MONITORING YEAR 6 ANNUAL REPORT

Final

MANEY FARM MITIGATION PROJECT

Chatham County, NC
NCDEQ Contract 005793
DMS Project Number 96314
USACE Action ID Number 2014-01825
NCDWR Project Number 2014-0338

Data Collection Period: January - November 2021
Draft Submission Date: November 15, 2021
Final Submission Date: November 29, 2021

PREPARED FOR:

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

PREPARED BY:

312 West Millbrook Road, Suite 225
Raleigh, NC 27609

Jason Lorch
jlorch@wildlandseng.com
Phone: 919.851.9986

EXECUTIVE SUMMARY

Wildlands Engineering Inc. (Wildlands) implemented a full delivery project at the Maney Farm Mitigation Project (Site) for the North Carolina Department of Environmental Quality Division of Mitigation Services (DMS) to restore and enhance a total of 6,092 linear feet (LF) of perennial and intermittent streams in Chatham County, NC. The Site is expected to generate 4,921.600 stream mitigation units (SMUs) by closeout. The Site is located northwest of Pittsboro, NC and north of Silk Hope, NC in the Cape Fear River Basin 8-Digit Hydrologic Unit Code (HUC) 03030002 (Figure 1). The Site is also within the Cane Creek Targeted Local Watershed (HUC 03030002050050), which flows into Cane Creek and eventually into the Haw River. The streams are all unnamed tributaries (UT) to South Fork Cane Creek (SF) and are referred to herein as UTSF, UT1, UT2, UT3, UT4, and UT5.

The Site is located within the Cane Creek Targeted Local Watershed (TLW) which is discussed in DMS's 2009 Cape Fear River Basin Restoration Priorities (RBRP). The RBRP identifies the need to improve aquatic conditions and habitats as well as promoting good riparian conditions in the Cane Creek watershed. Prior to the restoration activities, the Site was maintained as cattle pasture and is one of the 51 animal operations referenced in the RBRP. The Site drains to the Haw River, which flows to B. Everett Jordan Lake (Jordan Lake). The 2005 NCDWR Cape Fear River Basinwide Water Quality Plan indicates that Jordan Lake is a drinking water supply (WS-IV), a primary area for recreation, and a designated Nutrient Sensitive Water which calls for reduction of non-point source pollution. The water supply watershed boundary for Jordan Lake is just six miles downstream from the Site. The Cape Fear watershed is also discussed in the 2005 North Carolina Wildlife Resource Commission's Wildlife Action Plan where sedimentation is noted as a major issue in the basin. Maps within the Wildlife Action Plan indicate that Priority Species are present along Cane Creek. Restoration activities at the Site directly addressed non-point source stressors by removing cattle from the streams, creating stable stream banks, restoring a riparian corridor, and placing 16.69 acres of land under permanent conservation easement.

The project goals established in the Mitigation Plan (Wildlands, 2015) were developed with careful consideration of goals and objectives described in the Cape Fear RBRP plan. The project goals included:

- Exclude cattle from project streams resulting in reduced pollutant inputs including fecal coliform, nitrogen, and phosphorous;
- Stabilize eroding stream banks resulting in reduced inputs of sediment into streams;
- Construct stream channels that are laterally and vertically stable resulting in a network of streams capable of supporting hydrologic, biologic, and water quality functions;
- Improve instream habitat resulting in improved aquatic communities within the streams;
- Reconnect channels with floodplains so that floodplains are inundated relatively frequently resulting in groundwater recharge, floodplain wetland and vernal pool inundation, and reduced shear stress on channels during larger flow events;
- Restore and enhance native floodplain forest resulting in stream shading, reduced thermal loads, woody input sources, and reduced flood flow velocities allowing for pollutants and sediments to settle; and
- Permanently protect the project site from harmful uses therefore ensuring that development and agricultural damage is prevented.

The project is helping meet the goals for the watershed and providing numerous ecological benefits within the Cape Fear River Basin. While many of these benefits are limited to the project area; others, such as pollutant removal and reduced sediment loading have farther-reaching effects. In addition, protected parcels downstream of the Site promote cumulative project benefits within the watershed.

The Site construction and as-built surveys were completed between October 2015 and February 2016. A conservation easement is in place on 16.69 acres of the riparian corridors to protect them in perpetuity.

Monitoring Year 6 (MY6) site visits and assessments were completed between the months of January and October 2021 to visually assess the conditions of the project and collect stream hydrology data. Per Interagency Review Team (IRT) guidelines, detailed monitoring and analysis of vegetation, substrate, and channel cross-sectional dimensions were not required during MY6. Visual observations, hydrology data, and management practices are included in this report. To preserve the clarity and continuity of reporting structure, this report maintains section and appendix numbering from previous monitoring reports. Omitted sections are denoted in the table of contents.

Overall, Site performance for vegetation, stream geomorphology, and hydrology meet success criteria for MY6. Vegetation appears to be healthy based on visual assessment and densities will be evaluated in MY7. Herbaceous vegetation has and has been successful in providing streambank stabilization and creating wildlife habitat. Visual observation indicated that stream channels have remained geomorphically stable during MY6. Persistent flow and multiple bankfull events were recorded on all streams during MY6.

MANEY FARM MITIGATION PROJECT

Monitoring Year 6 Annual Report

TABLE OF CONTENTS

APPENDICES

Section 1: PROJECT OVERVIEW

The Maney Farm Mitigation Project (Site) is located in northwestern Chatham County within the Cape Fear River Basin (USGS Hydrologic Unit 03030002). The Site is located off Center Church Road northwest of Pittsboro, and north of Silk Hope, North Carolina. The Site is located in the Carolina Slate Belt of the Piedmont Physiographic Province (USGS, 1998). The project watershed consists primarily of agricultural and wooded land. The drainage area for the project site is 211 acres (0.33 square miles).

The project streams consist of six unnamed tributaries to South Fork Cane Creek. Stream restoration reaches include UTSF (Reach 1 and 2) and UT5. Stream enhancement I (EI) and enhancement II (EII) reaches included UT1 (Reach A and B), EII; UT1 (Reach C), EI; UT2 (Reach A), EII; U2 (Reach B), EI; UT3 (Reach A), EII; UT3 (Reach B), EI; and UT4 (Reach A), EII; UT4 (Reach B), EI. Mitigation work within the Site included restoration and enhancement of 6,092 linear feet (LF) of perennial and intermittent stream channels. The riparian areas were planted with native vegetation to improve habitat and protect water quality. Construction activities were completed by Land Mechanic Designs, Inc. in January 2016. Planting and seeding activities were completed by Bruton Natural Systems, Inc. in February 2016. A conservation easement (16.69 ac; Deed Book 1537, Page 876) has been recorded and is in place along the stream and riparian corridors to protect them in perpetuity within a tract owned by the M. Darryl Lindley Revocable Trust. The project is expected to provide 4,921.600 stream mitigation units (SMU's) by closeout.

Directions and a map of the Site are provided in Figure 1 and project components are illustrated for the Site in Figure 2.

1.1 Project Goals and Objectives

Prior to construction activities, the streams and vegetative communities on the Site had been severely impacted due to livestock having direct access to the streams and riparian zones. Table 4 in Appendix 1 and Tables 10a through 10d in Appendix 4 of MY5 Report present the pre-restoration conditions in detail.

This Site is intended to provide numerous ecological benefits within the Cape Fear River Basin. While many of these benefits are limited to the Maney Farm Mitigation Project area, others such as pollutant removal and reduced sediment loading have more far-reaching effects. Expected improvements to water quality and ecological processes are outlined below as project goals and objectives. These project goals were established and completed with careful consideration of goals and objectives that were described in the RBRP and to meet the DMS mitigation needs while maximizing the ecological and water quality uplift within the watershed.

The following project goals and related objectives established in the Mitigation Plan (Wildlands, 2015) include:

Goal	Objective	Expected Outcomes
Exclude cattle from project streams	Install fencing around conservation easements adjacent to cattle pastures.	Reduce pollutant inputs including fecal coliform, nitrogen, and phosphorous.
Stabilize eroding stream banks	Reconstruct stream channels with stable dimensions. Add bank revetments and in-stream structures to protect restored/enhanced streams.	Reduce inputs of sediment into streams.

Goal	Objective	Expected Outcomes
Construct stream channels that are laterally and vertical stable	Construct stream channels that will maintain a stable pattern and profile considering the hydrologic and sediment inputs to the system, the landscape setting, and the watershed conditions.	Return a network of streams to a stable form that is capable of supporting hydrologic, biologic, and water quality functions.
Improve instream habitat	Install habitat features such as constructed riffles and brush toes into restored/enhanced streams. Add woody materials to channel beds. Construct pools of varying depth.	Improve aquatic communities in project streams.
Reconnect channels with floodplains so that floodplains are inundated relatively frequently	Reconstructing stream channels with appropriate bankfull dimensions and depth relative to the existing floodplain.	Raise local groundwater elevations. Inundate floodplain wetlands and vernal pools. Reduce shear stress on channels during larger flow events.
Restore and enhance native floodplain forest	Plant native tree and understory species in riparian zone.	Create and improve forested riparian habitats. Provide a canopy to shade streams and reduce thermal loadings. Create a source of woody inputs for streams. Reduce flood flow velocities on floodplain and allow pollutants and sediment to settle.
Permanently protect the project site from harmful uses	Establish a conservation easement on the site.	Ensure that development and agricultural uses that would damage the site or reduce the benefits of the project are prevented.

The design streams were restored to the appropriate type based on the surrounding landscape, climate, and natural vegetation communities but also with strong consideration to existing watershed conditions and trajectory. The final mitigation plan was submitted and accepted by the DMS in August 2015. Construction activities were completed by Land Mechanic Designs, Inc. in January 2016. Planting and seeding activities were completed by Bruton Natural Systems, Inc. in February 2016. Baseline monitoring (MY0) was conducted between January 2016 and February 2016. Annual monitoring will be conducted for seven years with the close-out anticipated to commence in 2023 given the success criteria are met. Appendix 1 provides more detailed project activity, history, contact information, and watershed/site background information for the Site.

1.2 Monitoring Year 6 Data Assessment

Annual monitoring and quarterly site visits were conducted during MY6 to assess the condition of the project. The stream and vegetation success criteria for the Site follows the approved success criteria presented in the Maney Farm Mitigation Project Mitigation Plan (Wildlands, 2015).

1.2.1 Vegetative Assessment

Detailed vegetation inventory and analysis is not required during MY6. Visual assessment during MY6 indicated that vegetation is healthy and performing adequately to attain terminal success criteria of 210 planted stems per acre and averaging ten feet in height. Many volunteer tree species have become

established adding to the diversity of the overall Site. Along with a successful early successional canopy starting to develop, the herbaceous vegetation is dense and providing appropriate streambank stabilization and wildlife habitat.

1.2.2 Vegetation Areas of Concern

No vegetation areas of concern were identified during MY6.

1.2.3 Stream Assessment

Detailed dimensional survey and analysis is not required for MY6. Visual monitoring indicated that the stream channels are performing as desired. No deposition or erosion exceeding approximate natural levels was observed. See Appendix 2 for stream photographs and visual assessment data.

1.2.4 Stream Areas of Concern

No stream areas of concern were identified during MY6.

1.2.5 Hydrology Assessment

At the end of the seven-year monitoring period, two or more bankfull events must have occurred in separate years within the restoration reaches. Restoration reaches UTSF Reach 1 and 2 along with UT5 had at least one bankfull event throughout MY6. Bankfull events were also recorded on all restoration reaches during MY1, MY2, MY3, MY4, and MY5 resulting in full attainment of the stream hydrology assessment criteria. In addition, the presence of baseflow must be documented within the intermittent reach of UTSF Reach 1 for a minimum of 30 consecutive days during a normal precipitation year. Results from the flow gage established on UTSF Reach 1 indicate the stream is maintaining baseflow as expected for an intermittent stream. Baseflow was recorded for 66% of the monitoring period (93 consecutive and 241 total days). Refer to Appendix 5 for hydrologic data.

1.2.6 Maintenance Plan

No management plan was identified for MY7.

1.3 Monitoring Year 6 Summary

Visual assessment indicated that all project streams are geomorphically stable and functioning as designed. Visual assessment indicated that vegetation is healthy and on track to meet final success criteria. Stream bank stabilization and wildlife habitat have improved with the increase of dense herbaceous vegetation. Hydrology criteria have been attained for the duration of the project and bankfull events and persistent flow were recorded again during MY6.

Summary information and data related to the performance of various project and monitoring elements can be found in the tables and figures in the report appendices. Narrative background and supporting information formerly found in these reports can be found in the mitigation plan documents available on DMS's website. All raw data supporting the tables and figures in the appendices are available from DMS upon request.

Section 2: METHODOLOGY

Geomorphic data was collected following the standards outlined in The Stream Channel Reference Site: An Illustrated Guide to Field Techniques (Harrelson et al., 1994) and in the Stream Restoration: A Natural Channel Design Handbook (Doll et al., 2003). All Integrated Current Condition Mapping was recorded using a Trimble handheld GPS with sub-meter accuracy and processed using Pathfinder and ArcGIS. Crest gages and pressure transducers were installed in surveyed riffle cross sections and monitored throughout the year. Hydrologic monitoring instrument installation and monitoring methods are in accordance with the United States Army Corps of Engineers (USACE, 2003) standards. Vegetation monitoring protocols followed the Carolina Vegetation Survey-EEP Level 2 Protocol (Lee et al., 2008).

Section 3: REFERENCES

Doll, B.A., Grabow, G.L., Hall, K.A., Halley, J., Harman, W.A., Jennings, G.D., and Wise, D.E. 2003. Stream Restoration A Natural Channel Design Handbook.

Harrelson, C.C., Rawlins, C.L., Potyondy, J.P. 1994. *Stream Channel Reference Sites: An Illustrated Guide to Field Technique.* Gen. Tech. Rep. RM-245. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 61 p.

Lee, M.T., Peet, R.K., S.D., Wentworth, T.R. 2008. CVS-EEP Protocol for Recording Vegetation Version 4.2. Retrieved from http://cvs.bio.unc.edu/protocol/cvs-eep-protocol-v4.2-lev1-5.pdf.

North Carolina Department of Environment and Natural Resources. 2005. Division of Water Quality (NCDWR). Cape Fear River Basinwide Water Quality Plan. Accessed online at: http://portal.ncdenr.org/c/document_library/get_file?uuid=2eddbd59-b382-4b58-97ed-c4049bf4e8e4&groupId=38364

North Carolina Division of Mitigation Services (DMS). 2009. Cape Fear River Basin Restoration Priorities. Accessed online at: http://www.nceep.net/services/lwps/cape_fear/RBRP%20Cape%20Fear%202008.pdf

North Carolina Wildlife Resources Commission. 2005. Wildlife Action Plan. Accessed online at: http://www.ncwildlife.org/portals/0/Conserving/documents/ActionPlan/WAP_complete.pdf

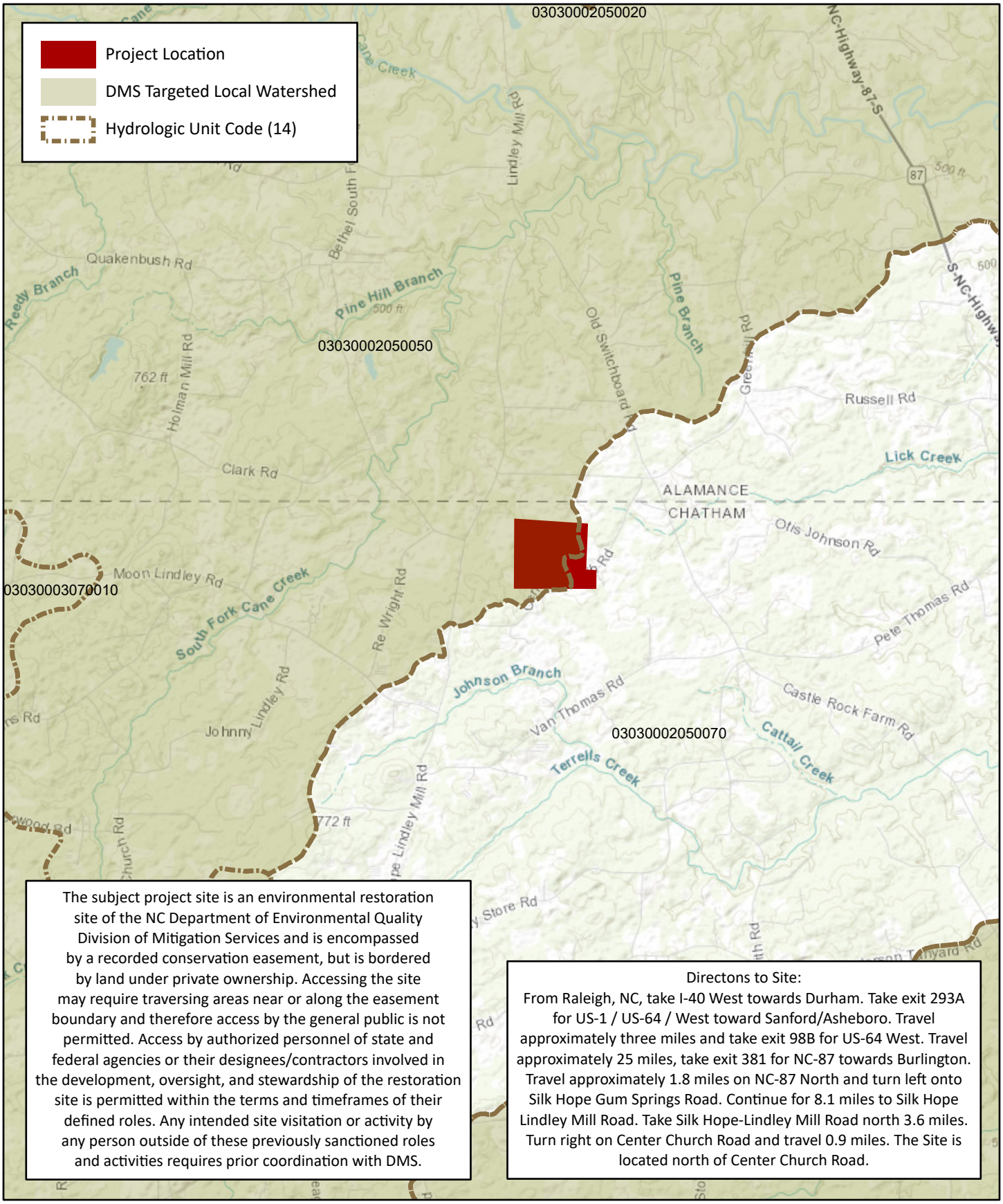
United States Army Corps of Engineers. 2003. Stream Mitigation Guidelines. USACE, NCDENR-DWQ, USEPA, NCWRC.

United States Drought Monitor. 2019. http://www.droughtmonitor.unl.edu/

United States Geological Survey. 1998. North Carolina Geology. http://www.geology.enr.state.nc.us/usgs/carolina.htm

Wildlands Engineering, Inc. 2015. Maney Farm Mitigation Project Mitigation Plan. DMS, Raleigh, NC.

APPENDIX 1. General Tables and Figures



The subject project site is an environmental restoration site of the NC Department of Environmental Quality Division of Mitigation Services and is encompassed by a recorded conservation easement, but is bordered by land under private ownership. Accessing the site may require traversing areas near or along the easement boundary and therefore access by the general public is not permitted. Access by authorized personnel of state and federal agencies or their designees/contractors involved in the development, oversight, and stewardship of the restoration site is permitted within the terms and timeframes of their defined roles. Any intended site visitation or activity by any person outside of these previously sanctioned roles and activities requires prior coordination with DMS.

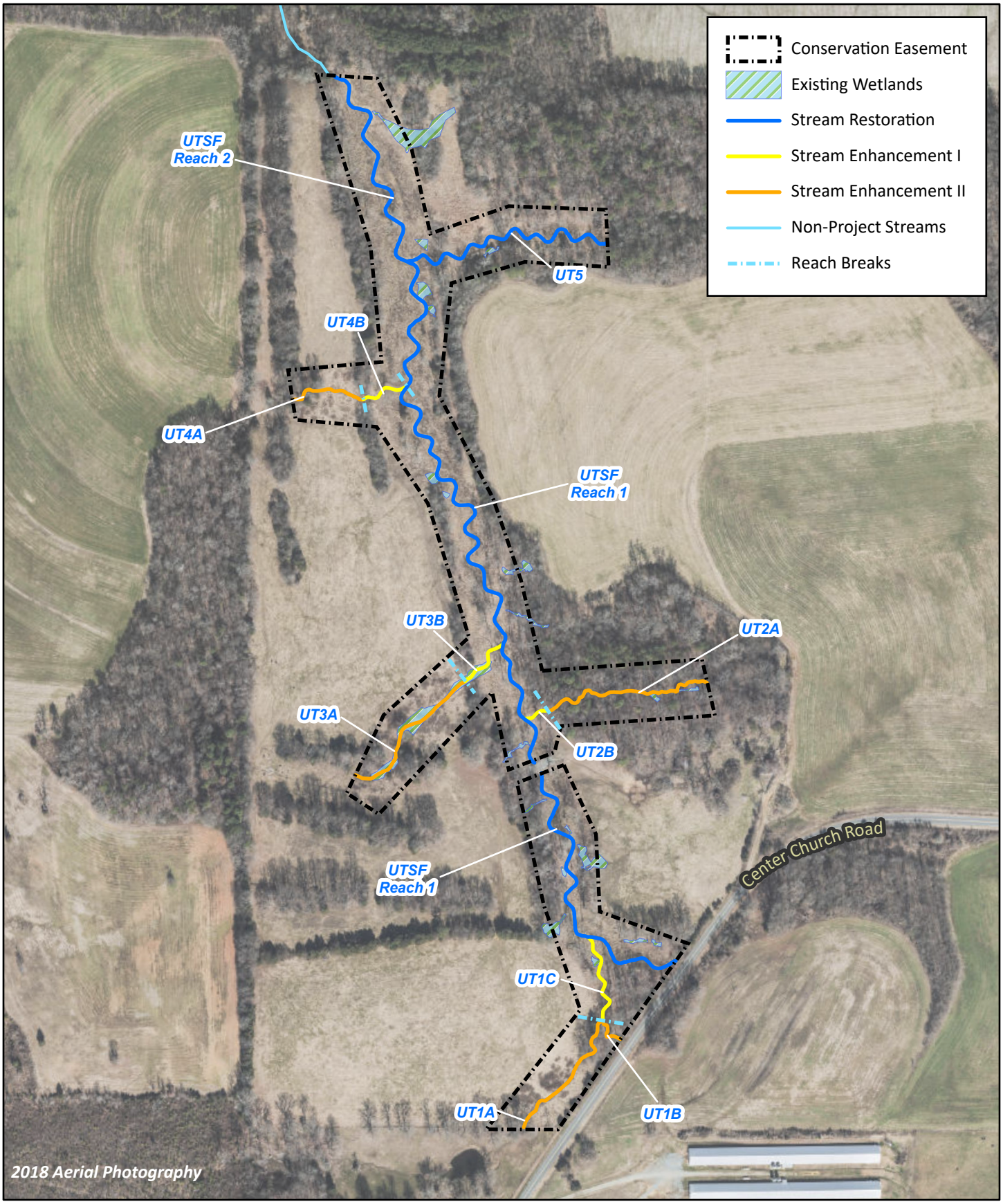
Directons to Site:
From Raleigh, NC, take I-40 West towards Durham. Take exit 293A for US-1 / US-64 / West toward Sanford/Asheboro. Travel approximately three miles and take exit 98B for US-64 West. Travel approximately 25 miles, take exit 381 for NC-87 towards Burlington. Travel approximately 1.8 miles on NC-87 North and turn left onto Silk Hope Gum Springs Road. Continue for 8.1 miles to Silk Hope Lindley Mill Road. Take Silk Hope-Lindley Mill Road north 3.6 miles. Turn right on Center Church Road and travel 0.9 miles. The Site is located north of Center Church Road.

WILDLANDS ENGINEERING

0 0.5 1 Miles

N

Figure 1 Project Vicinity Map
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 6 - 2021
Chatham County, NC



WILDLANDS ENGINEERING

0 175 350 Feet

N

Figure 2 Project Component/Asset Map
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 6 - 2021

Chatham County, NC

Table 1. Project Components and Mitigation Credits
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 6 - 2021

Mitigation Credits									
	Stream		Riparian Wetland		Non-Riparian Wetland		Buffer	Nitrogen Nutrient Offset	Phosphorous Nutrient Offset
Type	R	RE	R	RE	R	RE			
Totals	4,921.600	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Project Components							
Reach ID	As-Built Stationing / Location	Existing Footage / Acreage	Approach	Restoration or Restoration Equivalent	Restoration Footage / Acreage	Mitigation Ratio	Credits (SMU / WMU)
STREAMS							
UTSF - Reach 1	100+00 - 108+39 108+80 - 121+63	2,298	P1	Restoration	2,122	1:1	2,122.000
UTSF - Reach 2	121+63 - 132+24	1,209	P1	Restoration	1,061	1:1	1,061.000
UT1A	250+00 - 253+90	390	EII	Restoration	390	2.5:1	156.000
UT1B	199+08 - 200+00	101	EII	Restoration	92	2.5:1	36.800
UT1C	200+00 - 202+60	166	EI	Restoration	260	1.5:1	173.333
UT2A	295+15 - 300+00	485	EII	Restoration	484	2.5:1	193.600
UT2B	300+00 - 300+74	44	EI	Restoration	73	1.5:1	48.667
UT3A	395+79 - 400+00	418	EII	Restoration	421	2.5:1	168.400
UT3B	400+00 - 401+63	84	EI	Restoration	162	1.5:1	108.000
UT4A	497+87 - 500+00	217	EII	Restoration	212	2.5:1	84.800
UT4B	500+00 - 501+38	40	EI	Restoration	138	1.5:1	92.000
UT5	602+00 - 608+77	778	P1	Restoration	677	1:1	677.000

Component Summation						
Restoration Level	Stream (LF)	Riparian Wetland (acres)		Non-Riparian Wetland (acres)	Buffer (square feet)	Upland (acres)
		Riverine	Non-Riverine			
Restoration	3,860	-	-	-	-	-
Enhancement		-	-	-	-	-
Enhancement I	633					
Enhancement II	1,599					
Creation		-	-	-		
Preservation	-	-	-	-		-
High Quality Preservation	-	-	-	-		-

* Credit calculations were originally calculated along the as-built thalweg and updated to be calculated along stream centerlines for Monitoring Year 2 after discusions with NC IRT.

Table 2. Project Activity and Reporting History
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 6 - 2021

Activity or Report		Data Collection Complete	Completion or Scheduled Delivery
Mitigation Plan		July 2014	August 2015
Final Design - Construction Plans		July 2014	August 2015
Construction		October 2015 - January 2016	January 2016
Temporary S&E mix applied to entire project area [1]		October 2015 - January 2016	January 2016
Permanent seed mix applied to reach/segments [1]		October 2015 - January 2016	January 2016
Bare root and live stake plantings for reach/segments		February 2016	February 2016
Baseline Monitoring Document (Year 0)	Stream Survey	February 2016	April 2016
	Vegetation Survey	February 2016	
Year 1 Monitoring	Stream Survey	September 2016	December 2016
	Vegetation Survey	September 2016	
Year 2 Monitoring	Stream Survey	March 2017	December 2017
	Vegetation Survey	August 2017	
Year 3 Monitoring	Stream Survey	April 2018	December 2018
	Vegetation Survey	August 2018	
Invasive Vegetation Treatment			October 2019
Beaver Control			November 2019
Year 4 Monitoring			December 2019
Supplemental Planting			February 2020
Beaver Control			May 2020
Soil Amendments			July 2020
Invasive Vegetation Treatment			September 2020
Year 5 Monitoring	Stream Survey	March 2020	December 2020
	Vegetation Survey	August 2020	
Year 6 Monitoring			December 2021
Year 7 Monitoring	Stream Survey	2022	December 2022
	Vegetation Survey	2022	

[1]Seed and mulch is added as each section of construction is completed.

Table 3. Project Contact Table
Maney Farm Mitigation Site
DMS Project No. 96314
Monitoring Year 6 - 2021

Designer Jeff Keaton, PE	**Wildlands Engineering, Inc.** 312 West Millbrook Road, Suite 225 Raleigh, NC 27609 919.851.9986
Construction Contractor	**Land Mechanic Designs, Inc.** 126 Circle G Lane Willow Spring, NC 27592
Planting Contractor	**Bruton Natural Systems, Inc** P.O. Box 1197 Fremont, NC 27830
Seeding Contractor	**Land Mechanic Designs, Inc.** 126 Circle G Lane Willow Spring, NC 27592
Seed Mix Sources	**Green Resource, LLC**
Nursery Stock Suppliers Bare Roots Live Stakes	**Bruton Natural Systems, Inc**
Monitoring Performers Monitoring, POC	**Wildlands Engineering, Inc.** Jason Lorch 919-851-9986

Table 4. Project Information and Attributes

Maney Farm Mitigation Project

DMS Project No. 96314

Monitoring Year 6 - 2021

Project Information	
Project Name	Maney Farm Mitigation Site
County	Chatham County
Project Area (acres)	16.69
Planting Area (acres)	16.00
Project Coordinates (latitude and longitude)	35°50'18.00" N, 79° 20'38.00" W

Project Watershed Summary Information	
Physiographic Province	Carolina Slate Belt
River Basin	Cape Fear
USGS Hydrologic Unit 8-digit	03030002
USGS Hydrologic Unit 14-digit	03030002050050
DWR Sub-basin	03-06-04
Project Drainiage Area (acres)	211
Project Drainage Area Percentage of Impervious Area	3%
CGIA Land Use Classification	69% – Agriculture/Managed Herbaceous; 28% – Forested/Scrubland; 3% - Developed

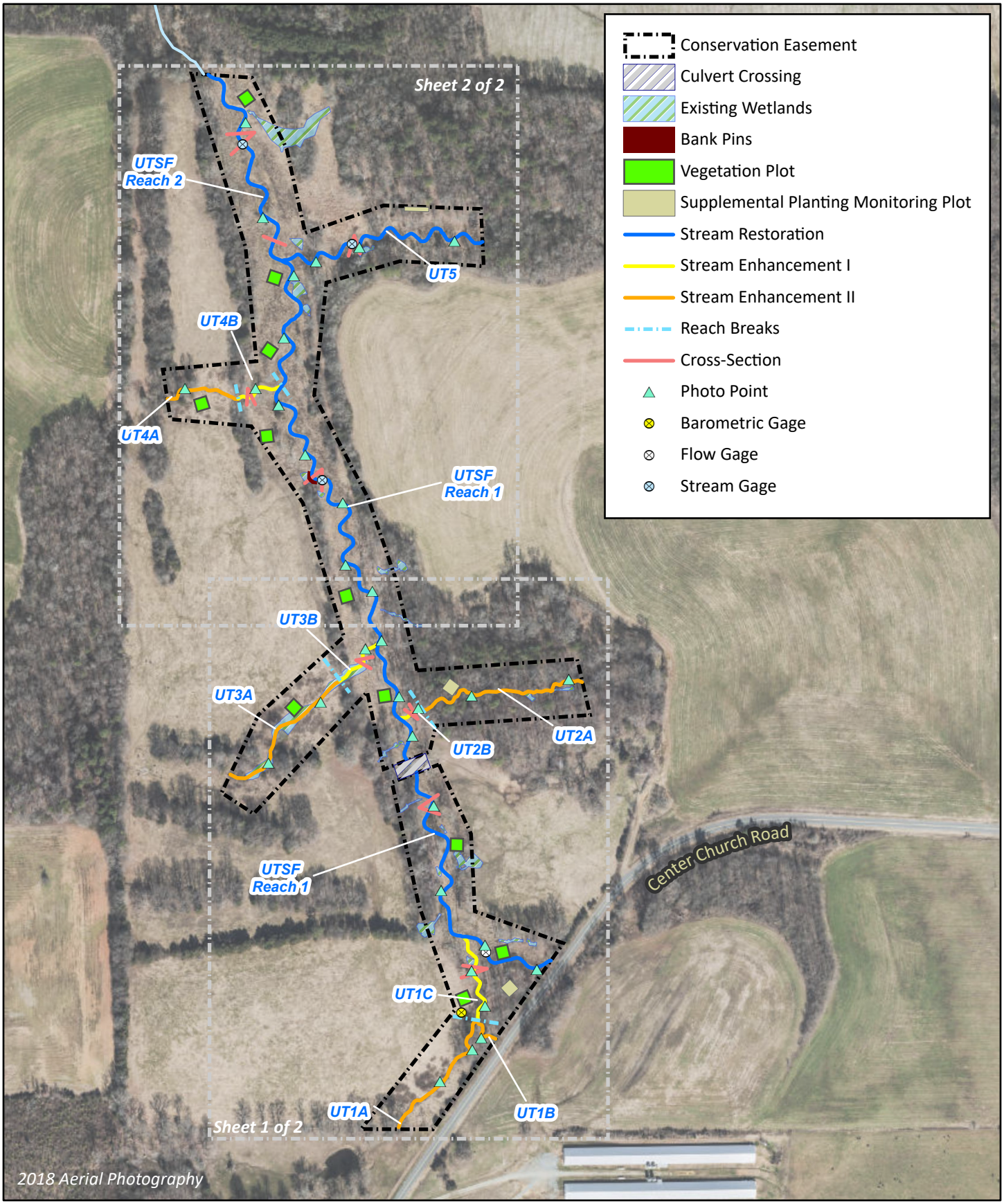
Reach Summary Information

Parameters	UTSF-R1	UTSF-R2	UT1A	UT1B	UT1C	UT2A/B	UT3A/B	UT4A/B	UT5
Length of Reach (linear feet) - Post-Restoration	2,122	1,061	390	92	260	557	583	350	677
Drainage Area (acres)	115	211	16	4	19	11	10	20	76
NCDWR Stream Identification Score	27/37	37	21	25.5	28	26/30	20.75	22.5	32.5
NCDWR Water Quality Classification	N/A								
Morphological Desription (stream type)	I/P	P	I	I	I	I/P	I	I	P
Evolutionary Trend (Simon's Model) - Pre-Restoration	II/IV	II/IV	III	V	II/IV	II/V	V/VI	II/V	II/III
Underlying Mapped Soils	Cid Silt Loam, Cid-Lignum Complex, Nanford-Badin Complex, Georgeville Silty Clay Loam								
Drainage Class	Well Drained - Moderately Well Drained								
Soil Hydric Status	Cid-Lignum Complex 2 to 6 percent slopes - Hydric								
Slope	0.0131	0.0086	0.0187	0.0396	0.0187	0.0366	0.0377	0.0232	0.0139
FEMA Classification	X								
Native Vegetation Community	Piedmont Bottomland Forest								
Percent Composition Exotic Invasive Vegetation - Post-Restoration	1%								

Regulatory Considerations

Regulation	Applicable?	Resolved?	Supporting Documentation
Waters of the United States - Section 404	X	X	USACE Nationwide Permit No.27 and DWR 401 Water Quality Certification No. 3885.
Waters of the United States - Section 401	X	X	
Division of Land Quality (Dam Safety)	N/A	N/A	N/A
Endangered Species Act	X	X	Maney Farm Mitigation Plan; Wildlands determined "no effect" on Chatham County listed endangered species. The USFWS responded on April 4, 2014 and concurred with NCWRC stating that "the proposed action is not likely to adversely affect any federally-listed endangered or threatened species, their formally designated critical habitat, or species currently proposed for listing under the Act."
Historic Preservation Act	X	X	Correspondence from SHPO on March 24, 2014 indicating they were not aware of any historic resources that would be affected by the project.
Coastal Zone Management Act (CZMA)/Coastal Area Management Act (CAMA)	N/A	N/A	N/A
FEMA Floodplain Compliance	X	X	Correspondence from Chatham County Public Works Director on January 12, 2015 stated that a floodplain development permit is not required since work is not located in a Special Flood Hazard Area.
Essential Fisheries Habitat	N/A	N/A	N/A

APPENDIX 2. Visual Assessment Data



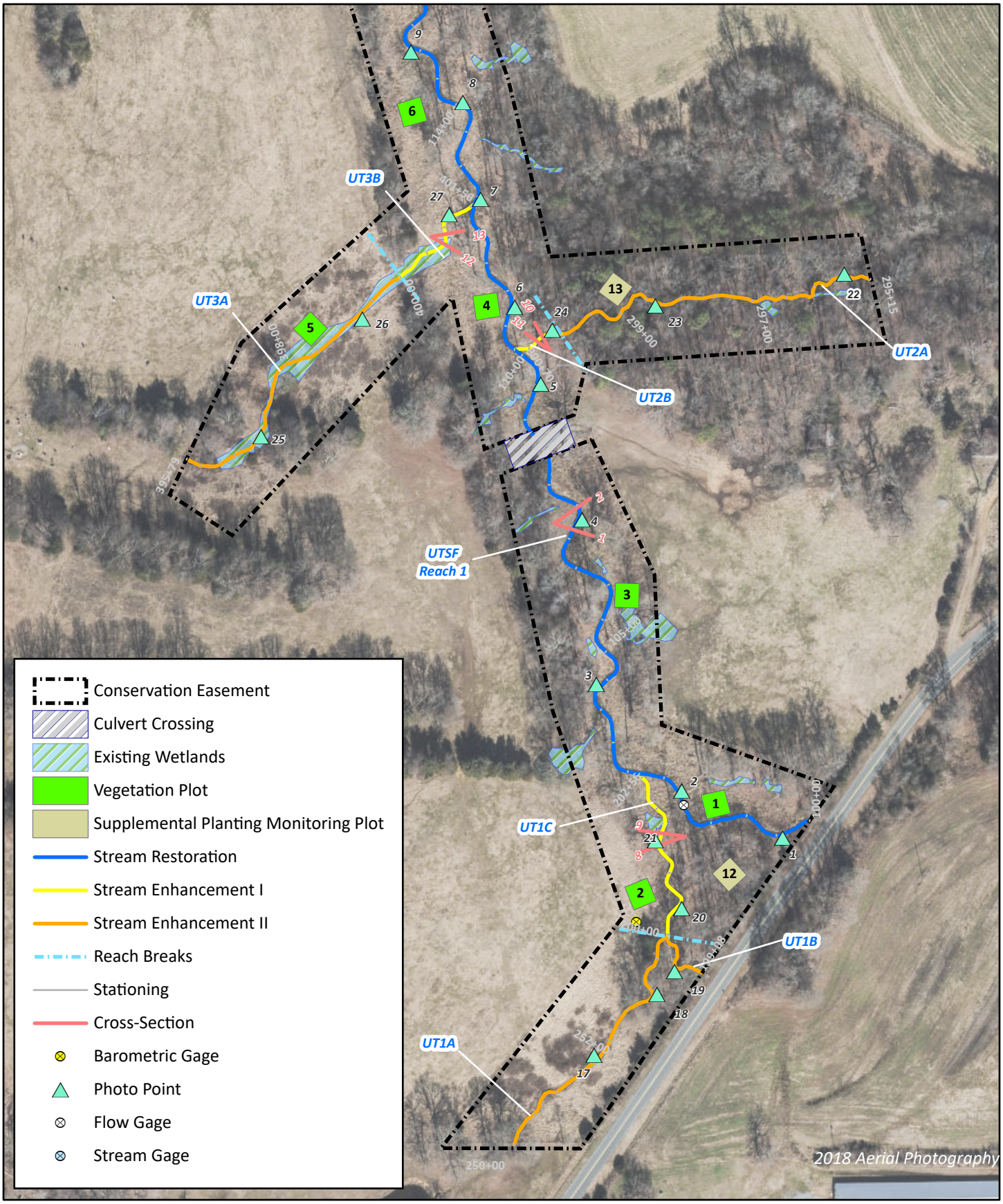
WILDLANDS ENGINEERING

0 175 350 Feet

N

Figure 3.0 Integrated Current Condition Plan View (Key)
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 6 - 2021

Chatham County, NC



WILDLANDS ENGINEERING

0 90 180 Feet

Figure 3.1 Integrated Current Condition Plan View
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 6 - 2021

Chatham County, NC

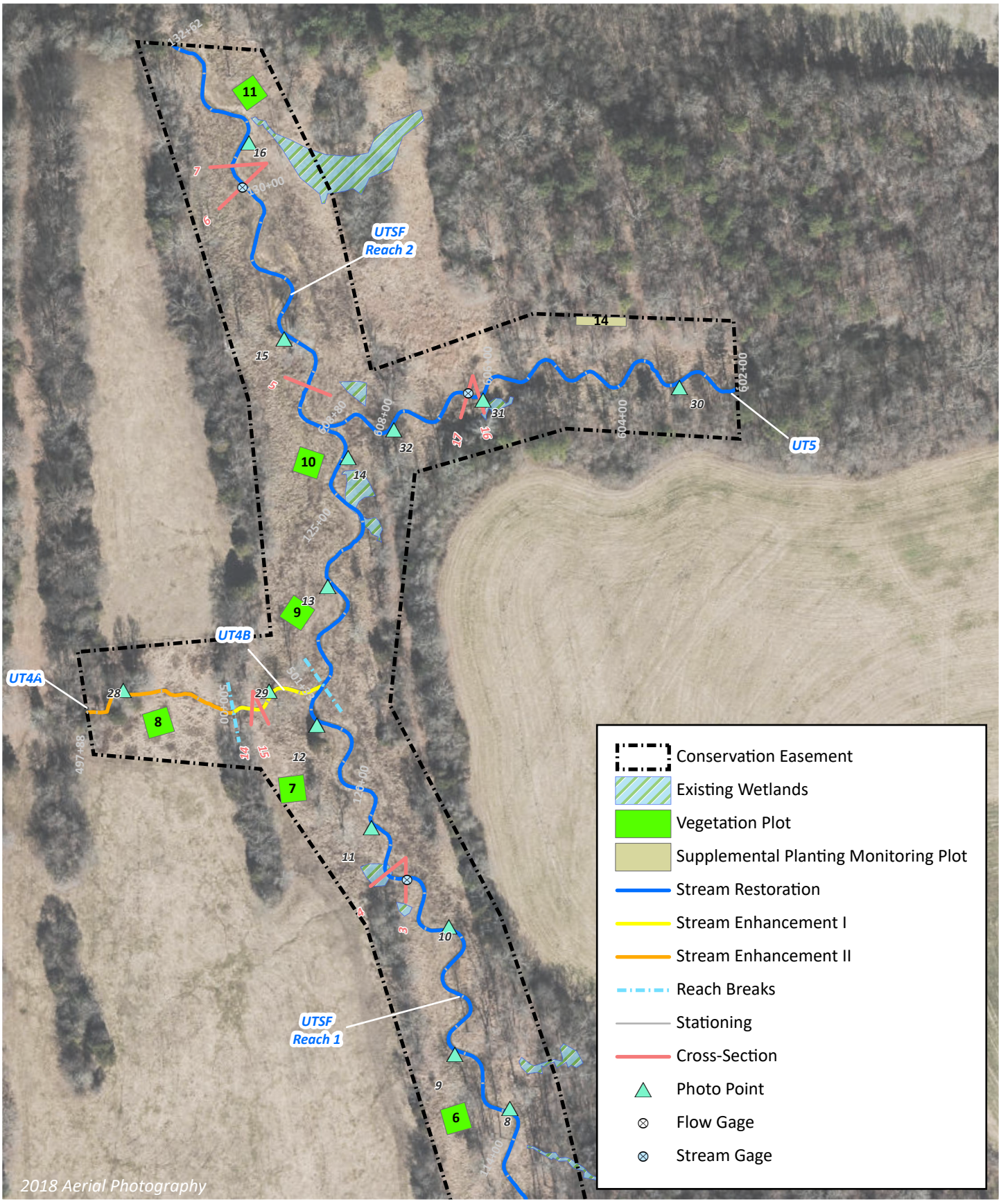


Figure 3.2 Integrated Current Condition Plan View
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 6 - 2021

Chatham County, NC

Table 5a. Visual Stream Morphology Stability Assessment Table
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 6 - 2021

UTSF Reach 1 (2,122 LF)

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-Built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjust % for Stabilizing Woody Vegetation
1. Bed	1. Vertical Stability (Riffle and Run Units)	Aggradation			0	0	100%			
		Degradation			0	0	100%			
	2. Riffle Condition	Texture/Substrate	38	38			100%			
	3. Meander Pool Condition	Depth Sufficient	38	38			100%			
		Length Appropriate	38	38			100%			
	4. Thalweg Position	Thalweg centering at upstream of meander bend (Run)	37	37			100%			
		Thalweg centering at downstream of meander bend (Glide)	38	38			100%			
2. Bank	1. Scoured/Eroded	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			0	0	100%	n/a	n/a	n/a
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	n/a	n/a	n/a
	3. Mass Wasting	Bank slumping, caving, or collapse			0	0	100%	n/a	n/a	n/a
				Totals	0	0	100%	n/a	n/a	n/a
3. Engineered Structures[1]	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	30	30			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	16	16			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	16	16			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	14	14			100%			
	4. Habitat	Pool forming structures maintaining ~Max Pool Depth : Bankfull Depth ≥ 1.6 Rootwads/logs providing some cover at baseflow.	14	14			100%			

[1]Excludes constructed riffles since they are evaluated in section 1.

Table 5b. Visual Stream Morphology Stability Assessment Table
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 6 - 2021

UTSF Reach 2 (1,061 LF)

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-Built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjust % for Stabilizing Woody Vegetation
1. Bed	1. Vertical Stability (Riffle and Run Units)	Aggradation			0	0	100%			
		Degradation			0	0	100%			
	2. Riffle Condition	Texture/Substrate	17	17			100%			
	3. Meander Pool Condition	Depth Sufficient	16	16			100%			
		Length Appropriate	16	16			100%			
	4. Thalweg Position	Thalweg centering at upstream of meander bend (Run)	16	16			100%			
		Thalweg centering at downstream of meander bend (Glide)	16	16			100%			
2. Bank	1. Scoured/Eroded	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			0	0	100%	n/a	n/a	n/a
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	n/a	n/a	n/a
	3. Mass Wasting	Bank slumping, caving, or collapse			0	0	100%	n/a	n/a	n/a
				Totals	0	0	100%	n/a	n/a	n/a
3. Engineered Structures[1]	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	10	10			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	7	7			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	7	7			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	3	3			100%			
	4. Habitat	Pool forming structures maintaining ~Max Pool Depth : Bankfull Depth ≥ 1.6 Rootwads/logs providing some cover at baseflow.	3	3			100%			

[1]Excludes constructed riffles since they are evaluated in section 1.

Table 5c. Visual Stream Morphology Stability Assessment Table
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 6 - 2021

UT1C (260 LF)

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-Built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjust % for Stabilizing Woody Vegetation
1. Bed	1. Vertical Stability (Riffle and Run Units)	Aggradation			0	0	100%			
		Degradation			0	0	100%			
	2. Riffle Condition	Texture/Substrate	9	9			100%			
	3. Meander Pool Condition	Depth Sufficient	8	8			100%			
		Length Appropriate	8	8			100%			
	4. Thalweg Position	Thalweg centering at upstream of meander bend (Run)	8	8			100%			
		Thalweg centering at downstream of meander bend (Glide)	8	8			100%			
2. Bank	1. Scoured/Eroded	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			0	0	100%	n/a	n/a	n/a
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	n/a	n/a	n/a
	3. Mass Wasting	Bank slumping, caving, or collapse			0	0	100%	n/a	n/a	n/a
				Totals	0	0	100%	n/a	n/a	n/a
3. Engineered Structures[1]	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	n/a	n/a			n/a			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	n/a	n/a			n/a			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	n/a	n/a			n/a			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	n/a	n/a			n/a			
	4. Habitat	Pool forming structures maintaining ~Max Pool Depth : Bankfull Depth ≥ 1.6 Rootwads/logs providing some cover at baseflow.	n/a	n/a			n/a			

[1]Excludes constructed riffles since they are evaluated in section 1.

Table 5d. Visual Stream Morphology Stability Assessment Table
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 6 - 2021

UT2B (73 LF)

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-Built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjust % for Stabilizing Woody Vegetation
1. Bed	1. Vertical Stability (Riffle and Run Units)	Aggradation			0	0	100%			
		Degradation			0	0	100%			
	2. Riffle Condition	Texture/Substrate	3	3			100%			
	3. Meander Pool Condition	Depth Sufficient	2	2			100%			
		Length Appropriate	2	2			100%			
	4. Thalweg Position	Thalweg centering at upstream of meander bend (Run)	2	2			100%			
		Thalweg centering at downstream of meander bend (Glide)	2	2			100%			
2. Bank	1. Scoured/Eroded	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			0	0	100%	n/a	n/a	n/a
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	n/a	n/a	n/a
	3. Mass Wasting	Bank slumping, caving, or collapse			0	0	100%	n/a	n/a	n/a
				Totals	0	0	100%	n/a	n/a	n/a
3. Engineered Structures[1]	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	n/a	n/a			n/a			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	n/a	n/a			n/a			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	n/a	n/a			n/a			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	n/a	n/a			n/a			
	4. Habitat	Pool forming structures maintaining ~Max Pool Depth : Bankfull Depth ≥ 1.6 Rootwads/logs providing some cover at baseflow.	n/a	n/a			n/a			

[1]Excludes constructed riffles since they are evaluated in section 1.

Table 5e. Visual Stream Morphology Stability Assessment Table
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 6 - 2021

UT3B (162 LF)

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-Built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjust % for Stabilizing Woody Vegetation
1. Bed	1. Vertical Stability (Riffle and Run Units)	Aggradation			0	0	100%			
		Degradation			0	0	100%			
	2. Riffle Condition	Texture/Substrate	5	5			100%			
	3. Meander Pool Condition	Depth Sufficient	4	4			100%			
		Length Appropriate	4	4			100%			
	4. Thalweg Position	Thalweg centering at upstream of meander bend (Run)	4	4			100%			
		Thalweg centering at downstream of meander bend (Glide)	4	4			100%			
2. Bank	1. Scoured/Eroded	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			0	0	100%	n/a	n/a	n/a
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	n/a	n/a	n/a
	3. Mass Wasting	Bank slumping, caving, or collapse			0	0	100%	n/a	n/a	n/a
				Totals	0	0	100%	n/a	n/a	n/a
3. Engineered Structures[1]	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	n/a	n/a			n/a			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	n/a	n/a			n/a			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	n/a	n/a			n/a			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	n/a	n/a			n/a			
	4. Habitat	Pool forming structures maintaining ~Max Pool Depth : Bankfull Depth ≥ 1.6 Rootwads/logs providing some cover at baseflow.	n/a	n/a			n/a			

[1]Excludes constructed riffles since they are evaluated in section 1.

Table 5f. Visual Stream Morphology Stability Assessment Table
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 6 - 2021

UT4B (138 LF)

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-Built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjust % for Stabilizing Woody Vegetation
1. Bed	1. Vertical Stability (Riffle and Run Units)	Aggradation			0	0	100%			
		Degradation			0	0	100%			
	2. Riffle Condition	Texture/Substrate	5	5			100%			
	3. Meander Pool Condition	Depth Sufficient	4	4			100%			
		Length Appropriate	4	4			100%			
	4. Thalweg Position	Thalweg centering at upstream of meander bend (Run)	4	4			100%			
		Thalweg centering at downstream of meander bend (Glide)	4	4			100%			
2. Bank	1. Scoured/Eroded	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			0	0	100%	n/a	n/a	n/a
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	n/a	n/a	n/a
	3. Mass Wasting	Bank slumping, caving, or collapse			0	0	100%	n/a	n/a	n/a
				Totals	0	0	100%	n/a	n/a	n/a
3. Engineered Structures[1]	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	n/a	n/a			n/a			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	n/a	n/a			n/a			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	n/a	n/a			n/a			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	n/a	n/a			n/a			
	4. Habitat	Pool forming structures maintaining ~Max Pool Depth : Bankfull Depth ≥ 1.6 Rootwads/logs providing some cover at baseflow.	n/a	n/a			n/a			

[1]Excludes constructed riffles since they are evaluated in section 1.

Table 5g. Visual Stream Morphology Stability Assessment Table
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 6 - 2021

UT5 (677 LF)

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-Built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjust % for Stabilizing Woody Vegetation
1. Bed	1. Vertical Stability (Riffle and Run Units)	Aggradation			0	0	100%			
		Degradation			0	0	100%			
	2. Riffle Condition	Texture/Substrate	17	17			100%			
	3. Meander Pool Condition	Depth Sufficient	16	16			100%			
		Length Appropriate	16	16			100%			
	4. Thalweg Position	Thalweg centering at upstream of meander bend (Run)	16	16			100%			
		Thalweg centering at downstream of meander bend (Glide)	16	16			100%			
2. Bank	1. Scoured/Eroded	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			0	0	100%	n/a	n/a	n/a
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	n/a	n/a	n/a
	3. Mass Wasting	Bank slumping, caving, or collapse			0	0	100%	n/a	n/a	n/a
				Totals	0	0	100%	n/a	n/a	n/a
3. Engineered Structures[1]	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	9	9			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	9	9			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	9	9			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	n/a	n/a			n/a			
	4. Habitat	Pool forming structures maintaining ~Max Pool Depth : Bankfull Depth ≥ 1.6 Rootwads/logs providing some cover at baseflow.	n/a	n/a			n/a			

[1]Excludes constructed riffles since they are evaluated in section 1.

Table 6. Vegetation Condition Assessment Table

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 6 - 2021

Planted Acreage **16**

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	0.0%
Low Stem Density Areas	Woody stem densities clearly below target levels based on MY3, 4, or 5 stem count criteria.	0.1	0	0.0	0.0%
		Total	**0**	**0.0**	**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	0%
		Cumulative Total	**0**	**0.0**	**0.0%**

Easement Acreage **17**

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	0.0%
Easement Encroachment Areas	Areas of points (if too small to render as polygons at map scale).	none	0	0	0%

STREAM PHOTOGRAPHS

	
PHOTO POINT 1 UTSF R1 – looking upstream *(3/30/2021)*	**PHOTO POINT 1 UTSF R1 – looking downstream *(3/30/2021)***
	
PHOTO POINT 2 UTSF R1 – looking upstream *(3/30/2021)*	**PHOTO POINT 2 UTSF R1 – looking downstream *(3/30/2021)***
	
PHOTO POINT 3 UTSF R1 – looking upstream *(3/30/2021)*	**PHOTO POINT 3 UTSF R1 – looking downstream *(3/30/2021)***

	
PHOTO POINT 4 UTSF R1 – looking upstream *(3/30/2021)*	**PHOTO POINT 4 UTSF R1 – looking downstream *(3/30/2021)***
	
PHOTO POINT 5 UTSF R1 – looking upstream *(3/30/2021)*	**PHOTO POINT 5 UTSF R1 – looking downstream *(3/30/2021)***
	
PHOTO POINT 6 UTSF R1 – looking upstream *(3/30/2021)*	**PHOTO POINT 6 UTSF R1 – looking downstream *(3/30/2021)***

	
PHOTO POINT 7 UTSF R1 – looking upstream *(3/30/2021)*	**PHOTO POINT 7 UTSF R1 – looking downstream *(3/30/2021)***
	
PHOTO POINT 8 UTSF R1 – looking upstream *(3/30/2021)*	**PHOTO POINT 8 UTSF R1 – looking downstream *(3/30/2021)***
	
PHOTO POINT 9 UTSF R1 – looking upstream *(3/30/2021)*	**PHOTO POINT 9 UTSF R1 – looking downstream *(3/30/2021)***

PHOTO POINT 10 UTSF R1 – looking upstream *(3/30/2021)*

PHOTO POINT 10 UTSF R1 – looking downstream *(3/30/2021)*

PHOTO POINT 11 UTSF R1 – looking upstream *(3/30/2021)*

PHOTO POINT 11 UTSF R1 – looking downstream *(3/30/2021)*

PHOTO POINT 12 UTSF R1 – looking upstream *(3/30/2021)*

PHOTO POINT 12 UTSF R1 – looking downstream *(3/30/2021)*

	
PHOTO POINT 13 UTSF R2 – looking upstream *(3/30/2021)*	**PHOTO POINT 13 UTSF R2 – looking downstream *(3/30/2021)***
	
PHOTO POINT 14 UTSF R2 – looking upstream *(3/30/2021)*	**PHOTO POINT 14 UTSF R2 – looking downstream *(3/30/2021)***
	
PHOTO POINT 15 UTSF R2 – looking upstream *(3/30/2021)*	**PHOTO POINT 15 UTSF R2 – looking downstream *(3/30/2021)***

	
PHOTO POINT 16 UTSF R2 – looking upstream *(3/30/2021)*	**PHOTO POINT 16 UTSF R2 – looking downstream *(3/30/2021)***
	
PHOTO POINT 17 UT1A – looking upstream *(3/30/2021)*	**PHOTO POINT 17 UT1A – looking downstream *(3/30/2021)***
	
PHOTO POINT 18 UT1A – looking upstream *(3/30/2021)*	**PHOTO POINT 18 UT1A – looking downstream *(3/30/2021)***

	
PHOTO POINT 19 UT1B – looking upstream *(3/30/2021)*	**PHOTO POINT 19 UT1B – looking downstream *(3/30/2021)***
	
PHOTO POINT 20 UT1C – looking upstream *(3/30/2021)*	**PHOTO POINT 20 UT1C – looking downstream *(3/30/2021)***
	
PHOTO POINT 21 UT1C – looking upstream *(3/30/2021)*	**PHOTO POINT 21 UT1C – looking downstream *(3/30/2021)***

	
PHOTO POINT 22 UT2 – looking upstream *(3/30/2021)*	**PHOTO POINT 22 UT2 – looking downstream *(3/30/2021)***
	
PHOTO POINT 23 UT2 – looking upstream *(3/30/2021)*	**PHOTO POINT 23 UT2 – looking downstream *(3/30/2021)***
	
PHOTO POINT 24 UT2 – looking upstream *(3/30/2021)*	**PHOTO POINT 24 UT2 – looking downstream *(3/30/2021)***

	
PHOTO POINT 25 UT3 – looking upstream *(3/30/2021)*	**PHOTO POINT 25 UT3 – looking downstream *(3/30/2021)***
	
PHOTO POINT 26 UT3 – looking upstream *(3/30/2021)*	**PHOTO POINT 26 UT3 – looking downstream *(3/30/2021)***
	
PHOTO POINT 27 UT3 – looking upstream *(3/30/2021)*	**PHOTO POINT 27 UT3 – looking downstream *(3/30/2021)***

	
PHOTO POINT 28 UT4 – looking upstream *(3/30/2021)*	**PHOTO POINT 28 UT4 – looking downstream *(3/30/2021)***
	
PHOTO POINT 29 UT4 – looking upstream *(3/30/2021)*	**PHOTO POINT 29 UT4 – looking downstream *(3/30/2021)***
	
PHOTO POINT 30 UT5 – looking upstream *(3/30/2021)*	**PHOTO POINT 30 UT5 – looking downstream *(3/30/2021)***

	
PHOTO POINT 31 UT5 – looking upstream *(3/30/2021)*	**PHOTO POINT 31 UT5 – looking downstream *(3/30/2021)***
	
PHOTO POINT 32 UT5 – looking upstream *(3/30/2021)*	**PHOTO POINT 32 UT5 – looking downstream *(3/30/2021)***

Vegetation Photographs

	
Vegetation Plot 1 – *(08/11/2021)*	**Vegetation Plot 2** – *(08/11/2021)*
	
Vegetation Plot 3 – *(08/11/2021)*	**Vegetation Plot 4** – *(08/11/2021)*
	
Vegetation Plot 5 – *(08/11/2021)*	**Vegetation Plot 6** – *(08/11/2021)*

Vegetation Plot 7 – *(08/11/2021)*

Vegetation Plot 8 – *(08/11/2021)*

Vegetation Plot 9 – *(08/11/2021)*

Vegetation Plot 10 – *(08/11/2021)*

Vegetation Plot 11 – *(08/11/2021)*

Vegetation Plot 12 – *(08/11/2021)*

	
Vegetation Plot 13 – *(08/11/2021)*	**Vegetation Plot 14** – *(08/11/2021)*

APPENDIX 3. Vegetation Plot Data

Vegetation inventory and analysis not required during MY6

APPENDIX 4. Morphological Summary Data and Plots

Morphological survey and analysis not required during MY6

APPENDIX 5. Hydrology Summary Data

Table 14. Verification of Bankfull Events

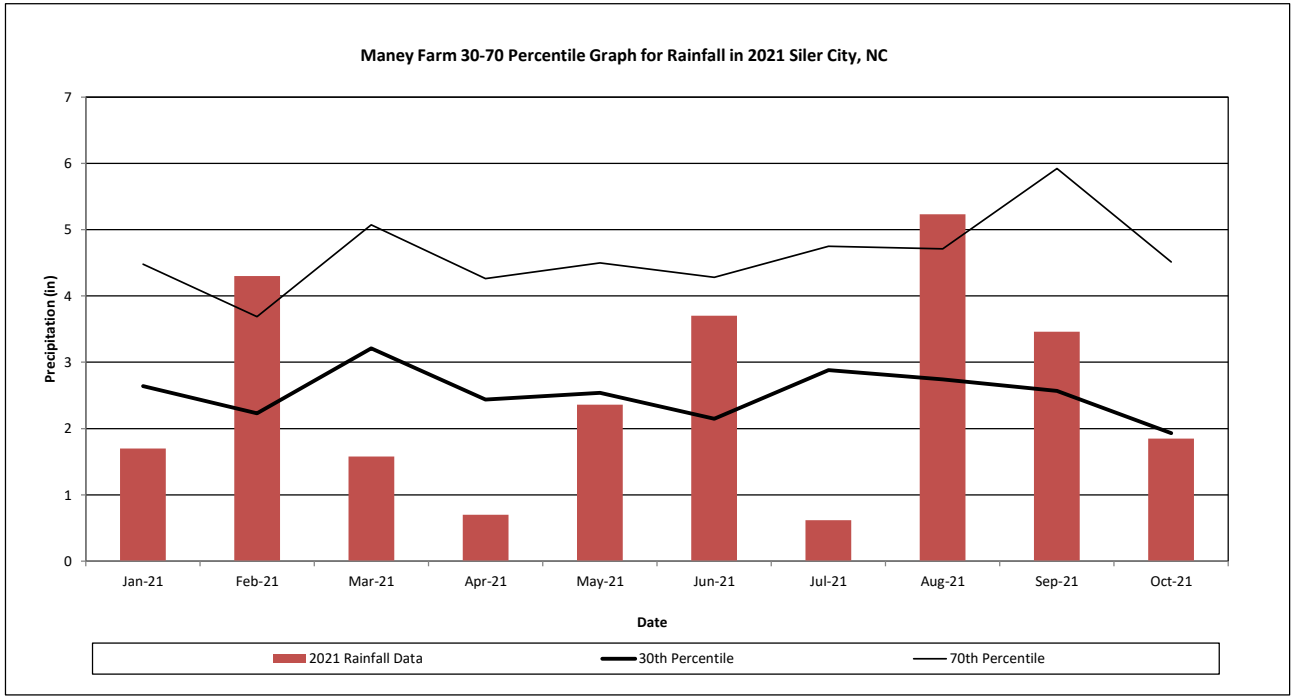
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 6 - 2021

	MY1		MY2		MY3		MY4		MY5		MY6		
Reach	**Date of Data Collection**	**Date of Occurrence**	**Date of Data Collection**	**Date of Occurrence**	**Date of Data Collection**	**Date of Occurrence**	**Date of Data Collection**	**Date of Occurrence**	**Date of Data Collection**	**Date of Occurrence**	**Date of Data Collection**	**Date of Occurrence**	**Method**
UTSF Reach 1	8/8/2016	2/16/2016	3/9/2017	1/9/2017	7/3/2018	5/16/2018	9/26/2019	3/21/2019	2/11/2020	2/6/2020	2/24/2021	1/3/2021	Crest Gage/ Pressure Transducer
			10/17/2017	7/23/2017	10/22/2018	9/17/2018*	***	4/19/2019	8/7/2020	6/11/2020			
UTSF Reach 2	8/8/2016	2/16/2016	3/9/2017	1/9/2017	10/22/2018	**	9/26/2019	3/21/2019	2/11/2020	2/6/2020	2/24/2021	1/3/2021	
			10/17/2017	7/23/2017				4/19/2019	8/7/2020	6/11/2020			
UT5	8/8/2016	2/16/2016	3/9/2017	1/9/2017	7/3/2018	5/16/2018	9/26/2019	3/21/2019	2/11/2020	2/6/2020	2/24/2021	1/3/2021	
			10/17/2017	7/23/2017	10/22/2018	9/17/2018*		4/19/2019	8/7/2020	6/11/2020	8/11/2021	7/19/2021	

*Hurricane Florence
**Crest gauge data malfunctioned
***Flow gauge data from UTSF Reach 1 was used in place of the crest gague due to equipment malfunction.

Monthly Rainfall Data

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 6 - 2021



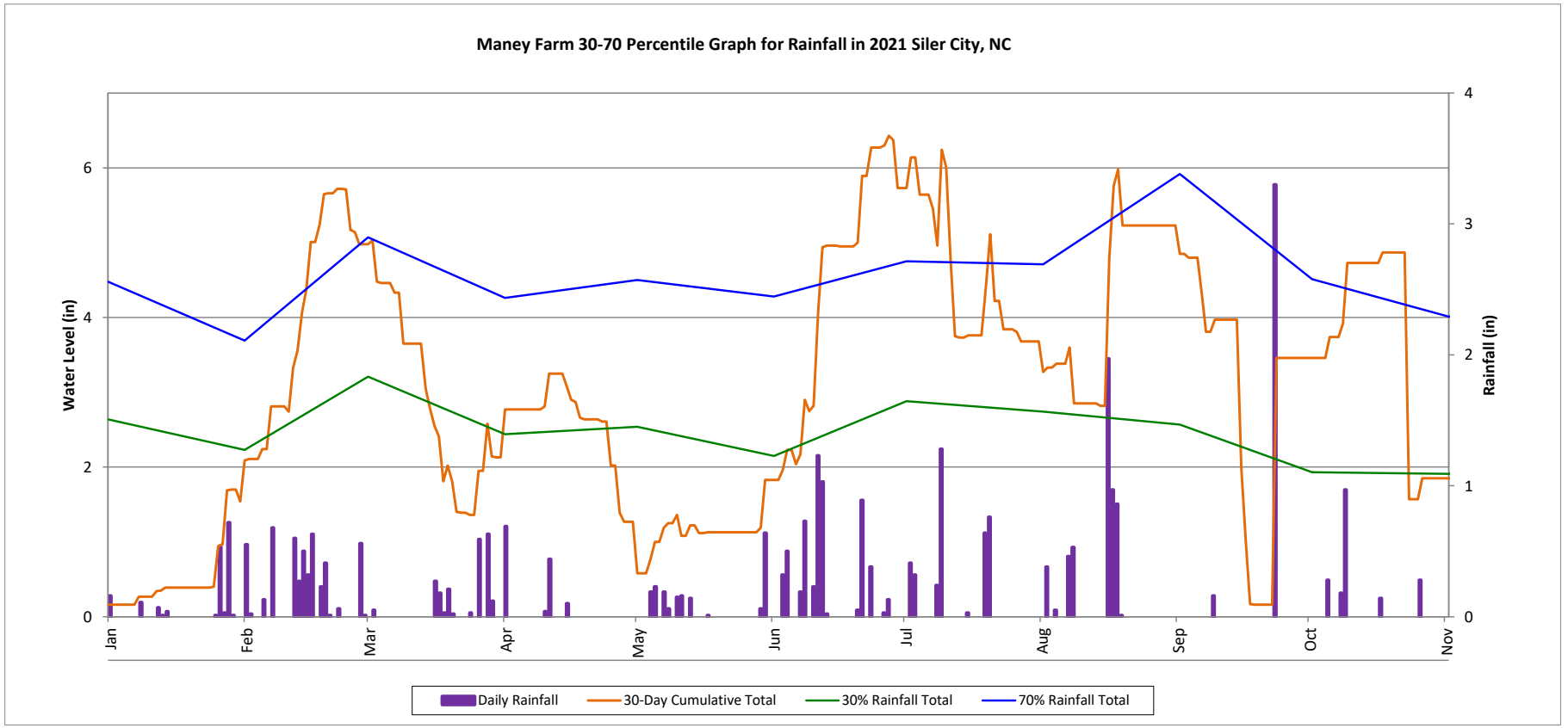
[1] 2021 monthly rainfall from USDA Station SILER CITY (317924)
[2] 30th and 70th percentile rainfall data collected from weather station Siler City 2 S, NC7924 (USDA, 2021).

30-Day Cumulative Total Rainfall Data

Maney Farm Mitigation Project

DMS Project No. 96314

Monitoring Year 6 - 2021



[1] 2021 monthly rainfall from USDA Station SILER CITY (317924)

[2] 30th and 70th percentile rainfall data collected from weather station Siler City 2 S, NC7924 (USDA, 2021).

Table 15. Recorded In-Stream Flow Events Attainment Summary

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 6 - 2021

Summary of In-Stream Flow Gage Results for Monitoring Years 1 through 7							
Reach	**Max Consecutive Days/ Total Days Meeting Success Criteria***						
	Year 1 (2016)	**Year 2 (2017)**	**Year 3 (2018)**	**Year 4 (2019)**	**Year 5 (2020)**	**Year 6 (2021)****	**Year 7 (2022)**
UTSF Reach 1	**207 Days/ 207 Days**	**137 Days/ 191 Days**	**365 Days/ 365 Days**	**365 Days/ 365 Days**	**232 Days/ 364 Days**	**93 Days/ 241 Days**	

*Success criteria is 30 consecutive days of flow.

**Data collected through November 5, 2021. Will be updated in MY7.

Recorded In-Stream Flow Events

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 6 - 2021