Final Monitoring Report/Closeout Report

Monitoring Year 7 of 7

FINAL

Pee Dee Stream Restoration Project
NCDMS Contract No.: 004644
NCDMS Project No.: 95350
USACE Action ID: SAW-2012-01077
DWR #: 13-1140

Montgomery County, NC
Data Collected: May and October 2021
Date Submitted: December 2021

Submitted to:

North Carolina Division of Mitigation Services

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December 17, 2021

Harry Tsomides
NC DEQ Division of Mitigation Services
5 Ravenscroft Drive, Suite 102
Asheville, NC 28801

RE: Pee Dee Stream Restoration Site: MY7 Monitoring Report (NCDMS ID 95350)

Listed below are comments provided by DMS on November 22, 2021 regarding the Pee Dee Stream Restoration Site: Year 7 Monitoring Report and RES' responses.

Report / General Comments:
Please indicate on the cover page that this is a proposed 2022 close out site. Attached to the email is an example cover page from a recent close out.
Done.

Please include the following IRT correspondences in an Appendix. Being a project close out, it is important to provide the relevant project communications and observations over time.

- 6/2/2020 meeting (MY5 IRT Credit Release Site Visit)
- 7/12/2018 meeting (MY3 IRT Credit Release Site Visit)
- 2019 Adaptive Management Plan, IRT e-Approval, and IRT comment letter

Done.

Since this project is being proposed for 2022 closure, please provide summary text (example sent via email) indicating the project is being proposed for closeout and validation. You have free license to phrase this as you wish, just summarizing the projects progress, challenges and activity in at least a paragraph, and summary stating that criteria have been met, or why they have not.
Done.

Appendix F (Adaptive Management Plan) is referenced in the text but there is no Appendix F in the report.
An Appendix F has been added.

Please include the Stems Per Plot Across All Years table in Appendix C (vegetation data). It was in the digital support files but not in the report PDF.
Done.

Please remove the verbiage and table referencing the prior review of the differential between the Approved Mitigation Plan and Baseline Monitoring Report. This has already been well documented, is not pertinent to the close out at this point, and is just confusing as it does not reflect the adaptive management plan adjusted credits.
Done.

Add a) Adaptive Management Plan and b) Project Closeout (estimated) to Table 2.
Done.

Please indicate the consecutive days of flow on the flow gage graph, and if possible show the corresponding period on the graph.
Done.

Digital Support File Comments:

- Please submit features depicting the existing wetlands shown in the CCPV.
  Done.

- Please include a feature that characterizes the 300 ft of aggradation throughout Thompson Branch and display this feature in the CCPV.
  Done.

- If available, please submit features that represent the MY3 stream centerlines.

- Please review cross section calculations. It looks like Omit BKF was used in the BHR workbook, but points did not appear to be omitted consistently based on the current MY's Low Bank Height (e.g. XS 6, 7, 22, etc.). The Omit BKF points should be used for both the BHR and LTOB workbooks. For BHR calculations, begin by omitting any points outside of the main channel and below the current MY's Low Bank Height, then adjust the Bankfull Stage until the MY0 cross sectional area is achieved. Also be sure that the data in the BHR and LTOB workbooks support the data included in the report (e.g. XS 7).
  Done.

- Ensure that excel flow gauge figures are being displayed correctly. The chart type should be scatter with straight lines.
  Done.

Prepared by:

3600 Glenwood Avenue, Suite 100
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1.0 PROJECT SUMMARY

1.1. Goals and Objectives

The project goals address stressors identified in the TLW and include the following:

- Improve water quality within the restored channel reaches and downstream watercourses by reducing sediment and nutrient inputs and increasing dissolved oxygen levels
- Improve local aquatic and terrestrial ecological function via stream shading, habitat complexities, and organic/woody material introduction
- Improve aquatic and benthic macroinvertebrate habitat and associated stream bed form
- Improve site hydrology and attenuate flood flows on-site and downstream
- Provide approximately 18.6 acres of riparian area restoration with a native plant community
- Protect stream and riparian improvements with livestock best management practices
- Protect the site in perpetuity with a permanent conservation easement

The project goals will be addressed through the following project objectives:

- Implement Priority I or II restoration of 5,992 feet of stream and enhancement of 625 feet of stream
- Implement appropriate changes in dimension, pattern and/or profile to create geomorphologically stable conditions along project area reaches
- Modify degraded stream channels to enable proper sediment transport capacity and improved stream bed character
- Construct a floodplain bench that is accessible at the proposed bankfull channel elevation.
- Remove a major impoundment
- Integrate in-stream structures and native bank vegetation
- Plant native woody and herbaceous riparian vegetation with a minimum width of 50 feet from the edge of the restored channels
- Eradicate invasive, exotic or undesirable plant species
- Install cattle exclusion fencing, two new wells, two new cattle drinking stations, and upgrade eight existing cattle drinking stations

1.2. Success Criteria

The success criteria for the Pee Dee Stream Restoration Site follows accepted and approved success criteria presented in the USACE Stream Mitigation Guidelines and subsequent NCDMS and agency guidance. Specific success criteria components are presented below.

1.2.1. Stream Restoration

Dimension – Cross-section measurements should indicate little change from the as-built cross-sections. If changes do occur, they will be evaluated to determine whether the adjustments are associated with increased stability or whether they indicate movement towards an unstable condition.

Pattern and Profile − Measurements and calculated values should indicate stability with little deviation from as-built conditions and established morphological ranges for the restored stream type. Pool depths may vary from year to year, but the majority should maintain depths sufficient to be observed as distinct features in the profile. The pools should maintain their depth with flatter water surface slopes, while the riffles should remain shallower and steeper. Pattern measurements will not be collected unless conditions seem to indicate that a detectable change appears to have occurred based on profile and/or dimension measurements.

Substrate − Calculated D_{50} and D_{84} values should indicate coarser size class distributions of bed materials in riffles and finer size class distributions in pools. The majority of riffle pebble counts should indicate maintenance or coarsening of substrate distributions. Generally, it is anticipated that the bed material will coarsen over time.

Sediment Transport – Depositional features should be consistent with a stable stream that is effectively managing its sediment load. Point bar and inner berm features, if present, should develop without excessive encroachment of the channel. Isolated development of robust (i.e. comprised of coarse material and/or vegetation actively diverting flow) mid-channel or lateral bars will be acceptable. Likewise, development of a higher number of mid-channel or lateral bars that are minor in terms of their permanency such that profile measurements do not indicate systemic aggradation will be acceptable, but trends in the development of robust mid-channel or alternating bar features will be considered a destabilizing condition and may require intervention or have success implications.

1.2.2. Surface Water Hydrology

Monitoring of stream surface water stages should indicate recurrence of bankfull flows on average every 1 to 2 years. At a minimum, throughout the monitoring period, the surface water stage should achieve bankfull or greater elevations at least twice. The bankfull events must occur during separate monitoring years.

1.2.3. Vegetation

Riparian vegetation monitoring shall be conducted for a minimum of seven years to ensure that success criteria are met per USACE guidelines. Accordingly, success criteria will consist of a minimum survival of 320 stems per acre by the end of the Year 3 monitoring period, a minimum of 260 stems per acre at the end of Year 5, and a minimum of 210 stems per acre in Year 7. If monitoring indicates either that the specified survival rate is not being met or the development of detrimental conditions (i.e., invasive species, diseased vegetation), appropriate corrective actions will be developed and implemented.

1.3. Project Setting and Background

The Pee Dee Stream Restoration Site (Site) encompasses approximately 21.0 acres of predominately agricultural land and includes three tributaries to Clarks Creek – Thompson Creek, Dale Branch, and Jerry Branch. The Site is located in the Yadkin River Watershed (NCDWR sub-basin 03-07-10 and HUC 03040104020020) approximately 1 mile south of the town of Pee Dee, NC in Montgomery County (**Figure 1**). Clarks Creek is listed as Class C water (NCDWR) and flows into the Pee Dee River. The Site is located within a NCDMS targeted local watershed.

1.4. Project Performance

Monitoring Year 7 (MY7) data was collected from May 2021 to October 2021. Year 7 Monitoring activities included cross section, vegetation plot, and hydrology monitoring, visual assessment of all reaches and the surrounding easement and permanent photo stations. With a final stems per acre of 536, an average stem height of 21.6 feet, minimal invasives, no stream problem areas, multiple bankfull events in separate years, and consecutive flow days greater than 30 days, the Site has met all success criteria and is recommended for closeout.

Summary information/data related to the occurrence of items such as beaver or easement encroachment and statistics related to 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 Baseline Monitoring Report (formerly Mitigation Plan) and in the Mitigation

Plan (formerly Restoration Plan) documents available on the NCDMS website (http://portal.ncdenr.org/web/eep). All raw data supporting the tables and figures in the appendices is available from NCDMS upon request.

1.4.1. Vegetation

Monitoring data collected during MY7 indicate that all vegetation monitoring plots have met final success criteria of 210 planted stems per acre. Stem densities of the permanent plots ranged from 283 to 971 stems per acre with a mean of 540 stems per acre. When volunteer stems are included, densities ranged between 364 and 1659 stems per acre with a mean of 988 stems per acre across all permanent plots. The average planted stem height in MY7 was 18.6 feet. Random vegetation monitoring plots were completed in the supplemental planting areas in October 2021. Stem densities ranged from 486 to 567 stems per acre with a mean of 513 stems per acre across the random plots. A total of 19 species were documented within the monitoring plots. The average stem height of all the plots was 21.6 feet

Visual assessment of the easement (**Appendix B - Table 6, Figure 2**) indicates that herbaceous vegetation is well established throughout the project. Invasive species treatments were administered in December 2019 and multiple times in 2020. MY7 treatments were performed in September 2021 and encompassed the entire easement. The overall treatment of invasive species onsite was very effective.

1.4.2. Stream Geomorphology

The data below is from MY7 collected during the annual monitoring survey performed during May 2021. Summary tables and cross-section plots related to stream morphology are located in **Appendix D**. MY7 stream morphology data indicate that, in general, the stream is stable and lacking in any significant change. In June 2021, RES repaired an area of floodplain scour on the right bank of Jerry 1 near XS1 & 2 by installing woody check dams. The goal of the check dams was to slow down flow in the floodplain scour area during storm events and reduce risk of erosion.

Substrate monitoring was performed during MY7. Riffle D_{50} ranged from medium gravel to l on Jerry Branch, coarse gravel on Dale Branch, and coarse gravel on Thompson Branch. Substrate composition data is presented in **Appendix D.**

Visual assessment of the stream was performed to document signs of channel instability, such as eroding banks, structural instability, or excessive sedimentation. There was no indication of instability was observed during the visual assessment (**Table 5 and Figure 2**). Structures are intact and performing as designed.

1.4.3. Stream Hydrology

In January 2019, RES installed flow monitoring gauges on Dale 1, Dale 2, and Thompson 1 per the request of the IRT. Each gauge is located in a pool and the elevation of the nearest downstream riffle is used to detect flow events. In MY7, Dale 1 recorded 212 consecutive days of flow, Dale 2 recorded 70 consecutive days of flow, and Thompson 1 recorded 81 consecutive days of flow. Due to manual gauge failure, RES also recorded bankfull events at the flow gauges. In MY7, Dale 1 documented 15 bankfull events, Dale 2 documented zero bankfull events, and Thompson 1 documented seven bankfull events. Bankfull and flow data is located in **Appendix E**.

1.4.4. Adaptive Management

During a site visit with NCIRT and NCDMS at the Pee Dee Site in July 2018, several problem areas were identified regarding the drained pond on Thompson 1 and the drained pond/wetland on Dale 1. RES submitted an Adaptive Management Plan to NCIRT in March 2019. The plan outlines the installation of

the aforementioned flow monitoring gauges and the excavation of a baseflow channel through the old pond/wetland on Dale 1. The plan also discusses the decision to forgo the credits for the portion of Thompson 1 that is located in the old pond bottom. RES excavated the baseflow channel on Dale 1 in early January 2020. Additionally, Chinese privet treatment was administered on Thompson 1, Thompson 2, Dale 1, and Dale 2. On June 2, 2020, NCIRT, NCDMS, and RES met at the Pee Dee Site. The purpose of the visit was to see the invasive species treatment areas, channel hand work, and supplemental plantings that were completed in the winter and spring of 2020. Details of this site visit along with the Adaptive Management Work Completed Memo are located in **Appendix F**. Overall, NCIRT was impressed with the invasive species treatment and RES agreed to continue treating invasives throughout the remainder of the monitoring period. NCIRT recommended using valley length for Dale 1 due to the braided nature of the channel through the old pond bottom. And flow, bed and bank, and riffle/pool sequences were observed above the pond area on Thompson 1. Additionally, random vegetation plots were performed in the supplemental planting areas, all of which documented greater than 210 stems per acre.

2.0 METHODS

Visual assessments of the project were performed at the beginning and end of the monitoring year.
Permanent photo station photos were collected during vegetation monitoring. Additional vegetation or stream problem areas within the project area were photo-documented. Geomorphic measurements were taken using a Topcon GTS-312 Total Station. Three-dimensional coordinates associated with cross-section and profile data were collected in the field and geo-referenced (NAD83 State Plane feet FIPS 3200). Morphological data was limited to 22 cross-sections.

Survey data (MY0, MY1, MY2, MY3, MY5, MY7) was imported into CAD, ArcGIS, and Excel for data processing and analysis. Channel substrate was characterized using a Wolman Pebble Count as outlined in Harrelson et al. (1994) and processed using Microsoft Excel.

Vegetation success (MY0, MY1, MY2, MY3, MY5, MY7) is being monitored using 14 permanent monitoring plots. Vegetation monitoring followed CVS-EEP Level 1 Protocol for MY1 and is following Level 2 Protocol Version 4.2 for monitoring years 2-7 (Lee et al. 2008). Level 2 Protocol includes analysis of species composition and density of planted species. Data is processed using the CVS data entry tool. In the field, the four corners of each plot were permanently marked with rebar and photos of each plot taken from the origin each monitoring year.

Precipitation data is reported from the NCCRONOS station Uwharrie (Troy). Three crest gauges were installed to document bankfull events, one each on Jerry, Dale, and Thompson branches. During quarterly visits to the site, the height of the corkline was recorded and cross-referenced with known bankfull elevations at each crest gauge. Three flow monitoring gauges were installed in January 2019 to document consecutive days of flow on Dale 1, Dale 2, and Thompson 1. These gauges are made up of pressure transducers located in PVC piping and placed in pools. The pressure transducers record water levels at an hourly interval and the elevation of the downstream riffle is used to detect stream flow from the pool water levels.

3.0 REFERENCES

Harrelson, Cheryl, C. Rawlins and J. Potyondy. 1994. Stream Channel Reference Sites: An Illustrated Guide to Field Technique. Gen. Tech. Rep. RM-245. Rocky Mountain Forest and Range Experiment Station. USDA Forest Service. Fort Collins, Colorado

Lee, M.T., R.K. Peet, S.D. Roberts, and T.R. Wentworth. 2008. CVS-EEP Protocol for Recording Vegetation. Version 4.2. http://cvs.bio.unc.edu/methods.htm; accessed November 2008.

Appendix A
General Tables and Figures

Table 1. Project Components and Mitigation Credits

Pee Dee Stream Restoration Site

Mitigation Credits

	Stream		Riparian Wetland		Non-riparian Wetland		Buffer	Nitrogen Nutrient Offset	Phosphorous Nutrient Offset
Type	R	RE	R	RE	R	RE			
Totals	**6,108.267**						-	-	-

Project Components

Project Component -or- Reach ID	Stationing/Location	Existing Footage/Acreage	Approach (PI, PII etc.)	Restoration -or- Restoration Equivalent	Restoration Footage or Acreage[1]	Creditable Footage	Mitigation Ratio	Credits[3]	Notes[4]
Thompson Creek 1	100+0 - 102 + 50	250	PI	EI	250	250	1.5	166.667	Flow being monitored
Thompson Creek 1 - 2	102+50 - 115+64	1,346	PI	R	1,314	1,014	1	1,014	Credit removal in old pond
Dale Branch 1	200+00 - 203+75	375	PI	EI	375	375	1.5	250	Repaired January 2020
Dale Branch 2 - 5	203+75 - 234+50	2,407	PI	R	2,955	2,955	1	2,955	
Jerry Branch	300+00 - 317+30	1,832	PI	R	1,670	1,670	1	1,670	
Hudson Branch	403+05 - 403+58	53	PI	R	52.6	52.6	1	52.600	

Component Summation

Restoration Level	Stream (linear feet)	Riparian Wetland (acres)		Non-riparian Wetland (acres)	Buffer (square feet)	Upland (acres)
		Riverine	Non-Riverine			
Restoration	5,691.6	-	-	-	-	-
Enhancement	-	-	-	-	-	-
Enhancement I	625	-	-	-	-	-
Enhancement II	-	-	-	-	-	-
Creation	-	-	-	-	-	-
Preservation	-	-	-	-	-	-
High Quality Preservation	-	-	-	-	-	-

BMP Elements

Element[2]	Location	Purpose/Function	Notes
FB	Entire Site	Protect Stream	

[1]Restoration footage accounts for crossings and exclusions.

[2]BR = Bioretention Cell; SF = Sand Filter; SW = Stormwater Wetland; WDP = Wet Detention Pond; DDP = Dry Detention Pond; FS = Filter Strip; S = Grassed Swale; LS = Level Spreader; NI = Natural Infiltration Area; FB = Forested Buffer

[3]Credit calculations were originally calculated along the as-built thalweg and updated to be calculated along stream centerlines for MY3 after discussions with NC IRT stemming from the April 3, 2017 Credit Release Meeting.

[4]An Adaptive Mangement Plan has been created to address the adjustments in Thompson Creek and Dale Branch. A breif description is included in Section 1.4.4 of the MY5 Report.

Table 2. Project Activity and Reporting History Pee Dee Stream Restoration Site		
Activity or Report	**Data Collection Complete**	**Completion or Delivery**
Mitigation Plan	Dec - 2013	Dec - 2013
Final Design - Construction Plans	N/A	Jan - 2014
Construction	N/A	April - 2015
Temporary S&E Mix Applied to Entire Project Area	N/A	April - 2015
Live Stakes and Bare Root Plantings for Entire Project Area	N/A	April - 2015
Baseline Monitoring Document (Year 0 Monitoring - Baseline)	April - 2015	July 2015
Year 1 Monitoring	Oct - 2015	Dec - 2015
Year 2 Monitoring	Jan - 2016	Oct - 2016
Year 3 Monitoring	Stream: June - 2017 Vegetation: Sept - 2017	Nov - 2017
Year 3 Invasive Species Treatment	---	June - 2017
Year 4 Invasive Species Treatment	---	Feb - 2018
Year 4 Invasive Species Treatment	---	June - 2018
Year 4 Monitoring	Nov -2018	Nov - 2018
Adaptive Management Plan	---	April - 2019
Year 5 Invasive Species Treatment	---	July - 2019
Year 5 Monitoring	XS: July - 2019 VP: Aug - 2019	Nov - 2019
Year 5 Invasive Species Treatment	---	Dec - 2019
Dale 1 Flow Path Excavation	---	Dec - 2019
Year 6 Invasive Species Treatment	---	Jan - 2020
Year 6 Supplemental Planting	---	Mar - 2020
Dale 1 Flow Path Excavation	---	Mar - 2020
Year 6 Invasive Species Treatment	---	Nov - 2020
Year 6 Monitoring	Nov - 2020	Dec - 2020
Floodplain Scour Check Dam Install	---	June -2021
Year 7 Invasive Species Treatment	---	Sept - 2021
Year 7 Monitoring	XS: May - 2021 VP: Oct - 2021	Nov - 2021
Project Closeout (Estimated)	---	Mar-22

Table 3. Project Contacts	
Pee Dee Stream Restoration Site	
Prime Contractor	Resource Environmental Solutions, LLC 3600 Glenwood Ave, Suite 100 Raleigh, North Carolina 27612 David Godley (919) 209-1053
Designer	Wolf Creek Engineering 12-1/2 Wall St., Suite C Asheville, North Carolina 28801 Grant Ginn (828) 449-1930 ext 102
Construction Contractor	Northstate Environmental 2889 Lowery Street Winston Salem, North Carolina 27101 Darrell Westmoreland (336) 725-2010
Seeding Contractor	Northstate Environmental 2889 Lowery Street Winston Salem, North Carolina 27101 Darrell Westmoreland (336) 725-2010
Planting Contractor	Resource Environmental Solutions, LLC 3600 Glenwood Ave, Suite 100 Raleigh, North Carolina 27612 David Godley (919) 209-1053
As-built Surveys	Kee Mapping and Surveying PO Box 2566 Asheville, North Carolina 28802 Phillip B. Key (828) 575-9021
Seeding Mix Source	Green Resource 5204 Highgreen Court Colfax, NC 27235 (336) 855-6363
Bare Root Seedlings	ArborGen Inc. 2011 Broadbank Court Ridgeville, SC 29472 (888) 888-7158
	North Carolina Forest Service 762 Claridge Nursery Road Goldsboro, NC 27350 (888) 628-7337
Live Stakes	Bear Duck Farms, LLC 105 Dobbs Place Goldsboro, NC 27350
Monitoring Performers (Y0-Y2) 2015 - 2016	Equinox Environmental 37 Haywood St. Asheville, North Carolina 28802 Drew Alderman (828) 253-6856
Monitoring Performers (Y3+) 2017+	Resource Environmental Solutions, LLC 3600 Glenwood Ave, Suite 100 Raleigh, North Carolina 27612 Ryan Medric (919) 741-6268

Table 4. Project Baseline Information and Attributes				
Project Information				
Project Name	Pee Dee Stream Restoration			
County	Montgomery County			
Project Area (acres)	21			
Project Coordinates (latitude and longitude)	35°15'26.95" N, 80°01'47.83" W			
Project Watershed Summary Information				
Physiographic Province	Piedmont			
River Basin	Yadkin			
USGS Hydrologic Unit 8-digit	03040104	USGS Hydrologic Unit 14-Digit	03040104020020	
DWQ Sub-basin	03-07-10			
Project Drainage Area (acres)	286			
Project Drainage Area Percentage of Impervious Area	<10%			
CGIA Land Use Classification	2.01.03 Hay and Pasture Land			
Reach Summary Information				
Parameters	**Thompson Creek**	**Dale Branch**	**Jerry Branch**	**Hudson Branch**
Length of reach (linear feet)	1,596	2,782	1,832	56
Valley classification (Rosgen)	II	II	II	II
Drainage area (acres)	102	58	83	19
NCDWQ stream identification score	30.5	34	30.5	21.5
NCDWQ Water Quality Classification	C	C	C	C
Morphological Description (stream type) (Rosgen)	B4	B4	B4	B4
Evolutionary trend (Rosgen)	IV	IV	IV	IV
Underlying mapped soils	GoE, BeC2, BaC2	GoE, CnA	GoE, BaC2, BaB2	BaC2
Drainage class	Well-drained	Well-drained	Well-drained	Well-drained
Soil Hydric status	Non-Hydric	Non-Hydric	Non-Hydric	Non-Hydric
Slope	2%	2%	2%	2%
FEMA classification	N/A	N/A	N/A	N/A
Native vegetation community	Agricultural	Agricultural	Agricultural	Agricultural
Percent composition of exotic invasive vegetation	5%	5%	5%	5%
Wetland Summary Information				
Parameters	-	-	-	
Size of Wetland (acres)	-	-		
Wetland Type (non-riparian, riparian riverine or riparian non-riverine)	-	-	-	
Mapped Soil Series	-	-	-	
Drainage class	-	-	-	
Soil Hydric Status	-	-	-	
Source of Hydrology	-	-	-	
Hydrologic Impairment	-	-	-	
Native vegetation community	-	-	-	
Percent composition of exotic invasive vegetation	-	-	-	

Regulatory Considerations			
Regulation	**Applicable?**	**Resolved?**	**Supporting Documentation**
Waters of the United States – Section 404	Yes	Yes	NWP
Waters of the United States – Section 401	Yes	Yes	401 Certification
Endangered Species Act	N/A		ERTR
Historic Preservation Act	N/A		ERTR
Coastal Zone Management Act (CZMA)/ Coastal Area Management Act (CAMA)	N/A		
FEMA Floodplain Compliance	N/A		
Essential Fisheries Habitat	N/A		ERTR

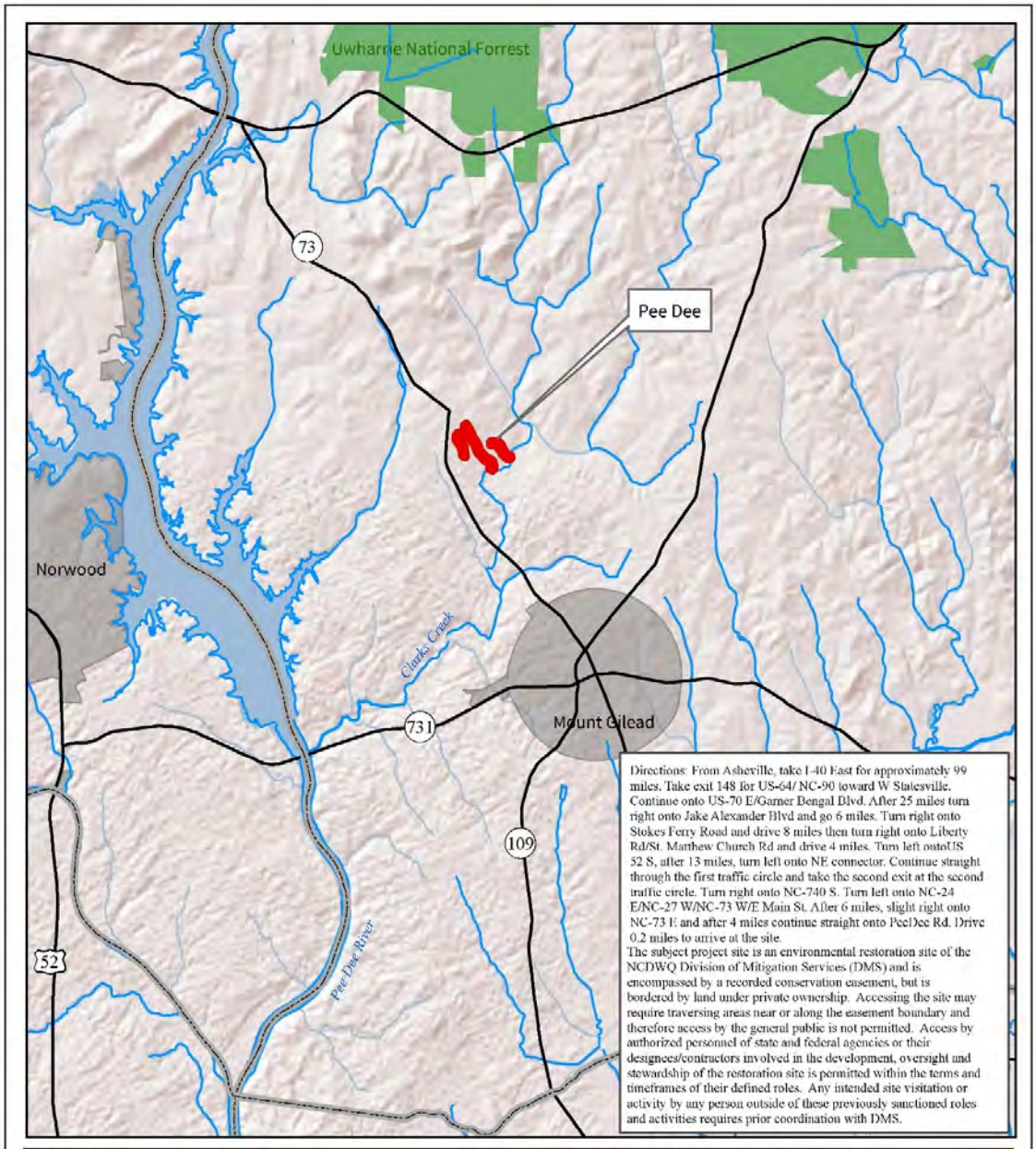

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Figure 1: Vicinity Map

Pee Dee Stream Restoration Site

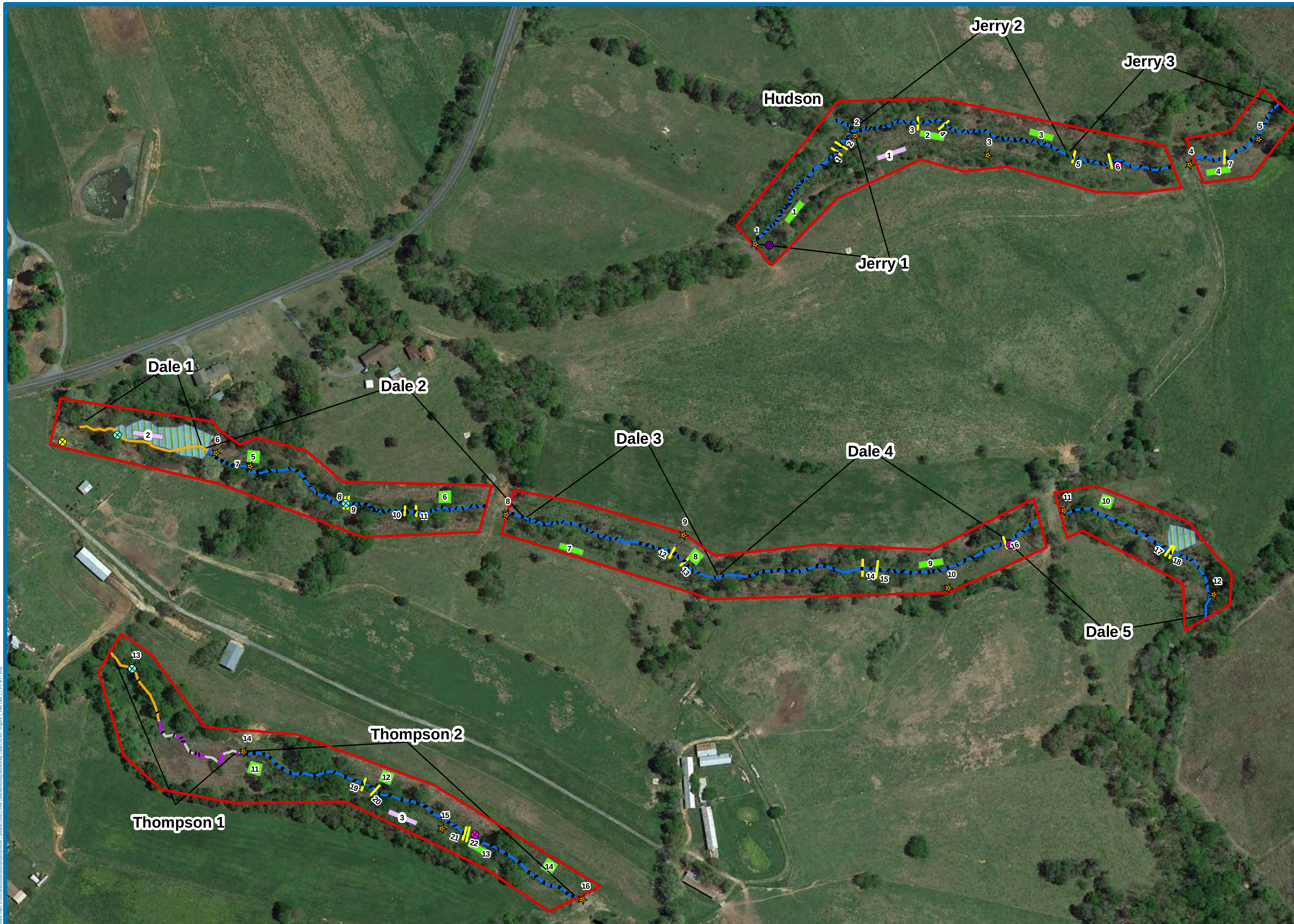
Project No. 95350

Montgomery County, North Carolina

Notes: Conservation Easement from Key Mapping & Survey, P.A.

Miles

0 0.5 1 2 3



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0 125 250
Feet

1 inch = 250 feet

Figure 2

Pee Dee Stream Restoration Project MY7 2021

Current Conditions Plan View

Date: 12/17/2021	Drawn by: RTM

LEGEND

- Conservation Easement
- Vegetation Plot
- MY7 Random Veg Plot
- Existing Wetland
- Cross Section

Mitigation Type

- Restoration
- Enhancement I
- No Credit
- Aggradation
- Structure
- Crest Gauge
- Flow Gauge
- Rain Gauge
- Ambient Gauge
- Photo Station

Vegetation Condition Assessment

Invasive Species	Target Community: Present	Marginal	Absent
Absent	No Fill		
Present			

Appendix B
Visual Assessment Data

Table 5. Visual Stream Morphology Stability Assessment
Pee Dee Stream Restoration Site - Jerry Branch
Assessed Length 1,832 feet | Date Assessed 10/26/2021

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	Adjusted % for Stabilizing Woody Vegetation
1. Bed	**1. Vertical Stability** (Riffle and Run Units)	1. Aggradation - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars).			0	0	100%			
		2. Degradation - Evidence of downcutting.			0	0	100%			
	2. Riffle Condition	1. Texture/Substrate - Riffle maintains coarser substrate.	90	90			100%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth≥ 1.6).	90	90			100%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstream riffle).	90	90			100%			
	4. Thalweg Position	1. Thalweg centering at upstream of meander bend (Run).	N/A	N/A			N/A			
		2. Thalweg centering at downstream of meander bend (Glide).	90	90			100%			
2. Bank	**1. Scoured / Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			0	0	100%	0	0	100%
	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, calving, 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. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	91	91			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	91	91			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	91	91			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence doesNOT exceed 15%.	91	91			100%			
	4. Habitat	Pool forming structures maintaining~ Max Pool Depth : Mean Bankfull Depth Ratio ≥ 1.6. Rootwads/logs providing some cover at base-flow.	91	91			100%			

Table 5 cont'd. Visual Stream Morphology Stability Assessment
Pee Dee Stream Restoration Site - Dale Branch
Assessed Length 2,782 feet | Date Assessed 10/26/2021

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	Adjusted % for Stabilizing Woody Vegetation
1. Bed	**1. Vertical Stability** (Riffle and Run Units)	1. Aggradation - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars).			0	0	100%			
		2. Degradation - Evidence of downcutting.			0	0	100%			
	2. Riffle Condition	1. Texture/Substrate - Riffle maintains coarser substrate.	120	120			100%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth≥ 1.6).	119	119			100%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstream riffle).	119	119			100%			
	4. Thalweg Position	1. Thalweg centering at upstream of meander bend (Run).	N/A	N/A			N/A			
		2. Thalweg centering at downstream of meander bend (Glide).	119	119			100%			
2. Bank	**1. Scoured / Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			0	0	100%	0	0	100%
	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, calving, 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. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	122	122			N/A			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	122	122			N/A			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	122	122			N/A			
	3. Bank Protection	Bank erosion within the structures extent of influence doesNOT exceed 15%.	122	122			N/A			
	4. Habitat	Pool forming structures maintaining~ Max Pool Depth : Mean Bankfull Depth Ratio ≥ 1.6. Rootwads/logs providing some cover at base-flow.	122	122			N/A			

Table 5 cont'd. Visual Stream Morphology Stability Assessment
Pee Dee Stream Restoration Site - Thompson Branch
Assessed Length 1,596 feet | Date Assessed 10/26/2021

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	Adjusted % for Stabilizing Woody Vegetation
1. Bed	**1. Vertical Stability** (Riffle and Run Units)	1. Aggradation - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars).			1	300	81%			
		2. Degradation - Evidence of downcutting.			0	0	100%			
	2. Riffle Condition	1. Texture/Substrate - Riffle maintains coarser substrate.	50	50			100%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth≥ 1.6).	50	50			100%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstream riffle).	50	50			100%			
	4. Thalweg Position	1. Thalweg centering at upstream of meander bend (Run).	N/A	N/A			N/A			
		2. Thalweg centering at downstream of meander bend (Glide).	50	50			100%			
2. Bank	**1. Scoured / Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			0	0	100%	0	0	100%
	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, calving, 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. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	51	51			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	51	51			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	51	51			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence doesNOT exceed 15%.	51	51			100%			
	4. Habitat	Pool forming structures maintaining~ Max Pool Depth : Mean Bankfull Depth Ratio ≥ 1.6. Rootwads/logs providing some cover at base-flow.	51	51			100%			

Table 6. Vegetation Condition Assessment Pee Dee Stream Restoration Site Planted Acreage 21.0 | Date Assessed 10/26/2021					
Vegetation Category	**Definitions**	**CCPV Depiction**	**Number of Polygons**	**Combined Acreage**	**% of Planted Acreage**
1. Bare Areas	Very limited cover of both woody and herbaceous material.	N/A	0	0.00	0%
2. Low Stem Density Areas	Woody stem densities clearly below target levels based on MY3, 4, or 5 stem count criteria.	N/A	0	0.00	0%
		Totals	0	0.00	0%
3. Areas of Poor Growth Rates or Vigor	Areas with woody stems of a size class that are obviously small given the monitoring year.	N/A	0	0.00	0%
		Cumulative Totals	0	0.00	0%
Easement Acreage 21.0 acres					
Vegetation Category	**Definitions**	**CCPV Depiction**	**Number of Polygons**	**Combined Acreage**	**% of Easement Acreage**
4. Invasive Areas of Concern	Areas or points (if too small to render as polygons at map scale).	Yellow Crosshatch	0	0.00	0%
5. Easement Encroachment Areas	Areas or points (if too small to render as polygons at map scale).	N/A	0	0.00	0%

MY7 – 2021 Pee Dee Photo Station Photos – October 26, 2021

Jerry Branch – Permanent Photo Station 1
Station 300+25 - Downstream

Jerry Branch – Permanent Photo Station 2
Station 305+04 – Upstream

Hudson Branch – Permanent Photo Station 2
Station 305+04 – Looking Upstream from Confluence with Jerry Branch
(November 17, 2020)

Jerry Branch – Permanent Photo Station 3
Looking North Northwest/Upstream Jerry Branch

Jerry Branch – Permanent Photo Station 4
Station 304+80 – Upstream

Jerry Branch – Permanent Photo Station 5
Station 304+80 – Downstream

Dale Branch – Permanent Photo Station 6
Station 204+15 – Upstream

Dale Branch – Permanent Photo Station 7
Station 205+15 – Upstream

Dale Branch – Permanent Photo Station 8
Station 212+95 – Upstream

Dale Branch – Permanent Photo Station 9
Looking South-Southeast- Downstream

Dale Branch – Permanent Photo Station 10
Looking South-Southwest – Downstream

Dale Branch – Permanent Photo Station 11
Station 229+20 – Upstream

Dale Branch – Permanent Photo Station 12
Station 234+25 – Downstream

Thompson Branch – Permanent Photo Station 13
Station 101+15 – Downstream
(November 17, 2020)

Thompson Branch – Permanent Photo Station 14
Station 105+25 – Upstream

Thompson Branch – Permanent Photo Station 15
Station 111+50 – Downstream

Thompson Branch – Permanent Photo Station 16
Station 115+85 – Upstream

Appendix C
Vegetation Plot Data

Table 7. MY7 Vegetation Plot Criteria Attainment

Plot #	Planted Stems/Acre	Volunteer Stems/Acre	Total Stems/Acre	Success Criteria Met?	Average Planted Stem Height (ft)
1	971	526	1497	Yes	9.7
2	607	567	1174	Yes	18.1
3	486	405	890	Yes	10.2
4	445	769	1214	Yes	24.2
5	283	0	283	Yes	27.9
6	283	647	931	Yes	18.1
7	364	0	364	Yes	15.6
8	324	526	850	Yes	11.4
9	647	0	647	Yes	14.5
10	364	769	1133	Yes	12.3
11	769	890	1659	Yes	16.1
12	809	809	1619	Yes	19.1
13	526	121	647	Yes	31.9
14	688	243	931	Yes	31.1
R1	486	0	486	Yes	21.4
R2	486	0	486	Yes	29.7
R3	567	0	567	Yes	34.1
Project Avg	**536**	**369**	**905**	**Yes**	**21.6**

Table 8. CVS Vegetation Plot Metadata Pee Dee Stream Restoration Site	
Report Prepared By	Ryan Medric
Date Prepared	11/9/2021 0:00
database name	Pee Dee MY7 2021 CVS.mdb
database location	
computer name	FIELD-PC
file size	61739008
DESCRIPTION OF WORKSHEETS IN THIS DOCUMENT----------	
Metadata	Description of database file, the report worksheets, and a summary of project(s) and project data.
Proj, planted	Each project is listed with its PLANTED stems per acre, for each year. This excludes live stakes.
Proj, 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	95350
project Name	Pee Dee
Description	
River Basin	
length(ft)	
stream-to-edge width (ft)	
area (sq m)	
Required Plots (calculated)	
Sampled Plots	14

Table 9. Total Planted Stem Counts

EEP Project Code 95350. Project Name: Pee Dee

Pee Dee			Current Plot Data (MY7 2021)																														
			95350-01-0001			95350-01-0002			95350-01-0003			95350-01-0004			95350-01-0005			95350-01-0006			95350-01-0007			95350-01-0008			95350-01-0009			95350-01-0010			95350-01-0011		
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	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T
Acer negundo	boxelder	Tree																																	3
Acer rubrum	red maple	Tree																																	3
Betula nigra	river birch	Tree	9	9	9	2	2	2	3	3	3				1	1	1				1	1	1				4	4	4						
Broussonetia papyrifera	paper mulberry	Exotic																																	
Carya	hickory	Tree																																	
Carya alba	mockernut hickory	Tree																																	
Celtis laevigata	sugarberry	Tree																																	
Celtis occidentalis	common hackberry	Tree									2																								
Cephalanthus occidentalis	common buttonbush	Shrub																																	
Diospyros virginiana	common persimmon	Tree																																	
Fraxinus pennsylvanica	green ash	Tree	2	2	5	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	1	1	1				3	3	3	2	2	2			
Ilex opaca	American holly	Tree																																	
Juglans nigra	black walnut	Tree									2																								1
Liquidambar styraciflua	sweetgum	Tree			10															15						13					5			
Liriodendron tulipifera var.	Tulip-tree, Yellow Popl	Tree	3	3	3																1	1	1												
Pinus taeda	loblolly pine	Tree																																	
Platanus occidentalis	American sycamore	Tree																1	1	1															
Platanus occidentalis var. o	Sycamore, Plane-tree	Tree	4	4	4	9	9	9	1	1	1	2	2	2							4	4	4				3	3	3	7	7	7	18	18	18
Quercus	oak	Tree																																	
Quercus michauxii	swamp chestnut oak	Tree				2	2	2	1	1	1	1	1	1				1	1	1				3	3	3	1	1	1				1	1	1
Quercus nigra	water oak	Tree	3	3	3				3	3	3	1	1	1	2	2	2	1	1	1				1	1	1									
Quercus phellos	willow oak	Tree	3	3	3	1	1	1	3	3	3	6	6	9	1	1	1	2	2	2	2	2	2	4	4	4	5	5	5						
Quercus rubra	northern red oak	Tree													1	1	1																		
Rhus copallinum	flameleaf sumac	shrub									6																								
Rhus copallinum var. copal	flameleaf sumac	shrub																																	
Rhus glabra	smooth sumac	shrub																																	
Salix nigra	black willow	Tree																																	
Ulmus alata	winged elm	Tree						14						16						1												14			
Ulmus americana	American elm	Tree																																	15
Stem count			24	24	37	15	15	29	12	12	22	11	11	30	7	7	7	7	7	23	9	9	9	8	8	21	16	16	16	9	9	28	19	19	41
size (ares)			1			1			1			1			1			1			1			1			1			1			1		
size (ACRES)			0.02			0.02			0.02			0.02			0.02			0.02			0.02			0.02			0.02			0.02			0.02		
Species count			6	6	7	5	5	6	6	6	9	5	5	6	5	5	5	5	5	7	5	5	5	3	3	4	5	5	5	2	2	4	2	2	6
Stems per ACRE			971	971	1497	607	607	1174	486	486	890	445	445	1214	283	283	283	283	283	931	364	364	364	324	324	850	647	647	647	364	364	1133	769	769	1659

Pee Dee			Current Plot Data (MY7 2021)																		Annual Means																	
			95350-01-0012			95350-01-0013			95350-01-0014			95350-01-R1			95350-01-R2			95350-01-R3			MY7 (2021)			MY5 (2019)			MY3 (2017)			MY2 (2016)			MY1 (2015)			MY0 (2015)		
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	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T
Acer negundo	boxelder	Tree			4																		11			2			5									
Acer rubrum	red maple	Tree																					3			1			101									
Betula nigra	river birch	Tree										2	2	2							22	22	22	19	19	19	27	27	29	45	45	47	42	42	42	51	51	51
Broussonetia papyrifera	paper mulberry	Exotic																																2				
Carya	hickory	Tree																														4			4			
Carya alba	mockernut hickory	Tree																											7					2				
Celtis laevigata	sugarberry	Tree																								8												
Celtis occidentalis	common hackberry	Tree																					2								1164			333				
Cephalanthus occidentalis	common buttonbush	Shrub																													221							
Cercis canadensis	Redbud	Tree										3	3	3							3	3	3															
Diospyros virginiana	common persimmon	Tree																											4			2			2			
Fraxinus pennsylvanica	green ash	Tree	1	1	1				1	1	1	2	2	2	5	5	5				24	24	27	18	18	19	24	24	26	26	26	37	29	29	29	33	33	33
Ilex opaca	American holly	Tree																											2									
Juglans nigra	black walnut	Tree			1			3			1										1	1	9			3						15			4			
Liquidambar styraciflua	sweetgum	Tree									5												48			28			45			96			51			
Liriodendron tulipifera var.	Tulip-tree, Yellow Popl	Tree																			4	4	4	5	5	10	5	5	19	7	7	7	6	6	6	16	16	16
Pinus taeda	loblolly pine	Tree																											2									
Platanus occidentalis	American sycamore	Tree				1	1	1							6	6	6	8	8	8	16	16	16												1	1	1
Platanus occidentalis var. o	Sycamore, Plane-tree	Tree	8	8	8	9	9	9	11	11	11										76	76	76	75	75	88	78	78	108	80	80	159	80	80	83	86	86	86
Quercus	oak	Tree																												2	2	2	1	1	1	83	83	83
Quercus michauxii	swamp chestnut oak	Tree				3	3	3	4	4	4	1	1	1				3	3	3	21	21	21	16	16	16	22	22	22	26	26	26	27	27	27	14	14	14
Quercus nigra	water oak	Tree										4	4	4							15	15	15	9	9	9	16	16	16	16	16	16	16	16	16	17	17	17
Quercus phellos	willow oak	Tree	4	4	4				1	1	1							1	1	1	33	33	36	36	36	38	50	50	50	55	55	69	55	55	57	18	18	18
Quercus rubra	northern red oak	Tree	7	7	7													1	1	1	9	9	9															
Rhus copallinum	flameleaf sumac	shrub																					6			24									4			
Rhus copallinum var. copal	flameleaf sumac	shrub																											18			47						
Rhus glabra	smooth sumac	shrub																																	12			
Salix nigra	black willow	Tree													1	1	1				1	1	1						2									
Ulmus alata	winged elm	Tree																					45			19			84			6						
Ulmus americana	American elm	Tree			15																		30			55			317									
		Stem count	20	20	40	13	13	16	17	17	23	12	12	12	12	12	12	14	14	14	225	225	384	178	178	339	222	222	857	257	257	1918	256	256	675	319	319	319
		size (ares)	1			1			1			1			1			1			17			14			14			14			14			14		
		size (ACRES)	0.02			0.02			0.02			0.02			0.02			0.02			0.42			0.35			0.35			0.35			0.35			0.35		
		Species count	4	4	7	3	3	4	4	4	6	5	5	5	3	3	3	5	5	5	12	12	19	7	7	15	7	7	18	8	8	16	8	8	17	9	9	9
		Stems per ACRE	809	809	1619	526	526	647	688	688	931	486	486	486	486	486	486	567	567	567	536	536	914	515	515	980	642	642	2477	743	743	5544	740	740	1951	922	922	922

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%
Recruit Stems

Pee Dee (95350)
Stems Per Plot Across All Years

Plot	MY7 -2021			MY5 - 2019			MY3 - 2017			MY2 - 2016			MY1 - 2015			MY0 - 2015		
	Planted Stems	Total Stems	Total Stems/Ac	Planted Stems	Total Stems	Total Stems/Ac	Planted Stems	Total Stems	Total Stems/Ac	Planted Stems	Total Stems	Total Stems/Ac	Planted Stems	Total Stems	Total Stems/Ac	Planted Stems	Total Stems	Total Stems/Ac
1	24	37	1497	24	36	1457	26	49	1983	26	72	2914	26	80	3237	25	25	1012
2	15	29	1174	14	19	769	20	111	4492	21	69	2792	20	34	1376	24	24	971
3	12	22	890	9	12	486	16	19	769	18	36	1457	18	27	1093	28	28	1133
4	11	30	1214	11	28	1133	14	67	2711	15	58	2347	11	11	445	21	21	850
5	7	7	283	4	4	162	12	17	688	20	71	2873	18	115	4654	24	24	971
6	7	23	931	8	22	890	14	25	1012	19	314	12707	19	71	2873	23	23	931
7	9	9	364	9	13	526	11	13	526	15	20	809	15	16	647	22	22	890
8	8	21	850	8	20	809	13	18	728	14	60	2428	16	16	647	21	21	850
9	16	16	647	20	30	1214	21	290	11736	23	288	11655	24	24	971	25	25	1012
10	9	28	1133	9	24	971	9	33	1335	12	20	809	13	13	526	21	21	850
11	19	41	1659	19	56	2266	19	45	1821	20	755	30554	20	144	5827	23	23	931
12	20	40	1619	15	37	1497	17	89	3602	18	54	2185	18	58	2347	20	20	809
13	13	16	647	11	13	526	13	15	607	18	22	890	19	23	931	20	20	809
14	17	23	931	17	25	1012	17	18	728	18	34	1376	18	18	728	22	22	890

MY7 – 2021 Vegetation Plot Photos

Pee Dee - Vegetation Monitoring Plot 1

Pee Dee - Vegetation Monitoring Plot 2

Pee Dee - Vegetation Monitoring Plot 3

Pee Dee - Vegetation Monitoring Plot 4

Pee Dee - Vegetation Monitoring Plot 5

Pee Dee - Vegetation Monitoring Plot 6

Pee Dee - Vegetation Monitoring Plot 7

Pee Dee - Vegetation Monitoring Plot 8

Pee Dee - Vegetation Monitoring Plot 9

Pee Dee - Vegetation Monitoring Plot 10

Pee Dee - Vegetation Monitoring Plot 11

Pee Dee - Vegetation Monitoring Plot 12

Pee Dee - Vegetation Monitoring Plot 13

Pee Dee - Vegetation Monitoring Plot 14

MY7 – 2021 Random Vegetation Plot Photos

Pee Dee – Random Vegetation Plot 1

Pee Dee – Random Vegetation Plot 2

Pee Dee – Random Vegetation Plot 3

Appendix D
Stream Geomorphology Data

Table 10. Baseline Stream Data Summary
Pee Dee Stream Restoration Site - Jerry Branch 1 (430 feet)

Parameter	Regional Curve			Pre-Existing Condition						Reference Reach Data						Design			As-Built / Baseline					
Dimension & Substrate - Riffle	**LL**	**UL**	**Eq.**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Max**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**
Bankfull Width (ft)	-	-	3.79	3.5	5.3	5.3	7.0	2.5	2	9.8	11.7	-	13.1	-	-	-	7.9	-	8.1	8.1	8.1	8.1	-	1
Floodprone Width (ft)				3.3	6.2	6.2	9.0	4.0	2	16.0	18.0	-	21	-	-	-	-	-	31.8	31.8	31.8	31.8	-	1
Bankfull Mean Depth (ft)	-	-	0.64	0.6	0.6	0.6	0.6	0.0	2	0.5	0.62	-	0.8	-	-	-	0.42	-	0.5	0.5	0.5	0.5	-	1
Bankfull Max Depth (ft)				0.7	0.8	0.8	0.9	0.1	2	0.8	0.9	-	1.2	-	-	-	0.65	-	1.0	1.0	1.0	1.0	-	1
Bankfull Cross Sectional Area (ft^2)	3.5			2.0	2.9	2.9	3.8	1.3	2	5.4	7.3	-	8	-	-	-	3.3	-	3.7	3.7	3.7	3.7	-	1
Width/Depth Ratio				6.0	9.4	9.4	12.8	4.8	2	12.3	18.8	-	19.6	-	-	-	18.6	-	17.7	17.7	17.7	17.7	-	1
Entrenchment Ratio				0.5	1.6	1.6	2.6	1.5	2	1.4	1.5	-	1.8	-	-	-	2.5	-	3.9	3.9	3.9	3.9	-	1
Bank Height Ratio				2.4	7.7	7.7	12.9	7.4	2	0.9	1	-	1.4	-	-	-	-	-	1.0	1.0	1.0	1.0	-	1
d50 (mm)				-	-	-	-	-	-	-	52	-	-	-	-	-	-	-						
Profile																								
Riffle Length (ft)				-	-	-	-	-	-	4.0	14.0	-	30.0	-	-	-	-	-	2.6	6.2	6.2	16.4	2.8	26
Riffle Slope (ft/ft)				-	-	-	-	-	-	0.017	0.027	-	0.059	-	-	-	0.003	-	0.001	0.010	0.009	0.026	0.008	26
Pool Length (ft)				-	-	-	-	-	-	7.0	13.0	-	30.0	-	-	-	-	-	2.3	5.9	5.4	16.0	2.9	26
Pool Max Depth (ft)				-	-	-	-	-	-	1.8	1.9	-	2.7	-	-	-	0.97	-	0.7	1.5	1.5	2.3	0.4	26
Pool Spacing (ft)				-	-	-	-	-	-	18.0	39.0	-	53.0	-	-	-	22.5	-	6.1	15.0	14.2	27.8	5.1	25
Pattern																								
Channel Belt Width (ft)				-	-	-	-	-	-	-	21.0	-	-	-	-	-	-	-	14.0	19.2	19.2	24.4	7.3	2
Radius of Curvature (ft)				-	-	-	-	-	-	-	18.0	-	-	-	-	12.0	-	17.0	11.6	13.6	13.1	16.5	2.2	4
Rc: Bankfull Width (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.4	1.7	1.6	2.0	0.3	2
Meander Wavelength (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23.8	44.4	47.1	55.0	11.9	6
Meander Width Ratio				-	-	-	-	-	-	-	1.8	-	-	-	-	-	2	-	1.7	2.4	2.4	3.0	0.9	2
Substrate, Bed and Transport Parameters																								
Ri% / Ru% / P% / G% / S%				-						-									42% / 0% / 40% / 7% / 11%					
SC% / Sa% / G% / C% / B% / Be%				-						4% / 2% / 49% / 38% / 1% / 6%														
d16 / d35 / d50 / d84 / d95 / di^p / di^{sp} (mm)				--/5/6/13/22						14 / 36 / 52 / 110 / 170 / - / -														
Reach Shear Stress (Competency) lb/ft^2				-						0.562						-			-					
Max Part Size (mm) Mobilized at Bankfull				-						947						32			-					
Stream Power (Transport Capacity) W/m^2				-						-						-								
Additional Reach Parameters																								
Drainage Area (mi^2)				0.07						0.42														
Impervious Cover Estimate (%)				-						-														
Rosgen Classification				-						B4c						B4			B4					
Bankfull Velocity (fps)	-			-						3.8						-								
Bankfull Discharge (cfs)	13.12			G						28.0						13								
Valley Length (ft)				-						260.0						406								
Channel Thalweg Length (ft)				-						-						435			430					
Sinuosity				-						1.50						1.0			1.06					
Water Surface Slope (ft/ft)				-						-						0.037			0.0265					
Bankfull Slope (ft/ft)				-						-						-			0.0267					
Bankfull Floodplain Area (acres)				-						-						-								
Proportion Over Wide (%)				-						-														
Entrenchment Class (ER Range)				-						-														
Incision Class (BHR Range)				-						-														
BEHI				24.03						-														
Channel Stability or Habitat Metric				-						-														
Biological or Other				-						-														

- Information unavailable.
N/A - Item does not apply.
Non-Applicable.

Table 10 cont'd. Baseline Stream Data Summary
Pee Dee Stream Restoration Site - Jerry Branch 2 (625 feet)

Parameter	Regional Curve			Pre-Existing Condition						Reference Reach Data						Design			As-Built / Baseline					
Dimension & Substrate - Riffle	**LL**	**UL**	**Eq.**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Max**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**
Bankfull Width (ft)	-	-	4.78	3.5	6.0	6.6	8.0	2.3	3	9.8	11.7	-	13.1	-	-	-	7.1	-	7.1	7.1	7.1	7.1	-	1
Floodprone Width (ft)				2.5	10.8	15.0	15.0	7.2	2	16.0	18.0	-	21	-	-	-	-	-	16.0	16.0	16.0	16.0	-	1
Bankfull Mean Depth (ft)	-	-	0.76	0.4	0.6	0.7	0.8	0.2	3	0.5	0.62	-	0.8	-	-	-	0.53	-	0.4	0.4	0.4	0.4	-	1
Bankfull Max Depth (ft)				0.5	0.7	0.8	1.0	0.2	3	0.8	0.9	-	1.2	-	-	-	0.75	-	0.7	0.7	0.7	0.7	-	1
Bankfull Cross Sectional Area (ft^2)	5.1			2.4	2.7	2.7	3.0	0.3	3	5.4	7.3	-	8	-	-	-	3.7	-	3.1	3.1	3.1	3.1	-	1
Width/Depth Ratio				4.6	15.2	14.6	26.3	10.9	3	12.3	18.8	-	19.6	-	-	-	13.4	-	16.4	16.4	16.4	16.4	-	1
Entrenchment Ratio				0.7	1.6	1.9	2.3	0.8	3	1.4	1.5	-	1.8	-	-	-	3.5	-	2.3	2.3	2.3	2.3	-	1
Bank Height Ratio				1.0	3.5	1.5	7.9	3.8	3	0.9	1	-	1.4	-	-	-	-	-	1.0	1.0	1.0	1.0	-	1
d50 (mm)				-	-	-	-	-	-	-	52	-		-	-	-	-	-						
Profile																								
Riffle Length (ft)				-	-	-	-	-	-	4.0	14.0	-	30.0	-	-	-	-	-	3.1	9.0	8.7	26.5	4.5	29
Riffle Slope (ft/ft)				-	-	-	-	-	-	0.017	0.027	-	0.059	-	-	-	0.002	-	0.005	0.019	0.018	0.042	0.010	29
Pool Length (ft)				-	-	-	-	-	-	7.0	13.0	-	30.0	-	-	-	-	-	2.3	4.8	4.7	7.8	1.5	31
Pool Max Depth (ft)				-	-	-	-	-	-	1.8	1.9	-	2.7	-	-	-	1.13	-	0.9	1.5	1.5	2.2	0.3	29
Pool Spacing (ft)				-	-	-	-	-	-	18.0	39.0	-	53.0	-	-	-	21.7	-	12.0	18.0	16.8	36.2	5.1	30
Pattern																								
Channel Belt Width (ft)				-	-	-	-	-	-	-	21.0	-	-	-	-	-	-	-	13.4	20.3	22.4	25.6	5.1	6
Radius of Curvature (ft)				-	-	-	-	-	-	-	18.0	-	-	-	-	11.0	-	17.0	12.1	13.4	12.7	16.5	1.8	5
Rc: Bankfull Width (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7	1.9	1.8	2.3	0.2	2
Meander Wavelength (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18.5	30.0	30.6	38.1	6.6	6
Meander Width Ratio				-	-	-	-	-	-	-	1.8	-	-	-	-	-	2	-	1.9	2.9	3.2	3.6	0.7	6
Substrate, Bed and Transport Parameters																								
Ri% / Ru% / P% / G% / S%				-						-									47% / 0% / 27% / 12% / 14 /%					
SC% / Sa% / G% / C% / B% / Be%				-						4% / 2% / 49% / 38% / 1% / 6%														
d16 / d35 / d50 / d84 / d95 / di^p / di^{sp} (mm)				--/5/6/13/22						14 / 36 / 52 / 110 / 170 / - / -														
Reach Shear Stress (Competency) lb/ft^2				-						0.562						-			-					
Max Part Size (mm) Mobilized at Bankfull				-						947						32			-					
Stream Power (Transport Capacity) W/m^2				-						-						-								
Additional Reach Parameters																								
Drainage Area (mi^2)										0.42														
Impervious Cover Estimate (%)				-						-														
Rosgen Classification				-						B4c						B4			B4					
Bankfull Velocity (fps)	-			-						3.8						-								
Bankfull Discharge (cfs)	19.35			G						28.0						19								
Valley Length (ft)				-						260.0						485								
Channel Thalweg Length (ft)				-						-						625			625					
Sinuosity				-						1.50						1.1			1.29					
Water Surface Slope (ft/ft)				-						-						0.024			0.024					
Bankfull Slope (ft/ft)				-						-						-			0.024					
Bankfull Floodplain Area (acres)				-						-						-								
Proportion Over Wide (%)				-						-														
Entrenchment Class (ER Range)				-						-														
Incision Class (BHR Range)				-						-														
BEHI				26.67						-														
Channel Stability or Habitat Metric				-						-														
Biological or Other				-						-														

- Information unavailable.
N/A - Item does not apply.
Non-Applicable.

Table 10 cont'd. Baseline Stream Data Summary
Pee Dee Stream Restoration Site - Jerry Branch 3 (636 feet)

Parameter	Regional Curve			Pre-Existing Condition						Reference Reach Data						Design			As-Built / Baseline					
Dimension & Substrate - Riffle	**LL**	**UL**	**Eq.**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Max**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**
Bankfull Width (ft)	-	-	4.95	-	4.0	-	-	-	1	9.8	11.7	-	13.1	-	-	-	7.3	-	7.2	7.3	7.3	7.4	0.141	2
Floodprone Width (ft)				-	6.5	-	-	-	1	16.0	18.0	-	21	-	-	-	-	-	24.7	29.3	29.3	33.8	6.435	2
Bankfull Mean Depth (ft)	-	-	0.78	-	0.9	-	-	-	1	0.5	0.62	-	0.8	-	-	-	0.54	-	0.4	0.4	0.4	0.4	0	2
Bankfull Max Depth (ft)				-	1.1	-	-	-	1	0.8	0.9	-	1.2	-	-	-	0.77	-	0.8	0.9	0.9	0.9	0.071	2
Bankfull Cross Sectional Area (ft^2)	5.4			-	3.3	-	-	-	1	5.4	7.3	-	8	-	-	-	4.0	-	3.0	3.2	3.2	3.3	0.212	2
Width/Depth Ratio				-	4.8	-	-	-	1	12.3	18.8	-	19.6	-	-	-	13.5	-	16.6	17.2	17.2	17.7	0.778	2
Entrenchment Ratio				-	1.6	-	-	-	1	1.4	1.5	-	1.8	-	-	-	3.4	-	3.4	4.0	4.0	4.6	0.849	2
Bank Height Ratio				-	2.9	-	-	-	1	0.9	1	-	1.4	-	-	-	-	-	1.0	1.0	1.0	1.0	0.0	2
d50 (mm)				-	-	-	-	-	-	-	52	-	-	-	-	-	-	-						
Profile																								
Riffle Length (ft)				-	-	-	-	-	-	4.0	14.0	-	30.0	-	-	-	-	-	3.1	9.0	8.7	26.5	4.5	29
Riffle Slope (ft/ft)				-	-	-	-	-	-	0.017	0.027	-	0.059	-	-	-	0.002	-	0.005	0.019	0.018	0.042	0.010	29
Pool Length (ft)				-	-	-	-	-	-	7.0	13.0	-	30.0	-	-	-	-	-	2.3	4.8	4.7	7.8	1.5	31
Pool Max Depth (ft)				-	-	-	-	-	-	1.8	1.9	-	2.7	-	-	-	1.15	-	0.9	1.5	1.5	2.2	0.3	29
Pool Spacing (ft)				-	-	-	-	-	-	18.0	39.0	-	53.0	-	-	-	23.9	-	12.0	18.0	16.8	36.2	5.1	30
Pattern																								
Channel Belt Width (ft)				-	-	-	-	-	-	-	21.0	-	-	-	-	-	-	-	20.0	24.2	26.0	26.5	3.6	3
Radius of Curvature (ft)				-	-	-	-	-	-	-	18.0	-	-	-	-	12.0	-	17.0	9.2	12.1	10.6	17.0	2.8	7
Rc: Bankfull Width (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.3	1.7	1.5	2.3	0.4	1
Meander Wavelength (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	34.1	43.9	44.8	54.4	8.1	6
Meander Width Ratio				-	-	-	-	-	-	-	1.8	-	-	-	-	-	2	-	2.7	3.3	3.6	3.6	0.5	3
Substrate, Bed and Transport Parameters																								
Ri% / Ru% / P% / G% / S%						-						-							60% / 0% / 21% / 10% / 9%					
SC% / Sa% / G% / C% / B% / Be%						-						4% / 2% / 49% / 38% / 1% / 6%												
d16 / d35 / d50 / d84 / d95 / di^{p} / di^{sp} (mm)						--/5/6/13/22						14 / 36 / 52 / 110 / 170 / - / -												
Reach Shear Stress (Competency) lb/ft^2						-						0.562					-				-			
Max Part Size (mm) Mobilized at Bankfull						-						947					32				-			
Stream Power (Transport Capacity) W/m^2						-						-					-							
Additional Reach Parameters																								
Drainage Area (mi^2)												0.42												
Impervious Cover Estimate (%)						-						-												
Rosgen Classification						G						B4c					B4				B4			
Bankfull Velocity (fps)	-					-						3.8					-							
Bankfull Discharge (cfs)	20.49					-						28.0					20							
Valley Length (ft)						-						260.0					624							
Channel Thalweg Length (ft)						-						-					670				636			
Sinuosity						-						1.50					1.00				1.02			
Water Surface Slope (ft/ft)						-						-					0.0240				0.0235			
Bankfull Slope (ft/ft)						-						-					-				0.0239			
Bankfull Floodplain Area (acres)						-						-					-							
Proportion Over Wide (%)						-						-												
Entrenchment Class (ER Range)						-						-												
Incision Class (BHR Range)						-						-												
BEHI						21.4						-												
Channel Stability or Habitat Metric						-						-												
Biological or Other						-						-												

- Information unavailable.
N/A - Item does not apply.
Non-Applicable.

Table 10 cont'd. Baseline Stream Data Summary
Pee Dee Stream Restoration Site - Hudson Branch (59 feet)

Parameter	Regional Curve			Pre-Existing Condition						Reference Reach Data						Design			As-Built / Baseline[1]					
Dimension & Substrate - Riffle	**LL**	**UL**	**Eq.**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Max**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**
Bankfull Width (ft)	-	-	2.63	-	4.5	-	-	-	1	9.8	11.7	-	13.1	-	-	-	7.3	-						
Floodprone Width (ft)				-	8.0	-	-	-	1	16.0	18.0	-	21	-	-	-	-	-						
Bankfull Mean Depth (ft)	-	-	0.49	-	0.5	-	-	-	1	0.5	0.62	-	0.8	-	-	-	0.34	-						
Bankfull Max Depth (ft)				-	0.7	-	-	-	1	0.8	0.9	-	1.2	-	-	-	0.52	-						
Bankfull Cross Sectional Area (ft^2)	2.0			-	2.1	-	-	-	1	5.4	7.3	-	8	-	-	-	2.1	-						
Width/Depth Ratio				-	9.5	-	-	-	1	12.3	18.8	-	19.6	-	-	-	18.7	-						
Entrenchment Ratio				-	1.8	-	-	-	1	1.4	1.5	-	1.8	-	-	-	4.8	-						
Bank Height Ratio				-	3.6	-	-	-	1	0.9	1	-	1.4	-	-	-	-	-						
d50 (mm)				-	-	-	-	-	-		52	-	-	-	-	-	-	-						
Profile																								
Riffle Length (ft)				-	-	-	-	-	-	4.0	14.0	-	30.0	-	-	-	-	-	8.89	10.2	10.2	11.5	1.86	2
Riffle Slope (ft/ft)				-	-	-	-	-	-	0.017	0.027	-	0.059	-	-	-	0.003	-	0.017	0.017	0.017	0.018	0.001	2
Pool Length (ft)				-	-	-	-	-	-	7.0	13.0	-	30.0	-	-	-	-	-	5.4	7.33	7.1	9.51	2.07	3
Pool Max Depth (ft)				-	-	-	-	-	-	1.8	1.9	-	2.7	-	-	-	0.77	-	1.37	1.77	1.82	2.14	0.39	3
Pool Spacing (ft)				-	-	-	-	-	-	18.0	39.0	-	53.0	-	-	-	15.9	-	11.5	16.6	16.6	21.8	7.26	2
Pattern																								
Channel Belt Width (ft)				-	-	-	-	-	-	-	21.0	-	-	-	-	-	-	-	10.2	10.2	10.2	10.2	-	1
Radius of Curvature (ft)				-	-	-	-	-	-	-	18.0	-	-	-	-	9.0	-	14.0	-	-	-	-	-	-
Rc: Bankfull Width (ft)				-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-
Meander Wavelength (ft)				-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-
Meander Width Ratio				-	-	-	-	-	-	-	1.8	-	-	-	-	-	2	-	1.4	1.4	1.4	1.4	-	1
Substrate, Bed and Transport Parameters																								
Ri% / Ru% / P% / G% / S%						-						-									46% / 0% / 50% / 0% / 4%			
SC% / Sa% / G% / C% / B% / Be%						-						4% / 2% / 49% / 38% / 1% / 6%												
d16 / d35 / d50 / d84 / d95 / di^p / di^{sp} (mm)						-						14 / 36 / 52 / 110 / 170 / - / -												
Reach Shear Stress (Competency) lb/ft^2						-						0.562					-				-			
Max Part Size (mm) Mobilized at Bankfull						-						947					32				-			
Stream Power (Transport Capacity) W/m^2						-						-					-							
Additional Reach Parameters																								
Drainage Area (mi^2)												0.42												
Impervious Cover Estimate (%)						-						-												
Rosgen Classification						G						B4c					B4				B4			
Bankfull Velocity (fps)	-					-						3.8					-							
Bankfull Discharge (cfs)	7.13					-						28.0					7							
Valley Length (ft)						-						260.0					55							
Channel Thalweg Length (ft)						-						-					102				59			
Sinuosity						-						1.50					1.10				1.08			
Water Surface Slope (ft/ft)						-						-					0.0120				0.030			
Bankfull Slope (ft/ft)						-						-					-				0.043			
Bankfull Floodplain Area (acres)						-						-					-							
Proportion Over Wide (%)						-						-												
Entrenchment Class (ER Range)						-						-												
Incision Class (BHR Range)						-						-												
BEHI						-						-												
Channel Stability or Habitat Metric						-						-												
Biological or Other						-						-												

- Information unavailable.
N/A - Item does not apply.
Non-Applicable.

[1]This reach limited to visual assessment since it is less than 500 feet

Table 10 cont'd. Baseline Stream Data Summary
Pee Dee Stream Restoration Site - Dale Branch 1 (250 feet)

Parameter	Regional Curve			Pre-Existing Condition						Reference Reach Data						Design			As-Built / Baseline[1]					
Dimension & Substrate - Riffle	**LL**	**UL**	**Eq.**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Max**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**
Bankfull Width (ft)	-	-	2.63	4.8	7.1	8.0	8.5	2.0	3	9.8	11.7	-	13.1	-	-	-	6.3	-						
Floodprone Width (ft)				7.0	15.0	18.0	20.0	7.0	2	16.0	18.0	-	21	-	-	-	-	-						
Bankfull Mean Depth (ft)	-	-	0.49	0.4	0.5	0.5	0.6	0.1	3	0.5	0.62	-	0.8	-	-	-	0.34	-						
Bankfull Max Depth (ft)				0.5	0.6	0.6	0.7	0.1	3	0.8	0.9	-	1.2	-	-	-	0.52	-						
Bankfull Cross Sectional Area (ft^2)	2.0			2.5	2.9	2.9	3.4	0.5	3	5.4	7.3	-	8	-	-	-	2.1	-						
Width/Depth Ratio				8.0	18.4	21.4	25.7	9.2	3	12.3	18.8	-	19.6	-	-	-	18.7	-						
Entrenchment Ratio				1.5	2.0	2.1	2.5	0.5	3	1.4	1.5	-	1.8	-	-	-	5.6	-						
Bank Height Ratio				1.0	1.8	1.2	3.1	1.2	3	0.9	1	-	1.4	-	-	-	-	-						
d50 (mm)				-	-	-	-	-	-	-	52	-	-	-	-	-	-	-						
Profile																								
Riffle Length (ft)				-	-	-	-	-	-	4.0	14.0	-	30.0	-	-	-	-	-						
Riffle Slope (ft/ft)				-	-	-	-	-	-	0.017	0.027	-	0.059	-	-	-	-	-						
Pool Length (ft)				-	-	-	-	-	-	7.0	13.0	-	30.0	-	-	-	-	-						
Pool Max Depth (ft)				-	-	-	-	-	-	1.8	1.9	-	2.7	-	-	-	0.77	-						
Pool Spacing (ft)				-	-	-	-	-	-	18.0	39.0	-	53.0	-	-	-	20.5	-						
Pattern																								
Channel Belt Width (ft)				-	-	-	-	-	-	-	21.0	-	-	-	-	-	-							
Radius of Curvature (ft)				-	-	-	-	-	-	-	18.0	-	-	-	-	9.0	-	14.0						
Rc: Bankfull Width (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Meander Wavelength (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Meander Width Ratio				-	-	-	-	-	-	-	1.8	-	-	-	-	-	4	-						
Substrate, Bed and Transport Parameters																								
Ri% / Ru% / P% / G% / S%				-						-														
SC% / Sa% / G% / C% / B% / Be%				-						4% / 2% / 49% / 38% / 1% / 6%														
d16 / d35 / d50 / d84 / d95 / di^p / di^{sp} (mm)				--/5/6/11/15						14 / 36 / 52 / 110 / 170 / - / -														
Reach Shear Stress (Competency) lb/ft^2				-						0.562						-								
Max Part Size (mm) Mobilized at Bankfull				-						947						32								
Stream Power (Transport Capacity) W/m^2				-						-						-								
Additional Reach Parameters																								
Drainage Area (mi^2)				-						0.42														
Impervious Cover Estimate (%)				-						-														
Rosgen Classification				C						B4c						B4								
Bankfull Velocity (fps)	-			-						3.8						-								
Bankfull Discharge (cfs)	7.13			-						28.0						7								
Valley Length (ft)				-						260.0						-								
Channel Thalweg Length (ft)				-						-						375								
Sinuosity				-						1.50						1.20								
Water Surface Slope (ft/ft)				-						-						0.0390								
Bankfull Slope (ft/ft)				-						-						-								
Bankfull Floodplain Area (acres)				-						-						-								
Proportion Over Wide (%)				-						-														
Entrenchment Class (ER Range)				-						-														
Incision Class (BHR Range)				-						-														
BEHI				25.64						-														
Channel Stability or Habitat Metric				-						-														
Biological or Other				-						-														

- Information unavailable.
N/A - Item does not apply.
Non-Applicable.

[1]This reach received minor bank work with no adjustments to profile. No cross-sections set in this reach.

Table 10 cont'd. Baseline Stream Data Summary
Pee Dee Stream Restoration Site - Dale Branch 2 (920 feet)

Parameter	Regional Curve			Pre-Existing Condition						Reference Reach Data						Design[1]			As-Built / Baseline					
Dimension & Substrate - Riffle	**LL**	**UL**	**Eq.**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Max**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**
Bankfull Width (ft)	-	-	2.98	-	5.0	-	-	-	1	9.8	11.7	-	13.1	-	-	-	5.4	-	6.4	6.7	6.7	7.0	0.42	2
Floodprone Width (ft)				-	7.0	-	-	-	1	16.0	18.0	-	21	-	-	-	-	-	15.1	19.5	19.5	23.9	6.22	2
Bankfull Mean Depth (ft)	-	-	0.54	-	0.6	-	-	-	1	0.5	0.62	-	0.8	-	-	-	0.37	-	0.3	0.3	0.3	0.3	0	2
Bankfull Max Depth (ft)				-	0.7	-	-	-	1	0.8	0.9	-	1.2	-	-	-	0.56	-	0.5	0.6	0.6	0.7	0.14	2
Bankfull Cross Sectional Area (ft^2)		2.4		-	2.8	-	-	-	1	5.4	7.3	-	8	-	-	-	2.0	-	1.8	1.9	1.9	2.0	0.14	2
Width/Depth Ratio				-	9.0	-	-	-	1	12.3	18.8	-	19.6	-	-	-	14.6	-	22.6	23.6	23.6	24.6	1.41	2
Entrenchment Ratio				-	1.4	-	-	-	1	1.4	1.5	-	1.8	-	-	-	8.2	-	2.4	2.9	2.9	3.4	0.71	2
Bank Height Ratio				-	7.9	-	-	-	1	0.9	1	-	1.4	-	-	-	-	-	1.0	1.0	1.0	1.0	0.0	2
d50 (mm)				-	-	-	-	-	-	-	52	-	-	-	-	-	-	-						
Profile																								
Riffle Length (ft)				-	-	-	-	-	-	4.0	14.0	-	30.0	-	-	-	-	-	3.2	10.1	9.0	21.3	4.8	28
Riffle Slope (ft/ft)				-	-	-	-	-	-	0.017	0.027	-	0.059	-	-	-	0.003	-	0.007	0.027	0.027	0.046	0.011	28
Pool Length (ft)				-	-	-	-	-	-	7.0	13.0	-	30.0	-	-	-	-	-	1.5	3.2	2.9	9.6	1.6	29
Pool Max Depth (ft)				-	-	-	-	-	-	1.8	1.9	-	2.7	-	-	-	0.84	-	1.1	1.6	1.4	2.8	0.5	28
Pool Spacing (ft)				-	-	-	-	-	-	18.0	39.0	-	53.0	-	-	-	20.7	-	9.4	19.7	19.3	31.4	4.9	28
Pattern																								
Channel Belt Width (ft)				-	-	-	-	-	-	-	21.0	-	-	-	-	-	-	-	18.0	20.6	19.0	24.4	3.1	5
Radius of Curvature (ft)				-	-	-	-	-	-	-	18.0	-	-	-	-	10.0	-	15.0	8.2	13.8	14.7	16.7	3.4	5
Rc: Bankfull Width (ft)				-	-	-	-	-	-	-		-	-	-	-	-	-	-	1.2	2.1	2.2	2.5	0.5	5
Meander Wavelength (ft)				-	-	-	-	-	-	-		-	-	-	-	-	-	-	33.1	38.9	39.6	41.5	3.1	6
Meander Width Ratio				-	-	-	-	-	-	-	1.8	-	-	-	-	-	4	-	2.7	3.1	2.8	3.6	0.9	6
Substrate, Bed and Transport Parameters																								
Ri% / Ru% / P% / G% / S%						-						-									50%/ 7%/ 16%/ 10%/ 17%			
SC% / Sa% / G% / C% / B% / Be%						-						4% / 2% / 49% / 38% / 1% / 6%												
d16 / d35 / d50 / d84 / d95 / di^p / di^{sp} (mm)						--/5/6/11/15						14 / 36 / 52 / 110 / 170 / - / -												
Reach Shear Stress (Competency) lb/ft^2						-						0.562					-				-			
Max Part Size (mm) Mobilized at Bankfull						-						947					32				-			
Stream Power (Transport Capacity) W/m^2						-						-					-							
Additional Reach Parameters																								
Drainage Area (mi^2)						0.04						0.42												
Impervious Cover Estimate (%)						-						-												
Rosgen Classification						G						B4c					B4				B4			
Bankfull Velocity (fps)		-				-						3.8					-							
Bankfull Discharge (cfs)		8.77				-						28.0					9							
Valley Length (ft)						-						260.0					896							
Channel Thalweg Length (ft)						-						-					975				920			
Sinuosity						-						1.50					1.00				1.03			
Water Surface Slope (ft/ft)						-						-					0.0420				0.029			
Bankfull Slope (ft/ft)						-						-					-				0.028			
Bankfull Floodplain Area (acres)						-						-					-							
Proportion Over Wide (%)						-						-												
Entrenchment Class (ER Range)						-						-												
Incision Class (BHR Range)						-						-												
BEHI						25.2						-												
Channel Stability or Habitat Metric						-						-												
Biological or Other						-						-												

[1]Based on average design values for Subreaches 2b-2e

- Information unavailable.
N/A - Item does not apply.
Non-Applicable.

Table 10 cont'd. Baseline Stream Data Summary
Pee Dee Stream Restoration Site - Dale Branch 3 (559 feet)

Parameter	Regional Curve			Pre-Existing Condition						Reference Reach Data						Design			As-Built / Baseline					
Dimension & Substrate - Riffle	**LL**	**UL**	**Eq.**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Max**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**
Bankfull Width (ft)	-	-	3.28	3.0	3.3	3.3	3.6	0.4	2	9.8	11.7	-	13.1	-	-	-	7.2	-	7.3	7.3	7.3	7.3	-	1
Floodprone Width (ft)				9.0	12.0	12.0	15.0	4.2	2	16.0	18.0	-	21	-	-	-	-	-	18.5	18.5	18.5	18.5	-	1
Bankfull Mean Depth (ft)	-	-	0.58	0.6	0.7	0.7	0.7	0.1	2	0.5	0.62	-	0.8	-	-	-	0.39	-	0.3	0.3	0.3	0.3	-	1
Bankfull Max Depth (ft)				0.7	0.8	0.8	0.9	0.1	2	0.8	0.9	-	1.2	-	-	-	0.59	-	0.7	0.7	0.7	0.7	-	1
Bankfull Cross Sectional Area (ft^2)	2.8			3.0	3.6	3.6	4.1	0.8	2	5.4	7.3	-	8	-	-	-	2.8	-	2.5	2.5	2.5	2.5	-	1
Width/Depth Ratio				8.8	10.4	10.4	11.9	2.2	2	12.3	18.8	-	19.6	-	-	-	18.7	-	21.1	21.1	21.1	21.1	-	1
Entrenchment Ratio				1.5	2.0	2.0	2.5	0.7	2	1.4	1.5	-	1.8	-	-	-	4.2	-	2.5	2.5	2.5	2.5	-	1
Bank Height Ratio				1.6	1.9	1.9	2.2	0.4	2	0.9	1	-	1.4	-	-	-	-	-	1.0	1.0	1.0	1.0	-	1
d50 (mm)				-	-	-	-	-	-	-	52	-		-	-	-	-	-						
Profile																								
Riffle Length (ft)				-	-	-	-	-	-	4.0	14.0	-	30.0	-	-	-	-	-	0.5	12.6	10.7	60.6	10.9	24
Riffle Slope (ft/ft)				-	-	-	-	-	-	0.017	0.027	-	0.059	-	-	-	0.008	-	0.005	0.026	0.025	0.061	0.014	24
Pool Length (ft)				-	-	-	-	-	-	7.0	13.0	-	30.0	-	-	-	-	-	1.3	3.3	2.9	9.0	1.5	23
Pool Max Depth (ft)				-	-	-	-	-	-	1.8	1.9	-	2.7	-	-	-	0.89	-	0.8	1.3	1.3	1.7	0.2	23
Pool Spacing (ft)				-	-	-	-	-	-	18.0	39.0	-	53.0	-	-	-	21.9	-	13.3	21.0	18.5	63.1	10.1	23
Pattern																								
Channel Belt Width (ft)				-	-	-	-	-	-	-	21.0	-	-	-	-	-	-	-	17.8	26.7	27.9	33.4	7.4	4
Radius of Curvature (ft)				-	-	-	-	-	-	-	18.0	-	-	-	-	11.0	-	16.0	8.7	10.2	9.8	12.1	1.4	6
Rc: Bankfull Width (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2	1.4	1.3	1.7	0.2	1
Meander Wavelength (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	29.6	39.9	37.4	55.7	10.0	6
Meander Width Ratio				-	-	-	-	-	-	-	1.8	-	-	-	-	-	2	-	2.4	3.7	3.8	4.6	1.0	4
Substrate, Bed and Transport Parameters																								
Ri% / Ru% / P% / G% / S%				-						-									62% / 0% / 16% /11% /11%					
SC% / Sa% / G% / C% / B% / Be%				-						4% / 2% / 49% / 38% / 1% / 6%														
d16 / d35 / d50 / d84 / d95 / di^p / di^{sp} (mm)				--/5/6/11/15						14 / 36 / 52 / 110 / 170 / - / -														
Reach Shear Stress (Competency) lb/ft^2				-						0.562						-			-					
Max Part Size (mm) Mobilized at Bankfull				-						947						32			-					
Stream Power (Transport Capacity) W/m^2				-						-						-								
Additional Reach Parameters																								
Drainage Area (mi^2)				0.05						0.42														
Impervious Cover Estimate (%)				-						-														
Rosgen Classification				G						B4c						B4			B4					
Bankfull Velocity (fps)	-			-						3.8						-								
Bankfull Discharge (cfs)	10.3			-						28.0						10								
Valley Length (ft)				-						260.0						531								
Channel Thalweg Length (ft)				-						-						550			559					
Sinuosity				-						1.50						1.0			1.05					
Water Surface Slope (ft/ft)				-						-						0.027			0.024					
Bankfull Slope (ft/ft)				-						-						-			0.026					
Bankfull Floodplain Area (acres)				-						-						-								
Proportion Over Wide (%)				-						-														
Entrenchment Class (ER Range)				-						-														
Incision Class (BHR Range)				-						-														
BEHI				20.47						-														
Channel Stability or Habitat Metric				-						-														
Biological or Other				-						-														

- Information unavailable.
Non-Applicable.

Table 10 cont'd. Baseline Stream Data Summary
Pee Dee Stream Restoration Site - Dale Branch 4 (835 feet)

Parameter	Regional Curve			Pre-Existing Condition						Reference Reach Data						Design			As-Built / Baseline					
Dimension & Substrate - Riffle	**LL**	**UL**	**Eq.**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Max**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**
Bankfull Width (ft)	-	-	4.01	5.5	6.0	6.0	6.5	0.7	2	9.8	11.7	-	13.1	-	-	-	6.1	-	6.3	6.4	6.4	6.5	0.14	2
Floodprone Width (ft)				6.5	7.8	7.8	9.0	1.8	2	16.0	18.0	-	21	-	-	-	-	-	22.0	33.1	33.1	44.2	15.7	2
Bankfull Mean Depth (ft)	-	-	0.67	0.8	0.8	0.8	0.8	0.0	2	0.5	0.62	-	0.8	-	-	-	0.47	-	0.3	0.4	0.4	0.5	0.14	2
Bankfull Max Depth (ft)				1.0	1.0	1.0	1.0	0.0	2	0.8	0.9	-	1.2	-	-	-	0.67	-	0.7	0.8	0.8	0.9	0.14	2
Bankfull Cross Sectional Area (ft^2)	3.9			4.1	4.6	4.6	5.0	0.6	2	5.4	7.3	-	8	-	-	-	2.9	-	1.9	2.5	2.5	3.1	0.85	2
Width/Depth Ratio				7.3	7.9	7.9	8.4	0.8	2	12.3	18.8	-	19.6	-	-	-	13.0	-	13.8	17.4	17.4	21.0	5.09	2
Entrenchment Ratio				1.2	1.3	1.3	1.4	0.1	2	1.4	1.5	-	1.8	-	-	-	4.1	-	3.5	5.2	5.2	6.8	2.33	2
Bank Height Ratio				3.3	3.5	3.5	3.7	0.3	2	0.9	1	-	1.4	-	-	-	-	-	1.0	1.0	1.0	1.0	0.0	2
d50 (mm)				-	-	-	-	-	-	-	52	-	-	-	-	-	-	-						
Profile																								
Riffle Length (ft)				-	-	-	-	-	-	4.0	14.0	-	30.0	-	-	-	-	-	7.8	17.8	14.5	68.7	12.3	31
Riffle Slope (ft/ft)				-	-	-	-	-	-	0.017	0.027	-	0.059	-	-	-	0.002	-	0.003	0.018	0.016	0.048	0.009	31
Pool Length (ft)				-	-	-	-	-	-	7.0	13.0	-	30.0	-	-	-	-	-	1.5	3.2	2.9	12.5	2.1	30
Pool Max Depth (ft)				-	-	-	-	-	-	1.8	1.9	-	2.7	-	-	-	1.01	-	0.1	1.4	1.4	2.1	0.3	33
Pool Spacing (ft)				-	-	-	-	-	-	18.0	39.0	-	53.0	-	-	-	19.6	-	14.4	26.0	22.2	77.4	13.7	31
Pattern																								
Channel Belt Width (ft)				-	-	-	-	-	-	-	21.0	-	-	-	-	-	-	-	16.7	18.7	18.0	22.2	2.5	4
Radius of Curvature (ft)				-	-	-	-	-	-	-	18.0	-	-	-	-	9.0	-	14.0	9.3	13.1	13.6	16.4	2.9	6
Rc: Bankfull Width (ft)				-	-	-	-	-	-	-		-	-	-	-	-	-	-	1.4	2.1	2.1	2.6	0.5	2
Meander Wavelength (ft)				-	-	-	-	-	-	-		-	-	-	-	-	-	-	34.4	45.9	39.9	62.7	12.5	6
Meander Width Ratio				-	-	-	-	-	-	-	1.8	-	-	-	-	-	2	-	2.6	2.9	2.8	3.5	0.4	4
Substrate, Bed and Transport Parameters																								
Ri% / Ru% / P% / G% / S%				-						-									68%/ 0%/ 12%/ 8%/ 11%					
SC% / Sa% / G% / C% / B% / Be%				-						4% / 2% / 49% / 38% / 1% / 6%														
d16 / d35 / d50 / d84 / d95 / di^p / di^{sp} (mm)				--/5/6/11/15						14 / 36 / 52 / 110 / 170 / - / -														
Reach Shear Stress (Competency) lb/ft^2				-						0.562						-			-					
Max Part Size (mm) Mobilized at Bankfull				-						947						32			-					
Stream Power (Transport Capacity) W/m^2				-						-						-								
Additional Reach Parameters																								
Drainage Area (mi^2)				0.08						0.42														
Impervious Cover Estimate (%)				-						-														
Rosgen Classification				G						B4c						B4			B4					
Bankfull Velocity (fps)	-			-						3.8						-								
Bankfull Discharge (cfs)	14.45			-						28.0						14								
Valley Length (ft)				-						260.0						810								
Channel Thalweg Length (ft)				-						-						825			835					
Sinuosity				-						1.50						1.00			1.03					
Water Surface Slope (ft/ft)				-						-						0.028			0.024					
Bankfull Slope (ft/ft)				-						-						-			0.020					
Bankfull Floodplain Area (acres)				-						-						-								
Proportion Over Wide (%)				-						-														
Entrenchment Class (ER Range)				-						-														
Incision Class (BHR Range)				-						-														
BEHI				24.25						-														
Channel Stability or Habitat Metric				-						-														
Biological or Other				-						-														

- Information unavailable.
N/A - Item does not apply.
Non-Applicable.

Table 10 cont'd. Baseline Stream Data Summary
Pee Dee Stream Restoration Site - Dale Branch 5 (679 feet)

Parameter	Regional Curve			Pre-Existing Condition						Reference Reach Data						Design[1]			As-Built / Baseline					
Dimension & Substrate - Riffle	**LL**	**UL**	**Eq.**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Max**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**
Bankfull Width (ft)	-	-	4.2	-	8.0	-	-	-	1	9.8	11.7	-	13.1	-	-	-	6.4	-	7.1	7.1	7.1	7.1	-	1
Floodprone Width (ft)				-	9.0	-	-	-	1	16.0	18.0	-	21	-	-	-	-	-	23.9	23.9	23.9	23.9	-	1
Bankfull Mean Depth (ft)	-	-	0.7	-	0.8	-	-	-	1	0.5	0.62	-	0.8	-	-	-	0.49	-	0.5	0.5	0.5	0.5	-	1
Bankfull Max Depth (ft)				-	1.0	-	-	-	1	0.8	0.9	-	1.2	-	-	-	0.69	-	0.7	0.7	0.7	0.7	-	1
Bankfull Cross Sectional Area (ft^2)	4.2			-	5.0	-	-	-	1	5.4	7.3	-	8	-	-	-	3.1	-	3.3	3.3	3.3	3.3	-	1
Width/Depth Ratio				-	12.9	-	-	-	1	12.3	18.8	-	19.6	-	-	-	13.1	-	15.2	15.2	15.2	15.2	-	1
Entrenchment Ratio				-	1.1	-	-	-	1	1.4	1.5	-	1.8	-	-	-	3.1	-	3.4	3.4	3.4	3.4	-	1
Bank Height Ratio				-	2.6	-	-	-	1	0.9	1	-	1.4	-	-	-	-	-	1.0	1.0	1.0	1.0	-	1
d50 (mm)				-	-	-	-	-	-	-	52	-	-	-	-	-	-	-						
Profile																								
Riffle Length (ft)				-	-	-	-	-	-	4.0	14.0	-	30.0	-	-	-	-	-	7.2	18.3	20.3	25.1	6.0	11
Riffle Slope (ft/ft)				-	-	-	-	-	-	0.017	0.027	-	0.059	-	-	-	0.002	-	0.005	0.022	0.024	0.044	0.011	11
Pool Length (ft)				-	-	-	-	-	-	7.0	13.0	-	30.0	-	-	-	-	-	1.8	3.0	3.1	4.0	0.7	12
Pool Max Depth (ft)				-	-	-	-	-	-	1.8	1.9	-	2.7	-	-	-	1.04	-	1.1	1.5	1.4	2.2	0.4	11
Pool Spacing (ft)				-	-	-	-	-	-	18.0	39.0	-	53.0	-	-	-	29.9	-	12.1	26.4	28.4	35.2	6.8	11
Pattern																								
Channel Belt Width (ft)				-	-	-	-	-	-	-	21.0	-	-	-	-	-	-	-	13.2	15.3	15.6	17.1	1.9	3
Radius of Curvature (ft)				-	-	-	-	-	-	-	18.0	-	-	-	-	7.0	-	12.0	8.7	14.1	15.6	16.7	3.6	4
Rc: Bankfull Width (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2	2.0	2.2	2.4	0.5	2
Meander Wavelength (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	47.9	56.4	54.8	67.7	7.2	6
Meander Width Ratio				-	-	-	-	-	-	-	1.8	-	-	-	-	-	2	-	1.9	2.2	2.2	2.4	0.3	3
Substrate, Bed and Transport Parameters																								
Ri% / Ru% / P% / G% / S%					-						-									68% / 0%/ 12%/ 13%/ 7%				
SC% / Sa% / G% / C% / B% / Be%					-						4% / 2% / 49% / 38% / 1% / 6%													
d16 / d35 / d50 / d84 / d95 / di^p / di^{sp} (mm)					--/5/6/11/15						14 / 36 / 52 / 110 / 170 / - / -													
Reach Shear Stress (Competency) lb/ft^2					-						0.562						-			-				
Max Part Size (mm) Mobilized at Bankfull					-						947						32			-				
Stream Power (Transport Capacity) W/m^2					-						-						-							
Additional Reach Parameters																								
Drainage Area (mi^2)					0.09						0.42													
Impervious Cover Estimate (%)					-						-													
Rosgen Classification					F						B4c						B4			B4				
Bankfull Velocity (fps)		-			-						3.8						-							
Bankfull Discharge (cfs)		15.73			-						28.0						16							
Valley Length (ft)					-						260.0						695							
Channel Thalweg Length (ft)					-						-						725			679				
Sinuosity					-						1.50						1.0			0.977				
Water Surface Slope (ft/ft)					-						-						0.023			0.024				
Bankfull Slope (ft/ft)					-						-						-			0.024				
Bankfull Floodplain Area (acres)					-						-						-							
Proportion Over Wide (%)					-						-													
Entrenchment Class (ER Range)					-						-													
Incision Class (BHR Range)					-						-													
BEHI					23.1						-													
Channel Stability or Habitat Metric					-						-													
Biological or Other					-						-													

[1]Values taken from Subreach 5b

- Information unavailable.

Non-Applicable.

Table 10 con't. Baseline Stream Data Summary
Pee Dee Stream Restoration Site - Thompson Branch 1 (530 feet)

Parameter	Regional Curve			Pre-Existing Condition						Reference Reach Data						Design			As-Built / Baseline					
Dimension & Substrate - Riffle	**LL**	**UL**	**Eq.**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Max**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**
Bankfull Width (ft)	-	-	4.6	-	5.0	-	-	-	1	9.8	11.7	-	13.1	-	-	-	8.8	-	-	-	-	-	-	-
Floodprone Width (ft)				-	20.0	-	-	-	1	16.0	18.0	-	21.0	-	-	-	-	-	-	-	-	-	-	-
Bankfull Mean Depth (ft)	-	-	0.7	-	1.0	-	-	-	1	0.5	0.6	-	0.8	-	-	-	0.48	-	-	-	-	-	-	-
Bankfull Max Depth (ft)				-	1.3	-	-	-	1	0.8	0.9	-	1.2	-	-	-	0.73	-	-	-	-	-	-	-
Bankfull Cross Sectional Area (ft^2)	4.8			-	4.6	-	-	-	1	5.4	7.3	-	8.0	-	-	-	4.2	-	-	-	-	-	-	-
Width/Depth Ratio				-	5.5	-	-	-	1	12.3	18.8	-	19.6	-	-	-	18.6	-	-	-	-	-	-	-
Entrenchment Ratio				-	4.0	-	-	-	1	1.4	1.5	-	1.8	-	-	-	3.4	-	-	-	-	-	-	-
Bank Height Ratio				-	1.2	-	-	-	1	0.9	1.0	-	1.4	-	-	-	-	-	-	-	-	-	-	-
d50 (mm)				-	-	-	-	-	-	-	52	-		-	-	-	-	-	-	-	-	-	-	-
Profile																								
Riffle Length (ft)				-	-	-	-	-	-	4.0	14.0	-	30.0	-	-	-	-	-	44.7	44.7	44.7	44.7	-	1
Riffle Slope (ft/ft)				-	-	-	-	-	-	0.017	0.027	-	0.059	-	-	-	-	-	0.006	0.006	0.006	0.006	-	1
Pool Length (ft)				-	-	-	-	-	-	7.0	13.0	-	30.0	-	-	-	-	-	9.6	20.6	17.0	35.0	11.6	6
Pool Max Depth (ft)				-	-	-	-	-	-	1.8	1.9	-	2.7	-	-	-	1.1	-	1.6	2.0	1.9	2.3	0.3	7
Pool Spacing (ft)				-	-	-	-	-	-	18.0	39.0	-	53.0	-	-	-	28.6	-	11.0	22.3	18.3	36.5	11.2	6
Pattern																								
Channel Belt Width (ft)				-	-	-	-	-	-	-	21.0	-	-	-	-	-	-	-	19.0	26.1	22.9	36.4	9.1	3
Radius of Curvature (ft)				-	-	-	-	-	-	-	18.0	-	-	-	-	13.0	-	19.0	12.3	13.1	13.2	13.7	0.7	3
Rc: Bankfull Width (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.4	1.5	1.5	1.6	0.1	1
Meander Wavelength (ft)				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60.7	94.7	81.4	155.2	44.0	4
Meander Width Ratio				-	-	-	-	-	-	-	1.8	-	-	-	-	-	3	-	2.2	3.0	2.6	4.1	1.0	3
Substrate, Bed and Transport Parameters																								
Ri% / Ru% / P% / G% / S%				-						-									25% / 0% / 69% / 0% / 6%					
SC% / Sa% / G% / C% / B% / Be%				-						4% / 2% / 49% / 38% / 1% / 6%														
d16 / d35 / d50 / d84 / d95 / di^p / di^{sp} (mm)				4 / 6 /8 /15 / 24						14 / 36 / 52 / 110 / 170 / - / -														
Reach Shear Stress (Competency) lb/ft^2				-						0.562						-			-					
Max Part Size (mm) Mobilized at Bankfull				-						947						37			-					
Stream Power (Transport Capacity) W/m^2				-						-						-								
Additional Reach Parameters																								
Drainage Area (mi^2)				0.11						0.42														
Impervious Cover Estimate (%)				-						-														
Rosgen Classification				G						B4c						B4			B4					
Bankfull Velocity (fps)	-			-						3.8						-								
Bankfull Discharge (cfs)	18.2			-						28.0						18								
Valley Length (ft)				-						260.0						294								
Channel Thalweg Length (ft)				-						-						511			530					
Sinuosity				-						1.50						1.0			1.06					
Water Surface Slope (ft/ft)				-						-						0.030			0.031					
Bankfull Slope (ft/ft)				-						-						-			0.030					
Bankfull Floodplain Area (acres)				-						-						-								
Proportion Over Wide (%)				-						-														
Entrenchment Class (ER Range)				-						-														
Incision Class (BHR Range)				-						-														
BEHI				30.9						-														
Channel Stability or Habitat Metric				-						-														
Biological or Other				-						-														

- Information unavailable.
Non-Applicable.

Table 10 cont'd. Baseline Stream Data Summary
Pee Dee Stream Restoration Site - Thompson Branch 2 (1,061 feet)

Parameter	Regional Curve			Pre-Existing Condition						Reference Reach Data						Design			As-Built / Baseline					
Dimension & Substrate - Riffle	**LL**	**UL**	**Eq.**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**	**Min**	**Mean**	**Max**	**Min**	**Mean**	**Med**	**Max**	**SD**	**N**
Bankfull Width (ft)	-	-	5.11	7.0	7.7	7.0	9.0	1.2	3	9.8	11.7	-	13.1	-	-	-	7.5	-	7.5	7.6	7.6	7.6	0.07	2
Floodprone Width (ft)				9.0	14.7	15.0	20.0	5.5	2	16.0	18.0	-	21.0	-	-	-	-	-	31.1	32.7	32.7	34.3	2.26	2
Bankfull Mean Depth (ft)	-	-	0.8	0.9	0.9	0.9	1.0	0.1	3	0.5	0.6	-	0.8	-	-	-	0.6	-	0.6	0.6	0.6	0.6	0	2
Bankfull Max Depth (ft)				1.1	1.1	1.1	1.2	0.1	3	0.8	0.9	-	1.2	-	-	-	0.78	-	1.1	1.2	1.2	1.2	0.07	2
Bankfull Cross Sectional Area (ft^2)	5.6			5.7	6.7	6.0	8.4	1.5	3	5.4	7.3	-	8.0	-	-	-	4.2	-	4.2	4.3	4.3	4.3	0.07	2
Width/Depth Ratio				8.1	8.8	8.5	9.7	0.8	3	12.3	18.8	-	19.6	-	-	-	13.5	-	13.3	13.4	13.4	13.4	0.07	2
Entrenchment Ratio				1.3	2.0	1.7	2.9	0.8	3	1.4	1.5	-	1.8	-	-	-	4.0	-	4.1	4.3	4.3	4.5	0.28	2
Bank Height Ratio				1.4	2.2	2.4	2.9	0.8	3	0.9	1.0	-	1.4	-	-	-	-	-	1.0	1.0	1.0	1.0	0.0	2
d50 (mm)				-	-	-	-	-	-		52	-		-	-	-	-	-						
Profile																								
Riffle Length (ft)				-	-	-	-	-	-	4.0	14.0	-	30.0	-	-	-	-	-	10.0	15.8	15.2	25.4	3.9	32
Riffle Slope (ft/ft)				-	-	-	-	-	-	0.017	0.027	-	0.059	-	-	-	0.008	-	0.005	0.014	0.013	0.023	0.005	32
Pool Length (ft)				-	-	-	-	-	-	7.0	13.0	-	30.0	-	-	-	-	-	1.8	5.0	4.6	18.3	3.0	32
Pool Max Depth (ft)				-	-	-	-	-	-	1.8	1.9	-	2.7	-	-	-	1.17	-	1.4	2.1	2.0	2.6	0.3	32
Pool Spacing (ft)				-	-	-	-	-	-	18.0	39.0	-	53.0	-	-	-	26.2	-	19.5	27.5	25.9	54.0	7.4	32
Pattern																								
Channel Belt Width (ft)				-	-	-	-	-	-	-	21.0	-	-	-	-	-	-	-	14.4	22.4	19.5	37.8	8.2	6
Radius of Curvature (ft)				-	-	-	-	-	-	-	18.0	-	-	-	-	12.0	-	18.0	10.5	18.3	18.5	25.9	6.7	4
Rc: Bankfull Width (ft)				-	-	-	-	-	-	-		-	-	-	-	-	-	-	1.4	2.4	2.5	3.5	0.9	2
Meander Wavelength (ft)				-	-	-	-	-	-	-		-	-	-	-	-	-	-	34.3	48.7	50.5	60.9	9.8	6
Meander Width Ratio				-	-	-	-	-	-	-	1.8	-	-	-	-	-	3	-	2.2	3.0	2.6	4.1	1.0	3
Substrate, Bed and Transport Parameters																								
Ri% / Ru% / P% / G% / S%				-						-									57% / 0% / 18% / 11% / 14%					
SC% / Sa% / G% / C% / B% / Be%				-						4% / 2% / 49% / 38% / 1% / 6%														
d16 / d35 / d50 / d84 / d95 / di^p / di^{sp} (mm)				4 / 6 / 8 / 15 /24						14 / 36 / 52 / 110 / 170 / - / -														
Reach Shear Stress (Competency) lb/ft^2				-						0.562						-			-					
Max Part Size (mm) Mobilized at Bankfull				-						947						37			-					
Stream Power (Transport Capacity) W/m^2				-						-						-								
Additional Reach Parameters																								
Drainage Area (mi^2)				0.14						0.42														
Impervious Cover Estimate (%)				-						-														
Rosgen Classification				G						B4c						B4			B4					
Bankfull Velocity (fps)	-			-						3.8						-								
Bankfull Discharge (cfs)	21.6			-						28.0						22								
Valley Length (ft)				-						260.0						1,010								
Channel Thalweg Length (ft)				-						-						1,150			1,061					
Sinuosity				-						1.50						1.1			1.05					
Water Surface Slope (ft/ft)				-						-						0.020			0.020					
Bankfull Slope (ft/ft)				-						-						0.022			0.022					
Bankfull Floodplain Area (acres)				-						-						-								
Proportion Over Wide (%)				-						-														
Entrenchment Class (ER Range)				-						-														
Incision Class (BHR Range)				-						-														
BEHI				29.8						-														
Channel Stability or Habitat Metric				-						-														
Biological or Other				-						-														

- Information unavailable.
Non-Applicable.

Appendix D. Table 11a. - Monitoring Data - Dimensional Morphology Summary
(Dimensional Parameters - Cross Sections)
Pee Dee Stream Restoration Site - Jerry Branch

	Reach 1 Cross-Section 1 Pool								Reach 1 Cross-Section 2 Riffle								Reach 2 Cross-Section 3 Pool								Reach 2 Cross-Section 4 Riffle							
Dimension	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**
Record elevation (datum) used[1]	320.1	320.1	320.1	320.1	---	N/A	---	320.23	319.6	319.6	319.6	319.6	---	319.71	---	319.69	312.9	312.9	312.9	312.9	---	N/A	---	312.22	310.6	310.6	310.6	310.6	---	310.67	---	310.76
Bankfull Width (ft)[1]	9.1	8.3	8.3	8.2	---	N/A	---	N/A	8.1	7.0	6.7	6.9	---	8.6	---	7.9	7.8	8.1	8.1	9.8	---	N/A	---	N/A	7.1	7.2	7.2	7.7	---	7.3	---	7.8
Floodprone Width (ft)[1]	>25	>25	>25	>25	---	N/A	---	N/A	>30	>30	>30	>30	---	>29.9	---	>28.2	>30	>30	>30	>30	---	N/A	---	N/A	>25	>25	>25	>25	---	21.6	---	17.3
Bankfull Mean Depth (ft)	0.9	0.8	0.8	0.8	---	---	---	---	0.5	0.3	0.4	0.4	---	---	---	---	1.1	1.0	1.1	1.0	---	---	---	---	0.4	0.4	0.4	0.3	---	---	---	---
Bankfull Max Depth (ft)[2]	1.7	1.3	1.2	1.2	---	1.7	---	1.3	1.0	0.5	0.6	0.6	---	0.8	---	0.8	2.3	2	2.2	2.1	---	2.1	---	2.2	0.7	0.6	0.6	0.6	---	0.7	---	0.7
Low Bank Elevation	-	-	-	-	---	320.33	---	320.15	-	-	-	-	---	319.68	---	319.75	-	-	-	-	---	312.68	---	312.71	-	-	-	-	---	310.63	---	310.82
Bankfull Cross Sectional Area (ft^2)[2]	8.5	6.8	6.9	6.6	---	10.2	---	7.8	3.7	2.4	2.6	2.7	---	3.5	---	4.2	8.3	7.7	8.7	9.4	---	10.1	---	11.8	3.1	3.0	2.7	2.6	---	2.8	---	3.5
Bankfull Width/Depth Ratio	9.8	10.1	9.9	10.1	---	---	---	---	17.7	20.3	17.5	17.6	---	---	---	---	7.4	8.4	7.6	10.2	---	---	---	---	16.4	17	19.4	22.6	---	---	---	---
Bankfull Entrenchment Ratio[1]	>2.7	>3.0	>3.0	N/A	---	N/A	---	N/A	>3.7	>4.3	>4.5	4.0	---	>3.5	---	>3.6	>3.8	>3.7	>3.7	N/A	---	N/A	---	N/A	>3.5	>3.5	>3.5	3.2	---	3	---	2.2
Bankfull Bank Height Ratio[1]	1.0	1.0	1.0	N/A	---	N/A	---	N/A	1.0	1.0	1.0	1.0	---	1	---	1.1	1.0	1.0	1.0	N/A	---	N/A	---	N/A	1.0	1.0	1.0	0.9	---	<1	---	1.1
d50 (mm)	N/A	N/A	N/A	N/A	---	N/A	---	N/A	N/A	0.2	0.062	12.0	---	12	---	22	N/A	N/A	N/A	N/A	---	N/A	---	N/A	N/A	22	5.2	12.0	---	22	---	6

	Reach 3 Cross-Section 5 Pool								Reach 3 Cross-Section 6 Riffle								Reach 3 Cross-Section 7 Riffle							
Dimension	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**
Record elevation (datum) used[1]	301.7	301.7	301.7	301.7	---	N/A	---	301.8	298.8	298.8	298.8	298.8	---	299.26	---	299.4	290.2	290.2	290.2	290.2	---	290.45	---	290.8
Bankfull Width (ft)[1]	8.1	9.2	9.7	9.4	---	N/A	---	N/A	7.4	7.5	7.3	6.9	---	12	---	10.2	7.2	6.7	6.4	6.2	---	7.4	---	9.9
Floodprone Width (ft)[1]	>25	>25	>25	>25	---	N/A	---	N/A	>30	>30	>30	>30	---	>33.8	---	>34.4	>25	>25	>25	>25	---	23.7	---	26.0
Bankfull Mean Depth (ft)	1.0	0.7	0.7	0.7	---	---	---	---	0.4	0.4	0.4	0.4	---	---	---	---	0.4	0.3	0.4	0.4	---	---	---	---
Bankfull Max Depth (ft)[2]	1.8	1.3	1.3	1.4	---	0.9	---	1.3	0.9	0.6	0.6	0.6	---	0.5	---	0.4	0.8	0.5	0.5	0.5	---	0.5	---	0.5
Low Bank Elevation	-	-	-	-	---	301.09	---	301.7	-	-	-	-	---	299.19	---	299.2	-	-	-	-	---	290.29	---	290.8
Bankfull Cross Sectional Area (ft^2)[2]	7.9	6.3	6.8	6.9	---	3.2	---	7.4	3.3	3.3	2.9	2.4	---	2.5	---	1.2	3.0	2.3	2.4	2.2	---	2	---	3.0
Bankfull Width/Depth Ratio	8.3	13.3	13.7	13.0	---	---	---	---	16.6	16.7	18.7	19.4	---	---	---	---	17.7	19.4	17.0	17.4	---	---	---	---
Bankfull Entrenchment Ratio[1]	>3.1	>2.7	>2.6	N/A	---	N/A	---	N/A	>4.1	>4.0	>4.1	4.4	---	>2.8	---	3.4	>3.4	>3.7	>3.9	4.0	---	3.2	---	2.6
Bankfull Bank Height Ratio[1]	N/A	N/A	N/A	N/A	---	N/A	---	N/A	1.0	1.0	1.0	1.0	---	<1	---	0.7	1.0	1.0	1.0	0.9	---	<1	---	1.0
d50 (mm)	N/A	N/A	N/A	N/A	---	N/A	---	N/A	N/A	5.5	14.0	52.0	---	17	---	7.4	N/A	34.0	15.0	27.0	---	16	---	16

N/A - Information Not Available

Note: Starting in MY5, the parameters denoted with [1] were calculated using the as-built cross sectional area as the basis for adjusting the bankfull elevation and the parameters denoted with [2] were calculated using the current years low top of bank as the bankfull elevation. These changes reflect the 2018 guidance that arose from the mitigation technical workgroup consisting of DMS, the IRT, and industry mitigation providers.

Appendix D. Table 11a. cont'd - Monitoring Data - Dimensional Morphology Summary
(Dimensional Parameters - Cross Sections)
Pee Dee Stream Restoration Site - Dale Branch

	Reach 2 Cross-Section 8 Riffle								Reach 2 Cross-Section 9 Pool								Reach 2 Cross-Section 10 Riffle								Reach 2 Cross-Section 11 Pool							
Dimension	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**
Record elevation (datum) used[1]	354.94	354.94	354.94	354.94	---	354.96	---	355.04	354.7	354.7	354.7	354.7	---	N/A	---	354.75	348.1	348.1	348.1	348.1	---	348.06	---	348.08	347.4	347.4	347.4	347.4	---	N/A	---	347.49
Bankfull Width (ft)[1]	7.0	7.3	7.2	6.5	---	7.7	---	6.2	7.7	8.0	8.1	7.7	---	N/A	---	N/A	6.4	6.2	6.2	6.5	---	5.9	---	5.9	7.6	8	8.3	9.4	---	N/A	---	N/A
Floodprone Width (ft)[1]	>25	>25	>25	>25	---	>24.5	---	21.3	>25	>25	>25	>25	---	N/A	---	N/A	>25	>25	>25	>25	---	15.2	---	0.3	>20	>20	>20	>20	---	N/A	---	N/A
Bankfull Mean Depth (ft)	0.3	0.2	0.3	0.2	---	---	---	---	0.6	0.6	0.6	0.6	---	---	---	---	0.3	0.3	0.3	0.3	---	---	---	---	0.8	0.7	0.7	0.7	---	---	---	---
Bankfull Max Depth (ft)[2]	0.7	0.5	0.5	0.5	---	0.6	---	0.6	1.7	1.5	1.7	1.5	---	1.5	---	1.4	0.5	0.5	0.5	0.6	---	0.5	---	0.5	1.6	1.2	1.3	1.3	---	1	---	1.1
Low Bank Elevation	-	-	-	-	---	354.85	---	354.9	-	-	-	-	---	354.59	---	354.6	-	-	-	-	---	347.99	---	348.03	-	-	-	-	---	347.3	---	347.47
Bankfull Cross Sectional Area (ft^2)[2]	2.0	1.7	2.0	1.6	---	1.3	---	1.7	4.8	4.8	5.0	5	---	4.2	---	4.1	1.8	1.6	1.7	1.8	---	1.4	---	1.6	6.1	5.9	6.0	6.7	---	4.6	---	6
Bankfull Width/Depth Ratio	24.6	30.6	26.0	26.9	---	---	---	---	12.3	13.5	13.3	11.8	---	---	---	---	22.6	23.7	21.7	23.4	---	---	---	---	9.5	10.9	11.5	13.3	---	---	---	---
Bankfull Entrenchment Ratio[1]	>3.6	>3.4	>3.5	3.9	---	>3.2	---	3.4	>3.1	>3.1	>3.1	N/A	---	N/A	---	N/A	>3.9	>4.0	>4.1	3.9	---	2.6	---	2.5	>2.6	>2.5	>2.4	N/A	---	N/A	---	N/A
Bankfull Bank Height Ratio[1]	1.0	1.0	1.0	0.9	---	<1	---	0.9	1.0	1.0	1.0	N/A	---	N/A	---	N/A	1.0	1.0	1.0	0.9	---	<1	---	0.9	1.0	1.0	1.0	N/A	---	N/A	---	N/A
d50 (mm)	N/A	8.0	8.3	7.1	---	16	---	1.8	N/A	N/A	N/A	N/A	---	N/A	---	N/A	N/A	19	4.3	25.0	---	41	---	36	N/A	N/A	N/A	N/A	---	N/A	---	N/A

	Reach 3 Cross-Section 12 Riffle								Reach 3 Cross-Section 13 Pool								Reach 4 Cross-Section 14 Pool								Reach 4 Cross-Section 15 Riffle							
Dimension	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**
Record elevation (datum) used[1]	327.8	327.8	327.8	327.8	---	327.77	---	327.6	326.1	326.1	326.1	326.1	---	N/A	---	326.1	315.3	315.3	315.3	315.3	---	N/A	---	315.5	314.1	314.1	314.1	314.1	---	313.88	---	313.6
Bankfull Width (ft)[1]	7.3	7.1	7.1	7.8	---	5.4	---	5.1	7.8	7.6	7.7	8.3	---	N/A	---	N/A	6.7	7.2	7.0	5.8	---	N/A	---	N/A	6.5	6.2	6.5	6.8	---	5.4	---	4.1
Floodprone Width (ft)[1]	>20	>20	>20	>20	---	17.7	---	15.7	>20	>20	>20	>20	---	N/A	---	N/A	>30	>30	>30	>30	---	N/A	---	N/A	>40	>40	>40	>40	---	>43.2	---	35.7
Bankfull Mean Depth (ft)	0.3	0.3	0.4	0.4	---	---	---	---	0.5	0.5	0.4	0.4	---	---	---	---	0.9	0.6	0.7	0.8	---	---	---	---	0.5	0.5	0.5	0.5	---	---	---	---
Bankfull Max Depth (ft)[2]	0.7	0.6	0.8	0.8	---	0.8	---	0.9	1.3	1.1	1.0	0.9	---	0.8	---	0.7	2.0	1.0	1.3	1.3	---	1.2	---	0.9	0.9	0.8	0.8	0.8	---	1.3	---	1.6
Low Bank Elevation	-	-	-	-	---	327.84	---	327.8	-	-	-	-	---	325.82	---	325.9	-	-	-	-	---	315.2	---	314.9	-	-	-	-	---	314.19	---	314.1
Bankfull Cross Sectional Area (ft^2)[2]	2.5	2.2	2.7	3.1	---	2.9	---	3.6	3.9	3.5	3.0	3.7	---	2.5	---	2.5	6.2	4.3	5.2	4.9	---	4.7	---	2.7	3.1	2.9	3.0	3.2	---	5	---	5.8
Bankfull Width/Depth Ratio	21.1	23.1	18.7	19.3	---	---	---	---	15.7	16.7	19.7	18.5	---	---	---	---	7.1	12.1	9.5	7.0	---	---	---	---	13.8	13.2	14.2	14.7	---	---	---	---
Bankfull Entrenchment Ratio[1]	>2.8	>2.8	>2.8	2.6	---	3.3	---	3.1	>2.6	>2.6	>2.6	N/A	---	N/A	---	N/A	>4.5	>4.2	>4.3	N/A	---	N/A	---	N/A	>6.1	>6.5	>6.2	5.9	---	>8	---	8.7
Bankfull Bank Height Ratio[1]	1.0	1.0	1.0	0.5	---	1.1	---	1.3	1.0	1.0	1.0	N/A	---	N/A	---	N/A	1.0	1.0	1.0	N/A	---	N/A	---	N/A	1.0	1.0	1.0	1.0	---	1.3	---	1.5
d50 (mm)	N/A	2.1	4.4	8.0	---	22	---	0.062	N/A	N/A	N/A	N/A	---	N/A	---	N/A	N/A	N/A	N/A	N/A	---	N/A	---	N/A	N/A	16.0	5.8	12.0	---	11	---	0.062

	Reach 4 Cross-Section 16 Riffle								Reach 5 Cross-Section 17 Riffle								Reach 5 Cross-Section 18 Pool							
Dimension	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**
Record elevation (datum) used[1]	303.5	303.5	303.5	303.5	---	303.57	---	303.51	286.8	286.8	286.8	286.8	---	286.8	---	286.84	286.6	286.6	286.6	286.6	---	N/A	---	286.77
Bankfull Width (ft)[1]	6.3	7.2	7.6	6.7	---	6.4	---	4.8	7.1	7.9	7.9	9.1	---	7	---	6.9	7.2	8.0	7.7	7.4	---	N/A	---	N/A
Floodprone Width (ft)[1]	>25	>25	>25	>25	---	17.5	---	16.6	>25	>25	>25	>25	---	>23.7	---	22.9	>25	>25	>25	>25	---	N/A	---	N/A
Bankfull Mean Depth (ft)	0.3	0.3	0.4	0.3	---	---	---	---	0.5	0.5	0.5	0.4	---	---	---	---	0.8	0.7	0.7	0.7	---	---	---	---
Bankfull Max Depth (ft)[2]	0.7	0.6	0.7	0.7	---	0.5	---	0.7	0.7	0.8	0.8	0.8	---	0.8	---	0.7	1.7	1.5	1.4	1.4	---	1.2	---	0.8
Low Bank Elevation	-	-	-	-	---	303.55	---	303.6	-	-	-	-	---	286.9	---	286.92	-	-	-	-	---	286.59	---	286.54
Bankfull Cross Sectional Area (ft^2)[2]	1.9	2.3	2.7	2.2	---	1.7	---	2.4	3.3	3.8	3.9	4.1	---	4	---	3.9	5.9	5.8	5.6	5.3	---	5.2	---	3.5
Bankfull Width/Depth Ratio	21.0	23.0	20.9	19.9	---	---	---	---	15.2	16.2	16.3	20.6	---	---	---	---	8.7	11.0	10.7	10.4	---	---	---	---
Bankfull Entrenchment Ratio[1]	>4.0	>3.5	>3.3	3.8	---	2.7	---	3.5	>3.5	>3.2	>3.2	2.7	---	>3.4	---	3.3	>3.5	>3.1	>3.2	N/A	---	N/A	---	N/A
Bankfull Bank Height Ratio[1]	1.0	1.0	1.0	0.9	---	1	---	1.1	1.0	1.0	1.0	1.2	---	1.1	---	1.1	1.0	1.0	1.0	N/A	---	N/A	---	N/A
d50 (mm)	N/A	26.0	4.7	16.0	---	25	---	25	N/A	33.0	16.0	32.0	---	24	---	33	N/A	N/A	N/A	N/A	---	N/A	---	N/A

N/A - Information Not Available

Note: Starting in MY5, the parameters denoted with [1] were calculated using the as-built cross sectional area as the basis for adjusting the bankfull elevation and the parameters denoted with [2] were calculated using the current years low top of bank as the bankfull elevation. These changes reflect the 2018 guidance that arose from the mitigation technical workgroup consisting of DMS, the IRT, and industry mitigation providers.

Appendix D. Table 11a. cont'd - Monitoring Data - Dimensional Morphology Summary
(Dimensional Parameters - Cross Sections)
Pee Dee Stream Restoration Site -Thompson Branch

	Reach 2 Cross-Section 19 Pool								Reach 2 Cross-Section 20 Riffle								Reach 2 Cross-Section 21 Pool								Reach 2 Cross-Section 22 Riffle							
Dimension	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**
Record elevation (datum) used[1]	364.1	364.1	364.1	364.1	---	N/A	---	364.17	363.2	363.2	363.2	363.2	---	363.17	---	363.11	356.0	356.0	356.0	356.0	---	N/A	---	356.04	356.0	356.0	356.0	356.0	---	356	---	356.04
Bankfull Width (ft)[1]	8.4	9.2	9.2	7.8	---	N/A	---	N/A	7.5	7.7	7.6	8.4	---	8.4	---	7.6	8.6	9.1	9.2	10.2	---	N/A	---	N/A	7.6	7.7	7.7	7.8	---	8.9	---	6.2
Floodprone Width (ft)[1]	>30	>30	>30	>30	---	N/A	---	N/A	>30	>30	>30	>30	---	25	---	25.6	>30	>30	>30	>30	---	N/A	---	N/A	>30	>30	>30	>30	---	33.3	---	34.7
Bankfull Mean Depth (ft)	1.0	0.9	0.8	1.0	---	---	---	---	0.6	0.6	0.6	0.6	---	---	---	---	1.0	0.8	0.8	0.8	---	---	---	---	0.6	0.6	0.6	0.6	---	---	---	---
Bankfull Max Depth (ft)[2]	2.1	1.7	1.5	1.5	---	1.3	---	1.1	1.2	0.9	0.9	0.9	---	0.8	---	0.8	2.3	1.7	1.7	1.6	---	1.2	---	1.2	1.1	1.0	1.1	1.1	---	0.8	---	0.8
Low Bank Elevation	-	-	-	-	---	364.01	---	363.96	-	-	-	-	---	363.16	---	362.9	-	-	-	-	---	355.64	---	355.7	-	-	-	-	---	355.8	---	355.91
Bankfull Cross Sectional Area (ft^2)[2]	8.8	8.1	7.0	7.7	---	7.3	---	6.9	4.2	4.4	4.4	4.8	---	4.1	---	3.2	8.5	7.5	7.8	8	---	4.9	---	5.5	4.3	4.4	4.4	4.4	---	2.8	---	2.9
Bankfull Width/Depth Ratio	8.0	10.4	12.1	8.0	---	---	---	---	13.3	13.5	13.0	14.5	---	---	---	---	8.7	10.9	10.9	12.9	---	---	---	---	13.4	13.5	13.5	13.8	---	---	---	---
Bankfull Entrenchment Ratio[1]	>3.6	>3.3	>3.3	N/A	---	N/A	---	N/A	>4.0	>3.9	>3.9	3.6	---	3	---	3.4	>3.5	>3.3	>3.2	N/A	---	N/A	---	N/A	>3.9	>3.9	>3.9	3.9	---	3.7	---	5.6
Bankfull Bank Height Ratio[1]	1.0	1.0	1.0	N/A	---	N/A	---	N/A	1.0	1.0	1.0	1.0	---	1	---	0.9	1.0	1.0	1.0	N/A	---	N/A	---	N/A	1.0	1.0	1.0	1.0	---	<1	---	0.8
d50 (mm)	N/A	N/A	N/A	N/A	---	N/A	---	N/A	N/A	0.2	9.9	47.0	---	28	---	16	N/A	N/A	N/A	N/A	---	N/A	---	N/A	N/A	29.0	30.0	53.0	---	23	---	17

N/A - Information Not Available

Note: Starting in MY5, the parameters denoted with [1] were calculated using the as-built cross sectional area as the basis for adjusting the bankfull elevation and the parameters denoted with [2] were calculated using the current years low top of bank as the bankfull elevation. These changes reflect the 2018 guidance that arose from the mitigation technical workgroup consisting of DMS, the IRT, and industry mitigation providers.

Table 11b. Monitoring Data - Stream Reach Data Summary
Pee Dee Stream Restoration - Jerry Branch 1 (430 feet)

Parameter	Baseline						MY - 1						MY - 2						MY - 3						MY - 4						MY - 5						MY - 6						MY - 7					
Dimension & Substrate - Riffle	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**
Bankfull Width (ft)[1]	8.1	8.1	8.1	8.1	N/A	1	7.0	7.0	7.0	7.0	N/A	1	6.7	6.7	6.7	6.7	N/A	1	6.9	6.9	6.9	6.9	N/A	1							8.60	8.60	8.60	8.60	N/A	1.00							7.90	7.90	7.90	7.90	N/A	1.00
Floodprone Width (ft)[1]	31.8	31.8	31.8	31.8	N/A	1	30.0	30.0	30.0	30.0	N/A	1	30.0	30.0	30.0	30.0	N/A	1	30.0	30.0	30.0	30.0	N/A	1							>29.9	>29.9	>29.9	>29.9	N/A	1.00							28.20	28.20	28.20	28.20	N/A	1.00
Bankfull Mean Depth (ft)	0.5	0.5	0.5	0.5	N/A	1	0.3	0.3	0.3	0.3	N/A	1	0.4	0.4	0.4	0.4	N/A	1	0.4	0.4	0.4	0.4	N/A	1							---	---	---	---	---	---							---	---	---	---	---	---
Bankfull Max Depth (ft)[2]	1.0	1.0	1.0	1.0	N/A	1	0.5	0.5	0.5	0.5	N/A	1	0.6	0.6	0.6	0.6	N/A	1	0.6	0.6	0.6	0.6	N/A	1							0.80	0.80	0.80	0.80	N/A	1.00							0.80	0.80	0.80	0.80	N/A	1.00
Bankfull Cross Sectional Area (ft^2)[2]	3.7	3.7	3.7	3.7	N/A	1	2.4	2.4	2.4	2.4	N/A	1	2.6	2.6	2.6	2.6	N/A	1	2.7	2.7	2.7	2.7	N/A	1							3.50	3.50	3.50	3.50	N/A	1.00							4.20	4.20	4.20	4.20	N/A	1.00
Bankfull Width/Depth Ratio	17.7	17.7	17.7	17.7	N/A	1	20.3	20.3	20.3	20.3	N/A	1	17.5	17.5	17.5	17.5	N/A	1	17.6	17.6	17.6	17.6	N/A	1							---	---	---	---	---	---							---	---	---	---	---	---
Bankfull Entrenchment Ratio[1]	3.9	3.9	3.9	3.9	N/A	1	4.3	4.3	4.3	4.3	N/A	1	4.5	4.5	4.5	4.5	N/A	1	4.0	4.0	4.0	4.0	N/A	1							>3.5	>3.5	>3.5	>3.5	N/A	1.00							3.60	3.60	3.60	3.60	N/A	1.00
Bankfull Bank Height Ratio[1]	1.0	1.0	1.0	1.0	N/A	1	1.0	1.0	1.0	1.0	N/A	1	1.0	1.0	1.0	1.0	N/A	1	1.0	1.0	1.0	1.0	N/A	1							1.00	1.00	1.00	1.00	N/A	1.00							1.10	1.10	1.10	1.10	N/A	1.00
Profile																																															
Riffle Length (ft)	2.6	6.2	6.2	16.4	2.8	26																																									
Riffle Slope (ft/ft)	0.001	0.010	0.009	0.026	0.0	26																																									
Pool Length (ft)	2.3	5.9	5.4	16.0	2.9	26																																									
Pool Max Depth (ft)	0.7	1.5	1.5	2.3	0.4	26																																									
Pool Spacing (ft)	6.1	15.0	14.2	27.8	5.1	25																																									
Pattern																																															
Channel Belt Width (ft)	14.0	19.2	19.2	24.4	7.3	2																																									
Radius of Curvature (ft)	11.6	13.6	13.1	16.5	2.2	4																																									
Rc: Bankfull Width (ft/ft)	1.4	1.7	1.6	2.0	0.3	2																																									
Meander Wavelength (ft)	23.8	44.4	47.1	55.0	11.9	6																																									
Meander Width Ratio	1.7	2.4	2.4	3.0	0.9	2																																									
Additional Reach Parameters																																															
Rosgen Classification	B4																																														
Channel Thalweg Length (ft)	430																																														
Sinuosity (ft)	1.06																																														
Water Surface Slope (Channel) (ft/ft)	0.0265																																														
Bankfull Slope (ft/ft)	0.0267																																														
Ri% / Ru% / P% / G% / S%	42%	0%	40%	7%	11%																																									

N/A - Information does not apply.
Ri = Riffle / Ru = Run / P = Pool / G = Glide / S = Step

Note: Starting in MY5, the parameters denoted with [1] were calculated using the as-built cross sectional area as the basis for adjusting the bankfull elevation and the parameters denoted with [2] were calculated using the current years low top of bank as the bankfull elevation. These changes reflect the 2018 guidance that arose from the mitigation technical workgroup consisting of DMS, the IRT, and industry mitigation providers.

Table 11b cont'd. Monitoring Data - Stream Reach Data Summary
Pee Dee Stream Restoration Site - Jerry Branch 2 (625 feet)

Parameter	Baseline						MY - 1						MY - 2						MY - 3						MY - 4						MY - 5						MY - 6						MY - 7					
Dimension & Substrate - Riffle	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**
Bankfull Width (ft)[1]	7.1	7.1	7.1	7.1	N/A	1	7.2	7.2	7.2	7.2	N/A	1	7.2	7.2	7.2	7.2	N/A	1	7.7	7.7	7.7	7.7	N/A	1							7.3	7.3	7.3	7.3	N/A	1.00							7.80	7.80	7.80	7.80	N/A	1.00
Floodprone Width (ft)[1]	16.0	16.0	16.0	16.0	N/A	1	25.0	25.0	25.0	25.0	N/A	1	25.0	25.0	25.0	25.0	N/A	1	25.0	25.0	25.0	25.0	N/A	1							21.6	21.6	21.6	21.6	N/A	1.00							17.30	17.30	17.30	17.30	N/A	1.00
Bankfull Mean Depth (ft)	0.4	0.4	0.4	0.4	N/A	1	0.4	0.4	0.4	0.4	N/A	1	0.4	0.4	0.4	0.4	N/A	1	0.3	0.3	0.3	0.3	N/A	1							---	---	---	---	N/A	1.00							---	---	---	---	---	---
Bankfull Max Depth (ft)[2]	0.7	0.7	0.7	0.7	N/A	1	0.6	0.6	0.6	0.6	N/A	1	0.6	0.6	0.6	0.6	N/A	1	0.6	0.6	0.6	0.6	N/A	1							0.7	0.7	0.7	0.7	N/A	1.00							0.70	0.70	0.70	0.70	N/A	1.00
Bankfull Cross Sectional Area (ft^2)[2]	3.1	3.1	3.1	3.1	N/A	1	3.0	3.0	3.0	3.0	N/A	1	2.7	2.7	2.7	2.7	N/A	1	2.6	2.6	2.6	2.6	N/A	1							2.8	2.8	2.8	2.8	N/A	1.00							3.60	3.60	3.60	3.60	N/A	1.00
Bankfull Width/Depth Ratio	16.4	16.4	16.4	16.4	N/A	1	17.0	17.0	17.0	17.0	N/A	1	19.4	19.4	19.4	19.4	N/A	1	22.6	22.6	22.6	22.6	N/A	1							---	---	---	---	N/A	1.00							---	---	---	---	---	---
Bankfull Entrenchment Ratio[1]	2.3	2.3	2.3	2.3	N/A	1	3.5	3.5	3.5	3.5	N/A	1	3.5	3.5	3.5	3.5	N/A	1	3.2	3.2	3.2	3.2	N/A	1							3.0	3.0	3.0	3.0	N/A	1.00							2.20	2.20	2.20	2.20	N/A	1.00
Bankfull Bank Height Ratio[1]	1.0	1.0	1.0	1.0	N/A	1	1.0	1.0	1.0	1.0	N/A	1	1.0	1.0	1.0	1.0	N/A	1	0.9	0.9	0.9	0.9	N/A	1							<1	<1	<1	<1	N/A	1.00							1.10	1.10	1.10	1.10	N/A	1.00
Profile																																															
Riffle Length (ft)	3.1	9.0	8.7	26.5	4.5	29																																									
Riffle Slope (ft/ft)	0.005	0.019	0.018	0.042	0.010	29																																									
Pool Length (ft)	2.3	4.8	4.7	7.8	1.5	31																																									
Pool Max Depth (ft)	0.9	1.5	1.5	2.2	0.3	29																																									
Pool Spacing (ft)	12.0	18.0	16.8	36.2	5.1	30																																									
Pattern																																															
Channel Belt Width (ft)	13.4	20.3	22.4	25.6	5.1	6																																									
Radius of Curvature (ft)	12.1	13.4	12.7	16.5	1.8	5																																									
Rc: Bankfull Width (ft/ft)	1.70	1.9	1.8	2.3	0.2	2																																									
Meander Wavelength (ft)	18.5	30.0	30.6	38.1	6.6	6																																									
Meander Width Ratio	1.9	2.9	3.2	3.6	0.7	6																																									
Additional Reach Parameters																																															
Rosgen Classification	B4																																														
Channel Thalweg Length (ft)	625																																														
Sinuosity (ft)	1.29																																														
Water Surface Slope (Channel) (ft/ft)	0.024																																														
Bankfull Slope (ft/ft)	0.024																																														
Ri% / Ru% / P% / G% / S%	47%	0%	27%	12%	14%																																									

N/A - Information does not apply.

Ri = Riffle / Ru = Run / P = Pool / G = Glide / S = Step

Note: Starting in MY5, the parameters denoted with [1] were calculated using the as-built cross sectional area as the basis for adjusting the bankfull elevation and the parameters denoted with [2] were calculated using the current years low top of bank as the bankfull elevation. These changes reflect the 2018 guidance that arose from the mitigation technical workgroup consisting of DMS, the IRT, and industry mitigation providers.

Table 11b cont'd. Monitoring Data - Stream Reach Data Summary
Pee Dee Stream Restoration Site - Jerry Branch 3 (636 feet)

Parameter	Baseline						MY - 1						MY - 2						MY - 3						MY - 4						MY - 5						MY - 6						MY - 7					
Dimension & Substrate - Riffle	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**
Bankfull Width (ft)[1]	7.2	7.3	7.3	7.4	0.1	2	6.7	7.1	7.1	7.5	0.6	2	6.4	6.9	6.9	7.3	0.6	2	6.2	6.6	6.6	6.9	0.5	2							7.4	9.7	9.7	12.0	3.3	2.0							9.90	11.35	11.35	12.80	2.05	2.00
Floodprone Width (ft)[1]	24.7	29.3	29.3	33.8	6.4	2	25.0	27.5	27.5	30.0	3.5	2	25.0	27.5	27.5	30.0	3.5	2	25.0	27.5	27.5	30.0	3.5	2							23.7	28.8	28.8	33.8	7.1	2.0							26.00	30.20	30.20	34.40	5.94	2.00
Bankfull Mean Depth (ft)	0.4	0.4	0.4	0.4	0.0	2	0.3	0.4	0.4	0.4	0.1	2	0.4	0.4	0.4	0.4	0.0	2	0.4	0.4	0.4	0.4	0.0	2							---	---	---	---	---	---							---	---	---	---	---	---
Bankfull Max Depth (ft)[2]	0.8	0.9	0.9	0.9	0.1	2	0.5	0.6	0.6	0.6	0.1	2	0.5	0.6	0.6	0.6	0.0	2	0.5	0.6	0.6	0.6	0.1	2							0.5	0.5	0.5	0.5	0.0	2.0							0.40	0.45	0.45	0.50	0.07	2.00
Bankfull Cross Sectional Area (ft^2)[2]	3.0	3.2	3.2	3.3	0.2	2	2.3	2.8	2.8	3.3	0.7	2	2.4	2.6	2.6	2.9	0.3	2	2.2	2.3	2.3	2.4	0.1	2							2.0	2.3	2.3	2.5	0.4	2.0							1.20	2.10	2.10	3.00	1.27	2.00
Bankfull Width/Depth Ratio	16.6	17.2	17.2	17.7	0.8	2	16.7	18.1	18.1	19.4	1.9	2	17.0	17.9	17.9	18.7	1.2	2	17.4	18.4	18.4	19.4	1.4	2							---	---	---	---	---	---							---	---	---	---	---	---
Bankfull Entrenchment Ratio[1]	3.4	4.0	4.0	4.6	0.8	2	3.7	3.9	3.9	4.0	0.2	2	3.9	4.0	4.0	4.1	0.1	2	4.0	4.2	4.2	4.4	0.3	2							2.8	3.0	3.0	3.2	0.3	2.0							2.60	2.65	2.65	2.70	0.07	2.00
Bankfull Bank Height Ratio[1]	1.0	1.0	1.0	1.0	0.0	2	1.0	1.0	1.0	1.0	0.0	2	1.0	1.0	1.0	1.0	0.0	2	1.0	1.0	1.0	1.0	0.0	2							1.0	1.0	1.0	1.0	0.0	2.0							0.70	1.05	1.05	1.40	0.49	2.00
Profile																																															
Riffle Length (ft)	3.1	9.0	8.7	26.5	4.5	29																																									
Riffle Slope (ft/ft)	0.00	0.019	0.018	0.042	0.010	29																																									
Pool Length (ft)	2.3	4.8	4.7	7.8	1.5	31																																									
Pool Max Depth (ft)	0.9	1.5	1.5	2.2	0.3	29																																									
Pool Spacing (ft)	12.0	18.0	16.8	36.2	5.1	30																																									
Pattern																																															
Channel Belt Width (ft)	20.0	24.2	26.0	26.5	3.6	3																																									
Radius of Curvature (ft)	9.2	12.1	10.6	17.0	2.8	7																																									
Rc: Bankfull Width (ft/ft)	1.3	1.7	1.5	2.3	0.4	2																																									
Meander Wavelength (ft)	34.1	43.9	44.8	54.4	8.1	6																																									
Meander Width Ratio	2.7	3.3	3.6	3.6	0.5	3																																									
Additional Reach Parameters																																															
Rosgen Classification	B4																																														
Channel Thalweg Length (ft)	636																																														
Sinuosity (ft)	1.02																																														
Water Surface Slope (Channel) (ft/ft)	0.0235																																														
Bankfull Slope (ft/ft)	0.0239																																														
Ri% / Ru% / P% / G% / S%	60%	0%	21%	10%	9%																																									

N/A - Information does not apply.

Ri = Riffle / Ru = Run / P = Pool / G = Glide / S = Step

Note: Starting in MY5, the parameters denoted with [1] were calculated using the as-built cross sectional area as the basis for adjusting the bankfull elevation and the parameters denoted with [2] were calculated using the current years low top of bank as the bankfull elevation. These changes reflect the 2018 guidance that arose from the mitigation technical workgroup consisting of DMS, the IRT, and industry mitigation providers.

Table 11b cont'd. Monitoring Data - Stream Reach Data Summary
Pee Dee Stream Restoration Site - Dale Branch 2 (920 feet)

Parameter	Baseline						MY - 1						MY - 2						MY - 3						MY - 4						MY - 5						MY - 6						MY - 7					
Dimension & Substrate - Riffle	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**
Bankfull Width (ft)[1]	6.4	6.7	6.7	7.0	0.4	2	6.2	6.8	6.8	7.3	0.8	2	6.2	6.7	6.7	7.2	0.7	2	6.5	6.5	6.5	6.5	0.0	2							5.9	6.8	6.8	7.7	1.3	2.0							5.90	6.05	6.05	6.20	0.21	2.00
Floodprone Width (ft)[1]	15.1	19.5	19.5	23.9	6.2	2	25.0	25.0	25.0	25.0	0.0	2	25.0	25.0	25.0	25.0	0.0	2	25.0	25.0	25.0	25.0	0.0	2							15.2	19.9	19.9	24.5	6.6	2.0							0.30	10.80	10.80	21.30	14.85	2.00
Bankfull Mean Depth (ft)	0.3	0.3	0.3	0.3	0.0	2	0.2	0.3	0.3	0.3	0.1	2	0.3	0.3	0.3	0.3	0.0	2	0.2	0.3	0.3	0.3	0.1	2							---	---	---	---	---	---							---	---	---	---	---	---
Bankfull Max Depth (ft)[2]	0.5	0.6	0.6	0.7	0.1	2	0.5	0.5	0.5	0.5	0.0	2	0.5	0.5	0.5	0.5	0.0	2	0.5	0.6	0.6	0.6	0.1	2							0.5	0.6	0.6	0.6	0.1	2.0							0.50	0.55	0.55	0.60	0.07	2.00
Bankfull Cross Sectional Area (ft^2)[2]	1.8	1.9	1.9	2.0	0.1	2	1.6	1.7	1.7	1.7	0.1	2	1.7	1.9	1.9	2.0	0.2	2	1.6	1.7	1.7	1.8	0.1	2							1.3	1.4	1.4	1.4	0.1	2.0							1.60	1.65	1.65	1.70	0.07	2.00
Bankfull Width/Depth Ratio	22.6	23.6	23.6	24.6	1.4	2	23.7	27.2	27.2	30.6	4.9	2	21.7	23.9	23.9	26.0	3.0	2	23.4	25.2	25.2	26.9	2.5	2							---	---	---	---	---	---							---	---	---	---	---	---
Bankfull Entrenchment Ratio[1]	2.4	2.9	2.9	3.4	0.7	2	3.3	3.7	3.7	4.0	0.5	2	3.5	3.8	3.8	4.1	0.4	2	3.9	3.9	3.9	3.9	0.0	2							2.6	2.9	2.9	3.2	0.4	2.0							2.50	2.95	2.95	3.40	0.64	2.00
Bankfull Bank Height Ratio[1]	1.0	1.0	1.0	1.0	0.0	2	1.0	1.0	1.0	1.0	0.0	2	1.0	1.0	1.0	1.0	0.0	2	0.9	0.9	0.9	0.9	0.0	2							1.0	1.0	1.0	1.0	0.0	2.0							0.90	0.90	0.90	0.90	0.00	2.00
Profile																																															
Riffle Length (ft)	3.2	10.1	9.0	21.3	4.8	28																																									
Riffle Slope (ft/ft)	0.007	0.027	0.027	0.046	0.011	28																																									
Pool Length (ft)	1.5	3.2	2.9	9.6	1.6	29																																									
Pool Max Depth (ft)	1.1	1.6	1.4	2.8	0.5	28																																									
Pool Spacing (ft)	9.4	19.7	19.3	31.4	4.9	28																																									
Pattern																																															
Channel Belt Width (ft)	18.0	20.6	19.0	24.4	3.1	5																																									
Radius of Curvature (ft)	8.2	13.8	14.7	16.7	3.4	5																																									
Rc: Bankfull Width (ft/ft)	1.2	2.1	2.2	2.5	0.5	5																																									
Meander Wavelength (ft)	33.1	38.9	39.6	41.5	3.1	6																																									
Meander Width Ratio	2.7	3.1	2.8	3.6	0.9	6																																									
Additional Reach Parameters																																															
Rosgen Classification	B4																																														
Channel Thalweg Length (ft)	920																																														
Sinuosity (ft)	1.03																																														
Water Surface Slope (Channel) (ft/ft)	0.029																																														
Bankfull Slope (ft/ft)	0.028																																														
Ri% / Ru% / P% / G% / S%	50%	7%	16%	10%	17%																																									

N/A - Information does not apply.
Ri = Riffle / Ru = Run / P = Pool / G = Glide / S = Step

Note: Starting in MY5, the parameters denoted with [1] were calculated using the as-built cross sectional area as the basis for adjusting the bankfull elevation and the parameters denoted with [2] were calculated using the current years low top of bank as the bankfull elevation. These changes reflect the 2018 guidance that arose from the mitigation technical workgroup consisting of DMS, the IRT, and industry mitigation providers.

Table 11b cont'd. Monitoring Data - Stream Reach Data Summary
Pee Dee Stream Restoration Site - Dale Branch 3 (559 feet)

Parameter	Baseline						MY - 1						MY - 2						MY - 3						MY - 4						MY - 5						MY - 6						MY - 7					
Dimension & Substrate - Riffle	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**
Bankfull Width (ft)[1]	7.3	7.3	7.3	7.3	N/A	1	7.1	7.1	7.1	7.1	N/A	1	7.1	7.1	7.1	7.1	N/A	1	7.8	7.8	7.8	7.8	N/A	1							5.40	5.40	5.40	5.40	N/A	1.00							5.10	5.10	5.10	5.10	N/A	1.00
Floodprone Width (ft)[1]	18.5	18.5	18.5	18.5	N/A	1	20.0	20.0	20.0	20.0	N/A	1	20.0	20.0	20.0	20.0	N/A	1	20.0	20.0	20.0	20.0	N/A	1							17.70	17.70	17.70	17.70	N/A	1.00							15.70	15.70	15.70	15.70	N/A	1.00
Bankfull Mean Depth (ft)	0.3	0.3	0.3	0.3	N/A	1	0.3	0.3	0.3	0.3	N/A	1	0.4	0.4	0.4	0.4	N/A	1	0.4	0.4	0.4	0.4	N/A	1							---	---	---	---	---	---							-	-	-	-	N/A	-
Bankfull Max Depth (ft)[2]	0.7	0.7	0.7	0.7	N/A	1	0.6	0.6	0.6	0.6	N/A	1	0.8	0.8	0.8	0.8	N/A	1	0.8	0.8	0.8	0.8	N/A	1							0.80	0.80	0.80	0.80	N/A	1.00							0.90	0.90	0.90	0.90	N/A	1.00
Bankfull Cross Sectional Area (ft^2)[2]	2.5	2.5	2.5	2.5	N/A	1	2.2	2.2	2.2	2.2	N/A	1	2.7	2.7	2.7	2.7	N/A	1	3.1	3.1	3.1	3.1	N/A	1							2.90	2.90	2.90	2.90	N/A	1.00							3.60	3.60	3.60	3.60	N/A	1.00
Bankfull Width/Depth Ratio	21.1	21.1	21.1	21.1	N/A	1	23.1	23.1	23.1	23.1	N/A	1	18.7	18.7	18.7	18.7	N/A	1	19.3	19.3	19.3	19.3	N/A	1							---	---	---	---	---	---							-	-	-	-	N/A	-
Bankfull Entrenchment Ratio[1]	2.5	2.5	2.5	2.5	N/A	1	2.8	2.8	2.8	2.8	N/A	1	2.8	2.8	2.8	2.8	N/A	1	2.6	2.6	2.6	2.6	N/A	1							3.30	3.30	3.30	3.30	N/A	1.00							3.10	3.10	3.10	3.10	N/A	1.00
Bankfull Bank Height Ratio[1]	1.0	1.0	1.0	1.0	N/A	1	1.0	1.0	1.0	1.0	N/A	1	1.0	1.0	1.0	1.0	N/A	1	0.5	0.5	0.5	0.5	N/A	1							1.10	1.10	1.10	1.10	N/A	1.00							1.30	1.30	1.30	1.30	N/A	1.00
Profile																																															
Riffle Length (ft)	0.5	12.6	10.7	60.6	10.9	24																																									
Riffle Slope (ft/ft)	0.005	0.026	0.025	0.061	0.014	24																																									
Pool Length (ft)	1.3	3.3	2.9	9.0	1.5	23																																									
Pool Max Depth (ft)	0.8	1.3	1.3	1.7	0.2	23																																									
Pool Spacing (ft)	13.3	21.0	18.5	63.1	10.1	23																																									
Pattern																																															
Channel Belt Width (ft)	17.8	26.7	27.9	33.4	7.4	4																																									
Radius of Curvature (ft)	8.7	10.2	9.8	12.1	1.4	6																																									
Rc: Bankfull Width (ft/ft)	1.2	1.4	1.3	1.7	0.2	1																																									
Meander Wavelength (ft)	29.6	39.9	37.4	55.7	10.0	6																																									
Meander Width Ratio	2.4	3.7	3.8	4.6	1.0	4																																									
Additional Reach Parameters																																															
Rosgen Classification	B4																																														
Channel Thalweg Length (ft)	559																																														
Sinuosity (ft)	1.05																																														
Water Surface Slope (Channel) (ft/ft)	0.024																																														
Bankfull Slope (ft/ft)	0.026																																														
Ri% / Ru% / P% / G% / S%	62%	0%	16%	11%	11%																																									

N/A - Information does not apply.
Ri = Riffle / Ru = Run / P = Pool / G = Glide / S = Step

Note: Starting in MY5, the parameters denoted with [1] were calculated using the as-built cross sectional area as the basis for adjusting the bankfull elevation and the parameters denoted with [2] were calculated using the current years low top of bank as the bankfull elevation. These changes reflect the 2018 guidance that arose from the mitigation technical workgroup consisting of DMS, the IRT, and industry mitigation providers.

Table 11b cont'd. Monitoring Data - Stream Reach Data Summary
Pee Dee Stream Restoration Site - Dale Branch 4 (835 feet)

Parameter	Baseline						MY - 1						MY - 2						MY - 3						MY - 4						MY - 5						MY - 6						MY - 7					
Dimension & Substrate - Riffle	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**
Bankfull Width (ft)[1]	6.3	6.4	6.4	6.5	0.1	2	6.2	6.7	6.7	7.2	0.7	2	6.5	7.0	7.0	7.6	0.7	2	6.7	6.8	6.8	6.8	0.1	2							5.40	5.90	5.90	6.40	0.71	2.00							4.1	4.5	4.5	4.8	0.5	2.0
Floodprone Width (ft)[1]	22.0	33.1	33.1	44.2	15.7	2	25.0	32.5	32.5	40.0	10.6	2	25.0	32.5	32.5	40.0	10.6	2	25.0	32.5	32.5	40.0	10.6	2							17.50	30.35	30.35	43.20	18.17	2.00							16.6	26.2	26.2	35.7	13.5	2.0
Bankfull Mean Depth (ft)	0.3	0.4	0.4	0.5	0.1	2	0.3	0.4	0.4	0.5	0.1	2	0.4	0.4	0.4	0.5	0.1	2	0.3	0.4	0.4	0.5	0.1	2							---	---	---	---	---	---							---	---	---	---	---	---
Bankfull Max Depth (ft)[2]	0.7	0.8	0.8	0.9	0.1	2	0.6	0.7	0.7	0.8	0.1	2	0.7	0.8	0.8	0.8	0.0	2	0.7	0.8	0.8	0.8	0.1	2							0.50	0.90	0.90	1.30	0.57	2.00							0.70	1.15	1.15	1.60	0.64	2.00
Bankfull Cross Sectional Area (ft^2)[2]	1.9	2.5	2.5	3.1	0.8	2	2.3	2.6	2.6	2.9	0.4	2	2.7	2.9	2.9	3.0	0.2	2	2.2	2.7	2.7	3.2	0.7	2							1.70	3.35	3.35	5.00	2.33	2.00							2.40	4.10	4.10	5.80	2.40	2.00
Bankfull Width/Depth Ratio	13.8	17.4	17.4	21.0	5.1	2	13.2	18.1	18.1	23.0	6.9	2	14.2	17.5	17.5	20.9	4.7	2	14.7	17.3	17.3	19.9	3.7	2							---	---	---	---	---	---							---	---	---	---	---	---
Bankfull Entrenchment Ratio[1]	3.5	5.2	5.2	6.8	2.3	2	3.5	4.9	4.9	6.2	1.9	2	3.3	4.7	4.7	6.2	2.0	2	3.8	4.9	4.9	5.9	1.5	2							2.70	5.35	5.35	8.00	3.75	2.00							3.50	6.10	6.10	8.70	3.68	2.00
Bankfull Bank Height Ratio[1]	1.0	1.0	1.0	1.0	0.0	2	1.0	1.0	1.0	1.0	0.0	2	1.0	1.0	1.0	1.0	0.0	2	0.9	1.0	1.0	1.0	0.1	2							1.00	1.15	1.15	1.30	0.21	2.00							1.10	1.30	1.30	1.50	0.28	2.00
Profile																																															
Riffle Length (ft)	7.8	17.8	14.5	68.7	12.3	31																																									
Riffle Slope (ft/ft)	0.003	0.018	0.016	0.048	0.009	31																																									
Pool Length (ft)	1.5	3.2	2.9	12.5	2.1	30																																									
Pool Max Depth (ft)	0.1	1.4	1.4	2.1	0.3	33																																									
Pool Spacing (ft)	14.4	26.0	22.2	77.4	13.7	31																																									
Pattern																																															
Channel Belt Width (ft)	16.7	18.7	18.0	22.2	2.5	4																																									
Radius of Curvature (ft)	9.3	13.1	13.6	16.4	2.9	6																																									
Rc: Bankfull Width (ft/ft)	1.4	2.1	2.1	2.6	0.5	2																																									
Meander Wavelength (ft)	34.4	45.9	39.9	62.7	12.5	6																																									
Meander Width Ratio	2.6	2.9	2.8	3.5	0.4	4																																									
Additional Reach Parameters																																															
Rosgen Classification	B4																																														
Channel Thalweg Length (ft)	835																																														
Sinuosity (ft)	1.03																																														
Water Surface Slope (Channel) (ft/ft)	0.024																																														
Bankfull Slope (ft/ft)	0.020																																														
Ri% / Ru% / P% / G% / S%	68%	0%	12.0%	8%	11%																																									

N/A - Information does not apply.
Ri = Riffle / Ru = Run / P = Pool / G = Glide / S = Step

Note: Starting in MY5, the parameters denoted with [1] were calculated using the as-built cross sectional area as the basis for adjusting the bankfull elevation and the parameters denoted with [2] were calculated using the current years low top of bank as the bankfull elevation. These changes reflect the 2018 guidance that arose from the mitigation technical workgroup consisting of DMS, the IRT, and industry mitigation providers.

Table 11b cont'd. Monitoring Data - Stream Reach Data Summary
Pee Dee Stream Restoration Site - Dale Branch 5 (679 feet)

Parameter	Baseline						MY - 1						MY - 2						MY - 3						MY - 4						MY - 5						MY - 6						MY - 7					
Dimension & Substrate - Riffle	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**
Bankfull Width (ft)[1]	7.1	7.1	7.1	7.1	N/A	1	7.9	7.9	7.9	7.9	N/A	1	7.9	7.9	7.9	7.9	N/A	1	9.1	9.1	9.1	9.1	N/A	1							7.0	7.0	7.0	7.0	N/A	1.0							6.90	6.90	6.90	6.90	N/A	1.0
Floodprone Width (ft)[1]	23.9	23.9	23.9	23.9	N/A	1	25.0	25.0	25.0	25.0	N/A	1	25.0	25.0	25.0	25.0	N/A	1	25.0	25.0	25.0	25.0	N/A	1							>23.7	>23.7	>23.7	>23.7	N/A	1.0							22.90	22.90	22.90	22.90	N/A	1.0
Bankfull Mean Depth (ft)	0.5	0.5	0.5	0.5	N/A	1	0.5	0.5	0.5	0.5	N/A	1	0.5	0.5	0.5	0.5	N/A	1	0.4	0.4	0.4	0.4	N/A	1							---	---	---	---	N/A	1.0							---	---	---	---	N/A	1.0
Bankfull Max Depth (ft)[2]	0.7	0.7	0.7	0.7	N/A	1	0.8	0.8	0.8	0.8	N/A	1	0.8	0.8	0.8	0.8	N/A	1	0.8	0.8	0.8	0.8	N/A	1							0.8	0.8	0.8	0.8	N/A	1.0							0.70	0.70	0.70	0.70	N/A	1.0
Bankfull Cross Sectional Area (ft^2)[2]	3.3	3.3	3.3	3.3	N/A	1	3.8	3.8	3.8	3.8	N/A	1	3.9	3.9	3.9	3.9	N/A	1	4.1	4.1	4.1	4.1	N/A	1							4.0	4.0	4.0	4.0	N/A	1.0							3.90	3.90	3.90	3.90	N/A	1.0
Bankfull Width/Depth Ratio	15.2	15.2	15.2	15.2	N/A	1	16.2	16.2	16.2	16.2	N/A	1	16.3	16.3	16.3	16.3	N/A	1	20.6	20.6	20.6	20.6	N/A	1							---	---	---	---	N/A	1.0							---	---	---	---	N/A	1.0
Bankfull Entrenchment Ratio[1]	3.4	3.4	3.4	3.4	N/A	1	3.2	3.2	3.2	3.2	N/A	1	3.2	3.2	3.2	3.2	N/A	1	2.7	2.7	2.7	2.7	N/A	1							>3.4	>3.4	>3.4	>3.4	N/A	1.0							3.30	3.30	3.30	3.30	N/A	1.0
Bankfull Bank Height Ratio[1]	1.0	1.0	1.0	1.0	N/A	1	1.0	1.0	1.0	1.0	N/A	1	1.0	1.0	1.0	1.0	N/A	1	1.2	1.2	1.2	1.2	N/A	1							1.1	1.1	1.1	1.1	N/A	1.0							1.10	1.10	1.10	1.10	N/A	1.0
Profile																																															
Riffle Length (ft)	7.2	18.3	20.3	25.1	6.0	11																																									
Riffle Slope (ft/ft)	0.005	0.022	0.024	0.044	0.011	11																																									
Pool Length (ft)	1.8	3.0	3.1	4.0	0.7	12																																									
Pool Max Depth (ft)	1.1	1.5	1.4	2.2	0.4	11																																									
Pool Spacing (ft)	12.1	26.4	28.4	35.2	6.8	11																																									
Pattern																																															
Channel Belt Width (ft)	13.2	15.3	15.6	17.1	1.9	3																																									
Radius of Curvature (ft)	8.7	14.1	15.6	16.7	3.6	4																																									
Rc: Bankfull Width (ft/ft)	1.2	2.0	2.2	2.4	0.5	2																																									
Meander Wavelength (ft)	47.9	56.4	54.8	67.7	7.2	6																																									
Meander Width Ratio	1.9	2.2	2.2	2.4	0.3	3																																									
Additional Reach Parameters																																															
Rosgen Classification	B4																																														
Channel Thalweg Length (ft)	679																																														
Sinuosity (ft)	0.977																																														
Water Surface Slope (Channel) (ft/ft)	0.024																																														
Bankfull Slope (ft/ft)	0.024																																														
Ri% / Ru% / P% / G% / S%	68%	0%	12%	13%	7%																																									

N/A - Information does not apply.
Ri = Riffle / Ru = Run / P = Pool / G = Glide / S = Step

Note: Starting in MY5, the parameters denoted with [1] were calculated using the as-built cross sectional area as the basis for adjusting the bankfull elevation and the parameters denoted with [2] were calculated using the current years low top of bank as the bankfull elevation. These changes reflect the 2018 guidance that arose from the mitigation technical workgroup consisting of DMS, the IRT, and industry mitigation providers.

Table 11b cont'd. Monitoring Data - Stream Reach Data Summary
Pee Dee Stream Restoration Site - Thompson Branch 2 (1,061 feet)

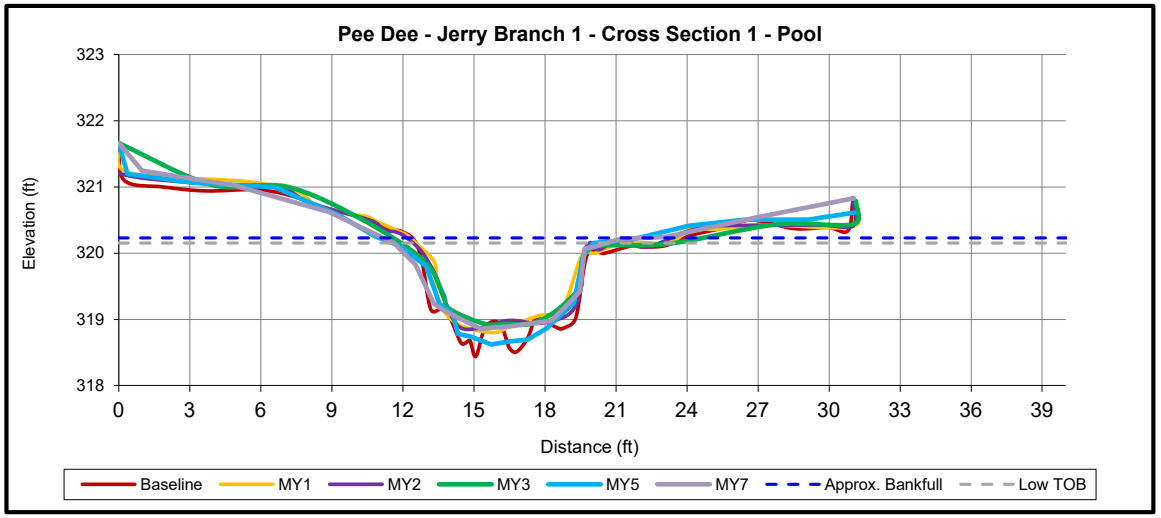
Parameter	Baseline						MY - 1						MY - 2						MY - 3						MY - 4						MY - 5						MY - 6						MY - 7					
Dimension & Substrate - Riffle	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**
Bankfull Width (ft)[1]	7.5	7.6	7.6	7.6	0.1	2	7.7	7.7	7.7	7.7	0.0	2	7.6	7.7	7.7	7.7	0.1	2	7.8	8.1	8.1	8.4	0.4	2							8.4	8.7	8.7	8.9	0.4	2.0							7.60	8.10	8.10	8.60	0.71	2.00
Floodprone Width (ft)[1]	31.1	32.7	32.7	34.3	2.3	2	30.0	30.0	30.0	30.0	0.0	2	30.0	30.0	30.0	30.0	0.0	2	30.0	30.0	30.0	30.0	0.0	2							25.0	29.2	29.2	33.3	5.9	2.0							25.60	30.15	30.15	34.70	6.43	2.00
Bankfull Mean Depth (ft)	0.6	0.6	0.6	0.6	0.0	2	0.6	0.6	0.6	0.6	0.0	2	0.6	0.6	0.6	0.6	0.0	2	0.6	0.6	0.6	0.6	0.0	2							---	---	---	---	---	---							---	---	---	---	---	---
Bankfull Max Depth (ft)[2]	1.1	1.2	1.2	1.2	0.1	2	0.9	1.0	1.0	1.0	0.1	2	0.9	1.0	1.0	1.1	0.1	2	0.9	1.0	1.0	1.1	0.1	2							0.8	0.8	0.8	0.8	0.0	2.0							0.80	0.80	0.80	0.80	0.00	2.00
Bankfull Cross Sectional Area (ft^2)[2]	4.2	4.3	4.3	4.3	0.1	2	4.4	4.4	4.4	4.4	0.0	2	4.4	4.4	4.4	4.4	0.0	2	4.4	4.6	4.6	4.8	0.3	2							2.8	3.5	3.5	4.1	0.9	2.0							2.90	3.05	3.05	3.20	0.21	2.00
Bankfull Width/Depth Ratio	13.3	13.4	13.4	13.4	0.1	2	13.5	13.5	13.5	13.5	0.0	2	13.0	13.3	13.3	13.5	0.4	2	13.8	14.2	14.2	14.5	0.5	2							---	---	---	---	---	---							---	---	---	---	---	---
Bankfull Entrenchment Ratio[1]	4.1	4.3	4.3	4.5	0.3	2	3.9	3.9	3.9	3.9	0.0	2	3.9	3.9	3.9	3.9	0.0	2	3.6	3.8	3.8	3.9	0.2	2							3.0	3.4	3.4	3.7	0.5	2.0							3.40	3.70	3.70	4.00	0.42	2.00
Bankfull Bank Height Ratio[1]	1.0	1.0	1.0	1.0	0.0	2	1.0	1.0	1.0	1.0	0.0	2	1.0	1.0	1.0	1.0	0.0	2	1.0	1.0	1.0	1.0	0.0	2							1.0	1.0	1.0	1.0	0.0	2.0							0.80	0.85	0.85	0.90	0.07	2.00
Profile																																															
Riffle Length (ft)	10.0	15.8	15.2	25.4	3.9	32																																									
Riffle Slope (ft/ft)	0.005	0.014	0.013	0.023	0.005	32																																									
Pool Length (ft)	1.8	5.0	4.6	18.3	3.0	32																																									
Pool Max Depth (ft)	1.4	2.1	2.0	2.6	0.3	32																																									
Pool Spacing (ft)	19.5	27.5	25.9	54.0	7.4	32																																									
Pattern																																															
Channel Belt Width (ft)	14.4	22.4	19.5	37.8	8.2	6																																									
Radius of Curvature (ft)	10.5	18.3	18.5	25.9	6.7	4																																									
Rc: Bankfull Width (ft/ft)	1.4	2.4	2.5	3.5	0.9	3																																									
Meander Wavelength (ft)	34.3	48.7	50.5	60.9	9.8	6																																									
Meander Width Ratio	2.2	3.0	2.6	4.1	1.0	3																																									
Additional Reach Parameters																																															
Rosgen Classification	B4																																														
Channel Thalweg Length (ft)	1,061																																														
Sinuosity (ft)	1.05																																														
Water Surface Slope (Channel) (ft/ft)	0.020																																														
Bankfull Slope (ft/ft)	0.022																																														
Ri% / Ru% / P% / G% / S%	57%	0%	18%	11%	14%																																									

N/A - Information does not apply
Ri = Riffle / Ru = Run / P = Pool / G = Glide / S = Step

Note: Starting in MY5, the parameters denoted with[1] were calculated using the as-built cross sectional area as the basis for adjusting the bankfull elevation and the parameters denoted with[2] were calculated using the current years low top of bank as the bankfull elevation. These changes reflect the 2018 guidance that arose from the mitigation technical workgroup consisting of DMS, the IRT, and industry mitigation providers.

Upstream

Downstream

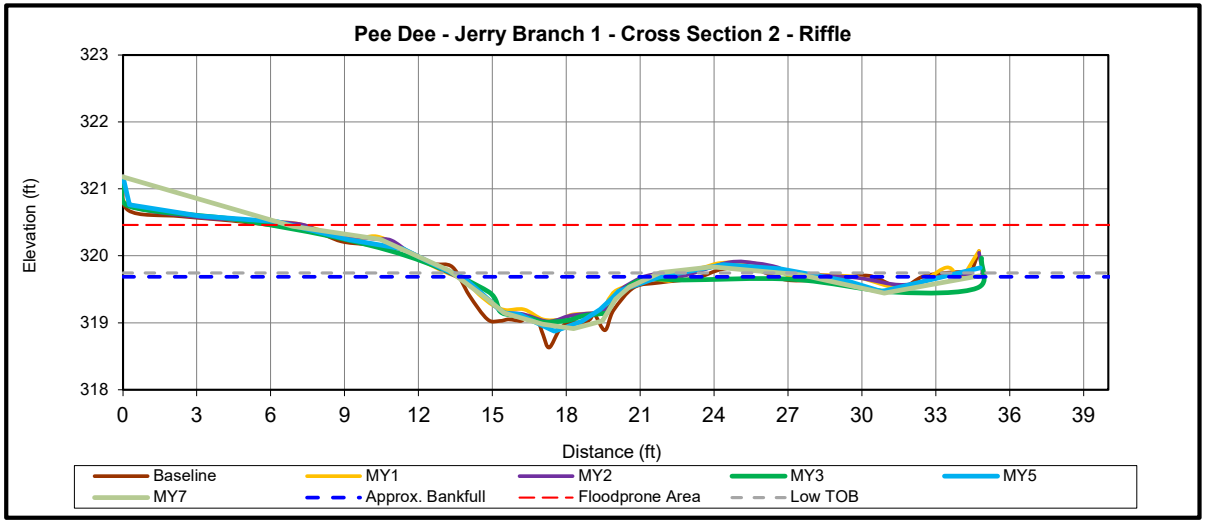


DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)[1]	9.1	8.3	8.3	8.2	-	N/A	-	N/A
Floodprone Width (ft)[1]	25.0	25.0	25.0	25.0	-	N/A	-	N/A
Bankfull Mean Depth (ft)	0.9	0.8	0.8	0.8	-	---	-	---
Bankfull Max Depth (ft)[2]	1.7	1.3	1.2	1.2	-	1.7	-	1.3
Bankfull Cross-Sectional Area (ft2)[2]	8.5	6.8	6.9	6.6	-	10.2	-	7.8
Width/Depth Ratio	9.8	10.1	9.9	10.1	-	---	-	---
Entrenchment Ratio[1]	2.7	3.0	3.0	N/A	-	N/A	-	N/A
Bank Height Ratio[1]	1.0	1.0	1.0	N/A	-	N/A	-	N/A

Note: Starting in MY5, the parameters denoted with [1] were calculated using the as-built cross sectional area as the basis for adjusting the bankfull elevation and the parameters denoted with [2] were calculated using the current years low top of bank as the bankfull elevation. These changes reflect the 2018 guidance that arose from the mitigation technical workgroup consisting of DMS, the IRT, and industry mitigation providers.

Upstream

Downstream

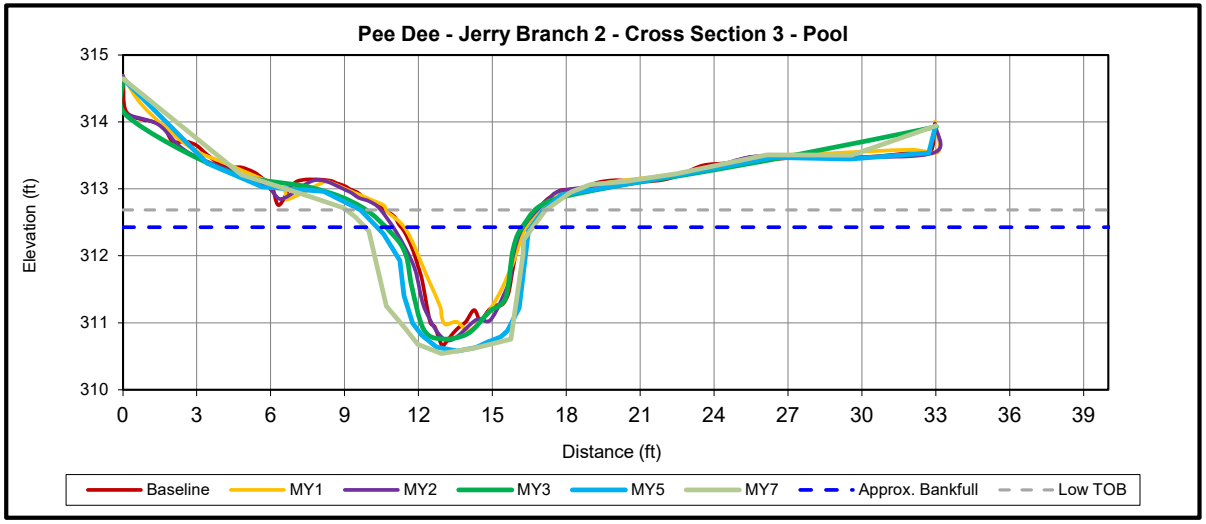


DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)[1]	8.1	7.0	6.7	6.9	-	8.6	-	7.9
Floodprone Width (ft)[1]	30.0	30.0	30.0	30.0	-	>29.9	-	>28.2
Bankfull Mean Depth (ft)	0.5	0.3	0.4	0.4	-	---	-	---
Bankfull Max Depth (ft)[2]	1.0	0.5	0.6	0.6	-	0.8	-	0.8
Bankfull Cross-Sectional Area (ft2)[2]	3.7	2.4	2.6	2.7	-	3.5	-	4.2
Width/Depth Ratio	17.7	20.3	17.5	17.6	-	---	-	---
Entrenchment Ratio[1]	3.7	4.3	4.5	4.0	-	>3.5	-	>3.6
Bank Height Ratio[1]	1.0	1.0	1.0	1.0	-	1.0	-	1.1

Note: Starting in MY5, the parameters denoted with [1] were calculated using the as-built cross sectional area as the basis for adjusting the bankfull elevation and the parameters denoted with [2] were calculated using the current years low top of bank as the bankfull elevation. These changes reflect the 2018 guidance that arose from the mitigation technical workgroup consisting of DMS, the IRT, and industry mitigation providers.

Upstream

Downstream

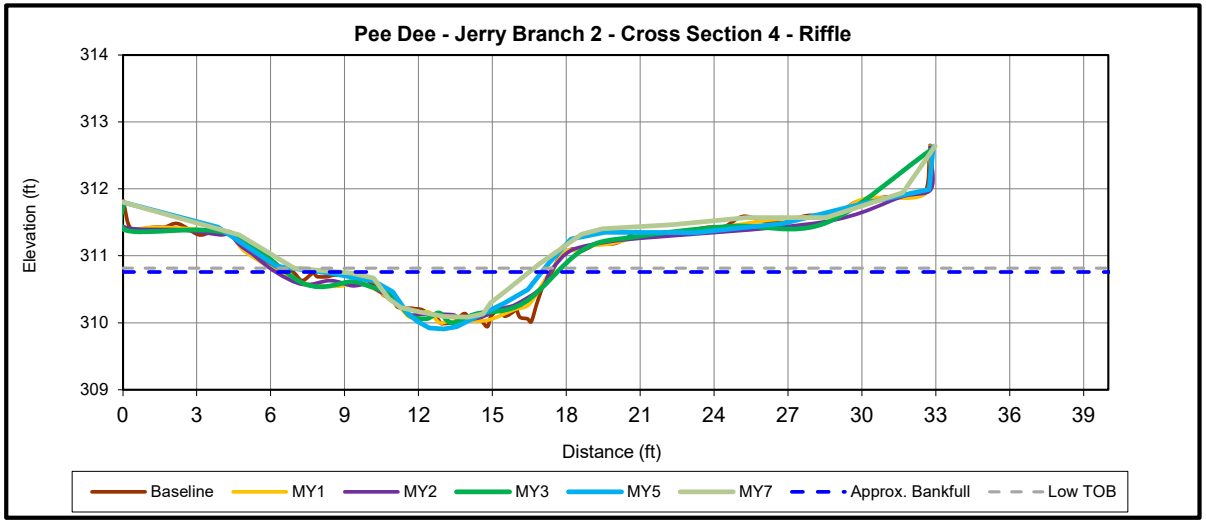


DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)[1]	7.8	8.1	8.1	9.8	-	N/A	-	N/A
Floodprone Width (ft)[1]	30.0	30.0	30.0	30.0	-	N/A	-	N/A
Bankfull Mean Depth (ft)	1.1	1.0	1.1	1.0	-	---	-	---
Bankfull Max Depth (ft)[2]	2.3	2.0	2.2	2.1	-	2.1	-	2.2
Bankfull Cross-Sectional Area (ft2)[2]	8.3	7.7	8.7	9.4	-	10.1	-	11.8
Width/Depth Ratio	7.4	8.4	7.6	10.2	-	---	-	---
Entrenchment Ratio[1]	3.8	3.7	3.7	N/A	-	N/A	-	N/A
Bank Height Ratio[1]	1.0	1.0	1.0	N/A	-	N/A	-	N/A

Note: Starting in MY5, the parameters denoted with [1] were calculated using the as-built cross sectional area as the basis for adjusting the bankfull elevation and the parameters denoted with [2] were calculated using the current years low top of bank as the bankfull elevation. These changes reflect the 2018 guidance that arose from the mitigation technical workgroup consisting of DMS, the IRT, and industry mitigation providers.

Upstream

Downstream

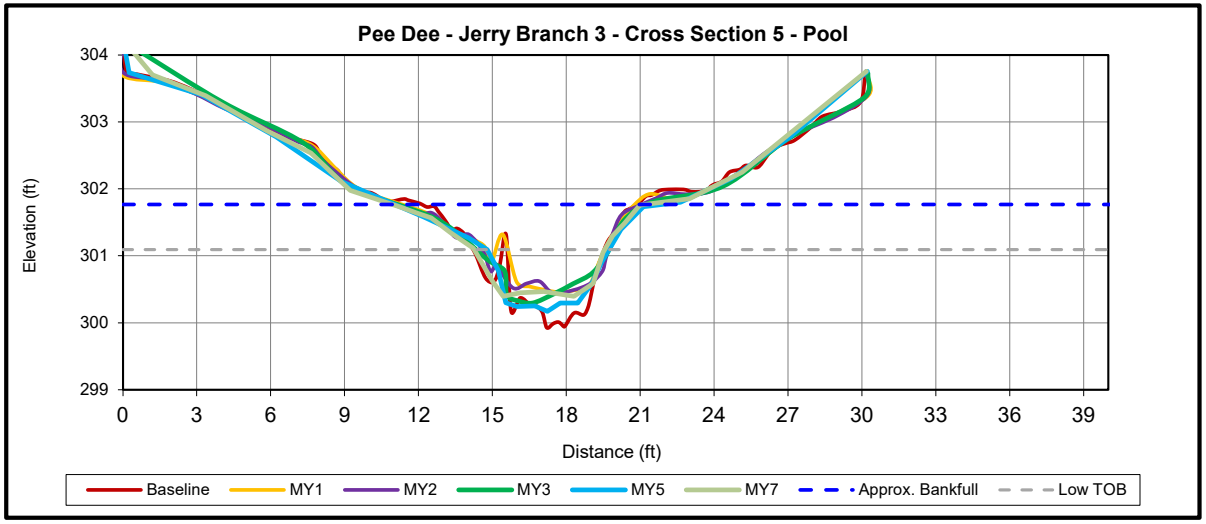


DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)[1]	7.1	7.2	7.2	7.7	-	7.3	-	7.8
Floodprone Width (ft)[1]	25.0	25.0	25.0	25.0	-	21.6	-	17.3
Bankfull Mean Depth (ft)	0.4	0.4	0.4	0.3	-	---	-	---
Bankfull Max Depth (ft)[2]	0.7	0.6	0.6	0.6	-	0.7	-	0.7
Bankfull Cross-Sectional Area (ft2)[2]	3.1	3.0	2.7	2.6	-	2.8	-	3.5
Width/Depth Ratio	16.4	17.0	19.4	22.6	-	---	-	---
Entrenchment Ratio[1]	3.5	3.5	3.5	3.2	-	3.0	-	2.2
Bank Height Ratio[1]	1.0	1.0	1.0	0.9	-	<1	-	1.1

Note: Starting in MY5, the parameters denoted with [1] were calculated using the as-built cross sectional area as the basis for adjusting the bankfull elevation and the parameters denoted with [2] were calculated using the current years low top of bank as the bankfull elevation. These changes reflect the 2018 guidance that arose from the mitigation technical workgroup consisting of DMS, the IRT, and industry mitigation providers.

Upstream

Downstream

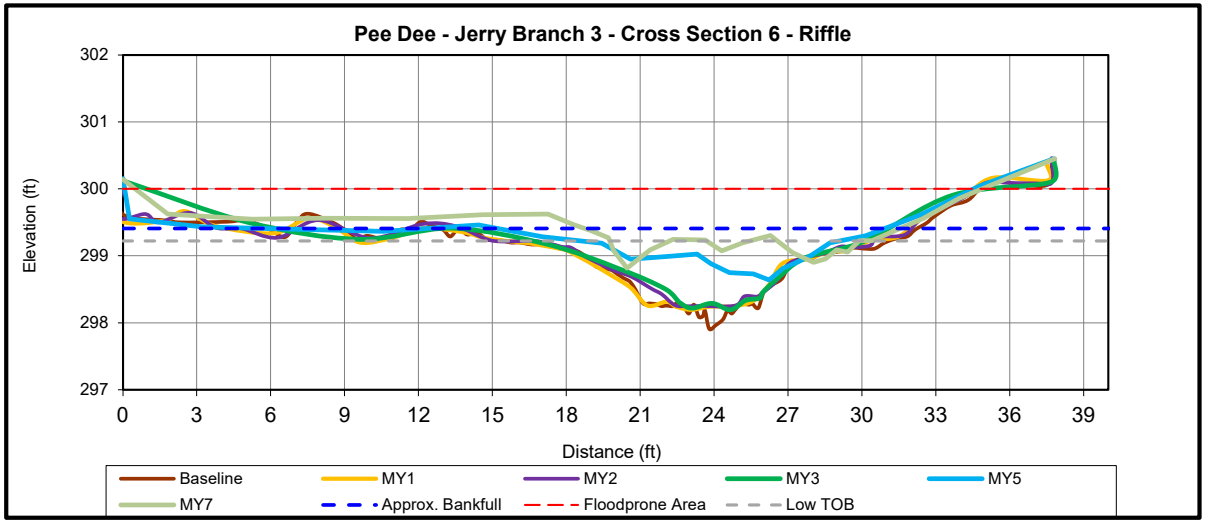


DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)[1]	8.1	9.2	9.7	9.4	-	N/A	-	N/A
Floodprone Width (ft)[1]	25.0	25.0	25.0	25.0	-	N/A	-	N/A
Bankfull Mean Depth (ft)	1.0	0.7	0.7	0.7	-	---	-	---
Bankfull Max Depth (ft)[2]	1.8	1.3	1.3	1.4	-	0.9	-	1.3
Bankfull Cross-Sectional Area (ft2)[2]	7.9	6.3	6.8	6.9	-	3.2	-	7.4
Width/Depth Ratio	8.3	13.2	13.7	13.0	-	---	-	---
Entrenchment Ratio[1]	3.1	2.7	2.6	N/A	-	N/A	-	N/A
Bank Height Ratio[1]	1.0	1.0	1.0	N/A	-	N/A	-	N/A

Note: Starting in MY5, the parameters denoted with [1] were calculated using the as-built cross sectional area as the basis for adjusting the bankfull elevation and the parameters denoted with [2] were calculated using the current years low top of bank as the bankfull elevation. These changes reflect the 2018 guidance that arose from the mitigation technical workgroup consisting of DMS, the IRT, and industry mitigation providers.

Upstream

Downstream

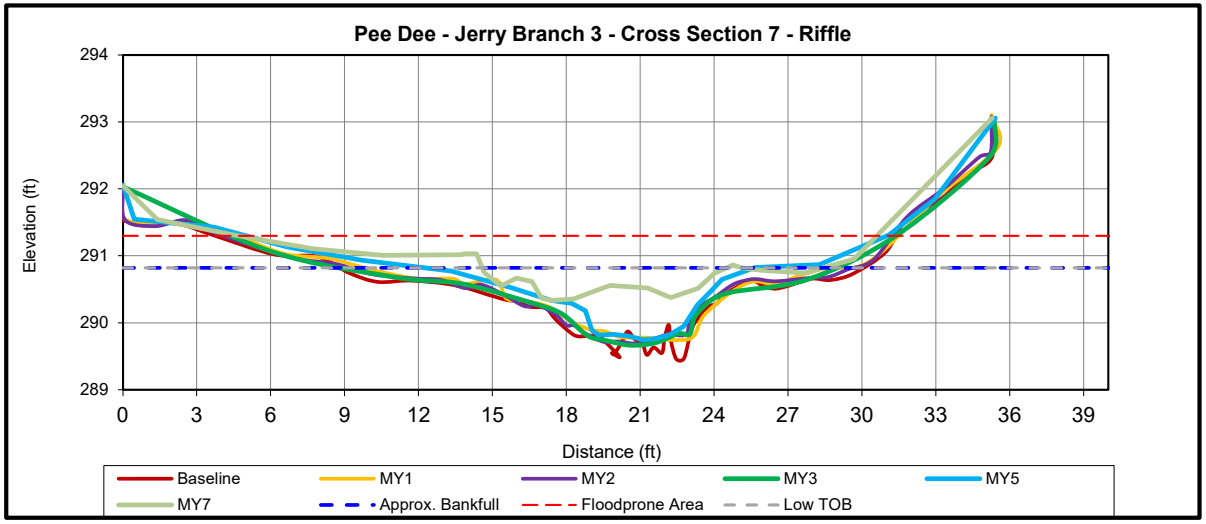


DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)[1]	7.4	7.5	7.3	6.9	-	12.0	-	10.2
Floodprone Width (ft)[1]	30.0	30.0	30.0	30.0	-	>33.8	-	>34.4
Bankfull Mean Depth (ft)	0.4	0.4	0.4	0.4	-	---	-	---
Bankfull Max Depth (ft)[2]	0.9	0.6	0.6	0.6	-	0.5	-	0.4
Bankfull Cross-Sectional Area (ft2)[2]	3.3	3.3	2.9	2.4	-	2.5	-	1.2
Width/Depth Ratio	16.6	16.7	18.7	19.4	-	---	-	---
Entrenchment Ratio[1]	4.1	4.0	4.1	4.4	-	>2.8	-	3.4
Bank Height Ratio[1]	1.0	1.0	1.0	1.0	-	<1	-	0.7

Note: Starting in MY5, the parameters denoted with [1] were calculated using the as-built cross sectional area as the basis for adjusting the bankfull elevation and the parameters denoted with [2] were calculated using the current years low top of bank as the bankfull elevation. These changes reflect the 2018 guidance that arose from the mitigation technical workgroup consisting of DMS, the IRT, and industry mitigation providers.

Upstream

Downstream

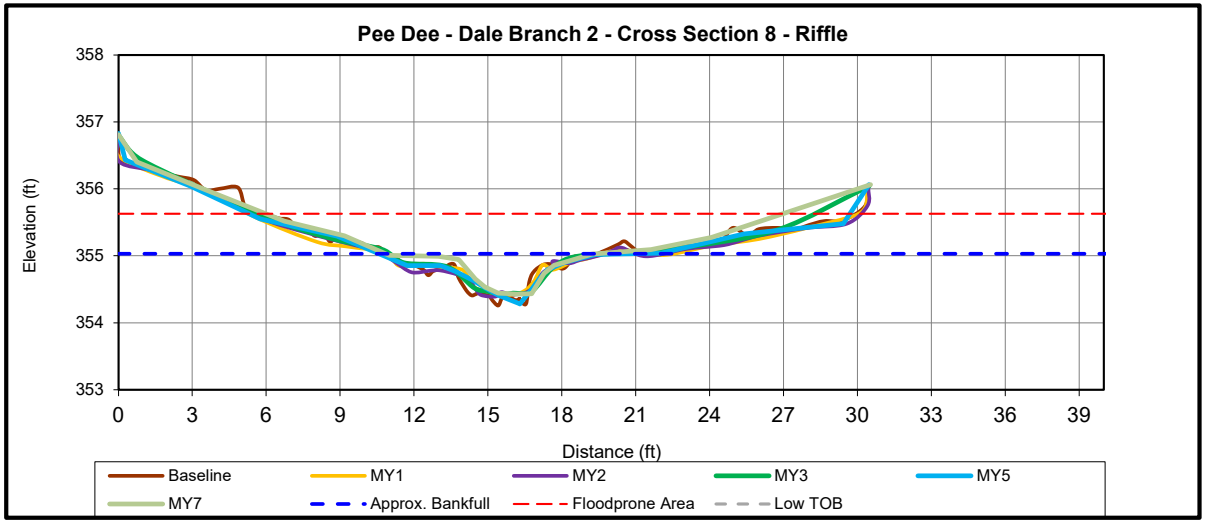


DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)[1]	7.2	6.7	6.4	6.2	-	7.4	-	9.9
Floodprone Width (ft)[1]	25.0	25.0	25.0	25.0	-	23.7	-	26.0
Bankfull Mean Depth (ft)	0.4	0.3	0.4	0.4	-	---	-	---
Bankfull Max Depth (ft)[2]	0.8	0.5	0.5	0.5	-	0.5	-	0.5
Bankfull Cross-Sectional Area (ft2)[2]	3.0	2.3	2.4	2.2	-	2.0	-	3.0
Width/Depth Ratio	17.7	19.4	17.0	17.4	-	---	-	---
Entrenchment Ratio[1]	3.4	3.7	3.9	4.0	-	3.2	-	2.6
Bank Height Ratio[1]	1.0	1.0	1.0	0.9	-	<1	-	1.0

Note: Starting in MY5, the parameters denoted with [1] were calculated using the as-built cross sectional area as the basis for adjusting the bankfull elevation and the parameters denoted with [2] were calculated using the current years low top of bank as the bankfull elevation. These changes reflect the 2018 guidance that arose from the mitigation technical workgroup consisting of DMS, the IRT, and industry mitigation providers.

Upstream

Downstream

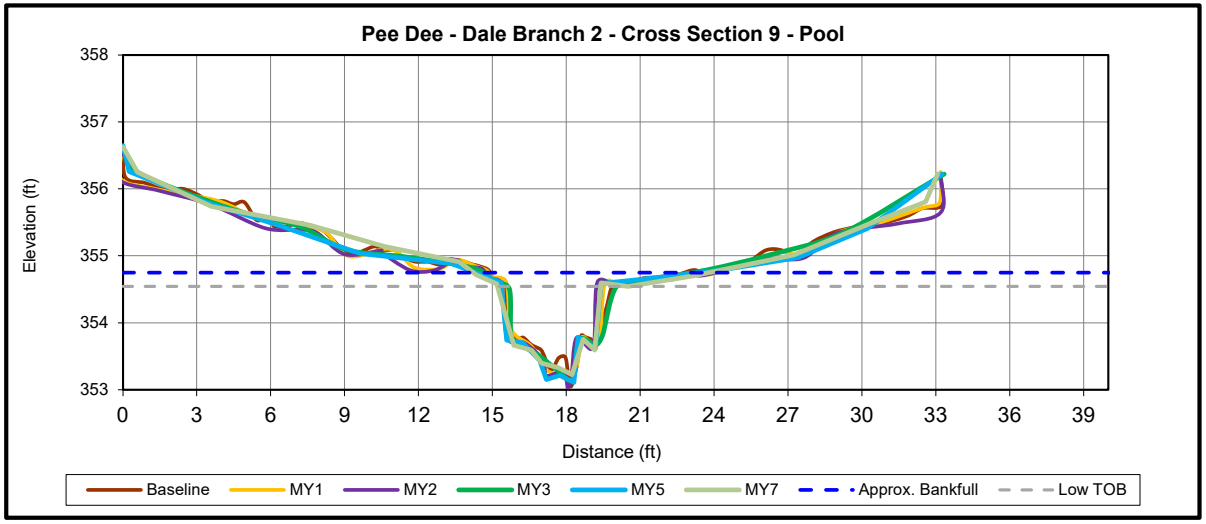


DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)[1]	7.0	7.3	7.2	6.5	-	7.7	-	6.2
Floodprone Width (ft)[1]	25.0	25.0	25.0	25.0	-	>24.5	-	21.3
Bankfull Mean Depth (ft)	0.3	0.2	0.3	0.2	-	---	-	---
Bankfull Max Depth (ft)[2]	0.7	0.5	0.5	0.5	-	0.6	-	0.6
Bankfull Cross-Sectional Area (ft2)[2]	2.0	1.7	2.0	1.6	-	1.3	-	1.7
Width/Depth Ratio	24.6	30.6	26.0	26.9	-	---	-	---
Entrenchment Ratio[1]	3.6	3.4	3.5	3.9	-	>3.2	-	3.4
Bank Height Ratio[1]	1.0	1.0	1.0	0.9	-	<1	-	0.9

Note: Starting in MY5, the parameters denoted with [1] were calculated using the as-built cross sectional area as the basis for adjusting the bankfull elevation and the parameters denoted with [2] were calculated using the current years low top of bank as the bankfull elevation. These changes reflect the 2018 guidance that arose from the mitigation technical workgroup consisting of DMS, the IRT, and industry mitigation providers.

Upstream

Downstream

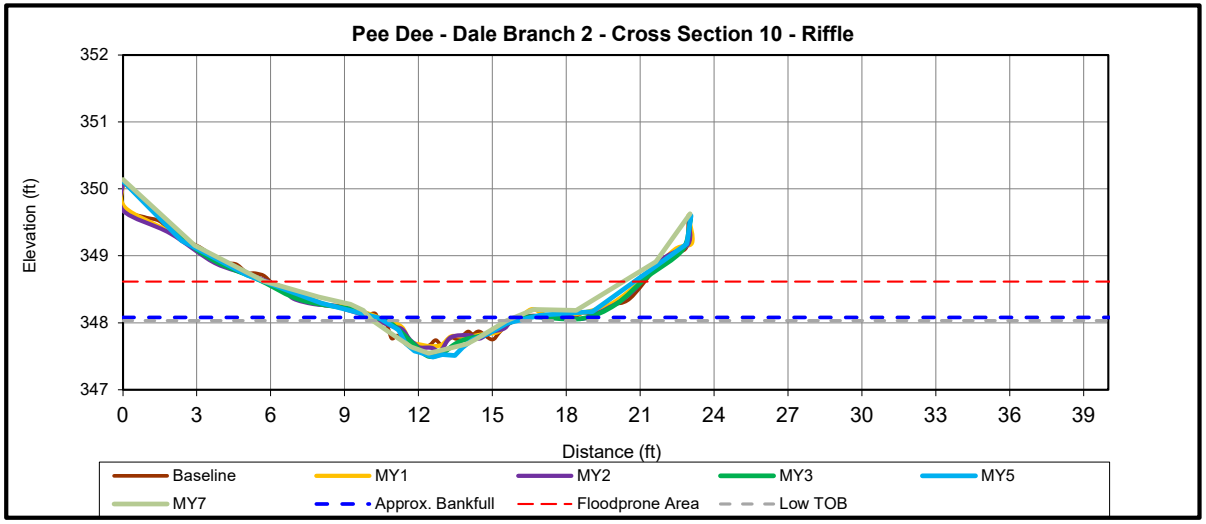


DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)[1]	7.7	8.0	8.1	7.7	-	N/A	-	N/A
Floodprone Width (ft)[1]	25.0	25.0	25.0	25.0	-	N/A	-	N/A
Bankfull Mean Depth (ft)	0.6	0.6	0.6	0.6	-	---	-	---
Bankfull Max Depth (ft)[2]	1.7	1.5	1.7	1.5	-	1.5	-	1.4
Bankfull Cross-Sectional Area (ft2)[2]	4.8	4.8	5.0	5.0	-	4.2	-	4.1
Width/Depth Ratio	12.3	13.5	13.3	11.8	-	---	-	---
Entrenchment Ratio[1]	3.3	3.1	3.1	N/A	-	N/A	-	N/A
Bank Height Ratio[1]	1.0	1.0	1.0	N/A	-	N/A	-	N/A

Note: Starting in MY5, the parameters denoted with [1] were calculated using the as-built cross sectional area as the basis for adjusting the bankfull elevation and the parameters denoted with [2] were calculated using the current years low top of bank as the bankfull elevation. These changes reflect the 2018 guidance that arose from the mitigation technical workgroup consisting of DMS, the IRT, and industry mitigation providers.

Upstream

Downstream

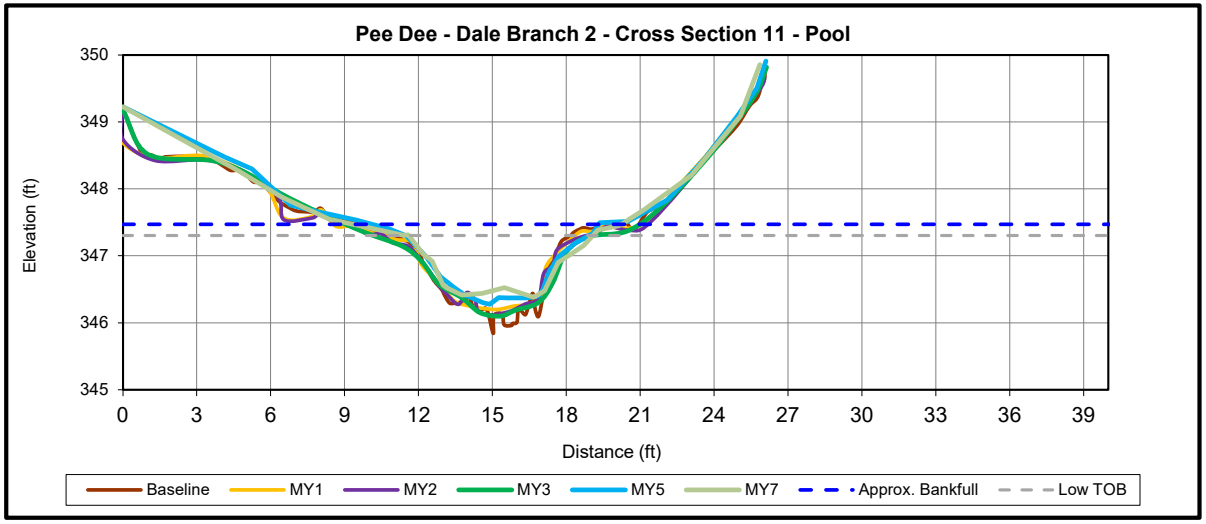


DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)[1]	6.4	6.2	6.2	6.5	-	5.9	-	5.9
Floodprone Width (ft)[1]	25.0	25.0	25.0	25.0	-	15.2	-	0.3
Bankfull Mean Depth (ft)	0.3	0.3	0.3	0.3	-	---	-	---
Bankfull Max Depth (ft)[2]	0.5	0.5	0.5	0.6	-	0.5	-	0.5
Bankfull Cross-Sectional Area (ft2)[2]	1.8	1.6	1.7	1.8	-	1.4	-	1.6
Width/Depth Ratio	22.6	23.7	21.7	23.4	-	---	-	---
Entrenchment Ratio[1]	3.9	4.0	4.1	3.9	-	2.6	-	2.5
Bank Height Ratio[1]	1.0	1.0	1.0	0.9	-	<1	-	0.9

Note: Starting in MY5, the parameters denoted with [1] were calculated using the as-built cross sectional area as the basis for adjusting the bankfull elevation and the parameters denoted with [2] were calculated using the current years low top of bank as the bankfull elevation. These changes reflect the 2018 guidance that arose from the mitigation technical workgroup consisting of DMS, the IRT, and industry mitigation providers.

Upstream

Downstream

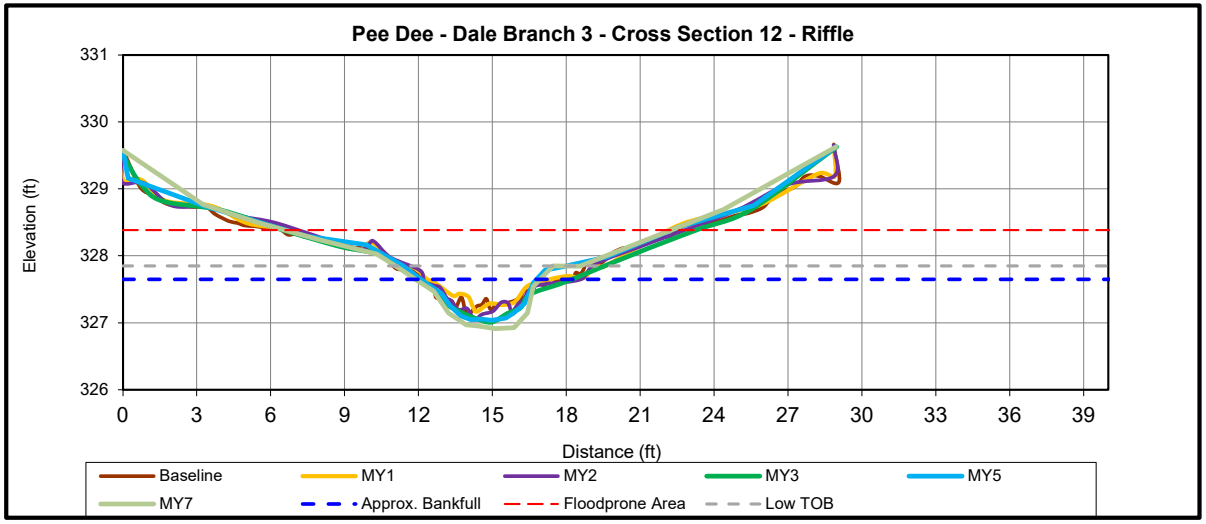


DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)[1]	7.6	8.0	8.3	9.4	-	N/A	-	N/A
Floodprone Width (ft)[1]	20.0	20.0	20.0	20.0	-	N/A	-	N/A
Bankfull Mean Depth (ft)	0.8	0.7	0.7	0.7	-	---	-	---
Bankfull Max Depth (ft)[2]	1.6	1.2	1.3	1.3	-	1.0	-	1.1
Bankfull Cross-Sectional Area (ft2)[2]	6.1	5.9	6.0	6.7	-	4.6	-	6.0
Width/Depth Ratio	9.5	10.9	11.5	13.3	-	---	-	---
Entrenchment Ratio[1]	2.6	2.5	2.4	N/A	-	N/A	-	N/A
Bank Height Ratio[1]	1.0	1.0	1.0	N/A	-	N/A	-	N/A

Note: Starting in MY5, the parameters denoted with [1] were calculated using the as-built cross sectional area as the basis for adjusting the bankfull elevation and the parameters denoted with [2] were calculated using the current years low top of bank as the bankfull elevation. These changes reflect the 2018 guidance that arose from the mitigation technical workgroup consisting of DMS, the IRT, and industry mitigation providers.

Upstream

Downstream

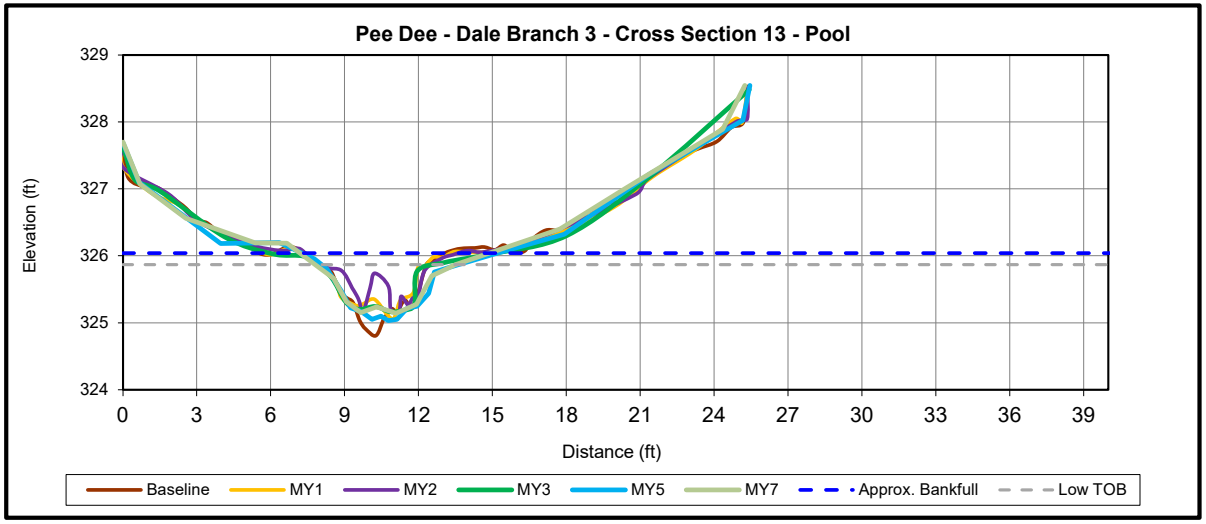


DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)[1]	7.3	7.1	7.1	7.8	-	5.4	-	5.1
Floodprone Width (ft)[1]	20.0	20.0	20.0	20.0	-	17.7	-	15.7
Bankfull Mean Depth (ft)	0.3	0.3	0.4	0.4	-	---	-	---
Bankfull Max Depth (ft)[2]	0.7	0.6	0.8	0.8	-	0.8	-	0.9
Bankfull Cross-Sectional Area (ft2)[2]	2.5	2.2	2.7	3.1	-	2.9	-	3.6
Width/Depth Ratio	21.1	23.1	18.7	19.3	-	---	-	---
Entrenchment Ratio[1]	2.8	2.8	2.8	2.6	-	3.3	-	3.1
Bank Height Ratio[1]	1.0	1.0	1.0	0.5	-	1.1	-	1.3

Note: Starting in MY5, the parameters denoted with [1] were calculated using the as-built cross sectional area as the basis for adjusting the bankfull elevation and the parameters denoted with [2] were calculated using the current years low top of bank as the bankfull elevation. These changes reflect the 2018 guidance that arose from the mitigation technical workgroup consisting of DMS, the IRT, and industry mitigation providers.

Upstream

Downstream

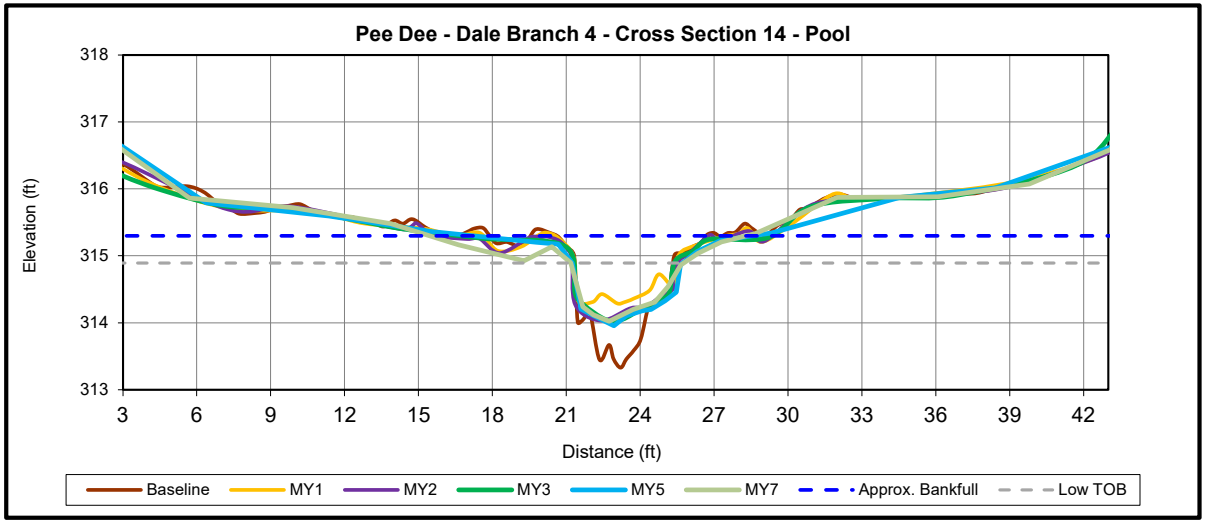


DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)[1]	7.8	7.6	7.7	8.3	-	N/A	-	N/A
Floodprone Width (ft)[1]	20.0	20.0	20.0	20.0	-	N/A	-	N/A
Bankfull Mean Depth (ft)	0.5	0.5	0.4	0.4	-	---	-	---
Bankfull Max Depth (ft)[2]	1.3	1.1	1.0	0.9	-	0.8	-	0.7
Bankfull Cross-Sectional Area (ft2)[2]	3.9	3.5	3.0	3.7	-	2.5	-	2.5
Width/Depth Ratio	15.7	16.7	19.7	18.5	-	---	-	---
Entrenchment Ratio[1]	2.6	2.6	2.6	N/A	-	N/A	-	N/A
Bank Height Ratio[1]	1.0	1.0	1.0	N/A	-	N/A	-	N/A

Note: Starting in MY5, the parameters denoted with [1] were calculated using the as-built cross sectional area as the basis for adjusting the bankfull elevation and the parameters denoted with [2] were calculated using the current years low top of bank as the bankfull elevation. These changes reflect the 2018 guidance that arose from the mitigation technical workgroup consisting of DMS, the IRT, and industry mitigation providers.

Upstream

Downstream

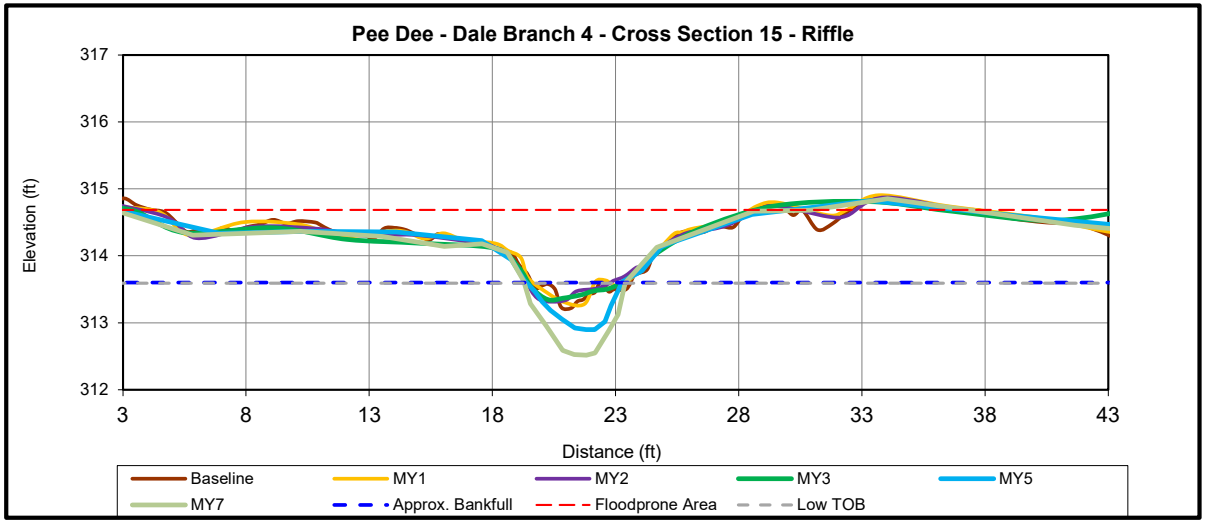


DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)[1]	6.7	7.2	7.0	5.8	-	N/A	-	N/A
Floodprone Width (ft)[1]	30.0	30.0	30.0	30.0	-	N/A	-	N/A
Bankfull Mean Depth (ft)	0.9	0.6	0.7	0.8	-	---	-	---
Bankfull Max Depth (ft)[2]	2.0	1.0	1.3	1.3	-	1.2	-	0.9
Bankfull Cross-Sectional Area (ft2)[2]	6.2	4.3	5.2	4.9	-	4.7	-	2.7
Width/Depth Ratio	7.1	12.1	9.5	7.0	-	---	-	---
Entrenchment Ratio[1]	4.5	4.2	4.3	N/A	-	N/A	-	N/A
Bank Height Ratio[1]	1.0	1.0	1.0	N/A	-	N/A	-	N/A

Note: Starting in MY5, the parameters denoted with [1] were calculated using the as-built cross sectional area as the basis for adjusting the bankfull elevation and the parameters denoted with [2] were calculated using the current years low top of bank as the bankfull elevation. These changes reflect the 2018 guidance that arose from the mitigation technical workgroup consisting of DMS, the IRT, and industry mitigation providers.

Upstream

Downstream

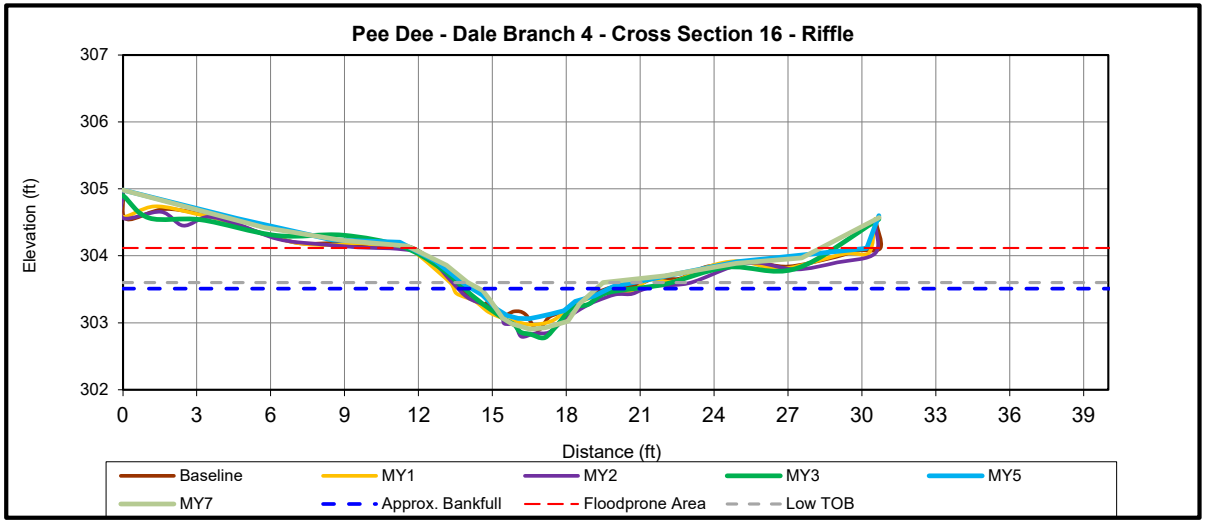


DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)[1]	6.5	6.2	6.5	6.8	-	5.4	-	4.1
Floodprone Width (ft)[1]	40.0	40.0	40.0	40.0	-	>43.2	-	35.7
Bankfull Mean Depth (ft)	0.5	0.5	0.5	0.5	-	---	-	---
Bankfull Max Depth (ft)[2]	0.9	0.8	0.8	0.8	-	1.3	-	1.6
Bankfull Cross-Sectional Area (ft2)[2]	3.1	2.9	3.0	3.2	-	5.0	-	5.8
Width/Depth Ratio	13.8	13.2	14.2	14.7	-	---	-	----
Entrenchment Ratio[1]	6.1	6.5	6.2	5.9	-	>8	-	8.7
Bank Height Ratio[1]	1.0	1.0	1.0	1.0	-	1.3	-	1.5

Note: Starting in MY5, the parameters denoted with [1] were calculated using the as-built cross sectional area as the basis for adjusting the bankfull elevation and the parameters denoted with [2] were calculated using the current years low top of bank as the bankfull elevation. These changes reflect the 2018 guidance that arose from the mitigation technical workgroup consisting of DMS, the IRT, and industry mitigation providers.

Upstream

Downstream

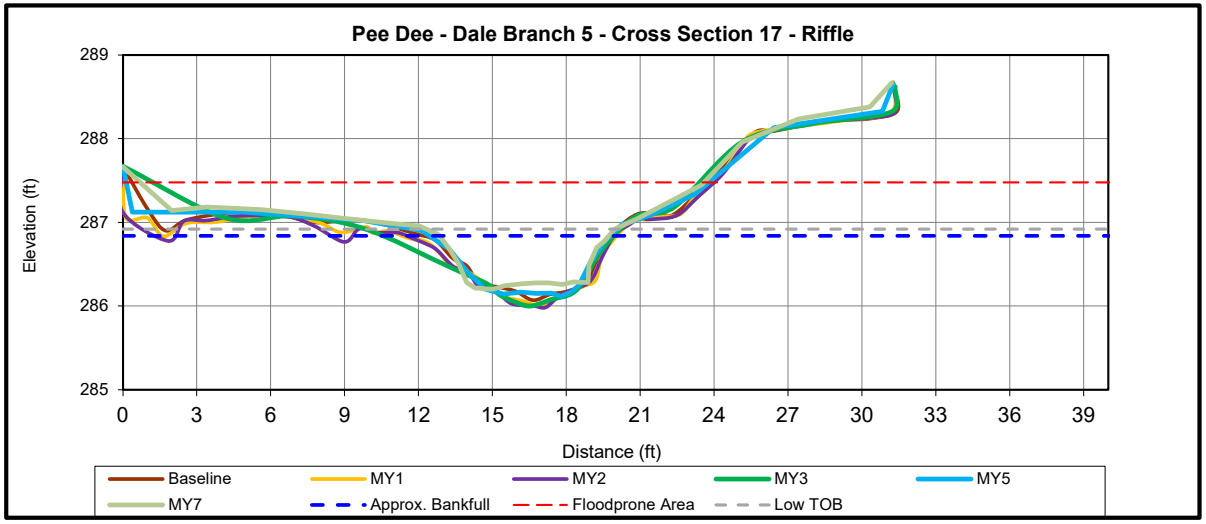


DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)[1]	6.3	7.2	7.6	6.7	-	6.4	-	4.8
Floodprone Width (ft)[1]	25.0	25.0	25.0	25.0	-	17.5	-	16.6
Bankfull Mean Depth (ft)	0.3	0.3	0.4	0.3	-	---	-	---
Bankfull Max Depth (ft)[2]	0.7	0.6	0.7	0.7	-	0.5	-	0.7
Bankfull Cross-Sectional Area (ft2)[2]	1.9	2.3	2.7	2.2	-	1.7	-	2.4
Width/Depth Ratio	21.0	23.0	20.9	19.9	-	---	-	---
Entrenchment Ratio[1]	4.0	3.5	3.3	3.8	-	2.7	-	3.5
Bank Height Ratio[1]	1.0	1.0	1.0	0.9	-	1.0	-	1.1

Note: Starting in MY5, the parameters denoted with [1] were calculated using the as-built cross sectional area as the basis for adjusting the bankfull elevation and the parameters denoted with [2] were calculated using the current years low top of bank as the bankfull elevation. These changes reflect the 2018 guidance that arose from the mitigation technical workgroup consisting of DMS, the IRT, and industry mitigation providers.

Upstream

Downstream

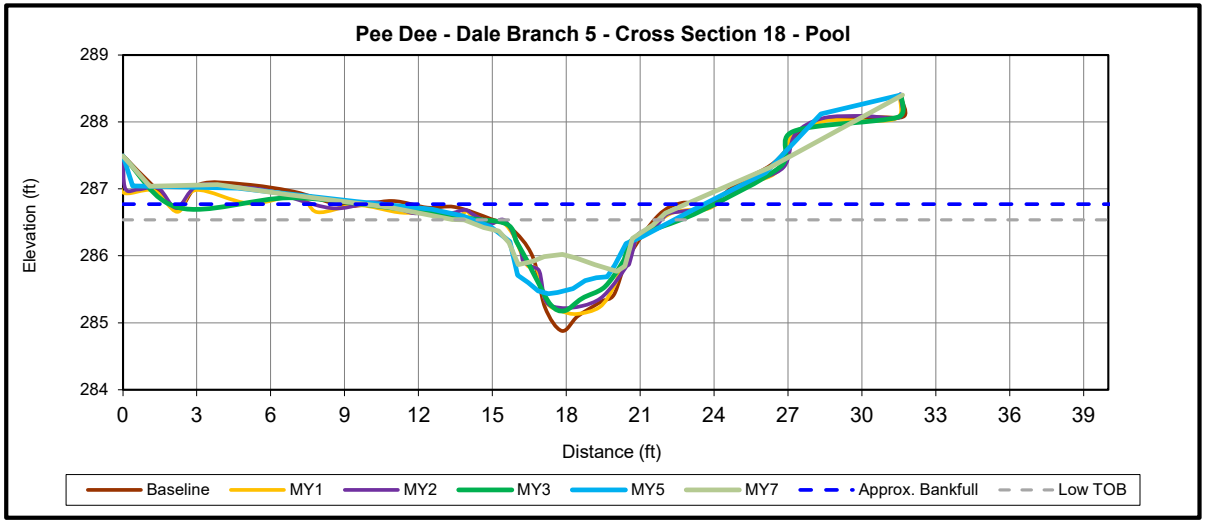


DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)[1]	7.1	7.9	7.9	9.1	-	7.0	-	6.9
Floodprone Width (ft)[1]	25.0	25.0	25.0	25.0	-	>23.7	-	22.9
Bankfull Mean Depth (ft)	0.5	0.5	0.5	0.4	-	---	-	---
Bankfull Max Depth (ft)[2]	0.7	0.8	0.8	0.8	-	0.8	-	0.7
Bankfull Cross-Sectional Area (ft2)[2]	3.3	3.8	3.9	4.1	-	4.0	-	3.9
Width/Depth Ratio	15.2	16.2	16.3	20.6	-	---	-	---
Entrenchment Ratio[1]	3.5	3.2	3.2	2.7	-	>3.4	-	3.3
Bank Height Ratio[1]	1.0	1.0	1.0	1.2	-	1.1	-	1.1

Note: Starting in MY5, the parameters denoted with [1] were calculated using the as-built cross sectional area as the basis for adjusting the bankfull elevation and the parameters denoted with [2] were calculated using the current years low top of bank as the bankfull elevation. These changes reflect the 2018 guidance that arose from the mitigation technical workgroup consisting of DMS, the IRT, and industry mitigation providers.

Upstream

Downstream

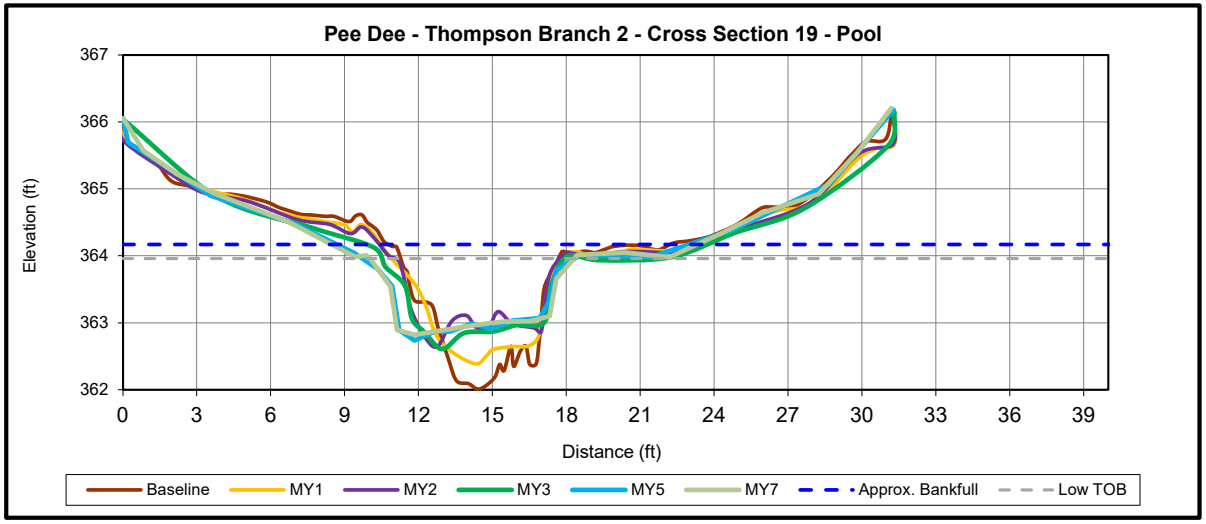


DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)[1]	7.2	8.0	7.7	7.4	-	N/A	-	N/A
Floodprone Width (ft)[1]	25.0	25.0	25.0	25.0	-	N/A	-	N/A
Bankfull Mean Depth (ft)	0.8	0.7	0.7	0.7	-	---	-	---
Bankfull Max Depth (ft)[2]	1.7	1.5	1.4	1.4	-	1.2	-	0.8
Bankfull Cross-Sectional Area (ft2)[2]	5.9	5.8	5.6	5.3	-	5.2	-	3.5
Width/Depth Ratio	8.7	11.0	10.7	10.4	-	---	-	---
Entrenchment Ratio[1]	3.5	3.1	3.2	N/A	-	N/A	-	N/A
Bank Height Ratio[1]	1.0	1.0	1.0	N/A	-	N/A	-	N/A

Note: Starting in MY5, the parameters denoted with [1] were calculated using the as-built cross sectional area as the basis for adjusting the bankfull elevation and the parameters denoted with [2] were calculated using the current years low top of bank as the bankfull elevation. These changes reflect the 2018 guidance that arose from the mitigation technical workgroup consisting of DMS, the IRT, and industry mitigation providers.

Upstream

Downstream

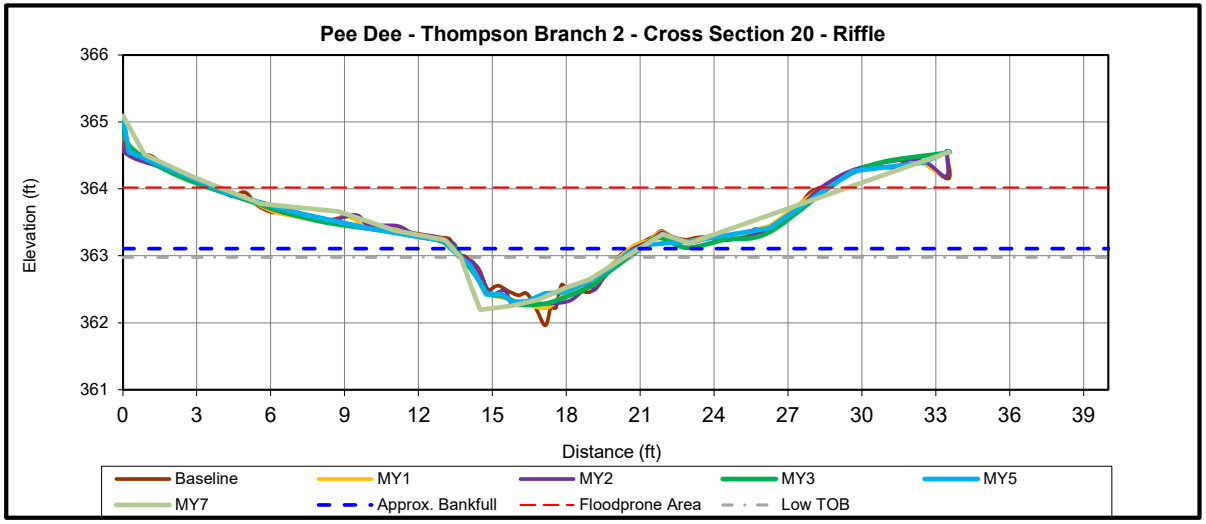


DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)[1]	8.4	9.2	9.2	7.8	-	N/A	-	N/A
Floodprone Width (ft)[1]	30.0	30.0	30.0	30.0	-	N/A	-	N/A
Bankfull Mean Depth (ft)	1.0	0.9	0.8	1.0	-	---	-	---
Bankfull Max Depth (ft)[2]	2.1	1.7	1.5	1.5	-	1.3	-	1.1
Bankfull Cross-Sectional Area (ft2)[2]	8.8	8.1	7.0	7.7	-	7.3	-	6.9
Width/Depth Ratio	8.0	10.4	12.1	8.0	-	---	-	---
Entrenchment Ratio[1]	3.6	3.3	3.3	N/A	-	N/A	-	N/A
Bank Height Ratio[1]	1.0	1.0	1.0	N/A	-	N/A	-	N/A

Note: Starting in MY5, the parameters denoted with [1] were calculated using the as-built cross sectional area as the basis for adjusting the bankfull elevation and the parameters denoted with [2] were calculated using the current years low top of bank as the bankfull elevation. These changes reflect the 2018 guidance that arose from the mitigation technical workgroup consisting of DMS, the IRT, and industry mitigation providers.

Upstream

Downstream

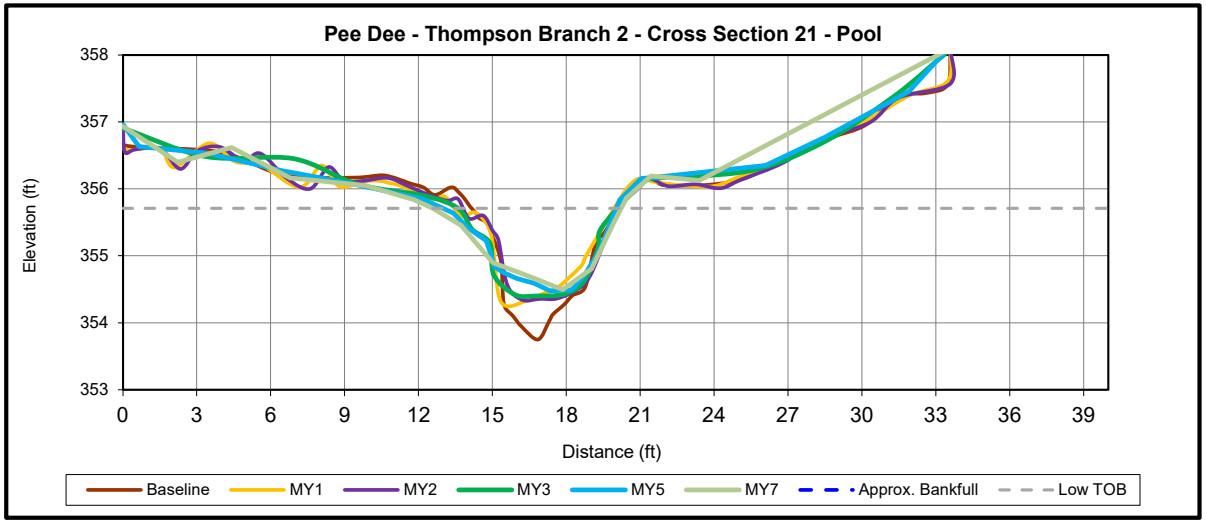


DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)[1]	7.5	7.7	7.6	8.4	-	8.4	-	7.6
Floodprone Width (ft)[1]	30.0	30.0	30.0	30.0	-	25.0	-	25.6
Bankfull Mean Depth (ft)	0.6	0.6	0.6	0.6	-	---	-	---
Bankfull Max Depth (ft)[2]	1.2	0.9	0.9	0.9	-	0.8	-	0.8
Bankfull Cross-Sectional Area (ft2)[2]	4.2	4.4	4.4	4.8	-	4.1	-	3.2
Width/Depth Ratio	13.3	13.5	13.0	14.5	-	---	-	---
Entrenchment Ratio[1]	4.0	3.9	3.9	3.6	-	3.0	-	3.4
Bank Height Ratio[1]	1.0	1.0	1.0	1.0	-	1.0	-	0.9

Note: Starting in MY5, the parameters denoted with [1] were calculated using the as-built cross sectional area as the basis for adjusting the bankfull elevation and the parameters denoted with [2] were calculated using the current years low top of bank as the bankfull elevation. These changes reflect the 2018 guidance that arose from the mitigation technical workgroup consisting of DMS, the IRT, and industry mitigation providers.

Upstream

Downstream

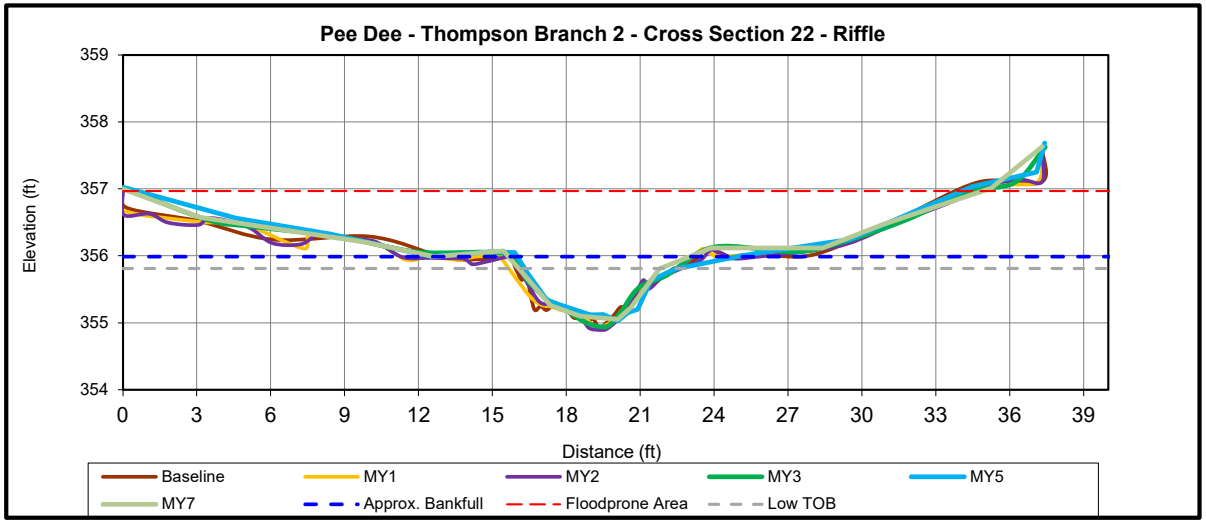


DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)[1]	8.6	9.1	9.2	10.2	-	N/A	-	N/A
Floodprone Width (ft)[1]	30.0	30.0	30.0	30.0	-	N/A	-	N/A
Bankfull Mean Depth (ft)	1.0	0.8	0.8	0.8	-	---	-	---
Bankfull Max Depth (ft)[2]	2.3	1.7	1.7	1.6	-	1.2	-	1.2
Bankfull Cross-Sectional Area (ft2)[2]	8.5	7.5	7.8	8.0	-	4.9	-	5.5
Width/Depth Ratio	8.7	10.9	10.9	12.9	-	---	-	---
Entrenchment Ratio[1]	3.5	3.3	3.2	N/A	-	N/A	-	N/A
Bank Height Ratio[1]	1.0	1.0	1.0	N/A	-	N/A	-	N/A

Note: Starting in MY5, the parameters denoted with [1] were calculated using the as-built cross sectional area as the basis for adjusting the bankfull elevation and the parameters denoted with [2] were calculated using the current years low top of bank as the bankfull elevation. These changes reflect the 2018 guidance that arose from the mitigation technical workgroup consisting of DMS, the IRT, and industry mitigation providers.

Upstream

Downstream



DIMENSIONS SUMMARY	MY0	MY1	MY2	MY3	MY4	MY5	MY6	MY7
Bankful Width (ft)[1]	7.6	7.7	7.7	7.8	-	8.9	-	3.2
Floodprone Width (ft)[1]	30.0	30.0	30.0	30.0	-	33.3	-	34.7
Bankfull Mean Depth (ft)	0.6	0.6	0.6	0.6	-	---	-	---
Bankfull Max Depth (ft)[2]	1.1	1.0	1.1	1.1	-	0.8	-	0.8
Bankfull Cross-Sectional Area (ft2)[2]	4.3	4.4	4.4	4.4	-	2.8	-	2.9
Width/Depth Ratio	13.4	13.5	13.5	13.8	-	---	-	---
Entrenchment Ratio[1]	3.9	3.9	3.9	3.9	-	3.7	-	5.6
Bank Height Ratio[1]	1.0	1.0	1.0	1.0	-	<1	-	0.8

Note: Starting in MY5, the parameters denoted with [1] were calculated using the as-built cross sectional area as the basis for adjusting the bankfull elevation and the parameters denoted with [2] were calculated using the current years low top of bank as the bankfull elevation. These changes reflect the 2018 guidance that arose from the mitigation technical workgroup consisting of DMS, the IRT, and industry mitigation providers.

Table 12. Pebble Count Data Summary

Stream Reach	MY1 - 2015		MY2 - 2016		MY3 - 2017		MY4 - 2018		MY5 - 2019		MY7 - 2021	
	Pebble Count		Pebble Count		Pebble Count		Pebble Count		Pebble Count		Pebble Count	
	D_{50} (mm)	D_{84} (mm)	D_{50} (mm)	D_{84} (mm)	D_{50} (mm)	D_{84} (mm)	D_{50} (mm)	D_{84} (mm)	D_{50} (mm)	D_{84} (mm)	D_{50} (mm)	D_{84} (mm)
Jerry Branch 1	0.2	34	0.062	5.2	12	58	11	28	12	37	22	76
Jerry Branch 2	22	44	5.2	9.6	12	30	22	78	22	60	6	27
Jerry Branch 3	20	44	15	51	40	76	12.5	45	16.5	47	11.7	35.5
Dale Branch 2	14	45	6.3	32	16	51	24	49	28.5	58.5	18.9	58.5
Dale Branch 3	2.1	13	4.4	30	8	80	9.4	60	22	52	0.062	49
Dale Branch 4	21	44	5	37	14	71	14.9	35	18	44.5	12.5	30.05
Dale Branch 5	33	60	16	41	32	69	48	96	24	54	33	57
Thompson Branch 2	15	51	20	51	50	95	30	76	25.5	58.5	16.5	71.5

Charts 1-9. MY5 Stream Reach Substrate Composition Charts

Chart 1.

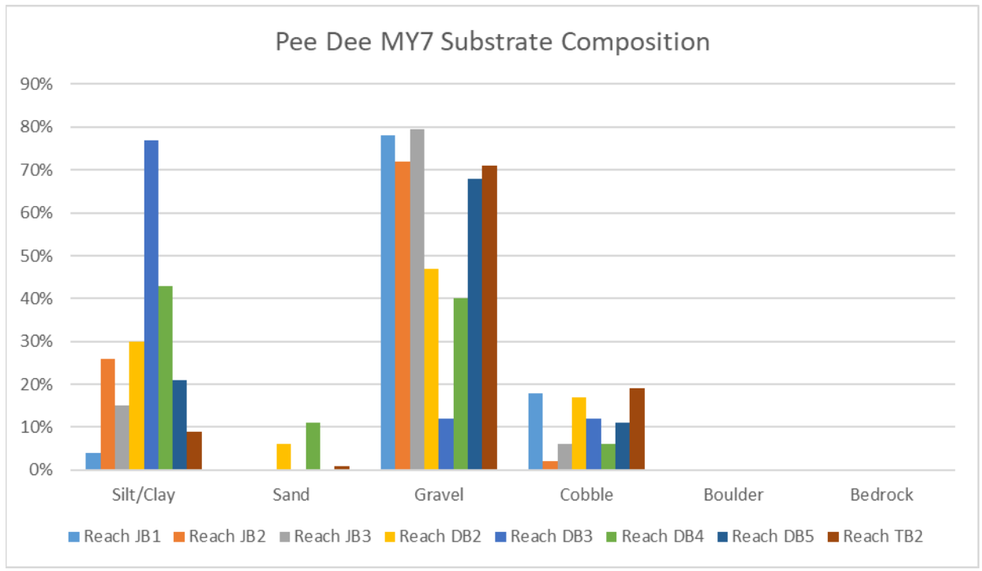


Chart 2.

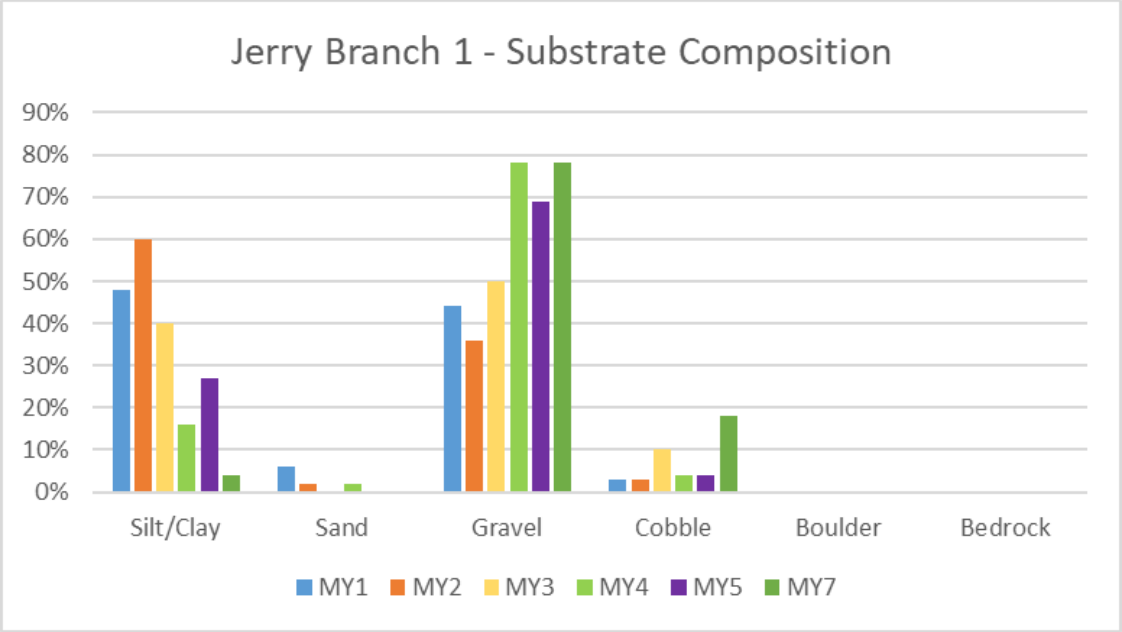


Chart 3.

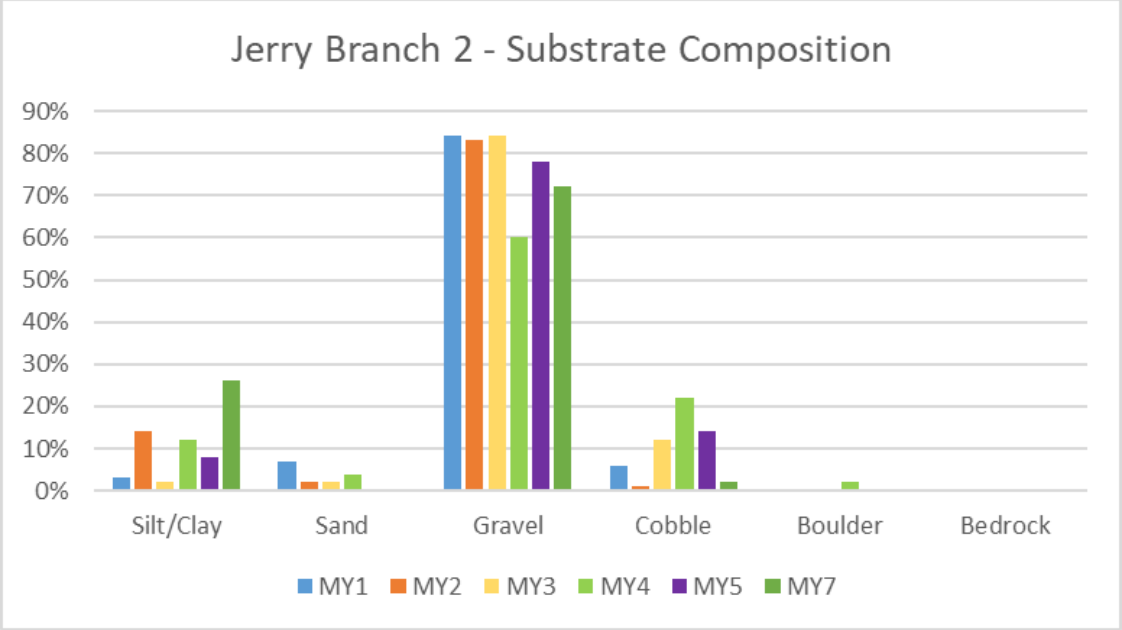


Chart 4.

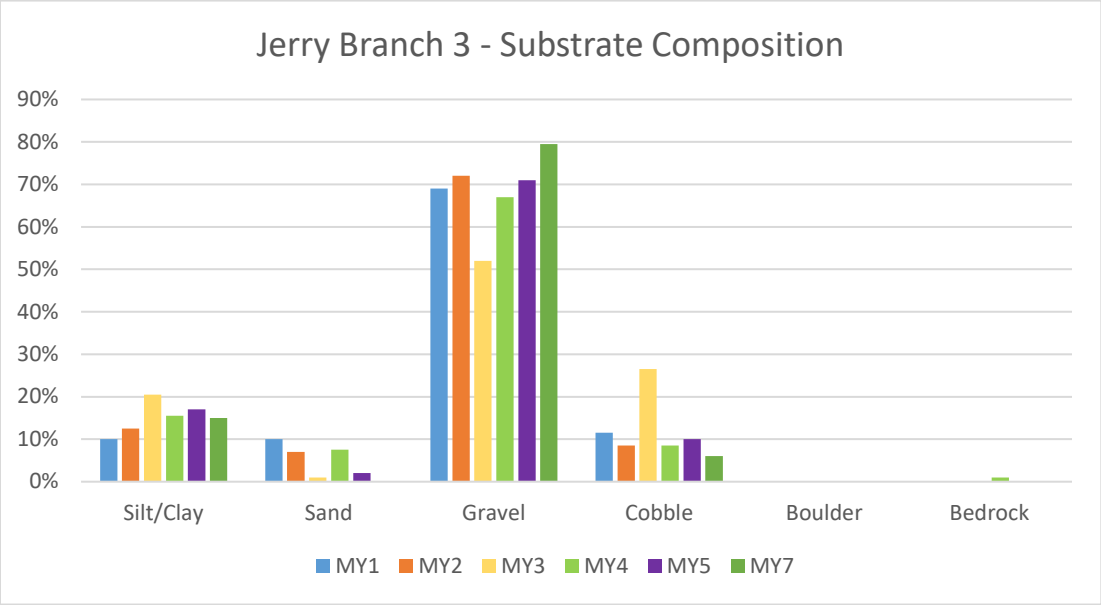


Chart 5.

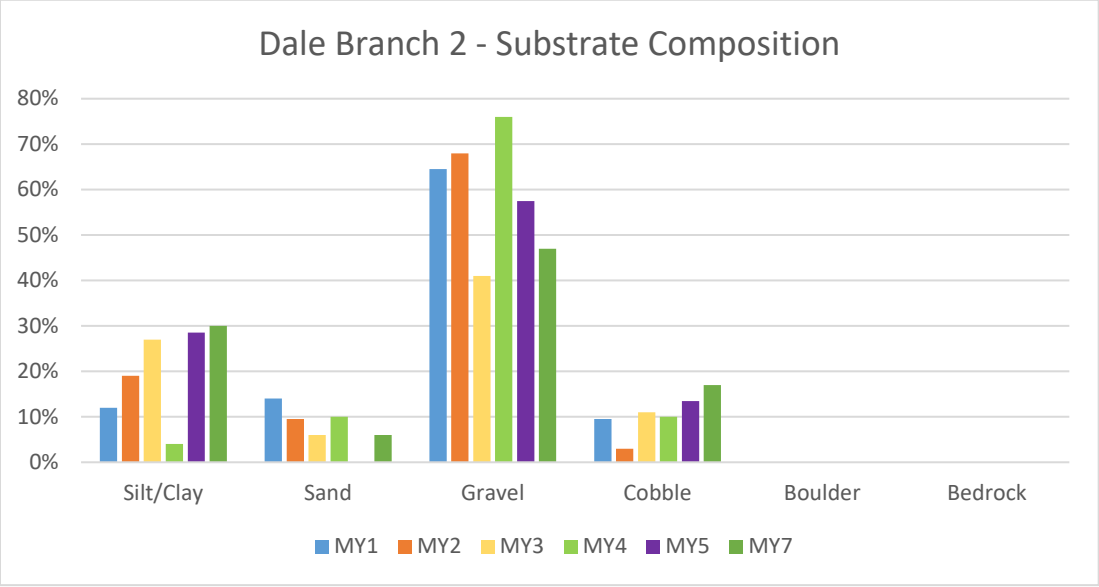


Chart 6.

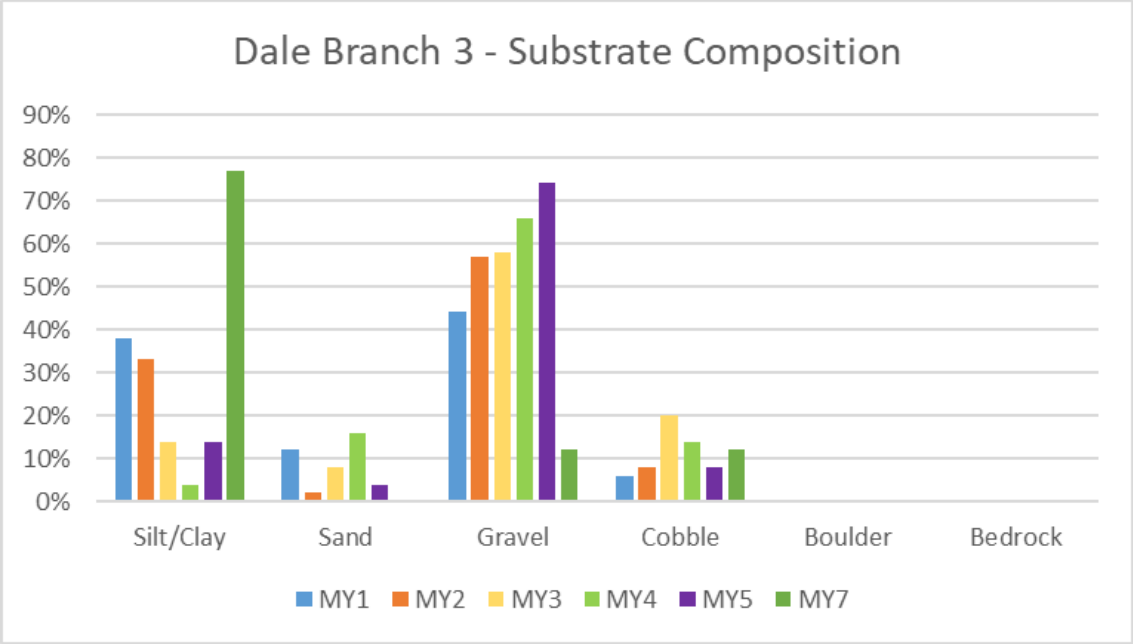


Chart 7.

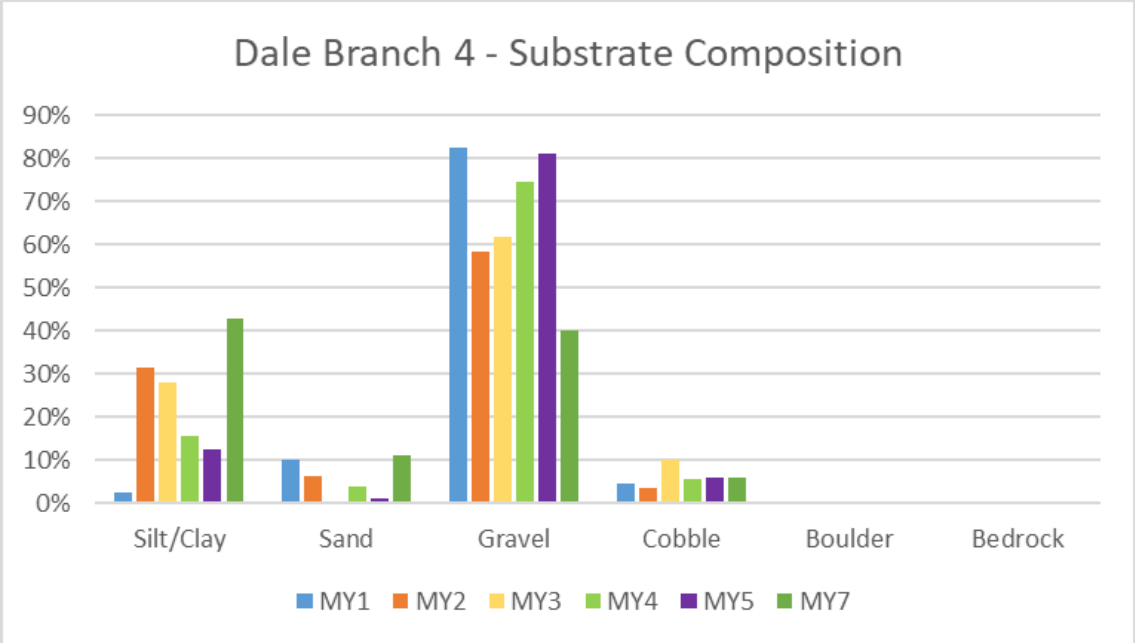


Chart 8.

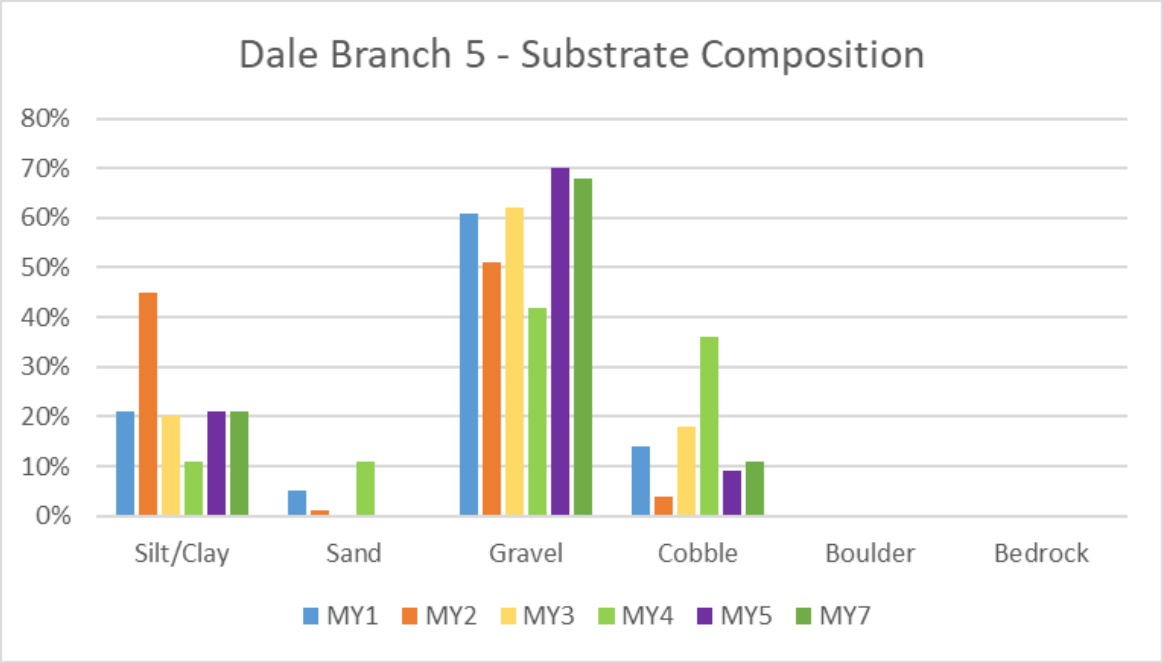


Chart 9.

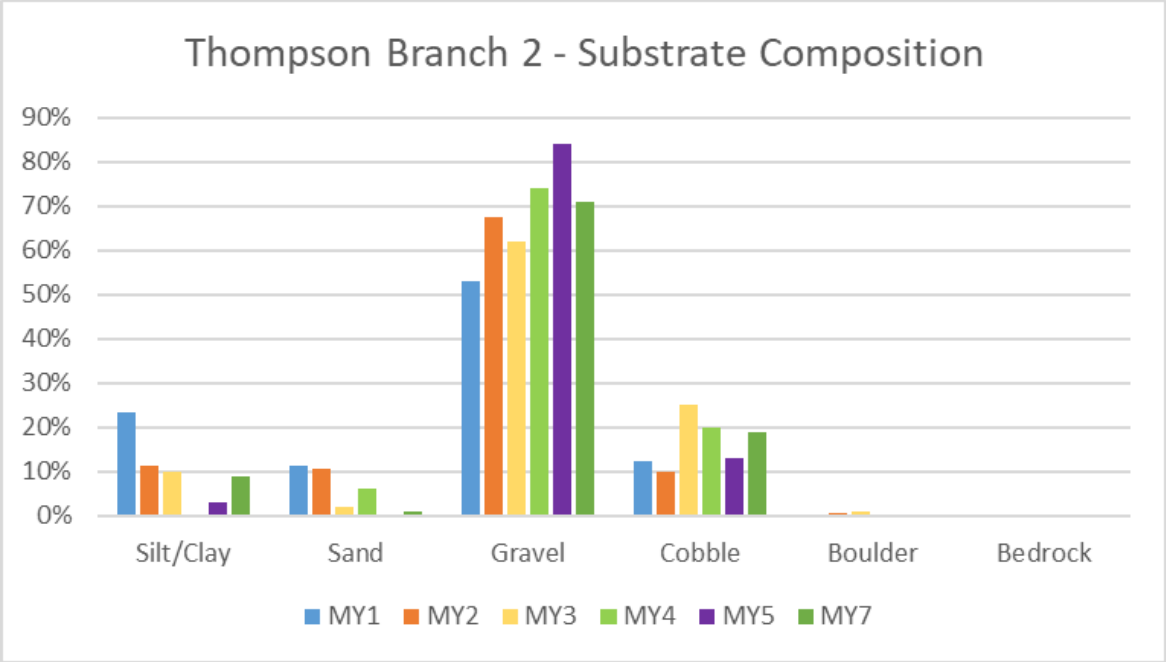


Table 13. Pee Dee Bank Pin Array Summary

Bank Pin Location	Position	Year 1 Reading (mm)	Year 2 Reading (mm)	Year 3 Reading (mm)	Year 5 Reading (mm)	Year 7 Reading (mm)
Cross Section 1	Upstream	0.0	0.0	0.0	0.0	0.0
	At Cross Section	0.0	0.0	0.0	0.0	0.0
	Downstream	0.0	6.35	0.00	0.00	0.00
Cross Section 5	Upstream	0.0	0.0	0.0	0.0	0.0
	At Cross Section	0.0	0.0	0.0	0.0	0.0
	Downstream	0.0	0.0	0.0	0.0	0.0
Cross Section 13	Upstream	0.0	0.0	0.0	0.0	0.0
	At Cross Section	0.0	0.0	0.0	0.0	0.0
	Downstream	0.0	0.0	0.0	0.0	0.0
Cross Section 18	Upstream	0.0	0.0	0.0	0.0	0.0
	At Cross Section	19.1	0.0	0.0	0.0	0.0
	Downstream	0.0	0.0	0.0	0.0	0.0
Cross Section 19	Upstream	12.7	0.0	0.0	0.0	0.0
	At Cross Section	6.4	19.05	0.0	0.0	0.0
	Downstream	0.00	19.05	0.0	0.0	0.0
Cross Section 21	Upstream	0.0	0.0	0.0	0.0	0.0
	At Cross Section	0.0	0.0	0.0	0.0	0.0
	Downstream	0.0	50.8	0.0	0.0	0.0

Appendix E
Hydrology Data

Table 14. Verification of Bankfull and Flow Events

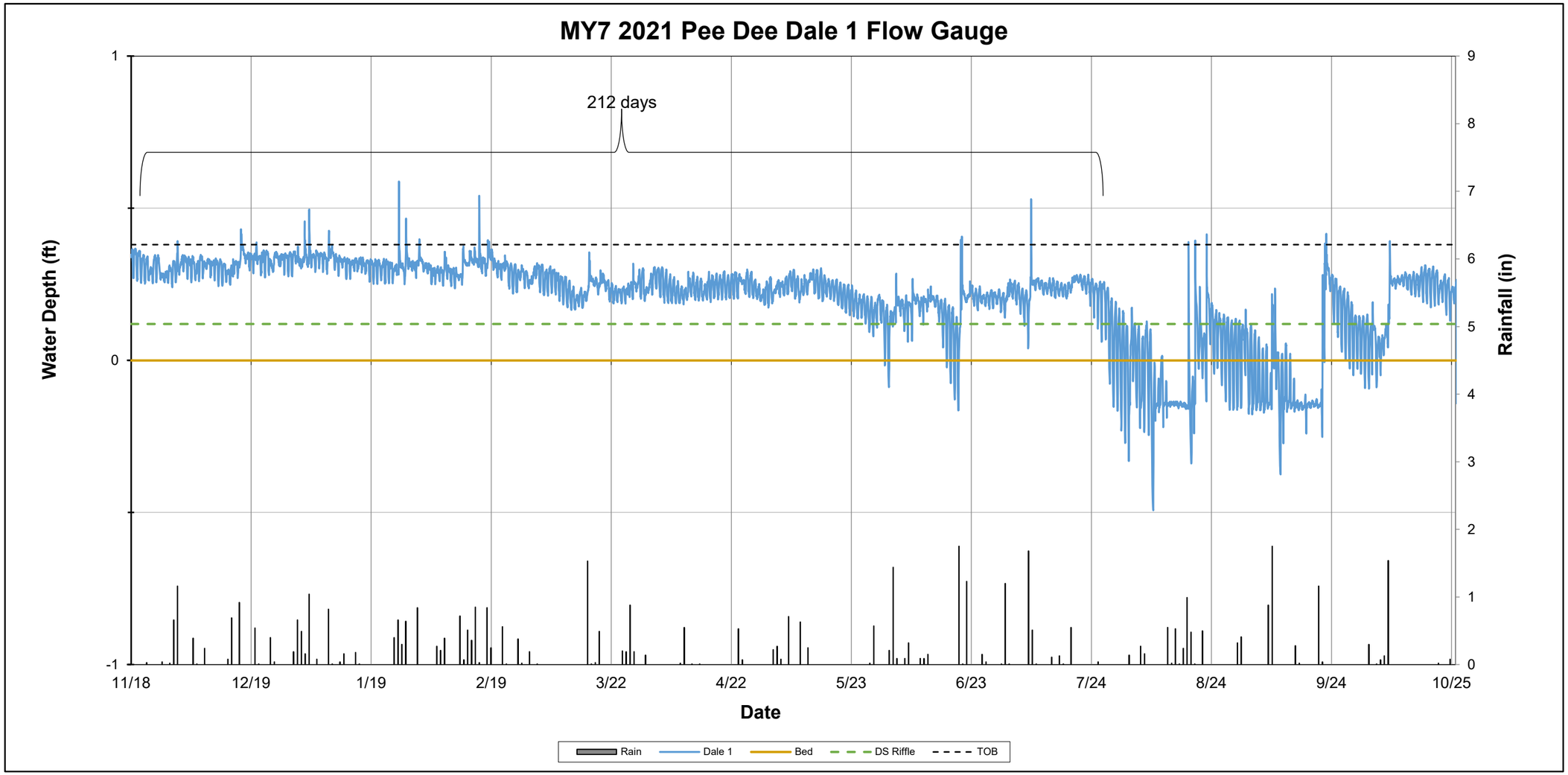
Year	Number of Bankfull Events	Maximum Bankfull Height
Jerry		
MY1 2015	1	1.33
MY2 2016	4	1.50
MY3 2017	0	N/A
MY4 2018	1	0.88
MY5 2019	0	N/A
Dale		
MY1 2015	1	0.95
MY2 2016	3	0.82
MY3 2017	0	N/A
MY4 2018	3	1.08
MY5 2019	0	N/A
Thompson		
MY1 2015	1	0.8
MY2 2016	3	0.88
MY3 2017	1	0.40
MY4 2018	1	0.67
MY5 2019	0	N/A

Year	Number of Bankfull Events	Maximum Bankfull Height
Dale 1		
MY6 2020	7	0.15
MY7 2021	15	0.21
Dale 2		
MY6 2020	2	0.97
MY7 2021	0	NA
Thompson 1		
MY6 2020	14	1.61
MY7 2021	7	0.50

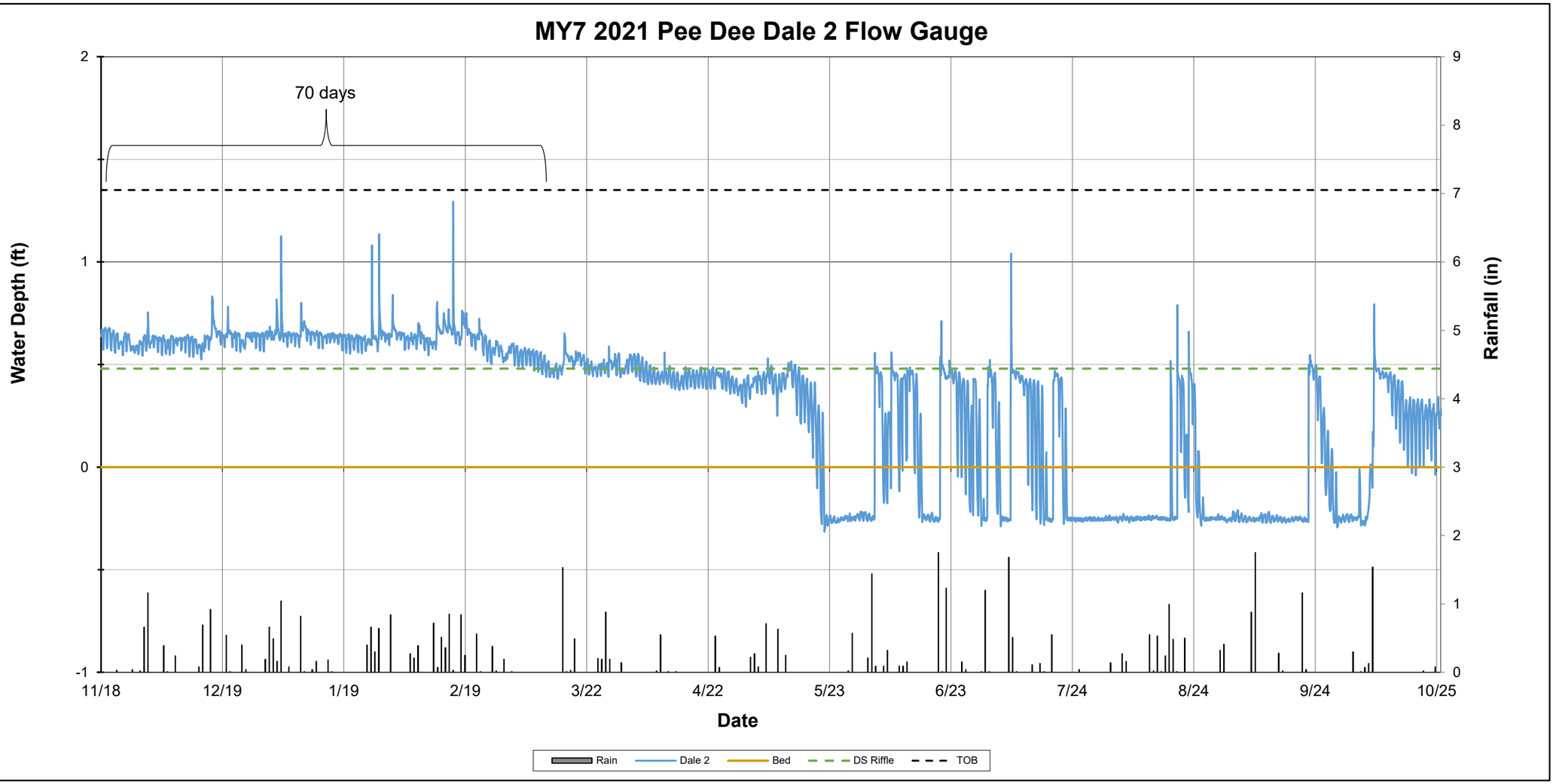
Year	Consecutive Flow Days	Total Flow Days	Number of Flow Events	Consecutive Flow Date Range
Dale 1				
MY5 2019	152	152	1	NA
MY6 2020	106	235	4	NA
MY7 2021	212	243	3	1/1/2021 - 8/1/2021
Dale 2				
MY5 2019	120	120	1	NA
MY6 2020	75	223	9	NA
MY7 2021	70	85	2	1/1/2021 - 3/12/2021
Thompson 1				
MY5 2019	97	104	2	NA
MY6 2020	81	266	11	NA
MY7 2021	81	111	8	1/1/2021 - 3/22/2021

Table 15. 2021 Rainfall Summary

Month	Average	Normal Limits		Uwharrie Station Precipitation
		30 Percent	70 Percent	
January	4.07	2.74	4.87	5.83
February	3.41	2.47	4.03	5.47
March	4.28	3.05	5.07	3.86
April	3.15	1.86	3.82	1.19
May	3.61	2.54	4.28	2.75
June	4.34	2.56	5.27	5.66
July	4.84	3.08	5.83	4.26
August	4.50	2.89	5.42	4.22
September	4.48	2.26	5.48	4.54
October	3.75	2.19	4.53	3.07
November	3.34	1.98	4.05	---
December	3.66	2.52	4.35	---
Total	47.43	30.14	57.00	40.85
Above Normal Limits	Below Normal Limits			


MY7 2021 Pee Dee Dale 1 Flow Gauge
212 days
Water Depth (ft)
Rainfall (in)
1
0
-1
9
8
7
6
5
4
3
2
1
0
11/18
12/19
1/19
2/19
3/22
4/22
5/23
6/23
7/24
8/24
9/24
10/25
Date
Rain
Dale 1
Bed
DS Riffle
TOB

MY7 2021 Pee Dee Dale 2 Flow Gauge



MY7 2021 Pee Dee Thompson 1 Flow Gauge