MONITORING YEAR 1 ANNUAL REPORT

Final

Little River Ford Mitigation Site

Johnston County, NC
NCDEQ Contract No. 0402-09
DMS ID No. 100182
DWR No. 2021-0112v2

Neuse River Basin
HUC 03020201

RFP #: 20200402

Data Collection Period: September 2023
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Final Submission Date: October 10, 2023

PREPARED FOR:

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Little River Ford Mitigation Site
Monitoring Year 1 Annual Report

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APPENDICES

Section 1: PROJECT OVERVIEW

1.1 Project Description

The Little River Ford Mitigation Site (Site) is in Johnston County approximately four miles west of the Town of Kenly (Figure 1). The Site involved riparian restoration and preservation on two unnamed tributaries (UT1 and UT2) and one ditch (Ditch A) that flow to the Little River. The Site was completed for buffer mitigation credit and nutrient offset 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 355,765.834 riparian buffer credits and 57.765 nutrient offset credits.

The project is located within the Neuse River Basin HUC 03020201180060, and North Carolina Division of Water Resources (NCDWR) Subbasin 03-04-06. Project streams flow into the Little River, which is classified as Nutrient Sensitive Waters (NSW) by the North Carolina Division of Water Resources (NCDWR). The proposed project supports specific goals identified in the 2018 Neuse Basin Restoration Priorities Plan (RBRP) by promoting "nutrient and sediment reduction in agricultural areas by restoring and preserving wetlands, streams and riparian buffers."

Prior to planting, the riparian restoration area was used as agricultural fields. Riparian area restoration involved planting appropriate native tree species along the riparian corridor. In addition to planting, isolated areas along UT1 banks were stabilized using live stakes. Along both UT1 and Ditch A erosional rills were addressed by placing straw bales adjacent to the area of concern to diffuse overland flow, thereby preventing further rill erosion until vegetation became established on Site.

Tables 2 and 4 in Appendix 1 provide more detailed watershed and Site background information. Project history, location, and design are presented in the Little River Ford Baseline Monitoring Report (Wildlands, 2023).

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 riparian 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 project features was previously agricultural fields, typically used to grow hay, cotton, and soybeans. Restoring up to 100 feet of vegetative buffer along the streams and ditches 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 Little River Ford Baseline Monitoring Report (Wildlands, 2023).

Section 2: PERFORMANCE CRITERIA AND MONITORING PROTOCOLS

The performance criteria for the Site follows approved performance criteria presented in the Little River Ford Mitigation Site Mitigation Plan (Wildlands, 2022), 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 or four native hardwood tree and native shrub species, where no one species is greater than 50 percent of stems. Native hardwood and native shrub volunteer species may be included to meet the final performance standard of 260 stems per acre. Methodology for annual monitoring is presented in the Little River Ford Baseline Monitoring Report (Wildlands, 2022).

Section 3: RESULTS OF YEAR 1 MONITORING

The MY1 vegetation monitoring revealed that the Site is far exceeding the final density criterion of 260 stems per acre. The Site has an average density of 579 planted stems per acre. Densities in individual monitoring plots range from 486 to 648 planted stems per acre with stem counts in individual plots ranging from 12 to 16 stems with an average of 14 planted stems per plot. Species diversity remains high throughout the first growing season, with the number of different species planted per plot ranging from 7 to 10, and a Site average of 8. Additionally, most recorded stems appear healthy, scoring either 3 (good) or 4 (excellent) on vigor. Refer to Appendix 2 for visual assessment data and vegetation plot photographs, and Appendix 3 for vegetation plot data.

3.1 Parcel Maintenance

While herbaceous cover is establishing across the Site, seeding took place across the Site in April 2023 and included a combination of Black-eyed Susan (*Rudbeckia hirta*) and Partridge Pea (*Chamaecrista fasciculata var. fasciculata*) as well as a cover crop seed mix including German Millet (*Setaria italica*), Crimson Clover (*Trifolium incarnatum*), and Ladino Clover (*Trifolium repens*). Soil tests were performed in the spring of 2023 and showed that soil was low in nitrogen, potassium, and magnesium. Additionally, pH was slightly acidic. Despite these results, herbaceous vegetation is well established and planted tree

survival has been high through the first growing season. Wildlands therefore does not anticipate that remedial action will be necessary to address soil conditions. The Site will be monitored in future years and action will be taken if it appears that soil conditions are negatively affecting vegetative growth.

Areas of bank stabilization that took place during as-built along Ditch A and UT1 appear to be stable, with vegetation growing along their banks and within any previous erosional rills feeding into the features.

As requested by the North Carolina Division of Mitigation Services (NCDMS) following a boundary inspection in May 2023, a sign was installed at corner #26. Aluminum monument caps stamped with the corresponding plat numbers were also requested to be installed at easement corners. These corners are scheduled to be installed by the surveyor in late November 2023. Wildlands will notify NCDMS once the caps have been installed. Fencing was also observed within the easement along UT2 during the NCDMS boundary inspection. Due to herbaceous vegetation growing in and around the fencing, Wildlands proposes to remove the fence between December 2023 – March 2024, as removal will be much easier during this time frame.

Additional 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. Herbaceous vegetation is well established across the Site, and areas of bank stabilization along UT1 and Ditch A have remained stable throughout the first monitoring year. Wildlands will remove fencing along UT2 during late 2023 or early 2024 when herbaceous vegetation has died back. Additionally, easement corners will be marked with stamped aluminum monuments.

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

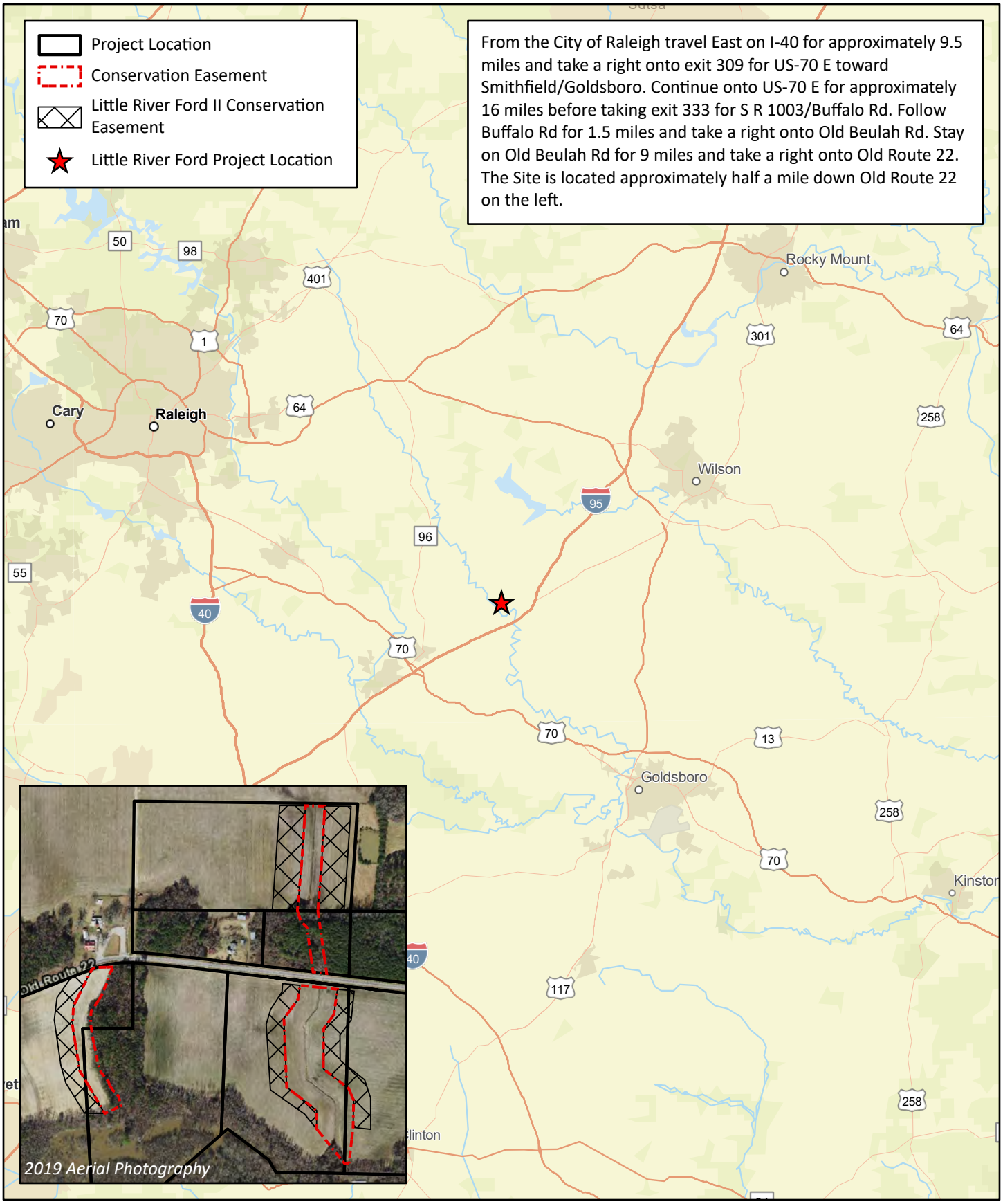
North Carolina Interagency Review Team. 2016. Wilmington District Stream and Wetland Compensatory Mitigation Update. October 24, 2016.

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. (2022). Little River Ford Mitigation Site – Mitigation Plan. North Carolina Department of Environmental Quality, Division of Mitigation Services (NCDMS), Raleigh, NC.

Wildlands Engineering, Inc. (2023). Little River Ford Mitigation Site – Baseline Monitoring Report. North Carolina Department of Environmental Quality, Division of Mitigation Services (NCDMS), Raleigh, NC.

APPENDIX 1. General Figures and Tables



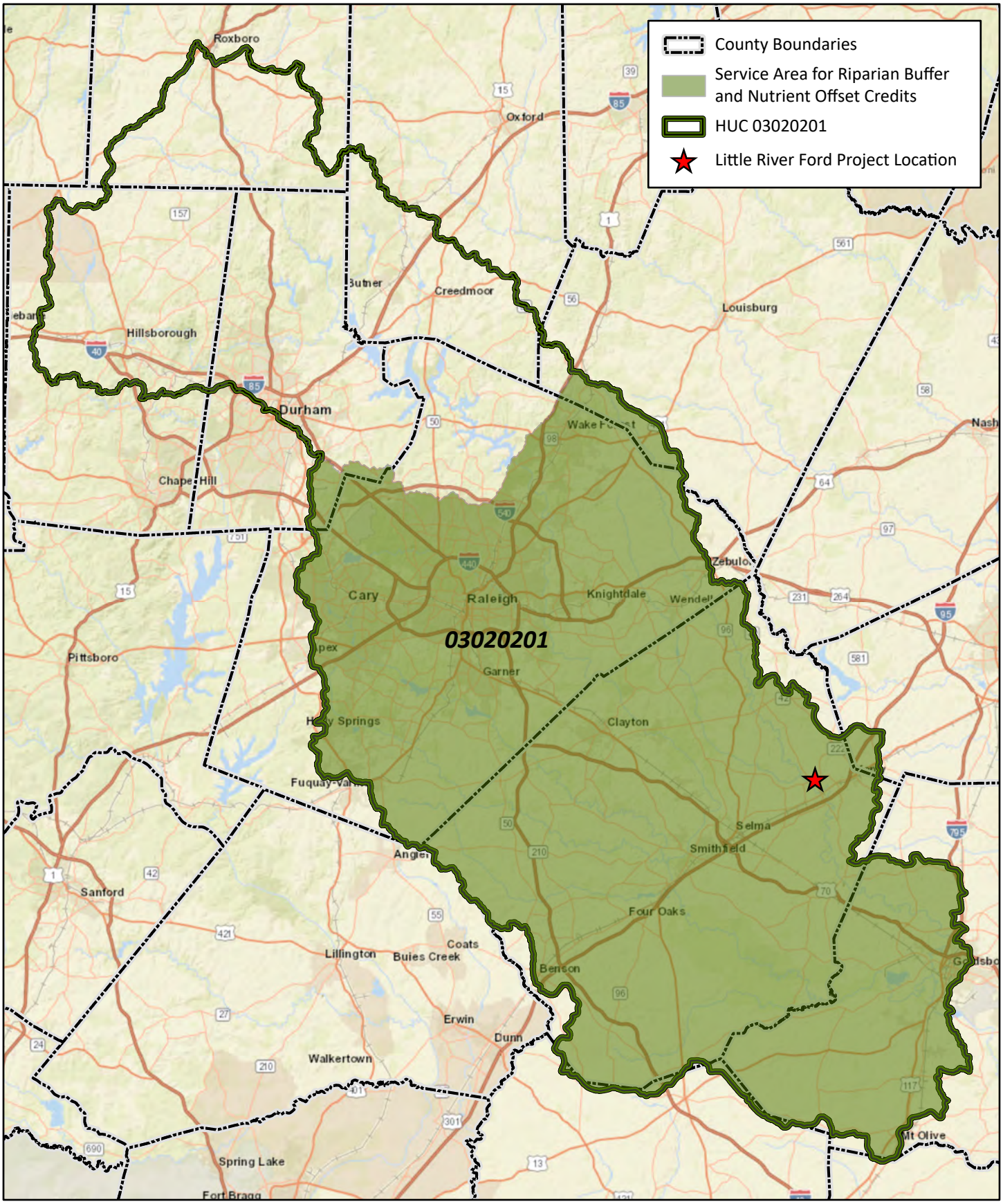
WILDLANDS ENGINEERING

0 5 10 Miles

N

Figure 1. Vicinity Map
Little River Ford Mitigation Site
Monitoring year 1 Report
Neuse River Basin (03020201)

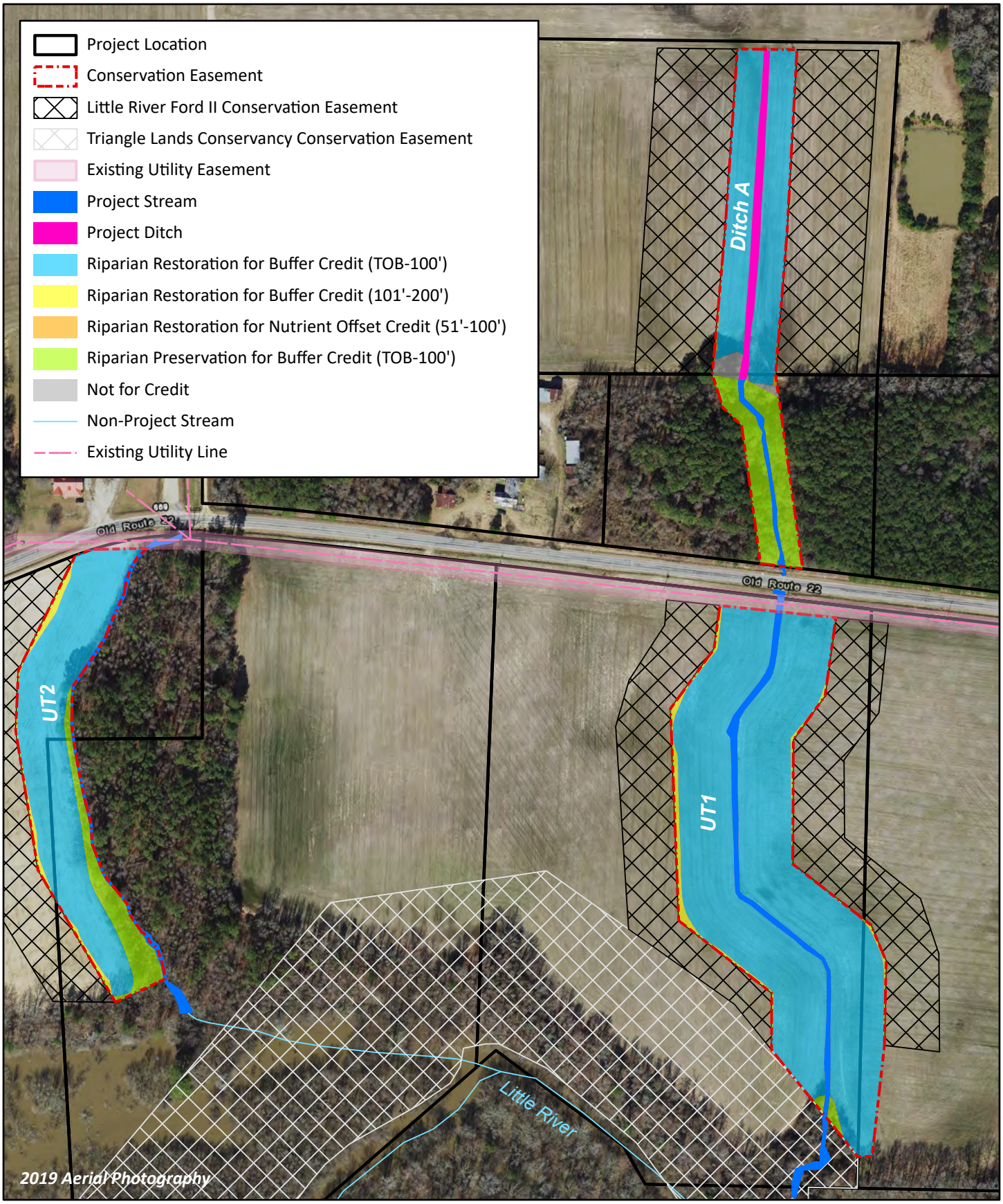
Johnston County, NC



WILDLANDS ENGINEERING

Figure 2. Service Area Map
Little River Ford Mitigation Site
Monitoring Year 1 Report
Neuse River Basin (03020201)

Johnston County, NC



WILDLANDS ENGINEERING

0 125 250 Feet

N

Figure 3. Project Component/Asset Map
Little River Ford Mitigation Site
Monitoring Year 1 Report
Neuse River Basin (03020201)

Johnston County, NC

Table 1. Buffer Project Areas and Assets

Little River Ford Mitigation Site

DMS Project No. 100182

Monitoring Year 1 - 2023

Neuse 03020201 - Outside Falls Lake	**Project Area**
19.16394	**N Credit Conversion Ratio (ft2/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 (ft2)	Total (Creditable) Area of Buffer Mitigation (ft2)	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	No	I / P	Restoration	0-100	UT1, UT2	282,605	282,605	1	100%	1.00000	Yes	282,605.000	Yes	14,746.707
Buffer	Rural	No	I / P	Restoration	101-200	UT1, UT2	13,611	13,611	1	33%	3.03030	Yes	4,491.634	Yes	710.240
Buffer	Rural	No	Ditch	Restoration	0-50	Ditch A	60,185	60,185	1	100%	1.00000	Yes	60,185.000	Yes	3,140.534
Nutrient Offset	Rural	No	Ditch	Restoration	0-100	Ditch A (51'-100')	1,107		1	100%	1.00000	No	—	Yes	57.765
						Totals (ft2):	**357,507**	**356,400**					**347,281.634**		**18,655.245**
						Total Buffer (ft2):	**356,400**	**356,400**							
						Total Nutrient Offset (ft2):	**1,107**	**N/A**							
						Total Ephemeral Area (ft2) for Credit:	**0**	**0**							
						Total Eligible Ephemeral Area (ft2):	**99,560**	**0.0%**	**Ephemeral Reaches as % TABM**						
						Total Eligible for Preservation (ft2):	**118,800**	**8.8%**	**Preservation as % TABM**						

Credit Type	Location	Subject?	Feature Type	Mitigation Activity	Min-Max Buffer Width (ft)	Feature Name	Total Area (sf)	Total (Creditable) Area for Buffer Mitigation (ft2)	Initial Credit Ratio (x:1)	% Full Credit	Final Credit Ratio (x:1)	Riparian Buffer Credits
	Rural	No	I / P		0-100	UT1,UT2	42,421	42,421	5	100%	5.00000	8,484.200
						Preservation Area Subtotals (ft2):	**42,421**	**42,421**				

TOTAL AREA OF BUFFER MITIGATION (TABM)			
Mitigation Totals		**Square Feet**	**Credits**
Restoration:		356,400	347,281.634
Enhancement:		0	0.000
Preservation:		42,421	8,484.200
Total Riparian Buffer:		398,821	355,765.834
TOTAL NUTRIENT OFFSET MITIGATION			
Mitigation Totals		**Square Feet**	**Credits**
Nutrient Offset:	**Nitrogen:**	1,107	57.765
	Phosphorus:		0.000

Table 2. Project Activity and Reporting History

Little River Ford Mitigation Site
DMS Project No. 100182
Monitoring Year 1 - 2023

Activity or Report	Data Collection Complete	Completion or Scheduled Delivery
Mitigation Plan Date	---	April 2022
Bare Roots Planting	---	December 2022
As-Built & Baseline Monitoring Document	December 2022	March 2023
Year 1 Monitoring Report Date	September 2023	December 2023
Year 2 Monitoring Report Date	2024	December 2024
Year 3 Monitoring Report Date	2025	December 2025
Year 4 Monitoring Report Date	2026	December 2026
Year 5 Monitoring Report Date	2027	December 2027

Table 3. Project Contact Table

Little River Ford Mitigation Site
DMS Project No. 100182
Monitoring Year 1 - 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.** Kaitlyn Hogarth 919.851.9986, ext. 122

Table 4. Project Information and Attributes

Little River Ford Mitigation Site
DMS Project No. 100182
Monitoring Year 1 - 2023

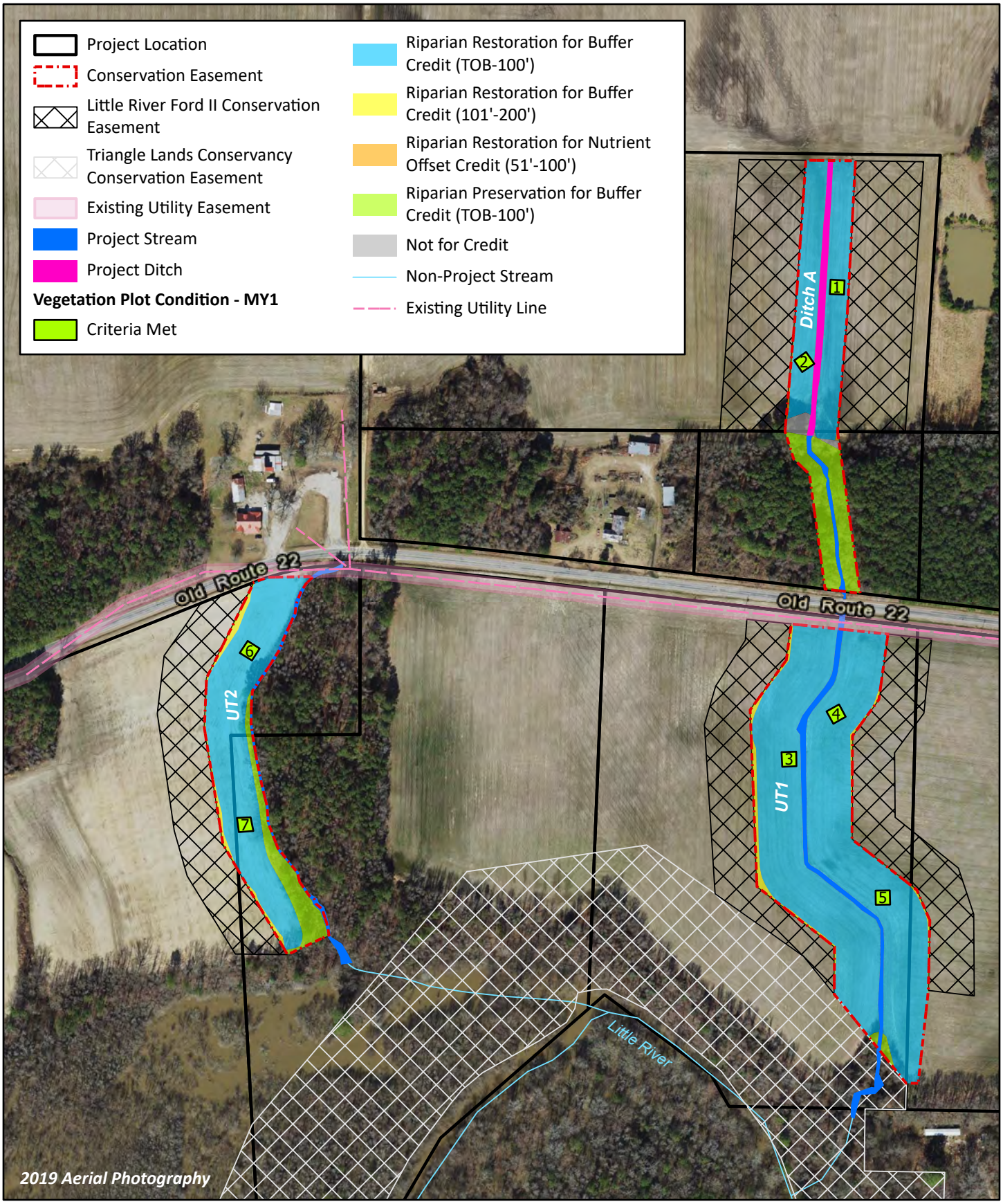
Project Information	
Project Name	Little River Ford Mitigation Site
USGS Hydrologic Unit 14-digit	03020201180060
River Basin	Neuse
Project Coordinates (latitude and longitude)	35.353192 N, -78.104116 W
Total Credits (BMU)	355,765.834
Total Credits (Nitrogen Offset)	57.765
Types of Credits	Riparian Buffer and Nutrient Offset

Table 5. Planted Tree Species

Little River Ford Mitigation Site
DMS Project No. 100182
Monitoring Year 1 - 2023

Common Name	Scientific Name	Number Planted	% of Total
American Sycamore	*Platanus occidentalis*	632	15%
River Birch	*Betula nigra*	632	15%
Common Persimmon	*Diospyros virginiana*	421	10%
Cherrybark Oak	*Quercus pagoda*	421	10%
Eastern Cottonwood	*Populus deltoides*	421	10%
Swamp Chestnut Oak	*Quercus michauxii*	421	10%
Boxelder	*Acer negundo*	421	10%
Black Cherry	*Prunus serotina*	211	5%
American Elm	*Ulmus americana*	211	5%
Willow Oak	*Quercus phellos*	211	5%
Sweetbay Magnolia	*Magnolia virginiana*	211	5%

APPENDIX 2. Visual Assessment Data



WILDLANDS ENGINEERING

0 150 300 Feet

N

Figure 4. Integrated Current Condition Plan View
Little River Ford Mitigation Site
Monitoring Year 1 Report
Neuse River Basin (03020201)

Johnston County, NC

Table 6. Vegetation Condition Assessment Table

Little River Ford Mitigation Site
DMS Project No. 100182
Monitoring Year 1 - 2023

Planted Acreage **8.21**

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 MY5 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 **9.83**

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

VEGETATION PLOT PHOTOGRAPHS

VEG PLOT 1 *(9/19/2023)*

VEG PLOT 2 *(9/19/2023)*

VEG PLOT 3 *(9/19/2023)*

VEG PLOT 4 *(9/19/2023)*

VEG PLOT 5 *(9/19/2023)*

VEG PLOT 6 *(9/19/2023)*

VEG PLOT 7 *(9/19/2023)*

EROSION STABILIZATION PHOTOGRAPHS

	
UT1 Erosion Reduction via Overland Flow Diversion *(1/16/2023)*	**MY1 Condition** *(9/19/2023)*
	
UT1 Erosion Reduction via Overland Flow Diversion and Live Stakes *(1/16/2023)*	**MY1 Condition** *(9/19/2023)*
	
UT1 Erosion Reduction via Overland Flow Diversion and Live Stakes *(1/16/2023)*	**MY1 Condition** *(9/19/2023)*

	
UT1 Erosion Reduction via Overland Flow Diversion and Live Stakes *(1/16/2023)*	**MY1 Condition** *(9/19/2023)*
	
UT1 Erosion Reduction via Overland Flow Diversion and Live Stakes *(1/16/2023)*	**MY1 Condition** *(9/19/2023)*
	
UT1 Erosion Reduction via Overland Flow Diversion *(1/16/2023)*	**MY1 Condition** *(9/19/2023)*

APPENDIX 3. Vegetation Plot Data

Table 7. Vegetation Plot Criteria Attainment Table

Little River Ford Mitigation Site

DMS Project No. 100182

Monitoring Year 1 - 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	

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

Table 8. Vegetation Plot Data
Little River Ford Mitigation Site
DMS Project No. 100182
Monitoring Year 1 - 2023

Planted Acreage	8.21
Date of Initial Plant	2022-12-30
Date of Current Survey	2023-09-19
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	
					Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	*Acer negundo*	boxelder	Tree	FAC	1	1	1	1	1	1	1	1	1	1	1	1	2	2
	Betula nigra	river birch	Tree	FACW	3	3	4	4	4	4	2	2	2	2	2	2	4	4
	Diospyros virginiana	common persimmon	Tree	FAC	2	2	1	1	1	1	1	1	1	1	3	3	2	2
	Magnolia virginiana	sweetbay	Tree	FACW	1	1	1	1							1	1	1	1
	Platanus occidentalis	American sycamore	Tree	FACW			2	2	1	1	5	5	2	2	4	4		
	Populus deltoides	eastern cottonwood	Tree	FAC	2	2	2	2	3	3			1	1	1	1		
	Prunus serotina	black cherry	Tree	FACU	2	2			1	1			1	1	1	1		
	Quercus michauxii	swamp chestnut oak	Tree	FACW			1	1	2	2	2	2	2	2	2	2		
	Quercus pagoda	cherrybark oak	Tree	FACW	3	3	1	1			1	1	1	1			1	1
	Quercus phellos	willow oak	Tree	FACW	2	2	1	1	1	1			2	2			1	1
	Ulmus americana	American elm	Tree	FAC							2	2	1	1	1	1	1	1
Sum	Performance Standard				16	16	14	14	14	14	14	14	14	14	16	16	12	12
Mitigation Plan Performance Standard	Current Year Stem Count					16		14		14		14		14		16		12
	Stems/Acre					648		567		567		567		567		648		486
	Species Count					8		9		8		7		10		9		7
	Dominant Species Composition (%)					19		29		29		36		14		25		33
	Average Plot Height (ft.)					3		3		3		3		3		3		3
	% Invasives					0		0		0		0		0		0		0
Post Mitigation Plan Performance Standard	Current Year Stem Count					16		14		14		14		14		16		12
	Stems/Acre					648		567		567		567		567		648		486
	Species Count					8		9		8		7		10		9		7
	Dominant Species Composition (%)					19		29		29		36		14		25		33
	Average Plot Height (ft.)					3		3		3		3		3		3		3
	% Invasives					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

Little River Ford Mitigation Site

DMS Project No.100182

Monitoring Year 1 - 2023

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

*Each monitoring year represents a different plot for the random vegetation plot "groups". Random plots are denoted with an R, and fixed plots with an F.

Table 10. Vegetation Height Data

Little River Ford Mitigation Site
DMS Project No. 100182
Monitoring Year 1 - 2023

Plot	Scientific Name	Common Name	X	Y	Height (Ft)	Vigor
1	*Populus deltoides*	eastern cottonwood	0.4	1.7	2.8	2
1	*Quercus phellos*	willow oak	2	1.7	2.7	4
1	*Betula nigra*	river birch	3.9	1.6	2.4	4
1	*Quercus pagoda*	cherrybark oak	5.9	1.6	2.2	4
1	*Betula nigra*	river birch	7.8	1.6	3.5	4
1	*Diospyros virginiana*	common persimmon	9.7	5.1	3.6	4
1	*Quercus phellos*	willow oak	9	5	1.2	4
1	*Magnolia virginiana*	sweetbay	7.3	5.1	1.9	3
1	*Acer negundo*	boxelder	5.1	5.2	1.9	2
1	*Populus deltoides*	eastern cottonwood	3	5	3.5	3
1	*Betula nigra*	river birch	0.8	5	3.4	3
1	*Quercus pagoda*	cherrybark oak	0.8	7.7	3.5	4
1	*Quercus pagoda*	cherrybark oak	3	7.9	3.4	4
1	*Diospyros virginiana*	common persimmon	5.1	8.1	3.4	3
1	*Prunus serotina*	black cherry	7.1	7.9	1.0	4
1	*Prunus serotina*	black cherry	9.2	7.7	1.0	4

Table 10. Vegetation Height Data

Little River Ford Mitigation Site
DMS Project No. 100182
Monitoring Year 1 - 2023

Plot	Scientific Name	Common Name	X	Y	Height (Ft)	Vigor
2	*Betula nigra*	river birch	0.6	4.6	3.8	4
2	*Acer negundo*	boxelder	1.7	3.4	2.1	3
2	*Diospyros virginiana*	common persimmon	2.8	2.2	3.4	4
2	*Platanus occidentalis*	American sycamore	4.1	0.9	3.0	4
2	*Quercus michauxii*	swamp chestnut oak	9.2	0.7	2.2	3
2	*Betula nigra*	river birch	8.1	2.3	5.8	4
2	*Populus deltoides*	eastern cottonwood	7	3.5	2.9	4
2	*Betula nigra*	river birch	5.8	4.6	4.6	4
2	*Magnolia virginiana*	sweetbay	4.8	5.9	2.4	3
2	*Quercus phellos*	willow oak	3.5	7	0.3	4
2	*Platanus occidentalis*	American sycamore	2.2	8.3	3.8	4
2	*Populus deltoides*	eastern cottonwood	1.1	9.5	2.0	2
2	*Betula nigra*	river birch	7.4	9.3	3.2	4
2	*Quercus pagoda*	cherrybark oak	9.5	4.9	1.5	3

Table 10. Vegetation Height Data
Little River Ford Mitigation Site
DMS Project No. 100182
Monitoring Year 1 - 2023

Plot	Scientific Name	Common Name	X	Y	Height (Ft)	Vigor
3	*Diospyros virginiana*	common persimmon	1	1.9	3.3	3
3	*Quercus phellos*	willow oak	3.1	1.7	1.9	4
3	*Populus deltoides*	eastern cottonwood	5.2	1.7	1.2	3
3	*Prunus serotina*	black cherry	7.5	1.6	1.2	3
3	*Populus deltoides*	eastern cottonwood	9.3	5.5	3.2	3
3	*Populus deltoides*	eastern cottonwood	6.9	5.6	3.1	3
3	*Quercus michauxii*	swamp chestnut oak	4.8	5.8	1.7	1
3	*Betula nigra*	river birch	2.7	5.9	3.1	4
3	*Platanus occidentalis*	American sycamore	0.5	6.1	3.5	4
3	*Betula nigra*	river birch	1.2	9.5	2.9	4
3	*Quercus michauxii*	swamp chestnut oak	3.2	9.4	3.4	4
3	*Betula nigra*	river birch	5.2	9.2	3.0	3
3	*Acer negundo*	boxelder	6.9	9.1	1.8	4
3	*Betula nigra*	river birch	9	9	3.5	4

Table 10. Vegetation Height Data

Little River Ford Mitigation Site
DMS Project No. 100182
Monitoring Year 1 - 2023

Plot	Scientific Name	Common Name	X	Y	Height (Ft)	Vigor
4	*Betula nigra*	river birch	0.6	3.4	3.3	4
4	*Diospyros virginiana*	common persimmon	2.1	2.3	4.3	4
4	*Ulmus americana*	American elm	3.4	1.2	2.6	3
4	*Quercus pagoda*	cherrybark oak	7.6	2.2	3.5	3
4	*Platanus occidentalis*	American sycamore	5.9	3.9	3.3	4
4	*Acer negundo*	boxelder	4.3	5.1	0.9	3
4	*Quercus michauxii*	swamp chestnut oak	2.8	6.5	3.3	4
4	*Quercus michauxii*	swamp chestnut oak	1.6	7.6	2.9	3
4	*Betula nigra*	river birch	0.4	8.8	3.3	4
4	*Platanus occidentalis*	American sycamore	3.8	9.5	3.3	4
4	*Platanus occidentalis*	American sycamore	5	8.6	3.4	4
4	*Platanus occidentalis*	American sycamore	6.5	7.6	3.7	4
4	*Ulmus americana*	American elm	7.9	6.4	3.3	3
4	*Platanus occidentalis*	American sycamore	9.5	5.2	2.5	4

Table 10. Vegetation Height Data
Little River Ford Mitigation Site
DMS Project No. 100182
Monitoring Year 1 - 2023

Plot	Scientific Name	Common Name	X	Y	Height (Ft)	Vigor
5	*Quercus michauxii*	swamp chestnut oak	2.1	1.1	1.3	3
5	*Prunus serotina*	black cherry	4	0.7	1.3	2
5	*Populus deltoides*	eastern cottonwood	7.8	3.4	2.3	4
5	*Quercus pagoda*	cherrybark oak	7.5	3.8	1.0	1
5	*Ulmus americana*	American elm	5.7	4.4	2.4	4
5	*Acer negundo*	boxelder	3.9	4.5	2.2	4
5	*Betula nigra*	river birch	2.1	4.9	3.1	4
5	*Diospyros virginiana*	common persimmon	0.5	4.9	2.8	3
5	*Betula nigra*	river birch	0.6	8.4	3.4	4
5	*Quercus phellos*	willow oak	2.3	8.2	3.4	3
5	*Platanus occidentalis*	American sycamore	4.1	8.1	4.7	4
5	*Platanus occidentalis*	American sycamore	6.1	8.1	4.0	4
5	*Quercus phellos*	willow oak	8	7.9	1.6	4
5	*Quercus michauxii*	swamp chestnut oak	9.8	7.8	2.9	3

Table 10. Vegetation Height Data

Little River Ford Mitigation Site
DMS Project No. 100182
Monitoring Year 1 - 2023

Plot	Scientific Name	Common Name	X	Y	Height (Ft)	Vigor
6	*Quercus michauxii*	swamp chestnut oak	0.4	2.6	1.9	3
6	*Populus deltoides*	eastern cottonwood	2.1	1.6	3.2	4
6	*Platanus occidentalis*	American sycamore	4	0.5	4.9	4
6	*Betula nigra*	river birch	9.1	0.7	3.3	4
6	*Diospyros virginiana*	common persimmon	7.5	1.5	3.5	3
6	*Platanus occidentalis*	American sycamore	5.7	2.6	5.3	4
6	*Magnolia virginiana*	sweetbay	4.1	4.1	1.0	1
6	*Ulmus americana*	American elm	2.2	5.5	2.1	2
6	*Diospyros virginiana*	common persimmon	0.5	6.8	3.4	3
6	*Betula nigra*	river birch	3.2	9.2	4.3	4
6	*Prunus serotina*	black cherry	5.1	8.1	1.9	4
6	*Platanus occidentalis*	American sycamore	6.8	6.6	4.1	4
6	*Quercus michauxii*	swamp chestnut oak	8.4	5.4	3.1	3
6	*Acer negundo*	boxelder	9.8	4.1	1.8	4
6	*Platanus occidentalis*	American sycamore	9.2	8.5	3.4	4
6	*Diospyros virginiana*	common persimmon	7.2	9.7	3.7	3

Table 10. Vegetation Height Data
Little River Ford Mitigation Site
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Monitoring Year 1 - 2023

Plot	Scientific Name	Common Name	X	Y	Height (Ft)	Vigor
7	*Betula nigra*	river birch	9	0.6	5.6	4
7	*Betula nigra*	river birch	9.3	4	4.3	4
7	*Quercus phellos*	willow oak	7.5	3.7	1.0	4
7	*Acer negundo*	boxelder	5.7	3.4	2.7	4
7	*Betula nigra*	river birch	2.3	2.9	3.9	4
7	*Quercus pagoda*	cherrybark oak	0.7	2.5	2.0	4
7	*Ulmus americana*	American elm	3.6	6.6	4.0	3
7	*Magnolia virginiana*	sweetbay	5.7	7	1.7	3
7	*Diospyros virginiana*	common persimmon	7.3	7.4	3.1	3
7	*Acer negundo*	boxelder	9.4	7.7	3.4	4
7	*Diospyros virginiana*	common persimmon	4.9	9.9	2.0	4
7	*Betula nigra*	river birch	3	9.8	5.4	4