

**MITIGATION PLAN**

**Hockett Dairy Site  
Riparian Buffer Restoration  
Randolph County, North Carolina  
EEP Project ID Number 003993 – EEP Site 95013**

**Cape Fear River Basin  
HUC 03030003010070**



**Prepared for:**



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

**June 2012**

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**Prepared by:**



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**June 2012**



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## EXECUTIVE SUMMARY

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.

The Hockett Dairy Buffer Mitigation Site was identified as an opportunity to improve water quality and habitat within the Randleman Lake watershed (03030003 Catalog Unit) through 11.82 acres (514,879 square feet) of riparian buffer restoration. The Hockett Dairy Buffer Mitigation Site is located along Hockett Dairy Road (SR 1938) in Randolph County approximately 12 miles north of Asheboro, NC. The site includes six unnamed tributaries and three in-line farm ponds that drain into Randleman Lake.

The project's watershed is primarily used for agricultural production. Much of the surrounding land use is currently dairy cows and calves or row crop production for dairy silage. Some tributaries have limited hardwood trees present, but lack significant ground cover. The mature trees are less than 100 stems per acre. Cattle have direct access and are a source of ongoing erosion along the banks and within the adjacent buffer.

There are few known constraints at the Hockett Dairy Site. Five farm access crossings, including three dams, are present on buffer restoration reaches. These crossings will remain and will be stabilized with correctly sized culverts to allow cattle and farm equipment access to neighboring pastures and facilities, but will prevent future degradation of the stream. No overhead or underground utilities are located within the proposed buffer. No existing land uses (such as residential) will constrain the proposed mitigation design. The proposed mitigation site is not located within five miles of an air transport facility. An alternate water source will be constructed near Farm Pond 2 and Farm Pond 3 to replace the lost farm pond water sources.

The riparian buffer is in poor condition throughout the project area. Most of the riparian buffer is devoid of trees or shrubs or has less than 100 trees per acre (TPA). Field counts of woody vegetation, where present, of stems greater than five inches dbh verified the absence of an adequate buffer. Saplings necessary for buffer regeneration were minimal or absent due to foraging and maintenance activities. Current buffer conditions demonstrate significant degradation with a loss of stabilizing vegetation due to continued cattle access, agricultural activities, and past land management actions.

Buffer restoration is proposed along five channels and surrounding two ponds. Additional un-credited buffer restoration and cattle exclusion is proposed on one farm pond, an adjacent slope, and stream channel where dairy operation constraints preclude full buffer establishment and permanent protection. Two of the four existing farm access crossings will be upgraded to correct culvert size and stabilized to prevent erosion. Buffer restoration will include removal of invasive species and debris, grade stabilization, slope stabilization, and planting appropriate hardwood species. The target natural community will be a Piedmont Alluvial Forest as described in Schafale

and Weakley (1990). This type of community is common throughout Piedmont drainages and when established will provide numerous water quality and ecological benefits. Livestock exclusion fencing will be installed around five of the six channels, around the pond buffers, and at all upgraded crossings.

The result will be a restored riparian habitat that functions to filter nutrient and sediment inputs from the surrounding uplands, provide soil stability, and increase dissolved oxygen concentrations through shading/cooling of the channel. The permanent conservation easement will extend a minimum of 50 feet from the top of bank on all channels and 50 feet from the pond normal pool elevation.

The site will be monitored on a regular basis and a physical inspection of the site will be conducted a minimum of twice per year throughout the post-construction monitoring period or until performance standards are met. These site inspections will include a complete inspection of the project easement boundary and fencing, and will identify site components and features that require routine maintenance. The site will be subject to EEP's CVS vegetation plot monitoring protocol. The measure of vegetative success for the site will be the survival of at least 320 5-year old planted trees per acre at the end of year five of the monitoring period. Annual monitoring data will be reported using the EEP monitoring template. The monitoring report shall provide a project data chronology that will facilitate an understanding of project status and trends, population of EEP databases for analysis, research purposes, and assist in decision making regarding project closeout.

Upon approval for closeout by the North Carolina division of Water Quality (DWQ), the site will be transferred to the State of North Carolina (State). The State 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.

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- Appendix B. DWQ Correspondence
- Appendix C. Baseline Information Data
- Appendix D. Project Construction Details

## 1.0 RESTORATION PROJECT GOALS AND OBJECTIVES

The Hockett Dairy Buffer Mitigation Site is located in the 03030003 Catalog Unit (CU), in the Cape Fear River Basin. The Project is located within the Randleman Lake watershed. It will provide buffer mitigation credits in accordance with the Randleman Lake Water Supply Watershed Buffer Rules (15A NCAC 02B .0250) and the Randleman Lake Water Supply Watershed Buffer Mitigation Rules (15A NCAC 02B .0252).

The Hockett Dairy Buffer Mitigation Site was identified as an opportunity to improve water quality and habitat within the CU. The project goals address stressors identified in the CU. The following table lists the project goals and the project objectives through which the goals will be addressed:

Goals	Objectives
<ol style="list-style-type: none"><li>1. Nutrient removal</li><li>2. Sediment removal</li><li>3. Runoff filtration</li><li>4. Increase dissolved oxygen concentration</li><li>5. Restore riparian habitats</li><li>6. Reduce water temperature</li></ol>	<ul style="list-style-type: none"><li>• Restore minimum 50-foot riparian buffer by planting appropriate bottomland hardwood species to filter runoff.</li><li>• Convert active farm fields to forested buffers.</li><li>• Plant buffer vegetation to shade channel.</li><li>• Restore riparian buffer habitat to appropriate bottomland hardwood ecosystem.</li><li>• Restore canopy tree species in the stream buffer areas to shade channel.</li><li>• Eliminate and control exotic invasive species.</li><li>• Replace two undersized and failing channel crossings with appropriately sized culverts or ford.</li><li>• Stabilize two small dams on small farm ponds.</li></ul>



## **2.0 SITE SELECTION**

### **2.1 Directions**

The Hockett Dairy Buffer Mitigation Site is located along Hockett Dairy Road (SR 1938) in Randolph County approximately 12 miles north of Asheboro, NC (**Figure 1**). To drive to the site, take US 220/ I-73 to the intersection with NC-62. Take the NC-62 exit east toward Climax for approximately one mile. Turn south onto Randleman Road for 1.4 miles. Hockett Dairy Road is located in the west side of the road. The site is located in the Cape Fear River Basin within Cataloging Unit 03030003010070 (NCDWQ sub-basin 03-06-08). The site includes six unnamed tributaries (UT) that drain into Randleman Lake. The proposed project consists of 11.82 acres of buffer restoration.

### **2.2 Physiography, Topography, and Land Use**

The Hockett Dairy Buffer Mitigation Site is located in the Piedmont Physiographic Province and in the Carolina Slate Belt. The region is underlain by felsic metavolcanic rocks, which can be seen in the streambed of UT 1 and UT 3. The topography of the project area is generally rolling with elevations ranging from 670 to 760 feet (**Figure 2**).

The project's watershed is primarily used for agricultural production. Much of the surrounding land use is currently dairy cows and calves or row crop production for dairy silage. Some tributaries have limited hardwood trees present, but lack significant ground cover. The mature trees are less than 100 stems per acre. Cattle have direct access to streams channels and ponds and are a source of ongoing erosion along the banks and within the adjacent buffer. Cattle are excluded from some channels with fencing on or near the top of bank, resulting in a degraded riparian buffer. The project area has been in agricultural use for several decades (**Figure 3**).

### **2.3 Soils**

The Randolph County Soil Survey (NRCS, 2006), shows three mapping units across the project site (**Figure 4**). The map units are Mecklenburg clay loam with a slope phase of 8 to 15 percent, Wynott-Enon complex with a slope phase of 8 to 15 percent, and Wynott-Enon complex with a slope phase of 8 to 15 percent that is moderately eroded. The Wynott-Enon complex is 59 percent Wynott or similar soils and 33 percent Enon or similar soils.

These soils formed residuum weathered from mafic high-grade metamorphic or igneous rocks. These moderate to very deep soils are well drained, greater than six feet to a seasonal high water table, have slow permeability, and medium runoff. Wynott-Enon soils have a high shrink-swell potential and Mecklenburg soils have a moderate shrink-swell potential. Wynott soils are 20 to 40 inches to soft bedrock and 40 to more than 60 inches to hard bedrock. Enon and Mecklenburg soils are more than 60 inches to bedrock. These upland Piedmont soils occur across a range of landforms that include summits, ridges, and side slopes. All soils within the watershed are classified as hydrologic soil groups B and C. These soils are not listed on the National Hydric Soil List.

### **2.4 Water Quality**

Water quality assessments are based upon published resource information and field observations. The project is in a mostly rural watershed draining into Randleman Lake, a water supply watershed. Small farms, forested areas, and rural home sites are the most common land uses. Agricultural fields, dairy operations, and home sites are two common disturbances to the natural communities in the project vicinity. Potential threats to stream quality in this area are increased soil erosion and excessive nutrient input, both non-point sources of pollution.

The Cape Fear Basin Wide Assessment Report (October 2005) list a number of impaired waters within the 03-06-08 sub-basin where the project study area is located. The sub-basin watershed is 13 percent urbanized and includes portions of the municipalities of Archdale, Greensboro, Highpoint, Kernersville and Randleman. Nearly 55 percent is forested and 25 percent is managed pastureland. Streams are rated as impaired due to fecal coliform

violations and impaired benthic communities due to stressors that include sedimentation, habitat degradation and urban runoff. Total Maximum Daily Load's (TMDL) developed for these streams call for significant reduction in fecal coliform.

The site drains directly into Randleman Lake. Randleman Lake has a best usage classification of Water Supply IV (WS-IV);CA: These waters are protected and used as sources of water supply for drinking, culinary or food processing purposes and are also protected for Class C uses. WS-IV waters are generally in moderately to highly developed watersheds. The CA designation identifies waters that are within a designated Critical Supply Watershed and are subject to a special management strategy specified in 15A NCAC 2B .0248. The 100-year floodplain (FEMA Zone AE) is located below UT 1 and UT 2 (**Figure 5**). The US fish and Wildlife Service does not show National Wetlands Inventory (NWI) wetlands within the project area (**Figure 5**).

## **2.5 Constraints**

There are few known constraints at the Hockett Dairy Site. Five farm access crossings, including two dams, are present on buffer restoration reaches (**Figure 7**). The two crossings on UT 4 are to remain and will be stabilized with correctly sized culverts to allow farm equipment access and prevent future degradation. Easement breaks on Pond 2 and Pond 3 will allow dam maintenance. No overhead or underground utilities are located within the proposed buffer. No existing land uses (such as residential) will constrain the proposed mitigation design. The proposed mitigation site is not located within five miles of an air transport facility. An alternate water source will be constructed near Farm Pond 2 and Farm Pond 3 to replace these water sources. A new well will be installed and a waterline will be constructed to water stations located in the pastures adjoining the ponds. Livestock exclusion fencing will be installed along the easement boundary in areas of current cattle usage. The easement boundary will be marked with metal poles and signs.

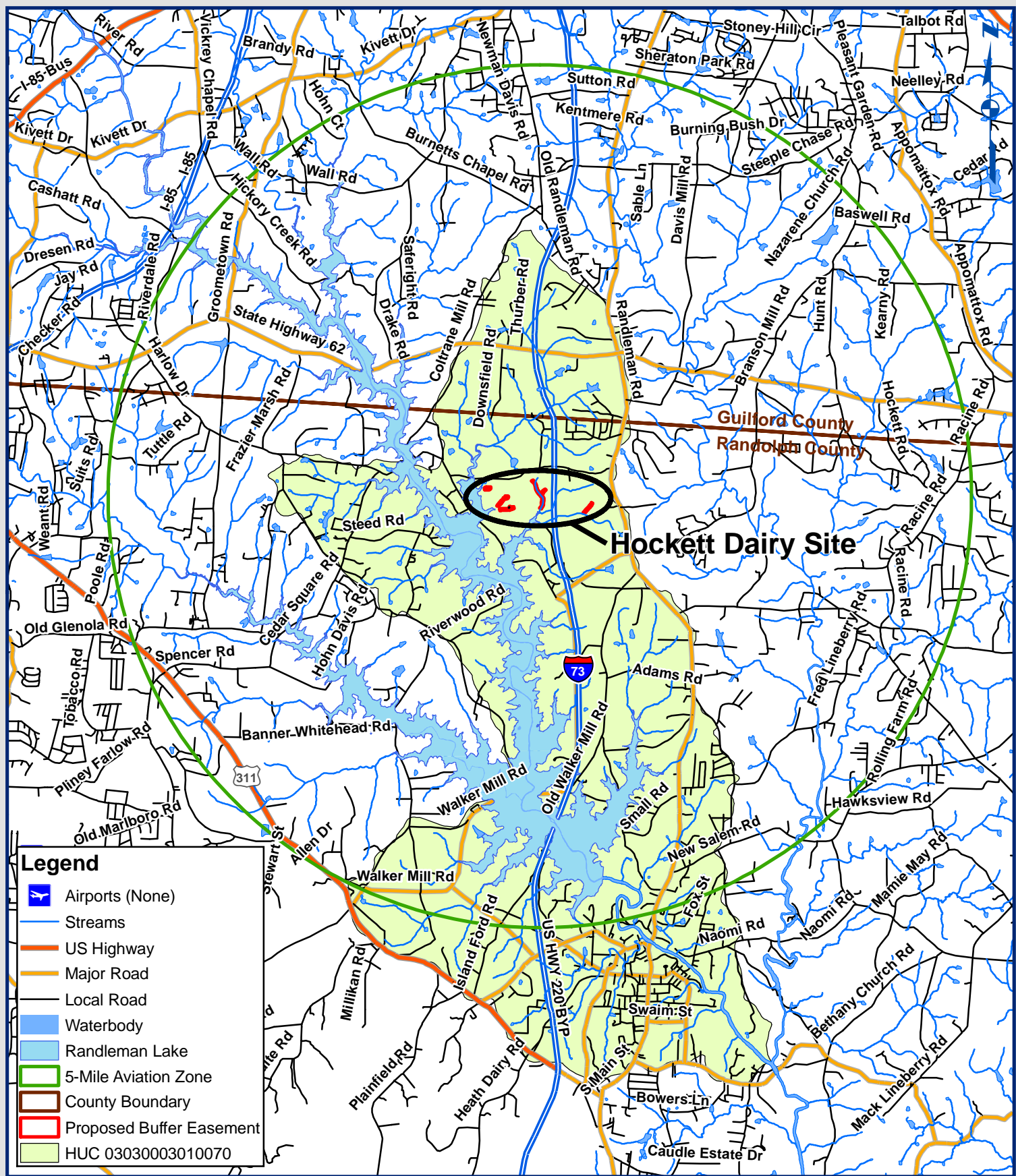
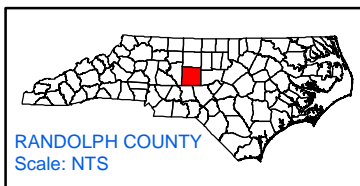
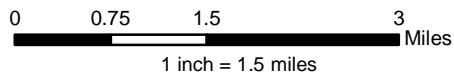


Figure 1.  
Project Vicinity Map  
Hockett Dairy Buffer Restoration Site



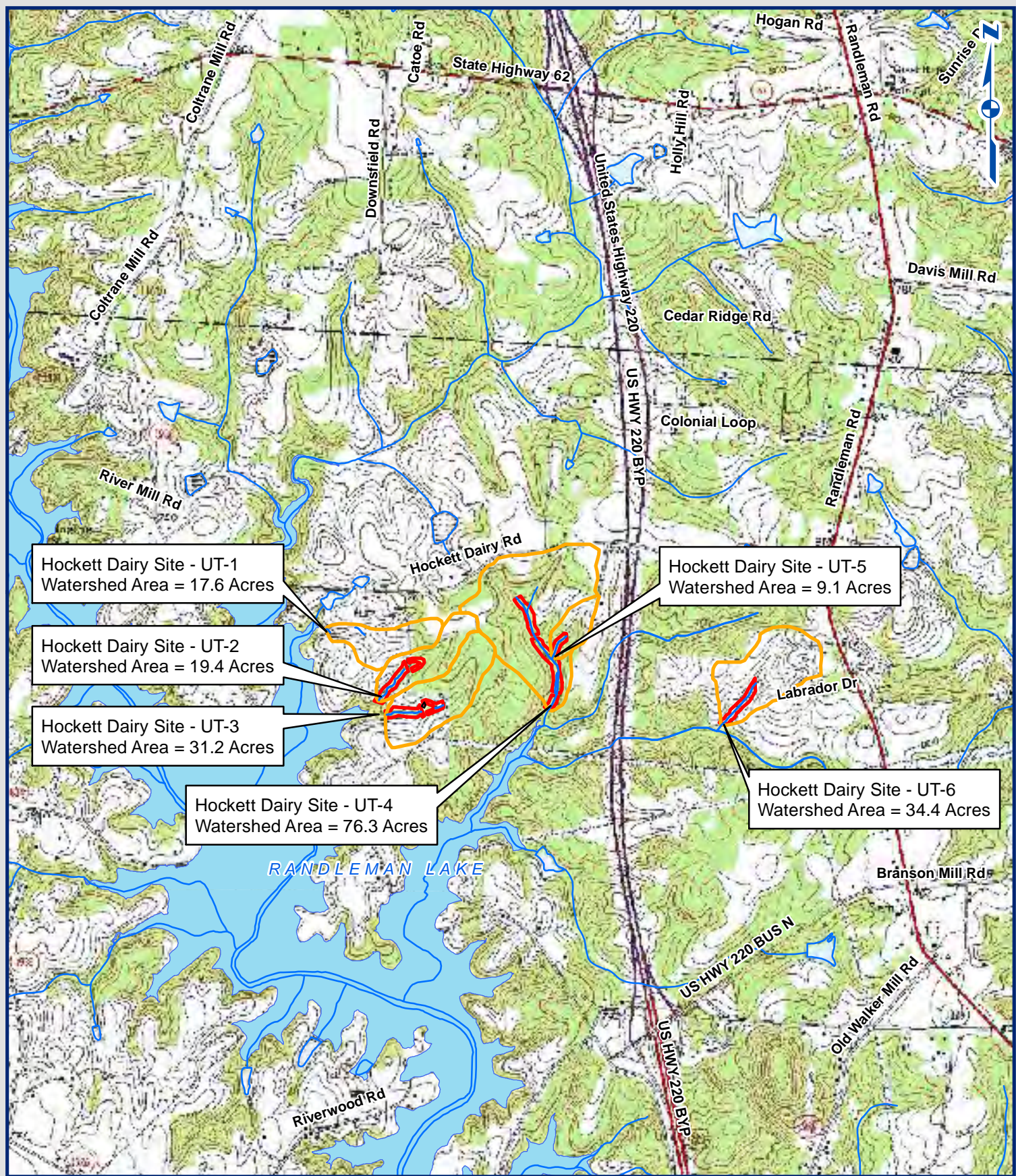
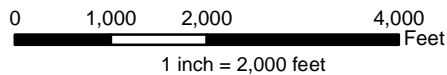



Figure 2.  
USGS/Watershed Map  
Hockett Dairy Buffer Restoration Site



**Legend**

-  Streams
-  Randleman Lake
-  Drainage Area
-  Conservation Easement



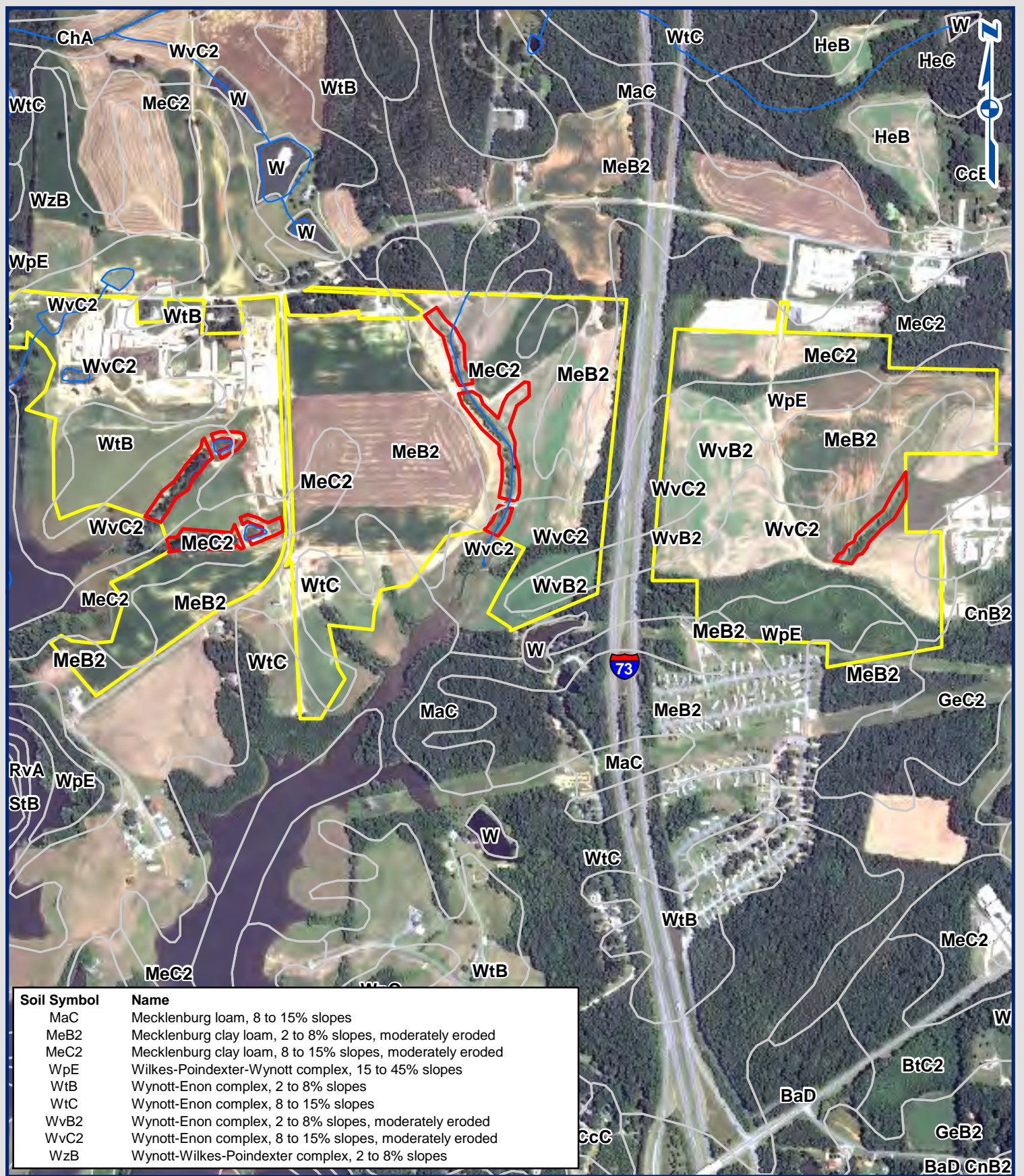






Figure 3.  
Soils Map  
Hockett Dairy Buffer Restoration Site

0 250 500 1,000 1,500 2,000  
Feet  
1 inch = 1,000 feet

**Legend**

-  Streams
-  Randolph County Soils
-  Proposed Buffer Easement
-  Target Parcels



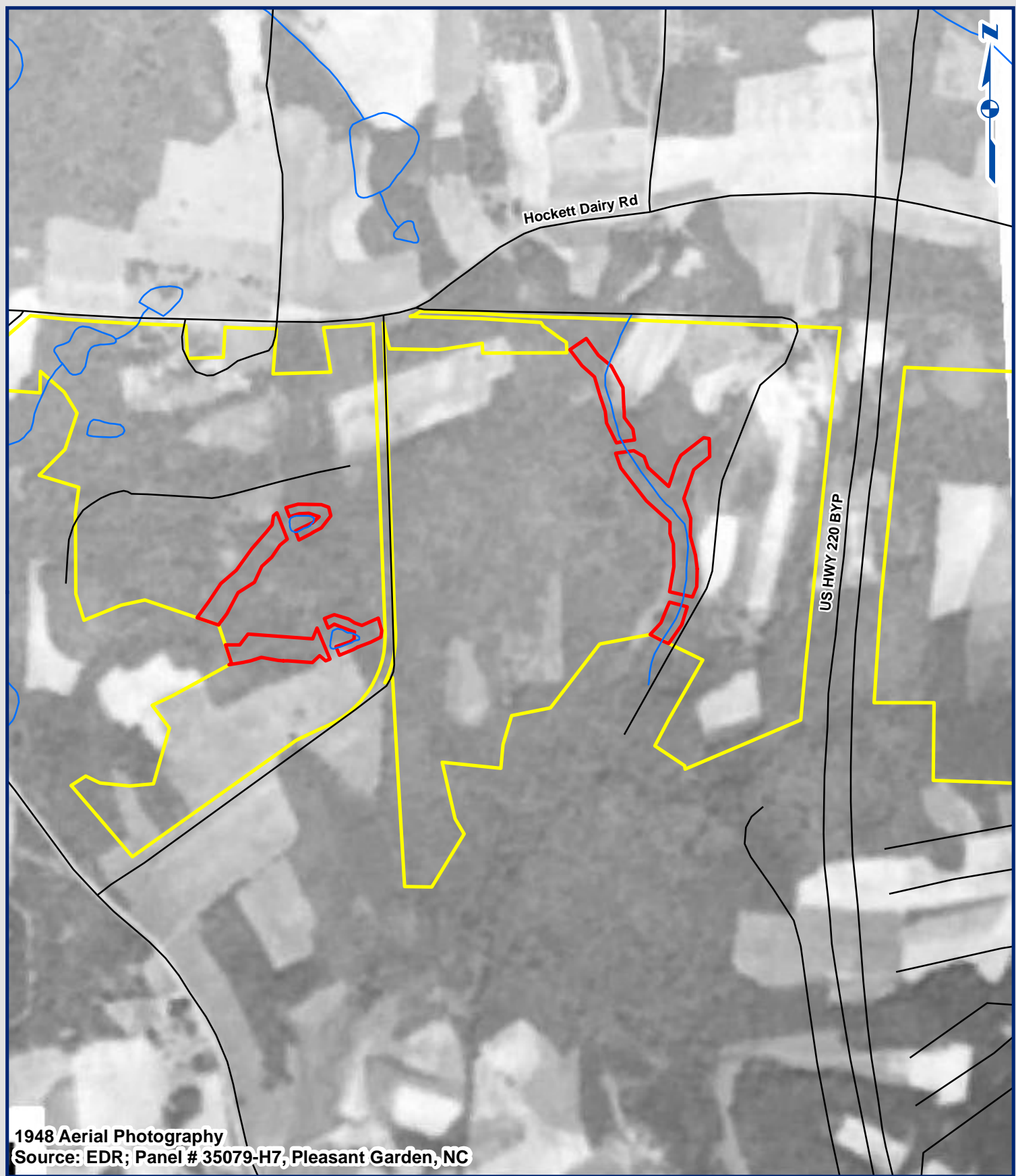
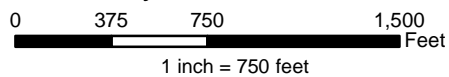






Figure 4.  
 Historical Aerial Map (1948)  
 Hockett Dairy Buffer Restoration Site



**Legend**

-  Streams
-  Randolph County Soils
-  Proposed Buffer Easement
-  Target Parcels



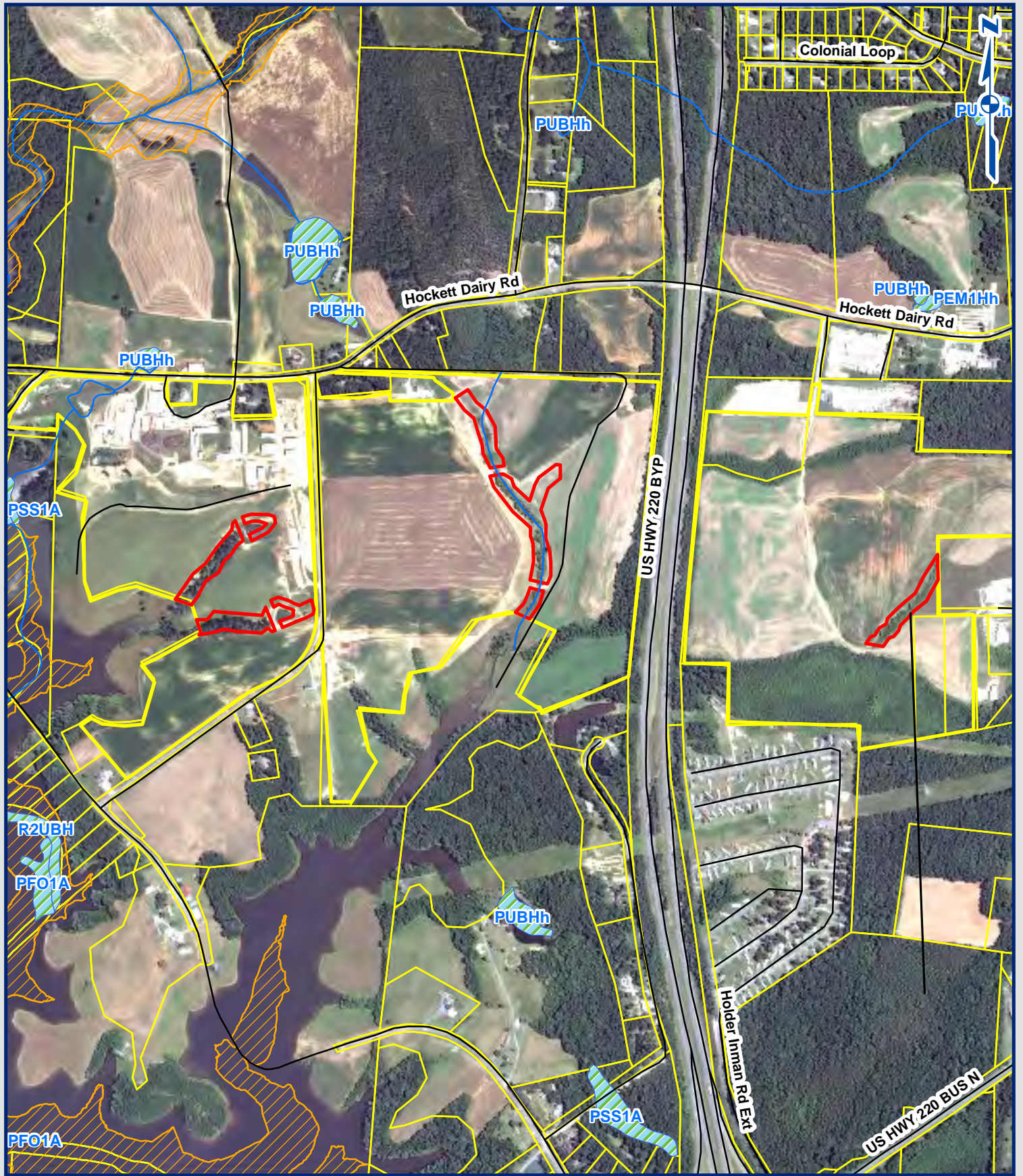
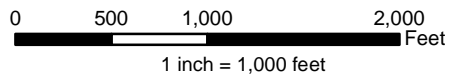







Figure 5.  
 FEMA Flood Insurance and NWI Map  
 Hockett Dairy Buffer Restoration Site



**Legend**

-  NWI Wetlands
-  Streams
-  FEMA Zone AE - Detailed 100yr. Floodplain
-  Hockett Dairy Farms Site
-  Target Parcels



## 2.6 Site Photographs



UT-2: Facing upstream showing cattle within the riparian buffer.



Pond 2: Farm pond at head of UT-2.



UT-3B: Above Pond 3.



UT-4C: Facing downstream.



UT-5A: Facing upstream.



UT-6: Facing downslope.



### 3.0 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 instruments (draft conservation easement plat and sample easement) are included are **Appendix A**.

**Table 1. Landowners in Site Protection Instrument**

Plat	Landowner	PIN	County	Site Protection Instrument	Deed Book & Page Number	Riparian Buffer Protected	Conservation Easement
1 of 1	Green Valley Farms, LLC	7.759E+09	Randolph	Easement	2233 @ 946	1.83	1.95
1 of 2	Hockett, Elwood S.	7.758E+09	Randolph	Easement	1950 @ 1519	4.53	5.44
2 of 2	Hockett, Elwood S.	7.758E+09	Randolph	Easement	1950 @ 1519	5.51	6.05
					Total acres	11.87	13.44

## 4.0 BASELINE INFORMATION

### 4.1 Protected Species

The US Fish and Wildlife Service (USFWS) database (updated 22 September 2010) lists two endangered species for Randolph County, North Carolina: Cape Fear shiner and Schweinitz's sunflower (**Table 1**). No protected species or potential habitat for protected species was observed during preliminary site evaluations.

In addition to the USFWS database, the NC Natural Heritage Program (NHP) GIS database was consulted to determine whether previously cataloged occurrences of protected species were mapped within one mile of the project site. Results from NHP indicated that there were no known occurrences within a one-mile radius of the project area. Based on initial site investigations, no impacts to federally protected species are anticipated as a result of the proposed project. The environmental screening phase of the project included USFWS coordination to confirm these findings (see Categorical Exclusion Form, **Appendix C**).

**Table 2. Federally Protected Species in Randolph County**

Common Name	Scientific name	Federal Status	Record Status
<b>Vertebrate:</b>			
American eel	<i>Anguilla rostrata</i>	FSC	Current
Cape Fear shiner	<i>Notropis mekistocholas</i>	E	Current
Carolina darter	<i>Etheostoma collis collis</i>	FSC	Obscure
Carolina redhorse	<i>Moxostoma</i> sp. 2	FSC	Current
<b>Invertebrate:</b>			
Atlantic pigtoe	<i>Fusconaia masoni</i>	FSC	Current
Brook floater	<i>Alasmidonta varicosa</i>	FSC	Current
Carolina creekshell	<i>Villosa vaughaniana</i>	FSC	Current
Savannah lilliput	<i>Toxolasma pullus</i>	FSC	Current
Yellow lampmussel	<i>Lampsilis cariosa</i>	FSC	Current
<b>Vascular Plant:</b>			
Georgia aster	<i>Symphyotrichum georgianum</i>	C	Current
Prairie birdsfoot-trefoil	<i>Lotus unifoliolatus</i> var. <i>helleri</i>	FSC	Current
Schweinitz's sunflower	<i>Helianthus schweinitzii</i>	E	Current
E = endangered. T = threatened. C = candidate. FSC = federal species of concern.		USFWS 09-22-2010 <a href="http://www.fws.gov/raleigh/">http://www.fws.gov/raleigh/</a> Accessed 02 February 2012	

Habitat may be improved or created for species that require riverine habitat by improving water quality, in-stream and near-stream forage and providing stable conditions not subject to regular maintenance or impacts due to livestock intrusion.

### 4.2 Cultural Resources

On February 3, 2011, the North Carolina State Historic Preservation Office (SHPO) website (<http://gis.ncdcr.gov/hpweb/>) database was reviewed to determine if any listed or potentially eligible historic or archeological resources in the proposed project area existed. This search did not reveal any occurrence within the project area. Approximately 1.0 mile west of the site, the Coltrane Mill Historic District (RD0031, RD0033) does occur. The Hockett Dairy Site project creates no threat or impact to this historic district. The environmental screening phase included SHPO coordination to confirm these findings.

### 4.3 Existing Conditions

Six unnamed tributaries to Randleman Lake and three farm ponds comprise the principle drainage features. The project's watershed is primarily used for agricultural production. Much of the site is currently used for dairy cows and calves or row crop production for dairy silage. Some tributaries have limited hardwood trees present, but lack significant ground cover. Cattle have direct access in forage areas, and are a source of ongoing erosion along the banks and within the adjacent buffer. The project area has been in agricultural use for several decades.

The riparian buffer is in poor condition throughout most of the project area and is devoid of trees or shrubs or has less than 100 trees per acre (TPA). Field counts of woody vegetation, where present, of stems greater than five inches dbh verified the absence of an adequate buffer. Saplings necessary for buffer regeneration were minimal or absent due to foraging and maintenance activities. Current buffer conditions demonstrate significant degradation with a loss of stabilizing vegetation because of continued cattle access, agricultural activities, and past land management actions. (Figure 6)

#### Stream Channels

The Hockett Dairy Buffer Mitigation Site is composed of six tributaries: UT-1, UT-2, UT-3, UT-4, UT-5, and UT-6. Three of the tributaries have farm ponds associated with them (Figure 7). These streams and ponds drain directly into Randleman Lake and abut the Randleman buffer, except for UT-6. The proposed buffer restoration is not located within FEMA mapped flood zones (Figure 5). There are no NWI mapped wetlands (Figure 5) within the proposed easement area. Photographs and NC DWQ Stream Identification Forms for the six stream reaches are included in Appendix C.

#### Unnamed Tributary 1

Unnamed Tributary 1 (UT-1) is an intermittent channel that drains directly to Randleman Lake. This tributary flows through an active pasture for 85 linear feet to the Randleman Buffer, the downstream limit. This tributary has a drainage area of approximately 17.6 acres. The existing buffer consists primarily of grassy pasture vegetation. No tree stems are present along this tributary. This channel is stable and exclusion of cattle will prevent future impacts.

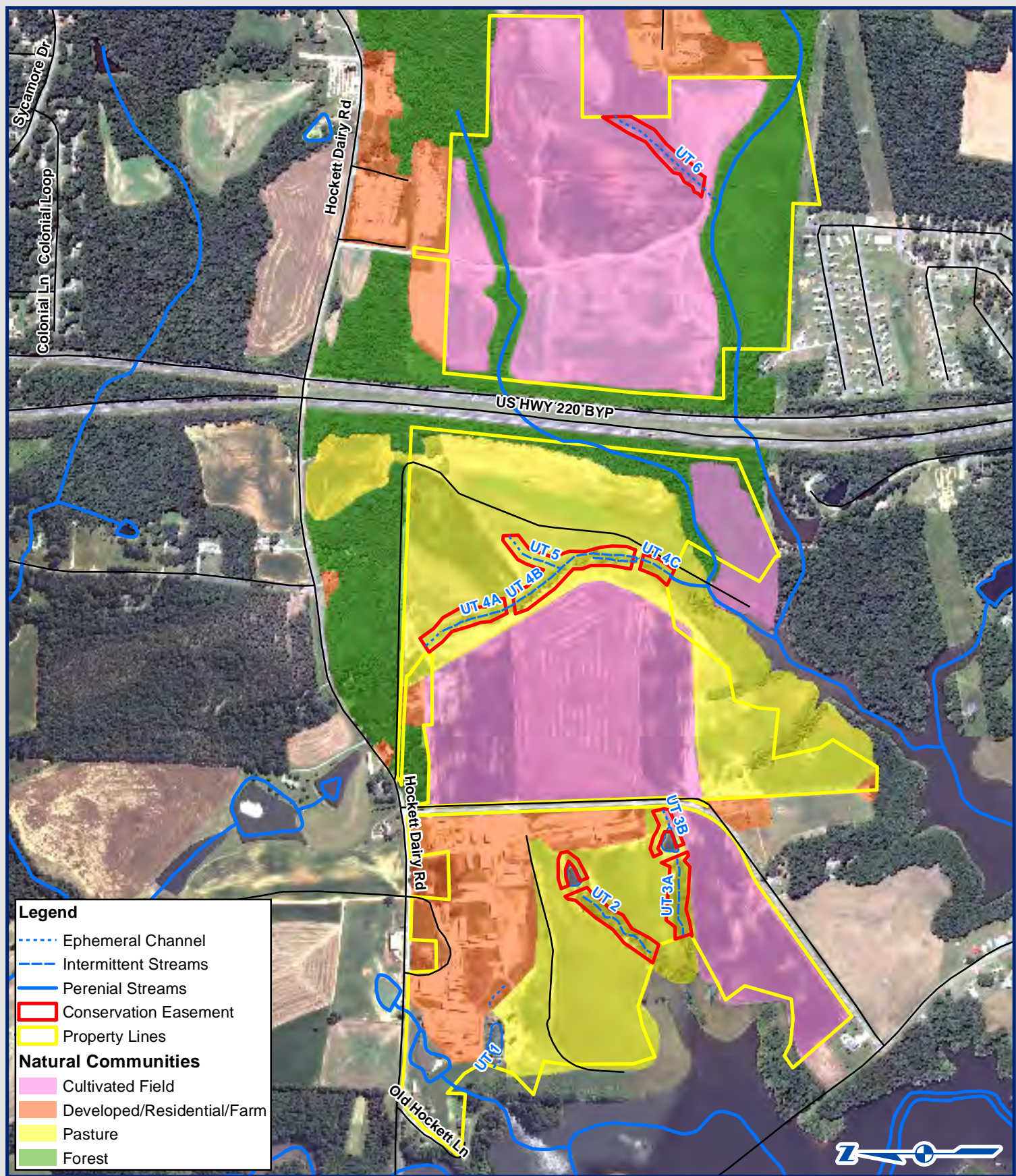
UT-1 has been impacted by agricultural practices resulting in sediment deposits in the upper reach. As a result, the channel is partially filled and lacks a defined bed and bank. Herbaceous wetland vegetation is also present in the channel bottom. The intermittent nature of this channel was indeterminate during the DWQ site visit due to sediment from grazing and stabilization activities. A NCDWQ site visit determined the channel, in its current state, is not subject to the Randleman Buffer Rules and not suitable for restoration. Additional documentation of the NCDWQ coordination is included in Appendix B. Buffer restoration on UT1 will not be used to generate credit due to the indeterminate nature of the channel and existing cattle operations constraints.

#### Farm Pond 1

Farm Pond 1 is located upstream of UT-1. This 0.23-acre pond is currently not used as a water source for cattle and is fenced. However, dairy operation and cattle feeding areas drain into the pond and there is no forested buffer. A limited number of shrubby stems are present along portions of the shoreline. The dam is unstable and the outlet appears to be inoperable. This has resulted in erosion on the downstream face of the dam. A cleared hill slope to the south of the pond will also be planted and fenced. Buffer restoration on Farm Pond 1 and the adjacent hill slope will not be used to generate credit due to constraints from existing cattle operations constraints and long term maintenance.

### **Unnamed Tributary 2**

This is an intermittent to perennial tributary to Randleman Lake. The channel is 733 linear feet and has a drainage area of approximately 19.4 acres. The existing buffer consists of a limited number of stems greater than five-inch dbh, with most stems greater than 16-inch dbh trees. A total stem count in the buffer found only 92 stems in 1.52 acres (60 TPA). The dominant trees consist of American sycamore (*Platanus occidentalis*), northern red oak



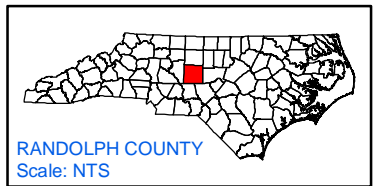
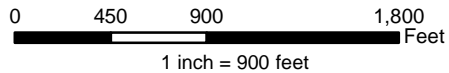
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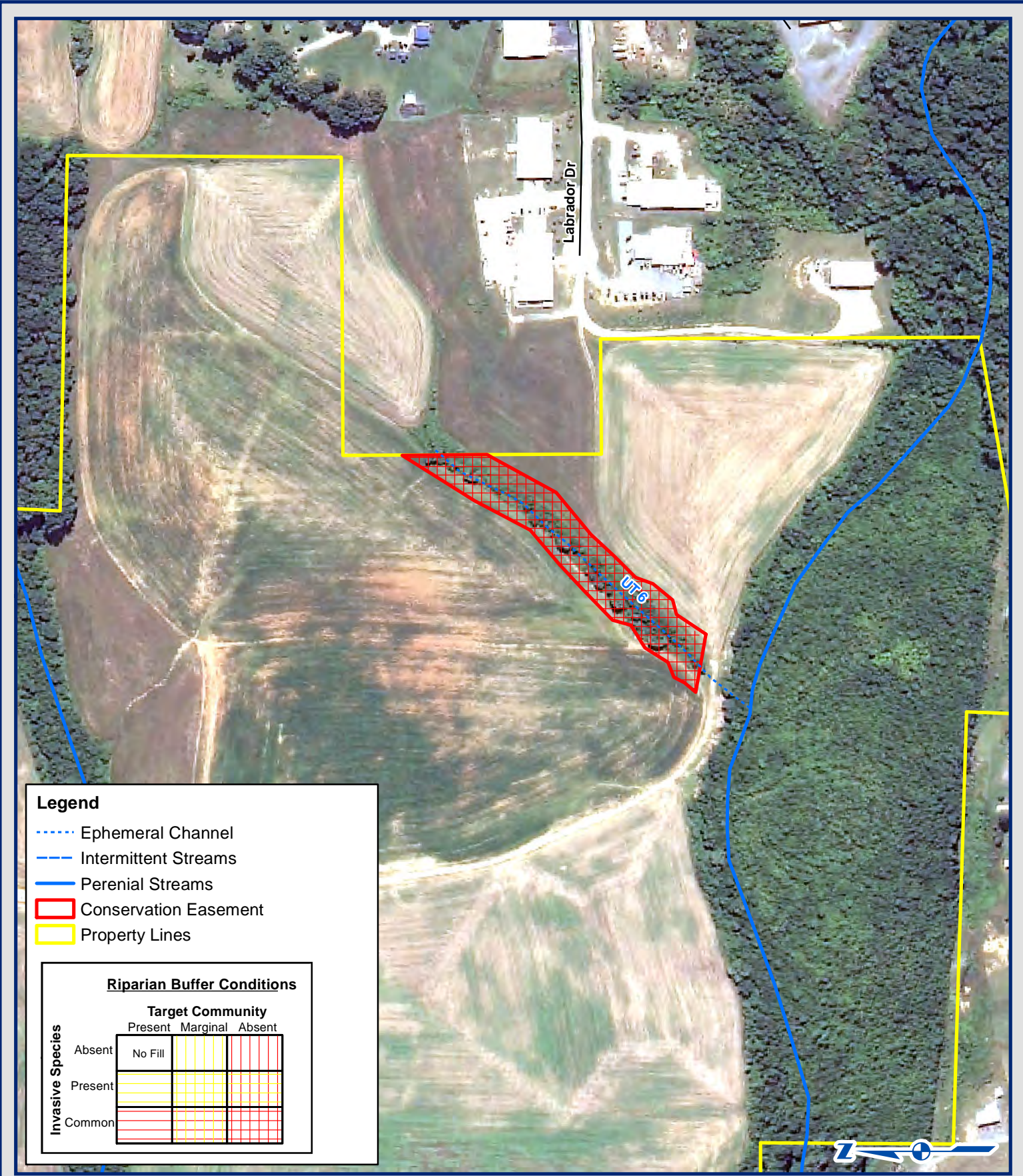
- ⋯ Ephemeral Channel
- - - Intermittent Streams
- Perennial Streams
- Conservation Easement
- Property Lines

**Natural Communities**

- Cultivated Field
- Developed/Residential/Farm
- Pasture
- Forest

Figure 6.  
Existing Natural Communities  
Hockett Dairy Buffer Restoration Site





**Legend**

- ..... Ephemeral Channel
- - - - Intermittent Streams
- Perennial Streams
- ▭ Conservation Easement
- ▭ Property Lines

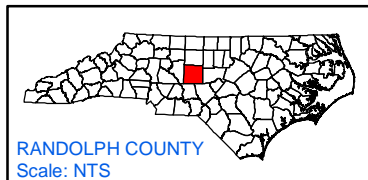
**Riparian Buffer Conditions**

		Target Community		
		Present	Marginal	Absent
Invasive Species	Absent	No Fill	▭	▭
	Present	▭	▭	▭
	Common	▭	▭	▭

**Figure 7a.**  
**Current Conditions Plan View**  
**Hockett Dairy Buffer Restoration Site**

0      150      300      600  
 Feet

1 inch = 300 feet



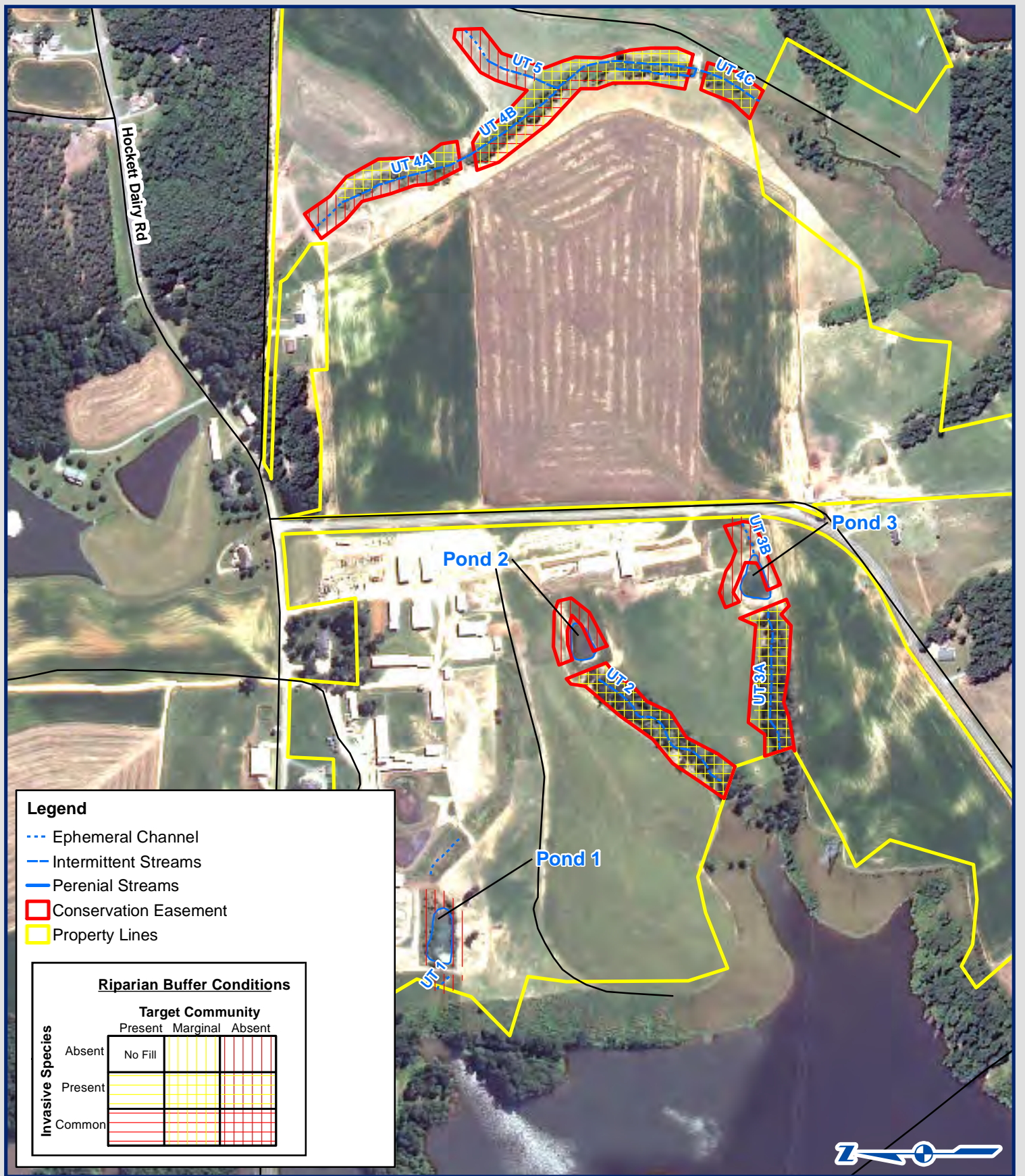
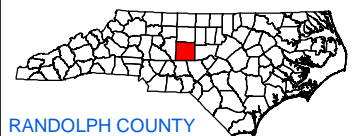


Figure 7b.  
Current Conditions Plan View  
Hockett Dairy Buffer Restoration Site

0 250 500 1,000  
Feet

1 inch = 500 feet



(*Quercus rubra*), red maple (*Acer rubrum*), and tulip poplar (*Liriodendron tulipifera*). A number of stems of tree of heaven (*Ailanthus altissima*) are also present. Shrubs and herbaceous vegetation are mostly absent because of ongoing cattle grazing. Seedlings necessary for canopy replacement are absent across most of the site. Near the upper end of the reach, a trash pile exists composed mostly of metal and tires from past dairy operations.

The stream had a moderate flow at the time of the site visit in December 2011. Substrate consists of gravel and sand with cobbles throughout. The stream is stable with minimal areas of localized erosion along the banks and adjacent buffer resulting from cattle impacts.

### **Farm Pond 2**

Located upstream of UT-2 is Farm Pond 2. This 0.28-acre pond is fenced and not regularly used as a water source for cattle. The buffer around this pond has limited vegetation that consists mainly of grasses and a few herbaceous weeds. Because of limited vegetation and regular maintenance, active surface erosion is present in areas around this pond, but no significant concentrated flows were observed. The dam has areas of erosion and a sub-standard outlet structure.

### **Unnamed Tributary 3**

This is an intermittent to perennial tributary to Randleman Lake. The channel originates at Stanton Farm Road (SR 2038) and flows 170 linear feet into Farm Pond 3 before ultimately flowing into Randleman Lake. The downstream channel is 647 linear feet with an approximate drainage area of 31.2 acres. The existing buffer consists of a limited number of stems at least five-inch dbh trees, with most stems greater than 16-inch dbh. Only 93 stems were found within the approximately 1.44 acre buffer (64 TPA). The dominant trees consist of American sycamore, red maple, southern red oak (*Quercus falcata*), tulip poplar, and white oak (*Quercus alba*). A number of stems of tree of heaven are also present. A seepage area on the left bank has resulted in some slope instability.

The stream had a moderate flow at the time of the site visit in December 2011. Substrate consists of gravel and sand with cobbles throughout. Exposed roots are visible along many sections of the channel. The stream is stable despite impacts from cattle creating moderate surface erosion along the banks and adjacent buffer. Upstream of Farm Pond 3, the tributary extends to a culvert outfall beneath Stanton Farm Road (SR 2038). This ephemeral channel is stable, but the area around this ditch is heavily impacted by cattle. Erosion is concentrated in areas where vegetation is limited or absent. The vegetation consists mainly of grasses and a few herbaceous weeds.

### **Farm Pond 3**

Farm Pond 3 is located upstream of UT-3. This 0.38-acre pond is currently used as a water source for cattle. The buffer around this pond has limited vegetation that consists mainly of grasses and a few herbaceous weeds. Exposed soil is dominant across much of this area. Because of limited vegetation and grazing cattle, surface erosion is present in many areas surrounding this pond, but small concentrated flows present can easily be corrected with site preparation prior to planting. The dam is unstable due to cattle access and a substandard outlet structure.

### **Unnamed Tributary 4**

This tributary consists of 1,720 linear feet of intermittent to perennial channel and 164 linear feet of ephemeral channel. This tributary has a drainage area of approximately 76.3 acres. The existing buffer has limited mature trees. Only 122 total tree stems larger than 5-inch dbh were found within the buffer (28 TPA). It flows into the Randleman buffer. The dominant trees consist of black willow (*Salix nigra*) with scattered American sycamore, eastern cottonwood (*Populus deltoides*), and red maple. There are minimal shrubs present and coverage is limited mostly to grasses, herbaceous weeds, and Japanese honeysuckle.

This tributary is divided into three distinct reaches, UT-4A, UT-4B, and UT-4C. The channel is stable along the downstream reach UT-4A where there is an existing narrow buffer. Limited tree stems are present.

Hockett Dairy Site Buffer Mitigation Plan

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The middle reach, UT-4B, lies within a relatively steeper valley segment that constricts the channel. A narrow strip along the channel is fenced. Within this reach, a small tributary side parallels the primary channel, approximately 30 feet apart. One within the narrow fenced buffer and the second lies parallel outside the fence. The side channel outside the fence most likely formed along a cattle path and is fed by hillslope seepages and runoff. Despite impacts from cattle, the channel outside the fence is stable with large rocks and boulders exposed as part of the channel substrate. The limited areas of instability are primarily due to lack of vegetation.

The upper reach, UT-4C, is an ephemeral channel. The channel is 164 linear feet and originates at a culvert beneath a farm crossing. Two hillslope seeps also contribute to the channel hydrology through small tributary channels. This channel is stable and within a natural valley. It receives runoff from a small watershed that includes the adjacent dairy feeding operation and a small wooded area beyond the property boundary. The buffer around this channel has vegetation limited to common rush (*Juncus effusus*), pasture grasses and a few herbaceous weeds and has been heavily impacted by cattle. Although this channel has a narrow fenced buffer on both sides, the fence was damaged and cattle have entered and degraded the buffer. Erosion is primarily limited to the crossing and the portions of the buffer having limited vegetation.

**Unnamed Tributary 5**

This is an intermittent to ephemeral tributary to UT-4. It receives runoff from a small watershed of approximately 9.1 acres entirely within the pasture. The lower intermittent reach, UT-5A, is 318 linear feet and the upper ephemeral reach, UT-5B, is 148 linear feet. The existing buffer is located in active pasture. Vegetation is limited to grasses and herbaceous weeds. No trees or shrubs are present.

UT-5A is stable despite impacts from cattle. Because of the limited vegetation and grazing pressure, UT-5B originates at a small headcut within the field and has become incised. Exposed bedrock grade control separates the two reaches, where a small seepage wetland is located. The channel is not fenced. The existing buffer vegetation around is limited to grasses and a few herbaceous weeds. It is heavily impacted by cattle with erosion primarily limited to the incised stream banks that lack vegetative cover.

**Unnamed Tributary 6**

This ephemeral channel (UT-6) flows into an unnamed tributary to Randleman Lake. The channel is approximately 797 linear feet. This tributary has a drainage area of 34.4 acres. This channel originates within a natural valley feature at a headcut on the edge of a cultivated field. The watershed for this channel is primarily within the cultivated field and a forested area along the ridge.

The woody vegetation along this channel consists of scattered trees, small saplings, and occasional shrubs. Less than 100 tree stems larger than 5-inch dbh were found within the buffer. Dominant trees include a mix of American sycamore, black willow, black walnut (*Juglans nigra*), and red maple. Other species found include winged sumac (*Rhus coppalina*), blackberry (*Rubus argutus*), common hackberry (*Celtis occidentalis*), green briar (*Smilax* sp.), and Japanese honeysuckle (*Lonicera japonica*). Sedimentation and fertilizer from the cultivated fields are the primary threat to water quality.

**Table 3. Project Information**

Project Name	Hockett Dairy Buffer Mitigation Site
County	Randolph
Project Area (acres)	13.44
Project Coordinates (latitude and longitude)	35° 53' 55.219" N, 79° 49' 37.381"W

**Table 4. Project Watershed Summary Information**

Physiographic Province	Piedmont Physiographic Province	
River Basin	Cape Fear River Basin	
USGS Hydrologic Unit 8-digit	03030003	
USGS Hydrologic Unit 14-digit	03030003010070	
DWQ Sub-basin	03-06-08	
Project Drainage Area (acres)	Reach UT1 17.6 acres Reach UT2 19.4 acres Reach UT3 31.2 acres Reach UT4 76.3 acres Reach UT5 9.1 acres Reach UT6 34.4 acres	
Project Drainage Area Percentage of Impervious Area	0.6%	
CGIA Land Use Classification	2.5	Residential
	144.3	Cropland and Pasture
	12.6	Other Agricultural Land
	19.1	Passively Managed Forest Stands

**Table 5. Reach Summary Information**

Parameters	Reach UT2	Reach UT3	Reach UT4	Reach UT5	Reach UT6
Length of reach (linear feet)	733	817	1884	466	797
Valley Classification	X	X	X	X	X
Drainage area (acres)	19.4	31.2	76.3	9.1	34.4
NCDWQ stream identification score	29	27.5	19-25.5	21	13
NCDWQ Water Quality Classification	WS-IV;CA	WS-IV;CA	WS-IV;CA	WS-IV;CA	WS-IV;CA
Morphological Description (stream type)	E	E	G	G	G
Evolutionary trend	Stable	Stable	Stable	Stable	Stable
Underlying mapped soils	Wynott-Enon complex WvC2	Mecklenburg CL MeC2,	Mecklenburg CL MeC2, Wynott-Enon complex WvC2	Mecklenburg CL MeC2	Wynott-Enon complex WvC2
Drainage class	well	well	well	well	well
Soil Hydric status	Non-hydric	Non-hydric	Non-hydric	Non-hydric	Non-hydric
Slope	0.04%	0.03%	0.02%	0.04%	0.02%
FEMA classification	Zone AE	Zone AE	Zone AE	Zone AE	Zone AE
Native vegetation community	Pasture	Pasture	Pasture	Pasture	Pasture
Percent composition of exotic invasive vegetation	10%	10%	15%	5%	20%

#### 4.4 Regulatory Considerations

**Table 6. Regulatory Considerations**

<b>Regulation</b>	<b>Applicable?</b>	<b>Resolved?</b>	<b>Supporting Documentation</b>
Waters of the United States - Section 404	Yes	Yes	see Appendix C
Waters of the United States - Section 401	Yes	Yes	see Appendix C
Endangered Species Act	Yes	Yes	see Appendix C
Historic Preservation Act	Yes	Yes	see Appendix C
Coastal Zone Management Act (CZMA)/Coastal Area Management Act (CAMA)	No	N/A	N/A
FEMA Floodplain Compliance	No	N/A	N/A
Essential Fisheries Habitat	No	N/A	N/A

## 5.0 DETERMINATION OF CREDITS

Mitigation credits presented in these tables 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. Mitigation Credits**

Hockett Dairy, Randolph County EEP Project ID Number 003993 – EEP Site 95013									
Mitigation Credits									
	Stream		Riparian Wetland		Non-riparian Wetland		Buffer	Nitrogen Nutrient Offset	Phosphorous Nutrient Offset
Type	N/A	N/A	N/A	N/A	N/A	N/A	Restoration	N/A	N/A
Totals	N/A	N/A	N/A	N/A	N/A	N/A	517,211	N/A	N/A
Project Components									
Reach ID	Stationing/ Location	Existing Footage (LF)	Approach (PI, PII, etc.)	Restoration -or- Restoration Equivalent	Restoration Area (acres)	Mitigation Ratio			
Reach UT2	N/A	733	N/A	Buffer Restoration	1.72	1:1			
Reach UT3	N/A	817	N/A	Buffer Restoration	1.85	1:1			
Reach UT4	N/A	1884	N/A	Buffer Restoration	4.62	1:1			
Reach UT5	N/A	466	N/A	Buffer Restoration	0.89	1:1			
Reach UT6	N/A	797	N/A	Buffer Restoration	1.84	1:1			
Pond 2	N/A	378*	N/A	Buffer Restoration	0.52	1:1			
Pond 3	N/A	338*	N/A	Buffer Restoration	0.38	1:1			
					Total	11.82			

\*perimeter

Component Summation						
Restoration Level	Stream (linear feet)	Riparian Wetland		Non-Riparian Wetland (acres)	Buffer (square feet)	Upland (acres)
		Riverine	Non-Riverine			
Restoration	N/A	N/A	N/A	N/A	513,572	N/A
Enhancement	N/A	N/A	N/A	N/A	N/A	N/A
Enhancement I	N/A	N/A	N/A	N/A	N/A	N/A
Enhancement II	N/A	N/A	N/A	N/A	N/A	N/A
Creation	N/A	N/A	N/A	N/A	N/A	N/A
Preservation	N/A	N/A	N/A	N/A	N/A	N/A
High Quality Preservation	N/A	N/A	N/A	N/A	N/A	N/A
BMP Elements						
Element	Location	Purpose/Function		Notes		
N/A	N/A	N/A		N/A		

## 6.0 CREDIT RELEASE SCHEDULE

**Table 8. Credit Release Schedule**

Task	Project Milestone	Percent Credit Available for Sale
1	Bank Parcel Development Package Approved by DWQ, and Conservation Easement or Restrictive Covenants Recorded	20
2	Mitigation Site Earthwork, Planting and Installation of Monitoring Devices Completed	20
3	Approval of As-Built Report and Monitoring Bond Purchased	10
4	Submit Monitoring Report #1 to DWQ (meets success criteria)	10
5	Submit Monitoring Report #2 to DWQ (meets success criteria)	10
6	Submit Monitoring Report #3 to DWQ (meets success criteria)	10
7	Submit Monitoring Report #4 to DWQ (meets success criteria)	10
8	Submit Monitoring Report #5 to DWQ (meets success criteria)	10
	Total	100

The above schedule applies only to the extent acceptable survival and growth of planted vegetation as described and documented under the success criteria in the monitoring section of the Monitoring Plans. The Monitoring Plans will be amended to specify a vegetation success rate of 320 trees per acre after five years within the stream buffers for which riparian buffer mitigation credit is specified. Monitoring of the riparian buffer restoration and enhancement shall be based on the **CVS-EEP Protocol for Recording Vegetation Level 1-2 Plot Sampling Only Version 4.0.**, as indicated in the Monitoring Plans.

## 7.0 MITIGATION WORK PLAN

The Hockett Dairy Buffer Mitigation Site offers an opportunity for high quality buffer restoration. Proposed mitigation for the Hockett Dairy Site involves buffering six channels and three farm ponds that flow directly and indirectly into Randleman Lake (**Figure 8**). Buffer restoration is proposed along all six channels and surrounding the three ponds. Three of the five existing farm access crossings will be upgraded to correct culvert size and stabilized to prevent erosion. The three embankment pond dams and spillways will be stabilized following guidance found in Ponds-Planning, Design, Construction (USDA-NRCS, 1997). The dam repairs and culvert crossing upgrades may require 404/401 permitting and certification. Both activities are authorized by 404 Nationwide Permit 3 - Maintenance and 401 General Water Quality Certification 3883 - Maintenance. No additional impacts to jurisdictional streams or wetlands are expected from the proposed maintenance activities and no preconstruction notification is required. The dam repairs and culvert upgrades are also exempt from the Randleman Buffer rules due to no additional impacts resulting from the maintenance activities.

Buffer restoration is proposed on six unnamed tributaries to improve water quality and to protect these waters in perpetuity. Buffer restoration will typically include removal of invasive species and debris, and planting appropriate bottomland hardwood species. Stabilizing grade control structures and slope stabilization details are in Appendix D. Livestock exclusion fencing will be installed around five of the six channels, around the pond buffers, and at all upgraded crossings.

### 7.1 Buffer Restoration Approach

Buffer restoration efforts along the tributaries to Randleman Lake will be accomplished through the planting, establishment, and protection of a hardwood forest community. The result will be a restored riparian habitat that functions to filter nutrient and sediment inputs from the surrounding uplands. This project will provide 10.92 acres of stream buffer restoration and 0.90 acres of buffer restoration around two farm ponds; resulting in a total of 11.82 acres of buffer restoration in the Randleman Lake watershed. The Hockett Dairy Site permanent

conservation easement will extend a minimum of 50 feet from the top of bank on all outside bends. The conceptual plan is provided in **Figure 8**. Specific restoration treatments for each reach are described below.

The buffer restoration approach will begin with removal of existing invasive species and debris, stabilization and implementation of dispersal techniques where surface flows have become concentrated, exclusion of cattle through fencing the buffer, and planting of appropriate hardwood species. Erosion matting and other stabilization structures will be utilized where necessary. All cattle will be fenced out of the proposed buffer restoration easement. Fencing will be built to NC DOT specifications with wooden posts and bracing. Woven wire fencing with a single strand of barbed wire across the top will be used on all portions of the easement where cattle exclusion is necessary. Proposed cattle crossings will be upgraded with the appropriate size (CMP) corrugated metal pipe. Cattle crossings and farm pond dams will be gated at each end to provide limited cattle access to these areas. There will be no cattle access to buffered streams or ponds. Farm pond dams will be stabilized and upgraded with riser structure outlets. All dam construction will follow guidance document USDA-NRCS Agriculture Handbook 590. Typical construction details are show in Appendix D. The dams and other crossings will be excluded from the conservation easement and fenced to prevent livestock access to any part of the stream channels, buffer, and ponds.

**7.2 Target Riparian Plant Community**

The riparian buffer restoration target natural community will be a Piedmont Alluvial Forest as described in Schafale and Weakley (1990). This type of community is common throughout Piedmont drainages and when established will provide numerous water quality and ecological benefits.

**7.3 Vegetation Planting Plan**

The buffer restoration approach will begin with removal of existing exotic species where present, stabilization and implementation of dispersal techniques where surface flows have become concentrated, exclusion of cattle through fencing the buffer, and planting of appropriate hardwood species. Sub-soil ripping will be conducted in compacted areas where it can be accomplished with minimal damage to existing tree roots. In areas not ripped, planting will be accomplished through augering/boring planting holes to accommodate roots.

Exotic invasive species will be removed and controlled with an appropriate herbicide. The application of herbicides will be specifically targeted to invasive species control. No grading beyond culvert replacement and crossing stabilization is planned. No fertilization will be done on site.

**Table 9** and **Appendix D** list proposed bottomland tree seedlings to be planted at the site. A riparian seed mix will be utilized to provide a rapid herbaceous cover and stabilization of the site, especially at culvert/crossings and in existing cultivated areas. All disturbed areas will require a temporary seed mix.

**Table 9. Proposed Tree Species**

<b>Common Name</b>	<b>Scientific Name</b>
River Birch	<i>Betula nigra</i>
Eastern Redbud	<i>Cercis canadensis</i>
Green Ash	<i>Fraxinus pennsylvanica</i>
American Sycamore	<i>Platanus occidentalis</i>
Swamp Chestnut Oak	<i>Quercus michauxii</i>
Water Oak	<i>Quercus nigra</i>
Northern Red Oak	<i>Quercus rubra</i>

## **7.4 Design Parameters.**

The mitigation approach for the channel buffers that comprise the Hockett Dairy Site are described in more detail below.

### **Unnamed Tributary 1**

The intermittent nature of this channel was indeterminate during the DWQ site visit due to sediment from cattle access and grading activities. The NCDWQ determined the channel, in its current state, is not subject to the Randleman Buffer Rules and not suitable for restoration. Additional documentation of the NCDWQ coordination is included in Appendix B. This area will not be included within the conservation easement and no buffer credit is proposed. The UT1 channel will be stabilized through cattle exclusion and establishment of a riparian buffer. There is no buffer credit proposed along this channel and it will not be included in the conservation easement.

### **Farm Pond 1**

The area is excluded from the buffer credit due to its determined lack of a suitable connection through UT 1 and will be excluded from the conservation easement. UT 1 will be stabilized, fenced, and planted. Constraints of the dairy operation prevent a complete 50-foot buffer on the pond due to a fence that cannot be moved. The pond dam and spillway will be upgraded and stabilized following USDA- NRCS Agriculture Handbook 590 guidance. To the south of Farm Pond 1, an additional area is deforested and unstable. This area will be a supplemental planting in excess of 50-feet and fenced to exclude cattle (**Figure 8**). The proposed supplemental planting around Pond 1 is 0.50 acres. No buffer credit is proposed for this supplemental planting area and it will not be included in the conservation easement.

### **Unnamed Tributary 2**

The exclusion of cattle and planting of supplemental vegetation will stabilize the buffer and stream banks. Exotic invasive species will be removed and controlled. Large trash items in the upper portion of the reach will also be removed. These efforts will allow buffer vegetation to spread and fill in bare areas along the channel and in the buffer, stabilizing the stream and buffer from continued erosion. The proposed buffer along this tributary is 1.72 acres.

### **Farm Pond 2**

Permanent exclusion of cattle and the establishment of a buffer will stabilize this area. An alternate water source will be constructed nearby to eliminate the need for watering cattle from this pond. The Farm Pond 2 dam is not included in the proposed easement to allow for maintenance of the dam, outlet, and spillway facilities. The pond dam and spillway will be upgraded and stabilized following USDA guidance. The proposed pond buffer is 0.52 acres. The footprint of the pond is excluded from the easement (see RFP #16-003564, Addendum #3, answer to Question #15).

### **Unnamed Tributary 3**

The exclusion of cattle, widening of the buffer, and removal of exotic species before planting of woody vegetation will allow buffer vegetation to spread and fill in bare areas along the channel and in the surrounding buffer, stabilizing the stream and buffer from continued erosion. A point of concentrated flow in the left buffer will be stabilized with a combination of re-grading contours and the use of natural materials to create a stable slope. UT-3 will include 1.85 acres of buffer restoration upstream and downstream of Farm Pond 3. The exclusion of cattle and removal of exotic species before planting of woody vegetation will allow buffer vegetation to spread and fill in bare areas along the channel and in the buffer, stabilizing the stream and buffer from continued erosion.

### **Farm Pond 3**

Exclusion of cattle and the establishment of a permanent 50-foot buffer will stabilize this area. The proposed pond buffer is 0.38 acres. An alternate water source will be constructed nearby to eliminate the need for watering cattle

from this pond. The Farm Pond 3 dam is excluded from the proposed easement to provide a crossing for cattle and machinery and allow for maintenance of the dam, outlet, and spillway facilities. The pond dam and spillway will be upgraded and stabilized following USDA guidance. The footprint of the pond is excluded from the easement (see RFP #16-003564, Addendum #3, answer to Question #15).

#### **Unnamed Tributary 4**

To provide adequate area for stabilization of both channels a buffer extending 50 feet from the top outside bank from each channel is proposed. The exclusion of cattle, widening of the buffer, and removal of exotic species before planting of woody vegetation will allow buffer vegetation to spread and fill in bare areas along the channel and in the surrounding buffer, stabilizing the stream and buffer from continued erosion. UT4 will include 4.62 acres of buffer restoration. The buffer restoration area includes narrow riparian areas between the small contributing channels originating from hillslope seeps. Within the narrow fenced area, the exclusion of cattle has allowed good herbaceous vegetative coverage to establish. The exclusion of cattle, widening of the buffer, and removal of exotic species before planting of woody vegetation will allow buffer vegetation to spread and fill in bare areas along the channel. The buffer will stabilize the stream from continued erosion.

#### **Unnamed Tributary 5**

The exclusion of cattle will allow native and planted buffer vegetation to spread along the channel and within the surrounding buffer, quickly stabilizing the stream and surrounding buffer. This channel is stable, but to ensure grade control, log grade-control structure will be installed at a nick point at the upper limit of the channel. A typical detail is found in Appendix D. UT-5 will include 0.89 acres of buffer restoration.

#### **Unnamed Tributary 6**

UT-6 will be planted with a proposed buffer of 1.84 acres. This channel is stable, but to ensure grade control, a log grade-control structure will be installed at a nick point at the upper limit of the channel. No livestock fencing is required around UT-6.



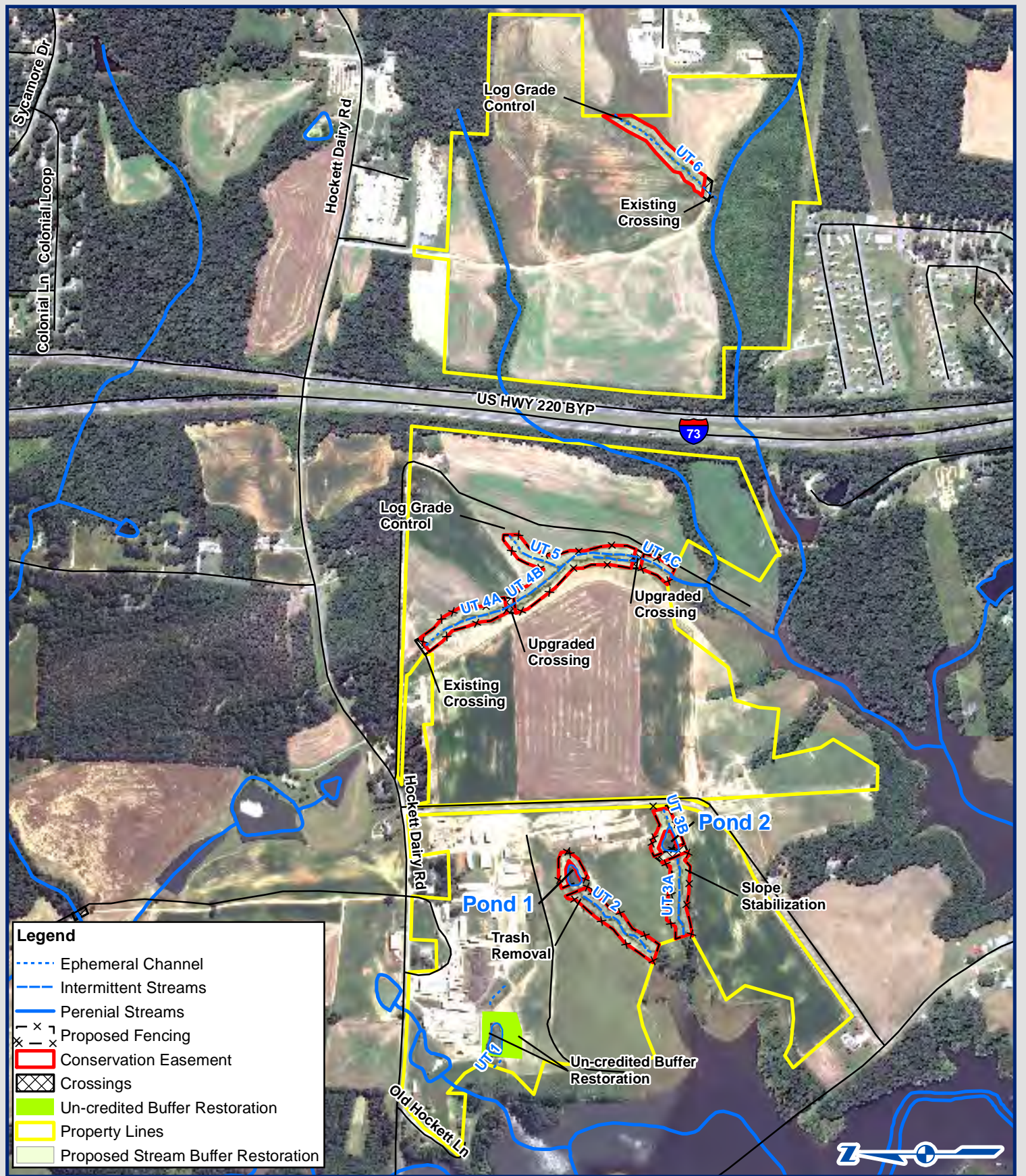
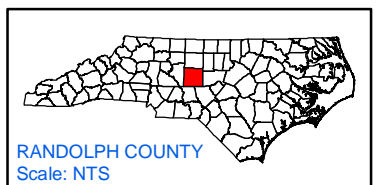
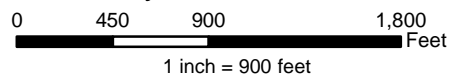


Figure 8.  
 Conceptual Design  
 Hockett Dairy Buffer Restoration Site



## 8.0 MAINTENANCE PLAN

The site will be monitored on a regular basis and a physical inspection of the site will be conducted a minimum of once per year throughout the post-construction monitoring period until performance standards are met. These site inspections will 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 following:

**Table 10. Proposed Maintenance Schedule**

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 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.
Road Crossing	Road crossings within the site may be maintained only as allowed by Conservation Easement or existing easement, deed restrictions, rights of way, or corridor agreements.

## 9.0 PERFORMANCE STANDARDS

### Vegetative Success Criteria

The measure of vegetative success for the site will be the survival of at least 320 5-year old planted trees per acre at the end of year five of the monitoring period.

Invasive and noxious species will be controlled such that none become dominant or alter the desired community structure of the site. If necessary, EBX will develop a species-specific control plan.

### Vegetative Photo Reference Stations

Photographs will be used to document visually restoration success. After construction has taken place, reference photo stations will be marked with wooden stakes. Reference stations will be photographed immediately following planting and continued annually for at least five years following construction. Photographers will make every effort to maintain consistently the same area in each photo over time. Photographs will be used to evaluate subjectively vegetation establishment. A series of photos over time should indicate successional maturation of riparian vegetation.

### Method of Reporting Success Criteria

A baseline report and as-built drawings documenting buffer restoration activities will be developed within 60 days of the planting completion on the mitigation site. The report will include all information required by NCEEP mitigation plan guidelines including photographs, sampling plot locations, and a description of initial species composition by community type. The report will also include a list of the species planted and the associated

densities. Baseline vegetation monitoring will follow CVS-NCEEP Protocol for Recording Vegetation Version 4.0. Level 1 and Level 2 monitoring will be conducted. Baseline report will follow Baseline Monitoring Report Template and Guidance version 2.0 (10/14/10).

The monitoring program will be implemented to document system development and progress toward achieving the success criteria. The restored buffer vegetation will be assessed to determine the success of the mitigation. The monitoring program will be undertaken for five years or until the final success criteria are achieved, whichever is longer.

Monitoring reports will be prepared in the fall of each year of monitoring and submitted to NCEEP. The monitoring reports will include all information and be in the format required by NCEEP in Version 2.0 of the NCEEP Monitoring Report Template.

### **Photo Reference Stations**

Photographs will be used to document visually restoration success. Reference stations will be photographed immediately following planting and continued for at least five years following construction. Reference photos will be taken once a year. After construction has taken place, reference stations will be marked with wooden stakes. Photographers should make every effort to maintain consistently the same area in each photo over time.

### **9.1 Vegetative Monitoring**

The vegetative success criteria are defined in Section 8.0. In order to determine if the success criteria are achieved and the planted areas are developing toward the target community, NCEEP-CVS Protocol for Recording Vegetation Version 4.0 will be utilized. The vegetation monitoring will include Level I and Level II plots distributed across the planted area. An interim vegetation monitoring will occur in spring after leaf-out has occurred. The CVS monitoring will be conducted toward the end of the growing season. Individual plot data for will be provided to NCEEP and CVS following NCEEP-CVS guidance. Visual vegetation monitoring will be performed as required in the EEP monitoring report template.

### **9.2 Remedial Actions**

In the event that the site or a specific component of the site fails to achieve the defined success criteria, EBX will develop necessary adaptive management plans and/or implement appropriate remedial actions for the site in coordination with NCEEP and the review agencies. Remedial action required will be designed to achieve the success criteria specified previously, and will include a work schedule and monitoring criteria that will take into account physical and climatic conditions.

## **10.0 MONITORING REQUIREMENTS**

Annual monitoring data will be reported using the EEP monitoring template. The monitoring report shall provide a project data chronology that will facilitate an understanding of project status and trends, population of EEP databases for analysis, research purposes, and assist in decision making regarding project closeout.

**Table 11. Annual Monitoring Requirements**

Required	Parameter	Quantity	Frequency	Notes
X	Vegetation	12 Plots Located randomly across the project area	Annual	Vegetation will be monitored using the Carolina Vegetation Survey (CVS) protocols
X	Exotic and nuisance vegetation	N/A	Annual	Exotic vegetation will be evaluated and spot treatment applied as needed
X	Project boundary	N/A	Semi-annual	Locations of fence damage, vegetation damage, boundary encroachments, etc. will be mapped

**11.0 LONG-TERM MANAGEMENT PLAN**

Upon approval for closeout by the Interagency Review Team (IRT) the site will be transferred to the State of North Carolina (State). The State 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.

**12.0 ADAPTIVE MANAGEMENT PLAN**

Upon completion of site construction, post-construction monitoring protocols previously defined in this document will be implemented. 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, EEP will be notified of the need to develop a Plan of Corrective Action.

**13.0 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 U.S. Army Corps of Engineers Wilmington District with a formal commitment to fund projects to satisfy mitigation requirements assumed by EEP. This commitment provides financial assurance for all mitigation projects implemented by the program.

## 14.0 REFERENCES

- Faber-Langendoen, D., Rocchio, J., Schafale, M., Nordman, C., Pyne, M., Teague, J., Foti, T., Comer, P. (2006), *Ecological Integrity Assessment and Performance Measures for Wetland Mitigation*. NatureServe, Arlington, Virginia.
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**Appendix A – Site Protection Instrument(s)**

Draft Conservation Easement/Deed Restriction

**STATE OF NORTH CAROLINA**

**CONSERVATION EASEMENT  
PROVIDED PURSUANT TO  
FULL DELIVERY  
MITIGATION CONTRACT**

\_\_\_\_\_ COUNTY

**SPO File Number**

Prepared by: Office of the Attorney General  
Property Control Section  
Return to: NC Department of Administration  
State Property Office  
1321 Mail Service Center  
Raleigh, NC 27699-1321

**THIS CONSERVATION EASEMENT DEED**, made this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_, by \_\_\_\_\_ *Landowner name goes here*, (“**Grantor**”), whose mailing address is \_\_\_\_\_ *Landowner address goes here*, to the State of North Carolina, (“**Grantee**”), whose mailing address is State of North Carolina, Department of Administration, State Property Office, 1321 Mail Service Center, Raleigh, NC 27699-1321. The designations of Grantor and Grantee as used herein shall include said parties, their heirs, successors, and assigns, and shall include singular, plural, masculine, feminine, or neuter as required by context.

**WITNESSETH:**

**WHEREAS**, pursuant to the provisions of N.C. Gen. Stat. § 143-214.8 et seq., the State of North Carolina has established the Ecosystem Enhancement Program (formerly known as the Wetlands Restoration Program) within the Department of Environment and Natural Resources for the purposes of acquiring, maintaining, restoring, enhancing, creating and preserving wetland and riparian resources that contribute to the protection and improvement of water quality, flood prevention, fisheries, aquatic habitat, wildlife habitat, and recreational opportunities; and

**WHEREAS**, this Conservation Easement from Grantor to Grantee has been negotiated, arranged and provided for as a condition of a full delivery contract between ( insert name and address of full delivery contract provider ) and the North Carolina Department of Environment and Natural Resources, to provide stream, wetland and/or buffer mitigation pursuant to the North Carolina Department of Environment and Natural Resources Purchase and Services Contract Number \_\_\_\_\_.

**WHEREAS**, The State of North Carolina is qualified to be the Grantee of a Conservation Easement pursuant to N.C. Gen. Stat. § 121-35; and

**WHEREAS**, the Department of Environment and Natural Resources, the North Carolina Department of Transportation and the United States Army Corps of Engineers, Wilmington District entered into a Memorandum of Agreement, (MOA) duly executed by all parties in Greensboro, NC on July 22, 2003, which recognizes that the Ecosystem Enhancement Program is to provide for compensatory mitigation by effective protection of the land, water and natural resources of the State by restoring, enhancing and preserving ecosystem functions; and

**WHEREAS**, the acceptance of this instrument for and on behalf of the State of North Carolina was granted to the Department of Administration by resolution as approved by the Governor and Council of State adopted at a meeting held in the City of Raleigh, North Carolina, on the 8<sup>th</sup> day of February 2000; and

**WHEREAS**, the Ecosystem Enhancement Program in the Department of Environment and Natural Resources, which has been delegated the authority authorized by the Governor and Council of State to the Department of Administration, has approved acceptance of this instrument; and

**WHEREAS**, Grantor owns in fee simple certain real property situated, lying, and being in \_\_\_\_\_ Township, \_\_\_\_\_ County, North Carolina (the "**Property**"), and being more particularly described as that certain parcel of land containing approximately \_\_\_\_\_ acres and being conveyed to the Grantor by deed as recorded in **Deed Book** \_\_\_\_\_ **at Page** \_\_\_\_\_ of the \_\_\_\_\_ County Registry, North Carolina; and

**WHEREAS**, Grantor is willing to grant a Conservation Easement over the herein described areas of the Property, thereby restricting and limiting the use of the included areas of the Property to the terms and conditions and purposes hereinafter set forth, and Grantee is willing to accept such Conservation Easement. This Conservation Easement shall be for the protection and benefit of (*if known, insert name of stream, branch, river or waterway here*).

**NOW, THEREFORE**, in consideration of the mutual covenants, terms, conditions, and restrictions hereinafter set forth, Grantor unconditionally and irrevocably hereby grants and conveys unto Grantee, its successors and assigns, forever and in perpetuity, a Conservation Easement along with a general Right of Access.

The Easement Area consists of the following:

Tracts Number \_\_\_\_\_ containing a total of \_\_\_\_\_ **acres** as shown on the plats of survey entitled "Final Plat, Conservation Easement for North Carolina Ecosystem Enhancement Program, Project Name: \_\_\_\_\_ Creek, SPO File No. \_\_\_\_\_, EEP Site No. \_\_\_\_\_, Property of \_\_\_\_\_," dated \_\_\_\_\_, 2011 by *name of surveyor*, PLS Number \_\_\_\_\_ and recorded in the \_\_\_\_\_ County, North Carolina Register of Deeds at **Plat Book** \_\_\_\_\_ **Pages** \_\_\_\_\_.



See attached “**Exhibit A**”, Legal Description of area of the Property hereinafter referred to as the “Easement Area”

The purposes of this Conservation Easement are to maintain, restore, enhance, construct, create and preserve wetland and/or riparian resources in the Easement Area that contribute to the protection and improvement of water quality, flood prevention, fisheries, aquatic habitat, wildlife habitat, and recreational opportunities; to maintain permanently the Easement Area in its natural condition, consistent with these purposes; and to prevent any use of the Easement Area that will significantly impair or interfere with these purposes. To achieve these purposes, the following conditions and restrictions are set forth:

### **I. DURATION OF EASEMENT**

Pursuant to law, including the above referenced statutes, this Conservation Easement and Right of Access shall be perpetual and it shall run with, and be a continuing restriction upon the use of, the Property, and it shall be enforceable by the Grantee against the Grantor and against Grantor’s heirs, successors and assigns, personal representatives, agents, lessees, and licensees.

### **II. GRANTOR RESERVED USES AND RESTRICTED ACTIVITIES**

The Easement Area shall be restricted from any development or usage that would impair or interfere with the purposes of this Conservation Easement. Unless expressly reserved as a compatible use herein, any activity in, or use of, the Easement Area by the Grantor is prohibited as inconsistent with the purposes of this Conservation Easement. Any rights not expressly reserved hereunder by the Grantor have been acquired by the Grantee. Any rights not expressly reserved hereunder by the Grantor, including the rights to all mitigation credits, including, but not limited to, stream, wetland, and riparian buffer mitigation units, derived from each site within the area of the Conservation Easement, are conveyed to and belong to the Grantee. Without limiting the generality of the foregoing, the following specific uses are prohibited, restricted, or reserved as indicated:

**A. Recreational Uses.** Grantor expressly reserves the right to undeveloped recreational uses, including hiking, bird watching, hunting and fishing, and access to the Easement Area for the purposes thereof.

**B. Motorized Vehicle Use.** Motorized vehicle use in the Easement Area is prohibited.

**C. Educational Uses.** The Grantor reserves the right to engage in and permit others to engage in educational uses in the Easement Area not inconsistent with this Conservation Easement, and the right of access to the Easement Area for such purposes including organized educational activities such as site visits and observations. Educational uses of the property shall not alter vegetation, hydrology or topography of the site.

**D. Vegetative Cutting.** Except as related to the removal of non-native plants, diseased or damaged trees, or vegetation that destabilizes or renders unsafe the Easement Area to persons or natural habitat, all cutting, removal, mowing, harming, or destruction of any trees and vegetation in the Easement Area is prohibited.

*Add the language below only if fence maintenance is needed within the conservation easement area. Currently, the conservation easement area that is within a fence maintenance zone is not included for calculation of full compensatory mitigation credit.*

**Delete this block if no fence maintenance zone is needed in the conservation easement area.**

Notwithstanding the foregoing, the Grantor reserves the right to mow and maintain vegetation inside the easement within 6 feet of the fence *as shown on the Survey Plat* and extending along the entire length of the fence. The Grantee is not responsible for fence maintenance, but reserves the right to maintain, repair or replace the fence at the sole discretion of the Grantee.

**E. Industrial, Residential and Commercial Uses.** All industrial, residential and commercial uses are prohibited in the Easement Area.

**F. Agricultural Use.** All agricultural uses are prohibited within the Easement Area including any use for cropland, waste lagoons, or pastureland.

**G. New Construction.** There shall be no building, facility, mobile home, antenna, utility pole, tower, or other structure constructed or placed in the Easement Area.

**H. Roads and Trails.** There shall be no construction of roads, trails, walkways, or paving in the Easement Area.

**I. Signs.** No signs shall be permitted in the Easement Area except interpretive signs describing restoration activities and the conservation values of the Easement Area, signs identifying the owner of the Property and the holder of the Conservation Easement, signs giving directions, or signs prescribing rules and regulations for the use of the Easement Area.

**J. Dumping or Storing.** Dumping or storage of soil, trash, ashes, garbage, waste, abandoned vehicles, appliances, machinery, or any other material in the Easement Area is prohibited.

**K. Grading, Mineral Use, Excavation, Dredging.** There shall be no grading, filling, excavation, dredging, mining, drilling; removal of topsoil, sand, gravel, rock, peat, minerals, or other materials.

**L. Water Quality and Drainage Patterns.** There shall be no diking, draining, dredging, channeling, filling, leveling, pumping, impounding or diverting, causing, allowing or permitting the diversion of surface or underground water in the Easement Area. No altering or tampering with water control structures or devices, or disruption or alteration of the restored, enhanced, or created drainage patterns is allowed. All removal of wetlands, polluting or discharging into waters, springs, seeps, or wetlands, or use of pesticide or biocides in the Easement Area is prohibited. In the event of an emergency interruption or shortage of all other water sources, water from within the Easement Area may temporarily be used for good cause shown as needed for the survival of livestock and agricultural production on the Property.

**M. Subdivision and Conveyance.** Grantor voluntarily agrees that no subdivision, partitioning, or dividing of the underlying Property owned by the Grantor in fee simple (“fee”) that is subject to this Easement is allowed. Unless agreed to by the Grantee in writing, any future conveyance of the underlying fee and the rights conveyed herein shall be as a single block of property. Any future transfer of the fee simple shall be subject to this Conservation Easement. Any transfer of the fee is subject to the Grantee’s right of unlimited and repeated ingress and egress over and across the Property to the Easement Area for the purposes set forth herein.

**N. Development Rights.** All development rights are permanently removed from the Easement Area and are non-transferrable.

**O. Disturbance of Natural Features.** Any change, disturbance, alteration or impairment of the natural features of the Easement Area or any intentional introduction of non-native plants, trees and/or animal species by Grantor is prohibited.

The Grantor may request permission to vary from the above restrictions for good cause shown, provided that any such request is not inconsistent with the purposes of this Conservation Easement, and the Grantor obtains advance written approval from the N.C. Ecosystem Enhancement Program, whose mailing address is 1652 Mail Services Center, Raleigh, NC 27699-1652.

### **III. GRANTEE RESERVED USES**

**A. Right of Access, Construction, and Inspection.** The Grantee, its employees and agents, successors and assigns, receive a perpetual Right of Access to the Easement Area over the Property at reasonable times to undertake any activities to restore, construct, manage, maintain, enhance, and monitor the stream, wetland and any other riparian resources in the Easement Area, in accordance with restoration activities or a long-term management plan. Unless otherwise specifically set forth in this Conservation Easement, the rights granted herein do not include or establish for the public any access rights.

**B. Restoration Activities.** These activities include planting of trees, shrubs and herbaceous vegetation, installation of monitoring wells, utilization of heavy equipment to grade, fill, and prepare the soil, modification of the hydrology of the site, and installation of natural and manmade materials as needed to direct in-stream, above ground, and subterranean water flow.

**C. Signs.** The Grantee, its employees and agents, successors or assigns, shall be permitted to place signs and witness posts on the Property to include any or all of the following: describe the project, prohibited activities within the Conservation Easement, or identify the project boundaries and the holder of the Conservation Easement.

**D. Fences.** The Grantee, its employees and agents, successors or assigns, shall be permitted to place fencing on the Property to restrict livestock access. Although the Grantee is not responsible for fence maintenance, the Grantee reserves the right to repair the fence, at its sole discretion.

#### IV. ENFORCEMENT AND REMEDIES

**A. Enforcement.** To accomplish the purposes of this Conservation Easement, Grantee is allowed to prevent any activity within the Easement Area that is inconsistent with the purposes of this Easement and to require the restoration of such areas or features in the Easement Area that may have been damaged by such unauthorized activity or use. Upon any breach of the terms of this Conservation Easement by Grantor, the Grantee shall, except as provided below, notify the Grantor in writing of such breach and the Grantor shall have ninety (90) days after receipt of such notice to correct the damage caused by such breach. If the breach and damage remains uncured after ninety (90) days, the Grantee may enforce this Conservation Easement by bringing appropriate legal proceedings including an action to recover damages, as well as injunctive and other relief. The Grantee shall also have the power and authority, consistent with its statutory authority: (a) to prevent any impairment of the Easement Area by acts which may be unlawful or in violation of this Conservation Easement; (b) to otherwise preserve or protect its interest in the Property; or (c) to seek damages from any appropriate person or entity. Notwithstanding the foregoing, the Grantee reserves the immediate right, without notice, to obtain a temporary restraining order, injunctive or other appropriate relief, if the breach is or would irreversibly or otherwise materially impair the benefits to be derived from this Conservation Easement, and the Grantor and Grantee acknowledge that the damage would be irreparable and remedies at law inadequate. The rights and remedies of the Grantee provided hereunder shall be in addition to, and not in lieu of, all other rights and remedies available to Grantee in connection with this Conservation Easement.

**B. Inspection.** The Grantee, its employees and agents, successors and assigns, have the right, with reasonable notice, to enter the Easement Area over the Property at reasonable times for the purpose of inspection to determine whether the Grantor is complying with the terms, conditions and restrictions of this Conservation Easement.

**C. Acts Beyond Grantor's Control.** Nothing contained in this Conservation Easement shall be construed to entitle Grantee to bring any action against Grantor for any injury or change in the Easement Area caused by third parties, resulting from causes beyond the Grantor's control, including, without limitation, fire, flood, storm, and earth movement, or from any prudent action taken in good faith by the Grantor under emergency conditions to prevent, abate, or mitigate significant injury to life; or damage to the Property resulting from such causes.

**D. Costs of Enforcement.** Beyond regular and typical monitoring expenses, any costs incurred by Grantee in enforcing the terms of this Conservation Easement against Grantor, including, without limitation, any costs of restoration necessitated by Grantor's acts or omissions in violation of the terms of this Conservation Easement, shall be borne by Grantor.

**E. No Waiver.** Enforcement of this Easement shall be at the discretion of the Grantee and any forbearance, delay or omission by Grantee to exercise its rights hereunder in the event of any breach of any term set forth herein shall not be construed to be a waiver by Grantee.

#### V. MISCELLANEOUS

**A.** This instrument sets forth the entire agreement of the parties with respect to the Conservation Easement and supersedes all prior discussions, negotiations, understandings or

agreements relating to the Conservation Easement. If any provision is found to be invalid, the remainder of the provisions of the Conservation Easement, and the application of such provision to persons or circumstances other than those as to which it is found to be invalid, shall not be affected thereby.

**B.** Grantor is responsible for any real estate taxes, assessments, fees, or charges levied upon the Property. Grantee shall not be responsible for any costs or liability of any kind related to the ownership, operation, insurance, upkeep, or maintenance of the Property, except as expressly provided herein. Upkeep of any constructed bridges, fences, or other amenities on the Property are the sole responsibility of the Grantor. Nothing herein shall relieve the Grantor of the obligation to comply with federal, state or local laws, regulations and permits that may apply to the exercise of the Reserved Rights.

**C.** Any notices shall be sent by registered or certified mail, return receipt requested to the parties at their addresses shown herein or to other addresses as either party establishes in writing upon notification to the other.

**D.** Grantor shall notify Grantee in writing of the name and address and any party to whom the Property or any part thereof is to be transferred at or prior to the time said transfer is made. Grantor further agrees that any subsequent lease, deed, or other legal instrument by which any interest in the Property is conveyed subject to the Conservation Easement herein created.

**E.** The Grantor and Grantee agree that the terms of this Conservation Easement shall survive any merger of the fee and easement interests in the Property or any portion thereof.

**F.** This Conservation Easement and Right of Access may be amended, but only in writing signed by all parties hereto, or their successors or assigns, if such amendment does not affect the qualification of this Conservation Easement or the status of the Grantee under any applicable laws, and is consistent with the purposes of the Conservation Easement. The owner of the Property shall notify the U.S. Army Corps of Engineers in writing sixty (60) days prior to the initiation of any transfer of all or any part of the Property. Such notification shall be addressed to: Justin McCorkle, General Counsel, US Army Corps of Engineers, 69 Darlington Avenue, Wilmington, NC 28403

**G.** The parties recognize and agree that the benefits of this Conservation Easement are in gross and assignable provided, however, that the Grantee hereby covenants and agrees, that in the event it transfers or assigns this Conservation Easement, the organization receiving the interest will be a qualified holder under N.C. Gen. Stat. § 121-34 et seq. and § 170(h) of the Internal Revenue Code, and the Grantee further covenants and agrees that the terms of the transfer or assignment will be such that the transferee or assignee will be required to continue in perpetuity the conservation purposes described in this document.

## **VI. QUIET ENJOYMENT**

Grantor reserves all remaining rights accruing from ownership of the Property, including the right to engage in or permit or invite others to engage in only those uses of the Easement Area that are expressly reserved herein, not prohibited or restricted herein, and are not inconsistent with the purposes of this Conservation Easement. Without limiting the generality of

the foregoing, the Grantor expressly reserves to the Grantor, and the Grantor's invitees and licensees, the right of access to the Easement Area, and the right of quiet enjoyment of the Easement Area

**TO HAVE AND TO HOLD**, the said rights and easements perpetually unto the State of North Carolina for the aforesaid purposes.

**AND** Grantor covenants that Grantor is seized of said premises in fee and has the right to convey the permanent Conservation Easement herein granted; that the same is free from encumbrances and that Grantor will warrant and defend title to the same against the claims of all persons whomsoever.

**IN TESTIMONY WHEREOF**, the Grantor has hereunto set his hand and seal, the day and year first above written.

\_\_\_\_\_  
(SEAL)

**NORTH CAROLINA**  
**COUNTY OF** \_\_\_\_\_

I, \_\_\_\_\_, a Notary Public in and for the County and State aforesaid, do hereby certify that \_\_\_\_\_, Grantor, personally appeared before me this day and acknowledged the execution of the foregoing instrument.

**IN WITNESS WHEREOF**, I have hereunto set my hand and Notary Seal this the \_\_\_\_\_ day of \_\_\_\_\_, 2011.

\_\_\_\_\_



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R:\Projects\Environ Banc & Exchange\2011017500RA - Hockett Dairy Buffer Mitigation Site\CADD\Land-Hockett Dairy\Hockett Dairy Conservation Easement\dwg\Hockett Dairy easel.dwg

REV. NO.	DESCRIPTION	DATE

PROJECT MANAGER	DRAWING SCALE
GVC	1" = 200'
DRAWN BY	PROJECT DATE
JRM	JAN 2012
APPROVED BY	PROJECT NUMBER
GVC	2011017500RA
FILE NAME	PLOT DATE
Hockett Dairy easel	

**W.K. DICKSON**  
community infrastructure consultants

909 MARKET STREET  
WILMINGTON, NC 28401  
(910) 762-4200

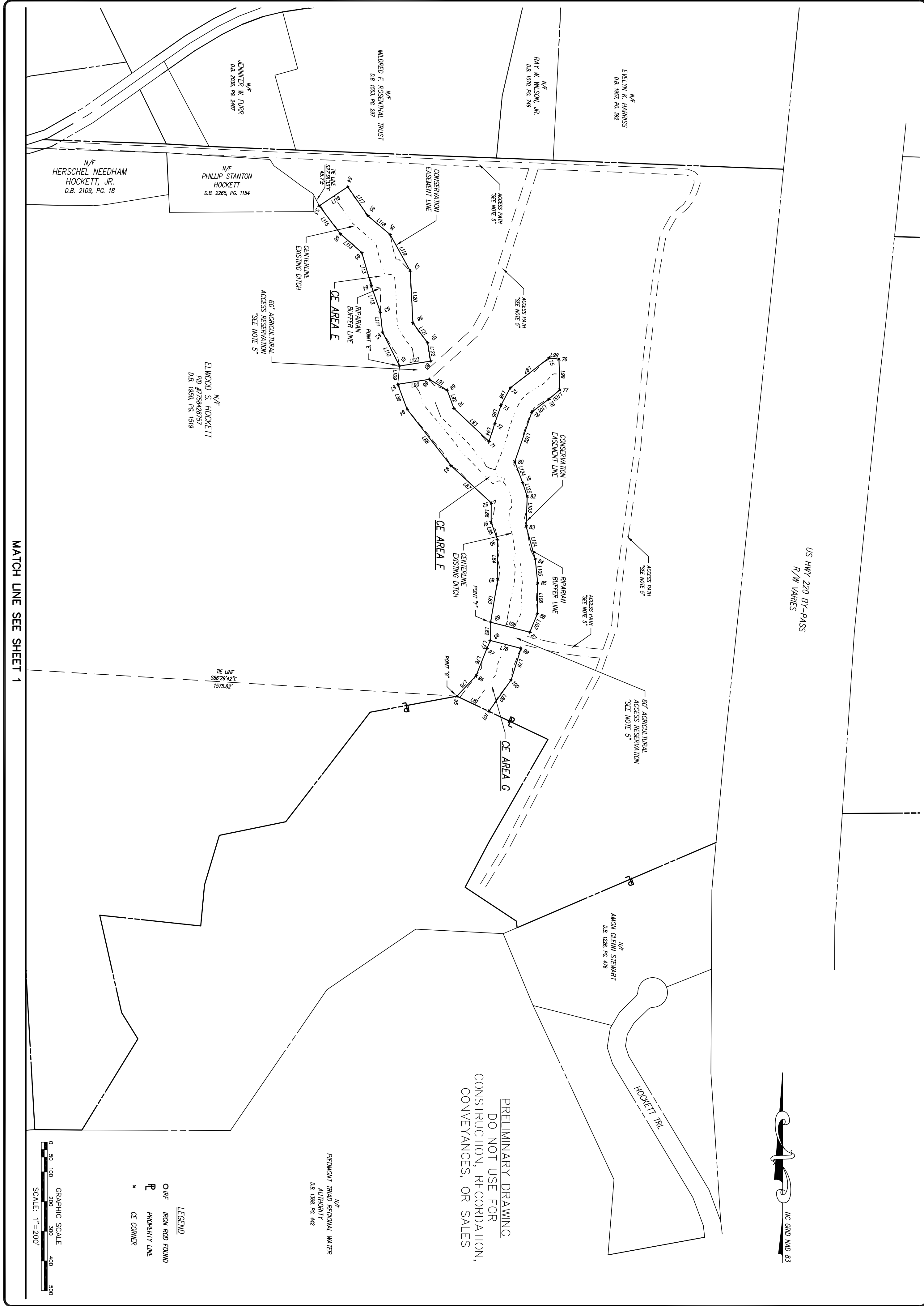
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Georgia  
NC LICENSE NO. F-0374

RELEASED FOR	DATE
APPROVALS	
BIDDING	
CONSTRUCTION	
RECORD DWG.	

**CONSERVATION EASEMENT SURVEY**  
FOR THE  
**STATE OF NORTH CAROLINA**  
S.P.O. FILE # 76-BA  
NCEEP RFP # 16-003567  
NCEEP PROJECT # 0039933-EPP SITE 95013  
NCEEP PROJECT NAME "HOCKETT DAIRY SITE".

**EPP PROJECT NAME: HOCKETT DAIRY SITE**  
**CONSERVATION EASEMENT**  
**ELWOOD S. HOCKETT PROPERTY**  
PID #7758226756 AND PID #7758428757  
LEVEL CROSS TOWNSHIP, RANDOLPH COUNTY  
NORTH CAROLINA

2
3





REV. NO.	DESCRIPTION	DATE

PROJECT MANAGER	DRAWING SCALE
GVC	1"=200'
DRAWN BY	PROJECT DATE
JRM	JAN 2012
APPROVED BY	PROJECT NUMBER
GVC	2011017500RA
FILE NAME	PLOT DATE
Hockett Dairy easel	



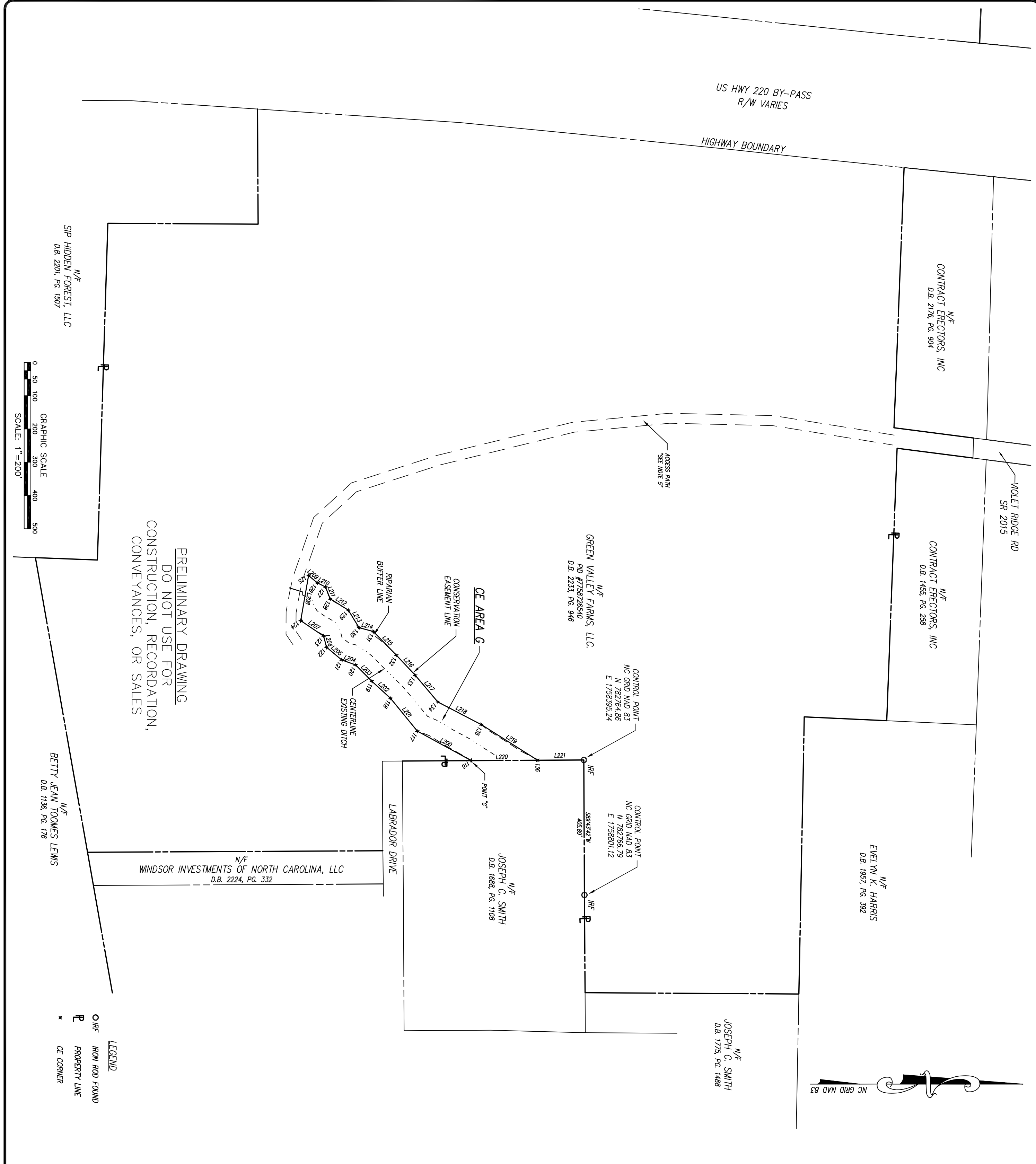
909 MARKET STREET  
WILMINGTON, NC 28401  
(910) 762-4200  
Office Locations: North Carolina  
South Carolina  
Georgia  
NC LICENSE NO. F-0374

RELEASED FOR	DATE
APPROVALS	
BIDDING	
CONSTRUCTION	
RECORD DWG.	

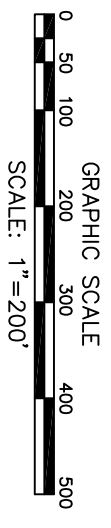
**CONSERVATION EASEMENT SURVEY**  
FOR THE  
**STATE OF NORTH CAROLINA**  
S.P.O. FILE # 76-BF  
NCEP RFP # 16-003567  
NCEP PROJECT # 0039933-EPP SITE 95013  
NCEP PROJECT NAME "HOCKETT DAIRY SITE".

**EPP PROJECT NAME: HOCKETT DAIRY SITE**  
**CONSERVATION EASEMENT**  
**GREEN VALLEY FARMS, LLC.**  
PID #7758726540  
LEVEL CROSS TOWNSHIP, RANDOLPH COUNTY  
NORTH CAROLINA

3 / 3



**PRELIMINARY DRAWING**  
DO NOT USE FOR  
CONSTRUCTION, RECORDATION,  
CONVEYANCES, OR SALES



CONSERVATION EASEMENT

LINE	LENGTH	BEARING
L200	184.73	S28°41'55"W
L201	127.21	S50°42'09"W
L202	76.71	S42°27'07"W
L203	68.82	S45°15'08"W
L204	44.10	S18°28'27"W
L205	44.10	S18°28'27"W
L206	34.42	S18°28'27"W
L207	83.05	S33°59'22"W
L208	137.79	N80°09'10"W
L209	33.72	N27°05'58"E
L210	28.23	N27°05'58"E
L211	27.93	N89°28'33"E
L212	27.93	N89°28'33"E
L213	61.92	N82°02'02"E
L214	44.47	N15°02'23"E
L215	98.97	N45°46'32"E
L216	82.87	N45°46'32"E
L217	105.58	N45°46'32"E
L218	147.50	N27°30'22"E
L219	147.50	N27°30'22"E
L220	199.61	N82°17'12"E
L221	138.73	S00°16'35"E

CONSERVATION EASEMENT

POINT	CORNER	EAST
116	78246.53	1758397.07
117	78264.49	1758308.37
118	78271.82	1758208.92
119	78272.72	1758198.14
120	78207.84	1758108.29
121	78198.12	1758052.04
122	78198.12	1758052.04
123	78198.12	1758052.04
124	78198.12	1758052.04
125	78198.12	1758052.04
126	78198.12	1758052.04
127	78198.12	1758052.04
128	78208.49	1757997.90
129	78208.49	1757997.90
130	78208.49	1757997.90
131	78208.49	1757997.90
132	78208.49	1757997.90
133	78208.49	1757997.90
134	78208.49	1757997.90
135	78208.49	1757997.90
136	78208.49	1757997.90
137	78208.49	1757997.90
138	78208.49	1757997.90

- GENERAL NOTES:**
- ALL DISTANCES ARE HORIZONTAL GROUND DISTANCES UNLESS OTHERWISE NOTED.
  - PROPERTY SUBJECT TO ALL EASEMENTS AND RESTRICTIONS OF RECORD.
  - AREAS COMPUTED BY COORDINATE METHOD.
  - THIS SURVEY IS NOT IN A FEMA DESIGNATED FLOOD ZONE ACCORDING TO FEMA FIRM MAP NUMBER 370775800K, MAP REVISED JANUARY 2, 2008.
  - SEE CONSERVATION EASEMENT AGREEMENT SECTION 3A INGRESS, EGRESS, REGRESS AND INSPECTION RIGHTS.

GUY V. COOKE, P.L.S. L-4596

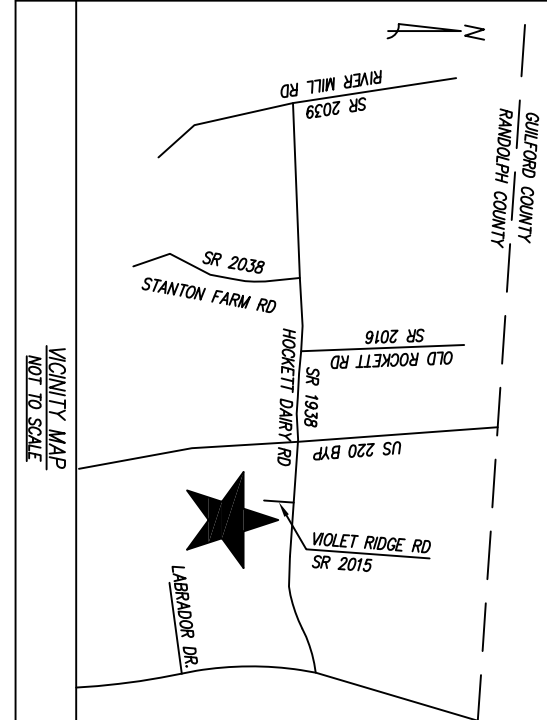
I, GUY V. COOKE, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL GPS SURVEY MADE UNDER MY SUPERVISION. THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION AS SHOWN ON THE FACE OF THIS MAP. THAT THE PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED, WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER AND SEAL THIS DAY OF \_\_\_\_\_ A.D., 2012.

GUY V. COOKE L-4596

I, GUY V. COOKE, NOTS NO. L-4596, CERTIFY THAT THIS PLAT IS OF A SURVEY OF ANOTHER CATEGORY, SUCH AS THE RECONSTRUCTION OF EXISTING PARCELS, A COURT-ORDERED SURVEY, OR OTHER EXCEPTION TO THE DEFINITION OF SUBDIVISION.

GUY V. COOKE, PROFESSIONAL LAND SURVEYOR, L-4596

I, GUY V. COOKE, CERTIFY THAT THIS MAP WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL GPS SURVEY MADE UNDER MY SUPERVISION. THAT THIS GPS SURVEY WAS PERFORMED TO THIRD ORDER, CLASS 1 FCCC SPECIFICATIONS AND THAT I USED VRS (VIRTUAL REFERENCE SYSTEM) GPS, GPS FIELD PROCEDURES AND COORDINATES WERE OBTAINED BY VRS NETWORK. THAT THIS SURVEY WAS PERFORMED ON JANUARY 2, 2012 USING A TRIMBLE 5800 RECEIVER ON A FIXED HEIGHT (2.0m) POLE AND ALL COORDINATES ARE BASED ON NC GRID NAD 83/2001.



## **Appendix B – DWQ Correspondence**



North Carolina Department of Environment and Natural Resources

Division of Water Quality

Coleen H. Sullins  
Director

Beverly Eaves Perdue  
Governor

Dee Freeman  
Secretary

November 10, 2011

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

Re: Hockett Dairy Buffer Mitigation Site  
Green Valley Farms Buffer Mitigation Site  
Randolph County

Dear Ms. Corson:

The Division of Water Quality (DWQ) Winston-Salem Regional Office has reviewed the Minutes submitted by EBX submitted to EEP on October 6, 2011 (attached). These minutes accurately summarizes all discussions conducted during a site visit to the Hockett Dairy and Green Valley Farms Buffer Mitigation Sites as well as all follow up correspondence.

The Division concurs that that the proposed buffer planting areas as depicted in the attached October 6, 2011 minutes and maps 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](mailto:sue.homewood@ncdenr.gov).

Sincerely,

Sue Homewood  
DWQ Winston-Salem Regional Office

Cc: DWQ-WSRO

## **HOCKETT DAIRY AND GREEN VALLEY FARMS DWQ SITE VISIT SUMMARY**

On September 1, 2011 NCDWQ met with NCEEP, EBX, and WK Dickson personnel to review the eligibility of the proposed Hockett Dairy and Green Valley Farms Buffer Mitigation sites in Randolph County, NC. The meeting attendees were:

- Sue Homewood, NCDWQ Surface Water Protection, Winston-Salem Regional Office
- Tim Baumgartner, NCEEP, Full Delivery Manager
- Martin Hovis, EBX
- Daniel Ingram, WK Dickson

The NCDWQ comments for each project site are summarized below. This memorandum also presents EBX's response to the NCDWQ comments. Overview maps are attached for Hockett Dairy and Green Valley Farms Buffer Mitigation Sites to illustrate comments listed below and to further depict locations in question from NCDWQ.

### **HOCKETT DAIRY**

**UT1** –Ms. Homewood (NCDWQ) agreed that buffer restoration would be advantageous at this location due to the immediate proximity of Randleman Lake and the direct nutrient and sediment input from the cattle operations. However, Ms. Homewood felt this drainage lacked a defined channel and was not subject to the Randleman Buffer rules. Ms. Homewood stated that if the channel was contained in a gully such as the one on the back of the upstream dam, then the channel would qualify for buffer restoration credit. Ms. Homewood also stated that she could not define the top of bank location and would not be able to establish the buffer zones. For these reasons Ms. Homewood felt the drainage feature was not suitable for mitigation. She did state that if a channel formed by the end of the five-year monitoring then the credits would be allowed. This results in a loss of 0.20 acres of buffer restoration and continued degradation of Randleman Lake.

EBX feels this determination is not appropriate for several reasons. The contributing watershed is 17.6 acres at the downstream end. Recent research by NCDWQ in this ecoregion (Carolina Slate Belt-A) has shown that stream channels form at a mean watershed size of 11.2 acres and intermittent channels are present in 75 percent of 14.47 acre watersheds (Mapping Headwater Streams: Intermittent and Perennial Headwater Stream Model Development and Spatial Application North Carolina Division of Water Quality Final Report for Federal Highway Administration Contract: Feasibility Study WBS: 36486.4.2, January 29, 2008). The upstream pond (Farm Pond 1) also provides hydrologic storage limiting channel forming flows. WK Dickson personnel observed seasonal stream flow in UT1 during the fall of 2010 and winter of 2011. Lastly, Keith Hockett, principle dairy farmer, stated that the UT1 channel was formerly gullied from cattle access and dam failures but was repaired at the request of NCDWQ. There is a defined drainage swale with FACW and OBL vegetation. EBX proposes the extent of the hydrophytic vegetation be considered the channel and buffer restoration be allowed for 50 feet extending outward from that point.

**Farm Pond 1** – Ms. Homewood agreed that buffer restoration would be advantageous at this location due to the immediate proximity of Randleman Lake and the direct nutrient and sediment input from the cattle operations. However, Ms. Homewood felt that Farm Pond 1 lacked a connection to a downstream water body due to UT1 not being subject to the Randleman Buffer Rules. As a result, Farm Pond 1 is not subject to the Randleman Buffer rules. For these reasons Ms. Homewood felt the pond was not suitable for mitigation. She did state that if UT1 was contained in a defined channel then the Pond 1 buffer restoration credits would be allowed. This results in a loss of 0.50 acres of buffer restoration and continued degradation of Randleman Lake. In addition, a supplemental planted area (not for credit) of 0.63 acres is located adjacent to the proposed buffer restoration and would not be included in the project if no buffer credit is allowed on Farm Pond I. NCDWQ had previously recommended planting this denuded area during a farm inspection.

EBX feels this determination is not appropriate for the reasons discussed above. UT1 should be considered an intermittent stream and subject to the Randleman Buffer Rules. This would allow allowing buffer restoration on Farm Pond 1.

**UT2** – Ms. Homewood agreed with the Technical Proposal that the proposed 1.52 acres of UT2 buffer restoration is allowable and appropriate under the Randleman Buffer Rules.

**Farm Pond 2** – Ms. Homewood agreed with the Technical Proposal that the proposed 0.46 acres of Farm Pond 2 buffer restoration is allowable and appropriate under the Randleman Buffer Rules.

**UT3** – Ms. Homewood agreed with the Technical Proposal that the proposed 1.44 acres of UT3 buffer restoration is allowable and appropriate under the Randleman Buffer Rules.

**Farm Pond 3** – Ms. Homewood agreed with the Technical Proposal that the proposed 0.54 acres of Farm Pond 3 buffer restoration is allowable and appropriate under the Randleman Buffer Rules.

**UT4** – Ms. Homewood agreed with the Technical Proposal that the proposed 4.35 acres of UT4 buffer restoration is allowable and appropriate under the Randleman Buffer Rules.

**UT5** – Ms. Homewood agreed with the Technical Proposal that the proposed 1.00 acres of UT5 buffer restoration is allowable and appropriate under the Randleman Buffer Rules.

**UT6** – Ms. Homewood agreed with the Technical Proposal that the proposed 1.78 acres of UT6 buffer restoration is allowable and appropriate under the Randleman Buffer Rules.

## **GREEN VALLEY FARMS**

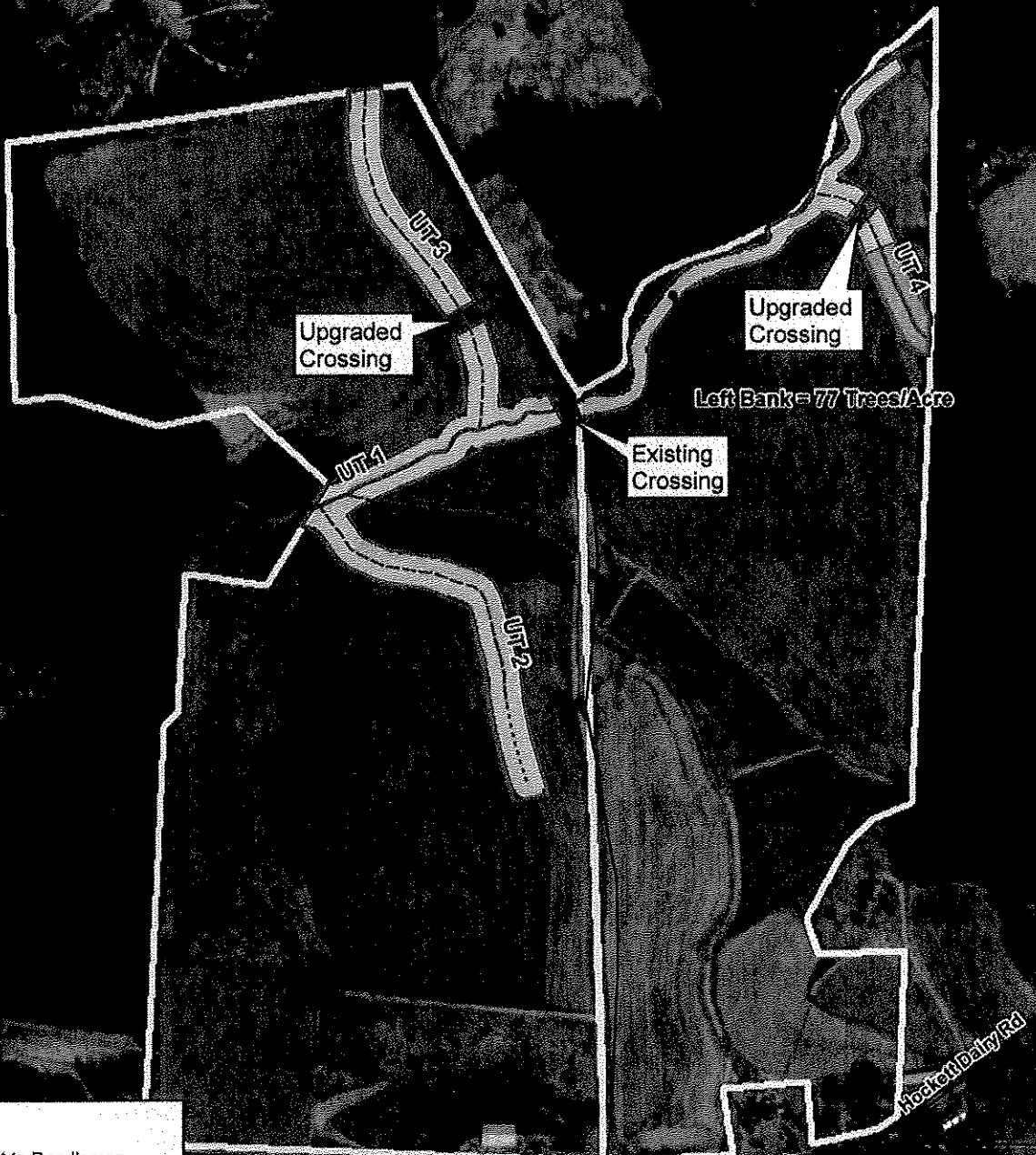
**UT1** – Ms. Homewood agreed with the Technical Proposal that the proposed 3.55 acres of UT1 buffer restoration is allowable and appropriate under the Randleman Buffer Rules.

**UT2** – Ms. Homewood agreed with the Technical Proposal that the proposed 2.65 acres of UT2 buffer restoration is allowable and appropriate under the Randleman Buffer Rules.

**UT3** – Ms. Homewood agreed with the Technical Proposal that the proposed 2.30 acres of UT3 buffer restoration is allowable and appropriate under the Randleman Buffer Rules.

**UT4** – Ms. Homewood felt the upper 309 linear feet (approximate) of this drainage feature was a linear wetland that lacked a defined channel and was not subject to the Randleman Buffer rules. Ms. Homewood also stated that she could not define the top of bank location and would not be able to establish the buffer zones. For these reason Ms. Homewood felt the upper UT4 drainage feature was not suitable for mitigation. She did state that if a channel formed by the end of the five-year monitoring then the credits would be allowed. This results in a loss of 0.92 acres of buffer restoration and continued degradation of Randleman Lake. Ms. Homewood agreed with the Technical Proposal that the lower 190 linear feet of UT4 buffer restoration is allowable and appropriate under the Randleman Buffer Rules, resulting in 0.28 acres of buffer restoration.

EBX feels this determination is not appropriate for several reasons. The contributing watershed is 19.2 acres. Recent research by NCDWQ in this ecoregion (Carolina Slate Belt-A) has shown that stream channels form at a mean watershed size of 11.2 acres and intermittent channels are present in 75 percent of 14.47 acre watersheds (Mapping Headwater Streams: Intermittent and Perennial Headwater Stream Model Development and Spatial Application North Carolina Division of Water Quality Final Report for Federal Highway Administration Contract: Feasibility Study WBS: 36486.4.2, January 29, 2008). Further, agricultural activities have resulted in heavy sediment loads entering the channel and filling/obscuring the channel. This is supported by the presence of a defined channel in the forested upstream reach (see attached Exhibit A). WK Dickson personnel observed seasonal stream flow in UT4 during the fall of 2010 and winter of 2011 and completed a NCDWQ Stream Identification Form that scored 26 points (intermittent). There is a defined drainageway swale with FACW and OBL vegetation. EBX proposes the extent of the hydrophytic vegetation be considered the channel and buffer restoration be allowed for 50 feet extending outward from that point.



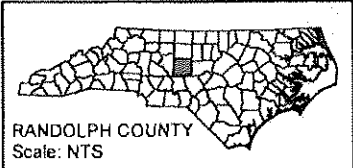
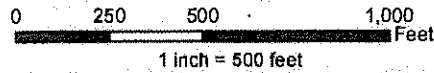
**Legend**

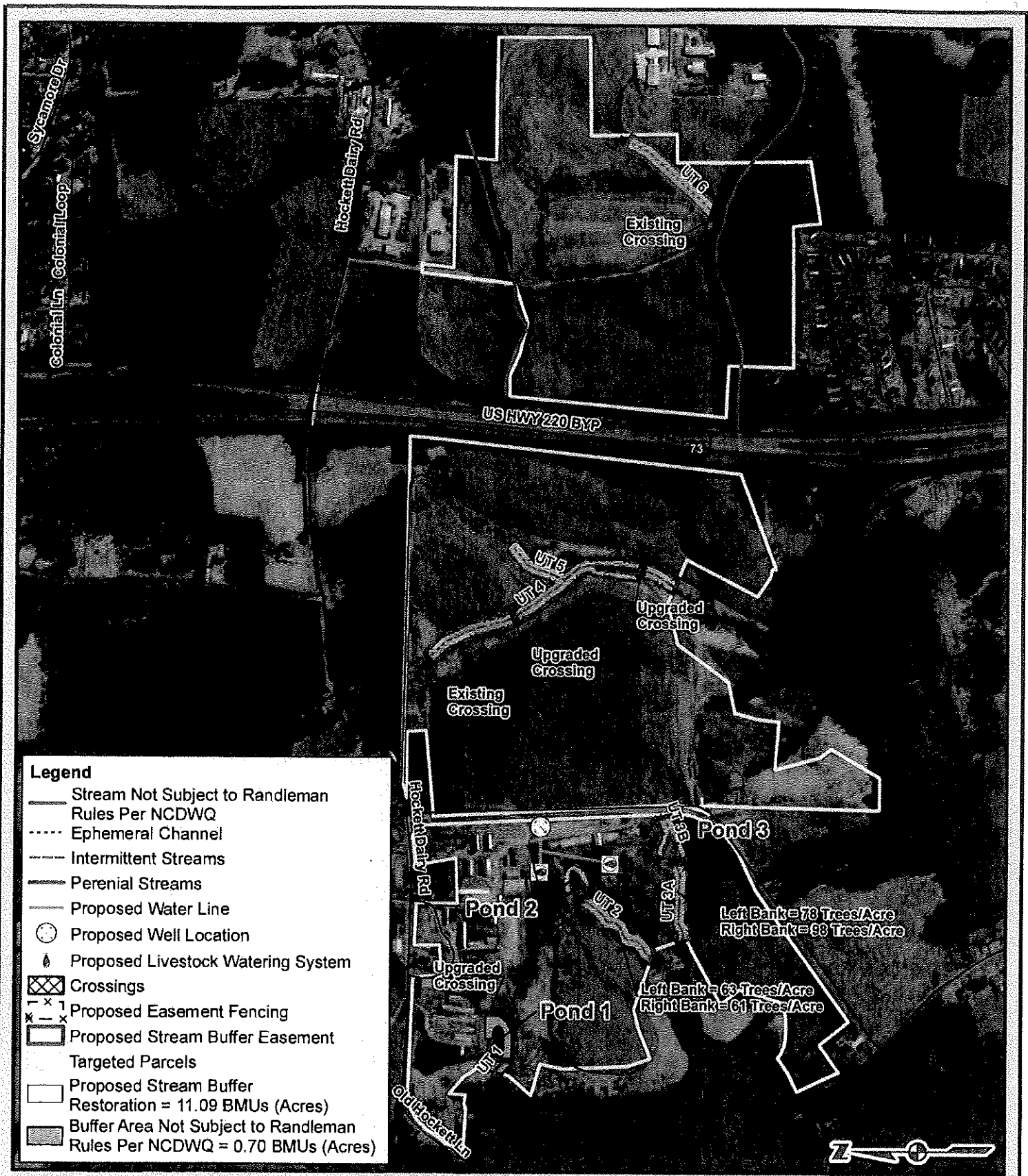
- Stream Not Subject to Randleman Rules Per NCDWQ
- Ephemeral Channel
- Intermittent Streams
- Perennial Streams
- Proposed Stream Buffer Easement
- Buffer Area Not Subject to Randleman Rules Per NCDWQ = 0.71 BMUs (Acres)
- Proposed Stream Buffer Restoration = 8.99 BMUs (Acres)
- Targeted Parcels



*[Handwritten signature]*  
11/10/11

**NCDWQ Stream Classifications  
& Stem Counts  
Green Valley Farms Buffer Restoration Site**





- Legend**
- Stream Not Subject to Randleman Rules Per NCDWQ
  - ..... Ephemeral Channel
  - - - - Intermittent Streams
  - Perennial Streams
  - Proposed Water Line
  - Proposed Well Location
  - ⦿ Proposed Livestock Watering System
  - ⊗ Crossings
  - ⊗ Proposed Easement Fencing
  - Proposed Stream Buffer Easement
  - Targeted Parcels
  - Proposed Stream Buffer Restoration = 11.09 BMUs (Acres)
  - Buffer Area Not Subject to Randleman Rules Per NCDWQ = 0.70 BMUs (Acres)

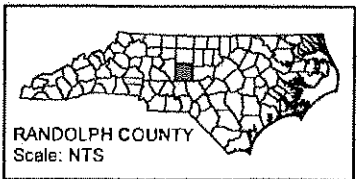
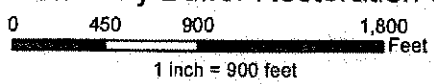
Left Bank = 78 Trees/Acre  
Right Bank = 98 Trees/Acre

Left Bank = 63 Trees/Acre  
Right Bank = 61 Trees/Acre



*SA*  
11/10/11

**NCDWQ Stream Classifications  
& Stem Counts  
Hockett Dairy Buffer Restoration Site**





**Daniel Ingram**

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**From:** Martin Hovis [mailto:martin@ebxusa.com]  
**Sent:** Tuesday, February 28, 2012 12:53 PM  
**To:** Daniel Ingram  
**Subject:** RE: Hockett Dairy and Green Valley Farms Buffer Site Cape Fear 03

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**From:** Homewood, Sue [mailto:sue.homewood@ncdenr.gov]  
**Sent:** Monday, February 27, 2012 12:37 PM  
**To:** Martin Hovis  
**Subject:** RE: Hockett Dairy and Green Valley Farms Buffer Site Cape Fear 03

Hi Martin,

I confirm that these statements are all accurate. If there are intermittent or perennial streams in these locations, as determined by the NCDWQ Stream Determination Manual that is in use at that time, then buffer credit would be allowed.

Sue Homewood  
NC DENR Winston-Salem Regional Office  
Division of Water Quality  
585 Waughtown Street  
Winston-Salem, NC 27107  
Voice: (336) 771-4964  
FAX: (336) 771-4630

E-mail correspondence to and from this address may be subject to the North Carolina Public Records Law and may be disclosed to third parties.

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**From:** Martin Hovis [mailto:martin@ebxusa.com]  
**Sent:** Friday, February 24, 2012 1:44 PM  
**To:** Homewood, Sue  
**Subject:** Hockett Dairy and Green Valley Farms Buffer Site Cape Fear 03

Mrs. Homewood

I hope you are doing well.

We are in the process of developing our Mitigation Plans for the Hockett Dairy and Green Valley Farms Buffer sites we were awarded for RFP# 16-003567.

Would you please confirm the following statement to be true regarding the buffer acreage for both Sites?

On September 01, 2011 the NCEP, NCDWQ and EBX visited the Green Valley Farms and Hockett Dairy Buffer sites. Upon viewing the sites NCDWQ, Sue Homewood, noted two sections of concern.

**Hockett Dairy UT1** –Ms. Homewood (NCDWQ) agreed that buffer restoration would be advantageous at this location due to the immediate proximity of Randleman Lake and the direct nutrient and sediment input from the cattle operations. However, Ms. Homewood felt this drainage lacked a defined channel and was not subject to the Randleman Buffer rules. Ms. Homewood stated that if the channel was contained in a gully, such as the one on the back of the upstream dam, then the channel would qualify for buffer restoration credit. Ms. Homewood also stated that she could not define the top of bank location and would not be able to establish the buffer zones. For these reasons Ms. Homewood felt the drainage feature was not suitable for mitigation. She did state that if a channel formed by the end of the five-year monitoring then the credits would be allowed.

**Farm Pond 1** – Ms. Homewood agreed that buffer restoration would be advantageous at this location due to the

3/9/2012

immediate proximity of Randleman Lake and the direct nutrient and sediment input from the cattle operations. However, Ms. Homewood felt that Farm Pond 1 lacked a connection to a downstream water body due to UT1 not being subject to the Randleman Buffer Rules. As a result, Farm Pond 1 is not subject to the Randleman Buffer rules. For these reasons Ms. Homewood felt the pond was not suitable for mitigation. She did state that if UT1 was contained in a defined channel then the Pond 1 buffer restoration credits would be allowed.

**Green Valley UT4** –Ms. Homewood felt the upper 309 linear feet of this drainage feature was a linear wetland that lacked a defined channel and was not subject to the Randleman Buffer rules. Ms. Homewood also stated that she could not define the top of bank location and would not be able to establish the buffer zones. For these reason Ms. Homewood felt the upper UT4 drainage feature was not suitable for mitigation. She did state that if a channel formed by the end of the five-year monitoring then the credits would be allowed. Ms. Homewood agreed with the Technical Proposal that the lower 190 linear feet of UT4 buffer restoration is allowable and appropriate under the Randleman Buffer Rules, resulting in 0.28 acres of buffer restoration.

EBX plans to plant trees and place a conservation easement over the areas in question (Hockett Dairy UT1 and Farm Pond 1, and Green Valley Farm's UT4 upper 309 Linear Feet) in anticipation that at the end of the 5 year monitoring period there will be a defined channel. We feel the watershed size and defined drainage swale would develop a channel formation if the access of equipment and cattle was eliminated.

**Environmental Banc & Exchange, LLC**

Martin W. Hovis

Project Manager

909 Capability Drive, Suite 3100

Dir: 919-829-9909 ext 24

Cell: 919-648-3661

Fax: 919-829-9913

[www.ebxusa.com](http://www.ebxusa.com)

## **Appendix C – Baseline Information Data**

NCDWQ Stream Classification Forms  
FHWA Categorical Exclusion Form

Hockett Dairy Site

NC DWQ Stream Identification Form Version 4.11

Date: 12-18-2010	Project/Site: Hockett Dairy Site UT-1	Latitude:
Evaluator: BSH	County: Randolph	Longitude:
Total Points: 16 Stream is at least intermittent if > 19 or perennial if > 30*	Stream Determination (circle one) Ephemeral Intermittent Perennial	Other e.g. Quad Name:

A. Geomorphology (Subtotal = 9.5)	Absent	Weak	Moderate	Strong
1 <sup>a</sup> Continuity of channel bed and bank	0	1	2	3
2. Sinuosity of channel along thalweg	0	0	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	0	2	3
5. Active/relict floodplain	0	0	2	3
6. Depositional bars or benches	0	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 = 0			Yes = 3

<sup>a</sup> artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 2.5)	Absent	Weak	Moderate	Strong
12. Presence of Baseflow	0	1	2	3
13. Iron oxidizing bacteria	0	1	2	3
14. Leaf litter	0	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)	Absent	Weak	Moderate	Strong
18. Fibrous roots in streambed	0	2	1	0
19. Rooted upland plants in streambed	0	2	1	0
20. Macroinvertebrates (note diversity and abundance)	C	1	2	3
21. Aquatic Mollusks	C	1	2	3
22. Fish	C	0.5	1	1.5
23. Crayfish	C	0.5	1	1.5
24. Amphibians	C	0.5	1	1.5
25. Algae	C	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: 12-14-2010	Project/Site: Hockett Dairy UT-2	Latitude:
Evaluator: GKL BSH	County: Randolph	Longitude:
Total Points: 29+ Stream is at least intermittent if > 19 or perennial if > 30*	Stream Determination (circle one) Ephemeral Intermittent Perennial	Other e.g. Quad Name:

A. Geomorphology (Subtotal = 19)	Absent	Weak	Moderate	Strong
1 <sup>a</sup> 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

<sup>a</sup> artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 4)	Absent	Weak	Moderate	Strong
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)	Absent	Weak	Moderate	Strong
18. Fibrous roots in streambed	3	2	1	0
19. Rooted upland plants in streambed	3	2	1	0
20. Macroinvertebrates (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: 12-14-2010	Project/Site: Hockett Dairy UT-3	Latitude:
Evaluator: GKL BSH	County: Randolph	Longitude:
Total Points: Stream is at least intermittent if ≥ 19 or perennial if ≥ 30* 27.5	Stream Determination (circle one) Ephemeral (intermittent) Perennial	Other e.g. Quad Name:

A. Geomorphology (Subtotal = 19)	Absent	Weak	Moderate	Strong
1 <sup>a</sup> 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	

\*artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 3.5)	Absent	Weak	Moderate	Strong
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)	Absent	Weak	Moderate	Strong
18. Fibrous roots in streambed	3	(2)	1	0
19. Rooted upland plants in streambed	(3)	2	1	0
20. Macroinvertebrates (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: 12-14-2010	Project/Site: Hockett Dairy UT-4 Upstream	Latitude:
Evaluator: GKL BSH	County: Randolph	Longitude:
Total Points: Stream is at least intermittent if ≥ 19 or perennial if ≥ 30* 19	Stream Determination (circle one) Ephemeral (intermittent) Perennial	Other e.g. Quad Name:

A. Geomorphology (Subtotal = 12.5)	Absent	Weak	Moderate	Strong
1 <sup>a</sup> 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	

\*artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 3.5)	Absent	Weak	Moderate	Strong
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 = ?)	Absent	Weak	Moderate	Strong
18. Fibrous roots in streambed	3	2	(1)	0
19. Rooted upland plants in streambed	3	(2)	1	0
20. Macroinvertebrates (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:

NCDWQ Stream Identification Form Version 4.11

Date: 12-14-2010	Project/Site: Hockett Dairy UT-4 Downstream	Latitude:
Evaluator: GKL BSH	County: Randolph	Longitude:
Total Points: Stream is at least intermittent if $\geq 19$ or perennial if $\geq 30^*$ 25.5	Stream Determination (circle one) Ephemeral (Intermittent) Perennial	Other e.g. Quad Name:

A. Geomorphology (Subtotal = 15.5)

	Absent	Weak	Moderate	Strong
1 <sup>a</sup> 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	

<sup>a</sup>artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 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)

18. Fibrous roots in streambed	3	2	1	0
19. Rooted upland plants in streambed	3	2	1	0
20. Macroinvertebrates (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			

<sup>a</sup>perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

NCDWQ Stream Identification Form Version 4.11

Date: 12-14-2010	Project/Site: Hockett Dairy UT-5	Latitude:
Evaluator: GKL BSH	County: Randolph	Longitude:
Total Points: Stream is at least intermittent if $\geq 19$ or perennial if $\geq 30^*$ 21	Stream Determination (circle one) Ephemeral (Intermittent) Perennial	Other e.g. Quad Name:

A. Geomorphology (Subtotal = 14.5)

	Absent	Weak	Moderate	Strong
1 <sup>a</sup> 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	

<sup>a</sup>artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 3.5)

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 = 3)

18. Fibrous roots in streambed	3	2	1	0
19. Rooted upland plants in streambed	3	2	1	0
20. Macroinvertebrates (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			

<sup>a</sup>perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

NCDWQ Stream Identification Form Version 4.11

Date: 12-15-2010	Project/Site: Hockett Dairy UT-6	Latitude:
Evaluator: GKL BSA	County: Randolph	Longitude:
Total Points: <i>Stream is at least intermittent if <math>\geq 18</math> or perennial if <math>\geq 30</math>*</i> 13	Stream Determination (circle one) Ephemeral Intermittent Perennial	Other e.g. Quad Name:

A. Geomorphology (Subtotal = 6.5)

	Absent	Weak	Moderate	Strong
1 <sup>a</sup> 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	

<sup>a</sup>artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 3.5)

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 = 3)

18. Filtrous roots in streambed	3	2	1	0
19. Rooted upland plants in streambed	3	2	1	0
20. Macroinvertebrates (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			

<sup>a</sup>perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

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Sketch:

**Appendix A**

**Categorical Exclusion Form for Ecosystem Enhancement  
Program Projects  
Version 1.4**

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

<b>Part 1: General Project Information</b>	
<b>Project Name:</b>	Hockett Dairy Stream Buffer Restoration Project
<b>County Name:</b>	Randolph
<b>EEP Number:</b>	
<b>Project Sponsor:</b>	Environmental Banc & Exchange
<b>Project Contact Name:</b>	Norton Webster
<b>Project Contact Address:</b>	909 Capability Drive, Suite 3100, Raleigh, NC 27606
<b>Project Contact E-mail:</b>	Norton@EBXUSA.com
<b>EEP Project Manager:</b>	
<b>Project Description</b>	
<p>The Hockett Dairy site has been identified by NC Ecosystem Enhancement Program to provide compensatory mitigation for unavoidable buffer impacts. The stream channel buffers have been impacted from livestock and ongoing agricultural operations. The proposed project consists of approximately 11.79 (Option 1) or 9.81 (Option 2) acres of buffer restoration on four unnamed tributaries to Randleman Lake, five ditches, and three farm ponds.</p>	
<b>For Official Use Only</b>	
<b>Reviewed By:</b>	
<b>Date</b>	<b>EEP Project Manager</b>
<b>Conditional Approved By:</b>	
<b>Date</b>	<b>For Division Administrator FHWA</b>
<input type="checkbox"/> Check this box if there are outstanding issues	
<b>Final Approval By:</b>	
<b>Date</b>	<b>For Division Administrator FHWA</b>



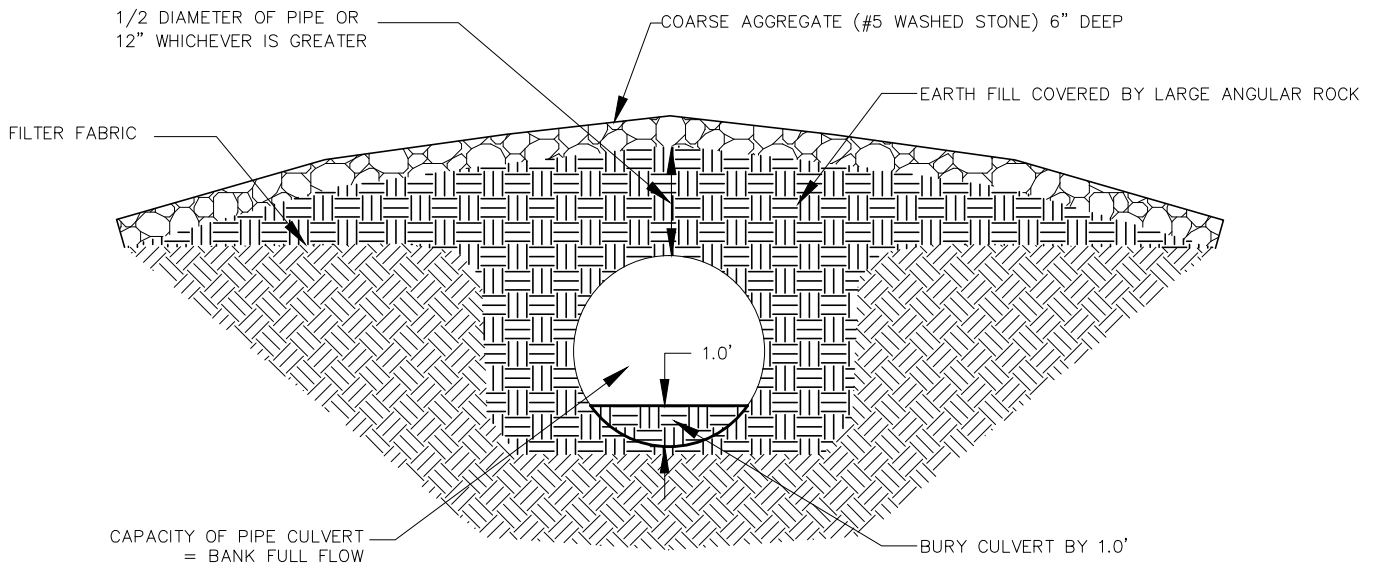
Part 2: All Projects Regulation/Question		Response
<b>Coastal Zone Management Act (CZMA)</b>		
1. Is the project located in a CAMA county?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2. Does the project involve ground-disturbing activities within a CAMA Area of Environmental Concern (AEC)?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
3. Has a CAMA permit been secured?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
4. Has NCDCEM agreed that the project is consistent with the NC Coastal Management Program?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
<b>Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)</b>		
1. Is this a "full-delivery" project?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
2. Has the zoning/land use of the subject property and adjacent properties ever been designated as commercial or industrial?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> 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?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> 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?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
5. As a result of a Phase II Site Assessment, are there known or potential hazardous waste sites within the project area?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
6. Is there an approved hazardous mitigation plan?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
<b>National Historic Preservation Act (Section 106)</b>		
1. Are there properties listed on, or eligible for listing on, the National Register of Historic Places in the project area?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2. Does the project affect such properties and does the SHPO/THPO concur?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
3. If the effects are adverse, have they been resolved?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
<b>Uniform Relocation Assistance and Real Property Acquisition Policies Act (Uniform Act)</b>		
1. Is this a "full-delivery" project?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
2. Does the project require the acquisition of real estate?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
3. Was the property acquisition completed prior to the intent to use federal funds?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> 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?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A

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

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

## **Appendix D – Construction Details**

- 1 Culvert Crossing
- 2 Ford Stream Crossing
- 3 Bare Root Planting
- 4 Seeding Schedule
- 5 Slope Stabilization

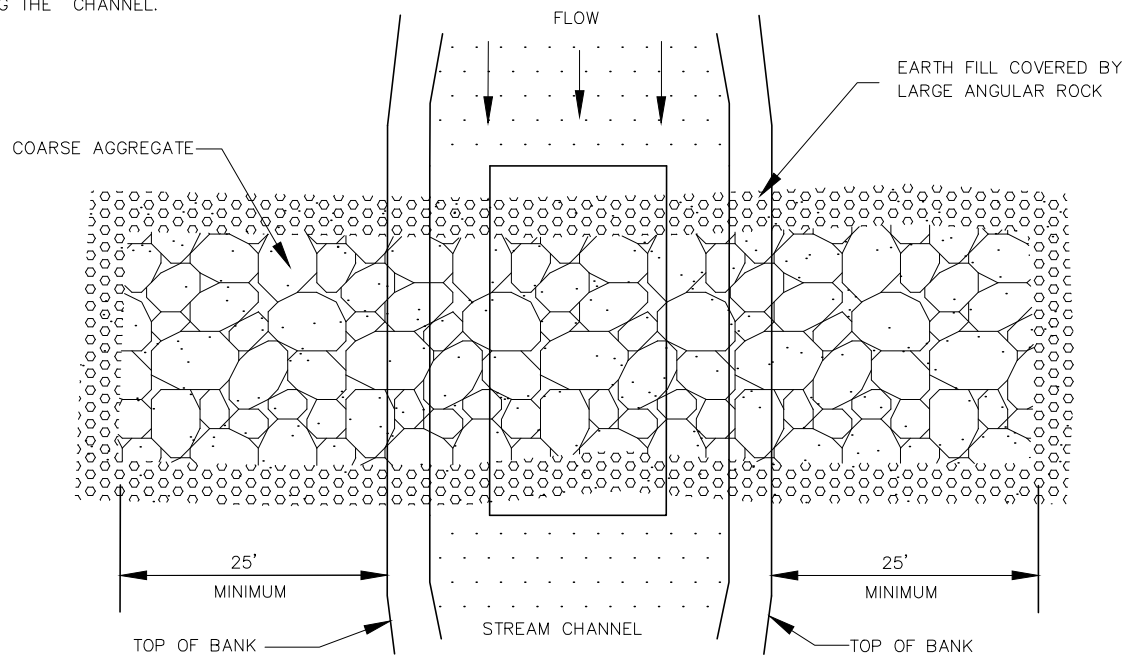


ELEVATION

NOTES:

1. CONSTRUCT STREAM CROSSING WHEN FLOW IS LOW.
2. INSTALL STREAM CROSSING PERPENDICULAR TO FLOW.
3. CONTRACTOR TO COORDINATE APPROPRIATE BEDDING MATERIAL WITH MANUFACTURER.
4. FILTER FABRIC USED SHALL BE NCDOT TYPE 2 ENGINEERING FABRIC OR EQUIVALENT.
5. WIDTH OF THE CROSSING SHALL BE SUFFICIENT (12' MIN.) TO ACCOMMODATE THE LARGEST VEHICLE CROSSING THE CHANNEL.

REACH	CULVERT SIZE/TYPE
UT-3	36" CMP
UT-4	36" CMP



PLAN

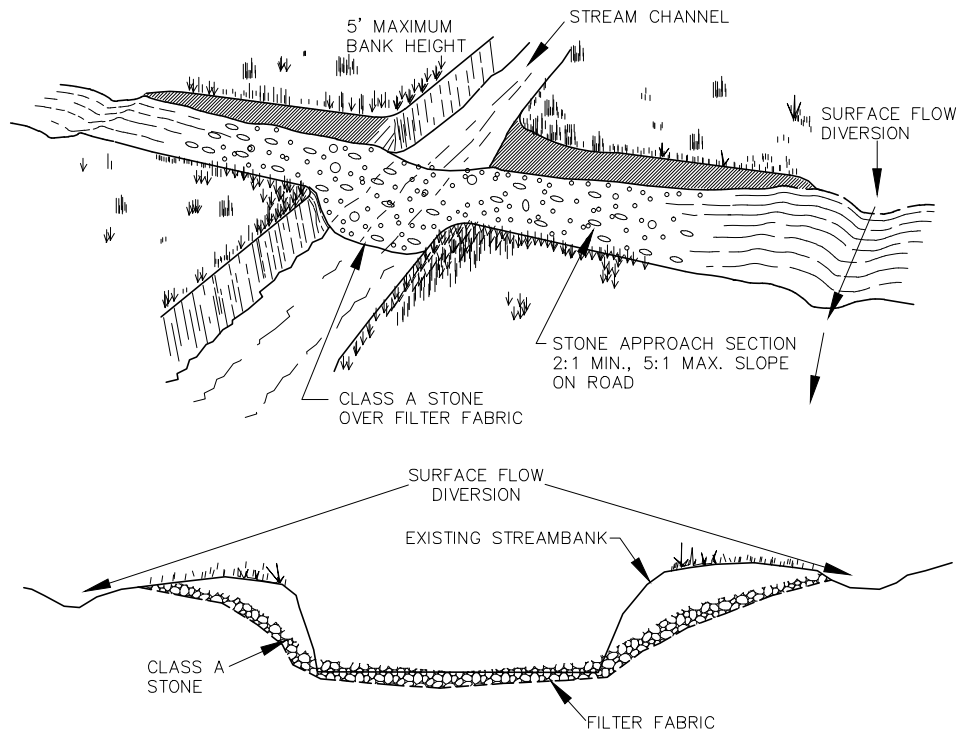
CULVERT CROSSING  
NOT TO SCALE

PROJECT MANAGER DPI	DRAWING SCALE NTS
DRAWN BY FM	PROJECT DATE 03/2012
APPROVED BY DPI	PROJECT NUMBER 2011017700RA
FILE NAME DETAILS	PLOT DATE 03/2012



720 CORPORATE CENTER DRIVE  
RALEIGH, NC 27607  
(919) 782-0495

Office Locations:  
North Carolina  
South Carolina  
Georgia



NOTES:

1. CONSTRUCT STREAM CROSSING WHEN FLOW IS LOW.
2. HAVE ALL NECESSARY MATERIALS AND EQUIPMENT ON-SITE BEFORE WORK BEGINS.
3. MINIMIZE CLEARING AND EXCAVATION OF STREAMBANKS. DO NOT EXCAVATE CHANNEL BOTTOM. COMPLETE ONE SIDE BEFORE STARTING ON THE OTHER SIDE.
4. INSTALL STREAM CROSSING PERPENDICULAR TO FLOW.
5. GRADE SLOPES TO A MINIMUM OF 2:1 SLOPE, MAXIMUM
6. MAINTAIN CROSSING SO THAT RUNOFF IN THE CONSTRUCTION ROAD DOES NOT ENTER EXISTING CHANNEL.
7. A STABILIZED PAD OF NATURAL CLASS A STONE, 6 INCHES THICK, LINED WITH FILTER FABRIC SHALL BE USED OVER THE BERM AND ACCESS SLOPES.
8. FILTER FABRIC USED SHALL BE NCDOT TYPE 2 ENGINEERING FABRIC OR EQUIVALENT.
9. WIDTH OF THE CROSSING SHALL BE SUFFICIENT (12' MIN.) TO ACCOMMODATE THE LARGEST VEHICLE CROSSING THE CHANNEL.
10. CONTRACTOR SHALL DETERMINE AN APPROPRIATE RAMP ANGLE ACCORDING TO EQUIPMENT UTILIZED.

FORD STREAM CROSSING

NOT TO SCALE

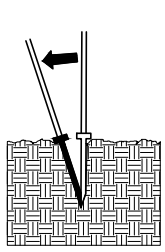
PROJECT MANAGER DPI	DRAWING SCALE NTS
DRAWN BY FM	PROJECT DATE 03/2012
APPROVED BY DPI	PROJECT NUMBER 2011017700RA
FILE NAME DETAILS	PLOT DATE 03/2012



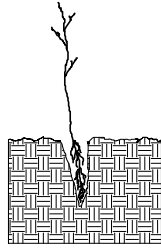
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Office Locations:  
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South Carolina  
Georgia

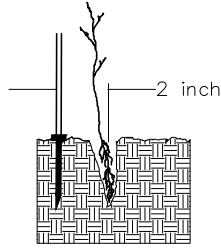
DIBBLE PLANTING METHOD  
USING THE KBC PLANTING BAR



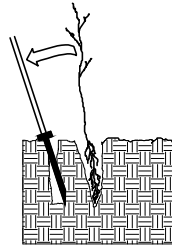
1. INSERT PLANTING BAR AS SHOWN AND PULL HANDLE TOWARD PLANTER.



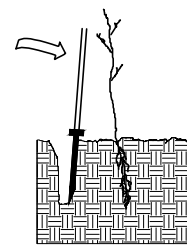
2. REMOVE PLANTING BAR AND PLACE SEEDLING AT CORRECT DEPTH.



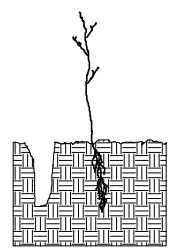
3. INSERT PLANTING BAR 2 INCHES TOWARD PLANTER FROM SEEDING.



4. PULL HANDLE OF BAR TOWARD PLANTER, FIRING SOIL AT BOTTOM.



5. PUSH HANDLE FORWARD FIRING SOIL AT TOP.



6. LEAVE COMPACTION HOLE OPEN. WATER THOROUGHLY.

PLANTING NOTES:

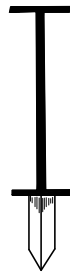
PLANTING BAG  
DURING PLANTING, SEEDLINGS SHALL BE KEPT IN A MOIST CANVAS BAG OR SIMILAR CONTAINER TO PREVENT THE ROOT SYSTEMS FROM DRYING.



NOTES:

BARE ROOTS SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.

KBC PLANTING BAR  
PLANTING BAR SHALL HAVE A BLADE WITH A TRIANGULAR CROSS SECTION, AND SHALL BE 12 INCHES LONG, 4 INCHES WIDE AND 1 INCH THICK AT CENTER.



ROOT PRUNING  
ALL SEEDLINGS SHALL BE ROOT PRUNED, IF NECESSARY, SO THAT NO ROOTS EXTEND MORE THAN 10 INCHES BELOW THE ROOT COLLAR.

COMMON NAME	SCIENTIFIC NAME	PERCENT COMPOSITION
Eastern Redbud	<i>Cercis canadensis</i>	10
Green Ash	<i>Fraxinus pennsylvanica</i>	20
American Sycamore	<i>Platanus occidentalis</i>	20
White Oak	<i>Quercus alba</i>	10
Willow Oak	<i>Quercus phellos</i>	15
Water Oak	<i>Quercus nigra</i>	10
Northern Red Oak	<i>Quercus rubra</i>	15

BARE ROOT PLANTING

NOT TO SCALE

PROJECT MANAGER DPI	DRAWING SCALE NTS
DRAWN BY FM	PROJECT DATE 03/2012
APPROVED BY DPI	PROJECT NUMBER 2011017700RA
FILE NAME DETAILS	PLOT DATE 03/2012



720 CORPORATE CENTER DRIVE  
RALEIGH, NC 27807  
(919) 782-0495

Office Locations:  
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South Carolina

Georgia

### Temporary Riparian Seeding

#### Seed Mix A - Winter

Common Name	Scientific Name
Barley	<i>Hordeum sp.</i>
Winter Rye	<i>Secale cereale</i>

#### Seed Mix B - Summer

Common Name	Scientific Name
Browntop Millet	<i>Panicum ramosum</i>
Pearl Millet	<i>Pennisetum glaucum</i>
Sudangrass	<i>Sorghum bicolor</i>
German Foxtail Millet (Foxtail bristlegrass)	<i>Setaria italica</i>
Japanese Millet	<i>Echinochloa frumentacea</i>

Planting rate is 20 lb/acre.

#### Seeding dates

Summer: May through September plant summer mix;  
July 15 through September plant summer mix and  
replant with winter mix in October.

Winter: October through April plant winter mix;  
February 15 through April plant winter mix and  
replant with summer mix in May.

#### Soil amendments

Follow recommendations of soil tests or apply 2,000  
lb/acre ground agricultural limestone and 750 lb/acre  
10-10-10 fertilizer.

#### Mulch

Apply 4,000 lb/acre straw. Anchor straw by netting or a  
mulch anchoring tool. Asphalt shall not be used.

#### Maintenance

Refertilize if growth is not fully adequate. Reseed,  
refertilize and mulch immediately following erosion or  
other damage.

### Permanent Riparian Seeding

#### Seed Mix

Common Name	Scientific Name	% Composition
Broomsedge Bluestem	<i>Andropogon virginicus</i>	10
Sedge, Fringed	<i>Carex crinita</i>	5
Sedge, Tussock	<i>Carex stricta</i>	5
Virginia Wildrye	<i>Elymus virginicus</i>	10
Purple Lovegrass	<i>Eragrostis spectabilis</i>	10
Hairawn Muhly	<i>Muhlenbergia capillaris</i>	15
Deertongue	<i>Panicum clandestinum</i>	10
Beaked Panic Grass	<i>Panicum anceps</i>	15
Little Blue Stem	<i>Schizachyrium scoparium</i>	10
Eastern Gamagrass	<i>Tripsacum dactyloides</i>	10

Planting rate is 15 lb/acre.

#### Soil amendments

Apply lime and fertilizer according to soil test, or apply 2500 lb/acre  
ground agricultural limestone (use the lower rate on sandy soils) and  
600 lb/acre 10-10-10 fertilizer.

#### Mulch

Apply 3,000-4,000 lb/acre grain straw or equivalent cover of another  
suitable mulching material. Anchor mulch by roving or netting. Netting  
is the preferred anchoring method on steep slopes. Asphalt shall not be  
used.

## SEEDING SCHEDULE

PROJECT MANAGER DPI	DRAWING SCALE NTS
DRAWN BY FM	PROJECT DATE 03/2012
APPROVED BY DPI	PROJECT NUMBER 2011017700RA
FILE NAME DETAILS	PLOT DATE 03/2012

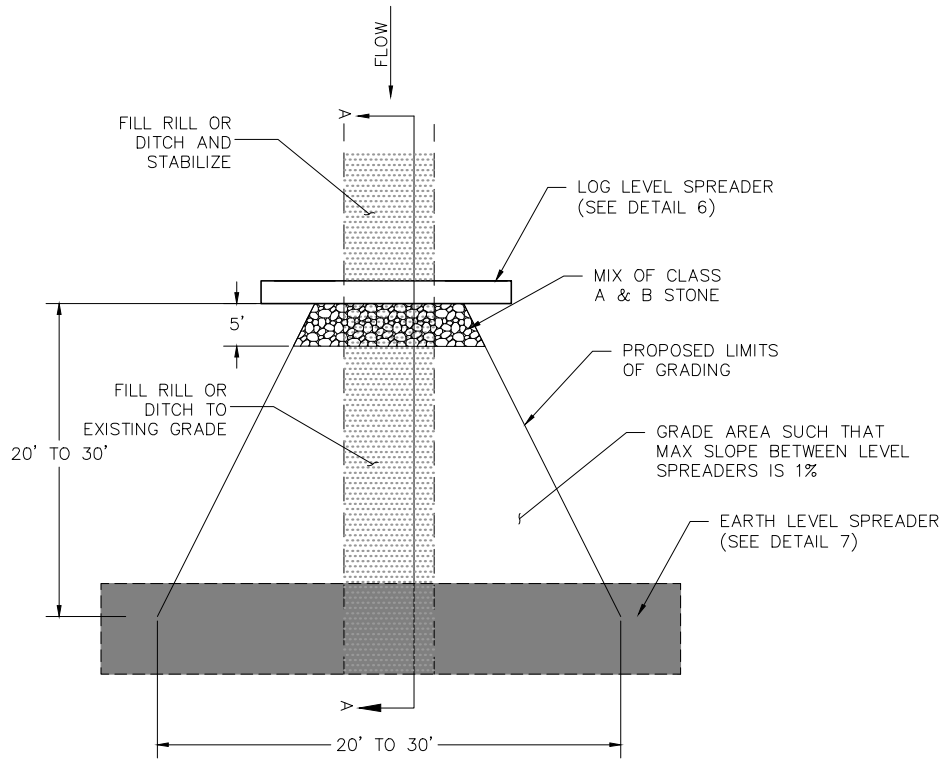


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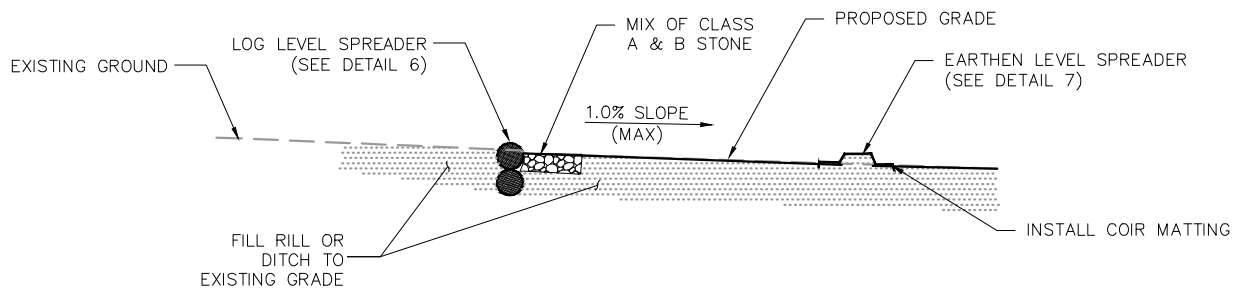
Office Locations:  
North Carolina  
South Carolina

Georgia





PLAN VIEW



SECTION A-A

NOTES:  
LOGS SHALL BE AT LEAST 10'-15' LONG, 10 INCHES IN DIAMETER, AND HARDWOOD (OAK SPECIES).

## SLOPE STABILIZATION BMP

NOT TO SCALE

PROJECT MANAGER DPI	DRAWING SCALE NTS
DRAWN BY FM	PROJECT DATE 03/2012
APPROVED BY DPI	PROJECT NUMBER 2011017500RA
FILE NAME DETAILS	PLOT DATE 04/2012

DETAIL 5



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