

COOR ISLAND MITIGATION SITE

Year 1 Monitoring Report (2023)
Wayne County, North Carolina
Neuse River Basin - 03020201

DMS Project ID No. 100183
Full Delivery Contract No. 0402-03
DWR Project No. 2021 0021 v3
RFP No. 16-20200402



Prepared for:



NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF MITIGATION SERVICES
1652 MAIL SERVICE CENTER
RALEIGH, NORTH CAROLINA 27699-1652

Data Collected: November 2023
Date Submitted: January 2024



Response to DMS Comments – MY1 (2023)

Coor Island Mitigation Site, Project ID #100183, DMS Contract #0402-03
DWR Project No. 2021-0021 v3
Neuse River Basin 03020201, Wayne County
DMS Reviewers: Emily Dunnigan

Comments Received (Black Text) & Responses (Blue Text):

1. Figure 2: Please include the Phase B easement on the figure.
Response: The Phase B easement has been added to the CCPV figure.
2. Figure 2: Please make the symbology for streams vs ditches different.
Response: The symbology on the CCPV has been updated. Streams are depicted in blue and ditches in orange.
3. Please provide documentation of completed MYO boundary inspection comment action items.
Response: A response to the MYO boundary inspection action items was added as Appendix C.
4. Please include the buffer credit table excel spreadsheet in the digital submittal.
Response: The MYO Buffer Credit Table – excel spreadsheet was added to the digital submittal.

Coor Island Year 1, 2023 Monitoring Summary

General Notes

- No areas of encroachment were observed during year 1 (2023).
- No evidence of nuisance animal activity (i.e., heavy deer browsing, beaver activated, etc.) was observed.

Vegetation

- Measurements of the 8 vegetation plots resulted in an average of 430 planted stems/acre. All individual plots met success criteria except plot 4. Plot 4 failed to meet the success criteria by less than 10% with an average of 243 stems/acre.
- All 8 vegetation plots contained at least 4 native hardwood and native shrub species where no one species was greater than 50 % of stems.

Site Maintenance Report (2023)

Invasive Species Work	Maintenance work
None	None

**FINAL
MY1 (2023) MONITORING REPORT**

COOR ISLAND WETLAND MITIGATION SITE

Wayne County, North Carolina
Neuse River Basin
Cataloging Unit 03020201

DMS Project No. 100183
Full Delivery Contract No. 0402-03
DMS RFP No. 16-20200402
DWR Project No. 2021 0021 v3

Data Collection: November 2023
Submission: January 2024

Prepared for:

NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF MITIGATION SERVICES
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RALEIGH, NORTH CAROLINA 27699-1652

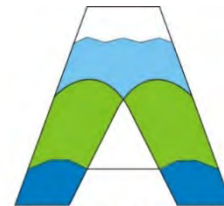


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And



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- Table 11. Project Baseline Information and Attributes

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1.0 Mitigation Project Summary

Restoration Systems (RS) is pleased to provide the North Carolina Division of Mitigation Services (NC DMS) this **Year 1 (2023) Monitoring Report** for the **Coor Island Mitigation Site (hereafter referred to as the "Project" or "Site")**. The Project has been implemented in accordance with State Rules 15A NCAC 02B .0295 (Consolidated Buffer Mitigation Rule – CMB Rule) to provide Neuse River Riparian Buffer Credits (RBC) and 15A NCAC 02B .0703 (Nutrient Offset Credit Trading Rule) to provide Neuse River Nutrient Offset Credits (NOC) for impacts within the Neuse River Basin USGS 8-digit HUC 03020201, excluding the Falls Lake Watershed. The Site is located within the warm waters of the United States Geological Society (USGS) Hydrologic Unit 03020201-170030 and NC DWR subbasin 03-04-12. The permanent conservation easement encompasses 11.52 acres and provides 380,448.524 RBCs (Available RBC). Additionally, 364,095.993 RBCs can potentially be converted to 19,320.776 lbs nitrogen NOCs at the request of NCDMS. The Project provides the State with the Available RBC while permanently protecting the restored riparian area and preserving the forested floodplain, a mapped FEMA Floodway (Map 3720256800K, Panel 2568, effective June 20, 2018).

Located in Wayne County, North Carolina, the Project encompasses 11.52 acres, of which 1.904 acres are forested, and the remainder was utilized for row crop production. The Project restored riparian buffer areas along an unnamed tributary to Half Mile Creek and preserved the established riparian buffer where it exists. Detailed project mapping is provided in Appendix A, along with site-specific data in Appendix B.

The parcels were acquired by RS through a fee-simple purchase agreement with the former landowners (E & S Wayne Farms LLC) effective July 1, 2021. Following the purchase, RS assigned a conservation easement to the State Property Office recorded November 14, 2022.

A DWR representative conducted an on-site stream determination on January 21, 2021. A Stream Determination letter was provided on March 4, 2021. Further, A DWR representative conducted a Site Viability visit on March 24, 2021, and provided an approval letter on April 16, 2021.

RS began preparation for restoration of the riparian buffer by planting the Site in February 2023. Riparian buffer restoration activities included planting a cover crop in advance of tree planting, bare-root planting, and broadcast application of a permanent seed mix. On February 15, 2023, Axiom Environmental installed eight (8) Carolina Vegetation Survey (CVS) monitoring plots and collected as-built data. On November 2, 2023, Axiom Environmental returned to the site and collected monitoring year 1 (2023) vegetation data (Appendix B).

1.1 Project Goals and Objectives

The primary goals of the proposed nutrient offset project are to provide ecological and water quality enhancements to the Neuse River Basin by restoring the riparian area to create a functional riparian corridor. The Site is not located within a watershed planning unit but addresses watershed goals outlined by the Neuse River Basin Restoration Priorities (RBRP) report (NCEEP 2010 amended 2018). Table 1 summarizes the RBRP goals and provides site-specific objectives to address the RBRP goals. Specific enhancements to water quality and ecological processes are outlined in Table 1.

Table 1. Ecological and Water Quality Goals

Goal	Objective
Decrease nutrient levels	Nutrient input will be decreased by filtering runoff from the agricultural fields through restored riparian 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.
Decrease sediment input	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	Planted riparian trees will shade the streams as they mature, reducing thermal pollution.
Create appropriate terrestrial habitat	Buffer areas will be restored by planting native vegetation.
Permanently protect the project Parcel from harmful uses	A permanent conservation easement will be recorded, protecting the Parcel's assets in perpetuity.

Ecological and water quality goals will be achieved by restoring 8.747 acres of forested riparian buffer and preserving 1.904 acres of existing riparian forest.

1.2 Pre-construction Site Conditions

The Project encompasses 11.52 acres, of which 8.747 acres were in crop production, and the remaining area includes existing bottomland hardwood forest and water features. The Project has preserved and restored riparian buffer areas along an unnamed tributary to Half Mile Creek. The downstream site boundary is an existing mitigation site, Half Mile Branch Bank Site. Detailed project mapping is provided in Appendix A.

Intensive agriculture practices existed across all proposed restoration areas. Agricultural fields within and adjacent to the Site were subject to routine fertilizer and herbicide applications. Site streams and ditches exhibited bank erosion due to long-term plowing and removal of native vegetation throughout the proposed restoration areas. Historic imagery dating back to 1959 indicates that land management practices were consistent with the Site's conditions prior to restoration (Restoration Systems, 2022).

Site tributaries ("features") A, B, and C originate to the south less than 300 feet from the Project. Site feature 1 (UT to Half Mile Branch) originates to the east less than 300 feet from the Project. All tributaries drain to Half Mile Branch.

2.0 Determination of Credits

Within the 11.52-acre Site, 8.747 acres of agricultural fields historically used for row crops are proposed for riparian buffer restoration. The primary goals associated with restoring riparian areas within the Site will improve water quality, enhance flood attenuation, and restore wildlife habitat. These goals will be achieved by restoring 8.747 acres of forested riparian buffer and preserving 1.904 acres of existing forest and State waters. Mitigation credits are presented in Table 8 and Figure 2 in Appendix A and are based upon the as-built survey.

3.0 Baseline Restoration Activities Summary

Riparian area restoration involved planting appropriate native tree species along the 200-foot-wide riparian corridor of streams and hydrologically connected ditches at a density of 680 stems per acre on 8ft x 8ft spacing. Vegetation management and herbicide applications may be needed over the first few years of tree establishment in the riparian restoration areas to prevent encroachment of undesirable species that may out-compete the planted native vegetation. Tree species planted across the riparian areas of the Project included those listed in Table 3. Stems were mixed prior to planting to ensure diversity of bare roots across the planted area. A seed mix including the species listed in Table 4 was applied to provide temporary and permanent ground cover for soil stabilization and reduction of sediment loss during rain events in areas without existing herbaceous cover. Planting took place on February 6, 2023.

Table 2. Restoration Plan Activities

Restoration Plan Activity	Phase Specific Actions
Riparian Restoration	<ol style="list-style-type: none">1. Parcel-wide soil preparation herbaceous vegetation treatment ahead of planting2. Establishment of a native herbaceous community via site-specific seed mix (Table 4)3. Establishment of 8.747 acres of native hardwood forest via the planting of bare-root saplings from the top of the bank to the conservation easement boundary (Table 3)

3.1 Riparian Area Restoration Activities

Restoration of the riparian area allows for recolonization and expansion of characteristic species across the landscape. The riparian areas were restored according to the Consolidated Buffer Mitigation Rule 15A NCAC 02B.0295. Prior to planting a cover crop was planted to improve soil health, and by doing so it was determined that soil ripping and testing was not needed to facilitate restoration of the native hardwood forest. The planting plan for the riparian restoration area included planting 6,000 native bare-root hardwood saplings across 8.747 acres at a density of +/- 686 stems per acre. The planted species composition is intentionally diverse and while based on these communities, also accounted for local observations and nursery availability.

All species were selected based on their ability for: sediment stabilization, rapid growth rate, withstanding hydraulic forces associated with flood events, suitability to specific soil types, and Project conditions. Tree species were mixed thoroughly before planting to provide a diverse and random plant across the Site. Planting density was set to ensure sufficient diversity and density of planted stems outlined in Rule 15A NCAC 02B.0295 of 260 trees per acre at the end of five years. No one tree species was greater than 50% of the established stems.

The bare root planting list is provided in Table 3 followed by the permanent seed mix in Table 4. MY1 (2023) vegetation data is provided in Appendix B.

Table 3. Planting List

Vegetation Association		Coastal Plain Bottomland Hardwood	
Species	Indicator Status	# planted	% of total
River birch (<i>Betula nigra</i>)	FACW	600	10.0%
Black gum (<i>Nyssa Sylvatica</i>)	FAC	600	10.0%
Bitternut hickory (<i>Carya cordiformis</i>)	FAC	300	5.0%
American elm (<i>Ulmus americana</i>)	FAC	300	5.0%
Persimmon (<i>Diospyros virginiana</i>)	FAC	500	8.3%
Green ash (<i>Fraxinus pennsylvanica</i>)	FACW	300	5.0%
Sycamore (<i>Platanus occidentalis</i>)	FAC	600	10.0%
Tulip poplar (<i>Liriodendron tulipifera</i>)	FACU	600	10.0%
Water oak (<i>Quercus nigra</i>)	FACW	600	10.0%
Swamp Chestnut oak (<i>Quercus michauxii</i>)	FACW	600	8.3%
Willow oak (<i>Quercus phellos</i>)	FACW	500	10.0%
Elderberry (<i>Sambucus nigra</i>)	FACW	500	8.3%
TOTAL		6,000	100.0%

Table 4. Permanent Seed

Permanent Seed- Sitewide @ 2 lbs /acre					
Species	%	Species	%	Species	%
<i>Agrostis hyemalis</i>	5	<i>Desmodium canadense</i>	2	<i>Lespedeza capitata</i>	2
<i>Agrostis perennans</i>	5	<i>Echinacea purpurea</i>	7	<i>Liatris spicata</i>	0.5
<i>Bidens aristosa</i>	3	<i>Elymus virginicus</i>	5	<i>Monarda fistulosa</i>	0.5
<i>Carex albolutescens</i>	2	<i>Eupatorium coelestinum</i>	0.5	<i>Panicum anceps</i>	2
<i>Carex lupulina</i>	1	<i>Eupatorium perfoliatum</i>	1	<i>Panicum clandestinum</i>	2
<i>Carex vulpinoidea</i>	2	<i>Helianthus angustifolius</i>	4	<i>Rudbeckia hirta</i>	7
<i>Chamaecrista fasciculata</i>	5	<i>Heliopsis helianthoides</i>	4	<i>Senna hebecarpa</i>	5
<i>Chamaecrista nictitans</i>	2	<i>Hibiscus moscheutos</i>	0.5	<i>Tridens flavus</i>	20
<i>Coreopsis lanceolata</i>	3	<i>Juncus effusus</i>	2	<i>Verbena hastata</i>	2
<i>Coreopsis tinctoria</i>	3	<i>Juncus tenuis</i>	2	--	

4.0 Monitoring Protocol & Success Criteria

4.1 Monitoring Protocol

Restoration monitoring procedures for vegetation will monitor plant survival and species diversity. Eight permanent 10 x 10-meter vegetation plots were installed for quantitative sampling as outlined in the *CVS Level 1-2 Protocol for Recording Vegetation, Version 4.2* (Lee et al. 2008) (Figures 2A-B, Appendix A). Vegetation monitoring will occur no earlier than Fall of each year. A reference photo will be taken from

the origin point of each plot. All planted stems in the plots will be marked with flagging tape and recorded. Data collected will include species, height, planting type (planted stem and/or volunteer) and vigor. Monitoring of the restoration efforts will be performed for five years or until success criteria are fulfilled. Per the latest NCDWR guidance, the height of each individual planted stem and average vigor (by plot) will be reported during years 1, 3, and 5. Monitoring will be conducted by Axiom Environmental, Inc based on the schedule in Table 5. A summary of monitoring is outlined in Table 6. Annual monitoring reports will be submitted to the NCDMS by Restoration Systems no later than December 1 of each monitoring year data.

Year 1 (2023) data was collected on November 1-2, 2023 by Axiom Environmental and derived an average planted stem density of 430 stems per acre. All individual plots met success criteria except plot 4. Plot 4 failed to meet the success criteria by less than 10% (1 stem) with an average of 243 stems/acre. Additionally, all 8 vegetation plots contained at least 4 native hardwood and native shrub species where no one species was greater than 50% of stems. Appendix B includes Year 1 (2023) vegetation plot photographs along with planted and total stem counts.

Table 5. Monitoring Schedule

Resource	Year 1	Year 2	Year 3	Year 4	Year 5
Vegetation (2% of planted area)	x	x	x	x	x
Visual Assessment (100% of Site)	x	x	x	x	x
Report Submittal	x	x	x	x	x

Table 6. Monitoring Summary

Vegetation Parameters				
Parameter	Method	Schedule/ Frequency	Number/ Extent	Data Collected/Reported
Vegetation	8 Permanent vegetation plots 0.0247 acre (100 square meters) in size; <i>CVS-EEP Protocol for Recording Vegetation, Version 4.2</i> (Lee et al. 2008).	As-built (MY 0), MY 1, 2, 3, 4, and 5	8 plots across the restoration portion of the Site	Species, height, vigor, planted vs. volunteer, stems/acre. Reference photo at each monitoring plot.

4.2 Success Criteria

Success criteria will be based on the survival of planted species at a density of 260 stems per acre after five years of monitoring.

Table 7. Success Criteria

Vegetation
<ul style="list-style-type: none"> • Within planted portions of the Site, in accordance with Rule 15A NCAC 02B .0295: <ul style="list-style-type: none"> a) a minimum of 260 stems per acre must be present at year 5, and b) a minimum of four native hardwood and native shrub species in each vegetation monitoring plot, where no one species is greater than 50 % of stems. • Planted and volunteer stems are counted, provided they are included in the approved planting list for the Site; natural recruits not on the planting list may be considered by the DWR on a case-by-case basis.

4.3 Maintenance and Contingency Plans

An adaptive management plan will be developed and implemented with the approval of DMS and DWR in the event the Site or a specific component of the Site fails to achieve success criteria as outlined above. Other vegetation maintenance and repair activities may include pruning, mulching, and fertilizing. If exotic invasive plant species require treatment, such species will be controlled by mechanical (physical removal with the use of a chainsaw) and/or herbicide application in accordance with North Carolina Department of Agriculture (NCDA) rules and regulations.

5.0 References

Consolidated Buffer Mitigation Rule - 15A NCAC 02B .0295 (Published November 17, 2014)

Lee, M.T., R.K. Peet, S.D. Roberts, and T.R. Wentworth. 2008. CVS-EEP Protocol for Recording Vegetation. Version 4.2. North Carolina Department of Environment and Natural Resources, Ecosystem Enhancement Program. Raleigh, North Carolina.

North Carolina Department of Environmental Quality, Division of Mitigation Services (NCDMS), 2017. Riparian Buffer and Nutrient Offset Buffer Baseline and Annual Monitoring Report Template version 2.0

North Carolina Division of Mitigation Services (NCDMS). 2010 amended 2018. Neuse River Basin Restoration Priorities (online). Available: https://files.nc.gov/ncdeq/Mitigation%20Services/Watershed_Planning/Neuse_River_Basin/RB_RP-Neuse-201807-.pdf (September 11, 2020).

Restoration Systems, LLC, 2022. Coor Island Mitigation Site – Mitigation Plan. North Carolina Department of Environmental Quality, Division of Mitigation Services, Raleigh, NC.

Schafale, M. P. and Weakley, 2012. A Classification of the Natural Communities of North Carolina, Fourth Approximation. North Carolina Natural Heritage Program, North Carolina Department of Environment and Natural Resources. Raleigh, North Carolina.

United States Department of Agriculture (USDA). 2019. Web Soil Survey (online). Available: <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx> [September 2, 2020].

US Fish and Wildlife Service, 2020. Endangered Species, Threatened Species, Federal Species of Concern, and Candidate Species, Wayne County, North Carolina (online, updated July 17, 2020). Available: <https://www.fws.gov/raleigh/species/cntylist/wayne.html> [September 2, 2020].

Appendix A: General Figures and Tables

Figure 1. Parcel Location / Service Area

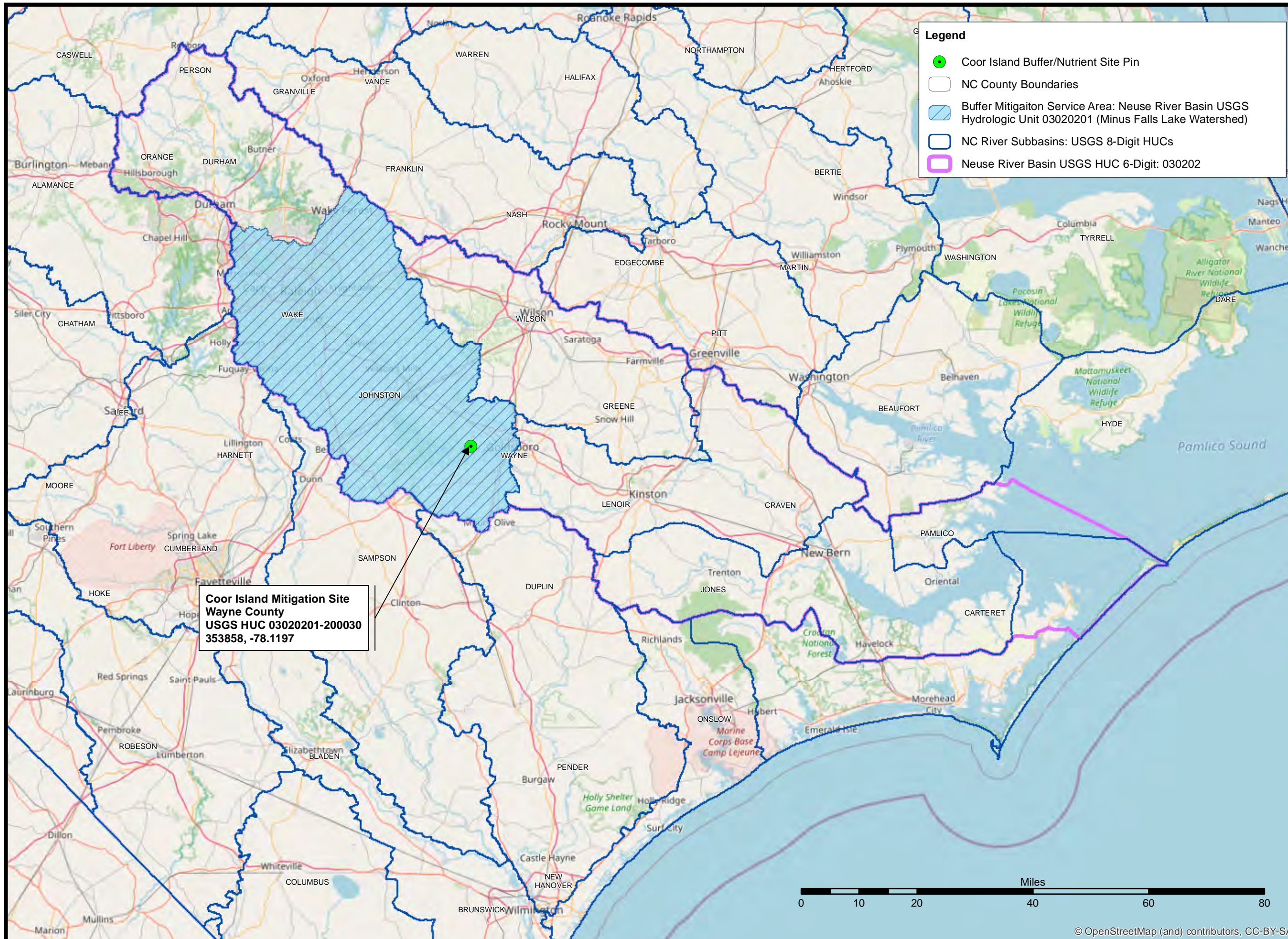
Figure 2. Current Conditions Plan View

Table 8. Project Components and Mitigation Credits

Table 9. Project Activity and Reporting History

Table 10. Project Contact

Table 11. Project Baseline Information and Attributes



Legend

- Coor Island Buffer/Nutrient Site Pin
- NC County Boundaries
- Buffer Mitigation Service Area: Neuse River Basin USGS Hydrologic Unit 03020201 (Minus Falls Lake Watershed)
- NC River Subbasins: USGS 8-Digit HUCs
- Neuse River Basin USGS HUC 6-Digit: 030202

Coor Island Mitigation Site
 Wayne County
 USGS HUC 03020201-200030
 353858, -78.1197



Prepared for:
NC DEQ
 Division of
 Mitigation Services

Project:
COOR ISLAND
 MITIGATION SITE

Wayne County, NC

Title:
SITE LOCATION
 &
HYDROLOGIC
 UNIT MAP

Drawn by: APS

Date: NOV 2023

Scale: 1:1,000,000

Project No.: 23-008

FIGURE
1



Legend

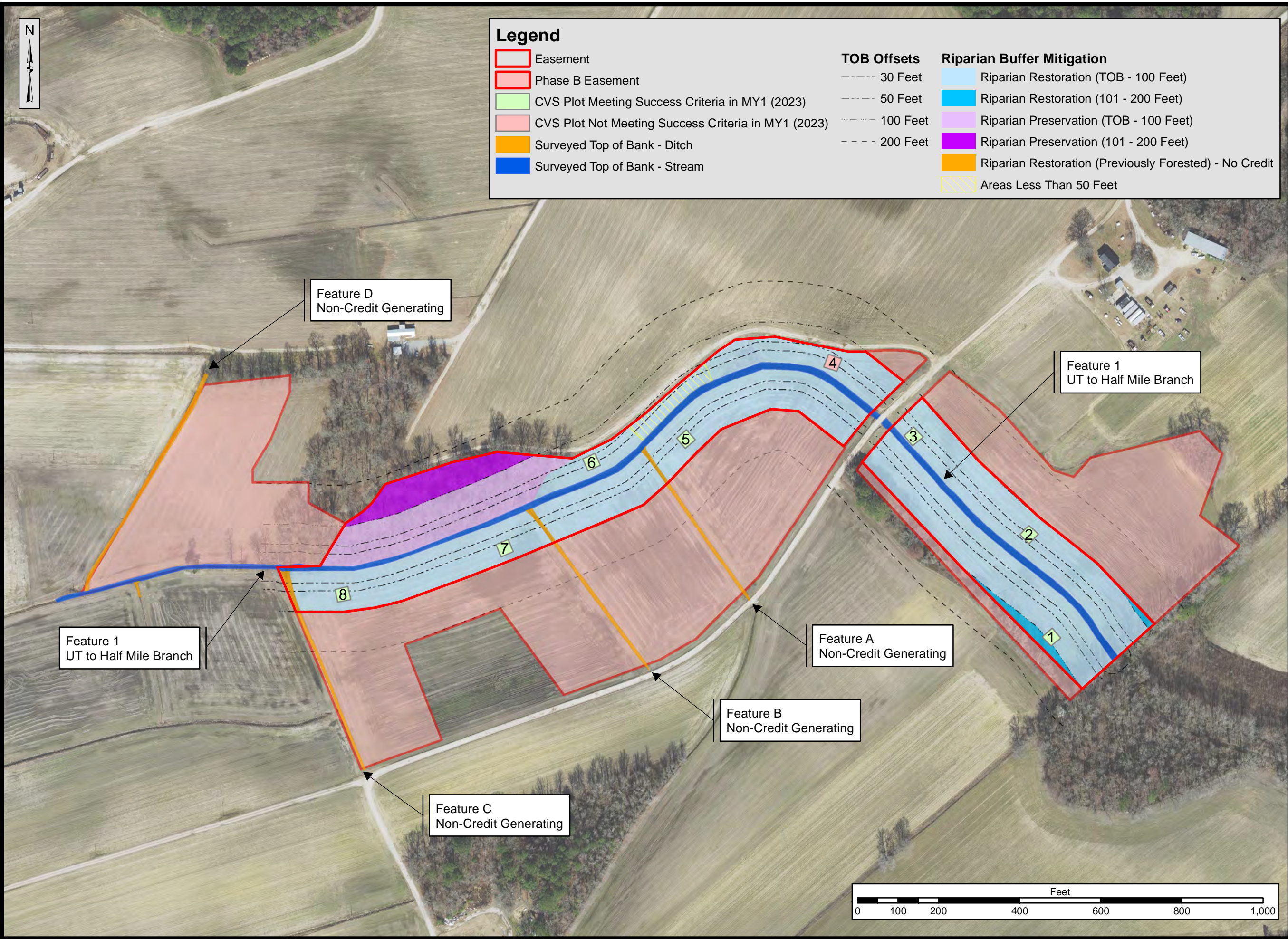
- Easement
- Phase B Easement
- CVS Plot Meeting Success Criteria in MY1 (2023)
- CVS Plot Not Meeting Success Criteria in MY1 (2023)
- Surveyed Top of Bank - Ditch
- Surveyed Top of Bank - Stream

TOB Offsets

- 30 Feet
- 50 Feet
- 100 Feet
- 200 Feet

Riparian Buffer Mitigation

- Riparian Restoration (TOB - 100 Feet)
- Riparian Restoration (101 - 200 Feet)
- Riparian Preservation (TOB - 100 Feet)
- Riparian Preservation (101 - 200 Feet)
- Riparian Restoration (Previously Forested) - No Credit
- Areas Less Than 50 Feet



Prepared for:

COOR ISLAND MITIGATION SITE

Wayne County, NC

Title:

CURRENT CONDITIONS PLAN VIEW

Imagery: 2021 NC OneMap

Drawn by: KRJ

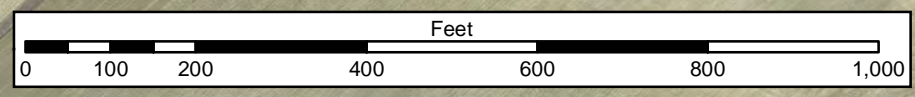
Date: JAN 2024

Scale: 1:2700

Project No.: 23-008

FIGURE

2



Coor Island Mitigation Site, Project Credits (Asbuilt)

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)	Delivered Nutrient Offset: P (lbs)	
Buffer	Rural	Yes	I / P	Restoration	0-50	1	9,800	9,800	1	100%	1.00000	Yes	9,800.000	No	—	—	
Buffer	Rural	Yes	I / P	Restoration	0-100	1	361,059	361,059	1	100%	1.00000	Yes	361,059.000	Yes	18,840.541	—	
Buffer	Rural	Yes	I / P	Restoration	101-200	1	9,203	9,203	1	33%	3.03030	Yes	3,036.993	Yes	480.225	—	
Buffer	Rural	Yes	I / P	Restoration	0-100	Non-Credit Areas (Previously Forested) Feature 1	812	0	1	100%		No	—	No	—	—	
Buffer	Rural	Yes	I / P	Restoration	101-200	Non-Credit Areas (Previously Forested) Feature 1	9	0	1	33%		No	—	No	—	—	
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Totals (ft²):							380,883	380,062					373,895.993			19,320.766	0.000
Total Buffer (ft²):							380,883	380,062									
Total Nutrient Offset (ft²):							0	N/A									
Total Ephemeral Area (ft²) for Credit:							0	0									
Total Eligible Ephemeral Area (ft²):							115,958	0.0%						Ephemeral Reaches as % TABM			
Total Eligible for Preservation (ft²):							126,961	16.3%						Preservation as % TABM			

Enter Preservation Credits Below

Credit Type	Location	Subject?	Feature Type	Mitigation Activity	Min-Max Buffer Width (ft)	Feature Name	Total Area (sf)	Total (Creditable) Area for Buffer Mitigation (ft ²)	Initial Credit Ratio (x:1)	% Full Credit	Final Credit Ratio (x:1)	Riparian Buffer Credits	
	Rural	Yes	I / P		0-100	1	56,943	56,943	10	100%	10.00000	5,694.300	
	Rural	Yes	I / P		101-200	1	26,006	26,006	10	33%	30.30303	858.198	
													—
													—

Preservation Area Subtotals (ft²): **82,949** **82,949**

TOTAL AREA OF BUFFER MITIGATION (TABM)		
Mitigation Totals	Square Feet	Credits
Restoration:	380,062	373,895.993
Enhancement:	0	0.000
Preservation:	82,949	6,552.498
Total Riparian Buffer:	463,011	380,448.491
TOTAL NUTRIENT OFFSET MITIGATION		
Mitigation Totals	Square Feet	Credits
Nutrient Offset: Nitrogen:	0	0.000
Phosphorus:		0.000

1. The Randleman Lake buffer rules allow some ditches to be classified as subject according to 15A NCAC 02B .0250 (5)(a).

Table 9. Project Activity and Reporting History

Activity / Milestone	Mitigation Plan Proposed Date	Actual Date
Mitigation Plan Approved	NA	November 28, 2022
Parcel Protection	NA	Recorded November 11, 2022
Planting	Q1 2023	February 6, 2023
As-built Data Collection	Q1 2023	February 15, 2023
Construction Completion Walkthrough	NA	February 6, 2023
As-built Report Submittal	NA	March 2023
Year 1 Monitoring	Q4 2023	December 2023
Year 2-5 Monitoring	Q4 2024 - 2027	On schedule

Table 10. Project Contact

	Firm	POC & Address
Full Delivery Provider	Restoration Systems, LLC	1101 Haynes Street, Suite 211 Raleigh, North Carolina 27604 John Preyer 919.755.9490
Designer/Permitting:	Restoration Systems, LLC	Raymond Holz: 919.755.9490 1101 Haynes Street, Suite 211 Raleigh, North Carolina 27604
Planting Contractor:	Restoration Systems, LLC	Josh Merritt: 919.755.9490 1101 Haynes Street, Suite 211 Raleigh, North Carolina 27604
Seeding Contractor:	Restoration Systems, LLC	Matthew Harrell: 919.755.9490 1101 Haynes Street, Suite 211 Raleigh, North Carolina 27604
Nursery Stock Suppliers:	Superior Trees, Inc. & Native Forest Nursery	1.888.888.7158
Baseline Data Collection	Axiom Environmental, Inc.	Grant Lewis; 919.215.1693 218 Snow Ave. Raleigh, NC 27603
Vegetation Monitoring:	Axiom Environmental, Inc.	Grant Lewis; 919.215.1693 218 Snow Ave. Raleigh, NC 27603

Table 11. Project Baseline Information & Attributes

Project Information			
Project Name		Coor Island	
County		Wayne	
Project Area (acres)		11.52	
Project Coordinates (latitude and longitude)		35.3858°, -78.1197° (NAD83/WGS84)	
Project Watershed Summary Information			
Physiographic Province		Southeastern Plain	
River Basin		Neuse	
USGS Hydrologic Unit 8-digit	03020201	USGS Hydrologic Unit 14-digit	03020201200030
DWR Sub-basin		03-04-12	
Project Drainage Area, Total Outfall (acres)		0.4 square miles	
Project Drainage Area Percentage of Impervious Area		<5%	

Appendix B: Vegetation Data

Table 12. MY1 (2023) Vegetation Plot Data

Table 13. MY1 (2023) Vegetation Height Data

Vegetation Plot Photos 1-8

Table 12. MY1 (2023) Vegetation Plot Data
 Project Code 23008. Project Name: Coor Island

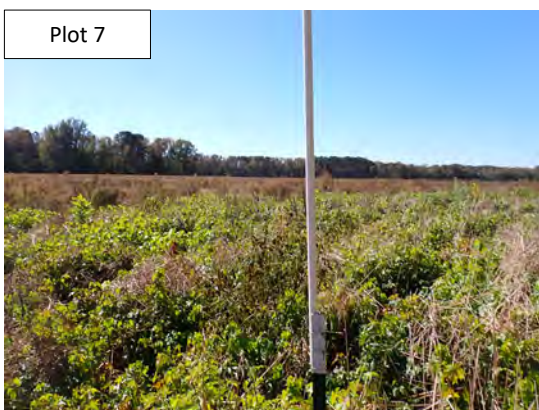
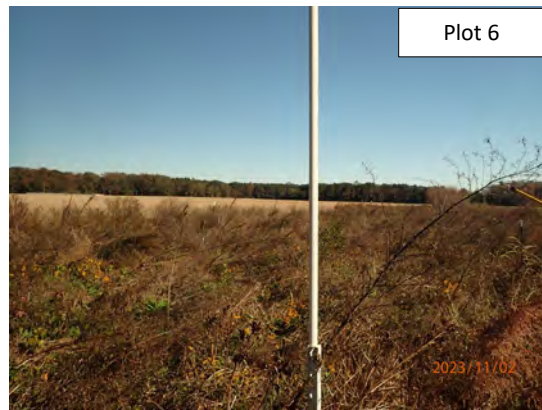
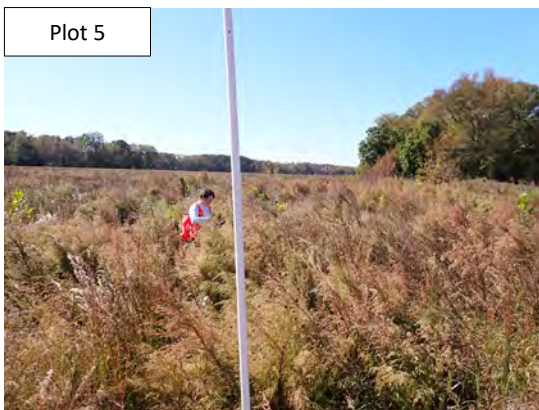
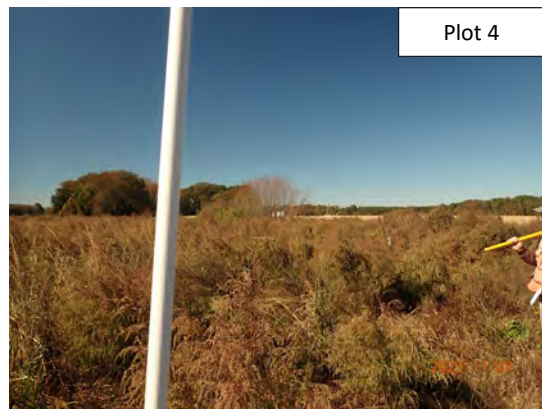
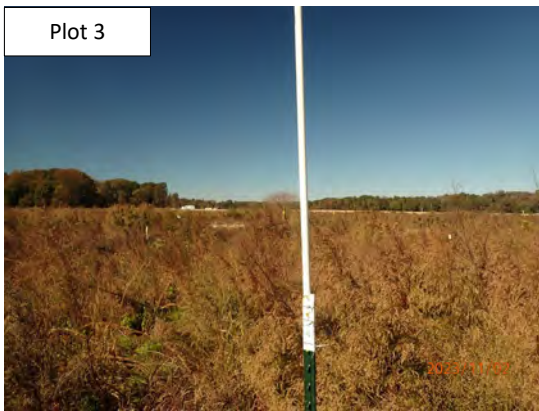
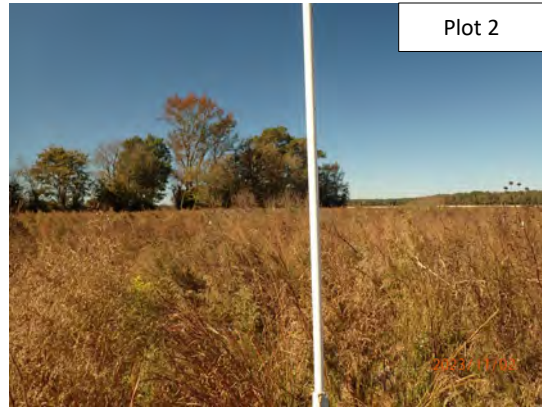
Scientific Name	Common Name	Species Type	Current Plot Data (MY1 2023)																								Annual Means								
			23008-01-0001			23008-01-0002			23008-01-0003			23008-01-0004			23008-01-0005			23008-01-0006			23008-01-0007			23008-01-0008			MY1 (2023)			MY0 (2023)					
			PnoLS	P-all	T	PnoLS	P-all	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
Betula nigra	river birch	Tree											2	2	2	9	9	9	1	1	1				4	1	1	1	13	13	17	6	6	6	
Carya cordiformis	bitternut hickory	Tree											1	1	1											1	1	1	2	2	2	3	3	3	
Cercis canadensis	eastern redbud	Tree																																	
Diospyros virginiana	common persimmon	Tree											1	1	1																				
Fraxinus pennsylvanica	green ash	Tree				2	2	2																											
Liriodendron tulipifera	tuliptree	Tree	1	1	1	1	1	1																											
Nyssa sylvatica	blackgum	Tree	4	4	4	4	4	4																											
Platanus occidentalis	American sycamore	Tree	1	1	2																														
Quercus	oak	Tree																																	
Quercus michauxii	swamp chestnut oak	Tree	2	2	2	1	1	1	1	1	1																								
Quercus nigra	water oak	Tree				3	3	3	4	4	4																								
Quercus phellos	willow oak	Tree	1	1	1				3	3	3																								
Salix caprea	goat willow	Exotic																																	
Sambucus canadensis	Common Elderberry	Shrub																																	
Sambucus nigra	European black elderberry	Shrub				1	1	1																											
Ulmus americana	American elm	Tree				1	1	1																											
	Stem count		9	9	10	13	13	13	10	10	10	6	6	6	14	14	14	10	10	10	9	9	13	14	14	14	85	85	90	118	118	118			
	size (ares)		1			1			1			1			1			1			1			1			1			8			8		
	size (ACRES)		0.02			0.02			0.02			0.02			0.02			0.02			0.02			0.02			0.20			0.20					
	Species count		5	5	5	7	7	7	5	5	5	5	5	5	3	3	3	5	5	5	6	6	7	6	6	6	15	15	15	14	14	14			
	Stems per ACRE		364.2	364.2	404.7	526.1	526.1	526.1	404.7	404.7	404.7	242.8	242.8	242.8	566.6	566.6	566.6	404.7	404.7	404.7	364.2	364.2	526.1	566.6	566.6	566.6	430	430	455.3	596.9	596.9	596.9			

Color 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%

Table 13. MY1 (2023) Vegetation Height Data

Plot	Species	X	Y	Height (cm)	DBH (cm)	Vigor	Plot Average Vigor
1	Quercus michauxii	0.3	0.3	58		4	3.8
1	Platanus occidentalis	3.2	0.3	122		4	
1	Nyssa sylvatica	0.5	2.8	52		4	
1	Nyssa sylvatica	2.9	2.8	34		4	
1	Quercus phellos	6	2.8	20		4	
1	Nyssa sylvatica	8.6	3.1	61		4	
1	Nyssa sylvatica	5.8	0.3	45		4	
1	Liriodendron tulipifera	7.6	8.2	44		2	
1	Quercus michauxii	0	7.9	52		4	
1	Platanus occidentalis			35		4	
2	Quercus nigra	0.2	0.2	38		3	3.3
2	Liriodendron tulipifera	3.4	0.6	31		3	
2	Quercus nigra	3.2	3.7	60		4	
2	Sambucus nigra	0.9	3.2	45		3	
2	Nyssa sylvatica	6.1	0.9	61		3	
2	Nyssa sylvatica	8.8	0.5	45		3	
2	Nyssa sylvatica	9.8	4.1	64		3	
2	Quercus michauxii	8.3	4.1	52		2	
2	Nyssa sylvatica	6	6.8	50		3	
2	Fraxinus pennsylvanica	8.4	7.3	95		4	
2	Ulmus americana	3.5	9.2	62		4	
2	Fraxinus pennsylvanica	1.6	6.0	80		4	
2	Quercus nigra	0.7	8.8	44		4	
3	Quercus michauxii	0.3	0.3	65		3	3.4
3	Quercus	2.7	0.6	78		4	
3	Quercus phellos	1.6	1.5	48		4	
3	Quercus nigra	1.2	4.8	40		3	
3	Quercus phellos	4	5.3	52		4	
3	Quercus nigra	4.5	1.9	39		4	
3	Quercus nigra	7.1	5.5	51		3	
3	Quercus nigra	7.5	8.4	15		2	
3	Platanus occidentalis	2.5	7.8	92		4	
3	Quercus phellos	0	7.8	40		3	
4	Diospyros virginiana	0	0.4	29		2	2.8
4	Nyssa sylvatica	3.1	3.6	111		4	
4	Betula nigra	5.5	5.5	121		4	
4	Betula nigra	8	5.5	98		4	
4	Liriodendron tulipifera	7	6.9	16		2	
4	Carya cordiformis	3.5	8.6	42		1	
5	Betula nigra	0.2	0.2	130		4	
5	Betula nigra	2.6	0.4	90		3	
5	Betula nigra	4.90	1.1	21		4	
5	Betula nigra	4.20	4	83		4	
5	Betula nigra	7.00	2.2	125		4	
5	Betula nigra	9.20	2.8	115		4	
5	Betula nigra	8.90	5.2	74		4	
5	Betula nigra	6.60	4.6	68		4	
5	Quercus michauxii	4.70	8.6	51		4	
5	Quercus michauxii	2.10	8.3	68		4	
5	Platanus occidentalis	4.50	6.1	25		4	
5	Betula nigra	2.30	2.3	55		4	
5	Platanus occidentalis	7.40	6.2	110		4	
5	Platanus occidentalis	9.00	6.8	130		4	
6	Quercus nigra	0.40	0.7	45		3	3.7
6	Quercus	3.20	0.6	46		4	
6	Quercus phellos	2.80	2.8	75		4	
6	Ulmus americana	0.40	2.8	40		3	
6	Quercus	5.60	0.5	19		3	
6	Betula nigra	5.60	2.7	153	0.3	4	
6	Quercus phellos	7.10	7.3	73		4	
6	Quercus	8.70	10	110		4	
6	Quercus nigra	0.70	9.8	65		4	
6	Quercus nigra	3.40	10	47		4	
7	Salix caprea	0.20	0.3	92		4	3.5
7	Cercis canadensis	4.30	3	82		1	
7	Diospyros virginiana	9.60	2.5	80		2	
7	Fraxinus pennsylvanica	7.90	4.9	135		4	
7	Nyssa sylvatica	6.00	7.4	90		4	
7	Diospyros virginiana	8.90	7	130		4	
7	Ulmus americana	9.30	9.3	125		4	
7	Fraxinus pennsylvanica	2.50	7.8	115		4	
7	Cercis canadensis	0.30	7.9	90		2	
7	Betula nigra			75		4	
7	Betula nigra			70		4	
7	Betula nigra			65		4	
7	Betula nigra			72		4	
8	Quercus	0.30	0	85		4	3.8
8	Quercus phellos	2.70	3.6	110		4	
8	Quercus	0.90	5.3	81		4	
8	Platanus occidentalis	0.40	2.8	135		3	
8	Quercus	6.60	1.4	180		4	
8	Platanus occidentalis	9.10	1.2	200	1.3	4	
8	Carya cordiformis	9.50	6.8	33		4	
8	Quercus	7.00	6.8	72		4	
8	Quercus	10.00	9.6	70		4	
8	Quercus	8.50	9.6	51		2	
8	Quercus	6.00	8.9	61		4	
8	Quercus	3.00	9.7	100		4	
8	Betula nigra	5.70	9.1	72		4	
8	Quercus michauxii	5.10	9.2	89		4	

Coor Island
MY1 (2023) Vegetation Monitoring Photographs (November 2023)



Appendix C: MY0 Boundary Inspection Action Item Documentation

ROY COOPER
Governor

ELIZABETH S. BISER
Secretary

MARC RECKTENWALD
Director



May 12, 2023

RS Responses in blue (2024-01-30)

Emily Dunnigan
Project Manager – Eastern Region
Division of Mitigation Services
Green Square
217 West Jones Street
Raleigh, NC 27603

Subject: Boundary Inspection Report – MY0 Site
Coor Island Mitigation Site, Wayne County, NC, DMS ID No. 100183

Emily,

The MY0 boundary inspection was conducted by DMS on May 2, 2023. The inspection was conducted in accordance with the DMS Property Checklist which included an office review and a site visit to document site conditions. The entire easement boundary was inspected during the site visit to validate easement integrity and identify any potential issues on the site. This report summarizes those inspection results. Site photos and locations are shown on the attached kmz map.

Office Review:

- No potential concerns were identified during the office review of the project documents.

Field Inspection:

- The easement corners were adequately monumented with stamped aluminum caps.
- In wooded areas, signs were incorrectly attached to trees using small roofing nails driven flush to the tree. An example photo is included on the kmz map.
- An area with scattered debris consisting of concrete pipes, metal and plastic is located within the easement on the western boundary between platted corners 131 & 134.
- In-line marker spacing was adequate.
- Marker signs attached to trees in densely wooded areas were difficult to see due to the trees not being blazed.

Action Items

- Upgrade sign fasteners to a material that is likely to meet the longevity specifications in the marking requirements. Roofing nails of this type have failed repeatedly across DMS sites.
Response: The relevant RFP for this project is subject to Survey Requirements dated January 22, 2020. According to that document, the witness post must meet a 50 year longevity specification, which we assert standard T-posts do. There is no specification for sign fasteners, however we have used fasteners expected to last at least as long as the typical service life of the standard DMS signs.
- Remove the scattered debris located within the conservation easement.
Response: Debris was removed in November 2023 as requested.
- Blazing the trees in densely wooded areas would facilitate easier identification of the site boundary.
Response: The boundary has been marked every 200' or closer as required by the applicable Survey Requirements. Additionally, most of this boundary is now surrounded by other conservation easements which are also marked.

Let me know if you have any questions or need additional information.



North Carolina Department of Environmental Quality | Division of Mitigation Services
217 West Jones Street | 1652 Mail Service Center | Raleigh, North Carolina 27699-1652
919.707.8976

Sincerely,
Kelly Phillips
Project Specialist
NCDEQ-DMS
Cell: (919) 723-7565

cc: R:\EEP PROJECT LIBRARY FILES\PROJECT DELIVERABLES(REPORTS)\FD PROJECTS\Coor Island 0402-03 (#100183)\4_T2_Cons_Ease\DMS Easement Inspections\MY0



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