE OF SURVEY AUGUST 31, 2011; 5) DATUM/EPOCH NAD 83(2011); 6) PUBLISHED/FIXED CONTROL NGS/CORS ;7)GEIOD MODEL GEIOD09; COMBINED GRID FACTOR 0.99989541; 9) UNITS U.S. SURVEY FOOT; AND THAT THIS INFORMATION WAS PREPARED IN ACCORDANCE WITH THE STANDARDS AND PRACTICE FOR LAND SURVEYING AS OUTLINED BY THE NC ADMINISTRATION CODE TITLE 21, CHAPTER 56.1607

WITNESS MY HAND AND OFFICIAL SEAL THIS 1st DAY OF NOVEMBER 2011 .

L-1421 _____
LICENSE NO. PROFESSIONAL LAND SURVEYOR

CONTROL POINTS:
POINT NUMBER,NORTHING,EASTING,ELEVATION,DESCRIPTION,
5001, 765145.6086, 1740958.5239, 737.54, NAIL(GROUND)
5002, 763602.6282, 1742664.3210, 774.73, NAIL,(GROUND)
5003, 763323.0324, 1740789.4619, 757.83, NAIL,(GROUND)
5004, 764336.0202, 1740114.6912, 748.61, NAIL(GROUND)

"COORDINATE TABLE" (GROUND)

POINT #	NORTHING	EASTING
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35	764,107.31	1,741,411.91
36	764,602.39	1,741,433.02
37	764,715.41	1,741,425.12
38	764,610.92	1,741,539.44
39	764,553.58	1,741,543.30
40	764,115.78	1,741,522.25
41	764,055.64	1,741,522.68
42	764,026.32	1,741,530.26
43	763,865.73	1,741,771.19
44	763,796.40	1,741,908.66
45	763,813.31	1,741,970.78
46	763,809.18	1,742,098.94
47	763,766.83	1,742,257.53
48	763,702.59	1,742,293.80
49	763,663.62	1,742,231.16
50	763,703.81	1,742,070.44
51	763,705.45	1,741,989.60
52	763,684.22	1,741,890.89
53	763,761.73	1,741,736.94
54	763,929.34	1,741,476.12
55	763,847.56	1,741,419.85
56	763,661.03	1,741,337.03
57	763,241.42	1,741,700.58
58	763,245.15	1,741,556.33
59	763,538.30	1,741,293.66
60	763,445.42	1,741,243.86
61	763,256.70	1,741,099.63

"LINE TABLE"

NUM	BEARING	DISTANCE
L31	N35°22'25"E	310.94'
L32	N24°21'31"E	410.71'
L33	N32°47'39"E	192.15'
L34	N02°26'31"E	495.53'
L35	N04°00'07"W	113.29'
L36	S47°34'28"E	154.88'
L37	S03°51'07"E	57.47'
L38	S02°45'13"W	438.30'
L39	S85°36'29"W	110.66'
L40	N85°36'29"E	98.93'
L41	S14°29'12"E	30.28'
L42	S56°18'55"E	289.55'
L43	S63°14'09"E	153.97'
L44	N74°46'00"E	64.38'
L45	S88°09'00"E	128.22'
L46	S75°03'01"E	164.15'
L47	S29°27'09"E	73.77'
L48	S58°06'47"W	73.77'
L49	N75°57'47"W	165.67'
L50	N88°49'57"W	80.85'
L51	S77°51'39"W	100.96'
L52	N63°16'42"W	172.36'
L53	N57°16'26"W	310.03'
L54	S34°32'07"W	99.26'
L55	S23°56'32"W	204.09'
L56	S40°54'19"E	555.20'
L57	N88°31'02"W	144.30'
L58	N41°51'42"W	393.61'
L59	S28°11'58"W	105.39'
L60	S37°23'19"W	237.52'
L61	N89°02'51"W	129.08'
L62	N25°16'21"W	66.88'
L63	N52°37'04"W	102.33'
L64	S00°24'56"E	60.14'

TOTAL AREA EASEMENT C = 1.400 Acres
TOTAL AREA EASEMENT D= 5.581 Acres
TOTAL EASEMENT AREA (MAP 2 OF 2) = 6.981 Acres

MAP 2 OF 2
CONSERVATION EASEMENT SURVEY
FOR

THE STATE OF NORTH CAROLINA
ECOSYSTEM ENHANCEMENT PROGRAM
LOFLIN DAIRY BUFFER MITIGATION SITE

SCO# 076-BC EEP#95008

OWNER: CLIFFORD W. LOFLIN, JR.
NEW MARKET TOWNSHIP RANDOLPH COUNTY
NORTH CAROLINA
NOVEMBER 2, 2011 SCALE 1"= 100'
REVISED 11-17-2011, 12-29-2011

100 0 100 200 300
SCALE

C.E. ROBERTSON & ASSOCIATES, P.C.
PROFESSIONAL LAND SURVEYOR L-1421
CERTIFICATION NUMBER: C-2928
P.O. BOX 584
EDEN, NC 27289
PH. (336) 627-0498

NOTE:
DISTANCES SHOWN ARE HORIZONTAL GROUND DISTANCES UNLESS OTHERWISE NOTED.

JOBNAME: LOFLINDAIRY22OF2

Appendix B:
Baseline Information Data

NC DWQ Stream Identification Form Version 4.11

Date: 2/2/11	**Project/Site:** Loflin Dairy	**Latitude:** 35.844877°N
Evaluator: MLJ	**County:** Randolph	**Longitude:** 79.878848°W
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 24	**Stream Determination (circle one)** Ephemeral (Intermittent) Perennial	**Other** SCP1 - A1 *e.g. Quad Name:*

A. Geomorphology (Subtotal = 12)	Absent	Weak	Moderate	Strong
1[a]. Continuity of channel bed and bank	0	(1)	2	3
2. Sinuosity of channel along thalweg	0	(1)	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	(2)	3
4. Particle size of stream substrate	0	1	(2)	3
5. Active/relict floodplain	0	1	(2)	3
6. Depositional bars or benches	0	(1)	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 = (0)		Yes = 3	

[a] artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 6)				
12. Presence of Baseflow	0	(1)	2	3
13. Iron oxidizing bacteria	(0)	1	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 = 6)				
18. Fibrous roots in streambed	(3)	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	(0)	1	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	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: 2/2/11	**Project/Site:** Loflin Dairy	**Latitude:** 35.845199°N
Evaluator: MLJ	**County:** Randolph	**Longitude:** 79.878427°W
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 23.25	**Stream Determination (circle one)** Ephemeral (Intermittent) Perennial	**Other** SCP2 - A2 *e.g. Quad Name:*

A. Geomorphology (Subtotal = 12)	Absent	Weak	Moderate	Strong
1[a]. Continuity of channel bed and bank	0	(1)	2	3
2. Sinuosity of channel along thalweg	0	(1)	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	(1)	2	3
4. Particle size of stream substrate	0	1	(2)	3
5. Active/relict floodplain	0	1	(2)	3
6. Depositional bars or benches	0	(1)	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 = (0)		Yes = 3	

[a] artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 6.5)				
12. Presence of Baseflow	0	(1)	2	3
13. Iron oxidizing bacteria	(0)	1	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 = 4.75)				
18. Fibrous roots in streambed	3	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	(0)	1	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	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: 2/2/11	**Project/Site:** Loflin Dairy	**Latitude:** 35.846317° N
Evaluator: MLJ	**County:** Randolph	**Longitude:** 79.878407° W
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 34.5	**Stream Determination (circle one)** Ephemeral Intermittent (Perennial)	**Other** SCP3 - A1 *e.g. Quad Name:*

A. Geomorphology (Subtotal = 20.5)	Absent	Weak	Moderate	Strong
1[a]. Continuity of channel bed and bank	0	1	(2)	3
2. Sinuosity of channel along thalweg	0	(1)	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	(2)	3
4. Particle size of stream substrate	0	1	(2)	3
5. Active/relict floodplain	0	1	2	(3)
6. Depositional bars or benches	0	(1)	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 = 0		Yes = (3)	

[a] artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 8)				
12. Presence of Baseflow	0	1	(2)	3
13. Iron oxidizing bacteria	(0)	1	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 = 6)				
18. Fibrous roots in streambed	(3)	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	(0)	1	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	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: 2/2/11	**Project/Site:** Loflin Dairy	**Latitude:** 35.844651°N
Evaluator: MLJ	**County:** Randolph	**Longitude:** 79.873293°W
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 27.25	**Stream Determination (circle one)** Ephemeral (Intermittent) Perennial	**Other** SCP4 - B1 *e.g. Quad Name:*

A. Geomorphology (Subtotal = 14)	Absent	Weak	Moderate	Strong
1[a]. Continuity of channel bed and bank	0	(1)	2	3
2. Sinuosity of channel along thalweg	0	(1)	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	(2)	3
4. Particle size of stream substrate	0	(1)	2	3
5. Active/relict floodplain	0	1	2	(3)
6. Depositional bars or benches	0	(1)	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 = (0)		Yes = 3	

[a] artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 7.5)				
12. Presence of Baseflow	0	1	(2)	3
13. Iron oxidizing bacteria	(0)	1	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 = 5.75)				
18. Fibrous roots in streambed	3	(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	(0)	1	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	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: 2/2/11	**Project/Site:** Loflin Dairy	**Latitude:** 35.844459°N
Evaluator: MCJ	**County:** Randolph	**Longitude:** 79.872295°W
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 20.75	**Stream Determination (circle one)** Ephemeral (Intermittent) Perennial	**Other** SCPS-B2 *e.g. Quad Name:*

A. Geomorphology (Subtotal = 9)	Absent	Weak	Moderate	Strong
1[a]. Continuity of channel bed and bank	0	1	(2)	3
2. Sinuosity of channel along thalweg	(0)	1	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	(1)	2	3
4. Particle size of stream substrate	0	(1)	2	3
5. Active/relict floodplain	0	(1)	2	3
6. Depositional bars or benches	(0)	1	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 = (0)		Yes = 3	

[a] artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 7)				
12. Presence of Baseflow	0	(1)	2	3
13. Iron oxidizing bacteria	(0)	1	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 = 4.75)				
18. Fibrous roots in streambed	3	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	(0)	1	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	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: 2/2/11	**Project/Site:** Loflin Dairy	**Latitude:** 35.845439°N
Evaluator: MCJ	**County:** Randolph	**Longitude:** 79.871048°W
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 22.75	**Stream Determination (circle one)** Ephemeral (Intermittent) Perennial	**Other** SCP6 - B3 *e.g. Quad Name:*

A. Geomorphology (Subtotal = 12)	Absent	Weak	Moderate	Strong
1[a]. Continuity of channel bed and bank	0	1	(2)	3
2. Sinuosity of channel along thalweg	0	(1)	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	(1)	2	3
4. Particle size of stream substrate	0	(1)	2	3
5. Active/relict floodplain	0	(1)	2	3
6. Depositional bars or benches	0	(1)	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 = (0)		Yes = 3	

[a] artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 6)				
12. Presence of Baseflow	0	(1)	2	3
13. Iron oxidizing bacteria	(0)	1	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 = 4.75)				
18. Fibrous roots in streambed	3	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	(0)	1	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	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: 2/2/11	**Project/Site:** Loflin Dairy	**Latitude:** 35.847624° N
Evaluator: MLS	**County:** Randolph	**Longitude:** 79.872329° W
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 35.5	**Stream Determination (circle one)** Ephemeral Intermittent (Perennial)	**Other** SCP7-B1 *e.g. Quad Name:*

A. Geomorphology (Subtotal = 21.5)	Absent	Weak	Moderate	Strong
1[a]. Continuity of channel bed and bank	0	1	(2)	3
2. Sinuosity of channel along thalweg	0	(1)	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	(2)	3
4. Particle size of stream substrate	0	1	2	(3)
5. Active/relict floodplain	0	1	2	(3)
6. Depositional bars or benches	0	(1)	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 = 0		Yes = (3)	

[a] artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 8)				
12. Presence of Baseflow	0	1	(2)	3
13. Iron oxidizing bacteria	(0)	1	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 = 6)				
18. Fibrous roots in streambed	(3)	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	(0)	1	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	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:

Loflin Dairy Mitigation Site
2417 Loflin Dairy Road
Sophia, NC 27350

Inquiry Number: 3119557.4
July 13, 2011

The EDR Aerial Photo Decade Package

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

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

Date EDR Searched Historical Sources:

Aerial Photography July 13, 2011

Target Property:

2417 Loflin Dairy Road

Sophia, NC 27350

Year	***Scale***	***Details***	***Source***
1948	Aerial Photograph. Scale: 1"=1000'	Panel #: 35079-G8, Glenola, NC;/Flight Date: May 19, 1948	EDR
1961	Aerial Photograph. Scale: 1"=1000'	Panel #: 35079-G8, Glenola, NC;/Flight Date: September 07, 1961	EDR
1969	Aerial Photograph. Scale: 1"=500'	Panel #: 35079-G8, Glenola, NC;/Flight Date: March 13, 1969	EDR
1973	Aerial Photograph. Scale: 1"=1000'	Panel #: 35079-G8, Glenola, NC;/Flight Date: February 24, 1973	EDR
1977	Aerial Photograph. Scale: 1"=1000'	Panel #: 35079-G8, Glenola, NC;/Flight Date: March 01, 1977	EDR
1980	Aerial Photograph. Scale: 1"=1000'	Panel #: 35079-G8, Glenola, NC;/Flight Date: March 15, 1980	EDR
1983	Aerial Photograph. Scale: 1"=1000'	Panel #: 35079-G8, Glenola, NC;/Flight Date: April 21, 1983	EDR
1993	Aerial Photograph. Scale: 1"=604'	Panel #: 35079-G8, Glenola, NC;/Composite DOQQ - acquisition dates: February 02, 1993	EDR
1999	Aerial Photograph. Scale: 1"=750'	Panel #: 35079-G8, Glenola, NC;/Flight Date: February 15, 1999	EDR
2005	Aerial Photograph. Scale: 1"=604'	Panel #: 35079-G8, Glenola, NC;/Flight Year: 2005	EDR
2006	Aerial Photograph. Scale: 1"=604'	Panel #: 35079-G8, Glenola, NC;/Flight Year: 2006	EDR
2008	Aerial Photograph. Scale: 1"=604'	Panel #: 35079-G8, Glenola, NC;/Flight Year: 2008	EDR


INQUIRY #: 3119557.4
YEAR: 1948
= 1000'
N


INQUIRY #: 3119557.4
YEAR: 1961
= 1000'
N


INQUIRY #: 3119557.4
YEAR: 1969
= 500'
N


INQUIRY #: 3119557.4
YEAR: 1973
= 1000'
N


INQUIRY #: 3119557.4
YEAR: 1977
= 1000'
N
EDR Environmental Data Resources Inc


INQUIRY #: 3119557.4
YEAR: 1980
= 1000'
N


INQUIRY #: 3119557.4
YEAR: 1983
= 1000'
N

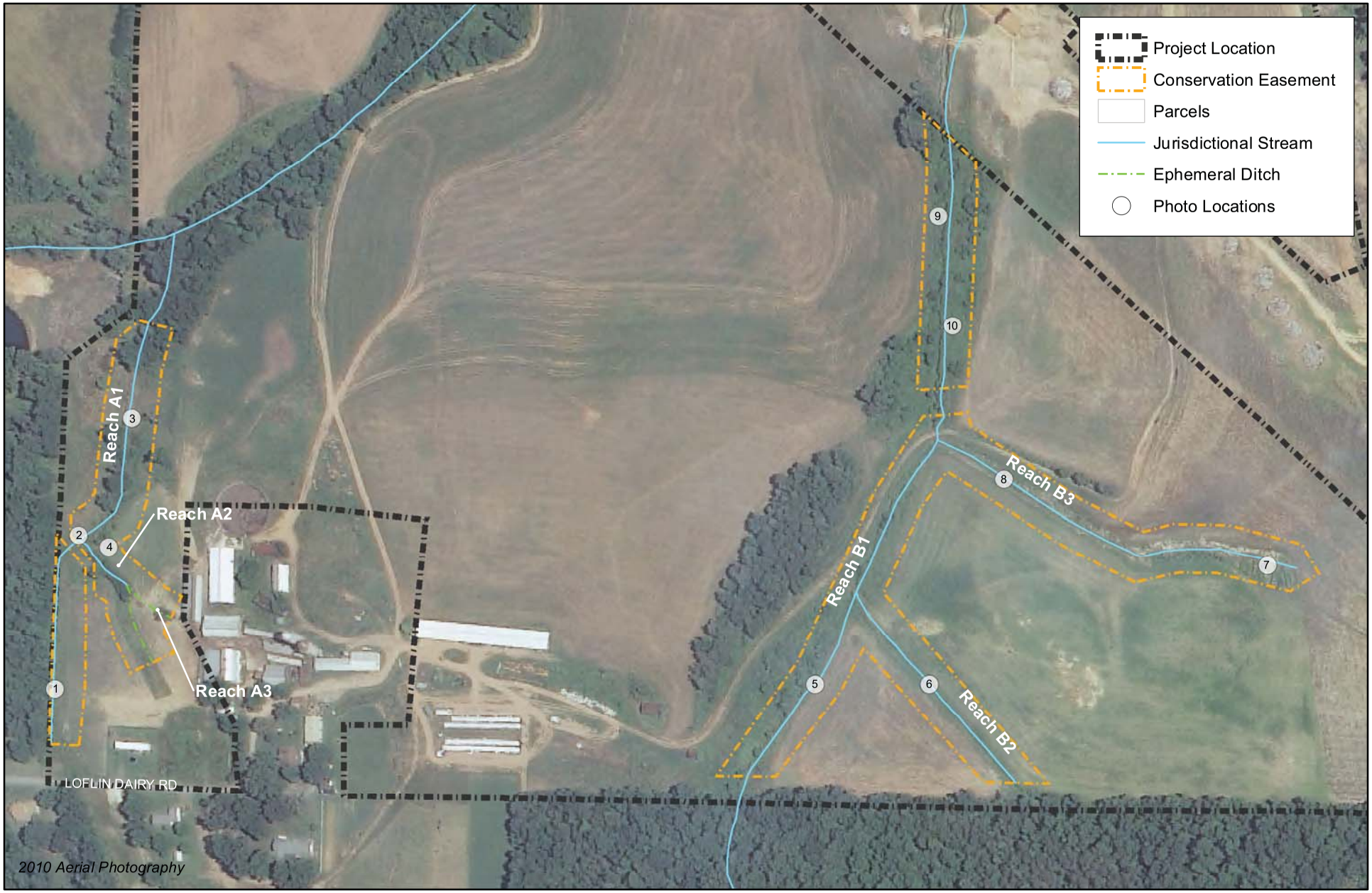

INQUIRY #: 3119557.4
YEAR: 1993
= 604'
N
EDR Environmental Data Resources Inc


INQUIRY #: 3119557.4
YEAR: 1999
= 750'
N
EDR Environmental Data Resources Inc


INQUIRY #: 3119557.4
YEAR: 2005
= 604'
N


INQUIRY #: 3119557.4
YEAR: 2006
= 604'
N


INQUIRY #: 3119557.4
YEAR: 2008
= 604'
N



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0 150 300 Feet

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Figure B-1 Site Photos
Loflin Dairy Buffer Mitigation Site
Cape Fear Basin (03030003)

Randolph County, NC

Photo 1- Intermittent Reach A1, facing downstream

Photo 2- Perennial Reach A1, facing downstream

Photo 3- Perennial Reach A1, facing downstream

Photo 4- Intermittent Reach A2, facing upstream

Photo 5- Intermittent Reach B1, facing downstream

Photo 6- Intermittent Reach B2, facing downstream

Photo 7- Intermittent Reach B2, facing downstream

Photo 8- Intermittent Reach B3, facing downstream

Photo 9- Lack of buffer on Perennial Reach B1

Photo 10- Maintained riparian zone along Reach B1

North Carolina Department of Environment and Natural Resources
Division of Water Quality

Beverly Eaves Perdue
Governor

Coleen H. Sullins
Director

Dee Freeman
Secretary

November 10, 2011

Kristie Corson
NC Ecosystem Enhancement Program
1652 Mail Service Center
Raleigh, NC 27699-1652

Re: Loflin Buffer Mitigation Site
Randolph County

Dear Ms. Corson:

The Division of Water Quality (DWQ) Winston-Salem Regional Office has reviewed the Memorandum submitted by Wildlands Engineering dated October 31, 2011 (attached). This memorandum accurately summarizes all discussions conducted during a site visit as well as all follow up correspondence.

The Division concurs that that the proposed buffer planting areas as depicted in the attached October 31, 2011 memo and diagrams should qualify for buffer restoration credits in the Randleman Lake watershed provided that the plantings are shown to meet the buffer mitigation success criteria established in 15A NCAC 02B .0252.

If you have any questions related to our comments or this mitigation project, please feel free to contact me at 336-771-4964 or sue.homewood@ncdenr.gov.

Sincerely,

Sue Homewood
DWQ Winston-Salem Regional Office

Cc: Andrea Eckardt, Wildlands Engineering (via email)
DWQ-WSRO

North Carolina Division of Water Quality, Winston-Salem Regional Office
Location: 585 Waughtown St. Winston-Salem, North Carolina 27107
Phone: 336-771-5000 \ FAX: 336-771-4630 \ Customer Service: 1-877-623-6748
Internet: www.ncwaterquality.org

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ENGINEERING

1430 S. Mint Street, Suite 104 · Charlotte, NC 28203 · Phone: 704.332.7754 · Fax: 704.332.3306

MEMORANDUM

To: Sue Homewood, NCDWQ
From: Andrea Eckardt

Cc: Kristie Corson
Tim Baumgartner
Date: 10/31/2011

Re: Loflin Dairy Buffer Mitigation Site – Proposed Planting Areas

Representatives of Wildlands Engineering, Inc (WEI), NC Ecosystem Enhancement Program (NCEEP), and NC Division of Water Quality (NCDWQ) attended a site visit to the Loflin Dairy Buffer Mitigation Site on August 18, 2011. Meeting notes and a draft planting area figure were submitted by WEI for agency review following the site visits. WEI received comments from NCDWQ on the notes and initial planting area map via email September 9, 2011. The proposed planting area for the project has since been revised based on agency comments, updated survey data, and site constraints.

Attached is the updated map showing the proposed planting area for the Loflin Dairy Buffer Mitigation Site. The conservation easement boundary is 50 feet from the surveyed top of bank. The project planting area, which is the area that will generate restoration credit, is 8.7 acres out of a 9.5 acre conservation easement area. The jurisdictional streams and ephemeral ditches on the site have been excluded from the planting acreage.

NCDWQ requested additional information on the existing vegetation in three areas: Reaches A1, A2, and B1. Reach A1 had only a single line of four mature trees (>5" DBH) along the right top-of-bank; therefore, no official tree count plot was established. A tree count plot was created on A2 as shown on the attached figure. The result of the plot is included below in Table 1. On Reach B1, there were no trees greater than or equal to 5 inches DBH found along the reach; therefore, so no official plot was created.

Table 1. Loflin Dairy Existing Buffer Vegetation Plots

Plot	Reach	Dimensions (ft.)	No. Trees ≥ 5" DBH	Tree Density Per Acre
#1	Reach A2	75' x 30'	4	77

Below is a summary of the conditions, issues, and mitigation potential at each project Reach.

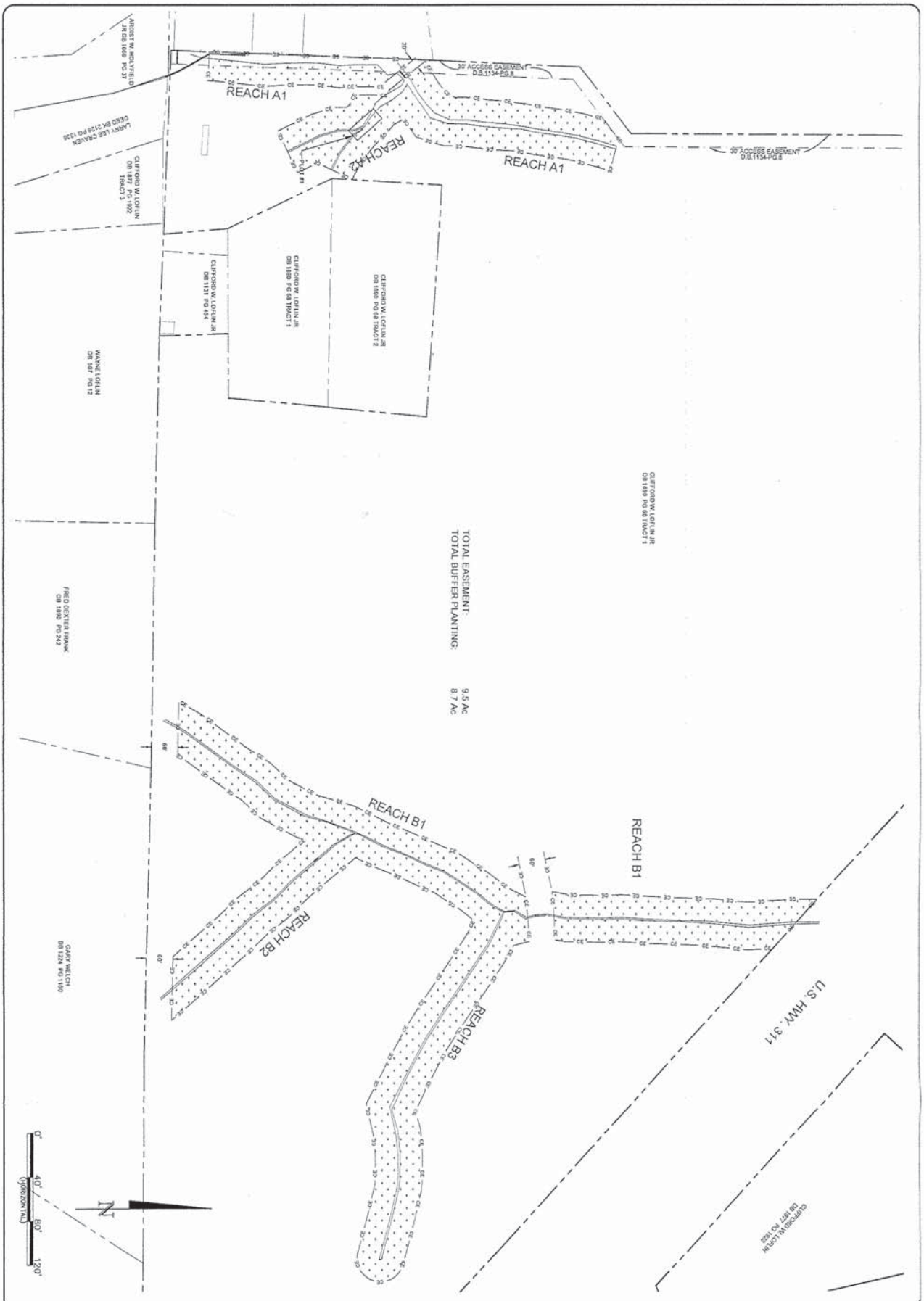
Reach A1 – As there was only a single line of four trees found along the top-of-bank of this reach with DBH greater than or equal to five inches, the conservation easement area along this entire reach will be riparian buffer restoration.

Reach A2 – As the tree density per acre for this reach was 77, the conservation easement area along this entire reach will be riparian buffer restoration. The upstream ephemeral breaks that had been identified in the field by NCDWQ were surveyed. The project extent stops prior to the breaks due to property owner constraints.

Reach B1 – As there were no trees found with DBH greater than or equal to five inches, the conservation easement area along this entire reach will be riparian buffer restoration.

Reach B2 – The conservation easement area along this entire reach will be riparian buffer restoration.

Reach B3 – The conservation easement area along this entire reach will be riparian buffer restoration. The headcut at the upstream portion of the reach that was identified in the field by NCDWQ was surveyed and used to determine the project extent on this reach. The upstream end of the easement area has been "bubbled" 50 feet per NCDWQ guidance.



Date	October 31, 2011
Job Number	005-021E
Project Engineer	EGR
Drawn By	JCR
Checked By	MJE

1
Sheet

Reviewers

Loflin Dairy Buffer Mitigation Site
Randolph County, North Carolina - Cape Fear Basin
Buffer Easement Exhibit

DRAFT

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11/10/11

60% Plans - Not For Construction

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:	Loflin Dairy Buffer Mitigation Site
County Name:	Randolph County
EEP Number:	Contract Number 003995, RFP 16-003567
Project Sponsor:	Wildlands Engineering, Inc.
Project Contact Name:	Andrea Spangler Eckardt
Project Contact Address:	1430 S. Mint Street, Suite 104, Charlotte, NC 28203
Project Contact E-mail:	aeckardt@wildlandsinc.com
EEP Project Manager:	Kristie Corson

Project Description

The Loflin Dairy Buffer Mitigation Site is a riparian buffer mitigation project located in Randolph County, NC, northwest of the City of Randleman. The project is located on several unnamed tributaries to Bob Branch. The project will provide riparian buffer mitigation units to NCEEP in the Cape Fear River Basin (03030003) - Randleman Lake. The mitigation project involves buffer restoration.

For Official Use Only

Reviewed By:

9/6/11
Date

Kristie T. Corson
EEP Project Manager

Conditional Approved By:

Date

For Division Administrator FHWA

☐ **Check this box if there are outstanding issues**

Final Approval By:

9-2-11
Date

For Division Administrator FHWA

Part 2: All Projects Regulation/Question	Response
Coastal Zone Management Act (CZMA)	
1. 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 (CERCLA)	
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)	
1. Are there properties listed on, or eligible for listing on, the National Register of Historic Places in the project area?	☐ 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 (Uniform 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
4. Has the owner of the property been informed: * prior to making an offer that the agency does not have condemnation authority; and * what the fair market value is believed to be?	☑ 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)	
1. 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 ☑ N/A
4. Has a permit been obtained?	☐ Yes ☐ No ☑ N/A
Archaeological Resources Protection Act (ARPA)	
1. 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 ☑ N/A
3. Will a permit from the appropriate Federal agency be required?	☐ Yes ☐ No ☑ N/A
4. Has a permit been obtained?	☐ Yes ☐ No ☑ N/A
Endangered Species Act (ESA)	
1. Are federal Threatened and Endangered species and/or Designated Critical Habitat listed for the county?	☑ Yes ☐ No
2. 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 ☑ N/A
6. Has the USFWS/NOAA-Fisheries rendered a "jeopardy" determination?	☐ Yes ☐ No ☑ N/A

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 Habitat)	
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)	
1. 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	
1. 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

Appendix C:
Project Plan Sheets

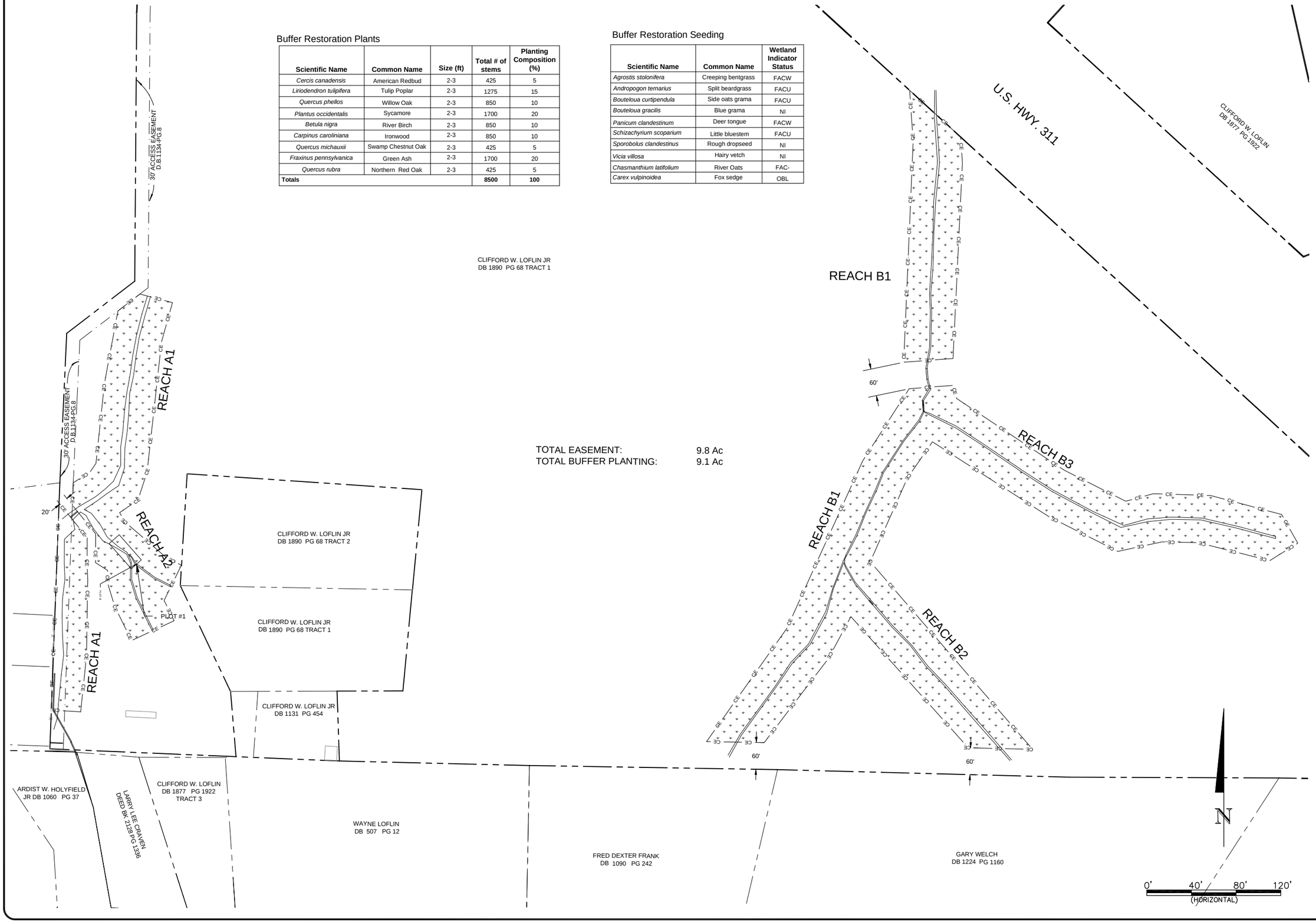
Buffer Restoration Plants

Scientific Name	Common Name	Size (ft)	Total # of stems	Planting Composition (%)
Cercis canadensis	American Redbud	2-3	425	5
Liriodendron tulipifera	Tulip Poplar	2-3	1275	15
Quercus phellos	Willow Oak	2-3	850	10
Plantus occidentalis	Sycamore	2-3	1700	20
Betula nigra	River Birch	2-3	850	10
Carpinus caroliniana	Ironwood	2-3	850	10
Quercus michauxii	Swamp Chestnut Oak	2-3	425	5
Fraxinus pennsylvanica	Green Ash	2-3	1700	20
Quercus rubra	Northern Red Oak	2-3	425	5
Totals			**8500**	**100**

Buffer Restoration Seeding

Scientific Name	Common Name	Wetland Indicator Status
Agrostis stolonifera	Creeping bentgrass	FACW
Andropogon ternarius	Split beardgrass	FACU
Bouteloua curtipendula	Side oats grama	FACU
Bouteloua gracilis	Blue grama	NI
Panicum clandestinum	Deer tongue	FACW
Schizachyrium scoparium	Little bluestem	FACU
Sporobolus clandestinus	Rough dropseed	NI
Vicia villosa	Hairy vetch	NI
Chasmanthium latifolium	River Oats	FAC-
Carex vulpinoidea	Fox sedge	OBL

TOTAL EASEMENT: 9.8 Ac
TOTAL BUFFER PLANTING: 9.1 Ac



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Loflin Dairy Buffer Mitigation Site
Randolph County, North Carolina - Cape Fear Basin
Buffer Easement Exhibit

Revisions:

Date:	October 21, 2011
Job Number:	008-02131
Project Engineer:	EGR
Drawn By:	JCK
Designed By:	ASE

Sheet 1

60% Plans - Not For Construction