MONITORING YEAR 7 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

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MANEY FARM MITIGATION PROJECT

Monitoring Year 7 Annual Report

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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 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 7 Data Assessment

Annual monitoring and quarterly site visits were conducted during MY7 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). Methodology for annual monitoring is presented in the MY0 Annual Report (Wildlands, 2016).

1.2.1 Vegetative Assessment

A total of 13 standard 10-meter by 10-meter vegetation plots and one non-standard 5-meter by 20-meter plot were established during the baseline monitoring within the project easement area. Plots were established to monitor both the standard planting zones (11 plots) as well as the supplemental

planting zones (3 plots). The final vegetative success criteria for the standard plots will be the survival of 210 planted stems per acre averaging 10 feet in height within the conservation easement at the end of the seven-year monitoring period (MY7). While there are no performance criteria for the stems established within the supplemental planting zones, these areas are monitored to document survival rates of these species.

The MY7 vegetative survey was completed in August 2022. The 2022 vegetation monitoring resulted in an average stem density of 397 planted stems per acre within the standard planting zones, which exceeds the final criteria of 210 stems per acre required at MY7, but approximately 43% less than the baseline density recorded (688 planted stems per acre). There was an average of 9 stems per plot as compared to an average of 16 stems per plot in MY0. Average vegetation height surpassed the final success criteria of ten feet with the standard plots averaging 18.6 feet across the Site. All 11 of the plots met the success criteria required for MY7 (Appendix 3).

Stem densities were monitored in the three supplemental planting zone plots to document annual survival rates within these zones. The MY7 survival rates within the supplemental plots ranged from 0% to 43% with an overall average of 16%, indicating a significant mortality rate from MY0 (Table 7b, Appendix 3). Survival rates of the individual species selected for these supplemental planting zones ranged from 0% (Arrow-wood (*Viburnum prunifolium)*), (Spice bush (*Calycanthus floridus)*), and (American beautyberry (*Callicarpa americana)*) to 33% (Red buckeye (*Aesculus pavia)*) in MY7 (Table 7c, Appendix 3). These three supplemental planting plots were experimental to see how well understory planting would work on Site, and results have shown that understory planting is not effective.

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. Refer to Appendix 2 for vegetation plot photographs and the vegetation condition assessment table and Appendix 3 for vegetation plot data tables.

1.2.2 Vegetation Areas of Concern

Chinese privet (*Ligustrum sinense*) is located immediately adjacent to the project boundary; however, this farm is certified organic and prevents chemical treatments outside the easement boundary. As a result, scattered populations of Chinese privet have become established along the perimeter, outside of the conservation easement. Sporadic population of invasive species was treated in July 2022 and will continue to be treated as needed in winter 2022.

Additional signage was added along the wooded boundaries in August 2022.

1.2.3 Stream Assessment

Morphological surveys for MY7 were conducted in March 2022. All streams within the Site are stable. Overall, cross-sections at the Site show little to no change in the bankfull area, maximum depth ratio, or width-to-depth ratio. Slight increases in bank height ratios for some cross-sections are likely the result of the established vegetation causing increased deposition along the bankfull benches. Bank height ratios fall within the success range stated in the Mitigation Plan.

A bank pin array was established on UTSF Reach 1 to monitor potential meander bend bank erosion at cross-section 4. No changes in exposed length of bank pins were observed during the MY7 assessments indicating bank stability.

Pebble count data is no longer required per the September 29, 2021 Technical Work Group Meeting and is not included in this report. The IRT reserves the right to request pebble count data/particle

distributions if deemed necessary during the monitoring period. Longitudinal profile surveys are not required on the project unless visual inspection indicates reach wide vertical instability. Refer to Appendix 2 for the visual stability assessment table, CCPV map, and reference photographs. Refer to Appendix 4 for the morphological data and plots.

1.2.4 Stream Areas of Concern

While beaver were an issue in past years, they have not reestablished themselves on Site in MY7. All vegetation is growing back from previous years of beaver activity.

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 MY7. Bankfull events were also recorded on all restoration reaches during most monitoring years 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 gauge established on UTSF Reach 1 indicate the stream is maintaining baseflow as expected for an intermittent stream. Baseflow was recorded for 96% of the monitoring period (144 consecutive and 275 total days). Overall UTSF Reach 1 has easily exceeded flow criteria in each of the seven monitoring years. Refer to Appendix 5 for hydrologic data.

1.2.6 Maintenance Plan

Additional invasive vegetation treatment of Chinese privet is scheduled for the winter of 2022 to continue treating any new growth seen across the Site.

While conducting a Site Walk with the State Stewardship agency, it was discovered that the fence along the western side of the project at the start of UT1 (Figure 3a) was installed slightly inside the conservation easement by two feet. Since then, a surveyor and fencing contractor have been on Site to locate the easement boundary and reinstall the fence in the proper location.

1.3 Monitoring Year 7 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. In July 2022, an invasive vegetation treatment occurred across the Site to treat small sporadic populations of invasive species. The Site will continue to receive follow up invasive treatment until closeout. Additional signage was added along the boundary and vegetation was cleared along the fence. A fencing encroachment was discovered in September 2022 and will be fixed by the MY7 closeout Site walk. Stream bank stabilization and wildlife habitat have improved with the increase of dense herbaceous vegetation. Beaver have not reestablished themselves since being removed in 2021. Hydrology criteria have been attained for the duration of the project and bankfull events and persistent flow were recorded again during MY7. The project successfully restored and enhanced 6,092 linear feet of stream to provide drastic ecological, water quality, and habitat benefits relative to the pre-restoration condition of the site.

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: 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

North Carolina Department of Environment and Natural Resources. 2005. Division of Water Quality (NCDWR). Cape Fear River Basinwide Water Quality Plan.

North Carolina Division of Mitigation Services (DMS). 2009. Cape Fear River Basin Restoration Priorities.

North Carolina Wildlife Resources Commission. 2005. Wildlife Action Plan.

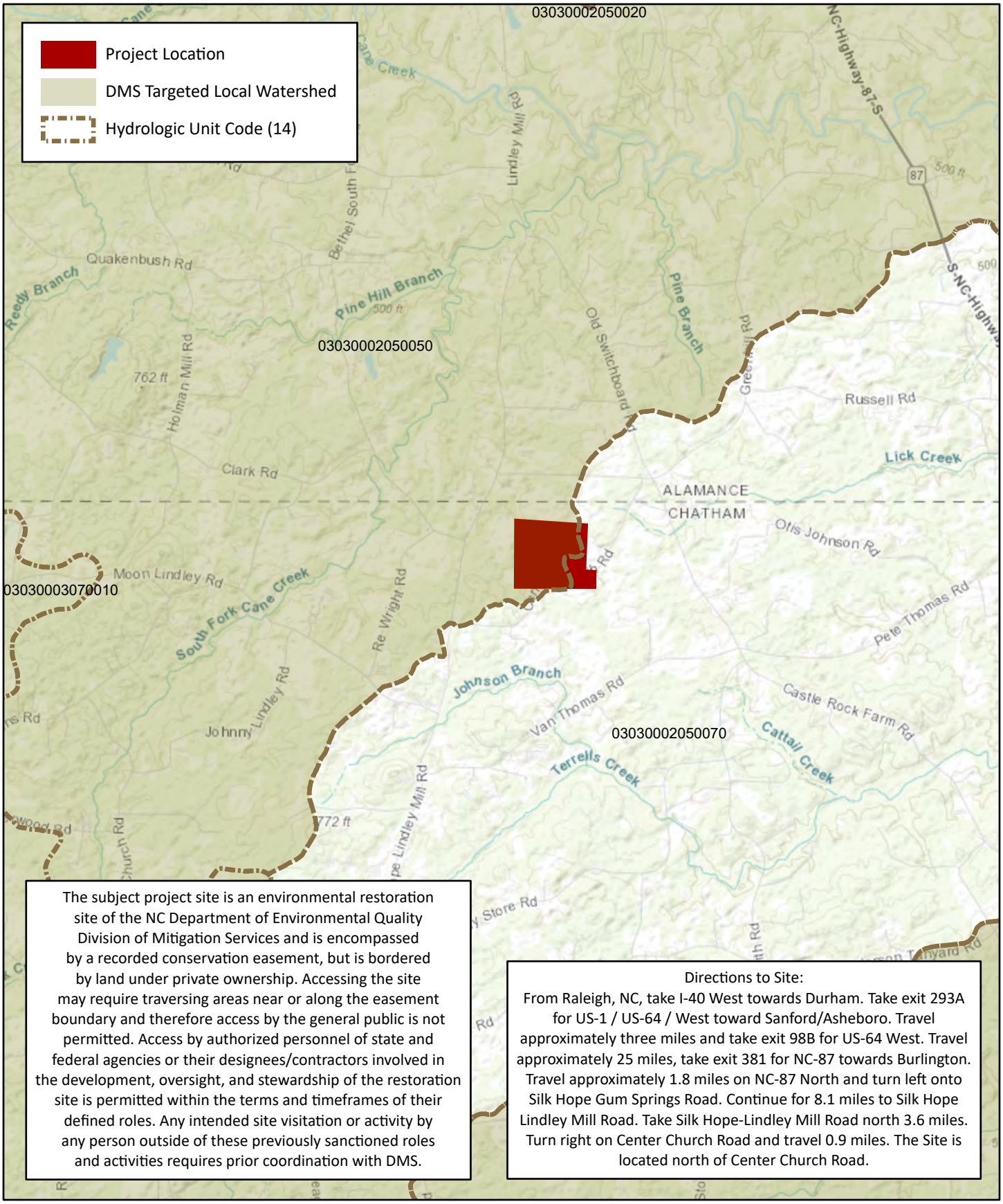
United States Army Corps of Engineers. 2003. Stream Mitigation Guidelines. USACE, NCDENR-DWQ, USEPA, NCWRC.

United States Geological Survey. 1998. North Carolina Geology.

Wildlands Engineering, Inc. 2016. Maney Farm Mitigation Project Baseline Monitoring Document and As-Built Baseline Report. DMS, Raleigh, NC.

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

APPENDIX 1. General Figures and Tables



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.

Directions 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

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Figure 1 Project Vicinity Map
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022
Chatham County, NC

WILDLANDS ENGINEERING

0 175 350 Feet

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Figure 2 Project Component/Asset Map
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

Chatham County, NC

Table 1. Project Components and Mitigation Credits
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

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 7 - 2022

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	March 2022	December 2022
	Vegetation Survey	August 2022	
Invasive Vegetation Treatment			March and July 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 7 - 2022

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 7 - 2022

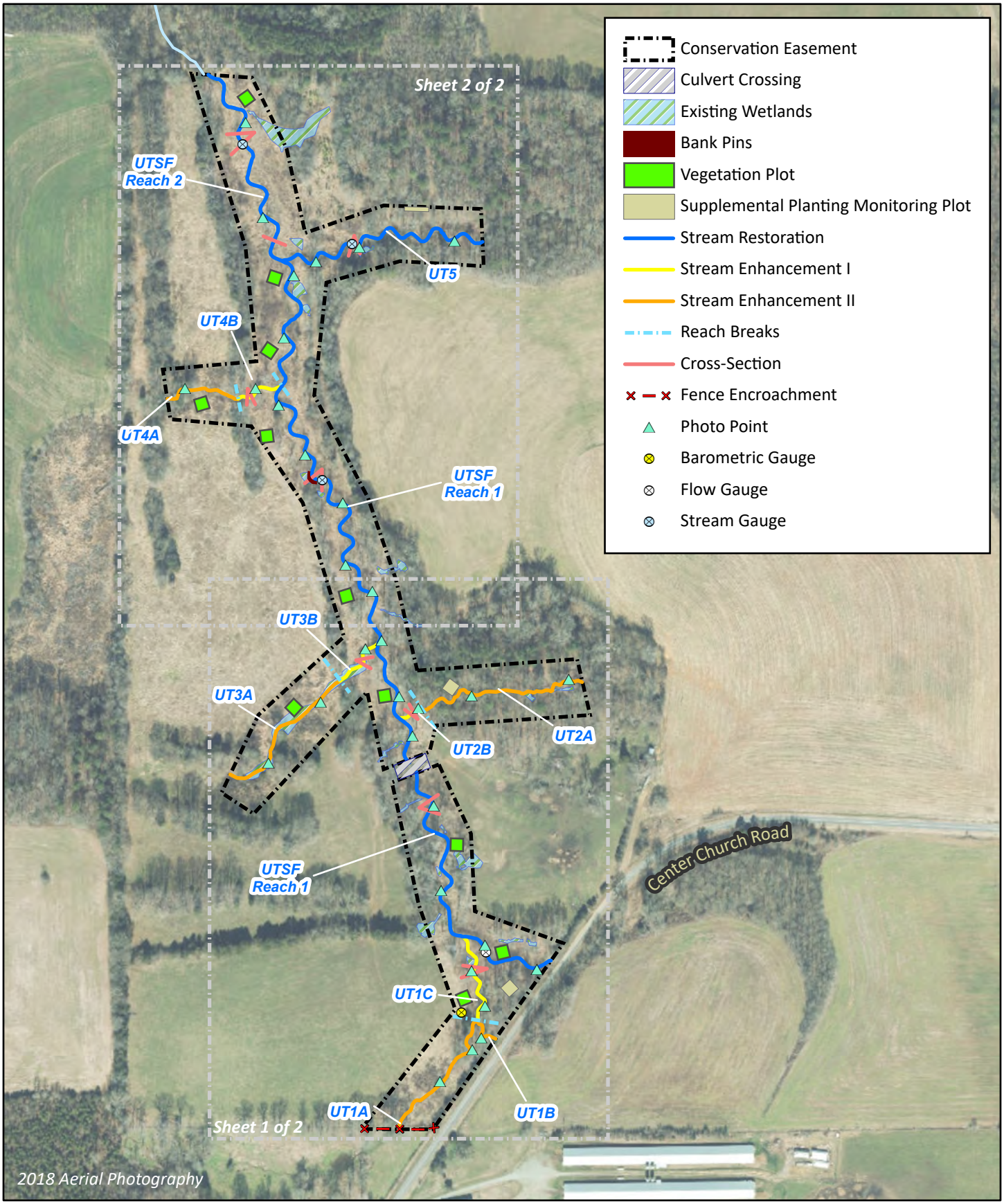
Project Information	
Project Name	Maney Farm Mitigation Site
County	Chatham County
Project Area (acres)	16.69
Planting Area (acres)	16.00
Project Coordinates (latitude and longitude)	35°50'18.00" N, 79° 20'38.00" W

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

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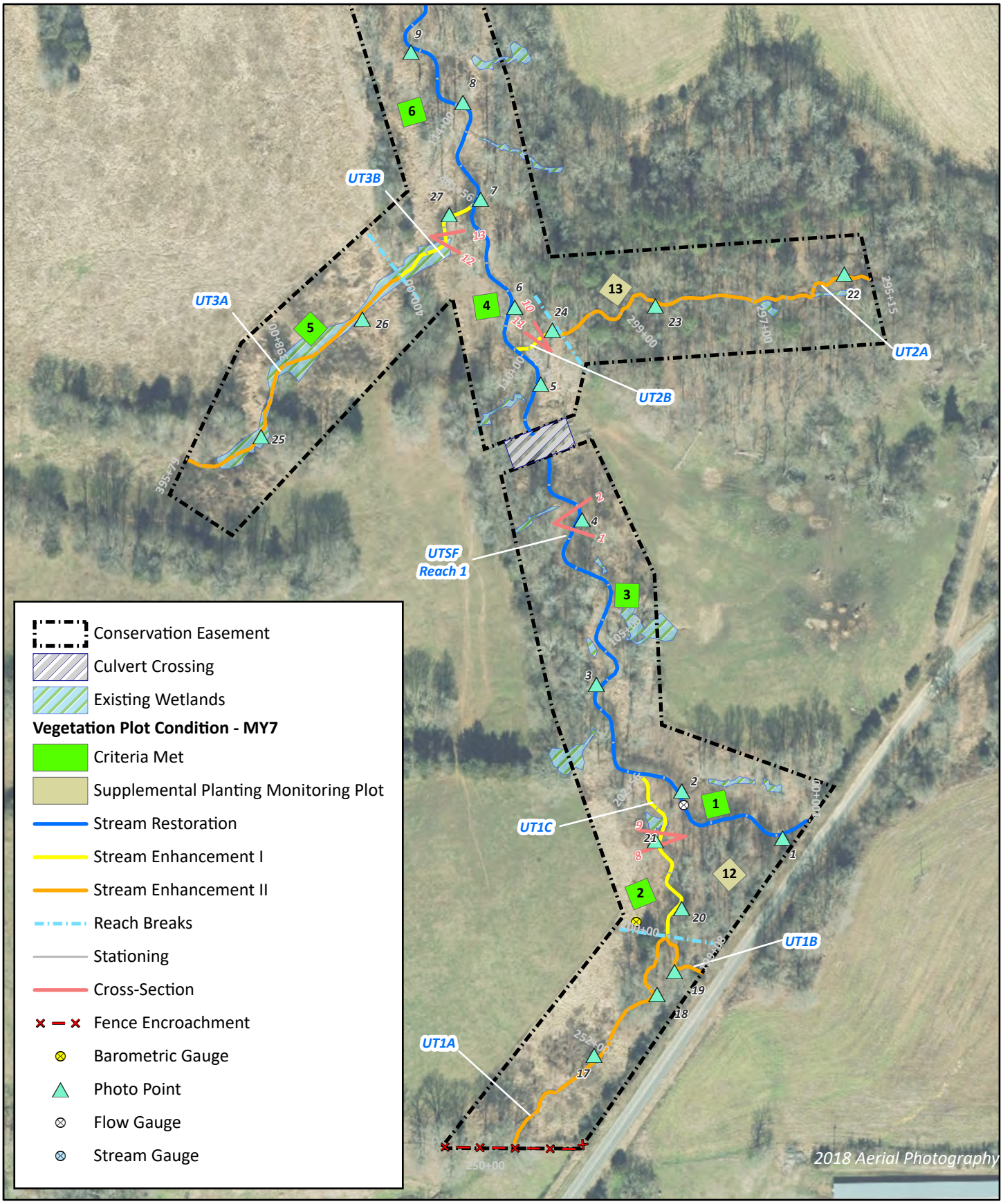
Figure 3.0 Integrated Current Condition Plan View (Key)
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

Chatham County, NC

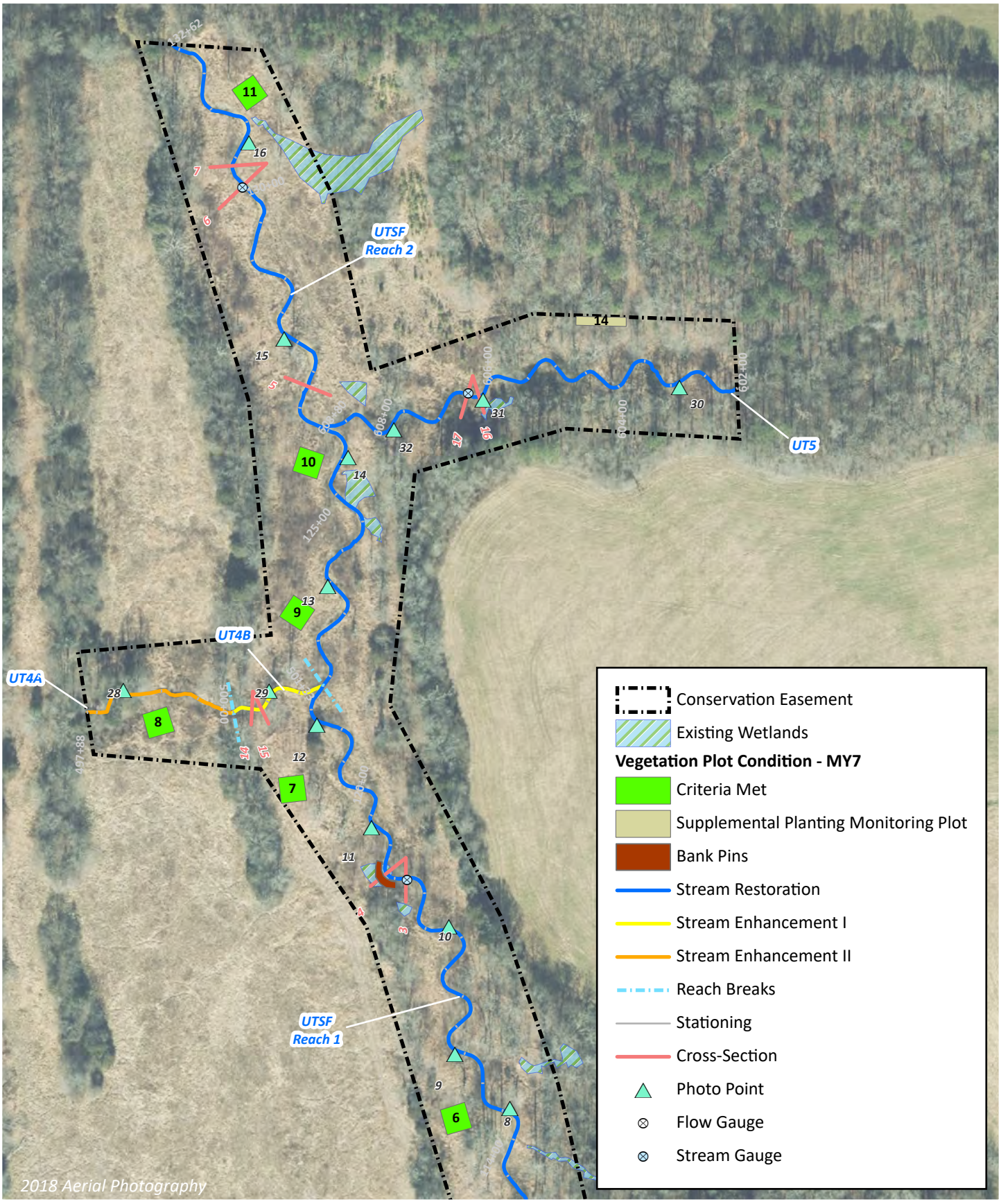


WILDLANDS ENGINEERING

0 90 180 Feet

Figure 3.1 Integrated Current Condition Plan View
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

Chatham County, NC



WILDLANDS ENGINEERING

0 85 170 Feet

Figure 3.2 Integrated Current Condition Plan View
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

Chatham County, NC

Table 5a. Visual Stream Morphology Stability Assessment Table
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

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 7 - 2022

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 7 - 2022

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 7 - 2022

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 7 - 2022

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 7 - 2022

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 7 - 2022

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 7 - 2022

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 *(3/15/2022)*	**PHOTO POINT 1 UTSF R1 – looking downstream *(3/15/2022)***
	
PHOTO POINT 2 UTSF R1 – looking upstream *(3/15/2022)*	**PHOTO POINT 2 UTSF R1 – looking downstream *(3/15/2022)***
	
PHOTO POINT 3 UTSF R1 – looking upstream *(3/15/2022)*	**PHOTO POINT 3 UTSF R1 – looking downstream *(3/15/2022)***

	
PHOTO POINT 4 UTSF R1 – looking upstream *(3/15/2022)*	**PHOTO POINT 4 UTSF R1 – looking downstream *(3/15/2022)***
	
PHOTO POINT 5 UTSF R1 – looking upstream *(3/15/2022)*	**PHOTO POINT 5 UTSF R1 – looking downstream *(3/15/2022)***
	
PHOTO POINT 6 UTSF R1 – looking upstream *(3/15/2022)*	**PHOTO POINT 6 UTSF R1 – looking downstream *(3/15/2022)***

	
PHOTO POINT 7 UTSF R1 – looking upstream *(3/15/2022)*	**PHOTO POINT 7 UTSF R1 – looking downstream *(3/15/2022)***
	
PHOTO POINT 8 UTSF R1 – looking upstream *(3/15/2022)*	**PHOTO POINT 8 UTSF R1 – looking downstream *(3/15/2022)***
	
PHOTO POINT 9 UTSF R1 – looking upstream *(3/15/2022)*	**PHOTO POINT 9 UTSF R1 – looking downstream *(3/15/2022)***

	
PHOTO POINT 10 UTSF R1 – looking upstream *(3/15/2022)*	**PHOTO POINT 10 UTSF R1 – looking downstream *(3/15/2022)***
	
PHOTO POINT 11 UTSF R1 – looking upstream *(3/15/2022)*	**PHOTO POINT 11 UTSF R1 – looking downstream *(3/15/2022)***
	
PHOTO POINT 12 UTSF R1 – looking upstream *(3/15/2022)*	**PHOTO POINT 12 UTSF R1 – looking downstream *(3/15/2022)***

	
PHOTO POINT 13 UTSF R2 – looking upstream *(3/15/2022)*	**PHOTO POINT 13 UTSF R2 – looking downstream *(3/15/2022)***
	
PHOTO POINT 14 UTSF R2 – looking upstream *(3/15/2022)*	**PHOTO POINT 14 UTSF R2 – looking downstream *(3/15/2022)***
	
PHOTO POINT 15 UTSF R2 – looking upstream *(3/15/2022)*	**PHOTO POINT 15 UTSF R2 – looking downstream *(3/15/2022)***

	
PHOTO POINT 16 UTSF R2 – looking upstream *(3/15/2022)*	**PHOTO POINT 16 UTSF R2 – looking downstream *(3/15/2022)***
	
PHOTO POINT 17 UT1A – looking upstream *(3/15/2022)*	**PHOTO POINT 17 UT1A – looking downstream *(3/15/2022)***
	
PHOTO POINT 18 UT1A – looking upstream *(3/15/2022)*	**PHOTO POINT 18 UT1A – looking downstream *(3/15/2022)***

PHOTO POINT 19 UT1B – looking upstream *(3/15/2022)*

PHOTO POINT 19 UT1B – looking downstream *(3/15/2022)*

PHOTO POINT 20 UT1C – looking upstream *(3/15/2022)*

PHOTO POINT 20 UT1C – looking downstream *(3/15/2022)*

PHOTO POINT 21 UT1C – looking upstream *(3/15/2022)*

PHOTO POINT 21 UT1C – looking downstream *(3/15/2022)*

	
PHOTO POINT 22 UT2 – looking upstream *(3/15/2022)*	**PHOTO POINT 22 UT2 – looking downstream *(3/15/2022)***
	
PHOTO POINT 23 UT2 – looking upstream *(3/15/2022)*	**PHOTO POINT 23 UT2 – looking downstream *(3/15/2022)***
	
PHOTO POINT 24 UT2 – looking upstream *(3/15/2022)*	**PHOTO POINT 24 UT2 – looking downstream *(3/15/2022)***

	
PHOTO POINT 25 UT3 – looking upstream *(3/15/2022)*	**PHOTO POINT 25 UT3 – looking downstream *(3/15/2022)***
	
PHOTO POINT 26 UT3 – looking upstream *(3/15/2022)*	**PHOTO POINT 26 UT3 – looking downstream *(3/15/2022)***
	
PHOTO POINT 27 UT3 – looking upstream *(3/15/2022)*	**PHOTO POINT 27 UT3 – looking downstream *(3/15/2022)***

	
PHOTO POINT 28 UT4 – looking upstream *(3/15/2022)*	**PHOTO POINT 28 UT4 – looking downstream *(3/15/2022)***
	
PHOTO POINT 29 UT4 – looking upstream *(3/15/2022)*	**PHOTO POINT 29 UT4 – looking downstream *(3/15/2022)***
	
PHOTO POINT 30 UT5 – looking upstream *(3/15/2022)*	**PHOTO POINT 30 UT5 – looking downstream *(3/15/2022)***

	
PHOTO POINT 31 UT5 – looking upstream *(3/15/2022)*	**PHOTO POINT 31 UT5 – looking downstream *(3/15/2022)***
	
PHOTO POINT 32 UT5 – looking upstream *(3/15/2022)*	**PHOTO POINT 32 UT5 – looking downstream *(3/15/2022)***

Vegetation Photographs

	
Vegetation Plot 1 – *(08/10/2022)*	**Vegetation Plot 2** – *(08/10/2022)*
	
Vegetation Plot 3 – *(08/10/2022)*	**Vegetation Plot 4** – *(08/10/2022)*
	
Vegetation Plot 5 – *(08/10/2022)*	**Vegetation Plot 6** – *(08/10/2022)*

Vegetation Plot 7 – *(08/10/2022)*

Vegetation Plot 8 – *(08/10/2022)*

Vegetation Plot 9 – *(08/10/2022)*

Vegetation Plot 10 – *(08/10/2022)*

Vegetation Plot 11 – *(08/10/2022)*

Vegetation Plot 12 – *(08/10/2022)*

	
Vegetation Plot 13 – *(08/10/2022)*	**Vegetation Plot 14** – *(08/10/2022)*

APPENDIX 3. Vegetation Plot Data

Table 7a. Vegetation Plot Criteria Attainment Table (Standard Planting Zones)

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

Plot	Success Criteria Met	Tract Mean
1	Yes	100%
2	Yes	
3	Yes	
4	Yes	
5	Yes	
6	Yes	
7	Yes	
8	Yes	
9	Yes	
10	Yes	
11	Yes	

Table 7b. Percent Survival by Plot Table (Supplemental Planting Zones)

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

Plot	MY0 Stems/Plot	MY1 Stems/Plot	MY2 Stems/Plot	MY3 Stems/Plot	MY5 Stems/Plot	MY7 Stems/Plot	MY1 Survival (%)	MY2 Survival (%)	MY3 Survival (%)	MY5 Survival (%)	MY7 Survival (%)
12	16	13	5	3	1	1	81%	31%	19%	6%	6%
13	16	15	10	8	8	7	94%	63%	50%	50%	43%
14	16	12	7	3	0	0	75%	44%	19%	0%	0%

MY1 Mean Survival (%)	MY2 Mean Survival (%)	MY3 Mean Survival (%)	MY5 Mean Survival (%)	MY7 Mean Survival (%)
83%	46%	29%	19%	16%

Table 7c. Percent Survival by Species Table (Supplemental Planting Zones)

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

Scientific Name	Common Name	MY0 Stems	MY1 Stems	MY2 Stems	MY3 Stems	MY5 Stems	MY7 Stems	MY1 Survival (%)	MY2 Survival (%)	MY3 Survival (%)	MY5 Survival (%)	MY7 Survival (%)
Aesculus pavia	Red buckeye	3	3	1	1	1	1	100%	33%	33%	33%	33%
Callicarpa americana	American beautyberry	11	9	1	0	0	0	82%	9%	0%	0%	0%
Calycanthus floridus	Sweet-shrub	6	4	2	1	0	0	67%	33%	17%	0%	0%
Carpinus caroliniana	American hornbeam	17	16	13	10	6	5	94%	76%	59%	35%	29%
Symphoricarpos orbiculatus	Coralberry	10	7	5	2	2	2	70%	50%	20%	20%	20%
Viburnum prunifolium	Black haw	1	1	0	0	0	0	100%	0%	0%	0%	0%

Table 7d. Average Height by Plot (Standard Planting Zones)

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

Plot	MY1	MY2	MY3	MY5	MY7
1	1.6	4.1	7.9	14.1	19.8
2	2.3	2.6	3.3	8.2	14.7
3	1.4	2.6	4.3	6.8	14.5
4	1.7	4.0	7.2	17.0	24.2
5	2.2	4.2	6.7	11.1	20.5
6	1.9	4.2	6.9	12.4	21.6
7	2.0	4.0	5.4	10.1	16.3
8	1.9	3.2	4.6	9.3	15.7
9	1.8	5.3	9.3	15.5	24.5
10	1.5	3.1	4.3	12.1	17.7
11	1.7	3.5	5.7	10.7	15.0
Average	**1.8**	**3.7**	**6.0**	**11.6**	**18.6**

Table 7e. Average Height by Plot (Supplemental Planting Zones)

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

Plot	MY1	MY2	MY3	MY5	MY7
12	1.7	1.4	1.8	2.6	4.1
13	2.0	1.8	2.0	2.3	3.2
14	1.8	1.5	2.9	0.0	0.0
Average	**1.8**	**1.6**	**2.3**	**1.6**	**2.4**

Graph 1. Vegetation Plot Trends

Maney Farm Mitigation Project

DMS Project No. 96314

Monitoring Year 7 - 2022

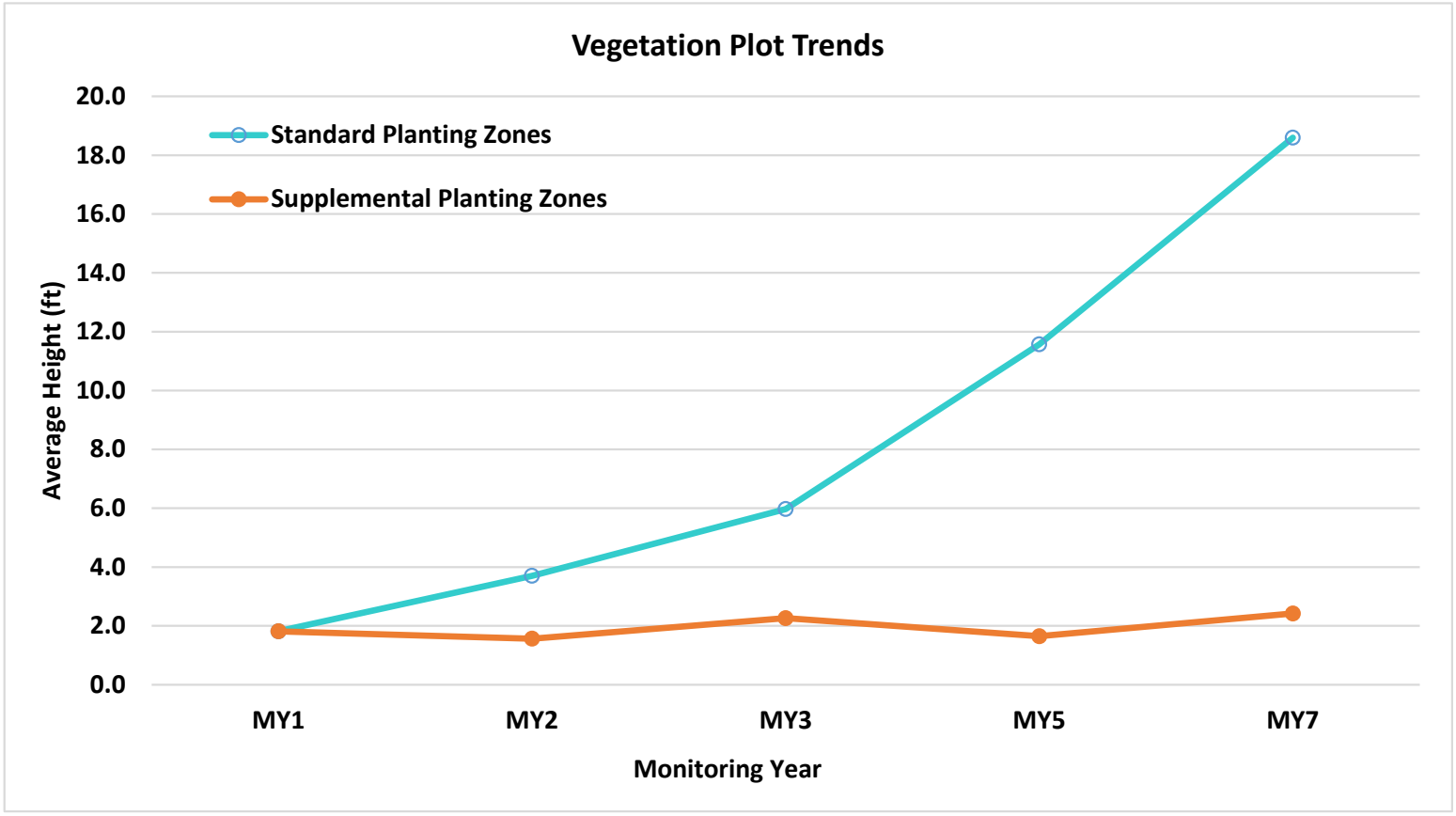


Table 8. CVS Vegetation Plot Metadata

Maney Farm Mitigation Project

DMS Project No. 96314

Monitoring Year 7 - 2022

Report Prepared By	Carolyn Lanza
Date Prepared	8/15/2022
Database Name	Maney Farm MY7- cvs-eep-entrytool-v2.5.0.mdb
Database Location	C:\Users\clanza\Documents
Computer Name	CAROLYN-PC
File Size	49545216
DESCRIPTION OF WORKSHEETS IN THIS DOCUMENT----------	
Metadata	Description of database file, the report worksheets, and a summary of project(s) and project data.
Project Planted	Each project is listed with its PLANTED stems per acre, for each year. This excludes live stakes.
Project Total Stems	Each project is listed with its TOTAL stems per acre, for each year. This includes live stakes, all planted stems, and all natural/volunteer stems.
Plots	List of plots surveyed with location and summary data (live stems, dead stems, missing, etc.).
Vigor	Frequency distribution of vigor classes for stems for all plots.
Vigor by Spp	Frequency distribution of vigor classes listed by species.
Damage	List of most frequent damage classes with number of occurrences and percent of total stems impacted by each.
Damage by Spp	Damage values tallied by type for each species.
Damage by Plot	Damage values tallied by type for each plot.
Planted Stems by Plot and Spp	A matrix of the count of PLANTED living stems of each species for each plot; dead and missing stems are excluded.
ALL Stems by Plot and Spp	A matrix of the count of total living stems of each species (planted and natural volunteers combined) for each plot; dead and missing stems are excluded.
PROJECT SUMMARY----------	
Project Code	96314
Project Name	Maney Farm
Description	Stream Mitigation
Sampled Plots	14

Table 9a. Planted and Total Stem Counts (Standard Planting Zones)

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

			Current Plot Data (MY5 2020)															
			VP 1			VP 2			VP 3			VP 4			VP 5		
Scientific Name	**Common Name**	**Species Type**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**
Acer negundo	Box Elder	Tree															
Acer rubrum	Red Maple	Tree									3						2
Alnus serrulata	Tag Alder	Shrub Tree															
Baccharis	Groundsel Tree	Shrub Tree															
Betula nigra	River Birch	Tree	1	1	1	2	2	2	1	1	1	1	1	1	1	1	1
Callicarpa americana	Beautyberry	Shrub															
Calycanthus floridus	Sweet-shrub	Shrub															
Carpinus caroliniana	Ironwood	Shrub Tree							2	2	2						
Fraxinus pennsylvanica	Green Ash	Tree	3	3	12	3	3	16	5	5	15			14	1	1	2
Juglans nigra	Black Walnut	Tree															
Juniperus virginiana	Eastern Red Cedar	Tree						6									
Ligustrum sinense	Chinese Privet	Exotic															
Liquidambar styraciflua	Sweet Gum	Tree															
Liriodendron tulipifera	Tulip Poplar	Tree													1	1	1
Pinus taeda	Loblolly Pine	Tree															
Platanus occidentalis	Sycamore	Tree	2	2	2	1	1	1	1	1	1	5	5	5	1	1	1
Populus deltoides	Eastern Cottonwood	Tree															
Quercus palustris	Pin Oak	Tree	1	1	1							1	1	1	1	1	1
Quercus phellos	Willow Oak	Tree			1	3	3	15	1	1	1	1	1	1	4	4	4
Salix nigra	Black Willow	Tree															
Ulmus alata	Winged Elm	Tree															
Ulmus americana	American Elm	Tree															
Ulmus rubra	Slippery Elm	Tree			4												
Viburnum prunifolium	Black Haw	Shrub Tree															
		Stem count	7	7	21	9	9	40	10	10	20	8	8	22	9	9	10
		size (ares)		1			1			1			1			1	
		size (ACRES)		0.02			0.02			0.02			0.02			0.02	
		Species count	4	4	6	4	4	5	5	5	6	4	4	5	6	6	7
		Stems per ACRE	283	283	850	364	364	1,619	405	405	809	324	324	890	364	364	405

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%
Volunteers

PnoLS: Number of Planted stems excluding live stakes
P-all: Number of planted stems including live stakes
T: Total Stems

Table 9a. Planted and Total Stem Counts (Standard Planting Zones)

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

			Current Plot Data (MY5 2020)																	
			VP 6			VP 7			VP 8			VP 9			VP 10			VP 11		
Scientific Name	**Common Name**	**Species Type**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**
Acer negundo	Box Elder	Tree																		4
Acer rubrum	Red Maple	Tree												10			14			4
Alnus serrulata	Tag Alder	Shrub Tree																		
Baccharis	Groundsel Tree	Shrub Tree																		3
Betula nigra	River Birch	Tree	3	3	3				3	3	3	1	1	2						
Callicarpa americana	Beautyberry	Shrub																		
Calycanthus floridus	Sweet-shrub	Shrub							1	1	2									
Carpinus caroliniana	Ironwood	Shrub Tree													1	1	1			
Fraxinus pennsylvanica	Green Ash	Tree	2	2	12	4	4	11	3	3	12	3	3	15	4	4	23	3	3	20
Juglans nigra	Black Walnut	Tree									7									
Juniperus virginiana	Eastern Red Cedar	Tree																		10
Ligustrum sinense	Chinese Privet	Exotic																		
Liquidambar styraciflua	Sweet Gum	Tree						4			3									
Liriodendron tulipifera	Tulip Poplar	Tree	1	1	1															
Pinus taeda	Loblolly Pine	Tree																		
Platanus occidentalis	Sycamore	Tree	2	2	2	3	3	3	3	3	3	8	8	8	6	6	17	6	6	46
Populus deltoides	Eastern Cottonwood	Tree																		
Quercus palustris	Pin Oak	Tree							1	1	1									
Quercus phellos	Willow Oak	Tree	2	2	3	1	1	1							2	2	2			
Salix nigra	Black Willow	Tree												1						
Ulmus alata	Winged Elm	Tree			4			5						6			10			
Ulmus americana	American Elm	Tree																		
Ulmus rubra	Slippery Elm	Tree			3												15			
Viburnum prunifolium	Black Haw	Shrub Tree				1	1	1	1	1	1									
		Stem count	10	10	28	9	9	21	12	12	29	12	12	32	13	13	68	9	9	80
		size (ares)		1			1			1			1			1			1	
		size (ACRES)		0.02			0.02			0.02			0.02			0.02			0.02	
		Species count	5	5	7	4	4	6	6	6	8	3	3	6	4	4	7	2	2	6
		Stems per ACRE	405	405	1,133	364	364	850	486	486	1,174	486	486	1,295	526	526	2,752	364	364	3,237

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%
Volunteers

PnoLS: Number of Planted stems excluding live stakes
P-all: Number of planted stems including live stakes
T: Total Stems

Table 9a. Planted and Total Stem Counts (Standard Planting Zones)

Maney Farm Mitigation Project

DMS Project No. 96314

Monitoring Year 7 - 2022

			Annual Means																	
			MY7 (2022)			MY5 (2020)			MY3 (2018)			MY2 (2017)			MY1 (2016)			MY0 (2016)		
Scientific Name	**Common Name**	**Species Type**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**
Acer negundo	Box Elder	Tree			4			2			1			3						
Acer rubrum	Red Maple	Tree			33			24			18			6						
Alnus serrulata	Tag Alder	Shrub Tree							1	1	1	4	4	4	7	7	7	13	13	13
Baccharis	Groundsel Tree	Shrub Tree			3															
Betula nigra	River Birch	Tree	13	13	14	13	13	13	15	15	15	13	13	13	19	19	19	25	25	25
Callicarpa americana	Beautyberry	Shrub										1	1	1	9	9	9	11	11	11
Calycanthus floridus	Sweet-shrub	Shrub	1	1	2	1	1	1	3	3	3	3	3	3	4	4	4	6	6	6
Carpinus caroliniana	Ironwood	Shrub Tree	3	3	3	4	4	4	4	4	4	7	7	7	10	10	10	13	13	13
Fraxinus pennsylvanica	Green Ash	Tree	31	31	152	37	37	193	40	40	373	36	36	139	35	35	35	36	36	36
Juglans nigra	Black Walnut	Tree			7			2			1									
Juniperus virginiana	Eastern Red Cedar	Tree			16			7												
Ligustrum sinense	Chinese Privet	Exotic						1			1									
Liquidambar styraciflua	Sweet Gum	Tree			7			6			5			3						
Liriodendron tulipifera	Tulip Poplar	Tree	2	2	2	2	2	3	2	2	2	2	2	2	7	7	7	16	16	16
Pinus taeda	Loblolly Pine	Tree									1									
Platanus occidentalis	Sycamore	Tree	38	38	89	38	38	56	37	37	45	38	38	44	37	37	37	37	37	37
Populus deltoides	Eastern Cottonwood	Tree						1			1									
Quercus palustris	Pin Oak	Tree	4	4	4	4	4	4	6	6	6	6	6	6	15	15	15	16	16	16
Quercus phellos	Willow Oak	Tree	14	14	28	15	15	29	16	16	27	15	15	21	15	15	15	16	16	16
Salix nigra	Black Willow	Tree			1			1						1						
Ulmus alata	Winged Elm	Tree			25			25			2			4						
Ulmus americana	American Elm	Tree						25			16									
Ulmus rubra	Slippery Elm	Tree			22			9			9			13						
Viburnum prunifolium	Black Haw	Shrub Tree	2	2	2	2	2	2	2	2	2	2	2	2	5	5	5	5	5	5
		Stem count	108	108	374	116	116	408	126	126	533	127	127	272	163	163	163	194	194	194
		size (ares)		14			11			11			11			11			11	
		size (ACRES)		0.27			0.27			0.27			0.27			0.27			0.27	
		Species count	9	9	18	9	9	20	10	10	20	11	11	17	11	11	11	11	11	11
		Stems per ACRE	397	397	1,376	427	427	1,501	464	464	1,961	467	467	1,001	600	600	600	714	714	714

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%

Volunteers

PnoLS: Number of Planted stems excluding live stakes

P-all: Number of planted stems including live stakes

T: Total Stems

Table 9b. Planted and Total Stem Counts (Supplemental Planting Zones)

Maney Farm Mitigation Project

DMS Project No. 96314

Monitoring Year 7 - 2022

Scientific Name	Common Name	Species Type	Current Plot Data (MY5 2020)								
			VP 12			VP 13			VP 14		
			PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T
Aesculus pavia	Red buckeye	Shrub/Tree				1	1	1			
Callicarpa americana	American beautyberry	Shrub									
Calycanthus floridus	Sweet-shrub	Shrub									
Carpinus caroliniana	American hornbeam	Shrub Tree	1	1	1	4	4	4			
Symphoricarpos orbiculatus	Coralberry	Shrub				2	2	2			
Viburnum prunifolium	Black haw	Shrub Tree									
		Stem count	1	1	1	7	7	7	0	0	0
		size (ares)	1			1			1		
		size (ACRES)	0.02			0.02			0.02		
		Species count	1	1	1	3	3	3	0	0	0
		Stems per ACRE	40	40	40	283	283	283	0	0	0

Supplemental planting zones are monitored to determine survival rates of these species but the results will not be tied to project success.

PnoLS: Number of Planted stems excluding live stakes

P-all: Number of planted stems including live stakes

T: Total Stems

Table 9b. Planted and Total Stem Counts (Supplemental Planting Zones)
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

Scientific Name	Common Name	Species Type	Annual Means																	
			MY7 (2020)			MY5 (2020)			MY3 (2018)			MY2 (2017)			MY1 (2016)			MY0 (2016)		
			PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T
Aesculus pavia	Red buckeye	Shrub/Tree	1	1	1	1	1	1	1	1	1	1	1	1	3	3	3	3	3	3
Callicarpa americana	American beautyberry	Shrub										1	1	1	9	9	9	11	11	11
Calycanthus floridus	Sweet-shrub	Shrub							1	1	1	2	2	2	4	4	4	6	6	6
Carpinus caroliniana	American hornbeam	Shrub Tree	5	5	5	6	6	6	10	10	10	13	13	13	16	16	16	17	17	17
Symphoricarpos orbiculatus	Coralberry	Shrub	2	2	2	2	2	2	2	2	2	5	5	5	7	7	7	10	10	10
Viburnum prunifolium	Black haw	Shrub Tree													1	1	1	1	1	1
		Stem count	8	8	8	9	9	9	14	14	14	22	22	22	40	40	40	48	48	48
		size (ares)	2			3			3			3			3			3		
		size (ACRES)	0.07			0.07			0.07			0.07			0.07			0.07		
		Species count	3	3	3	3	3	3	4	4	4	5	5	5	6	6	6	6	6	6
		Stems per ACRE	108	108	108	121	121	121	189	189	189	297	297	297	540	540	540	647	647	647

Supplemental planting zones are monitored to determine survival rates of these species
but the results will not be tied to project success.

PnoLS: Number of Planted stems excluding live stakes
P-all: Number of planted stems including live stakes
T: Total Stems

APPENDIX 4. Morphological Summary Data and Plots

Table 10a. Baseline Stream Data Summary

Maney Farm Mitigation Project

DMS Project No. 96314

Monitoring Year 7 - 2022

UT South Fork Reaches 1 and 2

		Pre-Restoration Condition				Reference Reach Data				Design				As-Built/Baseline			
Parameter	**Gage**	**UTSF Reach 1**		**UTSF Reach 2**		**Agony Acres UT1A-Reach 1**		**UT to Cane Creek**		**UTSF Reach 1**		**UTSF Reach 2**		**UTSF Reach 1**		**UTSF Reach 2**	
		Min	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**
Dimension and Substrate - Riffle																	
Bankfull Width (ft)		3.2	12.0	4.7	8.2	9.1	10.4	11.5	12.3	9.5		12.1		8.8	9.3	12.7	13.7
Floodprone Width (ft)		15	50	70	82	>36		31		21	48	27	61	85		150	
Bankfull Mean Depth		0.6	1.3	0.7	1.2	1.0	1.2	0.8	1.0	0.7		0.8		0.6	0.7	0.8	0.9
Bankfull Max Depth		1.2	2.0	1.5		1.8		1.2	1.6	1.0	1.2	1.2	1.5	1.0	1.2	1.3	1.4
Bankfull Cross-Sectional Area (ft2)	N/A	4.1	7.1	5.4	5.6	10.7	11.3	8.9	12.2	6.5		10.2		5.3	6.8	10.9	11.0
Width/Depth Ratio		2.5	20.4	4.0	12.3	7.3	10.1	12.3	14.4	14.0		14.0		9.1	9.7	14.5	17.3
Entrenchment Ratio		1.4	12.5	10.0	14.8	>3.9		2.5	2.7	2.2	5.0	2.2	5.0	6.2	9.5	10.9	11.8
Bank Height Ratio		1.3	2.2	1.4	1.9	---		---		0.9	1.1	0.9	1.1	1.0		1.0	
D50 (mm)		Medium Sand		Silt/Clay										8.4		10.4	
Riffle Length (ft)						---		---		---		---		9	50	9	40
Riffle Slope (ft/ft)		0.0036	0.0274	0.0062	0.0258	---		0.0188	0.0704	0.0120	0.0505	0.0106	0.0447	0.0058	0.0432	0.0055	0.0326
Pool Length (ft)	N/A					---		---		---		---		12	47	23	50
Pool Max Depth (ft)		1.5	1.8	1.8	2	2.5		1.8	2.3	1.1	2.1	1.3	2.6	2.4	2.6	2.1	
Pool Spacing (ft)		23	239	44	145	---		27	73	3	67	4	85	29	85	45	78
Pool Volume (ft^3)																	
Pattern																	
Channel Beltwidth (ft)		5	42	10	37	21	93	102		15	85	19	108	24	56	37	54
Radius of Curvature (ft)		4	25	5	13	14	60	23	38	17	55	22	70	9	36	17	28
Rc:Bankfull Width (ft/ft)	N/A	1.3	2.1	1.1	1.6	1.5	5.8	2.0	3.1	1.8	5.8	1.8	5.8	1.0	4.1	1.6	2.6
Meander Length (ft)		18	100	21	59	---		---		29	156	36	198	68	151	110	144
Meander Width Ratio		1.6	3.5	2.1	4.5	2.3	8.9	8.3	8.9	1.6	8.9	1.6	8.9	2.7	6.5	3.4	5.0
Substrate, Bed and Transport Parameters																	
Ri%/Ru%/P%/G%/S%																	
SC%/Sa%/G%/C%/B%/Be%														21/13/64/2/0/0		28/10/56/6/0/0	
d16/d35/d50/d84/d95/d100	N/A	SC/VFS/MS/11.1/15.4/22.6		SC/SC/SC/6.1/28.5/180		---		---						SC/2.37/8.4/34.5/55/180		SC/0.40/10.4/37.9/71.7/180	
Reach Shear Stress (Competency) lb/ft^2		0.39		0.45						0.42		0.44		0.32	0.34	0.35	0.37
Max part size (mm) mobilized at bankfull		28.9		34.2						31.7		33.0					
Stream Power (Capacity) W/m^2										---		---		---		---	
Additional Reach Parameters																	
Drainage Area (SM)		0.18		0.33		0.30		0.29		0.18		0.33		0.18		0.33	
Watershed Impervious Cover Estimate (%)		5%		3%		---		---		5%		3%		5%		3%	
Rosgen Classification		E5		E5		E4		E4		C		C		C		C	
Bankfull Velocity (fps)		2.8	4.8	3.4	3.6	2.2	2.4	3.8		3.0		2.8		2.8	3.6	2.6	2.7
Bankfull Discharge (cfs)		19.6		19.3		25.3		40.0		19.0		29.0		19.0		29.0	
Q-NFF regression (2-yr)										43		67					
Q-USGS extrapolation (1.2-yr)	N/A									22		34					
Q-Mannings										4.8	8.0	6.9	11.0				
Valley Length (ft)		1,720		910		---		---		1,720		910		1,720		910	
Channel Thalweg Length (ft)		2,298		1,209		---		---		2,163		1,061		2,185		1,077	
Sinuosity		1.34		1.33		1.35		1.40		1.20	1.40	1.20	1.40	1.27		1.18	
Water Surface Slope $(ft/ft)^2$		0.0084		0.0075		---		---		0.0095		0.0113		0.0103		0.0078	
Bankfull Slope (ft/ft)		---		---		---		---		0.0129		0.0114		0.0102	0.0104	0.0077	0.0078

SC: Silt/Clay <0.062 mm diameter particles

(---): Data was not provided

N/A: Not Applicable

Table 10b. Baseline Stream Data Summary

Maney Farm Mitigation Project

DMS Project No. 96314

Monitoring Year 7 - 2022

UT1C and UT2B

		Pre-Restoration Condition				Reference Reach Data		Design				As-Built/Baseline			
Parameter	**Gage**	**UT1C**		**UT2B**		**UT to Varnals Creek**		**UT1C**		**UT2B**		**UT1C**		**UT2B**	
		Min	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**
Dimension and Substrate - Riffle															
Bankfull Width (ft)		4.1		2.6		9.3	10.5	8.1		4.0		9.8		5.5	
Floodprone Width (ft)		5.3		4.4		20	64	18	41	9	20	60		60	
Bankfull Mean Depth		0.5		0.4		1.1	1.2	0.6		0.4		0.5		0.4	
Bankfull Max Depth		0.8		0.5		1.5	1.7	0.9	1.2	0.5	0.7	0.7		0.7	
Bankfull Cross-Sectional Area (ft2)	N/A	2.1		1.1		10.3	12.3	5.2		1.5		4.9		2.3	
Width/Depth Ratio		8.1		6.2		8.1	9.3	13.0		11.0		19.4		13.2	
Entrenchment Ratio		1.3		1.7		1.9	6.1	2.2	5.0	2.2	5.0	6.1		10.8	
Bank Height Ratio		2.3		5.4		0.9	1.0	0.9	1.1			1.0		1.0	
D50 (mm)		---		---								3.3		0.1	
Riffle Length (ft)						---		---		---		8	22	11	19
Riffle Slope (ft/ft)		---		---		0.0240	0.0570	0.0086	0.0355	0.0083	0.0342	0.0011	0.0110	0.0073	0.0106
Pool Length (ft)	N/A					---		---		---		6	22	13	19
Pool Max Depth (ft)		---		---		2.5	2.6	0.9	1.8	0.6	1.2	2.0		1.5	
Pool Spacing (ft)		34	44	---		8	82	2	44	1	24	22	38	22	
Pool Volume (ft^3)															
Channel Beltwidth (ft)		10	18	1	2	15	45	13	72	6	36	16	26	---	
Radius of Curvature (ft)		9	16	1	3	8	47	11	47	5	23	9	15	13	25
Rc:Bankfull Width (ft/ft)	N/A	2.2	3.9	0.4	1.2	0.6	3.2	1.3	5.8	1.3	5.8	1.0	1.6	1.8	3.3
Meander Length (ft)		54	63	12		---		24	133	12	66	55	73	---	
Meander Width Ratio		2.4	4.4	0.4	0.8	1.0	3.0	1.6	8.9	1.6	8.9	1.7	2.8	---	
Ri%/Ru%/P%/G%/S%															
SC%/Sa%/G%/C%/B%/Be%												24/17/58/1/0/0		47/13/37/3/0/0	
d16/d35/d50/d84/d95/d100	N/A	---		---		---						SC/0.21/3.3/22.6/34.8/128		SC/SC/0.1/22.6/50.6/128	
Reach Shear Stress (Competency) lb/ft^2		---		---				---		---		0.15		0.23	
Max part size (mm) mobilized at bankfull		---		---				---		---					
Stream Power (Capacity) W/m^2								---		---		---		---	
Additional Reach Parameters															
Drainage Area (SM)		0.03		0.02		0.41		0.03		0.02		0.03		0.02	
Watershed Impervious Cover Estimate (%)		13%		0%		---		13%		0%		13%		0%	
Rosgen Classification		B5		B5		E4		C		C		C		C	
Bankfull Velocity (fps)		3.0		3.4		4.4	5.2	1.1		3.1		1.1		1.6	
Bankfull Discharge (cfs)		---		---		54.0		5.6		3.6		5.6		3.6	
Q-NFF regression (2-yr)								13		8					
Q-USGS extrapolation (1.2-yr)	N/A							6		4					
Q-Mannings								4.1	5.7	6.9	7.3				
Valley Length (ft)		142		42		---		220		62		231		67	
Channel Thalweg Length (ft)		166		44		---		260		74		256		70	
Sinuosity		1.17		1.04		1.20		1.10	1.25	1.10	1.25	1.11		1.04	
Water Surface Slope $(ft/ft)^2$		---		---		---		---		---		0.0053		0.0101	
Bankfull Slope (ft/ft)		---		---		---		0.0083		0.0080		0.0078	0.0080	0.0070	0.0084

SC: Silt/Clay <0.062 mm diameter particles

(---): Data was not provided

N/A: Not Applicable

Table 10c. Baseline Stream Data Summary

Maney Farm Mitigation Project

DMS Project No. 96314

Monitoring Year 7 - 2022

UT3B and UT4B

		Pre-Restoration Condition				Reference Reach Data		Design				As-Built/Baseline			
Parameter	**Gage**	**UT3B**		**UT4B**		**UT to Varnals Creek**		**UT3B**		**UT4B**		**UT3B**		**UT4B**	
		Min	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**
Dimension and Substrate - Riffle															
Bankfull Width (ft)		2.2		4.4		9.3	10.5	4.0		5.0		4.2		5.7	
Floodprone Width (ft)		11.4		23.3		20	64	9	20	11	25	60		25	
Bankfull Mean Depth		0.5		0.4		1.1	1.2	0.4		0.4		0.4		0.6	
Bankfull Max Depth		0.8		1.0		1.5	1.7	0.5	0.7	0.5	0.7	0.6		0.9	
Bankfull Cross-Sectional Area (ft2)	N/A	1.1		1.9		10.3	12.3	1.5		1.9		1.6		3.6	
Width/Depth Ratio		4.6		9.9		8.1	9.3	11.0		13.0		11.6		9.1	
Entrenchment Ratio		5.1		5.3		1.9	6.1	2.2	5.0	2.2	5.0	14.1		4.3	
Bank Height Ratio		2.2		1.4		0.9	1.0	0.9	1.1	0.9	1.1	1.0		1.0	
D50 (mm)		---		---								5.6		4.0	
Riffle Length (ft)						---		---		---		12	23	8	19
Riffle Slope (ft/ft)		---		---		0.0240	0.0570	0.0191	0.0786	0.0088	0.0312	0.0112	0.0419	0.0035	0.0113
Pool Length (ft)						---		---		---		10	22	10	21
Pool Max Depth (ft)	N/A	---		---		2.5	2.6	0.6	1.2	0.6	1.2	1.3		1.4	
Pool Spacing (ft)		56	157	---		8	82	1	24	3	31	30	36	31	
Pool Volume (ft^3)															
Channel Beltwidth (ft)		---		2	3	15	45	6	36	8	45	12	23	19	23
Radius of Curvature (ft)		---		2	3	8	47	5	23	7	29	11	47	10	20
Rc:Bankfull Width (ft/ft)	N/A	---		0.5	0.7	0.6	3.2	1.3	5.8	1.3	5.8	1.7	7.6	1.8	3.6
Meander Length (ft)		---		11	22	---		12	66	15	82	55	68	59	69
Meander Width Ratio		---		0.5	0.7	1.0	3.0	1.6	8.9	1.6	8.9	1.9	3.7	3.3	4.1
Ri%/Ru%/P%/G%/S%															
SC%/Sa%/G%/C%/B%/Be%												32/14/51/3/0/0		22/20/57/1/0/0	
d16/d35/d50/d84/d95/d100	N/A	---		---		---						SC/0.08/5.6/33.4/56.9/90		SC/0.25/4.0/20.1/45/90	
Reach Shear Stress (Competency) lb/ft^2		---		---				---		---		0.33		0.14	
Max part size (mm) mobilized at bankfull		---		---				---		---					
Stream Power (Capacity) W/m^2								---		---		---		---	
Additional Reach Parameters															
Drainage Area (SM)		0.02		0.03		0.41		0.02		0.03		0.02		0.03	
Watershed Impervious Cover Estimate (%)		0%		0%		---		0%		0%		0%		0%	
Rosgen Classification		E5b		E5b		E4		C		C		C		E	
Bankfull Velocity (fps)		3.2		3.0		4.4	5.2	3.3		3.3		2.2		1.5	
Bankfull Discharge (cfs)		---		---		54.0		3.5		5.3		3.5		5.3	
Q-NFF regression (2-yr)								8		12					
Q-USGS extrapolation (1.2-yr)	N/A							4		6					
Q-Mannings								7.8	12.0	4.1	5.5				
Valley Length (ft)		84		38		---		138		117		148		124	
Channel Thalweg Length (ft)		84		40		---		163		138		155		212	
Sinuosity		1.00		1.06		1.20		1.10	1.25	1.10	1.25	1.05		1.71	
Water Surface Slope $(ft/ft)^2$		---		---		---		---		---		0.0164		0.0043	
Bankfull Slope (ft/ft)		---		---		---		0.0170		0.0073		0.0127	0.0161	0.0059	0.0067

SC: Silt/Clay <0.062 mm diameter particles

(---): Data was not provided

N/A: Not Applicable

Table 10d. Baseline Stream Data Summary

Maney Farm Mitigation Project

DMS Project No. 96314

Monitoring Year 7 - 2022

UT5

		Pre-Restoration		Reference Reach Data				Design		As-Built/Baseline	
Parameter	**Gage**	**UT5**		**Agony Acres UT1A-Reach 1**		**UT to Cane Creek**		**UT5**		**UT5**	
		Min	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**
Dimension and Substrate - Riffle											
Bankfull Width (ft)	N/A	5.7		9.1	10.4	11.5	12.3	7.2		8.1	
Floodprone Width (ft)		40		>36		31		16	36	100	
Bankfull Mean Depth		0.6		1.0	1.2	0.8	1.0	0.6		0.5	
Bankfull Max Depth		1.2		1.8		1.2	1.6	0.8	1.0	0.9	
Bankfull Cross-Sectional Area (ft2)		3.5		10.7	11.3	8.9	12.2	4.1		4.0	
Width/Depth Ratio		9.1		7.3	10.1	12.3	14.4	13.0		16.6	
Entrenchment Ratio		7.1		>3.9		2.5	2.7	2.2	5.0	12.3	
Bank Height Ratio		1.4		---		---		0.9	1.1	1.0	
D50 (mm)		Silt/Clay								5.9	
Riffle Length (ft)	N/A			---		---		---		5	21
Riffle Slope (ft/ft)		0.0028	0.0638	---		0.0188	0.0704	0.0128	0.0541	0.0081	0.0374
Pool Length (ft)				---		---		---		18	42
Pool Max Depth (ft)		1.4		2.5		1.8	2.3	0.9	1.8	1.7	
Pool Spacing (ft)		9	197	---		27	73	2	44	31	51
Pool Volume (ft^3)											
Pattern											
Channel Beltwidth (ft)	N/A	3	18	21	93	102		12	64	22	40
Radius of Curvature (ft)		3	14	14	60	23	38	13	42	10	37
Rc:Bankfull Width (ft/ft)		0.5	2.5	1.5	5.8	2.0	3.1	1.3	5.8	1.0	3.7
Meander Length (ft)		16	58	---		---		22	118	63	97
Meander Width Ratio		0.5	3.2	2.3	8.9	8.3	8.9	1.6	8.9	2.3	4.0
Substrate, Bed and Transport Parameters											
Ri%/Ru%/P%/G%/S%	N/A										
SC%/Sa%/G%/C%/B%/Be%										34/11/54/1/0/0	
d16/d35/d50/d84/d95/d100		SC/SC/SC/8.9/22.6/64		---		---				SC/0.08/5.9/29.8/53.7/90	
Reach Shear Stress (Competency) lb/ft^2		0.19						0.37		0.31	
Max part size (mm) mobilized at bankfull		14.0						27.5			
Stream Power (Capacity) W/m^2								---		---	
Additional Reach Parameters											
Drainage Area (SM)	N/A	0.12		0.30		0.29		0.12		0.12	
Watershed Impervious Cover Estimate (%)		0%		---		---		0%		0%	
Rosgen Classification		E5		E4		E4		C		C	
Bankfull Velocity (fps)		2.1		2.2	2.4	3.8		2.9		3.5	
Bankfull Discharge (cfs)		7.4		25.3		40.0		14.0		14.0	
Q-NFF regression (2-yr)								32			
Q-USGS extrapolation (1.2-yr)								16			
Q-Mannings								5.4	11.0		
Valley Length (ft)		580		---		---		520		515	
Channel Thalweg Length (ft)		778		---		---		677		680	
Sinuosity		1.34		1.35		1.40		1.20	1.40	1.3	
Water Surface Slope $(ft/ft)^2$		0.0111		---		---		---		0.0114	
Bankfull Slope (ft/ft)		---		---		---		0.0138		0.0110	0.0114

SC: Silt/Clay <0.062 mm diameter particles

(---): Data was not provided

N/A: Not Applicable

Table 11a. Morphology and Hydraulic Summary (Dimensional Parameters - Cross-Section)

Maney Farm Mitigation Project

DMS Project No. 96314

Monitoring Year 7 - 2022

	Cross-Section 1, UTSF Reach 1 (Riffle)						Cross-Section 2, UTSF Reach 1 (Pool)						Cross-Section 3, UTSF Reach 1 (Riffle)					
Dimension and Substrate	**Base**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**
Bankfull Elevation (ft)	567.0	567.0	567.0	567.0	567.0	567.0	566.4	566.4	566.4	566.5	566.3	566.4	556.5	556.5	556.5	556.7	556.5	556.5
Low Bank Elevation (ft)	567.0	567.0	567.0	567.0	567.0	567.0	566.4	566.4	566.4	566.5	566.3	566.4	556.5	556.5	556.5	556.5	556.5	556.5
Bankfull Width (ft)	8.8	8.7	8.6	8.6	8.4	8.7	11.1	10.8	11.5	11.9	9.1	10.3	9.3	9.0	9.0	9.5	9.5	8.9
Floodprone Width (ft)	85	85	85	85	85	85	---	---	---	---	---	---	85	85	85	85	85	85
Bankfull Mean Depth (ft)	0.6	0.7	0.6	0.6	0.6	0.7	1.2	1.3	1.2	1.1	1.6	1.3	0.7	0.7	0.7	0.7	0.6	0.7
Bankfull Max Depth (ft)	1.0	1.1	1.1	1.1	1.2	1.2	2.6	2.6	2.3	2.4	2.3	2.6	1.2	1.1	1.1	1.3	1.1	1.1
Bankfull Cross-Sectional Area (ft^2)	5.3	5.7	5.4	5.3	5.2	5.7	13.6	14.0	13.6	13.6	14.2	13.8	6.8	6.2	6.2	6.8	6.0	6.1
Bankfull Width/Depth Ratio	14.6	13.3	13.5	13.8	13.5	13.2	9.1	8.3	9.7	10.4	5.9	7.8	12.8	13.1	13.0	13.3	15.1	13.0
Entrenchment Ratio[1]	9.7	9.8	9.9	9.9	10.1	9.8	---	---	---	---	---	---	9.1	9.4	9.4	8.9	8.9	9.6
Bankfull Bank Height Ratio[2]	1.0	1.0	1.0	1.0	<1.0	1.0	---	---	---	---	---	---	1.0	1.0	1.0	<1.0	<1.0	1.0
	Cross-Section 4, UTSF Reach 1 (Pool)						**Cross-Section 5, UTSF Reach 2 (Riffle)**						**Cross-Section 6, UTSF Reach 2 (Riffle)**					
Dimension and Substrate	**Base**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**
Bankfull Elevation (ft)	556.0	556.0	556.0	556.2	556.3	556.4	549.9	549.9	549.9	549.9	549.8	549.9	547.9	547.9	547.9	547.9	547.8	547.8
Low Bank Elevation (ft)	556.0	556.0	556.0	556.4	556.3	556.4	549.9	549.9	549.9	549.7	549.8	549.9	547.9	547.9	547.9	547.7	547.8	547.8
Bankfull Width (ft)	14.8	13.9	14.1	15.6	16.0	16.9	11.6	12.3	12.2	13.6	11.3	10.9	13.7	13.9	13.9	15.3	12.6	13.2
Floodprone Width (ft)	---	---	---	---	---	---	150	150	150	150	150	150	150	150	150	150	150	150
Bankfull Mean Depth (ft)	1.2	1.1	1.2	1.1	1.3	1.3	0.9	0.9	0.9	0.8	0.8	0.9	0.8	0.7	0.7	0.7	0.8	0.8
Bankfull Max Depth (ft)	2.4	2.3	2.5	2.5	2.6	2.7	1.4	1.4	1.4	1.5	1.4	1.5	1.3	1.3	1.3	1.4	1.5	1.5
Bankfull Cross-Sectional Area (ft^2)	17.5	15.7	16.3	17.5	20.3	21.2	10.9	11.0	10.5	10.9	8.5	9.4	10.9	10.2	10.4	10.9	9.5	10.2
Bankfull Width/Depth Ratio	12.6	12.2	12.1	13.9	12.6	13.5	12.4	13.7	14.3	16.9	14.9	12.5	17.3	18.9	18.7	21.5	16.8	17.2
Entrenchment Ratio[1]	---	---	---	---	---	---	12.9	12.2	12.3	11.0	13.3	13.8	10.9	10.8	10.8	9.8	11.9	11.3
Bankfull Bank Height Ratio[2]	---	---	---	---	---	---	1.0	1.0	1.0	<1.0	<1.0	<1.0	1.0	1.0	1.0	<1.0	<1.0	1.0
	Cross-Section 7, UTSF Reach 2 (Pool)						**Cross-Section 8, UT1C (Pool)**						**Cross-Section 9, UT1C (Riffle)**					
Dimension and Substrate	**Base**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**
Bankfull Elevation (ft)	547.0	547.0	547.0	547.0	547.1	547.1	572.5	572.5	572.5	572.7	572.5	572.6	572.4	572.4	572.4	572.5	572.5	572.5
Low Bank Elevation (ft)	547.0	547.0	547.0	547.3	547.1	547.1	572.5	572.5	572.5	572.7	572.5	572.6	572.4	572.4	572.4	572.5	572.5	572.5
Bankfull Width (ft)	12.3	12.0	12.1	12.4	13.7	13.8	7.6	6.6	7.0	6.3	5.0	5.9	9.8	9.8	9.9	10.7	9.7	9.3
Floodprone Width (ft)	---	---	---	---	---	---	---	---	---	---	---	---	60	60	60	60	60	60
Bankfull Mean Depth (ft)	1.2	1.2	1.2	1.2	1.2	1.2	1.0	0.8	0.8	0.7	1.2	1.0	0.5	0.5	0.5	0.5	0.5	0.5
Bankfull Max Depth (ft)	2.1	2.1	2.2	2.2	2.3	2.2	2.0	1.6	1.6	1.9	1.7	1.7	0.7	0.7	0.8	0.9	0.9	0.9
Bankfull Cross-Sectional Area (ft^2)	14.7	14.0	14.5	14.7	17.0	16.3	7.7	5.5	5.2	7.7	5.8	6.1	4.9	4.6	4.5	4.9	4.7	4.5
Bankfull Width/Depth Ratio	10.3	10.3	10.0	10.4	11.1	11.7	7.6	7.9	9.3	13.9	4.3	5.7	19.4	20.7	21.8	23.2	19.6	19.0
Entrenchment Ratio[1]	---	---	---	---	---	---	---	---	---	---	---	---	6.1	6.1	6.1	5.6	6.2	6.5
Bankfull Bank Height Ratio[2]	---	---	---	---	---	---	---	---	---	---	---	---	1.0	1.1	1.0	<1.0	<1.0	<1.0

[1]Entrenchment Ratio is calculated using the method specified in the Industry Technical Workgroup Memorandum

[2]Bank Height Ratio is calculated using the method specified in the Industry Technical Workgroup Memorandum

Table 11b. Morphology and Hydraulic Summary (Dimensional Parameters - Cross-Section)
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

	Cross-Section 10, UT2B (Pool)						Cross-Section 11, UT2B (Riffle)						Cross-Section 12, UT3B (Pool)					
Dimension and Substrate	**Base**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**
Bankfull Elevation (ft)	564.2	564.2	564.2	564.4	564.2	564.3	563.9	563.9	563.9	563.9	563.9	564.0	563.0	563.0	563.0	563.2	563.1	563.1
Low Bank Elevation (ft)	564.2	564.2	564.2	564.2	564.2	564.3	563.9	563.9	563.9	563.9	563.9	564.0	563.0	563.0	563.0	563.1	563.1	563.1
Bankfull Width (ft)	10.7	10.5	10.7	13.2	9.4	11.3	5.5	6.5	6.8	6.7	5.5	5.1	6.2	6.3	7.0	10.9	6.9	6.3
Floodprone Width (ft)	---	---	---	---	---	---	60	60	60	60	60	60	---	---	---	---	---	---
Bankfull Mean Depth (ft)	0.8	0.6	0.6	0.7	0.4	0.4	0.4	0.4	0.4	0.3	0.2	0.3	0.6	0.5	0.5	0.3	0.5	0.5
Bankfull Max Depth (ft)	1.5	1.0	1.0	1.1	0.8	0.9	0.7	0.7	0.7	0.6	0.6	0.6	1.3	1.0	1.0	1.0	1.2	1.1
Bankfull Cross-Sectional Area (ft^2)	8.6	6.3	6.3	8.6	3.4	4.3	2.3	2.7	2.8	2.3	1.4	1.4	3.8	3.0	3.2	3.8	3.4	3.1
Bankfull Width/Depth Ratio	13.3	17.4	17.9	20.2	25.8	29.5	13.2	15.7	16.5	19.3	22.6	18.8	10.1	13.4	15.5	31.2	14.3	12.6
Entrenchment Ratio[1]	---	---	---	---	---	---	10.8	9.3	8.8	9.0	10.8	11.7	---	---	---	---	---	---
Bankfull Bank Height Ratio[2]	---	---	---	---	---	---	1.0	1.0	1.0	1.1	<1.0	<1.0	---	---	---	---	---	---

	Cross-Section 13[3], UT3B (Riffle)						Cross-Section 14, UT4B (Riffle)						Cross-Section 15, UT4B (Pool)					
Dimension and Substrate	**Base**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**
Bankfull Elevation (ft)	563.0	563.0	563.0	563.2	563.1	563.1	553.8	553.8	553.8	554.0	554.0	554.1	553.6	553.6	553.6	553.9	553.8	553.8
Low Bank Elevation (ft)	563.0	563.1	563.1	563.1	563.1	563.1	553.8	553.8	553.8	553.8	554.0	554.1	553.6	553.6	553.6	553.7	553.8	553.8
Bankfull Width (ft)	8.7	4.7	4.6	6.6	5.9	5.2	5.7	6.4	6.7	9.9	5.3	4.3	6.3	5.7	5.5	6.5	4.5	5.0
Floodprone Width (ft)	60	60	60	60	60	60	25	25	25	25	25	25	---	---	---	---	---	---
Bankfull Mean Depth (ft)	0.3	0.4	0.4	0.4	0.4	0.4	0.6	0.4	0.4	0.4	0.4	0.4	0.7	0.5	0.6	0.7	0.5	0.5
Bankfull Max Depth (ft)	0.8	0.7	0.6	0.8	0.9	0.8	0.9	0.6	0.6	0.8	0.8	0.9	1.4	1.0	1.1	1.2	0.9	0.9
Bankfull Cross-Sectional Area (ft^2)	2.7	1.9	1.7	2.7	2.3	2.1	3.6	2.4	2.4	3.6	2.2	1.8	4.5	3.0	3.2	4.5	2.0	2.3
Bankfull Width/Depth Ratio	11.6	11.5	12.4	16.5	15.3	12.8	9.1	17.3	19.2	27.4	12.3	10.2	8.7	11.0	9.4	9.8	9.9	10.7
Entrenchment Ratio[1]	14.1	12.8	13.0	9.1	10.2	11.5	4.3	3.9	3.7	2.5	4.8	5.8	---	---	---	---	---	---
Bankfull Bank Height Ratio[2]	1.0	1.1	1.1	<1.0	<1.0	1.1	1.0	1.0	1.0	<1.0	<1.0	<1.0	---	---	---	---	---	---

	Cross-Section 16, UT5 (Pool)						Cross-Section 17, UT5 (Riffle)					
Dimension and Substrate	**Base**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**
Bankfull Elevation (ft)	552.6	552.6	552.6	552.7	552.7	552.9	552.5	552.5	552.5	552.6	552.7	552.5
Low Bank Elevation (ft)	552.6	552.6	552.6	552.8	552.7	552.9	552.5	552.5	552.5	552.4	552.7	552.5
Bankfull Width (ft)	8.0	7.6	7.3	8.1	6.4	8.1	8.1	8.1	8.2	8.4	9.9	7.0
Floodprone Width (ft)	---	---	---	---	---	---	100	100	100	100	100	100
Bankfull Mean Depth (ft)	1.0	1.1	1.1	1.0	1.3	1.3	0.5	0.4	0.5	0.5	0.5	0.5
Bankfull Max Depth (ft)	1.7	1.7	1.7	1.8	1.8	2.0	0.9	0.8	0.8	0.9	1.2	1.1
Bankfull Cross-Sectional Area (ft^2)	7.9	8.0	7.9	7.9	8.5	10.5	4.0	3.5	3.8	4.0	4.7	3.4
Bankfull Width/Depth Ratio	8.0	7.2	6.8	8.3	4.8	6.3	16.6	18.7	17.8	17.7	21.0	14.5
Entrenchment Ratio[1]	---	---	---	---	---	---	12.3	12.4	12.2	11.9	10.1	14.3
Bankfull Bank Height Ratio[2]	---	---	---	---	---	---	1.0	1.0	1.0	<1.0	1.2	1.0

[1]Entrenchment Ratio is calculated using the method specified in the Industry Technical Workgroup Memorandum

[2]Bank Height Ratio is calculated using the method specified in the Industry Technical Workgroup Memorandum

[3] Alternative Bank Height Ratio calculation method applied due to insufficient MY0 data

Table 12a. Monitoring Data - Stream Reach Data Summary

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

UT South Fork Reach 1

Parameter	As-Built/Baseline		MY1		MY2		MY3		MY5		MY7	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Dimension and Substrate - Riffle												
Bankfull Width (ft)	8.8	9.3	8.7	9.0	8.6	9.0	8.6	9.5	8.4	9.5	8.7	8.9
Floodprone Width (ft)	85		85		85		85		85		85	
Bankfull Mean Depth	0.6	0.7	0.7		0.6	0.7	0.6	0.7	0.6		0.7	
Bankfull Max Depth	1.0	1.2	1.1		1.1		1.1	1.3	1.1	1.2	1.1	
Bankfull Cross-Sectional Area (ft^2)	5.3	6.8	5.7	6.2	5.4	6.2	5.3	6.8	5.2	6.0	5.7	6.1
Width/Depth Ratio	12.8	14.6	13.1	13.3	13.0	13.5	13.3	13.8	13.5	15.1	13.0	13.2
Entrenchment Ratio	9.1	9.7	9.4	9.8	9.4	9.9	8.9	9.9	8.9	10.1	9.6	9.8
Bank Height Ratio	1.0		1.0		1.0		<1.0	1.0	<1.0		1.0	
D50 (mm)	8.4		14.1		3.3		2.4		5.6		*	
Profile												
Riffle Length (ft)	9	50										
Riffle Slope (ft/ft)	0.0058	0.0432										
Pool Length (ft)	12	47										
Pool Max Depth (ft)	2.4	2.6										
Pool Spacing (ft)	29	85										
Pool Volume (ft^3)												
Pattern												
Channel Beltwidth (ft)	24	56										
Radius of Curvature (ft)	9	36										
Rc:Bankfull Width (ft/ft)	1.0	4.1										
Meander Wave Length (ft)	68	151										
Meander Width Ratio	2.7	6.5										
Additional Reach Parameters												
Rosgen Classification	C4											
Channel Thalweg Length (ft)	2,185											
Sinuosity (ft)	1.27											
Water Surface Slope (ft/ft)	0.0103											
Bankfull Slope (ft/ft)	0.0102	0.0104										
Ri%/Ru%/P%/G%/S%	---											
SC%/Sa%/G%/C%/B%/Be%	21/13/64/2/0/0		25/9/52/14/0/0		27/22/33/18/0/0		27/20/46/7/0/0		14/17/66/3/0/0		*	
d16/d35/d50/d84/d95/d100	SC/2.37/8.4/34.5/55/180		SC/2.4/14.1/60/107/256		SC/0.14/3.3/70/121/256		SC/0.16/2.4/34.8/73.4/128		0.07/2.5/5.6/22.6/55.6/90.0		*	
% of Reach with Eroding Banks	0%		0%		0%		0%		0%		0%	

(---): Data was not provided
*Pebble count data is no longer required per the September 29, 2021 Technical Work Group Meeting and is not included in this report.

Table 12b. Monitoring Data - Stream Reach Data Summary

Maney Farm Mitigation Project

DMS Project No. 96314

Monitoring Year 7 - 2022

UT South Fork Reach 2

Parameter	As-Built/Baseline		MY1		MY2		MY3		MY5		MY7	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Dimension and Substrate - Riffle												
Bankfull Width (ft)	12.7	13.7	12.3	13.9	12.2	13.9	13.6	15.3	11.3	12.6	10.9	13.2
Floodprone Width (ft)	150		150		150		150		150		150	
Bankfull Mean Depth	0.8	0.9	0.7	0.9	0.7	0.9	0.7	0.8	0.8		0.8	0.9
Bankfull Max Depth	1.3	1.4	1.3	1.4	1.3	1.4	1.4	1.5	1.4	1.5	1.5	
Bankfull Cross-Sectional Area (ft^2)	10.9	11.0	10.2	11.0	10.4	10.5	10.9		8.5	9.5	9.4	10.2
Width/Depth Ratio	14.5	17.3	13.7	18.9	14.3	18.7	16.9	21.5	14.9	16.8	12.5	17.2
Entrenchment Ratio	10.9	11.8	10.8	12.2	10.8	12.3	9.8	11.0	11.9	13.3	11.3	13.8
Bank Height Ratio	1.0		1.0		1.0		1.0		<1.0		<1.0	1.0
D50 (mm)	10.4		14.6		7.3		8.0		13.3		*	
Profile												
Riffle Length (ft)	9	40										
Riffle Slope (ft/ft)	0.0055	0.0326										
Pool Length (ft)	23	50										
Pool Max Depth (ft)	2.1											
Pool Spacing (ft)	45	78										
Pool Volume (ft^3)												
Pattern												
Channel Beltwidth (ft)	37	54										
Radius of Curvature (ft)	17	28										
Rc:Bankfull Width (ft/ft)	1.6	2.6										
Meander Wave Length (ft)	110	144										
Meander Width Ratio	3.4	5.0										
Additional Reach Parameters												
Rosgen Classification	C4											
Channel Thalweg Length (ft)	1,077											
Sinuosity (ft)	1.18											
Water Surface Slope (ft/ft)	0.0078											
Bankfull Slope (ft/ft)	0.0077	0.0078										
Ri%/Ru%/P%/G%/S%	---											
SC%/Sa%/G%/C%/B%/Be%	28/10/56/6/0/0		15/16/43/26/0/1		23/21/44/11/1/0		14/15/67/4/0/0		15/15/59/11/0/0		*	
d16/d35/d50/d84/d95/d100	SC/0.4/10.4/37.9/72.0 /180		0.13/4.7/15/85/124.0 /256		SC/0.3/7.3/53.7/90.0 /362		0.1/2.5/8/33/53.7 /128		0.14/3.06/13.3/58.0 /82.6/180		*	
% of Reach with Eroding Banks	0%		0%		0%		0%		0%		0%	

(---): Data was not provided

*Pebble count data is no longer required per the September 29, 2021 Technical Work Group Meeting and is not included in this report.

Table 12c. Monitoring Data - Stream Reach Data Summary

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

UT1C

Parameter	As-Built/Baseline		MY1		MY2		MY3		MY5		MY7	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Dimension and Substrate - Riffle												
Bankfull Width (ft)	9.8		9.8		9.9		10.7		9.7		9.3	
Floodprone Width (ft)	60		60		60		60		60		60	
Bankfull Mean Depth	0.5		0.5		0.5		0.5		0.5		0.5	
Bankfull Max Depth	0.7		0.7		0.8		0.9		0.9		0.9	
Bankfull Cross-Sectional Area (ft^2)	4.9		4.6		4.5		4.9		4.7		4.5	
Width/Depth Ratio	19.4		20.7		21.8		23.2		19.6		19.0	
Entrenchment Ratio	6.1		6.1		6.1		5.6		6.2		6.5	
Bank Height Ratio	1.0		1.1		1.0		<1.0		<1.0		<1.0	
D50 (mm)	3.3		12.9		8.9		5.3		4.8		*	
Profile												
Riffle Length (ft)	8	22										
Riffle Slope (ft/ft)	0.0011	0.0110										
Pool Length (ft)	6	22										
Pool Max Depth (ft)	2.0											
Pool Spacing (ft)	22	38										
Pool Volume (ft^3)												
Pattern												
Channel Beltwidth (ft)	16	26										
Radius of Curvature (ft)	9	15										
Rc:Bankfull Width (ft/ft)	1.0	1.6										
Meander Wave Length (ft)	55	73										
Meander Width Ratio	1.7	2.8										
Additional Reach Parameters												
Rosgen Classification	C4											
Channel Thalweg Length (ft)	256											
Sinuosity (ft)	1.11											
Water Surface Slope (ft/ft)	0.0053											
Bankfull Slope (ft/ft)	0.0078	0.0080										
Ri%/Ru%/P%/G%/S%	---											
SC%/Sa%/G%/C%/B%/Be%	24/17/58/1/0/0		15/10/67/8/0/0		27/10/47/16/0/0		29/13/55/3/0/0		13/22/61/4/0/0		*	
d16/d35/d50/d84/d95/d100	SC/0.21/3.3/22.6/35/128		0.15/5.1/12.9/41/79/180		SC/0.63/8.9/64/107/180		SC/0.19/5.3/35.4/56.9/128		0.2/2.0/4.8/27.8/60.4/180		*	
% of Reach with Eroding Banks	0%		0%		0%		0%		0%		0%	

(---): Data was not provided

*Pebble count data is no longer required per the September 29, 2021 Technical Work Group Meeting and is not included in this report.

Table 12d. Monitoring Data - Stream Reach Data Summary

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

UT2B

Parameter	As-Built/Baseline		MY1		MY2		MY3		MY5		MY7	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Dimension and Substrate - Riffle												
Bankfull Width (ft)	5.5		6.5		6.8		6.7		5.5		5.1	
Floodprone Width (ft)	60		60		60		60		60		60	
Bankfull Mean Depth	0.4		0.4		0.4		0.3		0.2		0.3	
Bankfull Max Depth	0.7		0.7		0.7		0.6		0.6		0.6	
Bankfull Cross-Sectional Area (ft^2)	2.3		2.7		2.8		2.3		1.4		1.4	
Width/Depth Ratio	13.2		15.7		16.5		19.3		22.6		18.8	
Entrenchment Ratio	10.8		9.3		8.8		9.0		10.8		11.7	
Bank Height Ratio	1.0		1.0		1.0		1.1		<1.0		<1.0	
D50 (mm)	0.1		0.2		0.2		SC		1.3		*	
Profile												
Riffle Length (ft)	11	19										
Riffle Slope (ft/ft)	0.0073	0.0106										
Pool Length (ft)	13	19										
Pool Max Depth (ft)	1.5											
Pool Spacing (ft)	22											
Pool Volume (ft^3)												
Pattern												
Channel Beltwidth (ft)	---											
Radius of Curvature (ft)	13	25										
Rc:Bankfull Width (ft/ft)	1.8	3.3										
Meander Wave Length (ft)	---											
Meander Width Ratio	---											
Additional Reach Parameters												
Rosgen Classification	C4											
Channel Thalweg Length (ft)	70											
Sinuosity (ft)	1.04											
Water Surface Slope (ft/ft)	0.0101											
Bankfull Slope (ft/ft)	0.0070	0.0084										
Ri%/Ru%/P%/G%/S%	---											
SC%/Sa%/G%/C%/B%/Be%	47/13/37/3/0/0		39/23/31/8/0/0		44/26/21/9/0/0		61/32/4/3/0/0		44/8/47/1/0/0		*	
d16/d35/d50/d84/d95/d100	SC/SC/0.1/22.6/50.6/128		SC/SC/0.2/33.9/81.9/180		SC/SC/0.2/36.3/95/128		SC/SC/SC/0.6/32/180		SC/SC/1.3/8.4/16.0/90.0		*	
% of Reach with Eroding Banks	0%		0%		0%		0%		0%		0%	

(---): Data was not provided

*Pebble count data is no longer required per the September 29, 2021 Technical Work Group Meeting and is not included in this report.

Table 12e. Monitoring Data - Stream Reach Data Summary

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

UT3B

Parameter	As-Built/Baseline		MY1		MY2		MY3		MY5		MY7	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Dimension and Substrate - Riffle												
Bankfull Width (ft)	4.2		3.9		3.4		6.6		5.9		5.2	
Floodprone Width (ft)	60		60		60		60		60		60	
Bankfull Mean Depth	0.4		0.3		0.3		0.4		0.4		0.4	
Bankfull Max Depth	0.6		0.6		0.4		0.8		0.9		0.8	
Bankfull Cross-Sectional Area (ft^2)	1.6		1.1		1.0		2.7		2.3		2.1	
Width/Depth Ratio	11.6		13.0		11.8		16.5		15.3		12.8	
Entrenchment Ratio	14.1		15.5		17.5		9.1		10.2		11.5	
Bank Height Ratio	1.0		1.2		1.3		<1.0		<1.0		1.1	
D50 (mm)	5.6		2.8		0.2		0.2		6.7		*	
Profile												
Riffle Length (ft)	12	23										
Riffle Slope (ft/ft)	0.0112	0.0419										
Pool Length (ft)	10	22										
Pool Max Depth (ft)	1.3											
Pool Spacing (ft)	30	36										
Pool Volume (ft^3)												
Pattern												
Channel Beltwidth (ft)	12	23										
Radius of Curvature (ft)	11	47										
Rc:Bankfull Width (ft/ft)	1.7	7.6										
Meander Wave Length (ft)	55	68										
Meander Width Ratio	1.9	3.7										
Additional Reach Parameters												
Rosgen Classification	C4											
Channel Thalweg Length (ft)	155											
Sinuosity (ft)	1.05											
Water Surface Slope (ft/ft)	0.0164											
Bankfull Slope (ft/ft)	0.0127	0.0161										
Ri%/Ru%/P%/G%/S%	---											
SC%/Sa%/G%/C%/B%/Be%	32/14/51/3/0/0		33/14/43/10/0/0		29/39/20/12/0/0		45/17/26/12/0/0		33/13/41/13/0/0		*	
d16/d35/d50/d84/d95/d100	SC/0.08/5.6/33.4/57/90		SC/0.2/2.8/41.3/85/180		SC/0.1/0.2/53.7/83/128		SC/SC/0.2/48.3/ 104.7/180		SC/0.1/6.7/49.1/107.3 /256		*	
% of Reach with Eroding Banks	0%		0%		0%		0%		0%		0%	

(---): Data was not provided

*Pebble count data is no longer required per the September 29, 2021 Technical Work Group Meeting and is not included in this report.

Table 12f. Monitoring Data - Stream Reach Data Summary

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

UT4B

Parameter	As-Built/Baseline		MY1		MY2		MY3		MY5		MY7	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Dimension and Substrate - Riffle												
Bankfull Width (ft)	5.7		6.4		6.7		9.9		5.3		4.3	
Floodprone Width (ft)	25		25		25		25		25		25	
Bankfull Mean Depth	0.6		0.4		0.4		0.4		0.4		0.4	
Bankfull Max Depth	0.9		0.6		0.6		0.8		0.8		0.9	
Bankfull Cross-Sectional Area (ft^2)	3.6		2.4		2.4		3.6		2.2		1.8	
Width/Depth Ratio	9.1		17.3		19.2		27.4		12.3		10.2	
Entrenchment Ratio	4.3		3.9		3.7		2.5		4.8		5.8	
Bank Height Ratio	1.0		1.0		1.0		1.0		<1.0		<1.0	
D50 (mm)	4.0		6.9		0.4		0.5		3.2		*	
Profile												
Riffle Length (ft)	8	19										
Riffle Slope (ft/ft)	0.0035	0.0113										
Pool Length (ft)	10	21										
Pool Max Depth (ft)	1.4											
Pool Spacing (ft)	31											
Pool Volume (ft^3)												
Pattern												
Channel Beltwidth (ft)	19	23										
Radius of Curvature (ft)	10	20										
Rc:Bankfull Width (ft/ft)	1.8	3.6										
Meander Wave Length (ft)	59	69										
Meander Width Ratio	3.3	4.1										
Additional Reach Parameters												
Rosgen Classification	C4											
Channel Thalweg Length (ft)	212											
Sinuosity (ft)	1.71											
Water Surface Slope (ft/ft)	0.0043											
Bankfull Slope (ft/ft)	0.0059	0.0067										
Ri%/Ru%/P%/G%/S%	---											
SC%/Sa%/G%/C%/B%/Be%	22/20/57/1/0/0		31/12/43/14/0/0		18/43/34/5/0/0		38/16/29/17/0/0		19/21/60/0/0/0		*	
d16/d35/d50/d84/d95/d100	SC/0.25/4.0/20.1/45/90		SC/0.19/6.9/59.2/90/180		SC/0.2/0.4/34.8/64/128		SC/SC/0.5/66/98.3/180		SC/1.2/3.2/17.1/26.2/45		*	
% of Reach with Eroding Banks	0%		0%		0%		0%		0%		0%	

(---): Data was not provided

*Pebble count data is no longer required per the September 29, 2021 Technical Work Group Meeting and is not included in this report.

Table 12g. Monitoring Data - Stream Reach Data Summary

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

UT5

Parameter	As-Built/Baseline		MY1		MY2		MY3		MY5		MY7	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Dimension and Substrate - Riffle												
Bankfull Width (ft)	8.1		8.1		8.1		8.4		9.9		7.0	
Floodprone Width (ft)	100		100		100		100		100		100	
Bankfull Mean Depth	0.5		0.4		0.5		0.5		0.5		0.5	
Bankfull Max Depth	0.9		0.8		0.8		0.9		1.2		1.1	
Bankfull Cross-Sectional Area (ft^2)	4.0		3.5		3.7		4.0		4.7		3.4	
Width/Depth Ratio	16.6		18.7		17.5		17.7		21.0		14.5	
Entrenchment Ratio	12.3		12.4		12.4		11.9		10.1		14.3	
Bank Height Ratio	1.0		1.0		1.0		<1.0		1.2		1.0	
D50 (mm)	5.9		19.0		4.7		0.7		3.2		*	
Profile												
Riffle Length (ft)	5	21										
Riffle Slope (ft/ft)	0.0081	0.0374										
Pool Length (ft)	18	42										
Pool Max Depth (ft)	1.7											
Pool Spacing (ft)	31	51										
Pool Volume (ft^3)												
Pattern												
Channel Beltwidth (ft)	22	40										
Radius of Curvature (ft)	10	37										
Rc:Bankfull Width (ft/ft)	1.0	3.7										
Meander Wave Length (ft)	63	97										
Meander Width Ratio	2.3	4.0										
Additional Reach Parameters												
Rosgen Classification	C4											
Channel Thalweg Length (ft)	680											
Sinuosity (ft)	1.32											
Water Surface Slope (ft/ft)	0.0114											
Bankfull Slope (ft/ft)	0.0110	0.0114										
Ri%/Ru%/P%/G%/S%	---											
SC%/Sa%/G%/C%/B%/Be%	34/11/54/1/0/0		30/10/46/14/0/0		31/16/40/13/0/0		34/22/25/8/0/0		27/19/48/6/0/0		*	
d16/d35/d50/d84/d95/d100	SC/0.08/5.9/29.8/54/90		SC/0.18/19/61/101/180		SC/0.17/4.7/57.8/87/180		SC/0.14/0.7/45/75.9/180		SC/0.2/3.2/33.9/71.7/128		*	
% of Reach with Eroding Banks	0%		0%		0%		0%		0%		0%	

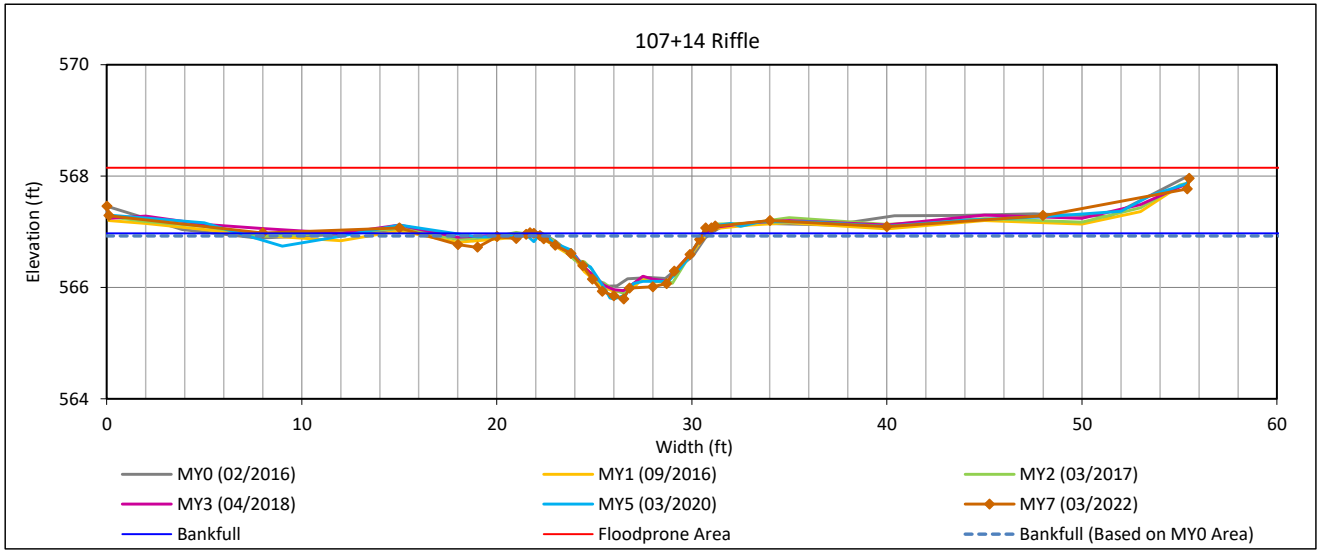
(---): Data was not provided

*Pebble count data is no longer required per the September 29, 2021 Technical Work Group Meeting and is not included in this report.

Cross-Section Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

Cross-Section 1, UTSF Reach 1



Bankfull Dimensions	
5.7	x-section area (ft.sq.)
8.7	width (ft)
0.7	mean depth (ft)
1.2	max depth (ft)
9.1	wetted perimeter (ft)
0.6	hydraulic radius (ft)
13.2	width-depth ratio
85.0	W flood prone area (ft)
9.8	entrenchment ratio
1.0	low bank height ratio

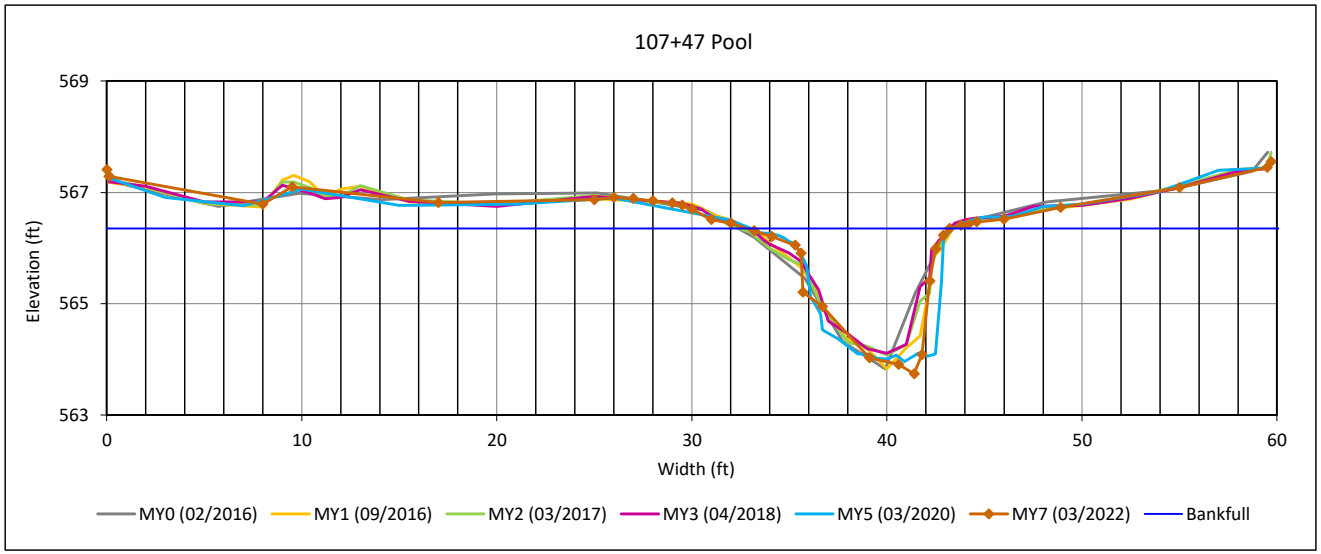
Survey Date: 03/2022
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

Cross-Section 2, UTSF Reach 1



Bankfull Dimensions	
13.8	x-section area (ft.sq.)
10.3	width (ft)
1.3	mean depth (ft)
2.6	max depth (ft)
12.8	wetted perimeter (ft)
1.1	hydraulic radius (ft)
7.8	width-depth ratio

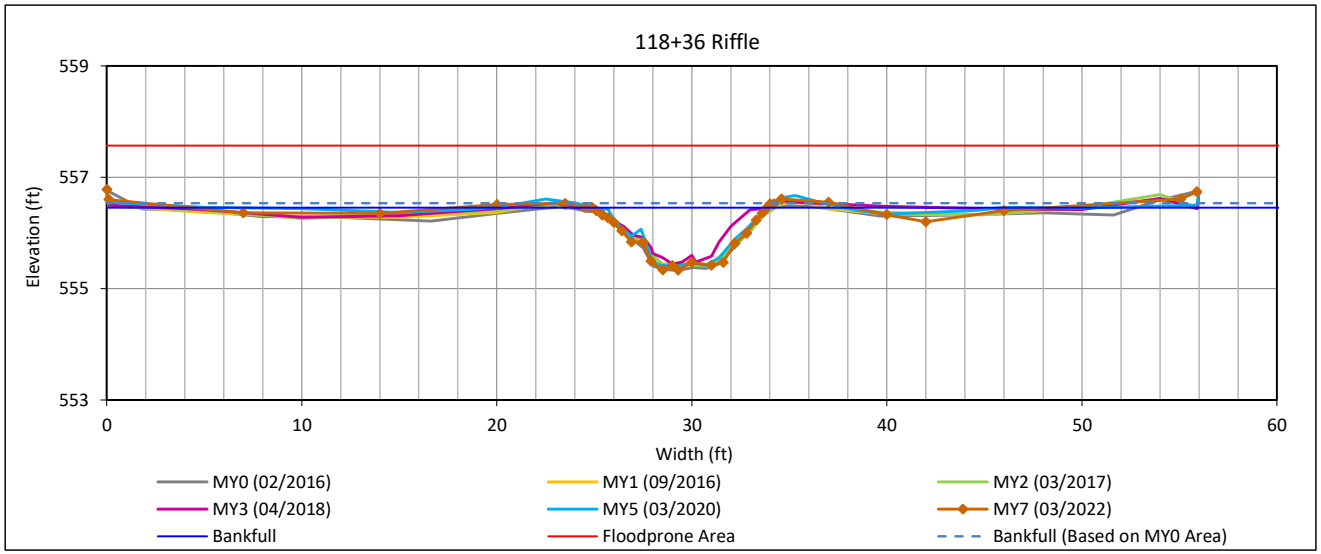
Survey Date: 03/2022
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

Cross-Section 3, UTSF Reach 1



Bankfull Dimensions	
6.1	x-section area (ft.sq.)
8.9	width (ft)
0.7	mean depth (ft)
1.1	max depth (ft)
9.4	wetted perimeter (ft)
0.6	hydraulic radius (ft)
13.0	width-depth ratio
85.0	W flood prone area (ft)
9.6	entrenchment ratio
1.0	low bank height ratio

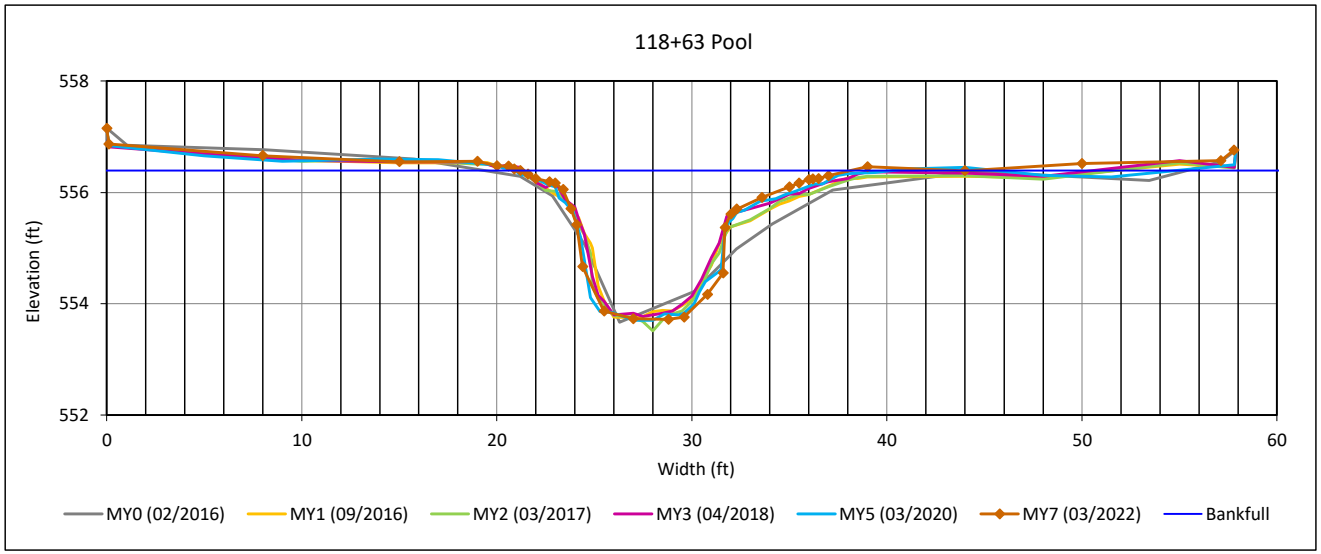
Survey Date: 03/2022
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

Cross-Section 4, UTSF Reach 1



Bankfull Dimensions	
21.2	x-section area (ft.sq.)
16.9	width (ft)
1.3	mean depth (ft)
2.7	max depth (ft)
19.0	wetted perimeter (ft)
1.1	hydraulic radius (ft)
13.5	width-depth ratio

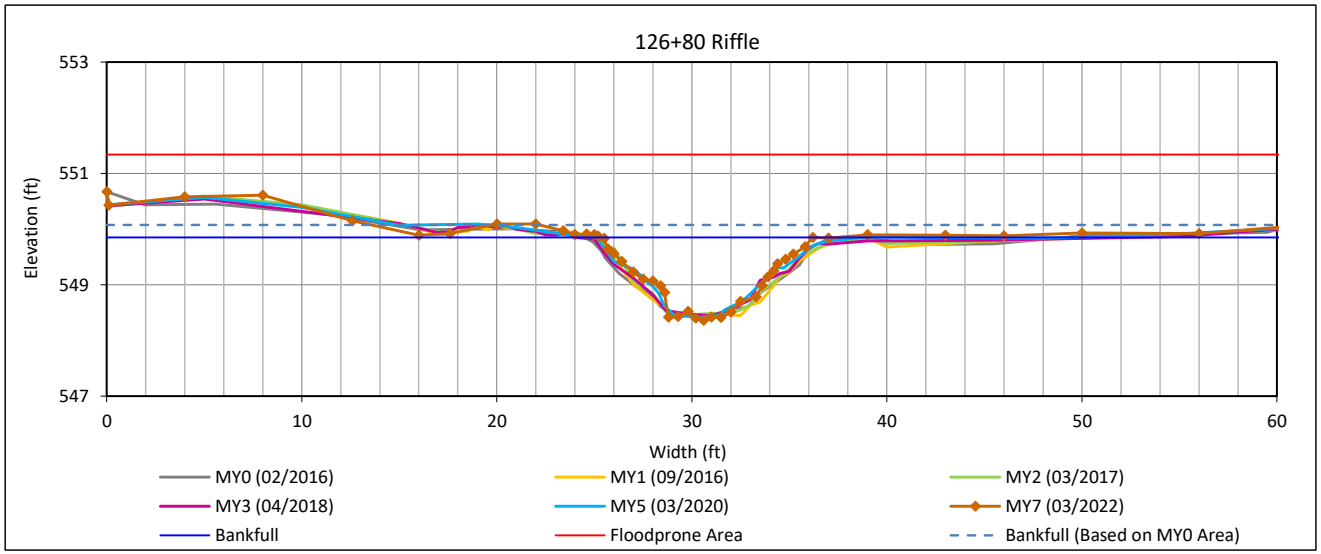
Survey Date: 03/2022
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

Cross-Section 5, UTSF Reach 2



Bankfull Dimensions	
9.4	x-section area (ft.sq.)
10.9	width (ft)
0.9	mean depth (ft)
1.5	max depth (ft)
11.6	wetted perimeter (ft)
0.8	hydraulic radius (ft)
12.5	width-depth ratio
150.0	W flood prone area (ft)
13.8	entrenchment ratio
< 1.0	low bank height ratio

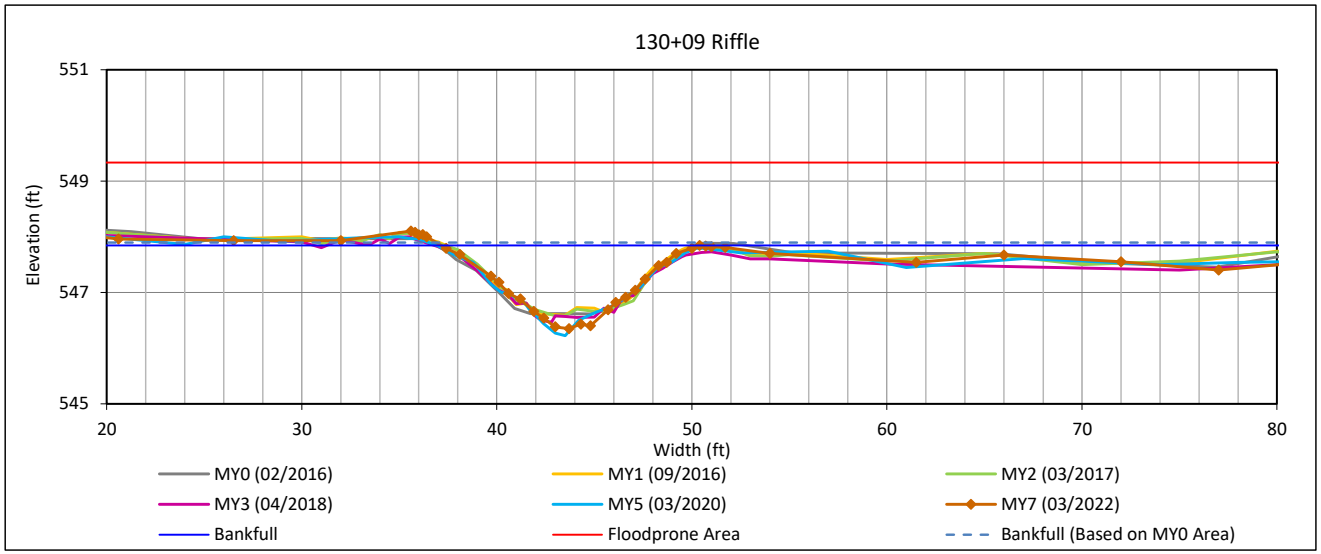
Survey Date: 03/2022
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

Cross-Section 6, UTSF Reach 2



Bankfull Dimensions	
10.2	x-section area (ft.sq.)
13.2	width (ft)
0.8	mean depth (ft)
1.5	max depth (ft)
13.6	wetted perimeter (ft)
0.7	hydraulic radius (ft)
17.2	width-depth ratio
150.0	W flood prone area (ft)
11.3	entrenchment ratio
1.0	low bank height ratio

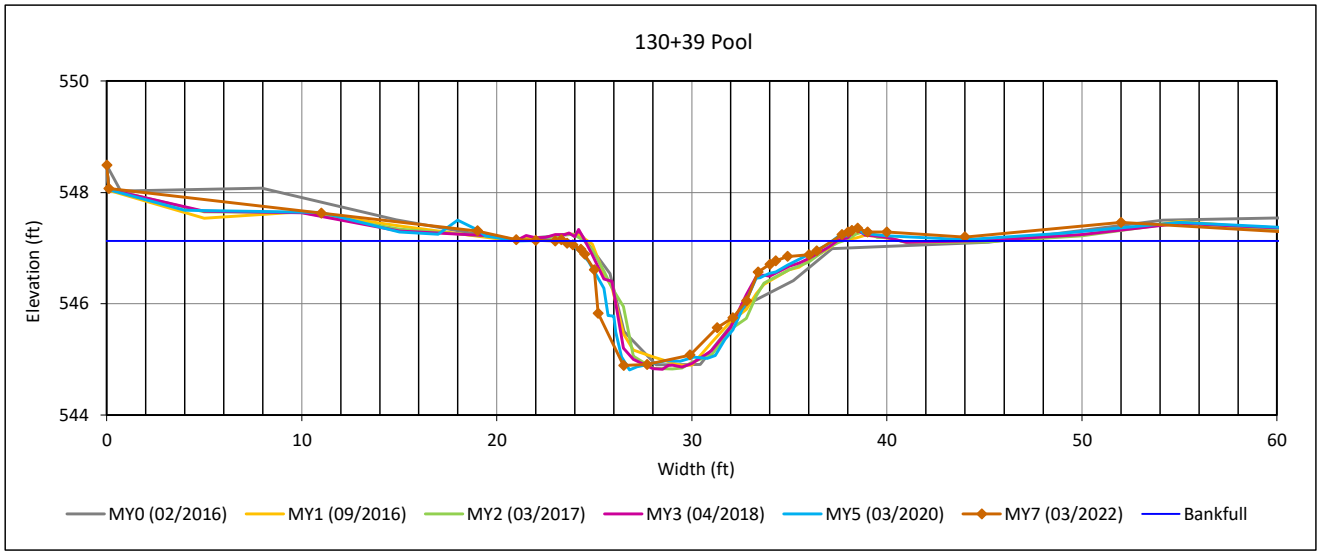
Survey Date: 03/2022
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

Cross-Section 7, UTSF Reach 2



Bankfull Dimensions	
16.3	x-section area (ft.sq.)
13.8	width (ft)
1.2	mean depth (ft)
2.2	max depth (ft)
15.2	wetted perimeter (ft)
1.1	hydraulic radius (ft)
11.7	width-depth ratio

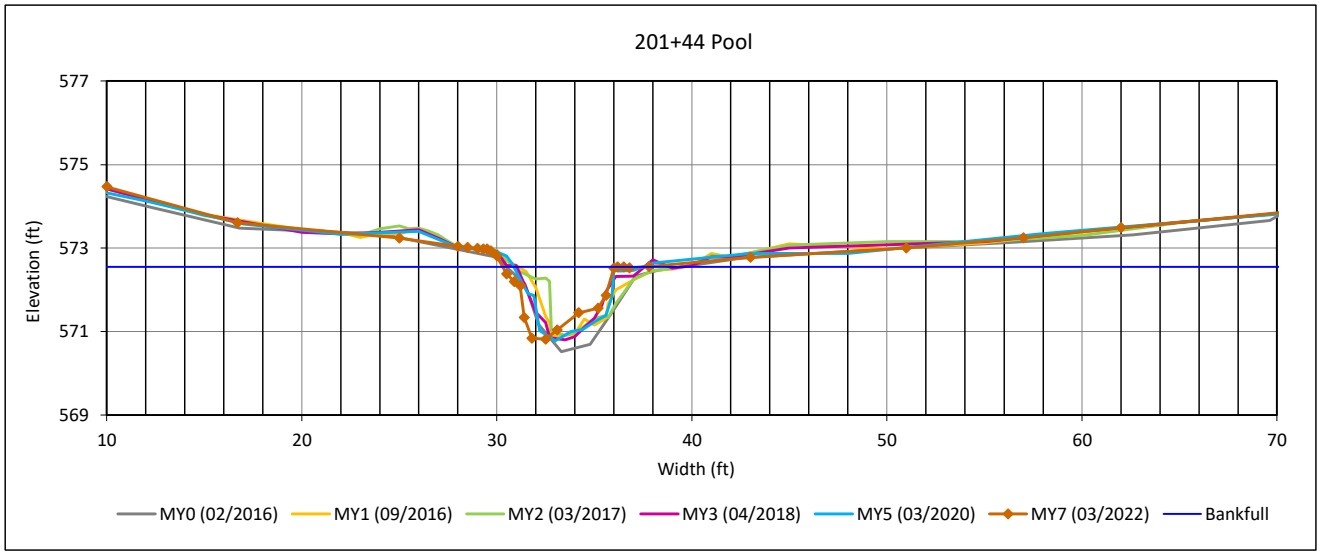
Survey Date: 03/2022
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

Cross-Section 8, UT1C



Bankfull Dimensions	
6.1	x-section area (ft.sq.)
5.9	width (ft)
1.0	mean depth (ft)
1.7	max depth (ft)
7.4	wetted perimeter (ft)
0.8	hydraulic radius (ft)
5.7	width-depth ratio

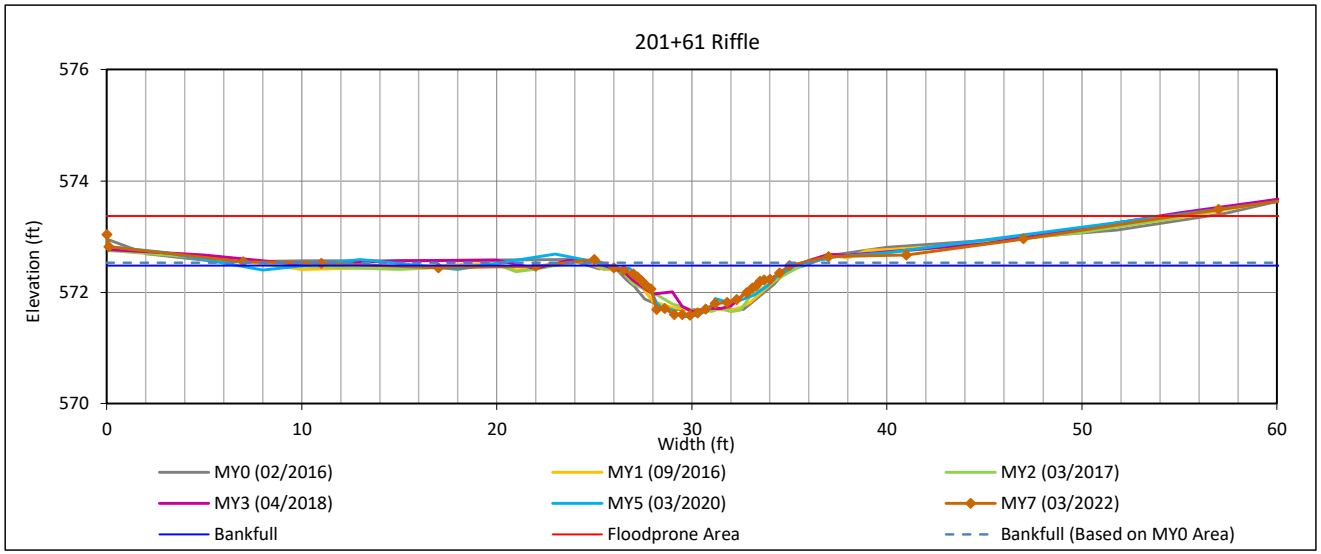
Survey Date: 03/2022
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

Cross-Section 9, UT1C



Bankfull Dimensions	
4.5	x-section area (ft.sq.)
9.3	width (ft)
0.5	mean depth (ft)
0.9	max depth (ft)
9.6	wetted perimeter (ft)
0.5	hydraulic radius (ft)
19.0	width-depth ratio
60.0	W flood prone area (ft)
6.5	entrenchment ratio
<1.0	low bank height ratio

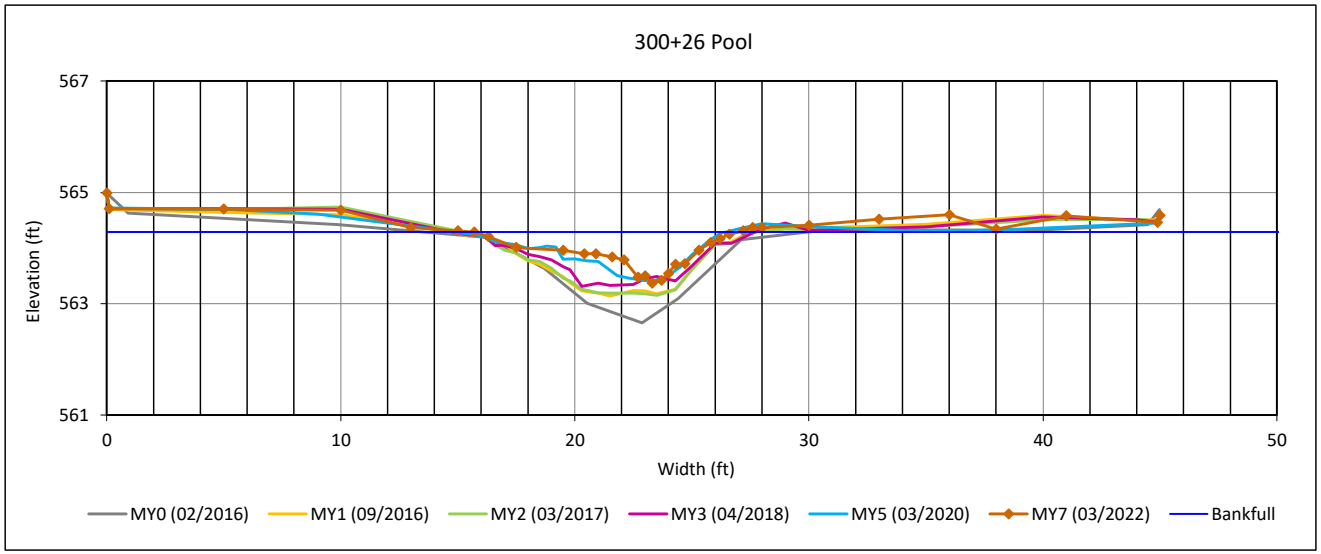
Survey Date: 03/2022
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

Cross-Section 10, UT2B



Bankfull Dimensions	
4.3	x-section area (ft.sq.)
11.3	width (ft)
0.4	mean depth (ft)
0.9	max depth (ft)
11.6	wetted perimeter (ft)
0.4	hydraulic radius (ft)
29.5	width-depth ratio

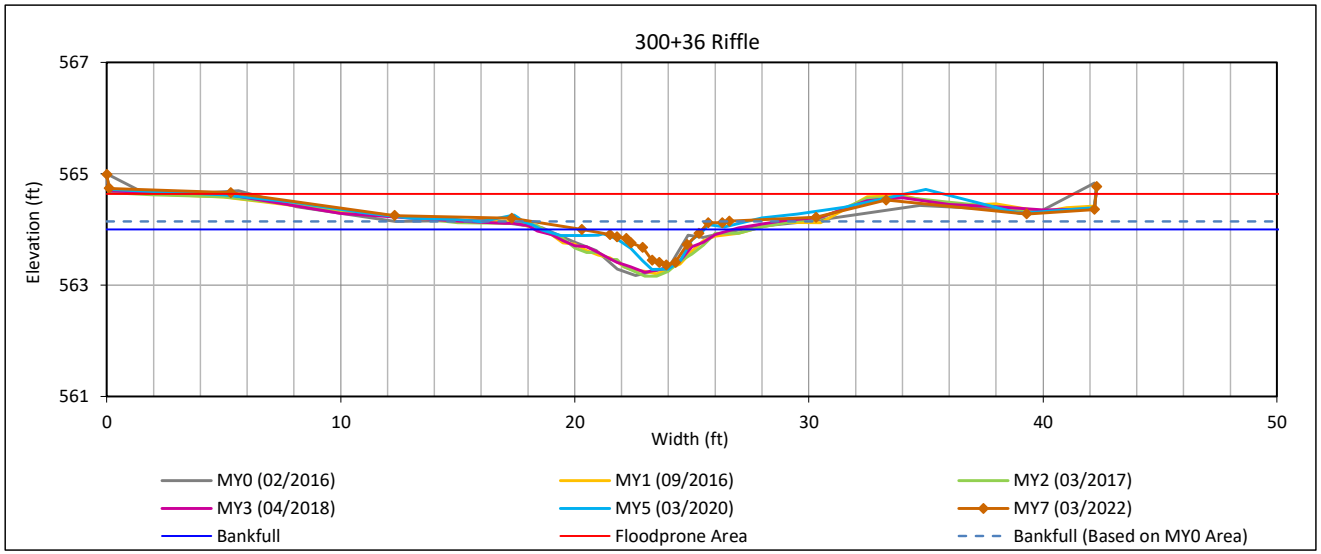
Survey Date: 03/2022
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

Cross-Section 11, UT2B



Bankfull Dimensions	
1.4	x-section area (ft.sq.)
5.1	width (ft)
0.3	mean depth (ft)
0.6	max depth (ft)
5.4	wetted perimeter (ft)
0.3	hydraulic radius (ft)
18.8	width-depth ratio
60.0	W flood prone area (ft)
11.7	entrenchment ratio
<1.0	low bank height ratio

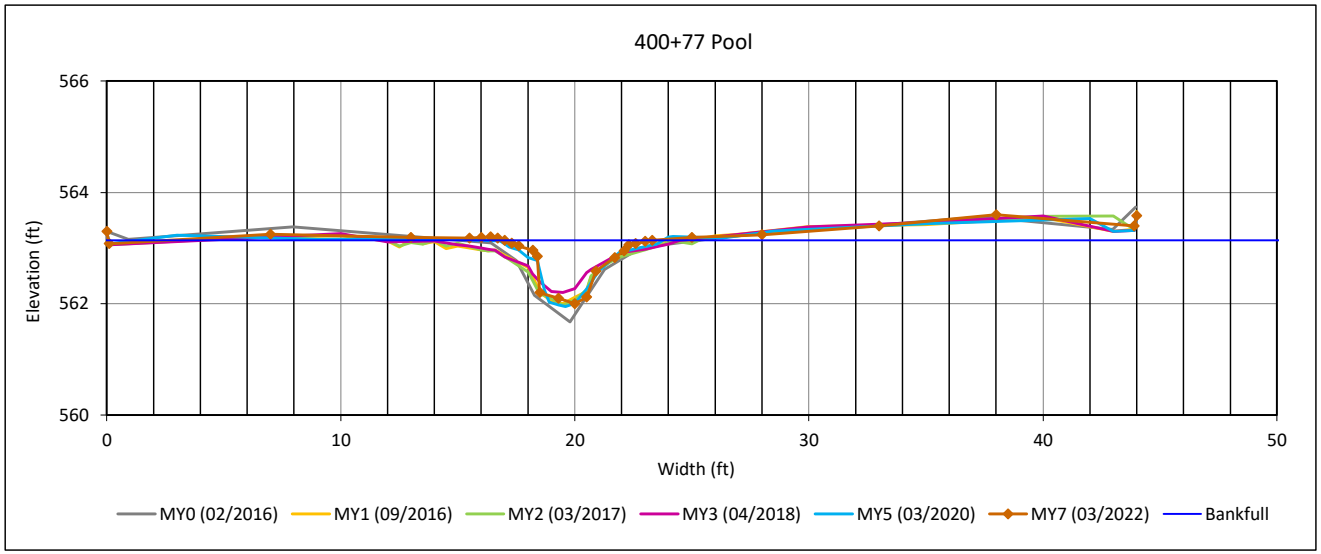
Survey Date: 03/2022
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

Cross-Section 12, UT3B



Bankfull Dimensions	
3.1	x-section area (ft.sq.)
6.3	width (ft)
0.5	mean depth (ft)
1.1	max depth (ft)
7.2	wetted perimeter (ft)
0.4	hydraulic radius (ft)
12.6	width-depth ratio

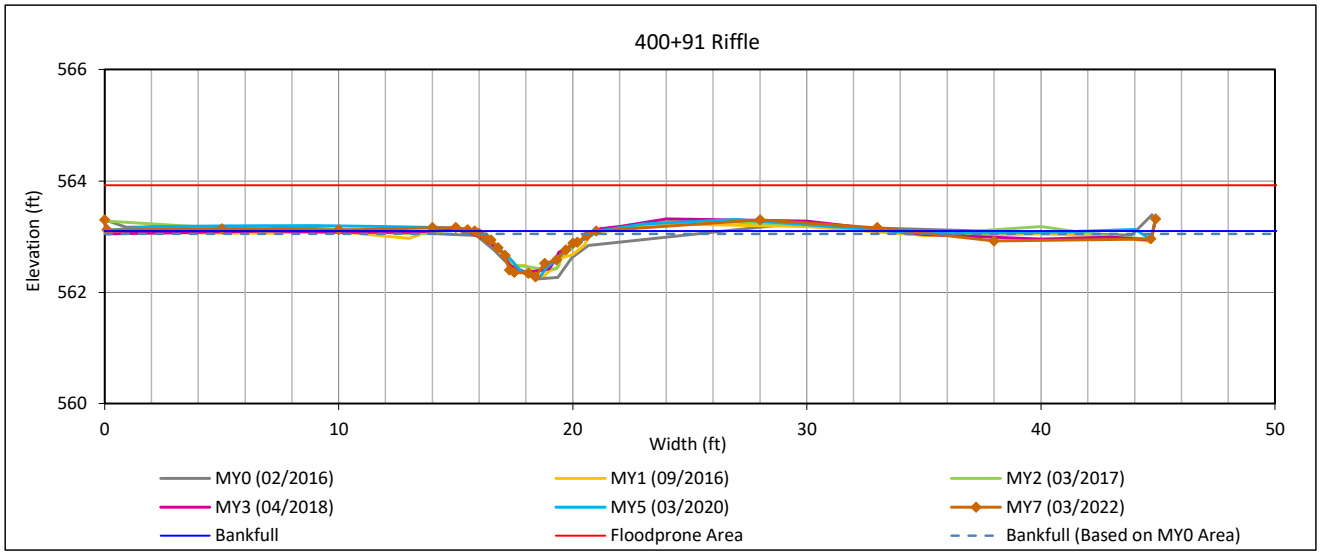
Survey Date: 03/2022
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

Cross-Section 13, UT3B



Bankfull Dimensions	
2.1	x-section area (ft.sq.)
5.2	width (ft)
0.4	mean depth (ft)
0.8	max depth (ft)
5.6	wetted perimeter (ft)
0.4	hydraulic radius (ft)
12.8	width-depth ratio
60.0	W flood prone area (ft)
11.5	entrenchment ratio
1.1	low bank height ratio

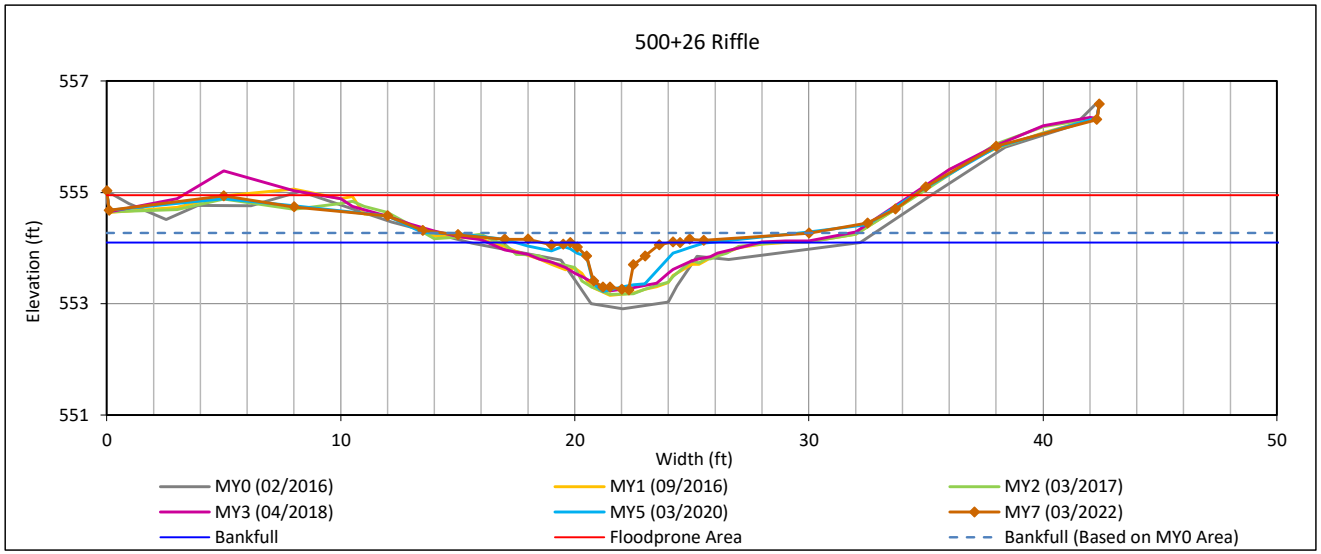
Survey Date: 03/2022
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

Cross-Section 14, UT4B



Bankfull Dimensions	
1.8	x-section area (ft.sq.)
4.3	width (ft)
0.4	mean depth (ft)
0.9	max depth (ft)
4.9	wetted perimeter (ft)
0.4	hydraulic radius (ft)
10.2	width-depth ratio
25.0	W flood prone area (ft)
5.8	entrenchment ratio
< 1.0	low bank height ratio

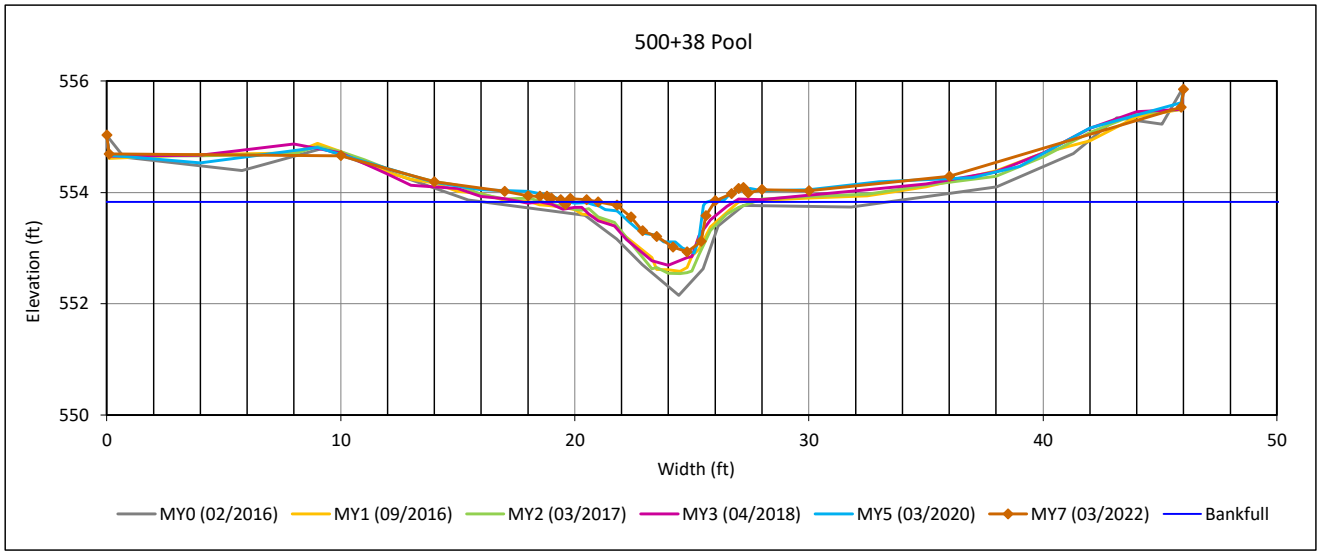
Survey Date: 03/2022
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

Cross-Section 15, UT4B



Bankfull Dimensions	
2.3	x-section area (ft.sq.)
5.0	width (ft)
0.5	mean depth (ft)
0.9	max depth (ft)
5.5	wetted perimeter (ft)
0.4	hydraulic radius (ft)
10.7	width-depth ratio

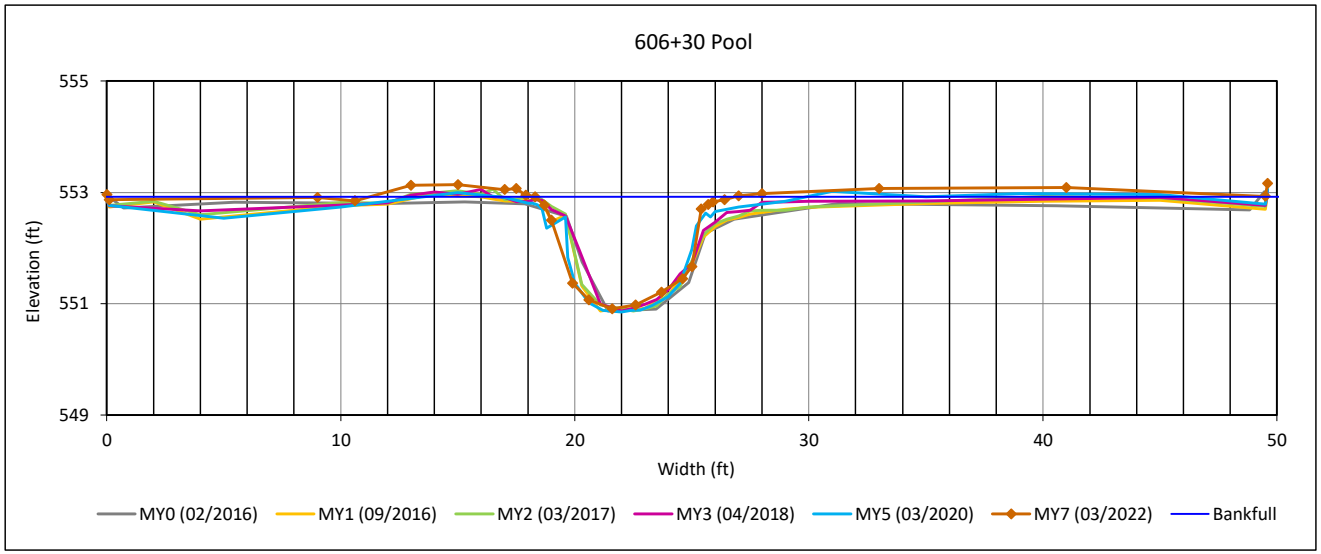
Survey Date: 03/2022
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

Cross-Section 16, UT5



Bankfull Dimensions	
10.5	x-section area (ft.sq.)
8.1	width (ft)
1.3	mean depth (ft)
2.0	max depth (ft)
9.7	wetted perimeter (ft)
1.1	hydraulic radius (ft)
6.3	width-depth ratio

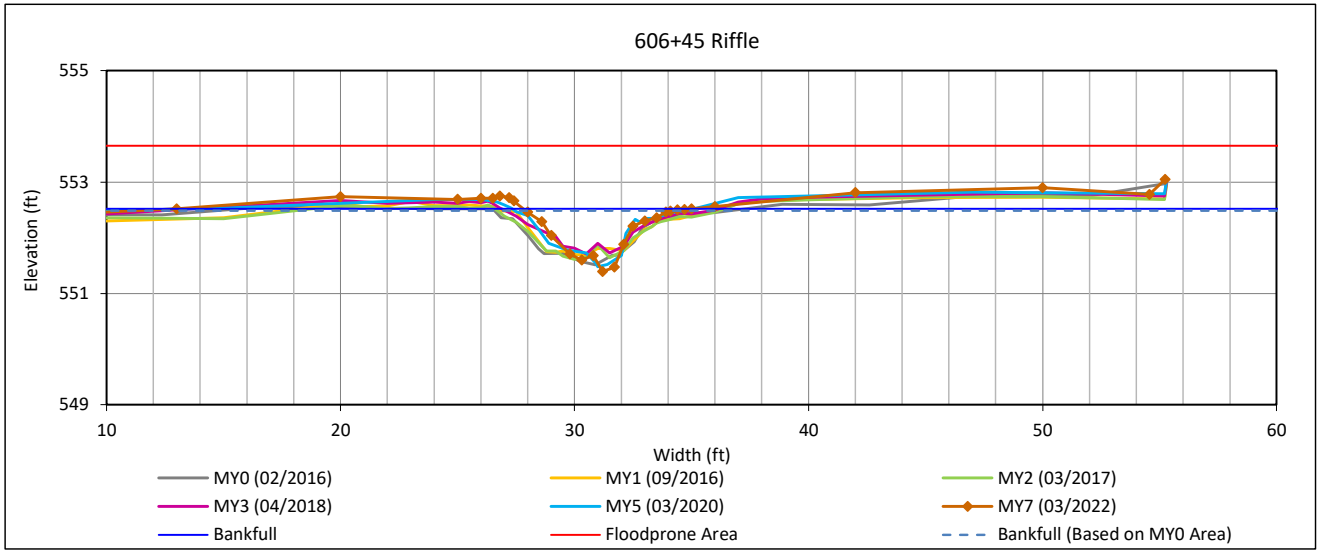
Survey Date: 03/2022
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

Cross-Section 17, UT5



Bankfull Dimensions	
3.4	x-section area (ft.sq.)
7.0	width (ft)
0.5	mean depth (ft)
1.1	max depth (ft)
7.6	wetted perimeter (ft)
0.4	hydraulic radius (ft)
14.5	width-depth ratio
100.0	W flood prone area (ft)
14.3	entrenchment ratio
1.0	low bank height ratio

Survey Date: 03/2022
Field Crew: Wildlands Engineering

View Downstream

Table 13. Bank Pin Table

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

UT South Fork Reach 1 - Cross-Section 4 Pool (Station 118+63)

Pin	Date	Exposure (in)
Upstream	4/15/2016	0.0
Midstream		0.0
Downstream		0.0
Upstream	9/14/2016	0.0
Midstream		0.0
Downstream		0.0
Upstream	10/19/2017	0.0
Midstream		0.0
Downstream		0.0
Upstream	10/22/2018	0.0
Midstream		0.0
Downstream		0.0
Upstream	9/25/2020	0.0
Midstream		0.0
Downstream		0.0
Upstream	10/13/2022	0.0
Midstream		0.0
Downstream		0.0

APPENDIX 5. Hydrology Summary Data

Table 14. Verification of Bankfull Events

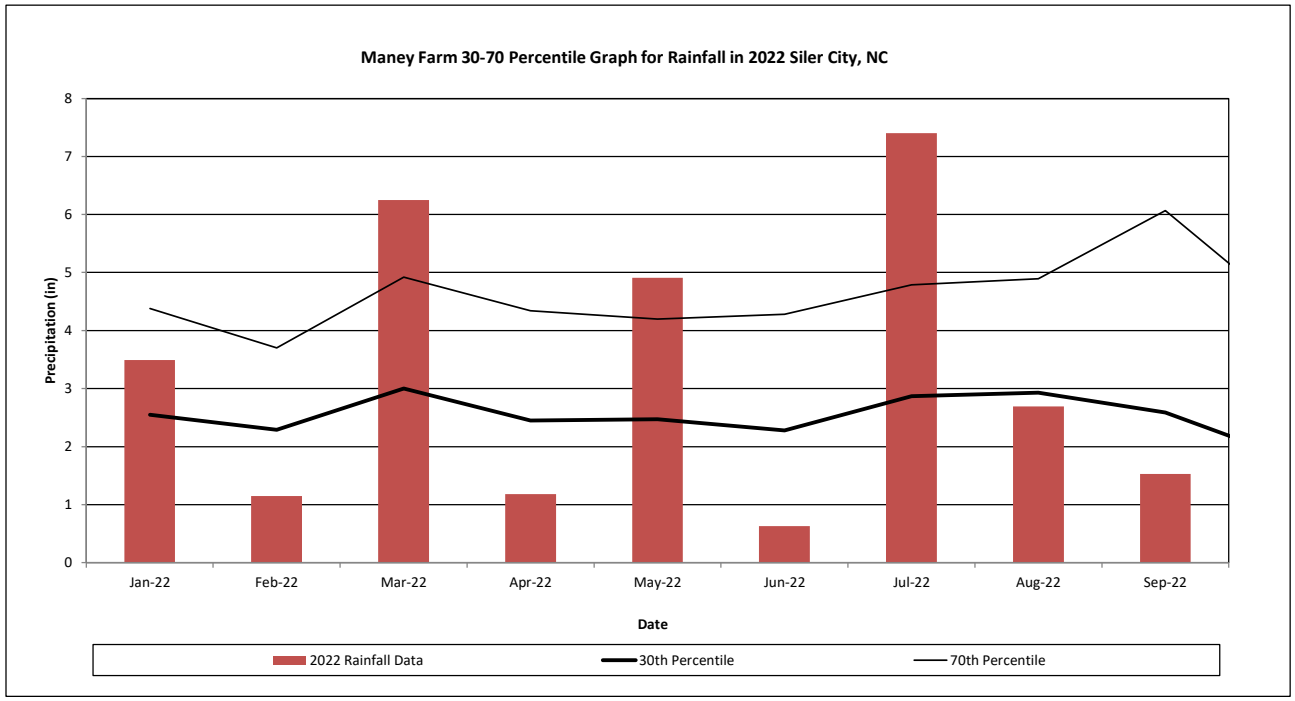
Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

	MY1		MY2		MY3		MY4		MY5		MY6		MY7	
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**	**Date of Data Collection**	**Date of Occurrence**
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	2/22/2022	1/3/2022
			10/17/2017	7/23/2017	10/22/2018	9/17/2018*	***	4/19/2019	8/7/2020	6/11/2020			5/18/2022	3/16/2022
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	5/18/2022	3/16/2022
			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	2/22/2022	1/3/2022
			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	5/18/2022	3/16/2022

*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 7 - 2022



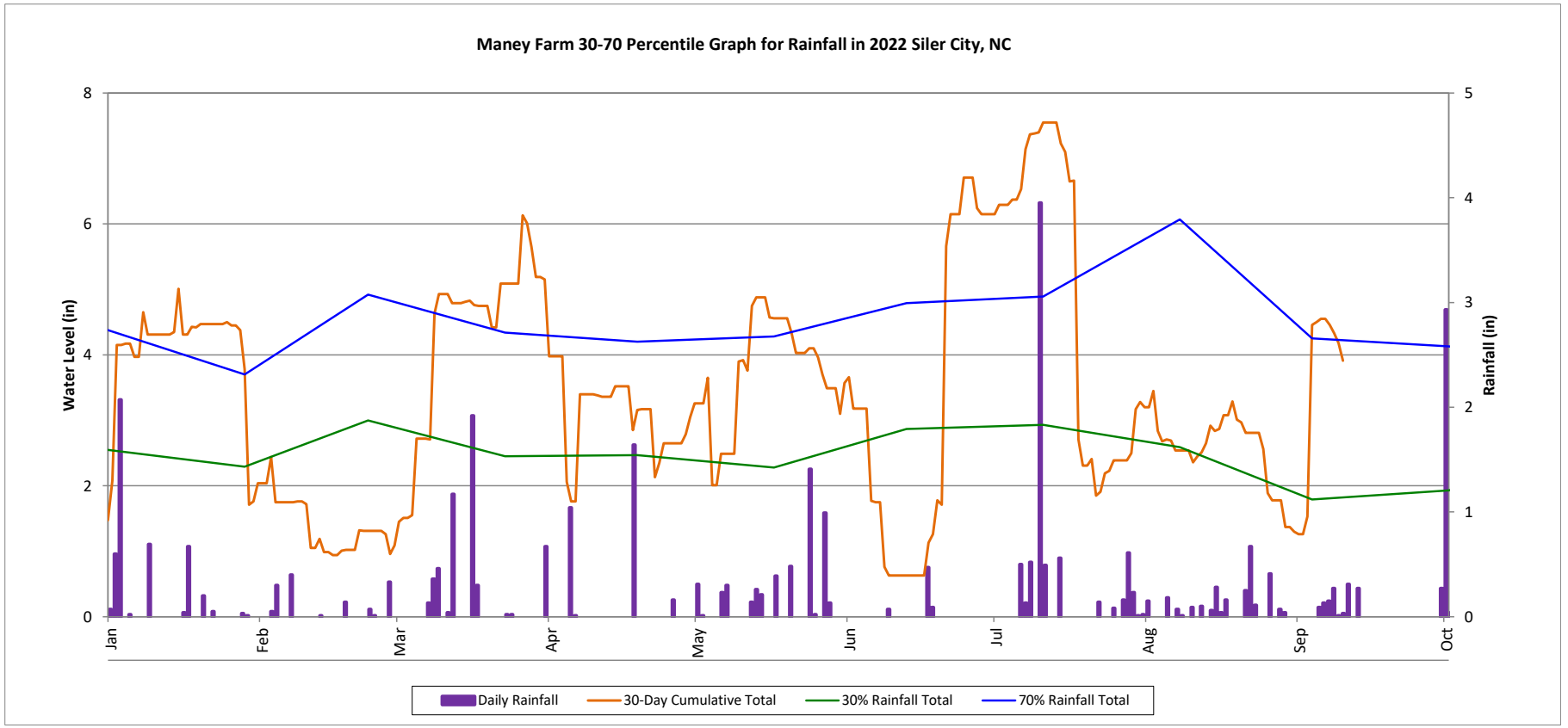
[1] 2022 monthly rainfall from USDA Station SILER CITY (317924)
[2] 30th and 70th percentile rainfall data collected from weather station Siler City 2 S, NC7924 (USDA, 2022).

30-Day Cumulative Total Rainfall Data

Maney Farm Mitigation Project

DMS Project No. 96314

Monitoring Year 7 - 2022



[1] 2022 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, 2022).

Table 15. Recorded In-Stream Flow Events Attainment Summary

Maney Farm Mitigation Project
DMS Project No. 96314
Monitoring Year 7 - 2022

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/ 277 Days**	**144 Days/ 275 Days**

*Success criteria is 30 consecutive days of flow.

**Data collected through October 13, 2022.

Recorded In-Stream Flow Events Plot

Maney Farm Mitigation Project

DMS Project No. 96314

Monitoring Year 7 - 2022