YEAR 7 (2022) MONITORING REPORT
AYCOCK SPRINGS
STREAM AND WETLAND MITIGATION SITE
ALAMANCE COUNTY, NORTH CAROLINA
DMS PROJECT NO. 96312
FULL DELIVERY CONTRACT NO. 5791
NCDWR PROJECT NO. 20140335
USACE ACTION ID NO. SAW-2014-01711

CAPE FEAR RIVER BASIN
CATALOGING UNIT 03030002

Data Collection – January-October 2022

PREPARED FOR:

NC. DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF MITIGATION SERVICES
1601 MAIL SERVICE CENTER
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February 2023

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Response to Monitoring Year 7 (2022) DMS Comments

Aycock Springs Stream and Wetland Mitigation Site (DMS #96312)
Cape Fear River Basin 03030002, Alamance County
Contract No. 005791

Comments Received (Black Text) & Responses (Blue Text)

Report

1. Appendix C
   a. Recommend removing Figure 3 and the old transect data following Figure 3 from report since the same transect data was not collected in MY7. Please ensure that the Table of Contents and Appendix C Title sheet are updated as necessary.
   Response: Figure 3 and the previous years' transect data were removed from Appendix C.

   b. Please include planted stem average height in the report if this information is available since this project is subject to the 10 ft. avg. height performance standard.
   Response: Two columns were added to Table 7 showing average height. One represents the average height for all planted stems measured in vegetation plots. The other represents the average height of the 6 tallest stems per plot, as at least 6 stems per plot are required to meet the 210 stems/acre performance standard. A footnote was added to the table explaining the purpose of this column.

2. Appendix D
   a. For consistency, the Bankfull MY-00 line (Green line) should be added to XS-2.
   Response: The MY-0 bankfull line was added to Travis Creek XS-2.

   b. On XS-4, since the Bankfull line based on MY0 cross-sectional area (blue-dotted line) is above the elevation of the LTOB, should the BHR be a number <1? Please clarify.
   Response: Based on the MY0 cross-sectional area, the unrounded Dmax value is 2.94589299999996 and LBH is 2.80289300000004, making the BHR ~0.95, which was rounded to 1 in the cross-section report and Table 11A. These values have been corrected to "<1".

   c. XS-8 needs the Bankfull line based on MY0 cross-sectional area (blue-dotted line) added.
   Response: The bankfull line was added to the XS-8 report.

   d. Check footnotes that are under the cross section graphs (XS-4 for example). Some letters are missing (not sure if a typo or error when converting or compressing the file).
   Response: Thank you for catching this – it appears to have occurred during the file compression process. To ensure this doesn't occur again, the final electronic copy of the report was not downsized.

Aycock Springs Year 7, 2022 Monitoring Summary

General Notes

- No encroachment was identified in Year 7.
- No beaver activity was observed along Travis Creek during Year 7 (2022).

Streams

- Stream monitoring measurements indicate minimal changes in the cross-sections compared to as-built through year 7 monitoring data. Channel geometry compares favorably with the proposed conditions outlined in the Mitigation Plan. Across the Site, all in-stream structures are intact and functioning as designed. The remedial repair to replace bed material along UT-1, completed in 2016/2017, remains stable and has naturalized.
- No stream areas of concern were identified during Year 7 (2022) monitoring. During previous monitoring years, three small areas of bank erosion were observed in the Enhancement (Level II) reach of Travis Creek. These areas remained during Year 7 (2022) however, herbaceous vegetation has continued to establish along all three spans, rendering them smaller and more stable than in past years. Since first identified in 2018, these areas have gradually stabilized, indicating that the Enhancement (Level II) mitigation treatment is working as proposed; therefore, they are no longer considered areas of concern.
- One bankfull event was documented during Year 7 (2022) monitoring for 17 total bankfull events throughout the monitoring period (Table 13, Appendix E).
- Channel formation was evident in all Site reaches in Year 7 (2022). The stream flow gauge and trail camera on UT-3 documented 213 consecutive days of stream flow during Year 7 (2022). The stream-flow gauge location is depicted in Figure 2 (Appendix A); a table containing channel formation indicators and a stream-flow gauge graph are included in Appendix E.

Wetlands

- All three groundwater gauges met success for the Year 7 (2022) monitoring period. Wetland hydrology data is in Appendix D.

Summary of Monitoring Period/Hydrology Success Criteria for Year 7 (2022)

Year	Soil Temperatures/Date Bud Burst Documented	Monitoring Period Used for Determining Success[%]	10 Percent of Monitoring Period
2022 (Year 7)	March 1, 2021**	March 1-October 22 (236 days)	24 days

** Based on data collected from a soil temperature data logger located on Site and observed bud burst.

Groundwater Hydrology Data

Gauge	Success Criteria Achieved/Max Consecutive Days During Growing Season (Percentage)						
	Year 1* (2016)	Year 2 (2017)	Year 3 (2018)	Year 4 (2019)	Year 5 (2020)	Year 6 (2021)	Year 7 (2022)
1	Yes/55 days (29.1 percent)	Yes/26 days (11.0 percent)	Yes/58 days (25.1 percent)	Yes/59 days (27 percent)	Yes/95 days (41 percent)	Yes/47 days (19.9 percent)	Yes/46 days (19.5 percent)
2	Yes/46 days (24.3 percent)	Yes/25 days (10.5 percent)	Yes/65 days (28.1 percent)	Yes/66 days (30 percent)	Yes/71 days (30 percent)	Yes/76 days (32.2 percent)	Yes/70 days (29.7 percent)
3	Yes/44 days (23.3 percent)	Yes/25 days (10.5 percent)	Yes/46 days (19.9 percent)	No/14 days (6.5 percent)	Yes/34 days (14.5 percent)	Yes/39 days (16.5 percent)	Yes/42 days (17.8 percent)

*Due to Site construction activities, groundwater gauges were not installed until May 5, 2016; therefore, the growing season for Year 1 (2016) is based on the soil survey start date of April 17.

Vegetation

- Year 7 (2022) stem count measurements were performed in September 2022 and indicated an average of 384 planted stems per acre (excluding livestakes) across the Site. Twelve of the fourteen individual vegetation plots met success criteria based on planted stems alone. When including naturally recruited stems of green ash (*Fraxinus pennsylvanica*), American elm (*Ulmus americana*), and hickory *(Carya* sp.*)*, plots 2 and 13 were above success criteria.

- Year 7 (2022) vegetation data can be found in Appendix C; plot locations are depicted in Figure 2 (Appendix B).

Site Maintenance Report (2022)

Invasive Species Work	Maintenance work
7/26/2022 Callery Pear, Privet, Multiflora rose, Autumn Olive	11/21/2022 30 7-gallon containerized trees were planted (see section 3.2 Vegetation)

Site Permitting/Monitoring Activity and Reporting History

Activity or Deliverable	Stream Monitoring Complete	Vegetation Monitoring Complete	All Data Collection Complete	Completion or Delivery
Technical Proposal (RFP No. 16-005568)	--	--	--	October 2013
DMS Contract No. 5791	--	--	--	February 2014
Mitigation Plan	--	--	October 2014	May 2015
Construction Plans	--	--	--	June 2015
Construction Earthwork	--	--	--	April 6, 2016
Planting	--	--	--	April 8, 2016
As-Built Documentation	April 6th, 2016	April 13th, 2016	April 2016	May 2016
Year 1 Monitoring	October 18th, 2016	October 13th, 2016	October 2016	December 2016
Supplemental Planting	--	--	--	December 2016
Year 2 Monitoring	April 19-20, 2017	July 25th, 2017	October 2017	November 2017
Year 3 Monitoring	April 16-17, 2018	July 19th, 2018	October 2018	October 2018
Year 4 Monitoring	N/A	N/A	October 2019	November 2019
Year 5 Monitoring	March 24th, 2020	July 7th, 2020	November 2020	December 2020
Year 6 Monitoring	NA	NA	October 2021	December 2021
Year 7 Monitoring	March 10th, 2022	September 19th, 2022	November 2022	February 2023

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February 2023

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Appendices

1.0 PROJECT SUMMARY

The Aycock Springs Stream and Wetland Mitigation Site (Site) encompasses approximately 13 acres located roughly 1.5 miles north of Elon and Gibsonville in western Alamance County within 14-digit Cataloging Unit and Targeted Local Watershed 03030002030010 of the Cape Fear River Basin (Figure 1, Appendix B and Table 4, Appendix A). Before construction, the Site consisted of agricultural land used for livestock grazing, hay production, and timber harvest. Streams were cleared, trampled by livestock, eroded vertically and laterally, and received extensive sediment and nutrient inputs from livestock and timber harvest activities. Stream impacts in Travis Creek also occurred due to a breached dam that impounded water during storm events. In addition, streamside wetlands were drained by channel incision, soil compaction, and forest vegetation loss due to land uses. Completed project activities, reporting history, completion dates, project contacts, and project attributes are summarized in Tables 1-4 (Appendix A).

Positive aspects supporting mitigation activities at the Site include the following.

- Streams have a Best Usage Classification of WS-V, NSW
- Located in a Targeted Local Watershed and within the NCDMS Travis, Tickle, Little Alamance Local Watershed Planning (LWP) Area
- Travis Creek is listed on the NCDENR 2012 303(d) list for ecological/biological integrity
- Immediately south and abutting the Site is a property identified in the *Little Alamance, Travis, & Tickle Creek Watersheds Restoration Plan* (PTCOG 2008) as a target property for wetland restoration and streambank enhancement/conservation
- Immediately west of the Site is a large tract associated with Guilford County open space

Based on the *Cape Fear River Basin Restoration Priorities Report 2009* (NCEEP 2009) and the *Little Alamance, Travis, & Tickle Creek Watersheds Restoration Plan* (PTCOG 2008), Targeted Local Watershed 03030002030010 is not meeting its designated use of supporting aquatic life. Agricultural land use appears to be the primary source of stress in the Hydrologic Unit, as well as land clearing and poor riparian management. This project will meet the eight priority goals of the Travis, Tickle, Little Alamance Local Watershed Plan (LWP), including the following:

1) Reduce sediment loading
2) Reduce nutrient loading
3) Manage stormwater runoff
4) Reduce toxic inputs
5) Provide and improve instream habitat
6) Provide and improve terrestrial habitat
7) Improve stream stability
8) Improve hydrologic function

The following six goals were identified by the Stakeholder group of the Travis, Tickle, Little Alamance LWP Phase I assessment, which addresses the water quality impacts and watershed needs in all of the Little Alamance, Travis, Tickle watersheds in 2006.

1) Increase local government awareness of the impacts of urban growth on water resources
2) Strengthen watershed protection standards
3) Improve water quality through stormwater management
4) Identify and rank parcels for retrofits, stream repair, preservation, and/or conservation

5) Assess aquatic health to identify stressors that are the most likely causes of poor biological conditions
6) Meet requirements of outside funding sources for implementation of projects

The following table summarizes the project goals/objectives and proposed functional uplift based on restoration activities and observations of two reference areas located in the vicinity of the Site. Goals and objectives target functional uplift identified in the Travis, Tickle, Little Alamance LWP, and based on stream/wetland functional assessments developed by the regulatory agencies.

Project Goals and Objectives

Project Goal/Objective	How Goal/Objective will be Accomplished
Improve Hydrology	
Restore Floodplain Access	Building a new channel at the historic floodplain elevation to restore overbank flows
Restore Wooded Riparian Buffer	Planting a woody riparian buffer
Restore Stream Stability	Providing proper channel width and depth, stabilizing channel banks, providing gravel/cobble substrate, planting a woody riparian buffer, and removing cattle
Improve Sediment Transport to Convert the UTs from Sand/Silt Dominated to Gravel/Cobble Dominated Streams	
Improve Stream Geomorphology	
Increase Surface Storage and Retention	Building a new channel at the historic floodplain elevation restoring overbank flows, removing cattle, scarifying compacted soils, and planting woody vegetation
Restore Appropriate Inundation/Duration	
Increase Subsurface Storage and Retention	Raising the stream bed elevation and rip compacted soils
Improve Water Quality	
Increase Upland Pollutant Filtration	Planting a native, woody riparian buffer
Increase Thermoregulation	Planting a native, woody riparian buffer
Reduce Stressors and Sources of Pollution	Removing cattle and other agricultural inputs
Increase Removal and Retention of Pathogens, Particulates (Sediments), Dissolved Materials (Nutrients), and Toxins from the Water Column	Raising the stream bed elevation, restoring overbank flows, planting with woody vegetation, removing cattle, increasing surface storage and retention, and restoring appropriate inundation/duration
Increase Energy Dissipation of Overbank/Overland Flows/Stormwater Runoff	Raising the stream bed elevation, restoring overbank flows, and planting with woody vegetation
Restore Habitat	
Restore In-stream Habitat	Building a stable channel with a cobble/gravel bed and planting a woody riparian buffer
Restore Streamside Habitat	Planting a woody riparian buffer
Improve Vegetation Composition and Structure	

Project construction was completed on April 6, 2016, and planting was completed on April 8, 2016. Site activities included the restoration of perennial and intermittent stream channels, enhancement (Level II) of a perennial stream channel, and re-establishment of riparian wetlands. Priority I restoration of intermittent channels at the Site is imperative to provide significant functional uplift to Site hydrology, water quality, and habitat and to restore adjacent streamside riparian wetlands. A total of **3581.1 Stream Mitigation Units (SMUs) and 0.5 Riparian Wetland Mitigation Units (WMUs)** are being provided, as depicted in the following table.

Stream Mitigation Type	Perennial Stream (linear feet)	Intermittent Stream (linear feet)	Ratio	Stream Mitigation Units
Restoration	**3147**	**90**	1:1	**3237.000**
Restoration (See Notes below)**		**122**	1:5:1	**81.333**
Enhancement (Level II)^	**657**	--	2.5:1	**262.800**
TOTAL	**3804**	**212**		**3581.133**
Wetland Mitigation Type	**Acreage**	**Ratio**	**Riparian Wetland Mitigation Units**	
Riparian Re-establishment	0.5	1:1	0.5	
Riparian Enhancement	1.5*		--	
TOTAL	**2.0**		**0.5**	

* Wetland enhancement acreage is not included in mitigation credit calculations as per RFP 16-005568 requirements.

** Before Site selection, the landowner received a violation for the unauthorized discharge of fill material into Waters of the United States. Fill resulted from unpermitted upgrades to a farm pond dam, including widening the dam footprint, dredging stream channel, and casting spoil material adjacent to the stream channel on jurisdictional wetlands. Before restoration activities, the landowner was required to obtain an after-the-fact permit to resolve Section 301 violations of the Clean Water Act (Action ID: SAW-2014-00665). Stream reaches and wetland areas associated with the violation have been removed from credit generation.

Further, the landowner received a violation for riparian buffer impacts due to the clearing of trees adjacent to streams draining to Jordan Lake (NOV-2013-BV-0001). As a result of this violation, the upper 122 linear feet of UT 3 has a reduced credit ratio (1.5:1). Onsite visits conducted with USACE representatives determined that the functional uplift of project restoration to UT 3 would be satisfactory to generate credit at this ratio.

^ The upper 20 linear feet of Travis Creek are within a powerline easement and is not credit generating (a reduction of 8.0 SMUs).

Stream Success Criteria

Monitoring and success criteria for stream restoration relate to project goals and objectives. From a mitigation perspective, several of the goals and objectives are assumed to be functionally elevated by restoration activities without direct measurement. Other goals and objectives will be considered successful upon achieving vegetation success criteria. The following table summarizes stream success criteria related to goals and objectives.

Stream Goals and Success Criteria

Project Goal/Objective	Stream Success Criteria
Improve Hydrology	
Restore Floodplain Access	Two overbank events in separate monitoring years will be documented during the monitoring period
Restore Wooded Riparian Buffer	Attaining Vegetation Success Criteria
Restore Stream Stability	Cross-sections, monitored annually, will be compared to as-built measurements to determine channel stability and maintenance of channel geomorphology
Improve Stream Geomorphology	Convert stream channels from unstable G- and F-type channels to stable E- and C- type stream channels
Increase Surface Storage and Retention	Two overbank events in separate monitoring years, and attaining Wetland and Vegetation Success Criteria
Restore Appropriate Inundation/Duration	
Increase Subsurface Storage and Retention	Two overbank events will be documented, in separate years, during the monitoring period and documentation of an elevated groundwater table (within 12 inches of the soil surface) for greater than 10 percent of the growing season during average climatic conditions
Improve Sediment Transport to Convert the UTs from Sand/Silt Dominated to Gravel/Cobble Dominated Streams	Pebble counts documenting coarsening of bed material from pre-existing conditions of sand and silt to post-restoration conditions of gravel and cobble
Improve Water Quality	
Increase Upland Pollutant Filtration	Attaining Wetland and Vegetation Success Criteria (Sections 2.3 and 2.2)
Increase Thermoregulation	Attaining Vegetation Success Criteria (Section 2.2)
Reduce Stressors and Sources of Pollution	Fencing maintained throughout the monitoring period, and encroachment within the easement eliminated
Increase Removal and Retention of Pathogens, Particulates (Sediments), Dissolved Materials (Nutrients), and Toxins from the Water Column	Removal of cattle, documentation of two overbank events in separate monitoring years, and attaining Vegetation Success Criteria (Section 2.2)
Increase Energy Dissipation of Overbank/Overland Flows/Stormwater Runoff	Documentation of two overbank events in separate monitoring years and attaining Vegetation Success Criteria (Section 2.2)
Restore Habitat	
Restore In-stream Habitat	Pebble counts documenting coarsening of bed material from pre-existing conditions of sand and silt to post-restoration conditions of gravel and cobble and attaining Vegetation Success Criteria (Section 2.2)
Restore Streamside Habitat	Attaining Vegetation Success Criteria (Section 2.2)
Improve Vegetation Composition and Structure	Attaining Vegetation Success Criteria (Section 2.2)

Vegetation Success Criteria

An average density of 320 planted stems per acre must be surviving in the first three monitoring years. Subsequently, 290 planted stems per acre must be surviving in year 4, 260 planted stems per acre in year 5, and 210 planted stems per acre in year 7. Planted vegetation must average 10 feet in height in each plot at year 7 since this Site is located in the Piedmont. Volunteer stems may be considered on a case-by-case basis in determining overall vegetation success; however, volunteer stems should be counted separately from planted stems.

Wetland Success Criteria

Monitoring and success criteria for wetland re-establishment should relate to project goals and objectives. From a mitigation perspective, several of the goals and objectives are assumed to be functionally elevated by restoration activities without direct measurement. Other goals and objectives will be considered successful upon achieving vegetation success criteria. The following summarizes wetland success criteria related to goals and objectives.

Wetland Goals and Success Criteria

Project Goal/Objective	Wetland Success Criteria
Improve Hydrology	
Restore Wooded Riparian Buffer	Attaining Vegetation Success Criteria
Increase Surface Storage and Retention	Two overbank events in separate monitoring years, and attaining Wetland and Vegetation Success Criteria
Restore Appropriate Inundation/Duration	
Increase Subsurface Storage and Retention	
Improve Water Quality	
Increase Upland Pollutant Filtration	Attaining Wetland and Vegetation Success Criteria
Reduce Stressors and Sources of Pollution	Fencing maintained throughout the monitoring period and encroachment within the easement eliminated
Increase Removal and Retention of Pathogens, Particulates (Sediments), Dissolved Materials (Nutrients), and Toxins from the Water Column	Removal of cattle, documentation of two overbank events in separate monitoring years, and attaining Vegetation Success Criteria
Increase Energy Dissipation of Overbank/Overland Flows/Stormwater Runoff	Documentation of two overbank events in separate monitoring years, and attaining Vegetation Success Criteria
Restore Habitat	
Restore Streamside Habitat	Attaining Vegetation Success Criteria.
Improve Vegetation Composition and Structure	

According to the *Soil Survey of Alamance County*, the growing season for Alamance County is from April 17 – October 22 (USDA 1960). However, the start date for the growing season is not typical for the Piedmont region; therefore, for this project, hydrologic wetland success will be determined using data from February 1 - October 22 to more accurately represent the period of biological activity. This will be confirmed annually by soil temperatures and/or bud burst. The growing season will be initiated each year on the documented date of biological activity. Photographic evidence of bud burst and field logs of date and temperature will be included in the annual monitoring reports.

Target hydrological characteristics include saturation or inundation for 10 percent of the monitored period (February 1-October 22) during average climatic conditions. During years with atypical climatic conditions, groundwater gauges in reference wetlands may dictate threshold hydrology success criteria (75 percent of reference). These areas are expected to support hydrophytic vegetation. If wetland parameters are marginal as indicated by vegetation and/or hydrology monitoring, a jurisdictional determination will be performed.

Summary of Monitoring Period/Hydrology Success Criteria by Year

Year	Soil Temperatures/Date Bud Burst Documented	Monitoring Period Used for Determining Success[%]	10 Percent of Monitoring Period
2016 (Year 1)	-	April 17*-October 22 (198 days)	19 days
2017 (Year 2)	Bud burst on red maple (*Acer rubrum*) and soil temperature of 58◦F documented on February 28, 2017	February 28-October 22 (237 days)	23 days
2018 (Year 3)	Bud burst and soil temperature of 44◦F documented on March 6, 2018	March 6-October 22 (231 days)	23 days
2019 (Year 4)	March 20th, 2019**	March 20-October 22 (217 days)	21 days
2020 (Year 5)	March 2nd, 2021**	March 2-October 22 (234 days)	23 days
2021 (Year 6)	March 1, 2021**	March 1-October 22 (236 days)	24 days
2022 (Year 7)	March 1, 2022**	March 1-October 22 (236 days)	24 days

* Gauges were installed on May 5 during year 1 (2016); therefore, April 17 was used as the start of the growing season (NRCS).

** Based on data collected from a soil temperature data logger located on Site and observed bud burst.

Summary information/data related to the occurrence of items such as beaver or encroachment and statistics related to various project and monitoring elements' performance can be found in tables and figures within this report's 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 the Restoration Plan) documents available on the NC Division of Mitigation Services (NCDMS) website. All raw data supporting the tables and figures in the appendices are available from NCDMS upon request.

2.0 METHODOLOGY

Monitoring requirements and success criteria outlined in the latest guidance by the US Army Corps of Engineers (USACE) in April 2003 (*Stream Mitigation Guidelines*) will be followed and are briefly outlined below. Monitoring data collected at the Site should include reference photos, plant survival analysis, channel stability analysis, and biological data if specifically required by permit conditions.

Wetland hydrology is proposed to be monitored for a period of seven years (years 1-7). Riparian vegetation and stream morphology is proposed to be monitored for a period of seven years with measurements completed in years 1-3, year 5, and year 7. Monitoring reports for years 4 and 6 will include photo documentation of stream stability and wetland hydrology monitoring data. If monitoring demonstrates the Site is successful by year 5 and no concerns have been identified, Restoration Systems (RS) may propose to terminate monitoring at the Site and forego monitoring requirements for years 6 and 7. Early closure will only be provided through written approval from the USACE in consultation with the Interagency Review Team (NC IRT). Monitoring will be conducted by Axiom Environmental, Inc (AXE). Annual monitoring reports

of the data collected will be submitted to the NCDMS by RS no later than December 31 of each monitoring year data is collected.

2.1 Streams

Annual monitoring of streams will include the development of channel cross-sections and substrate on riffles and pools. Data to be presented in graphic and tabular format will include 1) cross-sectional area, 2) bankfull width, 3) average depth, 4) maximum depth, 5) width-to-depth ratio, 6) bank height ratio, and 7) entrenchment ratio. Longitudinal profiles will not be measured routinely unless monitoring demonstrates channel bank or bed instability, in which case, longitudinal profiles may be required by the USACE along reaches of concern to track changes and demonstrate stability.

Visual assessment of in-stream structures will be conducted to determine if failure has occurred. Failure of a structure may be indicated by collapse of the structure, undermining of the structure, abandonment of the channel around the structure, and/or stream flow beneath the structure. In addition, visual assessments of the entire channel will be conducted in years 1-3, 5, and 7 of monitoring as outlined in NCDMS *Monitoring Requirements and Reporting Standards for Stream and/or Wetland Mitigation*. Areas of concern will be depicted on a plan view figure identifying the location of concern along with a written assessment and photograph of the area.

Year 7 (2022) stream measurements were performed on February 10 and March 10, 2022. As a whole, monitoring measurements indicate minimal changes in the cross-sections compared to as-built data.

Before construction, ground cover was fully established, multiple heavy rain events (2+ inches) caused some sedimentation in the streambed. This aggradation can be seen in several Year 1 (2016) cross-sections, and it appears to have reduced and stabilized during Years 2-6 (2017-2021).

The year 1 (2016) measurements for cross-sections 9 and 10 on UT-1 showed stream bed erosion compared with as-built data. Stream bed erosion was noted shortly after as-built measurements were taken and were the result of the above mentioned rain events. It was evident bed material used during construction in this area was finer than it should have been. Two riffles showed bed erosion, totaling approximately 50 feet in length (approximately 1 percent of the project length). RS created and implemented a remedial action plan during the winter of 2016/2017 (see Section 3.0 and Appendix E). The repairs were stable during Year 7 (2022) monitoring, and future instability in this area is not anticipated.

Across the Site, all in-stream structures are intact and functioning as designed. No stream areas of concern were identified during Year 7 (2022) monitoring; however, during previous monitoring years, three small areas of bank erosion were observed in the Enhancement (Level II) reach of Travis Creek. These areas remained during Year 7 (2022), however herbaceous vegetation has continued to establish along all three spans, rendering them smaller and more stable than past years. Since first identified in 2018, these areas have gradually stabilized, indicating that the Enhancement (level II) mitigation treatment is working as proposed; therefore, they are no longer considered areas of concern. Tables for annual quantitative assessments are included in Appendix C and photos are included in the site photo log (Appendix F).

2.2 Vegetation

During quantitative vegetation sampling, 14 sample plots (10-meter by 10-meter) were installed within the Site as per guidelines established in *CVS-EEP Protocol for Recording Vegetation*, *Version 4.2* (Lee et al. 2008). In each sample plot, vegetation parameters to be monitored include species composition and species

density. Visual observations of the percent cover of shrub and herbaceous species will also be documented by photograph.

After planting was completed on April 8, 2016, an initial evaluation was performed to verify planting methods and determine initial species composition and density. At this time, RS decided it was necessary to implement a supplemental planting. Working with Carolina Silvics, RS planted 1030 containerized trees consisting of 755 1-gallon pots and 275 3-gallon pots during the week of December 20, 2016, which included the following species: *Betula nigra, Fraxinus pennsylvanica, Platanus occidentalis, Quercus falcata, Quercus nigra, Quercus palustris, Quercus phellos,* and *Quercus rubra*. A remedial planting plan report detailing the location of planting and density is provided in Appendix E.

Year 7 (2022) stem count measurements were performed in September 2022 and indicated an average of 384 planted stems per acre (excluding livestakes) across the Site. Twelve of the fourteen individual vegetation plots met success criteria based on planted stems alone. When including naturally recruited stems of green ash (*Fraxinus pennsylvanica*), American elm (*Ulmus americana*), and hickory *(Carya* sp.*)*, Plots 2 and 13 are both above success criteria. Year 7 (2022) vegetation data can be found in Appendix C; plot locations are depicted in Figure 2 (Appendix B).

2.3 Wetland Hydrology

Three groundwater monitoring gauges were installed to take measurements after hydrological modifications were performed at the Site. Hydrological sampling will continue throughout the growing season at intervals necessary to satisfy jurisdictional hydrology success criteria (USEPA 1990). In addition, a surface water gauge was installed in Tributary 3 to monitor the flow regime of the tributary. Approximate locations of gauges are depicted in Figure 2 (Appendix A).

Hydrological sampling will continue throughout the growing season at intervals necessary to satisfy jurisdictional hydrology success criteria (USEPA 1990). In addition, an onsite rain gauge will document rainfall data for comparison of groundwater conditions with extended drought conditions, and floodplain crest gauges will confirm overbank flooding events.

All three groundwater gauges met success for the Year 7 (2022) monitoring period. Wetland hydrology data is in Appendix D.

2.4 Biotic Community Change

Changes in the biotic community are anticipated from a shift in habitat opportunities as tributaries are restored. In-stream, biological monitoring is proposed to track the changes during the monitoring period. The benthic macroinvertebrate community will be sampled using NCDWQ protocols found in the *Standard Operating Procedures for Benthic Macroinvertebrates* (NCDWQ 2006) and *Benthic Macroinvertebrate Protocols for Compensatory Stream Restoration Projects* (NCDWQ 2001). Biological sampling of benthic macroinvertebrates will be used to compare pre-construction baseline data with post-construction restored conditions.

Two benthic macroinvertebrate monitoring locations were established within restoration reaches. Post-restoration collections will occur in the approximate location of the pre-restoration sampling. Benthic macroinvertebrate samples will be collected from individual reaches using the Qual-4 collection method. Sampling techniques of the Qual-4 collection method consist of kick nets, sweep nets, leaf packs, and visual searches. Pre-project biological sampling occurred on June 26, 2014; post-project monitoring occurred in June of monitoring years 2-5. Benthic macroinvertebrate data was included in those monitoring reports.

3.0 REMEDIAL ACTION PLAN

A remedial action plan was developed to address stream and vegetation problem areas observed during Year 1 (2016) monitoring. The completed remedial action report can be found in Appendix G.

3.1 Stream

The degradation observed during Year 1 (2016) in and adjacent to cross-sections 9 and 10 on UT-1 encompasses approximately 12 linear feet and 15 linear feet of stream, respectively (<1 percent of the project length). All bed material used during construction was harvested onsite. The material used along this stream reach was too fine and washed from the riffles during heavy rainfall events, resulting in minor bed scour, and a small, less than 6-inch head cut at the top of the riffle. Suitable sized channel bed material was installed on February 23, 2017, at the proper elevation in the two riffles within UT-1. Bed material was installed to provide bank toe protection, and planting with willow stakes occurred. Bank toe protection designates that channel bed material will extend up the lower one-third of the bank. This area has been monitored by cross-sections 9 and 10, which have shown that the riffles have stabilized since the repair.

No beaver activity was observed along Travis Creek during Year 7 (2022).

3.2 Vegetation

Multiple factors were contributing to poor vegetative success in Year 1 (2016), including a later than desired initial bare-root planting, heavy herbaceous competition primarily from fescue (Site was previously a cattle pasture), and sporadic rain events, which left upland areas of the Site dry for extended periods of the growing season. Greater survival of planted species was observed within riparian areas.

The remedial action plan supplemented the bare-root planting over 5.44 acres with 1030 additional trees (755 1-gallon pots and 275 3-gallon pots). The remedial action plan figure (Appendix G) details the areas that received remedial planting along with density and number of species being placed into vegetation plots. Working with Carolina Silvics, RS acquired and re-planted the identified areas during the week of December 20, 2016. Species planted included *Betula nigra, Fraxinus pennsylvanica, Platanus occidentalis, Quercus falcata, Quercus nigra, Quercus palustris, Quercus phellos,* and *Quercus rubra*.

Treatment of invasive plant species has occurred each year of monitoring throughout the Site. RS will continue to treat and monitor the Site for invasive species as needed throughout the monitoring period. Previous treatments on the small patch of cattails at the confluence of UT-1 and UT-2 were successful. However, in the Spring of 2019, cattail regeneration was noted within the area of concern. Treatment was conducted in July 2019, and the area continues to be monitored. Additional dense herbaceous vegetation within UT-2, was noted during the spring of 2019. The vegetation appeared to be impeding the natural hydrology of the stream. Treatment was conducted in July 2019.

During Year 5 (2020), it was observed that several upland areas around UT-1 and UT-2 had sparse herbaceous vegetation. Four target areas were identified, totaling approximately 0.8 acres. Restoration Systems applied 500 pounds lime, 200 pounds fertilizer, and 14 pounds seed mix across these areas. Year 7 (2022) observations indicate that the establishment of herbaceous vegetation in these areas was successful. A vigorous population of herbaceous vegetation has established in the previously sparse areas, and no further seeding will be necessary. The seed mix species are listed in the following table, and the target areas are depicted in Figure 2 (Appendix B).

2020 Seed Mix Species List

Blackeyed Susan (*Rudbeckia hirta*)	Partridge Pea (*Chamaecrista fasciculata*)
Blue Vervain (*Verbena hastata*)	Plains Coreopsis (*Coreopsis tinctoria*)
Cosmos (*Cosmos* spp.)	Purple Coneflower (*Echinacea purpurea*)
Creeping Bentgrass (*Agrostis stolonifera*)	Purple Top (*Tridens flavus*)
Crimsoneyed Rosemallow (*Hibiscus moscheutos*)	Red Top (*Agrostis gigantea*)
Deertongue (*Dichanthelium clandestinum*)	Roundhead lespedeza (*Lespedeza capitata*)
Korean Lespedeza (*Kummerowia striata*)	Sensitive Pea (*Chamaecrista nictitans*)
Lanceleaf Coreopsis (*Coreopsis lanceolata*)	Showy Ticktrefoil (*Desmodium canadense*)
Marsh Blazing Star (*Liatris spicata*)	Slender lespedeza (*Lespedeza virginica*)
Narrowleaf Sunflower (*Helianthus angustifolius*)	Virginia Wildrye (*Elymus virginicus*)
Oxeye Daisy (*Leucanthemum vulgare*)	Winter Bentgrass (*Agrostis hyemalis*)
Oxeye Sunflower (*Heliopsis helianthoides*)	

In November 2022, Restoration Systems planted 30 7-gallon containerized trees along UT-1 and UT-2 within the Site's Dry-Mesic Oak-Hickory Forest Vegetation Association – graphically shown in Figure 2 (Appendix B). All species planted were listed in the approved mitigation plan and summarized in the following table.

Species	Number of Containerized Trees Planted
Ironwood (*Carpinus caroliniana*)	6
Persimmon (*Diospyros virginiana*)	8
White Oak (*Quercus alba*)	8
Willow oak (*Quercus phellos*)	8
Total	**30**

4.0 REFERENCES

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Schafale, M.P. and A.S. Weakley. 1990. Classification of the Natural Communities of North Carolina: Third Approximation. North Carolina Natural Heritage Program, Division of Parks and Recreation, North Carolina Department of Environment, Health, and Natural Resources. Raleigh, North Carolina.

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United States Department of Agriculture (USDA). 2021. Natural Resources Conservation Service National Weather and Climate Center. AgACIS Climate Data. Burlington Regional Airport WETS Station (online). Available: http://agacis.rcc-acis.org/

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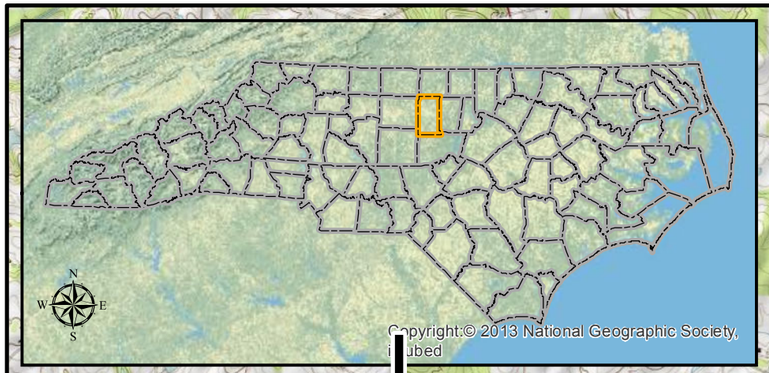
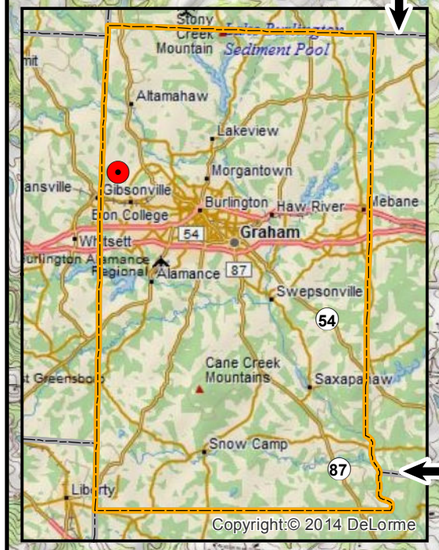
APPENDIX A

PROJECT BACKGROUND DATA AND MAPS

Directions to the Site from Interstates 40/85 in Burlington/Elon, NC:
- Exit onto University Drive (I-40/85 Exit 140) and travel north (toward Elon)
- Travel north for 2.8 miles and merge with NC 100
- Continue on University Drive (NC 100) for 0.5 mile and turn left onto Manning Street (SR 1503)
- Travel northwest for 0.8 mile and turn right onto Gibsonville-Ossipee Road (SR 1500)
- Travel north for 0.7 mile and Site is on the right





Aycock Springs Stream and Wetland Mitigation Site

36.127271 N
-79.525214 W

GUILFORD COUNTY
ALAMANCE COUNTY
Gibsonville-Ossipee Road

GIBSONVILLE
WHITSETT
ELON
BURLINGTON

Legend
- Aycock Springs Stream and Wetland Mitigation Site
- County lines

1 0.5 0 1 2 3 Miles

Axiom Environmental, Inc.

Prepared for:
RESTORATION SYSTEMS LLC

Project:
Aycock Springs Stream and Wetland Mitigation Site
Alamance County, NC

Title:
Project Location

Notes:
Background Imagery sources (provided by ESRI Data and Maps):
1. Physical Map of the United States (2009) created by the U.S. Park Service (upper inset).
2. Delorme World Basemap digital mapping (2010, lower inset).
3. Burlington, NC (1980), Lake Burlington, NC (1969), Gibsonville, NC (1970), and Ossipee, NC (1970) 7.5-minute topographic quadrangles provided by the U.S. Geological Survey.

Drawn by:	SGD
Date:	May 2016
Scale:	As Shown
Project No.:	14-006

FIGURE
1

Table 1. Project Components and Mitigation Credits

Mitigation Credits			
Stream	**Stream**	**Riparian Wetland**	**Nonriparian Wetland**
Restoration	**Enhancement**	**Re-establishment**	**Re-establishment**
3318.333	**262.800**	**0.5**	**--**

Projects Components							
Station Range	**Existing Linear Footage/ Acreage**	**Priority Approach**	**Restoration/ Restoration Equivalent**	**Restoration Linear Footage/ Acreage**	**Mitigation Ratio**	**Mitigation Credits**	**Comment**
UT 1 Station 10+04 to 23+21	1173	PI	Restoration	1317-24= 1293	1:1	1293	24 lf of UT 1 is located outside of easement and is not credit generating
UT 2 Station 10+00 to 16+75	723	PI	Restoration	675	1:1	675	
UT 3 Station 10+00 to 11+22	147	PI	Restoration	122	1.5:1	81.3	*** The upper 122 linear feet of channel is in a violation area and is generating credit at a reduced ratio of 1.5:1
UT 3 Station 11+22 to 12+12	16	PI	Restoration	90	1:1	90	
UT 4 Station 10+00 to 14+13	448	PI	Restoration	413-107= 306	1:1	306	****The upper 107 linear feet of channel is in a violation area and is not credit generating
Travis Creek Station 10+00 to 15+78	578		EII	578-20= 558	2.5:1	223.2	The upper 20 linear feet of Travis Creek are within a powerline easement and is not credit generating
Travis Creek Station 15+78 to 17+87	274	PII	Restoration	209	1:1	209	
Travis Creek Station 17+87 to 18+86	99		EII	99	2.5:1	39.6	
Travis Creek Station 23+71 to 30+35	936	PI	Restoration	664	1:1	664	

Table 1. Project Components and Mitigation Credits (continued)

Component Summation			
Restoration Level	**Stream (linear footage)**	**Riparian Wetland (acreage)**	**Nonriparian Wetland (acreage)**
Restoration	3237	0.5	--
Restoration***	122	--	--
Enhancement (Level II)	657	--	
Enhancement	--	1.5**	
Totals	**4016**	**--**	**--**
Mitigation Units	**3581.133 SMUs**	**0.5 Riparian WMUs**	**0.00 Nonriparian WMUs**

**Wetland enhancement acreage is not included in mitigation credit calculations as per RFP 16-005568 requirements.

*** Before Site selection, the landowner received a violation for riparian buffer impacts due to the clearing of trees adjacent to streams draining to Jordan Lake (NOV-2013-BV-0001). As a result of this violation, the upper 122 linear feet of UT 3 has a reduced credit ratio of 1.5:1. Onsite visits conducted with USACE representatives determined that the functional uplift of project restoration to UT 3 would be satisfactory to generate credit at this ratio.

**** Before Site selection, the landowner received a violation for the unauthorized discharge of fill material into Waters of the United States. Fill resulted from unpermitted upgrades to a farm pond dam, including widening the dam footprint, dredging stream channel, and casting spoil material adjacent to the stream channel on jurisdictional wetlands. Before restoration activities, the landowner was required to obtain an after-the-fact permit to resolve the violations of Section 301 of the Clean Water Act (Action ID: SAW-2014-00665). In addition, stream reaches and wetland areas associated with the violation area have been removed from credit generation – UT 4 begins credit generation at Station 11+07).

Table 2. Project Activity and Reporting History

Activity or Deliverable	Stream Monitoring Complete	Vegetation Monitoring Complete	All Data Collection Complete	Completion or Delivery
Technical Proposal (RFP No. 16-005568)	--	--	--	October 2013
DMS Contract No. 5791	--	--	--	February 2014
Mitigation Plan	--	--	October 2014	May 2015
Construction Plans	--	--	--	June 2015
Construction Earthwork	--	--	--	April 6, 2016
Planting	--	--	--	April 8, 2016
As-Built Documentation	April 6th, 2016	April 13th, 2016	April 2016	May 2016
Year 1 Monitoring	October 18th, 2016	October 13th, 2016	October 2016	December 2016
Supplemental Planting	--	--	--	December 2016
Year 2 Monitoring	April 19-20, 2017	July 25th, 2017	October 2017	November 2017
Year 3 Monitoring	April 16-17, 2018	July 19th, 2018	October 2018	October 2018
Year 4 Monitoring	N/A	N/A	October 2019	November 2019
Year 5 Monitoring	March 24th, 2020	July 7th, 2020	November 2020	December 2020
Year 6 Monitoring	N/A	N/A	October 2021	November 2021
Year 7 Monitoring	March 10th, 2022	September 19th, 2022	November 2022	February 2023

Table 3. Project Contacts Table

Full Delivery Provider Restoration Systems 1101 Haynes Street, Suite 211 Raleigh, North Carolina 27604 Worth Creech 919-755-9490	**Construction Contractor** Land Mechanic Designs 780 Landmark Road Willow Spring, NC 27592 Lloyd Glover 919-639-6132
Designer Axiom Environmental, Inc. 218 Snow Avenue Raleigh, NC 27603 Grant Lewis 919-215-1693	**Planting Contractor** Carolina Silvics, Inc. 908 Indian Trail Road Edenton, NC 27932 Mary-Margaret McKinney 252-482-8491
Construction Plans and Sediment and Erosion Control Plans Sungate Design Group, PA 915 Jones Franklin Road Raleigh, NC 27606 Joshua G. Dalton, PE 919-859-2243	**As-built Surveyor** K2 Design Group 5688 US Highway 70 East Goldsboro, NC 27534 John Rudolph 919-751-0075
	Baseline & Monitoring Data Collection Axiom Environmental, Inc. 218 Snow Avenue Raleigh, NC 27603 Grant Lewis 919-215-1693

Table 4. Project Attribute Table

Project Information				
Project Name	Aycock Springs Restoration Site			
Project County	Alamance County, North Carolina			
Project Area (acres)	15			
Project Coordinates (latitude & latitude)	36.127271ºN, 79.525214ºW			
Project Watershed Summary Information				
Physiographic Province	Piedmont			
Project River Basin	Cape Fear			
USGS HUC for Project (14-digit)	03030002030010			
NCDEQ Sub-basin for Project	03-06-02			
Project Drainage Area (acres)	26-3008			
Project Drainage Area Percentage of Impervious Area	<2%			
Reach Summary Information				
Parameters	**Travis Cr**	**UT 1/UT2**	**UT 3**	**UT 4**
Length of reach (linear feet)	1550	1966	212	413
Valley Classification	alluvial			
Drainage Area (acres)	3008	68	26	119
NCDWQ Stream ID Score	--	30.75/25.5	26.75	27.5
NCDWR Water Quality Classification	WS-V, NSW			
Existing Morphological Description (Rosgen 1996)	Cg 5/6-, Eg 5-, and Fc 5-type			
Existing Evolutionary Stage (Simon and Hupp 1986)	IV	IV	III	III
Underlying Mapped Soils	Cecil, Helena, Mixed Alluvial Land, Severely Gullied Land, Worsham			
Drainage Class	Well-drained, moderately well-drained, poorly drained, variable, poorly drained			
Hydric Soil Status	Nonhydric and Hydric			
Slope	0.0023	0.0249	0.0153	0.0093
FEMA Classification	AE	Special Hazard Flood Area		
Native Vegetation Community	Piedmont Alluvial Forest/Dry-Mesic Oak-Hickory Forest			
Watershed Land Use/Land Cover (Site)	42% forest, 53% agricultural land, <5% low density residential/impervious surface			
Watershed Land Use/Land Cover (Cedarock Reference Channel)	65% forest, 30% agricultural land, <5% low density residential/impervious surface			
Percent Composition of Exotic Invasive Vegetation	< 5%			

Table 4. Project Attribute Table (Continued)

Wetland Summary Information			
Parameters	**Wetlands**		
Wetland acreage	1.6		
Wetland Type	Riparian		
Mapped Soil Series	Worsham and Mixed Alluvial Land		
Drainage Class	Poorly drained		
Hydric Soil Status	Hydric		
Source of Hydrology	Groundwater, stream overbank		
Hydrologic Impairment	Incised streams, compacted soils, livestock		
Native Vegetation Community	Piedmont/Low Mountain Alluvial Forest		
Percent Composition of Exotic Invasive Vegetation	<5%		
Regulatory Considerations			
Regulation	**Applicable?**	**Resolved?**	**Supporting Documentation**
Waters of the United States-Section 401	Yes	Resolved	404 Permit
Waters of the United States-Section 404	Yes	Resolved	401 Certification
Endangered Species Act	No	--	CE Doc.
Historic Preservation Act	No	--	CE Doc.
Coastal Zone Management Act	No	--	NA
FEMA Floodplain Compliance	Yes	Resolved	CLOMR/LOMR
Essential Fisheries Habitat	No	--	NA

APPENDIX B

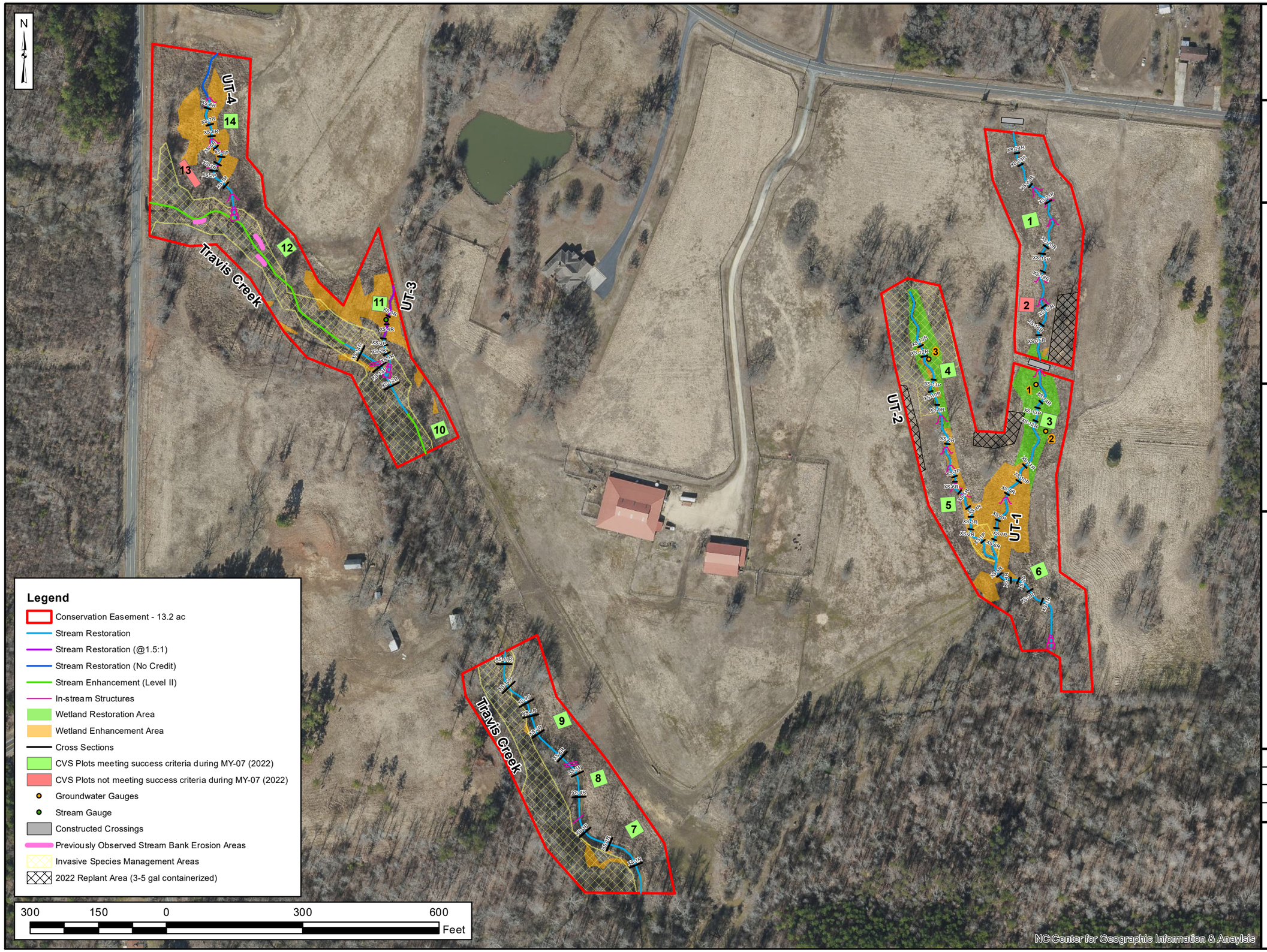
VISUAL ASSESSMENT DATA

Figure 2. Current Conditions Plan View (CCPV)

Tables 5A-5E. Visual Stream Morphology Stability Assessment

Table 6. Vegetation Condition Assessment

Vegetation Monitoring Photographs



Axiom Environmental, Inc.

Prepared for:

RESTORATION SYSTEMS | LLC

Project:

Aycock Springs Stream and Wetland Mitigation Site

Alamance County, NC

Title:

Current Conditions Plan View

Notes:

1. Background Imagery source: 2014 aerial photography provided by the NC OneMap Program (online, supported by the NC Geographic Information Coordination Council).

Drawn by:	KRJ/CLF
Date:	NOV 2022
Scale:	1:2400
Project No.:	14-006

FIGURE

2

Table 5A **Visual Stream Morphology Stability Assessment**
Reach ID **Aycock Springs - Travis Creek**
Assessed Length **1550**

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	10	10			100%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6)	9	9			100%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	9	9			100%			
	4.**Thalweg Position**	1. Thalweg centering at upstream of meander bend (Run)	9	9			100%			
		2. Thalweg centering at downstream of meander (Glide)	9	9			100%			
2. Bank	**1. Scoured/Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion			0	0	100%			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%			100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%			100%
				Totals	0	0	100%	0	0	100%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	9	9			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	9	9			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	9	9			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	9	9			100%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio ≥ 1.6 Rootwads/logs providing some cover at base-flow.	9	9			100%			

Table 5B **Visual Stream Morphology Stability Assessment**
Reach ID **Aycock Springs UT1**
Assessed Length **1317**

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	45	45			100%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6)	44	44			100%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	44	44			100%			
	4.**Thalweg Position**	1. Thalweg centering at upstream of meander bend (Run)	44	44			100%			
		2. Thalweg centering at downstream of meander (Glide)	44	44			100%			
2. Bank	**1. Scoured/Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion			0	0	100%			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%			100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%			100%
				Totals	0	0	100%	0	0	100%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	10	10			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	10	10			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	10	10			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	10	10			100%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio ≥ 1.6 Rootwads/logs providing some cover at base-flow.	10	10			100%			

Table 5C **Visual Stream Morphology Stability Assessment**
Reach ID **Aycock Springs UT2**
Assessed Length **675**

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	25	25			100%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6)	24	24			100%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	24	24			100%			
	4.**Thalweg Position**	1. Thalweg centering at upstream of meander bend (Run)	24	24			100%			
		2. Thalweg centering at downstream of meander (Glide)	24	24			100%			
2. Bank	**1. Scoured/Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion			0	0	100%			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%			100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%			100%
				Totals	0	0	100%	0	0	100%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	6	6			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	6	6			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	6	6			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	6	6			100%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio ≥ 1.6 Rootwads/logs providing some cover at base-flow.	6	6			100%			

Table 5D **Visual Stream Morphology Stability Assessment**
Reach ID **Aycock Springs UT3**
Assessed Length **212**

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	9	9			100%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6)	8	8			100%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	8	8			100%			
	4.**Thalweg Position**	1. Thalweg centering at upstream of meander bend (Run)	8	8			100%			
		2. Thalweg centering at downstream of meander (Glide)	8	8			100%			
2. Bank	**1. Scoured/Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion			0	0	100%			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%			100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%			100%
				Totals	0	0	100%	0	0	100%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	1	1			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	1	1			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	1	1			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	1	1			100%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio ≥ 1.6 Rootwads/logs providing some cover at base-flow.	1	1			100%			

Table 5E **Visual Stream Morphology Stability Assessment**
Reach ID **Aycock Springs UT4**
Assessed Length **413**

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	9	9			100%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6)	8	8			100%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	8	8			100%			
	4.**Thalweg Position**	1. Thalweg centering at upstream of meander bend (Run)	8	8			100%			
		2. Thalweg centering at downstream of meander (Glide)	8	8			100%			
2. Bank	**1. Scoured/Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion			0	0	100%			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%			100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%			100%
				Totals	0	0	100%	0	0	100%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	5	5			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	5	5			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	5	5			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	5	5			100%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio ≥ 1.6 Rootwads/logs providing some cover at base-flow.	5	5			100%			

Table 6 — Vegetation Condition Assessment

Aycock Springs

Planted Acreage[1] 11.9

Vegetation Category	Definitions	Mapping Threshold	CCPV Depiction	Number of Polygons	Combined Acreage	% of Planted Acreage
1. Bare Areas	None	0.1 acres	none	0	0.00	0.0%
2. Low Stem Density Areas	None	1550	none	0	0.00	0.0%
2B. Low Planted Stem Density Areas	None	0.1 acres	none	0	0.00	0.0%
			Total	0	0.00	0.0%
3. Areas of Poor Growth Rates or Vigor	None	0.25 acres	none	0	0.00	0.0%
			Cumulative Total	0	0.00	0.0%

Easement Acreage[2] 13.3

Vegetation Category	Definitions	Mapping Threshold	CCPV Depiction	Number of Polygons	Combined Acreage	% of Easement Acreage
4. Ongoing Invasive Species Management Areas[4]	Management of Chinese privet and multiflora rose has been ongoing along Travis Creek MY1-7. There has also been ongoing treatment for cattail along UT1 and UT2. In 2022, callery pear, autumn olive, Chinese privet, and multiflora rose were treated along the upper reach of UT-2. All invasive teatments have been successful, and vegetation condition has improved in all treatment areas.	1000 SF	Yellow Hatch	4	3.18	23.9%
5. Easement Encroachment Areas[3]	None	none	none	0	0.00	0.0%

1 = Enter the planted acreage within the easement. This number is calculated as the easement acreage minus any existing mature tree stands that were not subject to supplemental planting of the understory, the channel acreage, crossings or any other elements not directly planted as part of the project effort.

2 = The acreage within the easement boundaries.

3 = Encroachment may occur within or outside of planted areas and will therefore be calculated against the overall easement acreage. In the event a polygon is cataloged into items 1, 2 or 3 in the table and is the result of encroachment, the associated acreage should be tallied in the relevant item (i.e., item 1,2 or 3) as well as a parallel tally in item 5.

4 = Invasives may occur in or out of planted areas, but still within the easement and will therefore be calculated against the overall easement acreage. Invasives of concern/interest are listed below. The list of high concern spcies are those with the potential to directly outcompete native, young, woody stems in the short-term (e.g. monitoring period or shortly thereafter) or affect the community structure for existing, more established tree/shrub stands over timeframes that are slightly longer (e.g. 1-2 decades). The low/moderate concern group are those species that generally do not have this capacity over the timeframes discussed and therefore are not expected to be mapped with regularity, but can be mapped, if in the judgement of the observer their coverage, density or distribution is suppressing the viability, density, or growth of planted woody stems. Decisions as to whether remediation will be needed are based on the integration of risk factors by DMS such as species present, their coverage, distribution relative to native biomass, and the practicality of treatment. For example, even modest amounts of Kudzu or Japanese Knotweed early in the projects history will warrant control, but potentially large coverages of Microstegium in the herb layer will not likley trigger control because of the limited capacities to impact tree/shrub layers within the timeframes discussed and the potential impacts of treating extensive amounts of ground cover. Those species with the "watch list" designator in gray shade are of interest as well, but have yet to be observed across the state with any frequency. Those in *red italics* are of particular interest given their extreme risk/threat level for mapping as points where isolated specimens are found, particularly ealry in a projects monitoring history. However, areas of discreet, dense patches will of course be mapped as polygons. The symbology scheme below was one that was found to be helpful for symbolzing invasives polygons, particulalry for situations where the conditon for an area is somewhere between isolated specimens and dense, discreet patches. In any case, the point or polygon/area feature can be symbolized to describe things like high or low concern and species can be listed as a map inset, in legend items if the number of species are limited or in the narrative section of the executive summary.

Aycock Springs
MY-07 (2022) Vegetation Monitoring Photographs
Taken September 2022

Plot 1

Plot 2

Plot 3

Plot 4

Plot 5

Plot 6

Aycock Springs
MY-07 (2022) Vegetation Monitoring Photographs (continued)
Taken September 2022

Plot 7

Plot 8

Plot 9

Plot 10

Plot 11

Plot 12

Aycock Springs
MY-07 (2022) Vegetation Monitoring Photographs (continued)
Taken September 2022

Plot 13

Plot 14

APPENDIX C

VEGETATION PLOT DATA

Table 7. Vegetation Plot Criteria Attainment Based on Planted Stems

Vegetation Plot ID	Vegetation Survival Threshold Met?	MY 7 (2022) Planted Stems/Acre	MY 7 (2022) All Stems/Acre	Average Height (ft) – All Planted Stems	Average Height (ft) – Tallest 6 Stems per Plot**	Tract Mean
1	Yes	728	931	7.26	11.46	85.7%
2	No*	202	364	9.02	9.02	
3	Yes	283	283	9.50	9.91	
4	Yes	405	1214	8.58	10.09	
5	Yes	405	1133	4.87	7.09	
6	Yes	607	1012	9.81	12.13	
7	Yes	567	567	7.04	8.45	
8	Yes	364	607	9.44	11.24	
9	Yes	243	283	11.46	11.46	
10	Yes	364	486	10.12	11.64	
11	Yes	364	769	7.23	8.24	
12	Yes	364	526	9.89	13.07	
13	No*	121	567	5.12	5.12	
14	Yes	364	648	12.35	14.93	
Total =		**385**	**671**	**8.69**	**10.27**	

*These plots did not meet success criteria based on planted stems only; however, when including naturally recruited stems of green ash (*Fraxinus pennsylvanica*), American elm (*Ulmus americana*), and hickory *(Carya* sp.*)*, these plots were above success criteria.

** Stem height was tracked for planted stems only. To achieve the 210 stems/acre performance standard, each plot requires at least six stems; this column represents an average height of the tallest 6 stems per plot.

Table 8. CVS Vegetation Plot Metadata

Report Prepared By	Corri Faquin
Date Prepared	9/26/2022 13:16
database name	RS-Aycock_2022.mdb
database location	\\ae-file\share\Business\Projects\14\14-006 Aycock Springs Detailed\2022 YEAR-07\CVS
computer name	BRITTNIE-PC
file size	56627200
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	14-006
project Name	Aycock Springs
Description	
River Basin	Cape Fear
length(ft)	
stream-to-edge width (ft)	
area (sq m)	
Required Plots (calculated)	
Sampled Plots	14

Table 9. Total and Planted Stems by Plot and Species
Project Code 14.006. Project Name: Aycock Springs

			Current Plot Data (MY7 2022)																														
			14.006-01-0001			14.006-01-0002			14.006-01-0003			14.006-01-0004			14.006-01-0005			14.006-01-0006			14.006-01-0007			14.006-01-0008			14.006-01-0009			14.006-01-0010			14.006-01-0011		
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																		5														
Acer rubrum	red maple	Tree																																
Betula nigra	river birch	Tree			1	1	1	1																1	1	1						1	1	1
Callicarpa	beautyberry	Shrub																																
Callicarpa americana	American beautyberry	Shrub																																
Carpinus caroliniana	American hornbeam	Tree																4	4	4				1	1	1	1	1	1				1	1	1
Carya	hickory	Tree																																
Celtis	hackberry	Tree																																
Cephalanthus occidentalis	common buttonbush	Shrub																																
Cornus amomum	silky dogwood	Shrub	9	9	9	3	3	3	3	3	3	3	3	3	3	3	3	10	10	10	5	5	5	4	4	4	1	1	1	3	3	3	2	2	2
Cornus florida	flowering dogwood	Tree																															1	1	1
Diospyros virginiana	common persimmon	Tree																												1	1	1			
Fraxinus pennsylvanica	green ash	Tree			1			4				1	1	16	1	1	14			3				1	1	2	1	1	1	1	1	4			2
Juniperus virginiana	eastern redcedar	Tree															1																	
Liquidambar	sweetgum	Tree																																
Liquidambar styraciflua	sweetgum	Tree																																
Nyssa	tupelo	Tree																			3	3	3											
Nyssa sylvatica	blackgum	Tree																			1	1	1	1	1	1								
Pinus taeda	loblolly pine	Tree																																
Platanus occidentalis	American sycamore	Tree	2	2	5							1	1	1							1	1	1			3	1	1	1				1	1	7
Quercus	oak	Tree																																
Quercus alba	white oak	Tree	2	2	2																													
Quercus falcata	southern red oak	Tree													3	3	3										1	1	1						
Quercus michauxii	swamp chestnut oak	Tree							2	2	2	5	5	5																				
Quercus nigra	water oak	Tree													2	2	2										1	1	1					
Quercus pagoda	cherrybark oak	Tree							1	1	1																							
Quercus phellos	willow oak	Tree															2				2	2	2	1	1	1				3	3	3	3	3	3
Quercus rubra	northern red oak	Tree	5	5	5	1	1	1	1	1	1				1	1	1				1	1	1							1	1	1			
Rhus copallinum	flameleaf sumac	shrub															1																	
Rhus glabra	smooth sumac	shrub												5																				
Salix nigra	black willow	Tree																																
Sambucus canadensis	Common Elderberry	Shrub																1	1	1														1
Taxodium distichum	bald cypress	Tree																			1	1	1			2								
Ulmus	elm	Tree																																
Ulmus alata	winged elm	Tree																																
Ulmus americana	American elm	Tree															1			2									1					1
		Stem count	18	18	23	5	5	9	7	7	7	10	10	30	10	10	28	15	15	25	14	14	14	9	9	15	6	6	7	9	9	12	9	9	19
		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	4	4	6	3	3	4	4	4	4	4	4	5	5	5	9	3	3	6	7	7	7	6	6	8	6	6	7	5	5	5	6	6	9
		Stems per ACRE	728.4	728.4	930.8	202.3	202.3	364.2	283.3	283.3	283.3	404.7	404.7	1214	404.7	404.7	1133	607	607	1012	566.6	566.6	566.6	364.2	364.2	607	242.8	242.8	283.3	364.2	364.2	485.6	364.2	364.2	768.9

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%

PnoLS = Planted excluding livestakes

P-all = Planted including livestakes

T = All planted and natural recruits including livestakes

T includes natural recruits

Table 9. Total and Planted Stems by Plot and Species (continued)
Project Code 14.006. Project Name: Aycock Springs

			Current Plot Data (MY7 2022)									Annual Means																	
			14.006-01-0012			14.006-01-0013			14.006-01-0014			MY7 (2022)			MY5 (2020)			MY4 (2019)			MY3 (2018)			MY2 (2017)			MY1 (2016)			MY0 (2016)		
Scientific Name	Common Name	Species Type	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T
Acer negundo	boxelder	Tree						7			2			14			9			2						9			5			7
Acer rubrum	red maple	Tree															8			4						2			5			
Betula nigra	river birch	Tree							2	2	2	5	5	6	5	5	5	5	5	5	7	7	8	5	5	5	5	5	5	9	9	9
Callicarpa	beautyberry	Shrub																								1						
Callicarpa americana	American beautyberry	Shrub																											1			
Carpinus caroliniana	American hornbeam	Tree										7	7	7	7	7	7	6	6	7	5	5	5	6	6	6	5	5	5	7	7	7
Carya	hickory	Tree						1						1																		
Celtis	hackberry	Tree			1									1																		
Cephalanthus occidentalis	common buttonbush	Shrub																								2			4			
Cornus amomum	silky dogwood	Shrub				1	1	1				47	47	47	45	45	45	48	48	49	46	46	46	49	49	49	52	52	52	57	57	57
Cornus florida	flowering dogwood	Tree										1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	4	4	4	4	4	4
Diospyros virginiana	common persimmon	Tree										1	1	1	1	1	10	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2
Fraxinus pennsylvanica	green ash	Tree	4	4	5			1	3	3	6	12	12	59	12	12	117	13	13	80	13	13	36	10	10	31	5	5	13	3	3	5
Juniperus virginiana	eastern redcedar	Tree												1																		
Liquidambar	sweetgum	Tree																								1						
Liquidambar styraciflua	sweetgum	Tree															6															
Nyssa	tupelo	Tree										3	3	3	3	3	3	3	3	3												
Nyssa sylvatica	blackgum	Tree	1	1	1							3	3	3	3	3	3	2	2	2	2	2	2	3	3	3	3	3	3	6	6	6
Pinus taeda	loblolly pine	Tree															1															
Platanus occidentalis	American sycamore	Tree							1	1	1	7	7	19	7	7	9	7	7	16	7	7	10	7	7	9	1	1	1	5	5	5
Quercus	oak	Tree																						5	5	5	4	4	4	11	11	11
Quercus alba	white oak	Tree										2	2	2	2	2	2	2	2	3	1	1	1	1	1	1	1	1	1	2	2	2
Quercus falcata	southern red oak	Tree				1	1	1				5	5	5	5	5	5	5	5	5	5	5	5	4	4	4						
Quercus michauxii	swamp chestnut oak	Tree	1	1	1				3	3	3	11	11	11	10	10	10	10	10	10	10	10	10	7	7	7	5	5	5			
Quercus nigra	water oak	Tree	1	1	1							4	4	4	3	3	3	2	2	2	2	2	2	1	1	1						
Quercus pagoda	cherrybark oak	Tree										1	1	1	1	1	2							1	1	1	1	1	1	6	6	6
Quercus phellos	willow oak	Tree	1	1	1	1	1	1				11	11	13	9	9	16	9	9	10	9	9	9	9	9	9	6	6	6	18	18	18
Quercus rubra	northern red oak	Tree	1	1	1							11	11	11	14	14	14	16	16	17	14	14	16	12	12	12	11	11	11	13	13	13
Rhus copallinum	flameleaf sumac	shrub												1																		
Rhus glabra	smooth sumac	shrub												5																		
Salix nigra	black willow	Tree																					1									
Sambucus canadensis	Common Elderberry	Shrub			2							1	1	4	1	1	2	2	2	6	3	3	3	7	7	7	11	11	11	62	62	62
Taxodium distichum	bald cypress	Tree										1	1	3	1	1	2			2												
Ulmus	elm	Tree																								2						
Ulmus alata	winged elm	Tree																		2												2
Ulmus americana	American elm	Tree						2			2			9			4												3			
		Stem count	9	9	13	3	3	14	9	9	16	133	133	232	130	130	284	134	134	229	128	128	158	131	131	171	115	115	141	205	205	216
		size (ares)	1			1			1			14			14			14			14			14			14			14		
		size (ACRES)	0.02			0.02			0.02			0.35			0.35			0.35			0.35			0.35			0.35			0.35		
		Species count	6	6	8	3	3	7	4	4	6	18	18	25	18	18	23	16	16	20	15	15	16	17	17	23	15	15	20	14	14	16
		Stems per ACRE	364.2	364.2	526.1	121.4	121.4	566.6	364.2	364.2	647.5	384.5	384.5	670.6	375.8	375.8	820.9	387.3	387.3	662	370	370	456.7	378.7	378.7	494.3	332.4	332.4	407.6	592.6	592.6	624.4

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%

PnoLS = Planted excluding livestakes

P-all = Planted including livestakes

T = All planted and natural recruits including livestakes

T includes natural recruits

APPENDIX D

STREAM SURVEY DATA

Cross-Section Plots

Table 10a-10e. Baseline Stream Data Summary

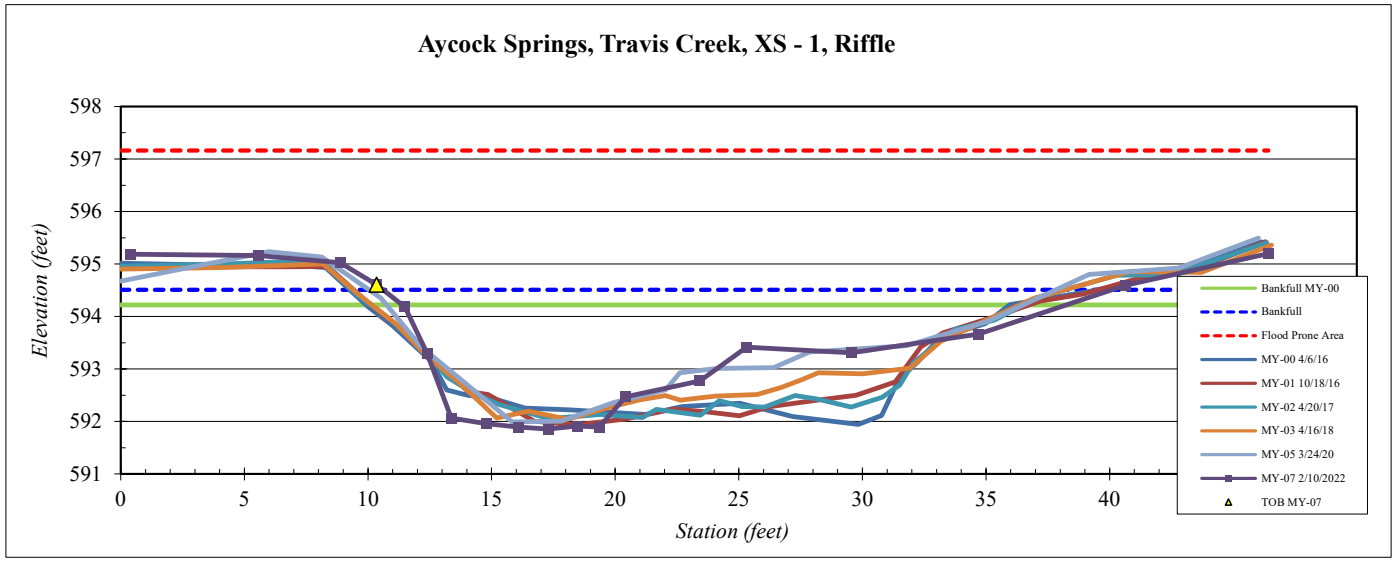
Table 11a-11f. Monitoring Data

Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	Travis Creek, XS - 1, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.4	595.18
5.6	595.16
8.9	595.02
10.3	594.60
11.5	594.18
12.4	593.30
13.4	592.06
14.8	591.96
16.1	591.89
17.3	591.85
18.5	591.91
19.4	591.89
20.4	592.47
23.4	592.77
25.3	593.42
29.6	593.31
34.7	593.66
40.7	594.60
46.4	595.20

SUMMARY DATA	
Bankfull Elevation:	594.5
Bankfull Cross-Sectional Area:	41.3
Bankfull Width:	29.5
Flood Prone Area Elevation:	597.2
Flood Prone Width:	150.0
Max Depth at Bankfull:	2.7
Low Bank Height:	2.7
Mean Depth at Bankfull:	1.4
W / D Ratio:	21.1
Entrenchment Ratio:	5.1
Bank Height Ratio:	1.0

Stream Type	C/E

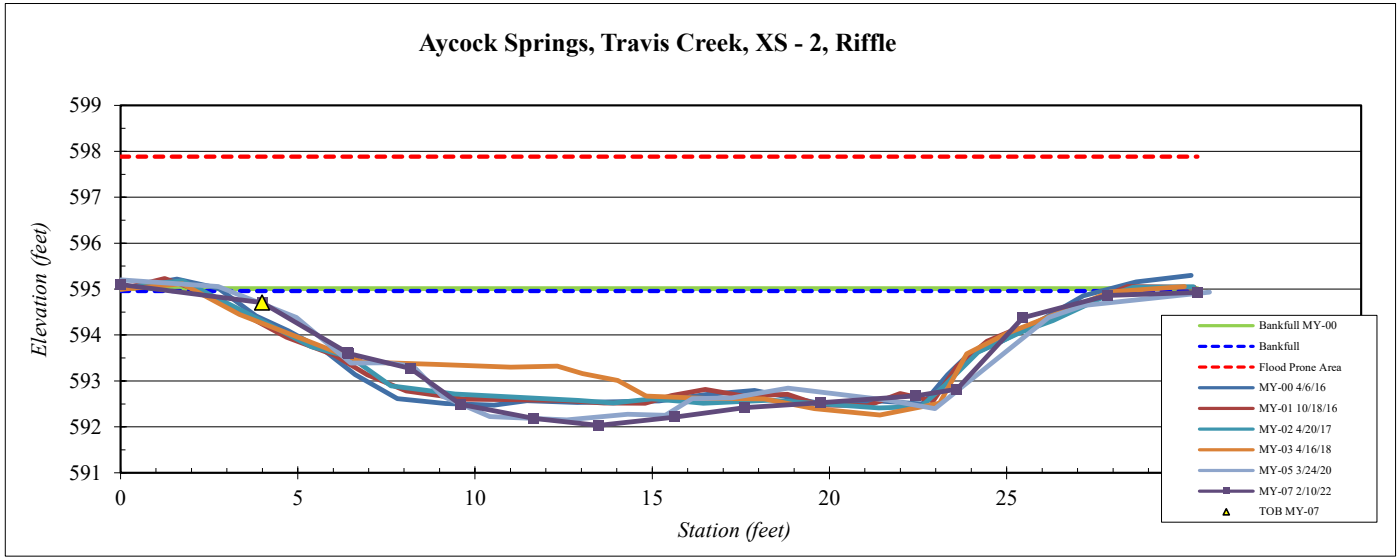


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	Travis Creek, XS - 2, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.0	595.10
4.0	594.70
6.4	593.62
6.4	593.60
8.2	593.27
9.6	592.49
11.7	592.19
13.5	592.03
15.6	592.21
17.6	592.42
19.7	592.53
22.4	592.67
23.6	592.82
25.5	594.38
27.8	594.86
30.4	594.93

SUMMARY DATA	
Bankfull Elevation:	595.0
Bankfull Cross-Sectional Area:	47.5
Bankfull Width:	29.0
Flood Prone Area Elevation:	597.9
Flood Prone Width:	150.0
Max Depth at Bankfull:	2.9
Low Bank Height:	2.7
Mean Depth at Bankfull:	1.6
W / D Ratio:	17.6
Entrenchment Ratio:	5.2
Bank Height Ratio:	0.91

Stream Type	C/E

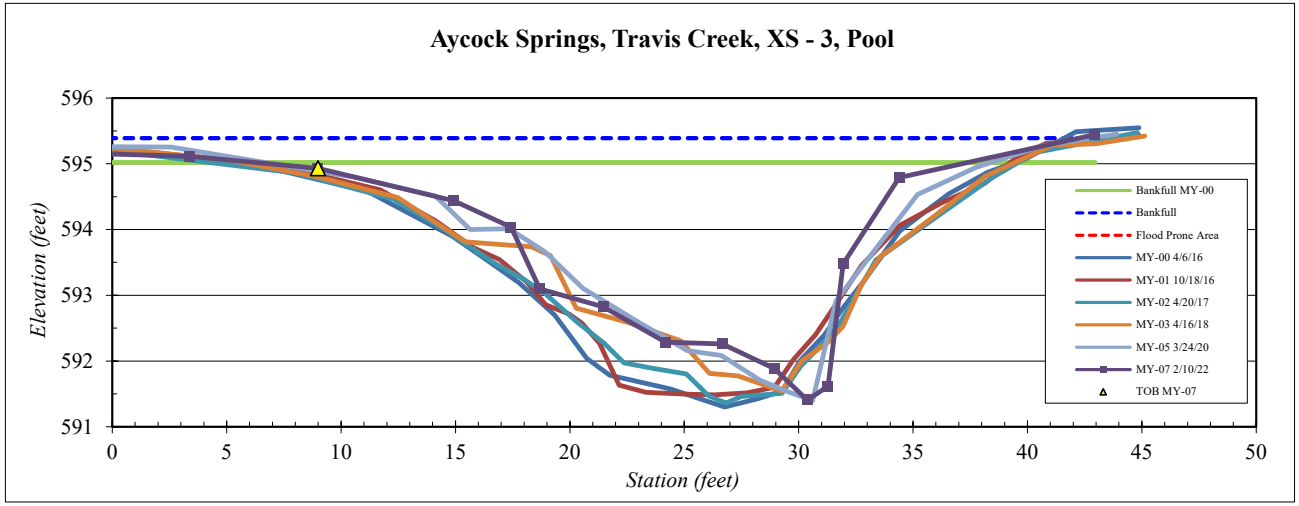


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	Travis Creek, XS - 3, Pool
Feature	Pool
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
-1.7	595.2
3.4	595.1
9.0	594.9
14.9	594.4
17.4	594.0
18.7	593.1
21.5	592.8
24.2	592.3
26.7	592.3
28.9	591.9
30.4	591.4
31.3	591.6
31.9	593.5
34.4	594.8
43.0	595.4

SUMMARY DATA	
Bankfull Elevation:	595.4
Bankfull Cross-Sectional Area:	58.7
Bankfull Width:	43.9
Flood Prone Area Elevation:	NA
Flood Prone Width:	NA
Max Depth at Bankfull:	4.0
Low Bank Height:	3.5
Mean Depth at Bankfull:	1.3
W / D Ratio:	NA
Entrenchment Ratio:	NA
Bank Height Ratio:	NA

Stream Type	C/E

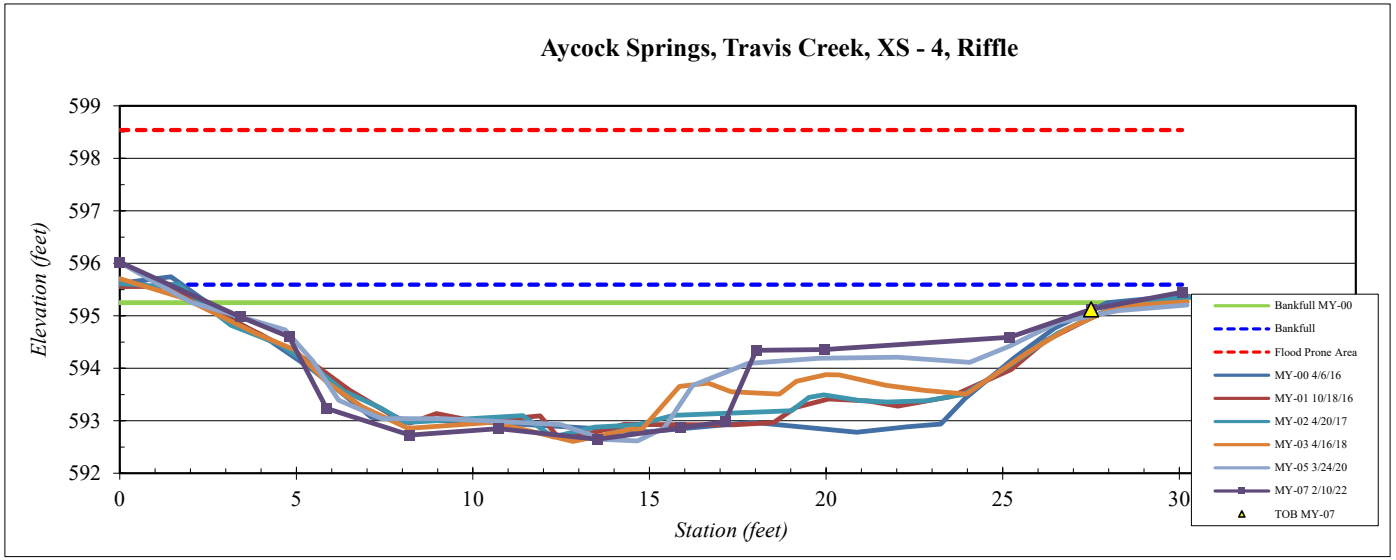


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	Travis Creek, XS - 4, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.0	596.02
3.4	594.98
4.8	594.60
5.9	593.23
8.2	592.73
10.7	592.85
13.5	592.65
15.9	592.86
17.1	592.98
18.0	594.34
20.0	594.36
25.2	594.59
27.5	595.12
30.1	595.45

SUMMARY DATA	
Bankfull Elevation:	595.6
Bankfull Cross-Sectional Area:	47.2
Bankfull Width:	28.7
Flood Prone Area Elevation:	598.5
Flood Prone Width:	150.0
Max Depth at Bankfull:	2.9
Low Bank Height:	2.8
Mean Depth at Bankfull:	1.6
W / D Ratio:	17.4
Entrenchment Ratio:	5.2
Bank Height Ratio:	<1

Stream Type	C/E



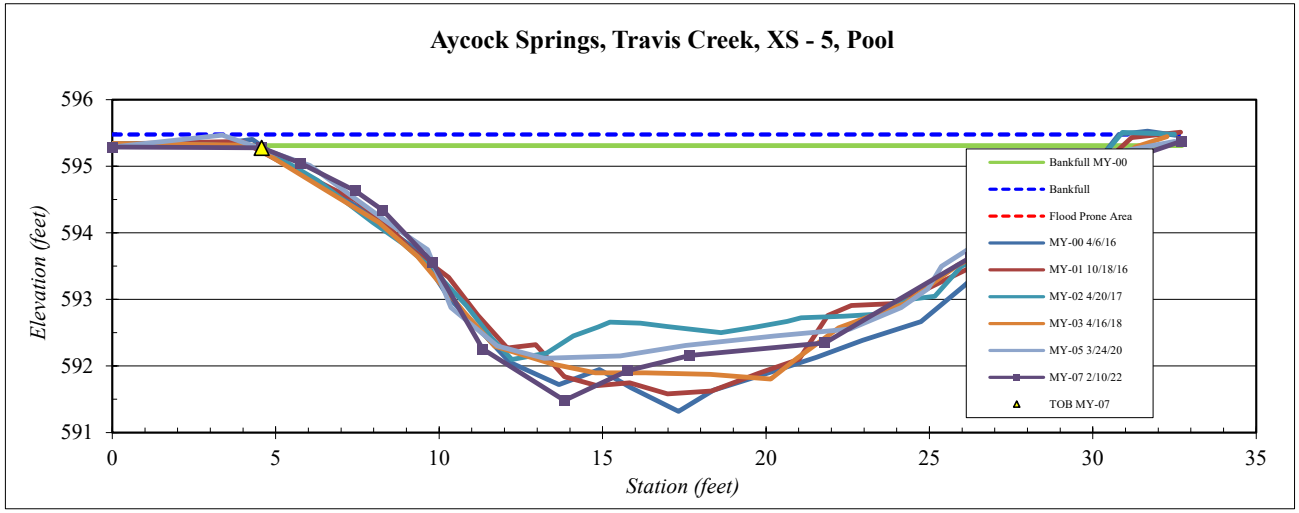
Note: Sediment deposition appears natural and is not expected to lead to instability.

Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	Travis Creek, XS - 5, Pool
Feature	Pool
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.0	595.3
4.6	595.3
5.8	595.0
7.4	594.6
8.3	594.3
9.8	593.6
11.3	592.3
13.8	591.5
15.8	591.9
17.7	592.2
21.8	592.3
26.3	593.6
28.0	594.6
32.7	595.4

SUMMARY DATA	
Bankfull Elevation:	595.5
Bankfull Cross-Sectional Area:	61.4
Bankfull Width:	32.7
Flood Prone Area Elevation:	NA
Flood Prone Width:	NA
Max Depth at Bankfull:	4.0
Low Bank Height:	3.8
Mean Depth at Bankfull:	1.9
W / D Ratio:	NA
Entrenchment Ratio:	NA
Bank Height Ratio:	NA

Stream Type	C/E

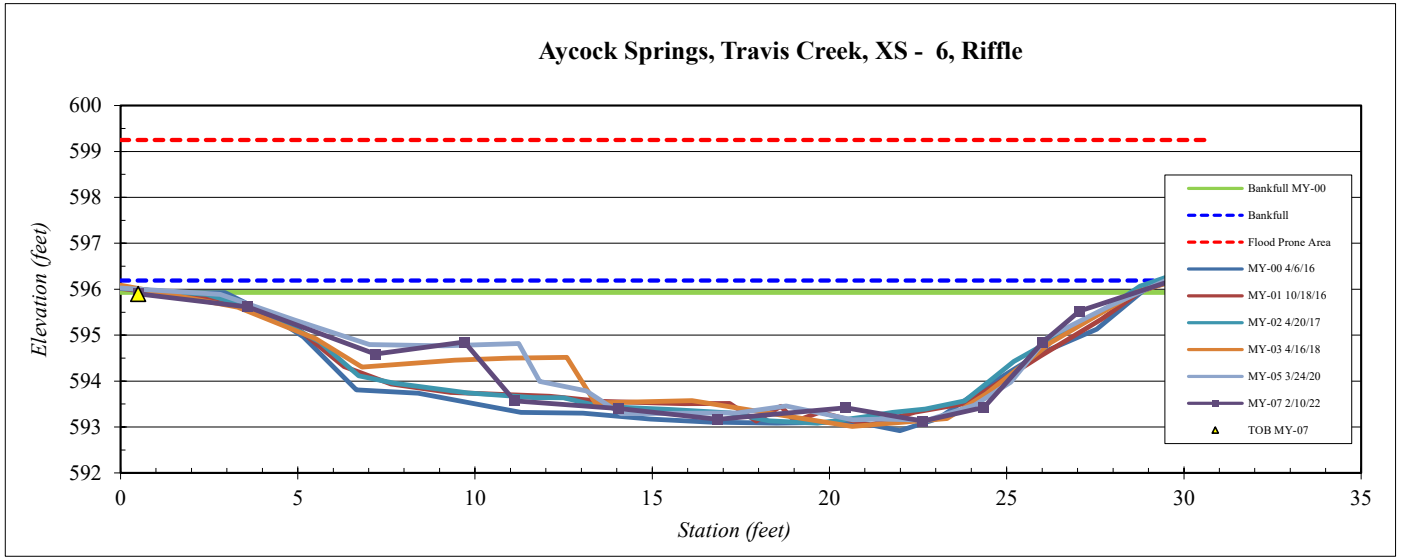


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	Travis Creek, XS - 6, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.5	595.90
3.6	595.61
7.2	594.59
9.7	594.85
11.1	593.57
14.1	593.40
16.9	593.17
20.5	593.42
22.6	593.13
24.4	593.43
26.0	594.85
27.1	595.53
30.6	596.43

SUMMARY DATA	
Bankfull Elevation:	596.2
Bankfull Cross-Sectional Area:	54.9
Bankfull Width:	29.2
Flood Prone Area Elevation:	599.2
Flood Prone Width:	150.0
Max Depth at Bankfull:	3.1
Low Bank Height:	2.8
Mean Depth at Bankfull:	1.9
W / D Ratio:	15.5
Entrenchment Ratio:	5.1
Bank Height Ratio:	0.91

Stream Type	C/E

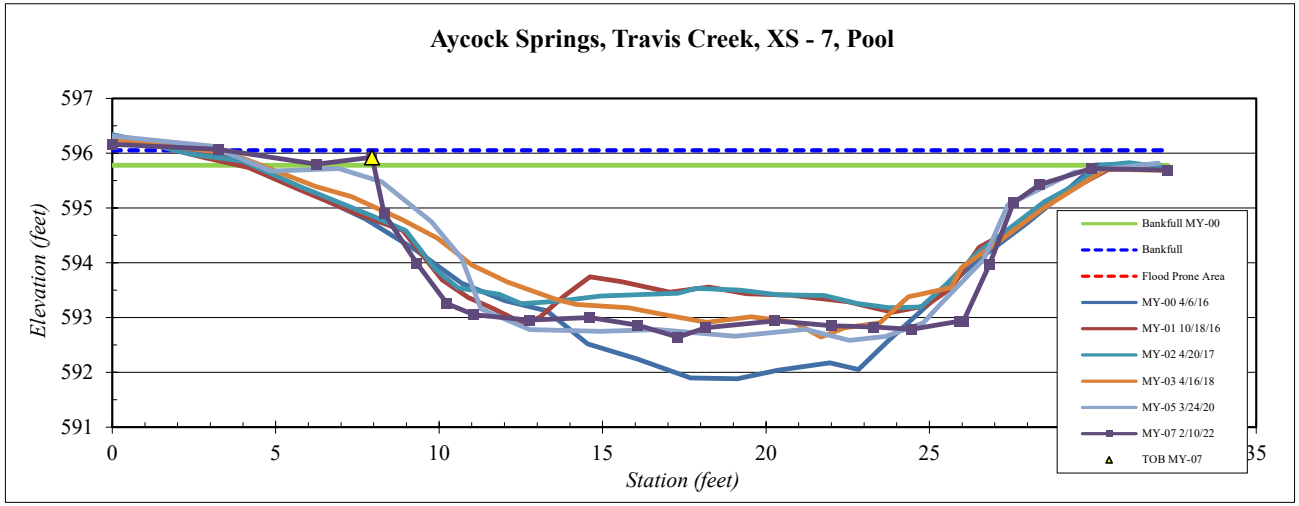


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	Travis Creek, XS - 7, Pool
Feature	Pool
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.0	596.2
3.2	596.1
6.2	595.8
8.0	595.9
8.3	594.9
9.3	594.0
10.2	593.3
11.1	593.1
12.8	593.0
14.6	593.0
16.1	592.9
17.3	592.6
18.2	592.8
20.3	592.9
22.0	592.9
23.3	592.8
24.4	592.8
25.9	592.9
26.0	592.9
26.8	594.0
27.6	595.1
28.4	595.4
30.0	595.7
32.3	595.7

SUMMARY DATA	
Bankfull Elevation:	596.1
Bankfull Cross-Sectional Area:	60.0
Bankfull Width:	28.9
Flood Prone Area Elevation:	NA
Flood Prone Width:	NA
Max Depth at Bankfull:	3.4
Low Bank Height:	3.3
Mean Depth at Bankfull:	2.1
W / D Ratio:	NA
Entrenchment Ratio:	NA
Bank Height Ratio:	NA

Stream Type	C/E



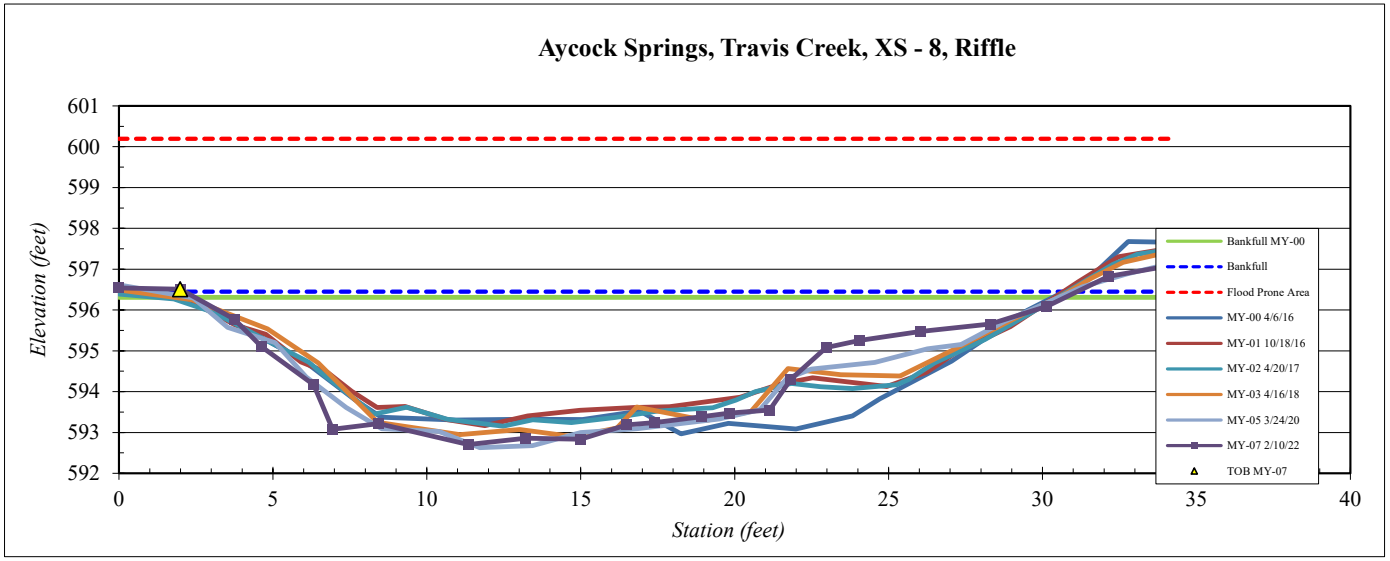
Note: Sediment deposition in pool appears natural and is not expected to lead to instability.

Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	Travis Creek, XS - 8, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.0	596.54
2.0	596.51
3.7	595.78
4.6	595.10
6.3	594.17
6.9	593.08
8.4	593.22
11.3	592.71
13.2	592.86
15.0	592.84
16.5	593.19
17.4	593.24
18.9	593.39
19.8	593.48
21.1	593.55
21.8	594.31
23.0	595.08
24.1	595.26
26.0	595.47
28.3	595.66
30.1	596.1
32.1	596.8
34.1	597.1

SUMMARY DATA	
Bankfull Elevation:	596.5
Bankfull Cross-Sectional Area:	64.6
Bankfull Width:	29.0
Flood Prone Area Elevation:	600.2
Flood Prone Width:	150.0
Max Depth at Bankfull:	3.7
Low Bank Height:	3.8
Mean Depth at Bankfull:	2.2
W / D Ratio:	13.0
Entrenchment Ratio:	5.2
Bank Height Ratio:	1.0

Stream Type	C/E

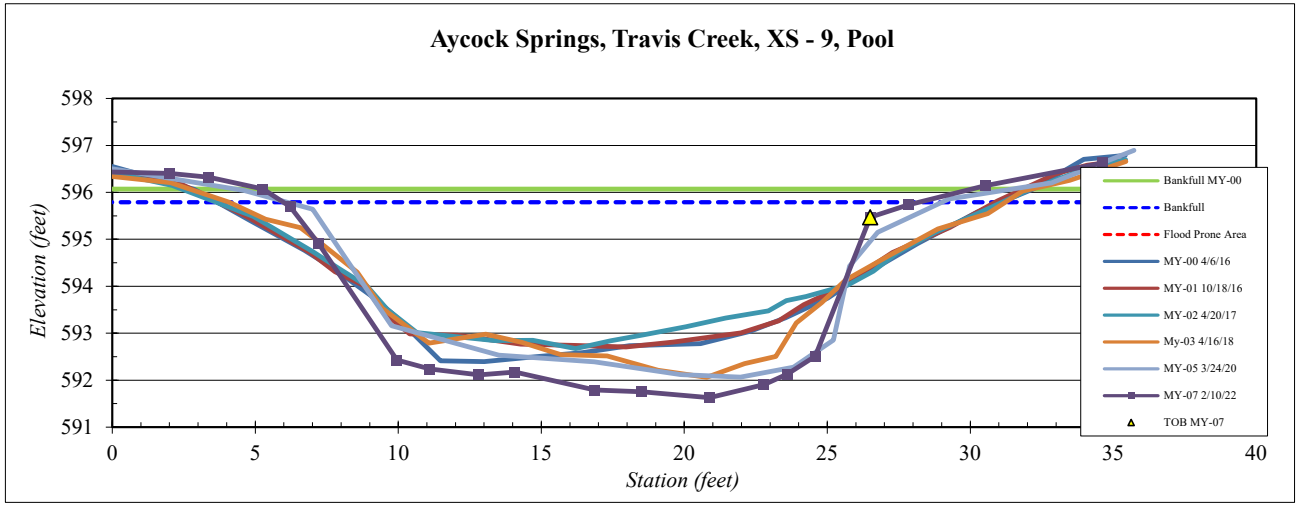


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	Travis Creek, XS - 9, Pool
Feature	Pool
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
-0.9	596.4
2.0	596.4
3.4	596.3
5.3	596.1
6.2	595.7
7.2	594.9
10.0	592.4
11.1	592.2
12.8	592.1
14.1	592.2
16.9	591.8
18.5	591.8
20.9	591.6
22.8	591.9
23.6	592.1
24.6	592.5
26.5	595.5
27.8	595.7
30.5	596.1
34.6	596.6

SUMMARY DATA	
Bankfull Elevation:	595.8
Bankfull Cross-Sectional Area:	65.9
Bankfull Width:	22.2
Flood Prone Area Elevation:	NA
Flood Prone Width:	NA
Max Depth at Bankfull:	4.2
Low Bank Height:	3.8
Mean Depth at Bankfull:	3.0
W / D Ratio:	NA
Entrenchment Ratio:	NA
Bank Height Ratio:	NA

Stream Type	C/E

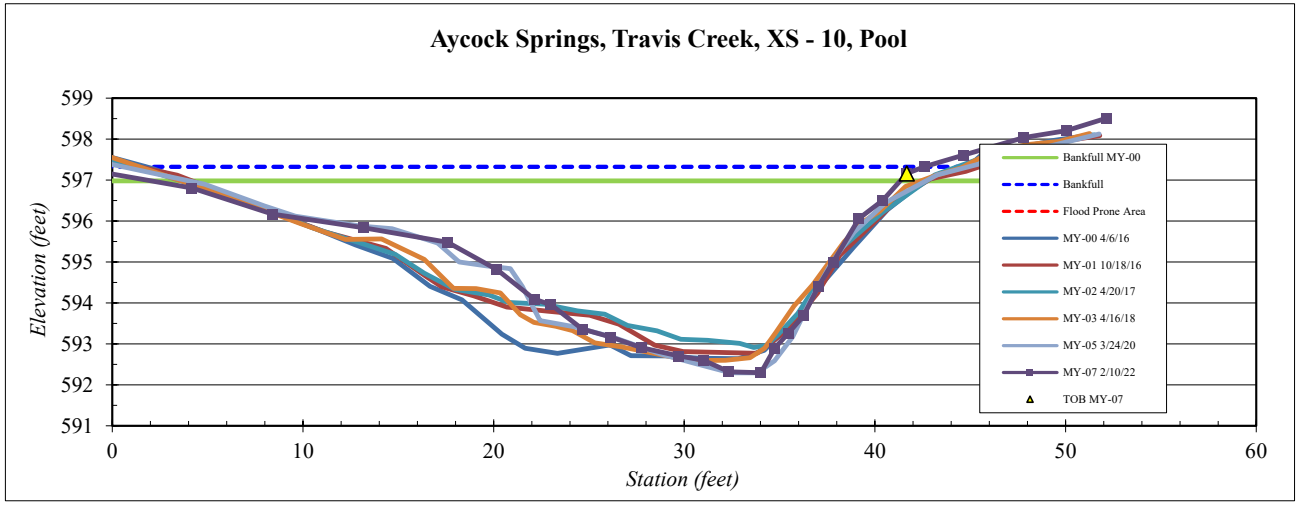


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	Travis Creek, XS - 10, Pool
Feature	Pool
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
-0.5	597.2
4.2	596.8
8.4	596.2
13.2	595.8
17.6	595.5
20.2	594.8
22.1	594.1
23.0	594.0
24.7	593.4
26.1	593.2
27.8	592.9
29.7	592.7
31.0	592.6
32.3	592.3
34.0	592.3
34.8	592.9
35.5	593.3
36.3	593.7
37.0	594.4
37.8	595.0
39.2	596.1
40.4	596.5
41.7	597.2
42.6	597.3
44.7	597.6
47.8	598.0
50.0	598.2
52.1	598.5

SUMMARY DATA	
Bankfull Elevation:	597.3
Bankfull Cross-Sectional Area:	100.1
Bankfull Width:	43.1
Flood Prone Area Elevation:	NA
Flood Prone Width:	NA
Max Depth at Bankfull:	5.0
Low Bank Height:	4.9
Mean Depth at Bankfull:	2.3
W / D Ratio:	NA
Entrenchment Ratio:	NA
Bank Height Ratio:	NA

Stream Type	C/E

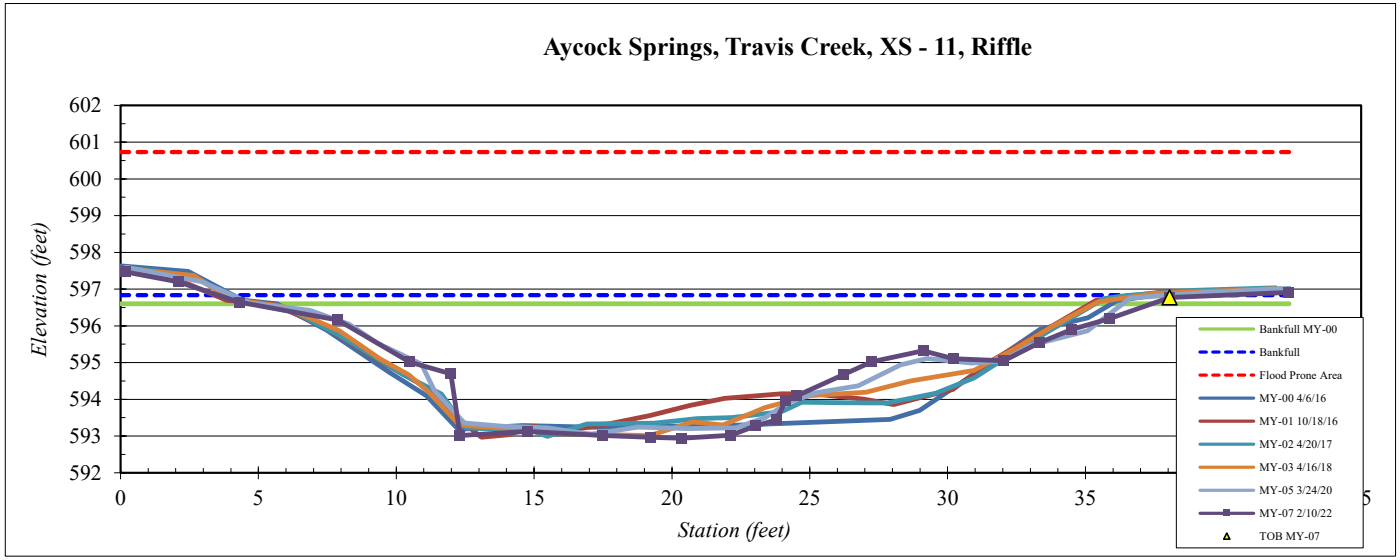


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	Travis Creek, XS - 11, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.2	597.46
2.1	597.20
4.3	596.64
7.9	596.16
10.5	595.01
12.0	594.69
12.3	593.02
14.8	593.12
17.5	593.02
19.2	592.97
20.3	592.94
22.1	593.02
23.0	593.27
23.8	593.44
24.1	593.97
24.5	594.09
26.2	594.68
27.2	595.02
29.1	595.32
30.2	595.11
32.0	595.0
33.3	595.5
34.5	595.9
35.9	596.2
38.1	596.8
42.4	596.9

SUMMARY DATA	
Bankfull Elevation:	596.8
Bankfull Cross-Sectional Area:	73.9
Bankfull Width:	36.6
Flood Prone Area Elevation:	600.7
Flood Prone Width:	150.0
Max Depth at Bankfull:	3.9
Low Bank Height:	3.8
Mean Depth at Bankfull:	2.0
W / D Ratio:	18.1
Entrenchment Ratio:	4.1
Bank Height Ratio:	1.0

Stream Type	C/E

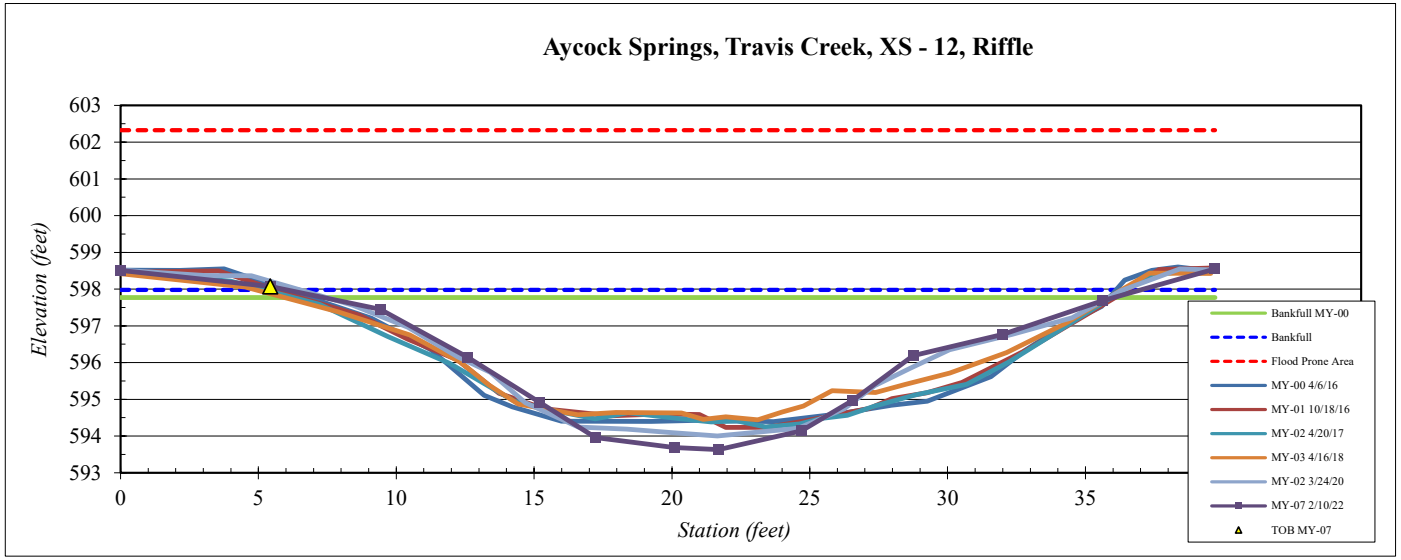


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	Travis Creek, XS - 12, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.0	598.51
5.4	598.07
9.4	597.45
12.6	596.15
15.2	594.92
17.2	593.96
20.1	593.69
21.7	593.63
24.7	594.14
26.5	594.96
28.8	596.19
32.0	596.77
35.6	597.68
39.7	598.55

SUMMARY DATA	
Bankfull Elevation:	598.0
Bankfull Cross-Sectional Area:	68.7
Bankfull Width:	31.0
Flood Prone Area Elevation:	602.3
Flood Prone Width:	150.0
Max Depth at Bankfull:	4.3
Low Bank Height:	4.4
Mean Depth at Bankfull:	2.2
W / D Ratio:	14.0
Entrenchment Ratio:	4.8
Bank Height Ratio:	1.0

Stream Type	C/E

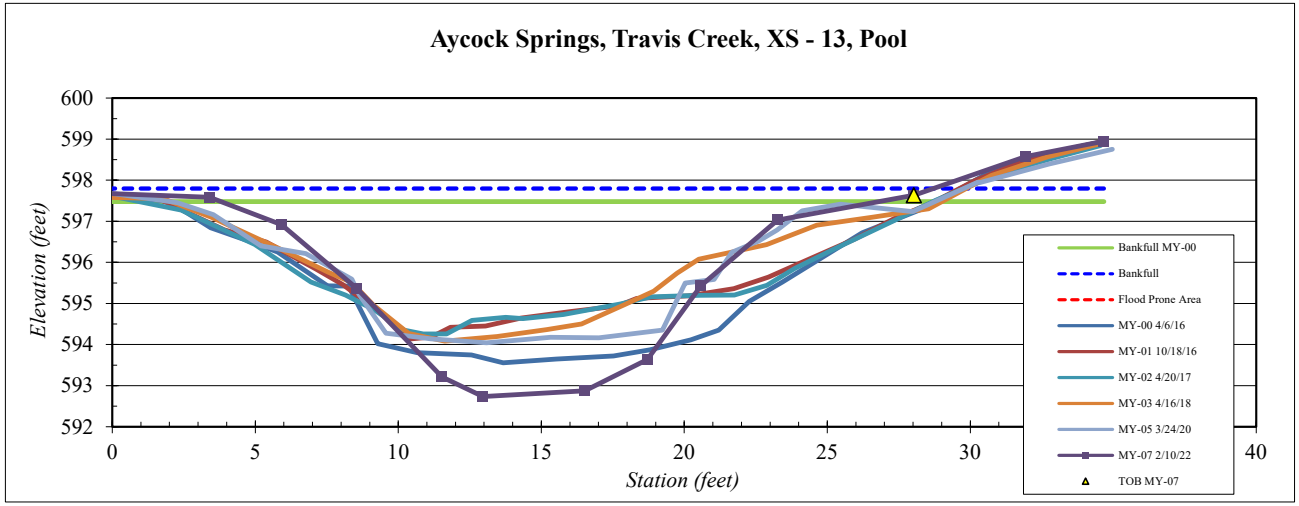


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	Travis Creek, XS - 13, Pool
Feature	Pool
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
-0.2	597.7
3.4	597.6
5.9	596.9
8.5	595.4
11.5	593.2
13.0	592.7
16.5	592.9
18.7	593.6
20.6	595.4
23.3	597.0
28.0	597.6
31.9	598.6
34.7	598.9

SUMMARY DATA	
Bankfull Elevation:	597.8
Bankfull Cross-Sectional Area:	64.0
Bankfull Width:	28.9
Flood Prone Area Elevation:	NA
Flood Prone Width:	NA
Max Depth at Bankfull:	5.1
Low Bank Height:	4.9
Mean Depth at Bankfull:	2.2
W / D Ratio:	NA
Entrenchment Ratio:	NA
Bank Height Ratio:	NA

Stream Type	C/E



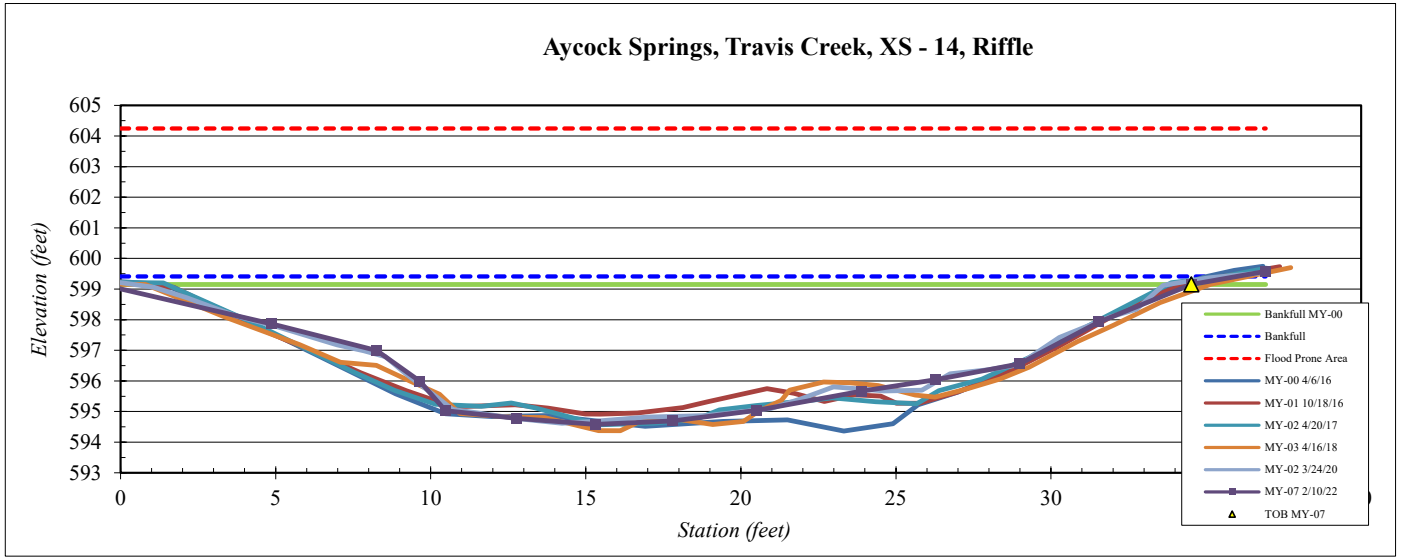
Note: Sediment movement in pool appears natural and is not expected to lead to instability.

Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	Travis Creek, XS - 14, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
-0.4	599.10
4.9	597.87
8.3	596.99
9.6	595.99
10.5	595.03
12.8	594.78
15.3	594.58
17.8	594.69
20.5	595.04
23.9	595.67
26.3	596.04
29.0	596.56
31.5	597.92
34.5	599.15
36.9	599.58

SUMMARY DATA	
Bankfull Elevation:	599.4
Bankfull Cross-Sectional Area:	104.5
Bankfull Width:	36.4
Flood Prone Area Elevation:	604.2
Flood Prone Width:	150.0
Max Depth at Bankfull:	4.8
Low Bank Height:	4.6
Mean Depth at Bankfull:	2.9
W / D Ratio:	12.7
Entrenchment Ratio:	4.1
Bank Height Ratio:	0.95

Stream Type	C/E

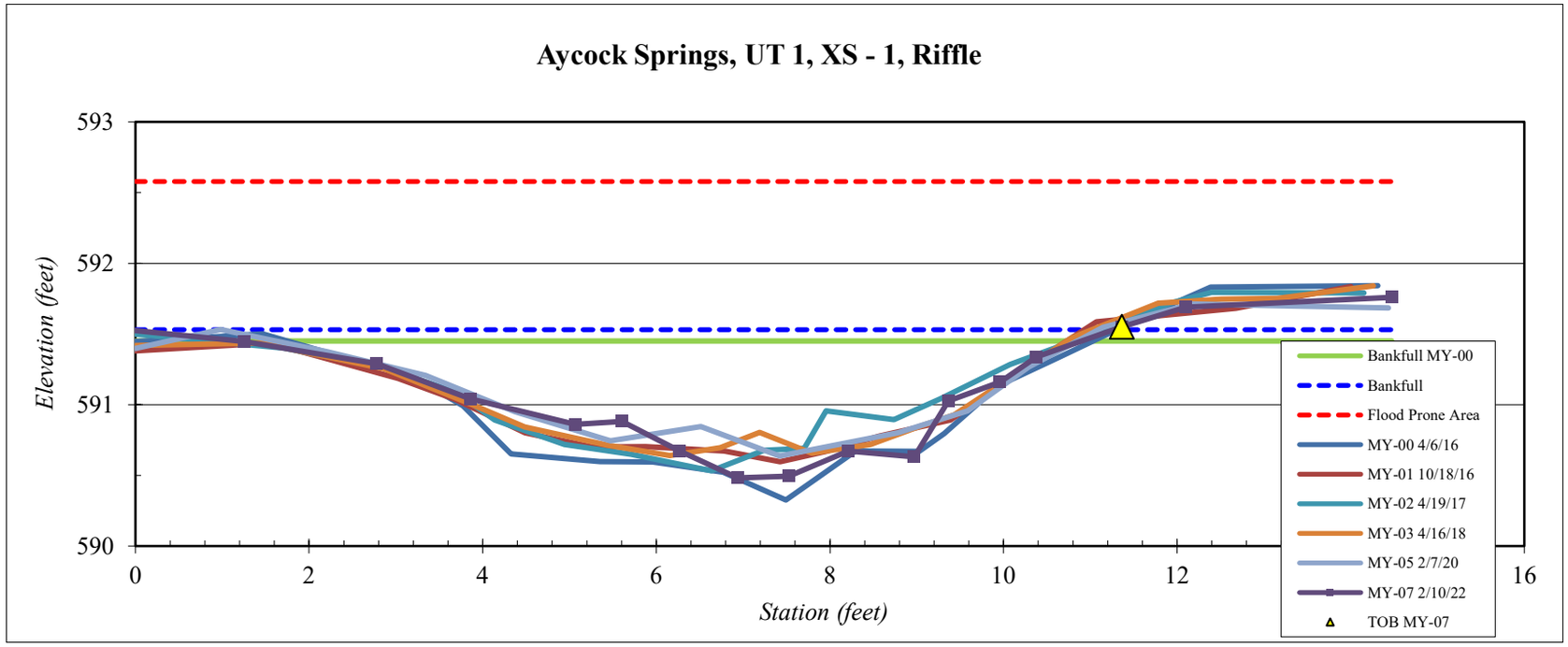


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 1, XS - 1, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
-0.3	591.54
1.3	591.45
2.8	591.29
3.9	591.04
5.1	590.86
5.6	590.88
6.3	590.67
6.9	590.48
7.5	590.50
8.2	590.67
9.0	590.63
9.4	591.03
10.0	591.16
10.4	591.34
11.4	591.55
12.1	591.69
14.5	591.76

SUMMARY DATA	
Bankfull Elevation:	591.5
Bankfull Cross-Sectional Area:	5.6
Bankfull Width:	11.4
Flood Prone Area Elevation:	592.6
Flood Prone Width:	90.0
Max Depth at Bankfull:	1.0
Low Bank Height:	1.1
Mean Depth at Bankfull:	0.5
W / D Ratio:	23.2
Entrenchment Ratio:	7.9
Bank Height Ratio:	1.0

Stream Type	C/E

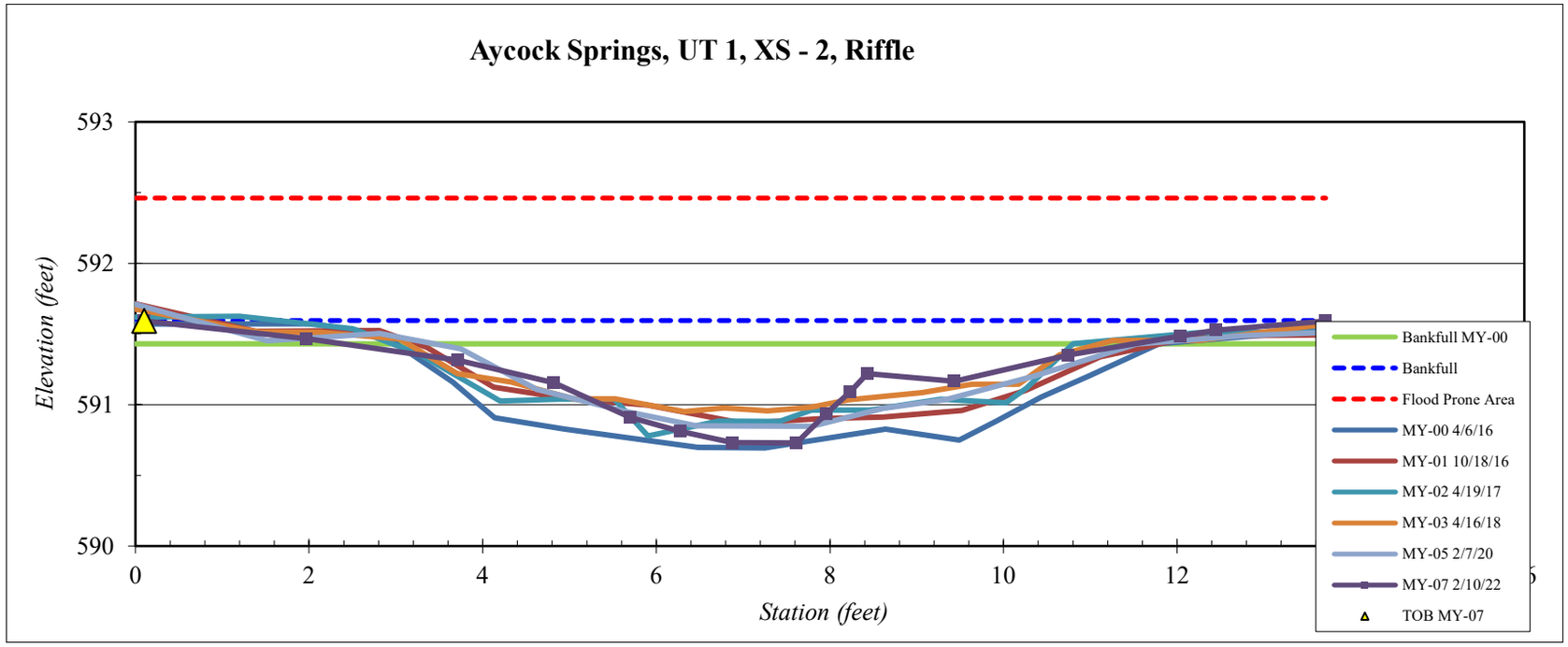


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 1, XS - 2, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.1	591.59
2.0	591.47
3.7	591.32
4.8	591.15
5.7	590.91
6.3	590.81
6.9	590.73
7.6	590.73
8.0	590.94
8.2	591.09
8.4	591.22
9.4	591.17
10.7	591.35
12.0	591.48
12.4	591.53
13.7	591.59

SUMMARY DATA	
Bankfull Elevation:	591.6
Bankfull Cross-Sectional Area:	4.6
Bankfull Width:	13.6
Flood Prone Area Elevation:	592.5
Flood Prone Width:	90.0
Max Depth at Bankfull:	0.9
Low Bank Height:	0.9
Mean Depth at Bankfull:	0.3
W / D Ratio:	40.3
Entrenchment Ratio:	6.6
Bank Height Ratio:	1.0

Stream Type	C/E

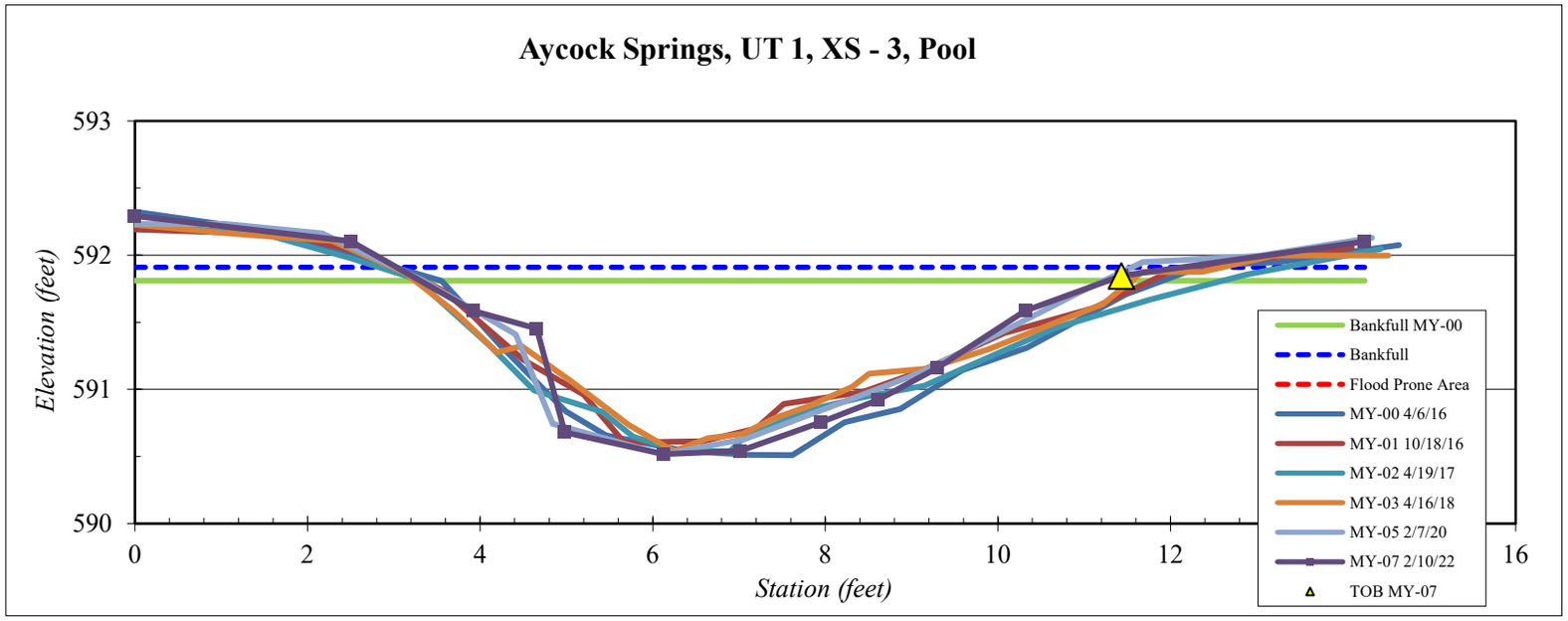


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 1, XS - 3, Pool
Feature	Pool
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.0	592.3
2.5	592.1
3.9	591.6
4.7	591.5
5.0	590.7
6.1	590.5
7.0	590.5
7.9	590.8
8.6	590.9
9.3	591.2
10.3	591.6
11.4	591.8
14.2	592.1

SUMMARY DATA	
Bankfull Elevation:	591.9
Bankfull Cross-Sectional Area:	6.7
Bankfull Width:	9.1
Flood Prone Area Elevation:	NA
Flood Prone Width:	NA
Max Depth at Bankfull:	1.4
Low Bank Height:	1.3
Mean Depth at Bankfull:	0.7
W / D Ratio:	NA
Entrenchment Ratio:	NA
Bank Height Ratio:	NA

Stream Type	C/E

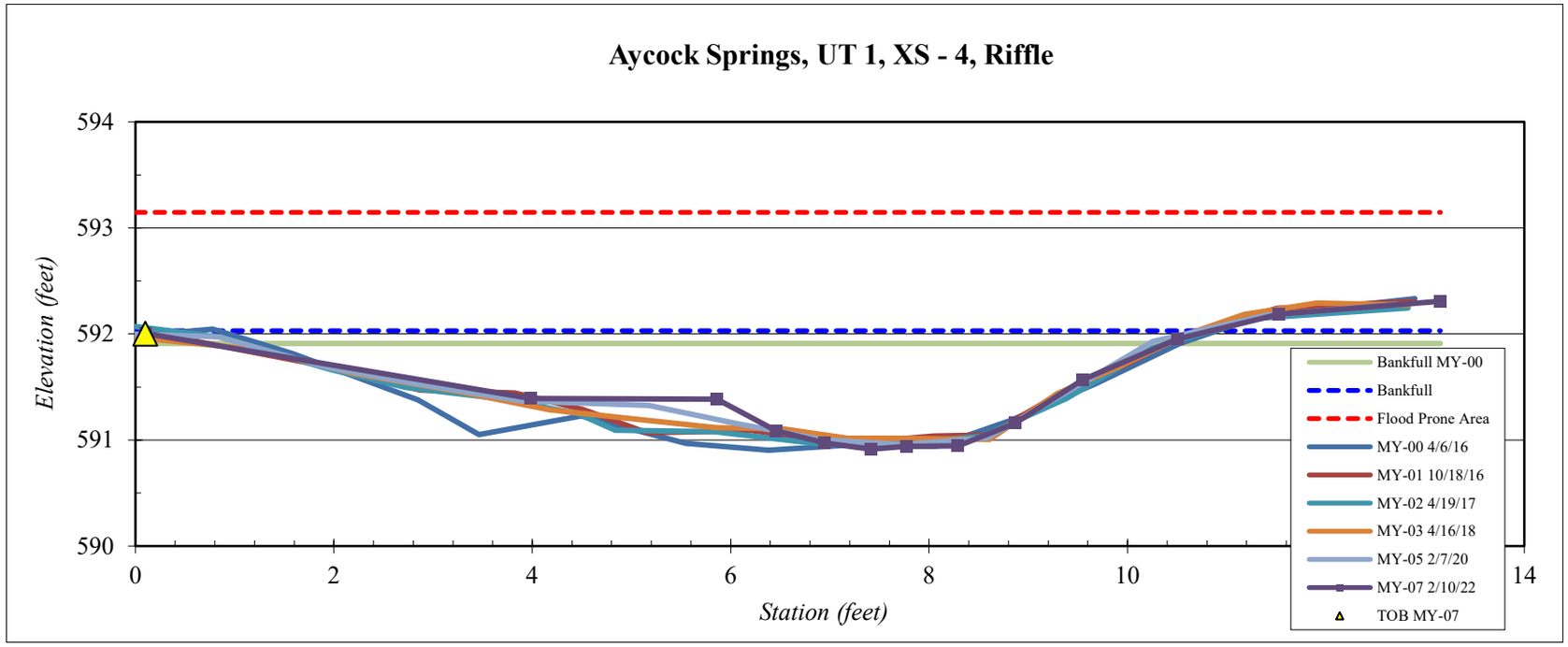


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 1, XS - 4, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.1	592.00
4.0	591.39
5.9	591.39
6.5	591.09
7.0	590.97
7.4	590.91
7.8	590.94
8.3	590.95
8.9	591.16
9.5	591.57
10.5	591.95
11.5	592.19
13.2	592.31

SUMMARY DATA	
Bankfull Elevation:	592.0
Bankfull Cross-Sectional Area:	6.2
Bankfull Width:	10.7
Flood Prone Area Elevation:	593.1
Flood Prone Width:	90.0
Max Depth at Bankfull:	1.1
Low Bank Height:	1.1
Mean Depth at Bankfull:	0.6
W / D Ratio:	18.6
Entrenchment Ratio:	8.4
Bank Height Ratio:	1.0

Stream Type	C/E

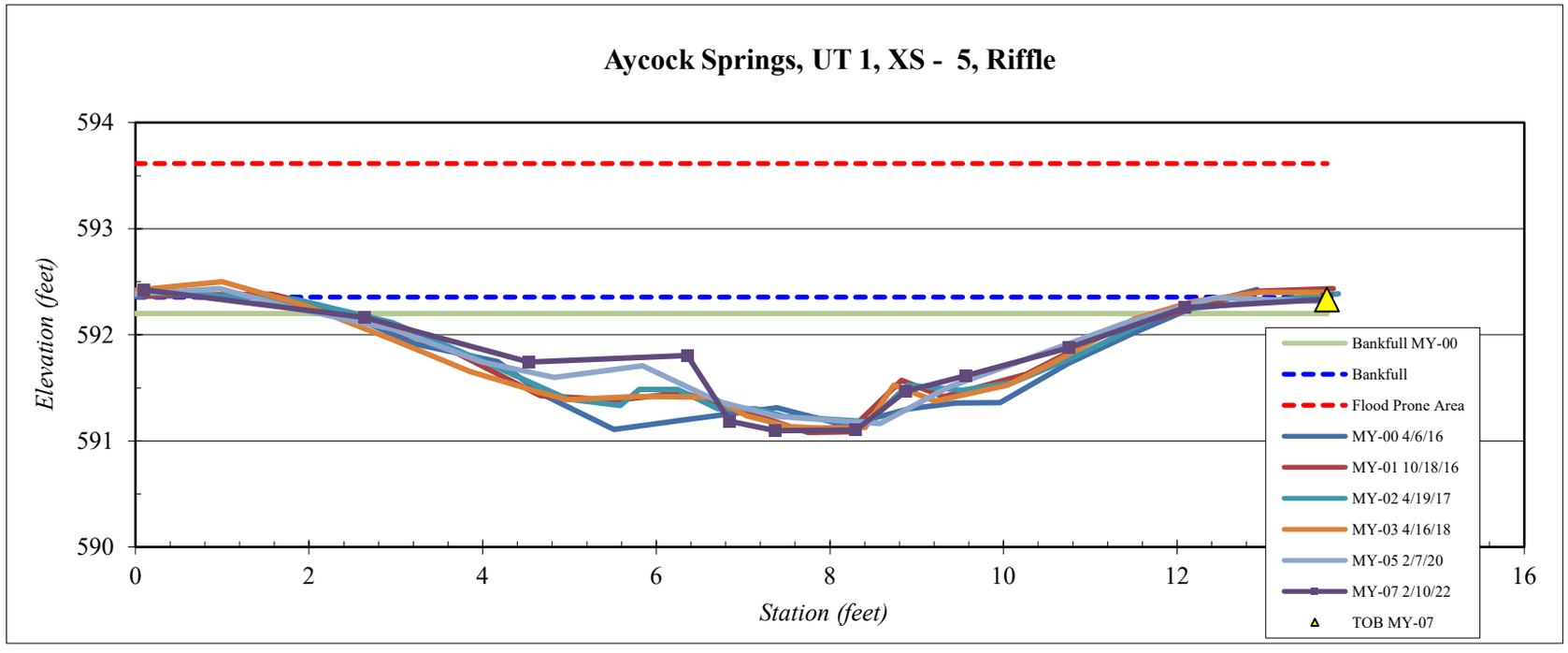


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 1, XS - 5, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.1	592.42
2.6	592.16
4.5	591.74
6.4	591.80
6.8	591.19
7.4	591.10
8.3	591.10
8.9	591.47
9.6	591.61
10.8	591.88
12.1	592.26
13.7	592.33

SUMMARY DATA	
Bankfull Elevation:	592.4
Bankfull Cross-Sectional Area:	6.6
Bankfull Width:	13.0
Flood Prone Area Elevation:	593.6
Flood Prone Width:	90.0
Max Depth at Bankfull:	1.3
Low Bank Height:	1.2
Mean Depth at Bankfull:	0.5
W / D Ratio:	25.4
Entrenchment Ratio:	6.9
Bank Height Ratio:	1.0

Stream Type	C/E

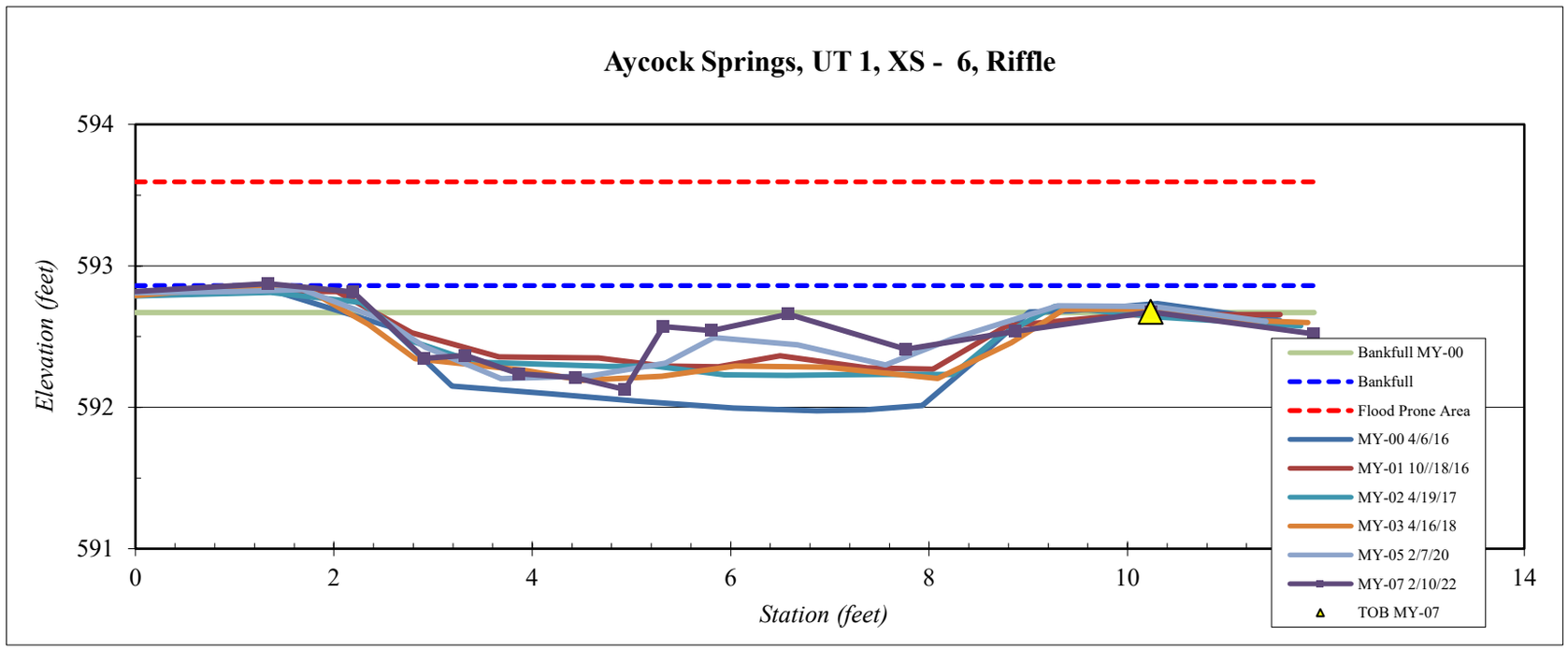


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 1, XS - 6, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
-0.2	592.81
1.3	592.87
2.2	592.82
2.9	592.35
3.3	592.37
3.9	592.24
4.4	592.21
4.9	592.13
5.3	592.57
5.8	592.54
6.6	592.66
7.8	592.41
8.9	592.54
10.2	592.68
11.9	592.52

SUMMARY DATA	
Bankfull Elevation:	592.9
Bankfull Cross-Sectional Area:	3.6
Bankfull Width:	11.5
Flood Prone Area Elevation:	593.6
Flood Prone Width:	90.0
Max Depth at Bankfull:	0.7
Low Bank Height:	0.5
Mean Depth at Bankfull:	0.3
W / D Ratio:	36.9
Entrenchment Ratio:	7.8
Bank Height Ratio:	0.75

Stream Type	C/E



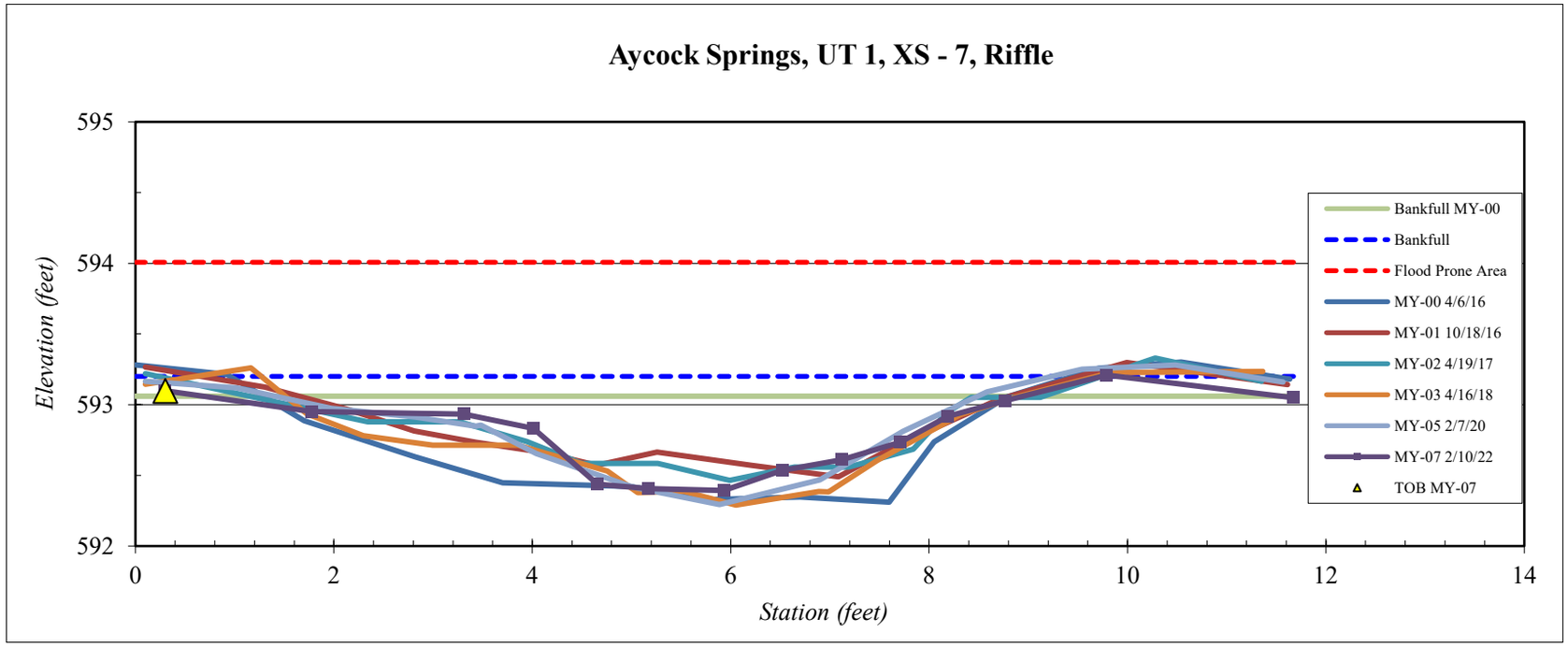
Note: Sediment deposition appears natural and is not expected to lead to instability.

Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 1, XS - 7, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.3	593.10
1.8	592.95
3.3	592.93
4.0	592.83
4.7	592.44
5.2	592.41
5.9	592.39
6.5	592.53
7.1	592.61
7.7	592.73
8.2	592.92
8.8	593.03
9.8	593.21
11.7	593.05

SUMMARY DATA	
Bankfull Elevation:	593.2
Bankfull Cross-Sectional Area:	3.9
Bankfull Width:	11.2
Flood Prone Area Elevation:	594.0
Flood Prone Width:	90.0
Max Depth at Bankfull:	0.8
Low Bank Height:	0.7
Mean Depth at Bankfull:	0.3
W / D Ratio:	32.2
Entrenchment Ratio:	8.0
Bank Height Ratio:	0.87

Stream Type	C/E

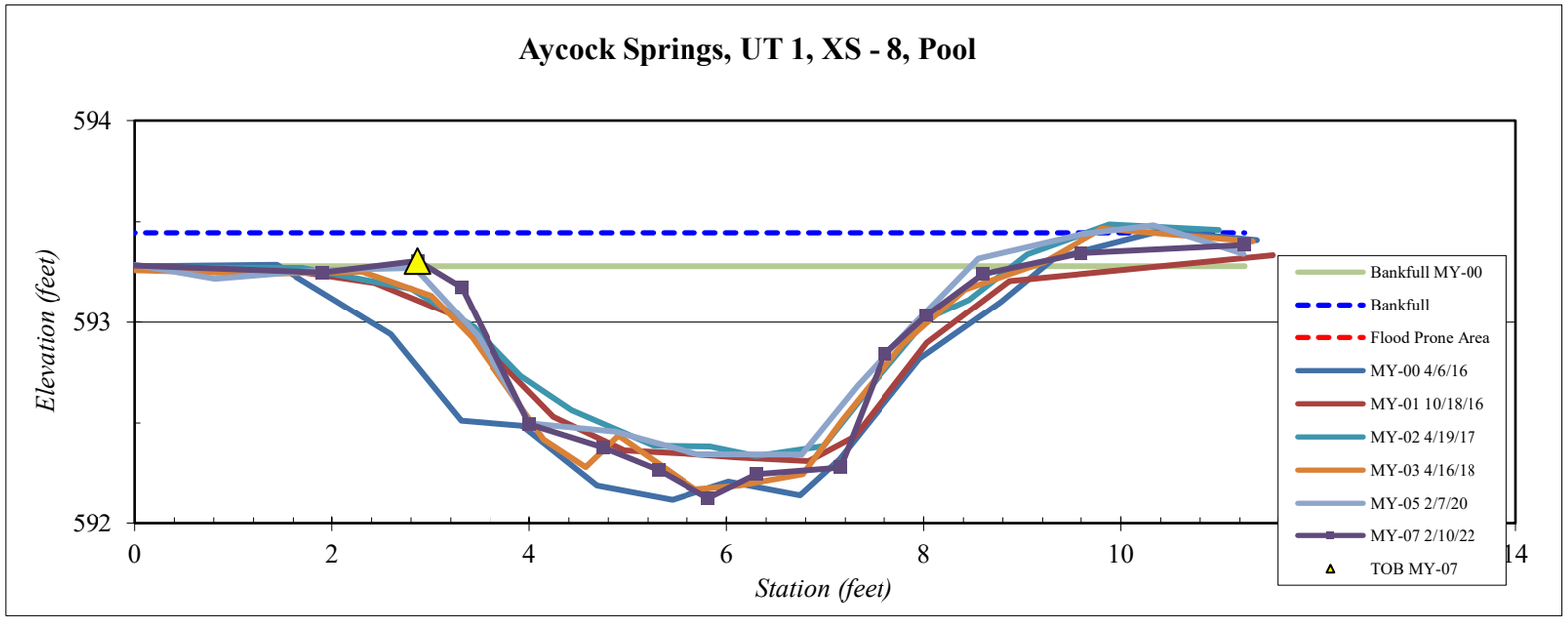


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 1, XS - 8, Pool
Feature	Pool
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
-0.1	593.3
1.9	593.2
2.9	593.3
3.3	593.2
4.0	592.5
4.8	592.4
5.3	592.3
5.8	592.1
6.3	592.2
7.2	592.3
7.6	592.8
8.0	593.0
8.6	593.2
9.6	593.3
11.2	593.4

SUMMARY DATA	
Bankfull Elevation:	593.4
Bankfull Cross-Sectional Area:	5.7
Bankfull Width:	11.3
Flood Prone Area Elevation:	NA
Flood Prone Width:	NA
Max Depth at Bankfull:	1.3
Low Bank Height:	1.2
Mean Depth at Bankfull:	0.5
W / D Ratio:	NA
Entrenchment Ratio:	NA
Bank Height Ratio:	NA

Stream Type	C/E



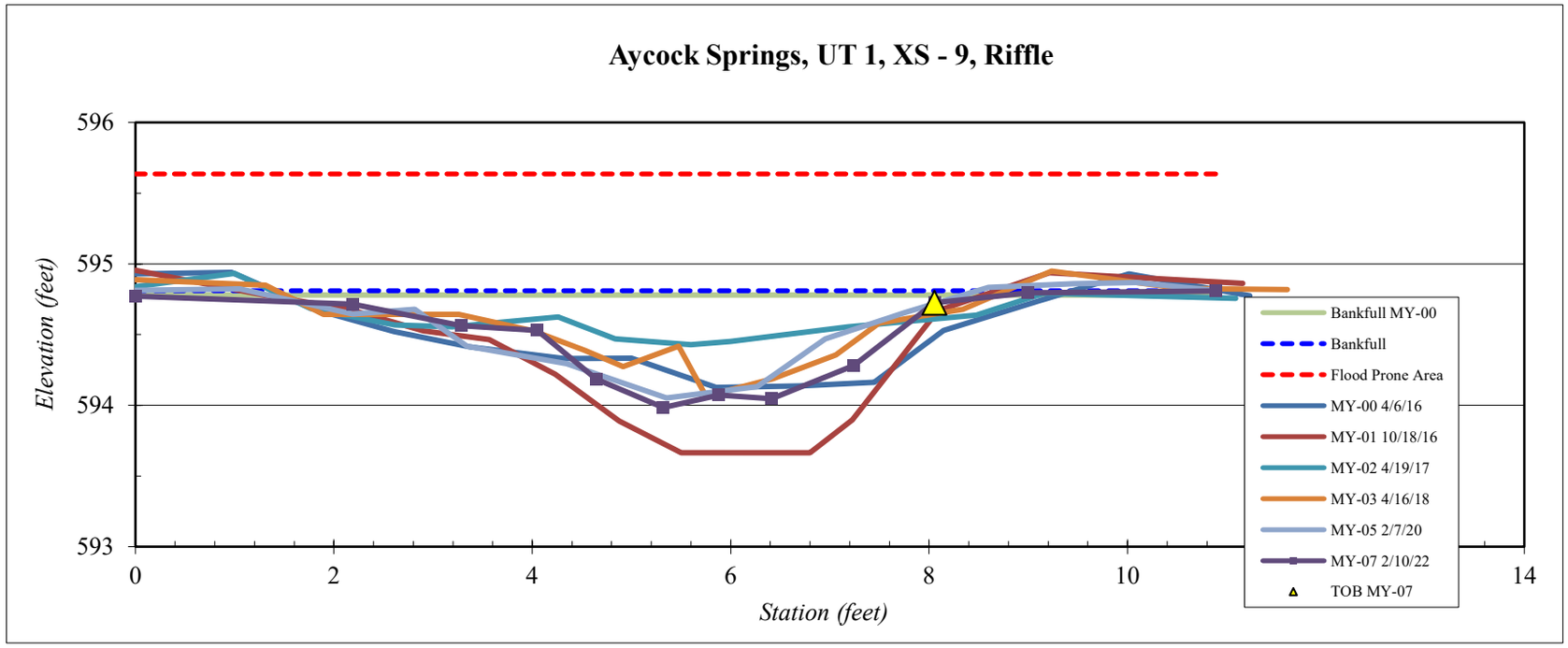
Note: Cross Sections 8 and 9 (UT 1) are located in the vicinity of a bed material repair. Additional bed material was added by hand in this reach.

Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 1, XS - 9, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.0	594.77
2.2	594.71
3.3	594.56
4.1	594.53
4.6	594.18
5.3	593.98
5.9	594.07
6.4	594.05
7.2	594.28
8.1	594.72
9.0	594.79
10.9	594.81

SUMMARY DATA	
Bankfull Elevation:	594.8
Bankfull Cross-Sectional Area:	3.0
Bankfull Width:	10.9
Flood Prone Area Elevation:	595.6
Flood Prone Width:	90.0
Max Depth at Bankfull:	0.8
Low Bank Height:	0.7
Mean Depth at Bankfull:	0.3
W / D Ratio:	39.7
Entrenchment Ratio:	8.3
Bank Height Ratio:	0.90

Stream Type	C/E



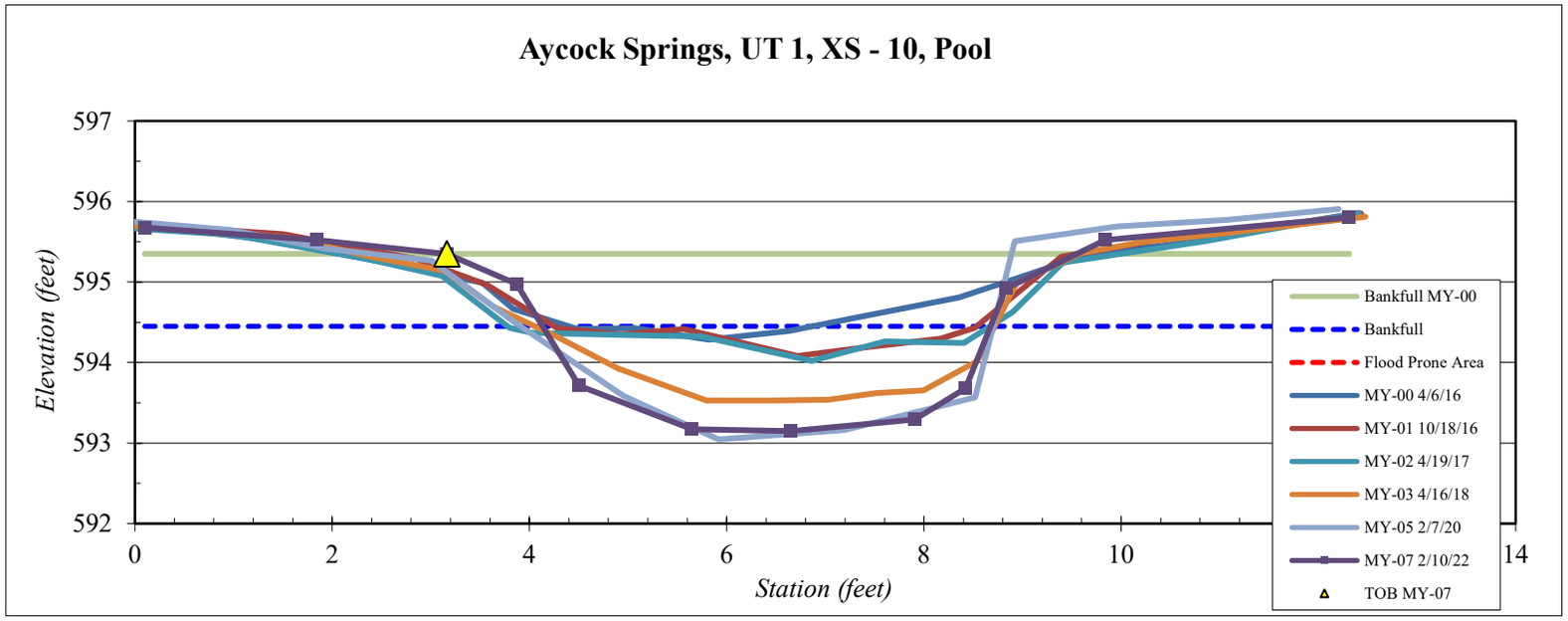
Note: Cross Sections 8 and 9 (UT 1) are located in the vicinity of a bed material repair. Additional bed material was added by hand in this reach.

Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 1, XS - 10, Pool
Feature	Pool
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.1	595.7
1.8	595.5
3.2	595.4
3.9	595.0
4.5	593.7
5.7	593.2
6.7	593.1
7.9	593.3
8.4	593.7
8.8	594.9
9.8	595.5
12.3	595.8

SUMMARY DATA	
Bankfull Elevation:	594.5
Bankfull Cross-Sectional Area:	4.7
Bankfull Width:	4.5
Flood Prone Area Elevation:	NA
Flood Prone Width:	NA
Max Depth at Bankfull:	1.3
Low Bank Height:	2.2
Mean Depth at Bankfull:	1.0
W / D Ratio:	NA
Entrenchment Ratio:	NA
Bank Height Ratio:	NA

Stream Type	C/E



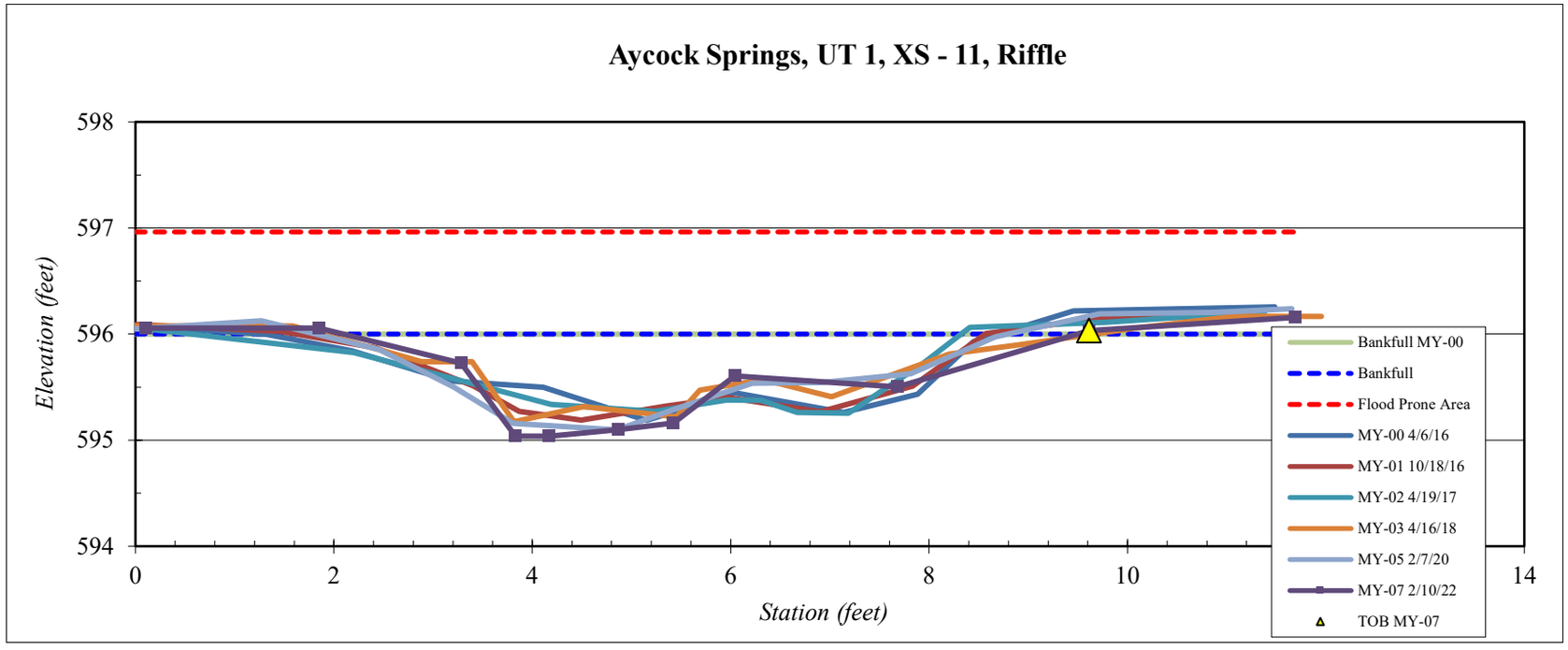
Note: Sediment mobilization during storm events has occurred; however, latteral stability has not been compromised. No problems are expected to result from pool deepening.

Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 1, XS - 11, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.1	596.05
1.8	596.06
3.3	595.73
3.8	595.04
4.2	595.04
4.9	595.10
5.4	595.16
6.0	595.61
7.7	595.50
9.6	596.03
11.7	596.16

SUMMARY DATA	
Bankfull Elevation:	596.0
Bankfull Cross-Sectional Area:	3.5
Bankfull Width:	7.4
Flood Prone Area Elevation:	597.0
Flood Prone Width:	90.0
Max Depth at Bankfull:	1.0
Low Bank Height:	1.0
Mean Depth at Bankfull:	0.5
W / D Ratio:	15.5
Entrenchment Ratio:	12.2
Bank Height Ratio:	1.0

Stream Type	C/E

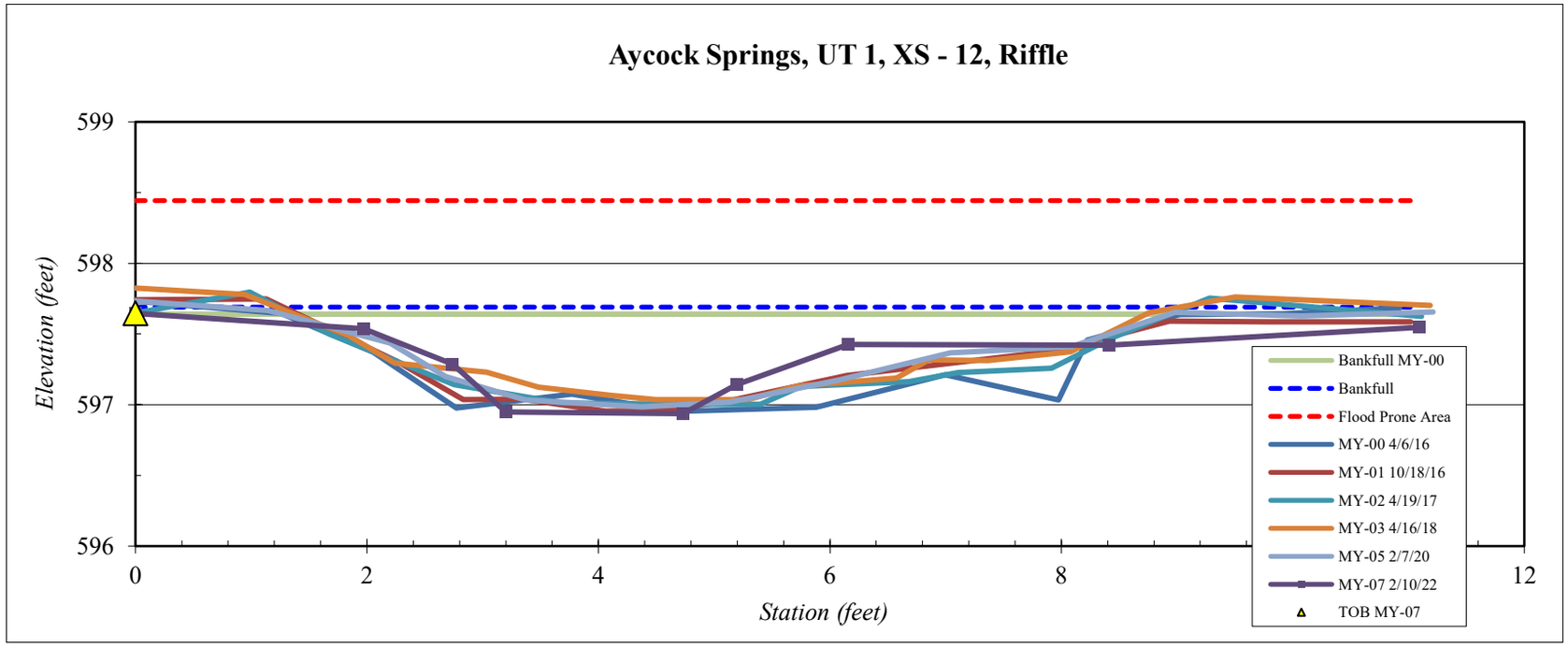


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 1, XS - 12, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.0	597.65
2.0	597.54
2.7	597.29
3.2	596.95
4.7	596.94
5.2	597.14
6.2	597.43
8.4	597.42
11.1	597.55

SUMMARY DATA	
Bankfull Elevation:	597.7
Bankfull Cross-Sectional Area:	3.7
Bankfull Width:	11.1
Flood Prone Area Elevation:	598.4
Flood Prone Width:	90.0
Max Depth at Bankfull:	0.8
Low Bank Height:	0.7
Mean Depth at Bankfull:	0.3
W / D Ratio:	33.6
Entrenchment Ratio:	8.1
Bank Height Ratio:	0.94

Stream Type	C/E

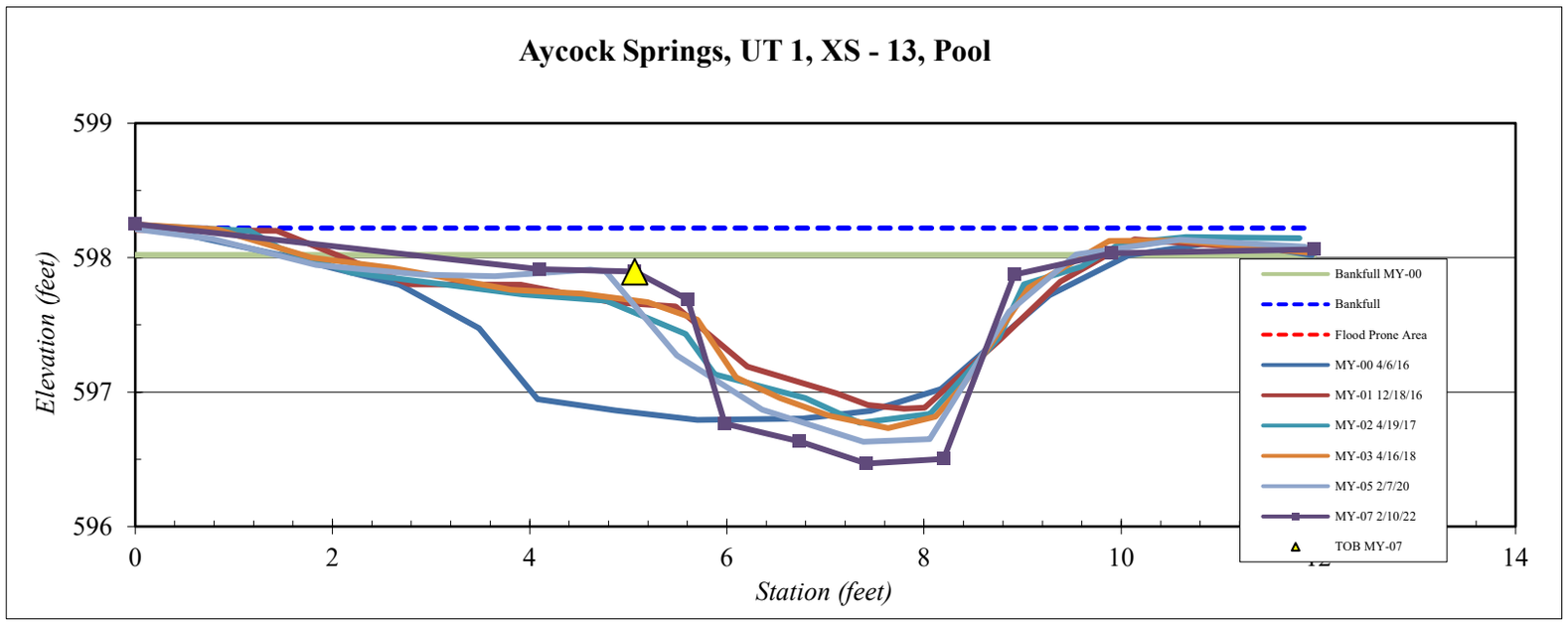


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 1, XS - 13, Pool
Feature	Pool
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.0	598.2
4.1	597.9
5.1	597.9
5.6	597.7
6.0	596.8
6.7	596.6
7.4	596.5
8.2	596.5
8.9	597.9
9.9	598.0
12.0	598.1

SUMMARY DATA	
Bankfull Elevation:	598.2
Bankfull Cross-Sectional Area:	6.5
Bankfull Width:	11.6
Flood Prone Area Elevation:	NA
Flood Prone Width:	NA
Max Depth at Bankfull:	1.8
Low Bank Height:	1.4
Mean Depth at Bankfull:	0.6
W / D Ratio:	NA
Entrenchment Ratio:	NA
Bank Height Ratio:	NA

Stream Type	C/E



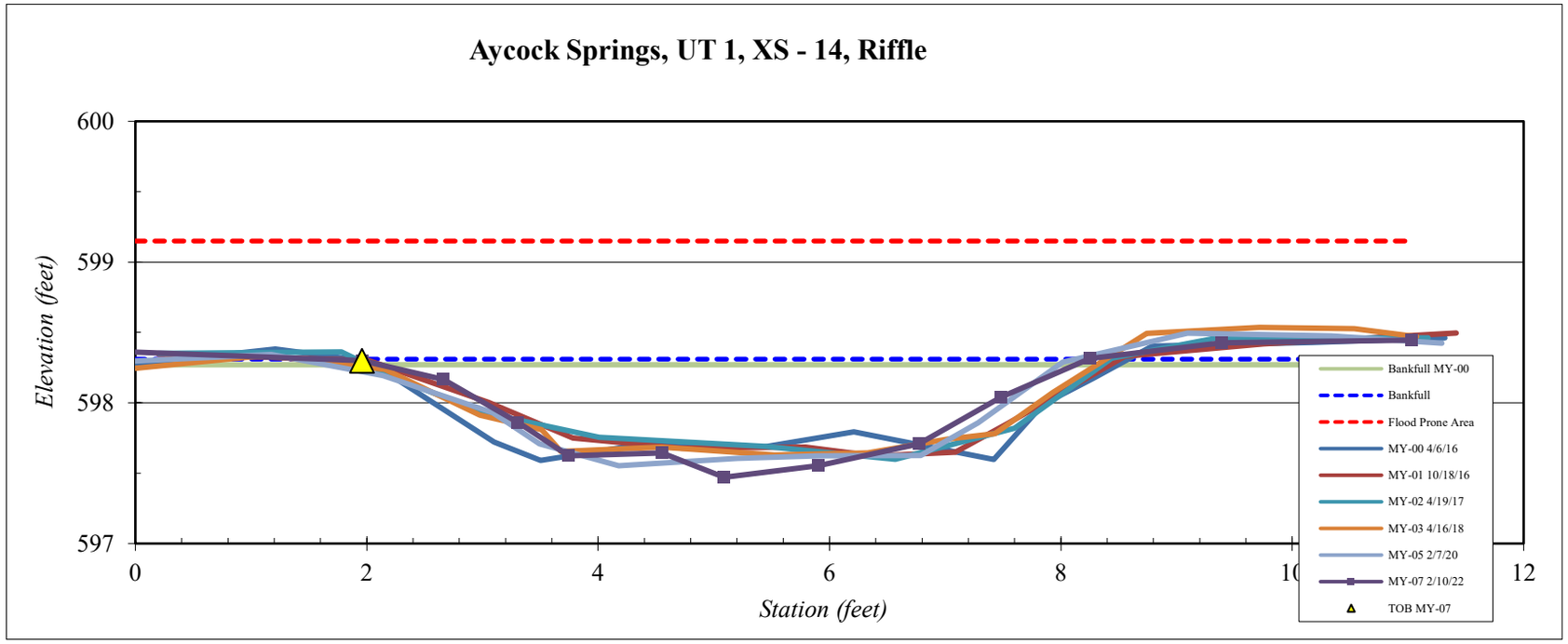
Note: Point bar development in pool is natural and appears stable through year 7 monitoring.

Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 1, XS - 14, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
-0.3	598.37
2.0	598.30
2.7	598.17
3.3	597.86
3.7	597.62
4.6	597.64
5.1	597.47
5.9	597.55
6.8	597.71
7.5	598.04
8.3	598.31
9.4	598.42
11.0	598.45

SUMMARY DATA	
Bankfull Elevation:	598.3
Bankfull Cross-Sectional Area:	3.1
Bankfull Width:	6.6
Flood Prone Area Elevation:	599.1
Flood Prone Width:	90.0
Max Depth at Bankfull:	0.8
Low Bank Height:	0.8
Mean Depth at Bankfull:	0.5
W / D Ratio:	14.2
Entrenchment Ratio:	13.6
Bank Height Ratio:	1.0

Stream Type	C/E

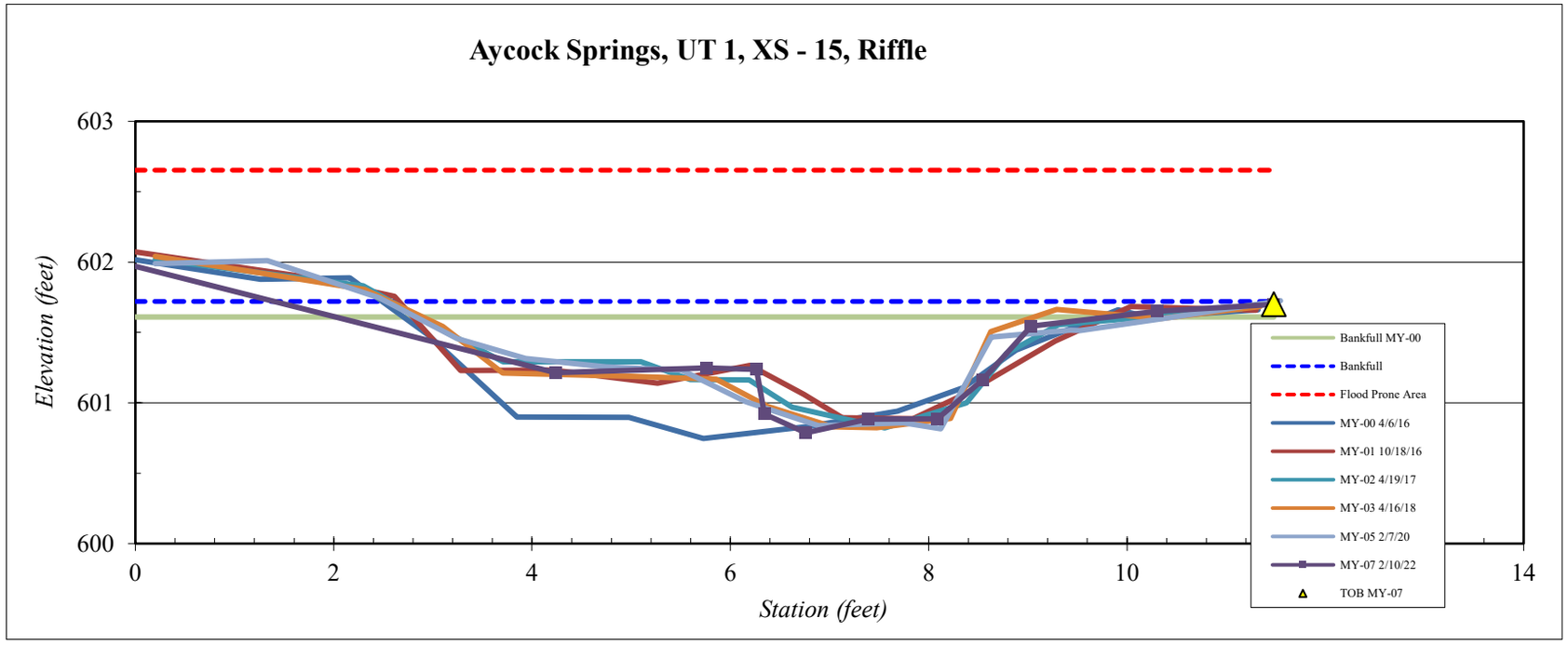


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 1, XS - 15, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
-0.3	602.02
4.2	601.21
5.8	601.25
6.3	601.24
6.3	600.92
6.8	600.79
7.4	600.88
8.1	600.89
8.5	601.16
9.0	601.54
10.3	601.65
11.5	601.70

SUMMARY DATA	
Bankfull Elevation:	601.7
Bankfull Cross-Sectional Area:	4.0
Bankfull Width:	10.1
Flood Prone Area Elevation:	602.7
Flood Prone Width:	90.0
Max Depth at Bankfull:	0.9
Low Bank Height:	0.9
Mean Depth at Bankfull:	0.4
W / D Ratio:	25.7
Entrenchment Ratio:	8.9
Bank Height Ratio:	1.0

Stream Type	C/E

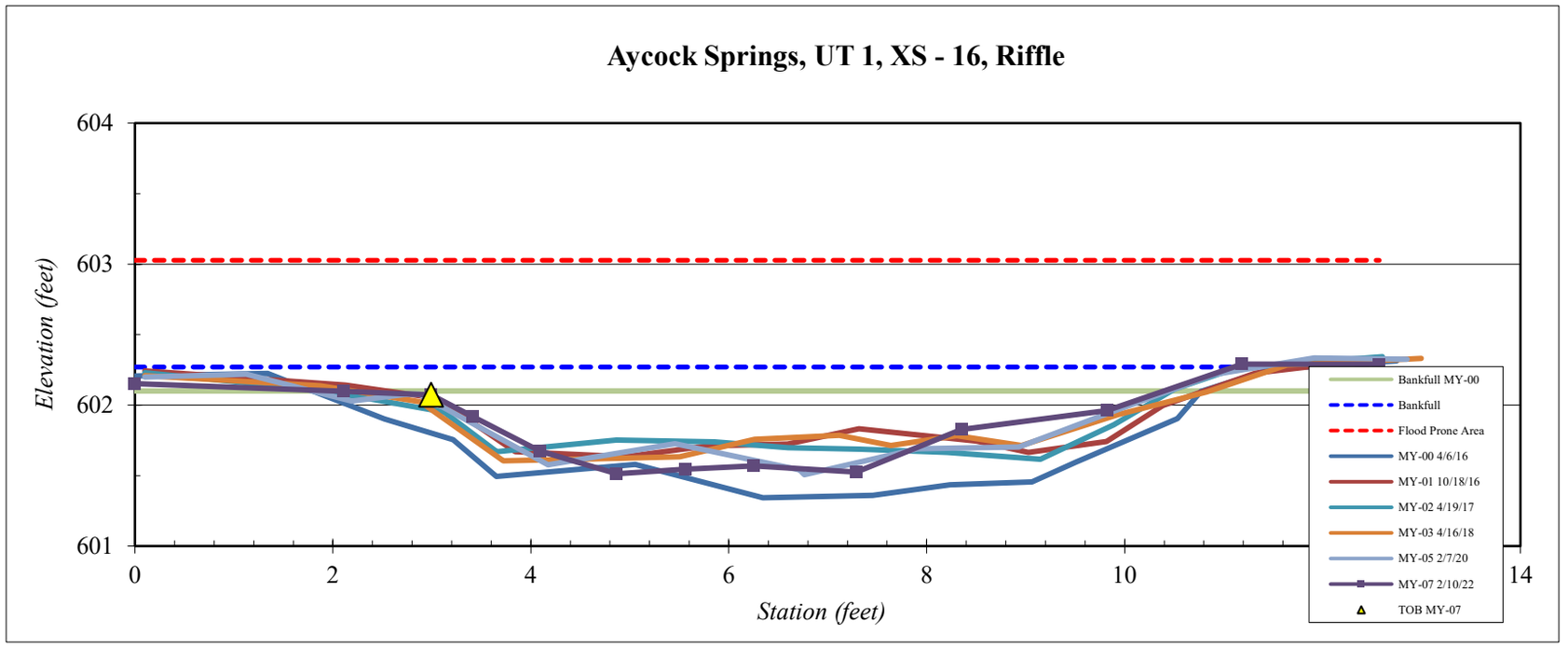


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 1, XS - 16, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.0	602.15
2.1	602.10
3.0	602.07
3.4	601.92
4.1	601.68
4.9	601.51
5.6	601.55
6.3	601.57
7.3	601.53
8.4	601.83
9.8	601.96
11.2	602.29
12.6	602.29

SUMMARY DATA	
Bankfull Elevation:	602.3
Bankfull Cross-Sectional Area:	4.6
Bankfull Width:	11.1
Flood Prone Area Elevation:	603.0
Flood Prone Width:	90.0
Max Depth at Bankfull:	0.8
Low Bank Height:	0.6
Mean Depth at Bankfull:	0.4
W / D Ratio:	27.0
Entrenchment Ratio:	8.1
Bank Height Ratio:	0.74

Stream Type	C/E



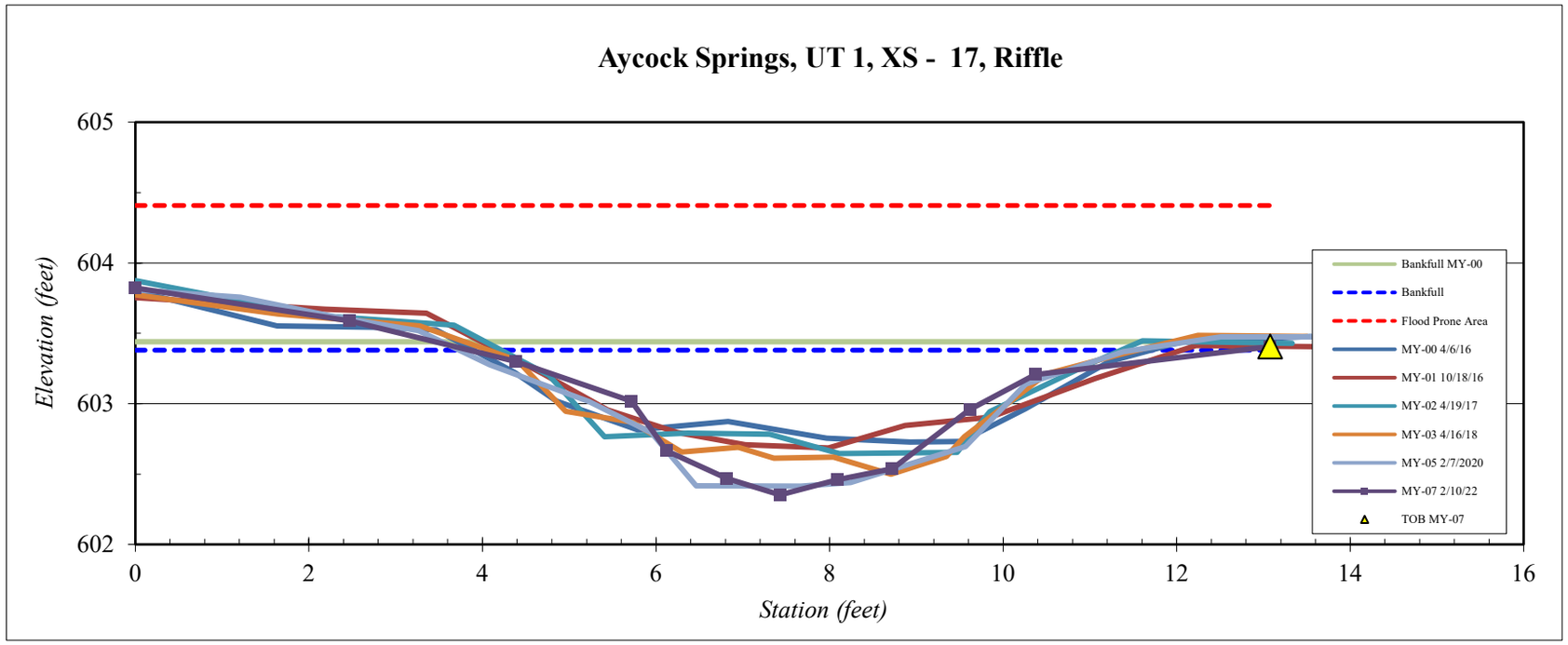
Note: Sediment transport appears natural and has stabilized during years 1-7. No problems are occuring in this reach.

Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 1, XS - 17, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.0	603.82
2.5	603.59
4.4	603.30
5.7	603.02
6.1	602.66
6.8	602.47
7.4	602.35
8.1	602.46
8.7	602.54
9.6	602.96
10.4	603.21
13.1	603.41

SUMMARY DATA	
Bankfull Elevation:	603.4
Bankfull Cross-Sectional Area:	3.9
Bankfull Width:	8.9
Flood Prone Area Elevation:	604.4
Flood Prone Width:	90.0
Max Depth at Bankfull:	1.0
Low Bank Height:	1.1
Mean Depth at Bankfull:	0.4
W / D Ratio:	20.3
Entrenchment Ratio:	10.1
Bank Height Ratio:	1.0

Stream Type	C/E

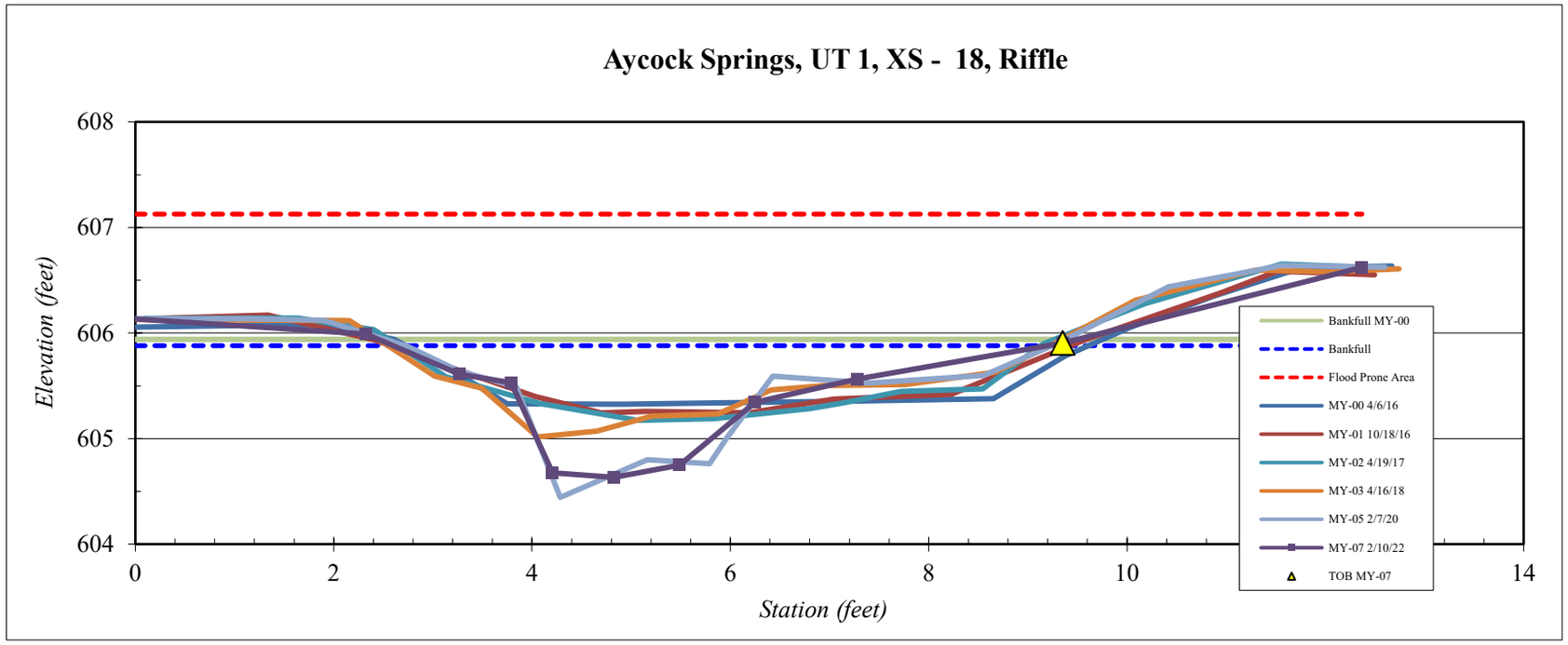


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 1, XS - 18, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
-0.2	606.14
2.3	605.99
3.3	605.61
3.8	605.53
4.2	604.68
4.8	604.63
5.5	604.75
6.2	605.34
7.3	605.56
9.4	605.91
12.4	606.62

SUMMARY DATA	
Bankfull Elevation:	605.9
Bankfull Cross-Sectional Area:	3.5
Bankfull Width:	6.6
Flood Prone Area Elevation:	607.1
Flood Prone Width:	90.0
Max Depth at Bankfull:	1.2
Low Bank Height:	1.3
Mean Depth at Bankfull:	0.5
W / D Ratio:	12.5
Entrenchment Ratio:	13.6
Bank Height Ratio:	1.0

Stream Type	C/E

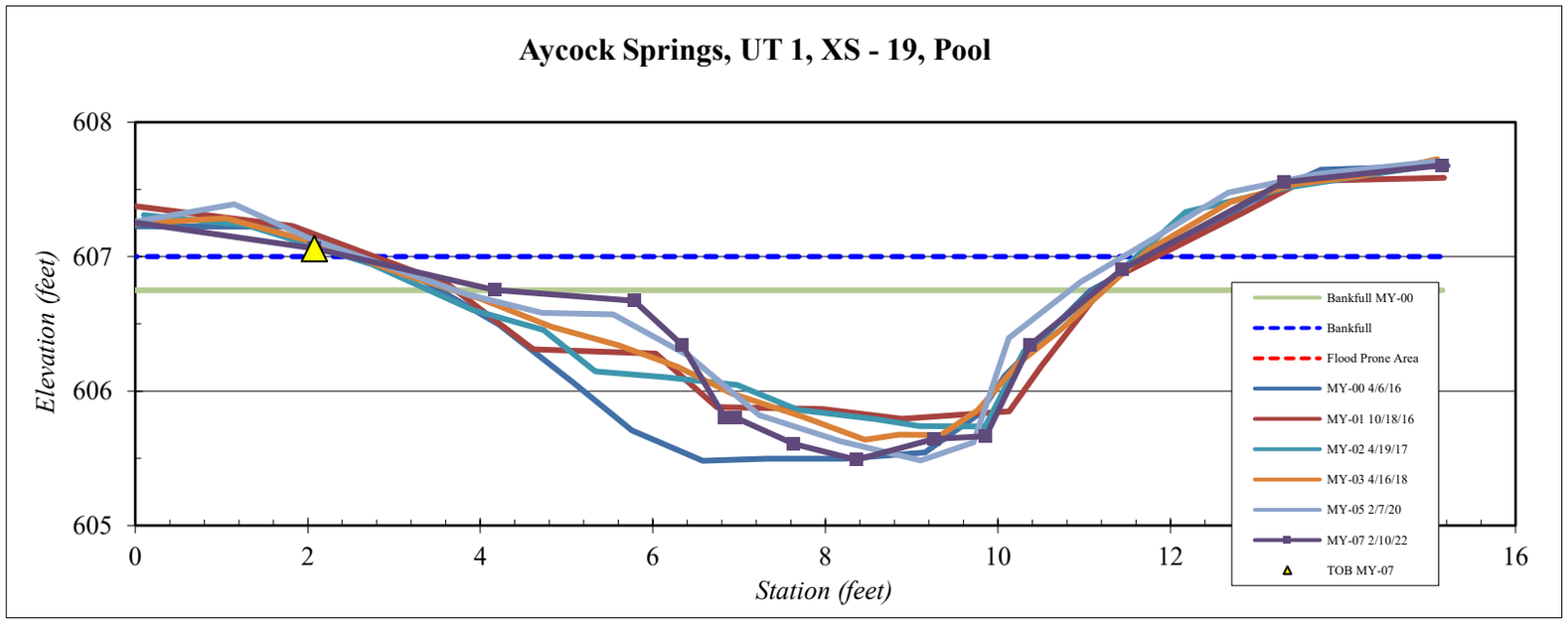


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 1, XS - 19, Pool
Feature	Pool
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
-0.1	607.3
2.1	607.1
4.2	606.8
5.8	606.7
6.3	606.3
6.8	605.8
7.0	605.8
7.6	605.6
8.4	605.5
9.3	605.6
9.9	605.7
10.4	606.3
11.4	606.9
13.3	607.6
15.2	607.7

SUMMARY DATA	
Bankfull Elevation:	607.0
Bankfull Cross-Sectional Area:	6.5
Bankfull Width:	9.2
Flood Prone Area Elevation:	NA
Flood Prone Width:	NA
Max Depth at Bankfull:	1.5
Low Bank Height:	1.6
Mean Depth at Bankfull:	0.7
W / D Ratio:	NA
Entrenchment Ratio:	NA
Bank Height Ratio:	NA

Stream Type	C/E



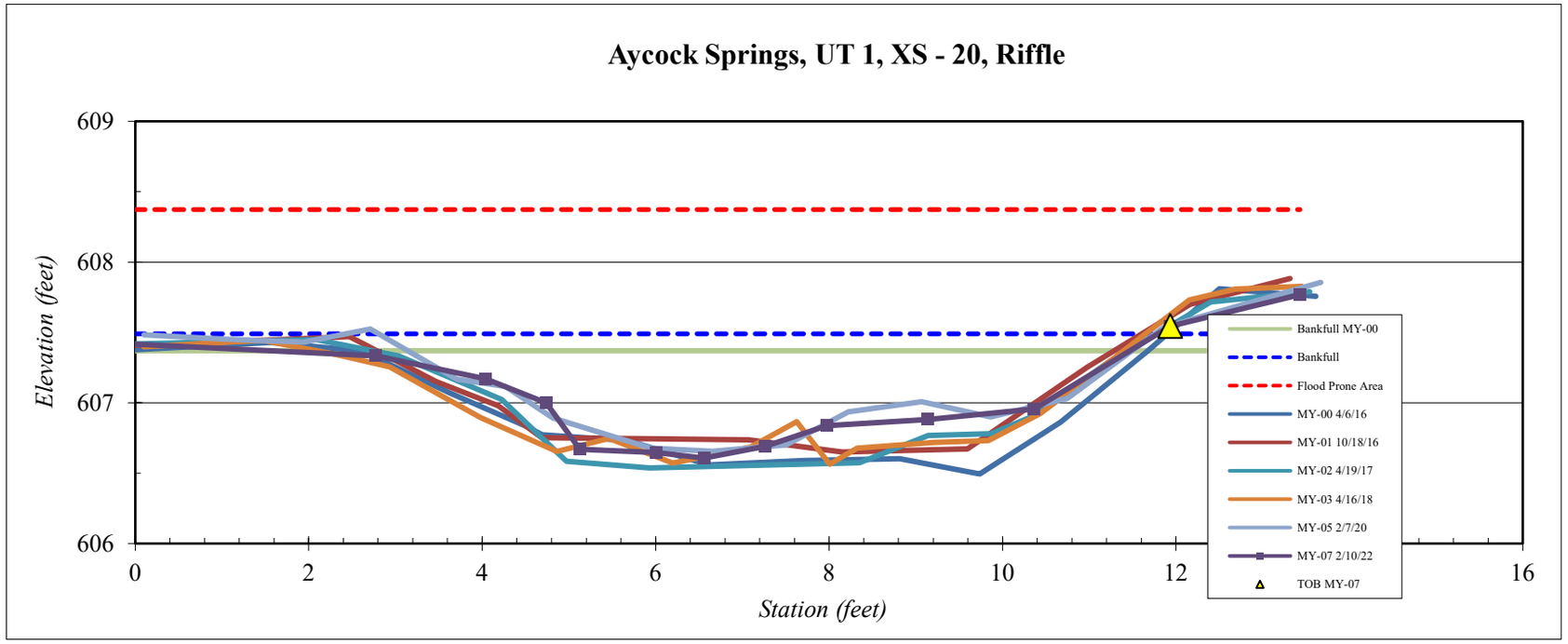
Note: Point bar development appears to have stabilized during years 1-7.

Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 1, XS - 20, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
-1.0	607.45
2.8	607.33
4.0	607.17
4.7	607.00
5.1	606.67
6.0	606.65
6.6	606.61
7.3	606.69
8.0	606.84
9.1	606.88
10.4	606.95
11.9	607.55
13.4	607.77

SUMMARY DATA	
Bankfull Elevation:	607.5
Bankfull Cross-Sectional Area:	5.3
Bankfull Width:	12.8
Flood Prone Area Elevation:	608.4
Flood Prone Width:	90.0
Max Depth at Bankfull:	0.9
Low Bank Height:	0.9
Mean Depth at Bankfull:	0.4
W / D Ratio:	30.6
Entrenchment Ratio:	7.0
Bank Height Ratio:	1.06

Stream Type	C/E

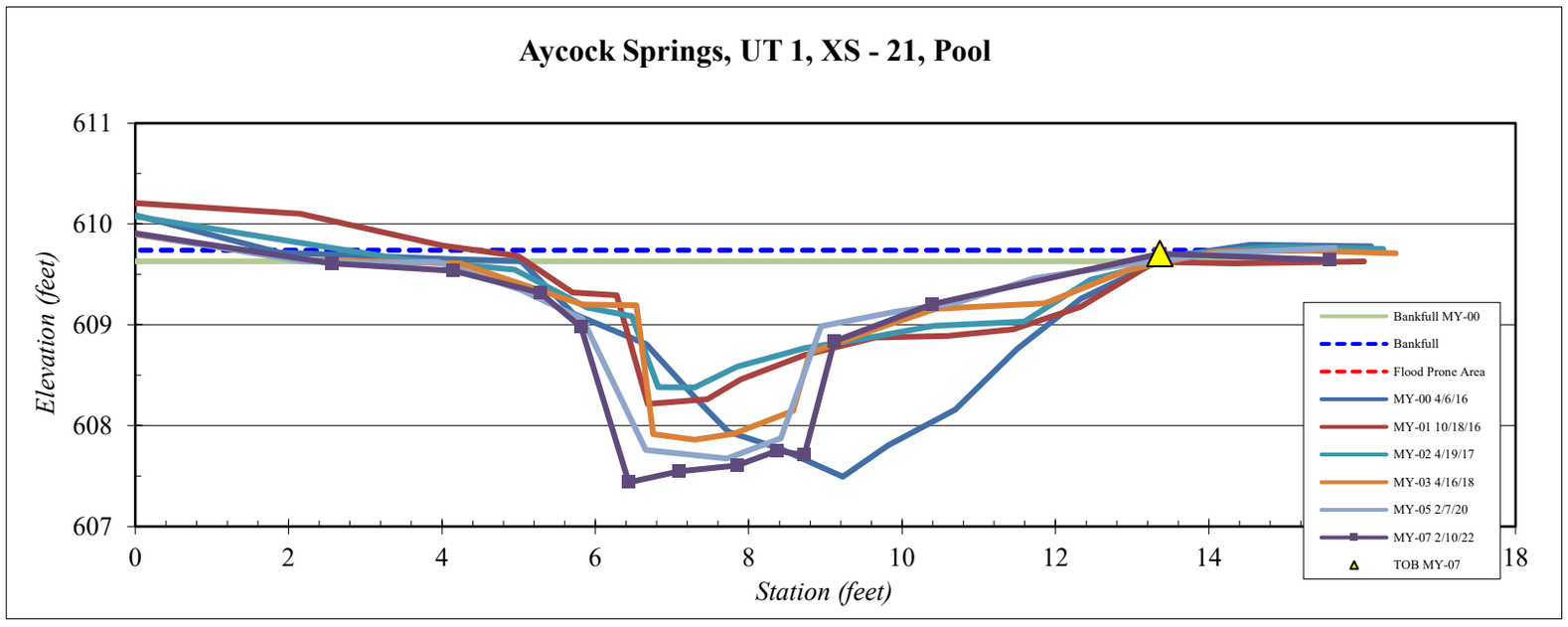


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 1, XS - 21, Pool
Feature	Pool
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
-0.2	609.9
2.6	609.6
4.1	609.5
5.3	609.3
5.8	609.0
6.4	607.4
7.1	607.5
7.8	607.6
8.4	607.8
8.7	607.7
9.1	608.8
10.4	609.2
13.4	609.7
15.6	609.6

SUMMARY DATA	
Bankfull Elevation:	609.7
Bankfull Cross-Sectional Area:	9.3
Bankfull Width:	14.1
Flood Prone Area Elevation:	NA
Flood Prone Width:	NA
Max Depth at Bankfull:	2.3
Low Bank Height:	2.3
Mean Depth at Bankfull:	0.7
W / D Ratio:	NA
Entrenchment Ratio:	NA
Bank Height Ratio:	NA

Stream Type	C/E



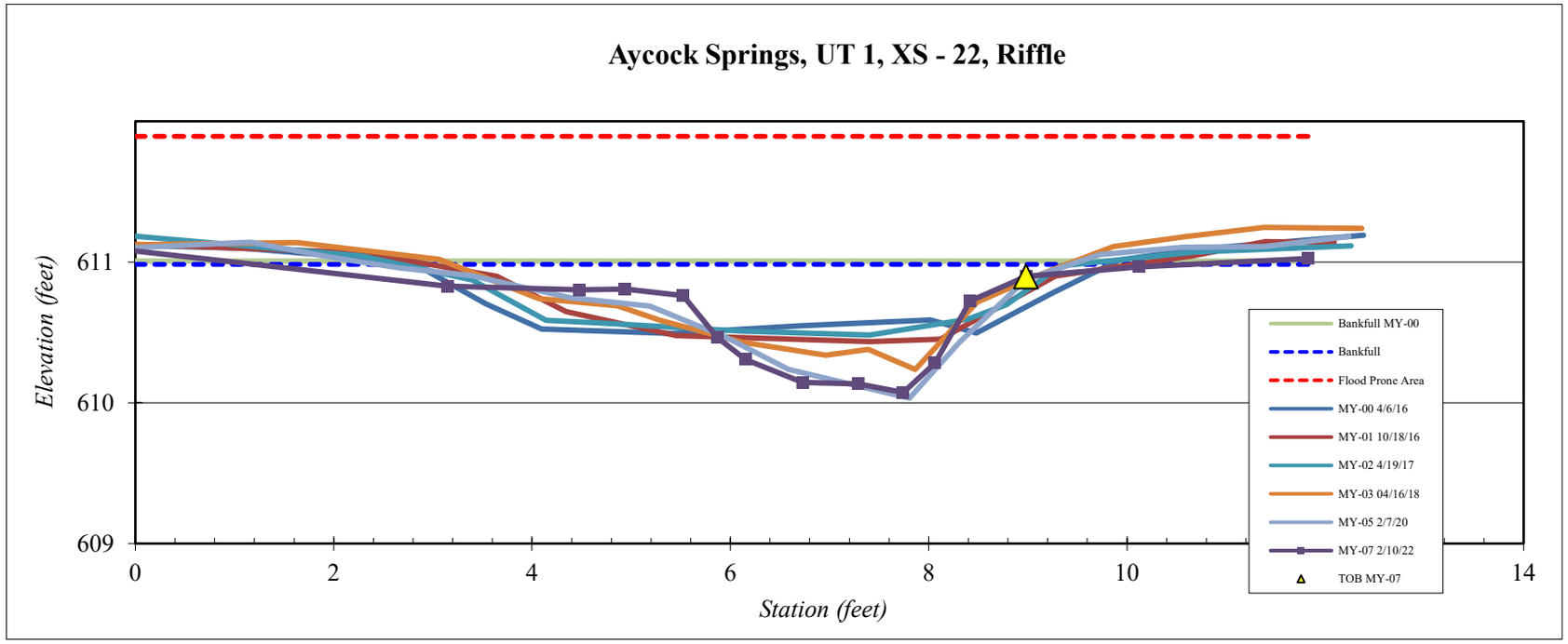
Note: Point bar development appears to have stabilized during years 1-7.

Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 1, XS - 22, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
-0.3	611.44
3.1	611.09
4.5	611.06
4.9	611.06
5.5	611.00
5.9	610.63
6.2	610.42
6.7	610.21
7.3	610.20
7.7	610.12
8.1	610.39
8.4	610.96
9.0	611.18
10.1	611.27
11.8	611.34

SUMMARY DATA	
Bankfull Elevation:	611.3
Bankfull Cross-Sectional Area:	3.6
Bankfull Width:	9.4
Flood Prone Area Elevation:	612.5
Flood Prone Width:	90.0
Max Depth at Bankfull:	1.2
Low Bank Height:	1.1
Mean Depth at Bankfull:	0.4
W / D Ratio:	25.0
Entrenchment Ratio:	9.5
Bank Height Ratio:	0.91

Stream Type	C/E

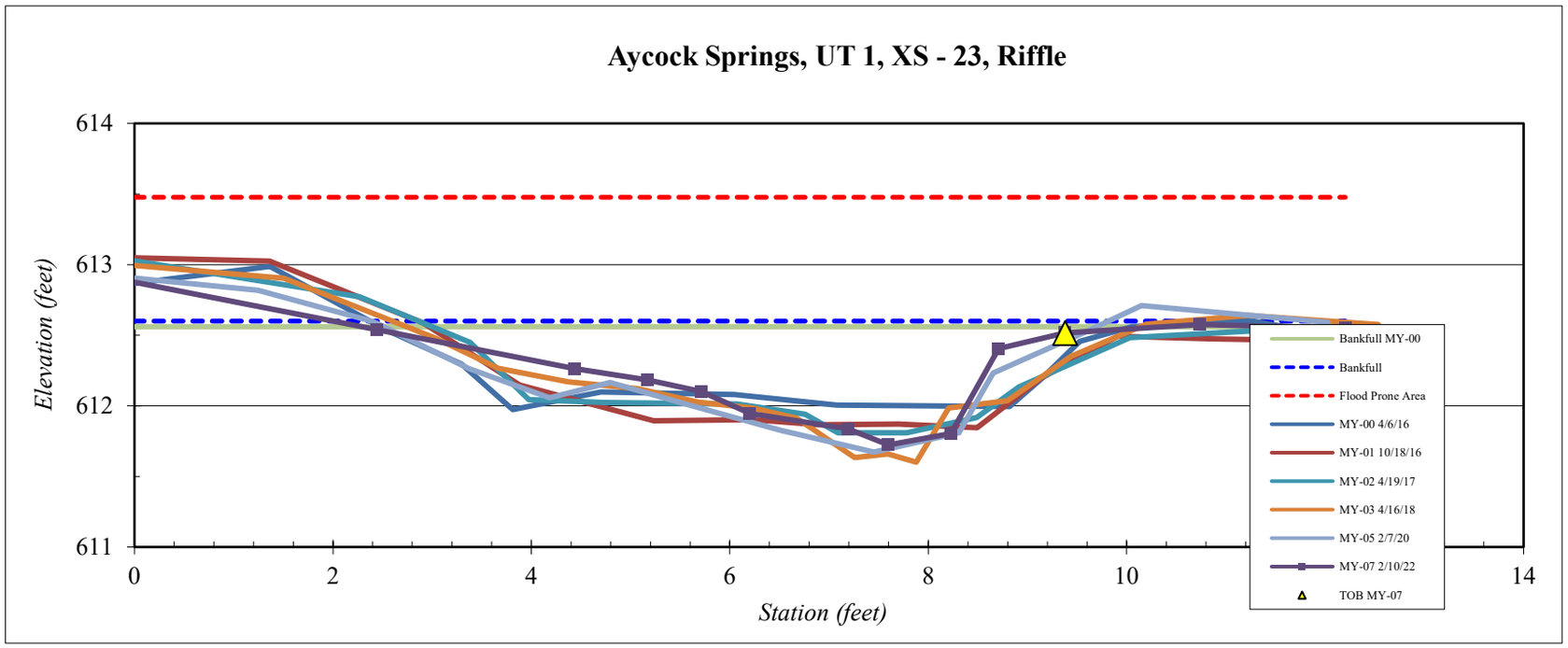


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 1, XS - 23, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
-0.2	612.90
2.4	612.54
4.4	612.26
5.2	612.18
5.7	612.10
6.2	611.95
7.2	611.84
7.6	611.72
8.2	611.80
8.7	612.40
9.4	612.52
10.7	612.58
12.2	612.55

SUMMARY DATA	
Bankfull Elevation:	612.6
Bankfull Cross-Sectional Area:	3.2
Bankfull Width:	10.2
Flood Prone Area Elevation:	613.5
Flood Prone Width:	90.0
Max Depth at Bankfull:	0.9
Low Bank Height:	0.8
Mean Depth at Bankfull:	0.3
W / D Ratio:	32.1
Entrenchment Ratio:	8.8
Bank Height Ratio:	0.90

Stream Type	C/E

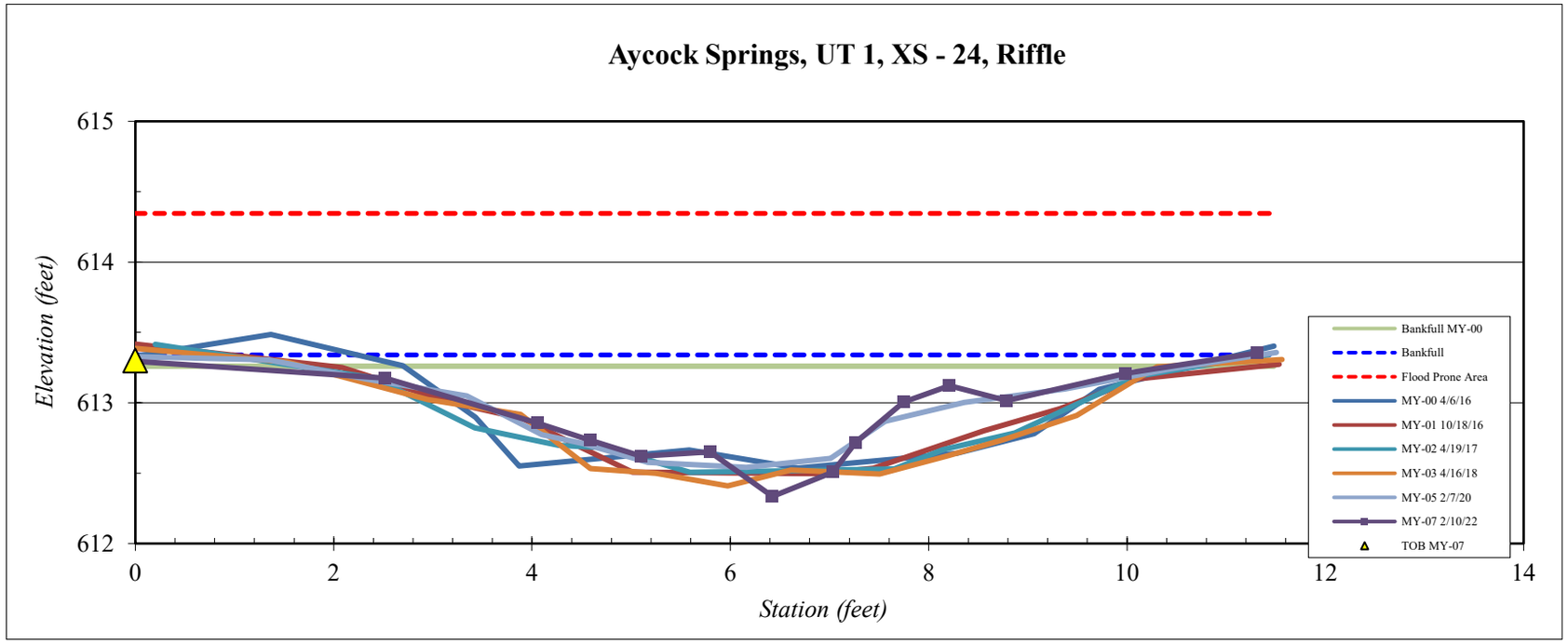


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 1, XS - 24, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
-0.1	613.30
2.5	613.18
4.1	612.86
4.6	612.73
5.1	612.62
5.8	612.65
6.4	612.33
7.0	612.51
7.3	612.72
7.7	613.01
8.2	613.12
8.8	613.02
10.0	613.21
11.3	613.35

SUMMARY DATA	
Bankfull Elevation:	613.3
Bankfull Cross-Sectional Area:	4.0
Bankfull Width:	11.3
Flood Prone Area Elevation:	614.3
Flood Prone Width:	90.0
Max Depth at Bankfull:	1.0
Low Bank Height:	1.0
Mean Depth at Bankfull:	0.4
W / D Ratio:	31.7
Entrenchment Ratio:	8.0
Bank Height Ratio:	1.0

Stream Type	C/E

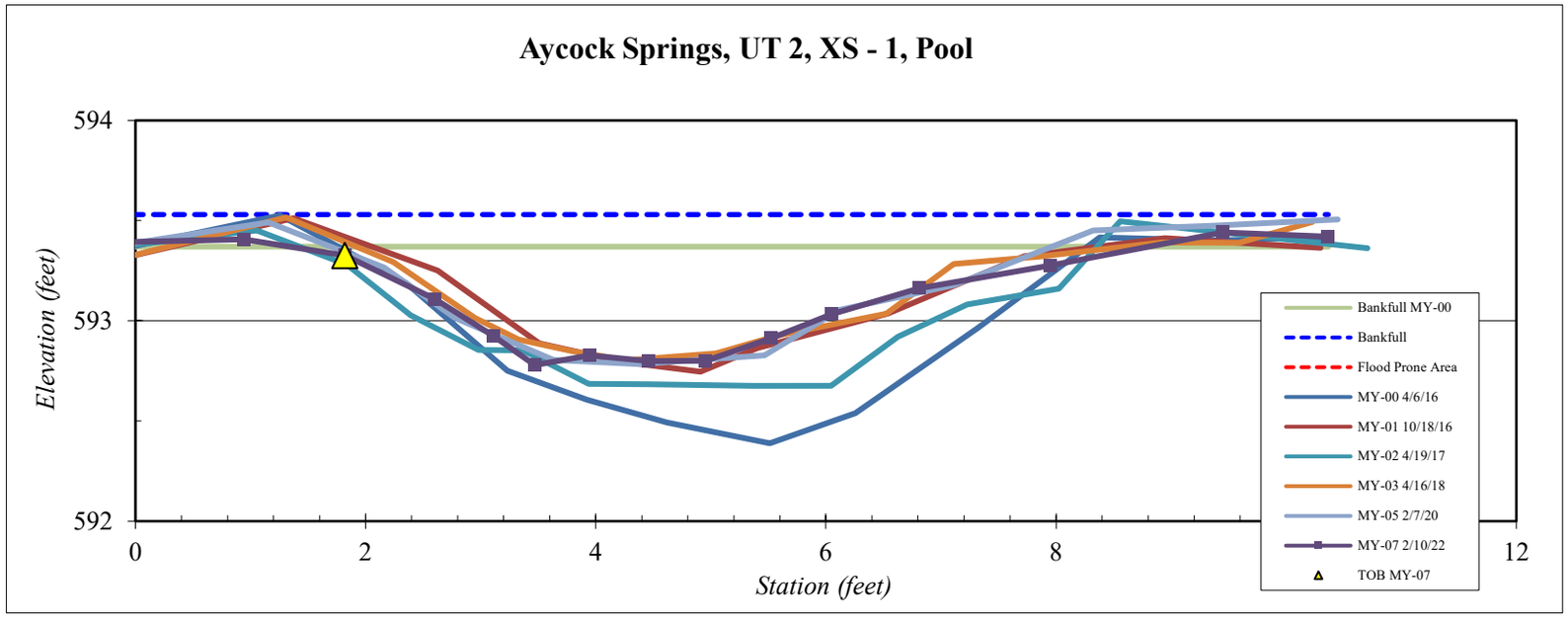


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 2, XS - 1, Pool
Feature	Pool
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
-0.2	593.4
0.9	593.4
1.8	593.3
2.6	593.1
3.1	592.9
3.5	592.8
3.9	592.8
4.5	592.8
5.0	592.8
5.5	592.9
6.1	593.0
6.8	593.2
7.9	593.3
9.5	593.4
10.4	593.4

SUMMARY DATA	
Bankfull Elevation:	593.5
Bankfull Cross-Sectional Area:	3.8
Bankfull Width:	10.6
Flood Prone Area Elevation:	NA
Flood Prone Width:	NA
Max Depth at Bankfull:	0.8
Low Bank Height:	0.5
Mean Depth at Bankfull:	0.4
W / D Ratio:	NA
Entrenchment Ratio:	NA
Bank Height Ratio:	NA

Stream Type	C/E

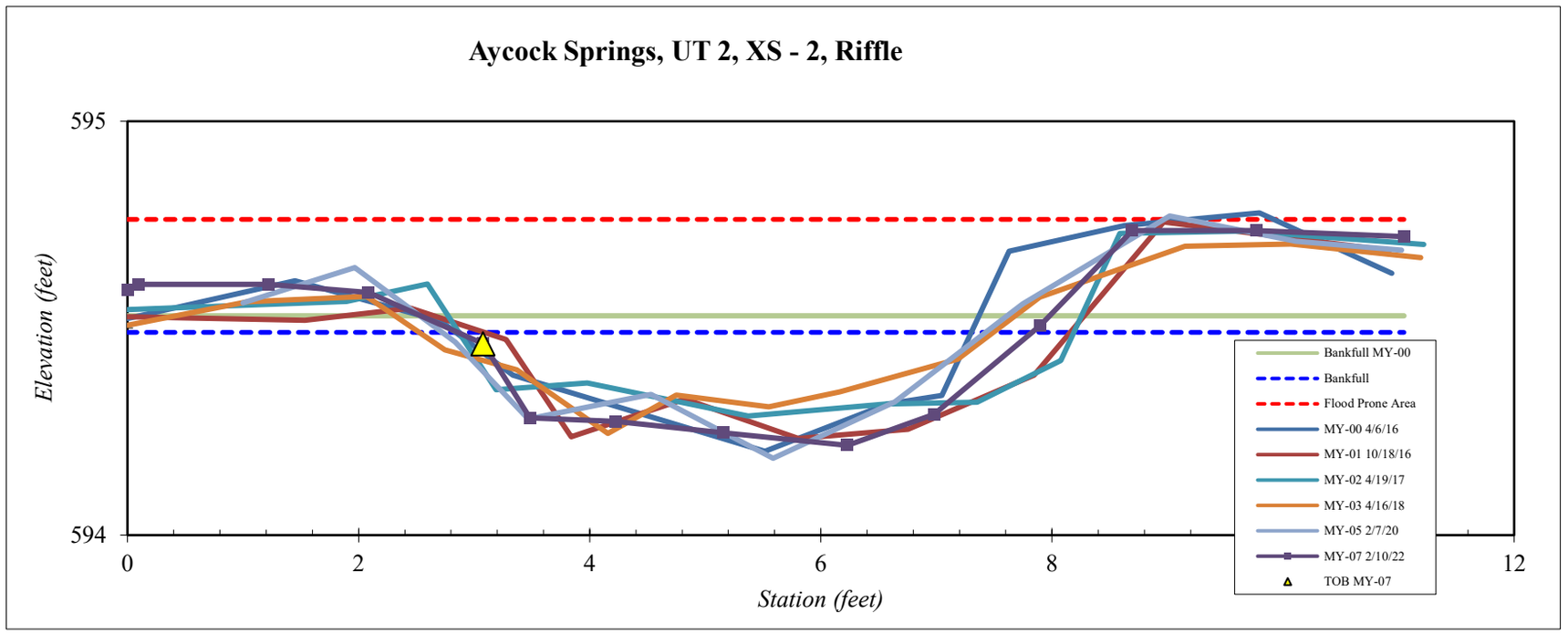


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 2, XS - 2, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.0	594.09
0.1	594.11
1.2	594.11
2.1	594.09
3.1	593.96
3.5	593.78
4.2	593.78
5.2	593.75
6.2	593.72
7.0	593.79
7.9	594.01
8.7	594.24
9.8	594.24
11.0	594.22

SUMMARY DATA	
Bankfull Elevation:	594.0
Bankfull Cross-Sectional Area:	1.0
Bankfull Width:	5.0
Flood Prone Area Elevation:	594.3
Flood Prone Width:	90.0
Max Depth at Bankfull:	0.3
Low Bank Height:	0.2
Mean Depth at Bankfull:	0.2
W / D Ratio:	25.8
Entrenchment Ratio:	18.1
Bank Height Ratio:	0.90

Stream Type	C/E

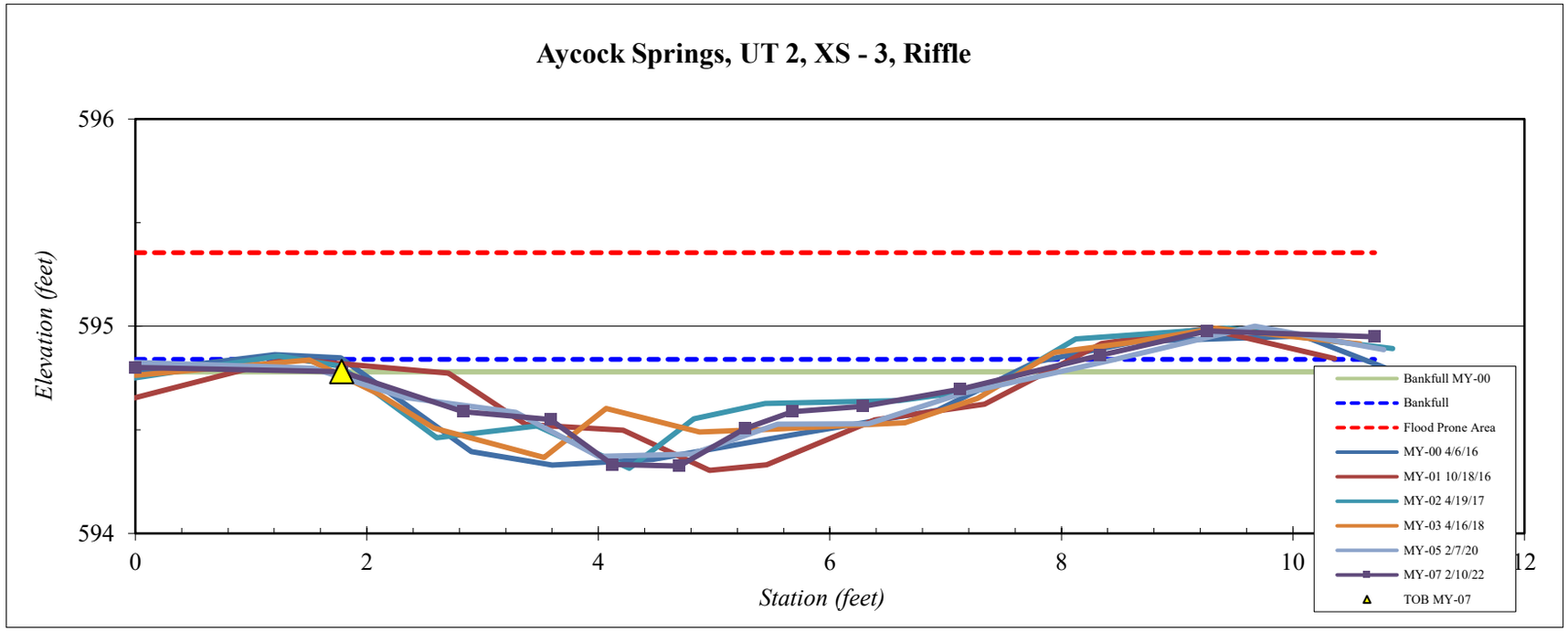


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 2, XS - 3, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.0	594.80
1.8	594.78
2.8	594.59
3.6	594.55
4.1	594.33
4.7	594.33
5.3	594.51
5.7	594.59
6.3	594.61
7.1	594.70
8.3	594.86
9.3	594.98
10.7	594.95

SUMMARY DATA	
Bankfull Elevation:	594.8
Bankfull Cross-Sectional Area:	1.7
Bankfull Width:	8.2
Flood Prone Area Elevation:	595.4
Flood Prone Width:	90.0
Max Depth at Bankfull:	0.5
Low Bank Height:	0.5
Mean Depth at Bankfull:	0.2
W / D Ratio:	39.4
Entrenchment Ratio:	11.0
Bank Height Ratio:	0.89

Stream Type	C/E

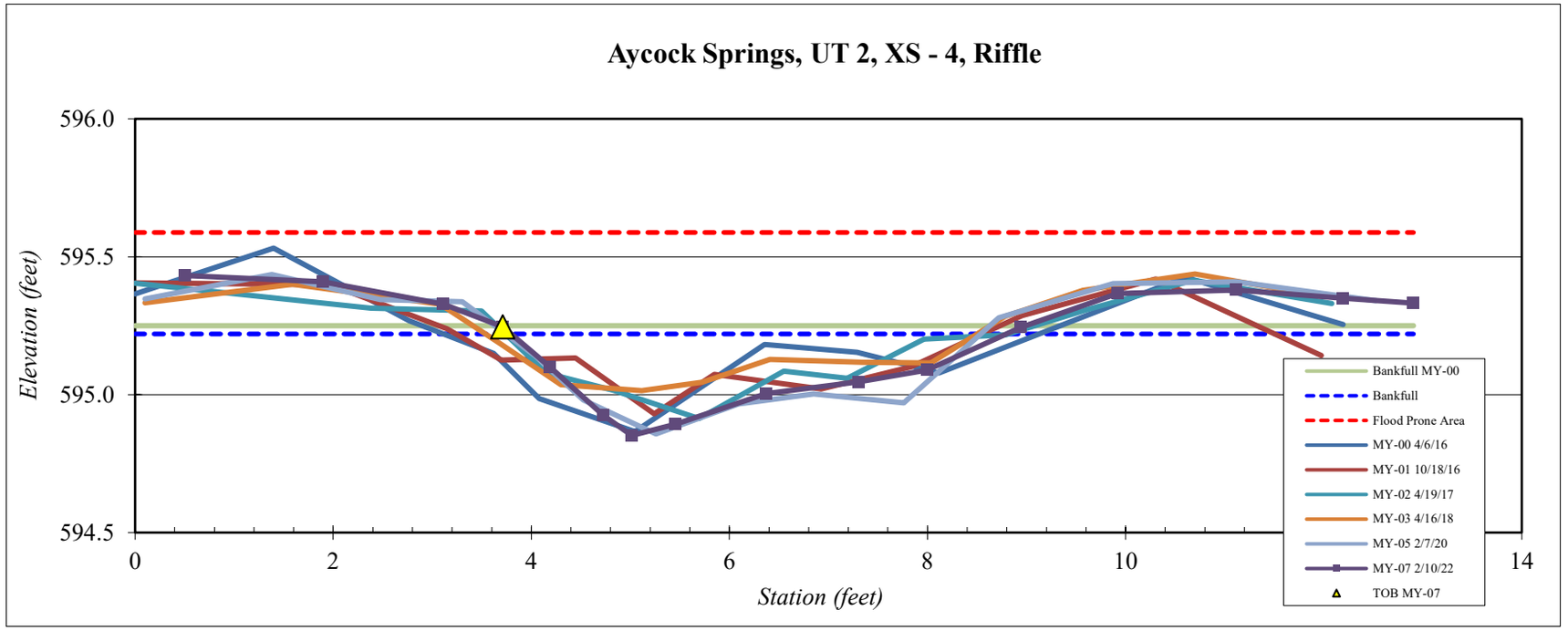


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 2, XS - 4, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.5	595.43
1.9	595.41
3.1	595.33
3.7	595.25
4.2	595.10
4.7	594.93
5.0	594.85
5.5	594.89
6.4	595.00
7.3	595.05
8.0	595.09
8.9	595.24
9.9	595.37
11.1	595.38
12.2	595.35
12.9	595.33

SUMMARY DATA	
Bankfull Elevation:	595.2
Bankfull Cross-Sectional Area:	1.0
Bankfull Width:	5.0
Flood Prone Area Elevation:	595.6
Flood Prone Width:	90.0
Max Depth at Bankfull:	0.4
Low Bank Height:	0.4
Mean Depth at Bankfull:	0.2
W / D Ratio:	25.7
Entrenchment Ratio:	18.0
Bank Height Ratio:	1.07

Stream Type	C/E

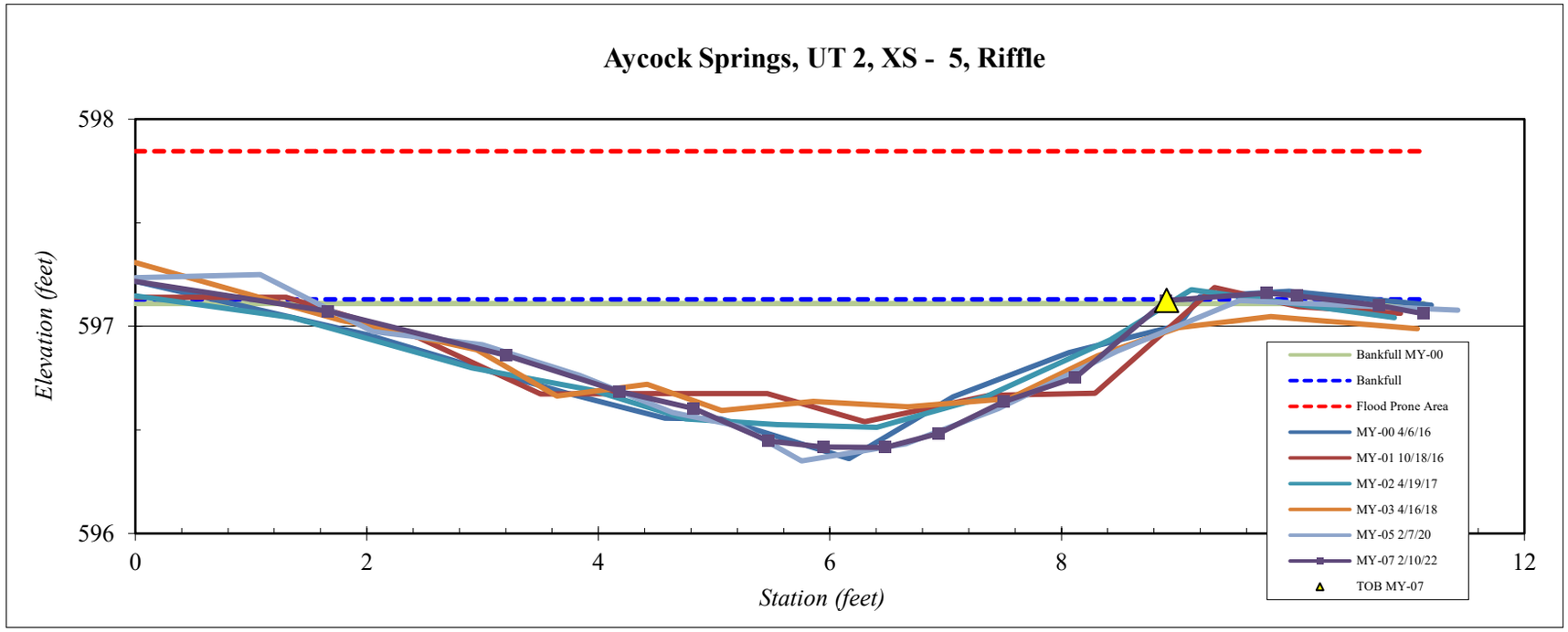


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 2, XS - 5, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
-0.2	597.23
1.7	597.07
3.2	596.86
4.2	596.69
4.8	596.60
5.5	596.45
5.9	596.42
6.5	596.42
6.9	596.48
7.5	596.64
8.1	596.75
8.9	597.13
9.8	597.16
10.0	597.15
10.7	597.10
11.1	597.06

SUMMARY DATA	
Bankfull Elevation:	597.1
Bankfull Cross-Sectional Area:	3.1
Bankfull Width:	8.9
Flood Prone Area Elevation:	597.8
Flood Prone Width:	90.0
Max Depth at Bankfull:	0.7
Low Bank Height:	0.7
Mean Depth at Bankfull:	0.4
W / D Ratio:	25.2
Entrenchment Ratio:	10.1
Bank Height Ratio:	1.0

Stream Type	C/E

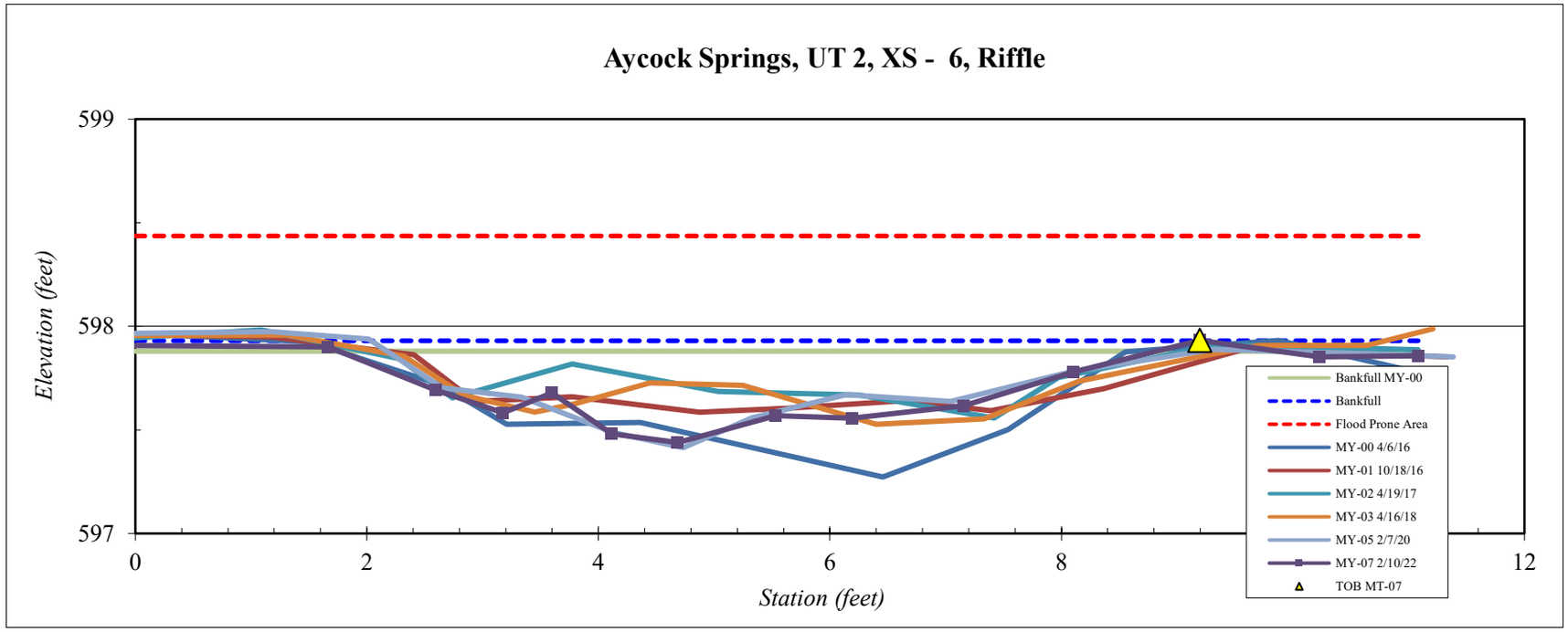


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 2, XS - 6, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
-0.2	597.91
1.7	597.90
2.6	597.69
3.2	597.58
3.6	597.68
4.1	597.48
4.7	597.44
5.5	597.57
6.2	597.56
7.2	597.62
8.1	597.78
9.2	597.93
10.2	597.85
11.1	597.86

SUMMARY DATA	
Bankfull Elevation:	597.9
Bankfull Cross-Sectional Area:	2.3
Bankfull Width:	11.2
Flood Prone Area Elevation:	598.4
Flood Prone Width:	90.0
Max Depth at Bankfull:	0.5
Low Bank Height:	0.5
Mean Depth at Bankfull:	0.2
W / D Ratio:	56.1
Entrenchment Ratio:	8.0
Bank Height Ratio:	1.0

Stream Type	C/E

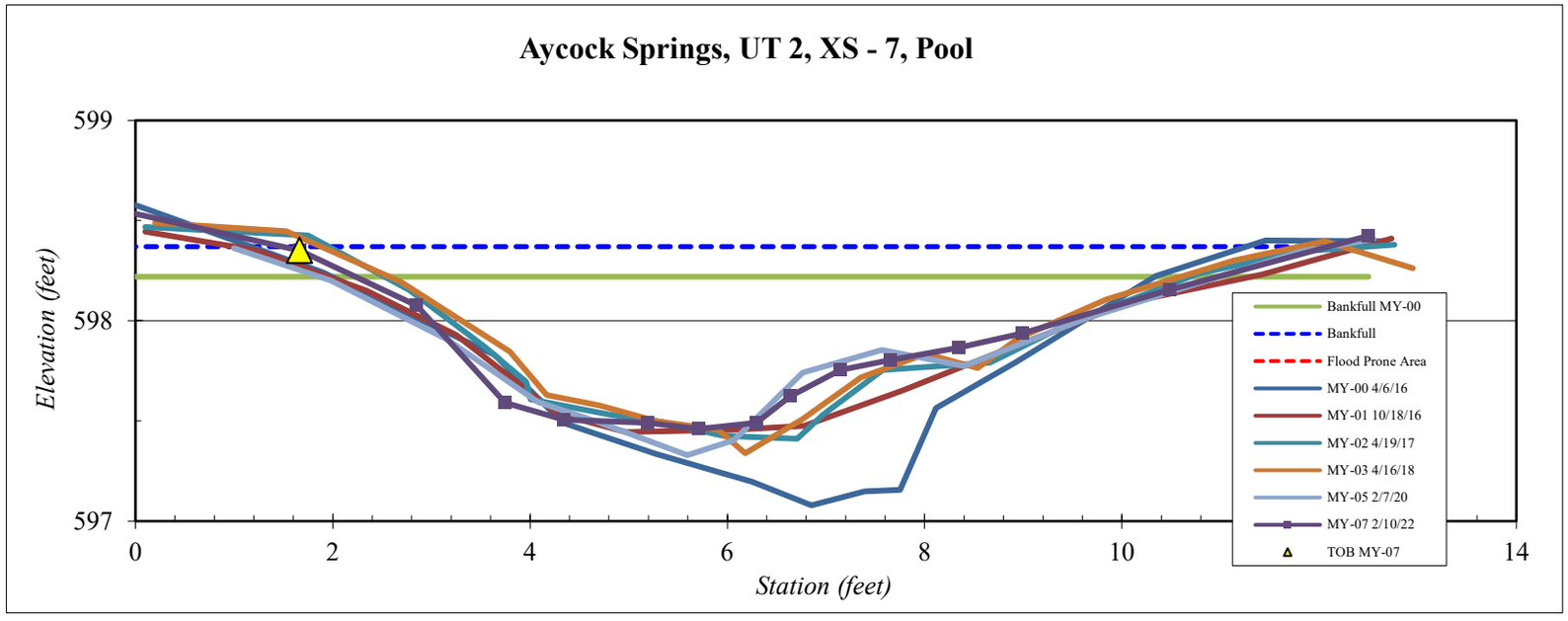


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 2, XS - 7, Pool
Feature	Pool
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
-0.1	598.5
1.7	598.4
2.9	598.1
3.7	597.6
4.3	597.5
5.2	597.5
5.7	597.5
6.3	597.5
6.6	597.6
7.1	597.8
7.7	597.8
8.3	597.9
9.0	597.9
10.5	598.2
12.5	598.4

SUMMARY DATA	
Bankfull Elevation:	598.4
Bankfull Cross-Sectional Area:	5.1
Bankfull Width:	10.6
Flood Prone Area Elevation:	NA
Flood Prone Width:	NA
Max Depth at Bankfull:	0.9
Low Bank Height:	0.9
Mean Depth at Bankfull:	0.5
W / D Ratio:	NA
Entrenchment Ratio:	NA
Bank Height Ratio:	NA

Stream Type	C/E

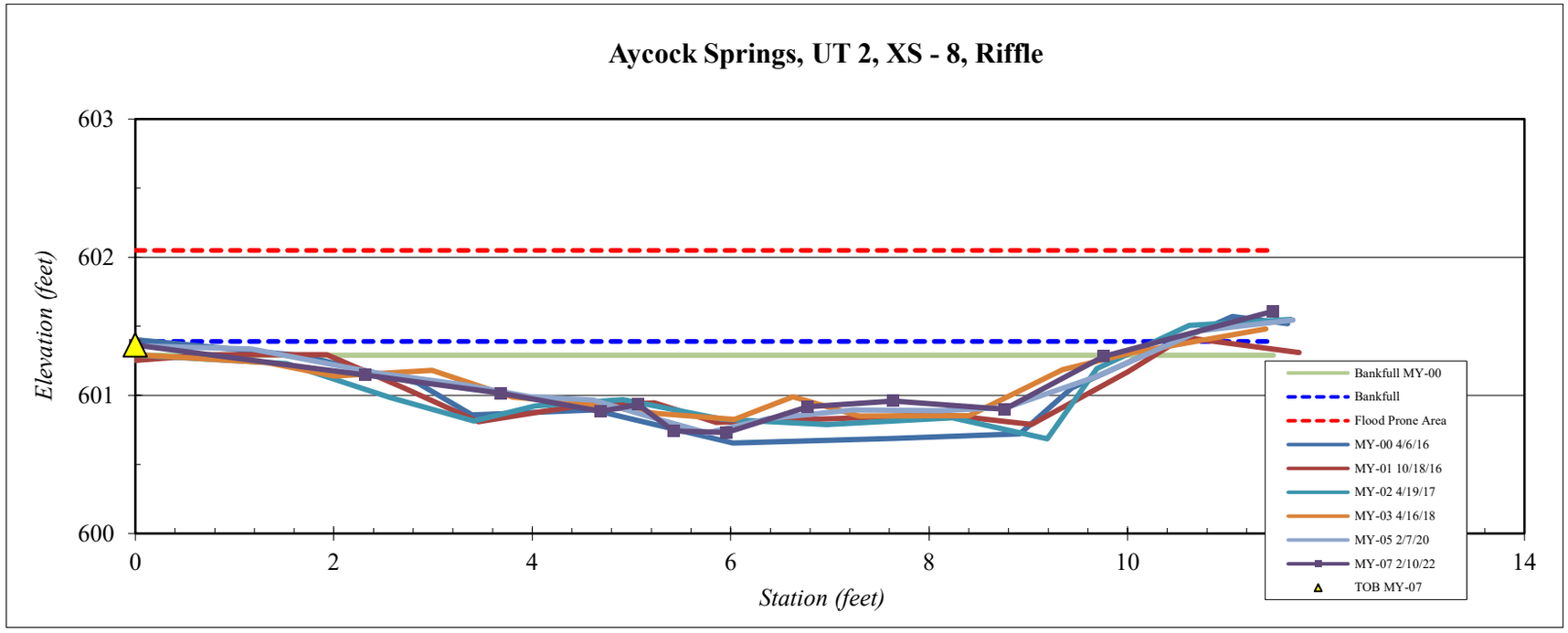


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 2, XS - 8, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.0	601.36
2.3	601.15
3.7	601.02
4.7	600.88
5.1	600.93
5.4	600.74
6.0	600.73
6.8	600.92
7.6	600.96
8.8	600.90
9.8	601.28
11.5	601.61

SUMMARY DATA	
Bankfull Elevation:	601.4
Bankfull Cross-Sectional Area:	3.6
Bankfull Width:	10.3
Flood Prone Area Elevation:	602.0
Flood Prone Width:	90.0
Max Depth at Bankfull:	0.7
Low Bank Height:	0.6
Mean Depth at Bankfull:	0.3
W / D Ratio:	29.6
Entrenchment Ratio:	8.7
Bank Height Ratio:	1.0

Stream Type	C/E

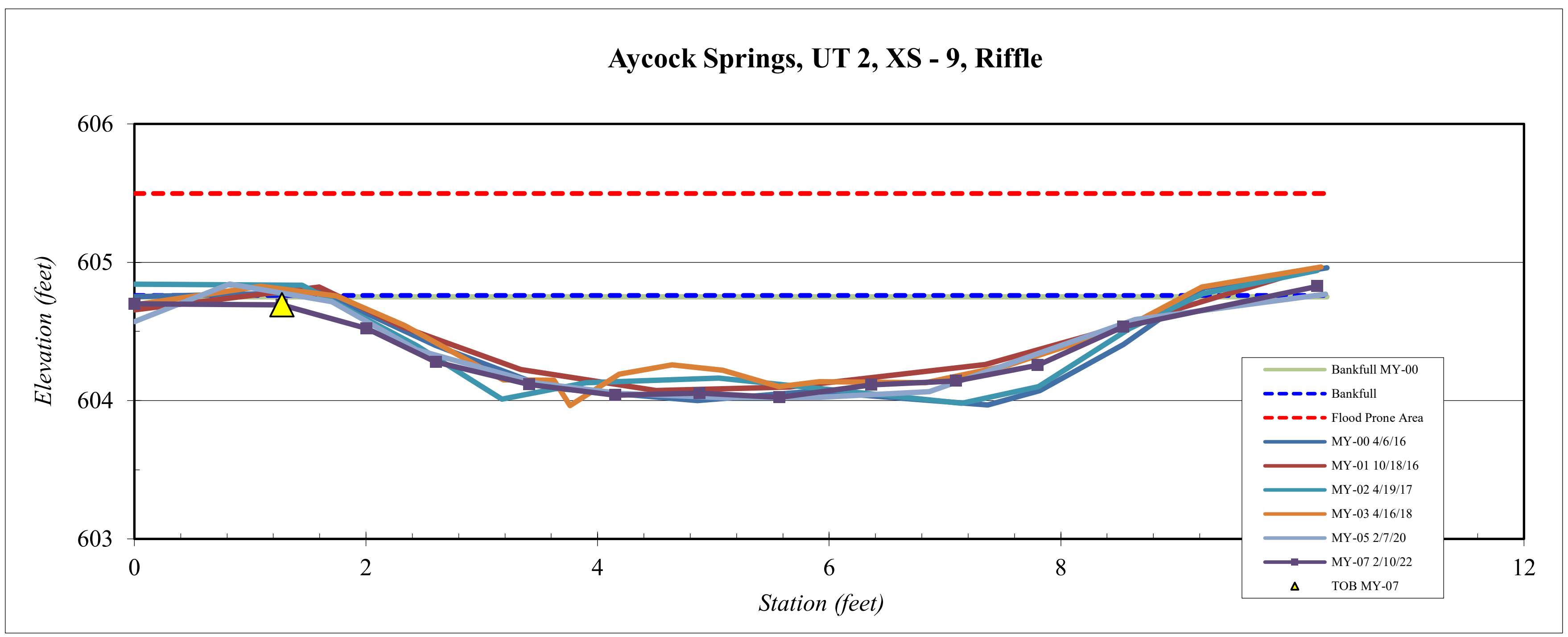


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 2, XS - 9, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation

SUMMARY DATA	
Bankfull Elevation:	604.8
Bankfull Cross-Sectional Area:	4.2
Bankfull Width:	9.8
Flood Prone Area Elevation:	605.5
Flood Prone Width:	90.0
Max Depth at Bankfull:	0.7
Low Bank Height:	0.7
Mean Depth at Bankfull:	0.4
W / D Ratio:	23.0
Entrenchment Ratio:	9.1
Bank Height Ratio:	0.91

Stream Type	C/E

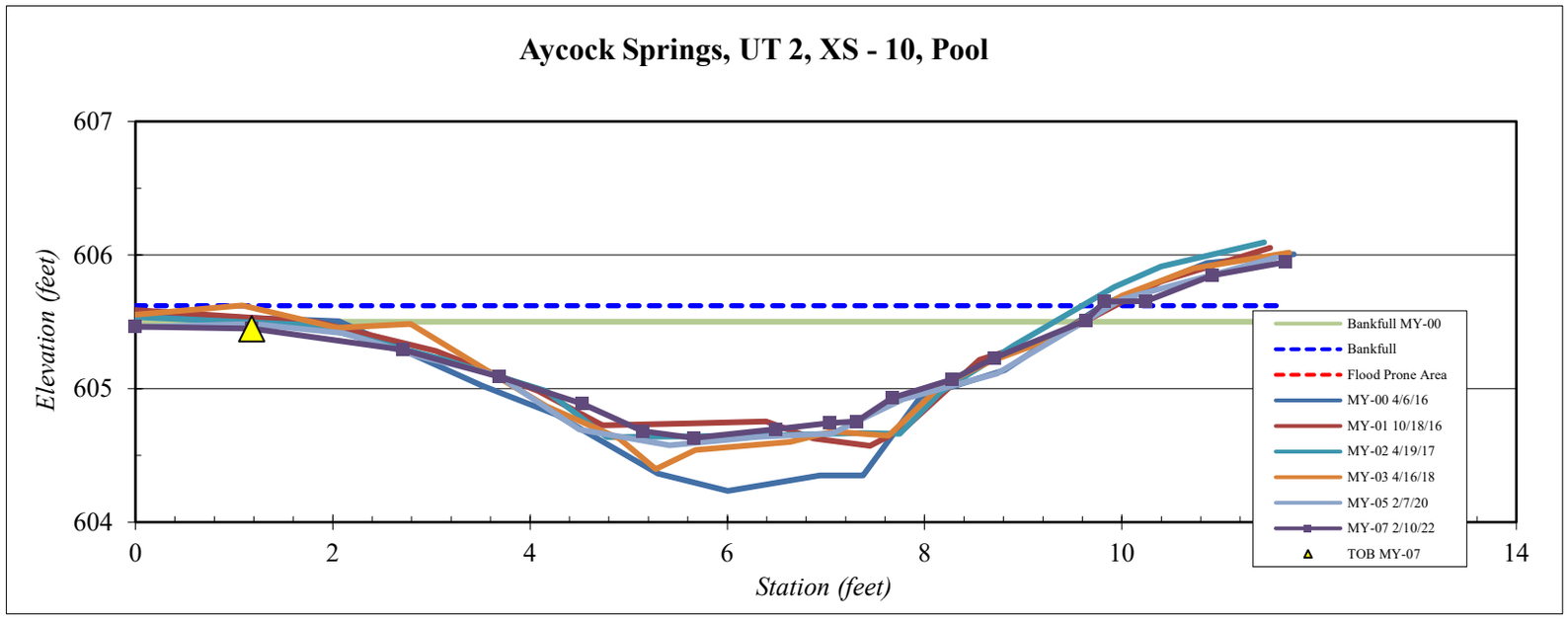


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 2, XS - 10, Pool
Feature	Pool
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.0	605.5
1.2	605.4
2.7	605.3
3.7	605.1
4.5	604.9
5.1	604.7
5.7	604.6
6.5	604.7
7.0	604.7
7.3	604.8
7.7	604.9
8.3	605.1
8.7	605.2
9.6	605.5
9.8	605.7
10.2	605.7
10.9	605.8
11.7	605.9

SUMMARY DATA	
Bankfull Elevation:	605.6
Bankfull Cross-Sectional Area:	5.2
Bankfull Width:	9.8
Flood Prone Area Elevation:	NA
Flood Prone Width:	NA
Max Depth at Bankfull:	1.0
Low Bank Height:	0.8
Mean Depth at Bankfull:	0.5
W / D Ratio:	NA
Entrenchment Ratio:	NA
Bank Height Ratio:	NA

Stream Type	C/E

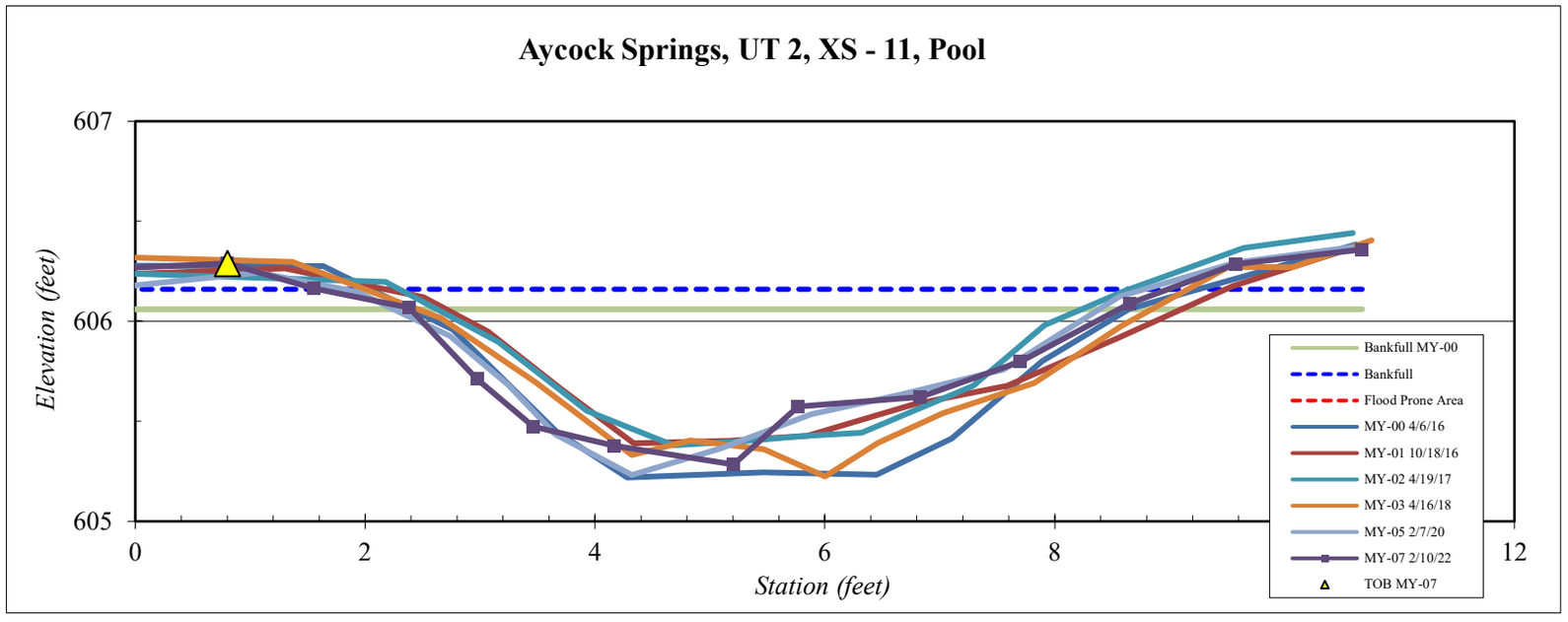


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 2, XS - 11, Pool
Feature	Pool
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
-0.3	606.3
0.8	606.3
1.6	606.2
2.4	606.1
3.0	605.7
3.5	605.5
4.2	605.4
5.2	605.3
5.8	605.6
6.8	605.6
7.7	605.8
8.7	606.1
9.6	606.3
10.7	606.4

SUMMARY DATA	
Bankfull Elevation:	606.2
Bankfull Cross-Sectional Area:	3.5
Bankfull Width:	7.4
Flood Prone Area Elevation:	NA
Flood Prone Width:	NA
Max Depth at Bankfull:	0.9
Low Bank Height:	1.0
Mean Depth at Bankfull:	0.5
W / D Ratio:	NA
Entrenchment Ratio:	NA
Bank Height Ratio:	NA

Stream Type	C/E

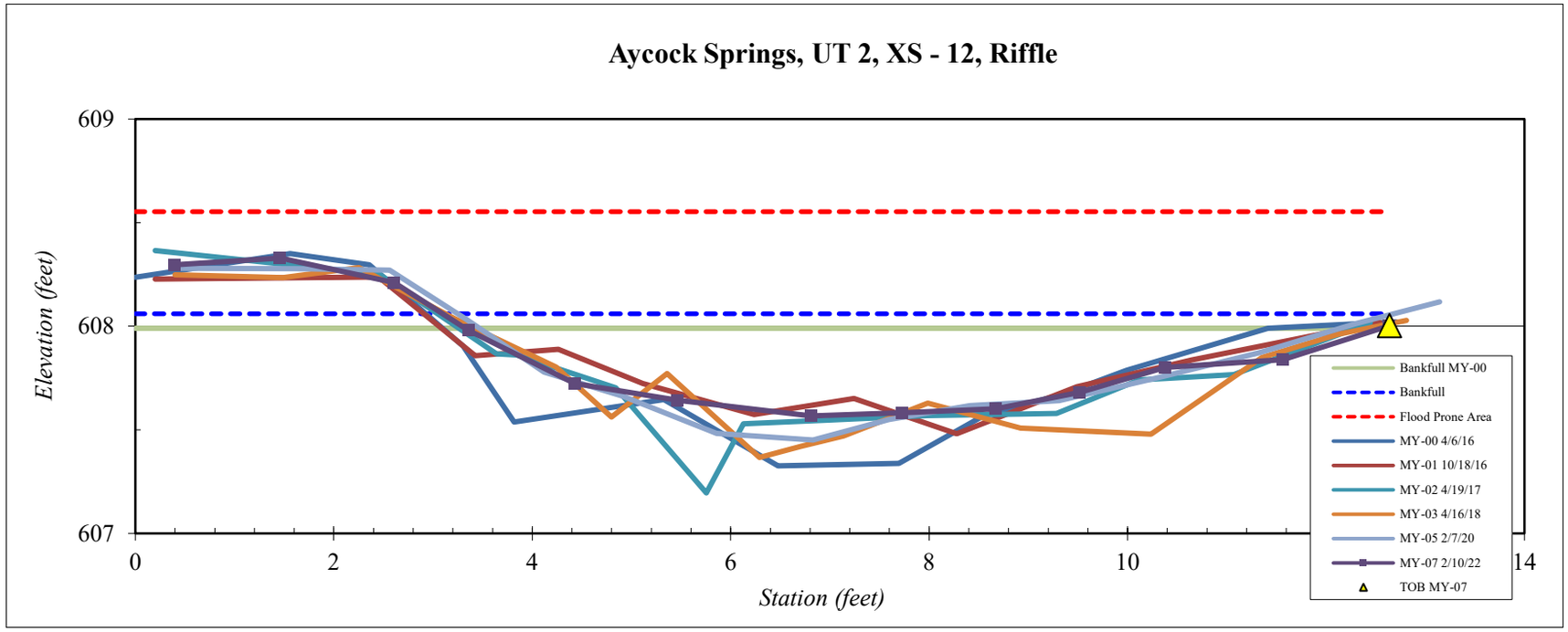


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 2, XS - 12, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.4	608.30
1.5	608.33
2.6	608.21
3.4	607.98
4.4	607.72
5.5	607.64
6.8	607.57
7.7	607.58
8.7	607.60
9.5	607.68
10.4	607.80
11.6	607.84
12.6	608.00

SUMMARY DATA	
Bankfull Elevation:	608.1
Bankfull Cross-Sectional Area:	3.2
Bankfull Width:	9.5
Flood Prone Area Elevation:	608.6
Flood Prone Width:	90.0
Max Depth at Bankfull:	0.5
Low Bank Height:	0.4
Mean Depth at Bankfull:	0.3
W / D Ratio:	28.5
Entrenchment Ratio:	9.4
Bank Height Ratio:	0.88

Stream Type	C/E

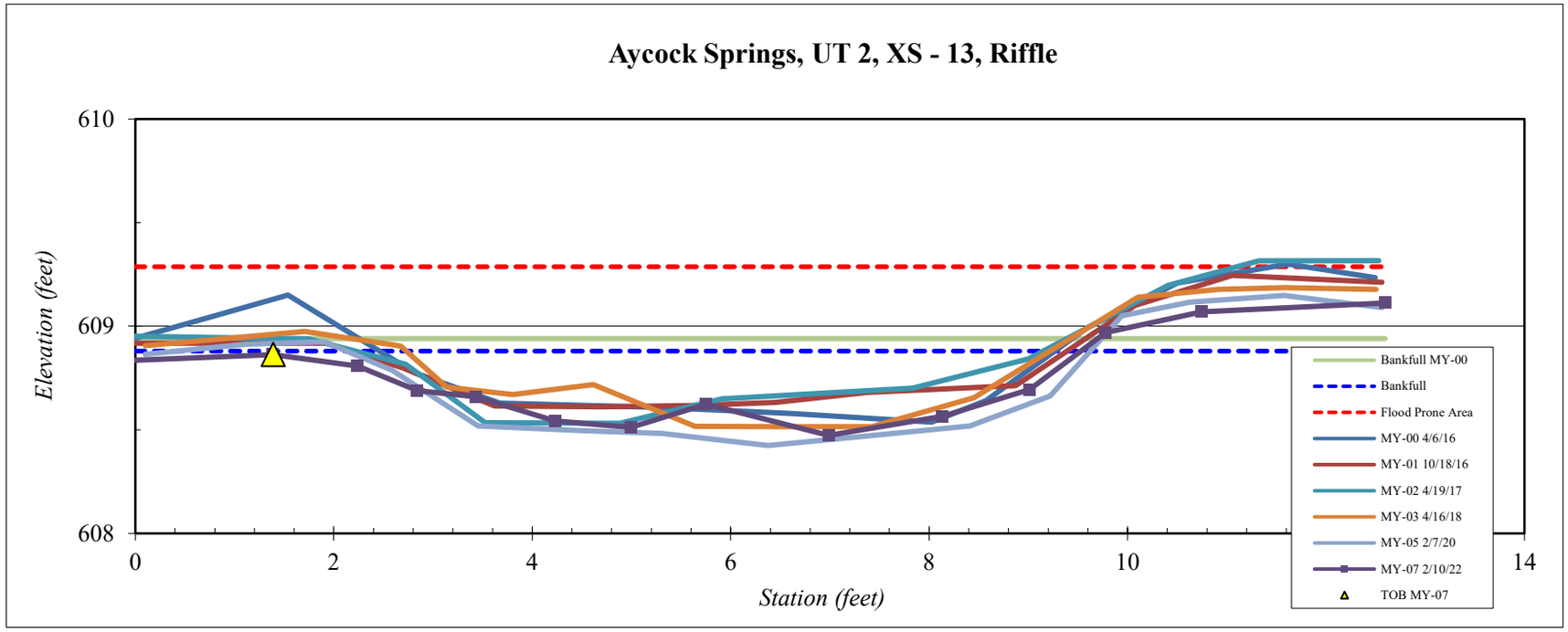


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 2, XS - 13, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
-0.2	608.83
1.4	608.86
2.2	608.81
2.8	608.69
3.4	608.66
4.2	608.54
5.0	608.51
5.8	608.62
7.0	608.47
8.1	608.57
9.0	608.70
9.8	608.97
10.7	609.07
12.6	609.11

SUMMARY DATA	
Bankfull Elevation:	608.9
Bankfull Cross-Sectional Area:	2.1
Bankfull Width:	9.7
Flood Prone Area Elevation:	609.3
Flood Prone Width:	90.0
Max Depth at Bankfull:	0.4
Low Bank Height:	0.4
Mean Depth at Bankfull:	0.2
W / D Ratio:	44.9
Entrenchment Ratio:	9.2
Bank Height Ratio:	1.0

Stream Type	C/E

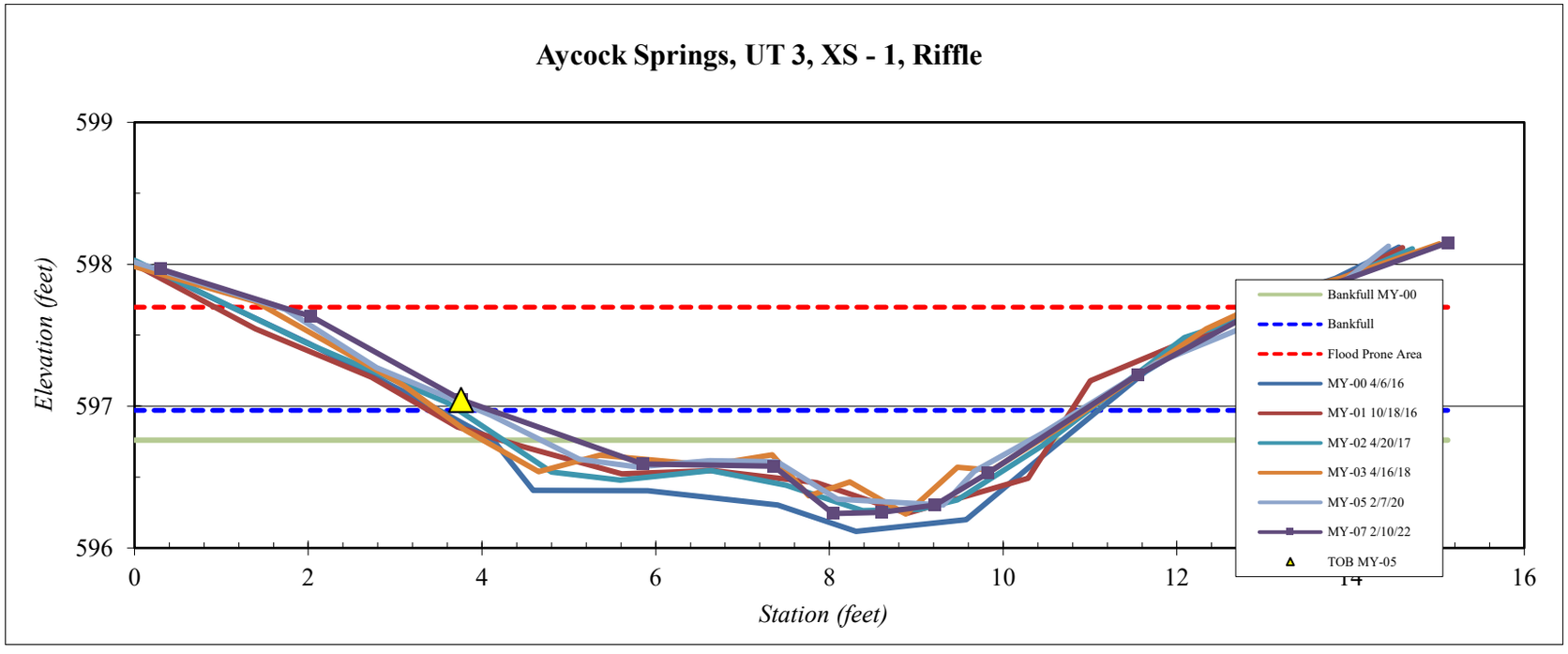


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 3, XS - 1, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.3	597.97
2.0	597.63
3.8	597.04
5.9	596.59
7.4	596.58
8.0	596.24
8.6	596.25
9.2	596.30
9.8	596.53
11.6	597.22
12.9	597.65
15.1	598.15

SUMMARY DATA	
Bankfull Elevation:	597.0
Bankfull Cross-Sectional Area:	2.7
Bankfull Width:	6.8
Flood Prone Area Elevation:	597.7
Flood Prone Width:	11.0
Max Depth at Bankfull:	0.7
Low Bank Height:	0.8
Mean Depth at Bankfull:	0.4
W / D Ratio:	17.2
Entrenchment Ratio:	1.6
Bank Height Ratio:	1.10

Stream Type	C/E

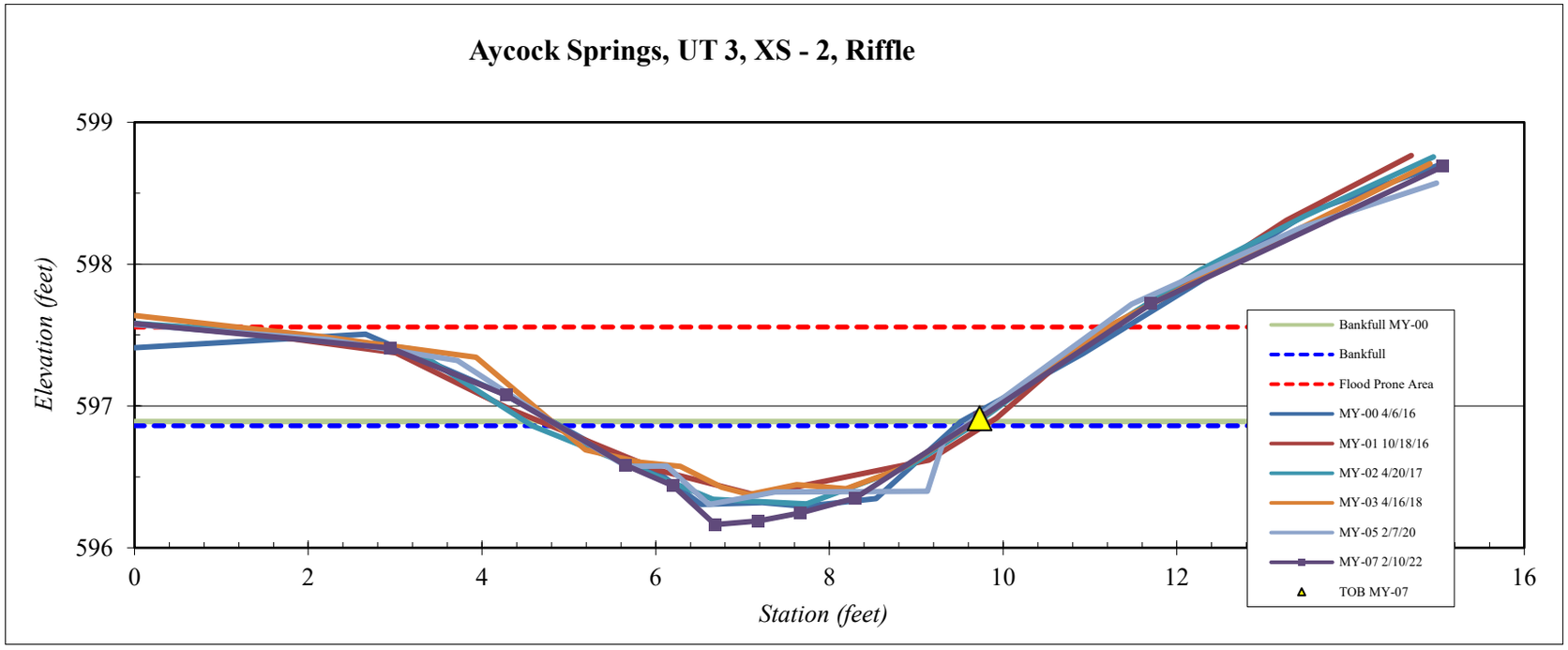


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 3, XS - 2, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
-0.1	597.59
2.9	597.41
4.3	597.07
5.7	596.58
6.2	596.44
6.7	596.16
7.2	596.19
7.7	596.25
8.3	596.35
9.7	596.91
11.7	597.72
15.1	598.69

SUMMARY DATA	
Bankfull Elevation:	596.9
Bankfull Cross-Sectional Area:	1.9
Bankfull Width:	4.7
Flood Prone Area Elevation:	597.6
Flood Prone Width:	8.0
Max Depth at Bankfull:	0.7
Low Bank Height:	0.8
Mean Depth at Bankfull:	0.4
W / D Ratio:	11.7
Entrenchment Ratio:	1.7
Bank Height Ratio:	1.08

Stream Type	C/E

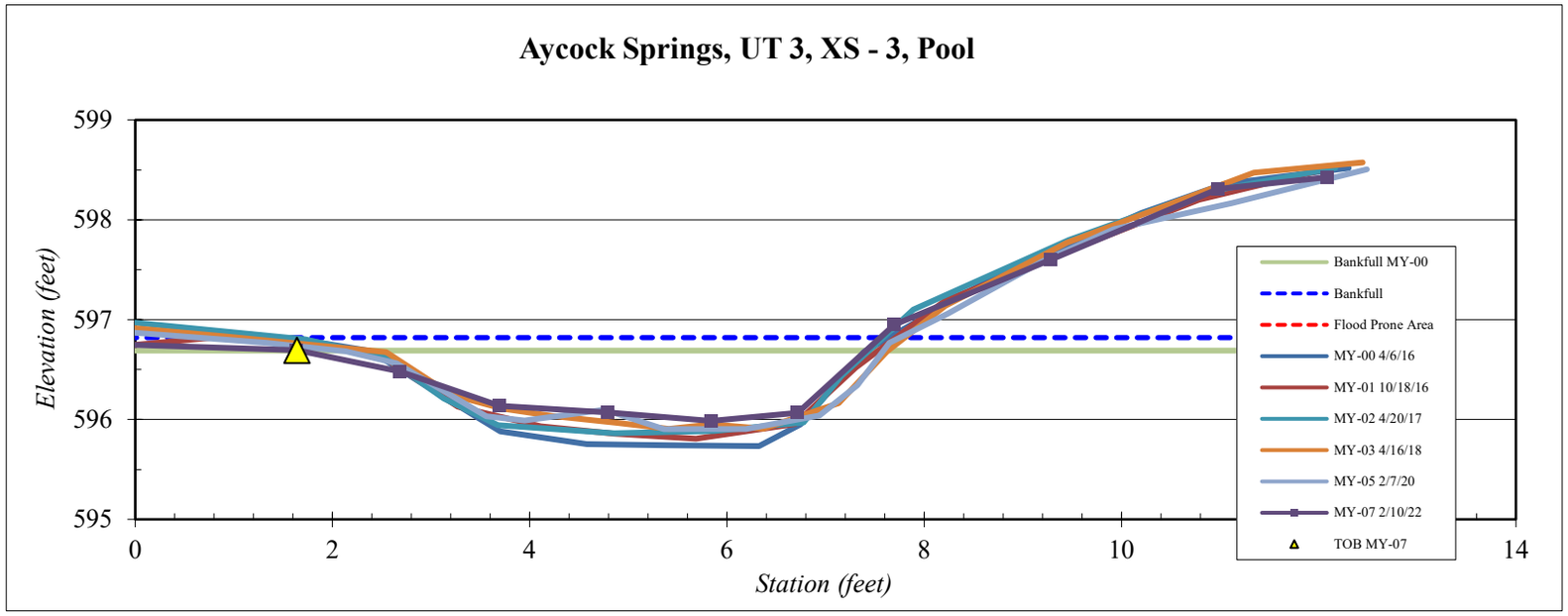


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 3, XS - 3, Pool
Feature	Pool
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
-0.3	596.8
1.6	596.7
2.7	596.5
3.7	596.1
4.8	596.1
5.8	596.0
6.7	596.1
7.7	597.0
9.3	597.6
11.0	598.3
12.1	598.4

SUMMARY DATA	
Bankfull Elevation:	596.8
Bankfull Cross-Sectional Area:	3.6
Bankfull Width:	7.9
Flood Prone Area Elevation:	NA
Flood Prone Width:	NA
Max Depth at Bankfull:	0.8
Low Bank Height:	0.7
Mean Depth at Bankfull:	0.5
W / D Ratio:	NA
Entrenchment Ratio:	NA
Bank Height Ratio:	NA

Stream Type	C/E

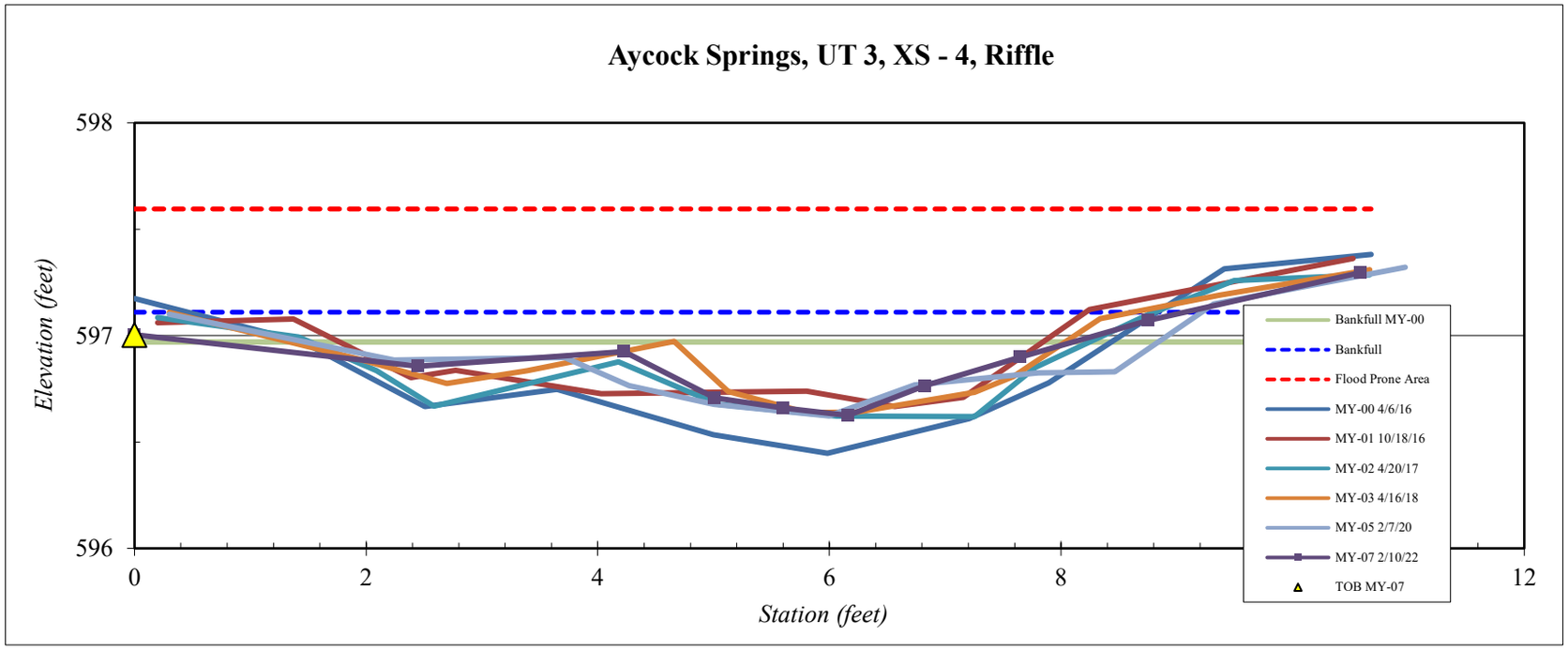


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 3, XS - 4, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.0	597.00
2.5	596.86
4.2	596.92
5.0	596.71
5.6	596.66
6.2	596.62
6.8	596.76
7.6	596.90
8.8	597.07
10.6	597.30

SUMMARY DATA	
Bankfull Elevation:	597.1
Bankfull Cross-Sectional Area:	2.2
Bankfull Width:	9.1
Flood Prone Area Elevation:	597.6
Flood Prone Width:	20.0
Max Depth at Bankfull:	0.5
Low Bank Height:	0.4
Mean Depth at Bankfull:	0.2
W / D Ratio:	36.9
Entrenchment Ratio:	2.2
Bank Height Ratio:	0.78

Stream Type	C/E



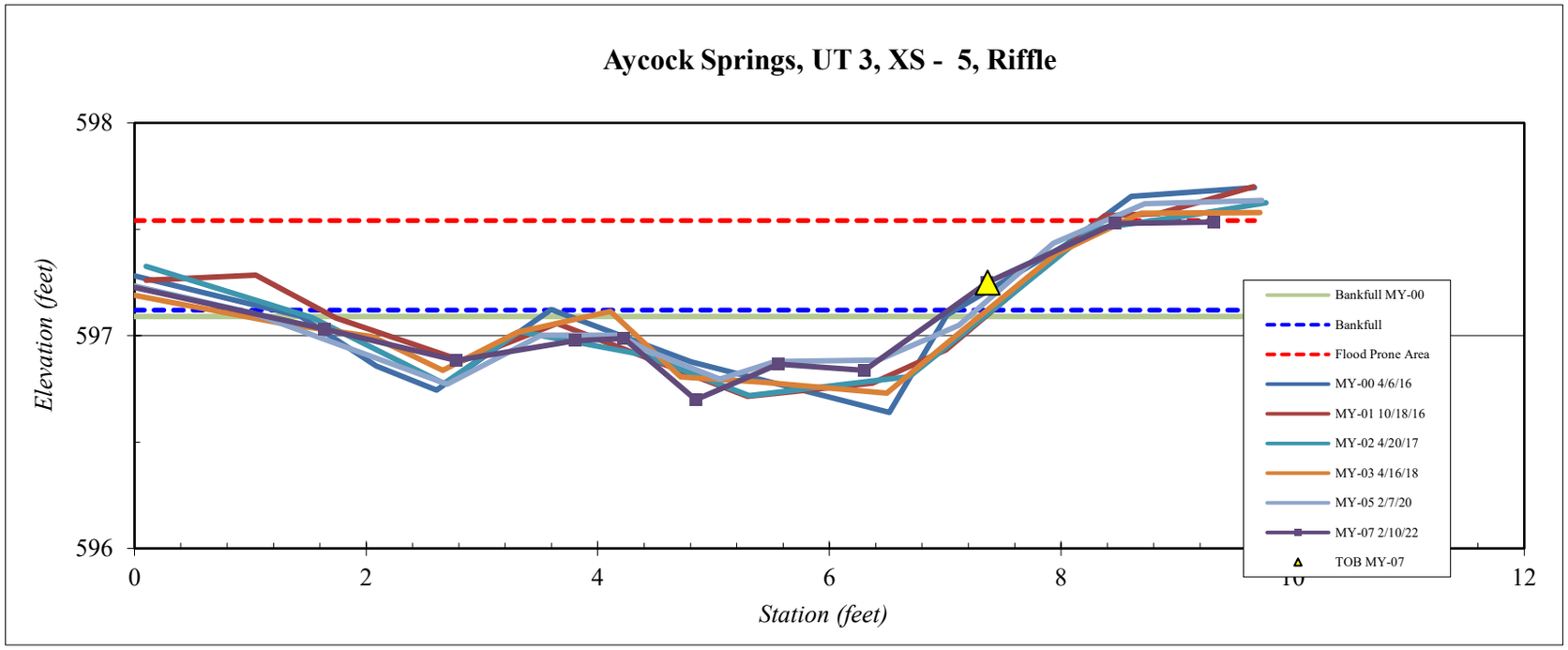
NOTE: Reduced BHR is the result of small changes in a very small channel. No signs of instability were observed along this reach

Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 3, XS - 5, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
-0.3	597.26
1.6	597.03
2.8	596.88
3.8	596.98
4.2	596.99
4.8	596.70
5.6	596.87
6.3	596.84
7.4	597.25
8.5	597.53
9.3	597.53

SUMMARY DATA	
Bankfull Elevation:	597.1
Bankfull Cross-Sectional Area:	1.2
Bankfull Width:	6.1
Flood Prone Area Elevation:	597.5
Flood Prone Width:	20.0
Max Depth at Bankfull:	0.4
Low Bank Height:	0.6
Mean Depth at Bankfull:	0.2
W / D Ratio:	31.7
Entrenchment Ratio:	3.3
Bank Height Ratio:	1.31

Stream Type	C/E



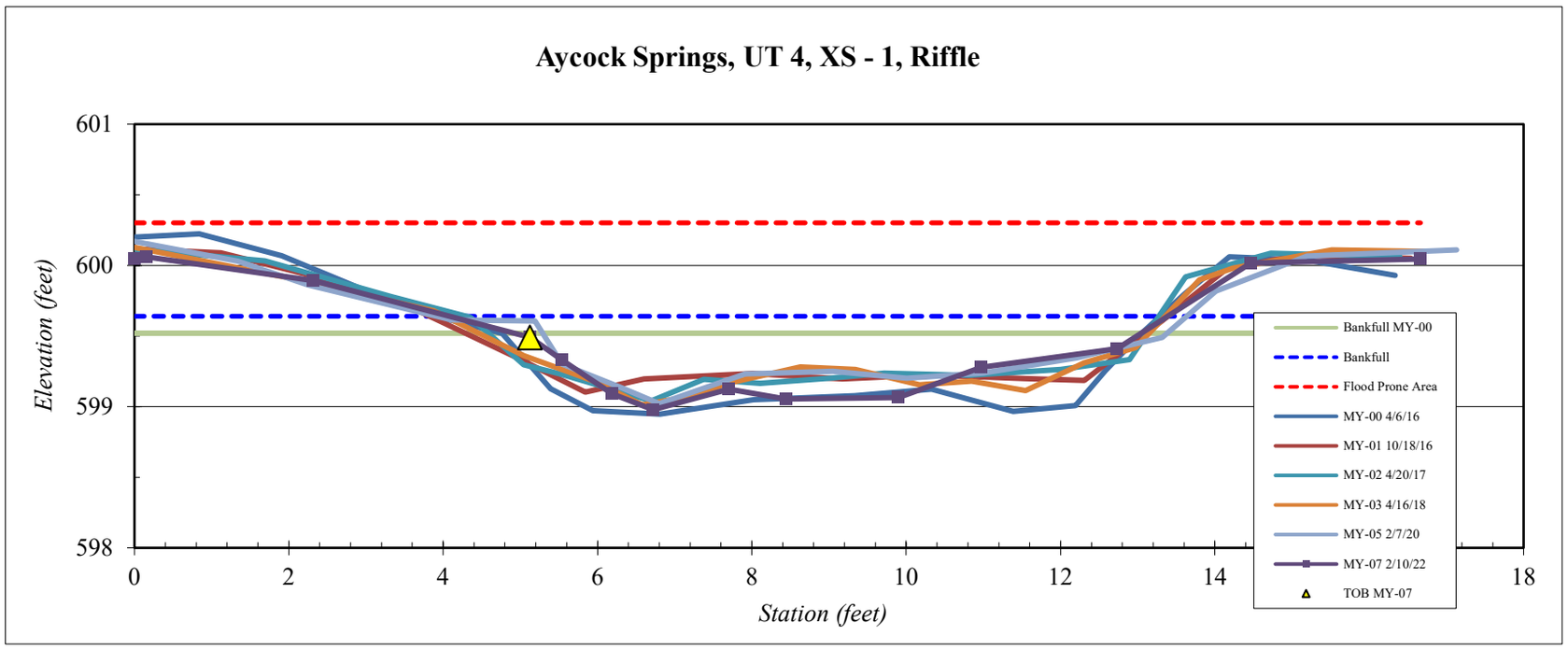
NOTE: Elevated BHR is the result of small changes in a very small channel. No signs of instability were observed along this reach

Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 4, XS - 1, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.0	600.05
0.2	600.06
2.3	599.89
5.1	599.49
5.5	599.33
6.2	599.09
6.7	598.98
7.7	599.12
8.4	599.05
9.9	599.06
11.0	599.28
12.7	599.41
14.5	600.02
16.7	600.04

SUMMARY DATA	
Bankfull Elevation:	599.6
Bankfull Cross-Sectional Area:	3.7
Bankfull Width:	9.3
Flood Prone Area Elevation:	600.3
Flood Prone Width:	50.0
Max Depth at Bankfull:	0.7
Low Bank Height:	0.5
Mean Depth at Bankfull:	0.4
W / D Ratio:	23.4
Entrenchment Ratio:	5.4
Bank Height Ratio:	0.77

Stream Type	C/E



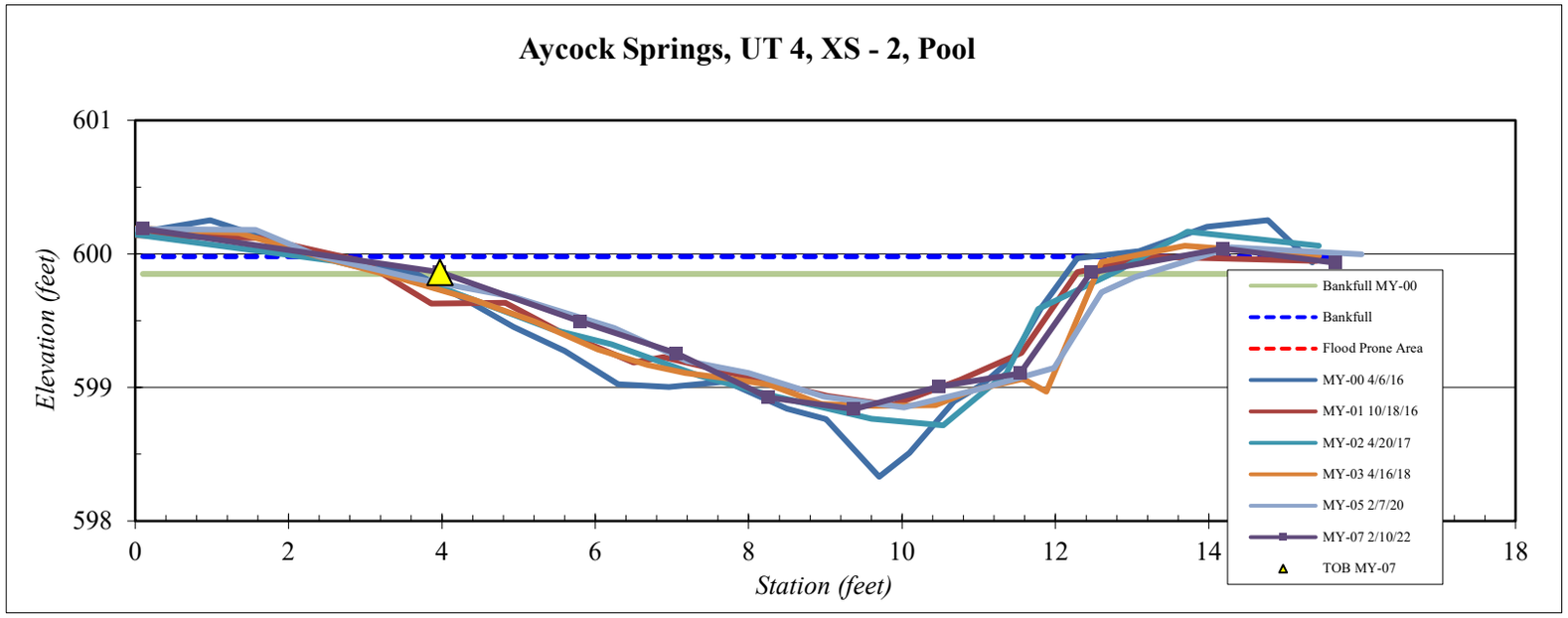
NOTE: Reduced BHR is the result of small changes in a very small channel. No signs of instability were observed along this reach

Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 4, XS - 2, Pool
Feature	Pool
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.1	600.2
4.0	599.9
5.8	599.5
7.1	599.3
8.3	598.9
9.4	598.8
10.5	599.0
11.5	599.1
12.5	599.9
14.2	600.0
15.7	599.9

SUMMARY DATA	
Bankfull Elevation:	600.0
Bankfull Cross-Sectional Area:	6.4
Bankfull Width:	11.7
Flood Prone Area Elevation:	NA
Flood Prone Width:	NA
Max Depth at Bankfull:	1.1
Low Bank Height:	1.0
Mean Depth at Bankfull:	0.5
W / D Ratio:	NA
Entrenchment Ratio:	NA
Bank Height Ratio:	NA

Stream Type	C/E

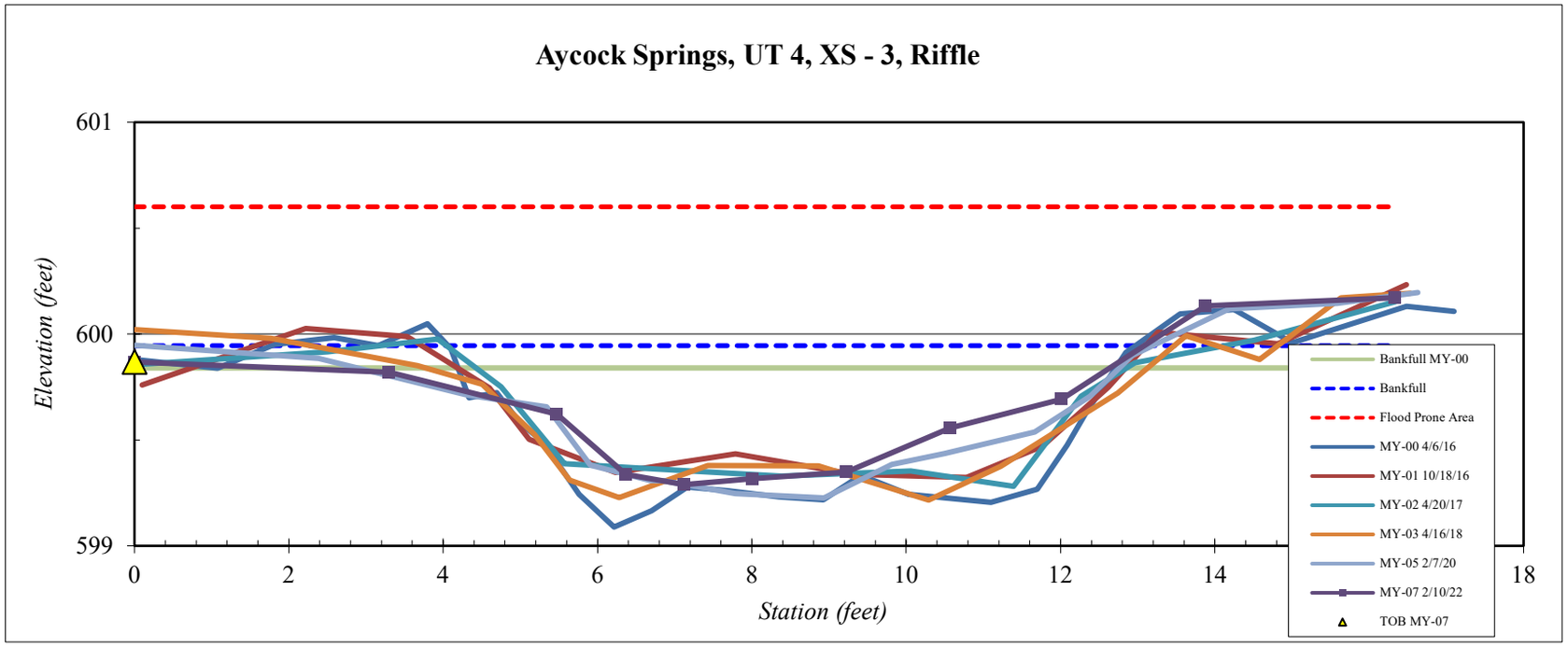


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 4, XS - 3, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.0	599.87
3.3	599.82
5.5	599.62
6.4	599.34
7.1	599.29
8.0	599.32
9.2	599.35
10.6	599.56
12.0	599.69
13.9	600.13
16.3	600.17

SUMMARY DATA	
Bankfull Elevation:	599.9
Bankfull Cross-Sectional Area:	4.3
Bankfull Width:	13.1
Flood Prone Area Elevation:	600.6
Flood Prone Width:	50.0
Max Depth at Bankfull:	0.7
Low Bank Height:	0.6
Mean Depth at Bankfull:	0.3
W / D Ratio:	40.0
Entrenchment Ratio:	3.8
Bank Height Ratio:	0.88

Stream Type	C/E

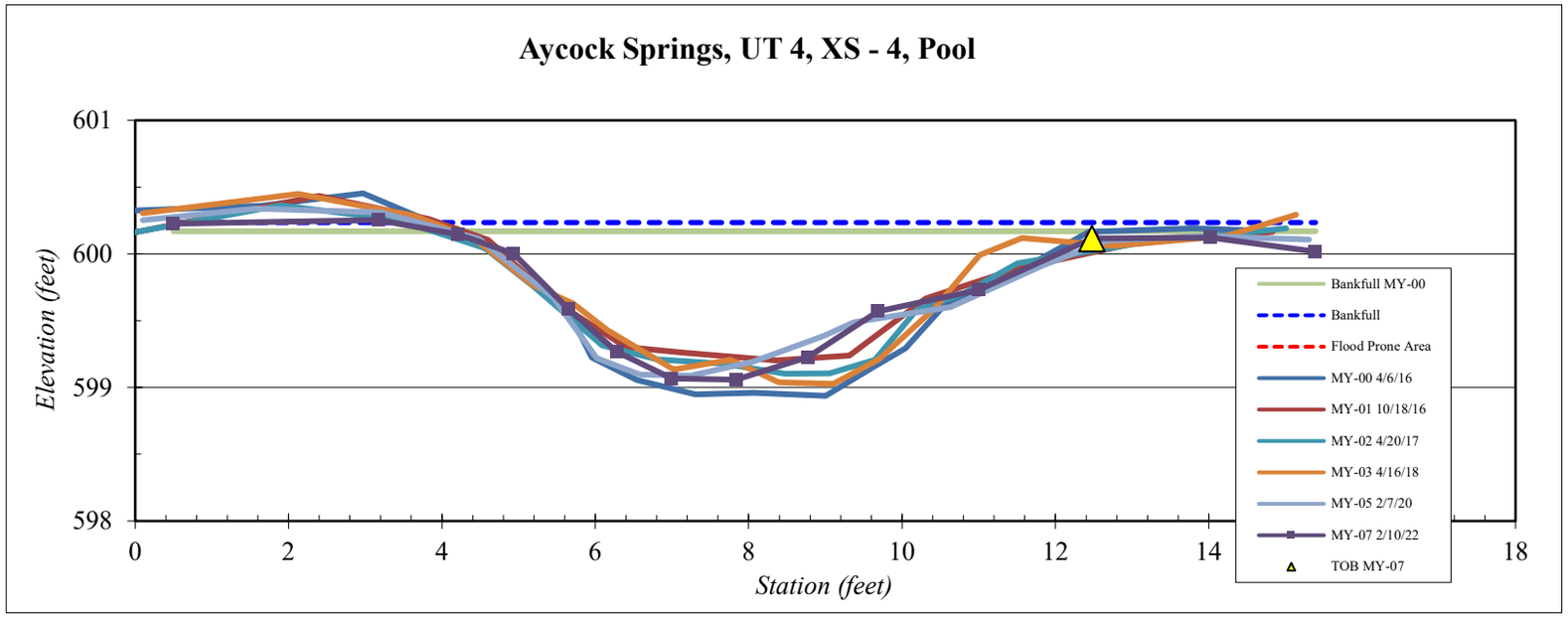


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 4, XS - 4, Pool
Feature	Pool
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.5	600.2
3.2	600.3
4.2	600.1
4.9	600.0
5.6	599.6
6.3	599.3
7.0	599.1
7.8	599.1
8.8	599.2
9.7	599.6
11.0	599.7
12.5	600.1
14.0	600.1
15.4	600.0

SUMMARY DATA	
Bankfull Elevation:	600.2
Bankfull Cross-Sectional Area:	6.2
Bankfull Width:	12.8
Flood Prone Area Elevation:	NA
Flood Prone Width:	NA
Max Depth at Bankfull:	1.2
Low Bank Height:	1.1
Mean Depth at Bankfull:	0.5
W / D Ratio:	NA
Entrenchment Ratio:	NA
Bank Height Ratio:	NA

Stream Type	C/E

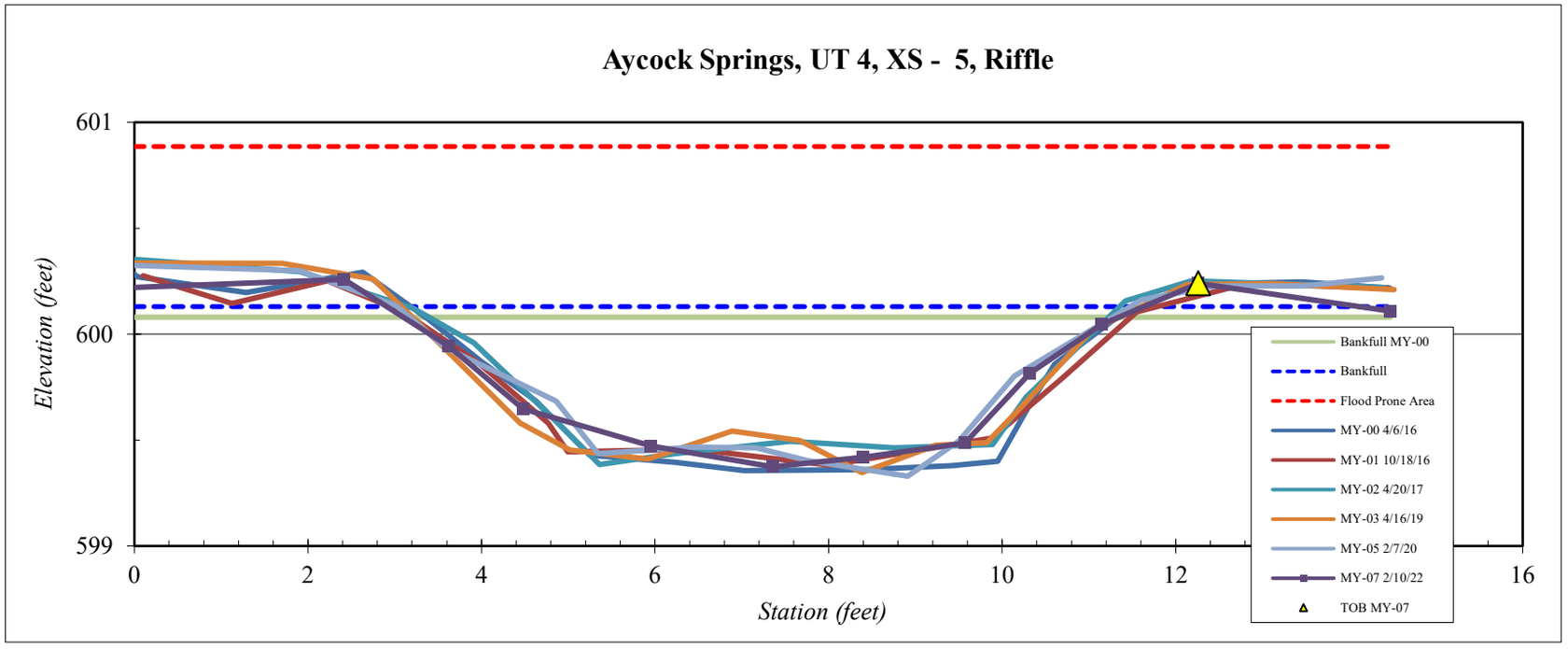


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 4, XS - 5, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
-0.1	600.22
2.4	600.26
3.6	599.94
4.5	599.65
6.0	599.47
7.4	599.37
8.4	599.42
9.6	599.49
10.3	599.82
11.1	600.05
12.3	600.24
14.5	600.11

SUMMARY DATA	
Bankfull Elevation:	600.1
Bankfull Cross-Sectional Area:	4.3
Bankfull Width:	8.7
Flood Prone Area Elevation:	600.9
Flood Prone Width:	50.0
Max Depth at Bankfull:	0.8
Low Bank Height:	0.9
Mean Depth at Bankfull:	0.5
W / D Ratio:	17.7
Entrenchment Ratio:	5.7
Bank Height Ratio:	1.15

Stream Type	C/E

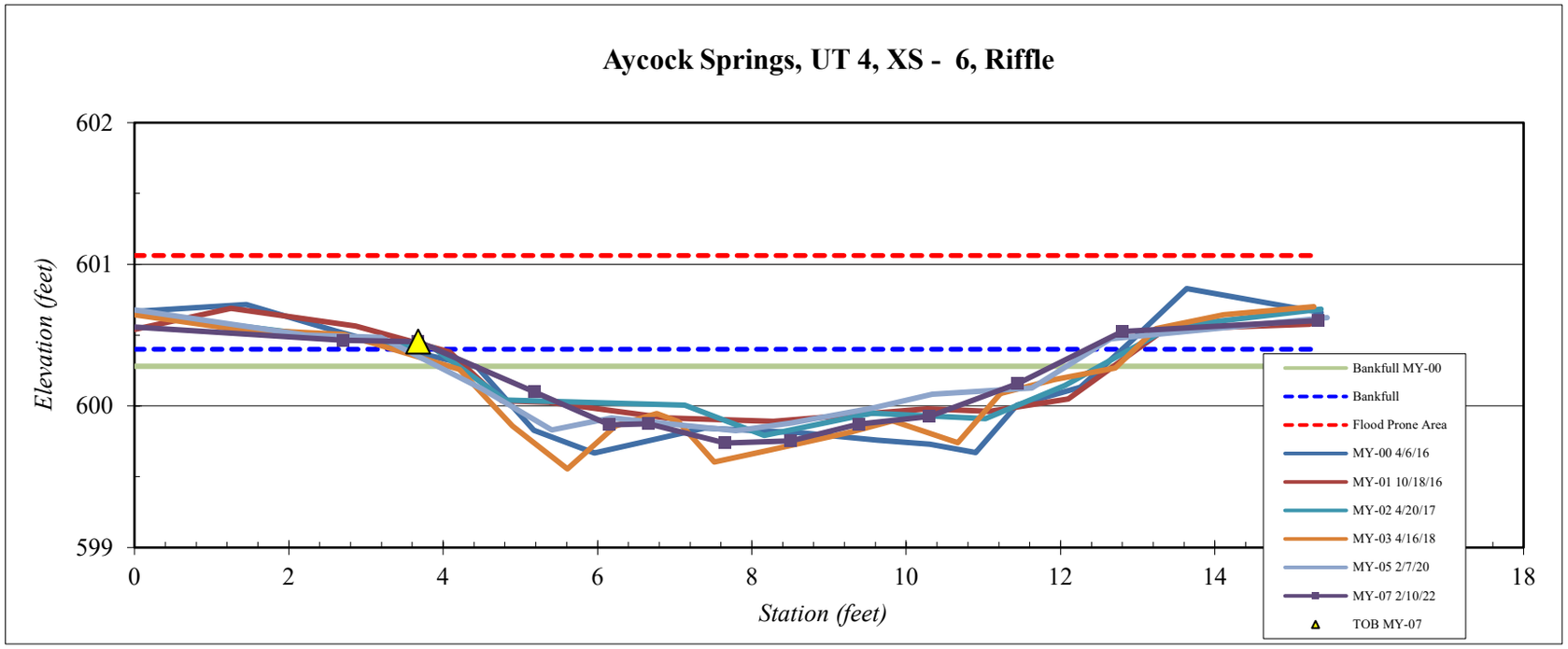


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 4, XS - 6, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
-0.2	600.56
2.7	600.46
3.7	600.45
5.2	600.10
6.2	599.87
6.7	599.88
7.7	599.74
8.5	599.75
9.4	599.87
10.3	599.93
11.4	600.16
12.8	600.53
15.3	600.60

SUMMARY DATA	
Bankfull Elevation:	600.4
Bankfull Cross-Sectional Area:	3.5
Bankfull Width:	8.4
Flood Prone Area Elevation:	601.1
Flood Prone Width:	50.0
Max Depth at Bankfull:	0.7
Low Bank Height:	0.7
Mean Depth at Bankfull:	0.4
W / D Ratio:	20.3
Entrenchment Ratio:	5.9
Bank Height Ratio:	1.08

Stream Type	C/E

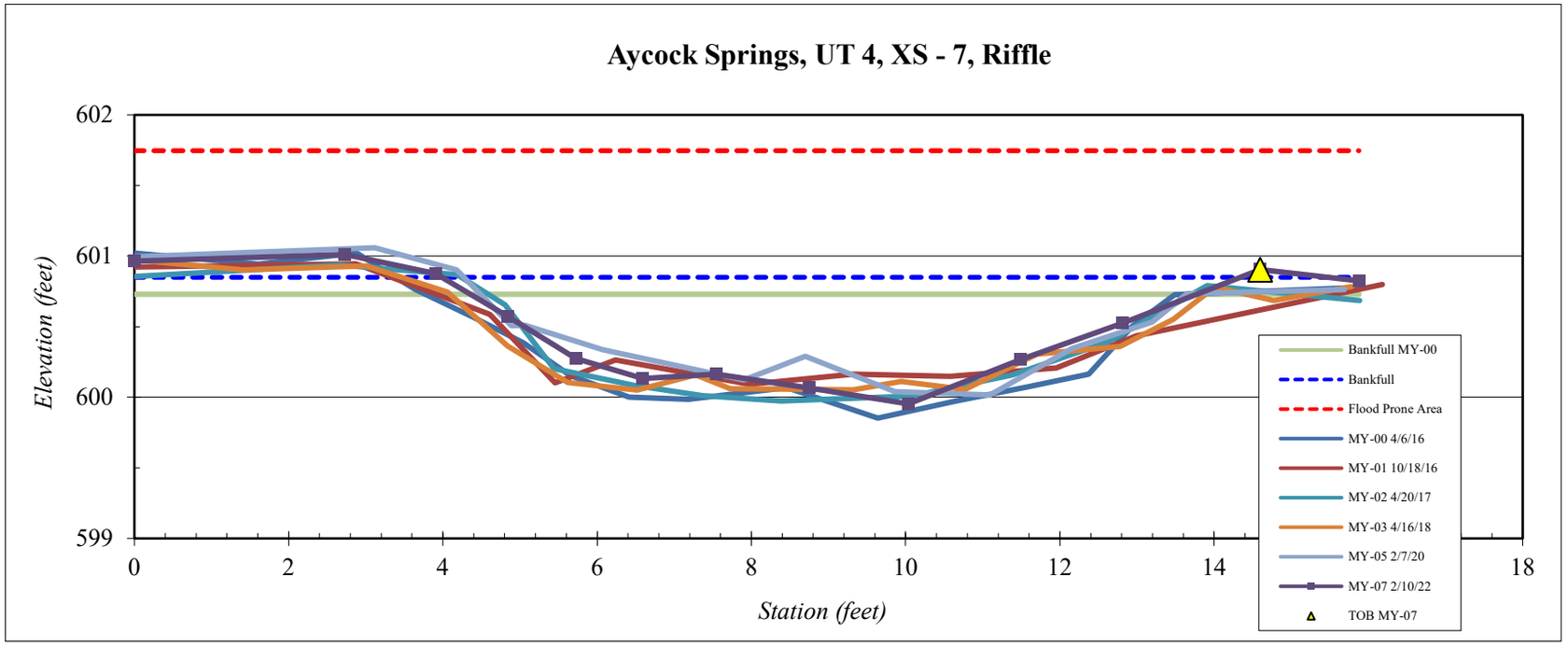


Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 4, XS - 7, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.0	600.96
2.7	601.01
3.9	600.88
4.8	600.57
5.7	600.27
6.6	600.13
7.5	600.16
8.7	600.07
10.0	599.95
11.5	600.27
12.8	600.53
14.6	600.90
15.9	600.82

SUMMARY DATA	
Bankfull Elevation:	600.9
Bankfull Cross-Sectional Area:	5.6
Bankfull Width:	10.4
Flood Prone Area Elevation:	601.7
Flood Prone Width:	50.0
Max Depth at Bankfull:	0.9
Low Bank Height:	1.0
Mean Depth at Bankfull:	0.5
W / D Ratio:	19.1
Entrenchment Ratio:	4.8
Bank Height Ratio:	1.06

Stream Type	C/E



Site	Aycock Springs
Watershed:	Cape Fear, 0303002
XS ID	UT 4, XS - 8, Riffle
Feature	Riffle
Date:	2/10/2022
Field Crew:	Adams, Harris, Perkinson

Station	Elevation
0.0	601.15
2.3	600.94
4.1	600.74
5.3	600.54
6.3	600.39
7.6	600.36
8.3	600.39
9.3	600.50
10.1	600.69
11.4	601.03
12.8	601.29
14.3	601.24

SUMMARY DATA	
Bankfull Elevation:	601.2
Bankfull Cross-Sectional Area:	5.6
Bankfull Width:	12.2
Flood Prone Area Elevation:	602.0
Flood Prone Width:	50.0
Max Depth at Bankfull:	0.8
Low Bank Height:	0.8
Mean Depth at Bankfull:	0.5
W / D Ratio:	26.7
Entrenchment Ratio:	4.1
Bank Height Ratio:	1.0

Stream Type	C/E

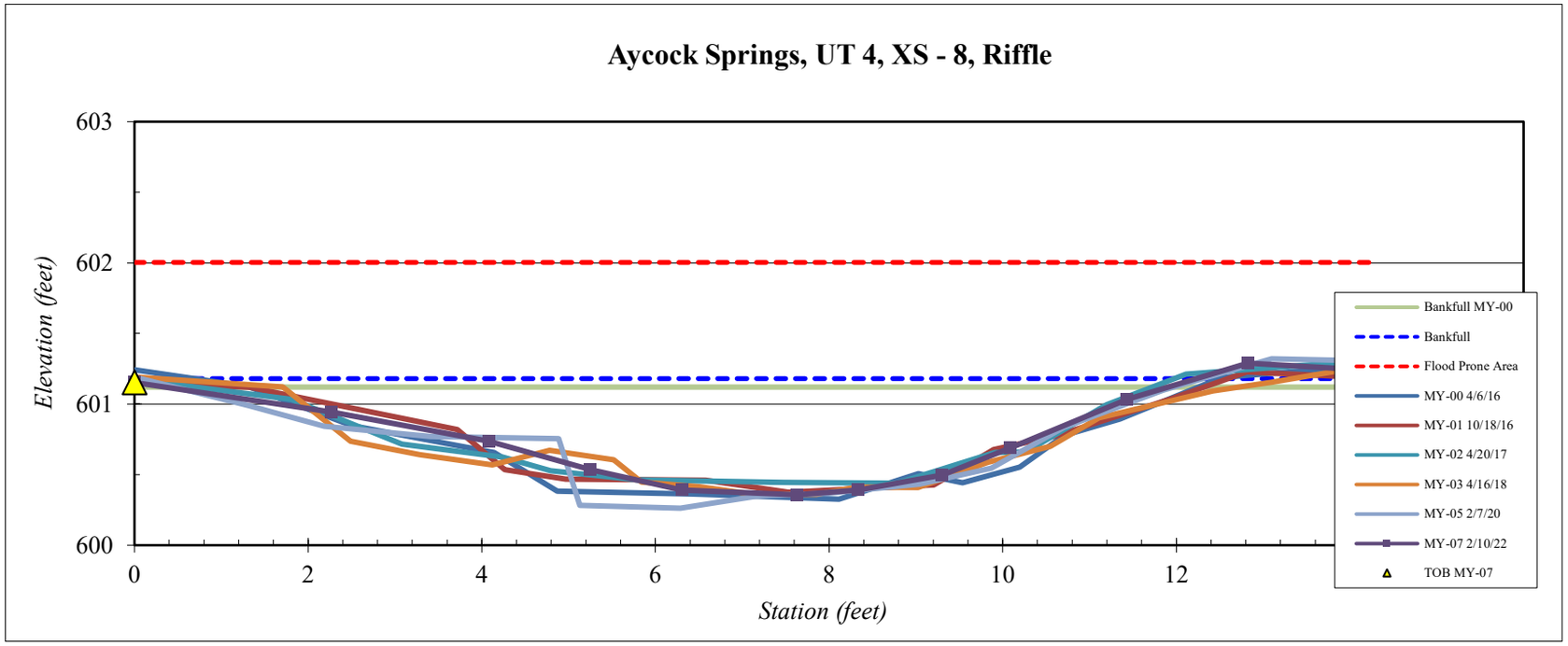


Table 10A. Baseline Morphology and Hydraulic Summary
Aycock Springs UT 1

Parameter	USGS Gage Data			Pre-Existing Condition			Project Reference Cedarock Park			Project Reference Cripple Creek			Design			As-built		
Dimension	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**
BF Width (ft)	USGS gage data is unavailable for this project			3.8	9.6	6.7	8	12.1	8.1	3	6.1	4.6	7.2	8.3	7.8	6.4	9.6	8.0
Floodprone Width (ft)				8	73	30	15	25	18	150	150	150	20	70	50			90
BF Cross Sectional Area (ft2)						4.3			8			5.9			4.3	3	6.6	3.9
BF Mean Depth (ft)				0.8	1	0.8	0.8	1	0.8	0.7	1.5	1.1	0.5	0.7	0.6	0.4	0.7	0.5
BF Max Depth (ft)				1.1	1.4	1.4	1.1	1.4	1.4	1	2.3	1.7	0.7	0.9	0.8	0.6	1.1	0.7
Width/Depth Ratio				8	15.1	10.1	8	15.1	10.1	4	4.3	4.2	12	16	14	11	19	15
Entrenchment Ratio				1.9	2.2	2.1	1.9	2.2	2.1	24.6	50	37.3	2.6	9	6.4	9	14	11.3
Bank Height Ratio				1	1.8	1	1	1.8	1	1	1.5	1.3	1	1.2	1			1
Wetted Perimeter(ft)						===			===			===			===			===
Hydraulic radius (ft)						===			===			===			===			===
Pattern																		
Channel Beltwidth (ft)				No pattern of riffles and pools due to straightening activties			20	38	22.8	15.1	29.2	24.3	23	47	31	23	47	31
Radius of Curvature (ft)							11	27	16.5	8.9	19.4	13.2	14	31	23	14	31	23
Meander Wavelength (ft)							44	116	68.4	31	74	47.8	47	94	66	47	94	66
Meander Width ratio							2.4	4.7	2.8	2.1	4	3.4	3	6	4	3	6	4
Profile																		
Riffle length (ft)				No pattern of riffles and pools due to straightening activties					===			===			===	9	70	16
Riffle slope (ft/ft)							1.00%	5.76%	3.16%	0.00%	1.54%	0.83%	2.77%	6.47%	4.16%	0.01%	4.33%	2.23%
Pool length (ft)									===			===			===	4	23	9
Pool spacing (ft)							25	69	37.2	14	39.6	32.4	23	62	31	23	62	31
Substrate																		
d50 (mm)						===			===			===			===			===
d84 (mm)						===			===			===			===			===
Additional Reach Parameters																		
Valley Length (ft)						===			===			===			===			===
Channel Length (ft)						===			===			===			===			===
Sinuosity						1.02			1.2			1.22			1.1			1.1
Water Surface Slope (ft/ft)						1.37% - 3.61%			2.58%			0.50%			1.27% - 3.35%			1.89%
BF slope (ft/ft)						===			===			===			===			===
Rosgen Classification						Cg			E			E			E/C			E/C

Table 10B. Baseline Morphology and Hydraulic Summary
Aycock Springs UT 2

Parameter	USGS Gage Data			Pre-Existing Condition			Project Reference Cedarock Park			Project Reference Cripple Creek			Design			As-built		
Dimension	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**
BF Width (ft)	USGS gage data is unavailable for this project			3.8	9.6	6.7	8	12.1	8.1	3	6.1	4.6	7.2	8.3	7.8	4.8	8.6	7.2
Floodprone Width (ft)				8	73	30	15	25	18	150	150	150	20	70	50			90
BF Cross Sectional Area (ft2)						4.3			8			5.9			4.3	1	4.2	2.3
BF Mean Depth (ft)				0.8	1	0.8	0.8	1	0.8	0.7	1.5	1.1	0.5	0.7	0.6	0.2	0.6	0.3
BF Max Depth (ft)				1.1	1.4	1.4	1.1	1.4	1.4	1	2.3	1.7	0.7	0.9	0.8	0.3	0.8	0.6
Width/Depth Ratio				8	15.1	10.1	8	15.1	10.1	4	4.3	4.2	12	16	14	12	32	22
Entrenchment Ratio				1.9	2.2	2.1	1.9	2.2	2.1	24.6	50	37.3	2.6	9	6.4	11	19	13
Bank Height Ratio				1	1.8	1	1	1.8	1	1	1.5	1.3	1	1.2	1			1
Wetted Perimeter(ft)						===			===			===			===			===
Hydraulic radius (ft)						===			===			===			===			===
Pattern																		
Channel Beltwidth (ft)				No pattern of riffles and pools due to straightening activties			20	38	22.8	15.1	29.2	24.3	23	47	31	23	47	31
Radius of Curvature (ft)							11	27	16.5	8.9	19.4	13.2	14	31	23	14	31	23
Meander Wavelength (ft)							44	116	68.4	31	74	47.8	47	94	66	47	94	66
Meander Width ratio							2.4	4.7	2.8	2.1	4	3.4	3	6	4	3	6	4
Profile																		
Riffle length (ft)				No pattern of riffles and pools due to straightening activties					===			===			===	9	23	14
Riffle slope (ft/ft)							1.00%	5.76%	3.16%	0.00%	1.54%	0.83%	2.77%	6.47%	4.16%	0.00%	5.24%	2.88%
Pool length (ft)									===			===			===	5	17	10
Pool spacing (ft)							25	69	37.2	14	39.6	32.4	23	62	31	23	62	31
Substrate																		
d50 (mm)						===			===			===			===			===
d84 (mm)						===			===			===			===			===
Additional Reach Parameters																		
Valley Length (ft)						===			===			===			===			===
Channel Length (ft)						===			===			===			===			===
Sinuosity						1.02			1.2			1.22			1.1			1.1
Water Surface Slope (ft/ft)						1.37% - 3.61%			2.58%			0.50%			1.27% - 3.35%			3.01%
BF slope (ft/ft)						===			===			===			===			===
Rosgen Classification						Cg			E			E			E/C			E/C

Note: UT 2 is characterized by a spring/seep, with a very small watershed. The channel was constructed with a smaller Bankfull Cross Sectional area to account for the smaller stormwater pulses and controlled discharge. In addition, the lower reaches of the channel are low slope wetlands that elevate the width-to-depth ratio in post construction measurements.

Table 10C. Baseline Morphology and Hydraulic Summary
Aycock Springs UT 3

Parameter	USGS Gage Data			Pre-Existing Condition			Project Reference Cedarock Park			Project Reference Cripple Creek			Design			As-built		
Dimension	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**
BF Width (ft)	USGS gage data is unavailable for this project			4.1	5	4.5	8	12.1	8.1	3	6.1	4.6	7.2	8.3	7.8	4.7	7	5.9
Floodprone Width (ft)				7	18	12	15	25	18	150	150	150	20	70	50	10	20	20
BF Cross Sectional Area (ft2)						2.2			8			5.9			4.3	1.2	2.7	2.1
BF Mean Depth (ft)				0.4	0.5	0.5	0.8	1	0.8	0.7	1.5	1.1	0.5	0.7	0.6	0.2	0.4	0.4
BF Max Depth (ft)				0.8	1.1	1	1.1	1.4	1.4	1	2.3	1.7	0.7	0.9	0.8	0.5	0.6	0.6
Width/Depth Ratio				8.2	12.5	9.9	8	15.1	10.1	4	4.3	4.2	12	16	14	12	26	20
Entrenchment Ratio				1.7	3.6	2.5	1.9	2.2	2.1	24.6	50	37.3	2.6	9	6.4	2	4	3.3
Bank Height Ratio				1	3	2	1	1.8	1	1	1.5	1.3	1	1.2	1			1
Wetted Perimeter(ft)						===			===			===			===			===
Hydraulic radius (ft)						===			===			===			===			===
Pattern																		
Channel Beltwidth (ft)				No pattern of riffles and pools due to straightening activties			20	38	22.8	15.1	29.2	24.3	23	47	31	23	47	31
Radius of Curvature (ft)							11	27	16.5	8.9	19.4	13.2	14	31	23	14	31	23
Meander Wavelength (ft)							44	116	68.4	31	74	47.8	47	94	66	47	94	66
Meander Width ratio							2.4	4.7	2.8	2.1	4	3.4	3	6	4	3	6	4
Profile																		
Riffle length (ft)				No pattern of riffles and pools due to straightening activties					===			===			===	8	24	14
Riffle slope (ft/ft)							1.00%	5.76%	3.16%	0.00%	1.54%	0.83%	2.77%	6.47%	4.16%	0.52%	2.54%	1.71%
Pool length (ft)									===			===			===	6	10	8
Pool spacing (ft)							25	69	37.2	14	39.6	32.4	23	62	31	23	62	31
Substrate																		
d50 (mm)						===			===			===			===			===
d84 (mm)						===			===			===			===			===
Additional Reach Parameters																		
Valley Length (ft)						===			===			===			===			===
Channel Length (ft)						===			===			===			===			===
Sinuosity						1.01			1.2			1.22			1.1			1.1
Water Surface Slope (ft/ft)						1.53%			2.58%			0.50%			1.27% - 3.35%			0.92%
BF slope (ft/ft)						===			===			===			===			===
Rosgen Classification						Eg			E			E			E/C			E/C

Note: UT 3 is characterized by a pond in the headwaters; therefore, the channel was constructed with a smaller Bankfull Cross Sectional area than other tributaries associated with the project.

Table 10D. Baseline Morphology and Hydraulic Summary
Aycock Springs UT 4

Parameter	USGS Gage Data			Pre-Existing Condition			Project Reference Cedarock Park			Project Reference Cripple Creek			Design			As-built		
Dimension	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**
BF Width (ft)	USGS gage data is unavailable for this project			4.8	11.7	8.3	8	12.1	8.1	3	6.1	4.6	8.7	10	9.4	8	10.9	8.5
Floodprone Width (ft)				8	70	39	15	25	18	150	150	150	70	200	150			50
BF Cross Sectional Area (ft2)						6.3			8			5.9			6.3	3.5	5.6	4.3
BF Mean Depth (ft)				0.5	1.3	0.8	0.8	1	0.8	0.7	1.5	1.1	0.6	0.8	0.7	0.4	0.6	0.5
BF Max Depth (ft)				0.9	2	1.5	1.1	1.4	1.4	1	2.3	1.7	0.8	1.1	1	0.6	0.9	0.8
Width/Depth Ratio				3.7	23.4	12.4	8	15.1	10.1	4	4.3	4.2	12	16	14	16	22	19
Entrenchment Ratio				1.2	11.5	4.9	1.9	2.2	2.1	24.6	50	37.3	7.5	21.3	16	5	6	6
Bank Height Ratio				1.2	2.4	1.8	1	1.8	1	1	1.5	1.3	1	1.2	1			1
Wetted Perimeter(ft)						===			===			===			===			===
Hydraulic radius (ft)						===			===			===			===			===
Pattern																		
Channel Beltwidth (ft)				No pattern of riffles and pools due to straightening activties			20	38	22.8	15.1	29.2	24.3	28	56	38	28	56	38
Radius of Curvature (ft)							11	27	16.5	8.9	19.4	13.2	17	38	28	17	38	28
Meander Wavelength (ft)							44	116	68.4	31	74	47.8	56	113	80	56	113	80
Meander Width ratio							2.4	4.7	2.8	2.1	4	3.4	3	6	4	3	6	4
Profile																		
Riffle length (ft)				No pattern of riffles and pools due to straightening activties					===			===			===	12	35	16
Riffle slope (ft/ft)							1.00%	5.76%	3.16%	0.00%	1.54%	0.83%	1.12%	2.60%	1.67%	0.61%	2.42%	1.28%
Pool length (ft)									===			===			===	14	42	22
Pool spacing (ft)							25	69	37.2	14	39.6	32.4	28	75	38	28	75	38
Substrate																		
d50 (mm)						===			===			===			===			===
d84 (mm)						===			===			===			===			===
Additional Reach Parameters																		
Valley Length (ft)						===			===			===			===			===
Channel Length (ft)						===			===			===			===			===
Sinuosity						1.1			1.2			1.22			1.1			1.1
Water Surface Slope (ft/ft)						0.93%			2.58%			0.50%			0.93%			0.66%
BF slope (ft/ft)						===			===			===			===			===
Rosgen Classification						Eg			E			E			E/C			E/C

Table 10E. Baseline Morphology and Hydraulic Summary
Aycock Springs Travis Creek

Parameter	USGS Gage Data			Pre-Existing Condition			Project Reference Cedarock Park			Project Reference Cripple Creek			Design			As-built		
Dimension	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**
BF Width (ft)	USGS gage data is			30	51.7	41.4	8	12.1	8.1	3	6.1	4.6	25.7	29.6	27.7	25.2	30.3	26.7
Floodprone Width (ft)	unavailable for this			68	160	122	15	25	18	150	150	150	200	300	250			150
BF Cross Sectional Area (ft2)	project					54.9			8			5.9			54.9	41.3	73.9	51.2
BF Mean Depth (ft)				1.1	1.8	1.4	0.8	1	0.8	0.7	1.5	1.1	1.9	2.1	2	1.6	2.4	2
BF Max Depth (ft)				3.3	4.1	3.7	1.1	1.4	1.4	1	2.3	1.7	2.7	3	2.8	2.3	3.4	2.8
Width/Depth Ratio				16.7	47	32.1	8	15.1	10.1	4	4.3	4.2	12	16	14	12	16	13
Entrenchment Ratio				1.6	5.3	3.2	1.9	2.2	2.1	24.6	50	37.3	7.2	10.8	9	5	6	5.6
Bank Height Ratio				1	1.1	1	1	1.8	1	1	1.5	1.3	1	1.2	1			1
Wetted Perimeter(ft)						===			===			===			===			===
Hydraulic radius (ft)						===			===			===			===			===
Pattern																		
Channel Beltwidth (ft)				No pattern of riffles			20	38	22.8	15.1	29.2	24.3	83	166	111	83	166	111
Radius of Curvature (ft)				and pools due to			11	27	16.5	8.9	19.4	13.2	55	111	83	55	111	83
Meander Wavelength (ft)				straightening activties			44	116	68.4	31	74	47.8	166	332	236	166	332	236
Meander Width ratio							2.4	4.7	2.8	2.1	4	3.4	3	6	4	3	6	4
Profile																		
Riffle length (ft)				No pattern of riffles					===			===			===	16	87	54
Riffle slope (ft/ft)				and pools due to			1.00%	5.76%	3.16%	0.00%	1.54%	0.83%	0.28%	0.64%	0.41%	0.00%	0.70%	0.19%
Pool length (ft)				straightening activties					===			===			===	27	70	43
Pool spacing (ft)							25	69	37.2	14	39.6	32.4	83	222	111	83	222	111
Substrate																		
d50 (mm)						===			===			===			===			===
d84 (mm)						===			===			===			===			===
Additional Reach Parameters																		
Valley Length (ft)						===			===			===			===			===
Channel Length (ft)						===			===			===			===			===
Sinuosity						1.05			1.2			1.22			1.05			1.05
Water Surface Slope (ft/ft)						NA			2.58%			0.50%			0.23%			0.10%
BF slope (ft/ft)						===			===			===			===			===
Rosgen Classification						Fc			E			E			E/C			E/C

Table 11A. Morphology and Hydraulic Monitoring Summary
Aycock Travis Creek (Downstream) - Stream and Wetland Restoration Site

Parameter	XS 1 Riffle (Travis Down)						XS 2 Riffle (Travis Down)						XS 3 Pool (Travis Down)						XS 4 Riffle (Travis Down)						XS 5 Pool (Travis Down)						XS 6 Riffle (Travis Down)					
Dimension	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**
BF Width (ft)	26	26.7	26.4	27.3	28.5	29.5	25.2	26.2	26.3	28.3	27.7	29	33.7	33.2	35.4	39	43.5	43.9	25.5	27	26.5	28.4	29.2	28.674	26	26.7	26	25.7	32.5	32.7	27.3	27.7	26.8	28.9	29.8	29.2
Floodprone Width (ft)	150	150	150	150	150	150	150	150	150	150	150	150	----	----	----	----	----	----	150	150	150	150	150	150	----	----	----	----	----	----	150	150	150	150	150	150
BF Cross Sectional Area (ft2)	41.3	40	40.1	40.1	41.3	41.3	47.5	47.4	47.9	47.9	47.5	47.5	58.7	55.8	57.2	57.2	58.7	58.7	47.2	44.6	43.8	43.8	47.2	47.2	61.4	58.1	52.3	52.3	61.4	61.4	54.9	50.6	50.3	50.3	54.9	54.9
BF Mean Depth (ft)	1.6	1.5	1.5	1.5	1.4	1.4	1.9	1.8	1.8	1.7	1.7	1.64	1.7	1.7	1.6	1.5	1.3	1.3	1.9	1.7	1.7	1.5	1.6	1.6461	2.4	2.2	2.0	2.0	1.9	1.9	2.0	1.8	1.9	1.7	1.8	1.88
BF Max Depth (ft)	2.3	2.3	2.2	2.3	2.6	2.7	2.5	2.5	2.6	2.9	2.8	2.93	3.7	3.5	3.7	3.6	4.0	4.0	2.5	2.6	2.6	2.7	2.997	2.9459	4	3.7	3.2	3.3	3.4	4.0	3	2.9	2.8	3	3.1	3.1
Width/Depth Ratio	16.4	17.8	17.4	18.6	19.7	21.1	13.4	14.5	14.4	16.7	16.2	17.6	----	----	----	----	----	----	13.8	16.3	16.0	18.4	18.1	17.4	----	----	----	----	----	----	13.6	15.2	14.3	16.6	16.2	15.5
Entrenchment Ratio	5.8	5.6	5.7	5.5	5.3	5.1	6.0	5.7	5.7	5.3	5.4	5.2	----	----	----	----	----	----	5.9	5.6	5.7	5.3	5.1	5.2	----	----	----	----	----	----	5.5	5.4	5.6	5.2	5.0	5.1
Low Bank Height (ft)	2.3	2.3	2.3	2.3	2.8	2.7	2.5	2.5	2.5	2.5	2.8	2.7	3.7	3.7	3.7	3.7	3.9	3.5	2.5	2.5	2.5	2.5	2.6	2.8	4.0	4.0	4.0	4.0	3.4	3.8	3.0	3.0	3.0	3.0	2.9	2.8
Bank Height Ratio	1.0	1.0	1.0	1.0	1.07	1.0	1.0	1.0	1.0	<1	1.0	<1	----	----	----	----	----	----	1.0	1.0	1.0	<1	<1	<1	----	----	----	----	----	----	1.0	1.0	1.1	1.0	<1	<1
Wetted Perimeter (ft)	27.1	27.4	27.2	28	29.4	30.9	26.4	27.5	27.3	29.5	29.1	30.1	34.8	34.4	36.4	40.2	45.1	46.2	26.6	28	27.5	29.6	30.4	30.392	27.6	28.2	27.3	26.9	33.8	34.2	28.7	29.1	27.9	30.4	31.3	30.7
Hydraulic Radius (ft)	1.5	1.5	1.5	1.4	1.4	1.3	1.8	1.7	1.8	1.6	1.6	1.6	1.7	1.6	1.6	1.4	1.3	1.3	1.8	1.6	1.6	1.5	1.6	1.6	2.2	2.1	1.9	1.9	1.8	1.8	1.9	1.7	1.8	1.7	1.8	1.8
Substrate																																				
d50 (mm)	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
d84 (mm)	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Parameter	XS 7 Pool (Travis Down)						XS 8 Riffle (Travis Down)						XS 9 Pool (Travis Down)						XS 10 Pool (Travis Down)						XS 11 Riffle (Travis Down)					
Dimension	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**
BF Width (ft)	25.9	27.7	25.7	25.1	28.9	28.9	28.1	28.5	28.6	28	28.9	29	29.3	29.1	29.7	27.8	27.4	22.2	38.6	38.6	39.1	37.5	43.8	43.1	30.3	29.8	30.5	30.7	34.5	36.6
Floodprone Width (ft)	----	----	----	----	----	----	150	150	150	150	150	150	----	----	----	----	----	----	----	----	----	----	----	----	150	150	150	150	150	150
BF Cross Sectional Area (ft2)	60	45.8	44.9	44.9	60	60	64.6	57.4	58.3	58.3	64.6	64.6	65.9	63.1	60.8	60.8	65.9	65.9	100	91	87.5	87.5	100.1	100.1	73.9	66.6	69.6	69.6	73.9	73.9
BF Mean Depth (ft)	2.3	1.7	1.7	1.8	2.1	2.1	2.3	2.0	2.0	2.1	2.2	2.2	2.2	2.2	2.0	2.2	2.4	3.0	2.6	2.4	2.2	2.3	2.3	2.3	2.4	2.2	2.3	2.3	2.1	2.0
BF Max Depth (ft)	3.9	2.8	2.5	3	3.5	3.4	3.3	3.1	3.1	3.4	3.7	3.7	3.7	3.4	3.4	3.8	4.0	4.2	4.3	4.2	4.1	4.3	5.003	5.0	3.4	3.6	3.6	3.6	3.8	3.9
Width/Depth Ratio	----	----	----	----	----	----	12.2	14.2	14.0	13.4	12.9	13.0	----	----	----	----	----	----	----	----	----	----	----	----	12.4	13.3	13.4	13.5	16.1	18.1
Entrenchment Ratio	----	----	----	----	----	----	5.3	5.3	5.2	5.4	5.2	5.2	----	----	----	----	----	----	----	----	----	----	----	----	5.0	5.0	4.9	4.9	4.3	4.1
Low Bank Height (ft)	3.9	3.9	3.9	3.9	3.2	3.3	3.3	3.3	3.3	3.3	3.7	3.8	3.7	3.7	3.7	3.7	4.1	3.8	4.3	4.3	4.3	4.3	5.1	4.9	3.4	3.4	3.4	3.4	3.9	3.8
Bank Height Ratio	----	----	----	----	----	----	1.0	1.1	1.1	1.0	1.0	1.0	----	----	----	----	----	----	----	----	----	----	----	----	1.0	<1	<1	<1	1.0	1.0
Wetted Perimeter (ft)	27.5	29.1	26.8	26.2	30.8	31.5	29.5	29.7	29.8	29.8	30.5	31.1	30.6	30.3	30.8	29.4	30	25.3	40.2	40	40.4	39.1	46	45.1	31.8	31.4	32.1	32.1	36.2	32.5
Hydraulic Radius (ft)	2.2	1.6	1.7	1.7	1.9	1.9	2.2	1.9	2.0	2.0	2.1	2.1	2.2	2.1	2.0	2.1	2.2	2.6	2.5	2.3	2.2	2.2	2.2	2.2	2.3	2.1	2.2	2.2	2.0	2.3
Substrate																														
d50 (mm)	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
d84 (mm)	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

*MY0-2 BHR were calculated using DMS method of "Dmax year x /Dmax year 0". MY3 was calculated using DMS method of area best fit, fixing the cross-sectional area to MY2. MY5-7 BHR were calculated using area best fit, fixing the cross-sectional area to MY0.

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Table 11B. Morphology and Hydraulic Monitoring Summary
Aycock Travis Creek (Upstream) - Stream and Wetland Restoration Site

Parameter	XS 12 Riffle (Travis Up)						XS 13 Pool (Travis Up)						XS 14 Riffle (Travis Up)					
Dimension	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**
BF Width (ft)	29	29.6	29.7	31.3	30	31	26.9	26.9	27.8	27.8	30.7	28.9	32.8	32.3	31.9	33.6	36.4	36.4
Floodprone Width (ft)	150	150	150	150	150	150	----	----	----	----	----	----	150	150	150	150	150	150
BF Cross Sectional Area (ft2)	68.7	66.4	67.9	67.9	68.7	68.7	64.0	50.3	51.9	48.2	64.0	64.0	104.5	92.4	94.6	94.6	104.5	104.5
BF Mean Depth (ft)	2.4	2.2	2.3	2.2	2.3	2.2	2.4	1.9	1.9	1.7	2.1	2.2	3.2	2.9	3.0	2.8	2.9	2.9
BF Max Depth (ft)	3.4	3.5	3.5	3.5	4.0	4.3	3.9	3.3	3.2	3.5	4.0	5.1	4.8	4.1	4.5	4.6	4.8	4.83
Width/Depth Ratio	12.2	13.2	13.0	14.4	13.1	14	----	----	----	----	----	----	10.295	11.3	10.8	11.9	12.7	12.7
Entrenchment Ratio	5.2	5.1	5.1	4.8	5.0	4.8	----	----	----	----	----	----	4.6	4.6	4.7	4.5	4.1	4.1
Low Bank Height (ft)	3.4	3.4	3.4	3.4	4.1	4.4	3.9	3.9	3.9	3.9	3.5	4.9	4.8	4.8	4.8	4.8	4.8	4.6
Bank Height Ratio	1.00	<1	<1	<1	1.0	1.0	----	----	----	----	----	----	1.0	1.2	1.1	1.0	1.0	<1
Wetted Perimeter (ft)	30.4	30.8	30.9	32.5	31.4	32.5	28.8	28.1	28.8	32.5	32.9	31.6	35.0	34.2	33.8	35.8	38.5	38.2
Hydraulic Radius (ft)	2.3	2.2	2.2	2.1	2.2	2.1	2.2	1.8	1.8	1.5	1.9	2.0	3.0	2.7	2.8	2.6	2.7	2.7
Substrate																		
d50 (mm)	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
d84 (mm)	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

*MY0-2 BHR were calculated using DMS method of "Dmax year x /Dmax year 0". MY3 was calculated using DMS method of area best fit, fixing the cross-sectional area to MY2. MY5-7 BHR were calculated using area best fit, fixing the cross-sectional area to MY0.

Table 11C. Morphology and Hydraulic Monitoring Summary
Aycock UT-1 - Stream and Wetland Restoration Site

Parameter	XS 1 Riffle (UT 1)						XS 2 Riffle (UT 1)						XS 3 Pool (UT 1)						XS 4 Riffle (UT 1)						XS 5 Riffle (UT 1)					
Dimension	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**
BF Width (ft)	9.3	9.2	9.7	9.1	11.3	11.4	8.8	9.3	9.2	10.2	12.9	13.6	8.4	8.4	9.3	9.5	8.6	9.1	9.3	9.7	9.3	10.2	10.7	10.7	9.6	9.5	9.3	9.2	11.6	13
Floodprone Width (ft)	90	90	90	90	90	90	90	90	90	90	90	90	----	----	----	----	----	----	90	90	90	90	90	90.0	90	90	90	90	90	90
BF Cross Sectional Area (ft2)	5.6	4.7	4.4	4.4	5.6	5.56	4.6	3.7	3.7	3.7	4.6	4.6	6.7	5.6	6.4	6.4	6.7	6.7	6.2	5.5	5.7	5.7	6.2	6.2	6.6	5.9	5.8	5.8	6.6	6.61
BF Mean Depth (ft)	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.8	0.7	0.7	0.7	0.8	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.7	0.6	0.6	0.6	0.6	0.5
BF Max Depth (ft)	1.1	0.8	0.9	0.8	0.9	1.05	0.7	0.6	0.7	0.6	0.7	0.87	1.3	1.2	1.3	1.4	1.4	1.39	1	0.9	0.9	0.9	1.1	1.1	1.1	1.1	1	1	1.2	1.26
Width/Depth Ratio	15.4	18.0	21.4	18.8	22.7	23.2	16.8	23.4	22.9	28.1	36.4	40.3	----	----	----	----	----	----	14.0	17.1	15.2	18.4	18.3	18.6	14.0	15.3	14.9	14.8	20.4	25.4
Entrenchment Ratio	9.7	9.8	9.3	9.9	8.0	7.9	10.2	9.7	9.8	8.8	7.0	6.6	----	----	----	----	----	----	9.7	9.3	9.7	8.8	8.4	8.4	9.4	9.5	9.7	9.8	7.8	6.9
Low Bank Height (ft)	1.1	1.1	1.1	1.1	0.9	1.1	0.7	0.7	0.7	0.7	0.6	0.9	1.3	1.3	1.3	1.3	1.4	1.3	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.2	1.2
Bank Height Ratio	1.0	1.4	1.2	1.4	1.0	1.0	1.0	1.2	1.0	1.2	<1	1.0	----	----	----	----	----	----	1.0	1.1	1.1	1.1	<1	1.0	1.0	1.0	1.1	1.1	1.01	1.0
Wetted Perimeter (ft)	9.7	9.4	10	9.3	11.5	11.7	9	9.4	9.4	10.3	13.1	13.8	8.9	8.9	9.8	10	9.3	9.9	9.7	10	9.6	10.5	11	11.1	10	10	9.8	9.7	12	13.5
Hydraulic Radius (ft)	0.6	0.5	0.4	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.7	0.6	0.7	0.6	0.7	0.7	0.6	0.6	0.6	0.5	0.5	0.6	0.7	0.6	0.6	0.6	0.7	0.5
Substrate																														
d50 (mm)	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
d84 (mm)	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Parameter	XS 6 Riffle (UT 1)						XS 7 Riffle (UT 1)						XS 8 Pool (UT 1)						XS 9 Riffle (UT 1)						XS 10 Pool (UT 1)					
Dimension	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**
BF Width (ft)	6.9	7.5	6.7	6.9	11.4	11.5	7.5	7.2	7.3	6.7	9.6	11.2	7.8	8.7	7.2	6	11.2	11.3	7.9	7.2	7.6	6.7	9.6	10.89	7.6	7	6.9	5.5	4.8	4.54
Floodprone Width (ft)	90	90	90	90	90	90	90	90	90	90	90	90	----	----	----	----	----	----	90	90	90	90	90	90	----	----	----	----	----	----
BF Cross Sectional Area (ft2)	3.6	1.9	2.2	2.2	3.6	3.6	3.9	2.4	2.4	2.4	3.6	3.9	5.7	4.1	3.6	3.6	5.7	5.74	3	4.1	1.6	1.6	3	2.985	4.7	5.6	5.5	5.5	4.7	4.72
BF Mean Depth (ft)	0.5	0.3	0.3	0.3	0.3	0.3	0.5	0.3	0.3	0.4	0.4	0.3	0.7	0.5	0.5	0.6	0.5	0.5	0.4	0.6	0.2	0.2	0.3	0.3	0.6	0.8	0.8	1	1.0	1.0
BF Max Depth (ft)	0.7	0.4	0.4	0.4	0.6	0.73	0.7	0.6	0.6	0.7	0.9	0.81	1.2	1	0.9	1	1.2	1.32	0.7	1.1	0.4	0.6	0.798	0.826	1.1	1.3	1.2	1.4	1.38	1.3
Width/Depth Ratio	13.2	29.6	20.4	21.9	36.1	36.9	14.4	21.6	22.2	18.9	25.6	32.2	----	----	----	----	----	----	20.8	12.6	36.1	28.1	30.7	39.7	----	----	----	----	----	----
Entrenchment Ratio	13.0	12.0	13.4	13.1	7.9	7.8	12.0	12.5	12.3	13.4	9.4	8.0	----	----	----	----	----	----	11.4	12.5	11.8	13.5	9.4	8.3	----	----	----	----	----	----
Low Bank Height (ft)	0.7	0.7	0.7	0.7	0.5	0.5	0.7	0.7	0.7	0.7	0.9	0.7	1.2	1.2	1.2	1.2	0.9	1.2	0.7	0.7	0.7	0.7	0.8	0.7	1.1	1.1	1.1	1.1	1.5	2.2
Bank Height Ratio	1.0	1.8	1.8	1.8	<1	<1	1.0	1.2	1.2	1.0	1.0	<1	----	----	----	----	----	----	1.0	0.6	1.8	1.2	1.0	<1	----	----	----	----	----	----
Wetted Perimeter (ft)	7.2	7.6	6.8	7	11.6	12	7.8	7.3	7.5	6.9	9.9	11.4	8.3	9.1	7.5	6.6	11.8	12.1	8	7.8	7.7	7	9.9	11.2	8	7.7	7.7	6.6	6	5.8
Hydraulic Radius (ft)	0.5	0.3	0.3	0.3	0.5	0.3	0.5	0.3	0.3	0.3	0.4	0.3	0.7	0.5	0.5	0.6	0.5	0.5	0.4	0.5	0.2	0.2	0.3	0.3	0.6	0.7	0.7	0.8	0.8	0.8
Substrate																														
d50 (mm)	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
d84 (mm)	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Parameter	XS 11 Riffle (UT 1)						XS 12 Riffle (UT 1)						XS 13 Pool (UT 1)						XS 14 Riffle (UT 1)						XS 15 Riffle (UT 1)					
Dimension	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**
BF Width (ft)	7.4	7	7.8	8.4	8.4	7.4	8	7.4	6.4	7.3	9.4	11.1	8.6	8	8.3	8.3	11.8	11.6	6.4	6.3	6.3	6.2	6.5	6.622	7.1	7.2	6.3	5.6	9.1	10.1
Floodprone Width (ft)	90	90	90	90	90	90	90	90	90	90	90	90	----	----	----	----	----	----	90	90	90	90	90	90	90	90	90	90	90	90
BF Cross Sectional Area (ft2)	3.5	3.5	3.5	3.5	3.5	3.53	3.7	2.8	2.8	2.8	3.7	3.66	6.5	4.3	4.7	4.7	6.5	6.49	3.1	2.8	2.8	2.8	3.1	3.098	4	3.3	2.4	2.4	4	3.96
BF Mean Depth (ft)	0.5	0.5	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.8	0.5	0.6	0.6	0.6	0.6	0.5	0.4	0.4	0.4	0.5	0.5	0.6	0.5	0.4	0.4	0.4	0.4
BF Max Depth (ft)	0.8	0.8	0.7	0.9	0.9	0.96	0.7	0.6	0.6	0.6	0.7	0.75	1.2	1.2	1.3	1.3	1.6	1.75	0.7	0.6	0.7	0.6	0.7	0.839	0.9	0.8	0.7	0.9	0.9	0.93
Width/Depth Ratio	15.6	14.0	17.4	19.8	19.8	15.5	17.3	19.6	14.6	18.8	23.9	33.6	----	----	----	----	----	----	13.2	14.2	14.2	14.0	13.6	14.2	12.6	15.7	16.5	13.0	20.7	25.7
Entrenchment Ratio	12.2	12.9	11.5	10.8	10.8	12.2	11.3	12.2	14.1	12.3	9.6	8.1	----	----	----	----	----	----	14.1	14.3	14.3	14.4	13.8	13.6	12.7	12.5	14.3	16.1	9.9	8.9
Low Bank Height (ft)	0.8	0.8	0.8	0.8	1.0	1.0	0.7	0.7	0.7	0.7	0.7	0.7	1.2	1.2	1.2	1.2	1.4	1.4	0.7	0.7	0.7	0.7	0.7	0.8	0.9	0.9	0.9	0.9	0.9	0.9
Bank Height Ratio	1.0	1.0	1.1	<1	1.03	1.03	1.0	1.2	1.2	1.2	1.03	<1	----	----	----	----	----	----	1.0	1.2	1.0	1.2	1.0	1.0	1.0	1.1	1.3	1.0	1.0	1.0
Wetted Perimeter (ft)	7.8	7.3	8.1	8.9	8.9	8.0	8.5	7.6	6.6	7.5	9.6	11.3	9.2	8.5	9.0	9.0	12.7	13.1	6.8	6.5	6.6	6.5	6.8	6.9	7.4	7.6	6.6	6.1	9.5	10.6
Hydraulic Radius (ft)	0.4	0.5	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.7	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.5	0.4	0.5	0.4	0.4	0.4	0.4	0.4
Substrate																														
d50 (mm)	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
d84 (mm)	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

*MY0-2 BHR were calculated using DMS method of "Dmax year x /Dmax year 0". MY3 was calculated using DMS method of area best fit, fixing the cross-sectional area to MY2. MY5-7 BHR were calculated using area best fit, fixing the cross-sectional area to MY0.

Table 11C continued. Morphology and Hydraulic Monitoring Summary
Aycock UT-1 - Stream and Wetland Restoration Site

Parameter	XS 16 Riffle (UT 1)						XS 17 Riffle (UT 1)						XS 18 Riffle (UT 1)						XS 19 Pool (UT 1)						XS 20 Riffle (UT 1)					
Dimension	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**
BF Width (ft)	9	8.3	8.5	8.8	11.3	11.1	8.5	8.1	7.4	7.4	7.3	8.88	7.1	7.2	6.7	6.9	6.4	6.6	7.6	7.7	8.1	8.1	9	9.23	9.1	8.5	8.7	9.4	9.1	12.8
Floodprone Width (ft)	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	----	----	----	----	----	----	90	90	90	90	90	90
BF Cross Sectional Area (ft2)	4.6	2.6	2.8	2.8	4.6	4.57	3.9	3.6	3.7	3.7	3.9	3.89	3.5	3.4	3.6	3.6	3.5	3.5	6.5	5.4	5.3	5.3	6.5	6.51	5.3	4.4	4.9	4.9	5.3	5.35
BF Mean Depth (ft)	0.5	0.3	0.3	0.3	0.4	0.4	0.5	0.4	0.5	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.9	0.7	0.7	0.7	0.7	0.7	0.6	0.5	0.6	0.5	0.6	0.4
BF Max Depth (ft)	0.8	0.5	0.5	0.5	0.8	0.8	0.7	0.7	0.8	0.9	0.9	1.0	0.6	0.7	0.8	0.9	1.4	1.2	1.3	1	1.1	1.2	1.5	1.51	0.9	0.7	0.8	0.8	0.9	0.9
Width/Depth Ratio	17.6	26.5	25.8	27.6	27.8	27.0	18.5	18.2	14.8	14.5	13.7	20.3	14.4	15.2	12.5	13.5	11.7	12.5	----	----	----	----	----	----	15.6	16.4	15.4	18.1	15.6	30.6
Entrenchment Ratio	10.0	10.8	10.6	10.2	8.0	8.1	10.6	11.1	12.2	12.2	12.3	10.1	12.7	12.5	13.4	13.0	14.1	13.6	----	----	----	----	----	----	9.9	10.6	10.3	9.6	9.9	7.0
Low Bank Height (ft)	0.8	0.8	0.8	0.8	0.7	0.6	0.7	0.7	0.7	0.7	0.9	1.1	0.6	0.6	0.6	0.6	1.4	1.3	1.3	1.3	1.3	1.3	1.5	1.6	0.9	0.9	0.9	0.9	0.9	0.94
Bank Height Ratio	1.0	1.6	1.6	1.6	<1	<1	1.0	1.0	<1	<1	<1	1.0	1.0	<1	<1	<1	1.0	1.0	----	----	----	----	----	----	1.0	1.3	1.1	1.1	1.0	1.06
Wetted Perimeter (ft)	9.3	8.4	8.7	9.0	11.5	11.3	8.7	8.3	7.7	7.7	7.7	9.2	7.4	7.4	7.0	7.4	7.7	7.5	8.2	8.3	8.7	8.6	9.8	10.1	9.4	8.7	9.0	9.8	9.4	13.1
Hydraulic Radius (ft)	0.5	0.3	0.3	0.3	0.4	0.4	0.5	0.4	0.5	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.8	0.7	0.6	0.6	0.7	0.6	0.6	0.5	0.5	0.5	0.6	0.4
Substrate																														
d50 (mm)	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
d84 (mm)	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Parameter	XS 21 Pool (UT 1)						XS 22 Riffle (UT 1)						XS 23 Riffle (UT 1)						XS 24 Riffle (UT 1)					
Dimension	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**
BF Width (ft)	8.3	8.2	9.7	8.4	15	14.1	7.2	7.5	7.3	6.4	7	9.43	7.6	6.8	7	7	6.9	10.2	8	7.7	7.6	7.8	11.3	10.2
Floodprone Width (ft)	----	----	----	----	----	----	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
BF Cross Sectional Area (ft2)	9.3	5.9	5.4	5.4	9.3	9.35	3.6	3.4	3.3	3.3	3.6	3.56	3.2	3.2	3	3	3.2	3.24	4	3.2	3.4	3.4	4	3.24
BF Mean Depth (ft)	1.1	0.7	0.6	0.6	0.6	0.7	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.5	0.4	0.4	0.5	0.3	0.5	0.4	0.4	0.4	0.4	0.3
BF Max Depth (ft)	2.1	1.4	1.3	1.7	2.1	2.3	0.7	0.7	0.7	1.0	1.2	1.2	0.6	0.6	0.7	0.9	0.8	0.9	0.7	0.7	0.7	0.7	0.8	0.9
Width/Depth Ratio	----	----	----	----	----	----	14.4	16.5	16.1	12.4	13.6	25.0	18.1	14.5	16.3	16.1	14.9	32.1	16.0	18.5	17.0	17.7	31.9	32.1
Entrenchment Ratio	----	----	----	----	----	----	12.5	12.0	12.3	14.1	12.9	9.5	11.8	13.2	12.9	12.9	13.0	8.8	11.3	11.7	11.8	11.6	8.0	8.8
Low Bank Height (ft)	2.1	2.1	2.1	2.1	2.1	2.3	0.7	0.7	0.7	0.7	1.2	1.1	0.6	0.6	0.6	0.6	0.8	0.8	0.7	0.7	0.7	0.7	0.8	0.8
Bank Height Ratio	----	----	----	----	----	----	1.0	1.0	1.0	<1	1.0	<1	1.0	1.0	0.9	<1	1.0	<1	1.0	1.0	1.0	1.0	1.0	<1
Wetted Perimeter (ft)	9.5	9.2	10.4	10	16.6	16.2	7.5	7.8	7.5	6.8	7.6	10.2	9.3	7.0	7.2	7.4	7.3	10.6	9.3	7.8	7.8	8	11.5	10.6
Hydraulic Radius (ft)	1	0.6	0.5	0.5	0.6	0.6	0.5	0.4	0.4	0.5	0.5	0.3	0.5	0.5	0.4	0.4	0.4	0.3	0.5	0.4	0.4	0.4	0.3	0.3
Substrate																								
d50 (mm)	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
d84 (mm)	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

*MY0-2 BHR were calculated using DMS method of "Dmax year x /Dmax year 0". MY3 was calculated using DMS method of area best fit, fixing the cross-sectional area to MY2. MY5-7 BHR were calculated using area best fit, fixing the cross-sectional area to MY0.

Table 11D. Morphology and Hydraulic Monitoring Summary
Aycock UT-2 - Stream and Wetland Restoration Site

Parameter	XS 1 Pool (UT 2)						XS 2 Riffle (UT 2)						XS 3 Riffle (UT 2)						XS 4 Riffle (UT 2)						XS 5 Riffle (UT 2)						XS 6 Riffle (UT 2)						XS 7 Pool (UT 2)					
Dimension	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**
BF Width (ft)	6.5	6.3	6.9	7.3	10.4	10.6	4.8	5.6	5.5	5.6	5.1	5.0	5.7	5.3	5.8	5.8	8.4	8.2	6.4	5.7	5.4	5.4	4.7	5.0	8.4	7.7	8.5	9.9	9.2	8.9	6.9	7	6.8	6.4	9.9	9.4	8.3	9.4	8.2	8.4	10.8	10.6
Floodprone Width (ft)	----	----	----	----	----	----	90	90	90	90	90	90.0	90	90	90	90	90	90.0	90	90	90	90	90	90.0	90	90	90	90	90	90.0	90	90	90	90	90	90.0	----	----	----	----	----	----
BF Cross Sectional Area (ft2)	3.8	2.1	3.2	3.2	3.8	3.8	1	1.1	1	1	1	1.0	1.7	1.4	1.2	1.2	1.7	1.7	1	0.9	0.9	0.9	1	1.0	3.1	2.8	2.9	2.9	3.1	3.1	2.3	1.4	1	1	2.3	2.3	5.1	4.1	3.8	3.8	5.1	5.1
BF Mean Depth (ft)	0.6	0.3	0.5	0.3	0.4	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.4	0.3	0.3	0.3	0.4	0.3	0.2	0.1	0.2	0.2	0.2	0.6	0.4	0.5	0.5	0.5	0.5
BF Max Depth (ft)	1	0.6	0.7	0.6	0.8	0.8	0.3	0.3	0.2	0.3	0.3	0.3	0.5	0.5	0.5	0.4	0.5	0.5	0.4	0.3	0.3	0.3	0.3	0.4	0.7	0.6	0.6	0.5	0.8	0.7	0.6	0.3	0.3	0.3	0.5	0.5	1.1	0.8	0.8	0.9	1.0	0.9
Width/Depth Ratio	----	----	----	----	----	----	23.0	28.5	30.3	32.3	25.4	25.8	19.1	20.1	28.0	26.9	41.5	39.4	41.0	36.1	32.4	33.0	22.1	25.7	22.8	21.2	24.9	33.2	27.3	25.2	20.7	35.0	46.2	40.5	42.6	38.5	----	----	----	----	----	----
Entrenchment Ratio	----	----	----	----	----	----	18.8	16.1	16.4	16.2	17.7	18.1	15.8	17.0	15.5	15.6	10.7	11.0	14.1	15.8	16.7	16.7	19.1	18.0	10.7	11.7	10.6	9.1	9.8	10.1	13.0	12.9	13.2	14.1	9.1	9.6	----	----	----	----	----	----
Low Bank Height (ft)	1.0	1.0	1.0	1.0	0.6	0.5	0.3	0.3	0.3	0.3	0.4	0.2	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.4	0.7	0.7	0.7	0.7	0.8	0.7	0.6	0.6	0.6	0.6	0.5	0.5	1.1	1.1	1.1	1.1	1.0	0.9
Bank Height Ratio	----	----	----	----	----	----	1.0	1.0	1.5	1.0	1.09	<1	1.0	1.0	1.0	1.3	1.0	<1	1.0	1.3	1.3	1.3	<1	1.07	1.0	1.2	1.2	1.4	1.02	1.0	1.0	2.0	2.0	2.0	<1	1.0	----	----	----	----	----	----
Wetted Perimeter (ft)	6.9	6.5	7.2	7.4	10.6	10.7	4.9	5.7	5.6	5.6	5.2	5.0	5.8	5.4	6.0	5.9	8.5	8.3	6.5	5.7	5.5	5.5	4.7	5.1	8.6	7.9	8.6	10.0	9.4	9.0	7.0	7.0	6.9	6.4	10.0	9.5	8.8	9.5	8.4	8.6	11.0	10.9
Hydraulic Radius (ft)	0.6	0.3	0.4	0.3	0.4	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.2	0.1	0.2	0.2	0.2	0.6	0.4	0.5	0.4	0.5	0.5
Substrate																																										
d50 (mm)	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----		
d84 (mm)	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----		

Parameter	XS 8 Riffle (UT 2)						XS 9 Riffle (UT 2)						XS 10 Pool (UT 2)						XS 11 Pool (UT 2)						XS 12 Riffle (UT 2)						XS 13 Riffle (UT 2)					
Dimension	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**
BF Width (ft)	8.6	8.3	8.3	10.1	10.5	10.3	7.4	7.9	7.9	8.5	9.6	9.8	7.5	7.8	7.6	6.7	9.8	9.8	6.2	6.4	5.6	5.8	7.1	7.4	8.3	9.2	7.7	7.2	9.2	9.5	7.2	7.6	7.4	6.7	7.2	8.1
Floodprone Width (ft)	90	90	90	90	90	90	90	90	90	90	90	90.0	----	----	----	----	----	----	----	----	----	----	----	----	90	90	90	90	90	90.0	90	90	90	90	90	90.0
BF Cross Sectional Area (ft2)	3.6	3.1	2.8	2.8	3.6	3.61	4.2	3.8	4.4	4.4	4.2	4.2	5.2	4	4	4	5.2	5.2	3.5	2.7	2.5	2.5	3.5	3.5	3.2	2.3	1.9	1.9	3.2	3.2	2.1	1.7	1.8	1.8	2.1	2.1
BF Mean Depth (ft)	0.4	0.4	0.3	0.3	0.3	0.3	0.6	0.5	0.6	0.5	0.4	0.4	0.7	0.5	0.5	0.6	0.5	0.5	0.6	0.4	0.4	0.4	0.5	0.5	0.4	0.3	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.3
BF Max Depth (ft)	0.6	0.5	0.5	0.5	0.7	0.66	0.8	0.7	0.8	0.9	0.8	0.7	1.3	0.9	0.8	1.1	1.0	1.0	0.8	0.7	0.7	0.7	0.9	0.9	0.7	0.5	0.7	0.5	0.6	0.5	0.4	0.3	0.4	0.4	0.4	0.4
Width/Depth Ratio	20.5	22.2	24.6	36.6	30.6	29.6	13.0	16.4	14.2	16.5	21.9	23.0	----	----	----	----	----	----	----	----	----	----	----	----	21.5	36.8	31.2	27.4	26.5	28.5	24.7	34.0	30.4	24.8	24.7	32.2
Entrenchment Ratio	10.5	10.8	10.8	8.9	8.6	8.7	12.2	11.4	11.4	10.5	9.4	9.1	----	----	----	----	----	----	----	----	----	----	----	----	10.8	9.8	11.7	12.5	9.8	9.4	12.5	11.8	12.2	13.4	12.5	11.1
Low Bank Height (ft)	0.6	0.6	0.6	0.6	0.6	0.6	0.8	0.8	0.8	0.8	0.8	0.7	1.3	1.3	1.3	1.3	0.9	0.8	0.8	0.8	0.8	0.8	0.9	1.0	0.7	0.7	0.7	0.7	0.6	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Bank Height Ratio	1.0	1.2	1.2	1.2	1.0	1.0	1.0	1.1	1.0	<1	1.09	<1	----	----	----	----	----	----	----	----	----	----	----	----	1.0	1.4	1.0	1.4	1.0	<1	1.0	1.3	1.0	1.0	<1	1.0
Wetted Perimeter (ft)	8.8	8.5	8.6	10.3	10.6	10.5	7.7	8.1	8.2	8.5	9.8	10.0	8.1	8.2	8.0	7.2	10.1	10.0	6.6	6.6	5.8	6.1	7.1	7.7	8.6	9.3	8.0	7.4	9.3	9.6	7.3	7.7	7.5	6.8	7.3	8.2
Hydraulic Radius (ft)	0.4	0.4	0.3	0.3	0.3	0.3	0.5	0.5	0.5	0.5	0.4	0.4	0.7	0.5	0.5	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.5	0.5	0.4	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.3
Substrate																																				
d50 (mm)	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
d84 (mm)	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

*MY0-2 BHR were calculated using DMS method of "Dmax year x /Dmax year 0". MY3 was calculated using DMS method of area best fit, fixing the cross-sectional area to MY2. MY5-7 BHR were calculated using area best fit, fixing the cross-sectional area to MY0.

Table 11E. Morphology and Hydraulic Monitoring Summary
Aycock UT-3 - Stream and Wetland Restoration Site

Parameter	XS 1 Riffle (UT 3)						XS 2 Riffle (UT 3)						XS 3 Pool (UT 3)						XS 4 Riffle (UT 3)						XS 5 Riffle (UT 3)					
Dimension	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**
BF Width (ft)	6.5	6.9	6.7	7.2	7	6.82	4.7	5.2	5.2	5.1	4.9	4.71	5	5.4	5.2	5.7	5	7.9	7	6.8	6.9	7.5	8.8	9.1	5.3	5.6	5.8	6.5	6.3	6.1
Floodprone Width (ft)	10	11	11	11	10	11	20	8	8	8	8	8	----	----	----	----	----	----	20	20	20	20	20	20	20	20	20	20	20	20
BF Cross Sectional Area (ft2)	2.7	2.3	2.4	2.4	2.7	2.71	1.9	1.6	1.9	1.9	1.9	1.91	3.6	3.2	3.2	3.2	3.6	3.6	2.2	1.9	1.7	1.7	2.2	2.2	1.2	1.1	1.2	1.2	1.2	1.2
BF Mean Depth (ft)	0.4	0.3	0.4	0.3	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.4	0.7	0.6	0.6	0.6	0.7	0.5	0.3	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
BF Max Depth (ft)	0.6	0.6	0.6	0.7	0.7	0.73	0.6	0.5	0.6	0.6	0.6	0.7	1	0.9	0.8	0.8	0.9	0.8	0.5	0.4	0.4	0.4	0.5	0.5	0.5	0.4	0.4	0.4	0.3	0.4
Width/Depth Ratio	15.6	20.7	18.7	21.8	18.1	17.2	11.6	16.9	14.2	13.9	12.5	11.7	----	----	----	----	----	----	22.3	24.3	28.0	33.7	35.2	37.6	23.4	28.5	28.0	35.4	33.6	31.0
Entrenchment Ratio	1.5	1.6	1.6	1.5	1.4	1.6	4.3	1.5	1.5	1.6	1.6	1.7	----	----	----	----	----	----	2.9	2.9	2.9	2.7	2.3	2.2	3.8	3.6	3.4	3.1	3.2	3.3
Low Bank Height (ft)	0.6	0.6	0.6	0.6	0.6	0.8	0.6	0.6	0.6	0.6	0.6	0.8	1.0	1.0	1.0	1.0	0.9	0.7	0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.3	0.6
Bank Height Ratio	1.0	1.0	1.0	<1	<1	1.10	1.0	1.2	1.0	1.0	1.0	1.08	----	----	----	----	----	----	1.0	1.3	1.3	1.3	1.02	<1	1.0	1.3	1.3	1.3	1.0	1.31
Wetted Perimeter (ft)	6.8	7.1	6.9	7.5	7.2	7.1	5.0	5.3	5.4	5.3	5.3	5.0	5.7	5.8	5.7	6.2	5.7	8.2	7.1	6.9	7.0	7.7	8.9	9.1	5.7	5.8	6.0	6.7	6.4	6.3
Hydraulic Radius (ft)	0.4	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.4	0.6	0.6	0.6	0.5	0.6	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Substrate	.						.																							
d50 (mm)	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
d84 (mm)	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

*MY0-2 BHR were calculated using DMS method of "Dmax year x /Dmax year 0". MY3 was calculated using DMS method of area best fit, fixing the cross-sectional area to MY2. MY5-7 BHR were calculated using area best fit, fixing the cross-sectional area to MY0.

Table 11F. Morphology and Hydraulic Monitoring Summary
Aycock UT-4 - Stream and Wetland Restoration Site

Parameter	XS 1 Riffle (UT 4)						XS 2 Pool (UT 4)						XS 3 Riffle (UT 4)						XS 4 Pool (UT 4)						XS 5 Riffle (UT 4)					
Dimension	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**
BF Width (ft)	8.3	9.4	8.8	9.1	10.2	9.3	8.5	9.1	9.5	9.2	11.1	11.7	8.6	8.7	8.4	9	12	13.1	8.5	10.6	10.7	10.5	11.6	12.8	8	8.3	7.8	7.9	8.5	8.7
Floodprone Width (ft)	50	50	50	50	50	50.0	----	----	----	----	----	----	50	50	50	50	50	50.0	----	----	----	----	----	----	50	50	50	50	50	50.0
BF Cross Sectional Area (ft2)	3.7	3.3	3.3	3.3	3.7	3.7	6.4	5.4	5.8	5.8	6.4	6.4	4.3	3.4	3.5	3.5	4.3	4.3	6.2	5.2	5.6	5.6	6.2	6.15	4.3	4.1	3.8	3.8	4.3	4.3
BF Mean Depth (ft)	0.4	0.4	0.4	0.4	0.4	0.4	0.8	0.6	0.6	0.6	0.6	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.7	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
BF Max Depth (ft)	0.6	0.5	0.6	0.6	0.7	0.7	1.5	1	1.1	1	1.1	1.1	0.8	0.5	0.6	0.6	0.7	0.7	1.2	1	1.1	1.2	1.1	1.18	0.7	0.7	0.7	0.7	0.8	0.8
Width/Depth Ratio	18.6	26.8	23.5	25.2	28.1	23.4	----	----	----	----	----	----	17.2	22.3	20.2	23.2	33.5	40.0	----	----	----	----	----	----	14.9	16.8	16.0	16.5	16.8	17.7
Entrenchment Ratio	6.0	5.3	5.7	5.5	4.9	5.4	----	----	----	----	----	----	5.8	5.7	6.0	5.6	4.2	3.8	----	----	----	----	----	----	6.3	6.0	6.4	6.3	5.9	5.7
Low Bank Height (ft)	0.6	0.6	0.6	0.6	0.8	0.5	1.5	1.5	1.5	1.5	1.1	1.0	0.8	0.8	0.8	0.8	0.7	0.6	1.2	1.2	1.2	1.2	1.0	1.1	0.7	0.7	0.7	0.7	0.8	0.9
Bank Height Ratio	1.0	1.2	1.0	1.0	1.19	<1	----	----	----	----	----	----	1.0	1.6	1.3	1.3	<1	<1	----	----	----	----	----	----	1.0	1.0	1.0	1.0	1.0	1.15
Wetted Perimeter (ft)	8.6	9.5	9.0	9.3	10.4	9.5	9.2	9.5	10.0	9.8	11.4	12.1	9.0	8.8	8.6	9.1	12.2	13.2	9.1	10.9	11.1	11.0	12.0	13.2	8.3	8.5	8.1	8.2	8.8	8.9
Hydraulic Radius (ft)	0.4	0.3	0.4	0.4	0.4	0.4	0.7	0.6	0.6	0.6	0.6	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.7	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Substrate																														
d50 (mm)	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
d84 (mm)	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Parameter	XS 6 Riffle (UT 4)						XS 7 Riffle (UT 4)						XS 8 Riffle (UT 4)					
Dimension	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**	**MY 0**	**MY1**	**MY2**	**MY3**	**MY5**	**MY7**
BF Width (ft)	8.1	8.9	8.9	8.4	9	8.4	9.9	11.7	9.1	9.8	11.4	10.4	10.9	11.1	11	10.6	11.7	12.2
Floodprone Width (ft)	50	50	50	50	50	50.0	50	50	50	50	50	50	50	50	50	50	50	50.0
BF Cross Sectional Area (ft2)	3.5	3.3	3.3	3.3	3.5	3.5	5.6	4.9	5	5	5.6	5.61	5.6	4.9	4.9	4.9	5.6	5.6
BF Mean Depth (ft)	0.4	0.4	0.4	0.4	0.4	0.4	0.6	0.4	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.5	0.5	0.5
BF Max Depth (ft)	0.6	0.5	0.6	0.7	0.6	0.7	0.9	0.6	0.8	0.7	0.8	0.9	0.8	0.7	0.7	0.7	0.9	0.8
Width/Depth Ratio	18.7	24.0	24.0	21.7	23.1	20.3	17.5	27.9	16.6	19	23.2	19.1	21.2	25.1	24.7	22.9	24.4	26.7
Entrenchment Ratio	6.2	5.6	5.6	5.9	5.6	5.9	5.1	4.3	5.5	5.1	4.4	4.8	4.6	4.5	4.5	4.7	4.3	4.1
Low Bank Height (ft)	0.6	0.6	0.6	0.6	0.6	0.7	0.9	0.9	0.9	0.9	0.8	0.95	0.8	0.8	0.8	0.8	0.9	0.8
Bank Height Ratio	1.0	1.2	1.0	<1	1.10	1.08	1.0	1.5	1.1	1.3	<1	1.06	1.0	1.1	1.1	1.1	1.07	1.0
Wetted Perimeter (ft)	8.4	9.0	9.0	8.9	9.2	8.6	10.2	11.9	9.4	10	11.7	10.6	11.1	11.3	11.2	10.8	12.1	12.4
Hydraulic Radius (ft)	0.4	0.4	0.4	0.4	0.4	0.4	0.6	0.4	0.5	0.5	0.5	0.53	0.5	0.4	0.4	0.5	0.5	0.5
Substrate																		
d50 (mm)	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
d84 (mm)	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

*MY0-2 BHR were calculated using DMS method of "Dmax year x /Dmax year 0". MY3 was calculated using DMS method of area best fit, fixing the cross-sectional area to MY2. MY5-7 BHR were calculated using area best fit, fixing the cross-sectional area to MY0.

APPENDIX E

HYDROLOGY DATA

Table 12. UT3 Channel Evidence

UT3 Channel Evidence	Year 1 (2016)	Year 2 (2017)	Year 3 (2018)	Year 4 (2019)	Year 5 (2020)	Year 6 (2021)	Year 7 (2022)
Max consecutive days channel flow	37	110	276	145	152	134	213
Presence of litter and debris (wracking)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Leaf litter disturbed or washed away	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Matted, bent, or absence of vegetation (herbaceous or otherwise)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sediment deposition and/or scour indicating sediment transport	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Water staining due to continual presence of water	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Formation of channel bed and banks	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sediment sorting within the primary path of flow	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sediment shelving or a natural line impressed on the banks	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Change in plant community (absence or destruction of terrestrial vegetation and/or transition to species adapted for flow or inundation for a long duration, including hydrophytes)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Development of channel pattern (meander bends and/or channel braiding) at natural topographic breaks, woody debris piles, or plant root systems	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Exposure of woody plant roots within the primary path of flow	No	No	No	No	No	No	No
Other:							


UT-3 Channel Formation

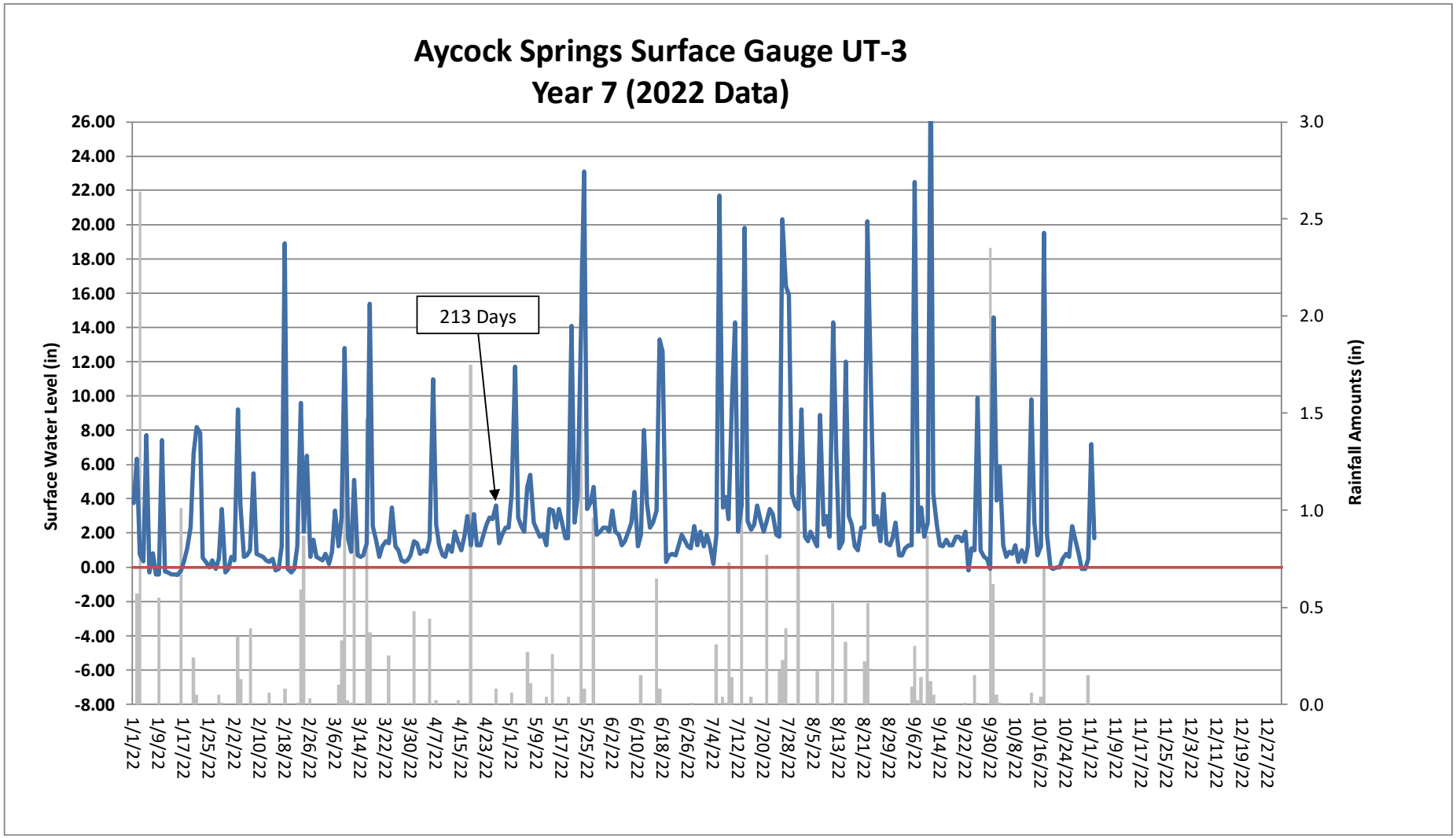

Aycock Springs Surface Gauge UT-3
Year 7 (2022 Data)
Surface Water Level (in)
Rainfall Amounts (in)
213 Days
26.00
24.00
22.00
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
-2.00
-4.00
-6.00
-8.00
3.0
2.5
2.0
1.5
1.0
0.5
0.0
1/1/22
1/9/22
1/17/22
1/25/22
2/2/22
2/10/22
2/18/22
2/26/22
3/6/22
3/14/22
3/22/22
3/30/22
4/7/22
4/15/22
4/23/22
5/1/22
5/9/22
5/17/22
5/25/22
6/2/22
6/10/22
6/18/22
6/26/22
7/4/22
7/12/22
7/20/22
7/28/22
8/5/22
8/13/22
8/21/22
8/29/22
9/6/22
9/14/22
9/22/22
9/30/22
10/8/22
10/16/22
10/24/22
11/1/22
11/9/22
11/17/22
11/25/22
12/3/22
12/11/22
12/19/22
12/27/22

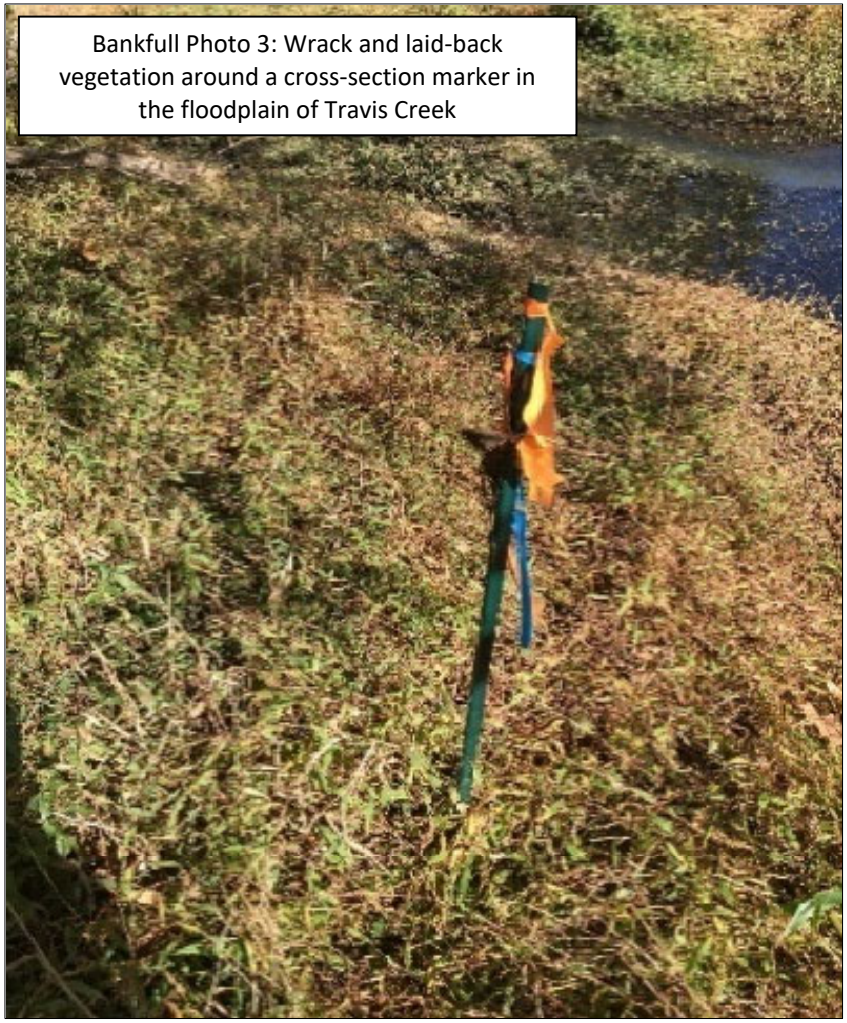
Table 13. Verification of Bankfull Events

Date of Data Collection	Date of Occurrence	Method	Photo (if available)
May 5, 2016	May 3, 2016	Wrack, laid-back vegetation, sediment, and standing water observed in the floodplain after 1.55 inches of rain documented* on May 3, 2016, at a nearby rain gauge	1
October 13, 2016	September 28, 2016	2.05 inches of rain was recorded on September 28, 2016, at an onsite rain gauge	--
October 13, 2016	October 8, 2016	Wrack and laid-back vegetation observed on top of the bank after 3.05 inches of rain was recorded on October 8, 2016, at an onsite rain gauge	2
June 15, 2017	April 25, 2017	4.66 inches of rain was recorded between April 23 and 25, 2017, at an onsite rain gauge. Visual observation of wrack and reclining vegetation in the floodplain of UT2	--
October 27, 2017	June 19, 2017	Wrack and laid-back vegetation observed in the floodplain of Travis Creek after 1.93 inches of rain was recorded on June 19, 2017, at an onsite rain gauge	3
October 24, 2018	September 17, 2018	Overbank as the result of Hurricane Florence on September 15-17, 2018	--
October 24, 2018	October 11, 2018	Overbank as the result of Hurricane Michael on October 11, 2018	--
October 16, 2019	July 7, 2019	Stream gauge data indicates a bankfull event occurred after 1.82 inches of rain was recorded on July 7, 2019, at an onsite rain gauge	--
October 16, 2019	July 23, 2019	Stream gauge data indicates a bankfull event occurred after 1.35 inches of rain was recorded on July 23, 2019, at an onsite rain gauge	--
November 21, 2019	October 22, 2019	Visual and onsite rain gauge data indicated that a bankfull event occurred after 1.8 inches of rain was recorded on October 22, 2019, at an onsite rain gauge	4
February 7, 2020	February 6, 2020	Wrack and laid-back vegetation observed on top of bank and floodplain after 4.04 inches of rain was recorded on February 6, 2020, at an onsite rain gauge	5
June 18, 2020	May 20, 2020	Wrack observed along fencing in the Travis Creek floodplain after 3.70 inches of rain was recorded between May 19-20, 2020, at an onsite rain gauge	6
November 5, 2020	September 17, 2020	Wrack observed in the floodplain of Travis Creek after 3.88 inches of rain was recorded between September 17, 2020, at an onsite rain gauge	7
March 2, 2021	January 31, 2021	Trail cameras captured Travis Creek at bankfull after 1.02 inches of rain was recorded on January 31, 2021 at an onsite rain gauge	8
March 2, 2021	February 13, 2021	Trail cameras captured Travis Creek at bankfull after 1.81 inches of rain was recorded between February 11 and 13, 2021 at an onsite rain gauge	9
August 4, 2021	July 19, 2021	Trail cameras captured Travis Creek at bankfull after 2.51 inches of rain was recorded on July 19, 2021 at an onsite rain gauge	10
February 10, 2022	January 3, 2022	Wrack observed in the floodplain of Travis Creek and UT-1 after 2.64 inches of rain was recorded on January 3, 2022, at an onsite rain gauge	11-12

*The onsite rain gauge was installed on May 18, 2016 – rain data from a nearby Site (Abbey Lamm Stream and Wetland Mitigation Site) was used to confirm this bankfull event.

Bankfull Photo 1: Wrack, laid-back vegetation, and sediment in the floodplain of Travis Creek

Bankfull Photo 2: Wrack, laid-back vegetation, on the top of bank of Travis Creek



Bankfull Photo 3: Wrack and laid-back vegetation around a cross-section marker in the floodplain of Travis Creek

Bankfull Photo 4: Wrack and laid-back vegetation on the top of bank and floodplain of UT1

Bankfull Photo 5: Wrack, laid-back vegetation, and sediment in the floodplain of UT1

Bankfull Photo 6: Wrack along the UT-2 easement fencing in the floodplain of Travis Creek

Bankfull Photo 7: Wrack in the floodplain of Travis Creek

Bankfull Photo 8: Trail Cam photo of Travis Creek at bankfull stage

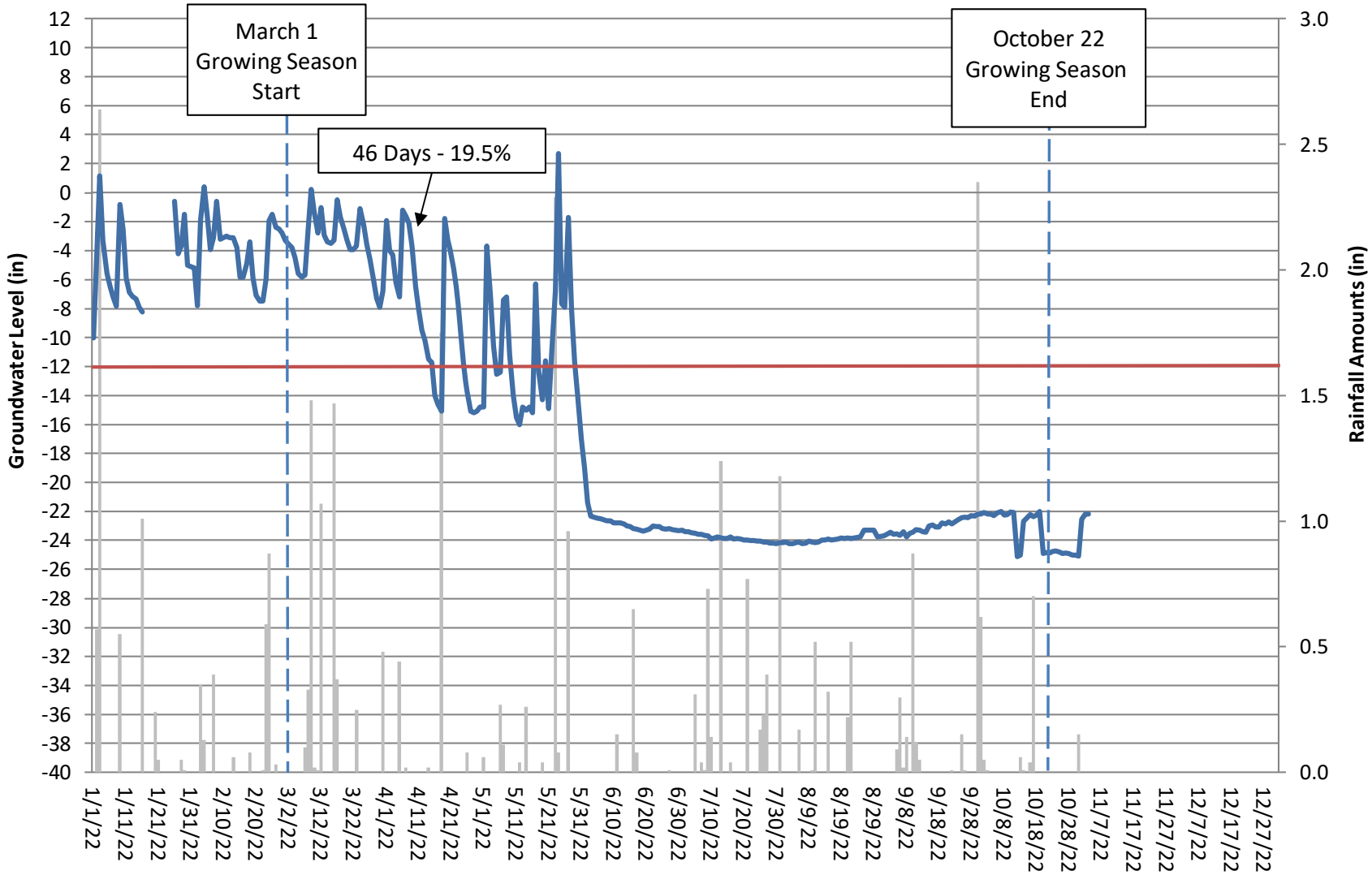
Bankfull Photo 9: Trail Cam photo of Travis Creek at bankfull stage

Bankfull Photo 10: Trail Cam photo of Travis Creek receding from bankfull stage

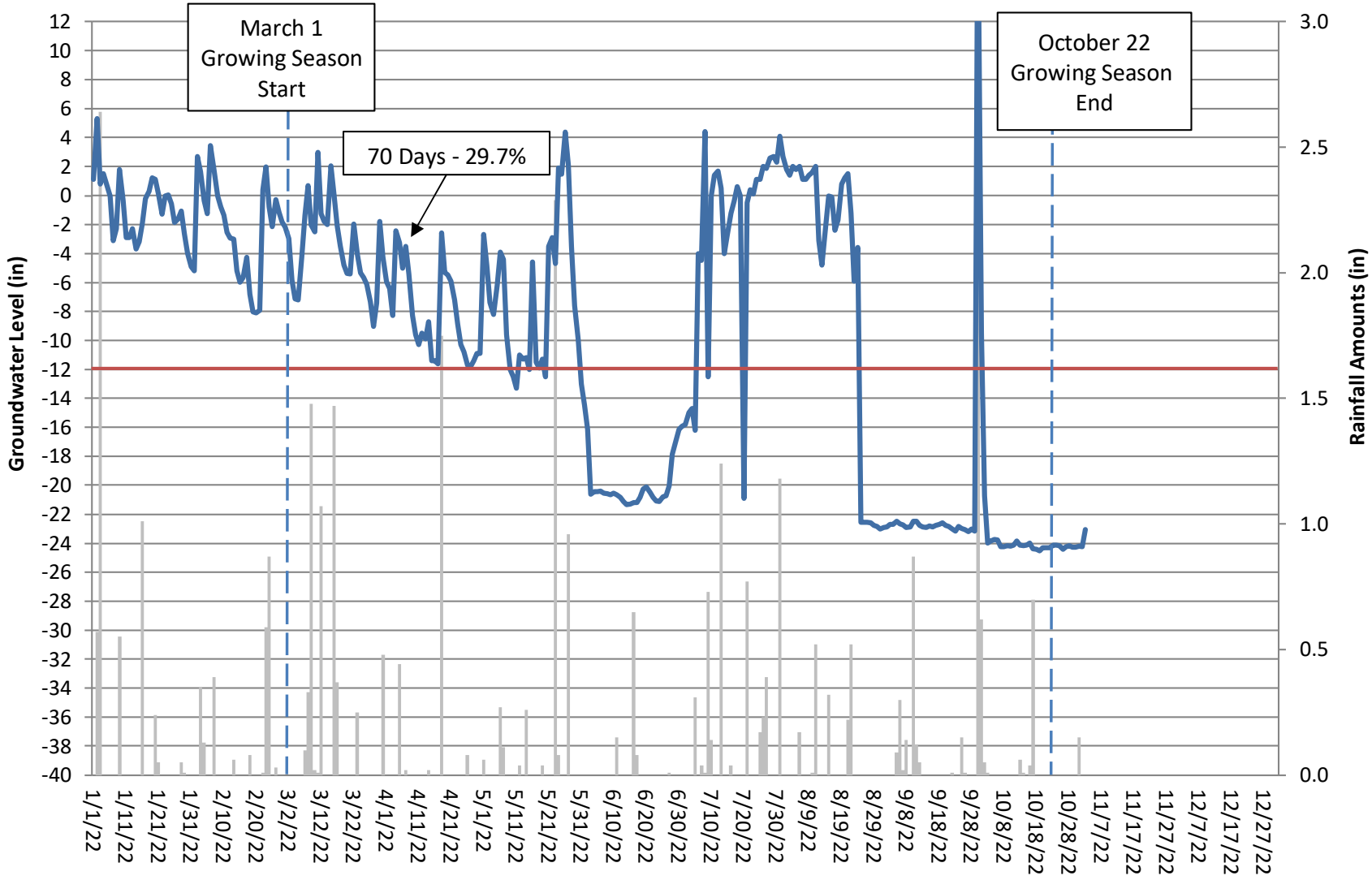
Bankfull Photo 11: Wrack in the floodplain of Travis Creek

Bankfull Photo 12: Wrack in the floodplain of UT-1

Aycock Springs Groundwater Gauge 1
Year 7 (2022 Data)



Aycock Springs Groundwater Gauge 2
Year 7 (2022 Data)



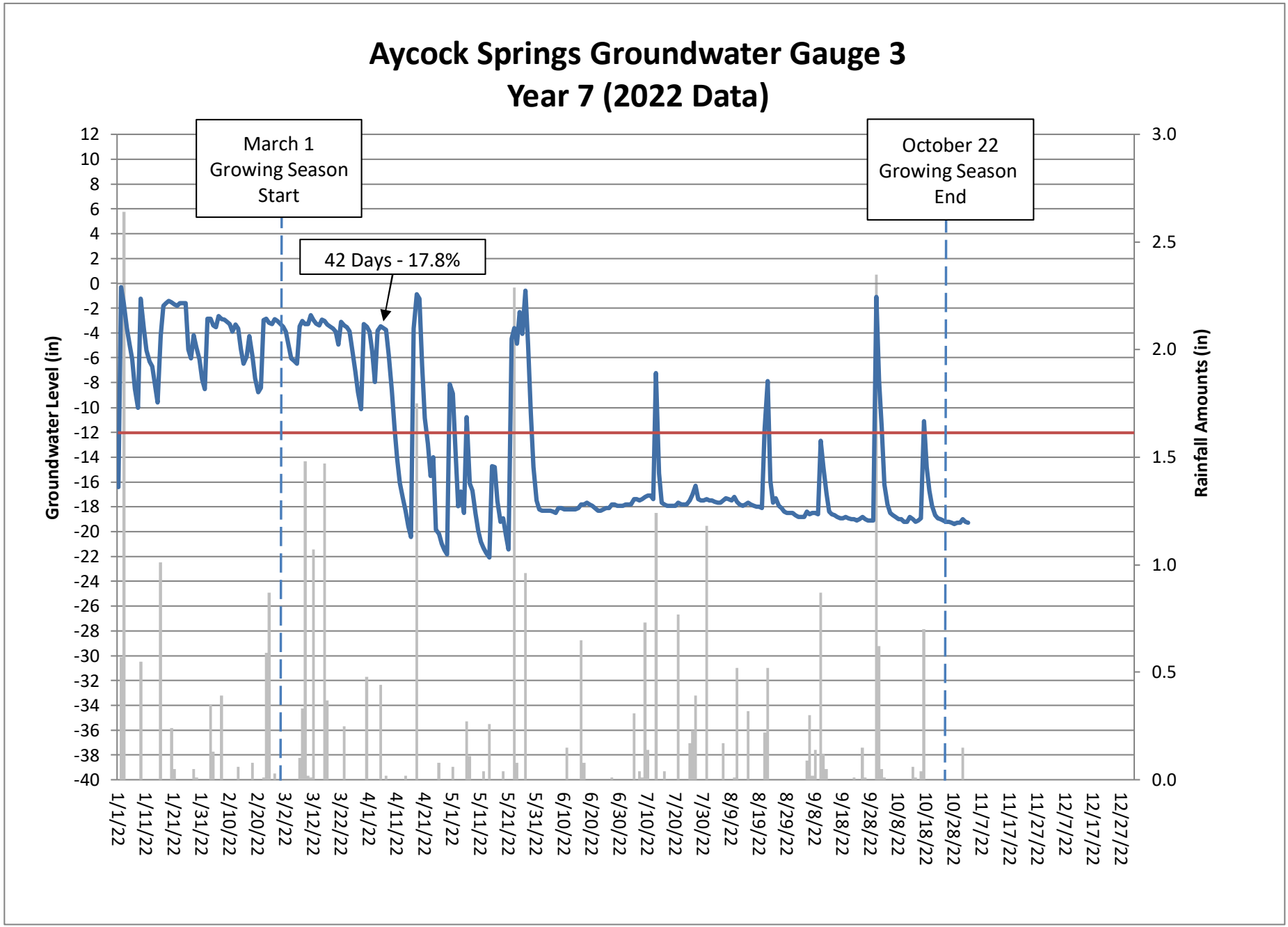

Aycock Springs Groundwater Gauge 3
Year 7 (2022 Data)
March 1
Growing Season
Start
October 22
Growing Season
End
42 Days - 17.8%
Groundwater Level (in)
Rainfall Amounts (in)
12
10
8
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
-22
-24
-26
-28
-30
-32
-34
-36
-38
-40
3.0
2.5
2.0
1.5
1.0
0.5
0.0
1/1/22
1/11/22
1/21/22
1/31/22
2/10/22
2/20/22
3/2/22
3/12/22
3/22/22
4/1/22
4/11/22
4/21/22
5/1/22
5/11/22
5/21/22
5/31/22
6/10/22
6/20/22
6/30/22
7/10/22
7/20/22
7/30/22
8/9/22
8/19/22
8/29/22
9/8/22
9/18/22
9/28/22
10/8/22
10/18/22
10/28/22
11/7/22
11/17/22
11/27/22
12/7/22
12/17/22
12/27/22

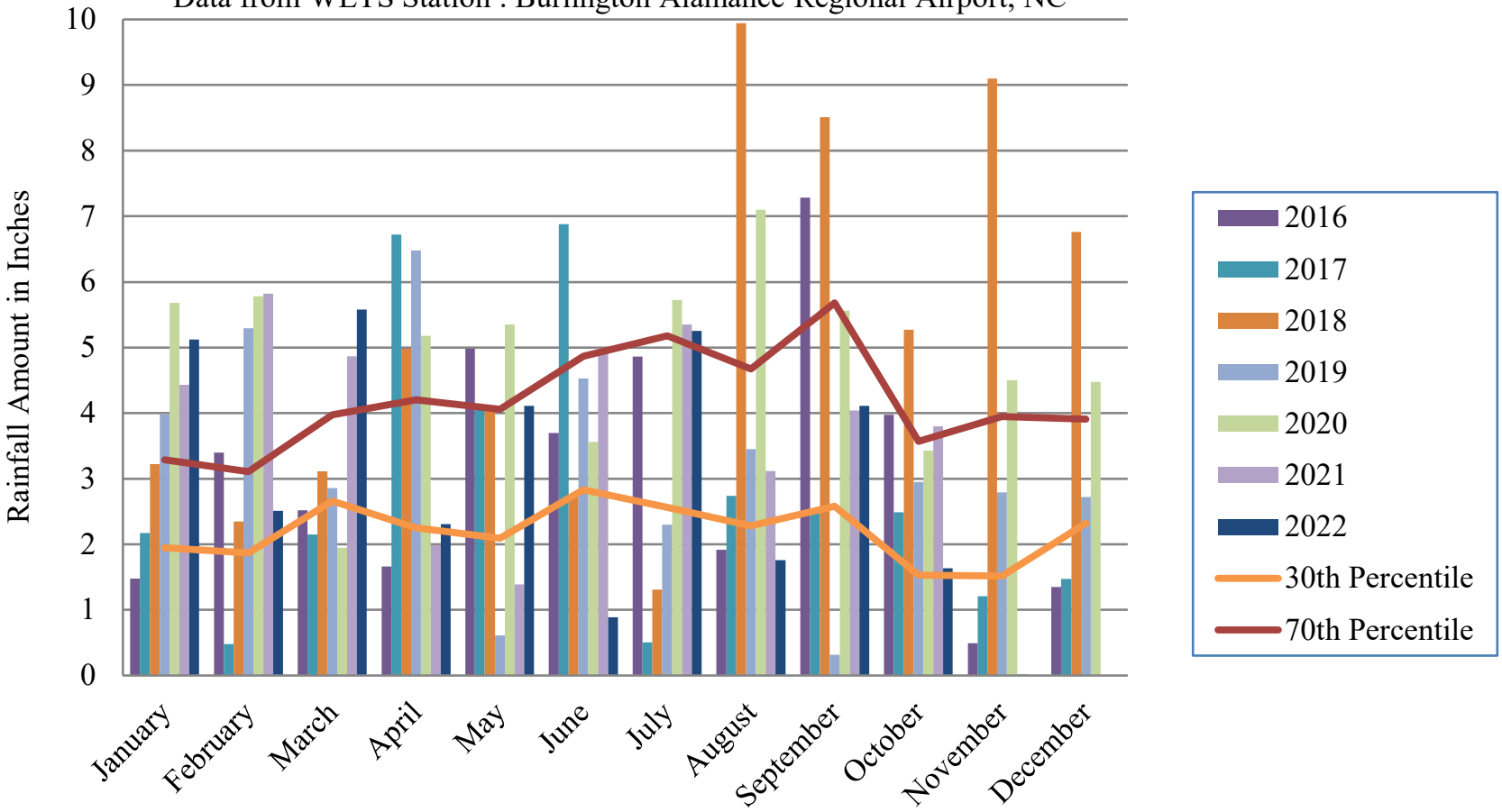
Table 14. Groundwater Hydrology Data

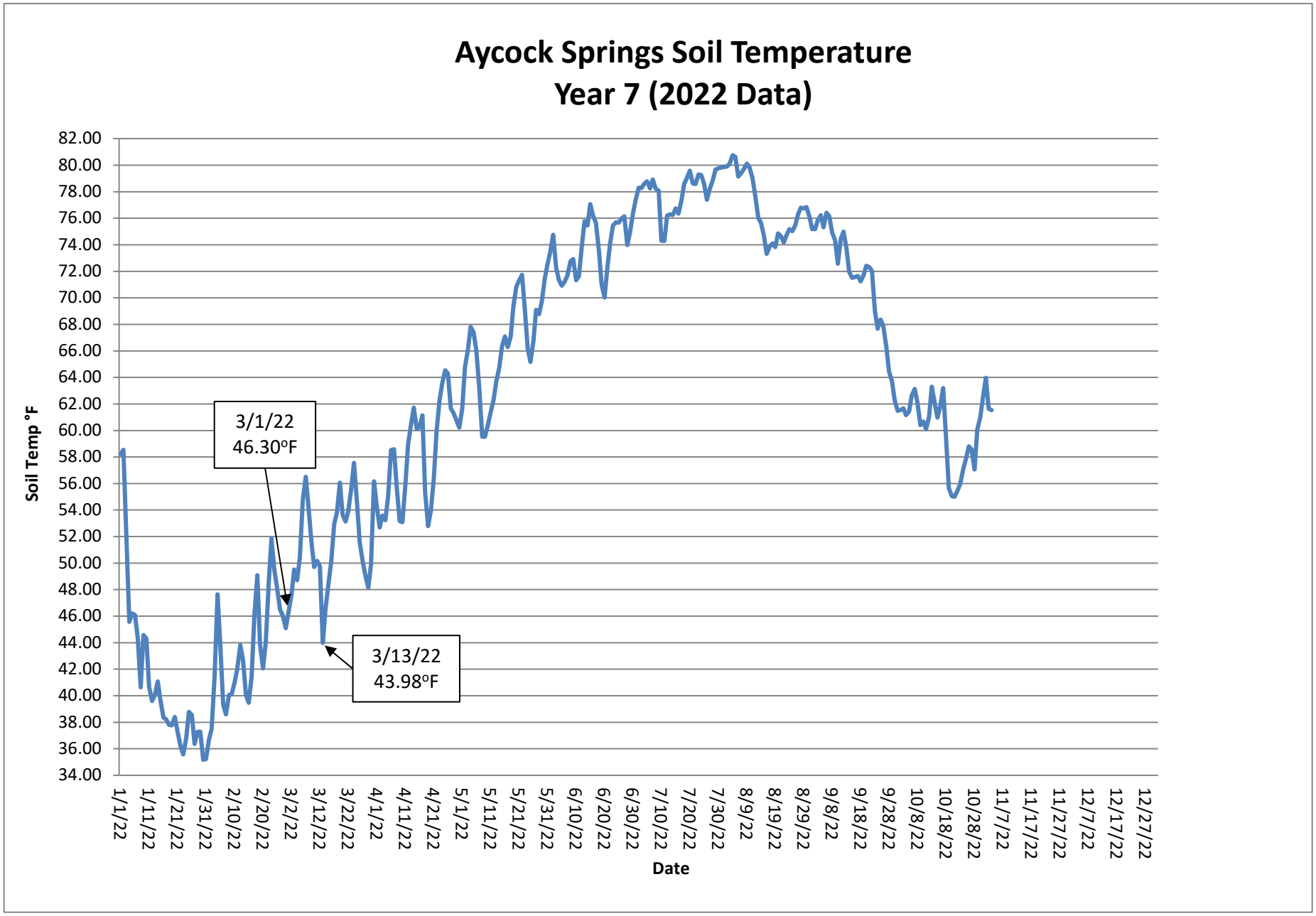
Gauge	Success Criteria Achieved/Max Consecutive Days During Growing Season (Percentage)						
	Year 1* (2016)	Year 2 (2017)	Year 3 (2018)	Year 4 (2019)	Year 5 (2020)	Year 6 (2021)	Year 7 (2022)
1	Yes/55 days (29.1 percent)	Yes/26 days (11.0 percent)	Yes/58 days (25.1 percent)	Yes/59 days (27 percent)	Yes/95 days (41 percent)	Yes/47 days (19.9 percent)	Yes/46 days (19.5 percent)
2	Yes/46 days (24.3 percent)	Yes/25 days (10.5 percent)	Yes/65 days (28.1 percent)	Yes/66 days (30 percent)	Yes/71 days (30 percent)	Yes/76 days (32.2 percent)	Yes/70 days (29.7 percent)
3	Yes/44 days (23.3 percent)	Yes/25 days (10.5 percent)	Yes/46 days (19.9 percent)	No/14 days (6.5 percent)	Yes/34 days (14.5 percent)	Yes/39 days (16.5 percent)	Yes/42 days (17.8 percent)

*Due to Site construction activities, groundwater gauges were not installed until May 5, 2016; therefore, the growing season for Year 1 (2016) is based on the soil survey start date of April 17.

Figure E1: Aycock Springs
30-70 Percentile Graph for Rainfall

Data from WETS Station : Burlington Alamance Regional Airport, NC




Aycock Springs Soil Temperature
Year 7 (2022 Data)
Soil Temp °F
82.00
80.00
78.00
76.00
74.00
72.00
70.00
68.00
66.00
64.00
62.00
60.00
58.00
56.00
54.00
52.00
50.00
48.00
46.00
44.00
42.00
40.00
38.00
36.00
34.00
3/1/22
46.30°F
3/13/22
43.98°F
1/1/22
1/11/22
1/21/22
1/31/22
2/10/22
2/20/22
3/2/22
3/12/22
3/22/22
4/1/22
4/11/22
4/21/22
5/1/22
5/11/22
5/21/22
5/31/22
6/10/22
6/20/22
6/30/22
7/10/22
7/20/22
7/30/22
8/9/22
8/19/22
8/29/22
9/8/22
9/18/22
9/28/22
10/8/22
10/18/22
10/28/22
11/7/22
11/17/22
11/27/22
12/7/22
12/17/22
12/27/22
Date

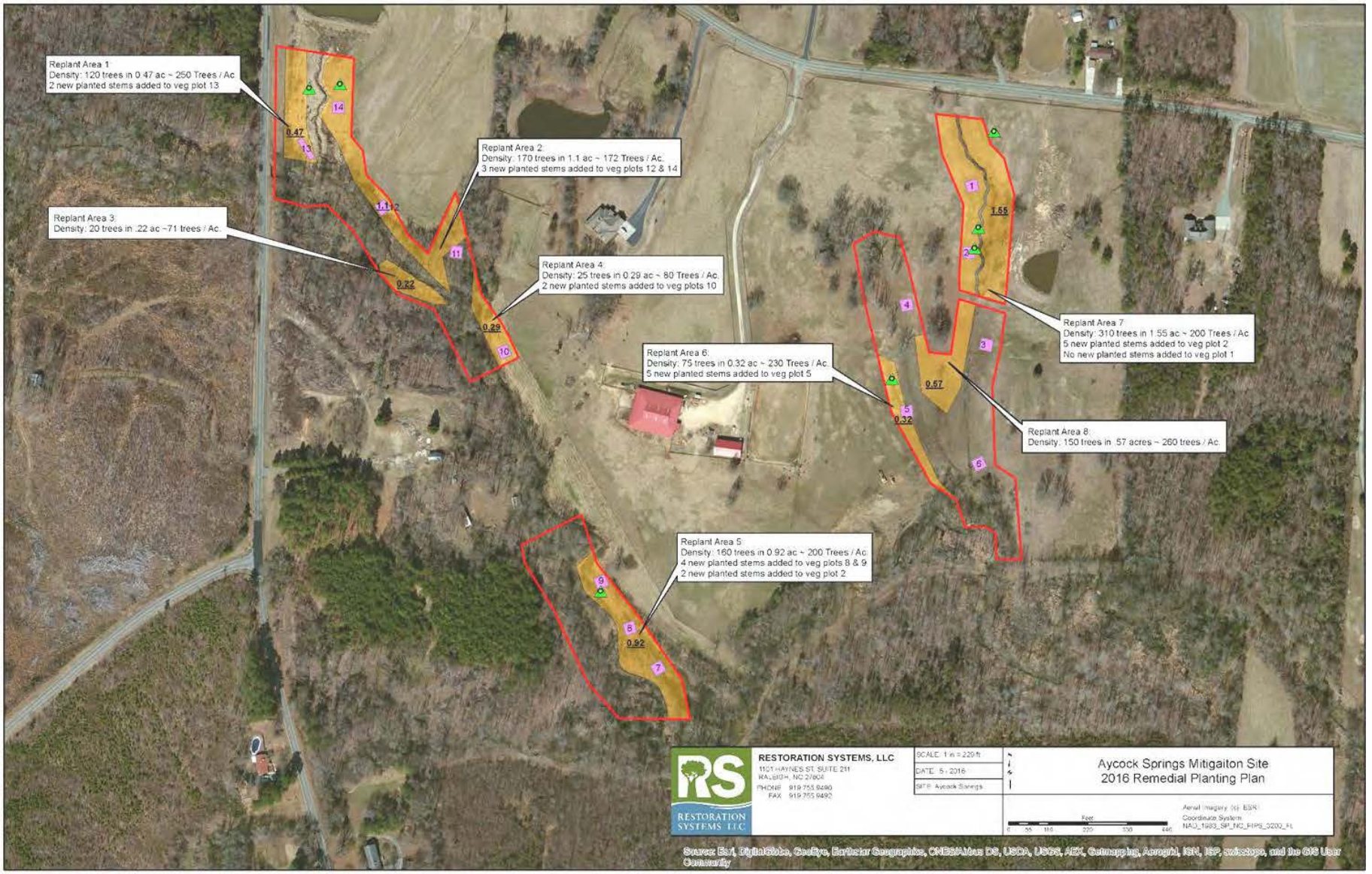
APPENDIX F

MISCELLANEOUS

2016-2017 Remediation

2022 Photo Log


Aycock Springs Stream and Wetland Mitigation Site
Remedial Action Update March 3, 2017
NC DMS Contract #5791



Map of Replant Areas- green dots indicate approximate location of where photos were taken.

Photo 1: Looking SW. along Replant Area -1

Photo Date: 1-13-2017

Photo 2: Looking S. in Replant Area 2, just N. of veg. plot 14

Photo Date: 1-13-2017

Photo 3: Looking SE. in Replant Area 4, near veg. plot 9

Photo Date: 1-13-2017

Photo 5: Looking S. in Replant Area 5, N. of veg. plot 5

Photo Date: 1-13-2017

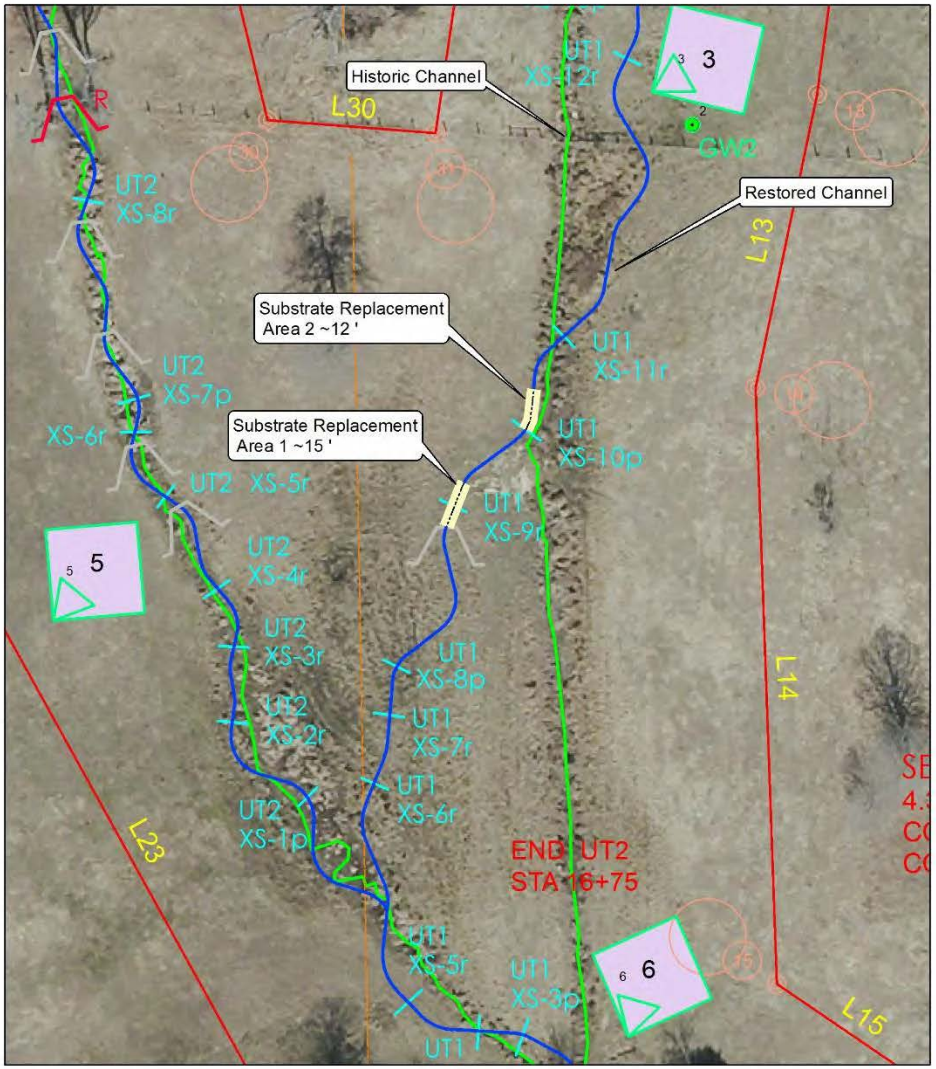
Photo 4: Looking S. in Replant Area 6, from outside of the easement

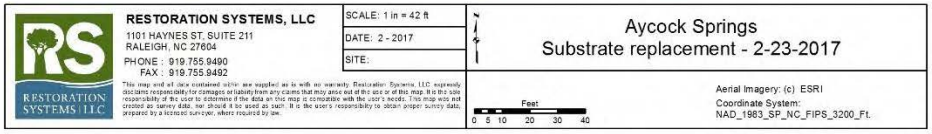
Photo Date: 1-13-2017

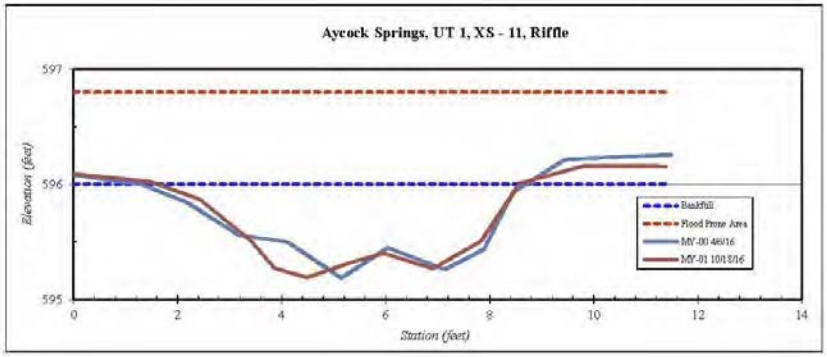
Photo 6 / 7: Live stake establishment on bank in Replant area 6

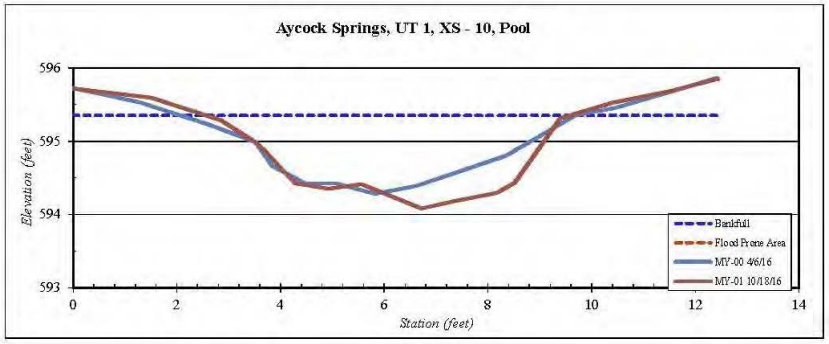
Photo Date: 1-13-2017

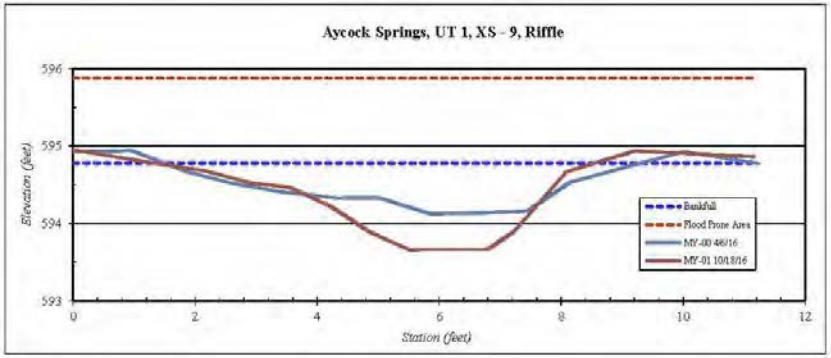
Aycock Springs– Remedial Action Plan Substrate Replacement - Update











Map of Area – UT 1, XC 9, 10, 11

Photo 1: Substrate loss, 6” head-cut at UT 1, XC 9

Photo 2: Pool, upstream of 6” head-cut at UT 1, XC 9 (XC 10 in background)

Photo 3: Substrate replacement at UT 1, XC 9

Photo 3: Substrate loss, upstream riffle of XC 10 (pool)

Photo 4: Substrate replaced, upstream riffle of XC 10 (pool)

Photo 5: post replacement overview

Photo 6: UT-1 looking downstream from XC-11

Photo 7: XC-9 – Post 3-1-2017 0.92 inch rain event (Per USGS Guage at BUFFALO CREEK (SR2819 NR MCLEANSVILLE, NC) ~ 7 miles from Site

Photo 7: XC-10 – Post 3-1-2017 0.92 inch rain event (Per USGS Guage at BUFFALO CREEK (SR2819 NR MCLEANSVILLE, NC) ~ 7 miles from Site

Aycock Springs
MY-07 (2022) Photo Log

Photo 1: Easement Fencing and Buffer Vegetation along UT 1

Photo 2: Easement Fencing and Buffer Vegetation along UT 3

Aycock Springs
MY-07 (2022) Photo Log

Photo 3: UT 1 at Drop Structure

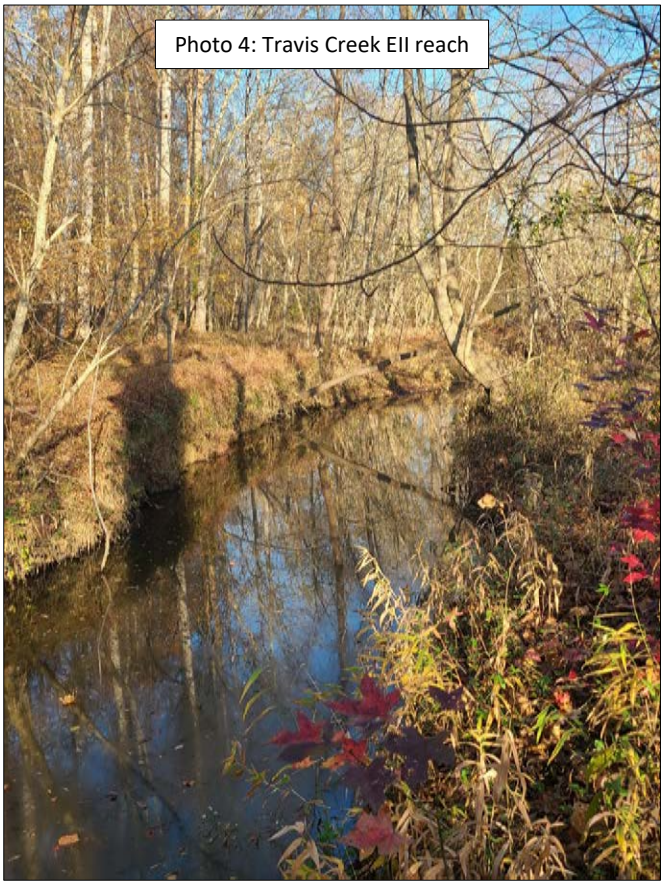


Photo 4: Travis Creek EII reach

Aycock Springs
MY-07 (2022) Photo Log

Photo 5: UT 1 Piped Crossing – Upstream End

Photo 6: UT 1 Piped Crossing – Downstream End

Aycock Springs
MY-07 (2022) Photo Log

Photo 7: UT 3 Upstream Pipe Outlet

Photo 8: Travis Creek Previously Observed Erosion Area – Right Bank, Downstream

Aycock Springs
MY-07 (2022) Photo Log

Photo 9: Travis Creek Previously Observed Erosion Area – Left Bank

Photo 10: Travis Creek Previously Observed Erosion Area – Right Bank, Upstream

Aycock Springs
MY-07 (2022) Photo Log

Photo 11: Bud Burst of Cornus amomum
Photo Taken 3/1/22

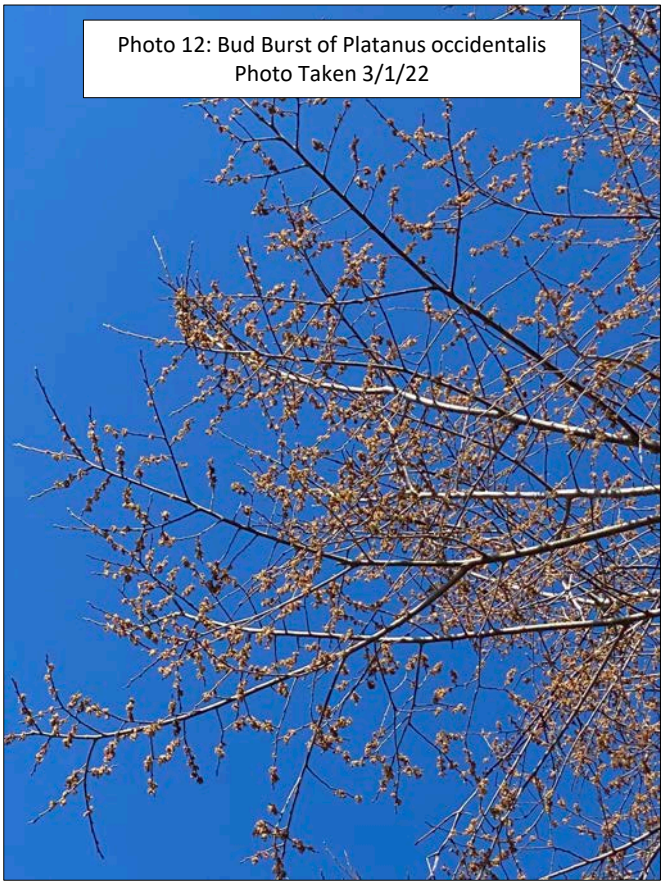


Photo 12: Bud Burst of Platanus occidentalis
Photo Taken 3/1/22

Aycock Springs
MY-07 (2022) Photo Log

Photo 13: Bud Burst of Quercus sp.
Photo Taken 3/1/22

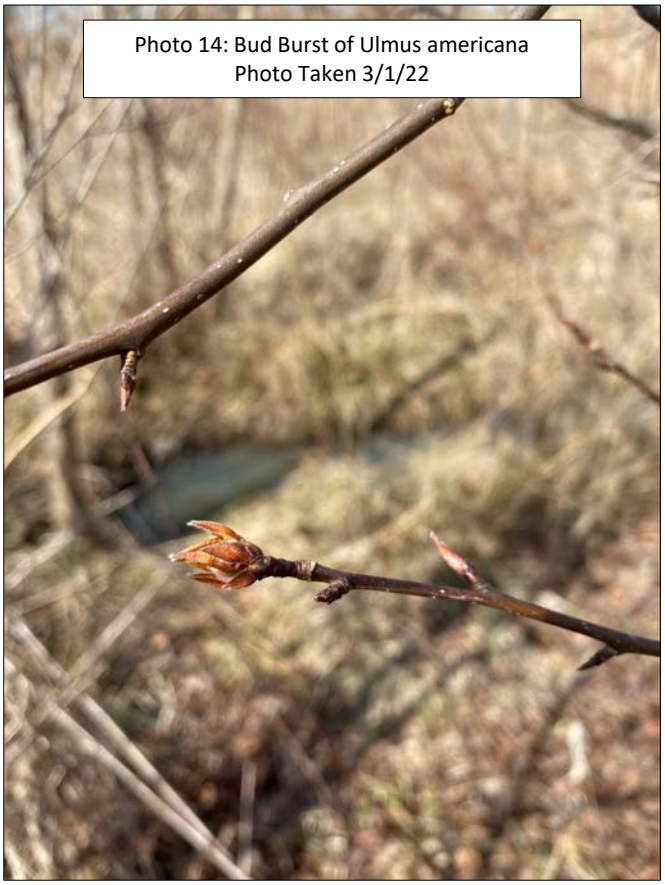


Photo 14: Bud Burst of Ulmus americana
Photo Taken 3/1/22