Eight Point Buffer Restoration Site

Year 2 Monitoring Report
Guilford County, North Carolina
Cape Fear River Basin - 03030003

DMS Contract 7865
DMS Project Number 100113
DWR Project Number 20190647

Prepared for:
NC Department of Environmental Quality
Division of Mitigation Services
1652 Mail Service Center
Raleigh, NC 27699

Data Collected: June 2022
Date Submitted: August 2022

Monitoring and Design Firm

Prepared by:

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ENGINEERS • SCIENTISTS • SURVEYORS • CONSTRUCTION MANAGERS

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MEMORANDUM

Date: September 6, 2022

To: Jeremiah Dow, DMS Project Manager

From: Adam Spiller, Project Manager
KCI Associates of North Carolina, PA

Subject: Eight Point Buffer Restoration Site
MY-02 Monitoring Report Comments
Cape Fear River Basin CU 03030003
NCDMS Project # 100108
Contract # 7865

Please find below our responses in italics to the MY-01 Monitoring Report comments from NCDMS received on January 17, 2022, for the Eight Point Buffer Restoration Site.

- Table 2 – Please either add the eligible preservation amount or remove the entire preservation part of the table since there is no preservation associated with this project.
  KCI Response: The preservation section of the table has been removed.

- DMS highly recommends thinning sweetgum throughout the site as soon as possible. During the August 30th site visit, sweetgum was observed throughout the site, and the veg plot data backs up this observation.
  KCI Response: Sweetgum will be thinned either in fall 2022 or spring 2023.

- The dense blackberry in the northeast corner of the project should be controlled. The area of densest blackberry is at risk of losing credit, and it is apparent that it is rapidly spreading in that corner of the site.
  KCI Response: This area of dense blackberry will be treated at the same time as the sweetgums.

- Some small encroachments were observed. Please address with the landowner and/or put horse tape between posts in the problem areas.
  KCI Response: KCI will address this issue with the landowner and put up horse tape where necessary.

Please contact me if you have any questions or would like clarification concerning these responses.

Sincerely,

Adam Spiller
Project Manager

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PROJECT SUMMARY

The Eight Point Buffer Restoration Site (EPBRS) was completed in early 2021 and restored a total of 217,858 square feet of riparian buffer along an intermittent stream in the Randleman Lake Watershed of the Cape Fear River Basin (HUC 03030003010050 – Randleman Reservoir/Hickory Creek). The buffers at this site have been historically cleared for pasture and impacted by cattle and other anthropogenic impacts. With the exception of a few large remnant oaks along the stream, the only vegetation in the riparian area was pasture grasses. The completed project restored a functional riparian buffer and lowered the supply of sediment entering Hickory Creek. All project assets are based on the surveyed conservation easement and top of bank.

The EPBRS is protected by a 5.62 acre permanent conservation easement, held by the State of North Carolina. It is located in central Guilford County, approximately eight miles southwest of Greensboro, North Carolina. Specifically, the site is on Newman Davis Road just west of US-73. The center of the site is at approximately 35.9621 N and -79.8351 W in the Pleasant Garden USGS Quadrangle.

The mitigation work at the EPBRS was completed on February 24, 2021. This work included of chemical control of pasture grasses and other non-native or invasive species. Disking was used in areas of fescue or other allelopathic plants. 3,400 bare root seedlings were planted across the site with a 4' Tubex Treeshelter and a VisPore Weedmat fitted on every other tree. See Table 3 for a complete list of the species planted on site. A custom herbaceous seed mix composed of native species was spread across the site. Finally the site boundary was marked with visible signs conforming to DMS and DEQ Stewardship standards.

MONITORING PLAN

Monitoring will be conducted for a period of five years following project implementation or until performance standards have been achieved. Monitoring will consist of vegetation sampling and visual inspection to ensure the health and vigor of the planted restoration area and that the requirements of the conservation easement are being upheld. Vegetation sampling will consist of five 10m x 10m plots. Three of these plots were permanently installed during the baseline monitoring, while the other two will be randomly placed during each monitoring visit. The species, height, and origin (planted vs. volunteer) of all trees within these plots will be recorded each year, and a photograph will be taken of each plot. Invasive stems will be recorded in each plot but will not count towards reaching performance standards.

SUCCESS CRITERIA

Plots must achieve an average stem density of 260 stems/acre after five years with 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/acre upon DWR approval.

MONITORING RESULTS

Monitoring Year 2 vegetation data was collected on June 23, 2022. All five vegetation monitoring plots had greater than 260 stems/acre and only one plot (Plot 1F, 3 species) had less than 4 native hardwood species. Overall the site is well vegetated with extensive herbaceous coverage and many diverse volunteer woody species.

APPENDIX A

Background Tables and Site Maps

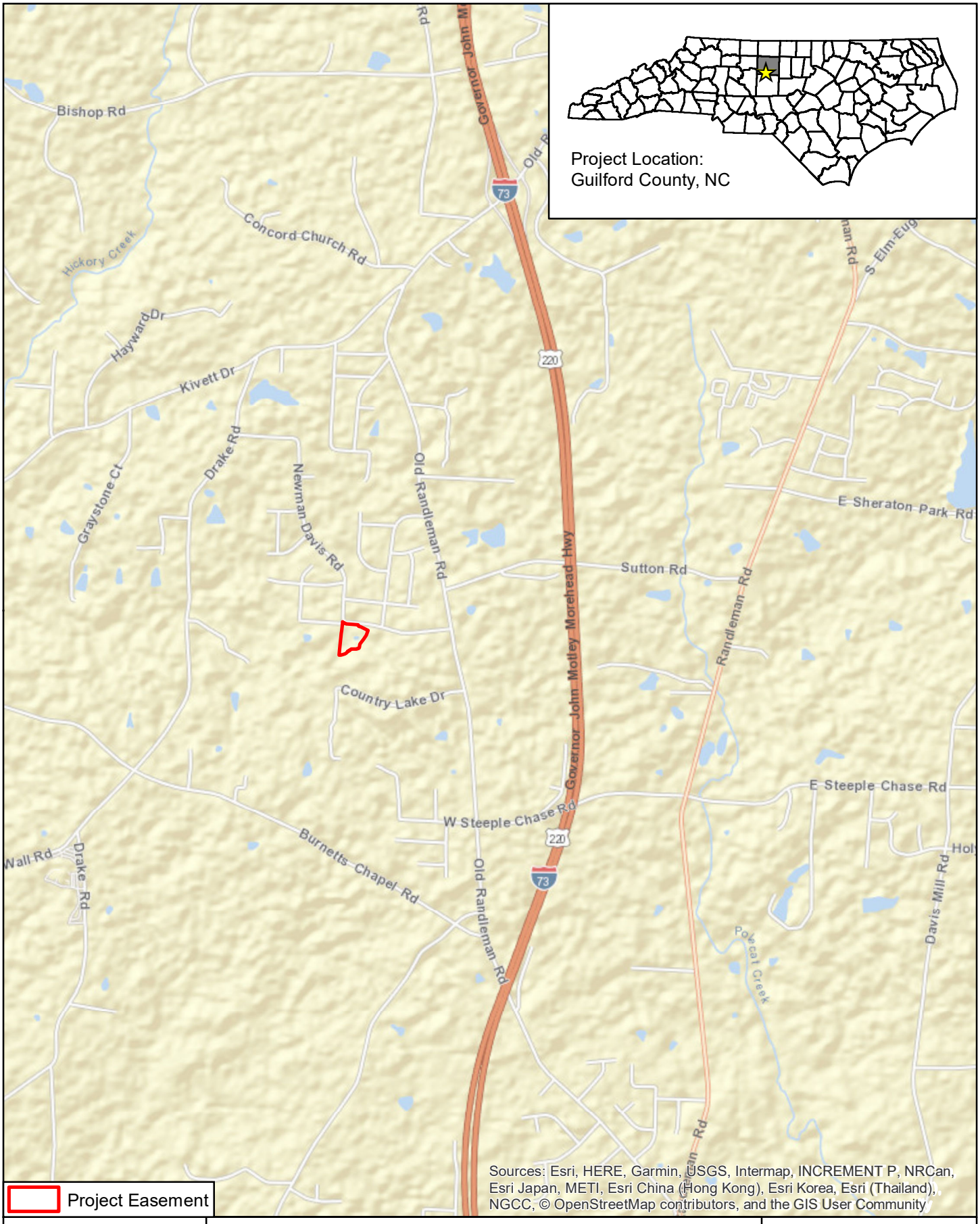

FIGURE 1. PROJECT SITE VICINITY MAP
EIGHT-POINT BUFFER RESTORATION SITE
GUILFORD COUNTY, NC

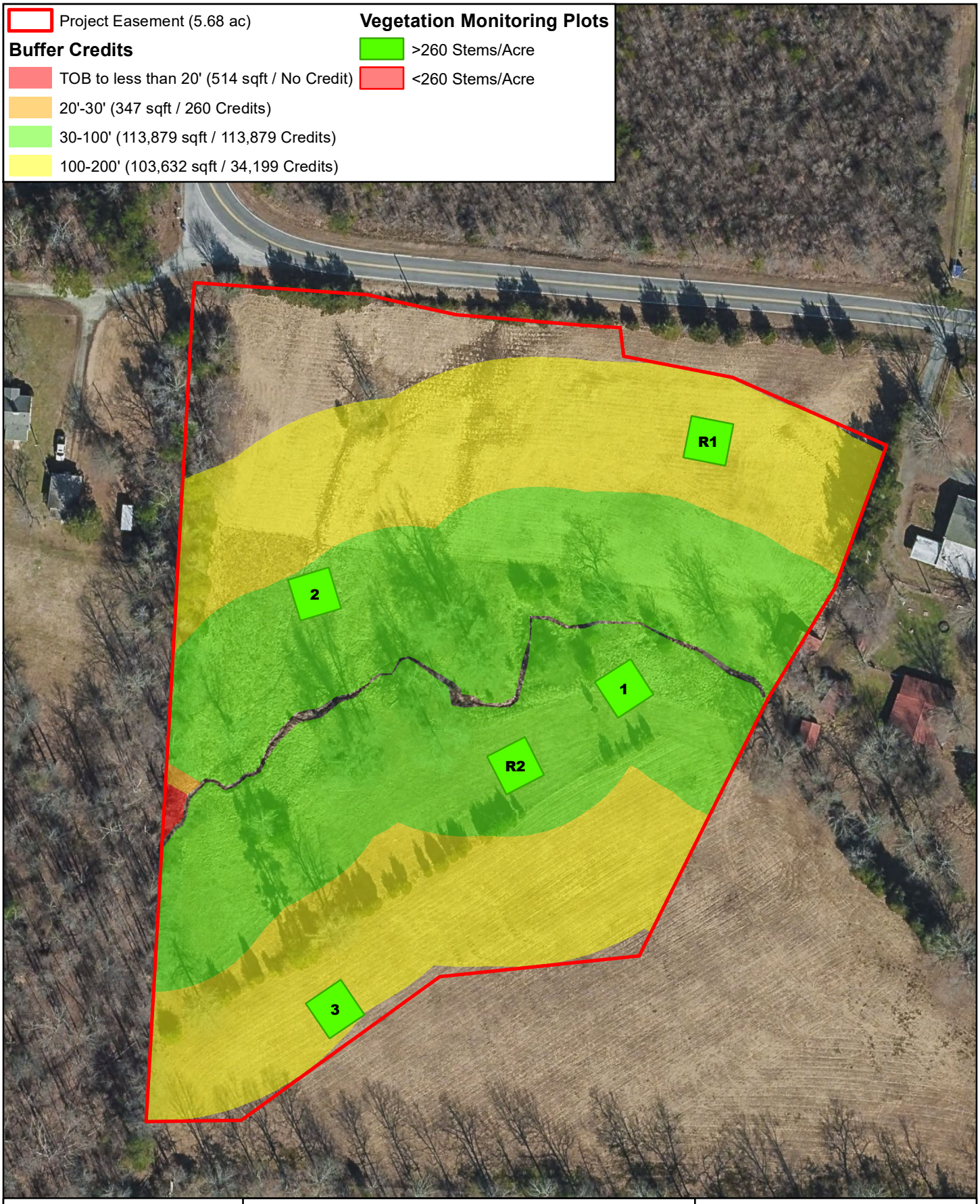

FIGURE 2. PROJECT ASSETS and CURRENT CONDITIONS
EIGHT-POINT BUFFER RESTORATION SITE
GUILFORD COUNTY, NC

Sources: NC Statewide Orthoimagery, 2014.

Table 1. Buffer Project Attributes	
Project Name	Eight Point Buffer Restoration Site
Hydrologic Unit Code	03030003010050
River Basin	Cape Fear - Randleman Lake
Geographic Location (Lat, Long)	35.9621 N and -79.8351 W
Site Protection Instrument (DB, PG)	DB 8295 PG 298
Total Credits (BMU)	148,337.845
Types of Credits	Restoration
Mitigation Plan Date	February 20, 2020
Initial Planting Date	February 24, 2021
Baseline Report Date	April 2021
MY1 Report Date	December 2021
MY2 Report Date	August 2022
MY3 Report Date	December 2023
MY4 Report Date	December 2024
MY5 Report Date	December 2025

Table 2. Buffer Project Areas and Assets
Riparian Buffer (15A NCAC 02.B0295)

Location	Jurisdictional Streams	Restoration Type	Reach ID/Component	Buffer Width (ft)	Creditable Area (sf)	Initial Credit Ratio (x:1)	% Full Credit	Final Credit Ratio (x:1)	Riparian Buffer Credits (BMU)	Convertible to Nutrient Offset (Yes or No)
Rural or Urban	Subject or Nonsubject	Restoration	T1	20-29	347	1	75%	1.33333	260.251	No
			T1	30-100	113,879		100%	1.00000	113879.000	No
			T1	101-200	103,632		33%	3.03030	34198.594	No
		Enhancement		20-29		2	75%	2.66667	0	
				30-100			100%	2	0	
				101-200			33%	6	0	
				SUBTOTALS	**217,858**				**148,337.845**	
				TOTALS	**217,858**				**148,337.845**	

APPENDIX B

Visual Assessment Data

Vegetation Monitoring Plot Photos

Plot 1 MY00 – 3/29/2021

Plot 1 MY02 – 6/23/2022

Plot 2 MY00 – 3/29/2021

Plot 2 MY02 – 6/23/2022

Plot 3 MY00 – 3/29/2021

Plot 3 MY02 – 6/23/2022

Plot R1 MY02 – 6/23/2022

Plot R2 MY02 – 6/23/2022

APPENDIX C

Vegetation Plot Data

Table 3. Species and Quantity of Planted Stems		
Common Name	Scientific Name	Quantity
Black Gum	*Nyssa sylvatica*	170
River Birch	*Betula nigra*	340
Persimmon	*Diospyros virginiana*	340
Silky Dogwood	*Cornus amomum*	170
Buttonbush	*Cephalanthus occidentalis*	34
Pin Oak	*Quercus palustris*	170
Tulip Poplar	*Liriodendron tulipifera*	340
Sycamore	*Platanus occidentalis*	340
White Oak	*Quercus alba*	340
Swamp Chestnut Oak	*Quercus michauxii*	340
Willow Oak	*Quercus phellos*	476
American Elm	*Ulmus americana*	340
Herbaceous Seed Mix		
Common Name	Scientific Name	% of mix
Autumn Bentgrass	*Agrostis perennans*	10
Big Bluestem	*Andropogon gerardii*	8
Lanceleaf Coreopsis	*Coreopsis lanceolata*	10
Virginia Wild Rye	*Elymus virginicus*	15
Soft Rush	*Juncus effusus*	3
Switchgrass	*Panicum virgatum*	10
Black-Eyed Susan	*Rudbeckia hirta*	10
Little Bluestem	*Schizachyrium scoparium*	3
Indian Grass	*Sorghastrum nutans*	3
Eastern Gamma	*Tripsacum dactyloides*	3
Rye Grain	*Secale cereal*	25

Planted Acreage	5.62
Date of Initial Plant	2021-02-24
Date(s) of Supplemental Plant(s)	NA
Date(s) Mowing	2022-06-23
Date of Current Survey	2022-06-23
Plot size (ACRES)	0.0247

Table 4. Vegetation Performance Standards Summary Table
Eight Points Buffer Restoration Site, DMS #100113

	Scientific Name	Common Name	Tree/ Shrub	Indicator Status	Veg Plot 1 F		Veg Plot 2 F		Veg Plot 3 F		Veg Plot 1 R	Veg Plot 2 R
					Planted	Total	Planted	Total	Planted	Total	Total	Total
Species Included in Approved Mitigation Plan	Betula nigra	river birch	Tree	FACW	9	9	4	4				
	Cornus amomum	silky dogwood	Shrub	FACW			1	1				
	Diospyros virginiana	common persimmon	Tree	FAC				1			5	2
	Liriodendron tulipifera	tuliptree	Tree	FACU			2	2		1	3	1
	Nyssa sylvatica	blackgum	Tree	FAC	1	1	1	1	2	2	3	
	Platanus occidentalis	American sycamore	Tree	FACW					4	4	2	1
	Quercus alba	white oak	Tree	FACU					5	5	1	
	Quercus michauxii	swamp chestnut oak	Tree	FACW	10	10	4	4	1	1		
	Quercus palustris	pin oak	Tree	FACW			2	2				4
	Quercus phellos	willow oak	Tree	FAC				2	1	1		12
	Ulmus americana	American elm	Tree	FACW				6	5	11	5	2
Sum	Performance Standard				20	20	14	23	18	25	19	22
Post Mitigation Plan Species	*Acer rubrum*	*red maple*	*Tree*	*FAC*							*1*	*1*
	Baccharis halimifolia	*eastern baccharis*	*Tree*	*FACW*		*1*					*4*	*4*
	Fraxinus pennsylvanica	*green ash*	*Tree*	*FACW*				*4*		*2*	*4*	
	Juglans nigra	*black walnut*	*Tree*	*FACU*				*1*		*2*		
	Liquidambar styraciflua	*sweetgum*	*Tree*	*FAC*		*32*		*13*		*93*	*7*	*25*
	Pinus virginiana	*Virginia pine*	*Tree*							*12*		*1*
Sum	Proposed Standard				20	20	14	23	18	25	19	22
Mitigation Plan Performance Standard	Current Year Stem Count					20		23		25	19	22
	Stems/Acre					810		931		1012	769	891
	Species Count					3		9		7	6	6
	Dominant Species Composition (%)					60		32		69	20	47
	Average Plot Height (ft.)					2		2		2	2	2
	% Invasives					0		0		0	0	0
Post Mitigation Plan Performance Standard	Current Year Stem Count					20		23		25	19	22
	Stems/Acre					810		931		1012	769	891
	Species Count					3		9		7	6	6
	Dominant Species Composition (%)					60		32		69	20	47
	Average Plot Height (ft.)					2		2		2	2	2
	% Invasives					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.
3). Green = acheived success criteria, red = did not achieve success criteria

	Veg Plot 1				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 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2	810	2	3	0	931	2	9	0	1012	2	7	0
Monitoring Year 1	850	2	3	0	607	2	6	0	729	2	6	0
Monitoring Year 0	891	2	3	0	688	2	7	0	931	2	8	0
	Veg Plot Group 1 R				Veg Plot Group 2 R							
	Stems/ Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/ Ac.	Av. Ht. (ft)	# Species	% Invasives				
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2	769	2	6	0	891	2	6	0				
Monitoring Year 1												
Monitoring Year 0												