



MONITORING YEAR 2 ANNUAL REPORT

Final

Anderson Farm Mitigation Site

Wayne County, NC
NCDEQ Contract No. 0402-10
DMS ID No. 100180
DWR No. 2021-0023v2

Neuse River Basin
HUC 03020201

RFP: 16-20200402

Data Collection Period: September 2023
Draft Submission Date: October 25, 2023
Final Submission Date: November 3, 2023

PREPARED FOR:



**NC Department of Environmental Quality,
Division of Mitigation Services**
1652 Mail Service Center
Raleigh, NC 27699-1652



November 3, 2023
Ms. Emily Dunnigan
Project Manager
NCDEQ- Division of Mitigation Services
217 West Jones Street
Raleigh, NC 27603

Subject: Task 6 Draft Monitoring Year 2 Report Comments – Anderson Farms Mitigation Site (DMS #100180)
Neuse River Basin: 03020201; Wayne County, NC
Contract No. 0402-10

Dear Ms. Dunnigan:

We have reviewed the comments on the MY2 draft report for the above referenced project dated October 25, 2023, and have revised the report based on these comments. The revised documents are submitted with this letter. Below are responses to each of your comments. For your convenience, the comments are reprinted in bold with our response in italics.

1. Please add the surrounding bank easement to the CCPV.

Response: The CCPV has been updated to display the surrounding bank easement. Additionally, figures 1 and 3 have been updated to display the bank easement.

2. As a reminder, monitoring providers are responsible for checking the easement integrity across the project site for encroachments, missing markers, adequate signage, fence breaks, etc. Please confirm that the site was fully checked and what the results are.

Response: The easement integrity was assessed across the entire Site, and no encroachments, missing markers, signage discrepancies and disparities, fence breaks, etc. were discovered during Monitoring Year 2.

3. Wildlands is under contract to provide 494,702.000 riparian buffer credits. The Baseline Report and subsequent reports indicated that the site will only provide 494,544.362 riparian buffer credits, a shortfall of 157.638 credits. The Task 6 payment should be \$29,187.42 (5% of the total contract value). However, the \$157.638 buffer shortfall below the contracted amount reduces to contract value by \$186.01 (at \$1.18/buffer credit). In order to reconcile the difference resulting from the 157.638 buffer credit shortfall, please adjust the Task 6 payment downward to a revised amount of \$29,001.41.

Response: The adjustment to the invoice was made on the Task 4 payment, which was a one-time adjustment. No further reductions are needed following the Task 4 payment.



If you have any questions, please contact me by phone (540) 907-9432, or by email (khogarth@wildlandseng.com).

Sincerely,

A handwritten signature in black ink that reads "Kaitlyn Hogarth". The signature is written in a cursive, flowing style.

Kaitlyn Hogarth, *Environmental Scientist*

PREPARED BY:



Wildlands Engineering, Inc.
312 W Millbrook Road, Suite 225
Raleigh, NC 27609
Phone: (919) 851-9986

Anderson Farm Mitigation Site
Monitoring Year 2 Annual Report

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Section 1: PROJECT OVERVIEW

1.1 Project Description

The Anderson Farm Mitigation Site (Site) is in Wayne County approximately six miles northwest of the Town of Mt. Olive (Figure 1). The Site involved riparian area restoration on three unnamed tributaries that flow to Thoroughfare Swamp. The Site was completed for buffer mitigation credit in the Neuse River Basin Hydrologic Unit Code (HUC) 03020201, in accordance with the Consolidated Buffer Mitigation Rules (15A NCAC 02B .0295) and the Nutrient Offset Payments Rule (15A NCAC 02B .0703). See Figure 2 for the Service Area of the Site. The Site is expected to generate 494,544.362 riparian buffer credits.

The project is located within the Neuse River Basin HUC 03020201170040, and North Carolina Division of Water Resources (NCDWR) Subbasin 03-04-12. Project streams flow approximately one mile to the confluence with Thoroughfare Swamp, which flows to 303d listed stream, Falling Creek, and eventually drains to the Neuse River. Thoroughfare Swamp and the Neuse River are both classified as a Water Supply Watershed for the City of Goldsboro and Nutrient Sensitive Waters (NSW) by NCDWR. The project supports specific goals identified in the 2010 Neuse River Basin Restoration Priorities Plan (RBRP) by “nutrient and sediment reduction in agricultural areas by restoring and preserving wetlands, streams, and riparian buffers.”

Prior to planting, the buffer restoration area was used as agricultural fields, mainly to produce corn or soybeans. A culvert on UT3 was removed prior to planting. Disturbed areas were tilled with a chisel plow to reduce soil compaction. The area was immediately seeded with a regionally appropriate seed mix and live stakes and coir matting was placed along banks to provide soil stabilization. An area of isolated erosion at the confluence of UT1 and UT3 was identified prior to planting which was stabilized by placing straw bales directly adjacent to the area to divert overland flow during rainfall events. Additionally, live stakes were planted, and a regionally appropriate native seed mix was applied around the area to provide long term soil stabilization.

Tables 2 and 4 in Appendix 1 provide more detailed watershed and Site background information for this project. Project history, location, and design are presented in the Anderson Farm Baseline Monitoring Report (Wildlands, 2022).

1.2 Project Goals and Objectives

The major goals of the riparian restoration project are to provide ecological and water quality enhancements to the Neuse River Basin by creating a functional riparian corridor.

This buffer restoration project will reduce sediment and nutrient loading, provide and improve terrestrial and in-stream habitats, and improve stream and bank stability. The area surrounding the streams was previously agricultural fields, typically used to grow corn, soybeans, and wheat. Restoring up to 100 feet of vegetative buffer along the streams and channels has removed the crops and fertilizer inputs within the project area. The restored floodplain areas will assist in filtering sediment during high rainfall events. The establishment of riparian areas will create shading to minimize thermal heating. Finally, invasive vegetation will be treated within the project area and the newly planted native vegetation will provide cover and food for wildlife. Specific enhancements to water quality and ecological processes are outlined below.

- Decrease nutrient levels by filtering runoff from the agricultural fields through restored native buffer zones. The off-site nutrient input will also be absorbed on-site by filtering flood flows through restored floodplain areas, where flood flows can disperse through native vegetation.

- Sediment from off-site sources will be captured by deposition on restored floodplain areas where native vegetation will slow overland flow velocities.
- Decrease water temperature and increase dissolved oxygen concentrations with the establishment and maintenance of riparian areas creating additional long-term shading of the channel flow to reduce thermal pollution.
- Establishment of a riparian area that will slow flood flows and allow for greater infiltration, reducing peak flows downstream.
- Create appropriate terrestrial habitat by removing invasive vegetation and planting native vegetation.
- Permanently protect the project Site from harmful uses by establishing a conservation easement on the Site that will protect the riparian corridor in perpetuity.

Mitigation credits are presented in Table 1 and Figure 3 in Appendix 1 and are based upon the as-built survey included in the Anderson Farm Baseline Monitoring Report (Wildlands, 2022).

Section 2: PERFORMANCE CRITERIA AND MONITORING PROTOCOLS

The performance criteria for the Site follows approved performance criteria presented in the Anderson Farm Mitigation Site Mitigation Plan (Wildlands Engineering, Inc., 2021), the NC DMS Riparian Buffer and Nutrient Offset Buffer Baseline & Annual Monitoring Report Template, Version 2.0 (May 2017) and the Consolidated Buffer Mitigation Rule (15A NCAC 02B .0295).

The buffer restoration project has been assigned specific performance criteria components for vegetation. Performance criteria will be evaluated throughout the five-year post-construction monitoring. The monitoring period will extend for five years beyond the completion of construction or until performance criteria have been met.

The final vegetative success criteria will be the survival of 260 stems per acre in the riparian corridor at the end of monitoring year 5. The final performance standard shall include a minimum of four native hardwood tree species, where no one species is greater than 50 percent of stems. Native hardwood species may be included to meet the final performance standard of 260 stems per acre. Methodology for annual monitoring is presented in the Anderson Farm Baseline Monitoring Report (Wildlands, 2022).

Section 3: RESULTS OF YEAR 2 MONITORING

The MY2 vegetation monitoring resulted in an average stem density of 477 planted stems per acre. Stem densities in individual monitoring plots range from 324 to 607 planted stems per acre with stem counts in individual plots ranging from 8 to 14 planted stems. Across plots, there is an average of 11 planted stems per plot. Species diversity remains high throughout the Site, with the planted species counts per plot ranging from 5 to 9, and a site average of 7. The total number of species planted across the Site was 11. Additionally, most recorded stems appear healthy, scoring either 3 (good) or 4 (excellent) on vigor. All vegetation plots exceed the final stem density success criteria of 260 stems per acre for MY5. Refer to Appendix 2 for visual assessment data and vegetation plot photographs, and Appendix 3 for vegetation plot data.

3.1 Parcel Maintenance

An easement boundary inspection was performed, and no issues were identified. Adaptive measures will be developed, or appropriate remedial actions will be implemented if the Site or a specific component of the Site fails to achieve the success criteria outlined in the Mitigation Plan. Site maintenance will be performed to correct any identified problems on the Site that have a high likelihood

of affecting project success. Such items include but are not limited to excess tree mortality caused by fire, flooding, drought, or insects. Any actions implemented will be designed to achieve the success criteria and will include a work schedule and updated monitoring criteria.

3.2 Conclusions

The 2023 vegetation monitoring data reflects that the Site is exceeding the final vegetative success criteria. These criteria include both a stem density of 260 stems per acre and a species diversity of at least four native tree or shrub species. Stems appear to be healthy, and herbaceous vegetation is well established across the Site. No problems requiring corrective actions were identified, such as invasive species or excessive tree mortality, during MY2. The easement boundary has been checked throughout the Site, and no issues were identified.

Section 4: REFERENCES

North Carolina Division of Mitigation Services (DMS). 2017. Riparian Buffer and Nutrient Offset Buffer Baseline & Annual monitoring Report Template (Version 2.0, 05-2017). Raleigh, North Carolina.

North Carolina Ecosystem Enhancement Program (NCEEP), 2010. 2010 Neuse River Basin Restoration Priorities Plan (RBRP).
https://files.nc.gov/ncdeq/Mitigation%20Services/Watershed_Planning/Neuse_River_Basin/FINAL%20RBRP%20Neuse%202010_%2020111207%20CORRECTED.pdf

North Carolina Interagency Review Team. 2016. Wilmington District Stream and Wetland Compensatory Mitigation Update. October 24, 2016.

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

Wildlands Engineering, Inc. 2021. Anderson Farm Mitigation Plan. DMS, Raleigh, NC. October 2021.

Wildlands Engineering, Inc. 2022. Anderson Farm Baseline Monitoring Report. DMS, Raleigh, NC. April 2022.



APPENDIX 1. General Figures and Tables

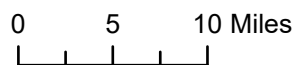
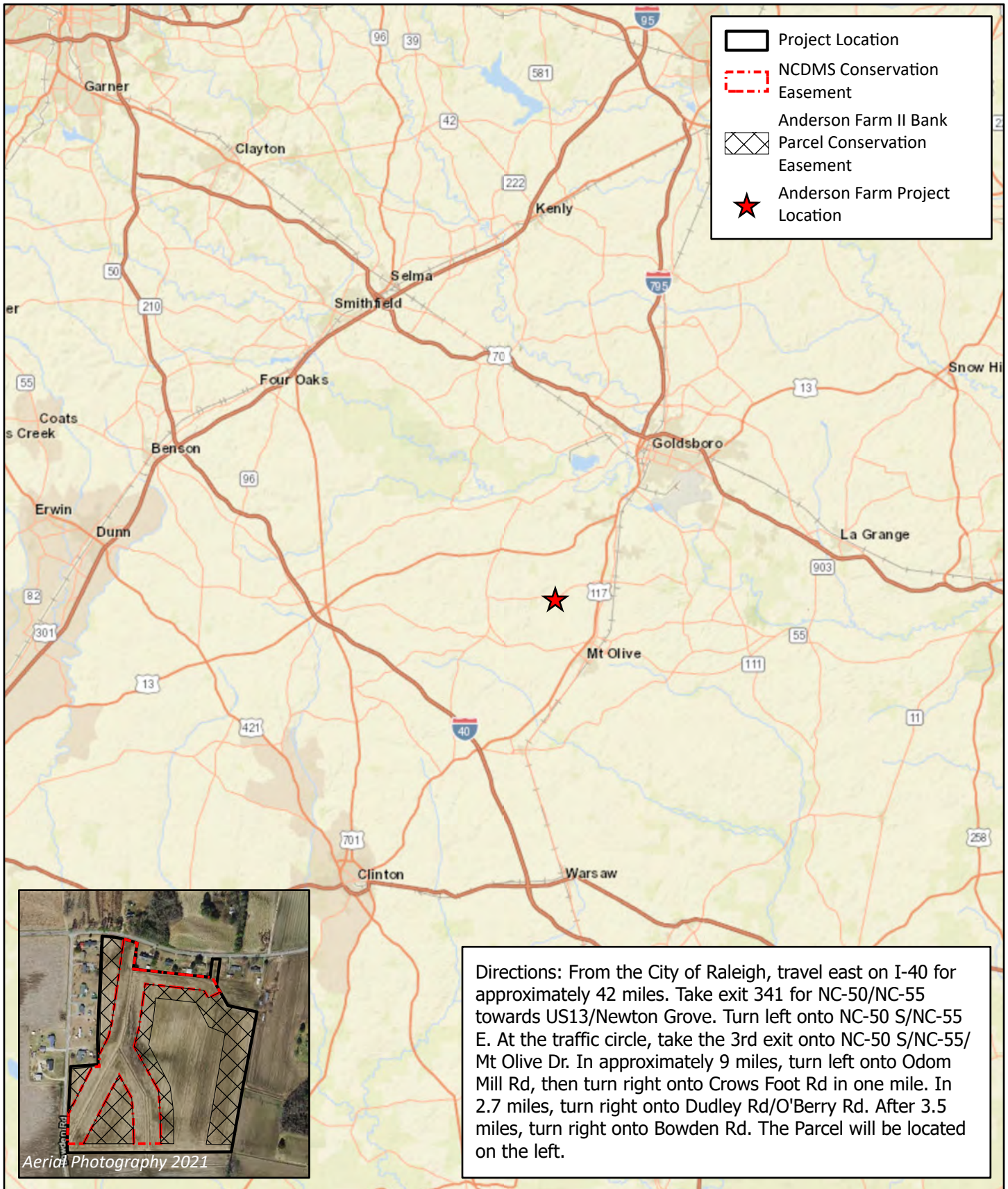
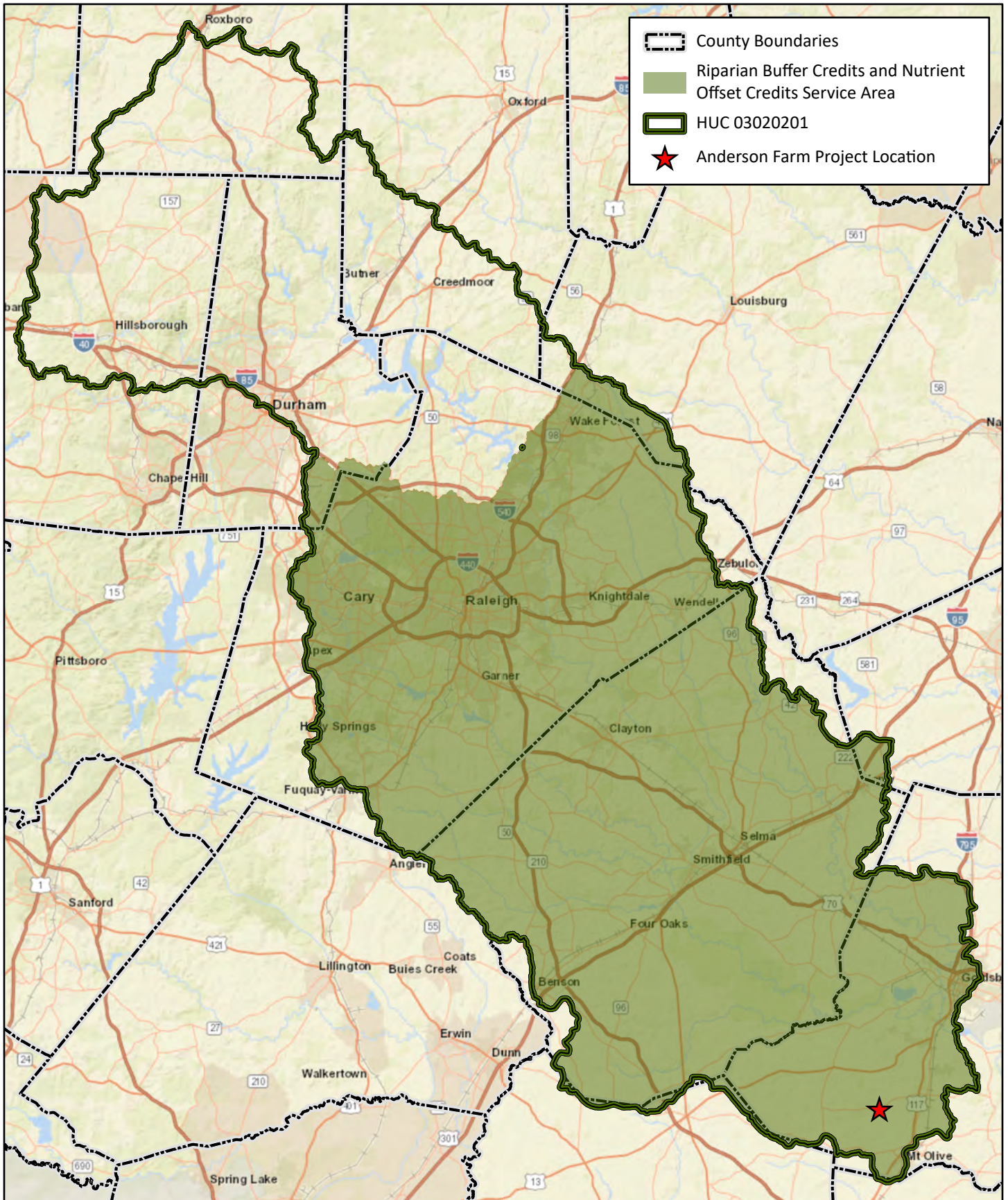






Figure 1. Vicinity Map
Anderson Farm Mitigation Site
Monitoring Year 2 - 2023
Neuse River Basin (03020201)



-  County Boundaries
-  Riparian Buffer Credits and Nutrient Offset Credits Service Area
-  HUC 03020201
-  Anderson Farm Project Location

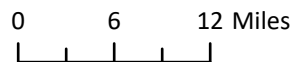


Figure 2. Service Area Map
Anderson Farm Mitigation Site
Monitoring Year 2 - 2023
Neuse River Basin (03020201)

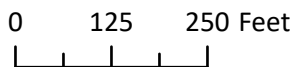
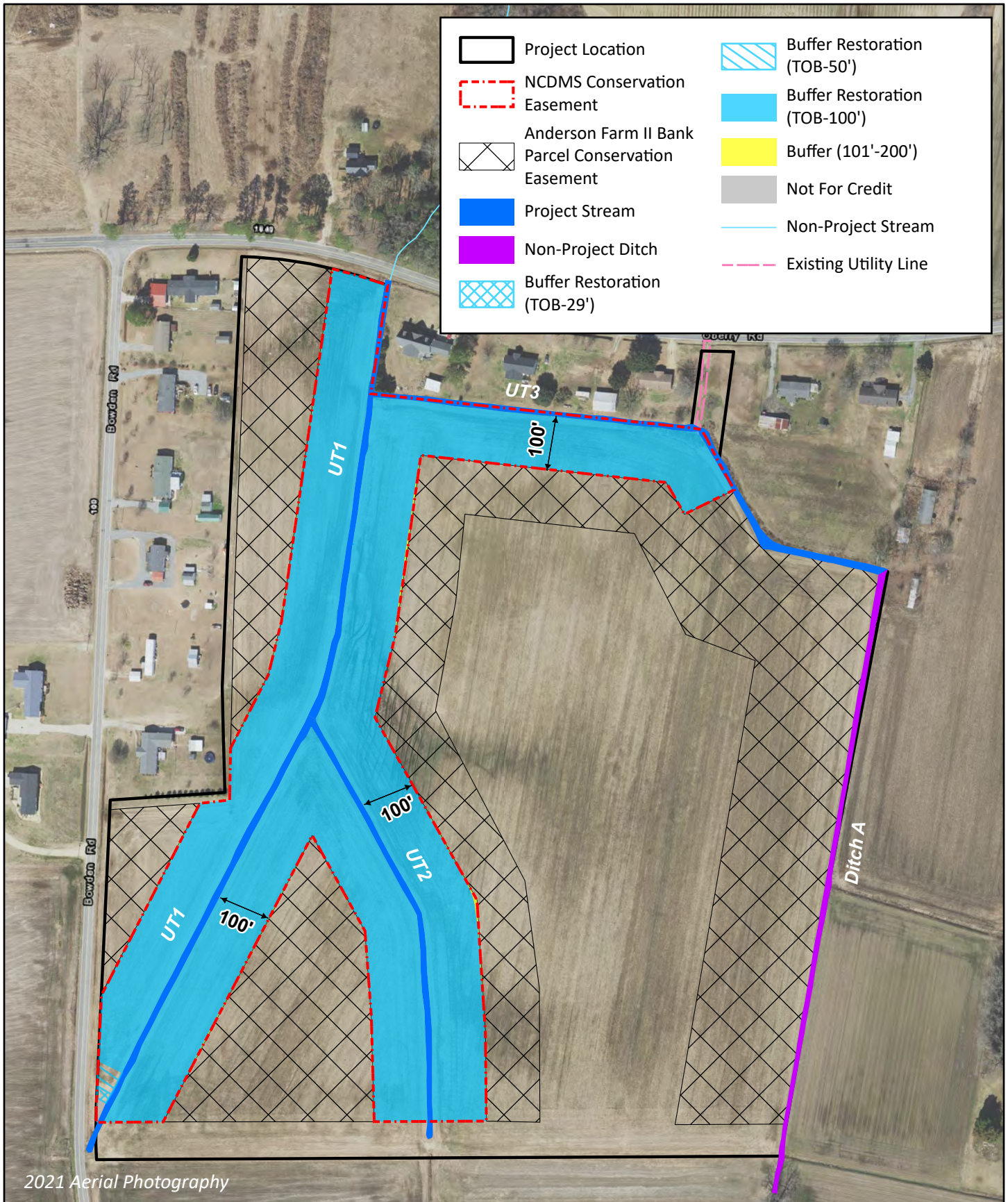


Figure 3. Project Component/Asset Map
 Anderson Farm Mitigation Site
 Monitoring Year 2 - 2023
 Neuse River Basin (03020201)

Table 1. Buffer Project Areas and Assets

Anderson Farm Mitigation Site
 DMS Project No. 100180
 Monitoring Year 2 - 2023

Neuse 03020201 - Outside Falls Lake				Project Area												
19.16394				N Credit Conversion Ratio (ft ² /pound)												
N/A				P Credit Conversion Ratio (ft ² /pound)												
Credit Type	Location	Subject? (enter NO if ephemeral or ditch ¹)	Feature Type	Mitigation Activity	Min-Max Buffer Width (ft)	Feature Name	Total Area (ft ²)	Total (Creditable) Area of Buffer Mitigation (ft ²)	Initial Credit Ratio (x:1)	% Full Credit	Final Credit Ratio (x:1)	Convertible to Riparian Buffer?	Riparian Buffer Credits	Convertible to Nutrient Offset?	Delivered Nutrient Offset: N (lbs)	
Buffer	Rural	Yes	I / P	Restoration	101-200	UT1, UT2, UT3	3,267	3,267	1	33%	3.03030	Yes	1,078.111	Yes	170.476	
Buffer	Rural	Yes	I / P	Restoration	0-100	UT1, UT2, UT3	491,294	491,294	1	100%	1.00000	Yes	491,294.000	Yes	25,636.378	
Buffer	Rural	Yes	I / P	Restoration	0-50	UT1, UT2, UT3	1,816	1,816	1	100%	1.00000	Yes	1,816.000	No	—	
Buffer	Rural	Yes	I / P	Restoration	20-29	UT1	475	475	1	75%	1.33333	Yes	356.251	No	—	
Totals (ft²):							496,852	496,852							494,544.362	25,806.854
Total Buffer (ft²):							496,852	496,852								
Total Nutrient Offset (ft²):							0	N/A								

TOTAL AREA OF BUFFER MITIGATION (TABM)		
Mitigation Totals	Square Feet	Credits
Restoration:	496,852	494,544.362
Enhancement:	0	0.000
Preservation:	0	0.000
Total Riparian Buffer:	496,852	494,544.362
TOTAL NUTRIENT OFFSET MITIGATION		
Mitigation Totals	Square Feet	Credits
Nutrient Offset:	Nitrogen:	0
	Phosphorus:	0.000

Table 2. Project Activity and Reporting History

Anderson Farm Mitigation Site

DMS Project No. 100180

Monitoring Year 2 - 2023

Activity or Report	Data Collection Complete	Completion or Scheduled Delivery
Mitigation Plan Date	---	December 2021
Bare Roots Planting	---	March 2022
As-Built & Baseline Monitoring Document	March 2022	April 2022
Year 1 Monitoring Report Date	September 2022	December 2022
Year 2 Monitoring Report Date	September 2023	December 2023
Year 3 Monitoring Report Date	2024	December 2024
Year 4 Monitoring Report Date	2025	December 2025
Year 5 Monitoring Report Date	2026	December 2026

Table 3. Project Contact Table

Anderson Farm Mitigation Site

DMS Project No. 100180

Monitoring Year 2 - 2023

Designers	Wildlands Engineering, Inc. 1430 S Mint St Charlotte, NC 28203
Planting Contractor	Bruton Natural Systems, Inc
Nursery Stock Suppliers	Dykes and Son Nursery
Monitoring Performers	Wildlands Engineering, Inc. Jason Lorch 919.851.9986, ext. 107

Table 4. Project Information and Attributes

Anderson Farm Mitigation Site

DMS Project No. 100180

Monitoring Year 2 - 2023

Project Information	
Project Name	Anderson Farm Mitigation Site
USGS Hydrologic Unit 14-digit	03020201170040
River Basin	Neuse
Project Coordinates (latitude and longitude)	35.251662, 78.103729
Total Credits (BMU)	494,544.362
Types of Credits	Riparian Buffer

Table 5. Planted Tree Species

Anderson Farm Mitigation Site

DMS Project No. 100180

Monitoring Year 2 - 2023

Common Name	Scientific Name	Number Planted	% of Total
Boxelder	<i>Acer negundo</i>	586	10%
River Birch	<i>Betula nigra</i>	869	15%
Sugarberry	<i>Celtis laevigata</i>	304	5%
American Persimmon	<i>Diospyros virginiana</i>	586	10%
Sweetbay Magnolia	<i>Magnolia virginiana</i>	304	5%
Sycamore	<i>Platanus occidentalis</i>	869	15%
Eastern Cottonwood	<i>Populus deltoides</i>	586	10%
Black Cherry	<i>Prunus serotina</i>	304	5%
Swamp Chestnut Oak	<i>Quercus michauxii</i>	586	10%
Cherrybark Oak	<i>Quercus pagoda</i>	586	10%
American Elm	<i>Ulmus americana</i>	304	5%

APPENDIX 2. Visual Assessment Data

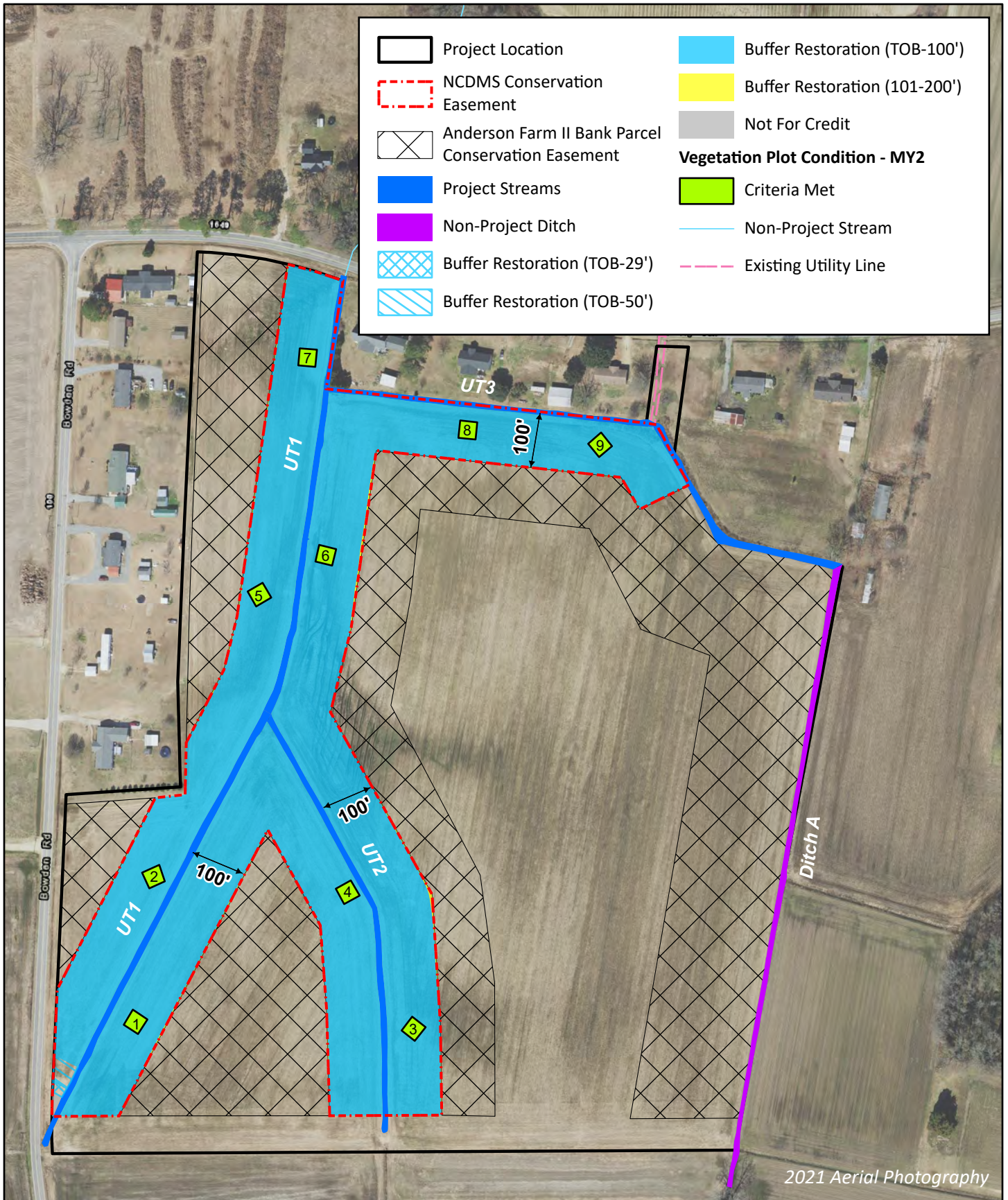


Table 6. Vegetation Condition Assessment Table

Anderson Farm Mitigation Site

DMS Project No. 100180

Monitoring Year 2 - 2023

Planted Acreage 11.42

Vegetation Category	Definitions	Mapping Threshold (Ac)	Number of Polygons	Combined Acreage	% of Planted Acreage
Bare Areas	Very limited cover of both woody and herbaceous material.	0.1	0	0	0%
Low Stem Density Areas	Woody stem densities clearly below target levels based on MY3, 4, or 5 stem count criteria.	0.1	0	0	0%
Total			0	0	0%
Areas of Poor Growth Rates or Vigor	Areas with woody stems of a size class that are obviously small given the monitoring year.	0.25 Ac	0	0	0%
Cumulative Total			0	0	0%

Easement Acreage 12.15

Vegetation Category	Definitions	Mapping Threshold (SF)	Number of Polygons	Combined Acreage	% of Easement Acreage
Invasive Areas of Concern	Areas of points (if too small to render as polygons at map scale).	1,000	0	0	0%
Easement Encroachment Areas	Areas of points (if too small to render as polygons at map scale).	none	0	0	0%

OVERVIEW PHOTOGRAPHS



9/11/2023



9/11/2023



Anderson Farm Mitigation Site

Appendix 2: Visual Assessment Data - Overview Photographs



9/11/2023



9/11/2023



Anderson Farm Mitigation Site

Appendix 2: Visual Assessment Data - Overview Photographs

VEGETATION PLOT PHOTOGRAPHS



VEG PLOT 1 (9/11/2023)



VEG PLOT 2 (9/11/2023)



VEG PLOT 3 (9/11/2023)



VEG PLOT 4 (9/11/2023)

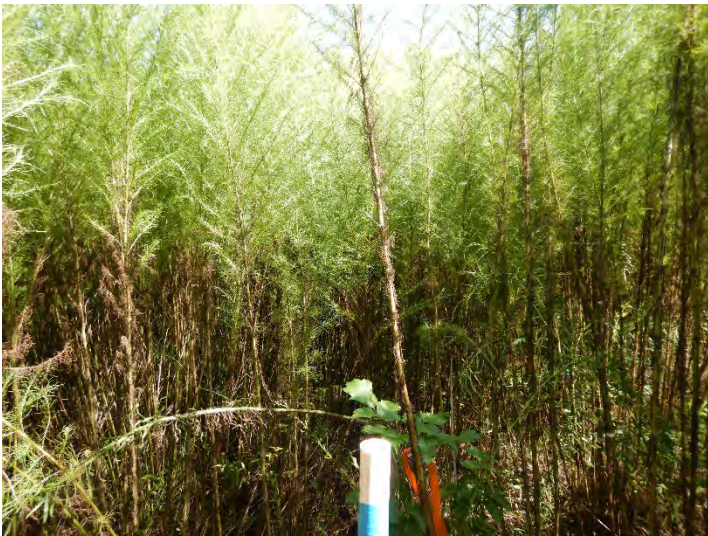


VEG PLOT 5 (9/11/2023)



VEG PLOT 6 (9/11/2023)





VEG PLOT 7 (9/11/2023)



VEG PLOT 8 (9/11/2023)



VEG PLOT 9 (9/11/2023)



APPENDIX 3. Vegetation Plot Data

Table 7. Vegetation Plot Criteria Attainment Table

Anderson Farm Mitigation Site

DMS Project No. 100180

Monitoring Year 2 - 2023

Plot	Success Criteria Met *	Tract Mean
Vegetation Plot 1	Yes	100%
Vegetation Plot 2	Yes	
Vegetation Plot 3	Yes	
Vegetation Plot 4	Yes	
Vegetation Plot 5	Yes	
Vegetation Plot 6	Yes	
Vegetation Plot 7	Yes	
Vegetation Plot 8	Yes	
Vegetation Plot 9	Yes	

*Success Criteria Met is based on the final success criteria for MY5 of 260 stems per acre.

Table 8. Vegetation Plot Data

Anderson Farm Mitigation Site

DMS Project No. 100180

Monitoring Year 2 - 2023

Planted Acreage	11.4
Date of Initial Plant	2022-03-21
Date of Current Survey	2023-09-11
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Tree/ Shrub	Indicator Status	Veg Plot 1 F		Veg Plot 2 F		Veg Plot 3 F		Veg Plot 4 F		Veg Plot 5 F		Veg Plot 6 F		Veg Plot 7 F		Veg Plot 8 F		Veg Plot 9 F	
					Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	<i>Acer negundo</i>	boxelder	Tree	FAC			4	4	2	2					1	1	3	3	2	2	1	1
	<i>Betula nigra</i>	river birch	Tree	FACW	2	2	1	1	4	4	1	1	1	1	1	1	1	1	3	3	2	2
	<i>Celtis laevigata</i>	sugarberry	Tree	FACW			1	1	1	1	2	2	1	1	1	1	1	1			1	1
	<i>Diospyros virginiana</i>	common persimmon	Tree	FAC	6	6	1	1					1	1	2	2	2	2	2	2		
	<i>Magnolia virginiana</i>	sweetbay	Tree	FACW			1	1														
	<i>Platanus occidentalis</i>	American sycamore	Tree	FACW	2	2			1	1	4	4	2	2	2	2	4	4			1	1
	<i>Populus deltoides</i>	eastern cottonwood	Tree	FAC	1	1	3	3					1	1	1	1	1	1	2	2	1	1
	<i>Prunus serotina</i>	black cherry	Tree	FACU	1	1							1	1			2	2				
	<i>Quercus michauxii</i>	swamp chestnut oak	Tree	FACW			1	1			2	2	1	1			1	1	2	2		
	<i>Quercus pagoda</i>	cherrybark oak	Tree	FACW			2	2	1	1	1	1	2	2	2	2	1	1	1	1	2	2
	<i>Ulmus americana</i>	American elm	Tree	FAC	2	2							1	1					1	1		
Sum	Performance Standard				14	14	14	14	9	9	11	11	10	10	12	12	14	15	13	13	8	8
Mitigation Plan Performance Standard	Current Year Stem Count				14	14	14	14	9	9	11	11	10	10	12	12	14	15	13	13	8	8
	Stems/Acre				567	567	567	567	364	364	445	445	405	405	486	486	607	607	526	526	324	324
	Species Count				6	6	6	6	5	5	6	6	8	8	8	8	9	9	7	7	6	6
	Dominant Species Composition (%)				43	43	43	43	44	44	36	36	20	20	17	17	27	27	23	23	25	25
	Average Plot Height (ft.)				2	2	2	2	3	3	3	3	4	4	2	2	4	4	5	5	3	3
% Invasives				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Post Mitigation Plan Performance Standard	Current Year Stem Count				14	14	14	14	9	9	11	11	10	10	12	12	14	15	13	13	8	8
	Stems/Acre				567	567	567	567	364	364	445	445	405	405	486	486	607	607	526	526	324	324
	Species Count				6	6	6	6	5	5	6	6	8	8	8	8	9	9	7	7	6	6
	Dominant Species Composition (%)				43	43	43	43	44	44	36	36	20	20	17	17	27	27	23	23	25	25
	Average Plot Height (ft.)				2	2	2	2	3	3	3	3	4	4	2	2	4	4	5	5	3	3
% Invasives				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

1). Bolded species are proposed for the current monitoring year, italicized species are not approved, and a regular font indicates that the species has been approved.

2). The "Species Included in Approved Mitigation Plan" section contains only those species that were included in the original approved mitigation plan. The "Post Mitigation Plan Species" section includes species that are being proposed through a mitigation plan addendum for the current monitoring year (bolded), species that have been approved in prior monitoring years through a mitigation plan addendum (regular font), and species that are not approved (italicized).

3). The "Mitigation Plan Performance Standard" section is derived only from stems included in the original mitigation plan, whereas the "Post Mitigation Plan Performance Standard" includes data from mitigation plan approved, post mitigation plan approved, and proposed stems.

Table 9. Vegetation Performance Standards Summary Table

Anderson Farm Mitigation Site

DMS Project No. 100180

Monitoring Year 2 - 2023

	Veg Plot 1 F				Veg Plot 2 F				Veg Plot 3 F			
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives
Monitoring Year 5												
Monitoring Year 4												
Monitoring Year 3												
Monitoring Year 2	567	2	6	0	567	3	8	0	364	3	5	0
Monitoring Year 1	607	1	7	0	526	2	8	0	364	2	5	0
Monitoring Year 0	607	2	7	0	648	2	10	0	567	2	9	0
	Veg Plot 4 F				Veg Plot 5 F				Veg Plot 6 F			
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives
Monitoring Year 5												
Monitoring Year 4												
Monitoring Year 3												
Monitoring Year 2	445	4	6	0	405	2	8	0	486	4	8	0
Monitoring Year 1	445	2	6	0	405	2	8	0	486	2	8	0
Monitoring Year 0	607	2	8	0	607	2	9	0	607	2	8	0
	Veg Plot 7 F				Veg Plot 8 F				Veg Plot 9 F			
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives
Monitoring Year 5												
Monitoring Year 4												
Monitoring Year 3												
Monitoring Year 2	607	5	9	0	526	3	7	0	324	3	6	0
Monitoring Year 1	567	3	8	0	526	2	7	0	364	2	6	0
Monitoring Year 0	607	2	8	0	607	2	8	0	607	2	10	0

Table 10. Vegetation Height Data

Anderson Farm Mitigation Site

DMS Project No. 100180

Monitoring Year 2 - 2023

Plot	Scientific Name	Common Name	X	Y	Height (Ft)	Vigor
1	<i>Platanus occidentalis</i>	American sycamore	0.4	0.5	2.6	3
1	<i>Betula nigra</i>	river birch	0.5	2.8	2.4	4
1	<i>Diospyros virginiana</i>	common persimmon	0.5	4.9	1.2	4
1	<i>Betula nigra</i>	river birch	0.4	7.1	4.6	4
1	<i>Ulmus americana</i>	American elm	0.5	9.4	2.4	4
1	<i>Prunus serotina</i>	black cherry	4.3	9.2	1.0	4
1	<i>Diospyros virginiana</i>	common persimmon	4.3	6.9	1.9	4
1	<i>Diospyros virginiana</i>	common persimmon	4.4	4.7	3.0	4
1	<i>Populus deltoides</i>	eastern cottonwood	4.4	2.6	0.9	2
1	<i>Diospyros virginiana</i>	common persimmon	4.4	0.5	1.4	4
1	<i>Diospyros virginiana</i>	common persimmon	7.9	2.6	1.9	4
1	<i>Diospyros virginiana</i>	common persimmon	7.8	4.7	1.1	4
1	<i>Ulmus americana</i>	American elm	7.7	6.9	1.0	3
1	<i>Platanus occidentalis</i>	American sycamore	7.7	9.3	3.1	4

Table 10. Vegetation Height Data

Anderson Farm Mitigation Site

DMS Project No. 100180

Monitoring Year 2 - 2023

Plot	Scientific Name	Common Name	X	Y	Height (Ft)	Vigor
2	<i>Betula nigra</i>	river birch	0.2	1.6	6.4	4
2	<i>Acer negundo</i>	boxelder	1.5	0.1	2.3	3
2	<i>Quercus michauxii</i>	swamp chestnut oak	8.6	0.2	2.9	3
2	<i>Acer negundo</i>	boxelder	6.9	1.5	3.1	4
2	<i>Populus deltoides</i>	eastern cottonwood	5.2	2.8	1.6	3
2	<i>Quercus pagoda</i>	cherrybark oak	3.1	4.0	2.5	4
2	<i>Acer negundo</i>	boxelder	1.4	5.5	1.9	4
2	<i>Populus deltoides</i>	eastern cottonwood	1.8	9.9	2.1	3
2	<i>Populus deltoides</i>	eastern cottonwood	3.7	8.6	0.1	1
2	<i>Quercus pagoda</i>	cherrybark oak	5.4	7.2	2.0	4
2	<i>Acer negundo</i>	boxelder	7.1	5.7	2.3	4
2	<i>Magnolia virginiana</i>	sweetbay	8.8	4.4	2.9	4
2	<i>Celtis laevigata</i>	sugarberry	9.8	8.4	1.0	2
2	<i>Diospyros virginiana</i>	common persimmon	8.0	9.9	4.4	3

Table 10. Vegetation Height Data

Anderson Farm Mitigation Site

DMS Project No. 100180

Monitoring Year 2 - 2023

Plot	Scientific Name	Common Name	X	Y	Height (Ft)	Vigor
3	<i>Betula nigra</i>	river birch	7.9	0.2	4.8	4
3	<i>Betula nigra</i>	river birch	9.1	2.1	3.4	4
3	<i>Quercus pagoda</i>	cherrybark oak	5.1	3.1	1.5	4
3	<i>Platanus occidentalis</i>	American sycamore	4.3	1.5	2.9	4
3	<i>Celtis laevigata</i>	sugarberry	3.4	0.1	1.6	4
3	<i>Betula nigra</i>	river birch	1.9	4.9	5.3	4
3	<i>Acer negundo</i>	boxelder	5.0	8.2	2.9	4
3	<i>Acer negundo</i>	boxelder	6.5	9.7	2.7	4
3	<i>Betula nigra</i>	river birch	0.4	8.5	4.1	4

Table 10. Vegetation Height Data

Anderson Farm Mitigation Site

DMS Project No. 100180

Monitoring Year 2 - 2023

Plot	Scientific Name	Common Name	X	Y	Height (Ft)	Vigor
4	<i>Platanus occidentalis</i>	American sycamore	0.5	1.0	7.4	4
4	<i>Platanus occidentalis</i>	American sycamore	2.4	1.1	2.4	2
4	<i>Platanus occidentalis</i>	American sycamore	4.5	1.0	4.8	4
4	<i>Quercus pagoda</i>	cherrybark oak	6.8	0.9	3.5	4
4	<i>Quercus michauxii</i>	swamp chestnut oak	9.1	1.0	3.5	4
4	<i>Platanus occidentalis</i>	American sycamore	8.9	5.2	5.3	4
4	<i>Quercus michauxii</i>	swamp chestnut oak	6.7	5.2	1.4	3
4	<i>Celtis laevigata</i>	sugarberry	2.4	5.2	1.3	4
4	<i>Celtis laevigata</i>	sugarberry	2.3	9.0	2.1	4
4	<i>Betula nigra</i>	river birch	7.0	8.8	8.7	4
4	<i>Prunus serotina</i>	black cherry	9.1	9.0	1.1	4

Table 10. Vegetation Height Data

Anderson Farm Mitigation Site

DMS Project No. 100180

Monitoring Year 2 - 2023

Plot	Scientific Name	Common Name	X	Y	Height (Ft)	Vigor
5	<i>Diospyros virginiana</i>	common persimmon	0.6	0.8	1.5	4
5	<i>Celtis laevigata</i>	sugarberry	5.1	0.8	1.6	4
5	<i>Quercus pagoda</i>	cherrybark oak	9.5	0.6	2.9	4
5	<i>Populus deltoides</i>	eastern cottonwood	7.6	4.7	1.9	4
5	<i>Quercus michauxii</i>	swamp chestnut oak	5.3	4.7	0.7	1
5	<i>Platanus occidentalis</i>	American sycamore	2.9	4.8	4.5	4
5	<i>Quercus pagoda</i>	cherrybark oak	0.6	4.8	3.2	4
5	<i>Platanus occidentalis</i>	American sycamore	0.6	8.9	2.8	4
5	<i>Betula nigra</i>	river birch	4.9	8.8	1.7	4
5	<i>Ulmus americana</i>	American elm	7.3	8.7	1.7	4

Table 10. Vegetation Height Data

Anderson Farm Mitigation Site

DMS Project No. 100180

Monitoring Year 2 - 2023

Plot	Scientific Name	Common Name	X	Y	Height (Ft)	Vigor
6	<i>Betula nigra</i>	river birch	0.6	0.9	1.4	4
6	<i>Diospyros virginiana</i>	common persimmon	2.7	0.9	2.0	4
6	<i>Prunus serotina</i>	black cherry	4.9	1.0	1.7	4
6	<i>Prunus serotina</i>	black cherry	7.2	1.0	3.1	4
6	<i>Platanus occidentalis</i>	American sycamore	9.3	1.0	9.4	4
6	<i>Quercus pagoda</i>	cherrybark oak	7.2	5.0	1.7	4
6	<i>Celtis laevigata</i>	sugarberry	4.8	5.2	4.8	4
6	<i>Populus deltoides</i>	eastern cottonwood	2.5	5.2	3.1	4
6	<i>Platanus occidentalis</i>	American sycamore	0.7	9.3	6.4	4
6	<i>Diospyros virginiana</i>	common persimmon	2.8	9.3	3.2	4
6	<i>Quercus pagoda</i>	cherrybark oak	5.2	9.3	1.8	4
6	<i>Acer negundo</i>	boxelder	7.4	9.4	4.0	4

Table 10. Vegetation Height Data

Anderson Farm Mitigation Site

DMS Project No. 100180

Monitoring Year 2 - 2023

Plot	Scientific Name	Common Name	X	Y	Height (Ft)	Vigor
7	<i>Acer negundo</i>	boxelder	0.4	0.5	4.1	4
7	<i>Quercus michauxii</i>	swamp chestnut oak	2.6	0.9	3.2	4
7	<i>Quercus pagoda</i>	cherrybark oak	4.9	0.9	3.1	4
7	<i>Acer negundo</i>	boxelder	7.2	0.9	3.6	4
7	<i>Diospyros virginiana</i>	common persimmon	9.5	0.7	6.4	4
7	<i>Platanus occidentalis</i>	American sycamore	9.6	4.9	5.4	4
7	<i>Celtis laevigata</i>	sugarberry	5.4	4.8	1.3	3
7	<i>Betula nigra</i>	river birch	2.9	4.8	5.3	4
7	<i>Acer negundo</i>	boxelder	0.9	4.7	6.8	4
7	<i>Diospyros virginiana</i>	common persimmon	0.8	9.3	2.6	4
7	<i>Populus deltoides</i>	eastern cottonwood	3.0	9.2	4.5	4
7	<i>Platanus occidentalis</i>	American sycamore	5.2	9.2	8.8	4
7	<i>Platanus occidentalis</i>	American sycamore	7.7	9.3	7.9	4
7	<i>Platanus occidentalis</i>	American sycamore	9.6	9.4	4.5	3
7	<i>Prunus serotina</i>	black cherry	5.2	5.1	1.3	4

Table 10. Vegetation Height Data

Anderson Farm Mitigation Site

DMS Project No. 100180

Monitoring Year 2 - 2023

Plot	Scientific Name	Common Name	X	Y	Height (Ft)	Vigor
8	<i>Acer negundo</i>	boxelder	1.1	0.9	3.2	4
8	<i>Acer negundo</i>	boxelder	0.9	2.9	6.8	4
8	<i>Populus deltoides</i>	eastern cottonwood	0.8	5.1	2.1	4
8	<i>Quercus michauxii</i>	swamp chestnut oak	0.8	7.4	1.8	4
8	<i>Betula nigra</i>	river birch	0.6	9.5	3.8	4
8	<i>Betula nigra</i>	river birch	4.6	9.4	4.8	4
8	<i>Diospyros virginiana</i>	common persimmon	4.8	5.0	4.0	4
8	<i>Ulmus americana</i>	American elm	5.0	2.9	4.0	4
8	<i>Betula nigra</i>	river birch	5.2	0.8	2.2	4
8	<i>Populus deltoides</i>	eastern cottonwood	8.9	1.0	1.2	4
8	<i>Diospyros virginiana</i>	common persimmon	8.8	2.8	2.5	4
8	<i>Quercus michauxii</i>	swamp chestnut oak	8.9	5.2	2.2	4
8	<i>Quercus pagoda</i>	cherrybark oak	9.0	7.4	2.8	4

Table 10. Vegetation Height Data

Anderson Farm Mitigation Site

DMS Project No. 100180

Monitoring Year 2 - 2023

Plot	Scientific Name	Common Name	X	Y	Height (Ft)	Vigor
9	<i>Quercus pagoda</i>	cherrybark oak	0.9	1.1	2.1	4
9	<i>Celtis laevigata</i>	sugarberry	0.7	3.1	1.3	4
9	<i>Platanus occidentalis</i>	American sycamore	0.6	5.3	3.4	4
9	<i>Populus deltoides</i>	eastern cottonwood	0.5	7.3	3.1	4
9	<i>Acer negundo</i>	boxelder	0.4	9.4	2.7	4
9	<i>Betula nigra</i>	river birch	4.8	2.9	3.9	4
9	<i>Quercus pagoda</i>	cherrybark oak	8.6	2.6	4.4	4
9	<i>Betula nigra</i>	river birch	8.0	9.2	3.8	4