FINAL MONITORING REPORT
YEAR 5 of 5

Hockett Dairy Site
Riparian Buffer Restoration
DMS Contract Number 003993 – DMS Site 95013
DWR Project Number 2016-0402

Randolph County, North Carolina
Cape Fear River Basin
HUC 03030003010070

Submitted to:

North Carolina Division of Mitigation Services

North Carolina Department of Environmental Quality
1652 Mail Service Center
Raleigh, NC 27699-1652

Construction Completed: October 2012
Data Collection Period: October 2017
Submission Date: January 2018

This project was developed in conformance with Randleman Buffer Rules 15A NCAC 02B. 0250

Provided by:

Resource Environmental Solutions, LLC
302 Jefferson Street, Suite 110
Raleigh, NC 27605
919-829-9909

TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY / PROJECT ABSTRACT 1
1.1 Project Goals and Objectives 1
1.2 Project Background 1
1.3 Vegetation Condition 2
1.4 Summary Information / Data 2
2.0 METHODOLOGY 2
3.0 REFERENCES 4

APPENDICES

Appendix A. Project Vicinity Map and Background Tables

Figure 1	Vicinity Map and Directions
Table 1	Project Restoration Components
Table 2	Project Activity and Reporting History
Table 3	Project Contacts
Table 4	Project Attributes

Appendix B. Visual Assessment Data

Figure 2	Current Condition Plan View (CCPV)
Table 5	Vegetation Condition Assessment Table
Photos	Vegetation Plot Photos

Appendix C. Vegetation Plot Data

Table 6	Vegetation Plot Success by Project Asset Type
Table 7	CVS Stem Count Total and Planted with/without Livestakes by Plot and Species

1.0 EXECUTIVE SUMMARY / PROJECT ABSTRACT

1.1 Project Goals and Objectives

The Hockett Dairy Buffer Mitigation Project is located in the 03030003 Catalog Unit (CU), in the Cape Fear River Basin. Assets of this CU include the Deep River, the Randleman Reservoir, and major communities including High Point, Asheboro, Siler City, and Sanford. Restoration goals for CU 03030003 as identified in the 2009 Cape Fear River Basin RBRP include protection of several species of mussel and the Cape Fear Shiner (*Notropis mekistocholas*). Additional goals include the improvement in water quality to waters draining to Randleman Reservoir.

The Hockett Dairy Buffer Mitigation Project 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
1. Nutrient removal 2. Sediment removal 3. Runoff filtration 4. Increase dissolved oxygen concentration 5. Restore riparian habitats 6. Reduce water temperature	• Restore minimum 50-foot riparian buffer by planting appropriate bottomland hardwood species to filter runoff. • Convert active farm fields to forested buffers. • Plant buffer vegetation to shade channel. • Restore riparian buffer habitat to appropriate bottomland hardwood ecosystem. • Restore canopy tree species in the stream buffer areas to shade channel. • Eliminate and control exotic invasive species. • Replace two undersized and failing channel crossings with appropriately sized culverts or ford. • Stabilize two small dams on small farm ponds.

1.2 Project Background

The Hockett Dairy Riparian Buffer Mitigation Site is located on Hockett Dairy Road (SR 1938) in Randolph County approximately 12 miles north of Asheboro, NC (**Figure 1**). The site is located in the Cape Fear River Basin within Cataloging Unit 03030003010070 (NCDWQ sub-basin 03-06-08). The site has five unnamed tributaries (UT) that drain into Randleman Lake. The project consists of 11.82 acres of buffer restoration.

The Hockett Dairy Buffer 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 2 and UT 3. The topography of the project area is generally rolling with elevations ranging from 670 to 760 feet. The five unnamed tributaries to Randleman Lake comprise the principle drainage features. These tributaries have limited hardwood trees present within the buffer and lack significant ground cover. The mature trees are less than 100 stems per acres. 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. Cattle had 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.

The Hockett Dairy mitigation project provides high quality riparian buffer restoration. Stream buffer mitigation for the Hockett Dairy Site involved buffering five streams that flow directly and indirectly into

Randleman Lake. The mitigation design divides the site into five distinct reaches **(Figure 2)**. Buffer restoration was performed along five channels. Two undersized and failing channel crossings were replaced with appropriately sized culverts to prevent erosion. Two small dams on small farm ponds have been stabilized.

1.3 Vegetation Condition

The measure of vegetative success for the site is the survival of at least 320 five-year old planted trees per acre at the end of year five of the monitoring period. During October 2017, CVS Level 2 was performed in Year 5 to document any volunteer generation. A total of 25 volunteers were observed across all 12 vegetation plots. Year 5 monitoring recorded an average of 573 planted stems per acre and 658 total stems per acre (planted and volunteers) across all vegetation plots. All plots achieved success criteria in Year 5 except for Plot 7 which only had three planted stems. Plot 7 is located in a low stem density area about 0.07 acres in size (**Figure 2a**). The low stem density area is below the CCPV mapping threshold and less than 1% of the project area. Aside from this area the site is exceeding performance standards. Overall the site is recommended for close out. MY5 conditions are shown on the Current Condition Plan View which is provided in **Appendix B**, **Figure 2**.

1.4 Summary Information / Data

Summary information/data related to the occurrence of items such as beaver or encroachment and statistics related to performance of various project and monitoring elements can be found in the tables and figures in the report appendices. Narrative background and supporting information formerly found in these reports can be found in the Baseline Monitoring Report (formerly Mitigation Plan) and in the Mitigation Plan (formerly the Restoration Plan) documents available on DMS's website. All raw data supporting the tables and figures in the appendices is available from DMS upon request.

2.0 METHODOLOGY

In order to determine if the success criteria are achieved and the planted areas are developing toward the target community, NCDMS-CVS Protocol for Recording Vegetation Version 4.2 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 will be provided to NCDMS and CVS following NCDMS-CVS guidance. The annual monitoring requirements are summarized in the following table:

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	Semi-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

Photographs will be used to visually document restoration success. Reference photos will be taken once a year and will be used to visually document restoration success. Reference photo stations are 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 the same area in each photo over time. Photographs will be used to subjectively evaluate vegetation establishment. A series of photos over time should indicate successional maturation of riparian vegetation.

3.0 REFERENCES

Lindenmayer, D.B., and J.F. Franklin. (2002), *Conserving forest biodiversity: A comprehensive multiscaled approach.* Island Press, Washington, DC.

N.C. Department of Environment and Natural Resources Ecosystem Enhancement Program. 2004. *Guidelines for Riparian Buffer Restoration.* Available online at http://portal.ncdenr.org/web/eep/process-and-protocol.

N.C. Department of Environment and Natural Resources. 2005. "Basinwide Planning Program : October 2005 Cape Fear River Basinwide Water Quality Plan." October 2005. Available online at http://portal.ncdenr.org/web/wq/ps. [Accessed 01 February 2012].

N.C. Department of Environment and Natural Resources Ecosystem Enhancement Program. 2012. *Procedural Guidance and Content Requirements for EEP Monitoring Reports.* Available online at http://portal.ncdenr.org/web/eep/fd-forms-templates.

N.C. Division of Water Quality. 2010. Methodology for Identification of Intermittent and Perennial Streams and their Origins, Version 4.11. North Carolina Department of Environment and Natural Resources, Division of Water Quality. Raleigh, NC.

Peet, R.K., Wentworth, T.S., and White, P.S. (1998), *A flexible, multipurpose method for recording vegetation composition and structure*. Castanea 63:262-274

Radford, A.E., H.E. Ahles and F.R. Bell. 1968. Manual of the Vascular Flora of the Carolinas. The University of North Carolina Press, Chapel Hill, North Carolina.

Schafale, M.P. and Weakley, A. S. (1990), *Classification of the Natural Communities of North Carolina, Third Approximation,* NC Natural Heritage Program, Raleigh, NC

United States Geological Survey. 1982. 7.5 Minute Topographic Map, Pleasant Garden, NC.

Young, T.F. and Sanzone, S. (editors). (2002), *A framework for assessing and reporting on ecological condition*. Ecological Reporting Panel, Ecological Processes and Effects Committee. EPA Science Advisory Board. Washington, DC.

Appendix A

Project Vicinity Map and Background Tables

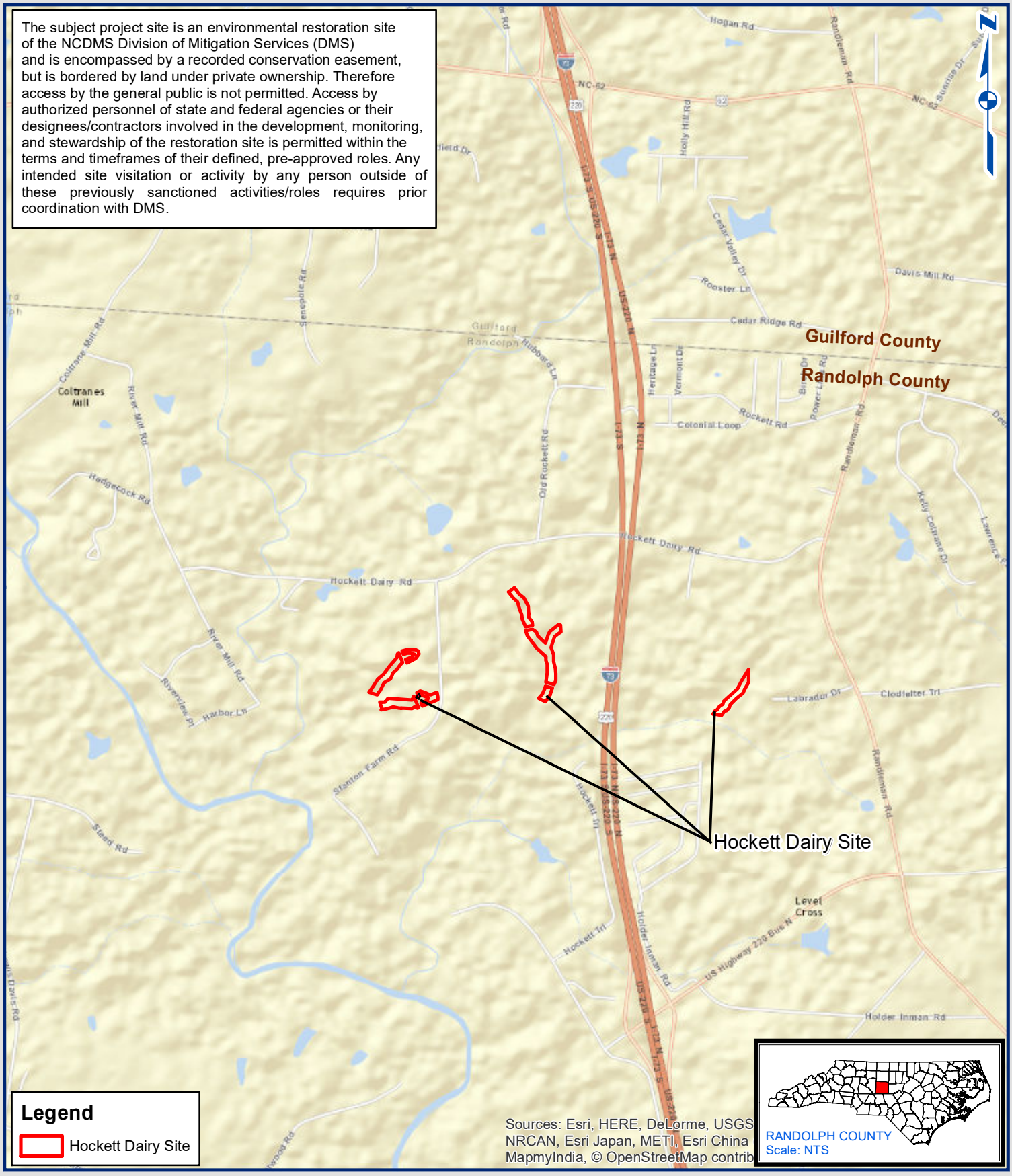

Figure 1. Project Vicinity Map

Hockett Dairy Riparian Buffer Restoration Site

Randolph County, North Carolina

DMS Project ID# 003993

0 1,000 2,000 4,000 Feet

1 inch = 2,000 feet

Table 1. Project Components and Mitigation Credits
Hockett Dairy, Randolph County
DMS Project ID Number 003993 DMSS 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	514,879 sq ft.	N/A	N/A

Project Components

Reach ID	Stationing/ Location	Existing Footage (LF)	Approach (PI, PII, etc.)	Restoration -or- Restoration Equivalent	Restoration Area (sq ft)	Mitigation Ratio
Reach UT2	N/A	733	N/A	Buffer Restoration	74,923	1:1
Reach UT3	N/A	817	N/A	Buffer Restoration	80,586	1:1
Reach UT4	N/A	1884	N/A	Buffer Restoration	201,247	1:1
Reach UT5	N/A	466	N/A	Buffer Restoration	38,768	1:1
Reach UT6	N/A	797	N/A	Buffer Restoration	80,150	1:1
Pond 2	N/A	378*	N/A	Buffer Restoration	22,651	1:1
Pond 3	N/A	338*	N/A	Buffer Restoration	16,553	1:1
				Total	514,879	

*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	514,879	N/A

Table 2. Project Activity and Reporting History
Hockett Dairy, Randolph County
DMS Project ID Number 003993 DMS Site 95013

Elapsed time since planting complete: 4 year, 11 months
Number of reporting years: 5

Activity or Report	Data Collection Complete	Completion or Delivery
Mitigation Plan	January 2012	May 2012
Final Design - Construction Plans	N/A	May 2012
Construction	N/A	October 2012
Temporary S&E mix applied to project area	N/A	June 2012
Permanent seed mix applied to project area	N/A	June 2012
Containerized and B&B plantings planted in project area	N/A	February 2013
Baseline Monitoring Document (Year 0 Monitoring - baseline)	February 2013	March 2013
Year 1 Monitoring	October 2013	October 2013
Year 2 Monitoring	September 2014	September 2014
Year 3 Monitoring	January 2016	February 2016
Year 4 Supplemental Replanting	N/A	April 2016
Year 4 Monitoring	December 2016	January 2017
Year 5 Monitoring	October 2017	January 2018

Table 3. Project Contact Table Hockett Dairy, Randolph County DMS Project ID Number 003993 DMS Site 95013	
Designer	WK Dickson & Co., Inc.
Primary project design POC	Frasier Mullen - (919) 782-0495
Construction Contractor	KBS Earthworks
Construction contractor POC	Kory Strader - (336) 362-0289
Planting Contractor	Strader Fencing
Planting contractor POC	Kenneth Strader - (336) 697-7005
Seeding Contractor	Strader Fencing
Planting contractor POC	Kenneth Strader - (336) 697-7005
Seed Mix Sources	Evergreen Seed, Inc
Nursery Stock Suppliers	ArborGen
Monitoring Performers	Resource Environmental Solutions, LLC
Vegetation Monitoring POC	Brian Hockett - (919)-209-1054

Table 4. Project Baseline Information and Attributes Hockett Dairy, Randolph County DMS Project ID Number 003993 DMS Site 95013	
Project Information	
Project Name	Hockett Dairy Buffer Mitigation Site
County	Randolph
Project Area (acres)	12.99
Project Coordinates (latitude and longitude)	35° 53' 55.219" N, 79° 49' 37.381"W
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 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 4 (cont.). Project Baseline Information and Attributes Hockett Dairy, Randolph County DMS Project ID Number 003993 DMS Site 95013					
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 (ft/ft)	0.0004	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	0.1	10%	15%	5%	20%

Regulatory Considerations			
Regulation	**Applicable**	**Resolved**	**Supporting Documentation**
Waters of the United States - Section 404	Yes	Yes	see Mitigation Plan
Waters of the United States - Section 401	Yes	Yes	see Mitigation Plan
Endangered Species Act	Yes	Yes	see Mitigation Plan
Historic Preservation Act	Yes	Yes	see Mitigation Plan
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

Appendix B

Visual Assessment Data

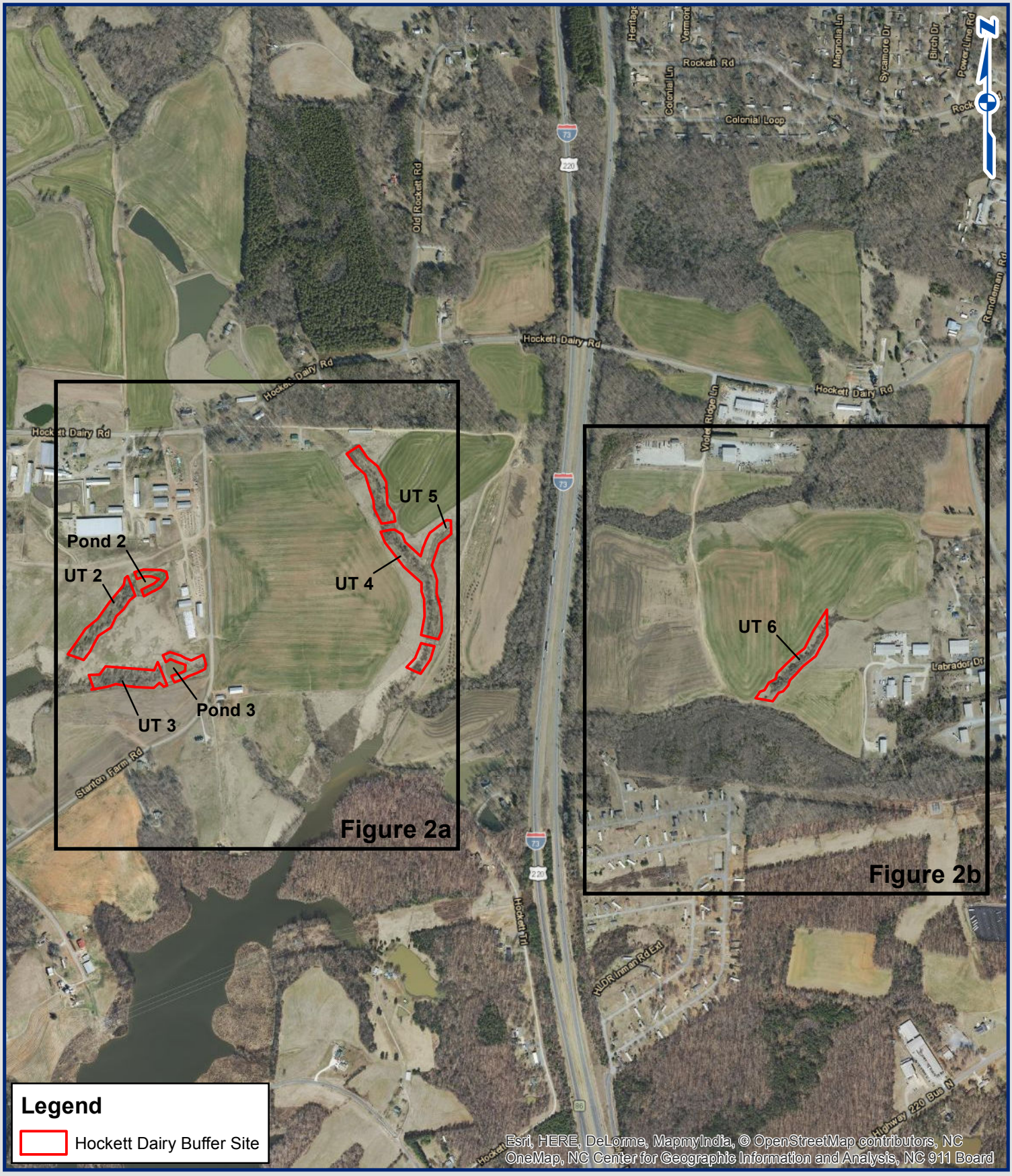

Figure 2-KEY. Current Condition Plan View

Hockett Dairy Riparian Buffer Restoration Site

Randolph County, North Carolina

DMS Project ID# 003993

0 500 1,000 2,000 Feet

1 inch = 1,000 feet

Date:January 2017

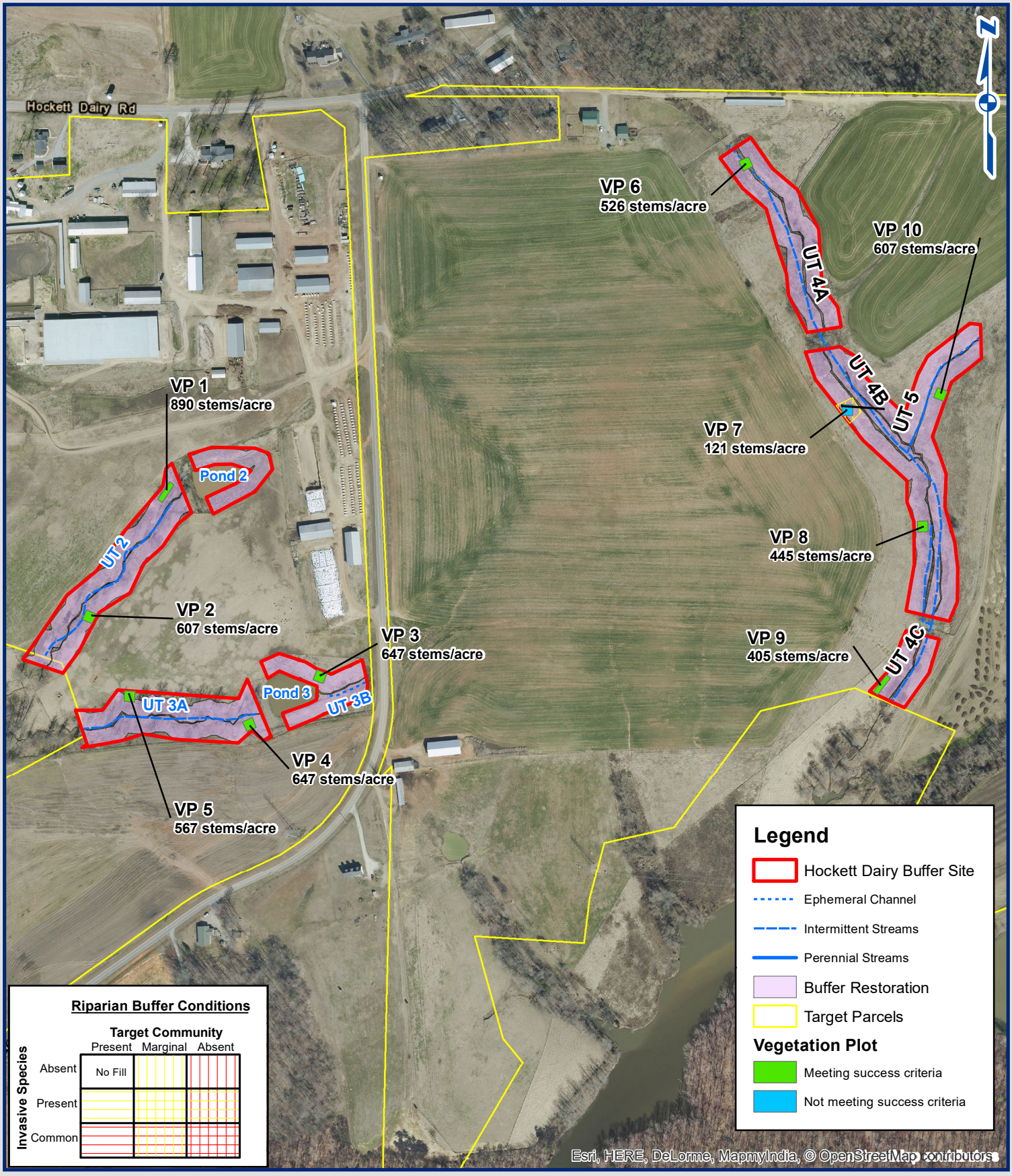

Figure 2a. Current Condition Plan View

Hockett Dairy Riparian Buffer Restoration Site

Randolph County, North Carolina

DMS Project ID# 003993

0 200 400 800 Feet

1 inch = 400 feet

Date: October 2017

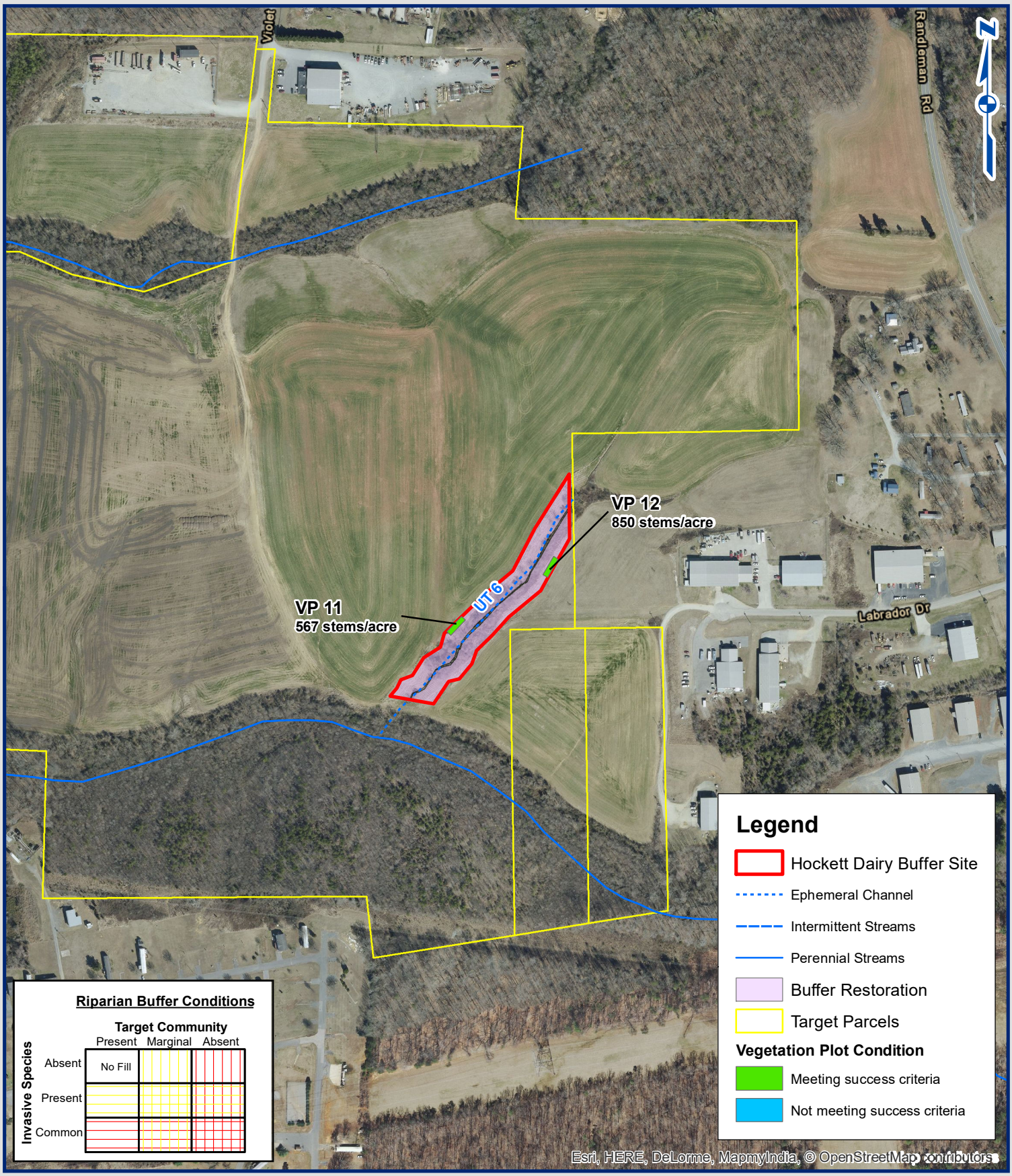

Figure 2b. Current Condition Plan View

Hockett Dairy Riparian Buffer Restoration Site

Randolph County, North Carolina

DMS Project ID# 003993

0 200 400 800 Feet

1 inch = 400 feet

Date: October 2017

Table 5. Vegetation Condition Assessment Hockett Dairy, Randolph County DMS Project ID Number 003993 DMS Site 95013						
Planted Acreage:	**12.99**					
Vegetation Category	**Definitions**	**Mapping Threshold**	**CCPV Depiction**	**Number of Polygons**	**Combined Acreage**	**% of Planted Acreage**
1. Bare Areas	Very limited cover of both woody and herbacious material.	0.1 acres	N/A	0	0.00	0%
2. Low Stem Density Areas	Woody stem densities clearly below target levels based on MY3, 4, or 5 stem count criteria.*	0.1 acres	vertical yellow line fill	0	0	0%
			Total:	**0**	**0**	**0%**
3. Areas of Poor Growth Rates or Vigor	Areas with woody stems of a size that are obviously small given the monitoring year.	0.25 acres	N/A	0	0.00	0%
			***Cumulative Total:**	**0**	**0**	**0%**
Easement Acreage:	**12.99**					
Vegetation Category	**Definitions**	**Mapping Threshold**	**CCPV Depiction**	**Number of Polygons**	**Combined Acreage**	**% of Planted Acreage**
4. Invasive Areas of Concern	Areas or points (if too small to render as polygons at map scale)	1000 SF	horizontal yellow line fill	0	0.00	0%
5. Easement Encroachment Areas	Areas or points (if too small to render as polygons at map scale)	none	N/A	0	0	0%

Vegetation Plot Photos

Vegetation Plot 1

Vegetation Plot 2

Vegetation Plot 3

Vegetation Plot 4

Vegetation Plot 5

Vegetation Plot 6

Vegetation Plot 7

Vegetation Plot 8

Vegetation Plot 9

Vegetation Plot 10

Vegetation Plot 11

Vegetation Plot 12

Appendix C

Vegetation Plot Data

Table 6. Riparian Buffer Vegetation Totals Hockett Dairy, Randolph County DMS Project ID Number 003993 DMS Site 95013					
Plot #	**Riparian Buffer Stems Per Acre**	**Volunteers per Acre**	**Total Stems per Acre**	**Success Criteria Met?**	**Average Tree Height (cm)***
1	890	162	1052	Yes	509
2	607	202	809	Yes	369
3	647	40	688	Yes	393
4	647	81	728	Yes	378
5	567	324	890	Yes	888
6	526	0	526	Yes	272
7	121	0	121	No	294
8	445	0	445	Yes	781
9	405	0	405	Yes	322
10	607	0	607	Yes	539
11	567	40	607	Yes	317
12	850	162	1012	Yes	173
Project Avg	**573**	**84**	**658**	**Yes**	**436**

* The tallest eight trees were averaged, representing 320 stems/acre.

Table 7. CVS Stem Count Total and Planted with/without Livestakes by Plot and Species
Hockett Dairy, Randolph County
DMS Project ID Number 003993 DMS Site 95013

EEP Project Code 003993. Project Name: Hockett Dairy

Current Plot Data (MY5 2017)

Scientific Name	Common Name	Species Type	003993-01-0001			003993-01-0002			003993-01-0003			003993-01-0004			003993-01-0005			003993-01-0006			003993-01-0007			003993-01-0008			003993-01-0009			003993-01-0010			003993-01-0011			003993-01-0012		
			PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T
Acer rubrum	red maple	Tree																																				
Betula nigra	river birch	Tree	6	6	6	5	5	5	1	1	1				3	3	3	1	1	1										1	1	1	2	2	2	2	2	2
Carya ovalis	red hickory	Tree															2																				
Carya ovata	shagbark hickory	Tree						4						2																							
Celtis occidentalis	common hackberry	Tree			1			1									1																				
Cercis canadensis	eastern redbud	Tree				1	1	1				2	2	2	1	1	1												2	2	2						
Diospyros virginiana	common persimmon	Tree																																			1
Fraxinus pennsylvanica	green ash	Tree	3	3	3				2	2	2	3	3	3	3	3	4	1	1	1	1	1	1				2	2	2	5	5	5	4	4	4	2	2	2
Juniperus virginiana	eastern redcedar	Tree															1																				
Liquidambar styraciflua	sweetgum	Tree																																			1
Nyssa aquatica	water tupelo	Tree																																			
Nyssa sylvatica	blackgum	Tree																																			
Platanus occidentalis	American sycamore	Tree				3	3	3							6	6	6	1	1	1	1	1	1	6	6	6				6	6	6			1	1	1	1
Prunus serotina	black cherry	Tree	1	1	4						1																										
Quercus	oak	Tree										1	1	1																							
Quercus falcata	southern red oak	Tree	7	7	7	2	2	2	3	3	3	2	2	2							1	1	1				6	6	6								
Quercus lyrata	overcup oak	Tree																																		3	3	3
Quercus michauxii	swamp chestnut oak	Tree	2	2	2	2	2	2	8	8	8	6	6	6	1	1	1	5	5	5							1	1	1				3	3	3	4	4	4
Quercus nigra	water oak	Tree										1	1	1				1	1	1							1	1	1				1	1	1	1	1	1
Quercus phellos	willow oak	Tree	3	3	3	1	1	1	2	2	2	1	1	1				4	4	4				5	5	5				1	1	1	3	3	3	5	5	5
Quercus rubra	northern red oak	Tree																																		3	3	3
Robinia pseudoacacia	black locust	Tree				1	1	1																									1	1	1			1
Ulmus americana	American elm	Tree															3																				1
Unknown		Shrub or Tree																																			
		Stem count	22	22	26	15	15	20	16	16	17	16	16	18	14	14	22	13	13	13	3	3	3	11	11	11	10	10	10	15	15	15	14	14	15	21	21	25
		size (ares)	1			1			1			1			1			1			1			1			1			1			1			1		
		size (ACRES)	0.02			0.02			0.02			0.02			0.02			0.02			0.02			0.02			0.02			0.02			0.02			0.02		
		Species count	6	6	7	7	7	9	5	5	6	7	7	8	5	5	9	6	6	6	3	3	3	2	2	2	4	4	4	5	5	5	6	6	7	8	8	12
		Stems per ACRE	890	890	1052	607	607	809	647	647	688	647	647	728	567	567	890	526	526	526	121	121	121	445	445	445	405	405	405	607	607	607	567	567	607	850	850	1012

Annual Means

Scientific Name	Common Name	Species Type	MY5 (2017)			MY4 (2016)			MY3 (2016)			MY2 (2014)			MY1 (2013)			MY0 (2013)		
			PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T
Acer rubrum	red maple	Tree						3												
Betula nigra	river birch	Tree	21	21	21	20	20	20	14	14	14	15	15	15	27	27	27	58	58	58
Carya ovalis	red hickory	Tree			2															
Carya ovata	shagbark hickory	Tree			6															
Celtis occidentalis	common hackberry	Tree			3															
Cercis canadensis	eastern redbud	Tree	6	6	6	7	7	9	6	6	8	8	8	8	2	2	2			
Diospyros virginiana	common persimmon	Tree			1									1						
Fraxinus pennsylvanica	green ash	Tree	26	26	27	26	26	29	26	26	27	26	26	27	30	30	30	28	28	28
Juniperus virginiana	eastern redcedar	Tree			1															
Liquidambar styraciflua	sweetgum	Tree			1			3			1									
Nyssa aquatica	water tupelo	Tree				1	1	1												
Nyssa sylvatica	blackgum	Tree												2						
Platanus occidentalis	American sycamore	Tree	24	24	25	23	23	23	19	19	19	20	20	21	20	20	20	45	45	45
Prunus serotina	black cherry	Tree	1	1	5															
Quercus	oak	Tree	1	1	1	5	5	6	11	11	12	15	15	15	61	61	61	133	133	133
Quercus falcata	southern red oak	Tree	21	21	21	25	25	26	16	16	16	12	12	12	1	1	1			
Quercus lyrata	overcup oak	Tree	3	3	3	1	1	1												
Quercus michauxii	swamp chestnut oak	Tree	32	32	32	32	32	32	32	32	32	31	31	31	15	15	15			
Quercus nigra	water oak	Tree	5	5	5	4	4	4	1	1	1	3	3	3	4	4	4			
Quercus phellos	willow oak	Tree	25	25	25	27	27	27	21	21	22	21	21	21	15	15	15			
Quercus rubra	northern red oak	Tree	3	3	3	4	4	4	3	3	3	3	3	3	2	2	2			
Robinia pseudoacacia	black locust	Tree	2	2	3	1	1	3			3									
Ulmus americana	American elm	Tree			4															
Unknown		Shrub or Tree									1									
		Stem count	170	170	195	176	176	191	149	149	159	154	154	159	177	177	177	264	264	264
		size (ares)	12			12			12			12			12			12		
		size (ACRES)	0.30			0.30			0.30			0.30			0.30			0.30		
		Species count	13	13	20	13	13	15	10	10	13	10	10	12	10	10	10	4	4	4
		Stems per ACRE	573	573	658	594	594	644	502	502	536	519	519	536	597	597	597	890	890	890

*Number of planted species increased from MY0-MY1 due to Quercus species being accurately identified during MY1.

Color Key for Density

Exceeds requirements by 10% | Exceeds requirements, but by less than 10% | Fails to meet requirements, by less than 10% | Fails to meet requirements by more than 10%