







SUPPLEMENTAL CLOSEOUT REPORT

FINAL

BYRDS CREEK MITIGATION SITE

Person County, NC NCDEQ Contract 003987 DMS Project Number 95020 USACE Action ID Number 2012-00230 NCDWR Project Number 2012-0102

Data Collection Period: January - November 2019

Draft Submission Date: March 10, 2020 Final Submission Date: March 19, 2020

PREPARED FOR:



NC Department of Environment Quality Division of Mitigation Services 1652 Mail Service Center Raleigh, NC 27699-1652 USACE Action ID NCDWR Permit No 2012-00230

Byrd's Creek Mitigation Site 95020 Neuse 03020201 Mitigation Project Name DMS ID River Basin Cataloging Unit County Date Project Instituted Date Prepared Person 7/27/2011 7/15/2019 2012-0102

		Stream Credits						Wetland Credits								
Credit Release Milestone	Scheduled Releases	Warm	Cool	Cold	Anticipated Release Year (Stream)		Scheduled Releases	Riparian Riverine	Riparian Non- riverine	Non-riparian	Scheduled Releases		Anticipated Release Year	Actual		
Potential Credits (Mitigation Plan)	(Stream)	5,592.000					(Forested)				(Coastal)		(Wetland)	(Wetland)		
Potential Credits (As-Built Survey)	(Stream)	5,370.667											(Wedana)	(Wettaria)		
1 (Site Establishment)	N/A				N/A	N/A	N/A				N/A		N/A	N/A		
2 (Year 0 / As-Built)	30%	1,611.200			2014	3/31/2014	N/A				N/A		N/A	N/A		
3 (Year 1 Monitoring)	10%	537.067			2015	4/23/2015	N/A				N/A		N/A	N/A		
4 (Year 2 Monitoring)	10%	537.067			2016	4/25/2016	N/A				N/A		N/A	N/A		
5 (Year 3 Monitoring)	10%	537.067			2017	4/3/2017	N/A				N/A		N/A	N/A		
6 (Year 4 Monitoring)	10%	537.067			2018	4/25/2018	N/A				N/A		N/A	N/A		
7 (Year 5 Monitoring)	15%	805.600			2019	No Release	N/A				N/A		N/A	N/A		
Stream Bankfull Standard	15%	805.600			2017	4/3/2017	N/A				N/A		N/A	N/A		
Total Credits Released to Date		4,565.067														

NOTES: 7/15/2019: No credit release approved. Additional monitoring required.

CONTINGENCIES:

27 Sept 2019

- 1 For DMS, no credits are released during the first milestone
 2 For DMS projects, the second credit release milestone occurs automatically when the as-built report (baseline monitoring report) has been made available to the NCIRT by posting it to the NCEEP Portal, provided the following criteria have been 2 - Fur Ding program, ...
 met:

 1) Approval of the final Mitigation Plan
 2) Recordation of the preservation mechanism, as well as a title opinion acceptable to the USACE covering the property
 3) Completion of all physical and biological improvements to the mitigation site pursuant to the mitigation plan
 4) Reciept of necessary DA permit authorization or written DA approval for porjects where DA permit issuance is not required

DEBITS (rele	eased credits only)	Ratios	1	1.5	2.5	5	1	3	2	5	1	3	2	5	1	3	2	5
			Stream Restoration	Stream Enhancment I	Stream Enhancement II	Stream Preservation	Riparian Restoration	Riparian Creation	Riparian Enhancement	Riparian Preservation	Nonriparian Restoration	Nonriparian Creation	Nonriparian Enhancement	Nonriparian Preservation	Coastal Marsh Restoration	Coastal Marsh Creation	Coastal Marsh Enhancement	Coastal Marsh Preservation
As-Built Amour	nts (feet and acres)		3,096.000	2,182.000	2,050.000													
As-Built Amour	nts (mitigation credits)		3,096.000	1,454.667	820.000													
Percentage Rel	eased		85%	85%	85%													
Released Amou	ints (feet / acres)		2,631.600	1,854.700	1,742.500													
Released Amou			2,631.600	1,236.467	697.000													
NCDWR Permit	USACE Action ID Project I	Name TIP R-2547 / R-2641																
2001-1689	2002-20819 - Knighto	dale Bypass	84.890															
2001-0550	1996-01836 Forest B		430.680															
2001-0681	Widenin 1997-00175 Lake	TIP R-2907 - g of NC 55 at Sunset	9.150															
2007-0018	2007-01106-292 42 East		210.790															
2007-1057 2007-1057	2007-02520-292 Perry Cr 2007-02520-292 Perry Cr		193.290	326.420														\vdash
2006-1617	2006-20100-292 Wendell			328.180	615.000													
2004-1111	2004-20594 / 2004- 21570 / 2004- 21571 Brightles	of at the Park	299.000															
	2000-20343 to 2000-20346 Heritage	SD	10.600	218.200	205.000													
2001-1689		TIP R-2547 / R-2641	309.600	218.200	205.000													
2003-0373	2002-20019 - Kriighte 2002-21036 / 2003- Ashwort 21102 Park		121.610	210.200	205.000													
1996-0319		TIP R-2000F / G -	1.080															
2003-0989		ton Woods	72.520															
	Stonewa	Ills Subdivision,	149.480															
2002-1634	2002-21496 Phase 2 2005-21042 / 2006-																	
2005-1131 2006-1900	20114 Regency 2006-32508-292 Pearl Cr	/ Parkway Extension	213.670 215.640	84.170														
	NCDOT	TIP R-2809 - Wake	213.040															
2001-0550		TIP R-2547 / R-2641		277.980														
2001-1689	NCDOT	tale Bypass TIP U-2582B -		183.350	512.500													
2000-1128	NCDOT	Mill Extension TIP R-2547 / R-2641	8.580															
2001-1689	2002-20819 - Knighto 2000-20343 to	dale Bypass	189.242															
	2000-20346 Heritage		111.778	203.633														
2006-1617	2006-20100-292 Wendell	Falls		14.567	205.000													
Remaining Ame	ounts (feet / acres)		0.000	0.000	0.000													
Remaining Ame			0.000	0.000	0.000													
Alling Allin	ounto (orounto)		0.000	0.000	0.000													

PREPARED BY:



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Section 1: Introduction

This information is provided to address concerns from the Interagency Review Team (IRT) during the Byrds Creek Mitigation Site closeout walk. In March 2019, Wildlands submitted a closeout report for Byrds Creek and completed the closeout site walk on March 28, 2019. While the site has met success criteria and was on track to closeout at the end of monitoring year 5, fifteen bankfull events occurred on Byrds Creek from October 2018 to March 2019 (including two caused by Hurricanes). These events knocked over floodplain vegetation and caused areas of isolated streambank erosion. To ensure the site is stable and will be able to handle such events, the IRT requested bank stabilization in the damaged areas, live stake planting where needed, and additional tree planting on the floodplain in areas of low stem density.

Section 2: Supplemental Vegetation Planting

Following comments by the IRT in March 2019, Wildlands Engineering contracted Native Roots, LLC to plant black willow (*Salix nigra*) live stakes along Byrds Creek in areas that contained few surviving live stakes. Live stakes were planted at 3 foot spacing along pools and 6 foot spacing along riffles of Byrds Creek (Figure 1).

Three hundred trees were planted throughout a total of 3.09 acres with low stem density (Figure 1). All planted trees were three-gallon container stock and approximately five feet tall. Species included sycamore (*Platanus occidentalis*), river birch (*Betula nigra*), green ash (*Fraxinus pennsylvanica*), willow oak (*Quercus phellos*), and tulip poplar (*Liriodendron tulipifera*).

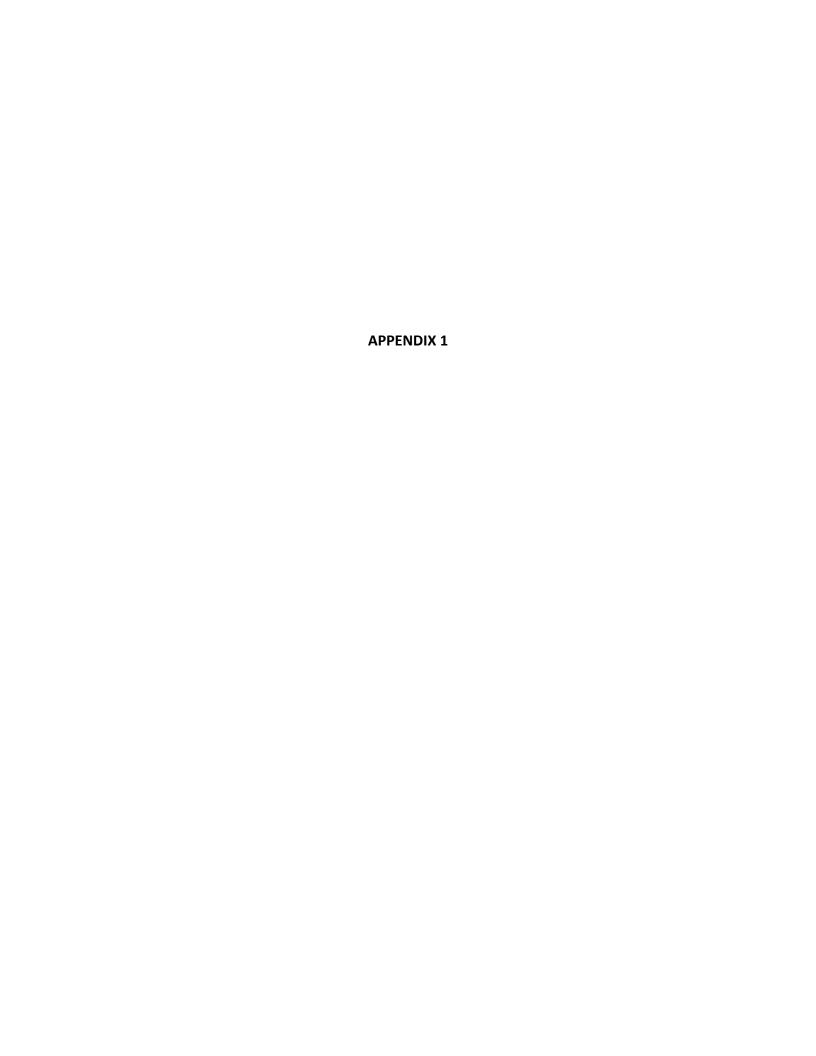
In November 2019, eight 100 square meter vegetation plots and one 50 square meter plot was surveyed by Wildlands Engineering staff (Figure 1). Plots were randomly located within the areas of supplemental planting. All trees within the plots were identified and measured, including volunteer species. Stem density ranged from 526 trees per acre (Random Vegetation Plot 4) to 4,128 stems per acre (Random Vegetation Plot 1). All random vegetation plots exceeded the required 260 stems per acre at year 5. For more information on species and stem counts, refer to Table 1 and random vegetation plot photographs in Appendix 1.

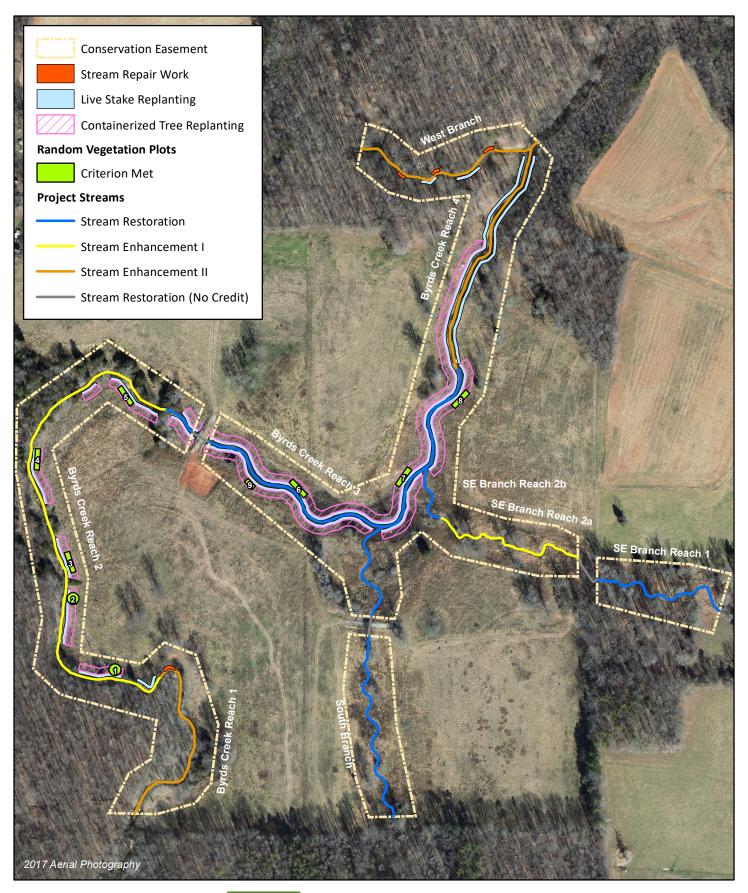
Section 3: Supplemental Stream Stabilization

During August 2019 one bend on Byrds Creek Reach 1 and three isolated areas along West Branch were repaired using an excavator. The outside of a bend along Byrds Creek Reach 1 (enhancement II) had scoured the previous fall/winter during several large storm events, including two hurricanes. The bank along this bend was graded, matted, sod mats were installed, and live stakes were planted. On West Branch (enhancement II), three areas experienced bank scour on the outside of bends. These areas were lined with rock, filled with dirt, and planted with live stakes. These repairs were stable during January of 2020. Photographs of the repaired areas are in Appendix 1.

Section 4: Conclusion

In summary, three hundred containerized trees were planted throughout 3.09 acres with low stem density, and live stakes were replanted along the majority of Byrds Creek. Random vegetation plot data and visual observation indicate stem density is well above the 260 stems per acre minimum and herbaceous vegetation is abundant. Isolated streambank erosion has been stabilized through grading, sod mat installation, and live stake planting. All IRT concerns have been addressed and Wildlands believes the Byrds Creek Mitigation Site is stable and ready for closeout.









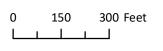




Figure 1. Supplemental Closeout Map Byrds Creek Mitigation Site DMS Project No. 95020

Table 1. Project Components and Mitigation Credits Byrds Creek Mitigation Site DMS Project No. 95020

				Mitig	ation Credits						
	Stream		Riparian Wet	Non-Riparia	an Wetland	Buffer	Nitrogen Nutrient Offset	•	horous nt Offset		
Туре	R	RE	R	RE	R	RE					
Totals	5,371	0	N/A	N/A	N/A	N/A	N/A	N/A	N	I/A	
				Projec	t Components						
Reach ID		As-Built Stationing / Location (LF)	Existing Footage (LF) / Acreage (Ac)	Approach		r Restoration ralent		Footage (LF) / ge (Ac)	Mitigation Ratio	Credits (SMU / WMU	
					Streams					•	
ВС		10+00-16+43	643	N/A	Enhancement Level II		6	43	2.5:1	257	
ВС	BC2 16+43-32+89		1,630	N/A	Enhancem	ent Level I	1,	646	1.5:1	1,097	
ВС	BC3 32+89-34+05 34+64-47+55		1,368	Priority 1	Resto	ration	1,	407	1:1	1,407	
ВС	C4 47+55-55+51		796	N/A	Enhancem	ent Level II	7	96	2.5:1	318	
SB	1	60+00-66+48 67+08-70+69	976	Priority 1 Resto		ration 1,		009	1:1	1,009	
SE	1	80+00-84+85	916	Priority 1	Resto	ration	on 4		1:1	485	
SE2	2a	85+88-91+24	524	N/A	Enhancem	ent Level I	5	36	1.5:1	357	
SE2	2b	91+24-93+19	50	Priority 1	Resto	ration	1	95	1:1	195	
WB	31	100+00-106+11	611	N/A	Enhancement Level II		6	11	2.5:1	244	
				Compon	ent Summatio	on					
Restoration	on Level		Stream near feet)	•	Wetland res)	•	an Wetland res)	Buffer (square feet)	Upland (acres)		
				Riverine	Non-Riverine						
Restor	ation		3,096	-	-	-		-		-	
Enhanc	ement			-	-		-	-		-	
Enhance	ement I	2,182									
Enhance	nhancement II 2,050		2,050								
Creat	tion			-	-		-				
Preserv	vation		-	-	-		-			-	
High Quality F	Preservation		-	-	-		-			-	

Table 2. Random Vegetation Plots: Stem Density of Re-planted Areas

Byrds Creek Mitigation Site DMS Project No. 95020

			Current Plot Data (2019)											
		Species	Rando	m VP 1	Rando	m VP 2	Rando	m VP 3	Rando	m VP 4	Rando	m VP 5		
Scientific Name	Common Name	Туре	Te	Total	Te	Total	Te	Total	Te	Total	Te	Total		
Acer negundo	Boxelder	Tree					2	2						
Acer rubrum	Red Maple	Tree	4	4	2	2					2	2		
Betula nigra	River Birch	Tree	50	50			1	1	2	2	1	1		
Carpinus caroliniana	American Hornbeam	Tree	1	1										
Fagus grandifolia	American Beech	Tree												
Fraxinus pennsylvanica	Green Ash	Tree			1	1	2	2	2	2	6	6		
Juglans nigra	Black Walnut	Tree					2	2	2	2				
Juniperus virginiana	Eastern Red Cedar	Tree	4	4							4	4		
Liquidambar styraciflua	Sweet Gum	Tree	15	15			1	1	1	1	57	57		
Liriodendron tulipifera	Tulip Poplar	Tree	11	11	8	8	1	1	1	1				
Pinus taeda	Loblolly Pine	Tree	1	1										
Platanus occidentalis	Sycamore	Tree	1	1	1	1	3	3	5	5	1	1		
Prunus serotina	Black Cherry	Tree	2	2										
Quercus michauxii	Swamp Chestnut Oak	Tree												
Quercus rubra	Northern Red Oak	Tree									1	1		
Quercus phellos	Willow Oak	Tree	10	10	1	1	3	3			3	3		
Ulmus alata	Winged Elm	Tree	1	1	7	7								
Ulmus americana	American Elm	Tree	3	3										
		Stem count	103	102	20	20	15	15	13	13	75	75		
		size (ares)		1		1		1		1		1		
		size (ACRES)	0.	.02	0.	.02	0.02		0.02		0.02			
		Species count	12	11	6	6	8	8	6	6	8	8		
	:	Stems per ACRE	4,168	4,128	809	809	607	607	526	526	3,035	3,035		

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%

Te - Number of stems including pines

Total - Number of stems excluding pines

Table 2. Random Vegetation Plots: Stem Density of Re-plante

Byrds Creek Mitigation Site DMS Project No. 95020

			Current Plot Data (2019)									Means
		Species	Rando	m VP 6	Random VP 7		Random VP 8		Random VP 9		MY5 (2019)	
Scientific Name	Common Name	Туре	Te	Total	Te	Total	Te	Total	Te	Total	Te	Total
Acer negundo	Boxelder	Tree									2	2
Acer rubrum	Red Maple	Tree	1	1			4	4	1	1	14	14
Betula nigra	River Birch	Tree	1	1			3	3			58	58
Carpinus caroliniana	American Hornbeam	Tree									1	1
Fagus grandifolia	American Beech	Tree					1	1			1	1
Fraxinus pennsylvanica	Green Ash	Tree	6	6	2	2			1	1	20	20
Juglans nigra	Black Walnut	Tree					1	1			5	5
Juniperus virginiana	Eastern Red Cedar	Tree	3	3			9	9	2	2	22	22
Liquidambar styraciflua	Sweet Gum	Tree	40	40	7	7	32	32	12	12	165	165
Liriodendron tulipifera	Tulip Poplar	Tree	1	1	1	1	4	4			27	27
Pinus taeda	Loblolly Pine	Tree	1	1			3	3			5	
Platanus occidentalis	Sycamore	Tree	4	4	2	2	2	2	12	12	31	31
Prunus serotina	Black Cherry	Tree									2	
Quercus michauxii	Swamp Chestnut Oak	Tree			2	2					2	2
Quercus rubra	Northern Red Oak	Tree	3	3							4	4
Quercus phellos	Willow Oak	Tree	4	4	2	2			2	2	25	25
Ulmus alata	Winged Elm	Tree									8	8
Ulmus americana	American Elm	Tree									3	3
		Stem count	64	63	16	16	59	56	30	30	395	388
		size (ares)		1		1		1	0	.5	8	.5
	size (ACRES		0.	02	0.	02	0.02		0.01		0.21	
		Species count	10	9	6	6	9	8	6	6	18	18
		Stems per ACRE	2,590	2,550	647	647	2,388	2,266	2,428	2,428	1,881	1,847

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%

Te - Number of stems including pines

Total - Number of stems excluding pines







RANDOM VEG PLOT 7 (11/14/2019)

RANDOM VEG PLOT 8 (11/14/2019)



RANDOM VEG PLOT 9 (11/14/2019)

