# Fletcher Stream and Wetland Mitigation Site

## Annual Monitoring Report

Monitoring Year 4 of 7

## FINAL

Fletcher Stream and Wetland Mitigation Site
French Broad River
HUC: 06010105
NCDMS Contract No. 006997
NCDMS Project No. 100004
DWR# 16-1076
USACE Action ID: SAW-2016-02205
Henderson County, North Carolina
Data Collected: April 2023– November 2023.
Date Submitted: February 2024

Submitted to:

NCDEQ-Division of Mitigation Services
1652 Mail Service Center Raleigh N C 27699-1652

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Prepared for:

EW SOLUTIONS

14 O' Henry Avenue, Suite 206
Asheville, NC 28801

Prepared by:

EQUINOX

*balance through proper planning*

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January 31, 2024

Harry Tsomides
Project Manager
NCDEQ-DMS
Asheville Regional Office
2090 U.S. 70 Highway

Subject: Re: Draft MY4 Monitoring Report
Fletcher Stream and Wetland Site, Henderson County
French Broad River CU 06010105
DMS Project ID No. 100004 / DEQ Contract #006997

Dear Harry,

EWS received and reviewed the comments for the Fletcher Creek Site Draft MY4 Monitoring Report from DMS on January 11, 2024. The following are the responses to those comments/questions (**IN RED**):

## Report Comments

- Please include the project stream basin and HUC on the report cover. **Added**
- At the 2023 Credit Release Meeting, the IRT requested an update of the failing structure in the XS 10 area along Fletcher Creek Reach 2A, and photos (beyond the graph photo) in the MY4 report. Please provide this. **The photographs presented with the cross-section provide the best representation of the area. A problem area photo for this location was added to the report and electronic files.**
- The Project Performance Standards Table indicates that 4 bankfull events or greater will be documented during the monitoring period; please clarify to note that the 4 bankfull events must occur in separate years. **Standard text update and bankfull occurrence years specified within Project Performance Standards Table.**
- Thank you for the supplemental planting in the areas of prior encroachment. A) Has the encroachment been eliminated? **Previously identified encroachments on the south side of the project have been eliminated through additional signage and flagged plantings. Encroachments in the north have been reduced through additional signage and verbal discussions and certified letters containing the Deeds of Conservation easement as recorded. Small areas of scallop have been addressed; one area of encroachment located on the southwest corner of the Weston Creek easement remains to be completely rectified.** B) Was horse tape or any preventive measures installed to protect the plantings? **Additional signage and temporary high visibility markers were installed in susceptible areas to guide mowing and hay cutting crews.** C) Are all the planted species from the approved mitigation plan planting list? **Species used in the supplemental planting were containerized trees and shrubs drawn from the approved Mitigation Plan.**
- Thank you for voluntarily upgrading the performance and goals table to include cumulative monitoring results. This is much appreciated.

- The wetland "expansion area" discussed with the IRT at the June 2023 site meeting is shown on the CCPV and data included in the report, however it is unclear what is intended with this data and expansion area. Please provide a brief background and context for the additional wetland area and data; explain how the data met/did not meet performance criteria; verify that it is not part of the tracked project credits; and include the June 23, 2022 meeting notes in an Appendix, along with the expansion proposal submitted for that meeting. Please indicate in the report narrative how EWS plans to potentially use this data to support wetland conditions to partially offset expected losses elsewhere on the project, and if/when that request is expected to be made (i.e., MY6? close out? Etc.). **Additional background information is included in the report.**
- Bank erosion was noted in the prior year's monitoring report (MY3) near Fletcher Creek STA 142+50; however this area is not noted on the CCPV (Sheet #4) or included in the photo section in the MY4 report. Was this area repaired or has it healed over? If not please provide an update on its condition, along with any applicable supportive data/photos. **The area has healed over.**
- Please include the year of the aerial imagery; is this the most recent available? **Aerial imagery year included on CCPV. To our knowledge, this is the latest imagery.**
- Is the Raccoon Branch pressure transducer fully functional now? **It was replaced in January MY4. A crest gage was also installed as a backup.**
- Thank you for your continued attention to the scattered invasives across the site; DMS appreciates EWS staying ahead of this issue with periodic treatments.
- Bankfull event frequencies seem inconsistent across the site reaches and year to year. For example, Coates Branch has 17 bankfull events reported to date, **Coates Branch has a higher percentage of impervious surface and heads up at a steeply sloped pasture leading to a more "flashy system" when compared to adjacent drainageways,** compared to adjacent reaches , while Fletcher Creek R1, with a drainage area 5-fold higher, has only 3 reported bankfull events and none since 2021 **Fletcher is buffered by both a pond and more mature woodlands in the headwaters.** Raccoon Branch had a bankfull event in 2023, its first ever, while Fletcher R2 and Coates Branch did not have a reported event in 2022, **An event was recorded in all reaches in August 2023, evidenced from increased flows sitewide. This indicates a localized rain event which was not reflected in the rain data. Given the drought conditions and low soil permeability at the time of the event, there is a potential for a more intense response in stream stage even during a relatively small rain event.** This is concerning with regard to meeting the bankfull release criteria. Can EWS QA check the bankfull measurement equipment/methodologies, or comment on why the reach results seem so scattered? **Bankfull measurements were set based upon the design criteria for each reach. Equinox staff can revisit the bankfull elevations and vertical positioning of the loggers as a QAQC step prior to MY5.** Would camera installations help verify true bankfull events? **Equinox staff has experimented with the use of cameras for recording high flow events on the much larger Weston reach with mixed results, being only able to capture the largest of events using that method.**
- The herbicide log in Appendix F should be labelled. **Added title.**

## Digital Support File Comments

- Please note that the abbreviations in the quantities and credits table are not accurate for the wetland component; NRR is no longer an accurate description. Wetlands are reported as Non-Riparian (NR) or Riparian. **Updated description and replaced in report.**

- Please verify that the spatial data submitted is MY4. The data appears to comport with the MY 4 CCPV but the layer names indicate MY 3. No need to resubmit if verified. **Verified that spatial data submitted is MY4.**

Please submit two final hard copies, in addition to a flash drive or CD with a PDF of the report and all digital support files (addressing any comments) in the correct file structure. Please include a copy of your response letter, inserted inside the front cover of each hard copy report (and included in the final PDF).

If you have any questions about these comments, please contact me at (828) 545-7057 or email me at harry.tsomides@ncdenr.gov before running any final copies.

Thanks for your continued hard work on this project!

**End of DMS Comments**_____

Sincerely,

David Tuch
Managing Partner
EW Solutions
14 O' Henry Avenues, Suite 206
Asheville, NC 28801

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# Table of Contents

# 1.0 PROJECT SUMMARY

## 1.1. Project Setting and Background

The Fletcher Stream and Wetland Mitigation Site (Fletcher Site) is located in the French Broad River Basin (CU 06010105). The Fletcher Site also lies within the lower portion of the Cane Creek (HUC 060101050703) watershed which is identified as a Targeted Local Watershed (TLW) according to the 2009 French Broad River Basin Restoration Priorities (RBRP) Plan. Project work at the Fletcher Site was completed in March 2019, and included construction, planting, monitoring feature installation, and fence installation. Through the project work, a total of 9,528 linear feet were restored, 896 linear feet were enhanced through Enhancement II activities, 1,249 linear feet were preserved, and 8.91 acres of wetland were re-established. The Fletcher Site is anticipated to generate a total of 10,011.300 SMU's and 8.910 WMU's. Refer to Appendix A, Table 1 for the project components and mitigation credit information and Figure 2 for the Project Asset Map.

Historic land use at the Fletcher Site has consisted primarily of agriculture and livestock grazing. Additional land use practices, including the excavation of drainage ditches, maintenance and removal of riparian vegetation, and the relocating, dredging, and straightening of on-site streams have contributed to unstable channel characteristics, degraded water quality, and degradation of prior wetlands. Previous stream conditions at the site consisted of incised channels with unstable banks and a limited riparian buffer width. Fletcher Creek and Coates Branch flow though active pastures with livestock access to the streams. The floodplain adjacent to Weston Creek contains approximately 8.91 acres of mapped hydric soils that have been farmed for produce. Previous ditching and farming activities eliminated jurisdictional wetlands. The completed project restored ecological function to the existing streams, wetlands, and riparian corridor by returning streams to a proper relationship with the floodplain, excluding cattle from the riparian buffer, eliminating drainage ditches and spoil piles, removing invasive species, and re-vegetating the riparian buffer with native plant species appropriate for the valley and the watershed conditions. Grading activities improved the groundwater hydrology of the onsite wetlands, increased hydrologic access of the floodplain for overbank flows, and provided attenuation of flood flows.

This project is protected by a 34.81-acre conservation easement and is located approximately 1.1 miles southeast of Fletcher, NC in Henderson County at 35.422278° N, -82.486183° W. The Fletcher Site is bounded by agricultural land and is bisected by Jackson Road.

## 1.2. Project Goals and Objectives

The project goals address stressors identified in the TLW and priority sub-watershed, as outlined in the Final Mitigation Plan, and include:

- Provide a network of streams with natural, stable forms that support proper stream functions;
- Improve groundwater hydrology to support recovery of native riparian vegetation;
- Reduce sediment inputs from eroding stream banks to reduce fine sediment loads and percentage of fines in the bed-material load;
- Restore proper sediment transport to support channel stability and bedform diversity;
- Improve substrate quality to facilitate hyporheic flow and support aquatic communities;
- Improve quantity, quality, and diversity of habitats to support healthy aquatic communities;
- Reduce pollutant inputs to the project streams (fecal coliform, nitrogen, phosphorus) to restore a balance to proper nutrient cycles;
- Improve riparian vegetation community to provide temperature regulation of the stream, provide a future source of organic inputs, and aid in long-term channel bank stability;

- Restore areas of former riparian wetlands so that the hydrology and soils will support wetland vegetative communities and wildlife;
- Improve landscape connectivity that allows space for biotic and abiotic process and provides a source and sink for natural populations; and,
- Prevent the site from future impacts of development and agricultural issues.

The following objectives are proposed for accomplishing the above listed goals as outlined in the Final Mitigation Plan:

- Construct stream channels that will maintain proper dimension, pattern, and profile and meet jurisdictional status;
- Construct streams with proper bankfull to floodplain relationship;
- Construct streams that provide naturally stable dimensions and stabilize constructed banks with appropriate bioengineering;
- Construct streams that maintain an appropriate sediment transport balance with the sediment that is supplied by the watershed so that the overall stream profile neither aggrades nor degrades over time;
- Create and improve stream bedform diversity by constructing pools of varied depths and riffles of varied slopes;
- Construct stable riffles that provide an improved diversity of bed material clast and a reduction in fines relative to existing conditions;
- Construct in-stream habitat features from native material to provide diversity of habitat;
- Prevent cattle from access to the streams and riparian areas by installing exclusion fencing;
- Install BMPs in concentrated runoff areas that drain agricultural fields;
- Provide a buffer from agricultural activates and row crops;
- Plant native climax tree species and understory species in the riparian zone;
- Reconstruct stream channels that are properly connected to the riparian wetlands;
- Re-grade topography to eliminate ditches and drainage features;
- Plant native wetland tree and shrub species; and,
- Establish a conservation easement that provides a minimum buffer from future activities in the adjacent watershed.

## 1.3. Project Performance Standards

The stream restoration performance standards for the project will follow accepted and approved criteria based on the Final Mitigation Plan for the Fletcher Mitigation Site (2018). Performance criteria will be evaluated throughout the monitoring period as defined in Table 4 of the Fletcher Adaptive Management Summary Packet. The table below provides a list of the performance standards associated with each project objective along with a description of the monitoring approach.

| Fletcher Mitigation Site<br>Project Performance Standards | | | |
|---|---|---|---|
| **Objective** | **Performance Standard** | **Monitoring Approach** | **Monitoring Results** |
| Construct stream channels that will maintain proper dimension, pattern, and profile | Riffle section W/D ratios should remain within the range of the appropriate stream type. BHR should not exceed 1.2. BHR should not change more than 10% in any given monitoring interval. Changes that do occur should indicate a trend toward stability. | Survey of select cross sections and visual assessment. | W/D ratios were less than or equal to AB condition. BHR were less than or equal to 2.1 for all riffles cross-sections. |
| Construct streams with proper bankfull to floodplain relationship | Four bankfull events or greater will be documented during the monitoring period in separate years. | Crest gauges, continuous stage recorders, and debris lines. | Fletcher 1-3 events (Pre-MY1&2), Fletcher 2-7 events (MY2&3), Coates-17 events (Pre-MY1 & MY1-3), Weston-6 events (MY1-4), Racoon Branch-1 event (MY4). |
| Construct streams that provide naturally stable dimensions and stabilize constructed banks with appropriate bioengineering | Channel banks should generally remain stable. Where bank migration does occur it should not exceed 20% of the bankfull width. | Visual assessment and bank pin monitoring as necessary. | Visual assessments have indicated no areas of significant bank instability. |
| Construct streams that maintain an appropriate sediment transport balance with the sediment that is supplied by the watershed so that the overall stream profile neither aggrades nor degrades over time. | Profile adjustments should not indicate significant aggradation or degradation. BHR requirements as stated above. | Resurvey of longitudinal profile if visual assessment indicates potential instability. | Visual assessments have indicated no areas of significant instability. |
| Create and improve stream bedform diversity by constructing pools of varied depths and riffles of varied slopes | Profile should maintain a diversity of depths expressed in riffle/pool forms. | Visual assessment and cross-section surveys. | Visual assessments and cross-sections indicate no major changes from As-built. |
| Construct stable riffles that provide an improved diversity of bed material clast and a reduction in fines relative to existing conditions | Substrate material should progress towards or maintain coarser material in riffles and runs with finer material present in pools and glides. | Pebble count measurements at surveyed cross sections | N/A |
| Construct in-stream habitat features from native material to provide a diversity of habitats | In-stream habitat structures should remain intact and functional. | Visual assessment and cross-section surveys. | Visual assessments and cross-sections indicate no major changes from As-built. |
| Prevent cattle from access to the streams and riparian areas by installing exclusion fencing. | Exclusion fencing should remain intact and effective at preventing livestock access. | Visual assessment | Weakend or damaged sections of fence have been repaired. |
| Install BMP's in concentrated runoff areas that drain agricultural fields | Capacity for sediment storage should be available for at least one year following construction completion. | Visual assessment | N/A |
| Provide a buffer from agricultural activities and row crops | Record conservation easement prior to implementation. | None | N/A |
| Plant native climax tree species and understory species in the riparian zone | Minimum of 320 stems/ac present at MY-3.<br>Minimum of 260 stems/ac present at MY-5.<br>Minimum of 210 stems/ac present at MY-7. | Vegetation plots | Two (2) of 26 vegetation plots fail to meet MY3 density criteria. |
| Reconstruct stream channels that are properly connected to the riparian wetlands | Groundwater elevation within 12 inches of the ground surface for 12% of the growing season. | Groundwater monitoring gauges | Four (4) of 15 wetland gages met during MY4. |
| Re-grade topography to eliminate ditches and drainage features | Groundwater elevation within 12 inches of the ground surface for 12% of the growing season. | Groundwater monitoring gauges | Four (4) of 15 wetland gages met during MY4. |
| Plant native wetland tree and shrub species. | Minimum of 320 stems/ac present at MY-3.<br>Minimum of 260 stems/ac present at MY-5.<br>Minimum of 210 stems/ac present at MY-7. | Vegetation plots | Two (2) of 26 vegetation plots fail to meet MY3 density criteria. |
| Establish a conservation easement that provides a minimum buffer from future activities in the adjacent watershed. | Record conservation easement prior to implementation. | None | N/A |

## 1.4. Mitigation Components

The Fletcher Site is expected to generate 10,011.300 SMUs and 8.910 WMUs. Refer to Table 1 for project components and mitigation credit information for the Fletcher Site and Table 2 for the project component and the CCPV for a visual description of the project assets. These credits are based on the Approved Fletcher Site Mitigation Plan.

## 1.5. Project Performance

Monitoring Year 4 (MY4) data was collected from April 2023 to November 2023. Monitoring activities included visual assessments of all reaches and the surrounding easement, collection of images at 33 permanent photo stations, inventory of 26 permanent vegetation monitoring plots, and surveying of 22 cross-sections.

Summary information/data related to the occurrence of items such as beaver or encroachment and statistics related to performance of various project and monitoring elements can be found in the tables and figures in the report appendices. Narrative background and supporting information formerly found in these reports can be found in the Baseline Monitoring Report (formerly Mitigation Plan) and in the Mitigation Plan (formerly Restoration Plan) documents available on the NCDMS website (https://deq.nc.gov/about/divisions/mitigation-services/dms-project-documents). All raw data supporting the tables and figures in the appendices is available from DMS upon request.

### 1.5.1. Vegetation

Visual assessment of vegetation outside of the monitoring plots (Appendix B – Table 6) indicates that the herbaceous vegetation is well established throughout the project. The site will continue to be monitored for problems in future monitoring years.

Monitoring of the permanent vegetation plots (n = 26) was completed in October 2023. Summary tables and photographs associated with MY4 vegetation monitoring are located in Appendix B and Tables 7a and 7b, Appendix C. MY4 monitoring data indicates that plots #25 and #26 are failing to meet the MY5 criteria of 260 planted stems per acre. When volunteer stems are included both plots exceed the density standard. Plot #6 failed to meet the minimal number of species standard. The remainder of the plots are well above success criteria. Planted stem densities among plots ranged from 202 to 850 planted stems per acre. A total of 24 species of stems were documented within the plots. Results from the vegetation plots surveyed during MY4 (2023) and a summary of preceding years can be found in Table 7b, Appendix C.

Three small areas of mowing encroachment were documented during the April and October 2023 boundary inspection. In all but one case these encroachments have resulted in scalloping of the easement along bends, between corner posts, or inline markers and generally cover areas between 10 and < 20 sqft for a site wide total of 0.03 acres. Additional posts and signs were installed at various locations to better denote the presence of the corners and straight line boundaries. Certified letters have been mailed to the landowners, and or their representatives regarding easement encroachment and included the conservation document outlining the restrictions associated with the easement.

A supplemental planting of containerized trees was conducted on March 6, 2023 to address areas of encroachment. Species were drawn from the list within the approved mitigation plan. Supplemental

plantings were intended to bring stem density to approximately 400 stems/acre. A table listing species and material type is located in Appendix F.

Invasive species occur in low abundance throughout the site. Largely along fences, game trails, and around the bases of existing mature trees. The majority of dense infestations were documented and treated in MY1 and MY2. Treatments continued through MY3. Twelve areas were identified during MY3 and will continue to be treated in future monitoring years. The primary species documented at the Fletcher Site include Chinese Privet (*Ligustrum sinense*) and Multiflora Rose (*Rosa multiflora*), although there are areas containing Asiatic bittersweet (*Celastrus orbiculatus*), kudzu (*Pueraria montana var. lobata*), and fescue (*Festuca spp.*). The largest areas of invasive vegetation occur along Raccoon Branch Reach 1B/1C (*Rosa multiflora*), Coates Branch Reach 1A (Rose*,* Privet*,* and Bittersweet) and the lower portion of Coates Reach 1B (Fescue). The most complicated area of treatment remains in the northwestern extent of the easement boundary of Weston Creek Reach 1B, along Hoopers Creek. Mature stands of canopy entangled kudzu are located immediately adjacent to and upstream of the easement in this location. Joint efforts are ongoing to control kudzu and to a lesser extent bittersweet and grape in both the easement and adjacent private land. Both mechanical and chemical treatments have been utilized in the extreme northeastern corner of the easement. This area will be replanted with size appropriate species as the invasive population is brought to a "spot treatment" level of control. Details on invasive species density and area can be found in Table 6 and the CCPV, Appendix B. Treatment logs are located in Appendix F.

### 1.5.2. Stream Geomorphology

Visual assessment of the stream channel was performed to document signs of beaver damage, structural instability, such as eroding banks, or excessive sedimentation. The area of bank scour (Station 142+25) on Fletcher Creek Reach 2B in MY1 has remained stable through MY4 (Table 5, Figure 2 CCPV). Additionally, the failed structure located at cross-section 10 resulting in an extension of the upstream pool has remained stable. MY4 survey indicates a reversion to conditions similar to MY2. This area and the remainder of the project will continue to be monitored in future site visits for further signs of structural instability.

One beaver dam was documented within the site during late MY4. This beaver dam was located at Stations 424+50. USDA APHIS has managed the beaver within the site. Beaver management during MY4 concluded on November 21, 2023. The site will continue to be monitored for signs of beaver activity and managed accordingly.

Geomorphic data for MY4 was collected between October 2023 and November 2023. Summary tables and cross-section data plots related to stream morphology are located in Appendix D. MY4 marks the skip year for cross sections along Weston Creek. The remaining cross-sections along Fletcher Creek and tributaries were monitored as normal. Cross-sectional dimensions remained relatively stable between baseline conditions and MY4 monitoring efforts. Cross-sections 9 and 10 had been watched in previous monitoring years due to some fluctuations in dimension and a structural failure, respectively. Cross-section #9 had shown some fluctuation in bankfull depth over the course of monitoring but had returned to roughly MY1 condition in MY4. At cross-section 10 a portion of the toe structure has failed leading to an extension of the upstream pool. The trend seemed to reverse in MY4 with a decrease in bankfull depth and increase in bankfull width indicating the formation of a glide like feature (Appendix A, Table 5, Appendix D, cross-section graphics and Table 11a). Overall, riffle dimensions for each reach also remained relatively similar between baseline conditions and MY3 monitoring (Appendix D, Table 11b).

### 1.5.3. Hydrology

Since project completion in late 2019, bankfull flows have been recorded on Fletcher Reach 1 a total of three times occurring during 2020 and 2021, Fletcher Reach 2 a total of 7 times occurring in 2021 and 2022, Coates Branch a total of 17 times occurring from 2019 to 2022, Raccoon Branch one event (2023), and Weston Creek Reach 1A a total of 7 times in all but years but 2019. See Table 10, Appendix E for details regarding bankfull events by stream.

Bankfull events have been unequally distributed across the site. Each stream system within the project has unique attributes leading to the inequal distribution of bankfull events. The Upper Fletcher Creek system is well buffered in the headwaters by both a mature forest and a pond leading to fewer bankfull events. Similarly, Raccoon Branch also experiences significant buffering due to the presence of a wetland in its middle reaches. Both Coates and Weston have significantly more impervious surface and open area within their drainage area and consequently experience a more intense response to rainfall. Fletcher Reach 2 is influenced by the action of Coates Branch and shows a reflective trend of bankfull events.

Groundwater wells (n=11) installed on Weston Creek Reach all fell short of the expected performance standard of 12% of the growing season. A significant drought was impacting the region during the vast majority of the growing season of MY4. Groundwater wells installed at the Fletcher/Coates wetland (N=4) met performance standards with the exception of MW_FC1 which is located in the upstream most portion of the wetland (Groundwater Summary Table and Figures, Appendix E, CCPV, Appendix B., and Drought.gov).

Two supplemental groundwater wells (FC1 and FC4) were installed in the area between Coates and Fletcher Creeks in 2020. These wells had been monitored internally to track the hydrologic uplift of this section of the project. FC1 and FC exceeded 12% wetland saturation period during MY1 and MY2. In MY3 monitoring well FC1 fell just short of the standard at 11%. Two additional wells (FC2 and FC3) were installed in the spring of 2023, to more accurately track the formation of wetland in this shared floodplain area (Groundwater Summary Table and Figures, Appendix E). Monitoring wells FC2, FC3 and FC4 exceeded 12% wetland saturation period during MY4. Monitoring well FC1 failed to meet the 12% threshold during the MY4 season.

Following three consecutive years of poor performance of the Weston Creek wells, EWS proposed the 1.99 acre of wetland established between Coates and Fletcher Creeks as a potential offset to the underperforming wetland areas along Weston Creek 1A. The NC IRT reviewed data submitted by Equinox and subsequently toured the area proposed for potential offset during MY4 (2023). Meeting notes from this site visit are available in Appendix F. No timeline was suggested for when to request that this area be made creditable. An approach of continued monitoring on both Weston and the proposed wetland expansion area will guide the timing of such a request as the project approaches closeout.

Data from future monitoring years will provide additional information regarding hydrologic uplift and wetland establishment. Groundwater wells will continue to be monitored throughout the life of the project.

## 2.0 METHODS

The visual assessment of the project was performed on April 25, 2023 and again on October 23-24 2023. Permanent photo station photos were taken during the initial site assessment and the fall monitoring efforts. Additional photos of vegetation or stream problem areas were taken as needed throughout MY4.

Geomorphic measurements were taken during low flow conditions using a Nikon® NPR 332 Total Station. Three-dimensional coordinates associated with cross-section and profile data were collected in the field and geo-referenced (NAD83 State Plane feet FIPS 3200). Morphological data were collected at 28 cross-sections. Survey data was imported into CAD, ArcGIS®, and Microsoft Excel® for data processing and analysis. Channel substrate monitoring is no longer required but if needed will be characterized using a Wolman Pebble Count as outlined in Harrelson et al. (1994) and processed using Microsoft Excel. Vegetation success is being monitored at 26 permanent monitoring plots. Vegetation monitoring follows the CVS-EEP Level 2 Protocol for Recording Vegetation, version 4.2 (Lee et al. 2008) and includes analysis of species composition and density of planted species. Data is processed using the NCDMS Shiny App Vegetation Tool (https://ncdms.shinyapps.io/Veg_Table_Tool/). In the field, the four corners of each plot were permanently marked with metal t-posts and photos of each plot are taken from the origin each monitoring year.

Precipitation data was reported from the NCCRONOS station at the Asheville Regional Airport. Bankfull events were documented with crest gauges and continuous stage recorders, each cross-referenced with the bankfull elevation at its location. Crest gauges will be monitored semi-annually. The height of the corklines was recorded and cross-referenced with known bankfull elevations at each crest gauge.

Groundwater for hydrologic success of restored wetlands was monitored using HOBO U20 Water Level Loggers. An additional logger was installed on site, above ground, for use as a barometric reference. Data loggers collected depth to groundwater daily and all data were processed using HOBOware and analyzed using Microsoft Excel.

## 3.0 REFERENCE


Equinox Environmental. 2019. As-Built Baseline Report – Fletcher Mitigation Site. Prepared for North Carolina Department of Environmental Quality, Division of Mitigation Services. DMS Project No. 100004.

Kee Mapping and Survey. 2019. As-Built Survey of Fletcher Creek Restoration Project. Prepared for EW Solutions.

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

National Integrated Drought information System (Drought.gov). https://www.drought.gov/states/north-carolina#historical-conditions Accessed 12/15/2023.

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Stantec Consulting Inc. 2019. Adaptive Management Plan – Fletcher Mitigation Site. Prepared for North Carolina Department of Environmental Quality, Division of Mitigation Services. DMS Project No. 100004.

USACE (U.S. Army Corps of Engineers). 2003. Stream Mitigation Guidelines. U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, North Carolina Wildlife Resources Commission, North Carolina Department of Environment and Natural Resources-Division of Water Quality. Wilmington District

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# Appendix A
# Project Background Data and Maps

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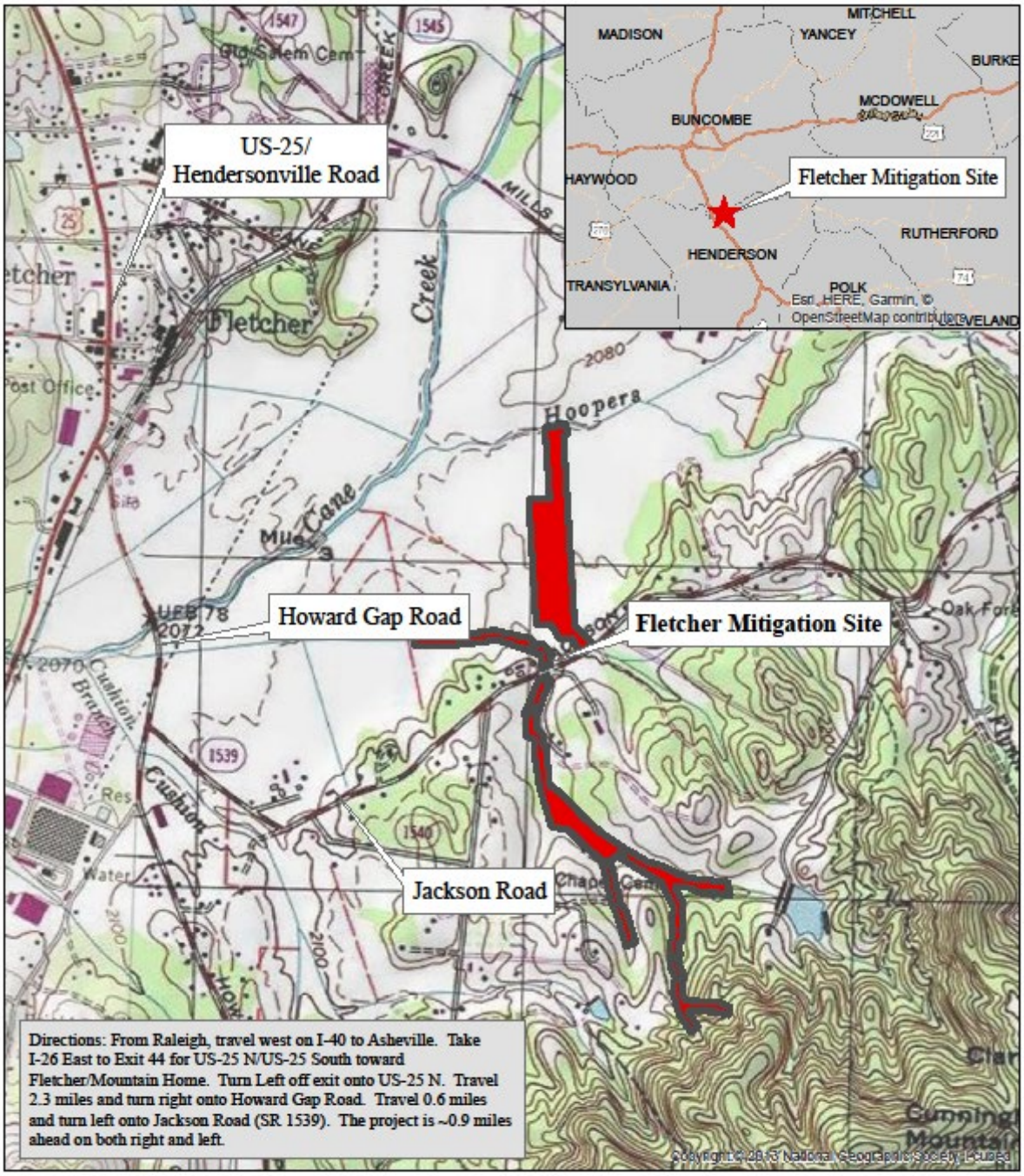


EQUINOX

**Figure 1**
**Vicinity Map**
**Fletcher Mitigation Site**

| Table 1. Project Mitigation Assets and Components<br>Fletcher Mitigation Site | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Segment | Mitigation Plan (ft/Ac) | As-Built Centerline (ft/Ac)^ | Mitigation Category | Restoration Level | Mitigation Ratio (X:1) | Mitigation Plan Credits* | Comments |
| | | | | | | | |
| Fletcher Creek 1a | 461 | 457 | Cool | EII | 2.5 | 184.400 | |
| Fletcher Creek 1b | 377 | 377 | Cool | R | 1.0 | 377.000 | |
| Fletcher Creek 1c | 1,540 | 1,507 | Cool | R | 1.0 | 1,540.000 | Less 51' for crossing |
| Fletcher Creek 2a | 1,296 | 1,290 | Cool | R | 1.0 | 1,296.000 | Less 33' for utility crossing; Less than 30' buffer for 86 LF |
| Fletcher Creek 2b | 1,470 | 1,558 | Cool | R | 1.0 | 1,470.000 | Less 33' for outlet protection and 51' and 73' for 2 crossings |
| Raccoon Branch 1a | 489 | 489 | Cool | P | 10.0 | 48.900 | .001 ac temporary impact to Wetland A |
| Raccoon Branch 1b | 461 | 461 | Cool | P | 10.0 | 46.100 | .006 ac temporary impact to Wetland B |
| Raccoon Branch 1c | 153 | 143 | Cool | EII | 2.5 | 61.200 | Less 53' for crossing; Stream length not included in wetlands |
| Raccoon Branch 1d | 448 | 439 | Cool | R | 1.0 | 448.000 | |
| Pine Branch 1 | 299 | 301 | Cool | P | 10.0 | 29.900 | |
| Coates Branch Reach 1a | 282 | 283 | Cool | EII | 2.5 | 112.800 | |
| Coates Branch Reach 1b | 606 | 598 | Cool | R | 1.0 | 606.000 | .016 ac temporary impact to Wetland D |
| Coates Branch Reach 1c | 708 | 702 | Cool | R | 1.0 | 708.000 | Less 44' for crossing |
| Coates Branch Reach 1d | 325 | 321 | Cool | R | 1.0 | 325.000 | |
| Weston Creek 1a | 1,954 | 1,916 | Cold | R | 1.0 | 1,954.000 | Less 29' for ROW and outlet protection |
| Weston Creek 1b | 804 | 798 | Cold | R | 1.0 | 804.000 | |
| | | | | | | | |
| Wetland A | 0.03 | n/a | Riparian | E | n/a | n/a | 0.001 ac temporary impact to Wetland A |
| Wetland B | 0.11 | n/a | Riparian | E | n/a | n/a | 0.006 ac temporary impact to Wetland A |
| Wetland D | 0.05 | n/a | Riparian | E | n/a | n/a | 0.016 ac temporary impact to Wetland A |
| Wetland E | 8.9 | 8.910 | Riparian | REE | 1.0 | 8.910 | |

* Mitigation plan credits account for breaks in conservation easements and are based on design stream stationing and taken from the approved mitigation plan. Mitigation plan credits are the same as the approved mitigation plan.

^ Based on centerline calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

## Project Credits

| | Stream | | | Riparian Wetland | Non-Rip | Coastal |
|---|---|---|---|---|---|---|
| Restoration Level | Warm | Cool | Cold | Non-Riv | Wetland | Marsh |
| Restoration | - | 6770.000 | 2758.000 | - | - | - |
| Re-establishment | | | | 8.910 | - | - |
| Rehabilitation | | | | - | - | - |
| Enhancement | | | | - | - | - |
| Enhancement I | - | - | - | | | |
| Enhancement II | - | 358.400 | - | | | |
| Creation | | | | | | |
| Preservation | - | 124.900 | - | - | - | |
| **Total Credits%** | **-** | **7253.300** | **2758.000** | **8.910** | **-** | **-** |

% Project credits reflect the sum of credits outlined in the approved mitigation plan.

**Total Stream Credit** **10,011.300**

**Total Wetland Credit** **8.910**

**Wetland Mitigation Category**

| | |
|---|---|
| CM | Coastal Marsh |
| R | Riparian |
| NR | Non-Riparian |

**Restoration Level**

| | |
|---|---|
| HQP | High Quality Preservation |
| P | Preservation |
| E | Wetland Enhancement - Veg and Hydro |
| EII | Stream Enhancement II |
| EI | Stream Enhancement I |
| C | Wetland Creation |
| RH | Wetland Rehabilitation - Veg and Hydro |
| REE | Wetland Re-establishment Veg and Hydro |
| R | Restoration |

| Table 2. Project Activity and Reporting History<br>Fletcher Mitigation Site | | |
|---|---|---|
| **Activity or Report** | **Data Collection Complete** | **Completion or Delivery** |
| Mitigation Plan | Feb - 2018 | Feb - 2018 |
| Mitigation Plan Addendum | - | - |
| Final Design - Construction Plans | - | Mar - 2018 |
| Construction | - | Mar - 2019 |
| Temporary S&E Mix Applied | - | Mar - 2019 |
| Permanent Seed Mix Applied | - | Mar - 2019 |
| Bare Root and Live Stake Plantings | - | Mar- 2019 |
| Baseline Monitoring Document (Year 0 Monitoring - Baseline) | Mar - 2019 | Apr - 2019 |
| Stream Assessment | Mar - 2019 | Apr - 2019 |
| Vegetation Assessment | Mar - 2019 | |
| Adaptive Management-Weston Cr | - | Dec-2019 |
| Adaptive Management-Weston Cr replant | - | Jan-2020 |
| Pre-Year 1 Vegetation Monitoring | Dec 2019 | - |
| Pre-Year 1 Geomorphology Monitoring | Dec 2019 | - |
| Weston Cr flood damage repair | - | Feb-2020 |
| MY1 Invasive Vegetation Treatments | Jun, Jul, Aug 2020 | - |
| MY1 Weston Reach Beaver Removal | - | July 2020 |
| MY1 Monitoring Geomorphology | Oct 2020 | - |
| MY1 Monitoring Vegetation | Oct 2020 | - |
| MY1 Monitoring Report | - | Dec-2020 |
| MY2 Initial Site Assessment | | April-2021 |
| MY2 Weston Reach Beaver Removal | - | July-2021 |
| MY2 Monitoring Vegetation | Oct-2021 | - |
| MY2 Monitoring Geomorphology | Oct-2021 | - |
| MY2 Monitoring Report | | Dec-2021 |
| MY3 Supplemental planting | March-2022 | - |
| MY3 Initial Site Assessment | April-2022 | - |
| MY3 Invasive Vegetation Treatments | June 2022 | - |
| M3 Weston Reach Beaver Management | - | Nov 2022 |
| MY3 Monitoring Vegetation | Nov 2022 | - |
| MY3 Monitoring Geomorphology | Nov 2022-Jan 2023 | - |
| MY3 Monitoring Report | | Jan-2023 |
| MY4 Supplemental planting | March-2023 | - |
| MY3 Initial Site Assessment | April-2023 | - |
| MY3 Invasive Vegetation Treatments | April, June, Sept-2023 | - |
| MY4 Weston Reach Beaver Management | May & Nov 2023 | - |
| MY4 Monitoring Vegetation | Oct 2023 | - |
| MY4 Monitoring Geomorphology | Oct-Nov 2023 | - |
| MY4 Monitoring Report | | Dec-2023 |

| Table 3. Project Contacts | |
|---|---|
| **Fletcher Mitigation Site** | |
| **Prime Contractor** | EW Solutions<br>14 O'Henry Avenue<br>Asheville, NC 28801<br>David Tuch (828) 253-6856 |
| **Designer** | Stantec Consulting, Inc<br>56 College Street, Suite 201<br>Asheville, North Carolina 28801<br>Grant Ginn (828) 449-1930 |
| **Construction Contractor (North Side)** | Penland Contracting, Inc<br>300 NP&L Loop<br>Franklin, NC 28734<br>Lewis Penland (828) 421-1753 |
| **Construction Contractor (South Side)** | Baker Construction<br>1000 Bat Cave Road<br>Old Fort, NC 28762<br>Charles Baker (828) 668-5060 |
| **Seeding Contractor (North Side)** | Penland Contracting, Inc<br>300 NP&L Loop<br>Franklin, NC 28734<br>Lewis Penland (828) 421-1753 |
| **Seeding Contractor (South Side)** | Baker Construction<br>1000 Bat Cave Road<br>Old Fort, NC 28762<br>Charles Baker (828) 668-5060 |
| **Planting Contractor** | Equinox<br>14 O'Henry Avenue<br>Asheville, North Carolina 28801<br>Owen Carson (828) 253-6856 |
| **As-built Surveys** | Kee Mapping<br>88 Central Ave.<br>Asheville, NC 28801<br>Brad Kee (828) 575-9021 |
| **Seeding Mix Source** | SESSCO LLC<br>209 Cane Creek Rd<br>Fletcher , NC 28732<br>(828) 654-8991 |
| **Live Stakes** | Mellow Marsh Farms<br>1312 Woody Store Road<br>Siler City, NC 27344<br>(919) 742-1200 |
| **Monitoring Performers (MY3)- 2022** | Equinox<br>14 O'Henry Avenue<br>Asheville, North Carolina 28801<br>Danvey Walsh (828) 253-6856 |

## Table 4. Project Baseline Information and Attributes

### Project Information

| | |
|---|---|
| Project Name | Fletcher Stream and Wetland Mitigation Site |
| County | Henderson |
| Project Area (acres) | 34.8 |
| Project Coordinates (latitude and longitude) | 35.422278° N, -82.486183° W |

### Project Watershed Summary Information

| | | | |
|---|---|---|---|
| Physiographic Province | Blue Ridge | | |
| River Basin | French Broad River | | |
| USGS Hydrologic Unit 8-digit | 6010105 | USGS Hydrologic Unit 14-digit | 06010105040010 |
| DWR Sub-basin | 04-03-02 | | |
| Project Drainage Area (sq. miles) | 0.52 Fletcher Creek / 0.37 Weston Branch | | |
| Project Drainage Area Percentage of Impervious Area | < 1% | | |
| CGIA Land Use Classification | Agricultural | | |

### Reach Summary Information

| Parameters | Fletcher Creek 1A | Fletcher Creek 1B | Fletcher Creek 1C | Fletcher Creek 2A | Fletcher Creek 2B | Raccoon Branch 1A | Raccoon Branch 1B | Raccoon Branch 1C | Raccoon Branch 1D | Pine Branch | Coates Branch 1A | Coates Branch 1B | Coates Branch 1C | Coates Branch 1D | Weston Creek 1A | Weston Creek 1B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Length of Reach (linear feet) ^ | 457 | 380 | 1,541 | 1,299 | 1,510 | 489 | 461 | 143 | 440 | 301 | 283 | 601 | 708 | 325 | 1,982 | 825 |
| Valley Confinement (Rosgen) | II | II | II | II | VIII | II | II | II | II | II | II | II | II | II | VIII | VIII |
| Drainage area (miles$^2$) | 0.30 | 0.30 | 0.37 | 0.49 | 0.52 | 0.01 | 0.03 | 0.04 | 0.04 | 0.01 | 0.02 | 0.03 | 0.04 | 0.07 | 0.30 | 0.37 |
| Perennial, Intermittent, Ephemeral | Perennial | Perennial | Perennial | Perennial | Perennial | Perennial | Perennial | Perennial | Perennial | Intermittent | Perennial | Perennial | Perennial | Perennial | Perennial | Perennial |
| NCDWR Water Quality Classification | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C: Tr | C: Tr |
| Stream Classification (existing) | G | G | B, F, G | B, G | B, E, G | B | B | B, G | B, G | B | B, G | B, G | B, F, G | B | E, G | E, G |
| Stream Classification (proposed) | B4 | B4 | B4 | B4 | B5 | B4 | B4 | B4 | B4 | B4 | B4 | B4 | B4 | B4 | C5 | C5 |
| FEMA classification | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

### Wetland Summary Information

| Parameters | Wetland A | Wetland B | Wetland D | Wetland E |
|---|---|---|---|---|
| Size of Wetland (acres) | 0.03 | 0.11 | 0.05 | 8.91 |
| Wetland Type (non-riparian, riparian riverine or riparian non-riverine) | Riparian | Riparian | Riparian | Riparian |
| Mapped Soil Series | - | - | - | Ha |
| Drainage class | - | - | - | poorly |
| Soil Hydric Status | Hydric | Hydric | Hydric | Hydric |
| Source of Hydrology | Spring | Spring | Spring | Groundwater |
| Hydrologic Impairment | Agriculture/ Livestock Grazing | Agriculture/ Livestock Grazing | Agriculture/ Livestock Grazing | Agriculture |
| Native vegetation community | Mountain Alluvial Forest | Mountain Alluvial Forest | Mountain Alluvial Forest | Mountain Alluvial Forest |
| Percent composition of exotic invasive vegetation | 15% | 15% | 15% | 1% |

### Regulatory Considerations

| Regulation | Applicable ? | Resolved? | Supporting Documentation |
|---|---|---|---|
| Waters of the United States – Section 404 | Yes | Yes | Jurisdictional Determination |
| Waters of the United States – Section 401 | Yes | Yes | Jurisdictional Determination |
| Endangered Species Act | Yes | Yes | ERTR |
| Historic Preservation Act | No | N/A | ERTR |
| Coastal Zone Management Act (CZMA)/ Coastal Area Management Act (CAMA) | No | N/A | N/A |
| FEMA Floodplain Compliance | Yes | Yes | Yes |
| Essential Fisheries Habitat | No | N/A | N/A |

^ Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

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# Appendix B
# Visual Assessment Data

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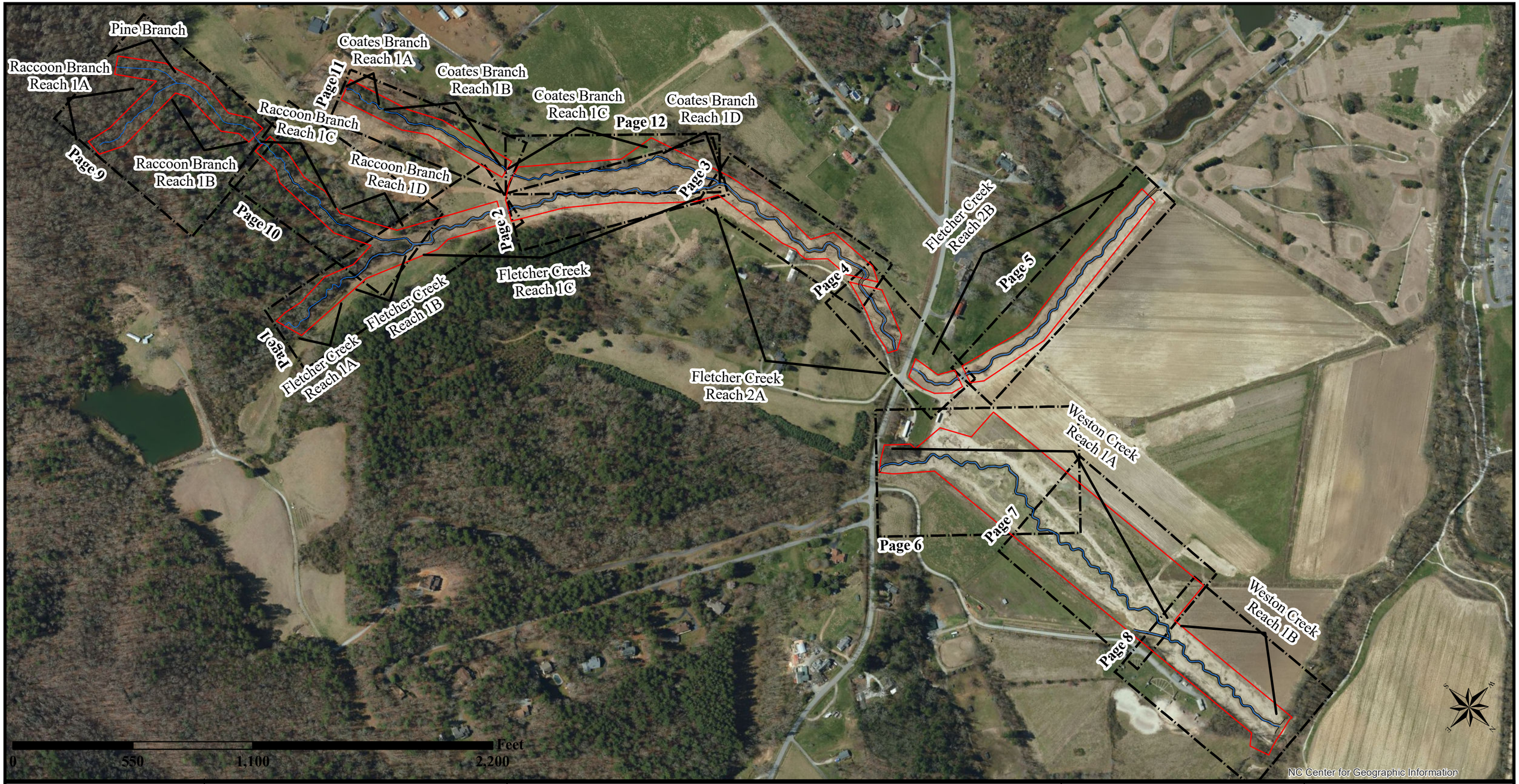



Prepared for

Mitigation Services
ENVIRONMENTAL QUALITY

Current Condition Plan View
Fletcher Mitigation Site
Monitoring Year 4
Henderson County, NC
NCDMS Contract No.: 006997
NCDMS Project No.: 100004
December 2023
Overview

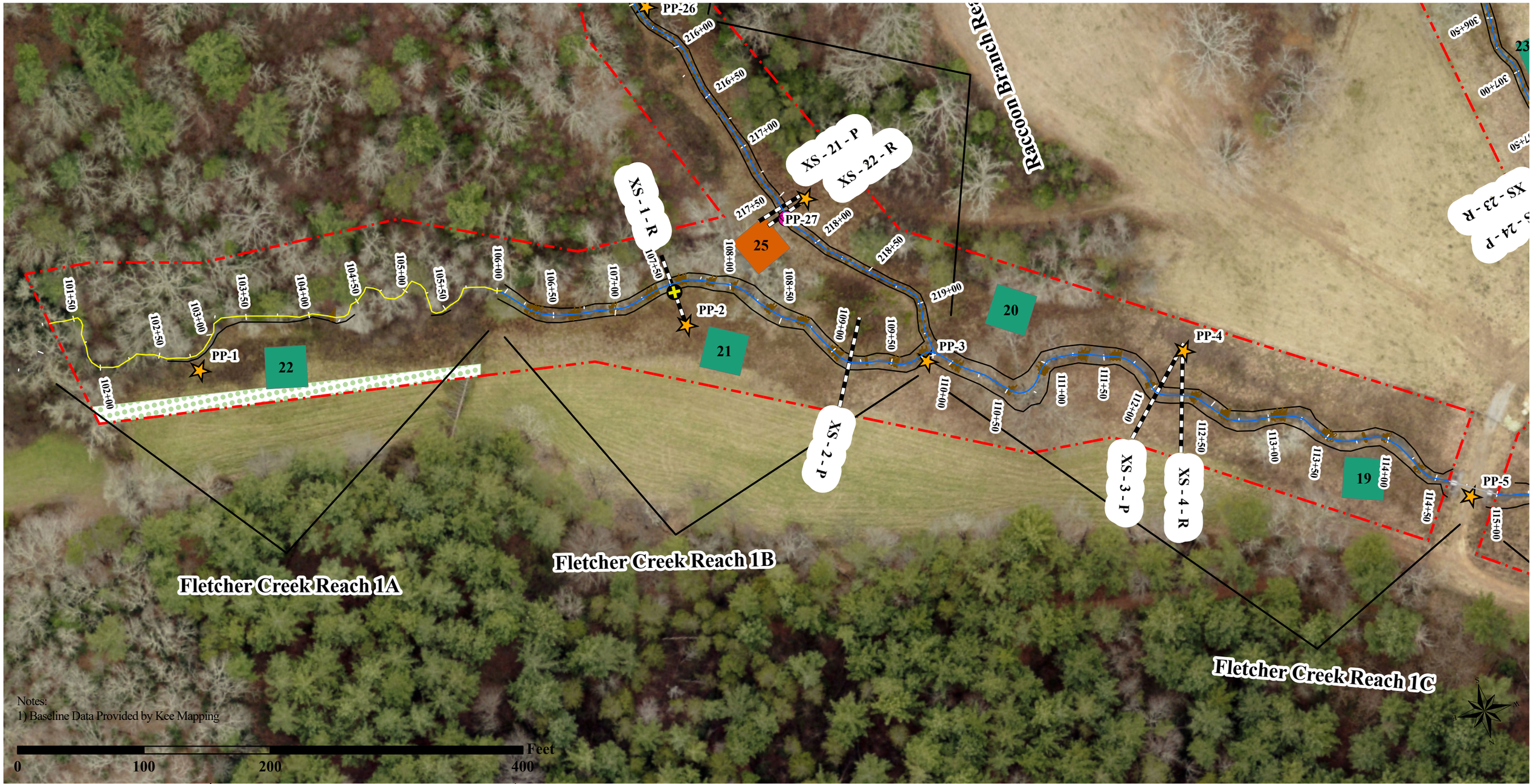
Easement
Map Pages
As-Built Top of Bank
As-Built Thalweg

Notes:
1) Baseline Data Provided by Kee Mapping

(Othoimagery Pictometry 2022; Latest Available)

Prepared by

EQUINOX

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Current Condition Plan View
Fletcher Mitigation Site
Monitoring Year 4
Henderson County, NC
NCDMS Contract No.: 006997
NCDMS Project No.: 100004
December 2023
Sheet 1 of 12

Supplemental Planting

**Streams**

Enhancement II

No Credit

Restoration

Continuous Stage Recorder

Crest Gauge

Photo Point

Cross-Section

As-Built Top of Bank

**Vegetation Plot**

Meeting

Not Meeting

Wetland Expansion Area

Conservation Easement

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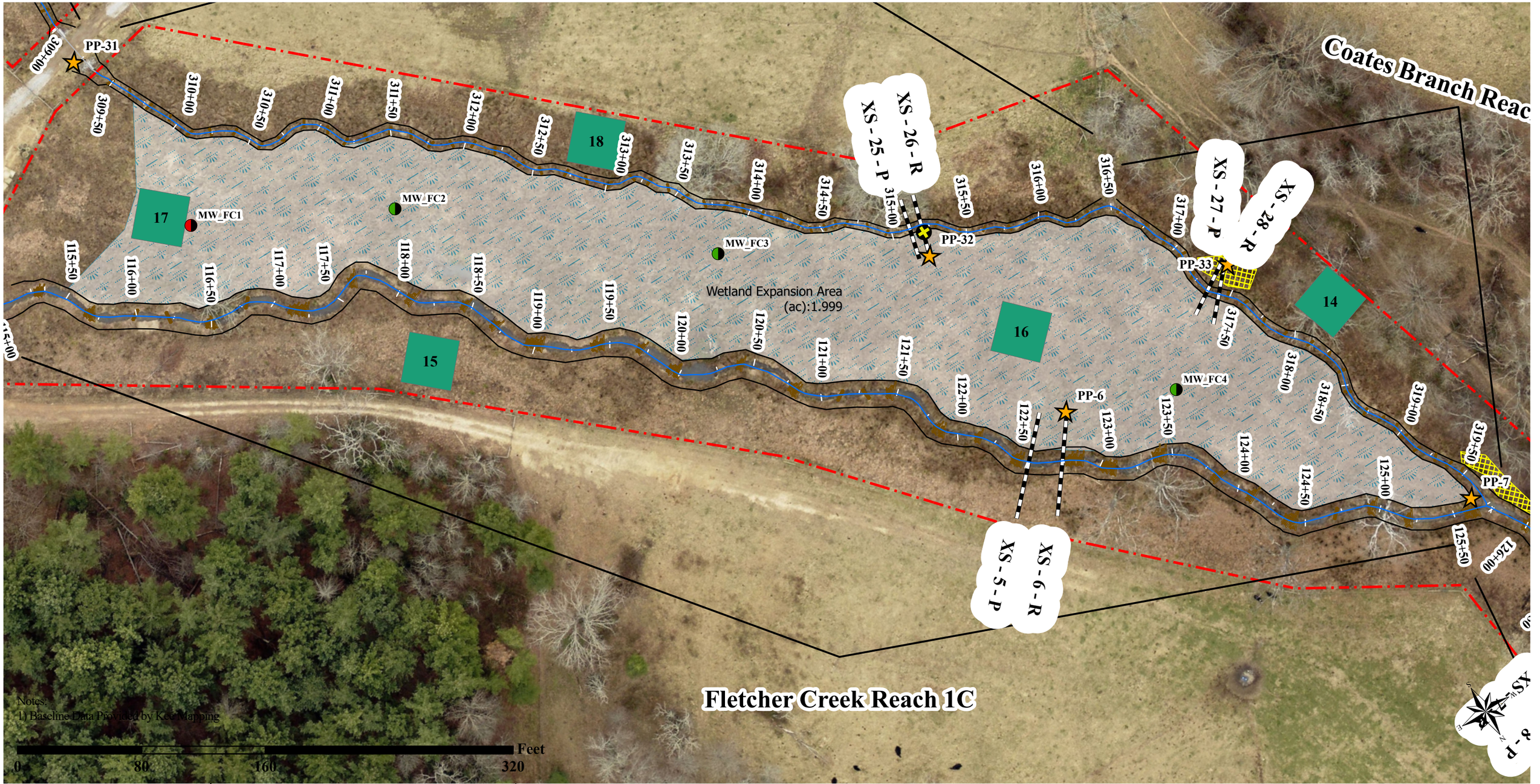


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Current Condition Plan View
Fletcher Mitigation Site
Monitoring Year 4
Henderson County, NC
NCDMS Contract No.: 006997
NCDMS Project No.: 100004
December 2023
Sheet 2 of 12

**Invasive Vegetation**
- Invasive Vegetation

**Streams**
- No Credit
- Restoration

- Crest Gauge
- Photo Point
- Cross-Section
- As-Built Top of Bank

**Vegetation Plot**
- Meeting
- Wetland Expansion Area
- Conservation Easement

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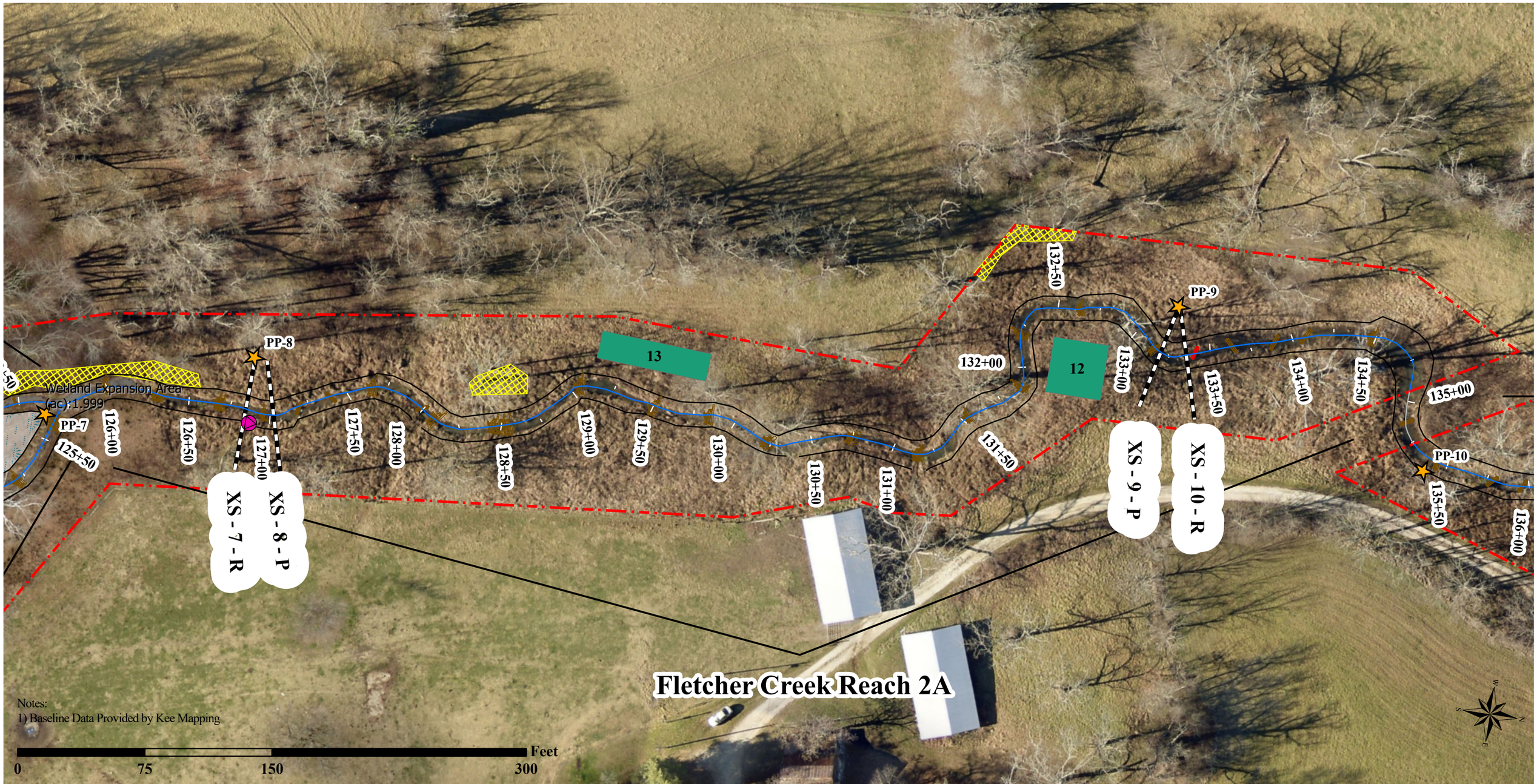


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Current Condition Plan View
Fletcher Mitigation Site
Monitoring Year 4
Henderson County, NC
NCDMS Contract No.: 006997
NCDMS Project No.: 100004
December 2023
Sheet 3 of 12

**Invasive Vegetation**
- Invasive Vegetation

**Streams**
- No Credit
- Restoration

- Continuous Stage Recorder
- Photo Point
- Cross-Section
- As-Built Top of Bank

**Vegetation Plot**
- Meeting
- Wetland Expansion Area
- Conservation Easement

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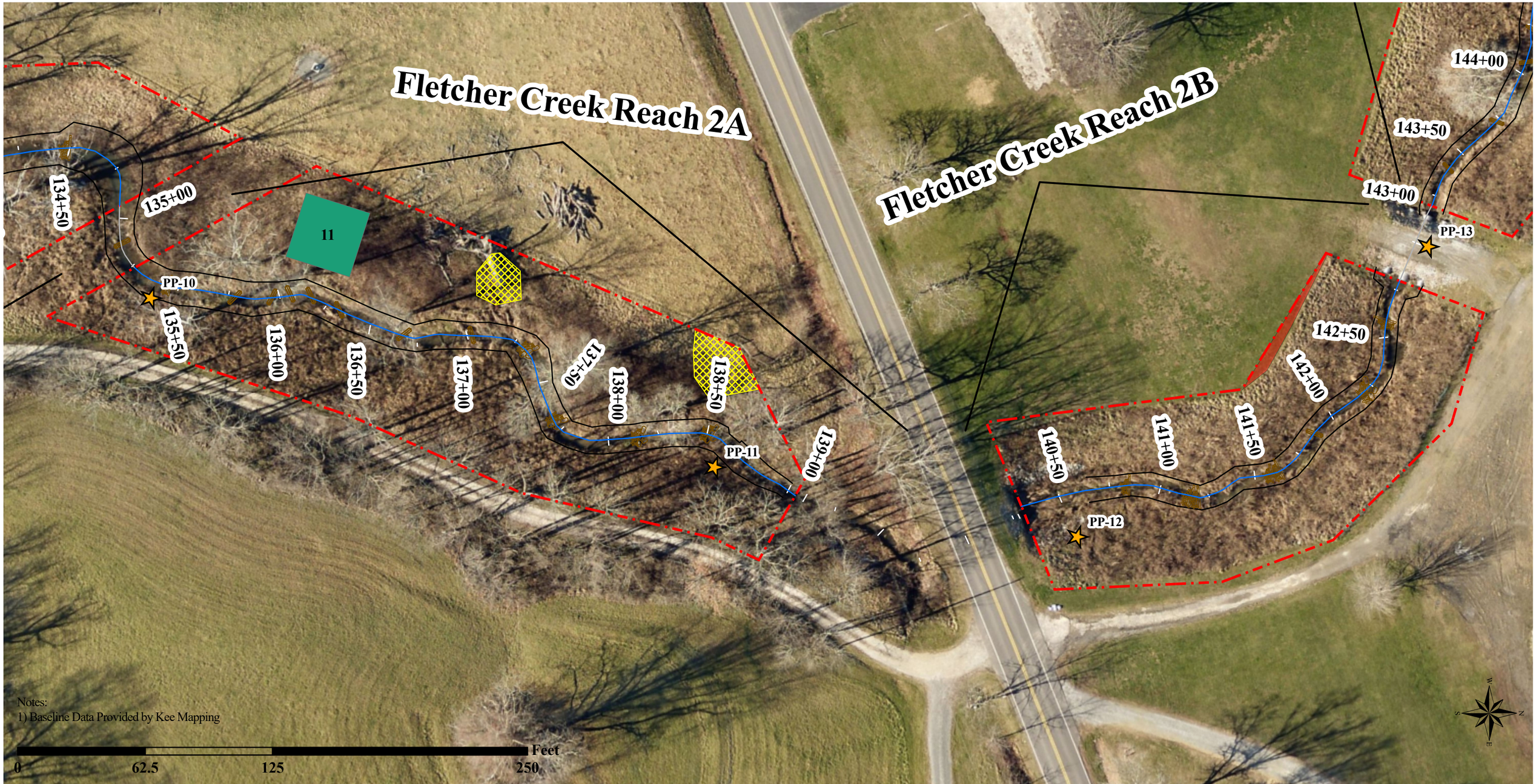


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Current Condition Plan View
Fletcher Mitigation Site
Monitoring Year 4
Henderson County, NC
NCDMS Contract No.: 006997
NCDMS Project No.: 100004
December 2023
Sheet 4 of 12

**Invasive Vegetation**
- Invasive Vegetation
- Encroachment

**Streams**
- No Credit
- Restoration
- Photo Point
- As-Built Top of Bank

**Vegetation Plot**
- Meeting
- Wetland Expansion Area
- Conservation Easement

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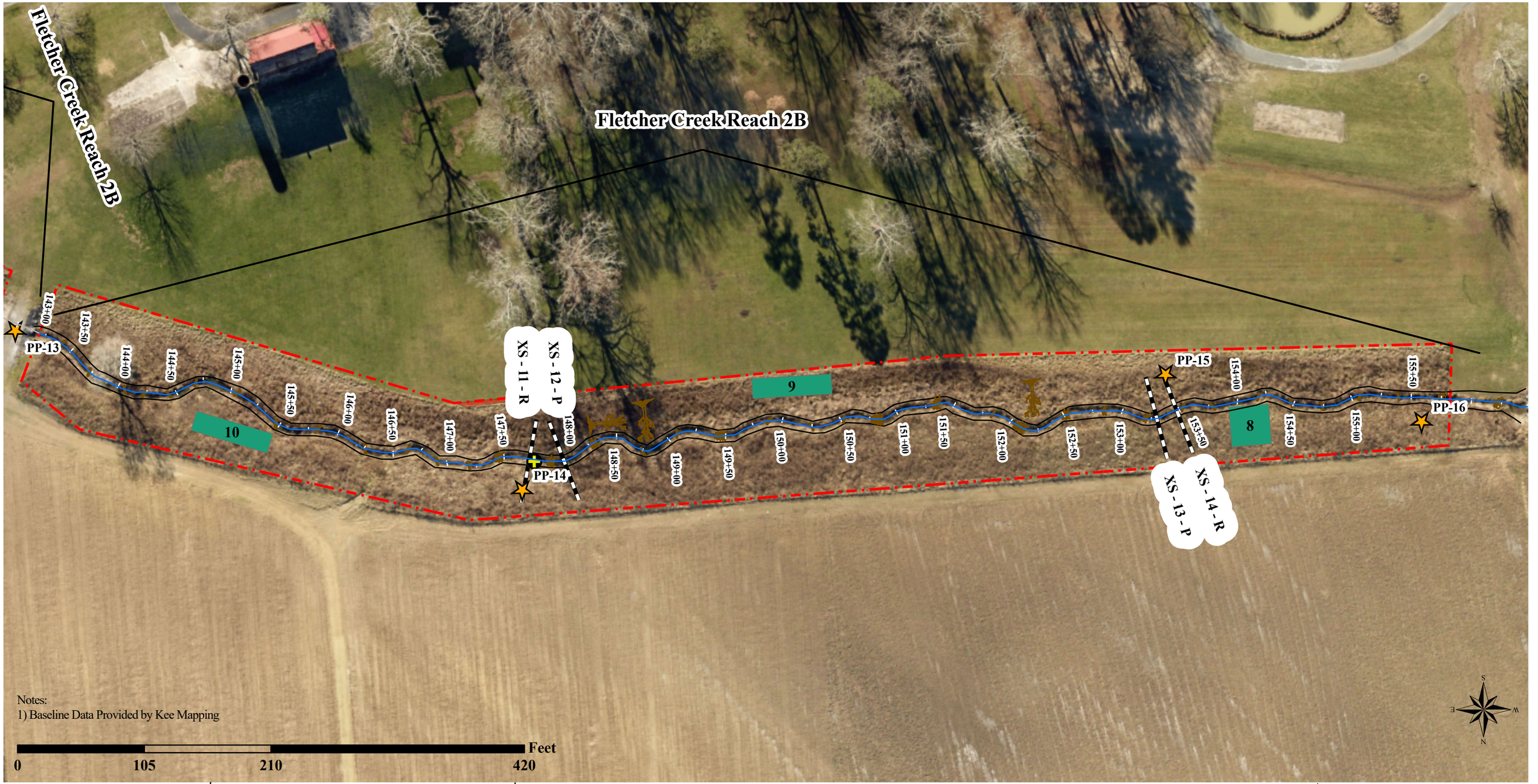
EQUINOX

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Current Condition Plan View
Fletcher Mitigation Site
Monitoring Year 4
Henderson County, NC
NCDMS Contract No.: 006997
NCDMS Project No.: 100004
December 2023
Sheet 5 of 12

Encroachment

**Streams**

No Credit

Restoration

Crest Gauge

Photo Point

Cross-Section

As-Built Top of Bank

**Vegetation Plot**

Meeting

Wetland Expansion Area

Conservation Easement

Prepared by

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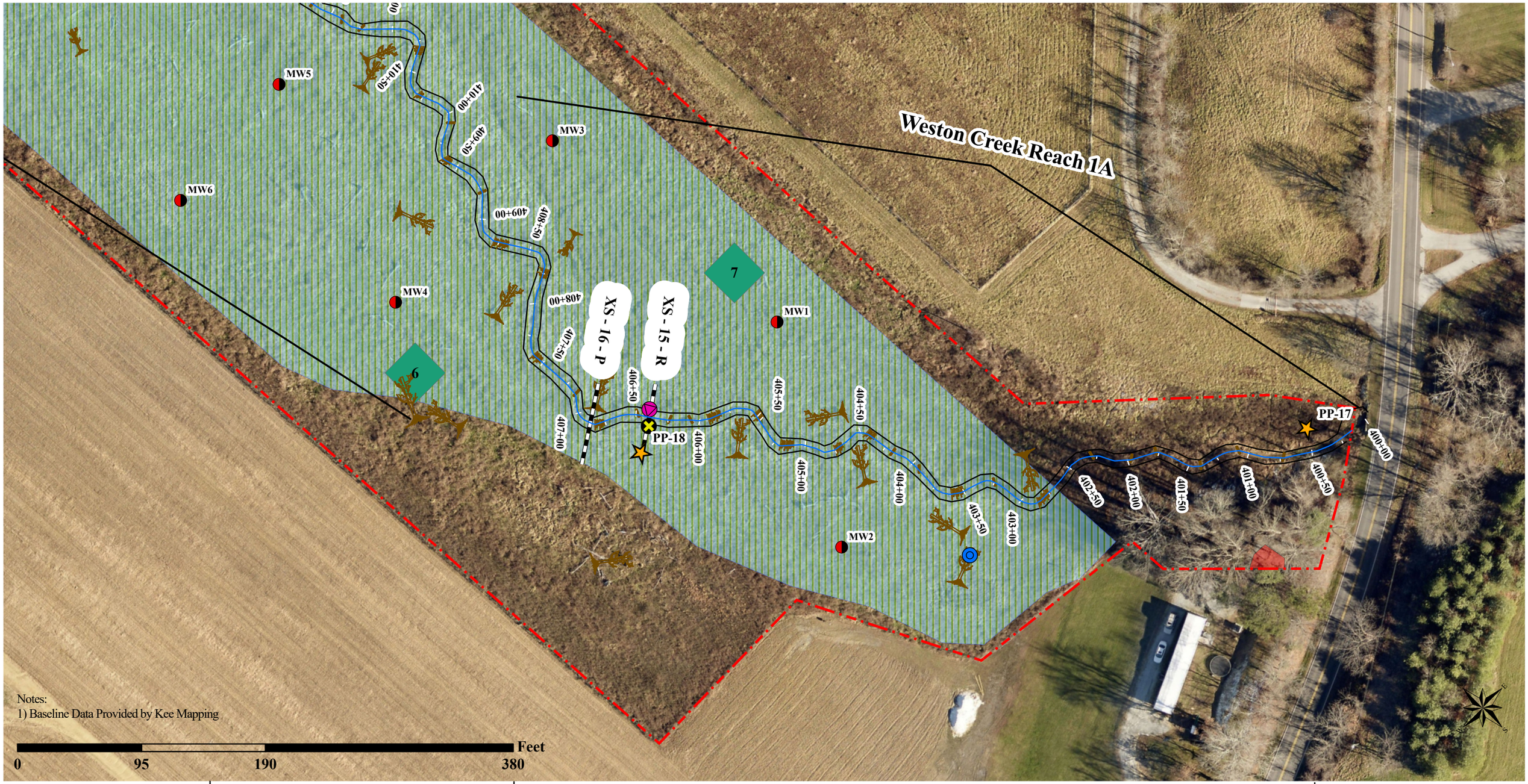


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Current Condition Plan View
Fletcher Mitigation Site
Monitoring Year 4
Henderson County, NC
NCDMS Contract No.: 006997
NCDMS Project No.: 100004
December 2023
Sheet 6 of 12

Encroachment

**Streams**

Restoration

Continuous Stage Recorder

Crest Gauge

Photo Point

Rain Gauge

Cross-Section

As-Built Top of Bank

**Vegetation Plot**

Meeting

Wetland Expansion Area

Wetland Re-Establishment

Conservation Easement

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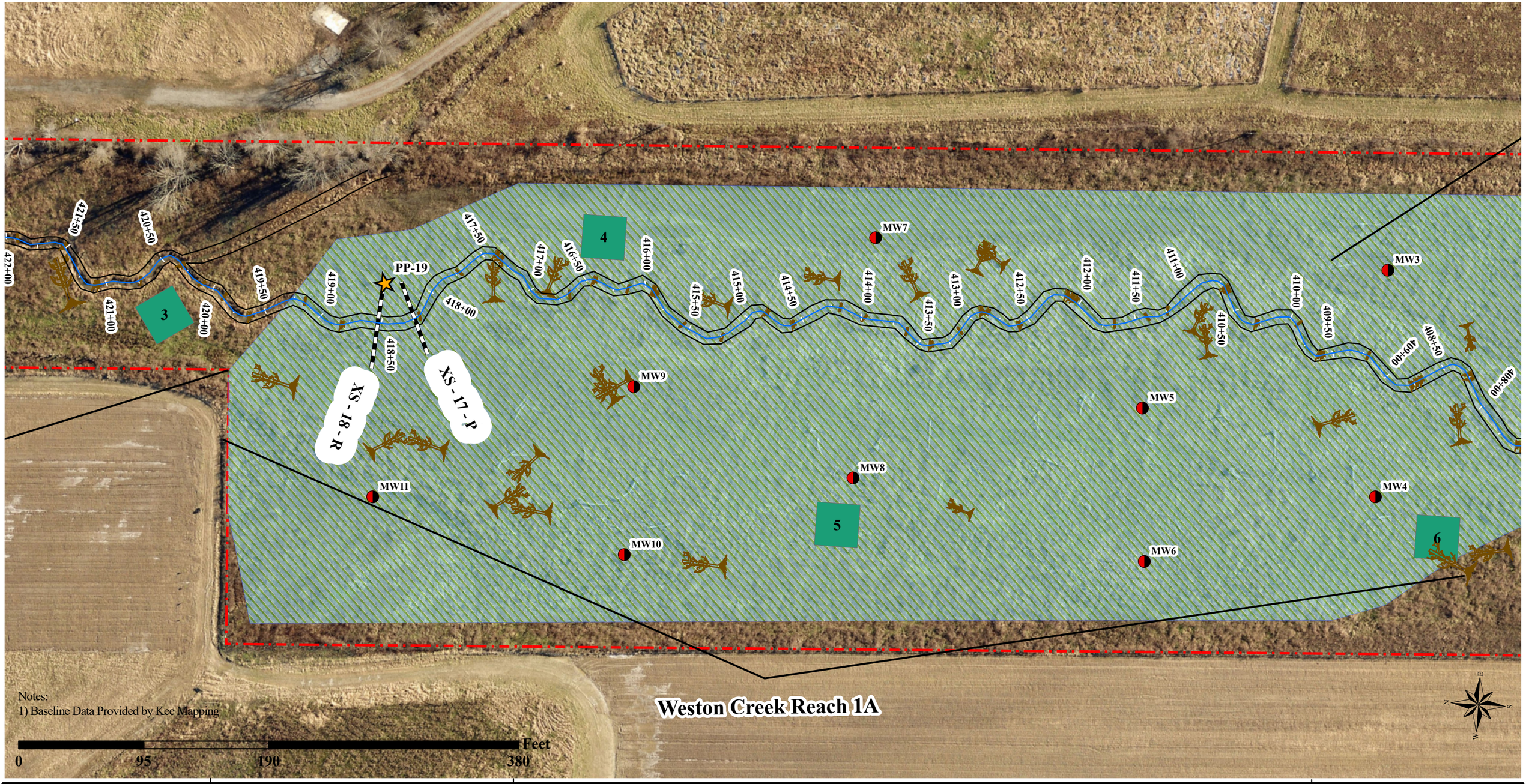


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Current Condition Plan View
Fletcher Mitigation Site
Monitoring Year 4
Henderson County, NC
NCDMS Contract No.: 006997
NCDMS Project No.: 100004
December 2023
Sheet 7 of 12

**Invasive Vegetation**
- Invasive Vegetation

**Streams**
- Restoration
- Photo Point
- Cross-Section
- As-Built Top of Bank

**Vegetation Plot**
- Meeting
- Wetland Expansion Area
- Wetland Re-Establishment
- Conservation Easement

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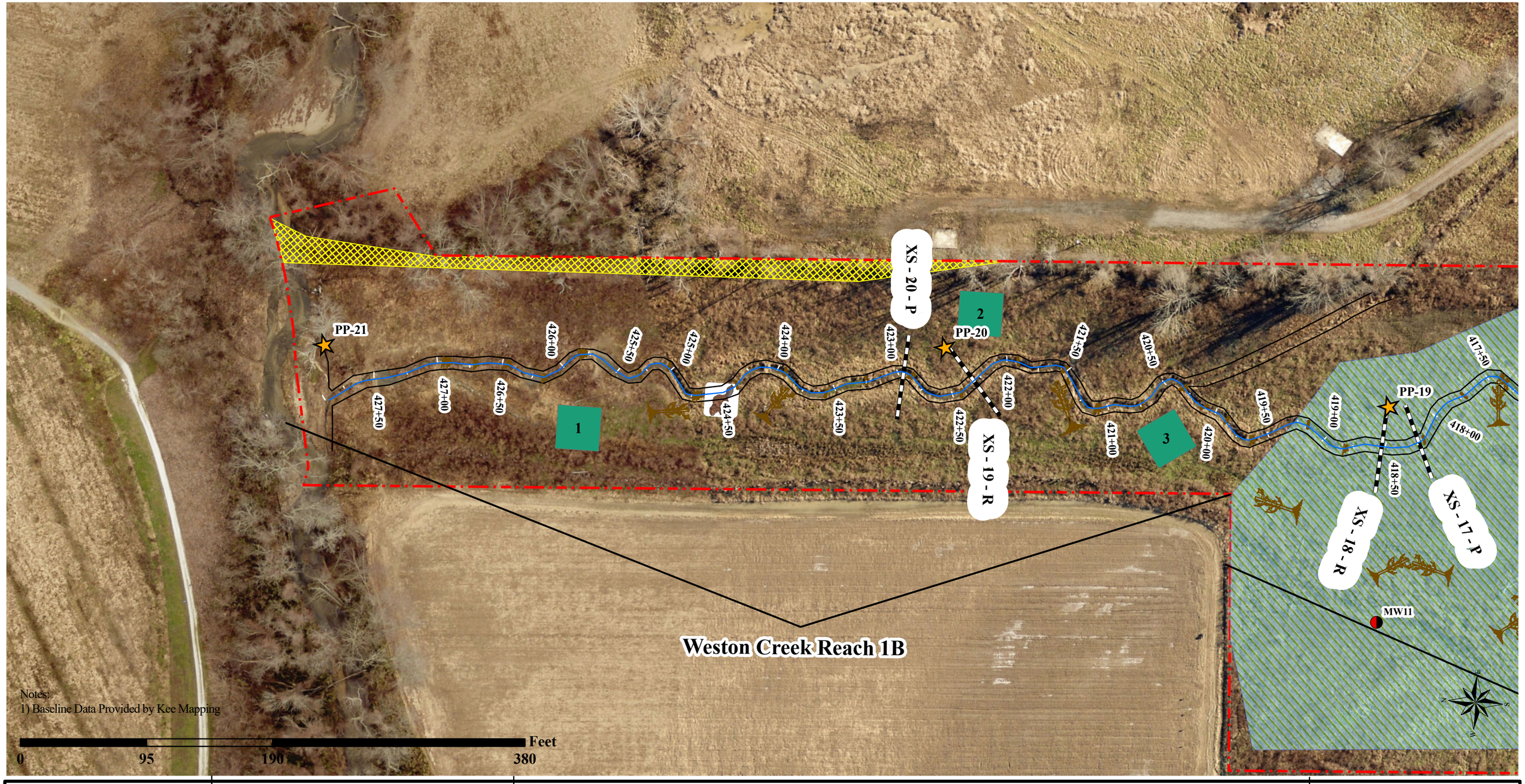


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Current Condition Plan View
Fletcher Mitigation Site
Monitoring Year 4
Henderson County, NC
NCDMS Contract No.: 006997
NCDMS Project No.: 100004
December 2023
Sheet 8 of 12

**Invasive Vegetation**
- Invasive Vegetation

**Streams**
- Restoration
- Photo Point
- Beaver Dam
- Cross-Section
- As-Built Top of Bank

**Vegetation Plot**
- Meeting
- Wetland Expansion Area
- Wetland Re-Establishment
- Conservation Easement

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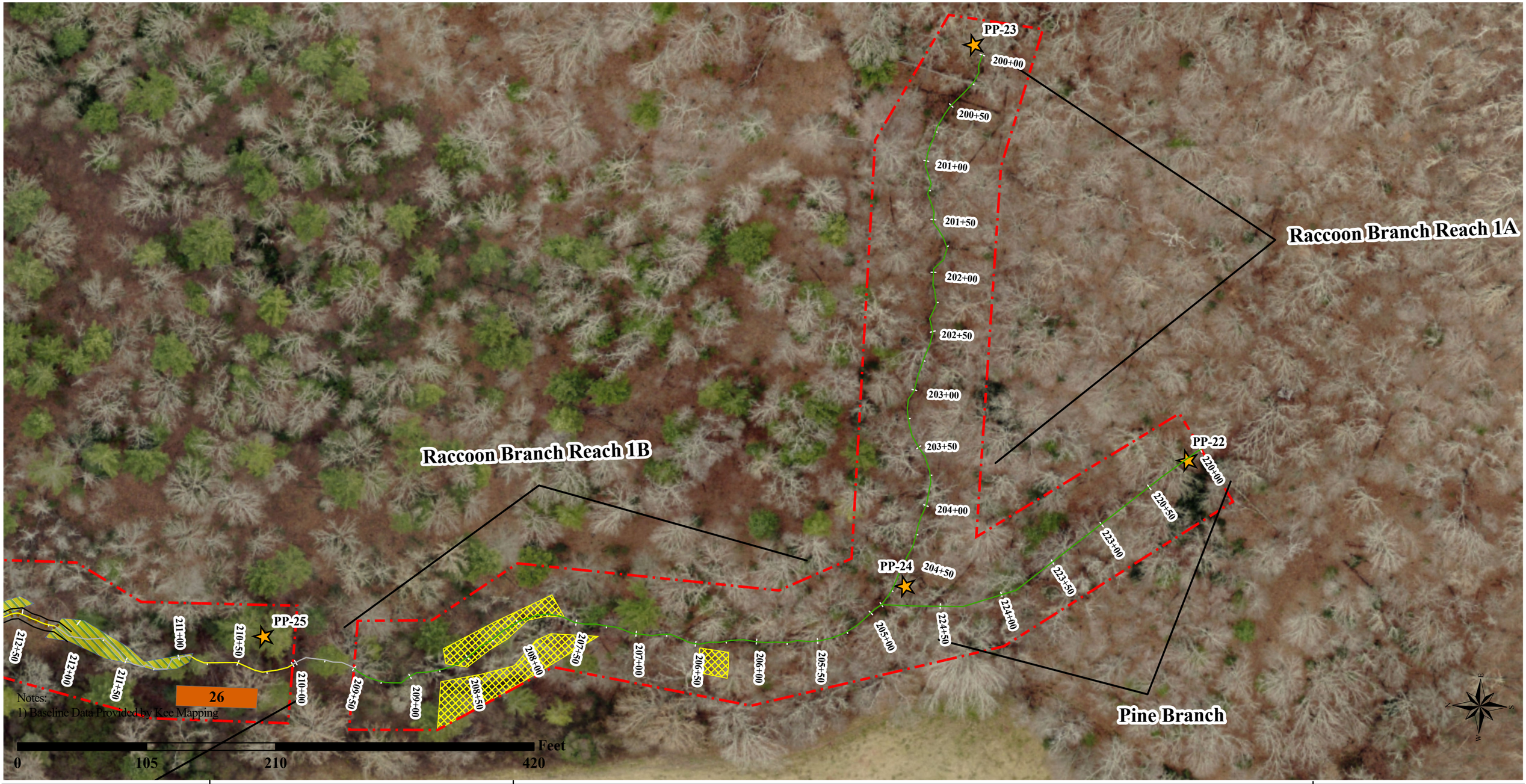


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Current Condition Plan View
Fletcher Mitigation Site
Monitoring Year 4
Henderson County, NC
NCDMS Contract No.: 006997
NCDMS Project No.: 100004
December 2023
Sheet 9 of 12

**Invasive Vegetation**
- Invasive Vegetation

**Streams**
- Enhancement II
- No Credit
- Preservation

- Photo Point
- As-Built Top of Bank

**Vegetation Plot**
- Not Meeting
- Wetland Expansion Area

- Wetlands Enhancement
- Conservation Easement

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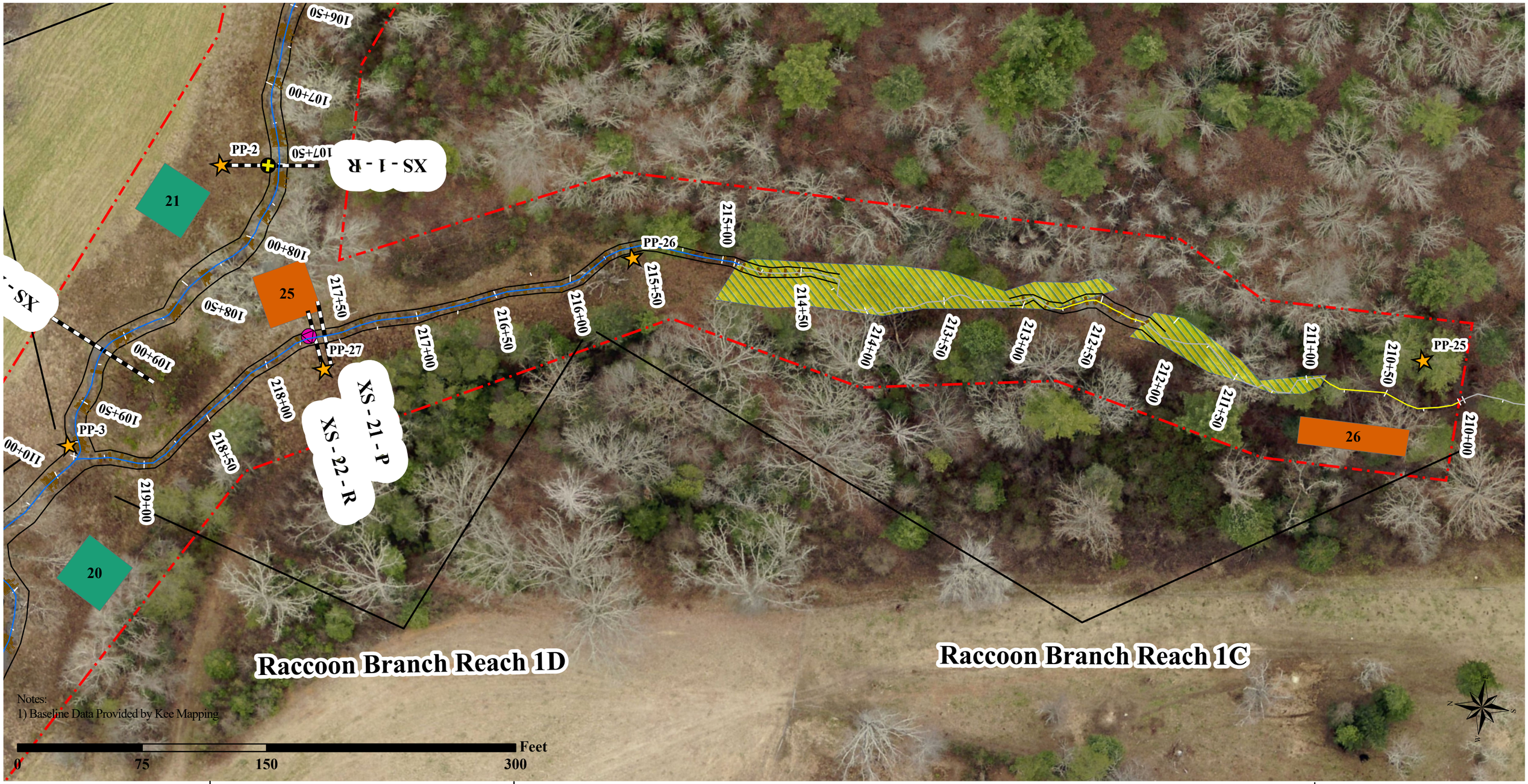


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ENVIRONMENTAL QUALITY

Current Condition Plan View
Fletcher Mitigation Site
Monitoring Year 4
Henderson County, NC
NCDMS Contract No.: 006997
NCDMS Project No.: 100004
December 2023
Sheet 10 of 12

**Streams**
- Enhancement II
- No Credit
- Restoration

- Continuous Stage Recorder
- Crest Gauge
- Photo Point
- Cross-Section
- As-Built Top of Bank

**Vegetation Plot**
- Meeting
- Not Meeting

- Wetland Expansion Area
- Wetlands Enhancement
- Conservation Easement

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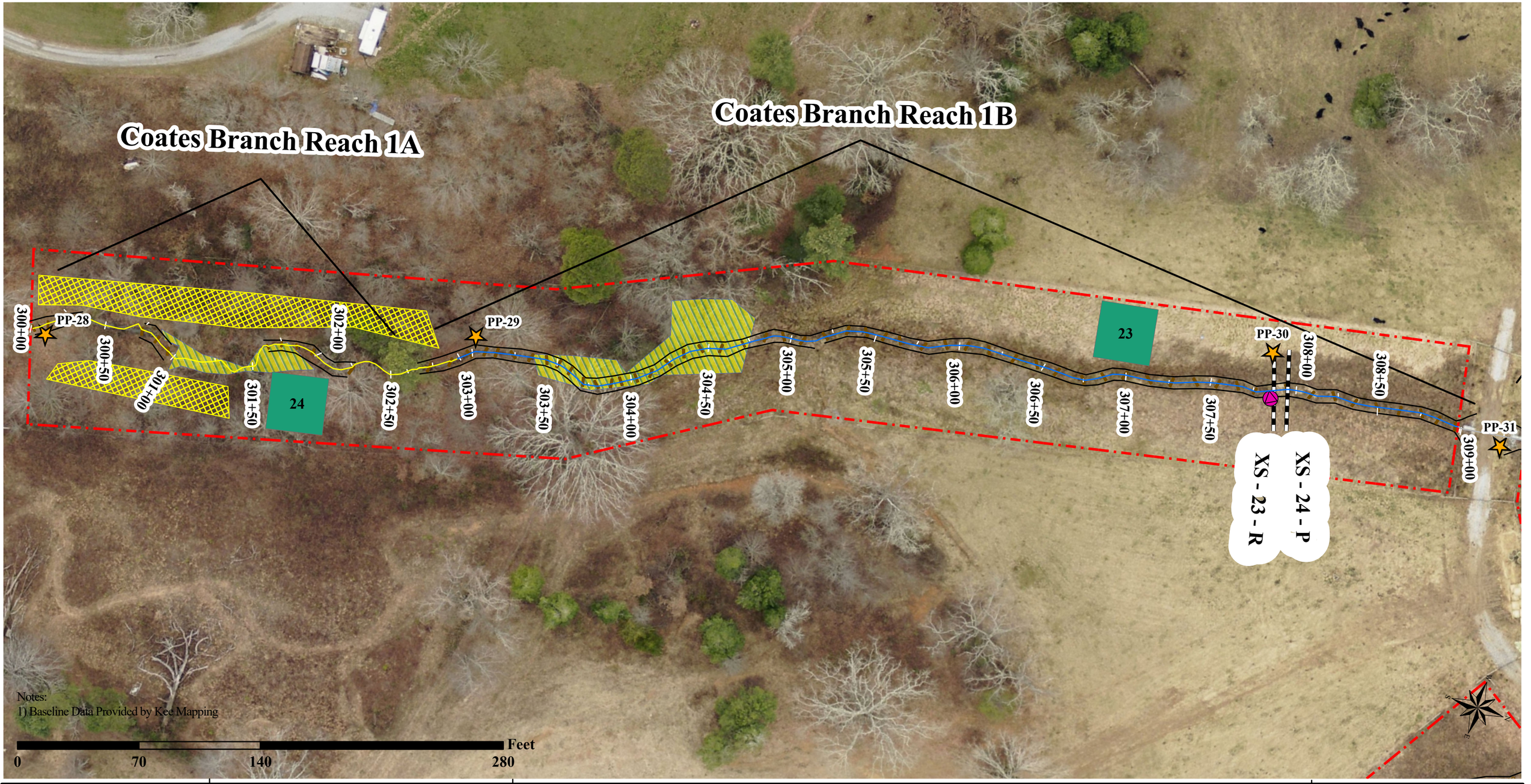


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ENVIRONMENTAL QUALITY

Current Condition Plan View
Fletcher Mitigation Site
Monitoring Year 4
Henderson County, NC
NCDMS Contract No.: 006997
NCDMS Project No.: 100004
December 2023
Sheet 11 of 12

**Invasive Vegetation**
- Invasive Vegetation

**Streams**
- Enhancement II
- No Credit
- Restoration

- Continuous Stage Recorder
- Photo Point
- Cross-Section
- As-Built Top of Bank

**Vegetation Plot**
- Meeting
- Wetland Expansion Area
- Wetlands Enhancement
- Conservation Easement

Prepared by

EQUINOX

Coates Branch Reach 1C

Coates Branch Reach 1D

XS - 26 - R
XS - 25 - P
XS - 27 - P
XS - 28 - R
XS - 5 - P
XS - 6 - R

PP-31
PP-32
PP-33
PP-7
PP-6
PP-5

MW_FC1
MW_FC2
MW_FC3
MW_FC4

Wetland Expansion Area
(ac):1.999

18
17
16
15
14

309+50
310+00
310+50
311+00
311+50
312+00
312+50
313+00
313+50
314+00
314+50
315+00
315+50
316+00
316+50
317+00
317+50
318+00
318+50
319+00
319+50
115+50
116+00
116+50
117+00
117+50
118+00
118+50
119+00
119+50
120+00
120+50
121+00
121+50
122+00
122+50
123+00
123+50
124+00
124+50
125+00
125+50

Notes:
1) Baseline Data Provided by Kee Mapping

0 80 160 320 Feet

Prepared for

Mitigation Services
ENVIRONMENTAL QUALITY

Current Condition Plan View
Fletcher Mitigation Site
Monitoring Year 4
Henderson County, NC
NCDMS Contract No.: 006997
NCDMS Project No.: 100004
December 2023
Sheet 12 of 12

**Invasive Vegetation**
- Invasive Vegetation

**Streams**
- No Credit
- Restoration

- Crest Gauge
- Photo Point
- Cross-Section
- As-Built Top of Bank

**Vegetation Plot**
- Meeting
- Wetland Expansion Area
- Conservation Easement

Prepared by

EQUINOX

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**Table 5. Visual Stream Morphology Stability Assessment**
**Fletcher Mitigation Site - Fletcher Creek Reach 1A - Enhancement II**
**Assessed Length 457 feet (April 25 and October 23-24, 2023)**

| 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. Bank | 1. Scoured / Eroding | Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion. | | | 0 | 0 | 100% | 0 | 0 | 100% |
| | 2. Undercut | Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat. | | | 0 | 0 | 100% | N/A | N/A | N/A |
| | 3. Mass Wasting | Bank slumping, calving, or collapse. | | | 0 | 0 | 100% | N/A | N/A | N/A |
| | | | | Totals | 0 | 0 | 100% | N/A | N/A | N/A |
| 3. Engineered Structures | 1. Overall Integrity | Structures physically intact with no dislodged boulders or logs. | N/A | N/A | | | N/A | | | |
| | 2. Grade Control | Grade control structures exhibiting maintenance of grade across the sill. | N/A | N/A | | | N/A | | | |
| | 2a. Piping | Structures lacking any substantial flow underneath sills or arms. | N/A | N/A | | | N/A | | | |
| | 3. Bank Protection | Bank erosion within the structures extent of influence does NOT exceed 15%. | N/A | N/A | | | N/A | | | |
| | 4. Habitat | Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth Ratio ≥ 1.6. Rootwads/logs providing some cover at base-flow. | N/A | N/A | | | N/A | | | |

- Information Unavailable
N/A - Item does not apply.

**Table 5 cont'd. Visual Stream Morphology Stability Assessment**
**Fletcher Mitigation Site - Fletcher Creek Reach 1B - Restoration**
**Assessed Length 380 feet (April 25 and October 23-24, 2023)**

| 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. Bank | 1. Scoured / Eroding | Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion. | | | 0 | 0 | 100% | 0 | 0 | 100% |
| | 2. Undercut | Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat. | | | 0 | 0 | 100% | 0 | 0 | 100% |
| | 3. Mass Wasting | Bank slumping, calving, or collapse. | | | 0 | 0 | 100% | 0 | 0 | 100% |
| | | | | Totals | 0 | 0 | 100% | 0 | 0 | 100% |
| 2. 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% | | | |

- Information Unavailable
N/A - Item does not apply.

**Table 5 cont'd. Visual Stream Morphology Stability Assessment**
**Fletcher Mitigation Site - Fletcher Creek Reach 1C - Restoration**
**Assessed Length 1,514 feet (April 25 and October 23-24, 2023)**

| 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. Bank** | **1. Scoured / Eroding** | Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion. | | | 0 | 0 | 100% | 0 | 0 | 100% |
| | **2. Undercut** | Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat. | | | 0 | 0 | 100% | 0 | 0 | 100% |
| | **3. Mass Wasting** | Bank slumping, calving, or collapse. | | | 0 | 0 | 100% | 0 | 0 | 100% |
| | | | | **Totals** | 0 | 0 | 100% | 0 | 0 | 100% |
| **2. 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% | | | |

- Information Unavailable

N/A - Item does not apply.

**Table 5 cont'd. Visual Stream Morphology Stability Assessment**
**Fletcher Mitigation Site - Fletcher Creek Reach 2A - Restoration**
**Assessed Length 1,299 feet ((April 25 and October 23-24, 2023)**

| 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. Bank** | **1. Scoured / Eroding** | Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion. | | | 0 | 0 | 100% | 0 | 0 | 100% |
| | **2. Undercut** | Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat. | | | 0 | 0 | 100% | 0 | 0 | 100% |
| | **3. Mass Wasting** | Bank slumping, calving, or collapse. | | | 0 | 0 | 100% | 0 | 0 | 100% |
| | | | | **Totals** | 0 | 0 | 100% | 0 | 0 | 100% |
| **2. Engineered Structures** | **1. Overall Integrity** | Structures physically intact with no dislodged boulders or logs. | 13 | 14 | | | 93% | | | |
| | **2. Grade Control** | Grade control structures exhibiting maintenance of grade across the sill. | 14 | 14 | | | 100% | | | |
| | **2a. Piping** | Structures lacking any substantial flow underneath sills or arms. | 14 | 14 | | | 100% | | | |
| | **3. Bank Protection** | Bank erosion within the structures extent of influence does NOT exceed 15%. | 14 | 14 | | | 100% | | | |
| | **4. Habitat** | Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth Ratio ≥ 1.6. Rootwads/logs providing some cover at base-flow. | 14 | 14 | | | 100% | | | |

- Information Unavailable

N/A - Item does not apply.

**Table 5 cont'd. Visual Stream Morphology Stability Assessment**
**Fletcher Mitigation Site - Fletcher Creek Reach 2B - Restoration**
**Assessed Length 1,511 feet (April 25 and October 23-24, 2023)**

| 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. Bank | 1. Scoured / Eroding | Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion. | | | 1 | 14 | 99% | 0 | 0 | 100% |
| | 2. Undercut | Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat. | | | 0 | 0 | 100% | 0 | 0 | 100% |
| | 3. Mass Wasting | Bank slumping, calving, or collapse. | | | 0 | 0 | 100% | 0 | 0 | 100% |
| | | | | Totals | 1 | 14 | 100% | 0 | 0 | 100% |
| 2. Engineered Structures | 1. Overall Integrity | Structures physically intact with no dislodged boulders or logs. | 27 | 27 | | | 100% | | | |
| | 2. Grade Control | Grade control structures exhibiting maintenance of grade across the sill. | 27 | 27 | | | 100% | | | |
| | 2a. Piping | Structures lacking any substantial flow underneath sills or arms. | 27 | 27 | | | 100% | | | |
| | 3. Bank Protection | Bank erosion within the structures extent of influence does NOT exceed 15%. | 27 | 27 | | | 100% | | | |
| | 4. Habitat | Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth Ratio ≥ 1.6. Rootwads/logs providing some cover at base-flow. | 27 | 27 | | | 100% | | | |

- Information Unavailable
N/A - Item does not apply.

**Table 5 cont'd. Visual Stream Morphology Stability Assessment**
**Fletcher Mitigation Site - Raccoon Branch Reach 1C - Enhancement II**
**Assessed Length 153 feet (April 25 and October 23-24, 2023)**

| 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. Bank | 1. Scoured / Eroding | Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion. | | | 0 | 0 | 100% | 0 | 0 | 100% |
| | 2. Undercut | Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat. | | | 0 | 0 | 100% | 0 | 0 | 100% |
| | 3. Mass Wasting | Bank slumping, calving, or collapse. | | | 0 | 0 | 100% | 0 | 0 | 100% |
| | | | | Totals | 0 | 0 | 100% | 0 | 0 | 100% |
| 2. Engineered Structures | 1. Overall Integrity | Structures physically intact with no dislodged boulders or logs. | N/A | N/A | | | N/A | | | |
| | 2. Grade Control | Grade control structures exhibiting maintenance of grade across the sill. | N/A | N/A | | | N/A | | | |
| | 2a. Piping | Structures lacking any substantial flow underneath sills or arms. | N/A | N/A | | | N/A | | | |
| | 3. Bank Protection | Bank erosion within the structures extent of influence does NOT exceed 15%. | N/A | N/A | | | N/A | | | |
| | 4. Habitat | Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth Ratio ≥ 1.6. Rootwads/logs providing some cover at base-flow. | N/A | N/A | | | N/A | | | |

- Information Unavailable
N/A - Item does not apply.

**Table 5 cont'd. Visual Stream Morphology Stability Assessment**
**Fletcher Mitigation Site - Raccoon Branch Reach 1D - Restoration**
**Assessed Length 440 feet ((April 25 and October 23-24, 2023)**

| 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. Bank** | **1. Scoured / Eroding** | Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion. | | | 0 | 0 | 100% | 0 | 0 | 100% |
| | **2. Undercut** | Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat. | | | 0 | 0 | 100% | 0 | 0 | 100% |
| | **3. Mass Wasting** | Bank slumping, calving, or collapse. | | | 0 | 0 | 100% | 0 | 0 | 100% |
| | | | | **Totals** | 0 | 0 | 100% | 0 | 0 | 100% |
| **2. Engineered Structures** | **1. Overall Integrity** | Structures physically intact with no dislodged boulders or logs. | N/A | N/A | | | N/A | | | |
| | **2. Grade Control** | Grade control structures exhibiting maintenance of grade across the sill. | N/A | N/A | | | N/A | | | |
| | **2a. Piping** | Structures lacking any substantial flow underneath sills or arms. | N/A | N/A | | | N/A | | | |
| | **3. Bank Protection** | Bank erosion within the structures extent of influence does NOT exceed 15%. | N/A | N/A | | | N/A | | | |
| | **4. Habitat** | Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth Ratio ≥ 1.6. Rootwads/logs providing some cover at base-flow. | N/A | N/A | | | N/A | | | |

- Information Unavailable

N/A - Item does not apply.

**Table 5 cont'd. Visual Stream Morphology Stability Assessment**
**Fletcher Mitigation Site - Coates Branch Reach 1B - Restoration**
**Assessed Length 601 feet (April 25 and October 23-24, 2023)**

| 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. Bank** | **1. Scoured / Eroding** | Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion. | | | 0 | 0 | 100% | 0 | 0 | 100% |
| | **2. Undercut** | Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat. | | | 0 | 0 | 100% | 0 | 0 | 100% |
| | **3. Mass Wasting** | Bank slumping, calving, or collapse. | | | 0 | 0 | 100% | 0 | 0 | 100% |
| | | | | **Totals** | 0 | 0 | 100% | 0 | 0 | 100% |
| **2. Engineered Structures** | **1. Overall Integrity** | Structures physically intact with no dislodged boulders or logs. | N/A | N/A | | | N/A | | | |
| | **2. Grade Control** | Grade control structures exhibiting maintenance of grade across the sill. | N/A | N/A | | | N/A | | | |
| | **2a. Piping** | Structures lacking any substantial flow underneath sills or arms. | N/A | N/A | | | N/A | | | |
| | **3. Bank Protection** | Bank erosion within the structures extent of influence does NOT exceed 15%. | N/A | N/A | | | N/A | | | |
| | **4. Habitat** | Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth Ratio ≥ 1.6. Rootwads/logs providing some cover at base-flow. | N/A | N/A | | | N/A | | | |

- Information Unavailable

N/A - Item does not apply.

**Table 5 cont'd. Visual Stream Morphology Stability Assessment**
**Fletcher Mitigation Site - Coates Branch Reach 1C - Restoration**
**Assessed Length 708 feet (April 25 and October 23-24, 2023)**

| 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. Bank** | **1. Scoured / Eroding** | Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion. | | | 0 | 0 | 100% | 0 | 0 | 100% |
| | **2. Undercut** | Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat. | | | 0 | 0 | 100% | 0 | 0 | 100% |
| | **3. Mass Wasting** | Bank slumping, calving, or collapse. | | | 0 | 0 | 100% | 0 | 0 | 100% |
| | | | | **Totals** | 0 | 0 | 100% | 0 | 0 | 100% |
| **2. Engineered Structures** | **1. Overall Integrity** | Structures physically intact with no dislodged boulders or logs. | N/A | N/A | | | N/A | | | |
| | **2. Grade Control** | Grade control structures exhibiting maintenance of grade across the sill. | N/A | N/A | | | N/A | | | |
| | **2a. Piping** | Structures lacking any substantial flow underneath sills or arms. | N/A | N/A | | | N/A | | | |
| | **3. Bank Protection** | Bank erosion within the structures extent of influence does NOT exceed 15%. | N/A | N/A | | | N/A | | | |
| | **4. Habitat** | Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth Ratio ≥ 1.6. Rootwads/logs providing some cover at base-flow. | N/A | N/A | | | N/A | | | |

- Information Unavailable

N/A - Item does not apply.

**Table 5 cont'd. Visual Stream Morphology Stability Assessment**
**Fletcher Mitigation Site - Coates Branch Reach 1D - Restoration**
**Assessed Length 325 feet (April 25 and October 23-24, 2023)**

| 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. Bank** | **1. Scoured / Eroding** | Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion. | | | 0 | 0 | 100% | 0 | 0 | 100% |
| | **2. Undercut** | Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat. | | | 0 | 0 | 100% | 0 | 0 | 100% |
| | **3. Mass Wasting** | Bank slumping, calving, or collapse. | | | 0 | 0 | 100% | 0 | 0 | 100% |
| | | | | **Totals** | 0 | 0 | 100% | 0 | 0 | 100% |
| **2. Engineered Structures** | **1. Overall Integrity** | Structures physically intact with no dislodged boulders or logs. | N/A | N/A | | | N/A | | | |
| | **2. Grade Control** | Grade control structures exhibiting maintenance of grade across the sill. | N/A | N/A | | | N/A | | | |
| | **2a. Piping** | Structures lacking any substantial flow underneath sills or arms. | N/A | N/A | | | N/A | | | |
| | **3. Bank Protection** | Bank erosion within the structures extent of influence does NOT exceed 15%. | N/A | N/A | | | N/A | | | |
| | **4. Habitat** | Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth Ratio ≥ 1.6. Rootwads/logs providing some cover at base-flow. | N/A | N/A | | | N/A | | | |

- Information Unavailable

N/A - Item does not apply.

**Table 5 cont'd. Visual Stream Morphology Stability Assessment**
**Fletcher Mitigation Site - Weston Creek Reach 1A - Restoration**
**Assessed Length 1,982 feet (April 25 and October 23-24, 2023)**

| 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. Bank** | **1. Scoured / Eroding** | Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion. | | | 0 | 0 | 100% | 0 | 0 | 100% |
| | **2. Undercut** | Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat. | | | 0 | 0 | 100% | 0 | 0 | 100% |
| | **3. Mass Wasting** | Bank slumping, calving, or collapse. | | | 0 | 0 | 100% | 0 | 0 | 100% |
| | | | | **Totals** | 0 | 0 | 100% | 0 | 0 | 100% |
| **2. Engineered Structures** | **1. Overall Integrity** | Structures physically intact with no dislodged boulders or logs. | 30 | 30 | | | 100% | | | |
| | **2. Grade Control** | Grade control structures exhibiting maintenance of grade across the sill. | 30 | 30 | | | 100% | | | |
| | **2a. Piping** | Structures lacking any substantial flow underneath sills or arms. | 30 | 30 | | | 100% | | | |
| | **3. Bank Protection** | Bank erosion within the structures extent of influence does NOT exceed 15%. | 30 | 30 | | | 100% | | | |
| | **4. Habitat** | Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth Ratio ≥ 1.6. Rootwads/logs providing some cover at base-flow. | 30 | 30 | | | 100% | | | |

- Information Unavailable

N/A - Item does not apply.

**Table 5 cont'd. Visual Stream Morphology Stability Assessment**
**Fletcher Mitigation Site - Weston Creek Reach 1B - Restoration**
**Assessed Length 825 feet (April 25 and October 23-24, 2023)**

| 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. Bank** | **1. Scoured / Eroding** | Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion. | | | 0 | 0 | 100% | 0 | 0 | 100% |
| | **2. Undercut** | Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat. | | | 0 | 0 | 100% | 0 | 0 | 100% |
| | **3. Mass Wasting** | Bank slumping, calving, or collapse. | | | 0 | 0 | 100% | 0 | 0 | 100% |
| | | | | **Totals** | 0 | 0 | 100% | 0 | 0 | 100% |
| **2. 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% | | | |

- Information Unavailable

N/A - Item does not apply.

**Table 6. Vegetation Condition Assessment**
**Fletcher Creek Restoration Site**
**(April 25 and October 23-24, 2023)**

**Planted Acreage : 32.3**

| Vegetation Category | Definitions | CCPV Depiction | Number of Polygons | Combined Acreage | % of Planted Acreage |
|---|---|---|---|---|---|
| **1. Bare Areas** | Very limited cover of both woody and herbaceous material. | Brown Stipple | 0 | 0.00 | 0% |
| **2. Low Stem Density Areas** | Woody stem densities clearly below target levels based on MY3, 4, or 5 stem count criteria. | Red Stipple | 0 | 0.00 | 0% |
| | | **Totals** | 0 | 0.00 | 0% |
| **3. Areas of Poor Growth Rates or Vigor** | Areas with woody stems of a size class that are obviously small given the monitoring year. | N/A | 0 | 0.00 | 0% |
| | | **Cumulative Totals** | 0 | 0.00 | 0% |

**Easement Acreage : 34.8**

| Vegetation Category | Definitions | CCPV Depiction | Number of Polygons/Points | Combined Acreage | % of Easement Acreage |
|---|---|---|---|---|---|
| **4. Invasive Areas of Concern** | Areas or points (if too small to render as polygons at map scale). | **Cross Hatch (Yellow - Present)** | 12 | 0.49 | 1% |
| **5. Easement Encroachment Areas** | Areas or points (if too small to render as polygons at map scale). | **Red** | 3 | 0.02 | 0.0% |

N/A - Item does not apply.

# Permanent Photo Stations


Fletcher Creek 1A – Permanent Photo Station 1
Looking Upstream


Fletcher Creek 1A – Permanent Photo Station 1
Looking Downstream


Fletcher 1B, Cross section 1 Crest Gauge.


Fletcher Creek 1B – Permanent Photo Station 2
Looking Upstream


Fletcher Creek 1B – Permanent Photo Station 2
Looking Downstream


Fletcher Creek 1B – Permanent Photo Station 3
Looking Upstream


Fletcher Creek 1C – Permanent Photo Station 3
Looking Downstream


Fletcher Creek 1C – Permanent Photo Station 4
Looking Upstream


Fletcher Creek 1C – Permanent Photo Station 4
Looking Downstream


Fletcher Creek 1C – Permanent Photo Station 5
Looking Upstream from Crossing


Fletcher Creek 1C – Permanent Photo Station 5
Looking upstream through culvert


Fletcher Creek 1C – Permanent Photo Station 5
Looking Downstream from Crossing


Fletcher Creek 1C – Permanent Photo Station 6
Looking Upstream


Fletcher Creek 1C – Permanent Photo Station 6
Looking Downstream


Fletcher Creek 1C – Permanent Photo Station 7
Looking Upstream


Fletcher Creek 2A - Permanent Photo Station 7
Looking Downstream


Coates Branch 1D – Permanent Photo Station 7
Looking Upstream


Fletcher Creek 2A – Permanent Photo Station 8
Looking Upstream


Fletcher Creek 2A – Permanent Photo Station 8
Looking Downstream


Fletcher Creek 2A – Permanent Photo Station 9
Looking Upstream


Fletcher Creek 2A – Permanent Photo Station 9
Looking Downstream


Fletcher Creek 2A – Permanent Photo Station 10
Looking Upstream


Fletcher Creek 2A – Permanent Photo Station 10
Looking Downstream


Fletcher Creek 2A – Permanent Photo Station 11
Looking Upstream


Fletcher Creek 2B – Permanent Photo Station 12
Looking Downstream


Fletcher Creek 2B – Permanent Photo Station 13
Looking Upstream from Crossing


Fletcher Creek 2B – Permanent Photo Station 13
Looking Upstream through culvert.


Fletcher Creek 2B – Permanent Photo Station 13
Looking Downstream from Crossing


Fletcher Reach 2B. Cross-section 11 Crest Gauge.


Fletcher Creek 2B – Permanent Photo Station 14
Looking Upstream


Fletcher Creek 2B – Permanent Photo Station 14
Looking Downstream


Fletcher Creek 2B – Permanent Photo Station 15
Looking Upstream


Fletcher Creek 2B – Permanent Photo Station 15
Looking Downstream


Fletcher Creek 2B – Permanent Photo Station 16
Looking Upstream


Weston Creek 1A – Permanent Photo Station 17
Looking Downstream


Weston Reach 1A, Cross-section 15 Crest Gauge.


Weston Creek 1A – Permanent Photo Station 18
Looking Upstream


Weston Creek 1A – Permanent Photo Station 18
Looking Downstream


Weston Creek 1A – Permanent Photo Station 19
Looking Upstream


Weston Creek 1A – Permanent Photo Station 19
Looking Downstream


Weston Creek 1B – Permanent Photo Station 20
Looking Upstream


Weston Creek 1B – Permanent Photo Station 20
Looking Downstream


Weston Creek 1D – Permanent Photo Station 21
Looking Upstream


Raccoon Branch 1A – Permanent Photo Station 22
Looking Downstream


Pine Branch – Permanent Photo Station 23
Looking Downstream

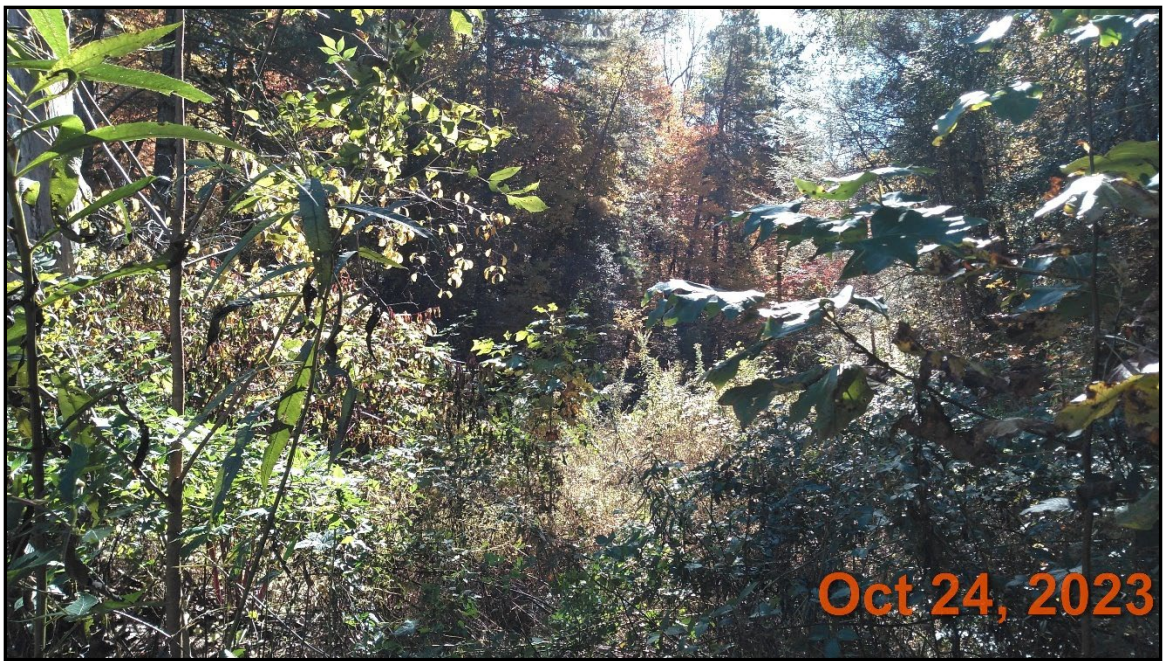

Raccoon Branch 1A – Permanent Photo Station 24
Looking Upstream


Raccoon Branch 1B – Permanent Photo Station 24
Looking Downstream


Pine Branch – Permanent Photo Station 24
Looking Upstream


Raccoon Branch 1B – Permanent Photo Station 25
Looking Upstream


Raccoon Branch 1C – Permanent Photo Station 25
Looking Downstream




Raccoon Branch 1C – Permanent Photo Station 26
Looking Upstream


Raccoon Branch 1D – Permanent Photo Station 26
Looking Downstream


Raccoon Branch 1D – Permanent Photo Station 27
Looking Upstream


Raccoon Branch 1D – Permanent Photo Station 27
Looking Downstream


Coates Branch 1A – Permanent Photo Station 28
Looking Downstream


Coates Branch 1B – Permanent Photo Station 29
Looking Downstream


Coates Branch 1B – Permanent Photo Station 30
Looking Upstream


Coates Branch 1B – Permanent Photo Station 30
Looking Downstream


Coates Branch 1B – Permanent Photo Station 31
Looking Upstream from Crossing


Coates Branch 1C – Permanent Photo Station 31
Looking Upstream through culvert.


Coates Branch 1C – Permanent Photo Station 31
Looking Downstream from Crossing


Cross-section 26 Crest Gauge.


Coates Branch 1C – Permanent Photo Station 32
Looking Upstream


Coates Branch 1C – Permanent Photo Station 32
Looking Downstream


Coates Branch 1D – Permanent Photo Station 33
Looking Upstream


Coates Branch 1D – Permanent Photo Station 33
Looking Downstream

# Vegetation Plot Photos


**Vegetation Monitoring Plot 1**


**Vegetation Monitoring Plot 2**


**Vegetation Monitoring Plot 3**


**Vegetation Monitoring Plot 4**


**Vegetation Monitoring Plot 5**


**Vegetation Monitoring Plot 6**


**Vegetation Monitoring Plot 7**


**Vegetation Monitoring Plot 8**


**Vegetation Monitoring Plot 9**


**Vegetation Monitoring Plot 10**


**Vegetation Monitoring Plot 11**


**Vegetation Monitoring Plot 12**


**Vegetation Monitoring Plot 13**


**Vegetation Monitoring Plot 14**


**Vegetation Monitoring Plot 15**


**Vegetation Monitoring Plot 16**


**Vegetation Monitoring Plot 17**


**Vegetation Monitoring Plot 18**


**Vegetation Monitoring Plot 19**


**Vegetation Monitoring Plot 20**


**Vegetation Monitoring Plot 21**


**Vegetation Monitoring Plot 22**


**Vegetation Monitoring Plot 23**


**Vegetation Monitoring Plot 24**


**Vegetation Monitoring Plot 25**


**Vegetation Monitoring Plot 26**

# Problem Areas


1. Beaver Dam Weston Reach 1B, Station 424+50


2. Beaver Dam Weston Reach 1B, Station 424+50

3.Cross Section 10, failed structure and extended pool, Station 133+50

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# Appendix C
# Vegetation Plot Data

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| | |
|---|---|
| Planted Acreage | 32.3 |
| Date of Initial Plant | 2019-01-31 |
| Date(s) of Supplemental Plant(s) | NA |
| Date(s) Mowing | 2023-10-16 |
| Date of Current Survey | 2023-10-16 |
| Plot size (ACRES) | 0.0247 |

**Table 7a. Current Plot Data MY4 (2023) Fletcher Mitigation Site**

| | Scientific Name | Common Name | Tree/Shrub | Indicator Status | Veg Plot 1 F | | Veg Plot 2 F | | Veg Plot 3 F | | Veg Plot 4 F | | Veg Plot 5 F | | Veg Plot 6 F | | Veg Plot 7 F | | Veg Plot 8 F | | Veg Plot 9 F | | Veg Plot 10 F | | Veg Plot 11 F | | Veg Plot 12 F | | Veg Plot 13 F | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Planted | Total | Planted | Total | Planted | Total | Planted | Total | Planted | Total | Planted | Total | Planted | Total | Planted | Total | Planted | Total | Planted | Total | Planted | Total | Planted | Total | Planted | Total |
| Species Included in Approved Mitigation Plan | Acer negundo | boxelder | Tree | FAC | 1 | 1 | 3 | 3 | 1 | 2 | 3 | 4 | | 5 | 3 | 4 | 4 | 8 | 3 | 3 | | | 6 | 6 | 1 | 1 | 1 | 1 | 2 | 2 |
| | Alnus serrulata | hazel alder | Tree | OBL | | | | | 1 | 2 | | | | | | | | | | | | | | | | | | | | |
| | Aronia arbutifolia | red chokeberry | Shrub | FACW | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Aronia melanocarpa | black chokeberry | Shrub | FAC | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Asimina triloba | pawpaw | Tree | FAC | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Betula nigra | river birch | Tree | FACW | | | 5 | 5 | 2 | 2 | 2 | 2 | | | | | | | 1 | 1 | 2 | 2 | 1 | 1 | 3 | 4 | 5 | 8 | 5 | 5 |
| | Carpinus caroliniana | American hornbeam | Tree | FAC | | | | | 1 | 1 | | | | 1 | | | | | 1 | 1 | 3 | 3 | | | | | 1 | 1 | | |
| | Cephalanthus occidentalis | common buttonbush | Shrub | OBL | 3 | 3 | | | 1 | 1 | 5 | 5 | 3 | 3 | 3 | 3 | 1 | 1 | | | | | | | | | | | | |
| | Cornus amomum | silky dogwood | Shrub | FACW | 3 | 3 | 1 | 1 | 4 | 4 | 2 | 3 | 5 | 5 | 5 | 5 | 2 | 2 | 1 | 1 | | | | | 1 | 1 | | | | |
| | Fraxinus pennsylvanica | green ash | Tree | FACW | 3 | 4 | 3 | 3 | 3 | 3 | | | 1 | 1 | | | | | 5 | 6 | 2 | 2 | 3 | 3 | | | | | 2 | 2 |
| | Hamamelis virginiana | American witchhazel | Tree | FACU | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | |
| | Lindera benzoin | northern spicebush | Tree | FAC | | | | | | | | | | | | | | | | | | | 1 | 1 | | | | | | |
| | Liriodendron tulipifera | tuliptree | Tree | FACU | | | 3 | 3 | | | | | | | | | 1 | 1 | 1 | 1 | 3 | 3 | | | 1 | 1 | | | 1 | 1 |
| | Platanus occidentalis | American sycamore | Tree | FACW | | | 4 | 4 | | 2 | | | 1 | 1 | | | | | 1 | 3 | 5 | 5 | 6 | 6 | 3 | 3 | | | 3 | 3 |
| | Salix nigra | black willow | Tree | OBL | | | | | | 1 | 1 | 2 | | | | | | | | | | | | | | 1 | | | | |
| | Salix sericea | silky willow | Shrub | OBL | | | | | | | | | | | | | | | | | | | | | | | | 3 | 1 | 1 |
| Sum | Performance Standard | | | | 11 | 12 | 19 | 19 | 13 | 18 | 13 | 16 | 10 | 16 | 11 | 12 | 8 | 12 | 13 | 16 | 15 | 15 | 17 | 17 | 9 | 11 | 7 | 13 | 14 | 14 |
| Post Mitigation Plan Species | *Acer rubrum* | *red maple* | *Tree* | *FAC* | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | *Carya ovata* | *shagbark hickory* | *Tree* | *FACU* | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | *Ilex opaca* | *American holly* | *Tree* | *FACU* | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | *Juglans nigra* | *black walnut* | *Tree* | *FACU* | | | | | | | | | | | | | | | | | | | | | | *1* | | | | |
| | *Oxydendrum arboreum* | *sourwood* | *Shrub* | *UPL* | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | *Pinus virginiana* | *Virginia pine* | *Tree* | | | | | | | | | | | | | | | | | | | | | | | | | *1* | | |
| | *Prunus serotina* | *black cherry* | *Tree* | *FACU* | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | *Quercus falcata* | *southern red oak* | *Tree* | *FACU* | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | *Robinia pseudoacacia* | *black locust* | *Tree* | *FACU* | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sum | Proposed Standard | | | | 11 | 12 | 19 | 19 | 13 | 18 | 13 | 16 | 10 | 16 | 11 | 12 | 8 | 12 | 13 | 16 | 15 | 15 | 17 | 17 | 9 | 11 | 7 | 13 | 14 | 14 |
| Mitigation Plan Performance Standard | Current Year Stem Count | | | | | 12 | | 19 | | 18 | | 16 | | 16 | | 12 | | 12 | | 16 | | 15 | | 17 | | 11 | | 13 | | 14 |
| | Stems/Acre | | | | | 486 | | 769 | | 729 | | 648 | | 648 | | 486 | | 405 | | 648 | | 607 | | 688 | | 445 | | 486 | | 567 |
| | Species Count | | | | | 5 | | 6 | | 9 | | 5 | | 6 | | 3 | | 4 | | 7 | | 5 | | 5 | | 6 | | 4 | | 6 |
| | Dominant Species Composition (%) | | | | | 33 | | 26 | | 22 | | 31 | | 31 | | 42 | | 67 | | 38 | | 33 | | 35 | | 33 | | 57 | | 36 |
| | Average Plot Height (ft.) | | | | | 6 | | 9 | | 6 | | 3 | | 4 | | 4 | | 4 | | 4 | | 8 | | 6 | | 9 | | 4 | | 10 |
| | % Invasives | | | | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 |
| Post Mitigation Plan Performance Standard | Current Year Stem Count | | | | | 12 | | 19 | | 18 | | 16 | | 16 | | 12 | | 12 | | 16 | | 15 | | 17 | | 11 | | 13 | | 14 |
| | Stems/Acre | | | | | 486 | | 769 | | 729 | | 648 | | 648 | | 486 | | 405 | | 648 | | 607 | | 688 | | 445 | | 486 | | 567 |
| | Species Count | | | | | 5 | | 6 | | 9 | | 5 | | 6 | | 3 | | 4 | | 7 | | 5 | | 5 | | 6 | | 4 | | 6 |
| | Dominant Species Composition (%) | | | | | 33 | | 26 | | 22 | | 31 | | 31 | | 42 | | 67 | | 38 | | 33 | | 35 | | 33 | | 57 | | 36 |
| | Average Plot Height (ft.) | | | | | 6 | | 9 | | 6 | | 3 | | 4 | | 4 | | 4 | | 4 | | 8 | | 6 | | 9 | | 4 | | 10 |
| | % Invasives | | | | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 |

1). Bolded species are proposed for the current monitoring year, italicized species are not approved, and a regular font indicates that the species has been approved.
2). The "Species Included in Approved Mitigation Plan" section contains only those species that were included in the original approved mitigation plan. The "Post Mitigation Plan Species" section includes species that are being proposed through a mitigation plan addendum for the current monitoring year (bolded) , species that have been approved in prior monitoring years through a mitigation plan addendum (regular font), and species that are not approved (italicized).
3). The "Mitigation Plan Performance Standard" section is derived only from stems included in the original mitigation plan, whereas the "Post Mitigation Plan Performance Standard" includes data from mitigation plan approved, post mitigation plan approved, and proposed stems.

| | |
|---|---|
| Planted Acreage | 32.3 |
| Date of Initial Plant | 2019-01-31 |
| Date(s) of Supplemental Plant(s) | NA |
| Date(s) Mowing | 2023-10-16 |
| Date of Current Survey | 2023-10-16 |
| Plot size (ACRES) | 0.0247 |

**Table 7a cont. Current Plot Data MY4 (2023) Fletcher Mitigation Site**

| | Scientific Name | Common Name | Tree/Shrub | Indicator Status | Veg Plot 14 F | | Veg Plot 15 F | | Veg Plot 16 F | | Veg Plot 17 F | | Veg Plot 18 F | | Veg Plot 19 F | | Veg Plot 20 F | | Veg Plot 21 F | | Veg Plot 22 F | | Veg Plot 23 F | | Veg Plot 24 F | | Veg Plot 25 F | | Veg Plot 26 F | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Planted | Total | Planted | Total | Planted | Total | Planted | Total | Planted | Total | Planted | Total | Planted | Total | Planted | Total | Planted | Total | Planted | Total | Planted | Total | Planted | Total | Planted | Total |
| Species Included in Approved Mitigation Plan | Acer negundo | boxelder | Tree | FAC | 2 | 2 | | | | | 3 | 3 | 6 | 6 | | | | | 1 | 1 | 2 | 2 | 1 | 1 | | | | 1 | | |
| | Alnus serrulata | hazel alder | Tree | OBL | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Aronia arbutifolia | red chokeberry | Shrub | FACW | | | | | | | | | | | | | | | 1 | 1 | | | | | | | | | | |
| | Aronia melanocarpa | black chokeberry | Shrub | FAC | | | | | | | | | | | | | | | | | | | | | 1 | 1 | | | | |
| | Asimina triloba | pawpaw | Tree | FAC | | | | | | | | | | | 1 | 1 | 1 | 1 | 1 | 1 | | | | | 3 | 3 | 1 | 1 | 2 | 2 |
| | Betula nigra | river birch | Tree | FACW | 4 | 4 | 5 | 5 | 2 | 2 | 1 | 1 | 2 | 2 | | | 3 | 3 | 4 | 4 | 1 | 1 | | | | | | | | |
| | Carpinus caroliniana | American hornbeam | Tree | FAC | 2 | 2 | 4 | 4 | | | 1 | 1 | 3 | 3 | 4 | 4 | | | | | | | 12 | 12 | | | | | | |
| | Cephalanthus occidentalis | common buttonbush | Shrub | OBL | | | | | 4 | 4 | | | | | 1 | 1 | | | 1 | 1 | | | 1 | 1 | | | | | 2 | 2 |
| | Cornus amomum | silky dogwood | Shrub | FACW | | | 2 | 2 | | | | | | | | | | | 1 | 1 | | | 1 | 2 | 1 | 1 | 3 | 3 | | |
| | Fraxinus pennsylvanica | green ash | Tree | FACW | 1 | 1 | 4 | 4 | 3 | 3 | 4 | 4 | 2 | 3 | 1 | 1 | 3 | 4 | 2 | 2 | 2 | 2 | | | 3 | 3 | | | | |
| | Hamamelis virginiana | American witchhazel | Tree | FACU | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Lindera benzoin | northern spicebush | Tree | FAC | | | | | | | | | | | | | | | 1 | 1 | 1 | 1 | | | 3 | 3 | | | 1 | 1 |
| | Liriodendron tulipifera | tuliptree | Tree | FACU | | 2 | 2 | 2 | 1 | 1 | | | | 1 | 2 | 2 | 3 | 4 | | | 1 | 1 | | | | 2 | | | | |
| | Platanus occidentalis | American sycamore | Tree | FACW | 6 | 6 | | | 2 | 2 | 2 | 3 | 1 | 4 | 4 | 4 | | | 1 | 1 | 7 | 7 | | | | | | | | |
| | Salix nigra | black willow | Tree | OBL | | | | | | | | | | 2 | | | | | | | 1 | 1 | | | | | | | | |
| | Salix sericea | silky willow | Shrub | OBL | | | | | 3 | 5 | 1 | 1 | | | 2 | 4 | | | | | | | | | | | | | 1 | 1 |
| Sum | Performance Standard | | | | 15 | 17 | 17 | 17 | 15 | 17 | 12 | 13 | 14 | 21 | 15 | 17 | 10 | 12 | 13 | 13 | 15 | 15 | 15 | 16 | 11 | 13 | 4 | 5 | 6 | 6 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Post Mitigation Plan Species | *Acer rubrum* | *red maple* | *Tree* | *FAC* | | | | | | | | *1* | | *1* | | | | | | | | | | *2* | | | | | | *1* |
| | *Carya ovata* | *shagbark hickory* | *Tree* | *FACU* | | | | | | | | | | | | | | | | | | | | | | | | *1* | | |
| | *Ilex opaca* | *American holly* | *Tree* | *FACU* | | | | | | | | | | | | | | | | | | | | | | *1* | | *1* | | *1* |
| | *Juglans nigra* | *black walnut* | *Tree* | *FACU* | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | *Oxydendrum arboreum* | *sourwood* | *Shrub* | *UPL* | | | | | | | | | | | | | | | | | | | | | | | | *3* | | |
| | *Pinus virginiana* | *Virginia pine* | *Tree* | | | | | | | | | | | | | | | | | | | | | | | | | *3* | | |
| | *Prunus serotina* | *black cherry* | *Tree* | *FACU* | | | | | | | | | | | | | | | | | | | | | | *1* | | | | |
| | *Quercus falcata* | *southern red oak* | *Tree* | *FACU* | | | | | | | | | | | | | | | | | | | | | | | | *3* | | |
| | *Robinia pseudoacacia* | *black locust* | *Tree* | *FACU* | | | | | | | | | | | | | | | | | | | | | | *1* | | | | |
| Sum | Proposed Standard | | | | 15 | 17 | 17 | 17 | 15 | 17 | 12 | 13 | 14 | 21 | 15 | 17 | 10 | 12 | 13 | 13 | 15 | 15 | 15 | 16 | 11 | 13 | 4 | 5 | 6 | 6 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mitigation Plan Performance Standard | Current Year Stem Count | | | | | 17 | | 17 | | 17 | | 13 | | 21 | | 17 | | 12 | | 13 | | 15 | | 16 | | 13 | | 5 | | 6 |
| | Stems/Acre | | | | | 688 | | 688 | | 688 | | 526 | | 850 | | 688 | | 486 | | 526 | | 607 | | 526 | | 526 | | 202 | | 243 |
| | Species Count | | | | | 6 | | 5 | | 6 | | 6 | | 7 | | 7 | | 4 | | 9 | | 7 | | 4 | | 6 | | 3 | | 4 |
| | Dominant Species Composition (%) | | | | | 35 | | 29 | | 29 | | 29 | | 27 | | 24 | | 33 | | 31 | | 47 | | 67 | | 19 | | 19 | | 25 |
| | Average Plot Height (ft.) | | | | | 11 | | 4 | | 4 | | 6 | | 6 | | 7 | | 8 | | 3 | | 7 | | 8 | | 4 | | 2 | | 4 |
| | % Invasives | | | | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Post Mitigation Plan Performance Standard | Current Year Stem Count | | | | | 17 | | 17 | | 17 | | 13 | | 21 | | 17 | | 12 | | 13 | | 15 | | 16 | | 13 | | 5 | | 6 |
| | Stems/Acre | | | | | 688 | | 688 | | 688 | | 526 | | 850 | | 688 | | 486 | | 526 | | 607 | | 526 | | 526 | | 202 | | 243 |
| | Species Count | | | | | 6 | | 5 | | 6 | | 6 | | 7 | | 7 | | 4 | | 9 | | 7 | | 4 | | 6 | | 3 | | 4 |
| | Dominant Species Composition (%) | | | | | 35 | | 29 | | 29 | | 29 | | 27 | | 24 | | 33 | | 31 | | 47 | | 67 | | 19 | | 19 | | 25 |
| | Average Plot Height (ft.) | | | | | 11 | | 4 | | 4 | | 6 | | 6 | | 7 | | 8 | | 3 | | 7 | | 8 | | 4 | | 2 | | 4 |
| | % Invasives | | | | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 |

1). Bolded species are proposed for the current monitoring year, italicized species are not approved, and a regular font indicates that the species has been approved.
2). The "Species Included in Approved Mitigation Plan" section contains only those species that were included in the original approved mitigation plan. The "Post Mitigation Plan Species" section includes species that are being proposed through a mitigation plan addendum for the current monitoring year (bolded) , species that have been approved in prior monitoring years through a mitigation plan addendum (regular font), and species that are not approved (italicized).
3). The "Mitigation Plan Performance Standard" section is derived only from stems included in the original mitigation plan, whereas the "Post Mitigation Plan Performance Standard" includes data from mitigation plan approved, post mitigation plan approved, and proposed stems.

**Table 7b. Vegetation Performance Standards Summary Table, MY4 (2023) Fletcher Mitigation Site**

| | Veg Plot 1 F | | | | Veg Plot 2 F | | | | Veg Plot 3 F | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Stems/Ac. | Av. Ht. (ft) | # Species | % Invasives | Stems/Ac. | Av. Ht. (ft) | # Species | % Invasives | Stems/Ac. | Av. Ht. (ft) | # Species | % Invasives |
| Monitoring Year 7 | | | | | | | | | | | | |
| Monitoring Year 5 | | | | | | | | | | | | |
| Monitoring Year 4 | 486 | 6 | 5 | 0 | 769 | 9 | 6 | 0 | 729 | 6 | 9 | 0 |
| Monitoring Year 3 | 405 | 5 | 6 | 0 | 729 | 10 | 6 | 0 | 769 | 5 | 9 | 0 |
| Monitoring Year 2 | 445 | 4 | 6 | 0 | 729 | 7 | 6 | 0 | 526 | 4 | 6 | 0 |
| Monitoring Year 1 | 526 | 2 | 6 | 0 | 688 | 4 | 5 | 0 | 526 | 2 | 6 | 0 |
| Monitoring Year 0 | 526 | 1 | 6 | 0 | 769 | 2 | 5 | 0 | 729 | 2 | 6 | 0 |
| | **Veg Plot 4 F** | | | | **Veg Plot 5 F** | | | | **Veg Plot 6 F** | | | |
| | Stems/Ac. | Av. Ht. (ft) | # Species | % Invasives | Stems/Ac. | Av. Ht. (ft) | # Species | % Invasives | Stems/Ac. | Av. Ht. (ft) | # Species | % Invasives |
| Monitoring Year 7 | | | | | | | | | | | | |
| Monitoring Year 5 | | | | | | | | | | | | |
| Monitoring Year 4 | 648 | 3 | 5 | 0 | 648 | 4 | 6 | 0 | 486 | 4 | 3 | 0 |
| Monitoring Year 3 | 567 | 3 | 5 | 0 | 526 | 3 | 6 | 0 | 526 | 4 | 3 | 0 |
| Monitoring Year 2 | 567 | 2 | 5 | 0 | 405 | 3 | 5 | 0 | 486 | 2 | 3 | 0 |
| Monitoring Year 1 | 526 | 1 | 5 | 0 | 364 | 2 | 4 | 0 | 324 | 22 | 2 | 0 |
| Monitoring Year 0 | 688 | 1 | 8 | 0 | 202 | 1 | 3 | 0 | 324 | 2 | 2 | 0 |
| | **Veg Plot 7 F** | | | | **Veg Plot 8 F** | | | | **Veg Plot 9 F** | | | |
| | Stems/Ac. | Av. Ht. (ft) | # Species | % Invasives | Stems/Ac. | Av. Ht. (ft) | # Species | % Invasives | Stems/Ac. | Av. Ht. (ft) | # Species | % Invasives |
| Monitoring Year 7 | | | | | | | | | | | | |
| Monitoring Year 5 | | | | | | | | | | | | |
| Monitoring Year 4 | 405 | 4 | 4 | 0 | 648 | 4 | 7 | 0 | 607 | 8 | 5 | 0 |
| Monitoring Year 3 | 405 | 4 | 4 | 8 | 648 | 3 | 7 | 0 | 648 | 7 | 5 | 0 |
| Monitoring Year 2 | 324 | 3 | 4 | 0 | 648 | 2 | 7 | 0 | 648 | 5 | 5 | 0 |
| Monitoring Year 1 | 243 | 2 | 3 | 0 | 688 | 2 | 7 | 0 | 648 | 3 | 5 | 0 |
| Monitoring Year 0 | 324 | 1 | 4 | 0 | 850 | 1 | 7 | 0 | 972 | 1 | 6 | 0 |
| | **Veg Plot 10 F** | | | | **Veg Plot 11 F** | | | | **Veg Plot 12 F** | | | |
| | Stems/Ac. | Av. Ht. (ft) | # Species | % Invasives | Stems/Ac. | Av. Ht. (ft) | # Species | % Invasives | Stems/Ac. | Av. Ht. (ft) | # Species | % Invasives |
| Monitoring Year 7 | | | | | | | | | | | | |
| Monitoring Year 5 | | | | | | | | | | | | |
| Monitoring Year 4 | 688 | 6 | 5 | 0 | 445 | 9 | 6 | 0 | 486 | 4 | 4 | 0 |
| Monitoring Year 3 | 729 | 6 | 5 | 0 | 526 | 8 | 6 | 0 | 486 | 3 | 4 | 0 |
| Monitoring Year 2 | 688 | 5 | 5 | 0 | 445 | 8 | 5 | 0 | 405 | 2 | 4 | 0 |
| Monitoring Year 1 | 688 | 3 | 5 | 0 | 567 | 5 | 6 | 0 | 405 | 2 | 4 | 0 |
| Monitoring Year 0 | 769 | 2 | 5 | 0 | 688 | 2 | 6 | 0 | 445 | 2 | 4 | 0 |
| | **Veg Plot 13 F** | | | | **Veg Plot 14 F** | | | | **Veg Plot 15 F** | | | |
| | Stems/Ac. | Av. Ht. (ft) | # Species | % Invasives | Stems/Ac. | Av. Ht. (ft) | # Species | % Invasives | Stems/Ac. | Av. Ht. (ft) | # Species | % Invasives |
| Monitoring Year 7 | | | | | | | | | | | | |
| Monitoring Year 5 | | | | | | | | | | | | |
| Monitoring Year 4 | 567 | 10 | 6 | 0 | 688 | 11 | 6 | 0 | 688 | 4 | 5 | 0 |
| Monitoring Year 3 | 567 | 8 | 6 | 0 | 648 | 90 | 6 | 0 | 769 | 4 | 6 | 0 |
| Monitoring Year 2 | 526 | 6 | 6 | 0 | 607 | 8 | 5 | 0 | 729 | 3 | 6 | 0 |
| Monitoring Year 1 | 567 | 4 | 6 | 0 | 648 | 4 | 5 | 0 | 769 | 3 | 6 | 0 |
| Monitoring Year 0 | 567 | 1 | 6 | 0 | 688 | 2 | 5 | 0 | 891 | 1 | 6 | 0 |
| | **Veg Plot 16 F** | | | | **Veg Plot 17 F** | | | | **Veg Plot 18 F** | | | |
| | Stems/Ac. | Av. Ht. (ft) | # Species | % Invasives | Stems/Ac. | Av. Ht. (ft) | # Species | % Invasives | Stems/Ac. | Av. Ht. (ft) | # Species | % Invasives |
| Monitoring Year 7 | | | | | | | | | | | | |
| Monitoring Year 5 | | | | | | | | | | | | |
| Monitoring Year 4 | 688 | 4 | 6 | 0 | 526 | 6 | 6 | 0 | 850 | 6 | 7 | 0 |
| Monitoring Year 3 | 486 | 3 | 7 | 0 | 486 | 6 | 6 | 0 | 688 | 5 | 6 | 0 |
| Monitoring Year 2 | 486 | 2 | 7 | 0 | 526 | 4 | 6 | 0 | 486 | 4 | 5 | 0 |
| Monitoring Year 1 | 567 | 1 | 9 | 0 | 526 | 3 | 6 | 0 | 526 | 2 | 5 | 0 |
| Monitoring Year 0 | 972 | 1 | 9 | 0 | 607 | 1 | 7 | 0 | 810 | 2 | 6 | 0 |
| | **Veg Plot 19 F** | | | | **Veg Plot 20 F** | | | | **Veg Plot 21 F** | | | |
| | Stems/Ac. | Av. Ht. (ft) | # Species | % Invasives | Stems/Ac. | Av. Ht. (ft) | # Species | % Invasives | Stems/Ac. | Av. Ht. (ft) | # Species | % Invasives |
| Monitoring Year 7 | | | | | | | | | | | | |
| Monitoring Year 5 | | | | | | | | | | | | |
| Monitoring Year 4 | 688 | 7 | 7 | 0 | 486 | 8 | 4 | 0 | 526 | 3 | 9 | 0 |
| Monitoring Year 3 | 850 | 6 | 9 | 0 | 364 | 8 | 4 | 0 | 648 | 3 | 9 | 0 |
| Monitoring Year 2 | 729 | 4 | 9 | 0 | 445 | 5 | 5 | 0 | 688 | 2 | 9 | 0 |
| Monitoring Year 1 | 769 | 3 | 9 | 0 | 567 | 3 | 5 | 0 | 729 | 2 | 9 | 0 |
| Monitoring Year 0 | 810 | 1 | 9 | 0 | 729 | 1 | 6 | 0 | 891 | 1 | 10 | 0 |
| | **Veg Plot 22 F** | | | | **Veg Plot 23 F** | | | | **Veg Plot 24 F** | | | |
| | Stems/Ac. | Av. Ht. (ft) | # Species | % Invasives | Stems/Ac. | Av. Ht. (ft) | # Species | % Invasives | Stems/Ac. | Av. Ht. (ft) | # Species | % Invasives |
| Monitoring Year 7 | | | | | | | | | | | | |
| Monitoring Year 5 | | | | | | | | | | | | |
| Monitoring Year 4 | 607 | 7 | 7 | 0 | 526 | 8 | 4 | 0 | 526 | 4 | 6 | 0 |
| Monitoring Year 3 | 648 | 6 | 7 | 0 | 526 | 6 | 4 | 0 | 405 | 3 | 5 | 0 |
| Monitoring Year 2 | 688 | 4 | 7 | 0 | 405 | 5 | 4 | 0 | 364 | 2 | 5 | 0 |
| Monitoring Year 1 | 688 | 3 | 7 | 0 | 405 | 3 | 4 | 0 | 405 | 2 | 5 | 0 |
| Monitoring Year 0 | 729 | 2 | 7 | 0 | 486 | 2 | 4 | 0 | 567 | 1 | 5 | 0 |
| | **Veg Plot 25 F** | | | | **Veg Plot 26 F** | | | | | | | |
| | Stems/Ac. | Av. Ht. (ft) | # Species | % Invasives | Stems/Ac. | Av. Ht. (ft) | # Species | % Invasives | | | | |
| Monitoring Year 7 | | | | | | | | | | | | |
| Monitoring Year 5 | | | | | | | | | | | | |
| Monitoring Year 4 | 202 | 2 | 3 | 0 | 243 | 4 | 4 | 0 | | | | |
| Monitoring Year 3 | 324 | 2 | 4 | 0 | 202 | 4 | 3 | 0 | | | | |
| Monitoring Year 2 | 324 | 1 | 4 | 0 | 283 | 4 | 3 | 0 | | | | |
| Monitoring Year 1 | 243 | 2 | 4 | 0 | 243 | 3 | 2 | 0 | | | | |
| Monitoring Year 0 | 445 | 1 | 5 | 0 | 729 | 3 | 6 | 0 | | | | |

*Each monitoring year represents a different plot for the random vegetation plot "groups". Random plots are denoted with an R, and fixed plots with an F.

| Table 9. Vegetation Plot Criteria Attainment MY4 (2023)<br>Fletcher Creek Restoration Project | | |
|---|---|---|
| Vegetation Plot ID | Vegetation Survival Threshold Met? | Tract Mean |
| 1 | Yes | 92.3% |
| 2 | Yes | |
| 3 | Yes | |
| 4 | Yes | |
| 5 | Yes | |
| 6 | Yes | |
| 7 | Yes | |
| 8 | Yes | |
| 9 | Yes | |
| 10 | Yes | |
| 11 | Yes | |
| 12 | Yes | |
| 13 | Yes | |
| 14 | Yes | |
| 15 | Yes | |
| 16 | Yes | |
| 17 | Yes | |
| 18 | Yes | |
| 19 | Yes | |
| 20 | Yes | |
| 21 | Yes | |
| 22 | Yes | |
| 23 | Yes | |
| 24 | Yes | |
| 25 | No | |
| 26 | No | |

# Appendix D
# Stream Measurement and Geomorphology Data

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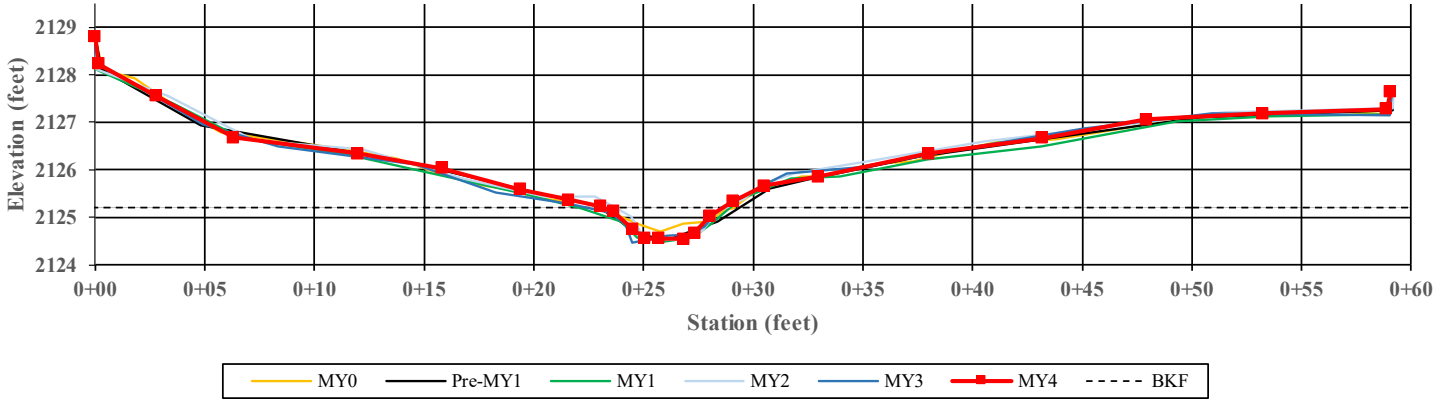
**Project Name:** Fletcher Mitigation site **XS Number:** 1 **Station:** 107+51

**Reach Name:** Fletcher Creek Reach 1B **XS Type:** Riffle




| CHANNEL DIMENSIONS SUMMARY | MY0 | *Pre-MY1 | MY1 | MY2 | MY3 | MY4 | MY5 | MY6 |
|---|---|---|---|---|---|---|---|---|
| Bankful Width (ft) | 7.1 | 6.1 | 6.1 | 4.5 | 5.0 | 4.9 | - | - |
| Floodprone Width (ft) | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 |
| Bankfull Mean Depth (ft) | 0.3 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | - | - |
| Bankfull Max Depth (ft) | 0.6 | 0.6 | 0.6 | 0.7 | 0.7 | 0.7 | - | - |
| Bankfull Cross-Sectional Area ($ft^2$) | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | - | - |
| Width/Depth Ratio | 21.4 | 16.4 | 15.9 | 8.8 | 10.6 | 10.5 | - | - |
| Entrenchment Ratio | 2.8 | 3.3 | 3.3 | 4.4 | 4.0 | 4.1 | - | - |
| Bank Height Ratio | 1.0 | 1.0 | 1.1 | 0.9 | 1.2 | 1.2 | - | - |

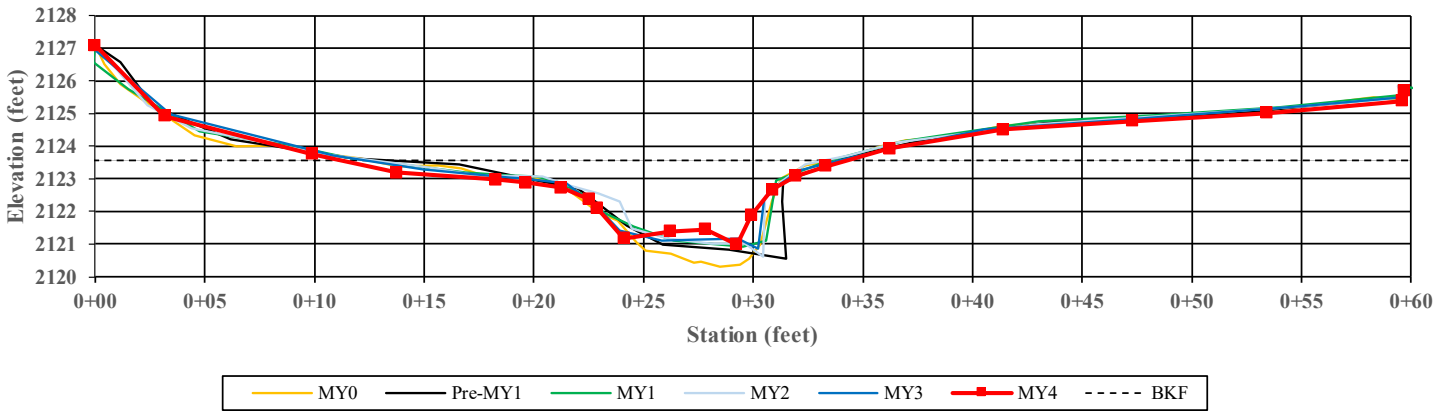

Left Descending Bank


Right Descending Bank

*** Data collected as part of 2019 monitoring year during adaptive management on Weston Reach 1A and 1B**

**Project Name:** Fletcher Mitigation site **XS Number:** 2 **Station:** 109+16

**Reach Name:** Fletcher Creek Reach 1B **XS Type:** Pool




| CHANNEL DIMENSIONS SUMMARY | MY0 | Pre-MY1 | MY1 | MY2 | MY3 | MY4 | MY5 | MY6 |
|---|---|---|---|---|---|---|---|---|
| Bankful Width (ft) | 10.9 | 11.9 | 12.2 | 10.8 | 9.5 | 9.6 | - | - |
| Floodprone Width (ft) | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 |
| Bankfull Mean Depth (ft) | 1.7 | 1.5 | 1.5 | 1.7 | 1.9 | 1.9 | - | - |
| Bankfull Max Depth (ft) | 2.7 | 2.5 | 5.7 | 2.8 | 2.6 | 2.6 | - | - |
| Bankfull Cross-Sectional Area ($ft^2$) | 18.3 | 18.3 | 18.3 | 18.3 | 18.3 | 18.3 | - | - |
| Width/Depth Ratio | 6.5 | 7.8 | 8.1 | 6.4 | 4.9 | 5.1 | - | - |
| Entrenchment Ratio | 5.5 | 5.0 | 4.9 | 5.5 | 6.3 | 6.2 | - | - |
| Bank Height Ratio | 1.0 | 1.1 | 0.9 | 0.9 | 0.8 | 0.7 | - | - |

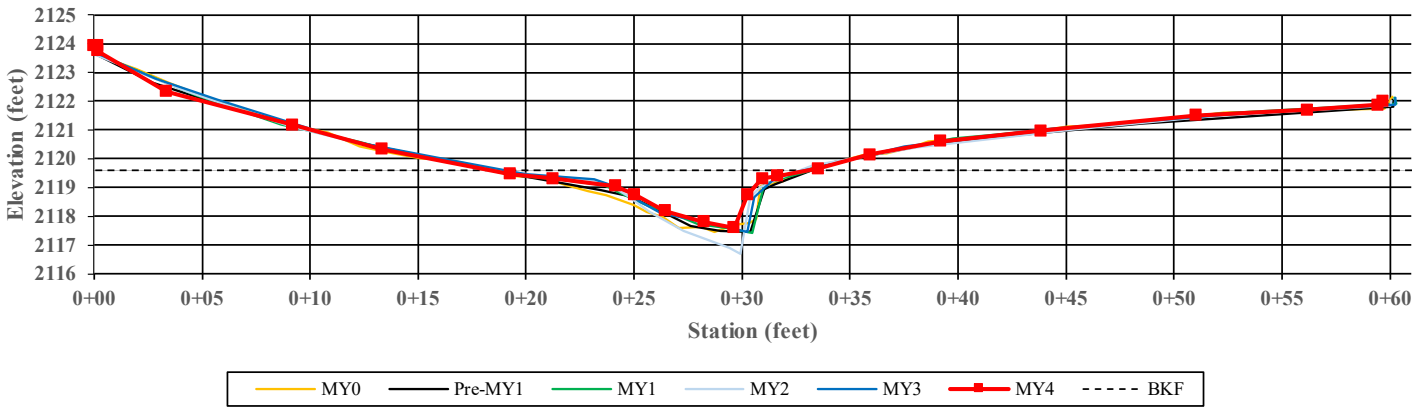

Left Descending Bank


Right Descending Bank

*** Data collected as part of 2019 monitoring year during adaptive management on Weston Reach 1A and 1B**

**Project Name:** Fletcher Mitigation site **XS Number:** 3 **Station:** 112+04

**Reach Name:** Fletcher Creek Reach 1C **XS Type:** P




| CHANNEL DIMENSIONS SUMMARY | MY0 | *Pre-MY1 | MY1 | MY2 | MY3 | MY4 | MY5 | MY6 |
|---|---|---|---|---|---|---|---|---|
| Bankful Width (ft) | 10.9 | 7.5 | 12.2 | 6.9 | 7.4 | 9.7 | - | - |
| Floodprone Width (ft) | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 |
| Bankfull Mean Depth (ft) | 0.9 | 1.4 | 0.8 | 1.5 | 1.4 | 1.1 | - | - |
| Bankfull Max Depth (ft) | 1.8 | 2.0 | 2.0 | 2.6 | 2.1 | 2.0 | - | - |
| Bankfull Cross-Sectional Area ($ft^2$) | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | - | - |
| Width/Depth Ratio | 11.5 | 5.5 | 14.5 | 4.7 | 5.3 | 9.1 | - | - |
| Entrenchment Ratio | 3.7 | 5.3 | 3.3 | 5.8 | 5.4 | 4.1 | - | - |
| Bank Height Ratio | 1.0 | 0.8 | 0.8 | 0.9 | 0.9 | 0.9 | - | - |

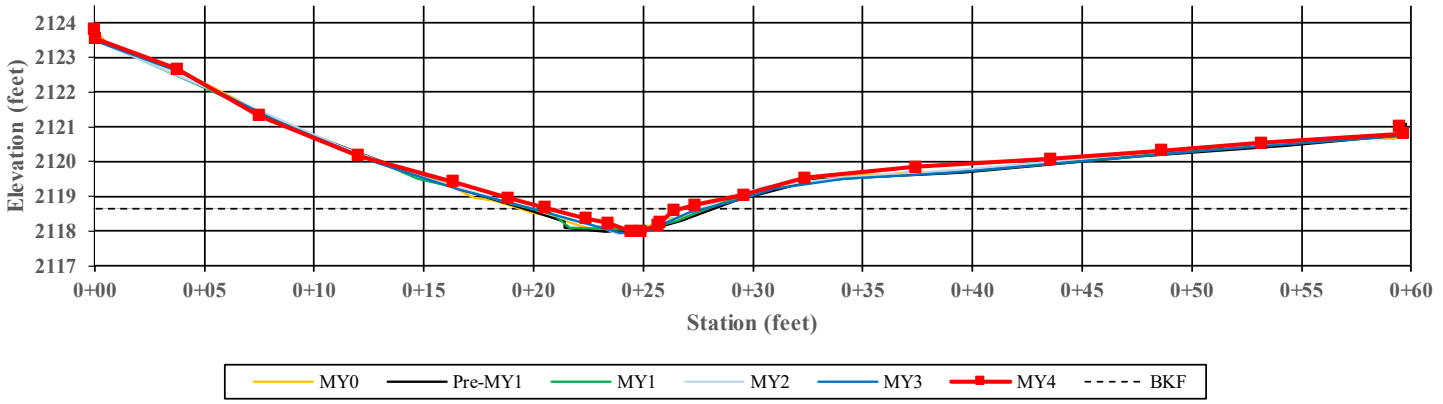

Left Descending Bank


Right Descending Bank

*** Data collected as part of 2019 monitoring year during adaptive management on Weston Reach 1A and 1B**

**Project Name:** Fletcher Mitigation site **XS Number:** 4 **Station:** 112+24

**Reach Name:** Fletcher Creek Reach 1C **XS Type:** Riffle




| CHANNEL DIMENSIONS SUMMARY | MY0 | *Pre-MY1 | MY1 | MY2 | MY3 | MY4 | MY5 | MY6 |
|---|---|---|---|---|---|---|---|---|
| Bankful Width (ft) | 7.6 | 6.1 | 6.5 | 5.4 | 4.0 | 5.7 | - | - |
| Floodprone Width (ft) | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| Bankfull Mean Depth (ft) | 0.3 | 0.3 | 0.3 | 0.4 | 0.5 | 0.4 | - | - |
| Bankfull Max Depth (ft) | 0.5 | 0.5 | 0.4 | 0.6 | 0.6 | 0.7 | - | - |
| Bankfull Cross-Sectional Area ($ft^2$) | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | - | - |
| Width/Depth Ratio | 27.6 | 18.2 | 19.8 | 14.0 | 7.9 | 15.5 | - | - |
| Entrenchment Ratio | 1.3 | 1.6 | 1.5 | 1.8 | 2.5 | 1.8 | - | - |
| Bank Height Ratio | 1.0 | 1.4 | 1.3 | 1.0 | 0.9 | 1.1 | - | - |

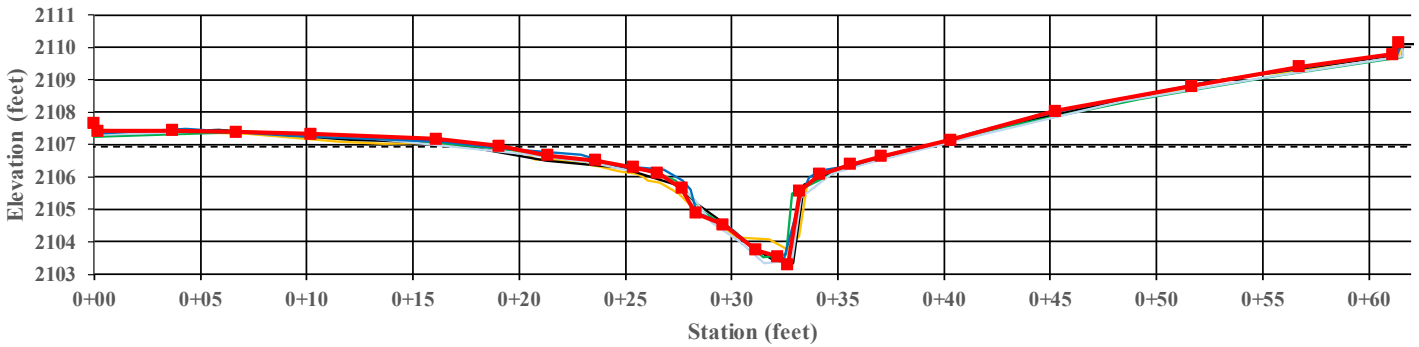

Left Descending Bank


Right Descending Bank

*** Data collected as part of 2019 monitoring year during adaptive management on Weston Reach 1A and 1B**

**Project Name:** Fletcher Mitigation site **XS Number:** 5 **Station:** 122+51

**Reach Name:** Fletcher Creek Reach 1C **XS Type:** Pool




| CHANNEL DIMENSIONS SUMMARY | MY0 | *Pre-MY1 | MY1 | MY2 | MY3 | MY4 | MY5 | MY6 |
|---|---|---|---|---|---|---|---|---|
| Bankful Width (ft) | 16.6 | 14.0 | 18.7 | 8.5 | 11.2 | 13.4 | - | - |
| Floodprone Width (ft) | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 |
| Bankfull Mean Depth (ft) | 1.2 | 1.5 | 1.1 | 2.4 | 1.8 | 1.5 | - | - |
| Bankfull Max Depth (ft) | 3.0 | 3.5 | 3.4 | 3.8 | 3.6 | 3.6 | - | - |
| Bankfull Cross-Sectional Area ($ft^2$) | 20.3 | 20.3 | 20.3 | 20.3 | 20.3 | 20.3 | - | - |
| Width/Depth Ratio | 13.7 | 9.6 | 17.2 | 3.5 | 6.2 | 8.9 | - | - |
| Entrenchment Ratio | 3.6 | 4.3 | 3.2 | 7.1 | 5.3 | 4.5 | - | - |
| Bank Height Ratio | 1.0 | 0.8 | 0.8 | 0.8 | 0.9 | 0.9 | - | - |

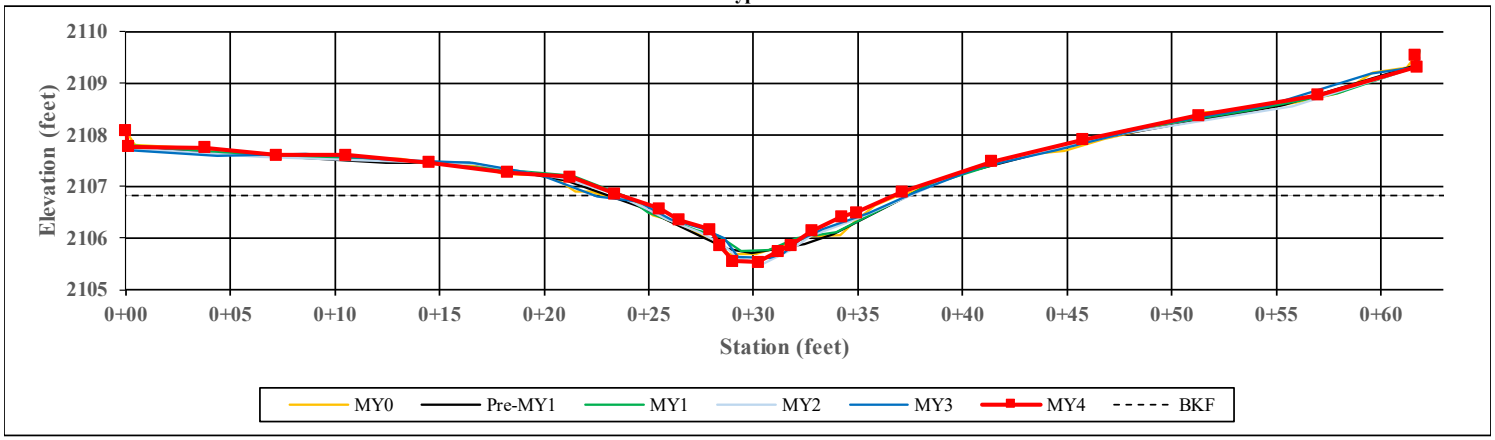

Left Descending Bank


Right Descending Bank

*** Data collected as part of 2019 monitoring year during adaptive management on Weston Reach 1A and 1B**

**Project Name:** Fletcher Mitigation site **XS Number:** 6 **Station:** 122+74

**Reach Name:** Fletcher Creek Reach 1C **XS Type:** Riffle




| CHANNEL DIMENSIONS SUMMARY | MY0 | *Pre-MY1 | MY1 | MY2 | MY3 | MY4 | MY5 | MY6 |
|---|---|---|---|---|---|---|---|---|
| Bankful Width (ft) | 12.0 | 12.9 | 13.0 | 12.8 | 11.0 | 9.4 | - | - |
| Floodprone Width (ft) | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| Bankfull Mean Depth (ft) | 0.6 | 0.6 | 0.6 | 0.6 | 0.7 | 0.8 | - | - |
| Bankfull Max Depth (ft) | 1.0 | 1.0 | 1.0 | 1.2 | 1.2 | 1.3 | - | - |
| Bankfull Cross-Sectional Area ($ft^2$) | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | - | - |
| Width/Depth Ratio | 19.2 | 22.4 | 22.4 | 21.8 | 16.2 | 11.8 | - | - |
| Entrenchment Ratio | 4.2 | 3.9 | 3.9 | 3.9 | 4.5 | 5.3 | - | - |
| Bank Height Ratio | 1.0 | 1.4 | 1.4 | 1.1 | 1.0 | 1.0 | - | - |

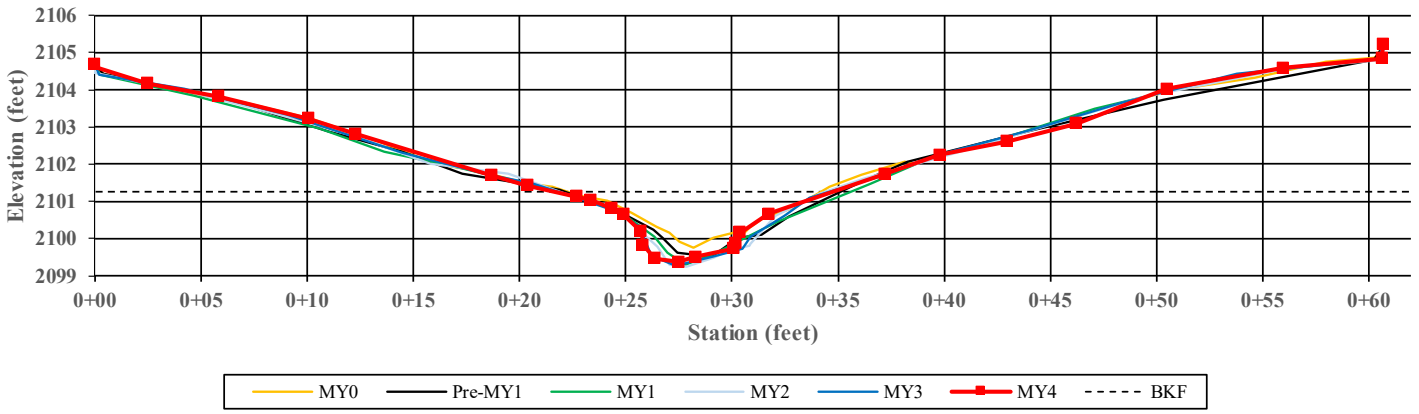

Left Descending Bank


Right Descending Bank

*** Data collected as part of 2019 monitoring year during adaptive management on Weston Reach 1A and 1B**

**Project Name:** Fletcher Mitigation site **XS Number:** 7 **Station:** 127+03

**Reach Name:** Fletcher Creek Reach 2A **XS Type:** Riffle




| CHANNEL DIMENSIONS SUMMARY | MY0 | *Pre-MY1 | MY1 | MY2 | MY3 | MY4 | MY5 | MY6 |
|---|---|---|---|---|---|---|---|---|
| Bankful Width (ft) | 13.1 | 10.6 | 11.7 | 8.5 | 8.0 | 8.4 | - | - |
| Floodprone Width (ft) | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 |
| Bankfull Mean Depth (ft) | 0.8 | 1.0 | 0.9 | 1.2 | 1.3 | 1.2 | - | - |
| Bankfull Max Depth (ft) | 1.6 | 1.7 | 1.8 | 1.9 | 1.9 | 1.9 | - | - |
| Bankfull Cross-Sectional Area ($ft^2$) | 10.4 | 10.4 | 10.4 | 10.4 | 10.4 | 10.4 | - | - |
| Width/Depth Ratio | 16.5 | 10.7 | 13.2 | 6.9 | 6.2 | 6.7 | - | - |
| Entrenchment Ratio | 2.7 | 3.3 | 3.0 | 4.1 | 4.4 | 4.2 | - | - |
| Bank Height Ratio | 1.0 | 1.0 | 0.9 | 0.9 | 1.0 | 0.9 | - | - |

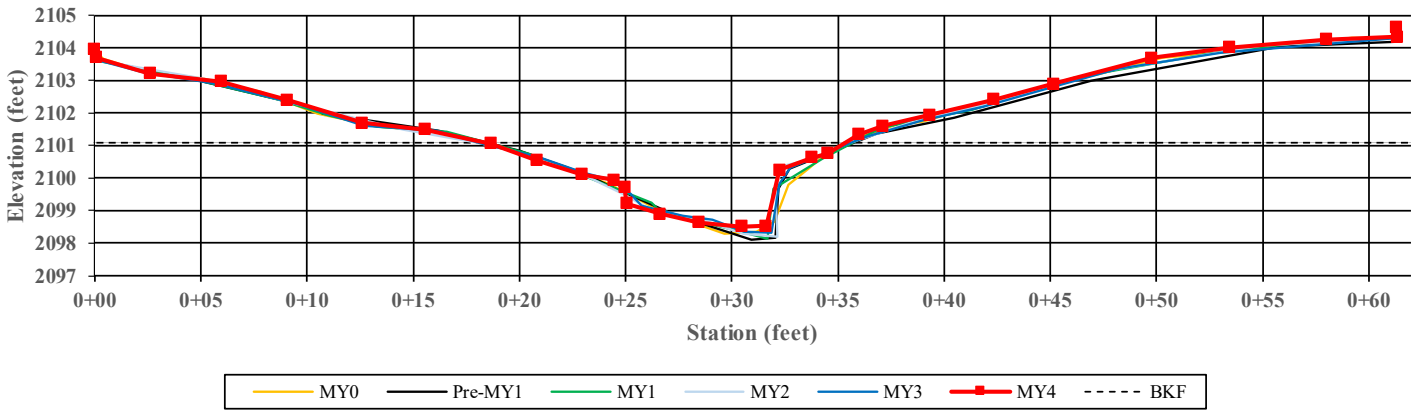

Left Descending Bank


Right Descending Bank

*** Data collected as part of 2019 monitoring year during adaptive management on Weston Reach 1A and 1B**

**Project Name:** Fletcher Mitigation site **XS Number:** 8 **Station:** 133+19

**Reach Name:** Fletcher Creek Reach 2A **XS Type:** Pool




| CHANNEL DIMENSIONS SUMMARY | MY0 | *Pre-MY1 | MY1 | MY2 | MY3 | MY4 | MY5 | MY6 |
|---|---|---|---|---|---|---|---|---|
| Bankful Width (ft) | 15.3 | 15.0 | 15.7 | 12.5 | 16.3 | 11.4 | - | - |
| Floodprone Width (ft) | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| Bankfull Mean Depth (ft) | 1.3 | 1.4 | 1.3 | 1.6 | 1.3 | 1.8 | - | - |
| Bankfull Max Depth (ft) | 2.6 | 2.8 | 2.8 | 2.8 | 2.6 | 2.6 | - | - |
| Bankfull Cross-Sectional Area ($ft^2$) | 20.5 | 20.5 | 20.5 | 20.5 | 20.5 | 20.5 | - | - |
| Width/Depth Ratio | 11.4 | 11.0 | 12.0 | 7.7 | 13.0 | 6.3 | - | - |
| Entrenchment Ratio | 3.3 | 3.3 | 3.2 | 4.0 | 3.1 | 4.4 | - | - |
| Bank Height Ratio | 1.0 | 0.8 | 0.9 | 0.9 | 0.9 | 0.8 | - | - |

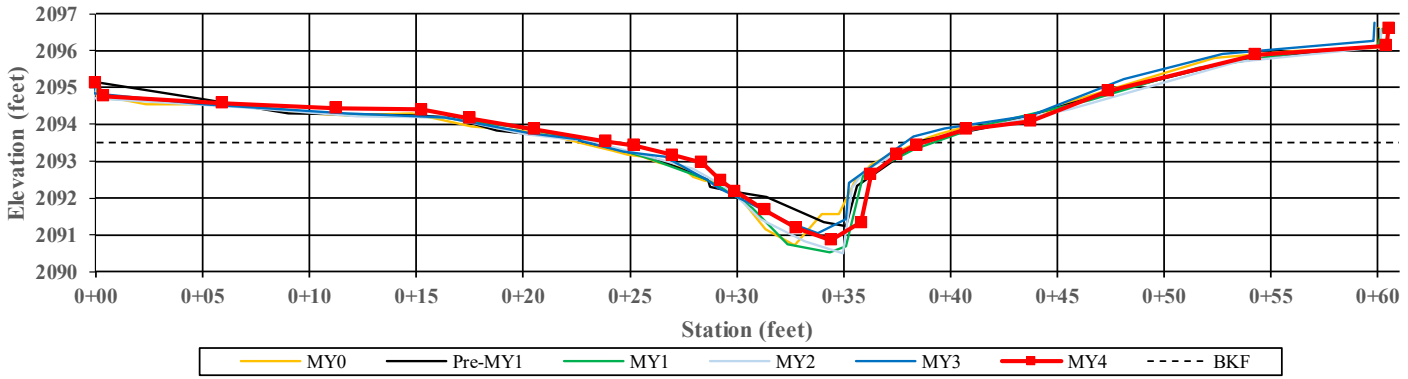

Left Descending Bank


Right Descending Bank

*** Data collected as part of 2019 monitoring year during adaptive management on Weston Reach 1A and 1B**

**Project Name:** Fletcher Mitigation site **XS Number:** 9 **Station:** 133+19

**Reach Name:** Fletcher Creek Reach 2A **XS Type:** Pool




| CHANNEL DIMENSIONS SUMMARY | MY0 | *Pre-MY1 | MY1 | MY2 | MY3 | MY4 | MY5 | MY6 |
|---|---|---|---|---|---|---|---|---|
| Bankful Width (ft) | 15.5 | 16.1 | 13.6 | 11.2 | 10.6 | 13.2 | - | - |
| Floodprone Width (ft) | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 |
| Bankfull Mean Depth (ft) | 1.1 | 1.0 | 1.2 | 1.5 | 1.6 | 1.3 | - | - |
| Bankfull Max Depth (ft) | 2.8 | 2.3 | 2.8 | 3.0 | 2.7 | 2.7 | - | - |
| Bankfull Cross-Sectional Area ($ft^2$) | 16.9 | 16.9 | 16.9 | 16.9 | 16.9 | 16.9 | - | - |
| Width/Depth Ratio | 14.2 | 15.4 | 10.9 | 7.4 | 6.6 | 10.4 | - | - |
| Entrenchment Ratio | 3.9 | 3.7 | 4.4 | 5.4 | 5.7 | 4.5 | - | - |
| Bank Height Ratio | 1.0 | 1.0 | 0.7 | 0.9 | 0.9 | 1.0 | - | - |

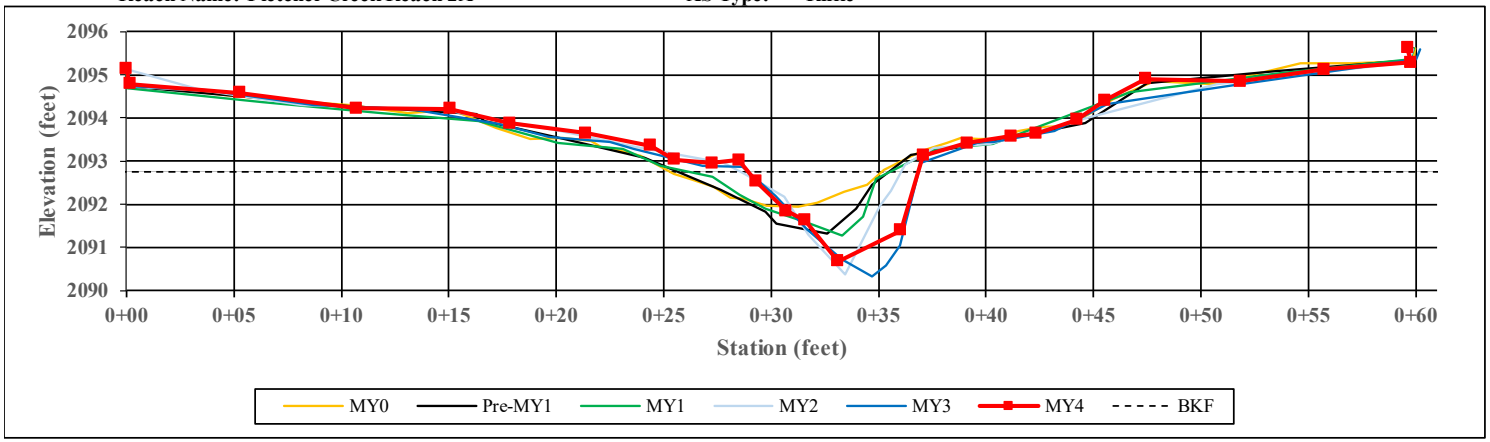

Left Descending Bank


Right Descending Bank

*** Data collected as part of 2019 monitoring year during adaptive management on Weston Reach 1A and 1B**

**Project Name:** Fletcher Mitigation site **XS Number:** 10 **Station:** 133+36

**Reach Name:** Fletcher Creek Reach 2A **XS Type:** Riffle




| CHANNEL DIMENSIONS SUMMARY | MY0 | *Pre-MY1 | MY1 | MY2 | MY3 | MY4 | MY5 | MY6 |
|---|---|---|---|---|---|---|---|---|
| Bankful Width (ft) | 12.6 | 11.0 | 11.8 | 8.2 | 6.7 | 7.1 | - | - |
| Floodprone Width (ft) | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| Bankfull Mean Depth (ft) | 0.7 | 0.8 | 0.8 | 1.1 | 1.4 | 1.3 | - | - |
| Bankfull Max Depth (ft) | 1.2 | 1.6 | 1.7 | 2.5 | 2.3 | 2.1 | - | - |
| Bankfull Cross-Sectional Area ($ft^2$) | 9.2 | 9.2 | 9.2 | 9.2 | 9.2 | 9.2 | - | - |
| Width/Depth Ratio | 17.4 | 13.2 | 15.0 | 7.3 | 4.9 | 5.5 | - | - |
| Entrenchment Ratio | 4.0 | 4.6 | 4.3 | 6.1 | 7.4 | 7.0 | - | - |
| Bank Height Ratio | 1.0 | 1.1 | 1.2 | 1.0 | 1.2 | 1.1 | - | - |

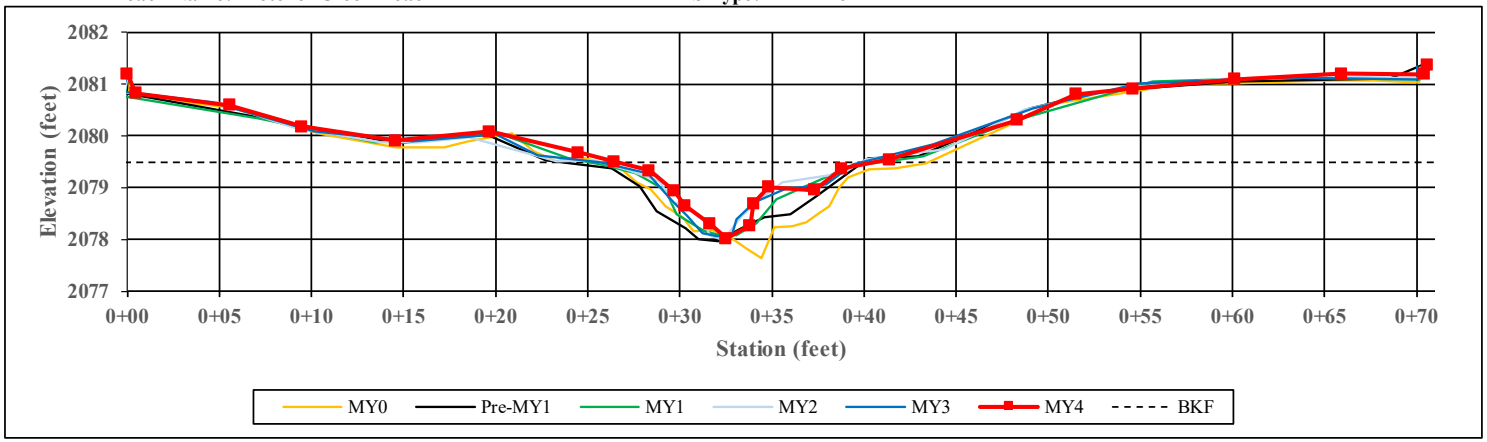

Left Descending Bank


Upstream

*** Data collected as part of 2019 monitoring year during adaptive management on Weston Reach 1A and 1B**

**Project Name: Fletcher Mitigation site** **XS Number: 11** **Station: 147+71**

**Reach Name: Fletcher Creek Reach 2B** **XS Type: Riffle**




| CHANNEL DIMENSIONS SUMMARY | MY0 | *Pre-MY1 | MY1 | MY2 | MY3 | MY4 | MY5 | MY6 |
|---|---|---|---|---|---|---|---|---|
| Bankful Width (ft) | 10.2 | 9.6 | 11.2 | 12.6 | 11.0 | 9.0 | - | - |
| Floodprone Width (ft) | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 |
| Bankfull Mean Depth (ft) | 0.7 | 0.7 | 0.6 | 0.6 | 0.6 | 0.8 | - | - |
| Bankfull Max Depth (ft) | 1.3 | 1.1 | 1.2 | 1.4 | 1.3 | 1.5 | - | - |
| Bankfull Cross-Sectional Area ($ft^2$) | 7.1 | 7.1 | 7.1 | 7.1 | 7.1 | 7.1 | - | - |
| Width/Depth Ratio | 14.6 | 13.0 | 17.7 | 22.4 | 16.9 | 11.3 | - | - |
| Entrenchment Ratio | 3.9 | 4.2 | 3.6 | 3.2 | 3.7 | 4.5 | - | - |
| Bank Height Ratio | 1.0 | 1.1 | 1.0 | 1.1 | 1.1 | 0.9 | - | - |

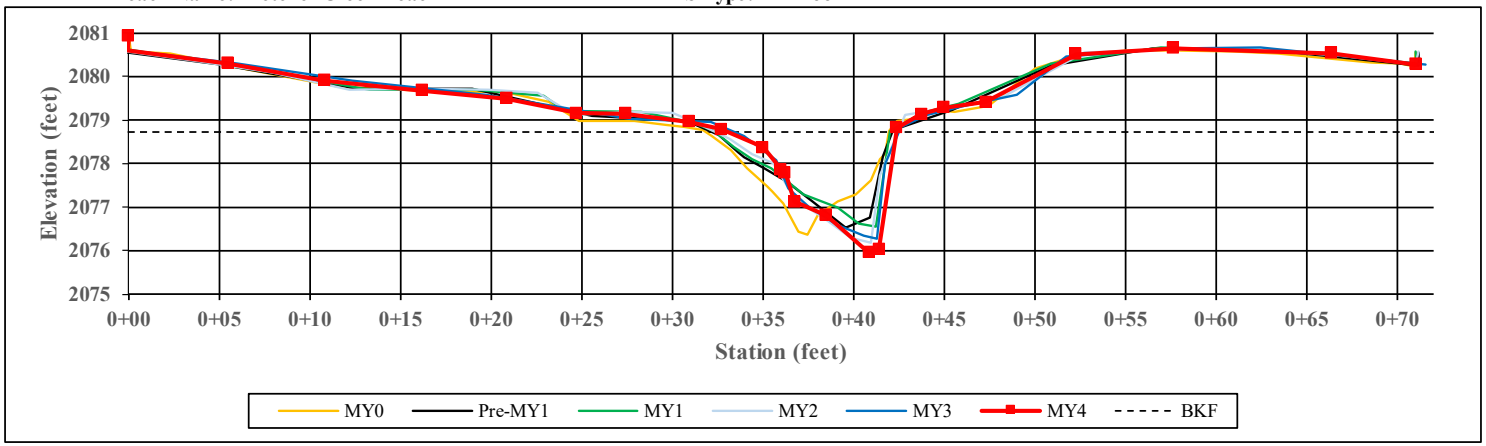

Left Descending Bank


Right Descending Bank

*** Data collected as part of 2019 monitoring year during adaptive management on Weston Reach 1A and 1B**

**Project Name:** Fletcher Mitigation site **XS Number:** 12 **Station:** 148+00

**Reach Name:** Fletcher Creek Reach 2B **XS Type:** Pool




| CHANNEL DIMENSIONS SUMMARY | MY0 | *Pre-MY1 | MY1 | MY2 | MY3 | MY4 | MY5 | MY6 |
|---|---|---|---|---|---|---|---|---|
| Bankful Width (ft) | 9.7 | 10.0 | 9.7 | 9.4 | 7.8 | 8.2 | - | - |
| Floodprone Width (ft) | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 |
| Bankfull Mean Depth (ft) | 1.2 | 1.2 | 1.2 | 1.2 | 1.5 | 1.4 | - | - |
| Bankfull Max Depth (ft) | 2.3 | 2.2 | 2.2 | 2.4 | 2.4 | 2.7 | - | - |
| Bankfull Cross-Sectional Area ($ft^2$) | 11.7 | 11.7 | 11.7 | 11.7 | 11.7 | 11.7 | - | - |
| Width/Depth Ratio | 8.1 | 8.5 | 8.1 | 7.6 | 5.2 | 5.8 | - | - |
| Entrenchment Ratio | 7.2 | 7.0 | 7.2 | 7.5 | 9.0 | 8.5 | - | - |
| Bank Height Ratio | 1.0 | 1.0 | 1.0 | 1.2 | 1.0 | 1.0 | - | - |

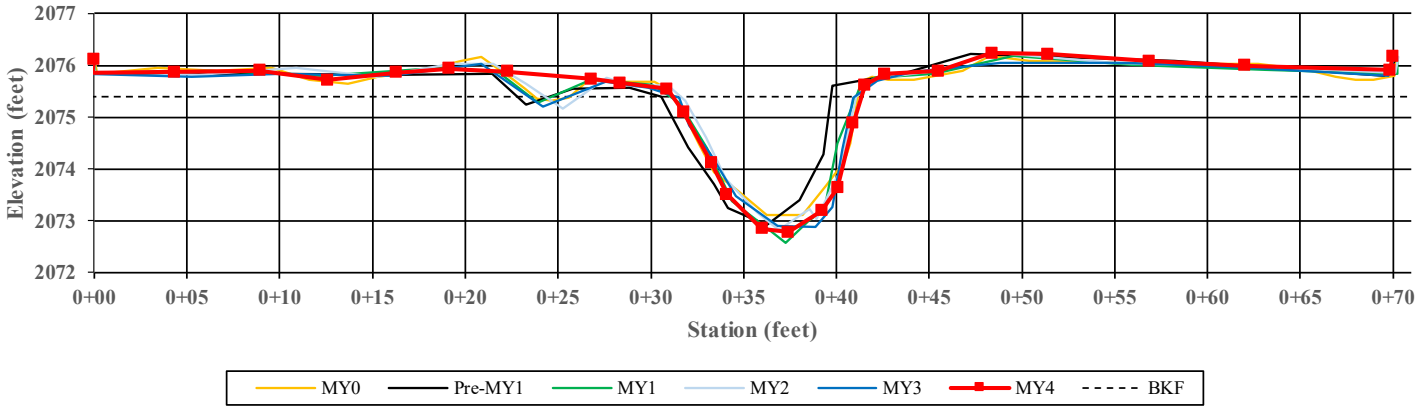

Upstream


Right Descending Bank

*** Data collected as part of 2019 monitoring year during adaptive management on Weston Reach 1A and 1B**

**Project Name:** Fletcher Mitigation site **XS Number:** 13 **Station:** 153+30

**Reach Name:** Fletcher Creek Reach 2B **XS Type:** Pool




| CHANNEL DIMENSIONS SUMMARY | MY0 | *Pre-MY1 | MY1 | MY2 | MY3 | MY4 | MY5 | MY6 |
|---|---|---|---|---|---|---|---|---|
| Bankful Width (ft) | 10.1 | 13.1 | 8.5 | 9.7 | 8.9 | 9.1 | - | - |
| Floodprone Width (ft) | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 |
| Bankfull Mean Depth (ft) | 1.6 | 1.2 | 1.9 | 1.7 | 1.8 | 1.8 | - | - |
| Bankfull Max Depth (ft) | 2.4 | 2.6 | 2.8 | 2.6 | 2.5 | 2.5 | - | - |
| Bankfull Cross-Sectional Area ($ft^2$) | 16.4 | 16.4 | 16.4 | 16.4 | 16.4 | 16.4 | - | - |
| Width/Depth Ratio | 6.2 | 10.5 | 4.5 | 5.7 | 4.8 | 5.1 | - | - |
| Entrenchment Ratio | 6.9 | 5.3 | 8.2 | 7.2 | 7.9 | 7.7 | - | - |
| Bank Height Ratio | 1.0 | 1.0 | 1.1 | 1.1 | 1.1 | 1.1 | - | - |

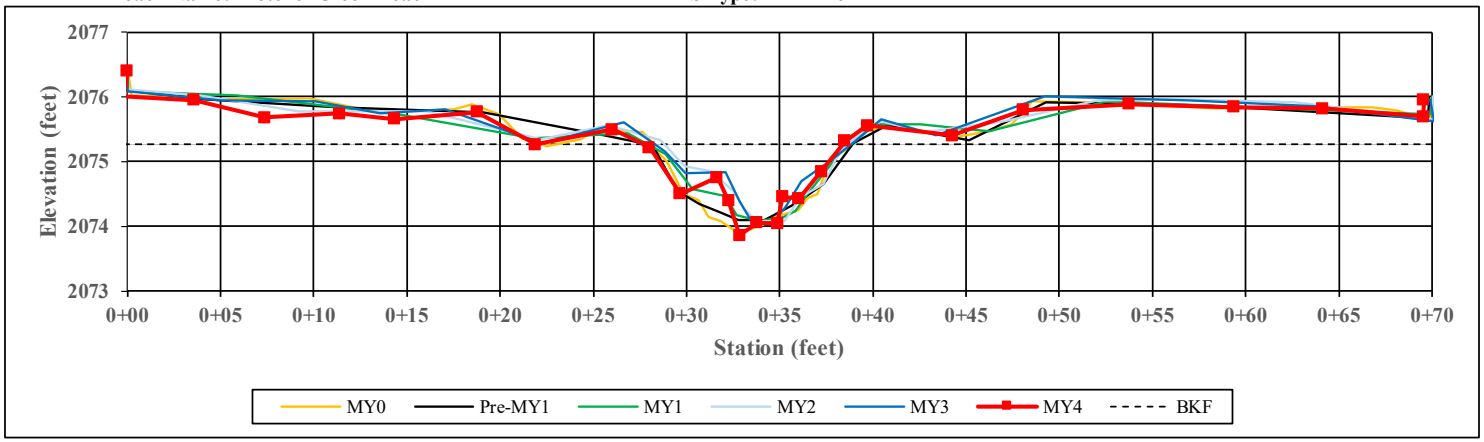

Left Descending Bank


Right Descending Bank

*** Data collected as part of 2019 monitoring year during adaptive management on Weston Reach 1A and 1B**

**Project Name:** Fletcher Mitigation site **XS Number:** 14 **Station:** 153+48

**Reach Name:** Fletcher Creek Reach 2B **XS Type:** Riffle




| CHANNEL DIMENSIONS SUMMARY | MY0 | *Pre-MY1 | MY1 | MY2 | MY3 | MY4 | MY5 | MY6 |
|---|---|---|---|---|---|---|---|---|
| Bankful Width (ft) | 9.8 | 10.3 | 9.7 | 9.6 | 10.2 | 10.8 | - | - |
| Floodprone Width (ft) | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 |
| Bankfull Mean Depth (ft) | 0.8 | 0.7 | 0.8 | 0.8 | 0.7 | 0.7 | - | - |
| Bankfull Max Depth (ft) | 1.2 | 1.1 | 1.2 | 1.3 | 1.4 | 1.4 | - | - |
| Bankfull Cross-Sectional Area ($ft^2$) | 7.6 | 7.6 | 7.6 | 7.6 | 7.6 | 7.6 | - | - |
| Width/Depth Ratio | 12.6 | 14.0 | 12.3 | 12.2 | 13.8 | 15.4 | - | - |
| Entrenchment Ratio | 7.1 | 6.8 | 7.2 | 7.3 | 6.8 | 6.5 | - | - |
| Bank Height Ratio | 1.0 | 1.1 | 1.1 | 1.0 | 1.1 | 1.2 | - | - |

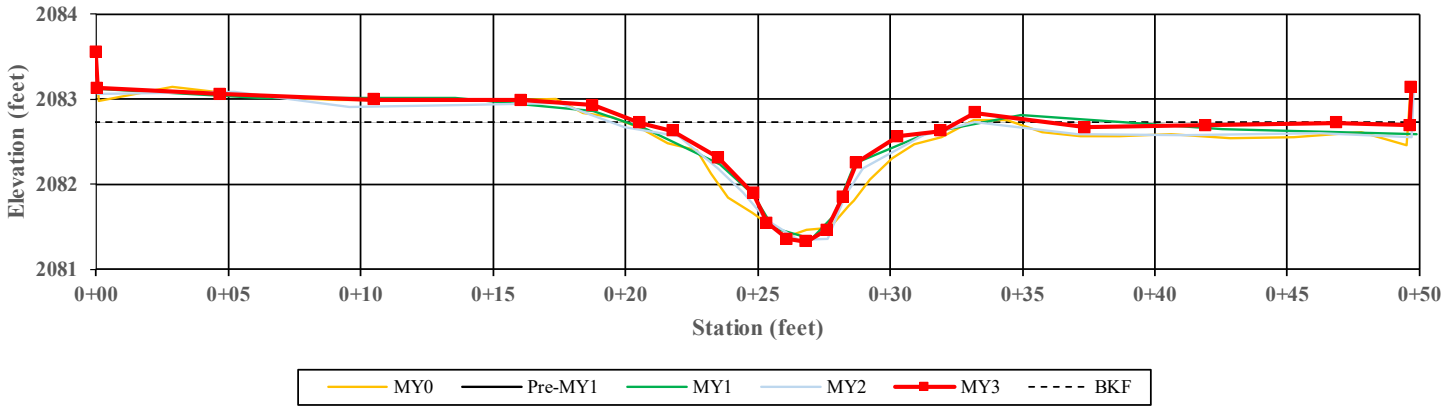

Left Descending Bank


Right Descending Bank

*** Data collected as part of 2019 monitoring year during adaptive management on Weston Reach 1A and 1B**

**Project Name:** Fletcher Mitigation site **XS Number:** 15 **Station:** 406+40

**Reach Name:** Weston Creek Reach 1A **XS Type:** Riffle




| CHANNEL DIMENSIONS SUMMARY | MY0 | *Pre-MY1 | MY1 | MY2 | MY3 | MY4 | MY5 | MY6 |
|---|---|---|---|---|---|---|---|---|
| Bankful Width (ft) | 9.1 | - | 10.8 | 9.0 | 5.2 | - | - | - |
| Floodprone Width (ft) | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| Bankfull Mean Depth (ft) | 0.6 | - | 0.5 | 0.6 | 1.0 | - | - | - |
| Bankfull Max Depth (ft) | 1.1 | - | 1.2 | 1.2 | 1.4 | - | - | - |
| Bankfull Cross-Sectional Area ($ft^2$) | 5.4 | - | 5.4 | 5.4 | 5.4 | - | - | - |
| Width/Depth Ratio | 15.5 | - | 21.7 | 15.0 | 5.1 | - | - | - |
| Entrenchment Ratio | 5.5 | - | 4.6 | 5.5 | 9.6 | - | - | - |
| Bank Height Ratio | 1.0 | - | 1.2 | 1.0 | 0.9 | - | - | - |

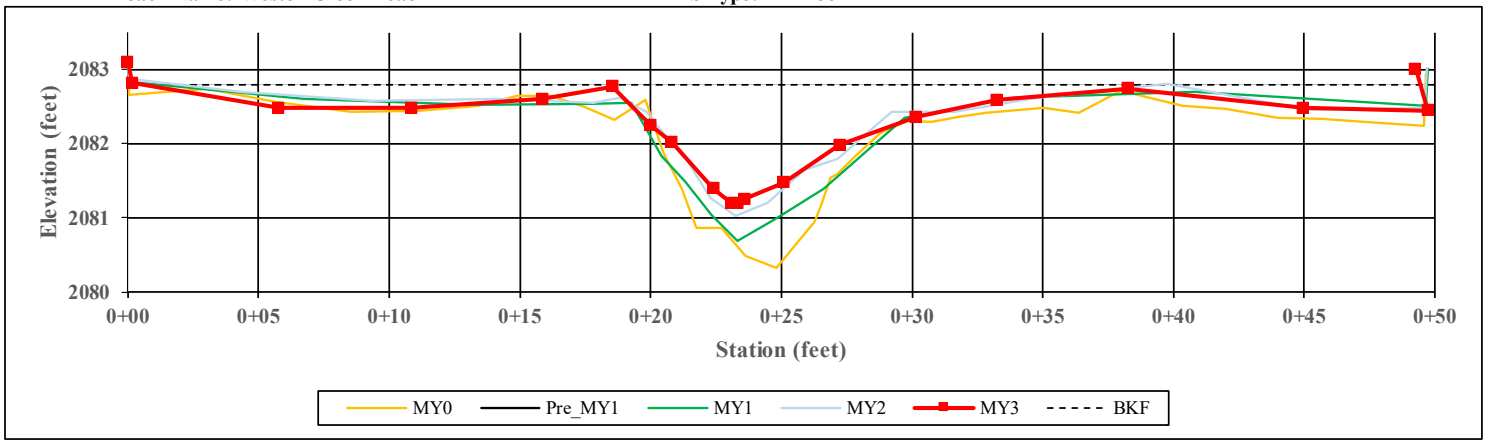

Left Descending Bank


Right Descending Bank

*** Data not collected due to adaptive management on Weston Reach 1A and 1B**

**Project Name:** Fletcher Mitigation site **XS Number:** 16 **Station:** 406+87

**Reach Name:** Weston Creek Reach 1A **XS Type:** Pool




| CHANNEL DIMENSIONS SUMMARY | MY0 | *Pre-MY1 | MY1 | MY2 | MY3 | MY4 | MY5 | MY6 |
|---|---|---|---|---|---|---|---|---|
| Bankful Width (ft) | 9.7 | - | 9.3 | 9.4 | 10.1 | - | - | - |
| Floodprone Width (ft) | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| Bankfull Mean Depth (ft) | 1.1 | - | 1.1 | 1.1 | 1.0 | - | - | - |
| Bankfull Max Depth (ft) | 2.0 | - | 1.8 | 1.8 | 1.6 | - | - | - |
| Bankfull Cross-Sectional Area ($ft^2$) | 10.4 | - | 10.4 | 10.4 | 10.4 | - | - | - |
| Width/Depth Ratio | 9.1 | - | 8.3 | 8.5 | 9.9 | - | - | - |
| Entrenchment Ratio | 5.1 | - | 5.4 | 5.3 | 4.9 | - | - | - |
| Bank Height Ratio | 1.0 | - | 0.9 | 0.8 | 0.9 | - | - | - |

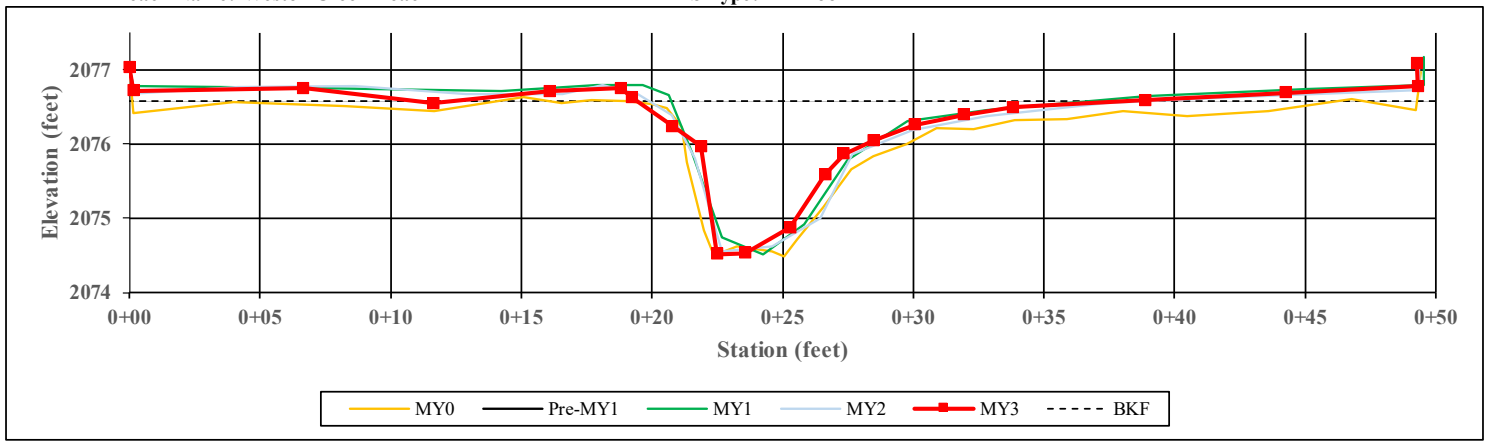

Left Descending Bank


Right Descending Bank

*** Data not collected due to adaptive management on Weston Reach 1A and 1B**

**Project Name:** Fletcher Mitigation site **XS Number:** 17 **Station:** 418+23

**Reach Name:** Weston Creek Reach 1A **XS Type:** Pool




| CHANNEL DIMENSIONS SUMMARY | MY0 | *Pre-MY1 | MY1 | MY2 | MY3 | MY4 | MY5 | MY6 |
|---|---|---|---|---|---|---|---|---|
| Bankful Width (ft) | 9.8 | - | 8.2 | 8.3 | 6.6 | - | - | - |
| Floodprone Width (ft) | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| Bankfull Mean Depth (ft) | 1.0 | - | 1.1 | 1.1 | 1.4 | - | - | - |
| Bankfull Max Depth (ft) | 1.7 | - | 1.9 | 1.8 | 2.1 | - | - | - |
| Bankfull Cross-Sectional Area ($ft^2$) | 9.4 | - | 9.4 | 9.4 | 9.4 | - | - | - |
| Width/Depth Ratio | 10.1 | - | 7.2 | 7.4 | 4.6 | - | - | - |
| Entrenchment Ratio | 5.1 | - | 6.1 | 6.0 | 7.6 | - | - | - |
| Bank Height Ratio | 1.0 | - | 0.9 | 0.9 | 0.8 | - | - | - |

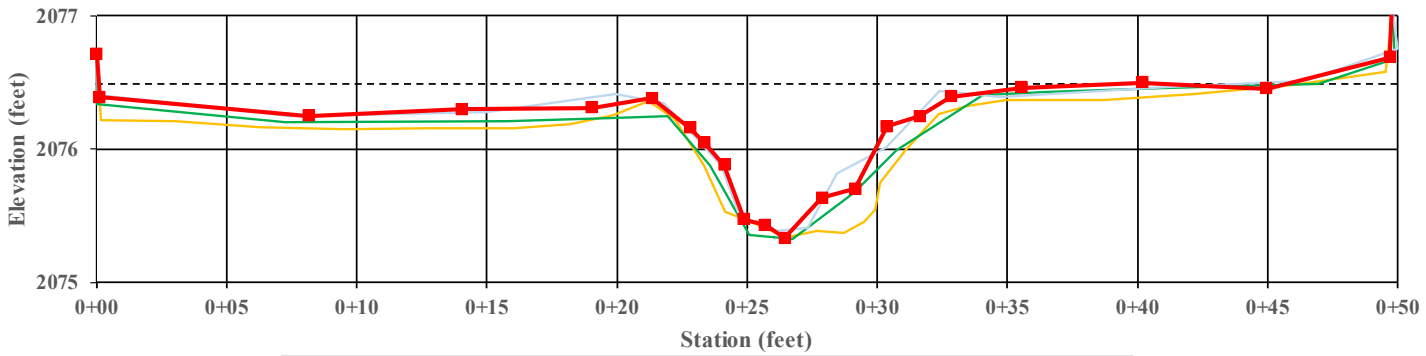

Left Descending Bank


Right Descending Bank

*** Data not collected due to adaptive management on Weston Reach 1A and 1B**

**Project Name:** Fletcher Mitigation site **XS Number:** 18 **Station:** 418+53

**Reach Name:** Weston Creek Reach 1A **XS Type:** Riffle




| CHANNEL DIMENSIONS SUMMARY | MY0 | *Pre-MY1 | MY1 | MY2 | MY3 | MY4 | MY5 | MY6 |
|---|---|---|---|---|---|---|---|---|
| Bankful Width (ft) | 10.4 | - | 23.5 | 10.4 | 8.3 | - | - | - |
| Floodprone Width (ft) | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | - | - | - |
| Bankfull Mean Depth (ft) | 0.6 | - | 0.3 | 0.6 | 0.8 | - | - | - |
| Bankfull Max Depth (ft) | 0.9 | - | 0.9 | 1.1 | 1.2 | - | - | - |
| Bankfull Cross-Sectional Area ($ft^2$) | 6.2 | - | 6.2 | 6.2 | 6.2 | - | - | - |
| Width/Depth Ratio | 17.4 | - | 89.4 | 17.6 | 11.0 | - | - | - |
| Entrenchment Ratio | 4.8 | - | 2.1 | 4.8 | 6.0 | - | - | - |
| Bank Height Ratio | 1.0 | - | 1.0 | 1.0 | 0.9 | - | - | - |

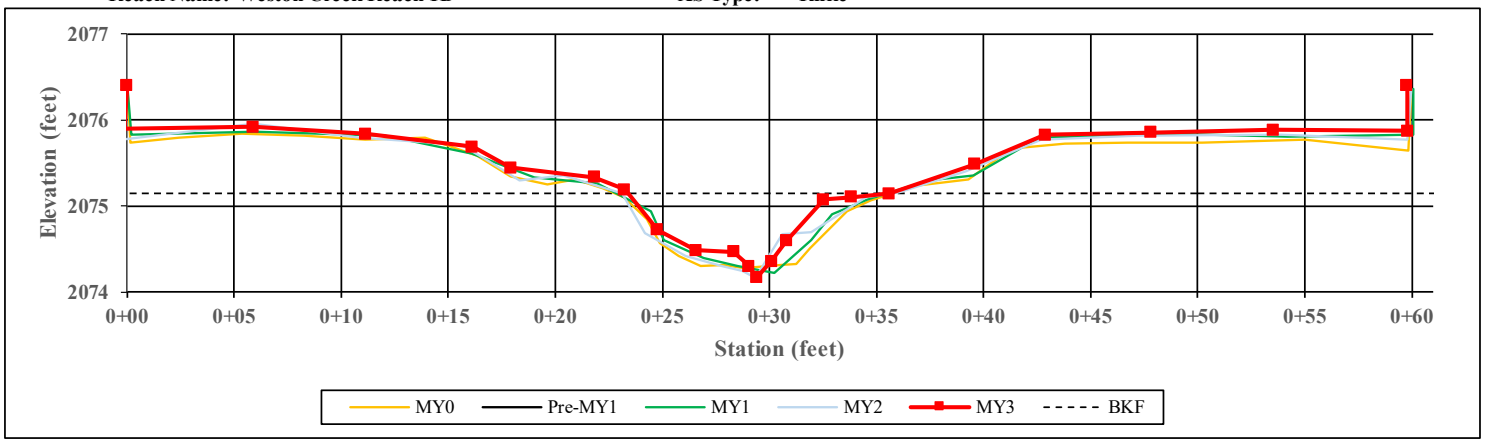

Left Descending Bank


Right Descending Bank

*** Data not collected due to adaptive management on Weston Reach 1A and 1B**

**Project Name:** Fletcher Mitigation site **XS Number:** 19 **Station:** 422+31

**Reach Name:** Weston Creek Reach 1B **XS Type:** Riffle




| CHANNEL DIMENSIONS SUMMARY | MY0 | *Pre-MY1 | MY1 | MY2 | MY3 | MY4 | MY5 | MY6 |
|---|---|---|---|---|---|---|---|---|
| Bankful Width (ft) | 9.7 | - | 9.4 | 9.8 | 7.7 | - | - | - |
| Floodprone Width (ft) | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 |
| Bankfull Mean Depth (ft) | 0.5 | - | 0.5 | 0.5 | 0.6 | - | - | - |
| Bankfull Max Depth (ft) | 0.7 | - | 0.8 | 0.8 | 1.0 | - | - | - |
| Bankfull Cross-Sectional Area ($ft^2$) | 4.7 | - | 4.7 | 4.7 | 4.7 | - | - | - |
| Width/Depth Ratio | 20.4 | - | 19.0 | 20.4 | 12.8 | - | - | - |
| Entrenchment Ratio | 4.1 | - | 4.2 | 4.1 | 5.2 | - | - | - |
| Bank Height Ratio | 1.0 | - | 1.3 | 1.1 | 0.9 | - | - | - |

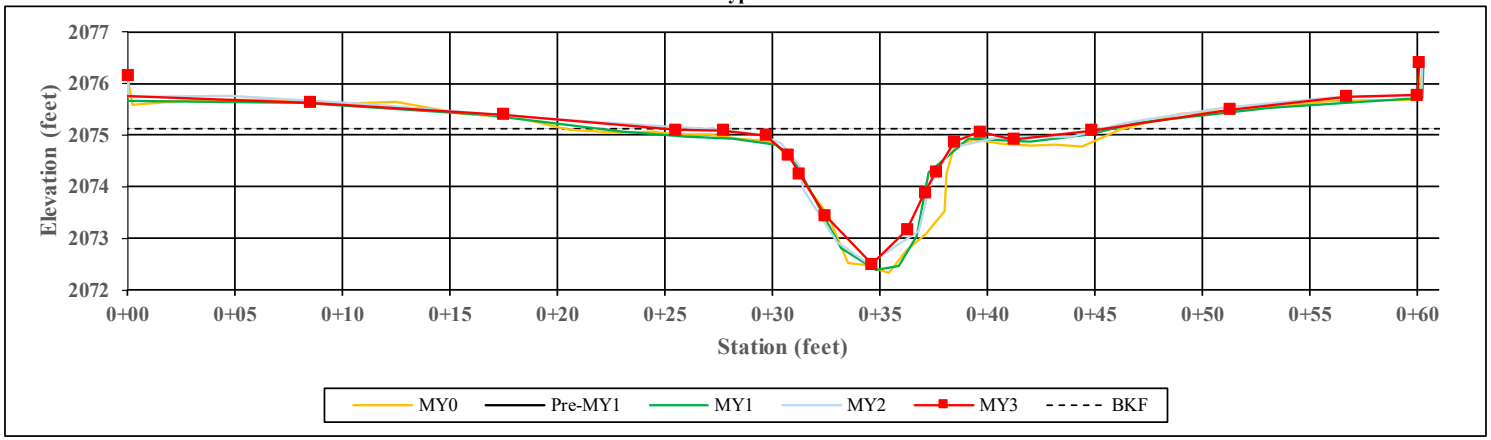

Left Descending Bank


Right Descending Bank

*** Data not collected due to adaptive management on Weston Reach 1A and 1B**

**Project Name:** Fletcher Mitigation site **XS Number:** 20 **Station:** 422+95

**Reach Name:** Weston Creek Reach 1B **XS Type:** Pool




| CHANNEL DIMENSIONS SUMMARY | MY0 | *Pre-MY1 | MY1 | MY2 | MY3 | MY4 | MY5 | MY6 |
|---|---|---|---|---|---|---|---|---|
| Bankful Width (ft) | 8.3 | - | 13.4 | 10.8 | 7.7 | - | - | - |
| Floodprone Width (ft) | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 |
| Bankfull Mean Depth (ft) | 1.5 | - | 0.9 | 1.2 | 1.6 | - | - | - |
| Bankfull Max Depth (ft) | 2.5 | - | 2.5 | 2.5 | 2.6 | - | - | - |
| Bankfull Cross-Sectional Area ($ft^2$) | 12.7 | - | 12.7 | 12.7 | 12.7 | - | - | - |
| Width/Depth Ratio | 5.4 | - | 14.2 | 9.2 | 4.7 | - | - | - |
| Entrenchment Ratio | 7.2 | - | 4.5 | 5.5 | 7.8 | - | - | - |
| Bank Height Ratio | 1.0 | - | 1.0 | 1.0 | 0.9 | - | - | - |

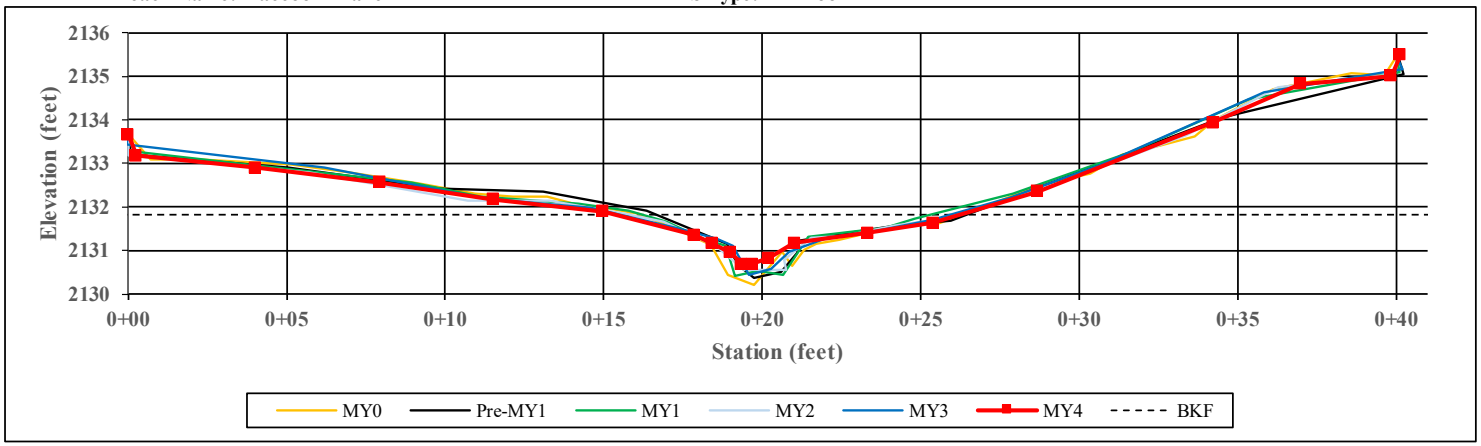

Left Descending Bank


Right Descending Bank

*** Data not collected due to adaptive management on Weston Reach 1A and 1B**

**Project Name:** Fletcher Mitigation site **XS Number:** 21 **Station:** 217+59

**Reach Name:** Raccoon Branch 1D **XS Type:** Pool




| CHANNEL DIMENSIONS SUMMARY | MY0 | *Pre-MY1 | MY1 | MY2 | MY3 | MY4 | MY5 | MY6 |
|---|---|---|---|---|---|---|---|---|
| Bankful Width (ft) | 5.6 | 6.1 | 6.1 | 3.6 | 3.5 | 3.2 | - | - |
| Floodprone Width (ft) | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 |
| Bankfull Mean Depth (ft) | 0.5 | 0.4 | 0.4 | 0.7 | 0.8 | 0.9 | - | - |
| Bankfull Max Depth (ft) | 1.2 | 1.2 | 1.1 | 1.0 | 1.2 | 1.1 | - | - |
| Bankfull Cross-Sectional Area ($ft^2$) | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | - | - |
| Width/Depth Ratio | 11.6 | 13.7 | 13.8 | 4.9 | 4.5 | 3.7 | - | - |
| Entrenchment Ratio | 3.6 | 3.3 | 3.3 | 5.6 | 5.7 | 6.3 | - | - |
| Bank Height Ratio | 1.0 | 0.7 | 0.6 | 0.7 | 0.8 | 0.6 | - | - |

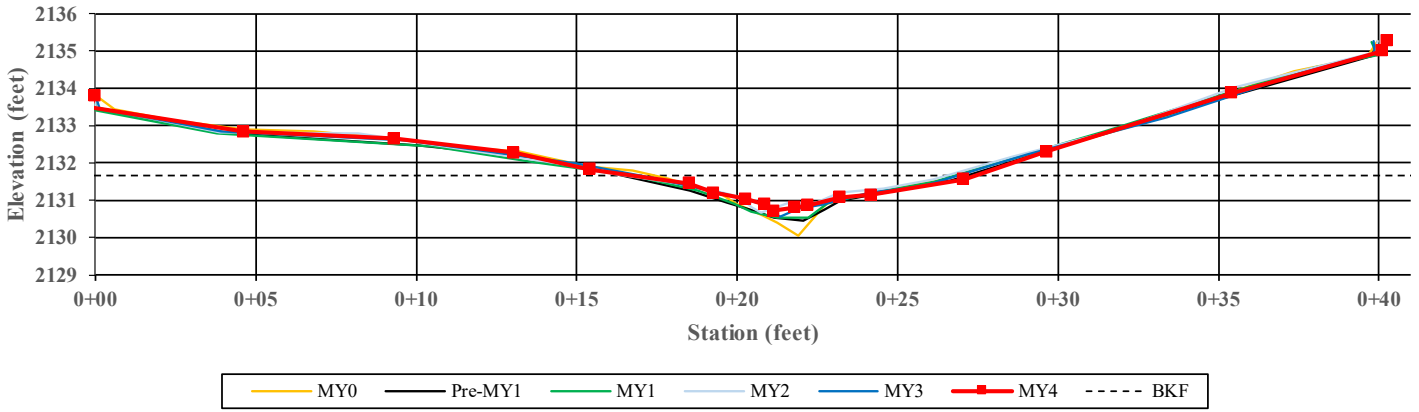

Left Descending Bank


Upstream

*** Data collected as part of 2019 monitoring year during adaptive management on Weston Reach 1A and 1B**

**Project Name:** Fletcher Mitigation site **XS Number:** 22 **Station:** 217+65

**Reach Name:** Raccoon Branch 1D **XS Type:** Riffle




| CHANNEL DIMENSIONS SUMMARY | MY0 | *Pre-MY1 | MY1 | MY2 | MY3 | MY4 | MY5 | MY6 |
|---|---|---|---|---|---|---|---|---|
| Bankful Width (ft) | 6.8 | 7.8 | 6.9 | 5.7 | 4.6 | 4.9 | - | - |
| Floodprone Width (ft) | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | - | - |
| Bankfull Mean Depth (ft) | 0.5 | 0.4 | 0.5 | 0.6 | 0.7 | 0.7 | - | - |
| Bankfull Max Depth (ft) | 1.3 | 0.9 | 0.9 | 1.0 | 1.1 | 1.0 | - | - |
| Bankfull Cross-Sectional Area ($ft^2$) | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | - | - |
| Width/Depth Ratio | 13.8 | 18.1 | 14.2 | 9.5 | 6.2 | 7.1 | - | - |
| Entrenchment Ratio | 2.9 | 2.6 | 2.9 | 3.5 | 4.4 | 4.1 | - | - |
| Bank Height Ratio | 1.0 | 0.6 | 0.8 | 0.7 | 0.7 | 0.8 | - | - |

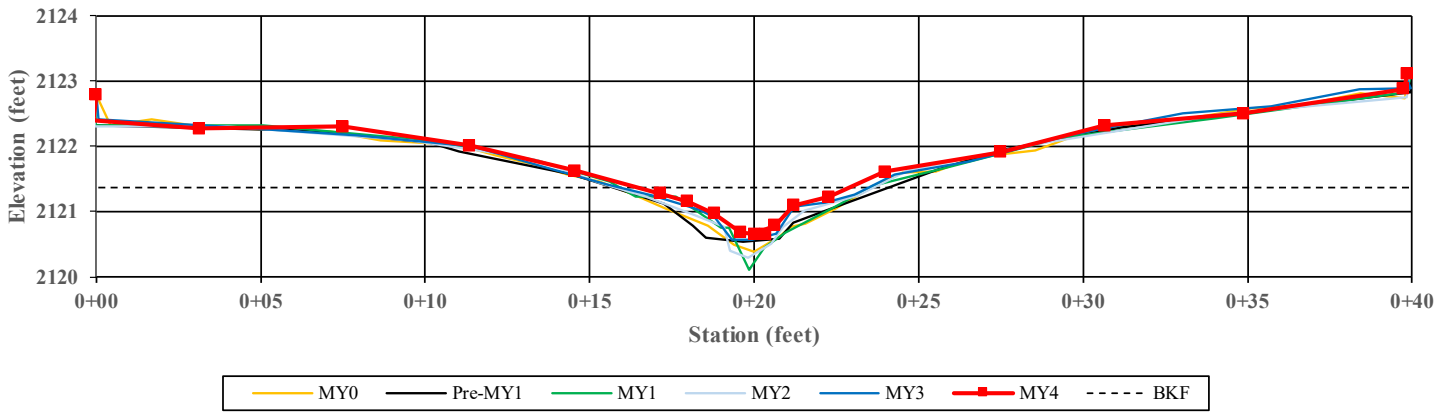

Left Descending Bank


Right Descending Bank

*** Data collected as part of 2019 monitoring year during adaptive management on Weston Reach 1A and 1B**

**Project Name:** Fletcher Mitigation site **XS Number:** 23 **Station:** 307+87

**Reach Name:** Coates Branch 1B **XS Type:** Riffle




| CHANNEL DIMENSIONS SUMMARY | MY0 | *Pre-MY1 | MY1 | MY2 | MY3 | MY4 | MY5 | MY6 |
|---|---|---|---|---|---|---|---|---|
| Bankful Width (ft) | 5.2 | 4.9 | 3.4 | 3.5 | 2.3 | 3.2 | - | - |
| Floodprone Width (ft) | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 |
| Bankfull Mean Depth (ft) | 0.3 | 0.3 | 0.5 | 0.5 | 0.7 | 0.5 | - | - |
| Bankfull Max Depth (ft) | 0.7 | 0.5 | 1.0 | 0.8 | 0.8 | 0.7 | - | - |
| Bankfull Cross-Sectional Area ($ft^2$) | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | - | - |
| Width/Depth Ratio | 16.5 | 15.1 | 7.5 | 7.6 | 3.4 | 6.4 | - | - |
| Entrenchment Ratio | 2.9 | 3.1 | 4.4 | 4.3 | 6.4 | 4.7 | - | - |
| Bank Height Ratio | 1.0 | 1.3 | 1.1 | 0.9 | 0.6 | 0.8 | - | - |

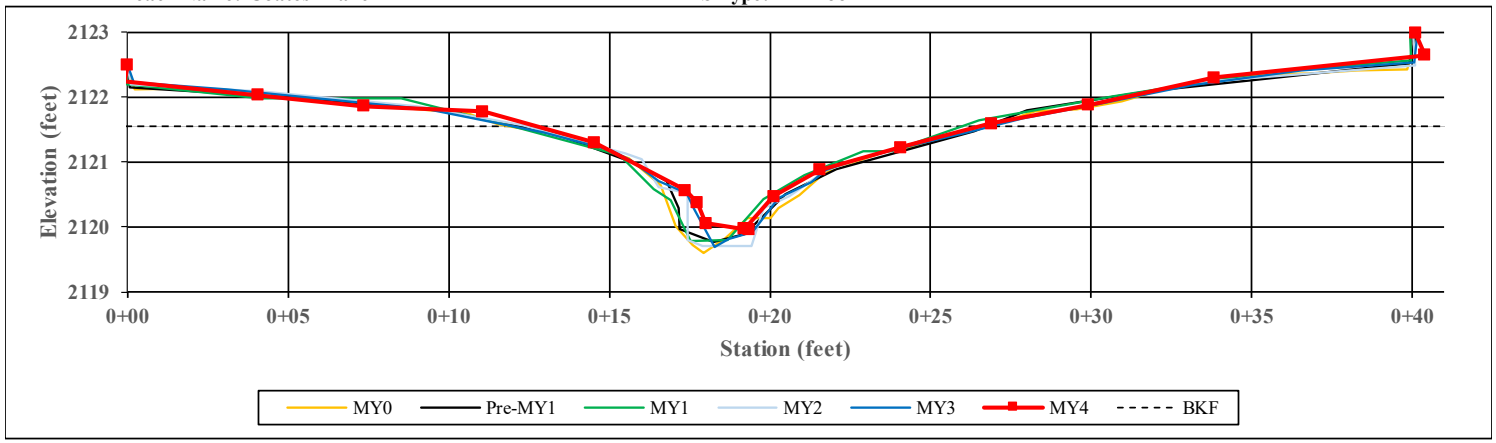

Left Descending Bank


Right Descending Bank

*** Data collected as part of 2019 monitoring year during adaptive management on Weston Reach 1A and 1B**

**Project Name:** Fletcher Mitigation site **XS Number:** 24 **Station:** 307+95

**Reach Name:** Coates Branch 1B **XS Type:** Pool




| CHANNEL DIMENSIONS SUMMARY | MY0 | *Pre-MY1 | MY1 | MY2 | MY3 | MY4 | MY5 | MY6 |
|---|---|---|---|---|---|---|---|---|
| Bankful Width (ft) | 7.4 | 8.6 | 7.9 | 5.7 | 7.5 | 4.2 | - | - |
| Floodprone Width (ft) | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 |
| Bankfull Mean Depth (ft) | 0.7 | 0.6 | 0.6 | 0.9 | 0.7 | 1.2 | - | - |
| Bankfull Max Depth (ft) | 1.5 | 1.3 | 1.4 | 1.4 | 1.5 | 1.6 | - | - |
| Bankfull Cross-Sectional Area ($ft^2$) | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | - | - |
| Width/Depth Ratio | 10.7 | 14.5 | 12.3 | 6.4 | 10.9 | 3.4 | - | - |
| Entrenchment Ratio | 5.4 | 4.6 | 5.0 | 7.0 | 5.3 | 9.6 | - | - |
| Bank Height Ratio | 1.0 | 0.9 | 0.9 | 0.9 | 0.9 | 0.8 | - | - |

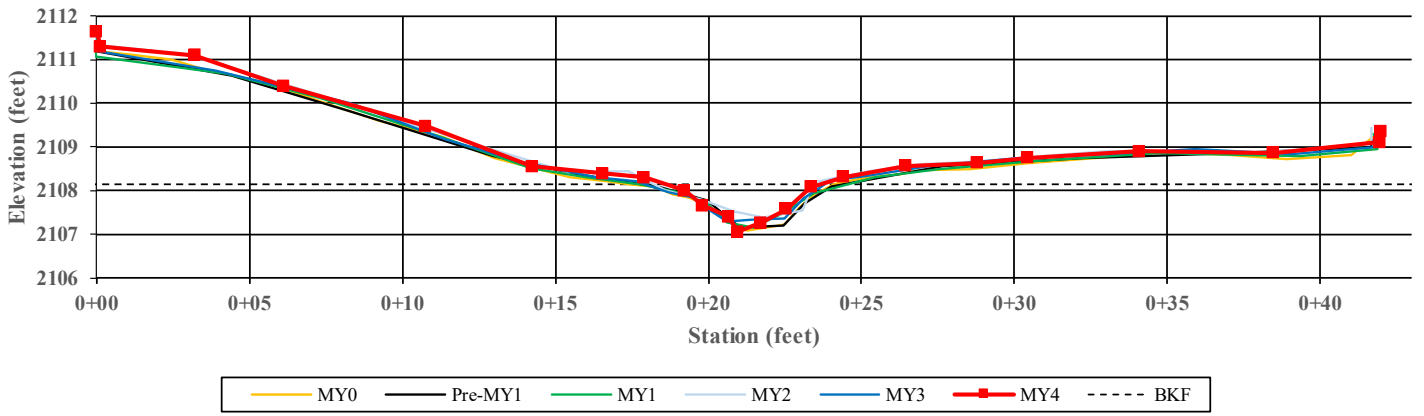

Left Descending Bank


Right Descending Bank

*** Data collected as part of 2019 monitoring year during adaptive management on Weston Reach 1A and 1B**

**Project Name:** Fletcher Mitigation site **XS Number:** 25 **Station:** 315+12

**Reach Name:** Coates Branch 1C **XS Type:** Pool




| CHANNEL DIMENSIONS SUMMARY | MY0 | *Pre-MY1 | MY1 | MY2 | MY3 | MY4 | MY5 | MY6 |
|---|---|---|---|---|---|---|---|---|
| Bankful Width (ft) | 5.3 | 5.6 | 6.2 | 4.8 | 4.4 | 4.1 | - | - |
| Floodprone Width (ft) | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 |
| Bankfull Mean Depth (ft) | 0.5 | 0.5 | 0.4 | 0.6 | 0.6 | 0.6 | - | - |
| Bankfull Max Depth (ft) | 0.9 | 0.9 | 0.9 | 0.8 | 0.9 | 1.1 | - | - |
| Bankfull Cross-Sectional Area ($ft^2$) | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | - | - |
| Width/Depth Ratio | 10.5 | 11.3 | 14.5 | 8.8 | 7.0 | 6.4 | - | - |
| Entrenchment Ratio | 3.8 | 3.6 | 3.2 | 4.1 | 4.5 | 4.8 | - | - |
| Bank Height Ratio | 1.0 | 1.0 | 0.8 | 1.0 | 1.1 | 1.1 | - | - |

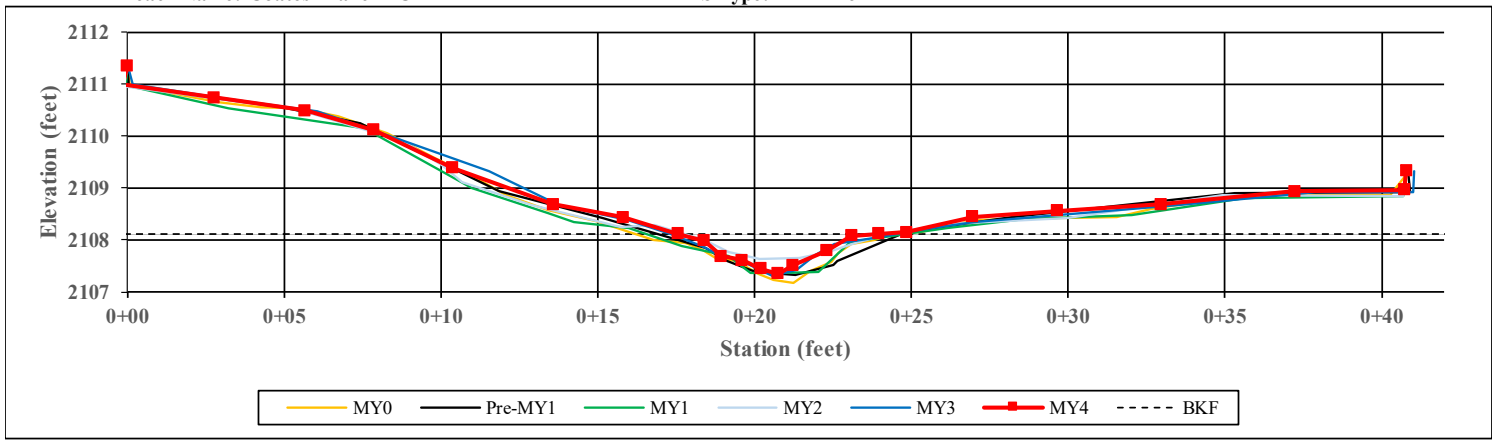

Looking Upstream


Right Descending Bank

*** Data collected as part of 2019 monitoring year during adaptive management on Weston Reach 1A and 1B**

**Project Name:** Fletcher Mitigation site **XS Number:** 26 **Station:** 315+20

**Reach Name:** Coates Branch 1C **XS Type:** Riffle




| CHANNEL DIMENSIONS SUMMARY | MY0 | *Pre-MY1 | MY1 | MY2 | MY3 | MY4 | MY5 | MY6 |
|---|---|---|---|---|---|---|---|---|
| Bankful Width (ft) | 5.4 | 5.5 | 5.8 | 5.8 | 4.2 | 4.7 | - | - |
| Floodprone Width (ft) | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 |
| Bankfull Mean Depth (ft) | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | - | - |
| Bankfull Max Depth (ft) | 0.8 | 0.6 | 0.6 | 0.5 | 0.8 | 0.8 | - | - |
| Bankfull Cross-Sectional Area ($ft^2$) | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | - | - |
| Width/Depth Ratio | 13.5 | 14.0 | 15.4 | 15.5 | 8.1 | 10.1 | - | - |
| Entrenchment Ratio | 3.7 | 3.6 | 3.4 | 3.4 | 4.7 | 4.3 | - | - |
| Bank Height Ratio | 1.0 | 0.9 | 0.8 | 0.9 | 0.9 | 1.0 | - | - |

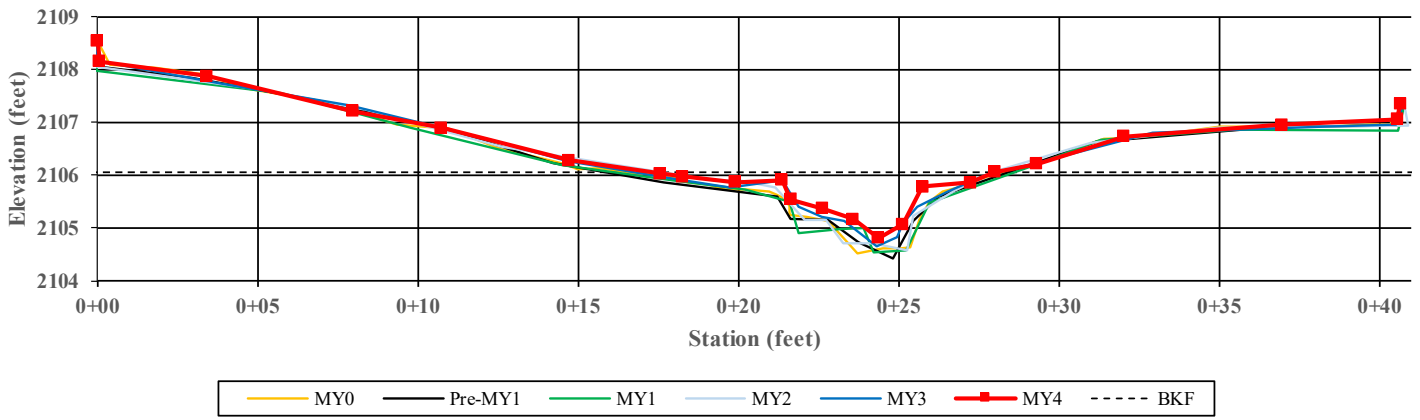

Left Descednding Bank


Right Descending Bank

*** Data collected as part of 2019 monitoring year during adaptive management on Weston Reach 1A and 1B**

**Project Name: Fletcher Mitigation site** **XS Number: 27** **Station: 317+35**

**Reach Name: Coates Branch 1D** **XS Type: Pool**




| CHANNEL DIMENSIONS SUMMARY | MY0 | *Pre-MY1 | MY1 | MY2 | MY3 | MY4 | MY5 | MY6 |
|---|---|---|---|---|---|---|---|---|
| Bankful Width (ft) | 5.9 | 6.9 | 6.4 | 5.6 | 6.7 | 5.6 | - | - |
| Floodprone Width (ft) | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 |
| Bankfull Mean Depth (ft) | 0.6 | 0.5 | 0.6 | 0.7 | 0.6 | 0.7 | - | - |
| Bankfull Max Depth (ft) | 1.2 | 1.3 | 1.1 | 1.2 | 1.2 | 1.2 | - | - |
| Bankfull Cross-Sectional Area ($ft^2$) | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | - | - |
| Width/Depth Ratio | 9.2 | 13.2 | 11.1 | 8.4 | 12.2 | 8.4 | - | - |
| Entrenchment Ratio | 4.3 | 3.6 | 3.9 | 4.5 | 3.7 | 4.5 | - | - |
| Bank Height Ratio | 1.0 | 1.0 | 0.8 | 1.0 | 1.0 | 0.9 | - | - |

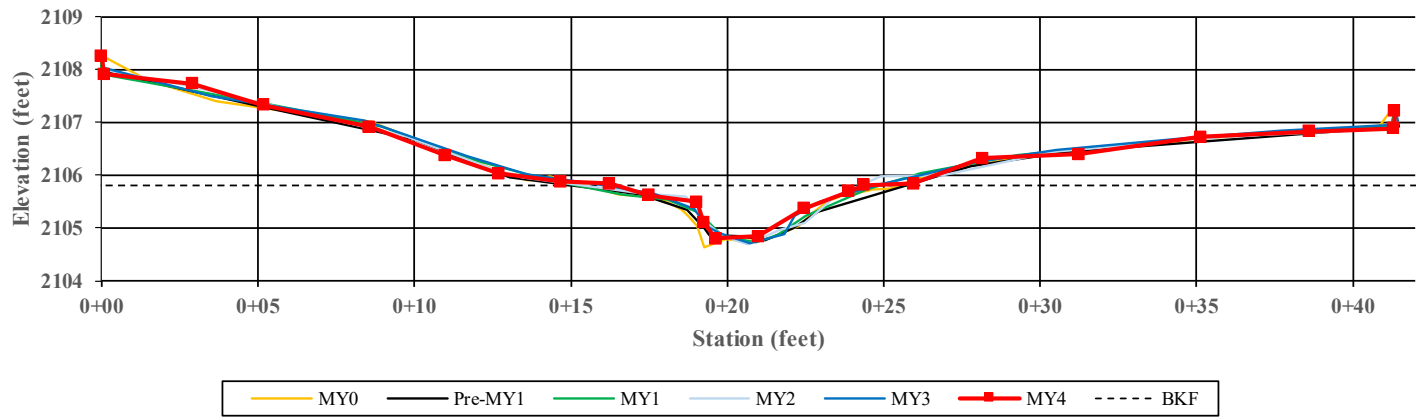

Left Descending Bank


Right Descending Bank

*** Data collected as part of 2019 monitoring year during adaptive management on Weston Reach 1A and 1B**

**Project Name: Fletcher Mitigation site** **XS Number: 28** **Station: 317+42**

**Reach Name: Coates Branch 1D** **XS Type: Riffle**




| CHANNEL DIMENSIONS SUMMARY | MY0 | *Pre-MY1 | MY1 | MY2 | MY3 | MY4 | MY5 | MY6 |
|---|---|---|---|---|---|---|---|---|
| Bankful Width (ft) | 6.1 | 7.4 | 7.5 | 4.7 | 4.0 | 6.4 | - | - |
| Floodprone Width (ft) | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 |
| Bankfull Mean Depth (ft) | 0.5 | 0.4 | 0.4 | 0.7 | 0.8 | 0.5 | - | - |
| Bankfull Max Depth (ft) | 1.0 | 0.9 | 0.9 | 1.0 | 1.1 | 1.0 | - | - |
| Bankfull Cross-Sectional Area ($ft^2$) | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | - | - |
| Width/Depth Ratio | 11.4 | 16.5 | 17.2 | 6.9 | 4.9 | 12.1 | - | - |
| Entrenchment Ratio | 4.1 | 3.4 | 3.3 | 5.3 | 6.2 | 3.9 | - | - |
| Bank Height Ratio | 1.0 | 1.0 | 0.9 | 0.9 | 0.9 | 1.0 | - | - |


Left Descending Bank


Right Descending Bank

*** Data collected as part of 2019 monitoring year during adaptive management on Weston Reach 1A and 1B**

**Table 10. Baseline Stream Data Summary**
**Fletcher Mitigation Site - Fletcher Creek Reach 1B (380 feet *)**

| Parameter | Regional Curve | | | Pre-Existing Condition | | | | | | Reference Reach Data | | | | | | Design | | | As-Built / Baseline | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimension & Substrate - Riffle** | **LL** | **UL** | **Eq.** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** | **Min** | **Mean** | **Max** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** |
| Bankfull Width (ft) | - | - | - | 6.1 | - | - | 8.0 | - | - | 14.7 | - | - | 19.5 | - | - | - | 8.7 | - | - | 7.1 | - | - | - | 1 |
| Floodprone Width (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 20.0 | - | - | - | 1 |
| Bankfull Mean Depth (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.6 | - | - | 0.3 | - | - | - | 1 |
| Bankfull Max Depth (ft) | | | | 0.7 | - | - | 0.8 | - | - | 1.2 | - | - | 1.4 | - | - | - | 0.9 | - | - | 0.6 | - | - | - | 1 |
| Bankfull Cross Sectional Area ($ft^2$) | - | | | 4.4 | - | - | 6.2 | - | - | 18.0 | - | - | 27.2 | - | - | - | 5.5 | - | - | 2.3 | - | - | - | 1 |
| Width/Depth Ratio | | | | 8.5 | - | - | 10.5 | - | - | 12.0 | - | - | 14 | - | - | - | 13.6 | - | - | 21.4 | - | - | - | 1 |
| Entrenchment Ratio | | | | 1.1 | - | - | 2.1 | - | - | 1.4 | - | - | 1.5 | - | - | - | 2.4 | - | - | 2.8 | - | - | - | 1 |
| Bank Height Ratio | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.0 | - | - | - | 1 |
| d50 (mm) | | | | 6.0 | - | - | 11.0 | - | - | 60.0 | - | - | 125 | - | - | - | - | - | - | 12.0 | - | - | - | 1 |
| **Profile** | | | | | | | | | | | | | | | | | | | | | | | | |
| Riffle Length (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 4.8 | 8.5 | 8.0 | 13.1 | 2.5 | 13 |
| Riffle Slope (ft/ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.002 | 0.018 | 0.014 | 0.044 | 0.013 | 13 |
| Pool Length (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 5.1 | 9.6 | 9.7 | 14.4 | 2.8 | 12 |
| Pool Max Depth (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.4 | - | 1.2 | 2.0 | 1.9 | 2.9 | 0.5 | 12 |
| Pool Spacing (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 23.4 | - | 39.0 | 14.6 | 27.9 | 29.4 | 40.5 | 8.0 | 11 |
| **Pattern** | | | | | | | | | | | | | | | | | | | | | | | | |
| Channel Belt Width (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 10.3 | 13.7 | 17.2 | 17.7 | 18.2 | 17.8 | 19.0 | 0.7 | 3 |
| Radius of Curvature (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 14.0 | - | 21.0 | 17.0 | 22.7 | 25.0 | 26.0 | 4.9 | 3 |
| Rc: Bankfull Width (ft/ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 2.0 | 2.6 | 2.9 | 3.0 | 0.6 | 3 |
| Meander Wavelength (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 17.7 | 18.2 | 17.8 | 19.1 | 0.8 | 3 |
| Meander Width Ratio | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | 2.5 | - | 2.0 | 2.1 | 2.0 | 2.2 | 0.1 | 3 |
| **Substrate, Bed and Transport Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| Reach Shear Stress (Competency) $lb/ft^2$ | | | | - | | | | | | - | | | | | | - | | | - | | | | | |
| Max Part Size (mm) Mobilized at Bankfull | | | | - | | | | | | - | | | | | | - | | | - | | | | | |
| Stream Power (Transport Capacity) $W/m^2$ | | | | - | | | | | | - | | | | | | - | | | - | | | | | |
| **Additional Reach Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| Drainage Area ($mi^2$) | | | | 0.30 | | | | | | 2.35 | | | | | | 0.30 | | | | | | | | |
| Rosgen Classification | | | | G | | | | | | B4 | | | | | | B4 | | | B4 | | | | | |
| Bankfull Velocity (fps) | - | | | 2.3 - 3.6 | | | | | | - | | | | | | - | | | | | | | | |
| Bankfull Discharge (cfs) | - | | | 22.0 | | | | | | - | | | | | | 15.0 | | | | | | | | |
| Valley Length (ft) | | | | - | | | | | | - | | | | | | - | | | 337 | | | | | |
| * Channel Thalweg Length (ft) | | | | - | | | | | | - | | | | | | - | | | 380 | | | | | |
| ^ Channel Centerline (ft) | | | | - | | | | | | - | | | | | | | | | 377 | | | | | |
| Sinuosity | | | | - | | | | | | - | | | | | | 1.11 | | | 1.12 | | | | | |
| Water Surface Slope (ft/ft) | | | | 0.008 - 0.018 | | | | | | 0.011 - 0.018 | | | | | | 0.016 | | | 0.015 | | | | | |
| Bankfull Slope (ft/ft) | | | | - | | | | | | - | | | | | | - | | | 0.016 | | | | | |
| Bankfull Floodplain Area (acres) | | | | - | | | | | | - | | | | | | | | | | | | | | |
| % of Reach with Eroding Banks | | | | - | | | | | | - | | | | | | | | | | | | | | |
| Channel Stability or Habitat Metric | | | | Unstable | | | | | | - | | | | | | | | | | | | | | |
| Biological or Other | | | | - | | | | | | - | | | | | | | | | | | | | | |

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

^ Channel Centerline (ft): Based on stream centerline stationing from design stream stationing; accounts for breaks in conservation easement and utility right-of-ways.

- Information unavailable.

Non-Applicable.

**Table 10. Baseline Stream Data Summary**
**Fletcher Mitigation Site - Fletcher Creek Reach 1B (380 feet *)**

| Parameter | Regional Curve | | | Pre-Existing Condition | | | | | | Reference Reach Data | | | | | | Design | | | As-Built / Baseline | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimension & Substrate - Riffle** | **LL** | **UL** | **Eq.** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** | **Min** | **Mean** | **Max** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** |
| Bankfull Width (ft) | - | - | - | 6.1 | - | - | 8.0 | - | - | 14.7 | - | - | 19.5 | - | - | - | 8.7 | - | - | 7.1 | - | - | - | 1 |
| Floodprone Width (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 20.0 | - | - | - | 1 |
| Bankfull Mean Depth (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.6 | - | - | 0.3 | - | - | - | 1 |
| Bankfull Max Depth (ft) | | | | 0.7 | - | - | 0.8 | - | - | 1.2 | - | - | 1.4 | - | - | - | 0.9 | - | - | 0.6 | - | - | - | 1 |
| Bankfull Cross Sectional Area ($ft^2$) | - | | | 4.4 | - | - | 6.2 | - | - | 18.0 | - | - | 27.2 | - | - | - | 5.5 | - | - | 2.3 | - | - | - | 1 |
| Width/Depth Ratio | | | | 8.5 | - | - | 10.5 | - | - | 12.0 | - | - | 14 | - | - | - | 13.6 | - | - | 21.4 | - | - | - | 1 |
| Entrenchment Ratio | | | | 1.1 | - | - | 2.1 | - | - | 1.4 | - | - | 1.5 | - | - | - | 2.4 | - | - | 2.8 | - | - | - | 1 |
| Bank Height Ratio | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.0 | - | - | - | 1 |
| d50 (mm) | | | | 6.0 | - | - | 11.0 | - | - | 60.0 | - | - | 125 | - | - | - | - | - | - | 12.0 | - | - | - | 1 |
| **Profile** | | | | | | | | | | | | | | | | | | | | | | | | |
| Riffle Length (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 4.8 | 8.5 | 8.0 | 13.1 | 2.5 | 13 |
| Riffle Slope (ft/ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.002 | 0.018 | 0.014 | 0.044 | 0.013 | 13 |
| Pool Length (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 5.1 | 9.6 | 9.7 | 14.4 | 2.8 | 12 |
| Pool Max Depth (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.4 | - | 1.2 | 2.0 | 1.9 | 2.9 | 0.5 | 12 |
| Pool Spacing (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 23.4 | - | 39.0 | 14.6 | 27.9 | 29.4 | 40.5 | 8.0 | 11 |
| **Pattern** | | | | | | | | | | | | | | | | | | | | | | | | |
| Channel Belt Width (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 10.3 | 13.7 | 17.2 | 17.7 | 18.2 | 17.8 | 19.0 | 0.7 | 3 |
| Radius of Curvature (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 14.0 | - | 21.0 | 17.0 | 22.7 | 25.0 | 26.0 | 4.9 | 3 |
| Rc: Bankfull Width (ft/ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 2.0 | 2.6 | 2.9 | 3.0 | 0.6 | 3 |
| Meander Wavelength (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 17.7 | 18.2 | 17.8 | 19.1 | 0.8 | 3 |
| Meander Width Ratio | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | 2.5 | - | 2.0 | 2.1 | 2.0 | 2.2 | 0.1 | 3 |
| **Substrate, Bed and Transport Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| Reach Shear Stress (Competency) $lb/ft^2$ | | | | - | | | | | | - | | | | | | - | | | - | | | | | |
| Max Part Size (mm) Mobilized at Bankfull | | | | - | | | | | | - | | | | | | - | | | - | | | | | |
| Stream Power (Transport Capacity) $W/m^2$ | | | | - | | | | | | - | | | | | | - | | | - | | | | | |
| **Additional Reach Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| Drainage Area ($mi^2$) | | | | 0.30 | | | | | | 2.35 | | | | | | 0.30 | | | | | | | | |
| Rosgen Classification | | | | G | | | | | | B4 | | | | | | B4 | | | B4 | | | | | |
| Bankfull Velocity (fps) | - | | | 2.3 - 3.6 | | | | | | - | | | | | | - | | | | | | | | |
| Bankfull Discharge (cfs) | - | | | 22.0 | | | | | | - | | | | | | 15.0 | | | | | | | | |
| Valley Length (ft) | | | | - | | | | | | - | | | | | | - | | | 337 | | | | | |
| * Channel Thalweg Length (ft) | | | | - | | | | | | - | | | | | | - | | | 380 | | | | | |
| ^ Channel Centerline (ft) | | | | - | | | | | | - | | | | | | | | | 377 | | | | | |
| Sinuosity | | | | - | | | | | | - | | | | | | 1.11 | | | 1.12 | | | | | |
| Water Surface Slope (ft/ft) | | | | 0.008 - 0.018 | | | | | | 0.011 - 0.018 | | | | | | 0.016 | | | 0.015 | | | | | |
| Bankfull Slope (ft/ft) | | | | - | | | | | | - | | | | | | - | | | 0.016 | | | | | |
| Bankfull Floodplain Area (acres) | | | | - | | | | | | - | | | | | | | | | | | | | | |
| % of Reach with Eroding Banks | | | | - | | | | | | - | | | | | | | | | | | | | | |
| Channel Stability or Habitat Metric | | | | Unstable | | | | | | - | | | | | | | | | | | | | | |
| Biological or Other | | | | - | | | | | | - | | | | | | | | | | | | | | |

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

^ Channel Centerline (ft): Based on stream centerline stationing from design stream stationing; accounts for breaks in conservation easement and utility right-of-ways.

- Information unavailable.

Non-Applicable.

**Table 10 Cont'd. Baseline Stream Data Summary**
**Fletcher Mitigation Site - Fletcher Creek Reach 1C (1,541 feet *)**

| Parameter | Regional Curve | | | Pre-Existing Condition | | | | | | Reference Reach Data | | | | | | Design | | | As-Built / Baseline | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimension & Substrate - Riffle** | **LL** | **UL** | **Eq.** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** | **Min** | **Mean** | **Max** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** |
| Bankfull Width (ft) | - | - | - | 6.3 | - | - | 9.3 | - | - | 14.7 | - | - | 19.5 | - | - | - | 9.4 | - | 7.6 | 9.8 | 9.8 | 12.0 | 3.1 | 2 |
| Floodprone Width (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 10.0 | 30.0 | 30.0 | 50.0 | 28.3 | 2 |
| Bankfull Mean Depth (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.7 | - | 0.3 | 0.5 | 0.5 | 0.6 | 0.2 | 2 |
| Bankfull Max Depth (ft) | | | | 0.6 | - | - | 0.9 | - | - | 1.2 | - | - | 1.4 | - | - | - | 0.9 | - | 0.5 | 0.8 | 0.8 | 1.0 | 0.4 | 2 |
| Bankfull Cross Sectional Area ($ft^2$) | | - | | 4.9 | - | - | 7.5 | - | - | 18.0 | - | - | 27.2 | - | - | - | 6.4 | - | 2.1 | 4.8 | 4.8 | 7.5 | 3.8 | 2 |
| Width/Depth Ratio | | | | 8.2 | - | - | 16.6 | - | - | 12.0 | - | - | 14 | - | - | - | 13.8 | - | 19.2 | 23.4 | 23.4 | 27.6 | 6.0 | 2 |
| Entrenchment Ratio | | | | 1.3 | - | - | 1.7 | - | - | 1.4 | - | - | 1.5 | - | - | - | 2.4 | - | 1.3 | 2.7 | 2.7 | 4.2 | 2.0 | 2 |
| Bank Height Ratio | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | | - | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 | 2 |
| d50 (mm) | | | | 5.0 | - | - | 14.0 | - | - | 60.0 | - | - | 125 | - | - | - | - | - | 18.0 | 18.5 | 19.0 | 19.0 | 0.71 | 2 |
| **Profile** | | | | | | | | | | | | | | | | | | | | | | | | |
| Riffle Length (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 3.4 | 10.9 | 11.1 | 21.1 | 4.9 | 44 |
| Riffle Slope (ft/ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.000 | 0.009 | 0.007 | 0.029 | 0.008 | 44 |
| Pool Length (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 6.3 | 13.1 | 12.8 | 29.0 | 4.6 | 44 |
| Pool Max Depth (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.4 | - | 1.5 | 2.8 | 2.8 | 4.0 | 0.6 | 44 |
| Pool Spacing (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 31.0 | - | 51.7 | 13.5 | 35.0 | 34.4 | 96.1 | 13.5 | 43 |
| **Pattern** | | | | | | | | | | | | | | | | | | | | | | | | |
| Channel Belt Width (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 11.2 | 15.0 | 18.7 | 18.7 | 20.2 | 19.7 | 22.3 | 1.9 | 3 |
| Radius of Curvature (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 15.0 | - | 22.0 | 17.2 | 21.0 | 20.6 | 25.3 | 4.1 | 3 |
| Rc: Bankfull Width (ft/ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.8 | 2.2 | 2.2 | 2.7 | 0.5 | 3 |
| Meander Wavelength (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 18.7 | 20.2 | 19.7 | 22.3 | 1.9 | 3 |
| Meander Width Ratio | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | 2.9 | - | 2.0 | 2.1 | 2.1 | 2.4 | 0.2 | 3 |
| **Substrate, Bed and Transport Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| Reach Shear Stress (Competency) $lb/ft^2$ | | | | - | | | | | | - | | | | | | - | | | - | | | | | |
| Max Part Size (mm) Mobilized at Bankfull | | | | - | | | | | | - | | | | | | - | | | - | | | | | |
| Stream Power (Transport Capacity) $W/m^2$ | | | | - | | | | | | - | | | | | | - | | | - | | | | | |
| **Additional Reach Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| Drainage Area ($mi^2$) | | | | 0.37 | | | | | | 2.35 | | | | | | 0.37 | | | | | | | | |
| Rosgen Classification | | | | B, F, G | | | | | | B4 | | | | | | B4 | | | B4 | | | | | |
| Bankfull Velocity (fps) | | - | | - | | | | | | - | | | | | | - | | | | | | | | |
| Bankfull Discharge (cfs) | | - | | 25.0 | | | | | | - | | | | | | 18.0 | | | | | | | | |
| Valley Length (ft) | | | | - | | | | | | - | | | | | | - | | | 1,436 | | | | | |
| * Channel Thalweg Length (ft) | | | | - | | | | | | - | | | | | | - | | | 1,541 | | | | | |
| ^ Channel Centerline (ft) | | | | - | | | | | | - | | | | | | - | | | 1,540 | | | | | |
| Sinuosity | | | | 1.24 | | | | | | - | | | | | | 1.10 | | | 1.10 | | | | | |
| Water Surface Slope (ft/ft) | | | | 0.009 - 0.015 | | | | | | 0.011 - 0.018 | | | | | | 0.012 | | | 0.012 | | | | | |
| Bankfull Slope (ft/ft) | | | | - | | | | | | - | | | | | | - | | | 0.012 | | | | | |
| Bankfull Floodplain Area (acres) | | | | - | | | | | | - | | | | | | | | | | | | | | |
| % of Reach with Eroding Banks | | | | - | | | | | | - | | | | | | | | | | | | | | |
| Channel Stability or Habitat Metric | | | | Unstable | | | | | | - | | | | | | | | | | | | | | |
| Biological or Other | | | | - | | | | | | - | | | | | | | | | | | | | | |

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

^ Channel Centerline (ft): Based on stream centerline stationing from design stream stationing; accounts for breaks in conservation easement and utility right-of-ways.

- Information unavailable.

Non-Applicable.

**Table 10 Cont'd. Baseline Stream Data Summary**
**Fletcher Mitigation Site - Fletcher Creek Reach 2A (1,299 feet *)**

| Parameter | Regional Curve | | | Pre-Existing Condition | | | | | | Reference Reach Data | | | | | | Design | | | As-Built / Baseline | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimension & Substrate - Riffle** | **LL** | **UL** | **Eq.** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** | **Min** | **Mean** | **Max** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** |
| Bankfull Width (ft) | - | - | - | 4.9 | - | - | 7.9 | - | - | 14.7 | - | - | 19.5 | - | - | - | 10.4 | - | 12.6 | 12.9 | 12.9 | 13.1 | 0.3 | 2 |
| Floodprone Width (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | | - | 35.0 | 42.5 | 42.5 | 50.0 | 10.6 | 2 |
| Bankfull Mean Depth (ft) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.7 | - | 0.7 | 0.8 | 0.8 | 0.8 | 0.0 | 2 |
| Bankfull Max Depth (ft) | | | | 0.8 | - | - | 1.1 | - | - | 1.2 | - | - | 1.4 | - | - | - | 1.0 | - | 1.2 | 1.4 | 1.4 | 1.6 | 0.3 | 2 |
| Bankfull Cross Sectional Area ($ft^2$) | | - | | 4.8 | - | - | 7.9 | - | - | 18.0 | - | - | 27.2 | - | - | - | 7.6 | - | 9.2 | 9.8 | 9.8 | 10.4 | 0.9 | 2 |
| Width/Depth Ratio | | | | 5.0 | - | - | 9.1 | - | - | 12.0 | - | - | 14 | - | - | - | 14.2 | - | 16.5 | 17.0 | 17.0 | 17.4 | 0.6 | 2 |
| Entrenchment Ratio | | | | 1.4 | - | - | 1.9 | - | - | 1.4 | - | - | 1.5 | - | - | - | 2.4 | - | 2.7 | 3.3 | 3.3 | 4.0 | 0.9 | 2 |
| Bank Height Ratio | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 | 2 |
| d50 (mm) | | | | 9.0 | - | - | 14.0 | - | - | 60.0 | - | - | 125.0 | - | - | - | - | - | 18.0 | 19.0 | 20.0 | 20.0 | 1.4 | 2 |
| **Profile** | | | | | | | | | | | | | | | | | | | | | | | | |
| Riffle Length (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 5.3 | 16.0 | 14.6 | 32.2 | 6.7 | 35 |
| Riffle Slope (ft/ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.001 | 0.010 | 0.008 | 0.028 | 0.007 | 35 |
| Pool Length (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 5.58 | 10.8 | 10.2 | 25.3 | 4.2 | 34 |
| Pool Max Depth (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.5 | - | 1.2 | 2.5 | 2.6 | 3.7 | 0.7 | 34 |
| Pool Spacing (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 34.2 | - | 57.2 | 9.4 | 36.8 | 37.5 | 52.2 | 9.4 | 33 |
| **Pattern** | | | | | | | | | | | | | | | | | | | | | | | | |
| Channel Belt Width (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 12.6 | 16.8 | 21.0 | 23.8 | 24.5 | 24.1 | 25.5 | 0.9 | 3 |
| Radius of Curvature (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 17.0 | - | 25.0 | 16.8 | 22.1 | 19.8 | 29.6 | 6.7 | 3 |
| Rc: Bankfull Width (ft/ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.6 | 2.1 | 1.9 | 2.8 | 0.6 | 3 |
| Meander Wavelength (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 23.8 | 24.5 | 24.1 | 25.5 | 0.9 | 3 |
| Meander Width Ratio | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | 3.5 | - | 2.3 | 2.4 | 2.3 | 2.5 | 0.1 | 3 |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| **Substrate, Bed and Transport Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| Reach Shear Stress (Competency) $lb/ft^2$ | | | | - | | | | | | - | | | | | | - | | | - | | | | | |
| Max Part Size (mm) Mobilized at Bankfull | | | | - | | | | | | - | | | | | | - | | | - | | | | | |
| Stream Power (Transport Capacity) $W/m^2$ | | | | - | | | | | | - | | | | | | - | | | - | | | | | |
| **Additional Reach Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| Drainage Area ($mi^2$) | | | | 0.49 | | | | | | 2.35 | | | | | | 0.49 | | | | | | | | |
| Rosgen Classification | | | | B, G | | | | | | B4 | | | | | | B4 | | | B4 | | | | | |
| Bankfull Velocity (fps) | | - | | 2.0 - 3.4 | | | | | | - | | | | | | - | | | | | | | | |
| Bankfull Discharge (cfs) | | - | | 32.0 | | | | | | - | | | | | | 22.0 | | | | | | | | |
| Valley Length (ft) | | | | - | | | | | | - | | | | | | - | | | 1,158 | | | | | |
| * Channel Thalweg Length (ft) | | | | - | | | | | | - | | | | | | - | | | 1,299 | | | | | |
| ^ Channel Centerline (ft) | | | | - | | | | | | - | | | | | | - | | | 1,296 | | | | | |
| Sinuosity | | | | 1.35 | | | | | | - | | | | | | 1.17 | | | 1.15 | | | | | |
| Water Surface Slope (ft/ft) | | | | 0.005 - 0.014 | | | | | | 0.011 - 0.018 | | | | | | 0.012 | | | 0.011 | | | | | |
| Bankfull Slope (ft/ft) | | | | - | | | | | | - | | | | | | - | | | 0.012 | | | | | |
| Bankfull Floodplain Area (acres) | | | | - | | | | | | - | | | | | | | | | | | | | | |
| % of Reach with Eroding Banks | | | | - | | | | | | - | | | | | | | | | | | | | | |
| Channel Stability or Habitat Metric | | | | Severe | | | | | | - | | | | | | | | | | | | | | |
| Biological or Other | | | | - | | | | | | - | | | | | | | | | | | | | | |

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

^ Channel Centerline (ft): Based on stream centerline stationing from design stream stationing; accounts for breaks in conservation easement and utility right-of-ways.

- Information unavailable.

Non-Applicable.

**Table 10 Cont'd. Baseline Stream Data Summary**
**Fletcher Mitigation Site - Fletcher Creek Reach 2B (1,510 feet *)**

| Parameter | Regional Curve | | | Pre-Existing Condition | | | | | | Reference Reach Data | | | | | | Design | | | As-Built / Baseline | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimension & Substrate - Riffle** | **LL** | **UL** | **Eq.** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** | **Min** | **Mean** | **Max** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** |
| Bankfull Width (ft) | - | - | - | 4.4 | - | - | 10.7 | - | - | 14.7 | - | - | 19.5 | - | - | - | 10.6 | - | 9.8 | 10.0 | 10.0 | 10.2 | 0.3 | 2 |
| Floodprone Width (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 40.0 | 55.0 | 55.0 | 70.0 | 21.2 | 2 |
| Bankfull Mean Depth (ft) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.7 | - | 0.7 | 0.7 | 0.7 | 0.8 | 0.1 | 2 |
| Bankfull Max Depth (ft) | | | | 0.7 | - | - | 1.0 | - | - | 1.2 | - | - | 1.4 | - | - | - | 1.0 | - | 1.2 | 1.3 | 1.3 | 1.3 | 0.1 | 2 |
| Bankfull Cross Sectional Area ($ft^2$) | | - | | 3.3 | - | - | 7.2 | - | - | 18.0 | - | - | 27.2 | - | - | - | 7.9 | - | 7.1 | 7.4 | 7.4 | 7.6 | 0.3 | 2 |
| Width/Depth Ratio | | | | 5.2 | - | - | 15.7 | - | - | 12.0 | - | - | 14 | - | - | - | 14.3 | - | 12.6 | 13.6 | 13.6 | 14.6 | 1.4 | 2 |
| Entrenchment Ratio | | | | 1.4 | - | - | 5.9 | - | - | 1.4 | - | - | 1.5 | - | - | - | 2.3 | - | 3.9 | 5.5 | 5.5 | 7.2 | 2.3 | 2 |
| Bank Height Ratio | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 | 2 |
| d50 (mm) | | | | - | 5.0 | - | - | - | - | 60.0 | - | - | 125.0 | - | - | - | - | - | 5.5 | 11.8 | 18.0 | 18.0 | 8.8 | 2 |
| **Profile** | | | | | | | | | | | | | | | | | | | | | | | | |
| Riffle Length (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 5.3 | 16.0 | 14.6 | 32.2 | 6.7 | 35 |
| Riffle Slope (ft/ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.001 | 0.010 | 0.008 | 0.028 | 0.007 | 35 |
| Pool Length (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 5.58 | 10.8 | 10.2 | 25.3 | 4.2 | 34 |
| Pool Max Depth (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.5 | - | 1.2 | 2.5 | 2.6 | 3.7 | 0.7 | 34 |
| Pool Spacing (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 35.0 | - | 58.3 | 9.4 | 36.8 | 37.5 | 52.2 | 9.4 | 33 |
| **Pattern** | | | | | | | | | | | | | | | | | | | | | | | | |
| Channel Belt Width (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 12.9 | 17.2 | 21.5 | 18.0 | 19.9 | 19.2 | 22.6 | 2.4 | 3 |
| Radius of Curvature (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 17.0 | - | 26.0 | 23.5 | 25.3 | 24.8 | 27.5 | 2.0 | 3 |
| Rc: Bankfull Width (ft/ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 2.2 | 2.4 | 2.3 | 2.6 | 0.2 | 3 |
| Meander Wavelength (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 17.9 | 19.9 | 19.2 | 22.6 | 2.4 | 3 |
| Meander Width Ratio | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | 2.6 | - | 1.7 | 1.9 | 1.8 | 2.1 | 0.2 | 3 |
| **Substrate, Bed and Transport Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| Reach Shear Stress (Competency) $lb/ft^2$ | | | | | | - | | | | | | - | | | | | | | | | | | | |
| Max Part Size (mm) Mobilized at Bankfull | | | | | | - | | | | | | - | | | | | | | | | | | | |
| Stream Power (Transport Capacity) $W/m^2$ | | | | | | - | | | | | | - | | | | | | | | | | | | |
| **Additional Reach Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| Drainage Area ($mi^2$) | | | | | | 0.52 | | | | | | 2.35 | | | | | 0.52 | | | | | | | |
| Rosgen Classification | | | | | | B, E, G | | | | | | B4 | | | | | B5 | | | | | B5 | | |
| Bankfull Velocity (fps) | | - | | | | 1.8 - 2.7 | | | | | | - | | | | | - | | | | | | | |
| Bankfull Discharge (cfs) | | - | | | | 33.0 | | | | | | - | | | | | 23.0 | | | | | | | |
| Valley Length (ft) | | | | | | - | | | | | | - | | | | | - | | | | | 1,467 | | |
| * Channel Thalweg Length (ft) | | | | | | - | | | | | | - | | | | | - | | | | | 1,510 | | |
| ^ Channel Centerline (ft) | | | | | | - | | | | | | - | | | | | - | | | | | 1,470 | | |
| Sinuosity | | | | | | 1.03 | | | | | | - | | | | | 1.10 | | | | | 1.10 | | |
| Water Surface Slope (ft/ft) | | | | | | 0.004 - 0.01 | | | | | | 0.011 - 0.018 | | | | | 0.007 | | | | | 0.011 | | |
| Bankfull Slope (ft/ft) | | | | | | - | | | | | | - | | | | | - | | | | | 0.012 | | |
| Bankfull Floodplain Area (acres) | | | | | | - | | | | | | - | | | | | | | | | | | | |
| % of Reach with Eroding Banks | | | | | | - | | | | | | - | | | | | | | | | | | | |
| Channel Stability or Habitat Metric | | | | | | Unstable | | | | | | - | | | | | | | | | | | | |
| Biological or Other | | | | | | - | | | | | | - | | | | | | | | | | | | |

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

^ Channel Centerline (ft): Based on stream centerline stationing from design stream stationing; accounts for breaks in conservation easement and utility right-of-ways.

- Information unavailable.

Non-Applicable.

**Table 10 Cont'd. Baseline Stream Data Summary**
**Fletcher Mitigation Site - Weston Creek Reach 1A (1,982 feet *)**

| Parameter | Regional Curve | | | Pre-Existing Condition | | | | | | Reference Reach Data | | | | | | Design | | | As-Built / Baseline | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimension & Substrate - Riffle** | **LL** | **UL** | **Eq.** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** | **Min** | **Mean** | **Max** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** |
| Bankfull Width (ft) | - | - | - | 4.5 | - | - | 6.3 | - | - | 6.3 | - | - | 10.7 | - | - | - | 8.6 | - | 9.1 | 9.8 | 9.8 | 10.4 | 0.9 | 2 |
| Floodprone Width (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 50.0 | 50.0 | 50.0 | 50.0 | 0.0 | 2 |
| Bankfull Mean Depth (ft) | - | - | - | - | - | - | - | - | - | | - | - | - | - | - | - | 0.6 | - | 0.6 | 0.6 | 0.6 | 0.6 | 0.0 | 2 |
| Bankfull Max Depth (ft) | | | | 0.6 | - | - | 0.7 | - | - | 1.0 | - | - | 1.2 | - | - | - | 0.9 | - | 0.9 | 1.0 | 1.0 | 1.1 | 0.1 | 2 |
| Bankfull Cross Sectional Area ($ft^2$) | | - | | 2.7 | - | - | 4.6 | - | - | 7.7 | - | - | 10.0 | - | - | - | 5.5 | - | 5.4 | 5.8 | 5.8 | 6.2 | 0.6 | 2 |
| Width/Depth Ratio | | | | 7.4 | - | - | 10.0 | - | - | 6.0 | - | - | 11.0 | - | - | - | 13.6 | - | 15.5 | 16.4 | 16.4 | 17.4 | 1.3 | 2 |
| Entrenchment Ratio | | | | 1.6 | - | - | 2.6 | - | - | 2.3 | - | - | 4.8 | - | - | - | 4.6 | - | 4.8 | 5.1 | 5.1 | 5.5 | 0.5 | 2 |
| Bank Height Ratio | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 | 2 |
| d50 (mm) | | | | 1.0 | - | - | 4.0 | - | - | 13.0 | - | - | 17.0 | - | - | - | - | - | 1.5 | 2.6 | 3.6 | 3.6 | 1.5 | 2 |
| **Profile** | | | | | | | | | | | | | | | | | | | | | | | | |
| Riffle Length (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 4.3 | 13.3 | 11.9 | 38.6 | 7.8 | 55 |
| Riffle Slope (ft/ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.000 | 0.004 | 0.002 | 0.017 | 0.004 | 55 |
| Pool Length (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 5.7 | 13.1 | 12.8 | 26.1 | 4.3 | 54 |
| Pool Max Depth (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.4 | - | 1.1 | 1.7 | 1.7 | 2.6 | 0.4 | 54 |
| Pool Spacing (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 43.0 | - | 60.2 | 8.9 | 35.7 | 34.4 | 72.9 | 12.0 | 53 |
| **Pattern** | | | | | | | | | | | | | | | | | | | | | | | | |
| Channel Belt Width (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 13.7 | 27.4 | 34.3 | 24.8 | 27.0 | 27.2 | 29.0 | 2.1 | 3 |
| Radius of Curvature (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 10.0 | - | 17.0 | 11.0 | 14.3 | 14.6 | 17.4 | 3.2 | 3 |
| Rc: Bankfull Width (ft/ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.3 | 1.7 | 1.7 | 2.0 | 0.4 | 3 |
| Meander Wavelength (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 24.5 | 26.9 | 27.2 | 29.0 | 2.3 | 3 |
| Meander Width Ratio | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | 2.9 | - | 2.9 | 3.1 | 3.2 | 3.4 | 0.2 | 3 |
| **Substrate, Bed and Transport Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| Reach Shear Stress (Competency) $lb/ft^2$ | | | | - | | | | | | - | | | | | | - | | | - | | | | | |
| Max Part Size (mm) Mobilized at Bankfull | | | | - | | | | | | - | | | | | | - | | | - | | | | | |
| Stream Power (Transport Capacity) $W/m^2$ | | | | - | | | | | | - | | | | | | - | | | - | | | | | |
| **Additional Reach Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| Drainage Area ($mi^2$) | | | | 0.30 | | | | | | 0.25 | | | | | | 0.30 | | | | | | | | |
| Rosgen Classification | | | | E, G | | | | | | E4 | | | | | | C5 | | | C5 | | | | | |
| Bankfull Velocity (fps) | | - | | 1.8 - 2.2 | | | | | | - | | | | | | - | | | | | | | | |
| Bankfull Discharge (cfs) | | - | | 21.0 | | | | | | - | | | | | | 15.0 | | | | | | | | |
| Valley Length (ft) | | | | - | | | | | | - | | | | | | - | | | 1,616 | | | | | |
| * Channel Thalweg Length (ft) | | | | - | | | | | | - | | | | | | - | | | 1,982 | | | | | |
| ^ Channel Centerline | | | | - | | | | | | - | | | | | | - | | | 1,954 | | | | | |
| Sinuosity | | | | 1.01 | | | | | | 1.60 | | | | | | 1.24 | | | 1.24 | | | | | |
| Water Surface Slope (ft/ft) | | | | 0.006 - 0.009 | | | | | | 0.008 | | | | | | 0.005 | | | 0.005 | | | | | |
| Bankfull Slope (ft/ft) | | | | - | | | | | | - | | | | | | - | | | 0.005 | | | | | |
| Bankfull Floodplain Area (acres) | | | | - | | | | | | - | | | | | | | | | | | | | | |
| % of Reach with Eroding Banks | | | | - | | | | | | - | | | | | | | | | | | | | | |
| Channel Stability or Habitat Metric | | | | Unstable | | | | | | - | | | | | | | | | | | | | | |
| Biological or Other | | | | - | | | | | | - | | | | | | | | | | | | | | |

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

^ Channel Centerline (ft): Based on stream centerline stationing from design stream stationing; accounts for breaks in conservation easement and utility right-of-ways.

- Information unavailable.

Non-Applicable.

**Table 10 Cont'd. Baseline Stream Data Summary**
**Fletcher Mitigation Site - Weston Creek Reach 1B (825 feet *)**

| Parameter | Regional Curve | | | Pre-Existing Condition | | | | | | Reference Reach Data | | | | | | Design | | | As-Built / Baseline | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimension & Substrate - Riffle** | **LL** | **UL** | **Eq.** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** | **Min** | **Mean** | **Max** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** |
| Bankfull Width (ft) | - | - | - | 4.5 | - | - | 9.6 | - | - | 6.3 | - | - | 10.7 | - | - | - | 9.4 | - | - | 9.7 | - | - | - | 1 |
| Floodprone Width (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | | - | - | 40.0 | - | - | - | 1 |
| Bankfull Mean Depth (ft) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.7 | - | - | 0.5 | - | - | - | 1 |
| Bankfull Max Depth (ft) | | | | 0.6 | - | - | 1.0 | - | - | 1.0 | - | - | 1.2 | - | - | - | 0.9 | - | - | 0.7 | - | - | - | 1 |
| Bankfull Cross Sectional Area ($ft^2$) | | - | | 3.8 | - | - | 7.8 | - | - | 7.7 | - | - | 10 | - | - | - | 6.3 | - | - | 4.7 | - | - | - | 1 |
| Width/Depth Ratio | | | | 5.3 | - | - | 11.9 | - | - | 6.0 | - | - | 11 | - | - | - | 3.3 | - | - | 20.4 | - | - | - | 1 |
| Entrenchment Ratio | | | | 1.3 | - | - | 2.2 | - | - | 2.3 | - | - | 4.8 | - | - | - | 4.3 | - | - | 4.1 | - | - | - | 1 |
| Bank Height Ratio | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.0 | - | - | - | 1 |
| d50 (mm) | | | | 1.0 | - | - | 4.0 | - | - | 13.0 | - | - | 17.0 | - | - | - | - | - | - | 1.8 | - | - | - | - |
| **Profile** | | | | | | | | | | | | | | | | | | | | | | | | |
| Riffle Length (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 4.5 | 12.3 | 12.1 | 29.1 | 5.9 | 21 |
| Riffle Slope (ft/ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.000 | 0.007 | 0.002 | 0.031 | 0.008 | 21 |
| Pool Length (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 5.6 | 14.8 | 14.0 | 26.8 | 6.9 | 21 |
| Pool Max Depth (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.4 | - | 1.4 | 2.0 | 2.0 | 2.7 | 0.3 | 21 |
| Pool Spacing (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 47.0 | - | 65.8 | 19.7 | 35.2 | 34.8 | 68.4 | 12.1 | 20 |
| **Pattern** | | | | | | | | | | | | | | | | | | | | | | | | |
| Channel Belt Width (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 14.9 | 29.9 | 37.3 | 27.3 | 28.4 | 28.1 | 29.9 | 1.3 | 3 |
| Radius of Curvature (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 11.0 | - | 19.0 | 15.8 | 19.5 | 18.2 | 24.5 | 4.5 | 3 |
| Rc: Bankfull Width (ft/ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.7 | 2.1 | 1.9 | 2.6 | 0.5 | 3 |
| Meander Wavelength (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 27.3 | 28.4 | 28.1 | 29.9 | 1.3 | 3 |
| Meander Width Ratio | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | 3.3 | - | 2.9 | 3.0 | 3.0 | 3.2 | 0.1 | 3 |
| **Substrate, Bed and Transport Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| Reach Shear Stress (Competency) $lb/ft^2$ | | | | - | | | | | | - | | | | | | - | | | - | | | | | |
| Max Part Size (mm) Mobilized at Bankfull | | | | - | | | | | | - | | | | | | - | | | - | | | | | |
| Stream Power (Transport Capacity) $W/m^2$ | | | | - | | | | | | - | | | | | | - | | | - | | | | | |
| **Additional Reach Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| Drainage Area ($mi^2$) | | | | 0.37 | | | | | | 0.25 | | | | | | 0.37 | | | | | | | | |
| Rosgen Classification | | | | G, E | | | | | | E4 | | | | | | C5 | | | C5 | | | | | |
| Bankfull Velocity (fps) | | - | | 1.8 - 2.3 | | | | | | - | | | | | | - | | | | | | | | |
| Bankfull Discharge (cfs) | | - | | 25.0 | | | | | | - | | | | | | 18.0 | | | | | | | | |
| Valley Length (ft) | | | | - | | | | | | - | | | | | | - | | | 708 | | | | | |
| * Channel Thalweg Length (ft) | | | | - | | | | | | - | | | | | | - | | | 825 | | | | | |
| ^ Channel Centerline (ft) | | | | - | | | | | | - | | | | | | - | | | 804 | | | | | |
| Sinuosity | | | | 1.01 | | | | | | 1.60 | | | | | | 1.20 | | | 1.17 | | | | | |
| Water Surface Slope (ft/ft) | | | | 0.005 - 0.007 | | | | | | 0.0080 | | | | | | 0.009 | | | 0.0024 | | | | | |
| Bankfull Slope (ft/ft) | | | | - | | | | | | - | | | | | | - | | | 0.0026 | | | | | |
| Bankfull Floodplain Area (acres) | | | | - | | | | | | - | | | | | | | | | | | | | | |
| % of Reach with Eroding Banks | | | | - | | | | | | - | | | | | | | | | | | | | | |
| Channel Stability or Habitat Metric | | | | Unstable | | | | | | - | | | | | | | | | | | | | | |
| Biological or Other | | | | - | | | | | | - | | | | | | | | | | | | | | |

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

^ Channel Centerline (ft): Based on stream centerline stationing from design stream stationing; accounts for breaks in conservation easement and utility right-of-ways.

- Information unavailable.

Non-Applicable.

**Table 10 Cont'd. Baseline Stream Data Summary**
**Fletcher Mitigation Site - Raccoon Branch Reach 1C (153 feet)**

| Parameter | Regional Curve | | | Pre-Existing Condition | | | | | | Reference Reach Data | | | | | | Design | | | As-Built / Baseline | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimension & Substrate - Riffle** | **LL** | **UL** | **Eq.** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** | **Min** | **Mean** | **Max** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** |
| Bankfull Width (ft) | - | - | - | 1.8 | - | - | 3.4 | - | - | 14.7 | - | - | 19.5 | - | - | - | 6.0 | - | | | | | | |
| Floodprone Width (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |
| Bankfull Mean Depth (ft) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.3 | - | | | | | | |
| Bankfull Max Depth (ft) | | | | 0.1 | - | - | 0.2 | - | - | 1.2 | - | - | 1.4 | - | - | - | 0.5 | - | | | | | | |
| Bankfull Cross Sectional Area ($ft^2$) | - | | | 0.4 | - | - | 0.6 | - | - | 18 | - | - | 27.2 | - | - | - | 2.0 | - | | | | | | |
| Width/Depth Ratio | | | | 8.0 | - | - | 25.7 | - | - | 12 | - | - | 14.0 | - | - | - | 17.8 | - | | | | | | |
| Entrenchment Ratio | | | | 1.7 | - | - | 2.1 | - | - | 1.4 | - | - | 1.5 | - | - | - | 2.3 | - | | | | | | |
| Bank Height Ratio | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |
| d50 (mm) | | | | 1.0 | - | - | 2.0 | - | - | 60.0 | - | - | 125.0 | - | - | - | - | - | | | | | | |
| **Profile** | | | | | | | | | | | | | | | | | | | | | | | | |
| Riffle Length (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |
| Riffle Slope (ft/ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |
| Pool Length (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |
| Pool Max Depth (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.8 | - | | | | | | |
| Pool Spacing (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 3.3 | - | 5.5 | | | | | | |
| **Pattern** | | | | | | | | | | | | | | | | | | | | | | | | |
| Channel Belt Width (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 6.4 | 8.5 | 10.7 | | | | | | |
| Radius of Curvature (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 9.0 | - | 13.0 | | | | | | |
| Rc: Bankfull Width (ft/ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |
| Meander Wavelength (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |
| Meander Width Ratio | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.9 | - | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| **Substrate, Bed and Transport Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| Reach Shear Stress (Competency) $lb/ft^2$ | | | | - | | | | | | - | | | | | | - | | | | | | | | |
| Max Part Size (mm) Mobilized at Bankfull | | | | - | | | | | | - | | | | | | - | | | | | | | | |
| Stream Power (Transport Capacity) $W/m^2$ | | | | - | | | | | | - | | | | | | - | | | | | | | | |
| **Additional Reach Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| Drainage Area ($mi^2$) | | | | 0.04 | | | | | | 2.35 | | | | | | 0.04 | | | | | | | | |
| Rosgen Classification | | | | B, G | | | | | | B4 | | | | | | B4 | | | | | | | | |
| Bankfull Velocity (fps) | - | | | 2.4 - 3.4 | | | | | | - | | | | | | - | | | | | | | | |
| Bankfull Discharge (cfs) | - | | | 4.0 | | | | | | - | | | | | | 3.0 | | | | | | | | |
| Valley Length (ft) | | | | - | | | | | | - | | | | | | - | | | | | | | | |
| Channel Thalweg Length (ft) | | | | - | | | | | | - | | | | | | - | | | | | | | | |
| Sinuosity | | | | 1.09 | | | | | | - | | | | | | 1.09 | | | | | | | | |
| Water Surface Slope (ft/ft) | | | | 0.048 - 0.092 | | | | | | 0.011 - 0.018 | | | | | | 0.040 | | | | | | | | |
| Bankfull Slope (ft/ft) | | | | - | | | | | | - | | | | | | - | | | | | | | | |
| Bankfull Floodplain Area (acres) | | | | - | | | | | | - | | | | | | | | | | | | | | |
| % of Reach with Eroding Banks | | | | - | | | | | | - | | | | | | | | | | | | | | |
| Channel Stability or Habitat Metric | | | | Unstable | | | | | | - | | | | | | | | | | | | | | |
| Biological or Other | | | | - | | | | | | - | | | | | | | | | | | | | | |

- Information unavailable.

Non-Applicable.

**Table 10 Cont'd. Baseline Stream Data Summary**
**Fletcher Mitigation Site - Raccoon Branch Reach 1D (440 feet *)**

| Parameter | Regional Curve | | | Pre-Existing Condition | | | | | | Reference Reach Data | | | | | | Design | | | As-Built / Baseline | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimension & Substrate - Riffle** | **LL** | **UL** | **Eq.** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** | **Min** | **Mean** | **Max** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** |
| Bankfull Width (ft) | - | - | - | 1.8 | - | - | 3.4 | - | - | 14.7 | - | - | 19.5 | - | - | - | 6.1 | - | - | 6.9 | - | - | - | 1 |
| Floodprone Width (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | | - | - | 20 | - | - | - | 1 |
| Bankfull Mean Depth (ft) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.3 | - | - | 0.5 | - | - | - | 1 |
| Bankfull Max Depth (ft) | | | | 0.1 | - | - | 0.2 | - | - | 1.2 | - | - | 1.4 | - | - | - | 0.5 | - | - | 1.34 | - | - | - | 1 |
| Bankfull Cross Sectional Area ($ft^2$) | - | | | 0.4 | - | - | 0.6 | - | - | 18 | - | - | 27.2 | - | - | - | 2.1 | - | - | 3.42 | - | - | - | 1 |
| Width/Depth Ratio | | | | 8.0 | - | - | 25.7 | - | - | 12 | - | - | 14.0 | - | - | - | 17.8 | - | - | 13.8 | - | - | - | 1 |
| Entrenchment Ratio | | | | 1.7 | - | - | 2.1 | - | - | 1.4 | - | - | 1.5 | - | - | - | 2.3 | - | - | 2.91 | - | - | - | 1 |
| Bank Height Ratio | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.0 | - | - | - | 1 |
| d50 (mm) | | | | 1.0 | - | - | 2.0 | - | - | 60.0 | - | - | 125.0 | - | - | - | - | - | - | 0.062 | - | - | - | 1 |
| **Profile** | | | | | | | | | | | | | | | | | | | | | | | | |
| Riffle Length (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.5 | 4.5 | 4.2 | 7.9 | 1.7 | 38.0 |
| Riffle Slope (ft/ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.003 | 0.033 | 0.030 | 0.085 | 0.021 | 38.0 |
| Pool Length (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.7 | 5.4 | 5.0 | 12.7 | 2.6 | 37.0 |
| Pool Max Depth (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.8 | - | 0.6 | 1.0 | 1.1 | 1.4 | 0.2 | 37.0 |
| Pool Spacing (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 20.1 | - | 33.6 | 4.1 | 12.1 | 11.2 | 28.8 | 5.5 | 35.0 |
| **Pattern** | | | | | | | | | | | | | | | | | | | | | | | | |
| Channel Belt Width (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 6.5 | 8.7 | 10.9 | 6.7 | 7.5 | 7.0 | 8.7 | 1.1 | 3 |
| Radius of Curvature (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 9.0 | - | 13.0 | 7.9 | 10.1 | 8.5 | 13.9 | 3.3 | 3 |
| Rc: Bankfull Width (ft/ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.2 | 1.6 | 1.3 | 2.2 | 0.6 | 3 |
| Meander Wavelength (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 6.7 | 7.5 | 7.0 | 8.7 | 1.1 | 3 |
| Meander Width Ratio | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | 2.5 | - | 1.1 | 1.2 | 1.1 | 1.4 | 0.1 | 3 |
| **Substrate, Bed and Transport Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| Reach Shear Stress (Competency) $lb/ft^2$ | | | | - | | | | | | - | | | | | | - | | | - | | | | | |
| Max Part Size (mm) Mobilized at Bankfull | | | | - | | | | | | - | | | | | | - | | | - | | | | | |
| Stream Power (Transport Capacity) $W/m^2$ | | | | - | | | | | | - | | | | | | - | | | - | | | | | |
| **Additional Reach Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| Drainage Area ($mi^2$) | | | | 0.04 | | | | | | 2.35 | | | | | | 0.04 | | | | | | | | |
| Rosgen Classification | | | | B, G | | | | | | B4 | | | | | | B4 | | | B4 | | | | | |
| Bankfull Velocity (fps) | - | | | 2.4 - 3.4 | | | | | | - | | | | | | - | | | | | | | | |
| Bankfull Discharge (cfs) | - | | | 4.0 | | | | | | - | | | | | | 3.0 | | | | | | | | |
| Valley Length (ft) | | | | - | | | | | | - | | | | | | - | | | 413 | | | | | |
| * Channel Thalweg Length (ft) | | | | - | | | | | | - | | | | | | - | | | 440 | | | | | |
| ^ Channel Centerline (ft) | | | | - | | | | | | - | | | | | | - | | | 448 | | | | | |
| Sinuosity | | | | 1.09 | | | | | | - | | | | | | 1.05 | | | 1.08 | | | | | |
| Water Surface Slope (ft/ft) | | | | 0.048 - 0.092 | | | | | | 0.011 - 0.018 | | | | | | 0.048 | | | 0.040 | | | | | |
| Bankfull Slope (ft/ft) | | | | - | | | | | | - | | | | | | - | | | 0.041 | | | | | |
| Bankfull Floodplain Area (acres) | | | | - | | | | | | - | | | | | | | | | | | | | | |
| % of Reach with Eroding Banks | | | | - | | | | | | - | | | | | | | | | | | | | | |
| Channel Stability or Habitat Metric | | | | Unstable | | | | | | - | | | | | | | | | | | | | | |
| Biological or Other | | | | - | | | | | | - | | | | | | | | | | | | | | |

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

^ Channel Centerline (ft): Based on stream centerline stationing from design stream stationing; accounts for breaks in conservation easement and utility right-of-ways.

- Information unavailable.

Non-Applicable.

**Table 10 Cont'd. Baseline Stream Data Summary**
**Fletcher Mitigation Site - Coates Branch Reach 1A (282 feet)**

| Parameter | Regional Curve | | | Pre-Existing Condition | | | | | | Reference Reach Data | | | | | | Design | | | As-Built / Baseline | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimension & Substrate - Riffle** | **LL** | **UL** | **Eq.** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** | **Min** | **Mean** | **Max** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** |
| Bankfull Width (ft) | - | - | - | 0.9 | - | - | 1.3 | - | - | 14.7 | - | - | 19.5 | - | - | - | 5.0 | - | | | | | | |
| Floodprone Width (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |
| Bankfull Mean Depth (ft) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.3 | - | | | | | | |
| Bankfull Max Depth (ft) | | | | 0.2 | - | - | 0.3 | - | - | 1.2 | - | - | 1.4 | - | - | - | 0.4 | - | | | | | | |
| Bankfull Cross Sectional Area ($ft^2$) | - | | | 0.2 | - | - | 0.3 | - | - | 18.0 | - | - | 27.2 | - | - | - | 1.4 | - | | | | | | |
| Width/Depth Ratio | | | | 5.1 | - | - | 5.6 | - | - | 12.0 | - | - | 14.0 | - | - | - | 18.0 | - | | | | | | |
| Entrenchment Ratio | | | | 2.0 | - | - | 2.8 | - | - | 1.4 | - | - | 1.5 | - | - | - | 2.4 | - | | | | | | |
| Bank Height Ratio | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |
| d50 (mm) | | | | 1.0 | - | - | 2.0 | - | - | 60.0 | - | - | 125.0 | - | - | - | - | - | | | | | | |
| **Profile** | | | | | | | | | | | | | | | | | | | | | | | | |
| Riffle Length (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |
| Riffle Slope (ft/ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |
| Pool Length (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |
| Pool Max Depth (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.7 | - | | | | | | |
| Pool Spacing (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 3.3 | - | 5.5 | | | | | | |
| **Pattern** | | | | | | | | | | | | | | | | | | | | | | | | |
| Channel Belt Width (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 5.4 | 7.2 | 9.0 | | | | | | |
| Radius of Curvature (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 7.0 | - | 11.0 | | | | | | |
| Rc: Bankfull Width (ft/ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |
| Meander Wavelength (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |
| Meander Width Ratio | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | 2.5 | - | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| **Substrate, Bed and Transport Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| Reach Shear Stress (Competency) $lb/ft^2$ | | | | - | | | | | | - | | | | | | - | | | | | | | | |
| Max Part Size (mm) Mobilized at Bankfull | | | | - | | | | | | - | | | | | | - | | | | | | | | |
| Stream Power (Transport Capacity) $W/m^2$ | | | | - | | | | | | - | | | | | | - | | | | | | | | |
| **Additional Reach Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| Drainage Area ($mi^2$) | | | | 0.02 | | | | | | 2.4 | | | | | | 0.02 | | | | | | | | |
| Rosgen Classification | | | | B, G | | | | | | B4 | | | | | | B4 | | | | | | | | |
| Bankfull Velocity (fps) | - | | | 1.7 - 2.0 | | | | | | - | | | | | | - | | | | | | | | |
| Bankfull Discharge (cfs) | - | | | 3.0 | | | | | | - | | | | | | 1.0 | | | | | | | | |
| Valley Length (ft) | | | | - | | | | | | - | | | | | | - | | | | | | | | |
| Channel Thalweg Length (ft) | | | | - | | | | | | - | | | | | | - | | | | | | | | |
| Sinuosity | | | | 1.08 | | | | | | - | | | | | | 1.14 | | | | | | | | |
| Water Surface Slope (ft/ft) | | | | 0.03 - 0.034 | | | | | | 0.011 - 0.018 | | | | | | 0.031 | | | | | | | | |
| Bankfull Slope (ft/ft) | | | | - | | | | | | - | | | | | | - | | | | | | | | |
| Bankfull Floodplain Area (acres) | | | | - | | | | | | - | | | | | | | | | | | | | | |
| % of Reach with Eroding Banks | | | | - | | | | | | - | | | | | | | | | | | | | | |
| Channel Stability or Habitat Metric | | | | Unstable | | | | | | - | | | | | | | | | | | | | | |
| Biological or Other | | | | - | | | | | | - | | | | | | | | | | | | | | |

- Information unavailable.

Non-Applicable.

**Table 10 Cont'd. Baseline Stream Data Summary**
**Fletcher Mitigation Site - Coates Branch Reach 1B (601 feet *)**

| Parameter | Regional Curve | | | Pre-Existing Condition | | | | | | Reference Reach Data | | | | | | Design | | | As-Built / Baseline | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimension & Substrate - Riffle** | **LL** | **UL** | **Eq.** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** | **Min** | **Mean** | **Max** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** |
| Bankfull Width (ft) | - | - | - | 0.9 | - | - | 1.3 | - | - | 14.7 | - | - | 19.5 | - | - | - | 5.7 | - | - | 5.2 | - | - | - | 1 |
| Floodprone Width (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 15.0 | - | - | - | 1 |
| Bankfull Mean Depth (ft) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.3 | - | - | 0.3 | - | - | - | 1 |
| Bankfull Max Depth (ft) | | | | 0.2 | - | - | 0.3 | - | - | 1.2 | - | - | 1.4 | - | - | - | 0.5 | - | - | 0.7 | - | - | - | 1 |
| Bankfull Cross Sectional Area ($ft^2$) | - | | | 0.2 | - | - | 0.3 | - | - | 18 | - | - | 27.2 | - | - | - | 1.8 | - | - | 1.6 | - | - | - | 1 |
| Width/Depth Ratio | | | | 5.1 | - | - | 5.6 | - | - | 12 | - | - | 14.0 | - | - | - | 17.9 | - | - | 16.5 | - | - | - | 1 |
| Entrenchment Ratio | | | | 2.0 | - | - | 2.8 | - | - | 1.4 | - | - | 1.5 | - | - | - | 2.4 | - | - | 2.9 | - | - | - | 1 |
| Bank Height Ratio | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.0 | - | - | - | 1 |
| d50 (mm) | | | | 1.0 | - | - | 2.0 | - | - | 60.0 | - | - | 125.0 | - | - | - | - | - | - | 15.0 | - | - | - | 1 |
| **Profile** | | | | | | | | | | | | | | | | | | | | | | | | |
| Riffle Length (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 3.0 | 6.5 | 6.3 | 14.0 | 2.1 | 52 |
| Riffle Slope (ft/ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.000 | 0.020 | 0.016 | 0.072 | 0.016 | 52 |
| Pool Length (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.2 | 3.4 | 3.2 | 6.3 | 1.2 | 51 |
| Pool Max Depth (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.8 | - | 0.24 | 1.2 | 1.1 | 2.5 | 0.4 | 51 |
| Pool Spacing (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 18.8 | - | 31.4 | 5.8 | 11.7 | 12 | 18.7 | 2.5 | 50 |
| **Pattern** | | | | | | | | | | | | | | | | | | | | | | | | |
| Channel Belt Width (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 6.1 | 8.1 | 10.2 | 9.7 | 10.6 | 10.5 | 11.5 | 0.9 | 3 |
| Radius of Curvature (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 8.0 | - | 12.0 | 9.0 | 11.0 | 12.0 | 12.1 | 1.8 | 3 |
| Rc: Bankfull Width (ft/ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.5 | 1.9 | 2.1 | 2.1 | 0.3 | 3 |
| Meander Wavelength (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 9.7 | 10.6 | 10.5 | 11.5 | 0.9 | 3 |
| Meander Width Ratio | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | 2.5 | - | 1.7 | 1.9 | 1.8 | 2.0 | 0.1 | 3 |
| **Substrate, Bed and Transport Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| Reach Shear Stress (Competency) $lb/ft^2$ | | | | - | | | | | | - | | | | | | - | | | - | | | | | |
| Max Part Size (mm) Mobilized at Bankfull | | | | - | | | | | | - | | | | | | - | | | - | | | | | |
| Stream Power (Transport Capacity) $W/m^2$ | | | | - | | | | | | - | | | | | | - | | | - | | | | | |
| **Additional Reach Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| Drainage Area ($mi^2$) | | | | 0.03 | | | | | | 2.4 | | | | | | 0.03 | | | | | | | | |
| Rosgen Classification | | | | B, G | | | | | | B4 | | | | | | B4 | | | B4 | | | | | |
| Bankfull Velocity (fps) | - | | | 1.7 - 2.0 | | | | | | - | | | | | | - | | | | | | | | |
| Bankfull Discharge (cfs) | - | | | 3.0 | | | | | | - | | | | | | 2.0 | | | | | | | | |
| Valley Length (ft) | | | | - | | | | | | - | | | | | | - | | | 597 | | | | | |
| * Channel Thalweg Length (ft) | | | | - | | | | | | - | | | | | | - | | | 601 | | | | | |
| ^ Channel Centerline (ft) | | | | - | | | | | | - | | | | | | - | | | 606 | | | | | |
| Sinuosity | | | | 1.08 | | | | | | - | | | | | | 1.04 | | | 1.05 | | | | | |
| Water Surface Slope (ft/ft) | | | | 0.03 - 0.034 | | | | | | 0.011 - 0.018 | | | | | | 0.033 | | | 0.033 | | | | | |
| Bankfull Slope (ft/ft) | | | | - | | | | | | - | | | | | | - | | | 0.033 | | | | | |
| Bankfull Floodplain Area (acres) | | | | - | | | | | | - | | | | | | | | | | | | | | |
| % of Reach with Eroding Banks | | | | - | | | | | | - | | | | | | | | | | | | | | |
| Channel Stability or Habitat Metric | | | | Severe | | | | | | - | | | | | | | | | | | | | | |
| Biological or Other | | | | - | | | | | | - | | | | | | | | | | | | | | |

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

^ Channel Centerline (ft): Based on stream centerline stationing from design stream stationing; accounts for breaks in conservation easement and utility right-of-ways.

- Information unavailable.

Non-Applicable.

**Table 10 Cont'd. Baseline Stream Data Summary**
**Fletcher Mitigation Site - Coates Branch Reach 1C (708 feet *)**

| Parameter | Regional Curve | | | Pre-Existing Condition | | | | | | Reference Reach Data | | | | | | Design | | | As-Built / Baseline | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimension & Substrate - Riffle** | **LL** | **UL** | **Eq.** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** | **Min** | **Mean** | **Max** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** |
| Bankfull Width (ft) | - | - | - | 1.9 | - | - | 3.4 | - | - | 14.7 | - | - | 19.5 | - | - | - | 6.0 | - | - | 5.4 | - | - | - | 1 |
| Floodprone Width (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | | - | - | 20.0 | - | - | - | 1 |
| Bankfull Mean Depth (ft) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.3 | - | - | 0.4 | - | - | - | 1 |
| Bankfull Max Depth (ft) | | | | 0.2 | - | - | 0.3 | - | - | 1.2 | - | - | 1.4 | - | - | - | 0.5 | - | - | 0.8 | - | - | - | 1 |
| Bankfull Cross Sectional Area ($ft^2$) | - | | | 0.3 | - | - | 0.8 | - | - | 18 | - | - | 27.2 | - | - | - | 2.0 | - | - | 2.2 | - | - | - | 1 |
| Width/Depth Ratio | | | | 10.4 | - | - | 14.5 | - | - | 12 | - | - | 14.0 | - | - | - | 17.8 | - | - | 13.5 | - | - | - | 1 |
| Entrenchment Ratio | | | | 1.2 | - | - | 1.9 | - | - | 1.4 | - | - | 1.5 | - | - | - | 2.3 | - | - | 3.7 | - | - | - | 1 |
| Bank Height Ratio | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.0 | - | - | - | 1 |
| d50 (mm) | | | | 9.0 | - | - | 12.0 | - | - | 60.0 | - | - | 125.0 | - | - | - | - | - | - | 0.4 | - | - | - | 1 |
| **Profile** | | | | | | | | | | | | | | | | | | | | | | | | |
| Riffle Length (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 3.8 | 7.4 | 7.7 | 10.1 | 1.6 | 48 |
| Riffle Slope (ft/ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.000 | 0.010 | 0.010 | 0.033 | 0.007 | 48 |
| Pool Length (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.2 | 4.6 | 4.2 | 7.3 | 1.4 | 48 |
| Pool Max Depth (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.8 | - | 0.6 | 1.0 | 1.0 | 1.4 | 0.2 | 49 |
| Pool Spacing (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 19.8 | - | 33.0 | 6.4 | 14.3 | 14.6 | 19.6 | 2.6 | 48 |
| **Pattern** | | | | | | | | | | | | | | | | | | | | | | | | |
| Channel Belt Width (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 6.5 | 8.6 | 10.8 | 10.9 | 11.7 | 11.6 | 12.5 | 0.8 | 3 |
| Radius of Curvature (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 9.0 | - | 13.0 | 7.0 | 8.8 | 7.2 | 12.1 | 2.9 | 3 |
| Rc: Bankfull Width (ft/ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.2 | 1.5 | 1.2 | 2.1 | 0.5 | 3 |
| Meander Wavelength (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 10.9 | 12.1 | 11.6 | 13.7 | 1.5 | 3 |
| Meander Width Ratio | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | 2.3 | - | 1.8 | 2.0 | 1.9 | 2.1 | 0.1 | 3 |
| **Substrate, Bed and Transport Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| Reach Shear Stress (Competency) $lb/ft^2$ | | | | - | | | | | | - | | | | | | - | | | - | | | | | |
| Max Part Size (mm) Mobilized at Bankfull | | | | - | | | | | | - | | | | | | - | | | - | | | | | |
| Stream Power (Transport Capacity) $W/m^2$ | | | | - | | | | | | - | | | | | | - | | | - | | | | | |
| **Additional Reach Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| Drainage Area ($mi^2$) | | | | 0.04 | | | | | | 2.4 | | | | | | 0.04 | | | | | | | | |
| Rosgen Classification | | | | B, F, G | | | | | | B4 | | | | | | B4 | | | B4 | | | | | |
| Bankfull Velocity (fps) | - | | | 0.9 - 1.8 | | | | | | - | | | | | | - | | | | | | | | |
| Bankfull Discharge (cfs) | - | | | 4.0 | | | | | | - | | | | | | 3.0 | | | | | | | | |
| Valley Length (ft) | | | | - | | | | | | - | | | | | | - | | | 667 | | | | | |
| * Channel Thalweg Length (ft) | | | | - | | | | | | - | | | | | | - | | | 708 | | | | | |
| ^ Channel Centerline (ft) | | | | - | | | | | | - | | | | | | - | | | 708 | | | | | |
| Sinuosity | | | | 1.03 | | | | | | - | | | | | | 1.07 | | | 1.06 | | | | | |
| Water Surface Slope (ft/ft) | | | | 0.009 - 0.021 | | | | | | 0.011 - 0.018 | | | | | | 0.015 | | | 0.013 | | | | | |
| Bankfull Slope (ft/ft) | | | | - | | | | | | - | | | | | | - | | | 0.013 | | | | | |
| Bankfull Floodplain Area (acres) | | | | - | | | | | | - | | | | | | | | | | | | | | |
| % of Reach with Eroding Banks | | | | - | | | | | | - | | | | | | | | | | | | | | |
| Channel Stability or Habitat Metric | | | | Unstable | | | | | | - | | | | | | | | | | | | | | |
| Biological or Other | | | | - | | | | | | - | | | | | | | | | | | | | | |

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

^ Channel Centerline (ft): Based on stream centerline stationing from design stream stationing; accounts for breaks in conservation easement and utility right-of-ways.

- Information unavailable.

Non-Applicable.

**Table 10 Cont'd. Baseline Stream Data Summary**
**Fletcher Mitigation Site - Coates Branch Reach 1D (325 feet *)**

| Parameter | Regional Curve | | | Pre-Existing Condition | | | | | | Reference Reach Data | | | | | | Design | | | As-Built / Baseline | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimension & Substrate - Riffle** | **LL** | **UL** | **Eq.** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** | **Min** | **Mean** | **Max** | **Min** | **Mean** | **Med** | **Max** | **SD** | **N** |
| Bankfull Width (ft) | - | - | - | 3.6 | - | - | 5.0 | - | - | 14.7 | - | - | 19.5 | - | - | - | 6.9 | - | - | 6.1 | - | - | - | 1 |
| Floodprone Width (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 25.0 | - | - | - | 1 |
| Bankfull Mean Depth (ft) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.4 | - | - | 0.5 | - | - | - | 1 |
| Bankfull Max Depth (ft) | | | | 0.2 | - | - | 0.3 | - | - | 1.2 | - | - | 1.4 | - | - | - | 0.6 | - | - | 1.0 | - | - | - | 1 |
| Bankfull Cross Sectional Area ($ft^2$) | - | | | 1.0 | - | - | 1.4 | - | - | 18 | - | - | 27.2 | - | - | - | 2.7 | - | - | 3.3 | - | - | - | 1 |
| Width/Depth Ratio | | | | 13.0 | - | - | 18.0 | - | - | 12 | - | - | 14.0 | - | - | - | 17.7 | - | - | 11.4 | - | - | - | 1 |
| Entrenchment Ratio | | | | 1.7 | - | - | 1.8 | - | - | 1.4 | - | - | 1.5 | - | - | - | 2.2 | - | - | 4.1 | - | - | - | 1 |
| Bank Height Ratio | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.0 | - | - | - | 1 |
| d50 (mm) | | | | 8.0 | - | - | 14.0 | - | - | 60.0 | - | - | 125.0 | - | - | - | - | - | - | 4.0 | - | - | - | 1 |
| **Profile** | | | | | | | | | | | | | | | | | | | | | | | | |
| Riffle Length (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 4.1 | 7.2 | 7.3 | 11.9 | 1.8 | 22 |
| Riffle Slope (ft/ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.000 | 0.008 | 0.006 | 0.021 | 0.006 | 22 |
| Pool Length (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1.8 | 4.6 | 4.4 | 8.1 | 1.8 | 22 |
| Pool Max Depth (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.9 | - | 0.6 | 1.1 | 1.1 | 2.2 | 0.3 | 22 |
| Pool Spacing (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 22.8 | - | 38.0 | 8.0 | 13.9 | 14.0 | 19.1 | 3.2 | 21 |
| **Pattern** | | | | | | | | | | | | | | | | | | | | | | | | |
| Channel Belt Width (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 7.4 | 9.9 | 12.3 | 11.5 | 12.7 | 12.8 | 13.8 | 1.2 | 3 |
| Radius of Curvature (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | 10.0 | - | 15.0 | 4.7 | 7.0 | 7.2 | 9.2 | 2.3 | 3 |
| Rc: Bankfull Width (ft/ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.7 | 1.0 | 1.0 | 1.3 | 0.3 | 3 |
| Meander Wavelength (ft) | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 11.5 | 12.5 | 12.1 | 13.8 | 1.2 | 3 |
| Meander Width Ratio | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | 2.6 | - | 1.7 | 1.8 | 1.9 | 2.0 | 0.1 | 3 |

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Substrate, Bed and Transport Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| Reach Shear Stress (Competency) $lb/ft^2$ | | | | - | | | | | | - | | | | | | - | | | - | | | | | |
| Max Part Size (mm) Mobilized at Bankfull | | | | - | | | | | | - | | | | | | - | | | - | | | | | |
| Stream Power (Transport Capacity) $W/m^2$ | | | | - | | | | | | - | | | | | | - | | | - | | | | | |
| **Additional Reach Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| Drainage Area ($mi^2$) | | | | 0.07 | | | | | | 2.4 | | | | | | 0.07 | | | | | | | | |
| Rosgen Classification | | | | B | | | | | | B4 | | | | | | B4 | | | B4 | | | | | |
| Bankfull Velocity (fps) | - | | | 0.9 - 1.3 | | | | | | - | | | | | | - | | | | | | | | |
| Bankfull Discharge (cfs) | - | | | 7.0 | | | | | | - | | | | | | 5.0 | | | | | | | | |
| Valley Length (ft) | | | | - | | | | | | - | | | | | | - | | | 311 | | | | | |
| * Channel Thalweg Length (ft) | | | | - | | | | | | - | | | | | | - | | | 325 | | | | | |
| ^ Channel Centerline (ft) | | | | - | | | | | | - | | | | | | - | | | 325 | | | | | |
| Sinuosity | | | | 1.05 | | | | | | - | | | | | | 1.12 | | | 1.05 | | | | | |
| Water Surface Slope (ft/ft) | | | | 0.004 - 0.009 | | | | | | 0.011 - 0.018 | | | | | | 0.015 | | | 0.013 | | | | | |
| Bankfull Slope (ft/ft) | | | | - | | | | | | - | | | | | | - | | | 0.014 | | | | | |
| Bankfull Floodplain Area (acres) | | | | - | | | | | | - | | | | | | | | | | | | | | |
| % of Reach with Eroding Banks | | | | - | | | | | | - | | | | | | | | | | | | | | |
| Channel Stability or Habitat Metric | | | | Unstable | | | | | | - | | | | | | | | | | | | | | |
| Biological or Other | | | | - | | | | | | - | | | | | | | | | | | | | | |

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

^ Channel Centerline (ft): Based on stream centerline stationing from design stream stationing; accounts for breaks in conservation easement and utility right-of-ways.

- Information unavailable.

Non-Applicable.

**Table 11a. Monitoring Data - Dimensional Morphology Summary (Dimensional Parameters – Cross Sections)**
**Fletcher Mitigation Site**

| | Cross Section 1 (Riffle) Fletcher Creek Reach 1B | | | | | | | | | Cross Section 2 (Pool) Fletcher Creek Reach 1B | | | | | | | | | Cross Section 3 (Pool) Fletcher Creek Reach 1C | | | | | | | | | Cross Section 4 (Riffle) Fletcher Creek Reach 1C | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimension** | **Base** | **Pre-MY1** | **MY1** | **MY2** | **MY3** | **MY4** | **MY5** | **MY6** | **MY7** | **Base** | **Pre-MY1** | **MY1** | **MY2** | **MY3** | **MY4** | **MY5** | **MY6** | **MY7** | **Base** | **Pre-MY1** | **MY1** | **MY2** | **MY3** | **MY4** | **MY5** | **MY6** | **MY7** | **Base** | **Pre-MY1** | **MY1** | **MY2** | **MY3** | **MY4** | **MY5** | **MY6** | **MY7** |
| Record Elevation (datum) Used | 2124.8 | 2124.7 | 2124.6 | 2124.7 | 2124.7 | 2124.7 | | | | 2123.0 | 2123.1 | 2123.1 | 2123.5 | 2123.4 | 2123.6 | | | | 2118.8 | 2118.9 | 2118.9 | 2118.8 | 2119.1 | 2119.1 | | | | 2118.5 | 2118.4 | 2118.5 | 2118.5 | 2118.6 | 2118.7 | | | |
| Low Bank Height Elevation (datum) Used | 2124.8 | 2124.7 | 2124.7 | 2124.7 | 2124.8 | 2124.8 | | | | 2123.0 | 2123.4 | 2122.9 | 2123.1 | 2123.0 | 2122.9 | | | | 2118.8 | 2118.6 | 2118.6 | 2118.6 | 2118.9 | 2118.9 | | | | 2118.5 | 2118.6 | 2119.5 | 2118.5 | 2118.5 | 2118.7 | | | |
| Bankfull Width (ft) | 7.1 | 6.1 | 6.1 | 4.5 | 5.0 | 4.9 | | | | 10.9 | 11.9 | 12.2 | 10.8 | 9.5 | 9.6 | | | | 10.9 | 7.5 | 12.2 | 6.9 | 7.4 | 9.7 | | | | 7.6 | 6.1 | 6.5 | 5.4 | 4.0 | 5.7 | | | |
| Floodprone Width (ft) | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | | | | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | | | | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | | | | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | | | |
| Bankfull Mean Depth (ft) | 0.3 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | | | | 1.7 | 1.5 | 1.3 | 1.7 | 1.9 | 1.9 | | | | 0.9 | 1.4 | 0.8 | 1.5 | 1.4 | 1.1 | | | | 0.3 | 0.3 | 0.3 | 0.4 | 0.5 | 0.4 | | | |
| Bankfull Max Depth (ft) | 0.6 | 0.6 | 0.6 | 0.7 | 0.7 | 0.7 | | | | 2.7 | 2.5 | 2.2 | 2.8 | 2.6 | 2.6 | | | | 1.8 | 2.0 | 2.0 | 2.6 | 2.1 | 2.0 | | | | 0.5 | 0.5 | 0.4 | 0.6 | 0.6 | 0.7 | | | |
| Bankfull Cross Sectional Area ($ft^2$) | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | | | | 18.3 | 18.3 | 18.3 | 18.3 | 18.3 | 18.3 | | | | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | | | | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | | | |
| Bankfull Width/Depth Ratio | 21.4 | 16.4 | 15.9 | 8.8 | 10.6 | 10.5 | | | | 6.5 | 7.8 | 9.4 | 6.4 | 4.9 | 5.1 | | | | 11.6 | 5.5 | 14.5 | 4.7 | 5.3 | 9.1 | | | | 27.6 | 18.2 | 19.8 | 14.0 | 7.9 | 15.5 | | | |
| Bankfull Entrenchment Ratio | 2.8 | 3.3 | 3.3 | 4.4 | 4.0 | 4.1 | | | | 5.5 | 5.0 | 4.9 | 5.5 | 6.3 | 6.2 | | | | 3.7 | 5.3 | 3.3 | 5.8 | 5.4 | 4.1 | | | | 1.3 | 1.6 | 1.5 | 1.8 | 2.5 | 1.8 | | | |
| *Bankfull Bank Height Ratio | 1.0 | 1.1 | 1.1 | 0.9 | 1.2 | 1.2 | | | | 1.0 | 1.1 | 0.9 | 0.9 | 0.8 | 0.7 | | | | 1.0 | 0.8 | 0.8 | 0.9 | 0.9 | 0.9 | | | | 1.0 | 1.4 | 1.3 | 1.0 | 0.9 | 1.1 | | | |
| Low Top of Bank Depth (ft) | 0.6 | 0.7 | 0.7 | 0.6 | 0.8 | 0.8 | | | | 2.7 | 2.9 | 2.0 | 2.4 | 2.1 | 1.9 | | | | 1.8 | 1.6 | 1.7 | 2.4 | 1.9 | 1.8 | | | | 0.5 | 0.6 | 0.6 | 0.6 | 0.6 | 0.8 | | | |

| | Cross Section 5 (Pool) Fletcher Creek Reach 1C | | | | | | | | | Cross Section 6 (Riffle) Fletcher Creek Reach 1C | | | | | | | | | Cross Section 7 (Riffle) Fletcher Creek Reach 2A | | | | | | | | | Cross Section 8 (Pool) Fletcher Creek Reach 2A | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimension** | **Base** | **Pre-MY1** | **MY1** | **MY2** | **MY3** | **MY4** | **MY5** | **MY6** | **MY7** | **Base** | **Pre-MY1** | **MY1** | **MY2** | **MY3** | **MY4** | **MY5** | **MY6** | **MY7** | **Base** | **Pre-MY1** | **MY1** | **MY2** | **MY3** | **MY4** | **MY5** | **MY6** | **MY7** | **Base** | **Pre-MY1** | **MY1** | **MY2** | **MY3** | **MY4** | **MY5** | **MY6** | **MY7** |
| Record Elevation (datum) Used | 2106.8 | 2106.8 | 2106.9 | 2107.1 | 2107.1 | 2106.9 | | | | 2106.2 | 2106.2 | 2106.3 | 2106.2 | 2106.3 | 2106.3 | | | | 2101.4 | 2101.3 | 2101.1 | 2101.2 | 2101.1 | 2101.3 | | | | 2100.9 | 2100.9 | 2100.9 | 2101.0 | 2101.0 | 2101.1 | | | |
| Low Bank Height Elevation (datum) Used | 2106.8 | 2106.3 | 2106.3 | 2106.3 | 2106.7 | 2106.7 | | | | 2106.2 | 2106.6 | 2106.6 | 2106.4 | 2106.3 | 2106.4 | | | | 2101.4 | 2101.3 | 2101.0 | 2101.0 | 2101.1 | 2101.1 | | | | 2100.9 | 2100.3 | 2100.6 | 2100.6 | 2100.6 | 2100.6 | | | |
| Bankfull Width (ft) | 16.6 | 14.0 | 18.7 | 8.5 | 11.2 | 13.4 | | | | 12.0 | 12.9 | 13.0 | 12.8 | 11.0 | 9.4 | | | | 13.1 | 10.6 | 11.7 | 8.5 | 8.0 | 8.4 | | | | 15.3 | 15.0 | 15.7 | 12.5 | 16.3 | 11.4 | | | |
| Floodprone Width (ft) | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | | | | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | | | | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | | | | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | | | |
| Bankfull Mean Depth (ft) | 1.2 | 1.5 | 1.1 | 2.4 | 1.8 | 1.5 | | | | 0.6 | 0.6 | 0.6 | 0.6 | 0.7 | 0.8 | | | | 0.8 | 1.0 | 0.9 | 1.2 | 1.3 | 1.2 | | | | 1.3 | 1.4 | 1.3 | 1.6 | 1.3 | 1.8 | | | |
| Bankfull Max Depth (ft) | 3.0 | 3.5 | 3.4 | 3.8 | 3.6 | 3.6 | | | | 1.0 | 1.0 | 1.0 | 1.2 | 1.2 | 1.3 | | | | 1.6 | 1.7 | 1.8 | 1.9 | 1.9 | 1.9 | | | | 2.6 | 2.8 | 2.8 | 2.8 | 2.6 | 2.6 | | | |
| Bankfull Cross Sectional Area ($ft^2$) | 20.3 | 20.3 | 20.3 | 20.3 | 20.3 | 20.3 | | | | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | | | | 10.4 | 10.4 | 10.4 | 10.4 | 10.4 | 10.4 | | | | 20.5 | 20.5 | 20.5 | 20.5 | 20.5 | 20.5 | | | |
| Bankfull Width/Depth Ratio | 13.7 | 9.6 | 17.2 | 3.5 | 6.2 | 8.9 | | | | 19.2 | 22.4 | 22.4 | 21.8 | 16.2 | 11.8 | | | | 16.5 | 10.7 | 13.2 | 6.9 | 6.2 | 6.7 | | | | 11.4 | 11.0 | 12.0 | 7.7 | 13.0 | 6.3 | | | |
| Bankfull Entrenchment Ratio | 3.6 | 4.3 | 3.2 | 7.1 | 5.3 | 4.5 | | | | 4.2 | 3.9 | 3.9 | 3.9 | 4.5 | 5.3 | | | | 2.7 | 3.3 | 3.0 | 4.1 | 4.4 | 4.2 | | | | 3.3 | 3.3 | 3.2 | 4.0 | 3.1 | 4.4 | | | |
| *Bankfull Bank Height Ratio | 1.0 | 0.8 | 0.8 | 0.8 | 0.9 | 0.9 | | | | 1.0 | 1.4 | 1.4 | 1.1 | 1.0 | 1.0 | | | | 1.0 | 1.0 | 0.9 | 0.9 | 1.0 | 0.9 | | | | 1.0 | 0.8 | 0.9 | 0.9 | 0.9 | 0.8 | | | |
| Low Top of Bank Depth (ft) | 3.0 | 3.0 | 2.8 | 2.9 | 3.2 | 3.4 | | | | 1.2 | 1.4 | 1.4 | 1.4 | 1.2 | 1.3 | | | | 1.6 | 1.8 | 1.7 | 1.8 | 1.8 | 1.8 | | | | 2.6 | 2.2 | 2.4 | 2.4 | 2.3 | 2.1 | | | |

| | Cross Section 9 (Pool) Fletcher Creek Reach 2A | | | | | | | | | Cross Section 10 (Riffle) Fletcher Creek Reach 2A | | | | | | | | | Cross Section 11 (Riffle) Fletcher Creek Reach 2B | | | | | | | | | Cross Section 12 (Pool) Fletcher Creek Reach 2B | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimension** | **Base** | **Pre-MY1** | **MY1** | **MY2** | **MY3** | **MY4** | **MY5** | **MY6** | **MY7** | **Base** | **Pre-MY1** | **MY1** | **MY2** | **MY3** | **MY4** | **MY5** | **MY6** | **MY7** | **Base** | **Pre-MY1** | **MY1** | **MY2** | **MY3** | **MY4** | **MY5** | **MY6** | **MY7** | **Base** | **Pre-MY1** | **MY1** | **MY2** | **MY3** | **MY4** | **MY5** | **MY6** | **MY7** |
| Record Elevation (datum) Used | 2093.5 | 2093.6 | 2093.3 | 2093.5 | 2093.7 | 2093.5 | | | | 2093.1 | 2092.9 | 2093.0 | 2092.9 | 2092.6 | 2092.8 | | | | 2079.0 | 2079.1 | 2079.3 | 2079.4 | 2079.4 | 2079.5 | | | | 2078.6 | 2078.7 | 2078.7 | 2078.6 | 2078.7 | 2078.7 | | | |
| Low Bank Height Elevation (datum) Used | 2093.5 | 2093.6 | 2092.6 | 2093.3 | 2093.6 | 2093.5 | | | | 2093.1 | 2093.1 | 2093.3 | 2093.0 | 2093.0 | 2093.0 | | | | 2079.0 | 2079.3 | 2079.3 | 2079.5 | 2079.5 | 2079.4 | | | | 2078.6 | 2078.8 | 2078.7 | 2079.1 | 2078.8 | 2078.8 | | | |
| Bankfull Width (ft) | 15.6 | 16.1 | 13.6 | 11.2 | 10.6 | 13.2 | | | | 12.6 | 11.0 | 11.8 | 8.2 | 6.7 | 7.1 | | | | 10.2 | 9.6 | 11.2 | 12.6 | 11.0 | 9.0 | | | | 9.7 | 10.0 | 9.7 | 9.4 | 7.8 | 8.2 | | | |
| Floodprone Width (ft) | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | | | | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | | | | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | | | | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | | | |
| Bankfull Mean Depth (ft) | 1.1 | 1.0 | 1.2 | 1.5 | 1.6 | 1.3 | | | | 0.7 | 0.8 | 0.8 | 1.1 | 1.4 | 1.3 | | | | 0.7 | 0.7 | 0.6 | 0.6 | 0.6 | 0.8 | | | | 1.2 | 1.2 | 1.2 | 1.2 | 1.5 | 1.4 | | | |
| Bankfull Max Depth (ft) | 2.8 | 2.3 | 2.8 | 3.0 | 2.7 | 2.7 | | | | 1.2 | 1.6 | 1.7 | 2.5 | 2.3 | 2.1 | | | | 1.3 | 1.1 | 1.2 | 1.4 | 1.3 | 1.5 | | | | 2.3 | 2.2 | 2.2 | 2.4 | 2.4 | 2.7 | | | |
| Bankfull Cross Sectional Area ($ft^2$) | 16.9 | 16.9 | 16.9 | 16.9 | 16.9 | 16.9 | | | | 9.2 | 9.2 | 9.2 | 9.2 | 9.2 | 9.2 | | | | 7.1 | 7.1 | 7.1 | 7.1 | 7.1 | 7.1 | | | | 11.7 | 11.7 | 11.7 | 11.7 | 11.7 | 11.7 | | | |
| Bankfull Width/Depth Ratio | 14.4 | 15.4 | 10.9 | 7.4 | 6.6 | 10.4 | | | | 17.4 | 13.2 | 15.0 | 7.3 | 4.9 | 5.5 | | | | 14.6 | 13.0 | 17.7 | 22.4 | 16.9 | 11.3 | | | | 8.1 | 8.5 | 8.1 | 7.6 | 5.2 | 5.8 | | | |
| Bankfull Entrenchment Ratio | 3.9 | 3.7 | 4.4 | 5.4 | 5.7 | 4.5 | | | | 4.0 | 4.6 | 4.3 | 6.1 | 7.4 | 7.0 | | | | 3.9 | 4.2 | 3.6 | 3.2 | 3.7 | 4.5 | | | | 7.2 | 7.0 | 7.2 | 7.5 | 9.0 | 8.5 | | | |
| *Bankfull Bank Height Ratio | 1.0 | 1.0 | 0.7 | 0.9 | 0.9 | 1.0 | | | | 1.0 | 1.1 | 1.2 | 1.0 | 1.2 | 1.1 | | | | 1.0 | 1.2 | 1.0 | 1.1 | 1.1 | 0.9 | | | | 1.0 | 1.0 | 1.0 | 1.2 | 1.0 | 1.0 | | | |
| Low Top of Bank Depth (ft) | 2.8 | 2.3 | 2.1 | 2.7 | 2.5 | 2.7 | | | | 1.5 | 1.7 | 2.0 | 2.6 | 2.6 | 2.3 | | | | 1.3 | 1.4 | 1.2 | 1.5 | 1.4 | 1.3 | | | | 2.3 | 2.2 | 2.2 | 2.9 | 2.6 | 2.6 | | | |

| | Cross Section 13 (Pool) Fletcher Creek Reach 2B | | | | | | | | | Cross Section 14 (Riffle) Fletcher Creek Reach 2B | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimension** | **Base** | **Pre-MY1** | **MY1** | **MY2** | **MY3** | **MY4** | **MY5** | **MY6** | **MY7** | **Base** | **Pre-MY1** | **MY1** | **MY2** | **MY3** | **MY4** | **MY5** | **MY6** | **MY7** |
| Record Elevation (datum) Used | 2075.5 | 2075.5 | 2075.4 | 2075.5 | 2075.4 | 2075.3 | | | | 2075.1 | 2075.2 | 2075.3 | 2075.4 | 2075.4 | 2075.3 | | | |
| Low Bank Height Elevation (datum) Used | 2075.5 | 2075.6 | 2075.8 | 2075.6 | 2075.7 | 2075.5 | | | | 2075.1 | 2075.2 | 2075.4 | 2075.3 | 2075.6 | 2075.6 | | | |
| Bankfull Width (ft) | 10.1 | 13.1 | 9.9 | 9.7 | 8.9 | 9.1 | | | | 9.8 | 10.3 | 9.7 | 9.6 | 10.2 | 10.8 | | | |
| Floodprone Width (ft) | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | | | | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | | | |
| Bankfull Mean Depth (ft) | 1.6 | 1.2 | 1.7 | 1.7 | 1.8 | 1.8 | | | | 0.8 | 0.7 | 0.8 | 0.8 | 0.7 | 0.7 | | | |
| Bankfull Max Depth (ft) | 2.4 | 2.6 | 2.8 | 2.6 | 2.5 | 2.5 | | | | 1.2 | 1.1 | 1.2 | 1.3 | 1.4 | 1.4 | | | |
| Bankfull Cross Sectional Area ($ft^2$) | 16.4 | 16.4 | 16.4 | 16.4 | 16.4 | 16.4 | | | | 7.6 | 7.6 | 7.6 | 7.6 | 7.6 | 7.6 | | | |
| Bankfull Width/Depth Ratio | 6.2 | 10.5 | 6.0 | 5.7 | 4.8 | 5.1 | | | | 12.6 | 14.0 | 12.3 | 12.2 | 13.8 | 15.4 | | | |
| Bankfull Entrenchment Ratio | 6.9 | 5.3 | 7.1 | 7.2 | 7.9 | 7.7 | | | | 7.2 | 6.8 | 7.2 | 7.3 | 6.8 | 6.5 | | | |
| *Bankfull Bank Height Ratio | 1.0 | 1.0 | 1.1 | 1.1 | 1.1 | 1.1 | | | | 1.0 | 1.1 | 1.1 | 1.0 | 1.1 | 1.2 | | | |
| Low Top of Bank Depth (ft) | 2.4 | 2.7 | 3.2 | 2.8 | 2.8 | 2.8 | | | | 1.2 | 1.1 | 1.4 | 1.3 | 1.6 | 1.7 | | | |

*Bank Height Ratio is calculated based on the As-built (MY0) cross-sectional area as described in the Standard Measurement of the BHR Monitoring Parameter document produced by the technical industry work group consisting of the NCIRT, NCDMS, and Industry Practitioners in NC (9/2018). The remainder of the bankfull dimensions are calculated based on the current year's low bank height.

+ Data not collected due to adaptive management on Weston Reach 1A and 1B

**Table 11a Cont'd. Monitoring Data - Dimensional Morphology Summary (Dimensional Parameters – Cross Sections)**
**Fletcher Mitigation Site**

| | Cross Section 15 (Riffle) Weston Creek 1A | | | | | | | | | Cross Section 16 (Pool) Weston Creek 1A | | | | | | | | | Cross Section 17 (Pool) Weston Creek 1A | | | | | | | | | Cross Section 18 (Riffle) Weston Creek 1A | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimension** | **Base** | **+Pre-MY1** | **MY1** | **MY2** | **MY3** | **MY4** | **MY5** | **MY6** | **MY7** | **Base** | **+Pre-MY1** | **MY1** | **MY2** | **MY3** | **MY4** | **MY5** | **MY6** | **MY7** | **Base** | **+Pre-MY1** | **MY1** | **MY2** | **MY3** | **MY4** | **MY5** | **MY6** | **MY7** | **Base** | **+Pre-MY1** | **MY1** | **MY2** | **MY3** | **MY4** | **MY5** | **MY6** | **MY7** |
| Record Elevation (datum) Used | 2082.5 | - | 2082.6 | 2082.6 | 2082.7 | | | | | 2082.3 | - | 2082.5 | 2082.8 | 2082.8 | | | | | 2076.2 | - | 2076.4 | 2076.4 | 2076.6 | | | | | 2076.3 | - | 2076.3 | 2076.5 | 2076.5 | | | | |
| Low Bank Height Elevation (datum) Used | 2082.5 | - | 2082.8 | 2082.6 | 2082.6 | | | | | 2082.3 | - | 2082.4 | 2082.4 | 2082.6 | | | | | 2076.2 | - | 2076.3 | 2076.2 | 2076.3 | | | | | 2076.3 | - | 2076.2 | 2076.4 | 2076.4 | | | | |
| Bankfull Width (ft) | 9.1 | - | 10.8 | 9.0 | 5.2 | | | | | 9.7 | - | 9.3 | 9.4 | 10.1 | | | | | 9.8 | - | 8.2 | 8.3 | 6.6 | | | | | 10.4 | - | 23.5 | 10.4 | 8.3 | | | | |
| Floodprone Width (ft) | 50.0 | - | 50.0 | 50.0 | 50.0 | | | | | 50.0 | - | 50.0 | 50.0 | 50.0 | | | | | 50.0 | - | 50.0 | 50.0 | 50.0 | | | | | 50.0 | - | 50.0 | 50.0 | 50.0 | | | | |
| Bankfull Mean Depth (ft) | 0.6 | - | 0.5 | 0.6 | 1.0 | | | | | 1.1 | - | 1.1 | 1.1 | 1.0 | | | | | 1.0 | - | 1.1 | 1.1 | 1.4 | | | | | 0.6 | - | 0.3 | 0.6 | 0.8 | | | | |
| Bankfull Max Depth (ft) | 1.1 | - | 1.2 | 1.2 | 1.4 | | | | | 2.0 | - | 1.8 | 1.8 | 1.6 | | | | | 1.7 | - | 1.9 | 1.8 | 2.1 | | | | | 0.9 | - | 0.9 | 1.1 | 1.2 | | | | |
| Bankfull Cross Sectional Area ($ft^2$) | 5.4 | - | 5.4 | 5.4 | 5.4 | | | | | 10.4 | - | 10.4 | 10.4 | 10.4 | | | | | 9.4 | - | 9.4 | 9.4 | 9.4 | | | | | 6.2 | - | 6.2 | 6.2 | 6.2 | | | | |
| Bankfull Width/Depth Ratio | 15.5 | - | 21.7 | 15.0 | 5.1 | | | | | 9.1 | - | 8.3 | 8.5 | 9.9 | | | | | 10.1 | - | 7.2 | 7.4 | 4.6 | | | | | 17.4 | - | 89.4 | 17.6 | 11.0 | | | | |
| Bankfull Entrenchment Ratio | 5.5 | - | 4.6 | 5.5 | 9.6 | | | | | 5.1 | - | 5.4 | 5.3 | 4.9 | | | | | 5.1 | - | 6.1 | 6.0 | 7.6 | | | | | 4.8 | - | 2.1 | 4.8 | 6.0 | | | | |
| *Bankfull Bank Height Ratio | 1.0 | - | 1.2 | 1.0 | 0.9 | | | | | 1.0 | - | 0.9 | 0.8 | 0.9 | | | | | 1.0 | - | 0.9 | 0.9 | 0.8 | | | | | 1.0 | - | 1.0 | 1.0 | 0.9 | | | | |
| Low Top of Bank Depth (ft) | 1.1 | - | 1.4 | 1.2 | 1.2 | | | | | 2.0 | - | 1.7 | 1.4 | 1.4 | | | | | 1.7 | - | 1.8 | 1.6 | 1.7 | | | | | 0.9 | - | 0.9 | 1.0 | 1.0 | | | | |

| | Cross Section 19 (Riffle) Weston Creek 1B | | | | | | | | | Cross Section 20 (Pool) Weston Creek 1B | | | | | | | | | Cross Section 21 (Pool) Raccoon Branch 1D | | | | | | | | | Cross Section 22 (Riffle) Raccoon Branch 1D | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimension** | **Base** | **+Pre-MY1** | **MY1** | **MY2** | **MY3** | **MY4** | **MY5** | **MY6** | **MY7** | **Base** | **+Pre-MY1** | **MY1** | **MY2** | **MY3** | **MY4** | **MY5** | **MY6** | **MY7** | **Base** | **Pre-MY1** | **MY1** | **MY2** | **MY3** | **MY4** | **MY5** | **MY6** | **MY7** | **Base** | **Pre-MY1** | **MY1** | **MY2** | **MY3** | **MY4** | **MY5** | **MY6** | **MY7** |
| Record Elevation (datum) Used | 2074.9 | - | 2075.0 | 2075.0 | 2075.2 | | | | | 2074.8 | - | 2074.9 | 2075.0 | 2075.1 | | | | | 2131.4 | 2131.5 | 2131.5 | 2131.6 | 2131.7 | 2131.8 | | | | 2131.4 | 2131.4 | 2131.4 | 2131.7 | 2131.7 | 2131.7 | | | |
| Low Bank Height Elevation (datum) Used | 2074.9 | - | 2075.3 | 2075.1 | 2075.1 | | | | | 2074.8 | - | 2074.8 | 2074.9 | 2075.0 | | | | | 2131.4 | 2131.2 | 2131.1 | 2131.3 | 2131.4 | 2131.4 | | | | 2131.4 | 2131.0 | 2131.3 | 2131.3 | 2131.4 | 2131.5 | | | |
| Bankfull Width (ft) | 9.7 | - | 9.4 | 9.8 | 7.7 | | | | | 8.3 | - | 13.4 | 10.8 | 7.7 | | | | | 5.6 | 6.1 | 6.1 | 3.6 | 3.5 | 3.2 | | | | 6.9 | 7.8 | 6.9 | 5.7 | 4.6 | 4.9 | | | |
| Floodprone Width (ft) | 40.0 | - | 40.0 | 40.0 | 40.0 | | | | | 60.0 | - | 60.0 | 60.0 | 60.0 | | | | | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | | | | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | | | |
| Bankfull Mean Depth (ft) | 0.5 | - | 0.5 | 0.5 | 0.6 | | | | | 1.5 | - | 0.9 | 1.2 | 1.6 | | | | | 0.5 | 0.4 | 0.4 | 0.7 | 0.8 | 0.9 | | | | 0.5 | 0.4 | 0.5 | 0.6 | 0.7 | 0.7 | | | |
| Bankfull Max Depth (ft) | 0.7 | - | 0.8 | 0.8 | 1.0 | | | | | 2.5 | - | 2.5 | 2.5 | 2.6 | | | | | 1.2 | 1.2 | 1.1 | 1.0 | 1.2 | 1.1 | | | | 1.3 | 0.9 | 0.9 | 1.0 | 1.1 | 1.0 | | | |
| Bankfull Cross Sectional Area ($ft^2$) | 4.7 | - | 4.7 | 4.7 | 4.7 | | | | | 12.7 | - | 12.7 | 12.7 | 12.7 | | | | | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | | | | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | | | |
| Bankfull Width/Depth Ratio | 20.4 | - | 19.0 | 20.4 | 12.8 | | | | | 5.4 | - | 14.2 | 9.2 | 4.7 | | | | | 11.6 | 13.7 | 13.8 | 4.9 | 4.5 | 3.7 | | | | 13.8 | 18.1 | 14.2 | 9.5 | 6.2 | 7.1 | | | |
| Bankfull Entrenchment Ratio | 4.1 | - | 4.2 | 4.1 | 5.2 | | | | | 7.2 | - | 0.0 | 5.5 | 7.8 | | | | | 3.6 | 3.3 | 3.3 | 5.6 | 5.7 | 6.3 | | | | 2.9 | 2.6 | 2.9 | 3.5 | 4.4 | 4.1 | | | |
| *Bankfull Bank Height Ratio | 1.0 | - | 1.3 | 1.1 | 0.9 | | | | | 1.0 | - | 1.0 | 1.0 | 0.9 | | | | | 1.0 | 0.7 | 0.6 | 0.7 | 0.8 | 0.6 | | | | 1.0 | 0.6 | 0.8 | 0.7 | 0.7 | 0.8 | | | |
| Low Top of Bank Depth (ft) | 0.7 | - | 1.0 | 0.9 | 0.9 | | | | | 2.5 | - | 2.4 | 2.4 | 2.5 | | | | | 1.2 | 0.8 | 0.7 | 0.7 | 1.0 | 0.7 | | | | 1.3 | 0.5 | 0.7 | 0.7 | 0.8 | 0.7 | | | |

| | Cross Section 23 (Riffle) Coates Branch 1B | | | | | | | | | Cross Section 24 (Pool) Coates Branch 1B | | | | | | | | | Cross Section 25 (Pool) Coates Branch 1C | | | | | | | | | Cross Section 26 (Riffle) Coates Branch 1C | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimension** | **Base** | **Pre-MY1** | **MY1** | **MY2** | **MY3** | **MY4** | **MY5** | **MY6** | **MY7** | **Base** | **Pre-MY1** | **MY1** | **MY2** | **MY3** | **MY4** | **MY5** | **MY6** | **MY7** | **Base** | **Pre-MY1** | **MY1** | **MY2** | **MY3** | **MY4** | **MY5** | **MY6** | **MY7** | **Base** | **Pre-MY1** | **MY1** | **MY2** | **MY3** | **MY4** | **MY5** | **MY6** | **MY7** |
| Record Elevation (datum) Used | 2121.0 | 2121.1 | 2121.1 | 2121.1 | 2121.4 | 2121.4 | | | | 2121.1 | 2121.1 | 2121.2 | 2121.2 | 2121.2 | 2121.6 | | | | 2108.0 | 2108.1 | 2108.1 | 2108.2 | 2108.2 | 2108.2 | | | | 2107.9 | 2107.9 | 2108.0 | 2108.2 | 2108.1 | 2108.1 | | | |
| Low Bank Height Elevation (datum) Used | 2121.0 | 2121.2 | 2121.2 | 2121.0 | 2121.1 | 2121.2 | | | | 2121.1 | 2121.0 | 2121.0 | 2121.0 | 2121.0 | 2121.2 | | | | 2108.0 | 2108.1 | 2107.9 | 2108.2 | 2108.2 | 2108.3 | | | | 2107.9 | 2107.9 | 2107.9 | 2108.1 | 2108.1 | 2108.1 | | | |
| Bankfull Width (ft) | 5.2 | 4.9 | 3.4 | 3.5 | 2.3 | 3.2 | | | | 7.4 | 8.6 | 7.9 | 5.7 | 7.5 | 4.2 | | | | 5.3 | 5.6 | 6.2 | 4.8 | 4.4 | 4.1 | | | | 5.4 | 5.5 | 5.8 | 5.8 | 4.2 | 4.7 | | | |
| Floodprone Width (ft) | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | | | | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | | | | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | | | | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | | | |
| Bankfull Mean Depth (ft) | 0.3 | 0.3 | 0.5 | 0.5 | 0.7 | 0.5 | | | | 0.7 | 0.6 | 0.6 | 0.9 | 0.7 | 1.2 | | | | 0.5 | 0.5 | 0.4 | 0.6 | 0.6 | 0.6 | | | | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | | | |
| Bankfull Max Depth (ft) | 0.7 | 0.5 | 1.0 | 0.8 | 0.8 | 0.7 | | | | 1.5 | 1.3 | 1.4 | 1.4 | 1.5 | 1.6 | | | | 0.9 | 0.9 | 0.9 | 0.8 | 0.9 | 1.1 | | | | 0.8 | 0.6 | 0.6 | 0.5 | 0.8 | 0.8 | | | |
| Bankfull Cross Sectional Area ($ft^2$) | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | | | | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | | | | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | | | | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | | | |
| Bankfull Width/Depth Ratio | 16.5 | 15.1 | 7.5 | 7.6 | 3.4 | 6.4 | | | | 10.7 | 14.5 | 12.3 | 6.4 | 10.9 | 3.4 | | | | 10.5 | 11.3 | 14.5 | 8.8 | 7.0 | 6.4 | | | | 13.5 | 14.0 | 15.4 | 15.5 | 8.1 | 10.1 | | | |
| Bankfull Entrenchment Ratio | 2.9 | 3.1 | 4.4 | 4.3 | 6.4 | 4.7 | | | | 5.4 | 4.6 | 5.0 | 7.0 | 5.3 | 9.6 | | | | 3.8 | 3.6 | 3.2 | 4.1 | 4.5 | 4.8 | | | | 3.7 | 3.6 | 3.4 | 3.4 | 4.7 | 4.3 | | | |
| *Bankfull Bank Height Ratio | 1.0 | 1.1 | 1.1 | 0.9 | 0.6 | 0.8 | | | | 1.0 | 0.9 | 0.9 | 0.9 | 0.9 | 0.8 | | | | 1.0 | 1.0 | 0.8 | 1.0 | 1.1 | 1.1 | | | | 1.0 | 1.0 | 0.8 | 0.9 | 0.9 | 1.0 | | | |
| Low Top of Bank Depth (ft) | 0.7 | 0.6 | 1.1 | 0.7 | 0.5 | 0.6 | | | | 1.5 | 1.2 | 1.2 | 1.3 | 1.3 | 1.3 | | | | 0.9 | 0.9 | 0.8 | 0.8 | 0.9 | 1.2 | | | | 0.8 | 0.6 | 0.5 | 0.5 | 0.8 | 0.8 | | | |

| | Cross Section 27 (Pool) Coates Branch 1D | | | | | | | | | Cross Section 28 (Riffle) Coates Branch 1D | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimension** | **Base** | **Pre-MY1** | **MY1** | **MY2** | **MY3** | **MY4** | **MY5** | **MY6** | **MY7** | **Base** | **Pre-MY1** | **MY1** | **MY2** | **MY3** | **MY4** | **MY5** | **MY6** | **MY7** |
| Record Elevation (datum) Used | 2105.7 | 2105.7 | 2105.7 | 2105.7 | 2105.9 | 2106.1 | | | | 2105.6 | 2105.6 | 2105.7 | 2105.7 | 2105.8 | 2105.8 | | | |
| Low Bank Height Elevation (datum) Used | 2105.7 | 2105.7 | 2105.5 | 2105.8 | 2106.0 | 2105.9 | | | | 2105.6 | 2105.6 | 2105.5 | 2105.6 | 2105.7 | 2105.8 | | | |
| Bankfull Width (ft) | 5.9 | 6.9 | 6.4 | 5.6 | 6.7 | 5.6 | | | | 6.1 | 7.4 | 7.5 | 4.7 | 4.0 | 6.4 | | | |
| Floodprone Width (ft) | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | | | | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | | | |
| Bankfull Mean Depth (ft) | 0.6 | 0.5 | 0.6 | 0.7 | 0.6 | 0.7 | | | | 0.5 | 0.4 | 0.4 | 0.7 | 0.8 | 0.5 | | | |
| Bankfull Max Depth (ft) | 1.2 | 1.3 | 1.1 | 1.2 | 1.2 | 1.2 | | | | 1.0 | 0.9 | 0.9 | 1.0 | 1.1 | 1.0 | | | |
| Bankfull Cross Sectional Area ($ft^2$) | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | | | | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | | | |
| Bankfull Width/Depth Ratio | 9.2 | 13.2 | 11.1 | 8.4 | 12.2 | 8.4 | | | | 11.4 | 16.5 | 17.2 | 6.9 | 4.9 | 12.1 | | | |
| Bankfull Entrenchment Ratio | 4.3 | 3.6 | 3.9 | 4.5 | 3.7 | 4.5 | | | | 4.1 | 3.4 | 3.3 | 5.3 | 6.2 | 3.9 | | | |
| *Bankfull Bank Height Ratio | 1.0 | 1.0 | 0.8 | 1.0 | 1.0 | 0.9 | | | | 1.0 | 1.0 | 0.9 | 0.9 | 0.9 | 1.0 | | | |
| Low Top of Bank Depth (ft) | 1.2 | 1.3 | 1.0 | 1.2 | 1.3 | 1.1 | | | | 1.0 | 0.9 | 0.8 | 0.9 | 0.9 | 1.0 | | | |

*Bank Height Ratio is calculated based on the As-built (MY0) cross-sectional area as described in the Standard Measurement of the BHR Monitoring Parameter document produced by the technical industry work group consisting of the NCIRT, NCDMS, and Industry Practitioners in NC (9/2018). The remainder of the bankfull dimensions are calculated based on the current year's low bank height.

+ Data not collected due to adaptive management on Weston Reach 1A and 1B

**Table 11b. Monitoring Data - Stream Reach Data Summary**
**Fletcher Mitigation Site - Fletcher Creek Reach 1B (380 feet *)**

| Parameter | Baseline | | | | | | Pre-MY - 1 | | | | | | MY - 1 | | | | | | MY - 2 | | | | | | MY - 3 | | | | | | MY - 4 | | | | | | MY -5 | | | | | | MY - 6 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimension & Substrate - Riffle** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** |
| Bankfull Width (ft) | - | 7.1 | - | - | - | 1 | - | 6.1 | - | - | - | 1 | - | 6.1 | - | - | - | 1 | - | 4.5 | - | - | - | 1 | - | 5.0 | - | - | - | 1 | - | 4.9 | - | - | - | 1 | | | | | | | | | | | | |
| Floodprone Width (ft) | - | 20.0 | - | - | - | 1 | - | 20.0 | - | - | - | 1 | - | 20.0 | - | - | - | 1 | - | 20.0 | - | - | - | 1 | - | 20.0 | - | - | - | 1 | - | 20.0 | - | - | - | 1 | | | | | | | | | | | | |
| Bankfull Mean Depth (ft) | - | 0.3 | - | - | - | 1 | - | 0.4 | - | - | - | 1 | - | 0.4 | - | - | - | 1 | - | 0.5 | - | - | - | 1 | - | 0.5 | - | - | - | 1 | - | 0.5 | - | - | - | 1 | | | | | | | | | | | | |
| Bankfull Max Depth (ft) | - | 0.6 | - | - | - | 1 | - | 0.6 | - | - | - | 1 | - | 0.6 | - | - | - | 1 | - | 0.7 | - | - | - | 1 | - | 0.7 | - | - | - | 1 | - | 0.7 | - | - | - | 1 | | | | | | | | | | | | |
| Bankfull Cross-Sectional Area ($ft^2$) | - | 2.3 | - | - | - | 1 | - | 2.3 | - | - | - | 1 | - | 2.3 | - | - | - | 1 | - | 2.3 | - | - | - | 1 | - | 2.3 | - | - | - | 1 | - | 2.3 | - | - | - | 1 | | | | | | | | | | | | |
| Width/Depth Ratio | - | 21.4 | - | - | - | 1 | - | 16.4 | - | - | - | 1 | - | 15.9 | - | - | - | 1 | - | 8.8 | - | - | - | 1 | - | 10.6 | - | - | - | 1 | - | 10.5 | - | - | - | 1 | | | | | | | | | | | | |
| Entrenchment Ratio | - | 2.8 | - | - | - | 1 | - | 3.3 | - | - | - | 1 | - | 3.3 | - | - | - | 1 | - | 4.4 | - | - | - | 1 | - | 4.0 | - | - | - | 1 | - | 4.1 | - | - | - | 1 | | | | | | | | | | | | |
| Bank Height Ratio | - | 1.0 | - | - | - | 1 | - | 1.0 | - | - | - | 1 | - | 1.1 | - | - | - | 1 | - | 0.9 | - | - | - | 1 | - | 1.2 | - | - | - | 1 | - | 1.2 | - | - | - | 1 | | | | | | | | | | | | |
| **Profile** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Riffle Length (ft) | 4.8 | 8.5 | 8.0 | 13.1 | 2.5 | 13 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Riffle Slope (ft/ft) | 0.002 | 0.018 | 0.014 | 0.044 | 0.013 | 13 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pool Length (ft) | 5.1 | 9.6 | 9.7 | 14.4 | 2.8 | 12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pool Max Depth (ft) | 1.2 | 2.0 | 1.9 | 2.9 | 0.5 | 12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pool Spacing (ft) | 14.6 | 27.9 | 29.4 | 40.5 | 8.0 | 11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Pattern** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Channel Belt Width (ft) | 17.7 | 18.2 | 17.8 | 19.0 | 0.7 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Radius of Curvature (ft) | 17.0 | 22.7 | 25.0 | 26.0 | 4.9 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rc: Bankfull Width (ft/ft) | 2.0 | 2.6 | 2.9 | 3.0 | 0.6 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Meander Wavelength (ft) | 17.7 | 18.2 | 17.8 | 19.1 | 0.8 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Meander Width Ratio | 2.0 | 2.1 | 2.0 | 2.2 | 0.1 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Additional Reach Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rosgen Classification | B4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Channel Thalweg Length (ft) | 380 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sinuosity (ft) | 1.12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Water Surface Slope (Channel) (ft/ft) | 0.015 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bankfull Slope (ft/ft) | 0.016 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ri% / Ru% / P% / G% / S% | 30% | 26% | 32% | 12% | 0% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

- Information Unavailable

N/A - Information does not apply.

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

**Table 11b Cont'd. Monitoring Data - Stream Reach Data Summary**
**Fletcher Mitigation Site - Fletcher Creek Reach 1C (1,541 feet *)**

| Parameter | Baseline | | | | | | Pre-MY - 1 | | | | | | MY - 1 | | | | | | MY - 2 | | | | | | MY - 3 | | | | | | MY - 4 | | | | | | MY - 5 | | | | | | MY - 6 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimension & Substrate - Riffle** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** |
| Bankfull Width (ft) | 7.6 | 9.8 | 9.8 | 12.0 | 3.1 | 2 | 6.1 | 9.5 | 9.5 | 12.9 | 4.8 | 2 | 6.5 | 9.7 | 9.7 | 13.0 | 4.6 | 2 | 5.4 | 9.1 | 9.1 | 12.8 | 5.2 | 2 | 4.0 | 7.5 | 7.5 | 11.0 | 4.9 | 2 | 5.7 | 7.6 | 7.6 | 9.4 | 2.6 | 2 | | | | | | | | | | | | |
| Floodprone Width (ft) | 10.0 | 30.0 | 30.0 | 50.0 | 28.3 | 2 | 10.0 | 30.0 | 30.0 | 50.0 | 28.3 | 2 | 10.0 | 30.0 | 30.0 | 50.0 | 28.3 | 2 | 10.0 | 30.0 | 30.0 | 50.0 | 28.3 | 2 | 10.0 | 30.0 | 30.0 | 50.0 | 28.3 | 2 | 10.0 | 30.0 | 30.0 | 50.0 | 28.3 | 2 | | | | | | | | | | | | |
| Bankfull Mean Depth (ft) | 0.3 | 0.5 | 0.5 | 0.6 | 0.2 | 2 | 0.3 | 0.5 | 0.5 | 0.6 | 0.2 | 2 | 0.3 | 0.5 | 0.5 | 0.6 | 0.2 | 2 | 0.4 | 0.5 | 0.5 | 0.6 | 0.1 | 2 | 0.5 | 0.6 | 0.6 | 0.7 | 0.1 | 2 | 0.4 | 0.6 | 0.6 | 0.8 | 0.3 | 2 | | | | | | | | | | | | |
| Bankfull Max Depth (ft) | 0.5 | 0.8 | 0.8 | 1.0 | 0.4 | 2 | 0.5 | 0.7 | 0.7 | 1.0 | 0.4 | 2 | 0.4 | 0.7 | 0.7 | 1.0 | 0.4 | 2 | 0.6 | 0.9 | 0.9 | 1.2 | 0.4 | 2 | 0.6 | 0.9 | 0.9 | 1.2 | 0.4 | 2 | 0.7 | 1.0 | 1.0 | 1.3 | 0.4 | 2 | | | | | | | | | | | | |
| Bankfull Cross-Sectional Area ($ft^2$) | 2.1 | 4.8 | 4.8 | 7.5 | 3.8 | 2 | 2.1 | 4.8 | 4.8 | 7.5 | 3.8 | 2 | 2.1 | 4.8 | 4.8 | 7.5 | 3.8 | 2 | 2.1 | 4.8 | 4.8 | 7.5 | 3.8 | 2 | 2.1 | 4.8 | 4.8 | 7.5 | 3.8 | 2 | 2.1 | 4.8 | 4.8 | 7.5 | 3.8 | 2 | | | | | | | | | | | | |
| Width/Depth Ratio | 19.2 | 23.4 | 23.4 | 27.6 | 6.0 | 2 | 18.2 | 20.3 | 20.3 | 22.4 | 3.0 | 2 | 19.8 | 21.1 | 21.1 | 22.4 | 1.9 | 2 | 14.0 | 17.9 | 17.9 | 21.8 | 5.5 | 2 | 7.9 | 12.1 | 12.1 | 16.2 | 5.9 | 2 | 11.8 | 13.7 | 13.7 | 15.5 | 2.6 | 2 | | | | | | | | | | | | |
| Entrenchment Ratio | 1.3 | 2.7 | 2.7 | 4.2 | 2.0 | 2 | 1.6 | 2.7 | 2.7 | 3.9 | 1.6 | 2 | 1.5 | 2.7 | 2.7 | 3.9 | 1.6 | 2 | 1.8 | 2.9 | 2.9 | 3.9 | 1.5 | 2 | 2.5 | 3.5 | 3.5 | 4.5 | 1.5 | 2 | 1.8 | 3.5 | 3.5 | 5.3 | 2.5 | 2 | | | | | | | | | | | | |
| Bank Height Ratio | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 | 2 | 1.4 | 1.4 | 1.4 | 1.4 | 0.0 | 2 | 1.3 | 1.3 | 1.3 | 1.4 | 0.0 | 2 | 1.0 | 1.1 | 1.1 | 1.1 | 0.1 | 2 | 0.9 | 1.0 | 1.0 | 1.0 | 0.1 | 2 | 1.0 | 1.1 | 1.1 | 1.1 | 0.1 | 2 | | | | | | | | | | | | |
| **Profile** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Riffle Length (ft) | 3.4 | 10.9 | 11.1 | 21.1 | 4.9 | 44 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Riffle Slope (ft/ft) | 0.000 | 0.009 | 0.007 | 0.029 | 0.008 | 44 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pool Length (ft) | 6.3 | 13.1 | 12.8 | 29.0 | 4.6 | 44 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pool Max Depth (ft) | 1.5 | 2.8 | 2.8 | 4.0 | 0.6 | 44 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pool Spacing (ft) | 13.5 | 35.0 | 34.4 | 96.1 | 13.5 | 43 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Pattern** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Channel Belt Width (ft) | 18.7 | 20.2 | 19.7 | 22.3 | 1.9 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Radius of Curvature (ft) | 17.2 | 21.0 | 20.6 | 25.3 | 4.1 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rc: Bankfull Width (ft/ft) | 1.8 | 2.2 | 2.2 | 2.7 | 0.5 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Meander Wavelength (ft) | 18.7 | 20.2 | 19.7 | 22.3 | 1.9 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Meander Width Ratio | 2.0 | 2.1 | 2.1 | 2.4 | 0.2 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Additional Reach Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rosgen Classification | B4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Channel Thalweg Length (ft) | 1,541 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sinuosity (ft) | 1.10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Water Surface Slope (Channel) (ft/ft) | 0.012 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bankfull Slope (ft/ft) | 0.012 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ri% / Ru% / P% / G% / S% | 32% | 19% | 38% | 11% | 0% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

- Information Unavailable

N/A - Information does not apply.

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

**Table 11b Cont'd. Monitoring Data - Stream Reach Data Summary**
**Fletcher Mitigation Site - Fletcher Creek Reach 2A (1,299 feet *)**

| Parameter | Baseline | | | | | | Pre-MY - 1 | | | | | | MY - 1 | | | | | | MY - 2 | | | | | | MY - 3 | | | | | | MY -4 | | | | | | MY - 5 | | | | | | MY - 6 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimension & Substrate - Riffle** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** |
| Bankfull Width (ft) | 13.1 | 14.3 | 14.3 | 15.5 | 1.7 | 2 | 10.6 | 13.4 | 13.4 | 16.1 | 4.0 | 2 | 11.7 | 12.6 | 12.6 | 13.6 | 1.3 | 2 | 8.2 | 8.3 | 8.3 | 8.5 | 0.2 | 2 | 6.7 | 7.4 | 7.4 | 8.0 | 0.9 | 2 | 7.1 | 7.7 | 7.7 | 8.4 | 0.9 | 2 | | | | | | | | | | | | |
| Floodprone Width (ft) | 35.0 | 47.5 | 47.5 | 60.0 | 17.7 | 2 | 35.0 | 47.5 | 47.5 | 60.0 | 17.7 | 2 | 35.0 | 47.5 | 47.5 | 60.0 | 17.7 | 2 | 35.0 | 42.5 | 42.5 | 50.0 | 10.6 | 2 | 35.0 | 42.5 | 42.5 | 50.0 | 10.6 | 2 | 35.0 | 42.5 | 42.5 | 50.0 | 10.6 | 2 | | | | | | | | | | | | |
| Bankfull Mean Depth (ft) | 0.8 | 0.9 | 0.9 | 1.1 | 0.2 | 2 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 | 2 | 0.9 | 1.1 | 1.1 | 1.2 | 0.3 | 2 | 1.1 | 1.2 | 1.2 | 1.2 | 0.1 | 2 | 1.3 | 1.3 | 1.3 | 1.4 | 0.1 | 2 | 1.2 | 1.3 | 1.3 | 1.3 | 0.0 | 2 | | | | | | | | | | | | |
| Bankfull Max Depth (ft) | 1.6 | 2.2 | 2.2 | 2.8 | 0.8 | 2 | 1.7 | 2.0 | 2.0 | 2.3 | 0.4 | 2 | 1.8 | 2.3 | 2.3 | 2.8 | 0.7 | 2 | 1.9 | 2.2 | 2.2 | 2.5 | 0.4 | 2 | 1.9 | 2.1 | 2.1 | 2.3 | 0.3 | 2 | 1.9 | 2.0 | 2.0 | 2.1 | 0.1 | 2 | | | | | | | | | | | | |
| Bankfull Cross-Sectional Area (ft²) | 10.4 | 13.6 | 13.6 | 16.9 | 4.6 | 2 | 10.4 | 13.7 | 13.7 | 16.9 | 4.6 | 2 | 10.4 | 13.6 | 13.6 | 16.9 | 4.6 | 2 | 9.2 | 9.8 | 9.8 | 10.4 | 0.9 | 2 | 9.2 | 9.8 | 9.8 | 10.4 | 0.8 | 2 | 9.2 | 9.8 | 9.8 | 10.4 | 0.9 | 2 | | | | | | | | | | | | |
| Width/Depth Ratio | 14.2 | 15.3 | 15.3 | 16.5 | 1.7 | 2 | 10.7 | 13.0 | 13.0 | 15.4 | 3.3 | 2 | 10.9 | 12.0 | 12.0 | 13.2 | 1.6 | 2 | 6.9 | 7.1 | 7.1 | 7.3 | 0.3 | 2 | 4.9 | 5.5 | 5.5 | 6.2 | 0.9 | 2 | 5.5 | 6.1 | 6.1 | 6.7 | 0.9 | 2 | | | | | | | | | | | | |
| Entrenchment Ratio | 2.7 | 3.3 | 3.3 | 3.9 | 0.9 | 2 | 3.3 | 3.5 | 3.5 | 3.7 | 0.3 | 2 | 3.0 | 3.7 | 3.7 | 4.4 | 1.0 | 2 | 4.1 | 5.1 | 5.1 | 6.1 | 1.4 | 2 | 4.4 | 5.9 | 5.9 | 7.4 | 2.2 | 2 | 4.2 | 5.6 | 5.6 | 7.0 | 2.0 | 2 | | | | | | | | | | | | |
| Bank Height Ratio | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 | 2 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 | 2 | 0.7 | 0.8 | 0.8 | 0.9 | 0.1 | 2 | 0.9 | 1.0 | 1.0 | 1.0 | 0.1 | 2 | 1.0 | 1.1 | 1.1 | 1.2 | 0.1 | 2 | 0.9 | 1.0 | 1.0 | 1.1 | 0.1 | 2 | | | | | | | | | | | | |
| **Profile** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Riffle Length (ft) | 5.3 | 16.0 | 14.6 | 32.2 | 6.7 | 35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Riffle Slope (ft/ft) | 0.001 | 0.010 | 0.008 | 0.028 | 0.007 | 35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pool Length (ft) | 5.6 | 10.8 | 10.2 | 25.3 | 4.2 | 34 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pool Max Depth (ft) | 1.2 | 2.5 | 2.6 | 3.7 | 0.7 | 34 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pool Spacing (ft) | 9.4 | 36.8 | 37.5 | 52.2 | 9.4 | 33 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Pattern** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Channel Belt Width (ft) | 23.8 | 24.5 | 24.1 | 25.5 | 0.9 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Radius of Curvature (ft) | 16.8 | 22.1 | 19.8 | 29.6 | 6.7 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rc: Bankfull Width (ft/ft) | 1.6 | 2.1 | 1.9 | 2.8 | 0.6 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Meander Wavelength (ft) | 23.8 | 24.5 | 24.1 | 25.5 | 0.9 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Meander Width Ratio | 2.3 | 2.4 | 2.3 | 2.5 | 0.1 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Additional Reach Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rosgen Classification | B4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Channel Thalweg Length (ft) | 1,299 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sinuosity (ft) | 1.15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Water Surface Slope (Channel) (ft/ft) | 0.011 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bankfull Slope (ft/ft) | 0.012 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ri% / Ru% / P% / G% / S% | 44% | 15% | 29% | 12% | 0% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.
- Information Unavailable
N/A - Information does not apply.
Ri = Riffle / Ru = Run / P = Pool / G = Glide / S = Step

**Table 11b Cont'd. Monitoring Data - Stream Reach Data Summary**
**Fletcher Mitigation Site - Fletcher Creek Reach 2B (1,510 feet *)**

| Parameter | Baseline | | | | | | Pre-MY - 1 | | | | | | MY - 1 | | | | | | MY - 2 | | | | | | MY - 3 | | | | | | MY - 4 | | | | | | MY - 5 | | | | | | MY - 6 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimension & Substrate - Riffle** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** |
| Bankfull Width (ft) | 9.8 | 10.0 | 10.0 | 10.2 | 0.3 | 2 | 9.6 | 9.9 | 9.9 | 10.3 | 0.5 | 2 | 9.7 | 10.4 | 10.4 | 11.2 | 1.1 | 2 | 9.6 | 11.1 | 11.1 | 12.6 | 2.11 | 2 | 10.2 | 10.6 | 10.6 | 11.0 | 0.5 | 2 | 9.0 | 9.9 | 9.9 | 10.8 | 1.3 | 2 | | | | | | | | | | | | |
| Floodprone Width (ft) | 40.0 | 55.0 | 55.0 | 70.0 | 21.2 | 2 | 40.0 | 55.0 | 55.0 | 70.0 | 21.2 | 2 | 40.0 | 55.0 | 55.0 | 70.0 | 21.2 | 2 | 40.0 | 55.0 | 55.0 | 70.0 | 21.21 | 2 | 40.0 | 55.0 | 55.0 | 70.0 | 21.2 | 2 | 40.0 | 55.0 | 55.0 | 70.0 | 21.2 | 2 | | | | | | | | | | | | |
| Bankfull Mean Depth (ft) | 0.7 | 0.7 | 0.7 | 0.8 | 0.1 | 2 | 0.7 | 0.7 | 0.7 | 0.7 | 0.0 | 2 | 0.6 | 0.7 | 0.7 | 0.8 | 0.1 | 2 | 0.6 | 0.7 | 0.7 | 0.8 | 0.16 | 2 | 0.6 | 0.7 | 0.7 | 0.7 | 0.1 | 2 | 0.7 | 0.7 | 0.7 | 0.8 | 0.1 | 2 | | | | | | | | | | | | |
| Bankfull Max Depth (ft) | 1.2 | 1.3 | 1.3 | 1.3 | 0.1 | 2 | 1.1 | 1.1 | 1.1 | 1.1 | 0.1 | 2 | 1.2 | 1.2 | 1.2 | 1.2 | 0.0 | 2 | 1.3 | 1.4 | 1.4 | 1.4 | 0.09 | 2 | 1.3 | 1.3 | 1.3 | 1.4 | 0.0 | 2 | 1.4 | 1.4 | 1.4 | 1.5 | 0.0 | 2 | | | | | | | | | | | | |
| Bankfull Cross-Sectional Area (ft²) | 7.1 | 7.4 | 7.4 | 7.6 | 0.3 | 2 | 7.1 | 7.3 | 7.3 | 7.6 | 0.3 | 2 | 7.1 | 7.3 | 7.3 | 7.6 | 0.4 | 2 | 7.1 | 7.3 | 7.3 | 7.6 | 0.35 | 2 | 7.1 | 7.4 | 7.4 | 7.6 | 0.3 | 2 | 7.1 | 7.4 | 7.4 | 7.6 | 0.3 | 2 | | | | | | | | | | | | |
| Width/Depth Ratio | 12.6 | 13.6 | 13.6 | 14.6 | 1.4 | 2 | 13.0 | 13.5 | 13.5 | 14.0 | 0.7 | 2 | 12.3 | 15.0 | 15.0 | 17.7 | 3.8 | 2 | 12.2 | 17.3 | 17.3 | 22.4 | 7.22 | 2 | 13.8 | 15.3 | 15.3 | 16.9 | 2.2 | 2 | 11.3 | 13.3 | 13.3 | 15.4 | 2.9 | 2 | | | | | | | | | | | | |
| Entrenchment Ratio | 3.9 | 5.5 | 5.5 | 7.2 | 2.3 | 2 | 4.2 | 5.5 | 5.5 | 6.8 | 1.9 | 2 | 3.6 | 5.4 | 5.4 | 7.2 | 2.6 | 2 | 3.2 | 5.2 | 5.2 | 7.3 | 2.92 | 2 | 3.7 | 5.2 | 5.2 | 6.8 | 2.3 | 2 | 4.5 | 5.5 | 5.5 | 6.5 | 1.4 | 2 | | | | | | | | | | | | |
| Bank Height Ratio | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 | 2 | 1.1 | 1.1 | 1.1 | 1.1 | 0.0 | 2 | 1.0 | 1.1 | 1.1 | 1.1 | 0.1 | 2 | 1.0 | 1.0 | 1.0 | 1.1 | 0.08 | 2 | 1.1 | 1.1 | 1.1 | 1.1 | 0.0 | 2 | 0.9 | 1.1 | 1.1 | 1.2 | 0.2 | 2 | | | | | | | | | | | | |
| **Profile** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Riffle Length (ft) | 5.3 | 16.0 | 14.6 | 32.2 | 6.7 | 35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Riffle Slope (ft/ft) | 0.001 | 0.010 | 0.008 | 0.028 | 0.007 | 35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pool Length (ft) | 5.6 | 10.8 | 10.2 | 25.3 | 4.2 | 34 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pool Max Depth (ft) | 1.2 | 2.5 | 2.6 | 3.7 | 0.7 | 34 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pool Spacing (ft) | 9.4 | 36.8 | 37.5 | 52.2 | 9.4 | 33 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Pattern** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Channel Belt Width (ft) | 18.0 | 19.9 | 19.2 | 22.6 | 2.4 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Radius of Curvature (ft) | 23.5 | 25.3 | 24.8 | 27.5 | 2.0 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rc: Bankfull Width (ft/ft) | 2.2 | 2.4 | 2.3 | 2.6 | 0.2 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Meander Wavelength (ft) | 17.9 | 19.9 | 19.2 | 22.6 | 2.4 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Meander Width Ratio | 1.7 | 1.9 | 1.8 | 2.1 | 0.2 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Additional Reach Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rosgen Classification | B5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Channel Thalweg Length (ft) | 1,510 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sinuosity (ft) | 1.10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Water Surface Slope (Channel) (ft/ft) | 0.011 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bankfull Slope (ft/ft) | 0.012 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ri% / Ru% / P% / G% / S% | 44% | 15% | 29% | 12% | 0% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.
- Information Unavailable
N/A - Information does not apply.
Ri = Riffle / Ru = Run / P = Pool / G = Glide / S = Step

**Table 11b Cont'd. Monitoring Data - Stream Reach Data Summary**
**Fletcher Mitigation Site - Weston Creek Reach 1A (1,982 feet *)**

| Parameter | Baseline | | | | | | +Pre-MY - 1 | | | | | | MY - 1 | | | | | | MY - 2 | | | | | | MY - 3 | | | | | | MY - 4 | | | | | | MY - 5 | | | | | | MY - 6 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimension & Substrate - Riffle** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** |
| Bankfull Width (ft) | 9.1 | 9.8 | 9.8 | 10.4 | 0.9 | 2 | - | - | - | - | - | - | 10.2 | 16.8 | 16.8 | 23.5 | 9.4 | 2 | 9.0 | 9.7 | 9.7 | 10.4 | 0.97 | 2 | 5.2 | 6.8 | 6.8 | 8.3 | 2.2 | 2 | - | - | - | - | - | - | | | | | | | | | | | | |
| Floodprone Width (ft) | 50.0 | 50.0 | 50.0 | 50.0 | 0.0 | 2 | - | - | - | - | - | - | 50.0 | 50.0 | 50.0 | 50.0 | 0.0 | 2 | 50.0 | 50.0 | 50.0 | 50.0 | 0.00 | 2 | 50.0 | 50.0 | 50.0 | 50.0 | 0.0 | 2 | - | - | - | - | - | - | | | | | | | | | | | | |
| Bankfull Mean Depth (ft) | 0.6 | 0.6 | 0.6 | 0.6 | 0.0 | 2 | - | - | - | - | - | - | 0.3 | 0.4 | 0.4 | 0.5 | 0.2 | 2 | 0.6 | 0.6 | 0.6 | 0.6 | 0.01 | 2 | 0.8 | 0.9 | 0.9 | 1.0 | 0.2 | 2 | - | - | - | - | - | - | | | | | | | | | | | | |
| Bankfull Max Depth (ft) | 0.9 | 1.0 | 1.0 | 1.1 | 0.1 | 2 | - | - | - | - | - | - | 0.9 | 1.1 | 1.1 | 1.2 | 0.2 | 2 | 1.1 | 1.1 | 1.1 | 1.2 | 0.10 | 2 | 1.2 | 1.3 | 1.3 | 1.4 | 0.2 | 2 | - | - | - | - | - | - | | | | | | | | | | | | |
| Bankfull Cross-Sectional Area ($ft^2$) | 5.4 | 5.8 | 5.8 | 6.2 | 0.6 | 2 | - | - | - | - | - | - | 5.4 | 5.8 | 5.8 | 6.2 | 0.6 | 2 | 5.4 | 5.8 | 5.8 | 6.2 | 0.51 | 2 | 5.4 | 5.8 | 5.8 | 6.2 | 0.6 | 2 | - | - | - | - | - | - | | | | | | | | | | | | |
| Width/Depth Ratio | 15.5 | 16.4 | 16.4 | 17.4 | 1.3 | 2 | - | - | - | - | - | - | 21.7 | 55.5 | 55.5 | 89.4 | 47.9 | 2 | 15.0 | 16.3 | 16.3 | 17.6 | 1.83 | 2 | 21.7 | 8.1 | 8.1 | 11.0 | 4.2 | 2 | - | - | - | - | - | - | | | | | | | | | | | | |
| Entrenchment Ratio | 4.8 | 5.1 | 5.1 | 5.5 | 0.5 | 2 | - | - | - | - | - | - | 2.1 | 3.5 | 3.5 | 4.9 | 2.0 | 2 | 4.8 | 5.2 | 5.2 | 5.5 | 0.52 | 2 | 6.0 | 7.8 | 7.8 | 9.6 | 2.5 | 2 | - | - | - | - | - | - | | | | | | | | | | | | |
| Bank Height Ratio | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 | 2 | - | - | - | - | - | - | 1.0 | 1.1 | 1.1 | 1.2 | 0.2 | 2 | 1.0 | 1.0 | 1.0 | 1.0 | 0.05 | 2 | 0.9 | 0.9 | 0.9 | 0.9 | 0.0 | 2 | - | - | - | - | - | - | | | | | | | | | | | | |
| **Profile** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Riffle Length (ft) | 4.3 | 13.3 | 11.9 | 38.6 | 7.8 | 55 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Riffle Slope (ft/ft) | 0.000 | 0.004 | 0.002 | 0.017 | 0.004 | 55 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pool Length (ft) | 5.7 | 13.1 | 12.8 | 26.1 | 4.3 | 54 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pool Max Depth (ft) | 1.1 | 1.7 | 1.7 | 2.6 | 0.4 | 54 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pool Spacing (ft) | 8.9 | 35.7 | 34.4 | 72.9 | 12.0 | 53 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Pattern** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Channel Belt Width (ft) | 24.8 | 27.0 | 27.2 | 29.0 | 2.1 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Radius of Curvature (ft) | 11.0 | 14.3 | 14.6 | 17.4 | 3.2 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rc: Bankfull Width (ft/ft) | 1.3 | 1.7 | 1.7 | 2.0 | 0.4 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Meander Wavelength (ft) | 24.5 | 26.9 | 27.2 | 29.0 | 2.3 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Meander Width Ratio | 2.9 | 3.1 | 3.2 | 3.4 | 0.2 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Additional Reach Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rosgen Classification | C5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Channel Thalweg Length (ft) | 1,982 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sinuosity (ft) | 1.24 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Water Surface Slope (Channel) (ft/ft) | 0.005 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bankfull Slope (ft/ft) | 0.005 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ri% / Ru% / P% / G% / S% | 38% | 15% | 36% | 11% | 0% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.
- Information Unavailable
+ Data not collected due to adaptive management on Weston Reach 1A and 1B
N/A - Information does not apply.
Ri = Riffle / Ru = Run / P = Pool / G = Glide / S = Step

**Table 11b Cont'd. Monitoring Data - Stream Reach Data Summary**
**Fletcher Mitigation Site - Weston Creek Reach 1B (825 feet *)**

| Parameter | Baseline | | | | | | +Pre-MY - 1 | | | | | | MY - 1 | | | | | | MY - 2 | | | | | | MY - 3 | | | | | | MY - 4 | | | | | | MY - 5 | | | | | | MY - 6 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimension & Substrate - Riffle** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** |
| Bankfull Width (ft) | - | 9.7 | - | - | - | 1 | - | - | - | - | - | - | - | 9.4 | - | - | - | 1 | - | 9.8 | - | - | - | 1 | - | 7.7 | - | - | - | 1 | - | - | - | - | - | - | | | | | | | | | | | | |
| Floodprone Width (ft) | - | 40.0 | - | - | - | 1 | - | - | - | - | - | - | - | 40.0 | - | - | - | 1 | - | 40.0 | - | - | - | 1 | - | 40.0 | - | - | - | 1 | - | - | - | - | - | - | | | | | | | | | | | | |
| Bankfull Mean Depth (ft) | - | 0.5 | - | - | - | 1 | - | - | - | - | - | - | - | 0.5 | - | - | - | 1 | - | 0.5 | - | - | - | 1 | - | 0.6 | - | - | - | 1 | - | - | - | - | - | - | | | | | | | | | | | | |
| Bankfull Max Depth (ft) | - | 0.7 | - | - | - | 1 | - | - | - | - | - | - | - | 0.8 | - | - | - | 1 | - | 0.8 | - | - | - | 1 | - | 1.0 | - | - | - | 1 | - | - | - | - | - | - | | | | | | | | | | | | |
| Bankfull Cross-Sectional Area ($ft^2$) | - | 4.7 | - | - | - | 1 | - | - | - | - | - | - | - | 4.7 | - | - | - | 1 | - | 4.7 | - | - | - | 1 | - | 4.7 | - | - | - | 1 | - | - | - | - | - | - | | | | | | | | | | | | |
| Width/Depth Ratio | - | 20.4 | - | - | - | 1 | - | - | - | - | - | - | - | 19.0 | - | - | - | 1 | - | 20.4 | - | - | - | 1 | - | 12.8 | - | - | - | 1 | - | - | - | - | - | - | | | | | | | | | | | | |
| Entrenchment Ratio | - | 4.1 | - | - | - | 1 | - | - | - | - | - | - | - | 4.2 | - | - | - | 1 | - | 4.1 | - | - | - | 1 | - | 5.2 | - | - | - | 1 | - | - | - | - | - | - | | | | | | | | | | | | |
| Bank Height Ratio | - | 1.0 | - | - | - | 1 | - | - | - | - | - | - | - | 1.3 | - | - | - | 1 | - | 1.1 | - | - | - | 1 | - | 0.9 | - | - | - | 1 | - | - | - | - | - | - | | | | | | | | | | | | |
| **Profile** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Riffle Length (ft) | 4.5 | 12.3 | 12.1 | 29.1 | 5.9 | 21 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Riffle Slope (ft/ft) | 0.000 | 0.007 | 0.002 | 0.031 | 0.008 | 21 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pool Length (ft) | 5.6 | 14.8 | 14.0 | 26.8 | 6.9 | 21 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pool Max Depth (ft) | 1.4 | 2.0 | 2.0 | 2.7 | 0.3 | 21 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pool Spacing (ft) | 19.7 | 35.2 | 34.8 | 68.4 | 12.1 | 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Pattern** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Channel Belt Width (ft) | 27.3 | 28.4 | 28.1 | 29.9 | 1.3 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Radius of Curvature (ft) | 15.8 | 19.5 | 18.2 | 24.5 | 4.5 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rc: Bankfull Width (ft/ft) | 1.7 | 2.1 | 1.9 | 2.6 | 0.5 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Meander Wavelength (ft) | 27.3 | 28.4 | 28.1 | 29.9 | 1.3 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Meander Width Ratio | 2.9 | 3.0 | 3.0 | 3.2 | 0.1 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Additional Reach Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rosgen Classification | C5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Channel Thalweg Length (ft) | 825 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sinuosity (ft) | 1.17 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Water Surface Slope (Channel) (ft/ft) | 0.0024 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bankfull Slope (ft/ft) | 0.0026 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ri% / Ru% / P% / G% / S% | 35% | 9% | 42% | 14% | 0% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.
- Information Unavailable
+ Data not collected due to adaptive management on Weston Reach 1A and 1B
N/A - Information does not apply.
Ri = Riffle / Ru = Run / P = Pool / G = Glide / S = Step

**Table 11b Cont'd. Monitoring Data - Stream Reach Data Summary**
**Fletcher Mitigation Site - Raccoon Branch Reach 1D (440 feet *)**

| Parameter | Baseline | | | | | | Pre-MY - 1 | | | | | | MY - 1 | | | | | | MY - 2 | | | | | | MY - 3 | | | | | | MY - 4 | | | | | | MY - 5 | | | | | | MY - 6 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimension & Substrate - Riffle** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** |
| Bankfull Width (ft) | - | 6.9 | - | - | - | 1 | - | 7.8 | - | - | - | 1 | - | 6.9 | - | - | - | 1 | - | 5.7 | - | - | - | 1 | - | 4.6 | - | - | - | 1 | - | 4.9 | - | - | - | 1 | | | | | | | | | | | | |
| Floodprone Width (ft) | - | 20.0 | - | - | - | 1 | - | 20.0 | - | - | - | 1 | - | 20.0 | - | - | - | 1 | - | 20.0 | - | - | - | 1 | - | 20.0 | - | - | - | 1 | - | 20.0 | - | - | - | 1 | | | | | | | | | | | | |
| Bankfull Mean Depth (ft) | - | 0.5 | - | - | - | 1 | - | 0.4 | - | - | - | 1 | - | 0.5 | - | - | - | 1 | - | 0.6 | - | - | - | 1 | - | 0.7 | - | - | - | 1 | - | 0.7 | - | - | - | 1 | | | | | | | | | | | | |
| Bankfull Max Depth (ft) | - | 1.3 | - | - | - | 1 | - | 0.9 | - | - | - | 1 | - | 0.9 | - | - | - | 1 | - | 1.0 | - | - | - | 1 | - | 1.1 | - | - | - | 1 | - | 1.0 | - | - | - | 1 | | | | | | | | | | | | |
| Bankfull Cross-Sectional Area ($ft^2$) | - | 3.4 | - | - | - | 1 | - | 3.4 | - | - | - | 1 | - | 3.4 | - | - | - | 1 | - | 3.4 | - | - | - | 1 | - | 3.4 | - | - | - | 1 | - | 3.4 | - | - | - | 1 | | | | | | | | | | | | |
| Width/Depth Ratio | - | 13.8 | - | - | - | 1 | - | 18.1 | - | - | - | 1 | - | 14.2 | - | - | - | 1 | - | 9.5 | - | - | - | 1 | - | 6.2 | - | - | - | 1 | - | 7.1 | - | - | - | 1 | | | | | | | | | | | | |
| Entrenchment Ratio | - | 2.9 | - | - | - | 1 | - | 2.6 | - | - | - | 1 | - | 2.9 | - | - | - | 1 | - | 3.5 | - | - | - | 1 | - | 4.4 | - | - | - | 1 | - | 4.1 | - | - | - | 1 | | | | | | | | | | | | |
| Bank Height Ratio | - | 1.0 | - | - | - | 1 | - | 0.6 | - | - | - | 1 | - | 0.8 | - | - | - | 1 | - | 0.7 | - | - | - | 1 | - | 0.7 | - | - | - | 1 | - | 0.8 | - | - | - | 1 | | | | | | | | | | | | |
| **Profile** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Riffle Length (ft) | 1.5 | 4.5 | 4.2 | 7.9 | 1.7 | 38 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Riffle Slope (ft/ft) | 0.003 | 0.033 | 0.030 | 0.085 | 0.021 | 38 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pool Length (ft) | 1.7 | 5.4 | 5.0 | 12.7 | 2.6 | 37 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pool Max Depth (ft) | 0.6 | 1.0 | 1.1 | 1.4 | 0.2 | 37 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pool Spacing (ft) | 4.1 | 12.1 | 11.2 | 28.8 | 5.5 | 35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Pattern** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Channel Belt Width (ft) | 6.7 | 7.5 | 7.0 | 8.7 | 1.1 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Radius of Curvature (ft) | 7.9 | 10.1 | 8.5 | 13.9 | 3.3 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rc: Bankfull Width (ft/ft) | 1.2 | 1.6 | 1.3 | 2.2 | 0.6 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Meander Wavelength (ft) | 6.7 | 7.5 | 7.0 | 8.7 | 1.1 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Meander Width Ratio | 1.1 | 1.2 | 1.1 | 1.4 | 0.1 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Additional Reach Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rosgen Classification | B4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Channel Thalweg Length (ft) | 440 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sinuosity (ft) | 1.08 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Water Surface Slope (Channel) (ft/ft) | 0.040 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bankfull Slope (ft/ft) | 0.041 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ri% / Ru% / P% / G% / S% | 39% | 0% | 46% | 8% | 6% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

- Information Unavailable

N/A - Information does not apply.

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

**Table 11b Cont'd. Monitoring Data - Stream Reach Data Summary**
**Fletcher Mitigation Site - Coates Branch Reach 1B (606 feet *)**

| Parameter | Baseline | | | | | | Pre-MY - 1 | | | | | | MY - 1 | | | | | | MY - 2 | | | | | | MY - 3 | | | | | | MY - 4 | | | | | | MY - 5 | | | | | | MY - 6 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimension & Substrate - Riffle** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** |
| Bankfull Width (ft) | - | 5.2 | - | - | - | 1 | - | 4.9 | - | - | - | 1 | - | 3.4 | - | - | - | 1 | - | 3.5 | - | - | - | 1 | - | 2.3 | - | - | - | 1.00 | - | 3.2 | - | - | - | 1 | | | | | | | | | | | | |
| Floodprone Width (ft) | - | 15.0 | - | - | - | 1 | - | 15.0 | - | - | - | 1 | - | 15.0 | - | - | - | 1 | - | 15.0 | - | - | - | 1 | - | 15.0 | - | - | - | 1.00 | - | 15.0 | - | - | - | 1 | | | | | | | | | | | | |
| Bankfull Mean Depth (ft) | - | 0.3 | - | - | - | 1 | - | 0.3 | - | - | - | 1 | - | 0.5 | - | - | - | 1 | - | 0.5 | - | - | - | 1 | - | 0.7 | - | - | - | 1.00 | - | 0.5 | - | - | - | 1 | | | | | | | | | | | | |
| Bankfull Max Depth (ft) | - | 0.7 | - | - | - | 1 | - | 0.5 | - | - | - | 1 | - | 1.0 | - | - | - | 1 | - | 0.8 | - | - | - | 1 | - | 0.8 | - | - | - | 1.00 | - | 0.7 | - | - | - | 1 | | | | | | | | | | | | |
| Bankfull Cross-Sectional Area ($ft^2$) | - | 1.6 | - | - | - | 1 | - | 1.6 | - | - | - | 1 | - | 1.6 | - | - | - | 1 | - | 1.6 | - | - | - | 1 | - | 1.6 | - | - | - | 1.00 | - | 1.6 | - | - | - | 1 | | | | | | | | | | | | |
| Width/Depth Ratio | - | 16.5 | - | - | - | 1 | - | 15.1 | - | - | - | 1 | - | 7.5 | - | - | - | 1 | - | 7.6 | - | - | - | 1 | - | 3.4 | - | - | - | 1.00 | - | 6.4 | - | - | - | 1 | | | | | | | | | | | | |
| Entrenchment Ratio | - | 2.9 | - | - | - | 1 | - | 3.1 | - | - | - | 1 | - | 4.4 | - | - | - | 1 | - | 4.3 | - | - | - | 1 | - | 6.4 | - | - | - | 1.00 | - | 4.7 | - | - | - | 1 | | | | | | | | | | | | |
| Bank Height Ratio | - | 1.0 | - | - | - | 1 | - | 1.3 | - | - | - | 1 | - | 1.1 | - | - | - | 1 | - | 0.9 | - | - | - | 1 | - | 0.6 | - | - | - | 1.00 | - | 0.8 | - | - | - | 1 | | | | | | | | | | | | |
| **Profile** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Riffle Length (ft) | 3.0 | 6.5 | 6.3 | 14.0 | 2.1 | 52 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Riffle Slope (ft/ft) | 0.000 | 0.020 | 0.016 | 0.072 | 0.016 | 52 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pool Length (ft) | 1.2 | 3.4 | 3.2 | 6.3 | 1.2 | 51 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pool Max Depth (ft) | 0.2 | 1.2 | 1.1 | 2.5 | 0.4 | 51 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pool Spacing (ft) | 5.8 | 11.7 | 12.0 | 18.7 | 2.5 | 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Pattern** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Channel Belt Width (ft) | 9.7 | 10.6 | 10.5 | 11.5 | 0.9 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Radius of Curvature (ft) | 9.0 | 11.0 | 12.0 | 12.1 | 1.8 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rc: Bankfull Width (ft/ft) | 1.5 | 1.9 | 2.1 | 2.1 | 0.3 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Meander Wavelength (ft) | 9.7 | 10.6 | 10.5 | 11.5 | 0.9 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Meander Width Ratio | 1.7 | 1.9 | 1.8 | 2.0 | 0.1 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Additional Reach Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rosgen Classification | B4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Channel Thalweg Length (ft) | 601 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sinuosity (ft) | 1.05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Water Surface Slope (Channel) (ft/ft) | 0.033 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bankfull Slope (ft/ft) | 0.033 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ri% / Ru% / P% / G% / S% | 56% | 0% | 28% | 10% | 6% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

- Information Unavailable

N/A - Information does not apply.

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

**Table 11b Cont'd. Monitoring Data - Stream Reach Data Summary**
**Fletcher Mitigation Site - Coates Branch Reach 1C (708 feet *)**

| Parameter | Baseline | | | | | | Pre-MY - 1 | | | | | | MY - 1 | | | | | | MY - 2 | | | | | | MY - 3 | | | | | | MY - 4 | | | | | | MY - 5 | | | | | | MY - 6 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimension & Substrate - Riffle** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** |
| Bankfull Width (ft) | - | 5.4 | - | - | - | 1 | - | 5.5 | - | - | - | 1 | - | 5.8 | - | - | - | 1 | - | 5.8 | - | - | - | 1 | - | 4.2 | - | - | - | 1.0 | - | 4.7 | - | - | - | 1.0 | | | | | | | | | | | | |
| Floodprone Width (ft) | - | 20.0 | - | - | - | 1 | - | 20.0 | - | - | - | 1 | - | 20.0 | - | - | - | 1 | - | 20.0 | - | - | - | 1 | - | 20.0 | - | - | - | 1.0 | - | 20.0 | - | - | - | 1.0 | | | | | | | | | | | | |
| Bankfull Mean Depth (ft) | - | 0.4 | - | - | - | 1 | - | 0.4 | - | - | - | 1 | - | 0.4 | - | - | - | 1 | - | 0.4 | - | - | - | 1 | - | 0.5 | - | - | - | 1.0 | - | 0.5 | - | - | - | 1.0 | | | | | | | | | | | | |
| Bankfull Max Depth (ft) | - | 0.8 | - | - | - | 1 | - | 0.6 | - | - | - | 1 | - | 0.6 | - | - | - | 1 | - | 0.5 | - | - | - | 1 | - | 0.8 | - | - | - | 1.0 | - | 0.8 | - | - | - | 1.0 | | | | | | | | | | | | |
| Bankfull Cross-Sectional Area ($ft^2$) | - | 2.2 | - | - | - | 1 | - | 2.2 | - | - | - | 1 | - | 2.2 | - | - | - | 1 | - | 2.2 | - | - | - | 1 | - | 2.2 | - | - | - | 1.0 | - | 2.2 | - | - | - | 1.0 | | | | | | | | | | | | |
| Width/Depth Ratio | - | 13.5 | - | - | - | 1 | - | 14.0 | - | - | - | 1 | - | 15.4 | - | - | - | 1 | - | 15.5 | - | - | - | 1 | - | 8.1 | - | - | - | 1.0 | - | 10.1 | - | - | - | 1.0 | | | | | | | | | | | | |
| Entrenchment Ratio | - | 3.7 | - | - | - | 1 | - | 3.6 | - | - | - | 1 | - | 3.4 | - | - | - | 1 | - | 3.4 | - | - | - | 1 | - | 4.7 | - | - | - | 1.0 | - | 4.3 | - | - | - | 1.0 | | | | | | | | | | | | |
| Bank Height Ratio | - | 1.0 | - | - | - | 1 | - | 0.9 | - | - | - | 1 | - | 0.8 | - | - | - | 1 | - | 0.9 | - | - | - | 1 | - | 0.9 | - | - | - | 1.0 | - | 1.0 | - | - | - | 1.0 | | | | | | | | | | | | |
| **Profile** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Riffle Length (ft) | 3.8 | 7.4 | 7.7 | 10.1 | 1.6 | 48 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Riffle Slope (ft/ft) | 0.000 | 0.010 | 0.010 | 0.033 | 0.007 | 48 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pool Length (ft) | 1.2 | 4.6 | 4.2 | 7.3 | 1.4 | 48 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pool Max Depth (ft) | 0.6 | 1.0 | 1.0 | 1.4 | 0.2 | 49 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pool Spacing (ft) | 6.4 | 14.3 | 14.6 | 19.6 | 2.6 | 48 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Pattern** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Channel Belt Width (ft) | 10.9 | 11.7 | 11.6 | 12.5 | 0.8 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Radius of Curvature (ft) | 7.0 | 8.8 | 7.2 | 12.1 | 2.9 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rc: Bankfull Width (ft/ft) | 1.2 | 1.5 | 1.2 | 2.1 | 0.5 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Meander Wavelength (ft) | 10.9 | 12.1 | 11.6 | 13.7 | 1.5 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Meander Width Ratio | 1.8 | 2.0 | 1.9 | 2.1 | 0.1 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Additional Reach Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rosgen Classification | B4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Channel Thalweg Length (ft) | 708 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sinuosity (ft) | 1.06 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Water Surface Slope (Channel) (ft/ft) | 0.013 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bankfull Slope (ft/ft) | 0.013 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ri% / Ru% / P% / G% / S% | 52% | 0% | 32% | 11% | 5% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

- Information Unavailable

N/A - Information does not apply.

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

**Table 11b Cont'd. Monitoring Data - Stream Reach Data Summary**
**Fletcher Mitigation Site - Coates Branch Reach 1D (325 feet *)**

| Parameter | Baseline | | | | | | Pre-MY - 1 | | | | | | MY - 1 | | | | | | MY - 2 | | | | | | MY - 3 | | | | | | MY - 4 | | | | | | MY - 5 | | | | | | MY - 6 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimension & Substrate - Riffle** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** | **Min** | **Mean** | **Med** | **Max** | **SD** | **n** |
| Bankfull Width (ft) | - | 6.1 | - | - | - | 1 | - | 7.4 | - | - | - | 1 | - | 7.5 | - | - | - | 1 | - | 4.7 | - | - | - | 1 | - | 4.0 | - | - | - | 1 | - | 6.4 | - | - | - | 1 | | | | | | | | | | | | |
| Floodprone Width (ft) | - | 25.0 | - | - | - | 1 | - | 25.0 | - | - | - | 1 | - | 25.0 | - | - | - | 1 | - | 25.0 | - | - | - | 1 | - | 25.0 | - | - | - | 1 | - | 25.0 | - | - | - | 1 | | | | | | | | | | | | |
| Bankfull Mean Depth (ft) | - | 0.5 | - | - | - | 1 | - | 0.4 | - | - | - | 1 | - | 0.4 | - | - | - | 1 | - | 0.7 | - | - | - | 1 | - | 0.8 | - | - | - | 1 | - | 0.5 | - | - | - | 1 | | | | | | | | | | | | |
| Bankfull Max Depth (ft) | - | 1.0 | - | - | - | 1 | - | 0.9 | - | - | - | 1 | - | 0.9 | - | - | - | 1 | - | 1.0 | - | - | - | 1 | - | 1.1 | - | - | - | 1 | - | 1.0 | - | - | - | 1 | | | | | | | | | | | | |
| Bankfull Cross-Sectional Area ($ft^2$) | - | 3.3 | - | - | - | 1 | - | 3.3 | - | - | - | 1 | - | 3.3 | - | - | - | 1 | - | 3.3 | - | - | - | 1 | - | 3.3 | - | - | - | 1 | - | 3.3 | - | - | - | 1 | | | | | | | | | | | | |
| Width/Depth Ratio | - | 11.4 | - | - | - | 1 | - | 16.5 | - | - | - | 1 | - | 17.2 | - | - | - | 1 | - | 6.9 | - | - | - | 1 | - | 4.9 | - | - | - | 1 | - | 12.1 | - | - | - | 1 | | | | | | | | | | | | |
| Entrenchment Ratio | - | 4.1 | - | - | - | 1 | - | 3.4 | - | - | - | 1 | - | 3.3 | - | - | - | 1 | - | 5.3 | - | - | - | 1 | - | 6.2 | - | - | - | 1 | - | 3.9 | - | - | - | 1 | | | | | | | | | | | | |
| Bank Height Ratio | - | 1.0 | - | - | - | 1 | - | 1.0 | - | - | - | 1 | - | 0.9 | - | - | - | 1 | - | 0.9 | - | - | - | 1 | - | 0.9 | - | - | - | 1 | - | 1.0 | - | - | - | 1 | | | | | | | | | | | | |
| **Profile** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Riffle Length (ft) | 4.1 | 7.2 | 7.3 | 11.9 | 1.8 | 22 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Riffle Slope (ft/ft) | 0.000 | 0.008 | 0.006 | 0.021 | 0.006 | 22 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pool Length (ft) | 1.8 | 4.6 | 4.4 | 8.1 | 1.8 | 22 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pool Max Depth (ft) | 0.6 | 1.1 | 1.1 | 2.2 | 0.3 | 22 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pool Spacing (ft) | 8.0 | 13.9 | 14.0 | 19.1 | 3.2 | 21 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Pattern** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Channel Belt Width (ft) | 11.5 | 12.7 | 12.8 | 13.8 | 1.2 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Radius of Curvature (ft) | 4.7 | 7.0 | 7.2 | 9.2 | 2.3 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rc: Bankfull Width (ft/ft) | 0.7 | 1.0 | 1.0 | 1.3 | 0.3 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Meander Wavelength (ft) | 11.5 | 12.5 | 12.1 | 13.8 | 1.2 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Meander Width Ratio | 1.7 | 1.8 | 1.9 | 2.0 | 0.1 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Additional Reach Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rosgen Classification | B4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Channel Thalweg Length (ft) | 325 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sinuosity (ft) | 1.05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Water Surface Slope (Channel) (ft/ft) | 0.013 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bankfull Slope (ft/ft) | 0.014 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ri% / Ru% / P% / G% / S% | 52% | 0% | 33% | 10% | 5% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

* Channel Thalweg Length (ft): Based on actual thalweg calculations from the as-built survey, accounts for breaks in conservation easement and utility right-of-ways.

- Information Unavailable

N/A - Information does not apply.

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

# Appendix E
# Hydrologic Data

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| Monitoring Gauge | Performance Standard: 12 %<br>WETS Station: Asheville 13S<br>Growing Season: 4/9 to 10/26 (201 days)<br>Max. Consecutive Hydroperiod (%) and number of consecutive days (n) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pre MY-1 (2020) | | MY-1 (2020) | | MY-2 (2021) | | MY-3 (2022) | | MY-4 (2023) | | MY-5 (2024) | | MY-6 (2025) | | MY-7 (2026) | |
| | % | n | % | n | % | n | % | n | % | n | % | n | % | n | % | n |
| MW-1 | - | - | 4 | 9 | 4 | 9 | 25 | 50 | 4 | 7 | - | - | - | - | - | - |
| MW-2 | - | - | 4 | 9 | 3 | 7 | 2 | 5 | 3 | 6 | - | - | - | - | - | - |
| MW-3 | - | - | 5 | 11 | 7 | 14 | 11 | 23 | 4 | 9 | - | - | - | - | - | - |
| MW-4 | - | - | 6 | 13 | 5 | 10 | 5 | 10 | 4 | 9 | - | - | - | - | - | - |
| MW-5 | - | - | 6 | 13 | 11 | 23 | 8 | 17 | 4 | 9 | - | - | - | - | - | - |
| MW-6 | - | - | 4 | 9 | 11 | 22 | 8 | 17 | 4 | 8 | - | - | - | - | - | - |
| MW-7 | - | - | 2 | 4 | 4 | 9 | 8 | 17 | 2 | 4 | - | - | - | - | - | - |
| MW-8 | - | - | 6 | 13 | 10 | 21 | 10 | 21 | 4 | 8 | - | - | - | - | - | - |
| MW-9 | - | - | 12 | 24 | 15 | 31 | 11 | 22 | 9 | 19 | - | - | - | - | - | - |
| MW-10 | - | - | 11 | 23 | 11 | 22 | 11 | 22 | 4 | 8 | - | - | - | - | - | - |
| MW-11 | - | - | 3 | 6 | 3 | 7 | 3 | 6 | 2 | 4 | - | - | - | - | - | - |
| MW_FC-1 | - | - | 46 | 92 | 20 | 40 | 11 | 23 | 6 | 12 | - | - | - | - | - | - |
| MW_FC-2 | - | - | - | - | - | - | - | - | 48 | 96 | - | - | - | - | - | - |
| MW_FC-3 | - | - | - | - | - | - | - | - | 36 | 65 | - | - | - | - | - | - |
| MW_FC-4 | - | - | 98 | 197 | 50 | 101 | 36 | 72 | 24 | 48 | - | - | - | - | - | - |

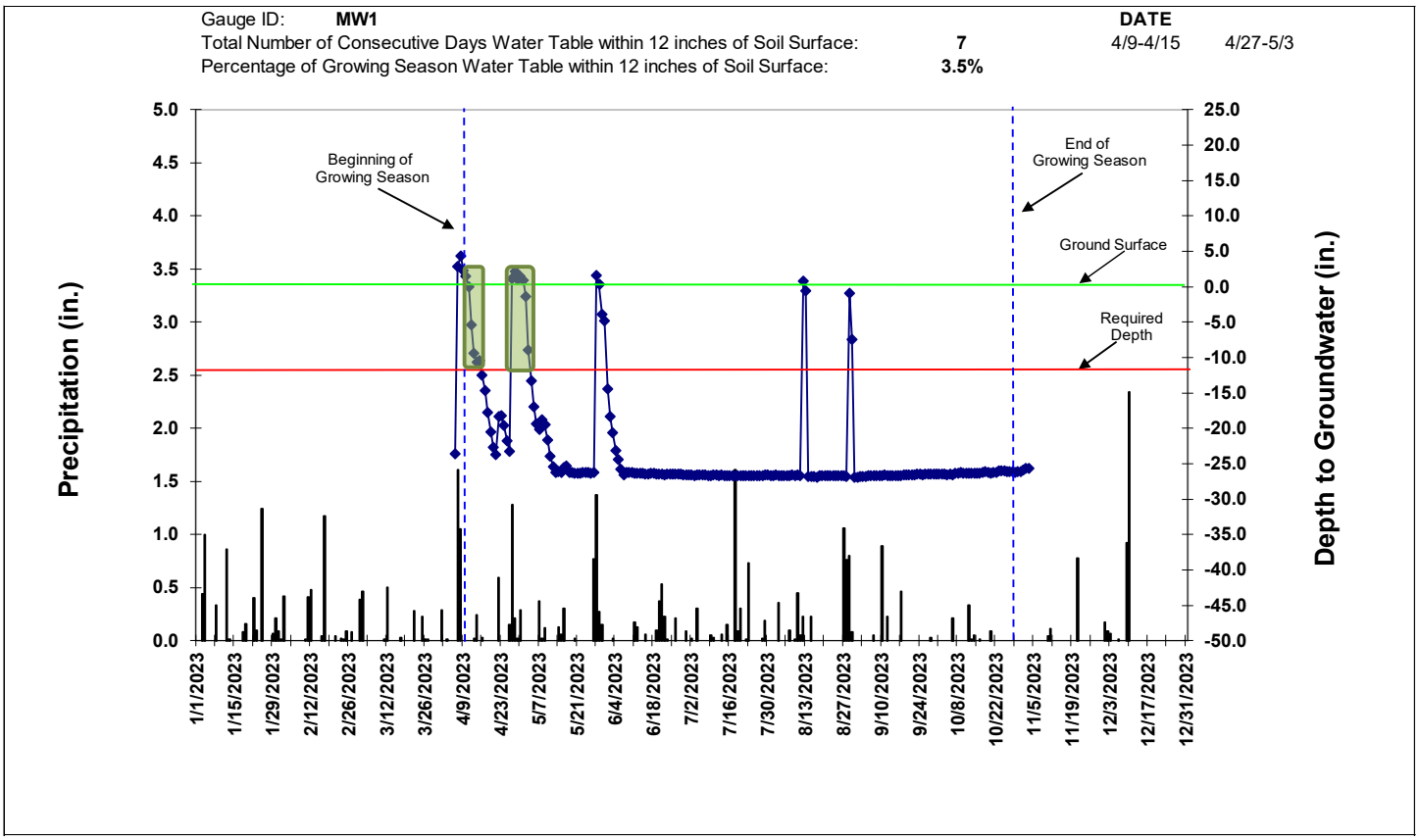
* Performace standard for groundwater gauges was calculated at 12 percent (24 days). Percent deviation is based upon this duration (2.4 days)

Exceeds requirements by 10%

Exceeds requirements, but by less than 10%

Fails to meet requirements, by less than 10%

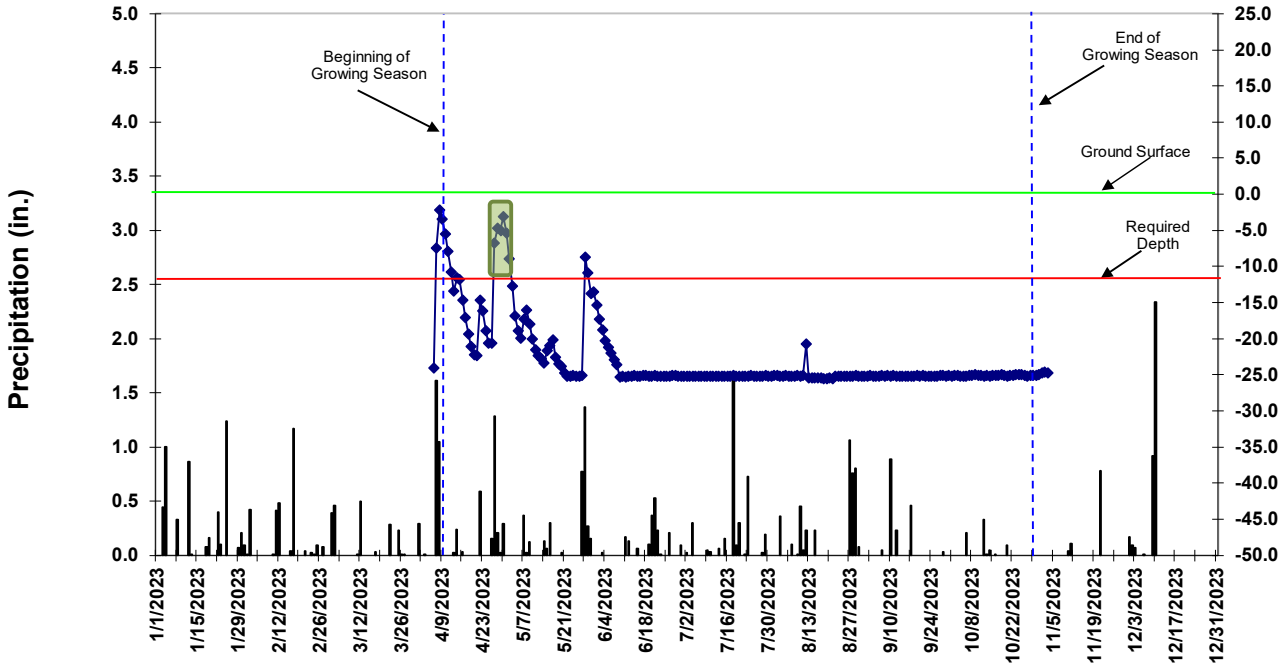
Fails to meet requirements by more than 10%



Gauge ID: **MW2** **DATE**

Total Number of Consecutive Days Water Table within 12 inches of Soil Surface: **6** 4/27-5/2

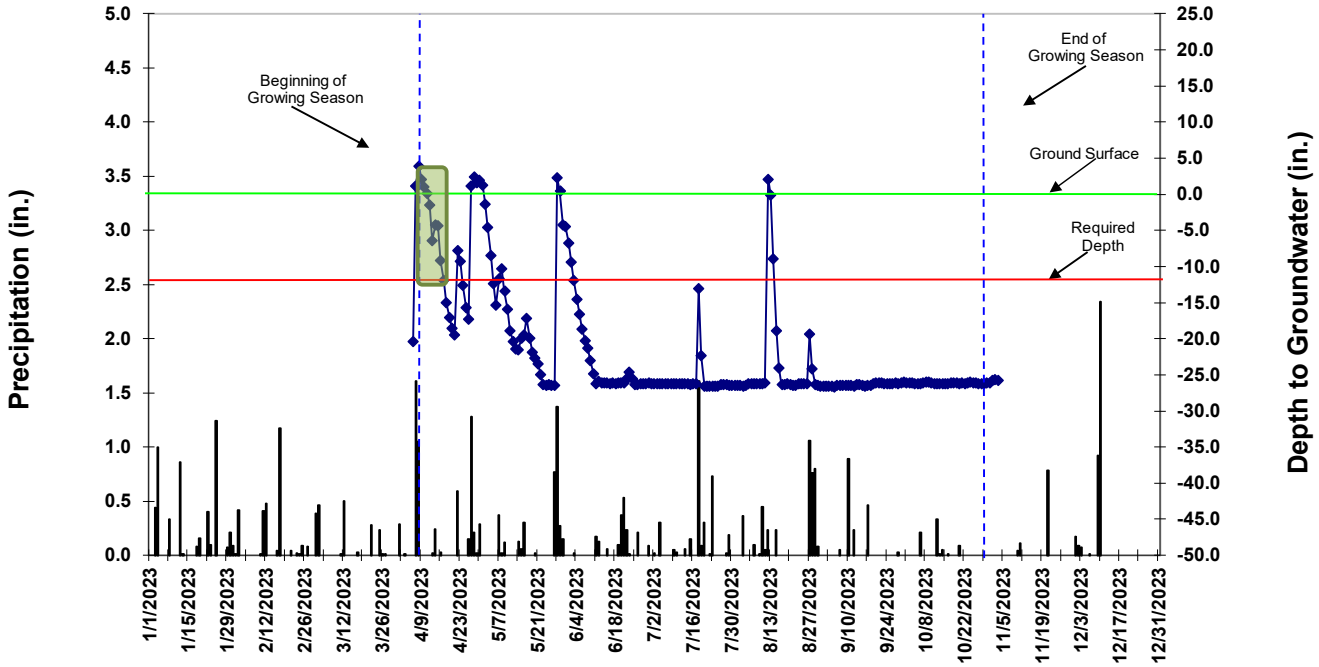
Percentage of Growing Season Water Table within 12 inches of Soil Surface: **3%**




Gauge ID: **MW3** **DATE**

Total Number of Consecutive Days Water Table within 12 inches of Soil Surface: **9** 4/9-4/17

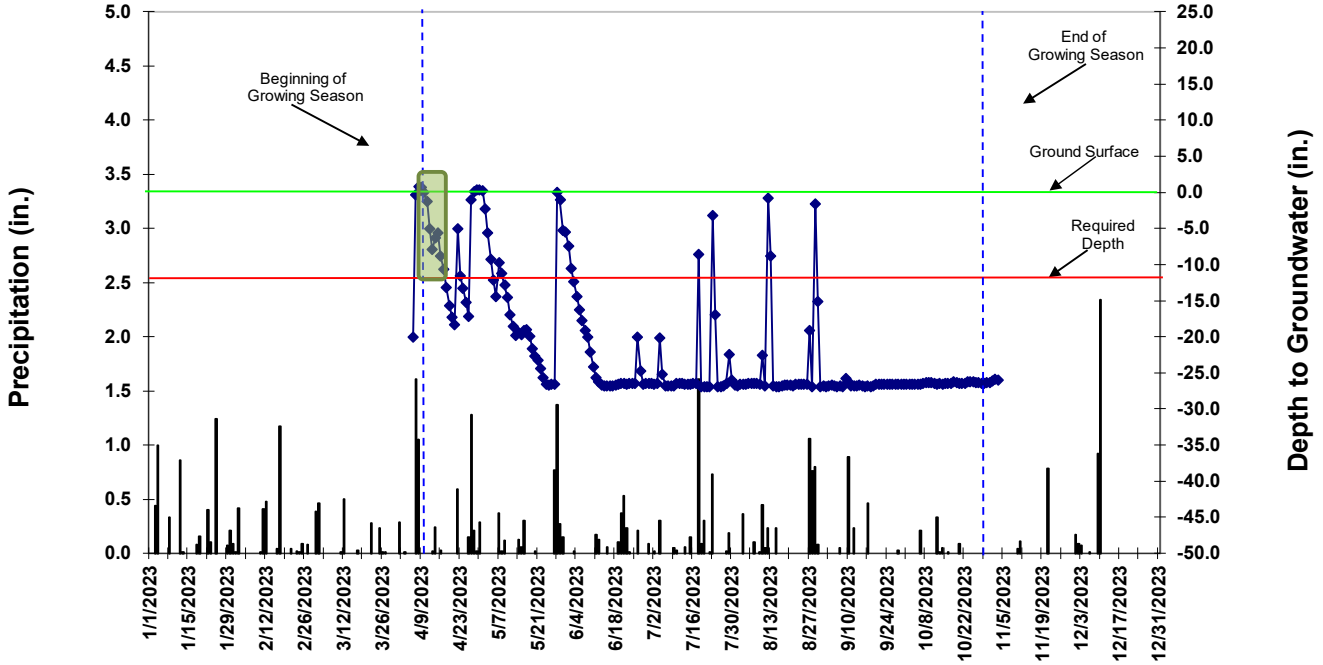
Percentage of Growing Season Water Table within 12 inches of Soil Surface: **4%**



Gauge ID: **MW4** **DATE**

Total Number of Consecutive Days Water Table within 12 inches of Soil Surface: **9** 4/9-4/17

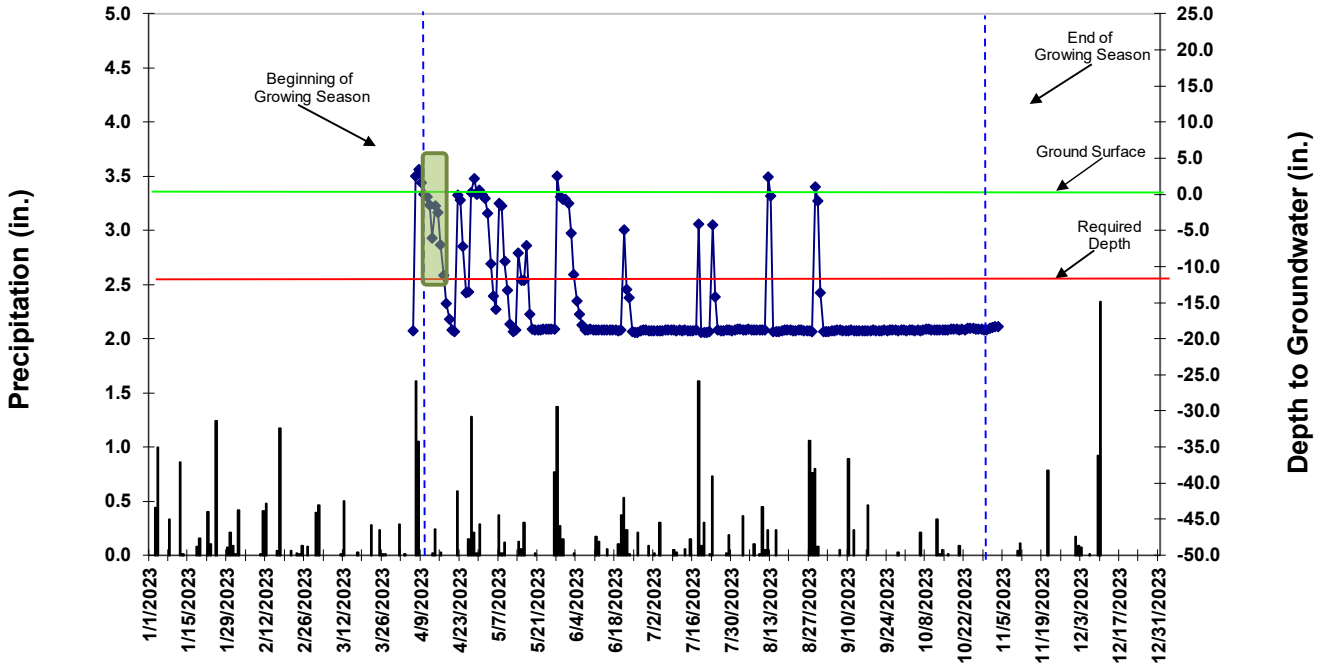
Percentage of Growing Season Water Table within 12 inches of Soil Surface: **4%**




Gauge ID: **MW5** **DATE**

Total Number of Consecutive Days Water Table within 12 inches of Soil Surface: **9** 4/9-4/17

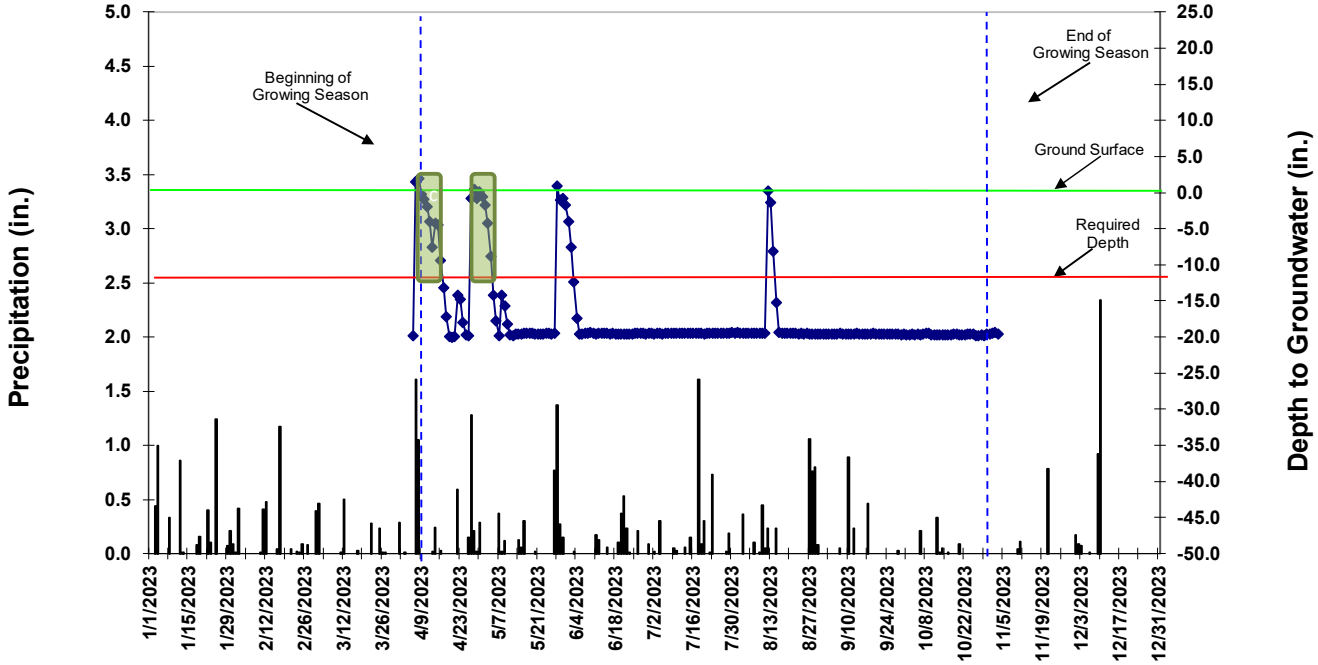
Percentage of Growing Season Water Table within 12 inches of Soil Surface: **4%**



Gauge ID: **MW6** **DATE**

Total Number of Consecutive Days Water Table within 12 inches of Soil Surface: **8** 4/9-4/16 4/27-5/4

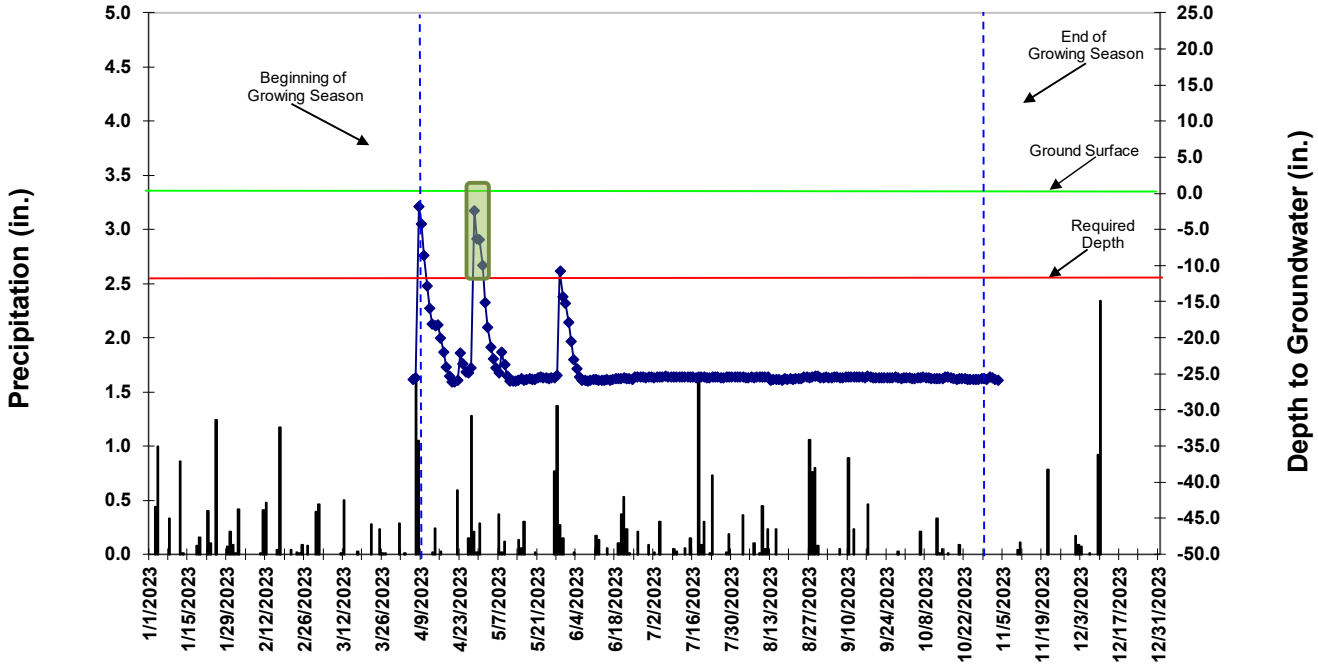
Percentage of Growing Season Water Table within 12 inches of Soil Surface: **4%**




Gauge ID: **MW7** **DATE**

Total Number of Consecutive Days Water Table within 12 inches of Soil Surface: **4** 4/28-5/1

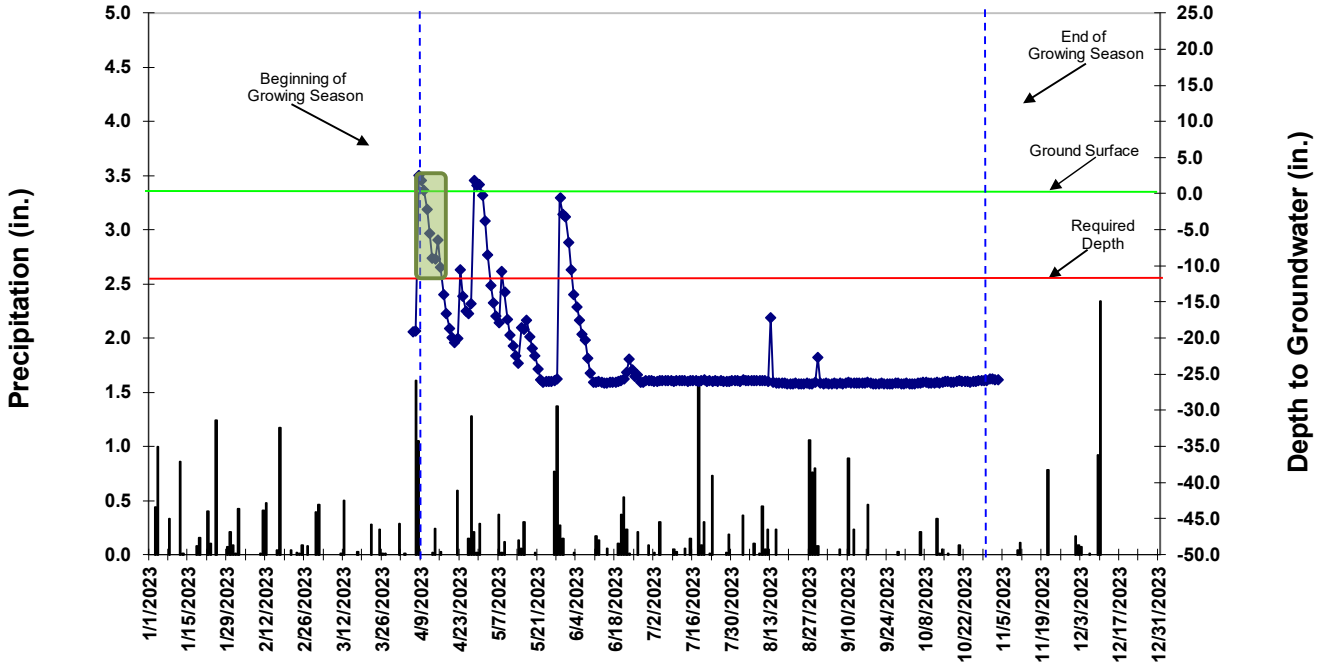
Percentage of Growing Season Water Table within 12 inches of Soil Surface: **2%**



Gauge ID: **MW8** **DATE**

Total Number of Consecutive Days Water Table within 12 inches of Soil Surface: **8** 4/9-4/16

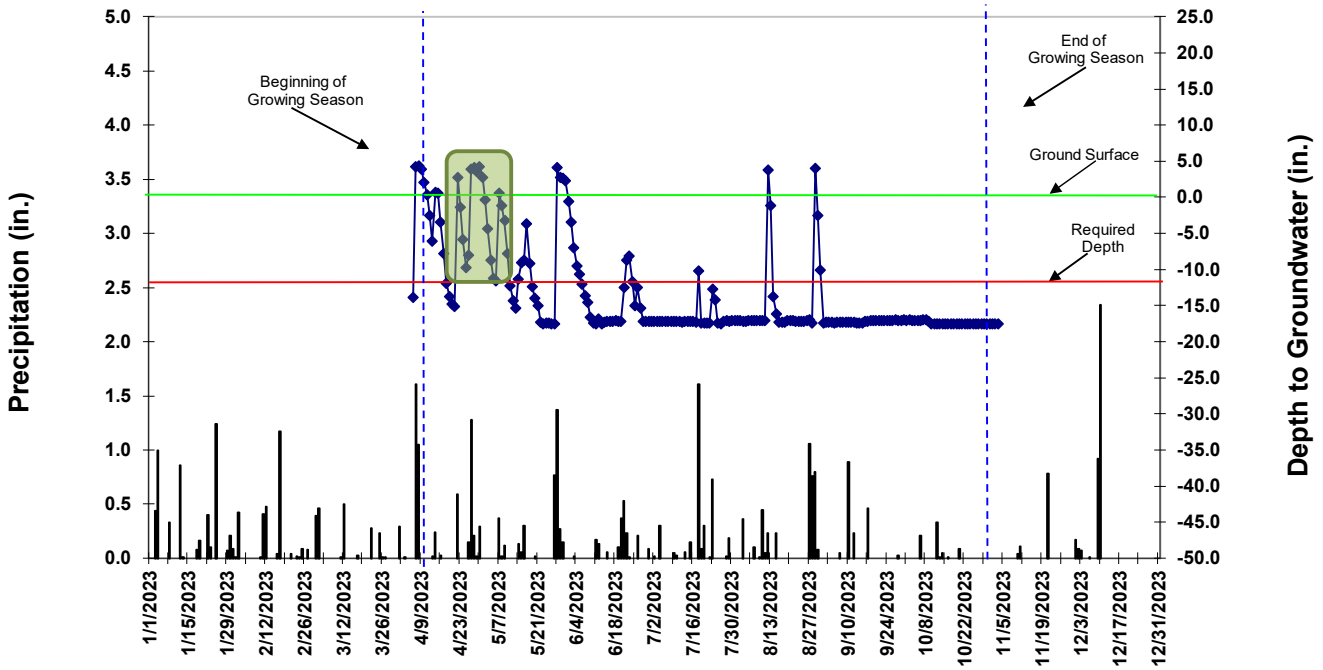
Percentage of Growing Season Water Table within 12 inches of Soil Surface: **4%**




Gauge ID: **MW9** **DATE**

Total Number of Consecutive Days Water Table within 12 inches of Soil Surface: **19** 4/22-5/10

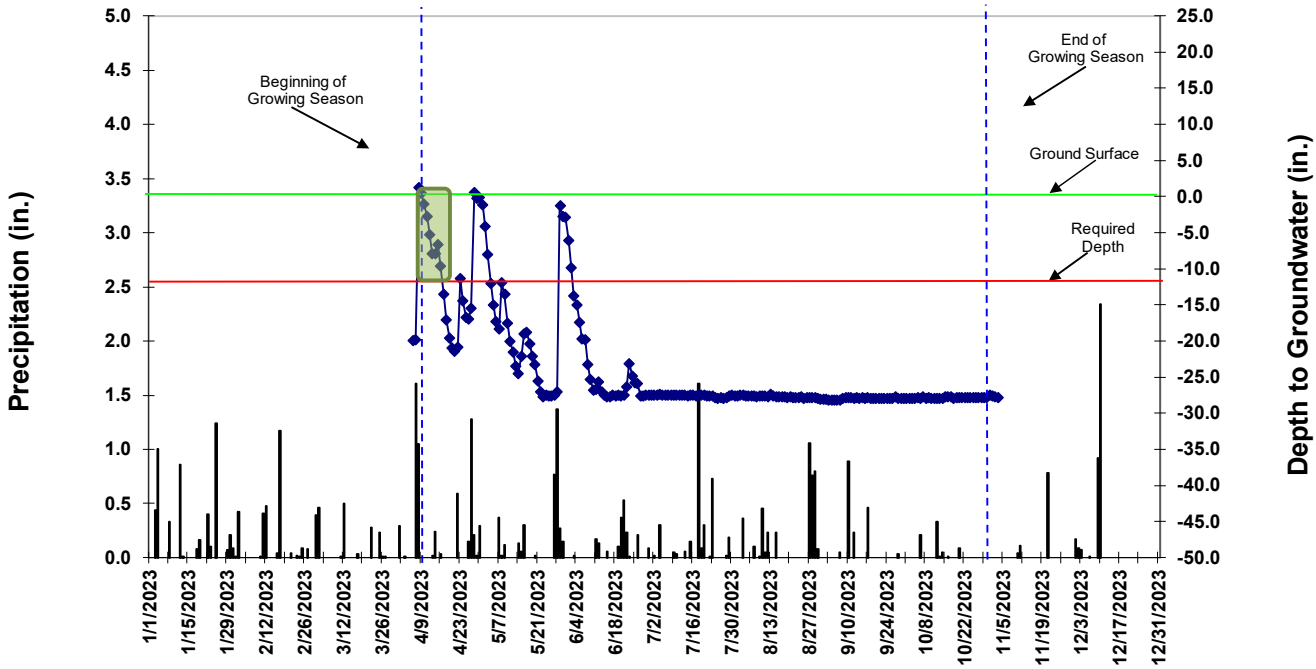
Percentage of Growing Season Water Table within 12 inches of Soil Surface: **9%**



Gauge ID: **MW10** **DATE**

Total Number of Consecutive Days Water Table within 12 inches of Soil Surface: **8** 4/9-4/16

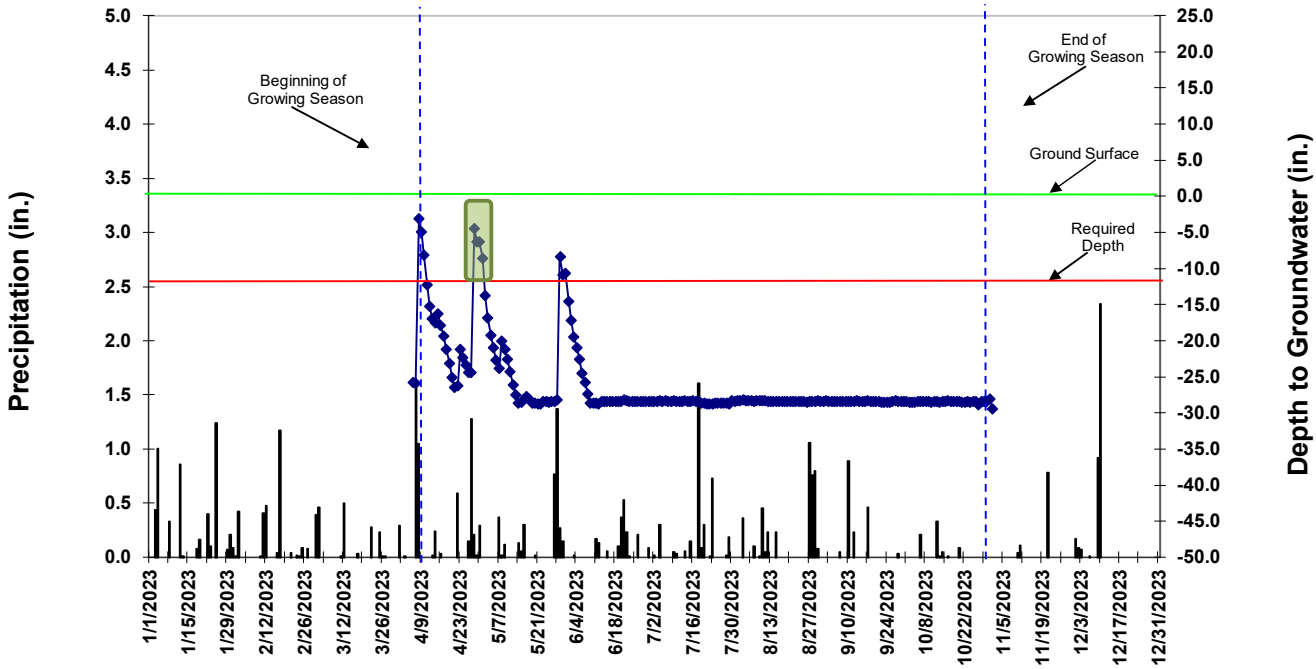
Percentage of Growing Season Water Table within 12 inches of Soil Surface: **4%**




Gauge ID: **MW11** **DATE**

Total Number of Consecutive Days Water Table within 12 inches of Soil Surface: **4** 4/27-5/1

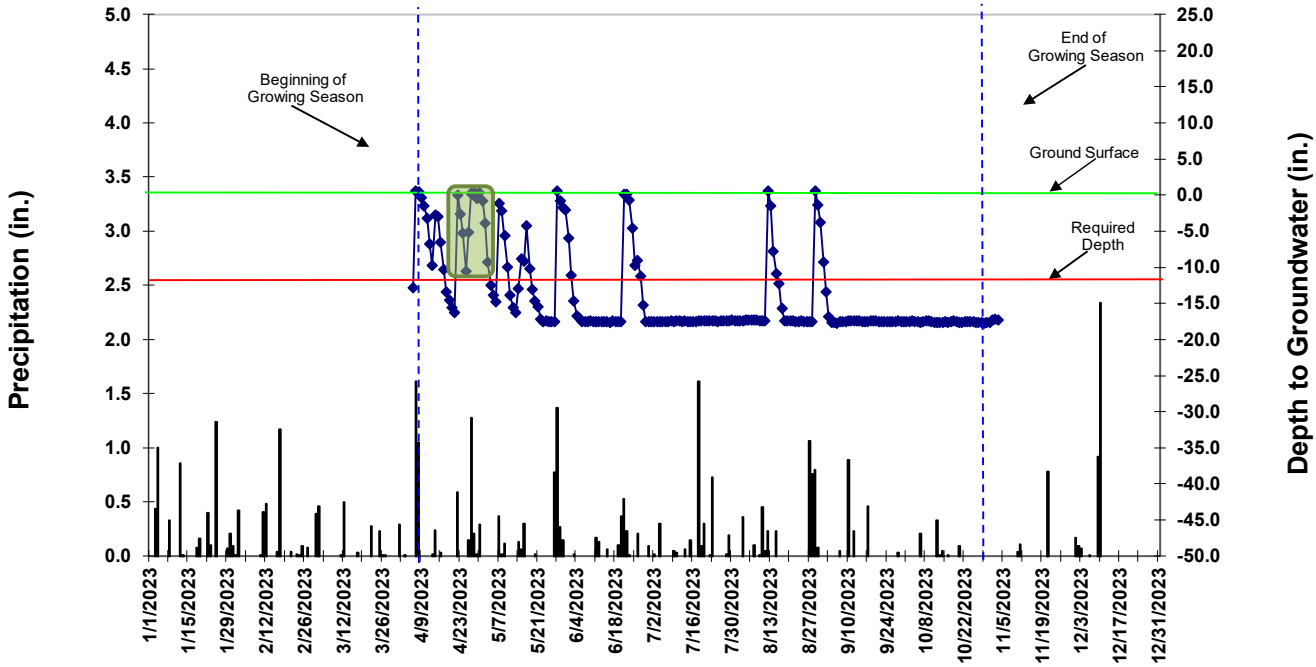
Percentage of Growing Season Water Table within 12 inches of Soil Surface: **2%**



Gauge ID: **MW_FC1** **DATE**

Total Number of Consecutive Days Water Table within 12 inches of Soil Surface: **12** 4/22-5/3

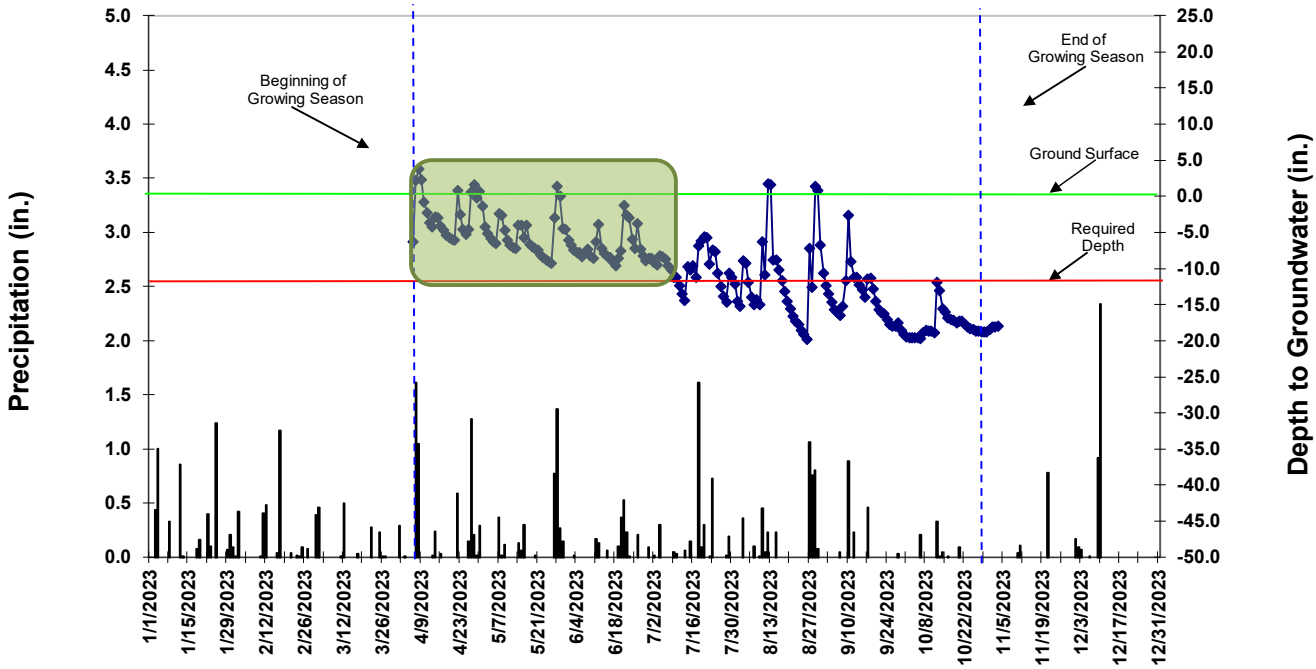
Percentage of Growing Season Water Table within 12 inches of Soil Surface: **6%**




Gauge ID: **MW_FC2** **DATE**

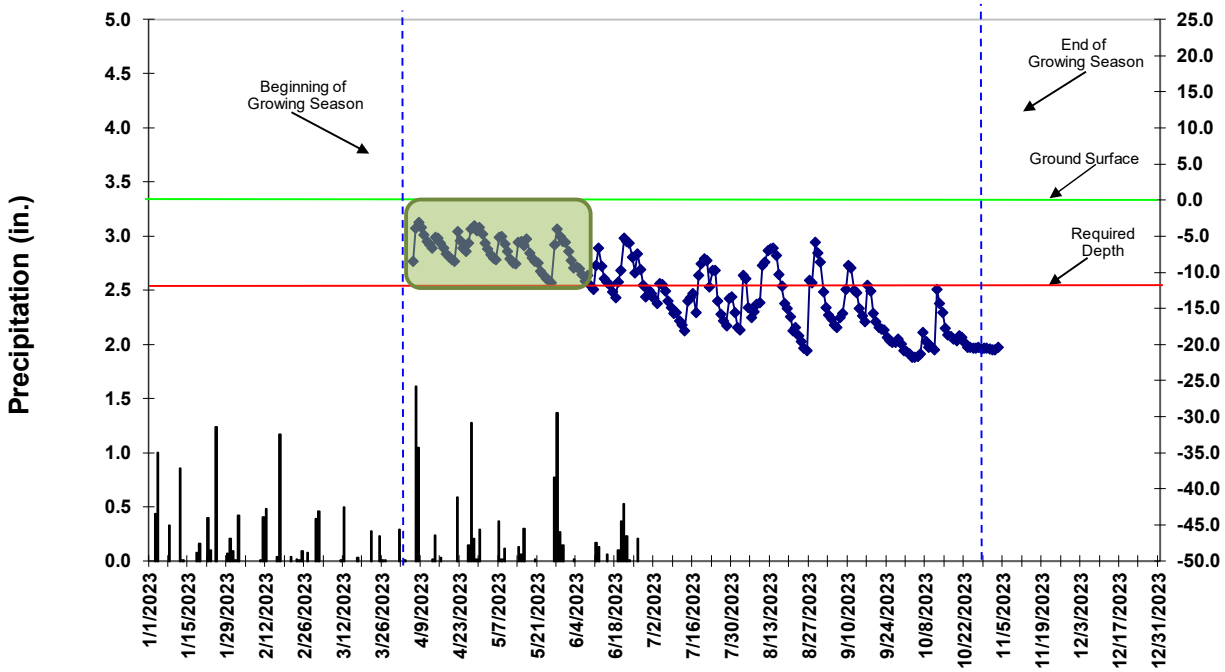
Total Number of Consecutive Days Water Table within 12 inches of Soil Surface: **96** 4/9-7/10

Percentage of Growing Season Water Table within 12 inches of Soil Surface: **48%**



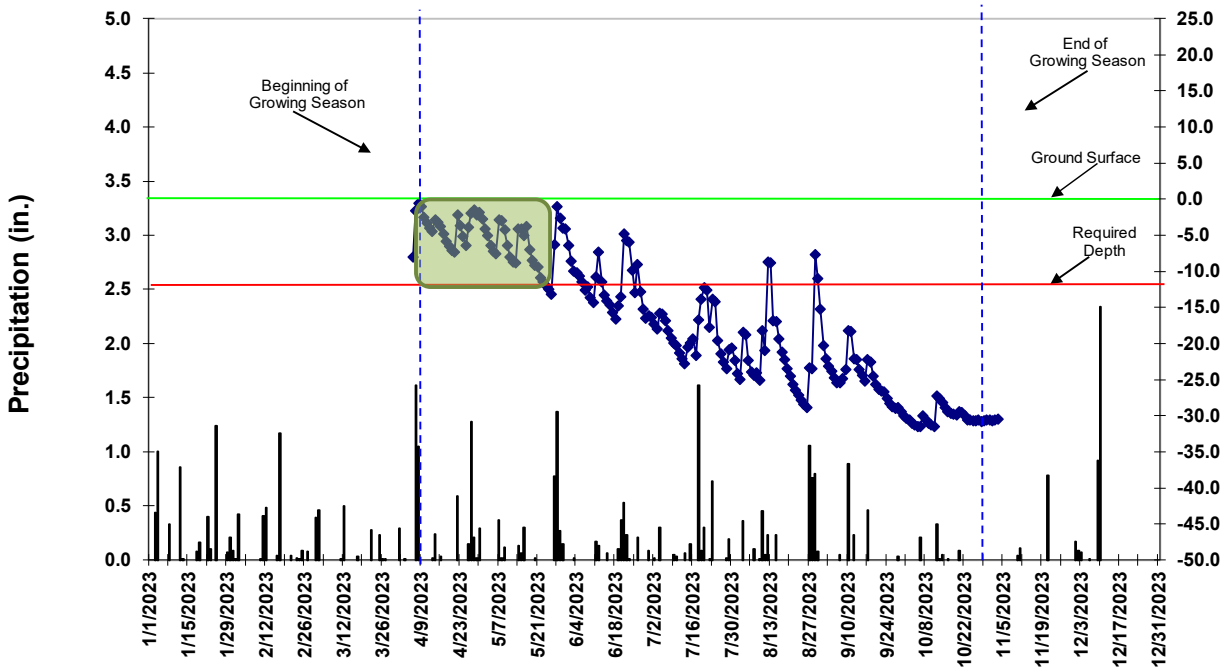
Gauge ID: **MW_FC3**

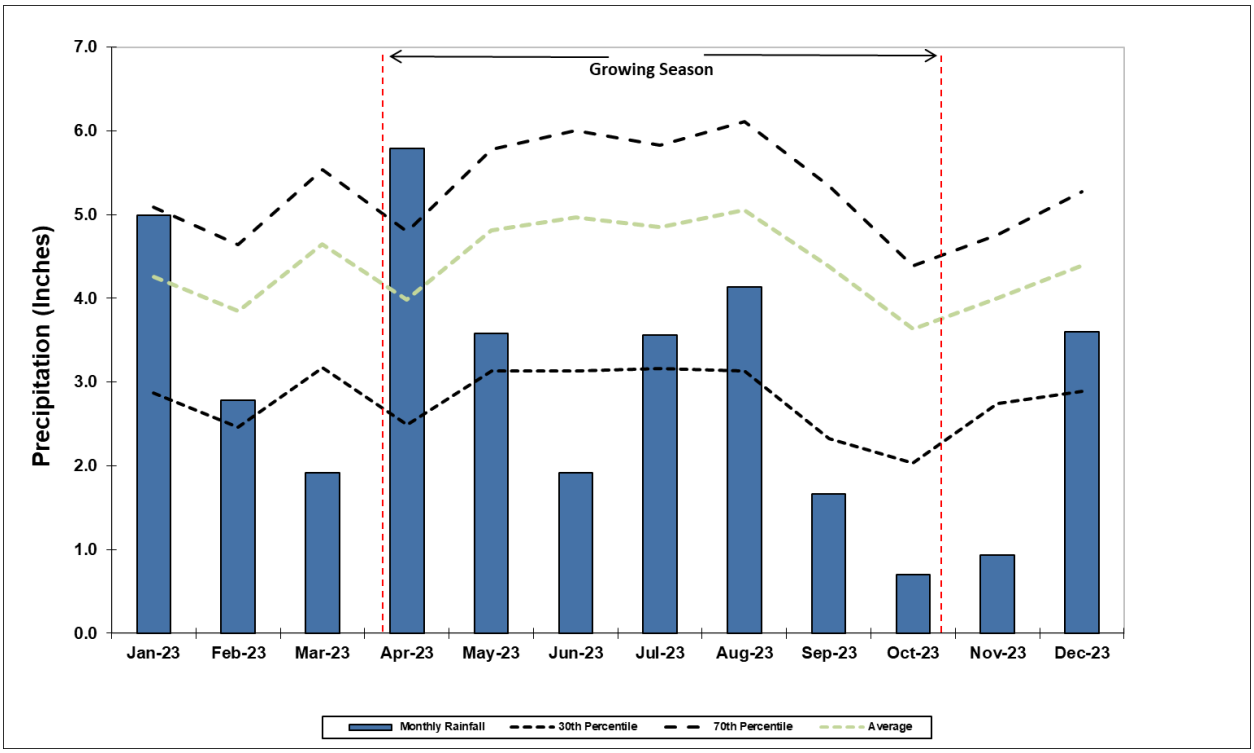
| | | DATE |
|---|---|---|
| Total Number of Consecutive Days Water Table within 12 inches of Soil Surface: | **65** | 4/9-6/9 |
| Percentage of Growing Season Water Table within 12 inches of Soil Surface: | **32%** | |

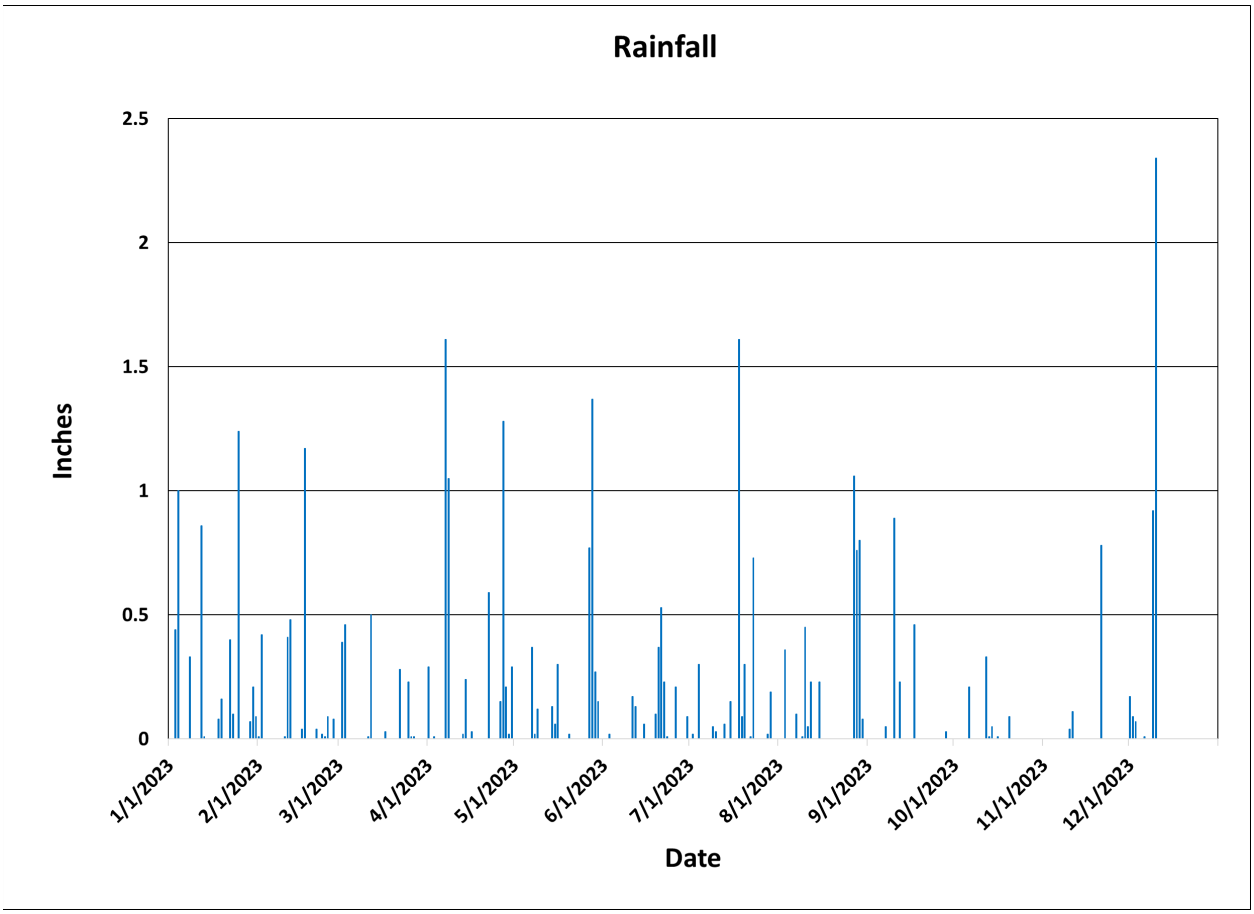


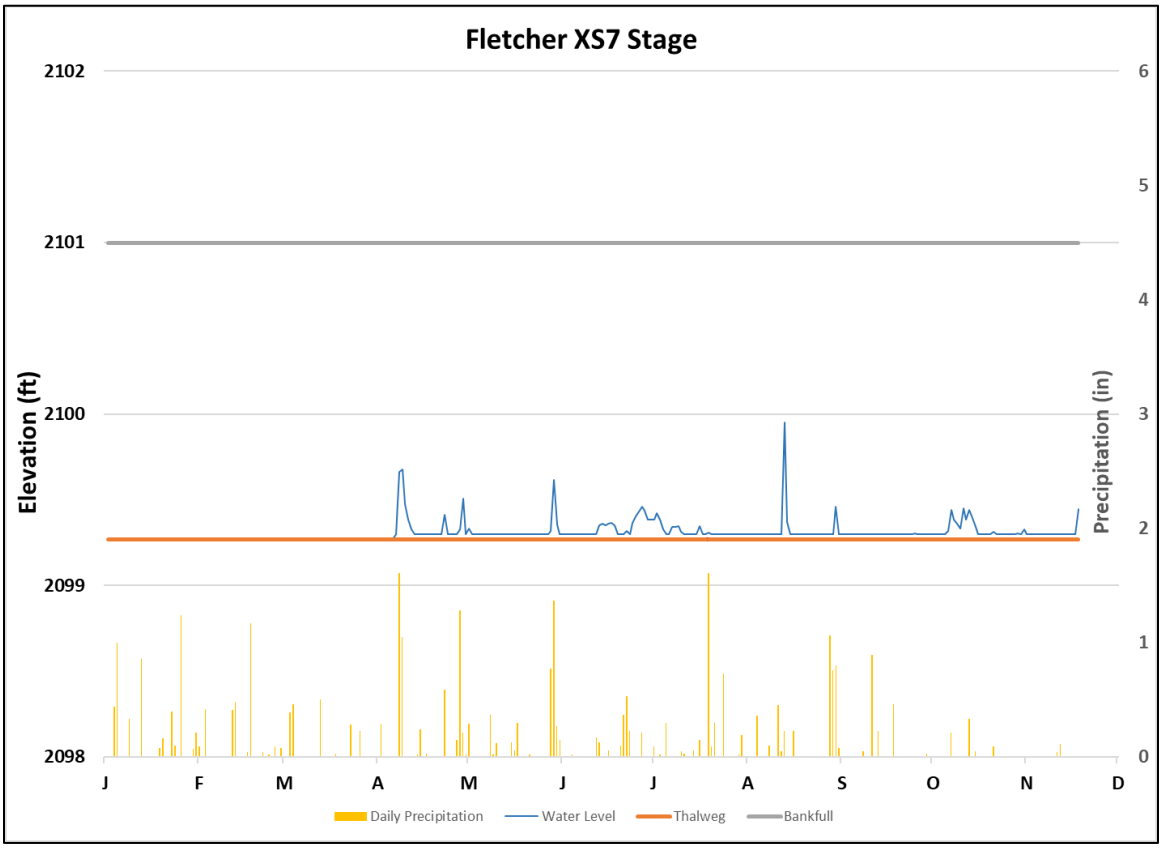

Gauge ID: **MW_FC4**

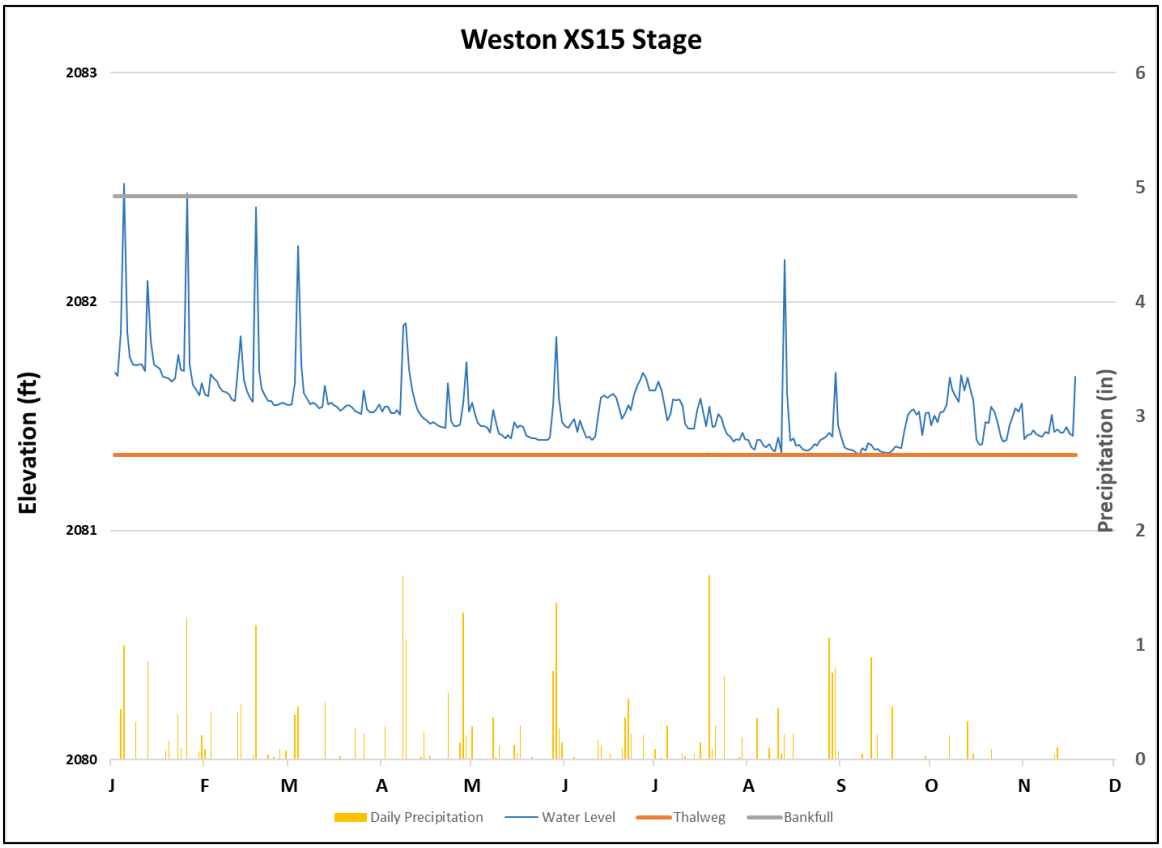
| | | DATE |
|---|---|---|
| Total Number of Consecutive Days Water Table within 12 inches of Soil Surface: | **48** | 4/9-5/23 |
| Percentage of Growing Season Water Table within 12 inches of Soil Surface: | **24%** | |

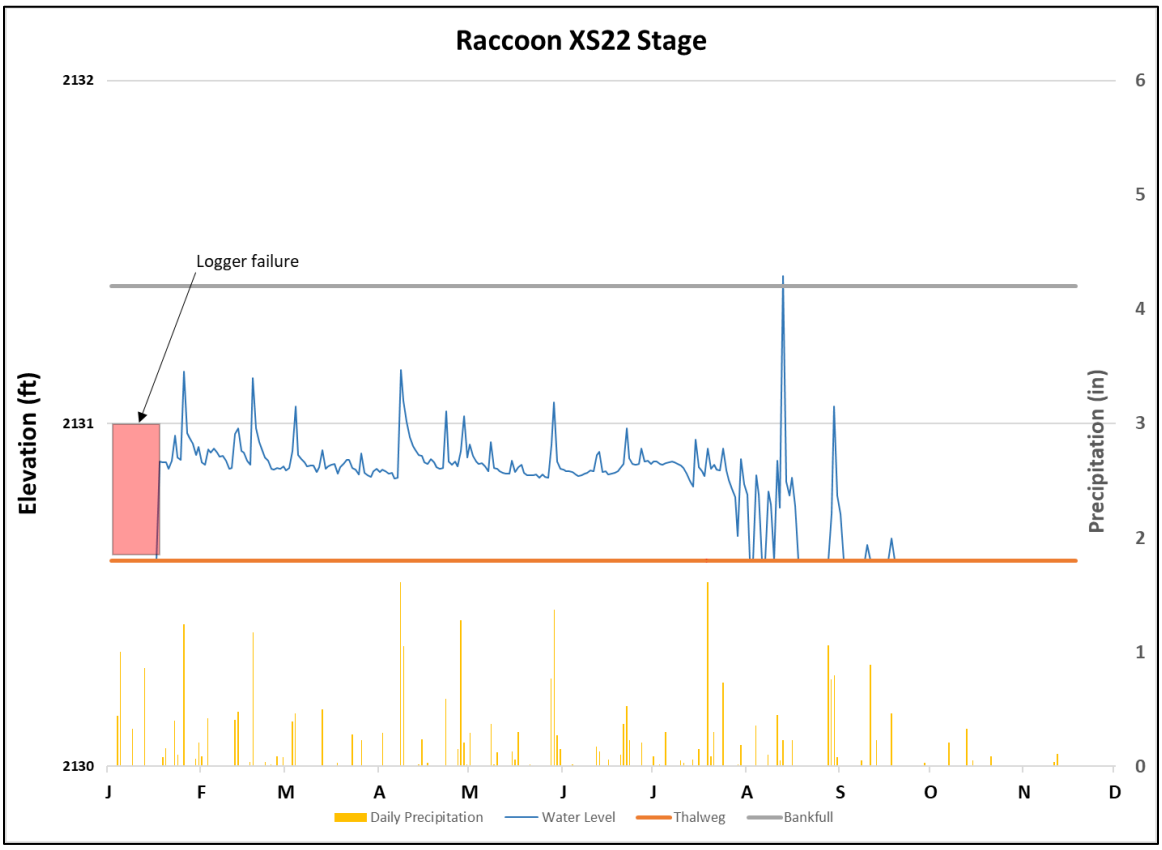


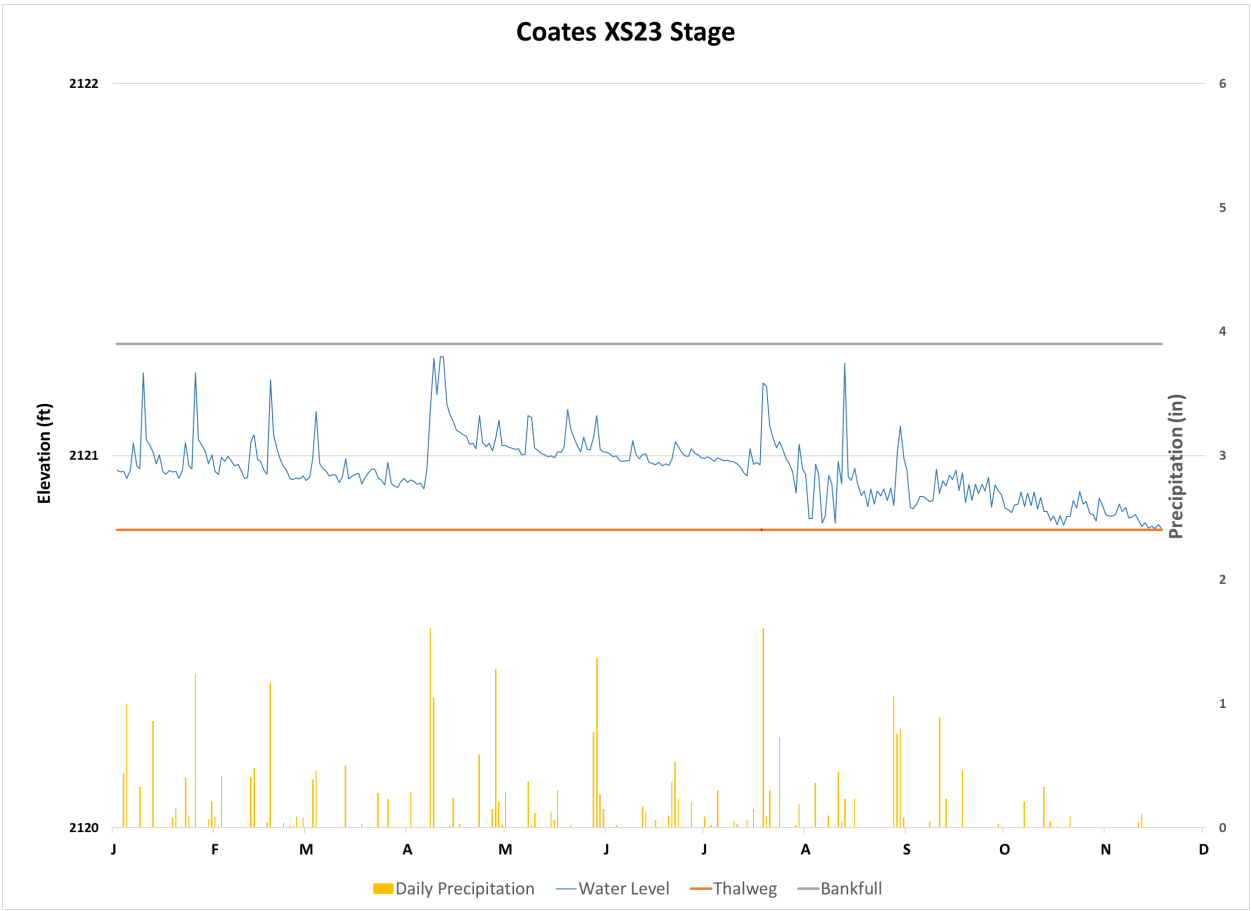

Growing Season
Precipitation (Inches)
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Jan-23
Feb-23
Mar-23
Apr-23
May-23
Jun-23
Jul-23
Aug-23
Sep-23
Oct-23
Nov-23
Dec-23
Monthly Rainfall
30th Percentile
70th Percentile
Average


Rainfall
Inches
2.5
2
1.5
1
0.5
0
1/1/2023
2/1/2023
3/1/2023
4/1/2023
5/1/2023
6/1/2023
7/1/2023
8/1/2023
9/1/2023
10/1/2023
11/1/2023
12/1/2023
Date


Fletcher XS7 Stage
2102
2101
2100
2099
2098
Elevation (ft)
6
5
4
3
2
1
0
Precipitation (in)
J
F
M
A
M
J
J
A
S
O
N
D
Daily Precipitation
Water Level
Thalweg
Bankfull


Weston XS15 Stage
2083
2082
2081
2080
Elevation (ft)
6
5
4
3
2
1
0
Precipitation (in)
J
F
M
A
M
J
J
A
S
O
N
D
Daily Precipitation
Water Level
Thalweg
Bankfull


Raccoon XS22 Stage
2132
2131
2130
Elevation (ft)
Precipitation (in)
6
5
4
3
2
1
0
Logger failure
J
F
M
A
M
J
J
A
S
O
N
D
Daily Precipitation
Water Level
Thalweg
Bankfull


Coates XS23 Stage
2122
2121
2120
Elevation (ft)
Precipitation (in)
6
5
4
3
2
1
0
J
F
M
A
M
J
J
A
S
O
N
D
Daily Precipitation
Water Level
Thalweg
Bankfull

| Table 10. Verification of Bankfull Events<br>Fletcher Creek Mitigation Project | | | | |
|---|---|---|---|---|
| **Reach** | **Date of Data Collection** | ***Date of Occurrence** | **Method** | **Photo #<br>(if available)** |
| **Fletcher Reach 1** | 8/6/2020 | 8/6/2020 | Stage Recorder | n/a |
| | 8/15/2020 | 8/15/2020 | Stage Recorder | n/a |
| | 10/18/2021 | unknown | Crest Gauge | n/a |
| | | | | |
| **Fletcher Reach 2** | 10/18/2021 | unknown | Crest Gauge | n/a |
| | 10/19/2021 | 3/25/2021 | Stage Recorder | n/a |
| | 10/19/2021 | 3/31/2021 | Stage Recorder | n/a |
| | 10/19/2021 | 8/17/2021 | Stage Recorder | n/a |
| | 10/19/2021 | 3/31/2021 | Stage Recorder | n/a |
| | 10/19/2021 | 8/17/2021 | Stage Recorder | n/a |
| | 11/14/2022 | unknown | Crest Gauge | n/a |
| | | | | |
| **Coates Branch** | 4/19/2019 | 4/19/2019 | Stage Recorder | n/a |
| | 2/6/2020 | 2/6/2020 | Stage Recorder | n/a |
| | 4/29/2020 | 4/29/2020 | Stage Recorder | n/a |
| | 8/6/2020 | 8/6/2020 | Stage Recorder | n/a |
| | 8/15/2020 | 8/15/2020 | Stage Recorder | n/a |
| | 10/18/2021 | unknown | Crest Gauge | 3 |
| | 10/19/2021 | 11/12/2020 | Stage Recorder | n/a |
| | 10/19/2021 | 12/14/2020 | Stage Recorder | n/a |
| | 10/19/2021 | 1/1/2021 | Stage Recorder | n/a |
| | 10/19/2021 | 2/18/2021 | Stage Recorder | n/a |
| | 10/19/2021 | 3/25/2021 | Stage Recorder | n/a |
| | 10/19/2021 | 3/31/2021 | Stage Recorder | n/a |
| | 10/19/2021 | 8/17/2021 | Stage Recorder | n/a |
| | 10/19/2021 | 10/7/2021 | Stage Recorder | n/a |
| | 11/13/2022 | 2/4/2022 | Stage Recorder | n/a |
| | 11/13/2022 | 5/26/2022 | Stage Recorder | n/a |
| | 11/13/2022 | 7/28/2022 | Stage Recorder | n/a |
| | | | | |
| **Raccoon Branch** | 8/13/2023 | 11/30/2023 | Stage Recorder | n/a |
| | | | | |
| **Weston Creek Reach 1A** | No data collected during 2019 due to Adaptive Management | | | |
| | 10/15/2021 | 2/6/2020 | Stage Recorder | n/a |
| | 10/15/2021 | 10/15/2021 | Crest Gauge | 4 |
| | 10/19/2021 | 3/25/2021 | Stage Recorder | n/a |
| | 10/19/2021 | 8/17/2021 | Stage Recorder | n/a |
| | 11/14/2022 | 4/23/2022 | Stage Recorder | n/a |
| | 11/14/2022 | 10/27/2022 | Stage Recorder | n/a |
| | 4/5/2023 | 1/5/2023 | Stage Recorder | n/a |

*The dates listed for 2022 were based on precipitation and stage recorder data collected between October 2021 and November 2022

# Appendix F
# Other Data

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# Fletcher MY4 June 22, 2023 IRT Meeting Notes

**Fletcher Stream and Wetland Site**
**100004**
**June 22, 2023 08:30**

*Attendees*

David Tuch (EWS), Charles Lawson, Danvey Walsh, Owen Carson (Equinox); Grant Ginn (Stantec); George Lankford (independent soil scientist); Paul Wiesner, Harry Tsomides, Matthew Reid (NCDMS); Maria Polizzi, Mac Haupt (NCDWR); Andrea Leslie, Dave McHenry (NCWRC); Steve Kichefski, Erin Davis (USACE)

**Weston Creek Wetland**

EWS proposes a success criteria reduction within the Weston Wetland from 12% to 10% based upon the evidence of Kinkora Soils within a Hatboro Map Unit. The success criteria proposed in the Initial Mitigation Plan was 10%, later changed to 12% in the Approved Mitigation Plan following DEQ comments.

*Discussion Points*

- **Equinox Staff:** Summarized history of flooding and resulting regrading efforts within the entire wetland area during adaptive management in 2020.
- **G. Lankford:** Summarized the soils-based evaluation and discussed differences between the NRCS-mapped unit and *in situ* cores he collected during assessment.
- **Mac Haupt:** Noted a steady improvement in well performance throughout the project and indicated the riparian position of the wetland which should, under normal circumstances, provide adequate hydrology for a 12% standard. Also noted dry subsoil conditions despite recent rainfall. Hydrological connectivity to Weston Creek being lower than expected was offered as a potential shortcoming within the wetland. Encouraged frequent well downloads to reduce the risk of data loss given the current conditions within the Weston Reach. Requested to review hydrologic data for the initial part of MY4.
- **Paul Wiesner, Harry Tsomides, Matthew Reid, Maria Polizzi:** No specific comments.
- **Erin Davis/Andrea Leslie:** Inquired on the status of Kudzu and other invasive vegetation within the project area. Equinox treats invasive vegetation yearly. Kudzu on lower Weston Creek was discussed specifically and is treated within the easement and on adjacent properties by Equinox. Autumn olive was discussed briefly and will be controlled by EWS in future efforts.
- **Steve Kichefski:** No specific comments.
- **Dave McHenry:** No specific comments.

*Summary*

IRT recommended to continue routine monitoring within the Weston Wetland considering that MY1-MY3 groundwater data seem to indicate gradual improvement in groundwater well performance. DMS inquired about changes in credit release for the project. IRT confirmed to release as proposed during the Fletcher MY3 Credit Release meeting in April of 2023.

**Fletcher/Coates Wetland**

EWS proposes to add a new creditable wetland area to include the area lying between Fletcher Creek Reach 1C and Coates Branch Reaches 1C and 1D [see attached map]. Total wetland credits would not exceed the original contracted amount.

*Discussion Points*

- **Equinox and Stantec Staff:** Summarized history of soils investigation, grading, and groundwater data collected within the proposed wetland expansion area. Two groundwater wells have been monitored since 2020 with two more installed for use beginning in the MY4 monitoring season. Maps were provided detailing the grading and relative excavation depths within the Fletcher Coates Wetland during construction.
- **Mac Haupt, Harry Tsomides, Matthew Reid, Maria Polizzi:** No specific comments.
- **Paul Wiesner:** Requested that EWS take good representative pictures of repair on Fletcher 2A to include in the monitoring report.
- **Erin Davis:** Expressed satisfaction with the available data, number and location of monitoring features including preconstruction data and excavation estimates. Mentioned the thickness of herbaceous vegetation on Coates Branch but noted that it was not obstructing channel formation; Andrea Leslie noted that the dense herbaceous layer was excellent habitat for wildlife. Checked the streams intermittently and indicated that they looked in good condition.
- **George Lankford:** Requested clarification on the need for additional soil evaluations on the Fletcher Coates wetland to satisfy the needs of the IRT. Steve Kichefski indicated that he would review the project records and clarify whether there is a need for additional soil evaluations. Clarification is currently in progress.
- **Andrea Leslie:** Noted invasive vegetation within the project area. Equinox is aware of residual pockets of invasives and treats invasive vegetation yearly.
- **Dave McHenry:** No specific comments.

*Summary*

IRT members were satisfied with the historical data and current monitoring features. A question remains on the preliminary soils survey and the need for additional soils information within the Fletcher Coates wetland area. A request was made to include monitoring data for the Fletcher Coates Wetland in its entirety in the MY4 Monitoring Report and continue to report results in future monitoring years.

## Sitewide Summary

**IRT:** Continue routine monitoring of the Weston Wetland under the existing success criteria. Results from future monitoring years will dictate the discussion regarding creditable wetland area within the Weston Wetland and need for the expansion of creditable wetlands to include the Fletcher Coates Wetland area.

Continue to monitor the Fletcher Coates Wetland in future years. Provide the monitoring data for the Fletcher Coates Wetland in the MY4 Monitoring Report. Report on Fletcher Coates Wetland monitoring features in successive monitoring reports.

Continue to monitor the encroachments across the site. DMS is willing to send official letters if assistance is needed for communicating with problematic landowners, lessees, and tenants. DMS may be trending toward withholding payment on sites with recurrent encroachments in and beyond MY4.

IRT confirmed credits to be released as proposed during the Fletcher MY3 Credit Release meeting April 2023.

June 8, 2023

Interagency Review Team (IRT) Members

Subject: Fletcher (SAW-2016-02205) Wetland Expansion Area and Hydroperiod Criterion Change

Dear IRT Members,

We propose to expand the creditable wetland area to include a portion of the area between Fletcher Creek Reach 1C and Coates Branch Reaches 1C and 1D (Attachment 1). The proposed expansion area is 1.999 acres. We also propose to change the wetland saturation period for the Weston area wetland from 12% to 10% as was originally proposed by EW Solutions due to soil characteristics but was later changed at the request of NCDWR.

## Fletcher/Coates Area Wetland Expansion

Hydric soils were identified at various depths across the proposed wetland expansion area (Wetland F) as detailed in the Preliminary Site Soil Evaluation Fletcher Mitigation Site-Upstream on Fletcher Creek document (Attachment 2: Figure 1). The potential for wetland credits in this area was also discussed at the Post Contract IRT Site Visit as documented in the notes from that meeting (Attachment 3: Note 4). No further investigation of the buried A horizon mentioned in those notes was made, nor was a 3D model of the buried A horizon surface generated.

However, based on valley shape and geomorphic position, it is likely this area was historically a transition from headwater forest type wetlands to a bottomland hardwood forest area. Other, similar systems in the region have been documented to fill with deposition during post-settlement deforestation and agricultural development. Although a groundwater table can be temporarily elevated and supported in conjunction with floodplain aggradation due to the deposition of this fine-grained material (often referred to as legacy sediment), a combination of ditching and the introduction of livestock on the newly elevated surface leads to stream incision and subsequent lowering of the groundwater table. The potentiometric surface gradient can be particularly steep near the channel boundary. With two channels (Fletcher and Coates) in such close lateral proximity, it is likely the groundwater table was lowered significantly and quickly, simultaneous with stream incision. As a result, and in tandem with the evidence of buried hydric soils, we posit that the currently existing wetland is the re-establishment of a previously existing wetland.

A soil study for the Coates area could be performed to delineate the boundaries of wetland re-establishment. Based on previous work that identified a general depth to the hydric horizon, it may be possible to estimate the area of re-establishment. Descriptions and photos of recent soil borings near each well are included in Attachment 4.

For the Coates area we would suggest a performance criterion of between 12% and 16% (guidance for Toxaway series) with depressional areas greater than 16 percent. Limited groundwater monitoring has been ongoing in this area since 2020. The two wells which were installed (FC1 and FC 4) have recorded an 11% or higher wetland saturation period during each of those years (Attachment 4). Well locations are indicated on the attached map. As of last year, two additional wells and pressure transducers were added to the area (FC2 and FC3).

## Weston Area Wetland Hydroperiod Criterion

In support of the change of the Weston wetland hydroperiod change from 12% to 10% we would point to our initial Mitigation Plan where we requested a wetland hydroperiod of 10% due to the similarity of the soil to the Kinkora (Ko) series rather than the mapped Hatboro soil. This discussion is documented in the comments section of the Final Mitigation Plan (Attachment 5).

The soil investigation does not provide adequate detail to distinguish the minor differences between the Hatboro (Ha) series and the Kinkora (Ko) series, and the potential inclusion of the adjacent map unit Dillard (DeA). Additionally, the site evaluation indicates soils have a color range between 2.5 YR and 10YR, which is not within the official range of either of these series. Based on the representative soil profiles, the area appears to lean toward a more clayey soil, a characteristic of the Kinkora series. Some of the profiles also indicate a relatively distinct profile development, a characteristic of Ultisols. It was determined that the soils more closely identified as Kinkora, however, the relatively small, heterogenous nature of the site dictates that classifying the area into a series between two very similar soils would not provide additional useful information.

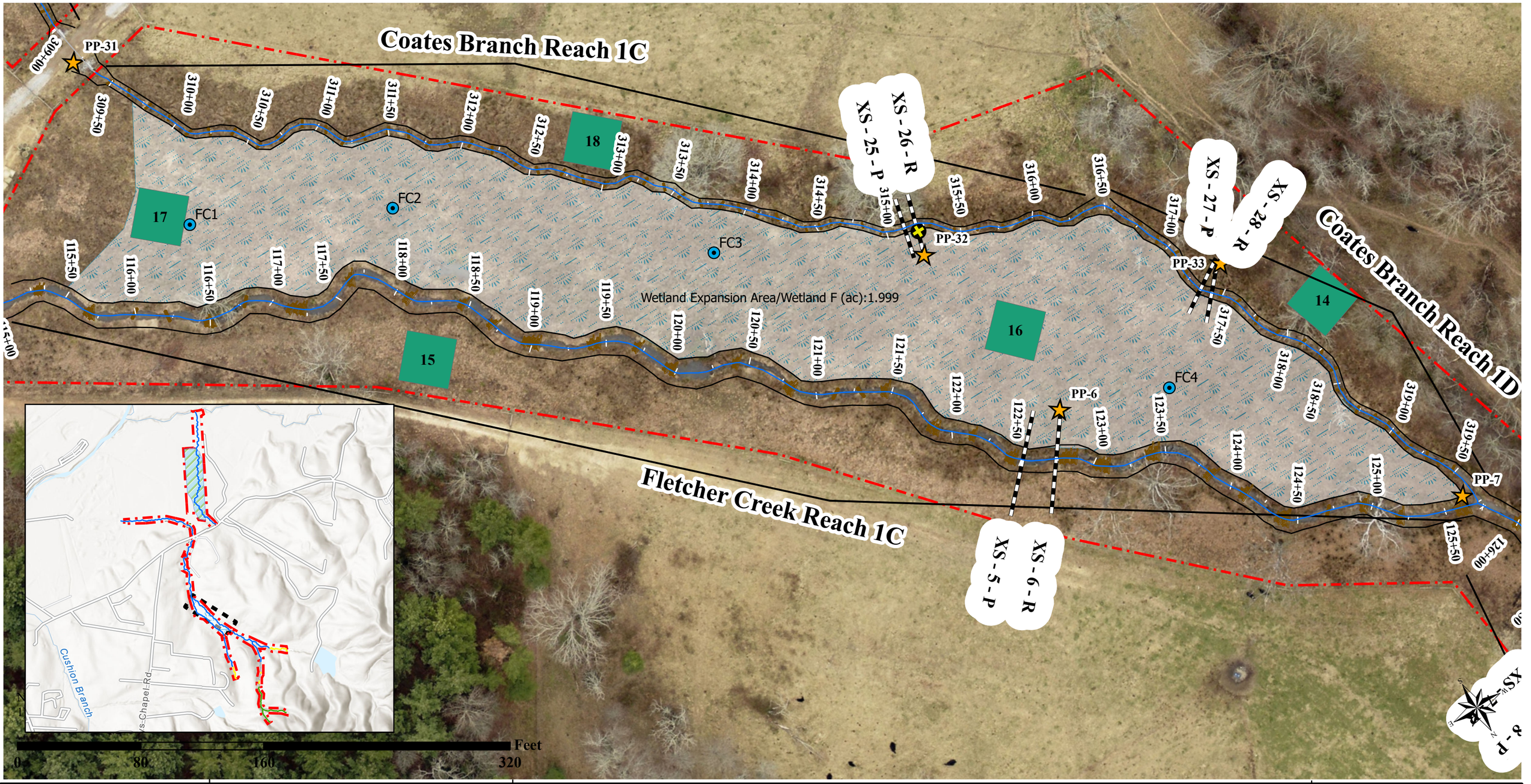
Generally, a series is a term applied to the description approved by the NRCS (Natural Resource Conservation Service). They mainly serve as specifications for identifying and classifying soils for mostly agricultural uses. The usefulness in discussing a “series” lies in its ability to suggest management for specific uses. Most smaller sites have a wide range of characteristics, often too small to be mapped by the NRCS. To provide a true classification to a series, work would require numerous lab tests to verify soil textures, measure pH, base saturation, and additional interpretation work. The work provided by the soils report in question evaluated site-specific criteria relevant to the intended use: wetland mitigation.

Additional soils work for the Weston area may be able to provide a more realistic boundary for areas meeting versus those areas falling short of the success criterion.

Sincerely,

Danvey Walsh
Environmental Scientist

| Wetland Expansion Area Mitigation Components | | | | | |
|---|---|---|---|---|---|
| Project Component | Stationing/Location | Restoration Acreage | Approach | Mitigation Ratio | WMU |
| Wetland F | Fletcher 1C/Coates 1C and 1D | 1.999 | Re-establishment | 1:1 | 1.999 |




Prepared for

Mitigation Services
ENVIRONMENTAL QUALITY

Wetland Expansion Area
Fletcher Mitigation Site
Henderson County, NC
NCDMS Contract No.: 006997
NCDMS Project No.: 100004
May 2023

**Streams**
- No Credit
- Restoration
- Wetland Expansion Wells
- Crest Gauge
- Photo Point
- Cross-Section
- As-Built Top of Bank

**Vegetation Plot**
- Meeting
- Wetland Expansion Area (Wetland F)
- Conservation Easement

Prepared by

EQUINOX

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**GEORGE K LANKFORD, LLC**
Shady Grove Road
Pittsboro, NC 27312
919-602-0127 gklankford91@gmail.com

June 22, 2017

Mr. Steve Melton
Equinox Environmental
37 Haywood Street, Suite 100
Asheville, NC 28801

Re: Preliminary Site Soil Evaluation
Fletcher Mitigation Site-Upstream on Fletcher Creek
Henderson County NC

---

A limited hydric soil field evaluation was completed on March 20, 2017 for the floodplain along Fletcher Creek at the Fletcher Site located in Henderson County, North Carolina. This area is upstream of the detailed hydric soil evaluation along Weston Branch. Within the mitigation project, the floodplain between Fletcher Creek and Coates Branch at the Fletcher Mitigation Site was investigated for the depth to buried A horizons with hydric indicators. This report presents an evaluation of the subject property based upon a short field evaluation the purpose of which is evaluate the presence buried soil horizon exhibiting hydric indicators or relict indicators. and approximate extent of these soil characteristics, and assess the site suitability for wetland restoration/mitigation. This evaluation is not a detailed soil delineation and all boundaries shown are only an approximation estimated from the limited field work.

The observations and opinions stated in this report reflect conditions apparent on the subject property at the time of the site evaluation. My findings, opinions, conclusions, and recommendations are based on the locations and boundaries of the property as evident in the field.

**Project Information and Background**

The purpose of the project was to determine the presence and depth of buried hydric horizons within the narrow floodplain between Fletcher Creek and Coates Branch. The site was evaluated to assess this potential on April 22, 2016 and March 20, 2017.

The property is located on the Fletcher Mitigation site south of Jackson Road (SR 1539) between to small tributaries. The site is approximately 3 acres located on a flood plain between Fletcher Creek and Coates Branch. The streams and floodplain are within an active pasture, surrounded by steeper forest land. On the east is Fletcher Branch and to the west is Coates Branch. Fletched Branch is 1$^{st}$ or 2$^{nd}$ order stream and Coates Branch is a 1$^{st}$ order stream. These streams flow northward with a narrow, elevated floodplain separating them that has become elevated due to a combination of excessive deposition and severe incision of the two streams. Management activities such as excavation of channels or spoil on the floodplain are unknown. There is terrace like features perpendicular to the channels on this floodplain potentially related to farming activities.

Site use is currently livestock having access to the channels. Both channels are heavily impacted by livestock and deeply incised below the floodplain. Stream bank erosion and surface churning for livestock are throughout this area. Fletcher Creek is a second order stream and Coates Branch is a 1$^{st}$ order channel. Both flows northerly toward Jackson Road and the Hooper's Creel and Cane Creek floodplain. The existing surrounding land use is undeveloped land, small farms, and single-family homes.

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**Methodology**

The soils mapped by the Natural Resource Conservation Service (NRCS) Henderson county soil survey indicate Codorus loam (Co) (Arkaqua loam) is mapped across most of the evaluated area (Appendix-NRCS Soil Report). This soil is naturally poorly drained and frequently flooded. The typical Codorus soil is somewhat poorly drained with potential inclusions of Toxaway silt loam. The typical Codorus soil when drained and protected from flooding is considered prime farmland. The NRCS web soil survey shows this map unit consists of 90% drained Arkaqua and 5% Toxaway with 5% dissimilar soil. The Codorus soil series has a taxonomic classification of *Fluvaquentic Dystrudepts*. Only inclusions of Toxaway soil are considered hydric by the NRCS.

A series of soil borings on the floodplain between these streams were evaluated to described and verify buried horizons containing hydric indicators. Locations of soil boring were located using the Trimble Outdoor Navigator smart phone application and exported to Google Earth where areas having similar depths were hand sketched. Soils were evaluated using morphologic characteristics to determine hydric indicators based on criteria of "Field Indicators of Hydric Soils in the United States" (USDA, NRCS, 2016, Version 8.0), and indicators valid for the Eastern Mountains and Piedmont Region (V2.0), Land Resource Region P.

**Results and Discussion**

Soils located on the project site were observed to have a range of characteristics and numerous buried horizons exhibiting hydric indicators (Appendix and Figure 3). Soil texture is sandy loam with a few lenses of silt loam or sandy clay loam. The NRCS mapped series also indicate a wide range of textures and colors. The boring observations do not contain adequate detail to classify these soils to a series.

Horizons were viewed the for potential to have formed as a surface horizon or near a surface horizon by evaluating for hydric indicators. Any horizon that not exhibiting common indicators was labeled as non-hydric. The area exhibits several potentially buried horizons at different depths having hydric indicators and relict hydric indicators. The floodplain was separated into three general categories by depth to a horizon with hydric indicators; 8 to 15 inches, 15 to 20 inches, and 25 to 35 inches. Typical of alluvial landscapes, some profiles have multiple horizons separated by non-hydric layers. A sketch map based upon the deepest depth to a horizon was created. Due to the high variability across the site it appears that historically multiple events have created hydric conditions and created multiple layers having hydric indicators.

Soils were consistently sandy in texture (sandy loam with limited loamy sand, silty loam, and sandy clay loam). The most common indicators are F3-Depleted Matrix and A12-Thick Dark Surface. No evidence of current hydrology was observed to the depth of any boring. Along Fletcher, Creek, erosion has created shelves on the bank that appear to correspond to some of the adjacent buried horizons. Typical profiles are attached.

**Conclusions**

The floodplain of Fletcher Creek exhibits evidence of multiple depositional events and historic saturation. Currently the floodplain is bordered by two deeply incised stream that cannot normally access the floodplain. The sandy nature of these soils does not currently allow long term saturation to form hydric indicators found at this site. The landscape indicates the historic hydrologic input likely from a high-water table related to the stream bed elevation. The potential reestablishment of the water table at one of these horizon depths with hydric indicators could restore some of the historic wetlands in this floodplain. Additional detailed site information will be required to verify the extent of any potential wetland restoration after a new stream bed elevation is established. Any restoration of these wetlands will

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reestablish the natural function to these degraded aquatic resources by providing a stable and unique riparian wetland habitat contiguous with the streams.

**Summary Table of Site Characteristics**

| |
|---|
| Site characteristics present suitable for wetland restoration<br>• Buried horizons having an F3-Depleted Matrix and A12-Thick Dark Surface are present.<br>• Land use modifications appear straightforward.<br>• Multiple depths to hydric soil are available for target elevations.<br>• Topography and landscape position are mostly suitable for hydrologic soil restoration.<br>• The proposed stream restoration can be potential modified to a target elevation matching soil indicators. |
| Limitations at this site are minor.<br>• Soils are sandy textured.<br>• The extent of any hydrologic restoration would depend upon the stream bed elevation.<br>• Multiple depth to hydric indicators may restrict potential extent for a given final elevation.<br>• Not all areas exhibit overlapping hydric horizons. |

This report describes the results of this soil evaluation. Any subsequent transfer of the report by the user shall be made by transferring the complete report, including figures, maps, appendices, all attachments and disclaimers.

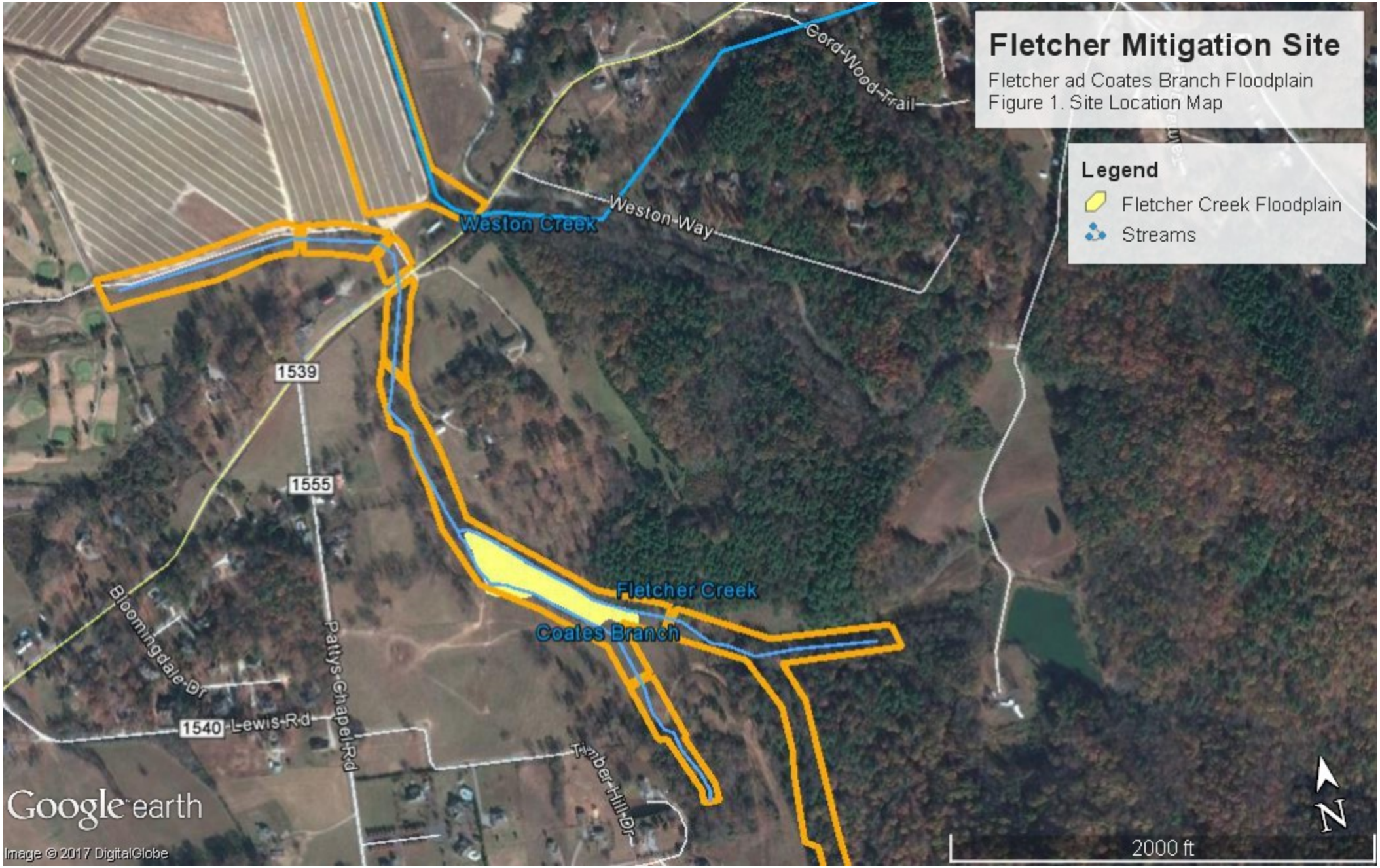
Sincerely,

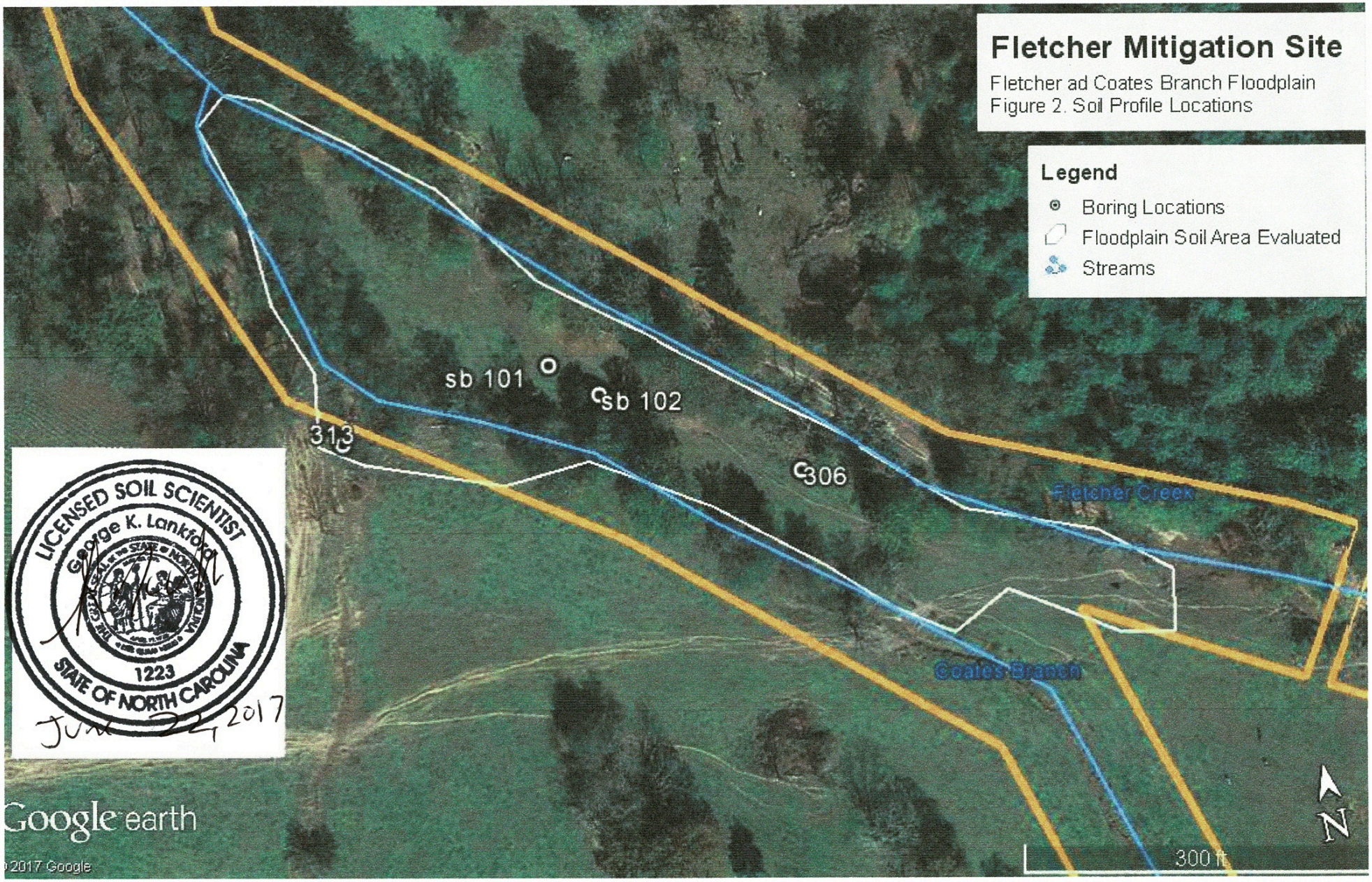
George Lankford
Soil Scientist, LSS #1223

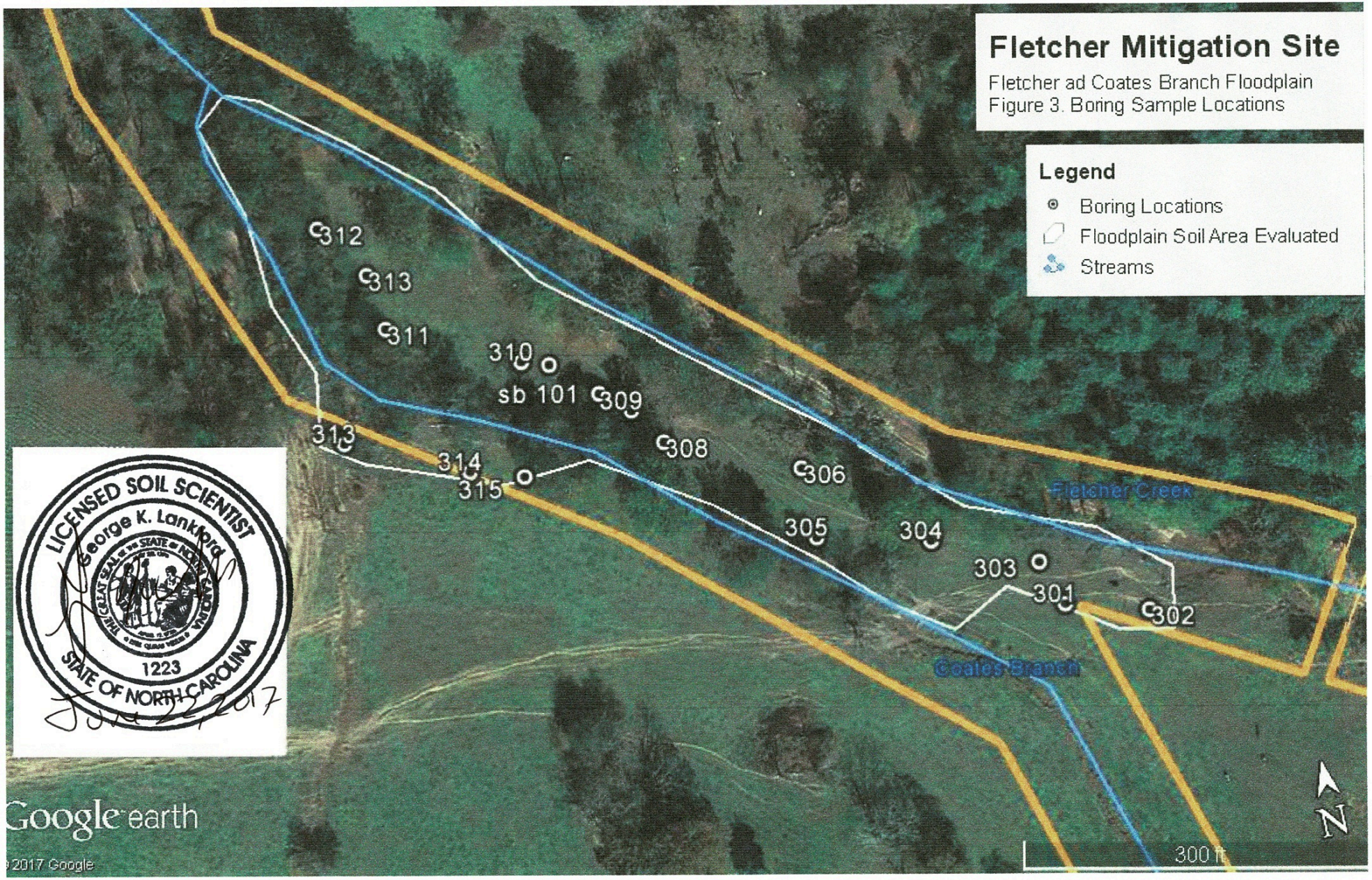
cc: Steve Melton
Grant Ginn

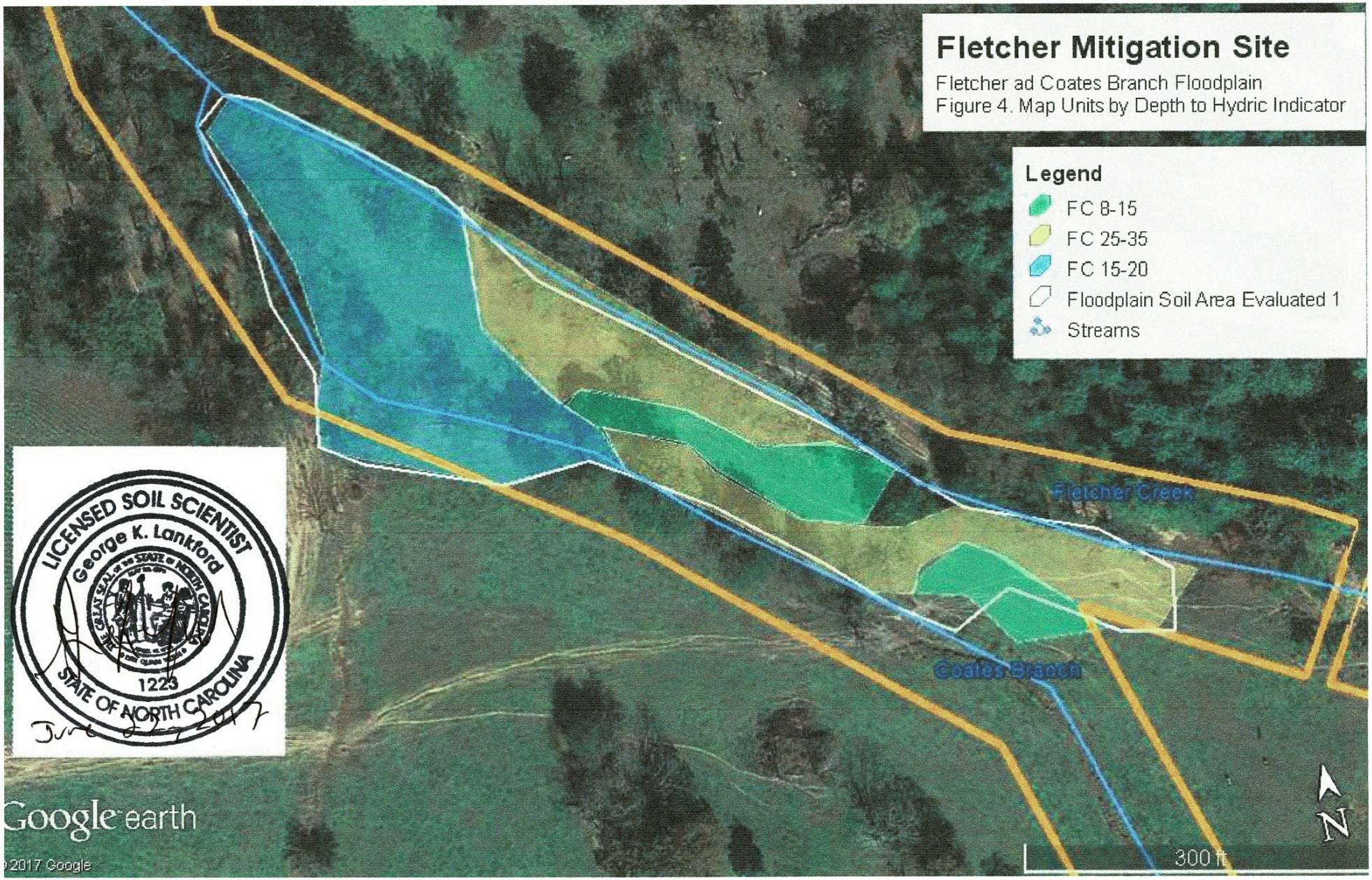
Attachments


Soil Scientist Seal


Fletcher Mitigation Site
Fletcher ad Coates Branch Floodplain
Figure 1. Site Location Map
Legend
Fletcher Creek Floodplain
Streams
Gord-Wood-Trail
Weston Creek
Weston-Way
1539
1555
Fletcher Creek
Coates Branch
Bloomingdale-Dr
1540
Lewis-Rd
Pattys-Chapel-Rd
Timber-Hill-Dr
Google earth
Image © 2017 DigitalGlobe
N
2000 ft


Fletcher Mitigation Site
Fletcher ad Coates Branch Floodplain
Figure 2. Soil Profile Locations
Legend
Boring Locations
Floodplain Soil Area Evaluated
Streams
sb 101
sb 102
313
306
Fletcher Creek
Coates Branch
LICENSED SOIL SCIENTIST
George K. Lankford
1223
STATE OF NORTH CAROLINA
Jun 22 2017
Google earth
2017 Google
300 ft
N


Fletcher Mitigation Site
Fletcher ad Coates Branch Floodplain
Figure 3. Boring Sample Locations
Legend
Boring Locations
Floodplain Soil Area Evaluated
Streams
312
313
311
310
sb 101
309
313
314
315
308
306
305
304
303
301
302
Fletcher Creek
Coates Branch
LICENSED SOIL SCIENTIST
George K. Lankford
1223
STATE OF NORTH CAROLINA
Google earth
2017 Google
300 ft
N


Fletcher Mitigation Site
Fletcher ad Coates Branch Floodplain
Figure 4. Map Units by Depth to Hydric Indicator
Legend
FC 8-15
FC 25-35
FC 15-20
Floodplain Soil Area Evaluated 1
Streams
Fletcher Creek
Coates Branch
LICENSED SOIL SCIENTIST
George K. Lankford
1223
STATE OF NORTH CAROLINA
Google earth
2017 Google
300 ft
N

Soil Map—Henderson County, North Carolina
(Fletcher Mitigation Site-Fletcher Creek)


Map Scale: 1:10,600 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 150 300 600 900

Feet
0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

## MAP LEGEND

**Area of Interest (AOI)**
- Area of Interest (AOI)

**Soils**
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

**Special Point Features**
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

**Water Features**
- Streams and Canals

**Transportation**
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

**Background**
- Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Henderson County, North Carolina
Survey Area Data: Version 16, Sep 19, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 15, 2011—Dec 9, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

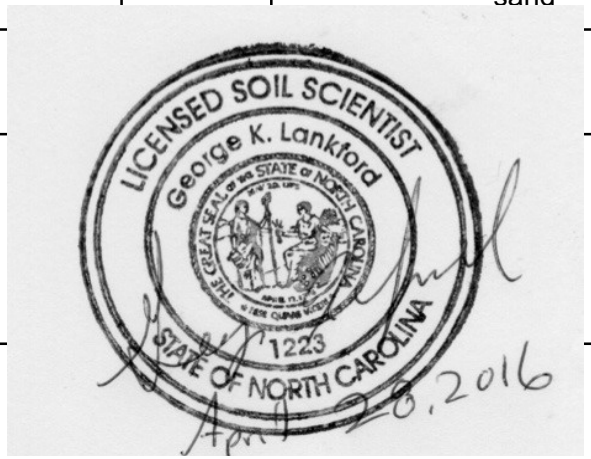
# Map Unit Legend

| Henderson County, North Carolina (NC089) | | | |
|---|---|---|---|
| **Map Unit Symbol** | **Map Unit Name** | **Acres in AOI** | **Percent of AOI** |
| BaB | Bradson gravelly loam, 2 to 7 percent slopes | 27.1 | 4.9% |
| BaC | Bradson gravelly loam, 7 to 15 percent slopes | 28.6 | 5.2% |
| BrE | Brevard loam, 15 to 25 percent slopes | 16.5 | 3.0% |
| Co | Codorus loam (arkaqua) | 57.7 | 10.5% |
| Cu | Comus (colvard) fine sandy loam | 1.3 | 0.2% |
| DeA | Delanco (dillard) loam, 0 to 2 percent slopes | 28.0 | 5.1% |
| EdF | Edneyville (edneytown) fine sandy loam, 25 to 45 percent slopes | 8.7 | 1.6% |
| EnB | Elsinboro loam, 0 to 3 percent slopes | 9.2 | 1.7% |
| EwE | Evard soils, 15 to 25 percent slopes | 10.0 | 1.8% |
| EwF | Evard soils, 25 to 45 percent slopes | 14.6 | 2.7% |
| Ha | Hatboro loam | 15.4 | 2.8% |
| HyB | Hayesville loam, 2 to 7 percent slopes | 58.0 | 10.5% |
| HyC | Hayesville loam, 7 to 15 percent slopes | 144.2 | 26.2% |
| HyE | Hayesville loam, 15 to 25 percent slopes | 66.8 | 12.1% |
| Ko | Kinkora loam | 1.2 | 0.2% |
| TeB | Tate fine sandy loam, 2 to 7 percent slopes | 8.8 | 1.6% |
| TeC | Tate fine sandy loam, 7 to 15 percent slopes | 26.7 | 4.9% |
| To | Toxaway silt loam | 20.9 | 3.8% |
| TsE | Tusquitee loam, 15 to 25 percent slopes | 1.8 | 0.3% |
| W | Water | 4.4 | 0.8% |
| **Totals for Area of Interest** | | **550.0** | **100.0%** |

| | | |
|---|---|---|
| **Project Name:**<br>**Fletcher Site** | **Point Location: Point 101**<br>**mid point between channels** | **Described by:**<br>**George Lankford** |
| **Date: April 22, 2016** | **State: North Carolina** | **County: Henderson** |
| **Soil Series:**<br>**Codorus loam (arkaqua)** | **Landform:**<br>**Alluvial floodplain** | **Landscape Point: Between two incised channels.** |
| **Water Table Depth (in):** | **Lat.**<br>**35.418161°** | **Long.**<br>**-82.485318°** |

| Horizon | Depth | Matrix Color (moist) | Redoximorphic Features | | | | Texture | Comments |
|---|---|---|---|---|---|---|---|---|
| | In. | | Color | Size (mm) | Abund. % | Type | | |
| A | 0-9 | 10YR 3/3 | -- | -- | -- | -- | Sandy Loam | Relict concentration mottles at bottom of horizon |
| B*w* | 9-21 | 10YR 3/3 | 10YR 3/4 | | 40% | Conc. | Sandy Loam | Appearance is of buried horizon |
| | 21-27 | 10YR 3/3 | -- | -- | -- | -- | Sand | Sand lens. Mostly uncoated sand<br>Small pebbles and gravel ~15% |
| B*w* | 27-36 | 10YR 3/2 | 10YR 4/4 | | 10% | Conc. | Sandy Loam | |
| B/C | 36-40+ | 10YR 3/4 | 10YR 4/6 | | 15% | Conc. | Sand | May be a sand lens. Mostly uncoated sand |
| | | | | | | | | |

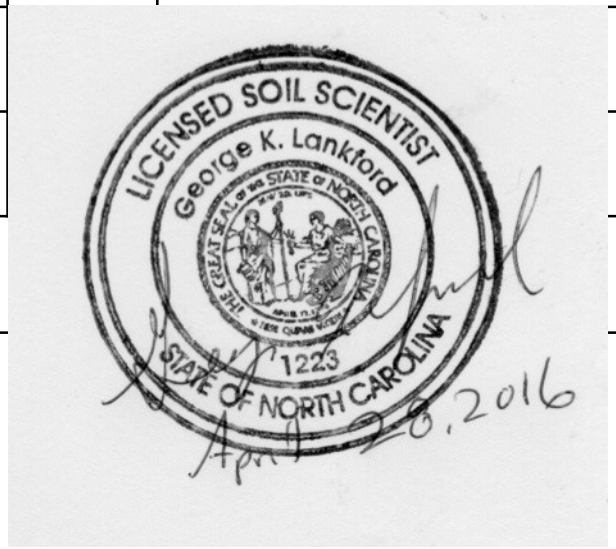
**Field Indicator(s) Found:**No hydric indators in subsurface horizons.
Profile does not conform to the mapped series. Likley representsl multiple depositional events



| Project Name: Fletcher Site | Point Location: Point 102 mid point between channels | Described by: George Lankford |
|---|---|---|
| Date: April 22, 2016 | State: North Carolina | County: Henderson |
| Soil Series: Codorus loam (arkaqua) | Landform: Alluvial floodplain | Landscape Point: Between two incised channels. |
| Water Table Depth (in): | Lat. 35.418071° | Long. -82.485196° |

| Horizon | Depth In. | Matrix Color (moist) | Redoximorphic Features | | | | Texture | Comments |
|---|---|---|---|---|---|---|---|---|
| | | | Color | Size (mm) | Abund. % | Type | | |
| A | 0-5 | 10YR 3/3 | -- | -- | -- | -- | Sandy Loam | |
| B*w* | 5-9 | 10YR 4/2 | 10YR 3/6 | Med | 10% | Conc. | Sandy Loam | |
| $A_b$ | 9-15+ | 10YR 2/1 | | | | | Sandy Clay Loam | Has the apperance of a buried surfaced horizon ($A_b$) |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

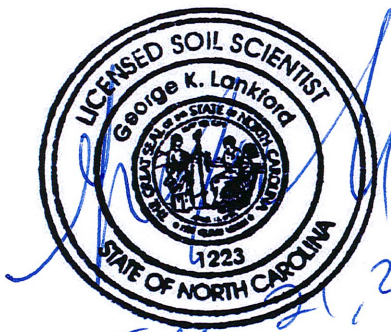
**Field Indicator(s) Found:** Currently meets the F-3 Depleted matrix indicator.
Profile is similar to the map unit inclusion of Toxaway.



| Project Name: Fletcher Site | Point Location: Point 306 mid point between channels | Described by: George K Lankford |
|---|---|---|
| Date: March 20, 2017 | State: North Carolina | County: Henderson |
| Soil Series: Codorus loam (arkaqua) | Landform: Alluvial floodplain | Landscape Point: Between two incised channels. |
| Water Table Depth (in):NA | Lat. 35.417801° | Long. -82.484678° |

| Horizon | Depth In. | Matrix Color (moist) | Redoximorphic Features | | | | Texture | Comments |
|---|---|---|---|---|---|---|---|---|
| | | | Color | Size (mm) | Abund. % | Type/ Location | | |
| A | 0-9 | 10YR 4/4 | 10YR 3/4 | -- | 10% | C/PL | Sandy Loam | Relict concentration mottles at bottom of horizon |
| Bw | 9-24 | 10YR 4/1 | 10YR 3/3<br>10YR 2/1 | -- | 15%<br>5% | C/PL | Sandy Loam | Appearance of buried horizon |
| Bw | 24-31 | 10YR 3/2 | 10YR 3/6 | -- | 10% | -- | Sand | Sand lens. Mostly uncoated sand<br>Small pebbles and gravel ~15% |
| Bw | 31-41 | 10YR 2/1 | -- | -- | -- | -- | Sandy Loam | Appearance of buried surface horizon<br>Small gravel = 10% |
| | | | | | | | | |
| | | | | | | | | |

**Field Indicator(s) Found:**No hydric indators in subsurface horizons.
Profile does not conform to the mapped series. Likley representsl multiple depositional events
C=Concentration, D=Depletion
PL=PoreLining, M=Matrix




June 21, 2017

| Project Name: Fletcher Site | Point Location: Point 313 mid point between channels | Described by: George K Lankford |
|---|---|---|
| Date: March 20, 2017 | State: North Carolina | County: Henderson |
| Soil Series: Codorus loam (arkaqua) | Landform: Alluvial floodplain | Landscape Point: Between two incised channels. |
| Water Table Depth (in):NA | Lat. 35.418084° | Long. -82.485936° |

| Horizon | Depth | Matrix Color (moist) | Redoximorphic Features | | | | Texture | Comments |
|---|---|---|---|---|---|---|---|---|
| | In. | | Color | Size (mm) | Abund. % | Type/ Location | | |
| A | 0-9 | 10YR 3/6 | 10YR 3/4 | -- | -- | -- | Sandy Loam | Relict concentration mottles at bottom of horizon |
| Bw | 9-15 | 10YR 5/2 | 10YR 3/6 | -- | 15% | C/PL | Sandy Loam | Appearance of buried horizon |
| Bw | 15-32 | 10YR 5/6 | -- | -- | -- | -- | coarse Sand | Sand lens. Mostly uncoated sand Small pebbles and gravel =10% |
| Bw | 32-38 | 10YR 3/2 | 10YR 5/2 | | 8% | C/PL | Sandy Loam | Appearance of buried horizon |
| | | | | | | | | |
| | | | | | | | | |

**Field Indicator(s) Found:**No hydric indators in subsurface horizons.
Profile does not conform to the mapped series. Likley representsl multiple depositional events
C=Concentration, D=Depletion
PL=PoreLining, M=Matrix


June 21, 2017

Attachment 3

## Meeting Notes

MEETING: Post Contract IRT Site Visit
Fletcher Stream and Wetland Mitigation Site
French Broad 06010105; Henderson County, NC
DEQ Contract No. 6997
DMS Project No. 100004

DATE: Tuesday, November 29, 2016, 12:00 to 2:30

LOCATION: 266 Jackson Road, Fletcher, NC

**Attendees**
Todd Tugwell – USACE
Andrea Hughes – USACE
Kim Browning – USACE
Steven Kichefski - USACE
Mac Haupt – NCDEQ – DWR
Jenny Baker – NCDEQ – DWR
Paul Wiesner – NCDEQ – DMS
Harry Tsomides – NCDEQ – DMS
Steve Melton – EW Solutions – Project Manager
Grant Ginn – Wolf Creek Engineering – Designer

**Materials**

- EW Solutions, LLC Technical Proposal dated 6/16/16 in response to RFP #16-006808

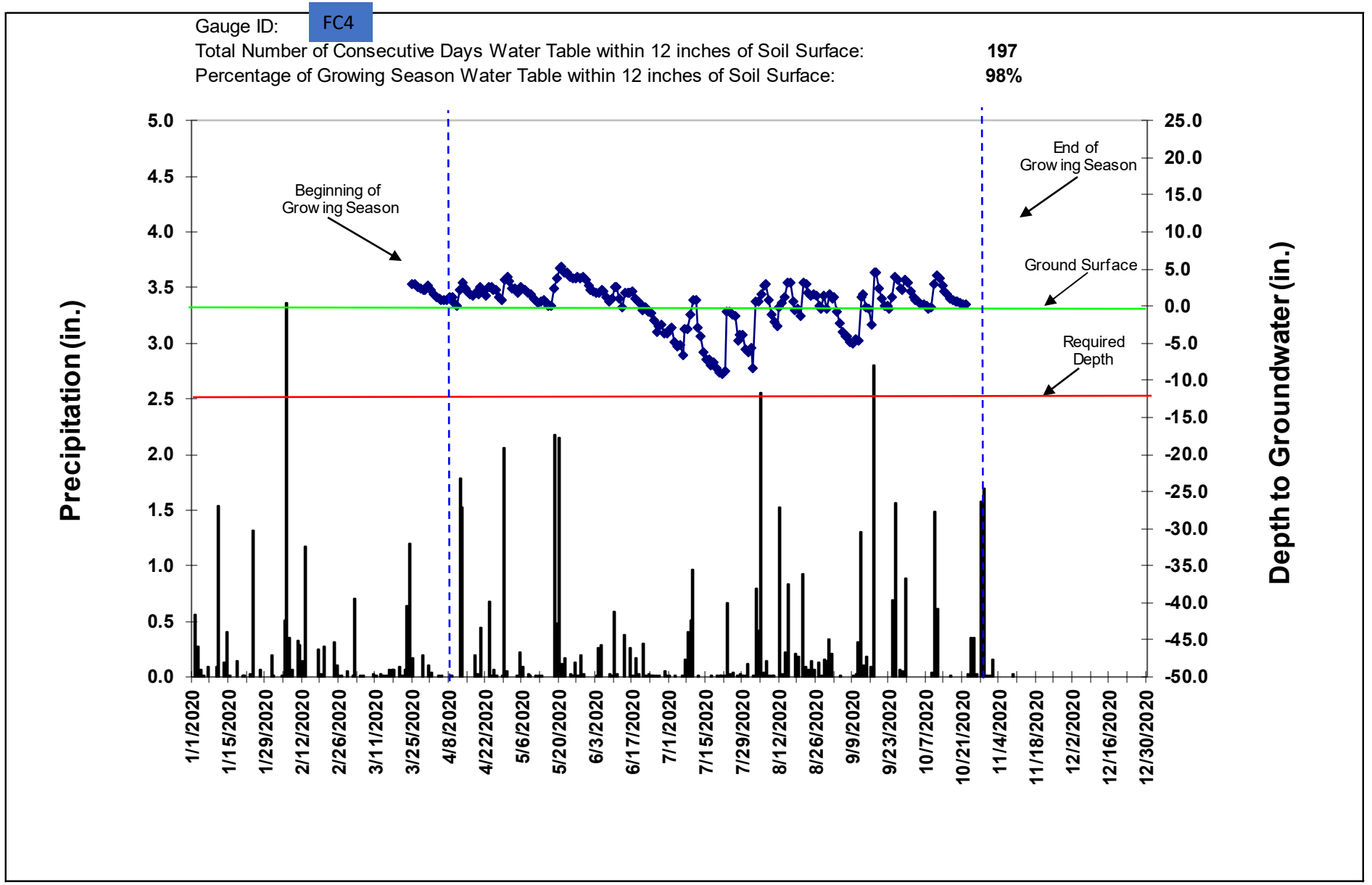
**Meeting Notes**

1. Introduction to site was given at meeting place off of Jackson Rd. New Corps guidance (Wilmington District Stream and Wetland Compensatory Mitigation Update, North Carolina Interagency Review Team – October 24, 2016) was discussed. One item mentioned specifically was the possibility to increase credits based on expanded buffer widths.
2. A concern was expressed about the low slope on Weston Creek area and that some past sites with low slopes have had issues with transporting sediment properly. Mr. Ginn noted that Weston Creek appears to be a low sediment supply stream and Mr. Melton noted that the majority of the watershed is forested.
3. No credit will be given for the ROW for the transmission line on Fletcher Creek 3.
4. The section of stream where Coates Branch and Fletcher Creek 2 are parallel before the confluence was discussed. Mr. Ginn explained the rationale based on site conditions and

available site history. The IRT concurred and further noted that forcing a confluence to occur upstream would result in a significant reduction in existing stream footage. We discussed Wolf Creek's plan of creating a 3D model of the buried A horizon and excavating to that feature. If EW Solutions request credits in this area during the mitigation plan stage, a restoration (1:1) or creation (3:1) mitigation credit ratio will be requested based on the presence or absence of a buried A horizon and the associated excavation proposed during construction. This area will also be monitored appropriately if credits are requested.

5. The IRT concurred with the proposed restoration of Raccoon Branch 3 and with proposed Enhancement II in Raccoon Branch 2 where the design includes structures to stabilize the bed. However, in areas where no structures are appropriate it was agreed that the enhancement credit ratio would be reduced to 5:1. Also the wetland area in the middle of this reach would be included in the easement but no credit would be allowed for stream enhancement.
6. Raccoon Branch I (preservation), it was discussed that there is a potential to include larger buffers to get additional credits under the new guidance. With normal buffers this preservation reach will be 10:1
7. All stream calls and wetland determinations will be determined by the appropriate agencies.

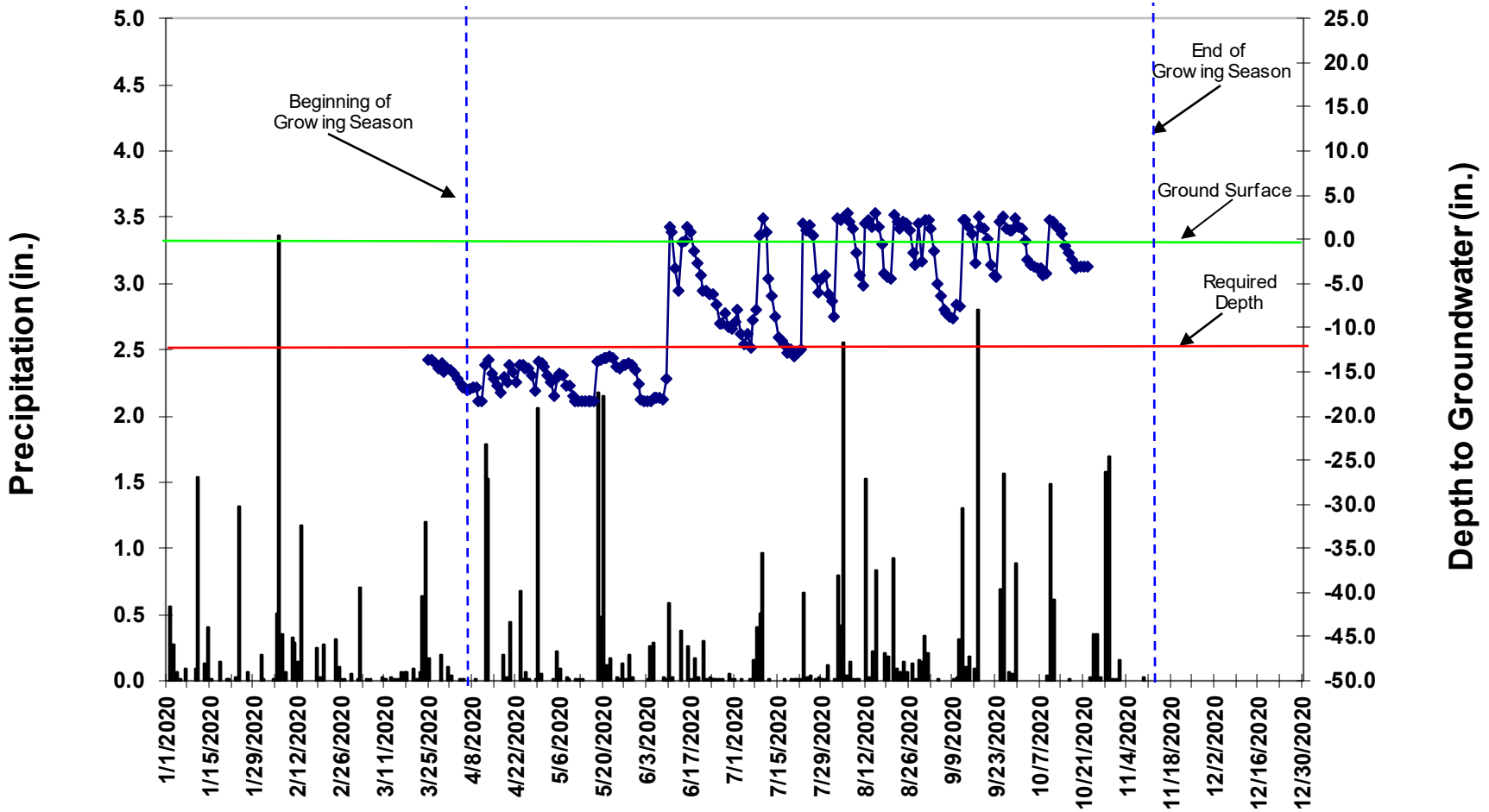
Attachment 4



Gauge ID: FC1

Total Number of Consecutive Days Water Table within 12 inches of Soil Surface: **92**

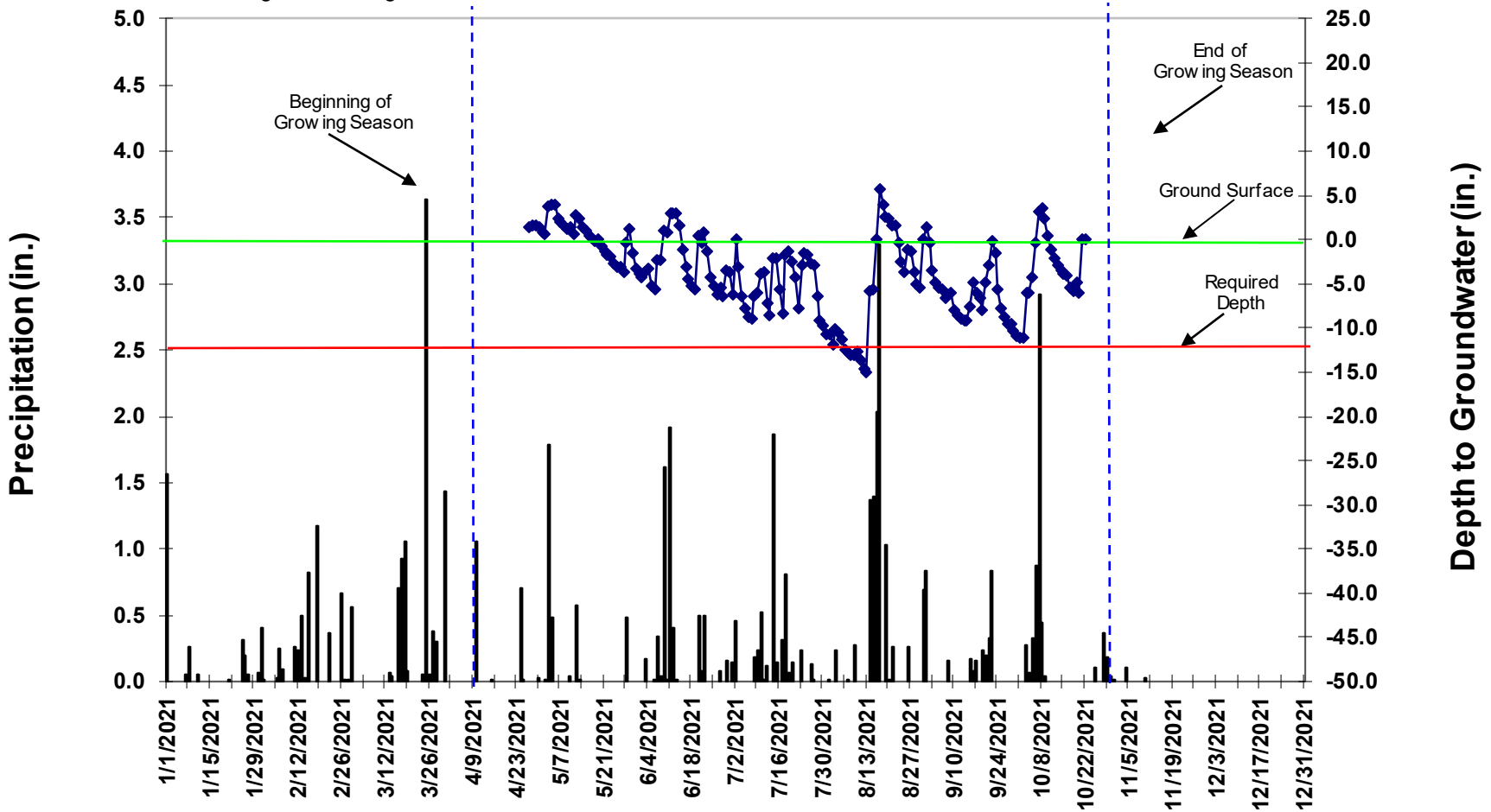
Percentage of Growing Season Water Table within 12 inches of Soil Surface: **46%**



Gauge ID: FC4

Total Number of Consecutive Days Water Table within 12 inches of Soil Surface: **101**

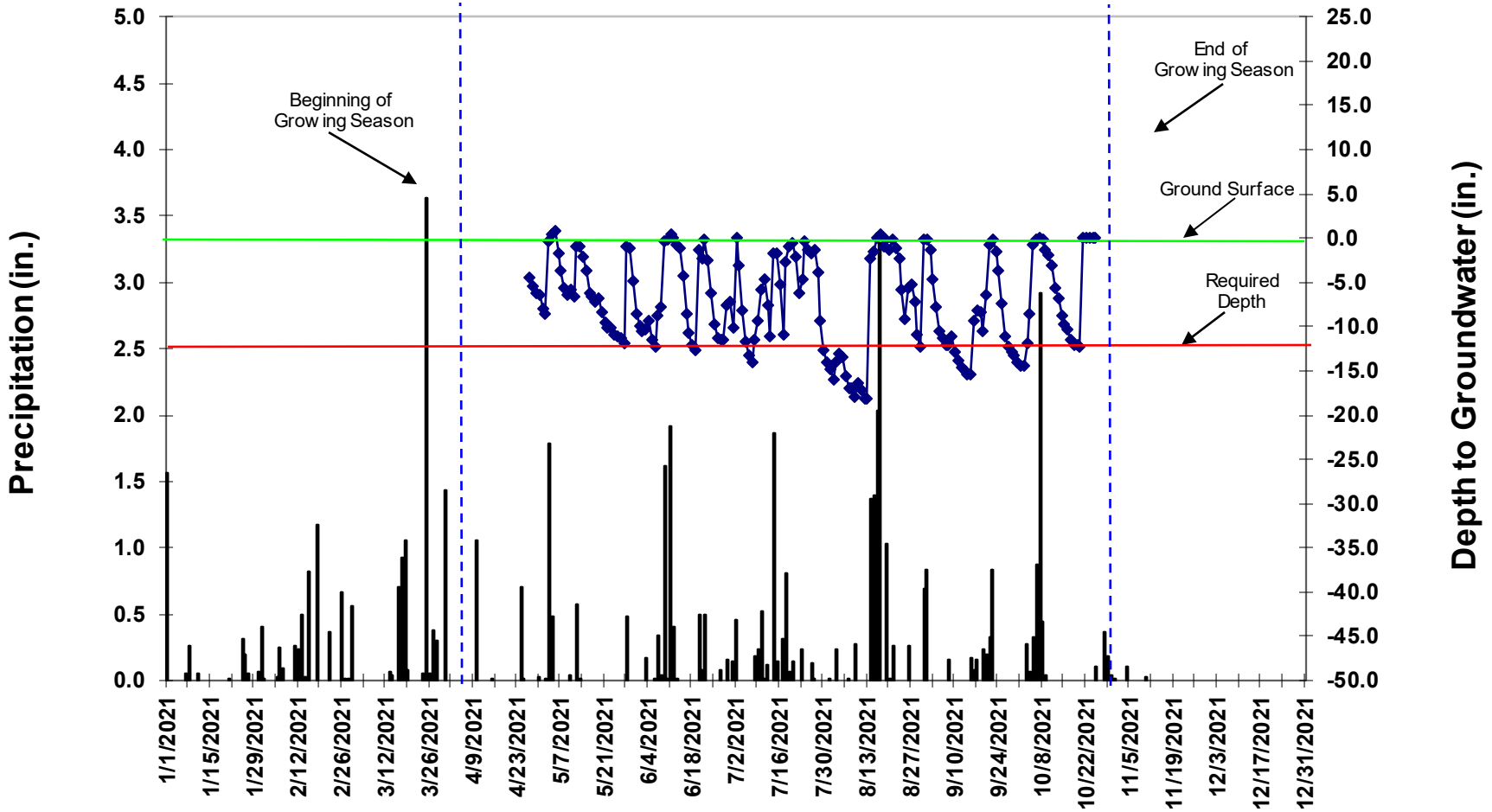
Percentage of Growing Season Water Table within 12 inches of Soil Surface: **50%**



Gauge ID: FC1

Total Number of Consecutive Days Water Table within 12 inches of Soil Surface: **40**

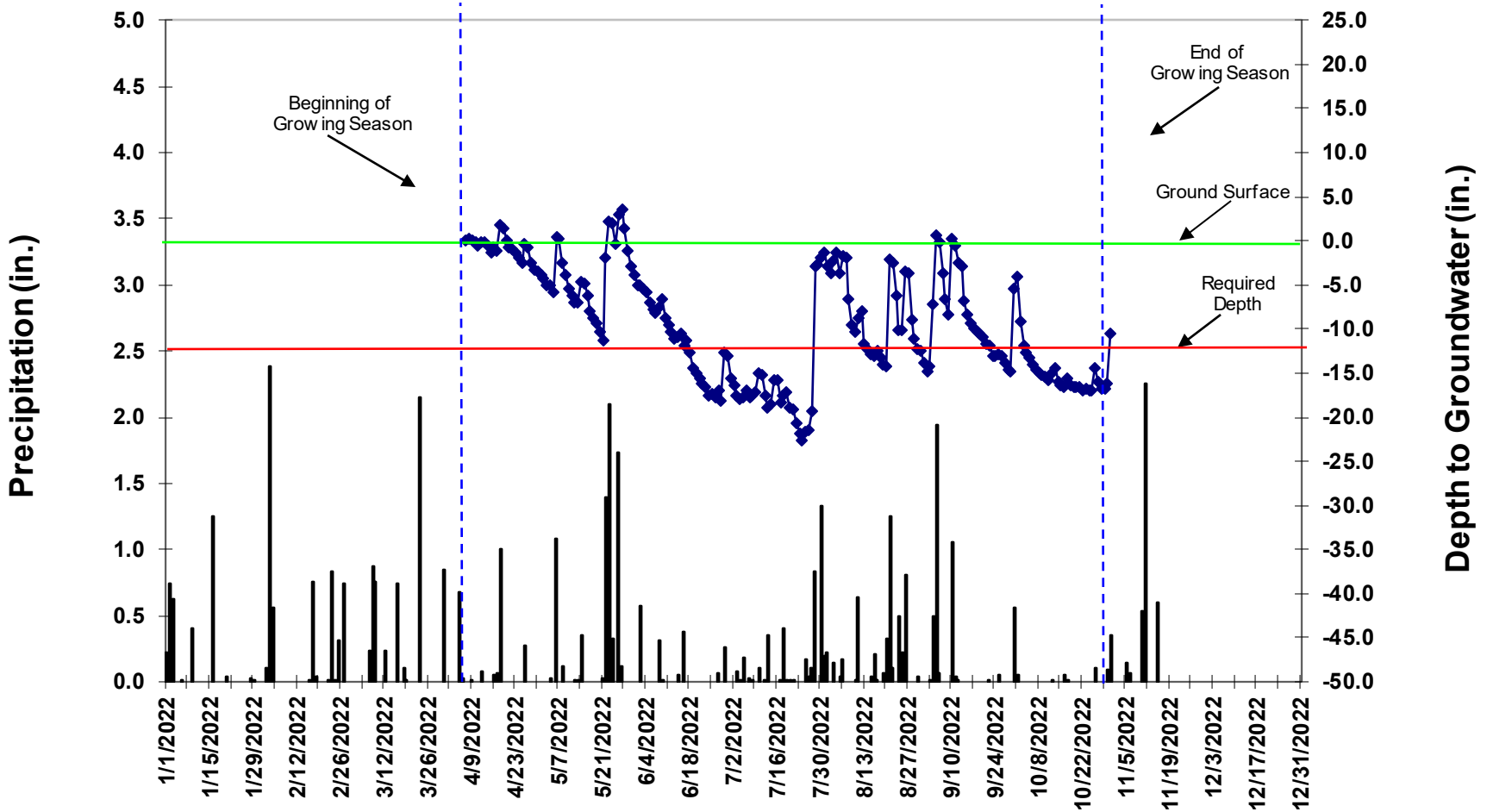
Percentage of Growing Season Water Table within 12 inches of Soil Surface: **20%**



Gauge ID: FC4

Total Number of Consecutive Days Water Table within 12 inches of Soil Surface: **72**

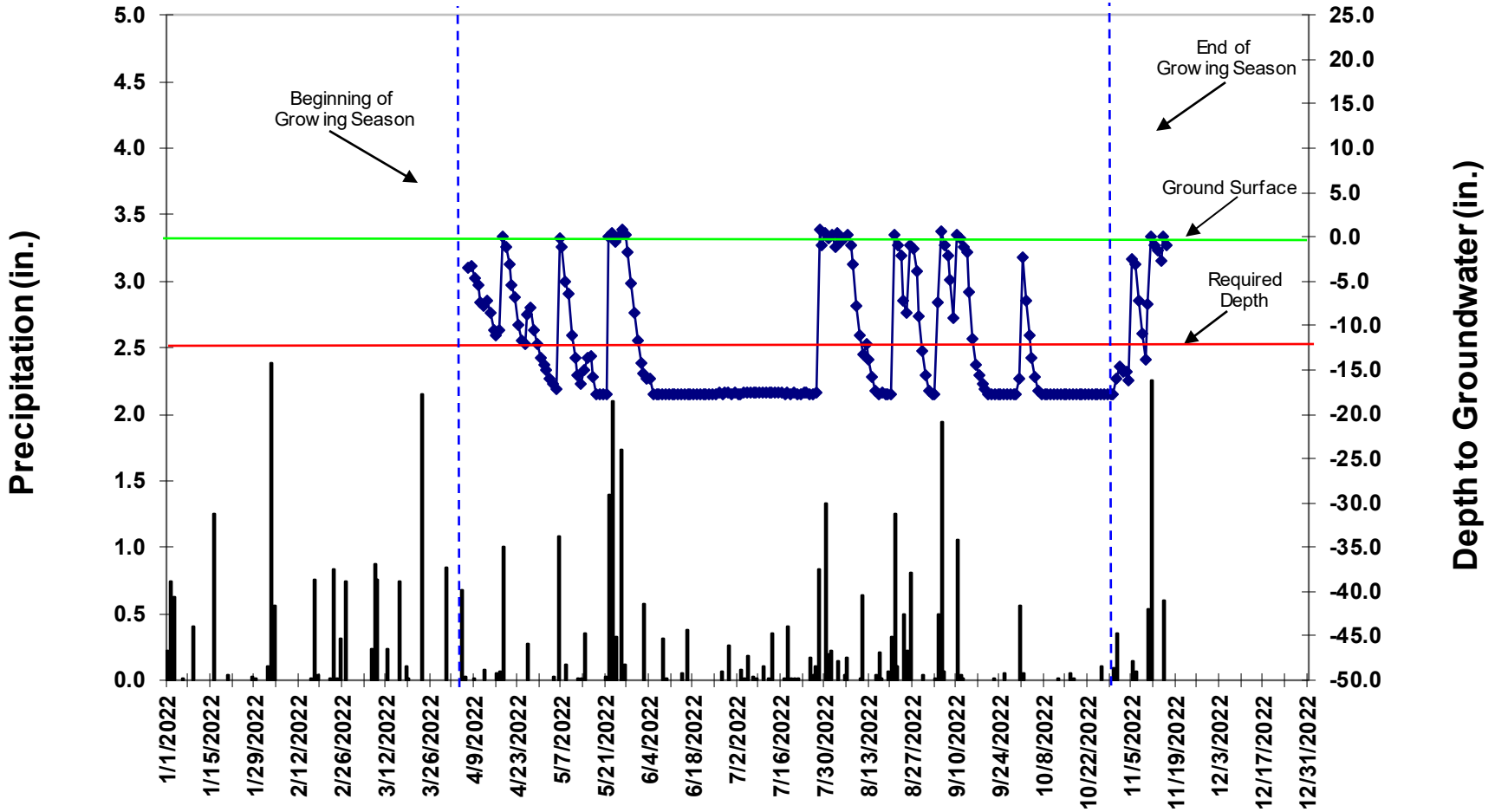
Percentage of Growing Season Water Table within 12 inches of Soil Surface: **36%**



Gauge ID: FC1

Total Number of Consecutive Days Water Table within 12 inches of Soil Surface: **23**

Percentage of Growing Season Water Table within 12 inches of Soil Surface: **11%**



## SOIL

Sampling Point: FC1

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (Feet) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-0.7 | 10yr 4/3 | 80 | 10yr4/1 | 20 | d | m | Loamy clay | |
| 0.7-1.1 | 7.5yr 4/1 | 60 | 7.5yr 4/6 | 40 | c | pl | Clay loam | Saturation below 1.0' |
| 1.1-1.5 | 5yr 4/1 | 90 | 7.5yr 4/4 | 10 | rm | pl | Loamy clay | |
| 1.5+ | 5yr 4/1 | 100 | ---------- | | | | Sandy | Coarse sands/fine gravels |
| | | | | | | | | |
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[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- X Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

**Indicators for Problematic Hydric Soils[3]:**

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if observed):** None

Type:

Depth (inches):

**Hydric Soil Present?** **Yes** X **No**

Remarks: Uppermost core in array


6
5
4
3
2
1
9
8
7
6
5
4
3
2
1

## SOIL

Sampling Point: FC2

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (Feet) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-1.1 | 2.5y 4/2 | 80 | 5yr 4/4 | 20 | c | pl | Loam clay | Saturation to surface |
| 1.1-1.3+ | 2.5y 5/2 | 99 | 5yr 4/6 | 1 | rm | m | Sandy loam | |
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[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- X Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

**Indicators for Problematic Hydric Soils[3]:**

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if observed):**

Type: None

Depth (inches):

**Hydric Soil Present? Yes** X **No**

Remarks:

4
3
2
1
1
9
8
7
6
5
4
3
2
1

## SOIL

Sampling Point: FC3

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (Feet) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-0.2 | O horizon | | | | | | | Saturation to surface |
| 0.2-0.8 | 5yr 4/1 | 95 | 7.5yr 3/3 | 5 | c | pl | Sandy loam | |
| 0.8-1.4+ | 5y 4/1 | 99 | 5yr 3/4 | 1 | c | pl | Loamy sand | WT 12" at time 0 & 10m |
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[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

**Indicators for Problematic Hydric Soils[3]:**

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if observed):**

Type: None

Depth (inches):

**Hydric Soil Present?** **Yes** X **No**

Remarks:


4
3
2
1
9
8
7
6
5
4
3
2
1

## SOIL

Sampling Point: FC4

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (Feet) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-0.5 | 2.5y 3/3 | 60 | 2.5yr 4/6 | 40 | c | pl | Loamy clay | Saturation to surface |
| 0.5-0.9 | 2.5y 4/1 | 90 | 2.5yr 3/6 | 10 | c | pl | Sandy loam | |
| 0.9-1.3+ | 2.5y 4/2 | 95 | 10y 3/6 | 5 | c | pl | Sandy loam | WT 14" at time 0 |
| | | | | | | | | |
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[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- X Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- X Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

**Indicators for Problematic Hydric Soils[3]:**

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if observed):**

Type: None

Depth (inches):

**Hydric Soil Present? Yes** X **No**

Remarks:


4 3 2 1 1 9 8 7 6 5 4 3 2 1

# Attachment 5



**Reference: Final Draft Mitigation Plan**

**Comment:** (5) Section 9- Performance Standards- for wetland hydrology, DWR wants the performance criteria to be 12-16% for the following reasons:

a. The site is mapped as Hatboro, and while the soils report did state the soils appeared more like Kinkora, which would be a 10%-12% range, the report also stated that the boring observations did not contain adequate detail to classify these soils to a series level.
b. There are two gauges in a limited growing season already showing a 9%saturation period,
c. A lot of the soil cores showed the F6- dark surface indicator which would give the indication of a site which was historically pretty wet,
d. There were a number of cores showing low chroma down to below 30 inches, and finally,
e. The concave landscape position of the site and the restrictive clay horizon will most likely pond water, in addition, the juxtaposition with Weston and Cane Creek will likely flood more often, resulting in a soil with at least a 12-16%saturation.

**Response:** Section 9.0, Table 18 revised performance standard for wetland hydrology to be "*at least 12% of the growing season.*"

**Comment:** (6) Section 10- Monitoring Plan- monitoring reports are required for years 1, 2, 3, 5 and 7.Table 19 skipped year 2.

**Response:** Table 19 edited to include year 2 in monitoring frequency for channel dimension and substrate metrics.

**Comment:** (7) DWR likes seeing wood incorporated into the typicals for the Brush Run on Design sheet3.

**Response:** Noted and appreciated.

**Comment:** (8) DWR would like to see floodplain pipes installed on all permanent crossings as seen on the typicals on Design sheet 3B.

**Response:** Floodplain pipes have been added to all Fletcher Creek crossings as part of the final plan preparation. The crossing on Coates Branch will be a single oversized pipe due to the small size of the watershed at that location.

**Comment:** (9) DWR likes the graphical format used to show existing bed and proposed bed on the Design Sheets.

**Response:** Noted and appreciated.

# Fletcher MY4 - Herbicide Application Log

| Date | Start / End Time | Certified Applicator # | Site & Target Species | Herbicide | Concentration (%) | Volume Herbicide Concentration Used (oz) | Volume Mixture Used (gal) | Weather (Temp/Wind) | Site Notes |
|---|---|---|---|---|---|---|---|---|---|
| 4/13/2023 | 10:00-15:30 | C. Lawson 26-38261 | Coates/Fletcher MFR, Privet, festuca | Glypho | 4 | 60 | 16 | 70+/calm | spot treatment |
| 6/1/2023 | 11:00-15:00 | C. Lawson 26-38261 | Weston cut/paint Bittersweet, Grape, MFR, privet. | Glypho | 25 | 30 | 1.5 | 80+/light var | Cut/paint |
| 6/6/2023 | 11:00-15:00 | C. Lawson 26-38261 | Weston cut/paint Bittersweet, Grape, MFR, privet. | Glypho | 25 | 6 | 0.25 | 80+/light var | Cut/paint |
| 6/9/2023 | 11:00-15:00 | C. Lawson 26-38261 | Coates/Fletcher floodplain MFR, Privet, festuca | Glypho | 4 | 26 | 13 | 80+/light var | Foliar |
| 9/15/2023 | 10:00-15:00 | O. Carson 26-29539 | Weston Kudzu | Clopyralid | 1 | 18 | 18 | 80+/light var | Pre-dormant Foliar |

| **MY4 Supplemental Planting Summary** | | | | |
|---|---|---|---|---|
| **Scientific Name** | **Common Name** | **Material** | **Number** | **Indicator Status** |
| *Alnus serrulata* | Tag alder | 1g | 4 | OBL |
| *Swida amomum* | Silky dogwood | 1g | 4 | FACW |
| *Platanus occidentalis* | Sycamore | 1g | 4 | FACW |
| *Cephalanthus occidentalis* | Button Bush | 1g | 4 | OBL |
| *Sambucus canadensis* | Elderberry | 1g | 4 | FAC |

* Supplemental planting was conducted on March 6, 2023. Containerized stems were installed along the right descending easement boundary of Fletcher Reach 1A; and at the northwestern corner of Reach 2A.