MONITORING YEAR 2 ANNUAL REPORT

Final

December 2023

CROSS CREEK RANCH SITE

Montgomery County, NC
Yadkin River Basin
HUC 03040104

DMS Project No. 100138
NCDEQ Contract No. 7879-01
DMS RFP No. 16-007879 / Issued: May 6, 2019
USACE Action ID No. 2020-00051
DWR Project No. 2020-0016
Data Collection Dates: January 2023 – November 2023
Final Submission Date: January, 2024

PREPARED FOR:

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

January 26, 2024

Mr. Kelly Phillips
Project Manager
NCDEQ – Division of Mitigation Services

RE: Cross Creek Ranch Site – Monitoring Year 2 Draft Report
Montgomery County, NC
Yadkin River Basin – CU# 03040104
DMS Project ID No. 100138
Contract # 7879-01

Dear Mr. Phillips:

On January 3, 2024, Wildlands Engineering (Wildlands) received comments from the Division of Mitigation Services (DMS) regarding the Monitoring Year 2 Draft Report for the Cross Creek Ranch Site. This letter serves as the documentation for DMS' comments, and Wildlands' corresponding responses. DMS' comments are depicted below in bold type, while Wildlands' responses are depicted below in italics.

Review Comments:

DMS' comment: Report Cover: Thank you for including the data collection dates.

Wildlands' response: You're welcome.

DMS' comment: Section 2.1 Vegetative Assessment: Include discussion of any supplemental livestaking installed during MY1 or MY2 as requested during the 2023 Credit Release meeting.

Wildlands' response: Wildlands assessed the livestake plantings and determined that no supplemental planting was necessary. We will continue to assess livestake plantings throughout the monitoring period.

DMS' comment: Section 2.2 Vegetation Areas of Concern and Management Activities: In the upcoming MY3 report, please include observations and discussion of the vegetation progress in the 0.7-acre low stem density area along UT3 and Clarks Creek.

Wildlands' response: The low stem density areas along UT3 and Clarks Creek will be closely monitored in the upcoming monitoring years and discussed in the MY3 report.

DMS' comment: Section 2.2 Vegetation Areas of Concern and Management Activities - Invasive Treatments: Thank you for conducting the ongoing privet treatment. The overall privet reduction has been noted during DMS site inspections.

Wildlands' response: Noted. The areas previously treated for privet will be re-evaluated and re-treated as necessary in the upcoming monitoring years.

DMS' comment: 2.6 Wetland Hydrology Assessment: GWGs 2 and 7 did not meet their hydroperiods again during MY2. The wells are geographically positioned near the center of their respective wetland polygons but may be located on small areas of higher elevation based on field observations and adjacent well measurements. Please verify the well locations are hydrologically representative of their surrounding wetland areas.

Wildlands' response: To ensure that the hydrologic data collected for the proposed wetlands surrounding GWG2 and GWG7 is representative of each area's elevation, Wildlands will install an additional well near each existing gage. The wells will be installed in MY3 prior to the onset of the growing season. Hydrologic data for the additional wells and their locations will be included in the MY3 report. Wildlands will continue to collect hydrologic data from GWG2 and GWG7, as well as the newly installed wells throughout the remainder of the 7-year monitoring period.

DMS' comment: Appendix D. Hydrology Data - UT1B Crest Gage: The pressure transducer appears to be set above the base flow water level and is continually dry. The gage should be set at a lower elevation to show changes in stream stage throughout the year.

Wildlands' response: The crest gage on UT1B will be re-installed at a lower elevation in the same location in MY3 to show the changes in the stream stage throughout the year.

Digital Deliverable Comments:

DMS' comment: The digital deliverables were within specification. Please update the final submittal following receipt and response to these comments.

Wildlands' response: Noted.

As requested, Wildlands has included two (2) hard copies of the final report and a full final electronic submittal of the support files on a USB. A copy of our letter responding to DMS' comments is included after the cover page of each report's hard copy, as well. Please let me know if you have any further questions.

Sincerely,

Kristi Suggs
Senior Environmental Scientist
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PREPARED BY:

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CROSS CREEK RANCH SITE
Monitoring Year 2 Annual Report

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Section 1: PROJECT OVERVIEW

The Cross Creek Ranch Site (Site) is located in Montgomery County, approximately 1.5 miles northwest of Mount Gilead and 4.5 miles east of Norwood. Table 3 presents information related to the project attributes.

1.1 Project Quantities and Credits

The Site is located on two parcels under one landowner, and a conservation easement was recorded on 63.9 acres. Table 1 below shows stream credits by reach and wetland acreage and the total amount of stream and wetland credits expected at closeout.

Table 1: Mitigation Assets and Components

PROJECT MITIGATION QUANTITIES							
Project Segment	**Mitigation Plan Footage**	**As-Built Footage**	**Mitigation Category**	**Restoration Level**	**Mitigation Ratio (X:1)**	**Credits**	**Comments**
STREAMS							
Clarks Creek	3,479	3,479	Warm	EII	4.0	869.750	Fencing Out Livestock, Minor Bank Grading, Invasive Removal
Big Branch	64	15	Warm	R	N/A	0.000	DOT ROW
Big Branch	2,133	2,196	Warm	R	1.0	2,133.000	Full Channel Restoration, Fencing Out Livestock
UT1 R1	2,821	2,866	Warm	R	1.0	2,821.000	Full Channel Restoration, Fencing Out Livestock
UT1 R2	164	167	Warm	R	1.0	164.000	Full Channel Restoration, Fencing Out Livestock
UT1 R2	100	100	Warm	R	N/A	0.000	Culvert Crossing
UT1 R2	423	439	Warm	R	1.0	423.000	Full Channel Restoration, Fencing Out Livestock
UT1B	373	377	Warm	R	1.0	373.000	Full Channel Restoration, Fencing Out Livestock
UT1B	62	62	Warm	R	N/A	0.000	Culvert Crossing
UT1B	868	877	Warm	R	1.0	868.000	Full Channel Restoration, Fencing Out Livestock
UT3	33	47	Warm	R	N/A	0.000	Non-Jurisdictional
UT3 R1	748	754	Warm	R	1.0	748.000	Full Channel Restoration, Fencing Out Livestock
UT3 R2	2,432	2,437	Warm	EII	3.0	810.667	Fencing Out Livestock, Minor Bank Grading
UT3 R3	331	331	Warm	P	10.0	33.100	Conservation Easement
					Total:	**9,243.517**	

Table 1: Mitigation Assets and Components

PROJECT MITIGATION QUANTITIES							
Project Segment	**Mitigation Plan Footage**	**As-Built Footage***	**Mitigation Category**	**Restoration Level**	**Mitigation Ratio (X:1)**	**Credits**	**Comments**
WETLANDS							
Wetland 1[2]	0.442	0.442	Riparian	R	1.0	0.442	
Wetland 2	2.163	2.163	Riparian	R	1.0	2.163[1]	
Wetland 3	1.781	1.781	Riparian	R	1.0	1.781	
Wetland A	0.075	0.075	Riparian	RH	1.5	0.050	
Wetland B	0.116	0.116	Riparian	RH	1.5	0.077	
Wetland D	0.033	0.033	Riparian	RH	1.5	0.022	
Wetland E	0.102	0.102	Riparian	RH	1.5	0.068	
Wetland F	0.103	0.103	Riparian	RH	1.5	0.069	
Wetland G	0.051	0.051	Riparian	RH	1.5	0.034	
Wetland H	0.158	0.158	Riparian	RH	1.5	0.105	
Wetland Q	0.063	0.063	Riparian	RH	1.5	0.042	
					Total:	**4.853**	

[1] Wetland 2 boundary includes conversion of the existing farm pond to wetland.
[2] Wetland 1 credits were updated in MY0 to account for an error in the Mitigation Plan.
* Crossing lengths have been removed from restoration footage.

Table 1.1: Total Mitigation Assets and Components

Restoration Level	Stream	Riparian Wetland
	Warm	Riverine
Restoration	7,530.000	
Enhancement II	1,680.417	
Preservation	33.100	
Re-Establishment		4.386
Rehabilitation		0.467
Total Stream Credit	**9,243.517**	
Total Wetland Credit		**4.853**[1]

[1] Total Riparian Wetland Credits were updated in MY0 to account for an error in the Mitigation Plan.

1.2 Project Goals and Objectives

The project is intended to provide numerous ecological benefits. Table 2 below describes expected outcomes to water quality and ecological processes and provides project goals and objectives.

Table 2: Goals, Performance Criteria, and Functional Improvements

Goal	Objective/ Treatment	Likely Functional Uplift	Performance Criteria	Measurement	Cumulative Monitoring Results
Improve the stability of stream channels.	Reconstruct stream channels slated for restoration with stable dimensions and appropriate depth relative to the existing floodplain. Add bank revetments and instream structures to protect restored/enhanced streams.	Reduce erosion and sediment inputs; maintain appropriate bed forms and sediment size distribution.	ER stays over 2.2 and BHR below 1.2 with visual assessments showing progression towards stability.	Cross-section monitoring and visual inspections.	No deviations from design and all streams are stable.
Exclude livestock from stream channels.	Install fencing to exclude livestock from stream channels, riparian areas, proposed wetland areas, and/or removed livestock from adjacent fields.	Reduce and control sediment inputs; reduce and manage nutrient inputs.	Fence conservation easement to exclude livestock. Install fenced and gated culvert crossings as needed.	Visually inspect the Site to ensure no cattle encroachment is occurring.	No cattle encroachment was observed.
Improve instream and wetland habitat.	Install habitat features such as cover logs, log sills, and bush toes into restored/enhanced streams. Add woody materials to channel beds. Construct pools of varying depth. Remove farm pond and re-establish forested riparian wetland habitat.	Support biological communities and processes. Provide aquatic habitats for diverse populations of aquatic organisms.	There is no required performance standard for this metric.	N/A	N/A
Reconnect channels with floodplains and riparian wetlands.	Reconstruct stream channels with appropriate bankfull dimensions and depth relative to existing floodplain.	Reduce shear stress on channel; hydrate adjacent wetland areas; filter pollutants out of overbank flows; provide surface storage of water on floodplain; increase groundwater recharge while reducing outflow of stormwater.	Four bankfull events in separate years within monitoring period. 30 consecutive days of flow for intermittent channel.	Crest gages and/or pressure transducers recording flow elevations.	Big Branch obtained multiple bankfull events in MY2. UT3 R1 obtained 54 days of consecutive flow during MY2.

Goal	Objective/ Treatment	Likely Functional Uplift	Performance Criteria	Measurement	Cumulative Monitoring Results
Restore wetland function and hydrology.	Restore wetlands through the re-establishment or rehabilitation of hydrology. Remove the drainage effects of agricultural ditching and maintenance.	Improve terrestrial habitat and contribute to the protection or improvement of a Water Supply and Nutrient-Sensitive Water.	Free groundwater surface within 12 inches of the ground surface for a minimum of 12% (re-establishment) or 11% (rehabilitation) of the growing season for Montgomery County.	Groundwater gages have been installed in wetland re-establishment and rehabilitation areas and monitored annually.	7 out of 9 groundwater gages successfully met performance criteria during MY2.
Reduce sediment and nutrient input from adjacent agricultural fields.	Restore riparian stream corridor and pocket wetland areas to slow and filter runoff from adjacent agricultural fields.	Reduction of sediment and nutrients to 303(d) receiving waters.	There is no required performance standard for this metric.	N/A	N/A
Restore and enhance native floodplain and wetland vegetation.	Convert active cattle pasture and previously maintained agricultural areas to forested riparian buffers along all Site streams and wetlands. Treat invasive vegetation along stream corridors. Protect and enhance existing forested riparian buffers.	Provide a canopy to shade streams and reduce thermal loadings; stabilize stream banks and floodplain; support water quality and habitat goals.	Survival rate of 320 stems per acre at MY3, 260 planted stems per acre, and an average height of 7ft at MY5, and 210 stems per acre and average height of 10 ft at MY7.	Twenty-nine 100m^2 vegetation plots are placed on 2% of the planted area of the Site and monitored annually.	All 29 vegetation plots have a planted stem density greater than 320 stems per acre.
Permanently protect the project Site from harmful uses.	Establish conservation easements on the Site.	Ensure that development and agricultural uses that would damage the Site or reduce the benefits of the project are prevented.	Prevent easement encroachment.	Visually inspect the perimeter of the Site to ensure no easement encroachment is occurring.	No easement encroachments. A full boundary inspection was completed in MY2.

1.3 Project Attributes

The Site was an active cattle farm composed of cattle pastures and previously deforested timber areas. Historical aerials from 1955 to 2018 (Wildlands, 2021) showed that onsite streams existed in the same approximate locations for the last 65 years with minor changes to land management. Table 3 below and Table 8a-b in Appendix C present additional information on pre-restoration conditions.

Table 3: Project Attributes

PROJECT INFORMATION					
Project Name	Cross Creek Ranch Site		County	Montgomery County	
Project Area (acres)	63.9		Project Coordinates	35.232211 N, 80.02425 W	
PROJECT WATERSHED SUMMARY INFORMATION					
Physiographic Province	Piedmont		River Basin	Pee Dee	
USGS HUC 8-digit	03040104		USGS HUC 14-digit	03040104020020	
DWR Sub-basin	03-07-10		Land Use Classification	24% agriculture, 74% forested, 5% developed	
Project Drainage Area (acres)	16,337		Percentage of Impervious Area	0.7%	
RESTORATION TRIBUTARY SUMMARY INFORMATION					
Parameters	**Clarks Creek**	**Big Branch**	**UT1**	**UT1B**	**UT3**
Pre-project length (feet)	3,479	2,044	3,604	1,571	3,611
Post-project (feet)	3,479	2,211	3,535	1,292	3,568
Valley confinement	Unconfined	Unconfined	Moderately Confined	Moderately Confined	Confined
Drainage area (acres)	16,667	1,464	725	348	96
Perennial, Intermittent, Ephemeral	Perennial	Perennial	Perennial	Perennial	Perennial
DWR Water Quality Classification	C				
Dominant Stream Classification (existing)	N/A	C4/1	E4/1, G3c/1	B4c/1	F1
Dominant Stream Classification (proposed)	N/A	C4/1	C4/1	C4/1	B4
Dominant Evolutionary class (Simon) if applicable	V	II	III/IV	IV	III
REGULATORY CONSIDERATIONS					
Parameters	**Applicable?**	**Resolved?**	**Supporting Documentation**		
Water of the United States - Section 404	Yes	Yes	USACE Nationwide Permit No. 27 and DWQ 401 Water Quality Certification No. 4134.		
Water of the United States - Section 401	Yes	Yes			
Endangered Species Act	Yes	Yes	Categorical Exclusion in Mitigation Plan (Wildlands, 2021)		
Historic Preservation Act	Yes	Yes			
Coastal Zone Management Act (CZMA or CAMA)	N/A	N/A	N/A		
Essential Fisheries Habitat	N/A	N/A	N/A		

Section 2: MONITORING YEAR 2 DATA ASSESSMENT

Annual monitoring and Site visits were conducted during MY2 to assess the condition of the project. The geomorphic, vegetative, and hydrologic success criteria for the Site follow the approved success criteria presented in the Mitigation Plan (Wildlands, 2021). Performance criteria are located in Section 1.2 Table 2: Goals, Performance Criteria, and Functional Improvements. Methodology for annual monitoring is presented in the MY0 Annual Report (Wildlands, 2022).

2.1 Vegetative Assessment

The MY2 vegetative survey was completed in August 2023. Vegetation monitoring resulted in a stem density range from 324 to 769 planted stems per acre. All 29 vegetation plots exceed the interim requirement of 320 stems per acre required at MY3. All volunteer species were and will continue to be inventoried according to the same metrics applied to planted stems. Herbaceous vegetation is also abundant across the Site and includes native pollinator species, indicating a healthy riparian habitat. Refer to Appendix A for vegetation plot photographs and the Vegetation Condition Assessment Table and Appendix B for vegetation plot data.

2.2 Vegetation Areas of Concern and Management Activities

Bare root mortality has been observed along Clarks Creek likely due to competition with fescue. These areas were evaluated and treated in February 2023 with ring-sprays to limit fescue competition. Additionally, approximately four acres of soil amendments were added to the trees that were ring sprayed along Clarks Creek as well as low performing areas around the wetlands on Big Branch. Vegetative performance in these areas will be reassessed and discussed in MY3.

Low planted stem density areas have been observed on the upstream portion of UT3 and along Clarks Creek, equating to 0.7 acres in total. These areas will continue to be observed for new growth in MY3. Refer to Appendix A for the Vegetation Condition Assessment Table and Figures 1b-c for a mapped representation of low stem density areas on the Site.

During construction, dense areas of Chinese privet *(Ligustrum sinense)* along Clarks Creek were mechanically removed; thereby, greatly decreasing the privet population along Clarks Creek. In February 2023, a foliar chemical treatment was applied to privet populations along UT1. This treatment was deemed successful when observed in the fall of 2023. These areas will be re-evaluated and re-treated, if necessary. In addition, previously untreated areas of dense Chinse privet along UT3 are scheduled for treatment in early 2024. Due to the nature of treating dense tracts of Chinese privet or any invasive species, Wildlands recognizes that multiple treatments are typically needed throughout the monitoring period for effective invasive plant control. Refer to the Vegetation Condition Assessment Table in Appendix A for information on additional vegetative areas of concern and to Figures 1a-c for the treated and untreated areas of Chinese privet.

A full easement boundary inspection will be conducted every monitoring year to ensure that the easement remains intact and free from violations. In MY2, no easement encroachments were observed.

2.3 Stream Assessment

Morphological surveys for MY2 were conducted in June 2023. All streams within the Site are stable and functioning as designed. All 14 cross-sections at the Site show little to no change in the bankfull areas, the width-to-depth ratios, and the entrenchment ratios (ERs), and the bank height ratios (BHRs) are less than 1.2. Pebble count data is no longer required per the September 29, 2021 Technical Work Group Meeting and is not included in this report. The IRT reserves the right to request pebble count data/particle distributions if deemed necessary during the monitoring period. Refer to Appendix A for

the Visual Stream Morphology Stability Assessment Table and stream photographs and Appendix C for stream geomorphology data.

2.4 Stream Areas of Concern

A site assessment last conducted in November 2023 found that there were no stream areas of concern across the project. The banks all appear stable and are well covered by newly established vegetation.

2.5 Stream Hydrology Assessment

Big Branch exhibited four bankfull events in MY2 as of November 20, 2023, and is on track to meet performance standards of four bankfull events in separate years during the 7-year monitoring period for restored streams. Though UT3 R1, UT1 R1, and UT1B did not have a bankfull event in MY2, all three reaches exhibited consistent baseflow at the crest gage locations throughout the year. Due to the low flow conditions at the upstream extent of UT3 R1, a stream gage was installed to ensure that the reach maintained at least 30 days of consecutive baseflow. Results in MY2 show that the reach met and exceeded the minimum baseflow requirement with 54 days of consecutive flow. Refer to Appendix D for additional stream hydrology data.

2.6 Wetland Hydrology Assessment

The performance criterion for wetland restoration is the presence of free groundwater within 12 inches of the soil surface for 11% (29 days) of the growing season in the rehabilitation zones and 12% (32 days) of the growing season in the re-establishment zones. Growing season dates approved in the Mitigation Plan (Wildlands, 2021) were March 17 through November 20, with an allowance for modification based on soil temperature data and bud burst. Modification of the growing season to March 1, through November 20 was established in MY1 and reverified in MY2 based on a soil temperature of above 41 degrees Fahrenheit for the entire observation period, bud burst photos of American elderberry (*Sambucus canadensis*), winged elm (*Ulmus alata*), and Eastern redcedar (*Juniperus virginiana*) on February 22, 2023, and post-leaf senescence photos on November 6, 2023. Therefore, March 1 – November 20 will be the established growing season throughout the remainder of the monitoring period. See Appendix A for bud burst and post-leaf senescence aerial photos in 2023 and Appendix D for the soil temperature data.

In MY2, seven of the nine GWGs met and/or exceeded the wetland hydrologic performance criteria at the Site. GWGs 5 & 6 within the wetland rehabilitation zones and GWGs 1, 3, 4, 8, and 9 in re-establishment zones are meeting criteria. While the majority of the rainfall at the Site was at or above the normal rainfall each month, most of July and the beginning of September of 2023 experienced moderate (D1) drought conditions (National Drought Mitigation Center, 2023). Though a few small rainfall events occurred in mid-September, moderate (D1) drought conditions continued from the end of September to the end of the growing season. Therefore, as drought conditions improve with winter rainfall and groundwater continues to recharge across the Site, it is anticipated that wetland hydrology will also improve; however, groundwater recharge will have to first overcome the water storage deficit.

To ensure that the hydrologic data collected for the proposed wetlands surrounding the two currently failing groundwater wells (GWG2 and GWG7) is representative of each area's elevation, Wildlands will install an additional well near each existing gage. The wells will be installed in MY3 prior to the onset of the growing season. Hydrologic data for the additional wells and their locations will be included in the MY3 report. Wildlands will continue to collect hydrologic data from GWG2 and GWG7, as well as the newly installed wells throughout the remainder of the 7-year monitoring period.

In MY2, the annual precipitation station used in MY1, Jackson Springs 5 WNW, in Montgomery County, NC did not have any rainfall data available after October 31, 2023, nor did any other near-by stations

from the National Oceanic and Atmospheric Administration's (NOAA) Regional Climate Center (RCC) website for the Applied Climate Information System (ACIS). Therefore, a different station (UNFN7 Uwharrie (Troy)) was referenced, and the rainfall data was downloaded from the Cardinal Data Retrieval System on the NC State Climate Office's (SCO) website. If available, Wildlands will continue to use the UNFN7 Uwharrie (Troy) station throughout the remainder of the monitoring period. The WETS Table's 30th and 70th percentiles (1992-2022) were still obtained from the Jackson Springs 5 WNW station (NOAA, 2023). If available, Wildlands will continue to reference the Jackson Springs 5 WNW climate station throughout the remainder of the monitoring period. Refer to Appendix D for the hydrologic wetland and precipitation data.

Annual inspections of the bentonite seals around the groundwater gages are a regular part of Wildlands' protocol, and bentonite was added as needed this year. Refer to Appendix A for groundwater well photos, and Appendix D for the Rainfall Summary Table and the Groundwater Gage Summary Table and plots.

2.7 Monitoring Year 2 Summary

All 29 vegetation plots exceeded the MY3 interim requirement of 320 stems per acre. All streams across the Site are stable and the cross sections show little dimensional change since the as-built survey. Chinese privet was chemically treated along Clarks Creek and UT1 in 2023. There are approximately 2.7 acres remaining, primarily along UT3. These areas along with resprouts along Clarks Creek and UT will be treated in early MY3. Four bankfull events were documented on Big Branch. UT3 R1, UT1 R1, and UT1B have yet to obtain a bankfull event during MY2, but the gages recorded consistent baseflow on all three streams. Due to low flow conditions in the upstream extent of UT3 R1, the reach was monitored for at least 30 consecutive days of baseflow. UT3 R1 exhibited 54 consecutive days of stream flow, fulfilling MY2 success requirements. Seven of the nine groundwater gages met or exceeded the hydrologic success criteria for MY2. The easement boundary has been checked throughout the Site, and no issues were identified. Overall, the Site is meeting the goals outlined in Table 2, which were established within the Mitigation Plan, and is on track to meet final success criteria.

Summary information and data related to the performance of the various project and monitoring elements can be found in the tables and figures in the report's appendices. All raw data supporting the tables and figures in the appendices are available from DMS upon request.

Section 3: References

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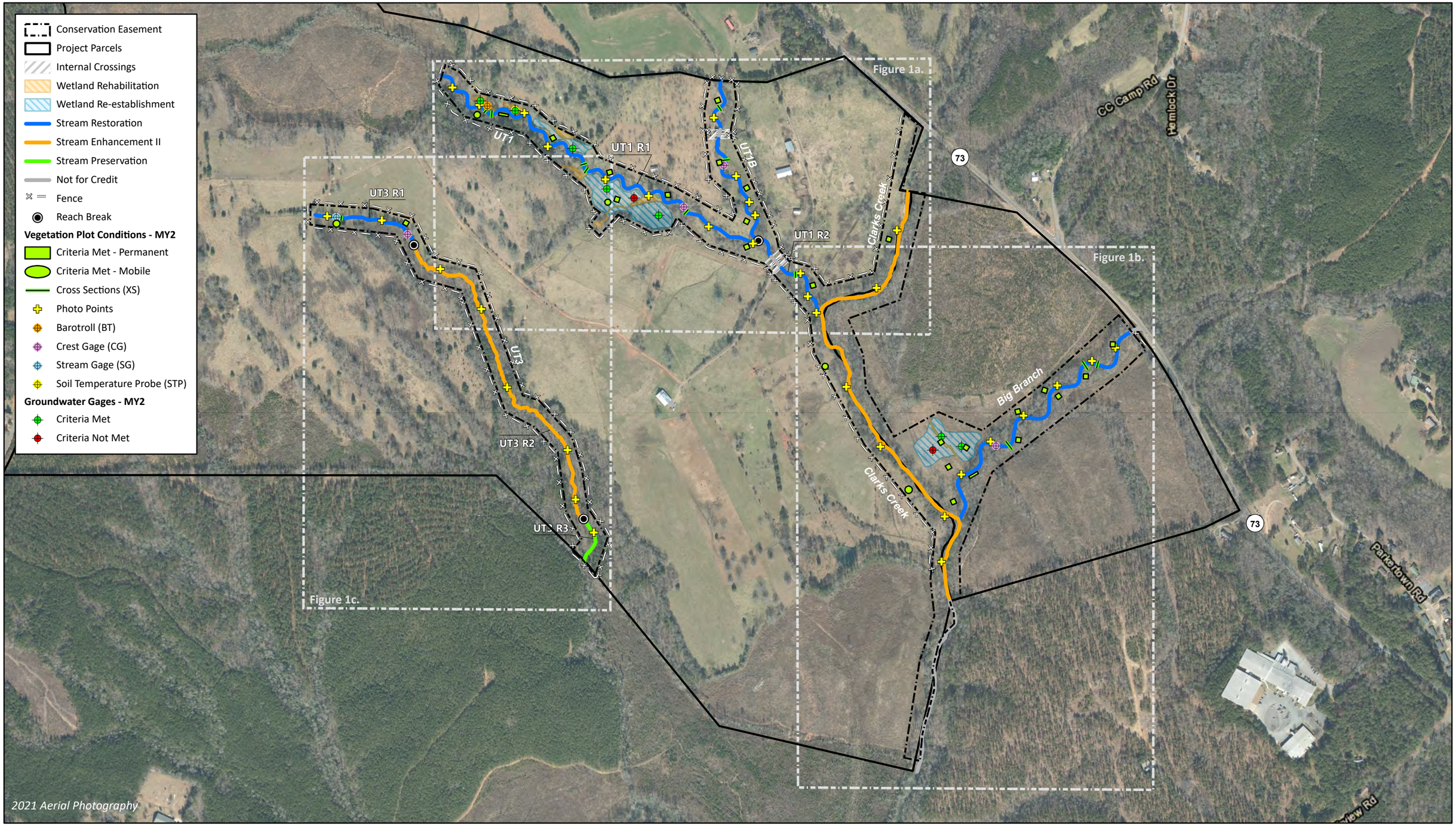


WILDLANDS ENGINEERING

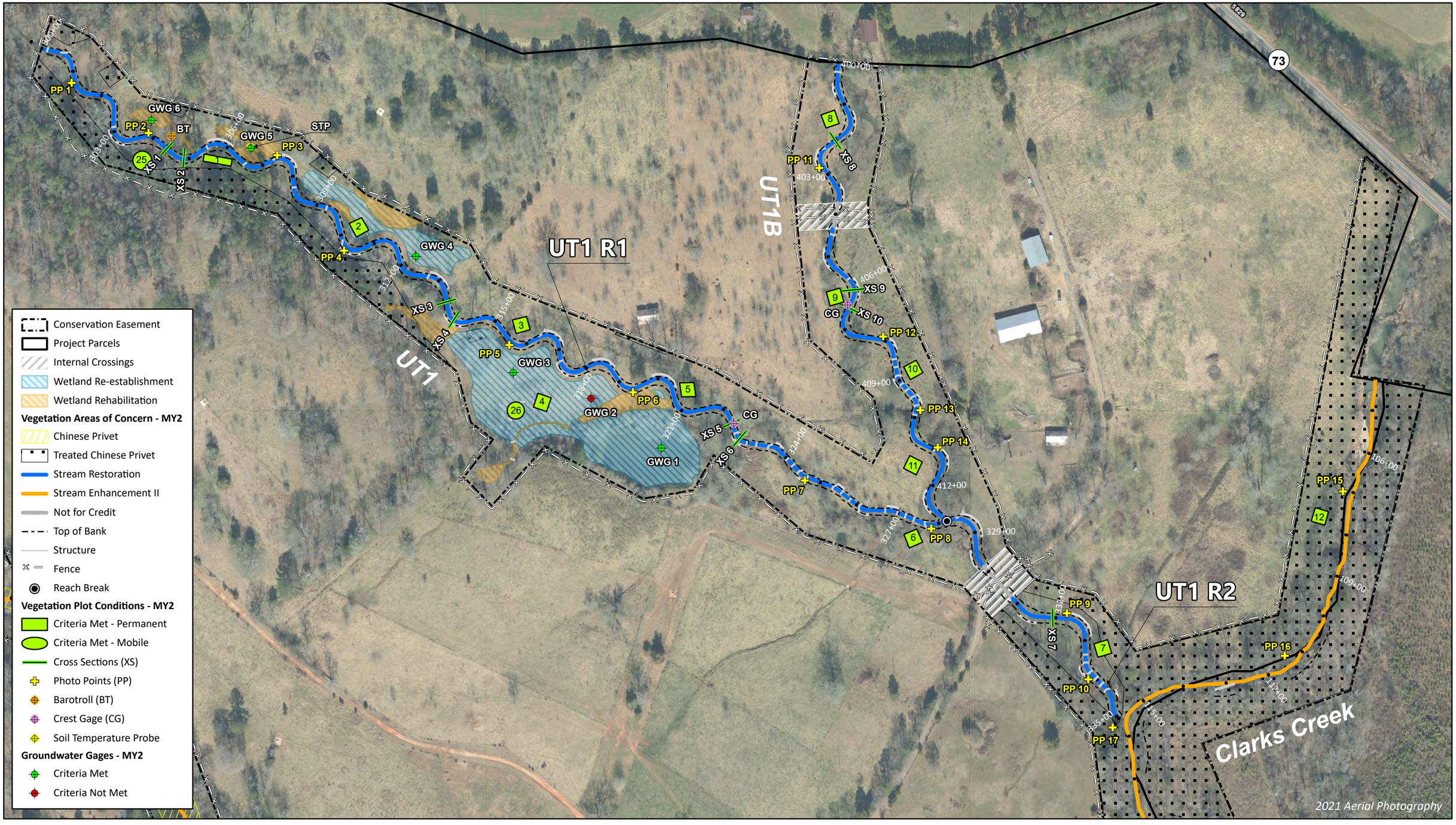
NC Environmental Quality

0 600 1,200 Feet

N

Figure 1. Current Condition Plan View (Key)
Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

Montgomery County, NC



WILDLANDS ENGINEERING

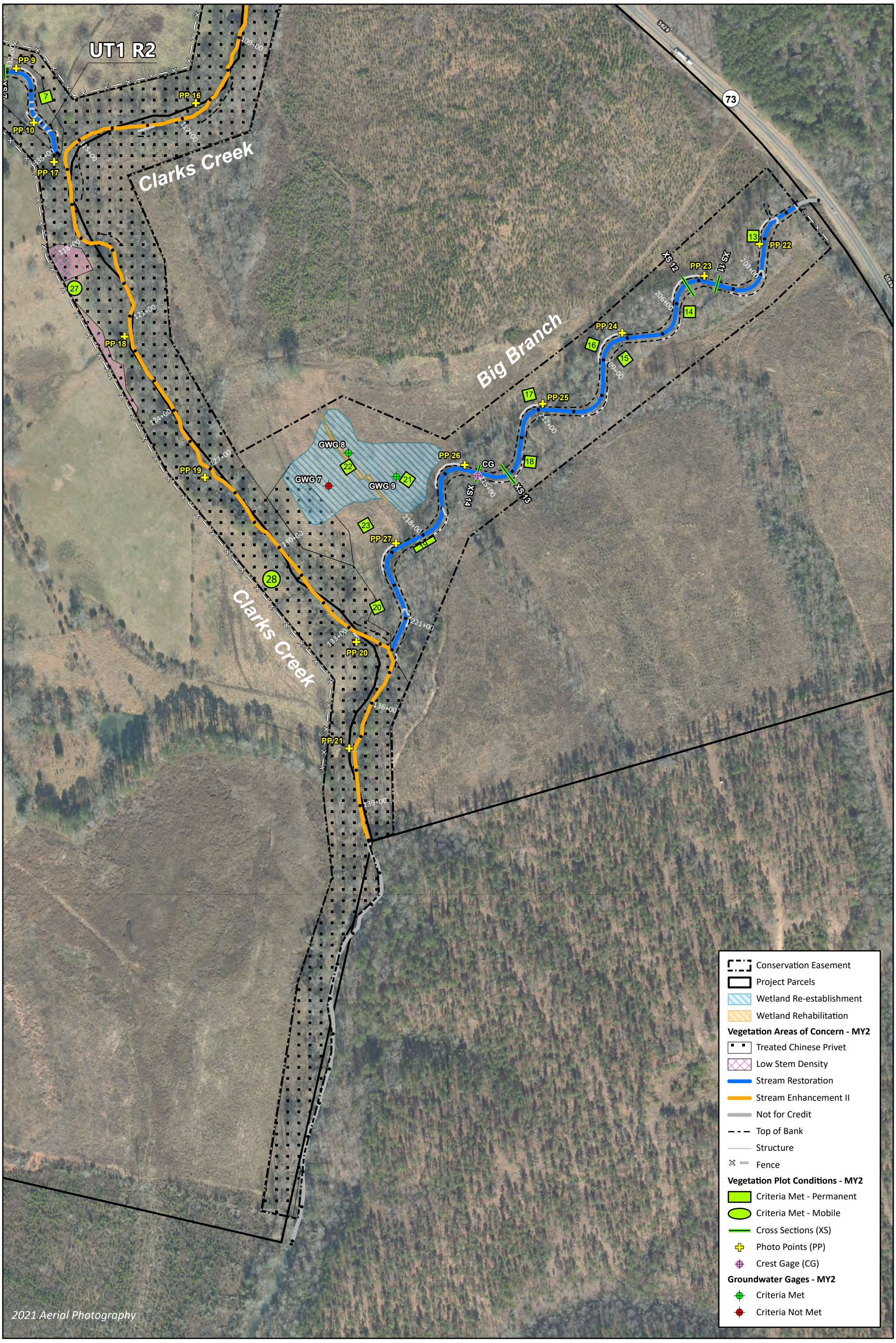
NC Environmental Quality

0 200 400 Feet

N

Figure 1a. Current Condition Plan View
Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

Montgomery County, NC



WILDLANDS ENGINEERING

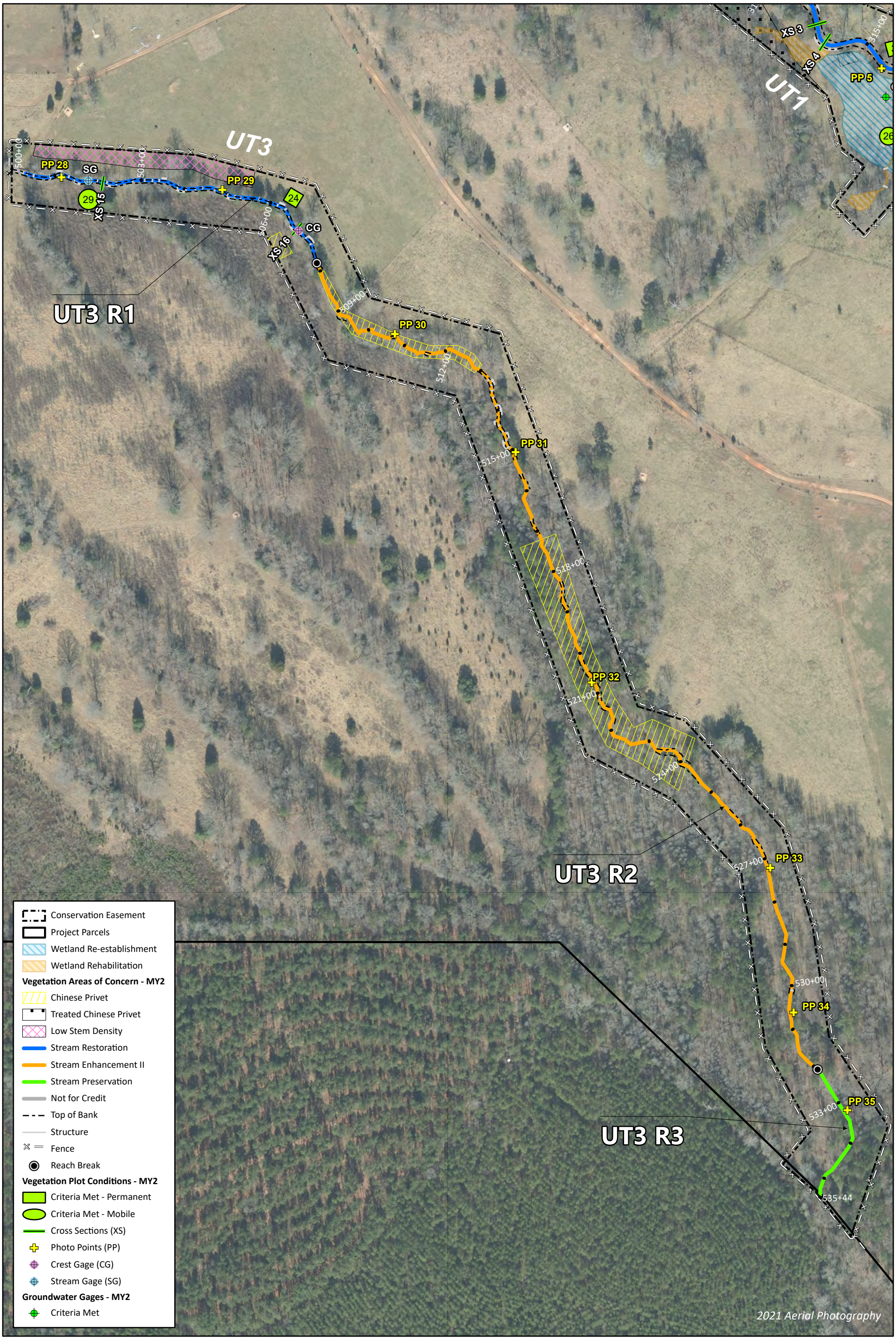
Environmental Quality

0 250 500 Feet

N

Figure 1b. Current Condition Plan View
Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

Montgomery County, NC



WILDLANDS ENGINEERING

NC Environmental Quality

0 200 400 Feet

N

Figure 1c. Current Condition Plan View
Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

Montgomery County, NC

APPENDIX A. VISUAL ASSESSMENT DATA

Table 4a. Visual Stream Morphology Stability Assessment Table

Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

UT1 R1

Major Channel Category		Metric	Number Stable, Performing as Intended	Total Number in As-Built	Amount of Unstable Footage	% Stable, Performing as Intended
					Assessed Stream Length	2,866
					Assessed Bank Length	5,732
Bank	**Surface Scour/ Bare Bank**	Bank lacking vegetative cover resulting simply from poor growth and/or surface scour.			0	100%
	Toe Erosion	Bank toe eroding to the extent that bank failure appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	100%
	Bank Failure	Fluvial and geotechnical - rotational, slumping, calving, or collapse.			0	100%
				Totals:	**0**	**100%**
Structure	**Grade Control**	Grade control structures exhibiting maintenance of grade across the sill.	9	9		100%
	Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	17	17		100%

Visual assessment was completed November 21, 2023.

UT1 R2

Major Channel Category		Metric	Number Stable, Performing as Intended	Total Number in As-Built	Amount of Unstable Footage	% Stable, Performing as Intended
					Assessed Stream Length	606
					Assessed Bank Length	1,212
Bank	**Surface Scour/ Bare Bank**	Bank lacking vegetative cover resulting simply from poor growth and/or surface scour.			0	100%
	Toe Erosion	Bank toe eroding to the extent that bank failure appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	100%
	Bank Failure	Fluvial and geotechnical - rotational, slumping, calving, or collapse.			0	100%
				Totals:	**0**	**100%**
Structure	**Grade Control**	Grade control structures exhibiting maintenance of grade across the sill.	3	3		100%
	Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	6	6		100%

Visual assessment was completed November 21, 2023.

Table 4b. Visual Stream Morphology Stability Assessment Table

Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

UT1B

Major Channel Category		Metric	Number Stable, Performing as Intended	Total Number in As-Built	Amount of Unstable Footage	% Stable, Performing as Intended
					Assessed Stream Length	1,254
					Assessed Bank Length	2,508
Bank	**Surface Scour/ Bare Bank**	Bank lacking vegetative cover resulting simply from poor growth and/or surface scour.			0	100%
	Toe Erosion	Bank toe eroding to the extent that bank failure appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	100%
	Bank Failure	Fluvial and geotechnical - rotational, slumping, calving, or collapse.			0	100%
				Totals:	**0**	**100%**
Structure	**Grade Control**	Grade control structures exhibiting maintenance of grade across the sill.	7	7		100%
	Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	11	11		100%

Visual assessment was completed November 21, 2023.

Clark's Creek

Major Channel Category		Metric	Number Stable, Performing as Intended	Total Number in As-Built	Amount of Unstable Footage	% Stable, Performing as Intended
					Assessed Stream Length	3,479
					Assessed Bank Length	6,958
Bank	**Surface Scour/ Bare Bank**	Bank lacking vegetative cover resulting simply from poor growth and/or surface scour.			0	100%
	Toe Erosion	Bank toe eroding to the extent that bank failure appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	100%
	Bank Failure	Fluvial and geotechnical - rotational, slumping, calving, or collapse.			0	100%
				Totals:	**0**	**100%**
Structure	**Grade Control**	Grade control structures exhibiting maintenance of grade across the sill.	0	0		N/A
	Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	1	1		100%

Visual assessment was completed November 21, 2023.

Table 4c. Visual Stream Morphology Stability Assessment Table

Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

Big Branch

Major Channel Category		Metric	Number Stable, Performing as Intended	Total Number in As-Built	Amount of Unstable Footage	% Stable, Performing as Intended
					Assessed Stream Length	2,196
					Assessed Bank Length	4,392
Bank	**Surface Scour/ Bare Bank**	Bank lacking vegetative cover resulting simply from poor growth and/or surface scour.			0	100%
	Toe Erosion	Bank toe eroding to the extent that bank failure appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	100%
	Bank Failure	Fluvial and geotechnical - rotational, slumping, calving, or collapse.			0	100%
				Totals:	**0**	**100%**
Structure	**Grade Control**	Grade control structures exhibiting maintenance of grade across the sill.	5	5		100%
	Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	12	12		100%

Visual assessment was completed November 21, 2023.

UT3 R1

Major Channel Category		Metric	Number Stable, Performing as Intended	Total Number in As-Built	Amount of Unstable Footage	% Stable, Performing as Intended
					Assessed Stream Length	754
					Assessed Bank Length	1,508
Bank	**Surface Scour/ Bare Bank**	Bank lacking vegetative cover resulting simply from poor growth and/or surface scour.			0	100%
	Toe Erosion	Bank toe eroding to the extent that bank failure appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	100%
	Bank Failure	Fluvial and geotechnical - rotational, slumping, calving, or collapse.			0	100%
				Totals:	**0**	**100%**
Structure	**Grade Control**	Grade control structures exhibiting maintenance of grade across the sill.	13	13		100%
	Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	8	8		100%

Visual assessment was completed November 21, 2023.

Table 4d. Visual Stream Morphology Stability Assessment Table

Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

UT3 R2

Major Channel Category		Metric	Number Stable, Performing as Intended	Total Number in As-Built	Amount of Unstable Footage	% Stable, Performing as Intended
					Assessed Stream Length	2,437
					Assessed Bank Length	4,874
Bank	**Surface Scour/ Bare Bank**	Bank lacking vegetative cover resulting simply from poor growth and/or surface scour.			0	100%
	Toe Erosion	Bank toe eroding to the extent that bank failure appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	100%
	Bank Failure	Fluvial and geotechnical - rotational, slumping, calving, or collapse.			0	100%
				Totals:	**0**	**100%**
Structure	**Grade Control**	Grade control structures exhibiting maintenance of grade across the sill.	3	3		100%
	Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	5	5		100%

Visual assessment was completed November 21, 2023.

UT3 R3

Major Channel Category		Metric	Number Stable, Performing as Intended	Total Number in As-Built	Amount of Unstable Footage	% Stable, Performing as Intended
					Assessed Stream Length	331
					Assessed Bank Length	662
Bank	**Surface Scour/ Bare Bank**	Bank lacking vegetative cover resulting simply from poor growth and/or surface scour.			0	100%
	Toe Erosion	Bank toe eroding to the extent that bank failure appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	100%
	Bank Failure	Fluvial and geotechnical - rotational, slumping, calving, or collapse.			0	100%
				Totals:	**0**	**100%**
Structure	**Grade Control**	Grade control structures exhibiting maintenance of grade across the sill.	0	0		N/A
	Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	0	0		N/A

Visual assessment was completed November 21, 2023.

Table 5. Vegetation Condition Assessment Table

Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

Planted Acreage 43.5

Vegetation Category	Definitions	Mapping Threshold (ac)	Combined Acreage	% of Planted Acreage
Bare Areas	Very limited cover of both woody and herbaceous material.	0.1	0.0	0%
Low Stem Density Areas	Woody stem densities clearly below target levels based on current MY stem count criteria.	0.1	0.7	2%
		Total	**0.7**	**2%**
Areas of Poor Growth Rates	Planted areas where average height is not meeting current MY Performance Standard.	0.1	0.0	0%
		Cumulative Total	**0.7**	**2%**

Visual assessment was completed November 21, 2023.

Easement Acreage 63.9

Vegetation Category	Definitions	Mapping Threshold (ac)	Combined Acreage	% of Easement Acreage
Invasive Areas of Concern	Invasives may occur outside of planted areas and within the easement and will therefore be calculated against the total easement acreage. Include species with the potential to directly outcompete native, young, woody stems in the short-term or community structure for existing communities. Invasive species included in summation above should be identified in report summary.	0.1	2.7	4%
Easement Encroachment Areas	Encroachment may be point, line, or polygon. Encroachment to be mapped consists of any violation of restrictions specified in the conservation easement. Common encroachments are mowing, cattle access, vehicular access. Encroachment has no threshold value as will need to be addressed regardless of impact area.	none	0 Encroachments Noted / 0 ac	

Visual assessment was completed November 21, 2023.

STREAM PHOTOGRAPHS

PHOTO POINT 1 UT1 R1 – upstream *(5/9/2023)*

PHOTO POINT 1 UT1 R1 – downstream *(5/9/2023)*

PHOTO POINT 2 UT1 R1 – upstream *(5/9/2023)*

PHOTO POINT 2 UT1 R1 – downstream *(5/9/2023)*

PHOTO POINT 3 UT1 R1 – upstream *(5/9/2023)*

PHOTO POINT 3 UT1 R1 – downstream *(5/9/2023)*

PHOTO POINT 4 UT1 R1 – upstream *(5/9/2023)*

PHOTO POINT 4 UT1 R1 – downstream *(5/9/2023)*

PHOTO POINT 5 UT1 R1 – upstream *(5/9/2023)*

PHOTO POINT 5 UT1 R1 – downstream *(5/9/2023)*

PHOTO POINT 6 UT1 R1 – upstream *(5/9/2023)*

PHOTO POINT 6 UT1 R1 – downstream *(5/9/2023)*

PHOTO POINT 7 UT1 R1 – upstream *(5/9/2023)*

PHOTO POINT 7 UT1 R1 – downstream *(5/9/2023)*

PHOTO POINT 8 UT1 R1 – upstream *(5/9/2023)*

PHOTO POINT 8 UT1 R1 – downstream *(5/9/2023)*

PHOTO POINT 9 UT1 R2 – upstream *(5/9/2023)*

PHOTO POINT 9 UT1 R2 – downstream *(5/9/2023)*

PHOTO POINT 10 UT1 R2 – upstream *(5/9/2023)*

PHOTO POINT 10 UT1 R2 – downstream *(5/9/2023)*

PHOTO POINT 11 UT1B – upstream *(5/9/2023)*

PHOTO POINT 11 UT1B – downstream *(5/9/2023)*

PHOTO POINT 12 UT1B – upstream *(5/9/2023)*

PHOTO POINT 12 UT1B – downstream *(5/9/2023)*

PHOTO POINT 13 UT1B – upstream *(5/9/2023)*

PHOTO POINT 13 UT1B – downstream *(5/9/2023)*

PHOTO POINT 14 UT1B – upstream *(5/9/2023)*

PHOTO POINT 14 UT1B – downstream *(5/9/2023)*

PHOTO POINT 15 Clarks Creek – upstream *(5/9/2023)*

PHOTO POINT 15 Clarks Creek – downstream *(5/9/2023)*

	
PHOTO POINT 16 Clarks Creek – upstream *(5/9/2023)*	**PHOTO POINT 16 Clarks Creek –** downstream *(5/9/2023)*
	
PHOTO POINT 17 Clarks Creek – upstream *(5/9/2023)*	**PHOTO POINT 17 Clarks Creek –** downstream *(5/9/2023)*
	
PHOTO POINT 18 Clarks Creek – upstream *(5/9/2023)*	**PHOTO POINT 18 Clarks Creek –** downstream *(5/9/2023)*

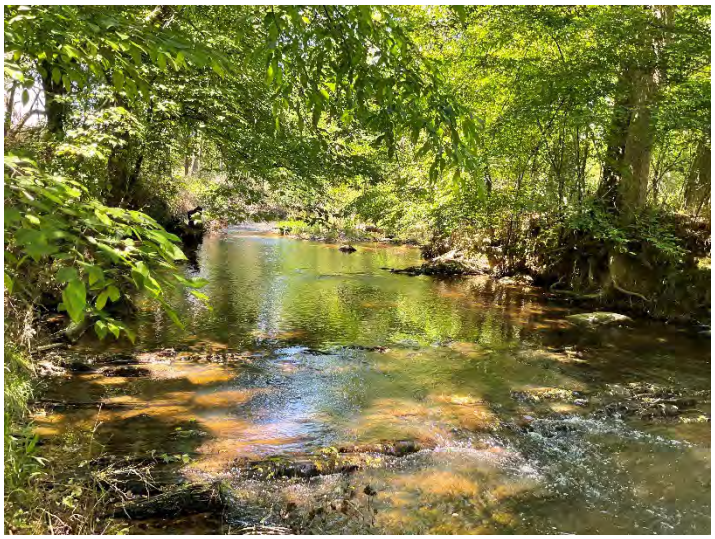


PHOTO POINT 19 Clarks Creek – upstream *(5/9/2023)*

PHOTO POINT 19 Clarks Creek – downstream *(5/9/2023)*

PHOTO POINT 20 Clarks Creek – upstream *(5/9/2023)*

PHOTO POINT 20 Clarks Creek – downstream *(5/9/2023)*

PHOTO POINT 21 Clarks Creek – upstream *(5/9/2023)*

PHOTO POINT 21 Clarks Creek – downstream *(5/9/2023)*

PHOTO POINT 22 Big Branch – upstream *(5/9/2023)*

PHOTO POINT 22 Big Branch – downstream *(5/9/2023)*

PHOTO POINT 23 Big Branch – upstream *(5/9/2023)*

PHOTO POINT 23 Big Branch – downstream *(5/9/2023)*

PHOTO POINT 24 Big Branch – upstream *(5/9/2023)*

PHOTO POINT 24 Big Branch – downstream *(5/9/2023)*

PHOTO POINT 25 Big Branch – upstream *(5/9/2023)*

PHOTO POINT 25 Big Branch – downstream *(5/9/2023)*

PHOTO POINT 26 Big Branch – upstream *(5/9/2023)*

PHOTO POINT 26 Big Branch – downstream *(5/9/2023)*

PHOTO POINT 27 Big Branch – upstream *(5/9/2023)*

PHOTO POINT 27 Big Branch – downstream *(5/9/2023)*

PHOTO POINT 28 UT3 R1 – upstream *(5/9/2023)*

PHOTO POINT 28 UT3 R1 – downstream *(5/9/2023)*

PHOTO POINT 29 UT3 R1 – upstream *(5/9/2023)*

PHOTO POINT 29 UT3 R1 – downstream *(5/9/2023)*

PHOTO POINT 30 UT3 R2 – upstream *(5/9/2023)*

PHOTO POINT 30 UT3 R2 – downstream *(5/9/2023)*

	
PHOTO POINT 31 UT3 R2 – upstream *(5/9/2023)*	**PHOTO POINT 31 UT3 R2 –** downstream *(5/9/2023)*
	
PHOTO POINT 32 UT3 R2 – upstream *(5/9/2023)*	**PHOTO POINT 32 UT3 R2 –** downstream *(5/9/2023)*
	
PHOTO POINT 33 UT3 R2 – upstream *(5/9/2023)*	**PHOTO POINT 33 UT3 R2 –** downstream *(5/9/2023)*

	
PHOTO POINT 34 UT3 R2 – upstream *(5/9/2023)*	**PHOTO POINT 34 UT3 R2 –** downstream *(5/9/2023)*
	
PHOTO POINT 35 UT3 R3 – upstream *(5/9/2023)*	**PHOTO POINT 35 UT3 R3 –** downstream *(5/9/2023)*

CULVERT CROSSING PHOTOGRAPHS

UT1 R2 – Looking Upstream *(5/9/2023)*

UT1 R2 – Looking Downstream *(5/9/2023)*

UT1 R2 Culvert Crossing – Looking Southwest *(5/9/2023)*

UT1 R2 Culvert Crossing – Looking Northeast *(5/9/2023)*

UT1B – Looking Upstream *(5/9/2023)*

UT1B – Looking Downstream *(5/9/2023)*

	
UT1B Culvert Crossing – Looking West *(5/9/2023)*	**UT1B Culvert Crossing –** Looking East *(5/9/2023)*

VEGETATION PLOT PHOTOGRAPHS

PERMANENT VEGETATION PLOT 1 *(8/16/2023)*

PERMANENT VEGETATION PLOT 2 *(8/16/2023)*

PERMANENT VEGETATION PLOT 3 *(8/16/2023)*

PERMANENT VEGETATION PLOT 4 *(8/16/2023)*

PERMANENT VEGETATION PLOT 5 *(8/16/2023)*

PERMANENT VEGETATION PLOT 6 *(8/15/2023)*

PERMANENT VEGETATION PLOT 7 *(8/15/2023)*

PERMANENT VEGETATION PLOT 8 *(8/15/2023)*

PERMANENT VEGETATION PLOT 9 *(8/15/2023)*

PERMANENT VEGETATION PLOT 10 *(8/15/2023)*

PERMANENT VEGETATION PLOT 11 *(8/15/2023)*

PERMANENT VEGETATION PLOT 12 *(8/15/2023)*

PERMANENT VEGETATION PLOT 13 *(8/16/2023)*

PERMANENT VEGETATION PLOT 14 *(8/16/2023)*

PERMANENT VEGETATION PLOT 15 *(8/14/2023)*

PERMANENT VEGETATION PLOT 16 *(8/14/2023)*

PERMANENT VEGETATION PLOT 17 *(8/14/2023)*

PERMANENT VEGETATION PLOT 18 *(8/14/2023)*

PERMANENT VEGETATION PLOT 19 *(8/14/2023)*

PERMANENT VEGETATION PLOT 20 *(8/14/2023)*

PERMANENT VEGETATION PLOT 21 *(8/14/2023)*

PERMANENT VEGETATION PLOT 22 *(8/14/2023)*

PERMANENT VEGETATION PLOT 23 *(8/14/2023)*

PERMANENT VEGETATION PLOT 24 *(8/16/2023)*

MOBILE VEGETATION PLOT 25 *(8/16/2023)*

MOBILE VEGETATION PLOT 26 *(8/16/2023)*

MOBILE VEGETATION PLOT 27 *(8/15/2023)*

MOBILE VEGETATION PLOT 28 *(8/14/2023)*

MOBILE VEGETATION PLOT 29 *(8/16/2023)*

GROUNDWATER WELL PHOTOGRAPHS

GROUNDWATER WELL 1 – *(8/16/2023)*

GROUNDWATER WELL 2 – *(8/16/2023)*

GROUNDWATER WELL 3 – *(8/16/2023)*

GROUNDWATER WELL 4 – *(8/16/2023)*

GROUNDWATER WELL 5 – *(8/16/2023)*

GROUNDWATER WELL 6 – *(8/16/2023)*

GROUNDWATER WELL 7 – *(8/14/2023)*

GROUNDWATER WELL 8 – *(8/14/2023)*

GROUNDWATER WELL 9 – *(8/14/2023)*

BUD BURSTS AND LEAF SENSESCENCE PHOTOGRAPHS

	
Budburst – winged elm *(2/2/2023)*	**Budburst –** Eastern red cedar *(2/2/2023)*
	
Budburst – yellow trout lily *(2/2/2023)*	**Budburst –** American elderberry *(2/2/2023)*
	
Leaf senescence – UT1 R2 upstream *(11/6/2023)*	**Leaf senescence –** UT1 R1 & UT1B upstream *(11/6/2023)*

	
Leaf senescence – UT1 R2 upstream *(11/6/2023)*	**Leaf senescence –** UT1 R1 & UT1B upstream *(11/6/2023)*

APPENDIX B. VEGETATION PLOT DATA

Table 6a. Vegetation Plot Data

Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

Planted Acreage	43.5
Date of Initial Plant	2022-03-10
Date of Current Survey	2023-08-16
Plot size (ACRES)	0.0247

	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	
					Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	Alnus serrulata	tag alder	Tree	OBL							3	3						
	Asimina triloba	pawpaw	Tree	FAC	1	1												
	Betula nigra	river birch	Tree	FACW	2	2	3	3	2	2	1	1						
	Celtis laevigata	sugarberry	Tree	FACW	1	1			1	1			2	2	1	1	1	1
	Cephalanthus occidentalis	buttonbush	Shrub	OBL							1	1						
	Diospyros virginiana	common persimmon	Tree	FAC	2	2			1	1		1	2	2	2	2	1	1
	Euonymus americanus	strawberry bush	Shrub	FAC	1	1							1	1	1	1		
	Nyssa biflora	swamp gum	Tree	FACW							1	1						
	Platanus occidentalis	American sycamore	Tree	FACW	1	3	1	1	3	4	4	4		2	3	3	3	3
	Populus deltoides	eastern cottonwood	Tree	FAC	3	3			1	1			1	1	1	1		
	Quercus lyrata	overcup oak	Tree	OBL			4	4										
	Quercus michauxii	swamp chestnut oak	Tree	FACW	1	1	3	3	2	2	1	1	1	1	2	2	1	1
	Quercus phellos	willow oak	Tree	FAC	1	1			1	1			1	1	2	2		
	Salix nigra	black willow	Tree	OBL			1	1										
	Ulmus americana	American elm	Tree	FACW			2	2			2	2			1	1	2	2
	Ulmus rubra	slippery elm	Tree	FAC	2	4			2	2			3	3			4	6
Sum				Performance Standard	15	19	14	14	13	14	13	14	11	13	13	13	12	14
Post Mitigation Plan Species	Acer negundo	boxelder	Tree	FAC														1
	Fraxinus pennsylvanica	green ash	Tree	FACW		1		1				1		1				
	Gleditsia triacanthos	honeylocust	Shrub	FAC														
	Liquidambar styraciflua	*sweetgum*	*Tree*	*FAC*						*1*								
Sum				Proposed Standard	15	20	14	15	13	14	13	15	11	14	13	13	12	15
Mitigation Plan Performance Standard				Current Year Stem Count		19		14		14		14		13		13		14
				Stems/Acre		769		567		567		567		526		526		567
				Species Count		10		6		8		8		8		8		6
				Dominant Species Composition (%)		21		29		27		29		23		23		43
				Average Plot Height (ft.)		2		2		3		2		2		3		3
				% Invasives		0		0		0		0		0		0		0
Post Mitigation Plan Performance Standard				Current Year Stem Count		20		15		14		15		14		13		15
				Stems/Acre		810		607		567		607		567		526		607
				Species Count		11		7		8		9		9		8		7
				Dominant Species Composition (%)		21		29		27		29		23		23		43
				Average Plot Height (ft.)		2		2		3		2		2		3		3
				% Invasives		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 6b. Vegetation Plot Data

Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

Planted Acreage	43.5
Date of Initial Plant	2022-03-10
Date of Current Survey	2023-08-16
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Tree/ Shrub	Indicator Status	Veg Plot 8 F		Veg Plot 9 F		Veg Plot 10 F		Veg Plot 11 F		Veg Plot 12 F		Veg Plot 13 F		Veg Plot 14 F	
					Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	Alnus serrulata	tag alder	Tree	OBL														
	Asimina triloba	pawpaw	Tree	FAC											1	1		
	Betula nigra	river birch	Tree	FACW	1	1	2	2					1	1	1	1		
	Celtis laevigata	sugarberry	Tree	FACW	1	1	2	2	1	1			1	1	1	1	1	1
	Cephalanthus occidentalis	buttonbush	Shrub	OBL														
	Diospyros virginiana	common persimmon	Tree	FAC	1	1			3	3	3	4	1	1	3	3	2	2
	Euonymus americanus	strawberry bush	Shrub	FAC	1	1			1	1	1	1	1	1	1	1	1	1
	Nyssa biflora	swamp gum	Tree	FACW														
	Platanus occidentalis	American sycamore	Tree	FACW	3	3	3	3	1	1	2	2	1	1	2	3	3	3
	Populus deltoides	eastern cottonwood	Tree	FAC	1	1	2	2	3	3	1	1	2	2	1	1	2	2
	Quercus lyrata	overcup oak	Tree	OBL														
	Quercus michauxii	swamp chestnut oak	Tree	FACW	3	3	1	1			2	2	3	3			2	2
	Quercus phellos	willow oak	Tree	FAC	2	2	1	1	1	1			2	2	2	3	1	1
	Salix nigra	black willow	Tree	OBL														
	Ulmus americana	American elm	Tree	FACW			1	1										
	Ulmus rubra	slippery elm	Tree	FAC	1	1	1	1	1	1	1	1	1	1	3	3	3	3
Sum				Performance Standard	14	14	13	13	11	11	10	11	13	13	15	17	15	15
Post Mitigation Plan Species	Acer negundo	boxelder	Tree	FAC										1				
	Fraxinus pennsylvanica	green ash	Tree	FACW		3		1		3		1						
	Gleditsia triacanthos	honeylocust	Shrub	FAC														
	Liquidambar styraciflua	*sweetgum*	*Tree*	*FAC*														
Sum				Proposed Standard	14	17	13	14	11	14	10	12	13	14	15	17	15	15
Mitigation Plan Performance Standard				Current Year Stem Count		14		13		11		11		13		17		15
				Stems/Acre		567		526		445		445		526		688		607
				Species Count		9		8		7		6		9		9		8
				Dominant Species Composition (%)		21		23		27		36		23		18		20
				Average Plot Height (ft.)		3		4		4		2		3		2		2
				% Invasives		0		0		0		0		0		0		0
Post Mitigation Plan Performance Standard				Current Year Stem Count		17		14		14		12		14		17		15
				Stems/Acre		688		567		567		486		567		688		607
				Species Count		10		9		8		7		10		9		8
				Dominant Species Composition (%)		18		23		27		36		23		18		20
				Average Plot Height (ft.)		3		4		3		2		3		2		2
				% Invasives		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 6c. Vegetation Plot Data
Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

Planted Acreage	43.5
Date of Initial Plant	2022-03-10
Date of Current Survey	2023-08-16
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Tree/ Shrub	Indicator Status	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	
					Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	Alnus serrulata	tag alder	Tree	OBL													2	2
	Asimina triloba	pawpaw	Tree	FAC														
	Betula nigra	river birch	Tree	FACW	1	1	2	2			3	3	2	2			3	3
	Celtis laevigata	sugarberry	Tree	FACW	2	2	2	2	1	1	1	1	1	1	2	2		
	Cephalanthus occidentalis	buttonbush	Shrub	OBL													1	1
	Diospyros virginiana	common persimmon	Tree	FAC	2	3	1	1			1	1	2	2				
	Euonymus americanus	strawberry bush	Shrub	FAC			1	1			1	1			1	1		
	Nyssa biflora	swamp gum	Tree	FACW														
	Platanus occidentalis	American sycamore	Tree	FACW	2	2	2	2	4	4	3	3	2	2	2	2	4	4
	Populus deltoides	eastern cottonwood	Tree	FAC	1	1	1	1	1	1	1	2	2	2	2	2		
	Quercus lyrata	overcup oak	Tree	OBL													2	2
	Quercus michauxii	swamp chestnut oak	Tree	FACW	1	1	3	3	2	2	1	1	2	2	2	2	1	1
	Quercus phellos	willow oak	Tree	FAC	1	1	2	2	1	1			1	1				
	Salix nigra	black willow	Tree	OBL												1		
	Ulmus americana	American elm	Tree	FACW											1	1	2	2
	Ulmus rubra	slippery elm	Tree	FAC	3	3	1	2	2	3	2	5	2	2				
Sum				Performance Standard	13	14	15	16	11	12	13	17	14	14	10	11	15	15
Post Mitigation Plan Species	Acer negundo	boxelder	Tree	FAC												3		
	Fraxinus pennsylvanica	green ash	Tree	FACW		1										1		
	Gleditsia triacanthos	honeylocust	Shrub	FAC						1								
	Liquidambar styraciflua	*sweetgum*	*Tree*	*FAC*														
Sum				Proposed Standard	13	15	15	16	11	13	13	17	14	14	10	15	15	15
Mitigation Plan Performance Standard				Current Year Stem Count		14		16		12		17		14		11		15
				Stems/Acre		567		648		486		688		567		445		607
				Species Count		8		9		6		8		8		7		7
				Dominant Species Composition (%)		21		19		33		29		14		18		27
				Average Plot Height (ft.)		2		3		3		3		3		3		2
				% Invasives		0		0		0		0		0		0		0
Post Mitigation Plan Performance Standard				Current Year Stem Count		15		16		13		17		14		15		15
				Stems/Acre		607		648		526		688		567		607		607
				Species Count		9		9		7		8		8		9		7
				Dominant Species Composition (%)		21		19		33		29		14		18		27
				Average Plot Height (ft.)		2		3		3		3		3		3		2
				% Invasives		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 6d. Vegetation Plot Data

Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

Planted Acreage	43.5
Date of Initial Plant	2022-03-10
Date of Current Survey	2023-08-16
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Tree/ Shrub	Indicator Status	Veg Plot 22 F		Veg Plot 23 F		Veg Plot 24 F		Veg Plot 25 R	Veg Plot 26 R	Veg Plot 27 R	Veg Plot 28 R	Veg Plot 29 R
					Planted	Total	Planted	Total	Planted	Total	Total	Total	Total	Total	Total
Species Included in Approved Mitigation Plan	Alnus serrulata	tag alder	Tree	OBL	1	1									
	Asimina triloba	pawpaw	Tree	FAC											
	Betula nigra	river birch	Tree	FACW	1	1	1	1	1	1					
	Celtis laevigata	sugarberry	Tree	FACW			2	2	1	1				1	
	Cephalanthus occidentalis	buttonbush	Shrub	OBL	1	1				1					1
	Diospyros virginiana	common persimmon	Tree	FAC			3	3	1	1	1	1			5
	Euonymus americanus	strawberry bush	Shrub	FAC			1	1				1			
	Nyssa biflora	swamp gum	Tree	FACW	1	1						1			
	Platanus occidentalis	American sycamore	Tree	FACW	1	1	2	2	1	1	4	4	5	1	1
	Populus deltoides	eastern cottonwood	Tree	FAC			2	2	1	1					
	Quercus lyrata	overcup oak	Tree	OBL	2	2						2			
	Quercus michauxii	swamp chestnut oak	Tree	FACW	3	3			1	1		2	1	1	
	Quercus phellos	willow oak	Tree	FAC			1	1	2	2				2	
	Salix nigra	black willow	Tree	OBL	1	1								1	
	Ulmus americana	American elm	Tree	FACW	3	3					1		2		1
	Ulmus rubra	slippery elm	Tree	FAC			1	1	1	2	5			5	3
Sum				Performance Standard	14	14	13	13	9	11	11	11	8	11	11
Post Mitigation Plan Species	Acer negundo	boxelder	Tree	FAC									3	2	
	Fraxinus pennsylvanica	green ash	Tree	FACW		1					3	1	1	4	
	Gleditsia triacanthos	honeylocust	Shrub	FAC									2	1	
	Liquidambar styraciflua	*sweetgum*	*Tree*	*FAC*									*1*		
Sum				Proposed Standard	14	15	13	13	9	11	14	12	14	18	11
Mitigation Plan Performance Standard				Current Year Stem Count		14		13		11	11	11	8	11	11
				Stems/Acre		567		526		445	445	445	324	445	445
				Species Count		9		8		9	4	6	3	6	5
				Dominant Species Composition (%)		21		23		18	36	33	33	28	45
				Average Plot Height (ft.)		2		2		1	2	2	3	3	2
				% Invasives		0		0		0	0	0	0	0	0
Post Mitigation Plan Performance Standard				Current Year Stem Count		15		13		11	14	12	14	18	11
				Stems/Acre		607		526		445	567	486	567	729	445
				Species Count		10		8		9	5	7	6	9	5
				Dominant Species Composition (%)		21		23		18	36	33	33	28	45
				Average Plot Height (ft.)		2		2		1	2	2	2	3	2
				% Invasives		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 7a. Vegetation Performance Standards Summary Table
Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

	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 3												
Monitoring Year 2	769	2	10	0	567	2	6	0	567	3	8	0
Monitoring Year 1	567	2	9	0	567	2	6	0	607	2	8	0
Monitoring Year 0	648	2	10	0	567	2	6	0	607	2	8	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 3												
Monitoring Year 2	567	2	8	0	526	2	8	0	526	3	8	0
Monitoring Year 1	526	2	7	0	567	2	9	0	526	3	8	0
Monitoring Year 0	607	2	8	0	567	2	9	0	567	2	9	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 3												
Monitoring Year 2	567	3	6	0	567	3	8	0	526	4	8	0
Monitoring Year 1	607	2	8	0	567	2	8	0	526	3	8	0
Monitoring Year 0	648	2	9	0	607	2	8	0	607	3	8	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 3												
Monitoring Year 2	445	4	7	0	445	2	6	0	526	3	9	0
Monitoring Year 1	445	3	7	0	445	2	8	0	648	2	9	0
Monitoring Year 0	567	3	9	0	567	2	9	0	648	2	9	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 3												
Monitoring Year 2	688	2	9	0	607	2	8	0	567	2	8	0
Monitoring Year 1	607	2	9	0	607	2	8	0	567	2	9	0
Monitoring Year 0	607	2	9	0	607	2	8	0	567	3	9	0

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

Table 7b. Vegetation Performance Standards Summary Table
Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

	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 3												
Monitoring Year 2	648	3	9	0	486	3	6	0	688	3	8	0
Monitoring Year 1	648	2	9	0	526	2	8	0	567	3	9	0
Monitoring Year 0	648	2	9	0	567	2	8	0	688	3	10	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 3												
Monitoring Year 2	567	3	8	0	445	3	7	0	607	2	7	0
Monitoring Year 1	567	2	8	0	405	3	6	0	607	2	7	0
Monitoring Year 0	607	3	8	0	567	2	9	0	648	3	8	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 3												
Monitoring Year 2	567	2	9	0	526	2	8	0	445	1	9	0
Monitoring Year 1	567	2	9	0	526	2	8	0	364	1	8	0
Monitoring Year 0	607	2	10	0	607	2	8	0	607	2	10	0
	Veg Plot Group 25 R				Veg Plot Group 26 R				Veg Plot Group 27 R			
	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 3												
Monitoring Year 2	445	2	4	0	445	2	6	0	324	3	3	0
Monitoring Year 1	202	3	4	0	405	2	6	0	121	3	2	0
Monitoring Year 0	445	2	5	0	445	2	4	0	607	2	10	0
	Veg Plot Group 28 R				Veg Plot Group 29 R							
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives				
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2	445	3	6	0	445	2	5	0				
Monitoring Year 1	202	2	5	17	405	2	5	0				
Monitoring Year 0	607	3	9	0	526	2	6	0				

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

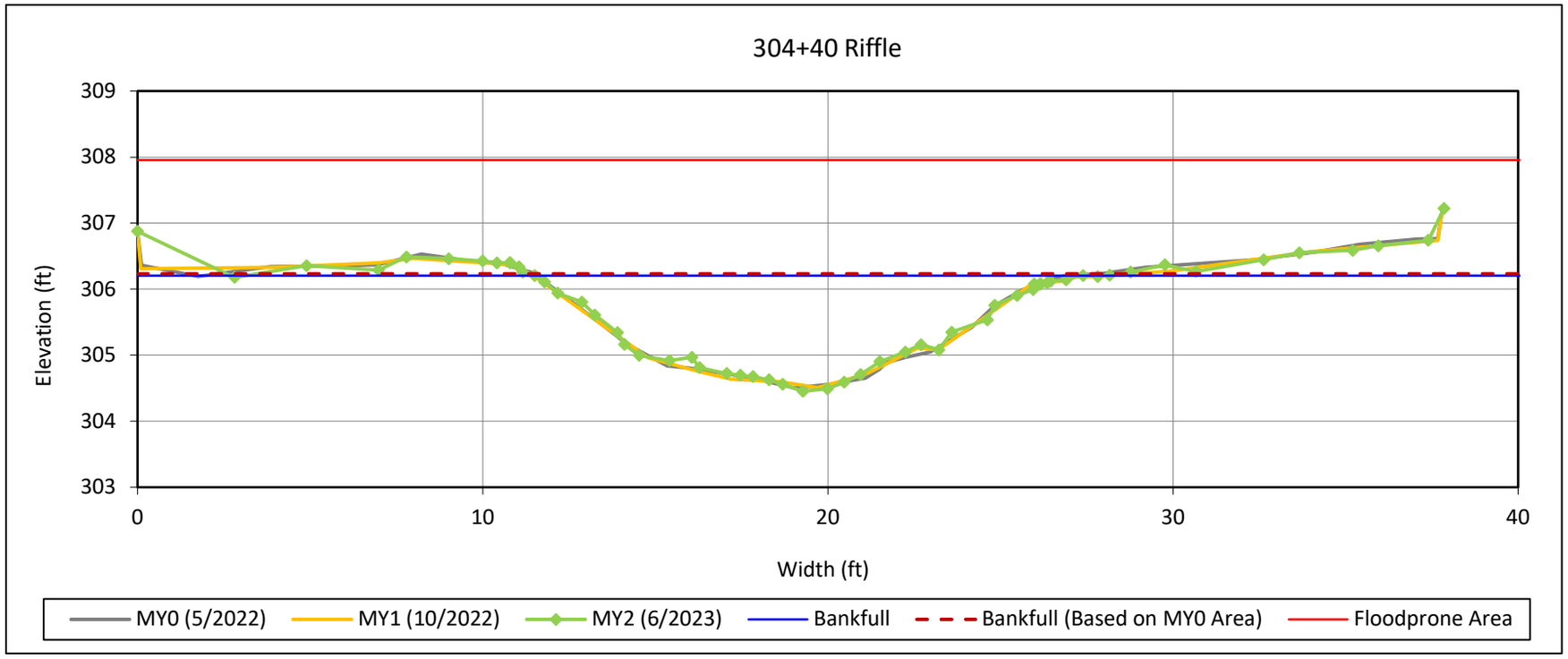
APPENDIX C. STREAM GEOMORPHOLOGY DATA

Cross-Section Plots

Cross-Section Plots

Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

Cross-Section 1 - UT1 Reach 1



Bankfull Dimensions	
15.8	x-section area (ft.sq.)
15.9	width (ft)
1.0	mean depth (ft)
1.8	max depth (ft)
16.6	wetted perimeter (ft)
0.9	hydraulic radius (ft)
16.0	width-depth ratio
37.9	W flood prone area (ft)
2.4	entrenchment ratio
1.0	low bank height ratio

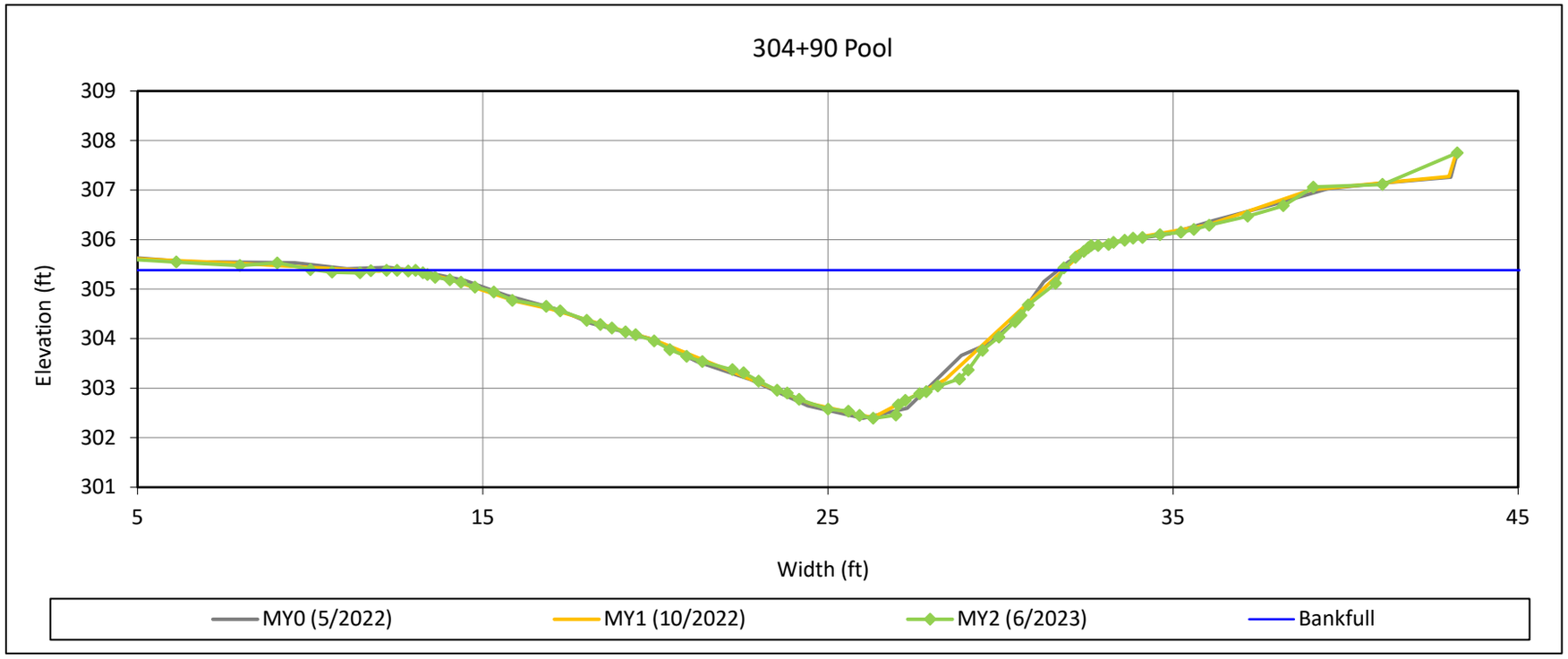
Survey Date: 6/2023
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

Cross-Section 2 - UT1 Reach 1



Bankfull Dimensions	
29.1	x-section area (ft.sq.)
18.7	width (ft)
1.6	mean depth (ft)
3.0	max depth (ft)
20.1	wetted perimeter (ft)
1.4	hydraulic radius (ft)
12.1	width-depth ratio

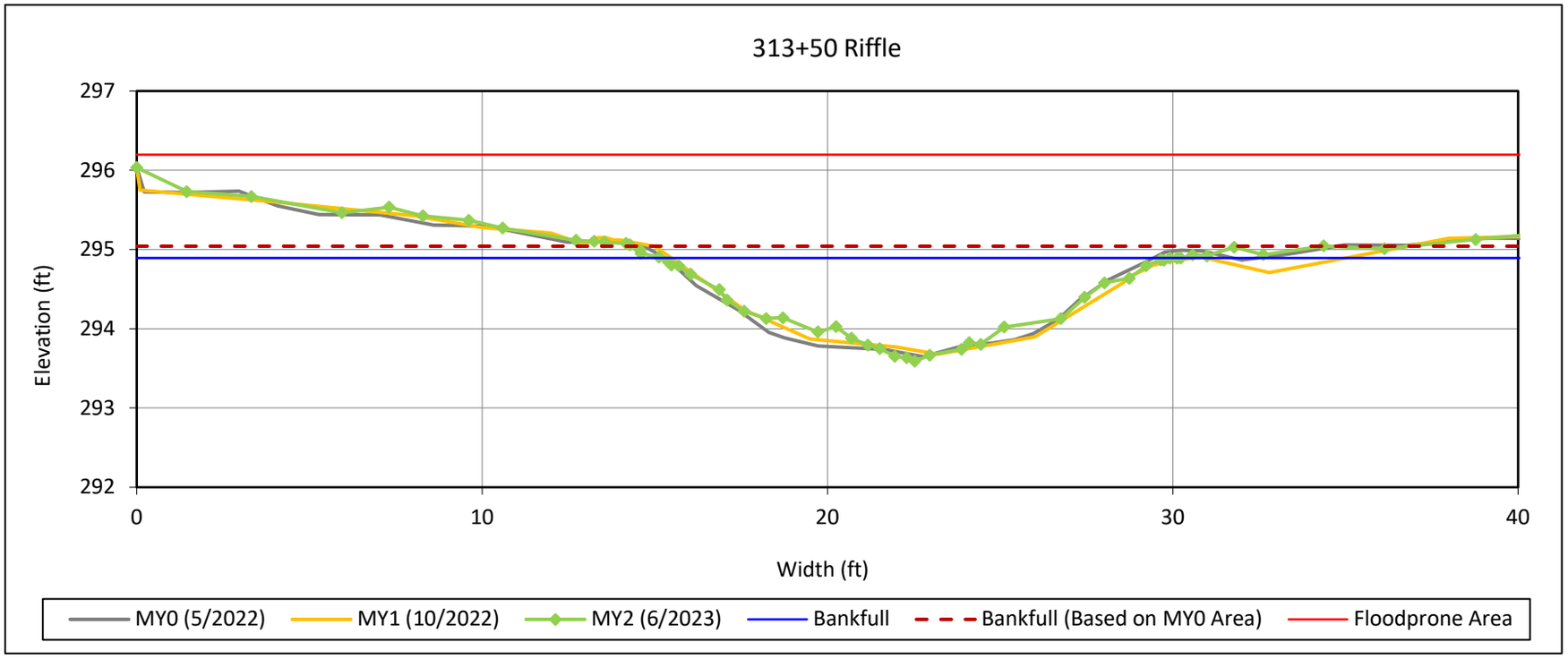
Survey Date: 6/2023
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

Cross-Section 3 - UT1 Reach 1



Bankfull Dimensions	
10.7	x-section area (ft.sq.)
14.8	width (ft)
0.7	mean depth (ft)
1.3	max depth (ft)
15.1	wetted perimeter (ft)
0.7	hydraulic radius (ft)
20.4	width-depth ratio
43.6	W flood prone area (ft)
3.0	entrenchment ratio
0.9	low bank height ratio

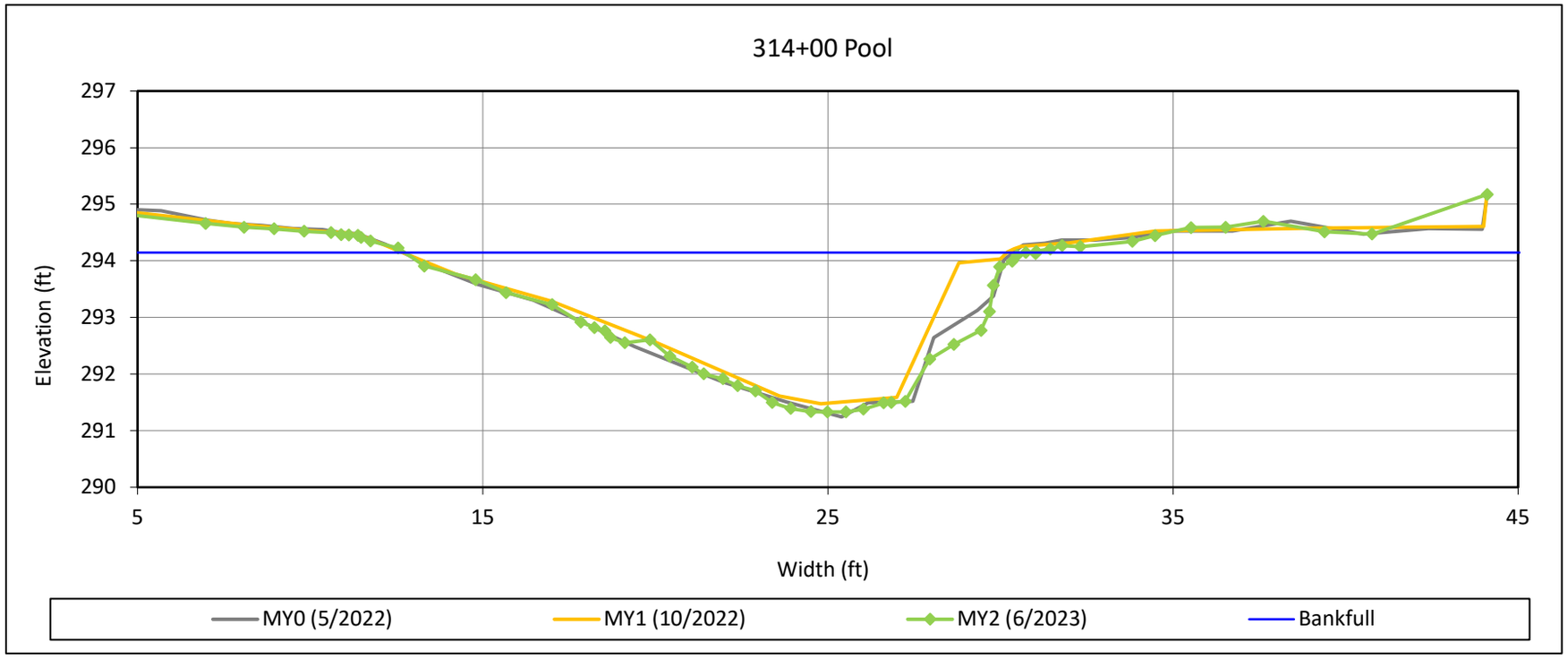
Survey Date: 6/2023
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

Cross-Section 4 - UT1 Reach 1



Bankfull Dimensions	
28.8	x-section area (ft.sq.)
18.0	width (ft)
1.6	mean depth (ft)
2.8	max depth (ft)
19.6	wetted perimeter (ft)
1.5	hydraulic radius (ft)
11.3	width-depth ratio

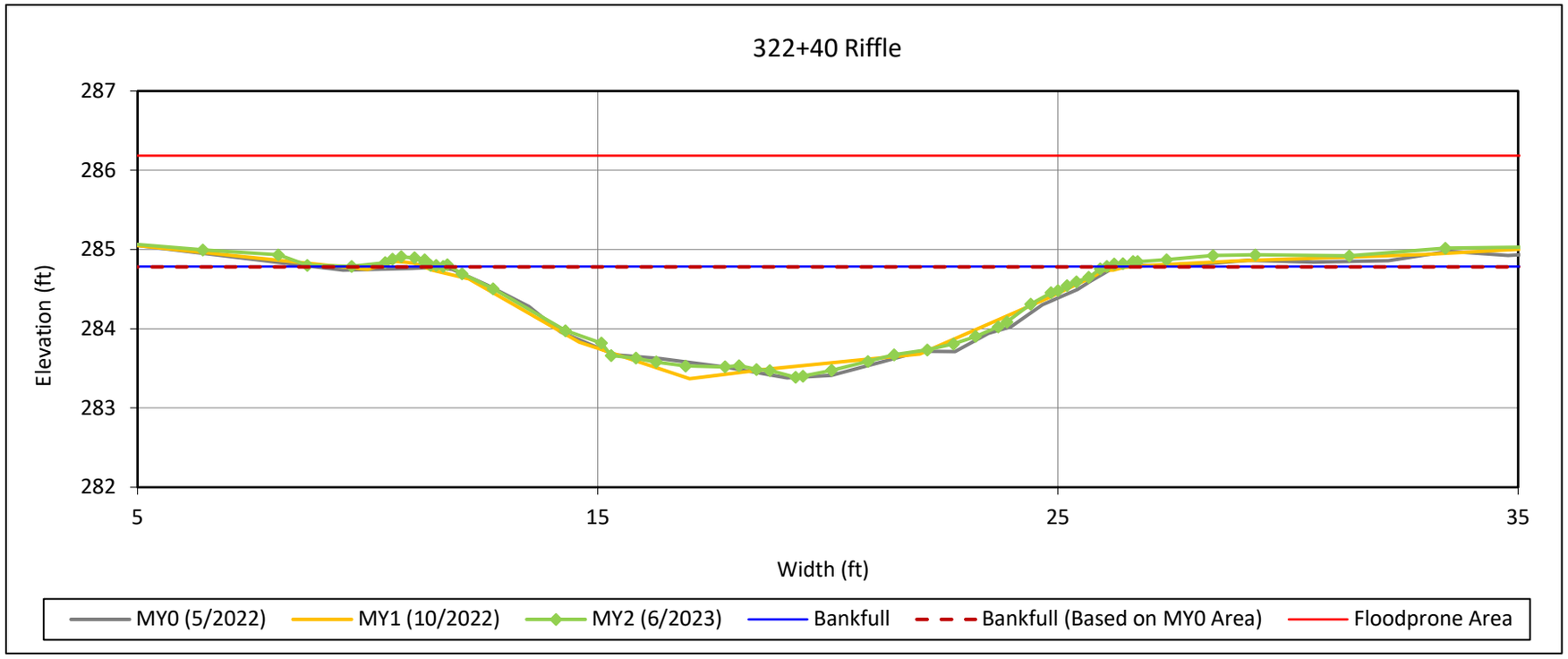
Survey Date: 6/2023
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

Cross-Section 5 - UT1 Reach 1



Bankfull Dimensions	
12.7	x-section area (ft.sq.)
14.3	width (ft)
0.9	mean depth (ft)
1.4	max depth (ft)
14.7	wetted perimeter (ft)
0.9	hydraulic radius (ft)
16.1	width-depth ratio
38.3	W flood prone area (ft)
2.7	entrenchment ratio
1.0	low bank height ratio

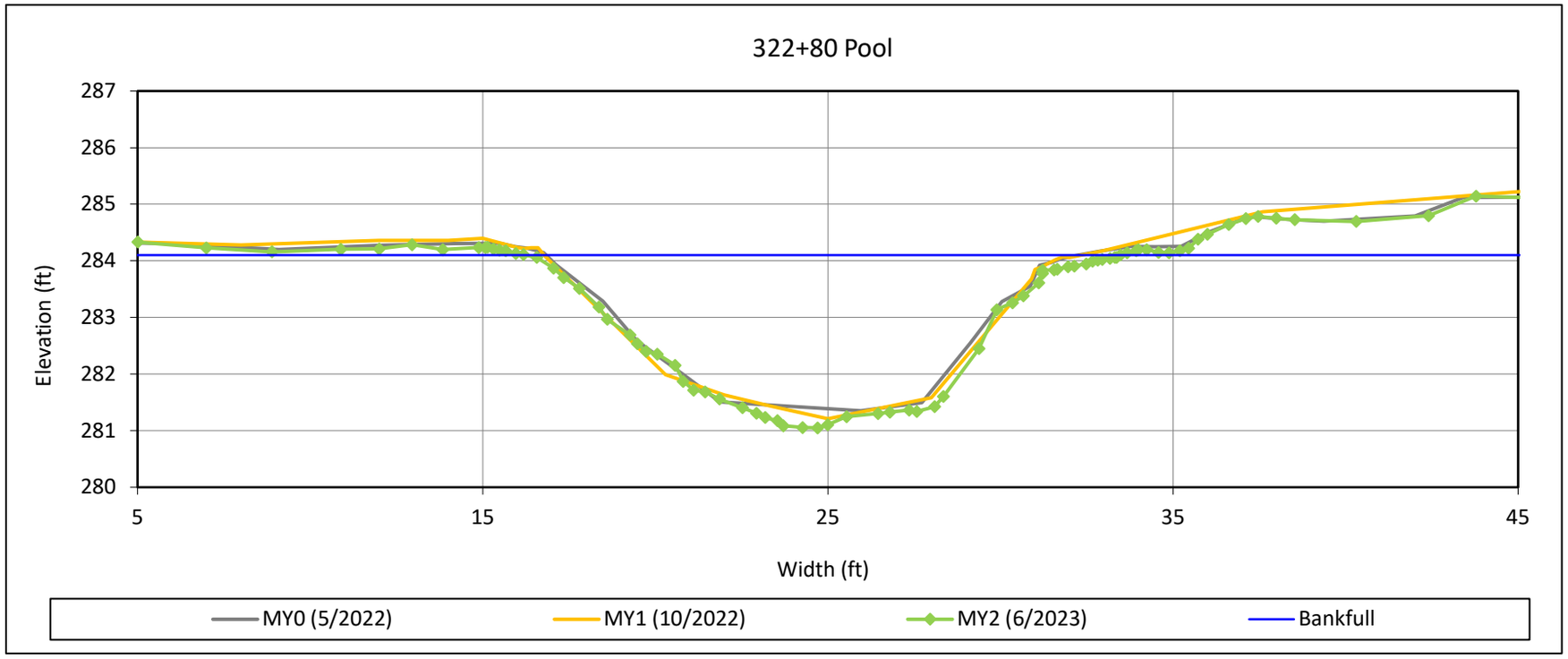
Survey Date: 6/2023
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

Cross-Section 6 - UT1 Reach 1



Bankfull Dimensions	
29.7	x-section area (ft.sq.)
17.2	width (ft)
1.7	mean depth (ft)
3.1	max depth (ft)
19.0	wetted perimeter (ft)
1.6	hydraulic radius (ft)
10.0	width-depth ratio

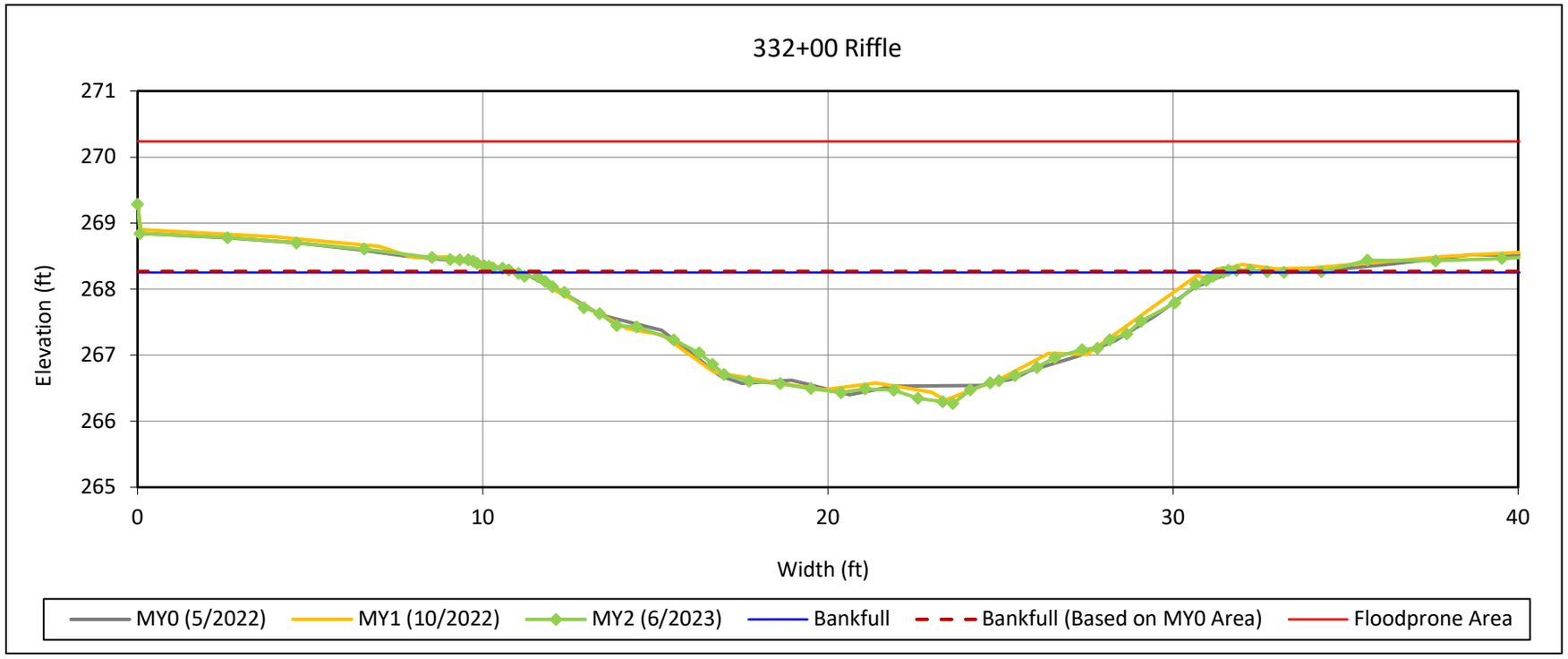
Survey Date: 6/2023
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

Cross-Section 7 - UT1 Reach 2



Bankfull Dimensions	
24.3	x-section area (ft.sq.)
20.5	width (ft)
1.2	mean depth (ft)
2.0	max depth (ft)
21.1	wetted perimeter (ft)
1.2	hydraulic radius (ft)
17.3	width-depth ratio
41.3	W flood prone area (ft)
2.0	entrenchment ratio
1.0	low bank height ratio

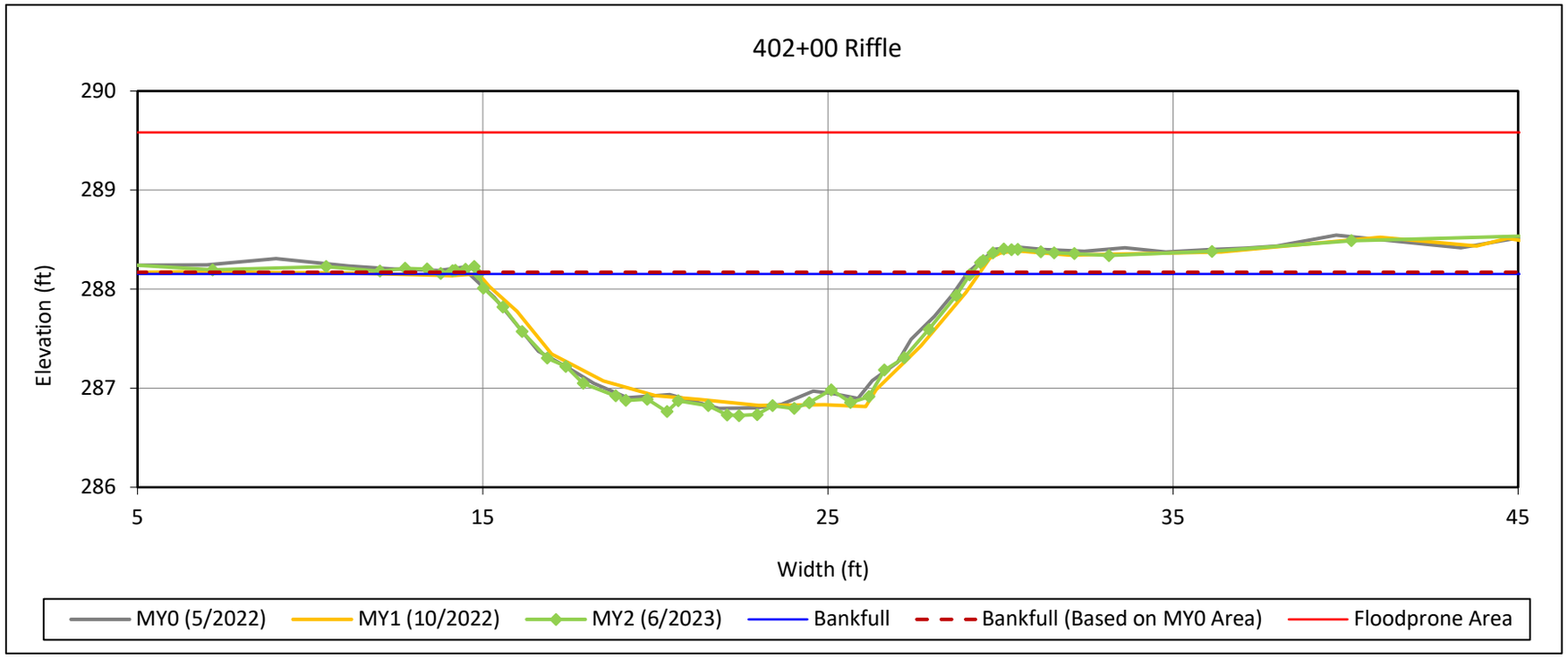
Survey Date: 6/2023
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

Cross-Section 8 - UT1B



Bankfull Dimensions	
14.5	x-section area (ft.sq.)
14.3	width (ft)
1.0	mean depth (ft)
1.4	max depth (ft)
14.8	wetted perimeter (ft)
1.0	hydraulic radius (ft)
14.0	width-depth ratio
45.5	W flood prone area (ft)
3.2	entrenchment ratio
1.0	low bank height ratio

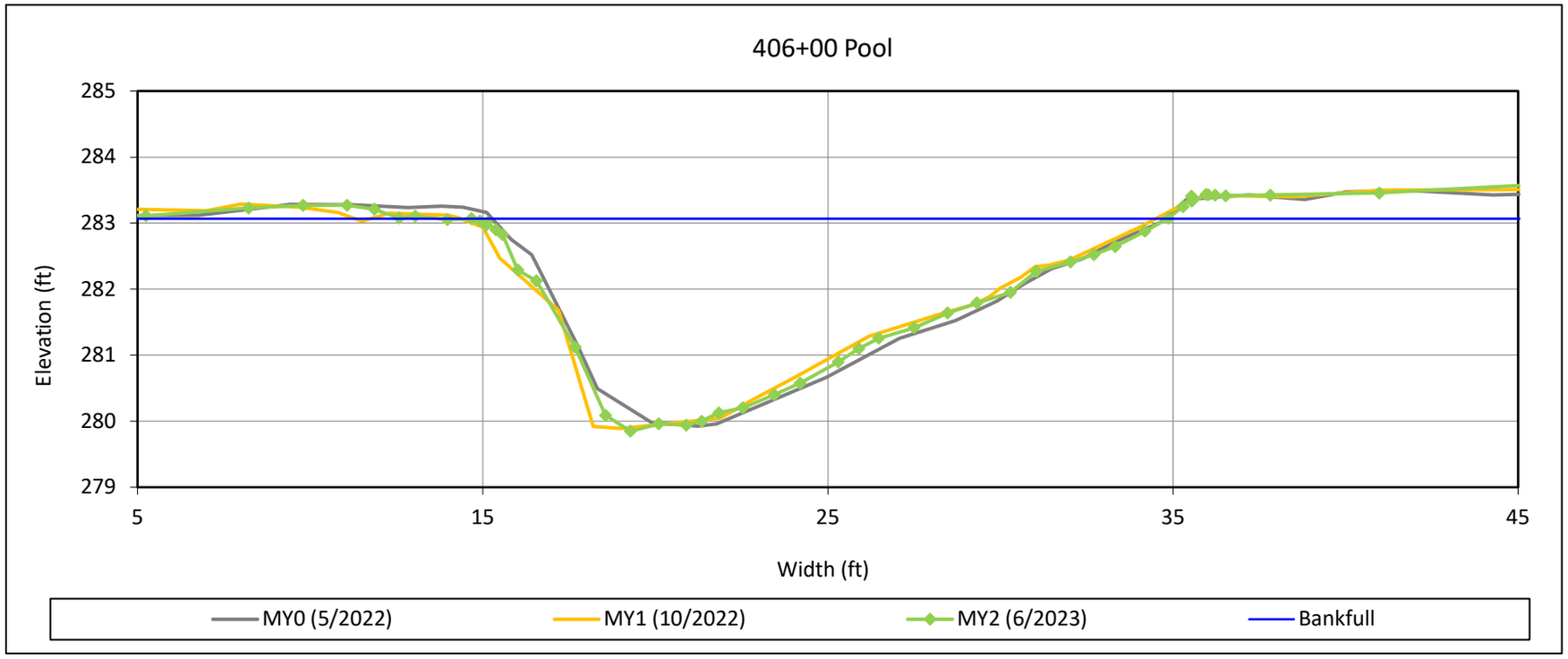
Survey Date: 6/2023
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

Cross-Section 9 - UT1B



Bankfull Dimensions	
34.2	x-section area (ft.sq.)
20.2	width (ft)
1.7	mean depth (ft)
3.2	max depth (ft)
21.8	wetted perimeter (ft)
1.6	hydraulic radius (ft)
11.9	width-depth ratio

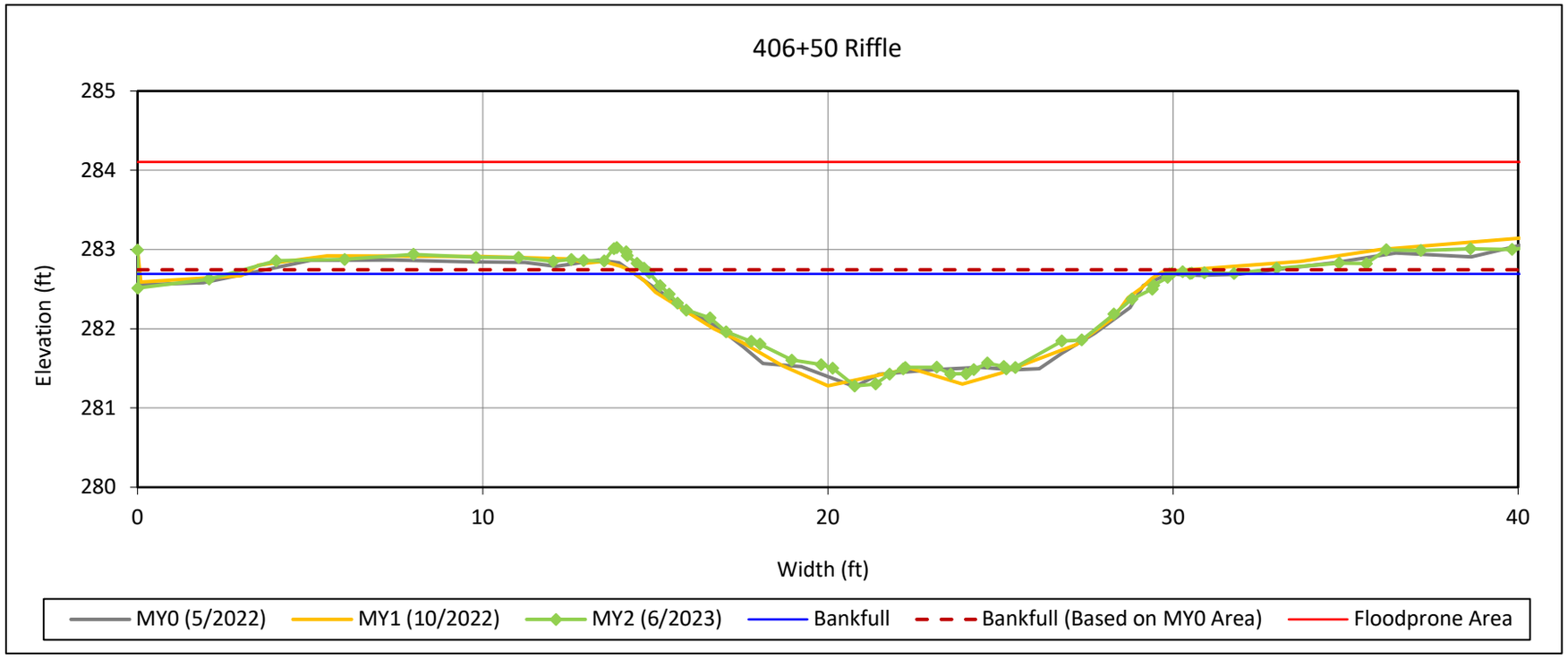
Survey Date: 6/2023
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

Cross-Section 10 - UT1B



Bankfull Dimensions	
13.4	x-section area (ft.sq.)
15.0	width (ft)
0.9	mean depth (ft)
1.4	max depth (ft)
15.5	wetted perimeter (ft)
0.9	hydraulic radius (ft)
16.9	width-depth ratio
42.6	W flood prone area (ft)
2.8	entrenchment ratio
1.0	low bank height ratio

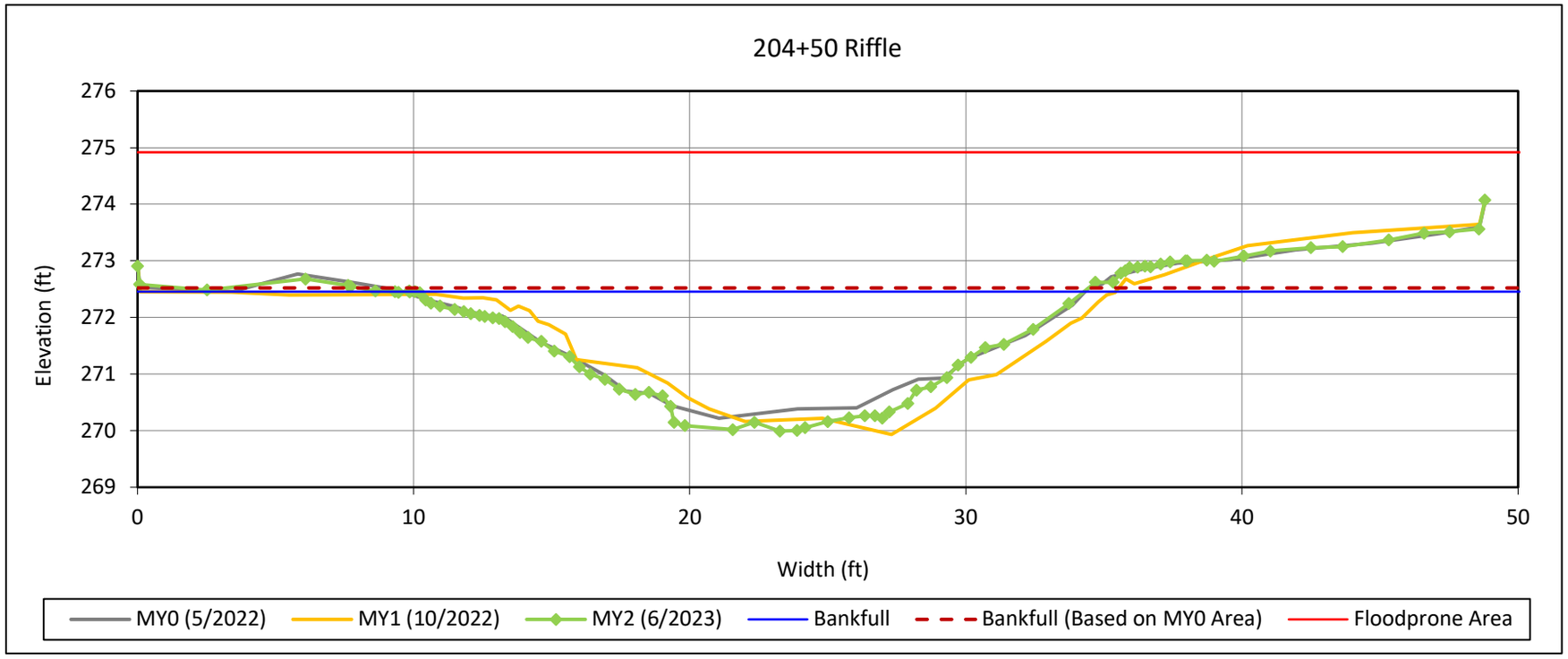
Survey Date: 6/2023
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

Cross-Section 11 - Big Branch



Bankfull Dimensions	
35.2	x-section area (ft.sq.)
24.2	width (ft)
1.5	mean depth (ft)
2.5	max depth (ft)
25.2	wetted perimeter (ft)
1.4	hydraulic radius (ft)
16.7	width-depth ratio
48.8	W flood prone area (ft)
2.0	entrenchment ratio
1.0	low bank height ratio

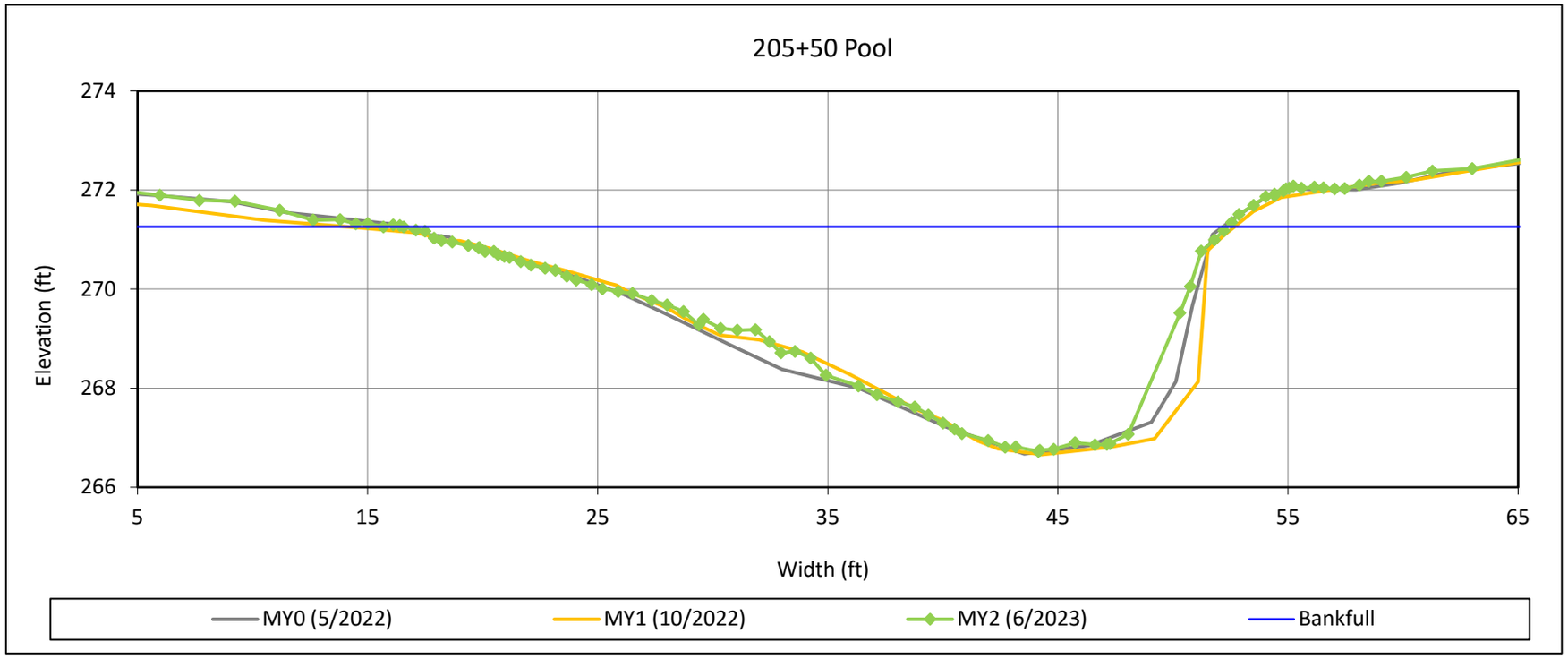
Survey Date: 6/2023
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

Cross-Section 12 - Big Branch



Bankfull Dimensions	
84.8	x-section area (ft.sq.)
35.8	width (ft)
2.4	mean depth (ft)
4.5	max depth (ft)
38.3	wetted perimeter (ft)
2.2	hydraulic radius (ft)
15.1	width-depth ratio

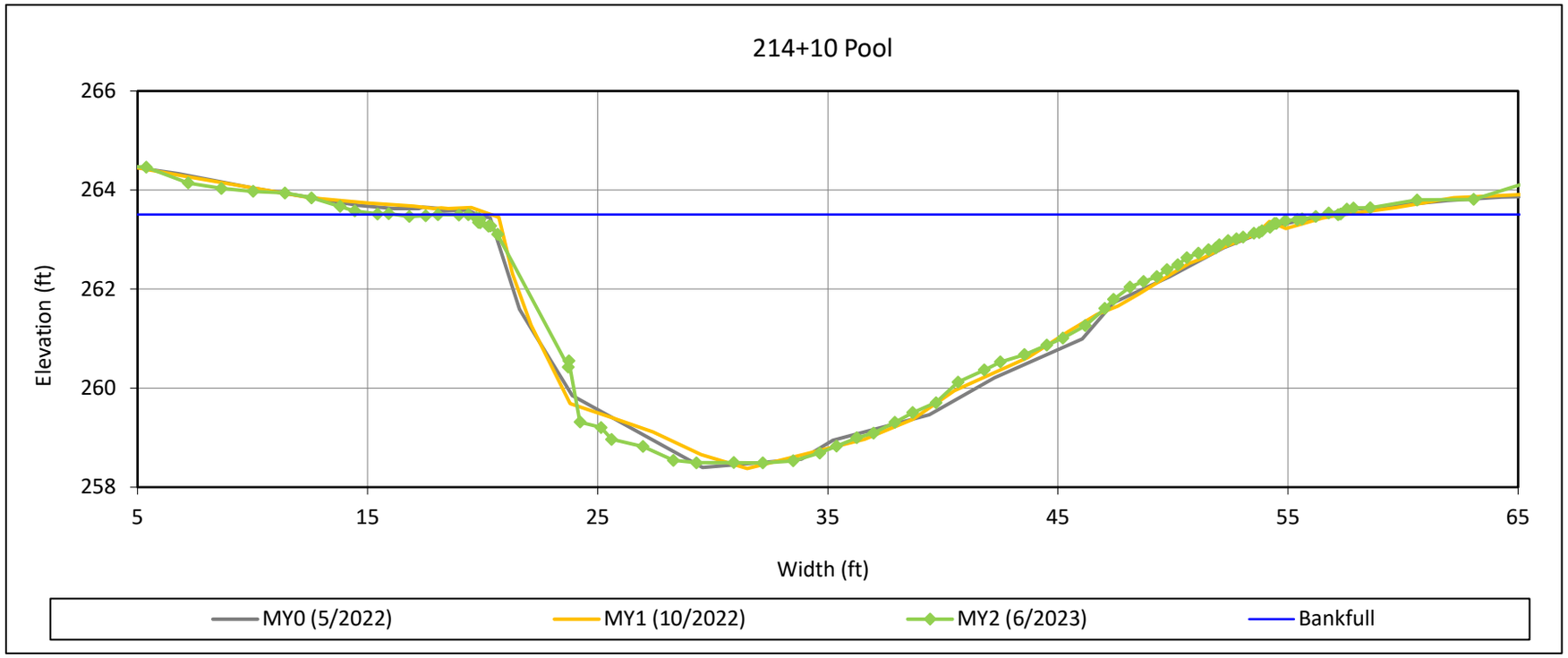
Survey Date: 6/2023
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

Cross-Section 13 - Big Branch



Bankfull Dimensions	
107.4	x-section area (ft.sq.)
38.5	width (ft)
2.8	mean depth (ft)
5.0	max depth (ft)
41.4	wetted perimeter (ft)
2.6	hydraulic radius (ft)
13.8	width-depth ratio

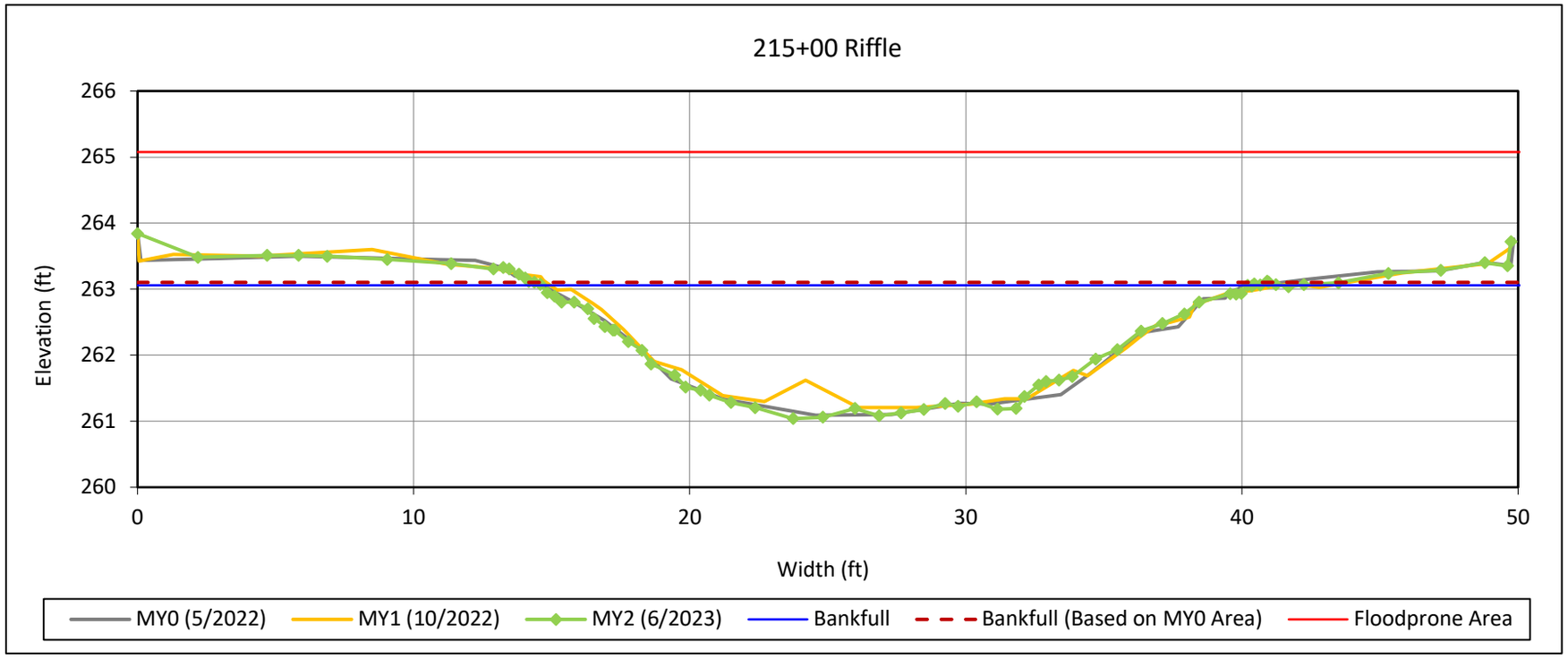
Survey Date: 6/2023
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

Cross-Section 14 - Big Branch



Bankfull Dimensions	
33.1	x-section area (ft.sq.)
25.6	width (ft)
1.3	mean depth (ft)
2.0	max depth (ft)
26.2	wetted perimeter (ft)
1.3	hydraulic radius (ft)
19.8	width-depth ratio
49.7	W flood prone area (ft)
1.9	entrenchment ratio
1.0	low bank height ratio

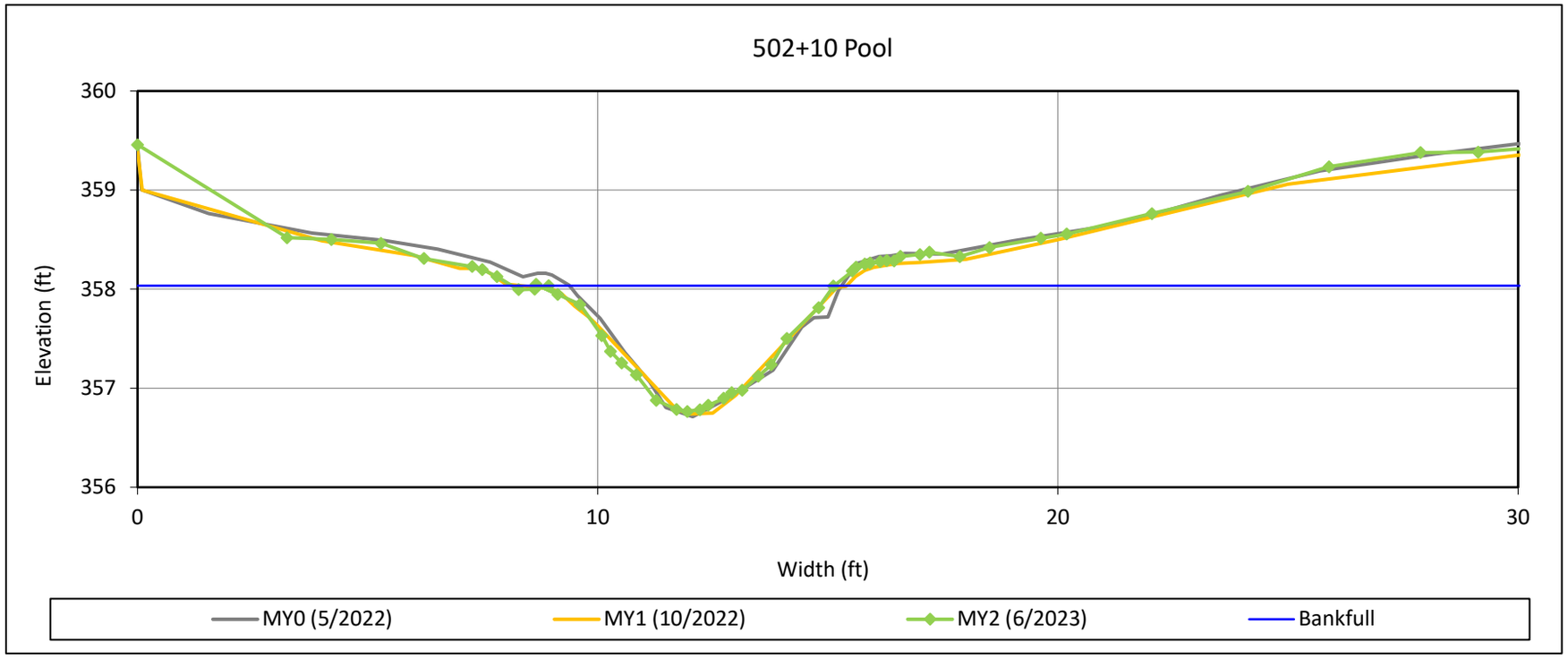
Survey Date: 6/2023
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

Cross-Section 15 - UT3 Reach 1



Bankfull Dimensions	
4.6	x-section area (ft.sq.)
6.2	width (ft)
0.7	mean depth (ft)
1.3	max depth (ft)
7.6	wetted perimeter (ft)
0.6	hydraulic radius (ft)
8.4	width-depth ratio

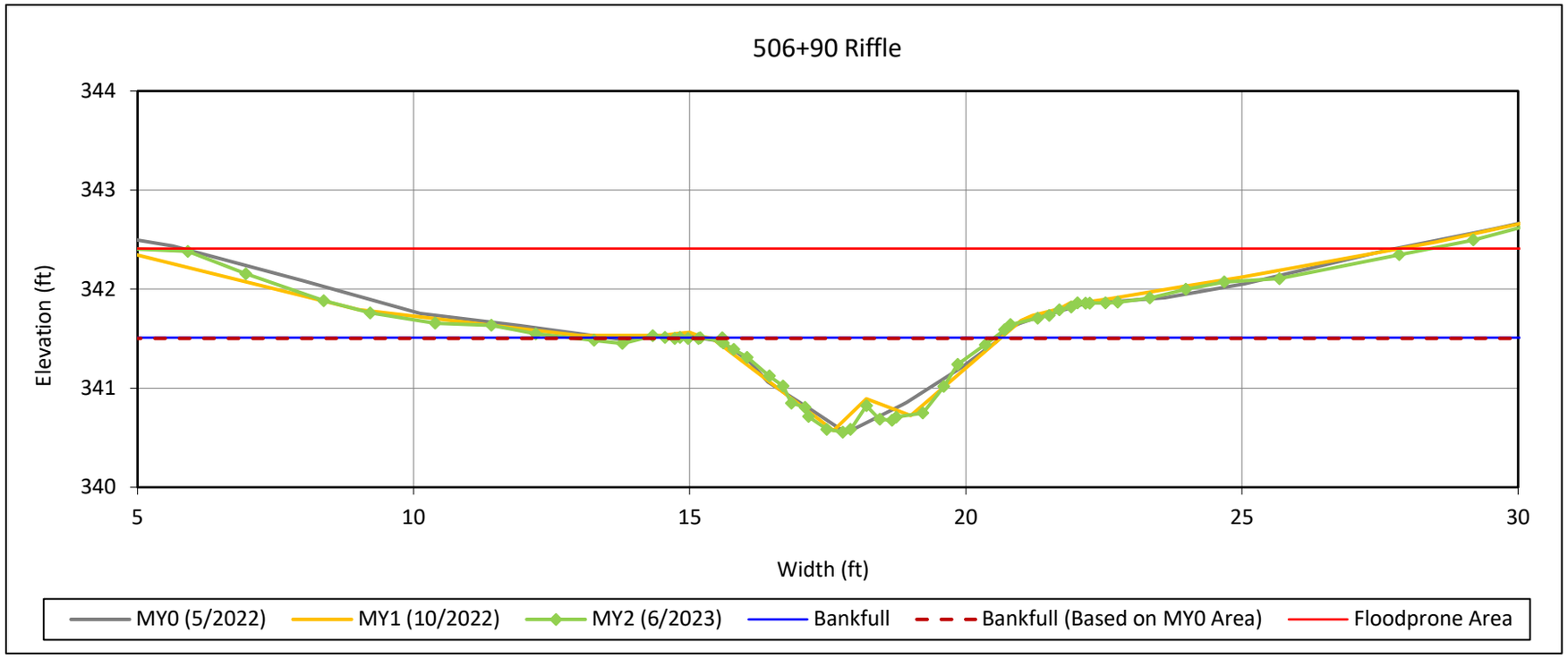
Survey Date: 6/2023
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

Cross-Section 16 - UT3 Reach 1



Bankfull Dimensions	
2.6	x-section area (ft.sq.)
4.8	width (ft)
0.5	mean depth (ft)
0.9	max depth (ft)
5.4	wetted perimeter (ft)
0.5	hydraulic radius (ft)
9.1	width-depth ratio
22.8	W flood prone area (ft)
4.7	entrenchment ratio
1.0	low bank height ratio

Survey Date: 6/2023
Field Crew: Wildlands Engineering

View Downstream

Table 8a. Baseline Stream Data Summary

Cross Creek Ranch Site

DMS Project No. 100138

Monitoring Year 2 - 2023

	PRE-EXISTING CONDITIONS			DESIGN		MONITORING BASELINE (MY0)		
Parameter	**UT1 R1**							
Riffle Only	**Min**	**Max**	**n**	**Min**	**Max**	**Min**	**Max**	**n**
Bankfull Width (ft)	10.3		1	14.5		14.3	15.4	3
Floodprone Width (ft)	50.0		1	31.9	72.5	132.0	195.0	3
Bankfull Mean Depth	1.3		1	1.0		0.8	1.1	3
Bankfull Max Depth	2.4		1	1.3		1.3	1.7	3
Bankfull Cross Sectional Area (ft^2)	13.3		1	13.8		12.6	16.2	3
Width/Depth Ratio	8.0		1	15.3		14.7	18.1	3
Entrenchment Ratio	>2.2		1	2.2	5.0	8.6	13.6	3
Bank Height Ratio	1.0		1	1.0		1.0		3
Max part size (mm) mobilized at bankfull	42			44		44		
Rosgen Classification	E4/1			C4/1		C4/1		
Bankfull Discharge (cfs)	58.5		1	52.0		50.0	72.1	3
Sinuosity	1.19			1.20		1.20		
Water Surface Slope ($ft/ft)^2$	0.0130			0.0118		0.0140		
Parameter	**UT1 R2**							
Riffle Only	**Min**	**Max**	**n**	**Min**	**Max**	**Min**	**Max**	**n**
Bankfull Width (ft)	11.6		1	20.0		21.1		1
Floodprone Width (ft)	13.8		1	44.0	100.0	240.0		1
Bankfull Mean Depth	1.0		1	1.2		1.2		1
Bankfull Max Depth	1.4		1	1.5		1.9		1
Bankfull Cross Sectional Area (ft^2)	11.9		1	23.3		24.7		1
Width/Depth Ratio	11.2		1	17.2		17.9		1
Entrenchment Ratio	1.2		1	2.2	5.0	11.4		1
Bank Height Ratio	4.6		1	1.0		1.0		1
Max part size (mm) mobilized at bankfull	47			50		50		
Rosgen Classification	G3c/1			C4/1		C4/1		
Bankfull Discharge (cfs)	54.5		1	85.0		120.6		1
Sinuosity	1.17			1.20		1.20		
Water Surface Slope ($ft/ft)^2$	0.0160			0.0080		0.0143		
Parameter	**UT1B**							
Riffle Only	**Min**	**Max**	**n**	**Min**	**Max**	**Min**	**Max**	**n**
Bankfull Width (ft)	11.7		1	15.2		14.8	15.4	2
Floodprone Width (ft)	19.1		1	33.4	76.0	105.0	140.0	2
Bankfull Mean Depth	0.9		1	1.0		0.9	1.0	2
Bankfull Max Depth	1.6		1	1.3		1.4		2
Bankfull Cross Sectional Area (ft^2)	10.7		1	14.7		14.2	14.8	2
Width/Depth Ratio	12.9		1	15.7		14.7	16.8	2
Entrenchment Ratio	1.6		1	2.2	5.0	7.1	9.1	2
Bank Height Ratio	2.0		1	1.0		1.0		2
Max part size (mm) mobilized at bankfull	34			45		45		
Rosgen Classification	F1			B4		B4		
Bankfull Discharge (cfs)	40.5		1	49.0		60.1	66.5	2
Sinuosity	1.19			1.20		1.20		
Water Surface Slope (ft/ft)2	0.013			0.0092		0.0151		

Table 8b. Baseline Stream Data Summary

Cross Creek Ranch Site

DMS Project No. 100138

Monitoring Year 2 - 2023

	PRE-EXISTING CONDITIONS			DESIGN		MONITORING BASELINE (MY0)		
Parameter	**Big Branch**							
Riffle Only	**Min**	**Max**	**n**	**Min**	**Max**	**Min**	**Max**	**n**
Bankfull Width (ft)	15.8	23.3	2	24.0		20.0	25.4	2
Floodprone Width (ft)	19.4	50.0	2	52.8	120.0	230.0	260.0	2
Bankfull Mean Depth	1.6	1.8	2	1.4		1.2	1.4	2
Bankfull Max Depth	2.2	2.6	2	2.0		2.0	2.4	2
Bankfull Cross Sectional Area (ft^2)	28.5	34.4	2	34.0		33.4	36.8	2
Width/Depth Ratio	8.8	13.3	2	16.9		19.3	20.1	2
Entrenchment Ratio	1.2	2.3	2	2.2	5.0	9.1	9.6	2
Bank Height Ratio	2.3	3.0	2	1.0		1.0		2
Max part size (mm) mobilized at bankfull	44			37		37		
Rosgen Classification	C4/1 - G4c/1			C4/1		C4/1		
Bankfull Discharge (cfs)	136.0		2	144.0		139.8	156.8	2
Sinuosity	1.14			1.20		1.20		
Water Surface Slope ($ft/ft)^2$	0.0070			0.0083		0.0090		
Parameter	**UT3 R1**							
Riffle Only	**Min**	**Max**	**n**	**Min**	**Max**	**Min**	**Max**	**n**
Bankfull Width (ft)	6.4		1	5.2		5.6		1
Floodprone Width (ft)	8.7		1	7.3	11.4	24.0		1
Bankfull Mean Depth	0.3		1	0.4		0.5		1
Bankfull Max Depth	1.0		1	0.5		1.0		1
Bankfull Cross Sectional Area (ft^2)	2.0		1	1.9		2.7		1
Width/Depth Ratio	20.6		1	14.6		11.5		1
Entrenchment Ratio	1.3		1	1.4	2.2	4.3		1
Bank Height Ratio	2.4		1	1.0		1.0		1
Max part size (mm) mobilized at bankfull	39			52		52		
Rosgen Classification	F1			B4		B4		
Bankfull Discharge (cfs)	7.6		1	10.0		11.6		1
Sinuosity	1.00			1.10		1.10		
Water Surface Slope (ft/ft)2	0.029			0.0327		0.0372		

Table 9a. Cross-Section Morphology Monitoring Summary

Cross Creek Ranch Site

DMS Project No. 100138

Monitoring Year 2 - 2023

	UT1 R1																	
	Cross-Section 1 (Riffle)						Cross-Section 2 (Pool)						Cross-Section 3 (Riffle)					
	MY0	MY1	MY2	MY3	MY5	MY7	MY0	MY1	MY2	MY3	MY5	MY7	MY0	MY1	MY2	MY3	MY5	MY7
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	306.21	306.21	306.23				N/A	N/A	N/A				294.99	295.00	295.04			
Bank Height Ratio - Based on AB Bankfull[1] Area	1.00	0.94	1.00				N/A	N/A	N/A				1.00	0.93	0.90			
Thalweg Elevation	304.50	304.51	304.45				302.39	302.41	302.39				293.65	293.68	293.59			
LTOB[2] Elevation	306.21	306.11	306.20				305.35	305.40	305.38				294.99	294.91	294.89			
LTOB[2] Max Depth (ft)	1.71	1.60	1.80				2.96	2.99	3.00				1.35	1.23	1.30			
LTOB[2] Cross Sectional Area (ft^2)	16.20	14.67	15.80				27.97	28.75	29.10				12.96	11.60	10.70			
	UT1 R1																	
	Cross-Section 4 (Pool)						Cross-Section 5 (Riffle)						Cross-Section 6 (Pool)					
	MY0	MY1	MY2	MY3	MY5	MY7	MY0	MY1	MY2	MY3	MY5	MY7	MY0	MY1	MY2	MY3	MY5	MY7
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	N/A	N/A	N/A				284.75	284.76	284.78				N/A	N/A	N/A			
Bank Height Ratio - Based on AB Bankfull[1] Area	N/A	N/A	N/A				1.00	1.02	1.00				N/A	N/A	N/A			
Thalweg Elevation	291.24	291.48	291.33				283.38	283.37	283.39				281.35	281.21	281.05			
LTOB[2] Elevation	294.28	294.26	294.26				284.75	284.79	284.79				284.20	284.18	284.10			
LTOB[2] Max Depth (ft)	3.04	2.78	2.80				1.37	1.42	1.40				2.85	2.97	3.10			
LTOB[2] Cross Sectional Area (ft^2)	30.77	26.57	26.80				12.58	12.99	12.70				28.69	29.48	29.70			
	UT1 R2						UT1B											
	Cross-Section 7 (Riffle)						Cross-Section 8 (Riffle)						Cross-Section 9 (Pool)					
	MY0	MY1	MY2	MY3	MY5	MY7	MY0	MY1	MY2	MY3	MY5	MY7	MY0	MY1	MY2	MY3	MY5	MY7
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	268.28	268.30	268.27				288.22	288.21	288.17				N/A	N/A	N/A			
Bank Height Ratio - Based on AB Bankfull[1] Area	1.00	1.03	1.00				1.00	0.96	1.00				N/A	N/A	N/A			
Thalweg Elevation	266.40	266.32	266.27				286.80	286.81	286.72				279.93	279.89	279.85			
LTOB[2] Elevation	268.28	268.37	268.25				288.22	288.15	288.15				283.16	283.12	283.07			
LTOB[2] Max Depth (ft)	1.88	2.05	2.00				1.42	1.34	1.40				3.24	3.23	3.20			
LTOB[2] Cross Sectional Area (ft^2)	24.72	26.14	24.30				14.94	14.17	14.50				36.04	34.98	34.20			

[1]Bank Height Ratio (BHR) takes the As-built bankful area as the basis for adjusting each subsequent years bankfull elevation.

[2]LTOB Area and Max depth - These are based on the LTOB elevation for each years survey (The same elevation used for the LTOB in the BHR calculation). Area below the LTOB elevation will be used and tracked for each year as above. The difference between the LTOB elevation and the thalweg elevation (same as in the BHR calculation) will be recroded and tracked above as LTOB max depth.

Table 9b. Cross-Section Morphology Monitoring Summary

Cross Creek Ranch Site

DMS Project No. 100138

Monitoring Year 2 - 2023

	UT1B						Big Branch											
	Cross-Section 10 (Riffle)						Cross-Section 11 (Riffle)						Cross-Section 12 (Pool)					
	MY0	MY1	MY2	MY3	MY5	MY7	MY0	MY1	MY2	MY3	MY5	MY7	MY0	MY1	MY2	MY3	MY5	MY7
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	282.69	282.71	282.74				272.62	272.55	272.52				N/A	N/A	N/A			
Bank Height Ratio - Based on AB Bankfull[1] Area	1.00	1.01	1.00				1.00	0.95	1.00				N/A	N/A	N/A			
Thalweg Elevation	281.27	281.30	281.28				270.22	269.93	269.99				266.67	266.66	266.73			
LTOB[2] Elevation	282.69	282.73	282.69				272.62	0.96	272.46				271.45	271.14	271.26			
LTOB[2] Max Depth (ft)	1.42	1.43	1.40				2.40	2.47	2.50				4.77	4.48	4.50			
LTOB[2] Cross Sectional Area (ft^2)	14.21	14.46	13.40				36.87	33.41	35.20				96.74	85.39	84.80			

	Big Branch						Big Branch						UT3 R1					
	Cross-Section 13 (Pool)						Cross-Section 14 (Riffle)						Cross-Section 15 (Pool)					
	MY0	MY1	MY2	MY3	MY5	MY7	MY0	MY1	MY2	MY3	MY5	MY7	MY0	MY1	MY2	MY3	MY5	MY7
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	N/A	N/A	N/A				263.06	263.15	263.10				N/A	N/A	N/A			
Bank Height Ratio - Based on AB Bankfull[1] Area	N/A	N/A	N/A				1.00	0.94	1.00				N/A	N/A	N/A			
Thalweg Elevation	258.40	258.38	258.49				261.09	261.21	261.04				356.71	356.74	356.77			
LTOB[2] Elevation	263.60	263.65	263.51				263.06	263.03	263.06				358.16	358.00	358.04			
LTOB[2] Max Depth (ft)	5.20	5.27	5.00				1.97	1.82	2.00				1.45	1.26	1.30			
LTOB[2] Cross Sectional Area (ft^2)	113.83	113.86	107.40				33.50	30.24	33.10				5.29	4.24	4.60			

	UT3 R1					
	Cross-Section 16 (Riffle)					
	MY0	MY1	MY2	MY3	MY5	MY7
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	341.52	341.51	341.50			
Bank Height Ratio - Based on AB Bankfull[1] Area	1.00	1.05	1.00			
Thalweg Elevation	340.55	340.57	340.56			
LTOB[2] Elevation	341.52	341.56	341.48			
LTOB[2] Max Depth (ft)	0.97	0.99	0.90			
LTOB[2] Cross Sectional Area (ft^2)	2.72	3.00	2.60			

[1]Bank Height Ratio (BHR) takes the As-built bankful area as the basis for adjusting each subsequent years bankfull elevation.

[2]LTOB Area and Max depth - These are based on the LTOB elevation for each years survey (The same elevation used for the LTOB in the BHR calculation). Area below the LTOB elevation will be used and tracked for each year as above. The difference between the LTOB elevation and the thalweg elevation (same as in the BHR calculation) will be recroded and tracked above as LTOB max depth.

APPENDIX D. HYDROLOGY DATA

Table 10. Bankfull Events

Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

Reach	MY1 (2022)	MY2 (2023)	MY3 (2024)	MY4 (2025)	MY5 (2026)	MY6 (2027)	MY7 (2028)
UT1 Reach 1	N/A	N/A					
UT1B	N/A	N/A					
UT3 Reach 1	N/A	N/A					
Big Branch	3/12/2022 3/16/2022 3/31/2022 4/18/2022 5/27/2022 7/15/2022	2/12/2023 4/8 - 4/9/2023 4/30/2023 6/22/2023					

N/A: No bankfull events were recorded before 11/20/2023. Data will be updated in MY3.

Table 11. Rainfall Summary

Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

	MY1 (2022)	MY2 (2023)[1]	MY3 (2024)	MY4 (2025)	MY5 (2026)	MY6 (2027)	MY7 (2028)
Annual Precip Total[2]	46.63	35.28					
WETS 30th Percentile[3]	44.54	44.52					
WETS 70th Percentile[3]	52.92	53.04					
Normal	Yes	N/A[1]					

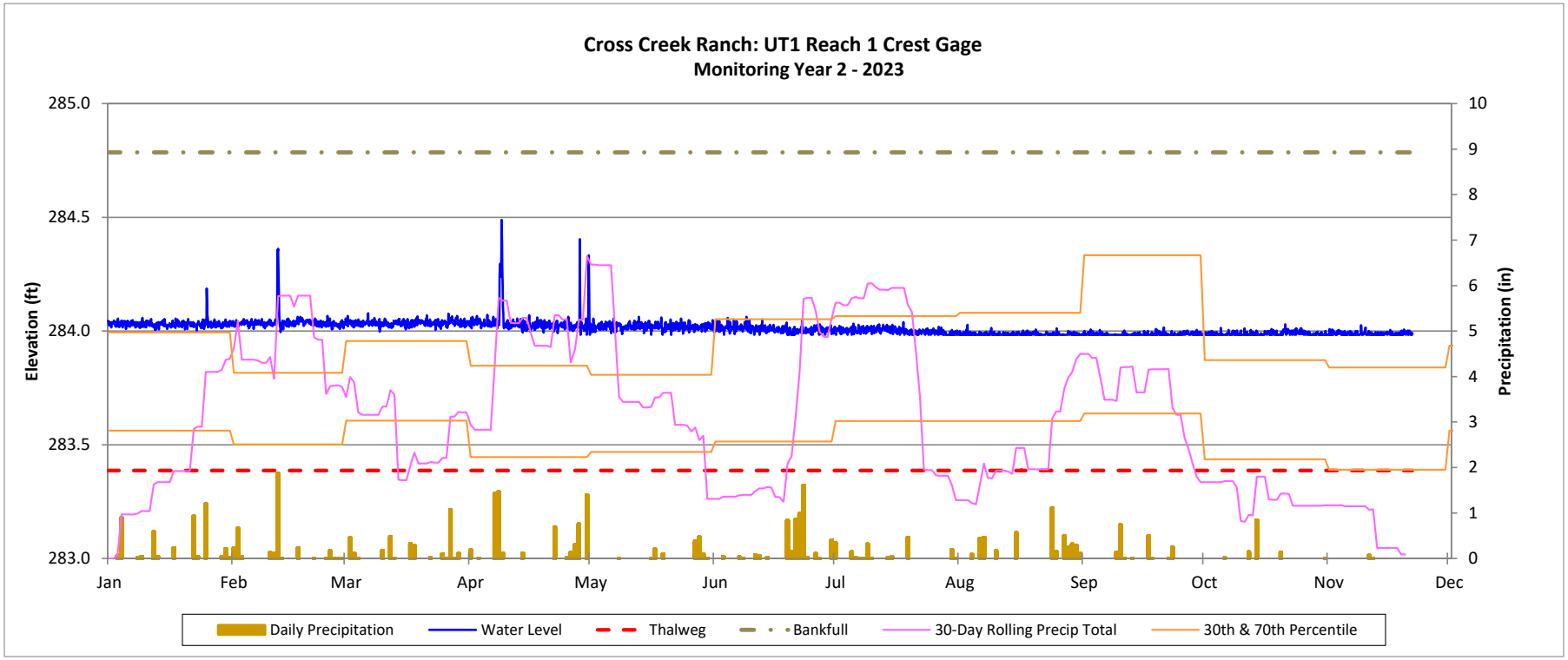
[1]Annual precipitation total was collected up until 11/20/2023. Data will be updated in MY3 (State Climate Office of North Carolina, 2023).

[2]Annual precipitation Station: NCSU Cardinal Station UNFN7 Uwharrie (Troy)(State Climate Office of North Carolina, 2023).

[3]30th and 70th percentile precipitation data derived from the WETS data for the Jackson Springs 5 WNW NC weather station (NOAA, 2023).

Recorded In-Stream Flow Events Plot

Cross Creek Ranch Mitigation Site
DMS Project No. 100138
Monitoring Year 2 - 2023



[1]Annual precipitation Station: NCSU Cardinal Station UNFN7 Uwharrie (Troy)(State Climate Office of North Carolina, 2023).

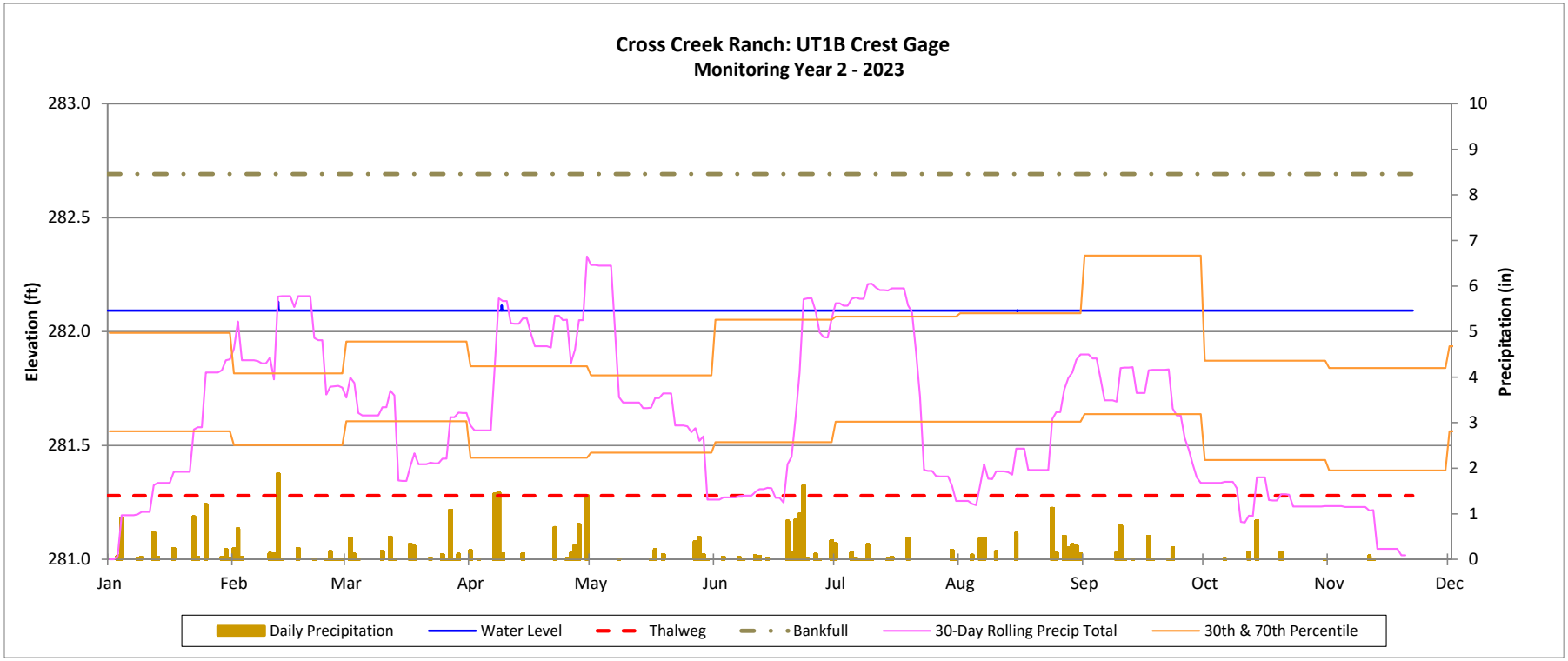
[2]30th and 70th percentile precipitation data derived from the WETS data for the Jackson Springs 5 WNW NC weather station (NOAA, 2023).

Recorded In-Stream Flow Events Plot

Cross Creek Ranch Mitigation Site

DMS Project No. 100138

Monitoring Year 2 - 2023

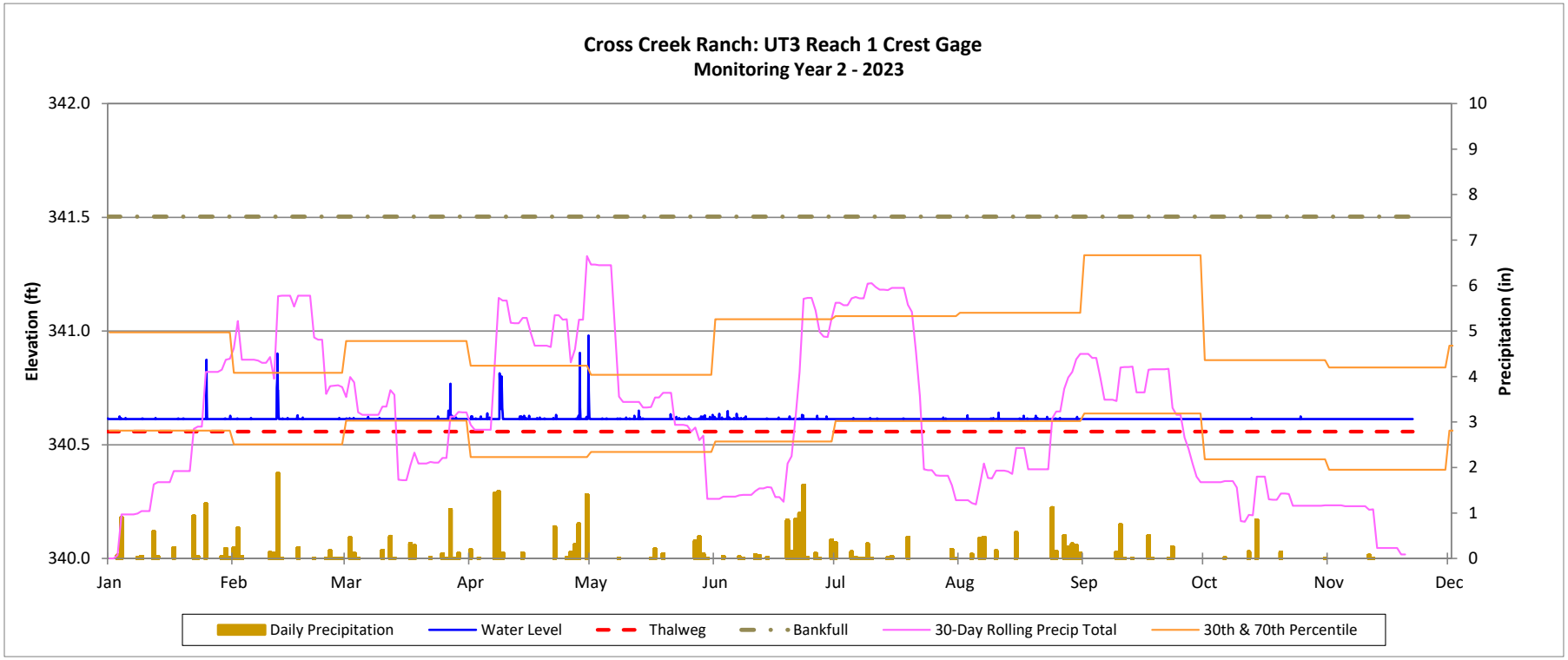


[1]Annual precipitation Station: NCSU Cardinal Station UNFN7 Uwharrie (Troy)(State Climate Office of North Carolina, 2023).

[2]30th and 70th percentile precipitation data derived from the WETS data for the Jackson Springs 5 WNW NC weather station (NOAA, 2023).

Recorded In-Stream Flow Events Plot

Cross Creek Ranch Mitigation Site
DMS Project No. 100138
Monitoring Year 2 - 2023



[1]Annual precipitation Station: NCSU Cardinal Station UNFN7 Uwharrie (Troy)(State Climate Office of North Carolina, 2023).

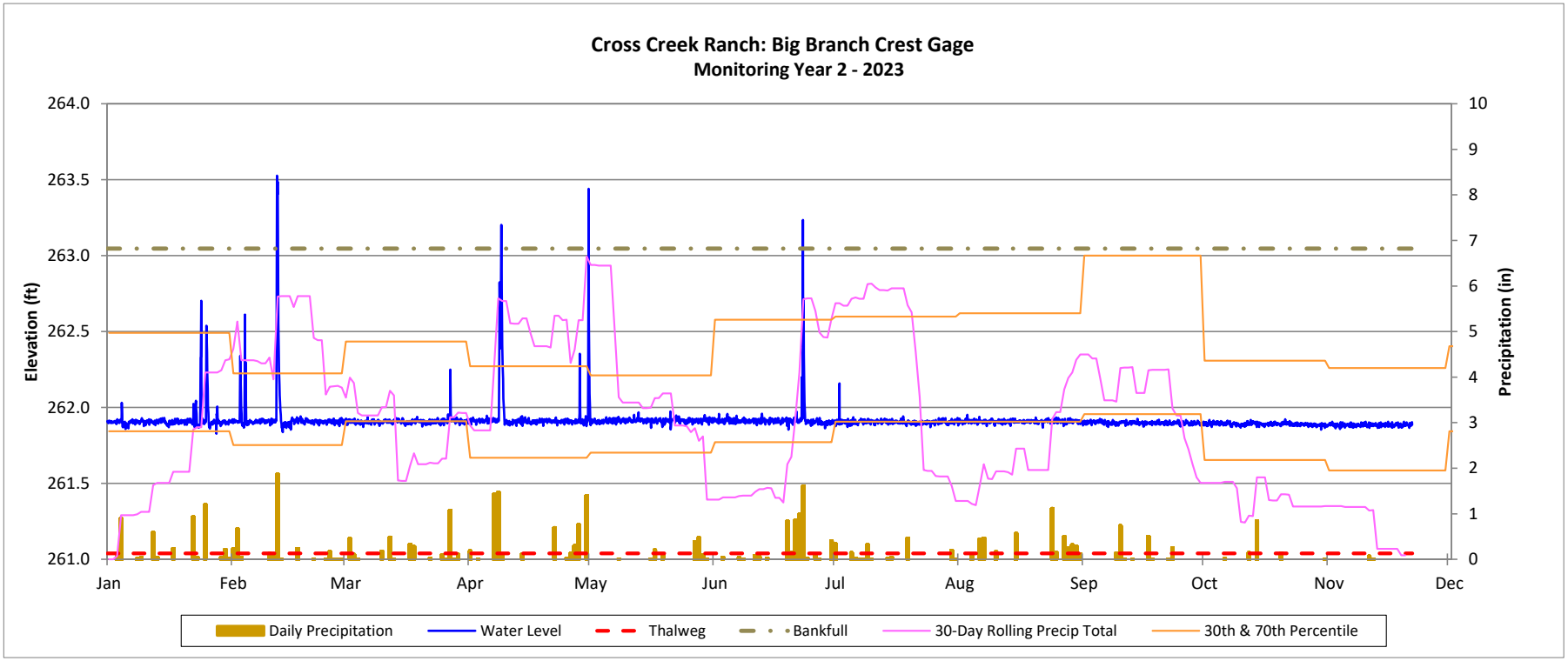
[2]30th and 70th percentile precipitation data derived from the WETS data for the Jackson Springs 5 WNW NC weather station (NOAA, 2023).

Recorded In-Stream Flow Events Plot

Cross Creek Ranch Mitigation Site

DMS Project No. 100138

Monitoring Year 2 - 2023



[1]Annual precipitation Station: NCSU Cardinal Station UNFN7 Uwharrie (Troy)(State Climate Office of North Carolina, 2023).

[2]30th and 70th percentile precipitation data derived from the WETS data for the Jackson Springs 5 WNW NC weather station (NOAA, 2023).

Table 12. Recorded In-Stream Flow Events Summary

Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

Reach	Max Consecutive Days/Total Days Meeting Success Criteria[1]						
	MY1 (2022)	MY2 (2023)[2]	MY3 (2024)	MY4 (2025)	MY5 (2026)	MY6 (2027)	MY7 (2028)
UT3 R1	64 Days/ 73 Days	54 Days/ 119 Days					

[1]Success criteria is 30 consecutive days of flow.

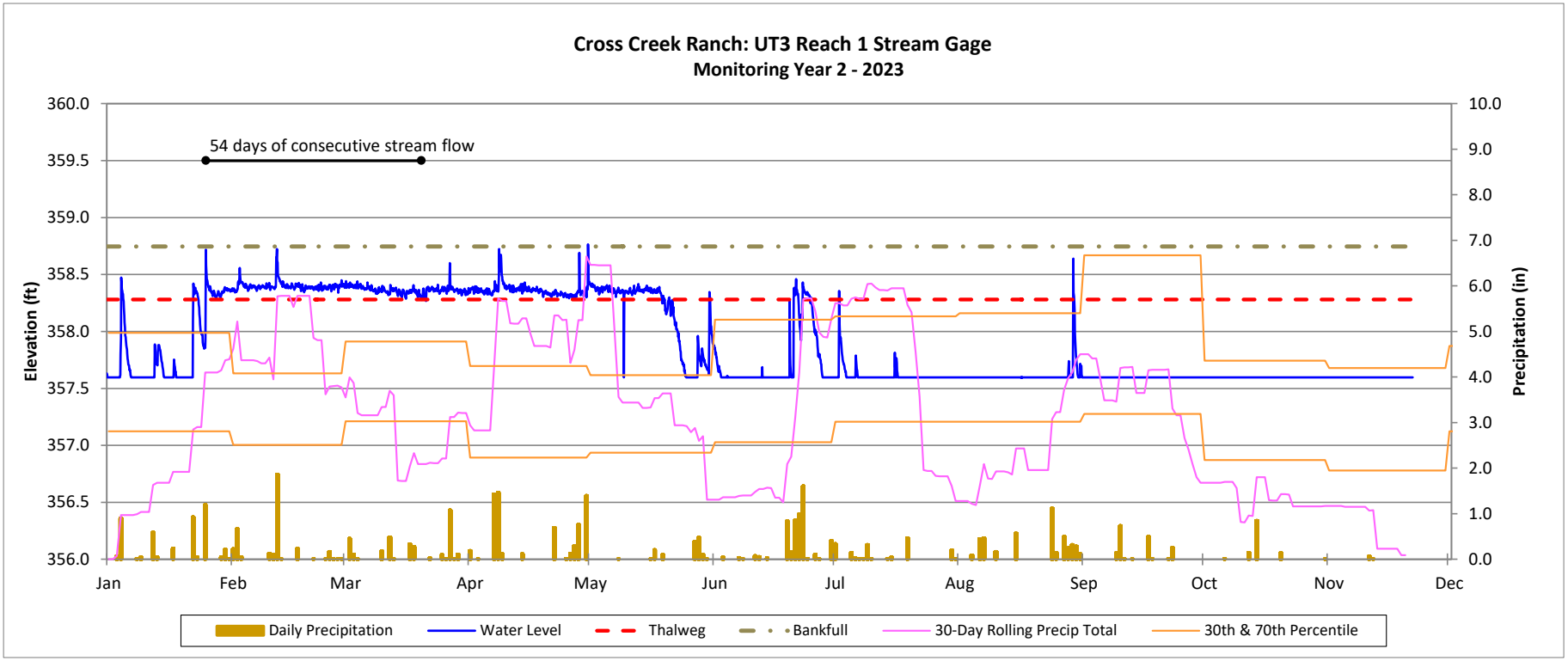
[2]Data was colleted through 11/20/2023. Data will be updated in MY3.

Recorded In-Stream Flow Events Plot

Cross Creek Ranch Site

DMS Project No. 100138

Monitoring Year 2 - 2023



[2]Annual precipitation Station: NCSU Cardinal Station UNFN7 Uwharrie (Troy)(State Climate Office of North Carolina, 2023).

[3]30th and 70th percentile precipitation data derived from the WETS data for the Jackson Springs 5 WNW NC weather station (NOAA, 2023).

Table 13. Groundwater Gage Summary

Cross Creek Ranch Site

DMS Project No. 100138

Monitoring Year 2 - 2023

Groundwater Gage	Max. Consecutive Hydroperiod (Percentage)						
	MY1 (2022)	MY2 (2023)	MY3 (2024)	MY4 (2025)	MY5 (2026)	MY6 (2027)	MY7 (2028)
1	99 Days (37.5%)	135 Days (51.1%)					
2	18 Days (6.8%)	3 Days (1.1%)					
3	59 Days (22.3%)	56 Days (21.2%)					
4	64 Days (24.2%)	36 Days (13.6%)					
5	81 Days (30.6%)	84 Days (31.8%)					
6	78 Days (29.5%)	94 Days (35.6%)					
7	20 Days (7.5%)	12 Days (4.5%)					
8	65 Days (24.6%)	51 Days (19.3%)					
9	21 Days (7.9%)	38 Days (14.4%)					

Performance Standard: GWG 5 and GWG 6 have an 11% (29 consecutive day) hydroperiod criterion.

GWG 1-4 and GW 7-9 have a 12% (32 consecutive day) hydroperiod criterion.

MY2 Growing Season: 3/1/2023 to 11/20/2023 (264 Days)

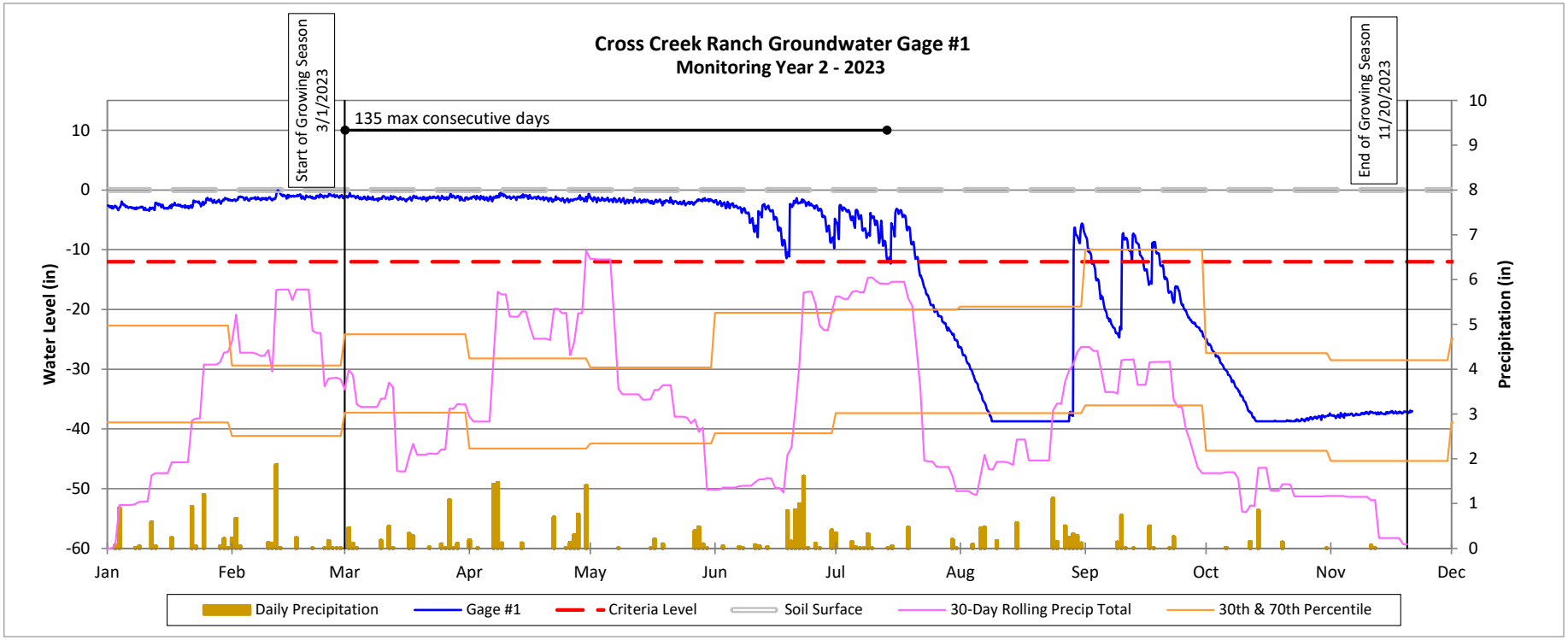
Groundwater Gage Plot

Cross Creek Ranch Site

DMS Project No. 100138

Monitoring Year 2 - 2023

Wetland Re-establishment



[1]Annual precipitation Station: NCSU Cardinal Station UNFN7 Uwharrie (Troy)(State Climate Office of North Carolina, 2023).

[2]30th and 70th percentile precipitation data derived from the WETS data for the Jackson Springs 5 WNW NC weather station (NOAA, 2023).

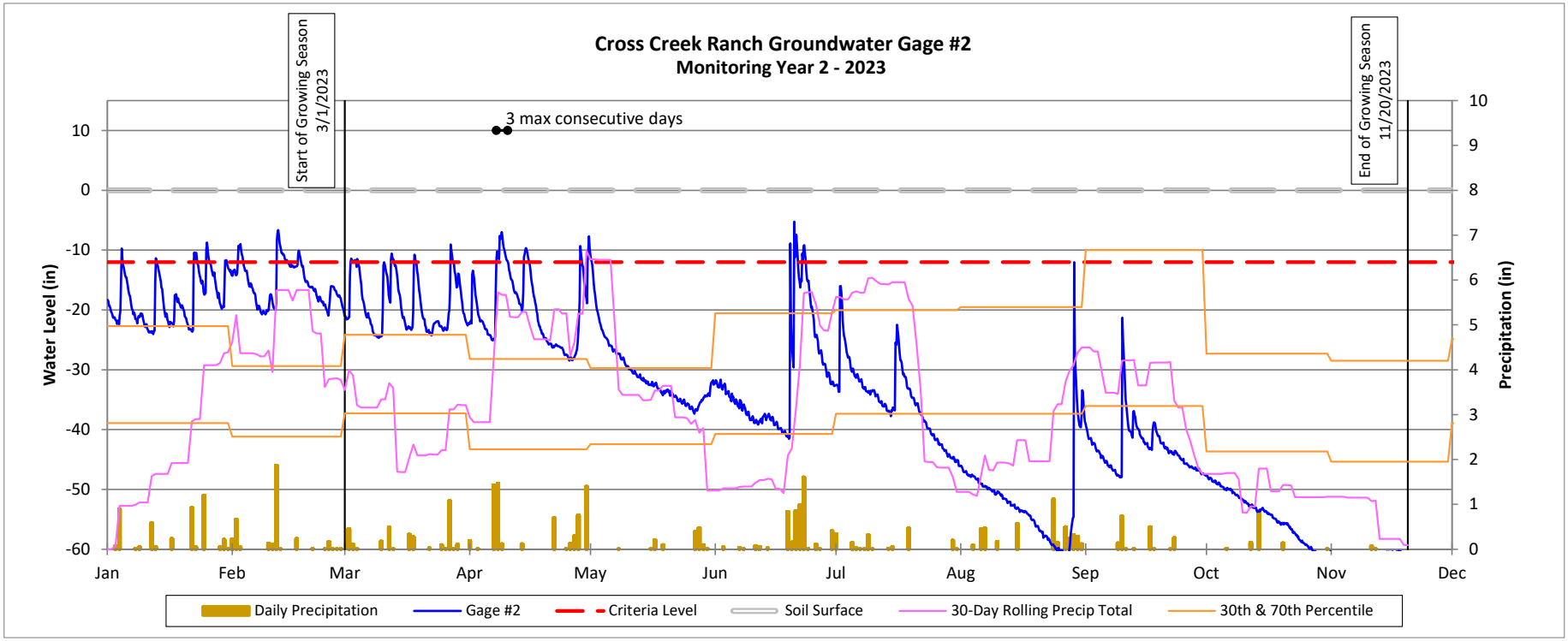
Groundwater Gage Plot

Cross Creek Ranch Site

DMS Project No. 100138

Monitoring Year 2 - 2023

Wetland Re-establishment



[1]Annual precipitation Station: NCSU Cardinal Station UNFN7 Uwharrie (Troy)(State Climate Office of North Carolina, 2023).

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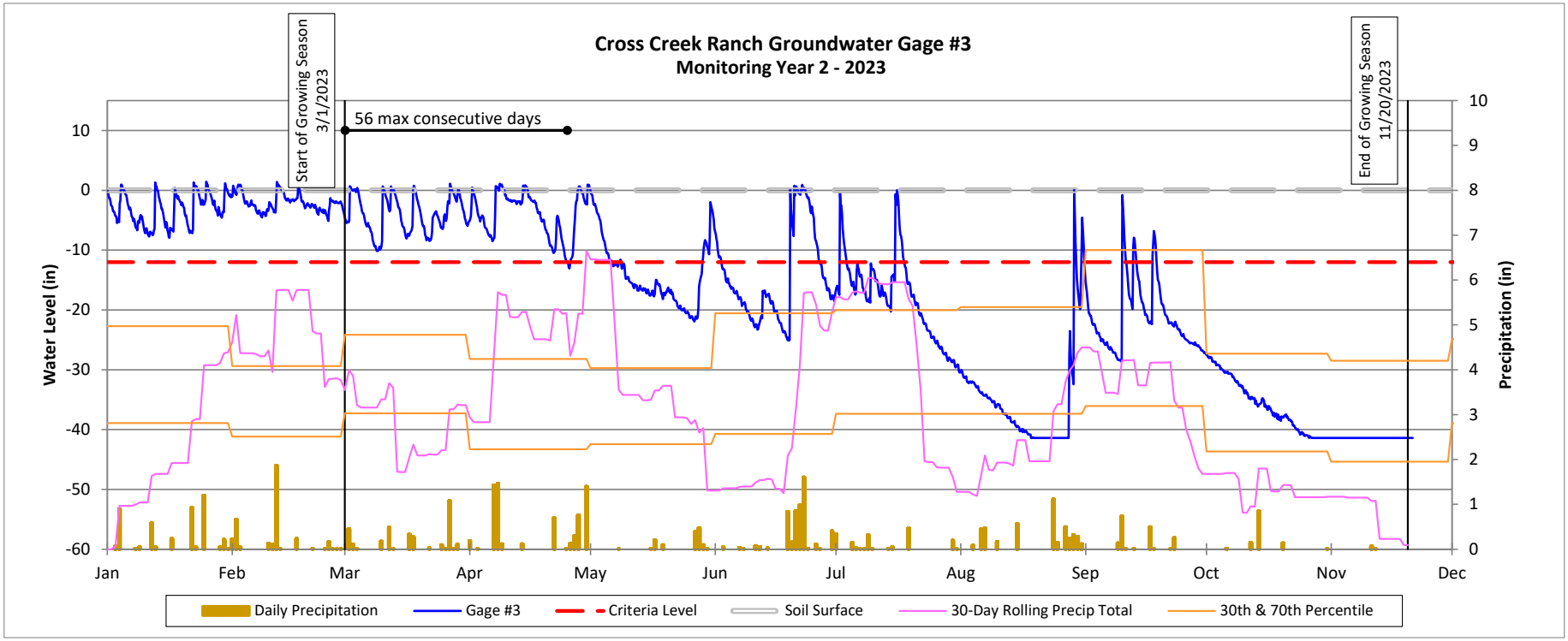
Groundwater Gage Plot

Cross Creek Ranch Site

DMS Project No. 100138

Monitoring Year 2 - 2023

Wetland Re-establishment



[1]Annual precipitation Station: NCSU Cardinal Station UNFN7 Uwharrie (Troy)(State Climate Office of North Carolina, 2023).

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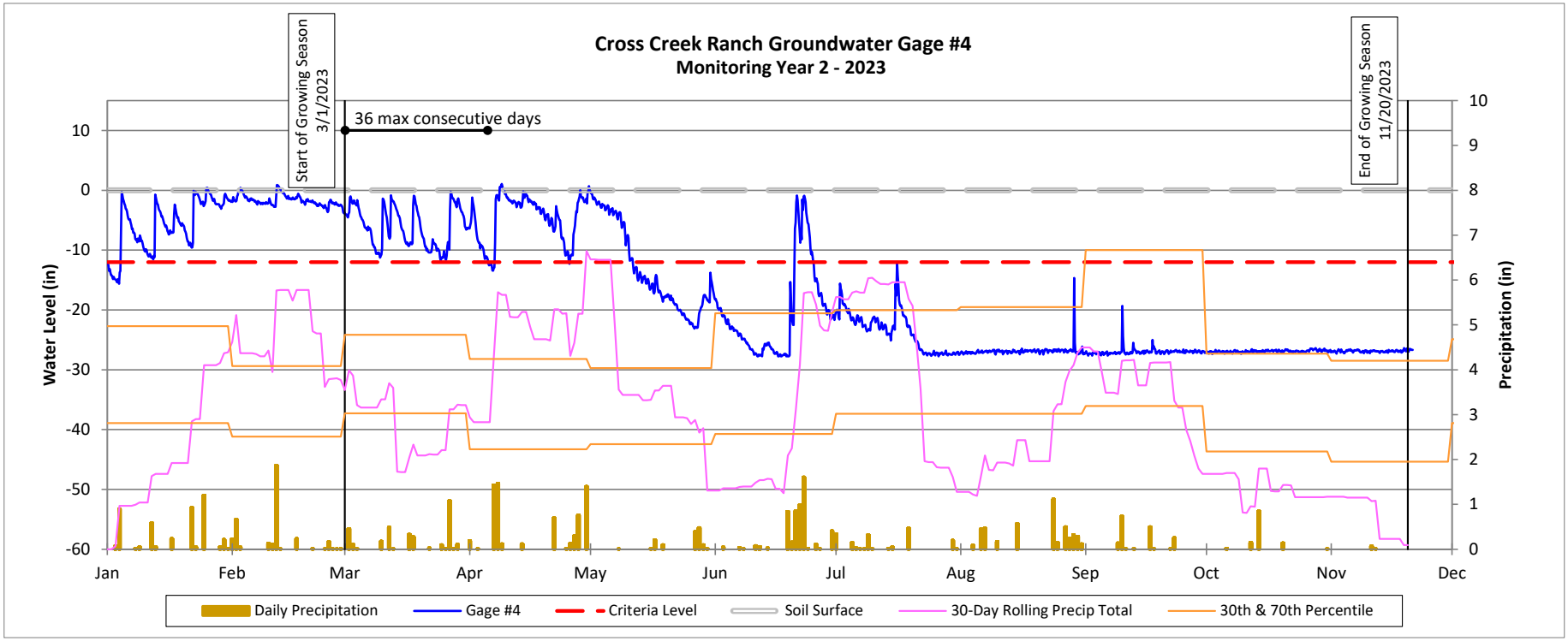
Groundwater Gage Plot

Cross Creek Ranch Site

DMS Project No. 100138

Monitoring Year 2 - 2023

Wetland Re-establishment



[1]Annual precipitation Station: NCSU Cardinal Station UNFN7 Uwharrie (Troy)(State Climate Office of North Carolina, 2023).

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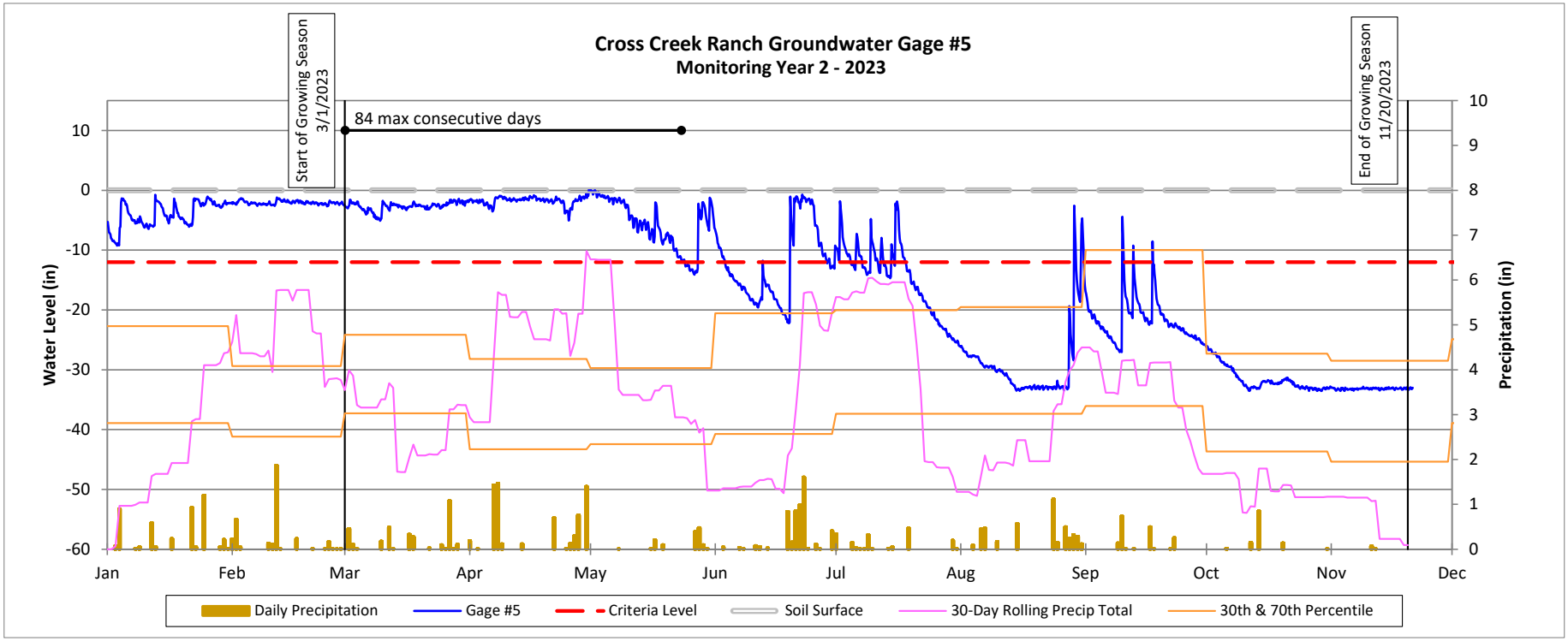
Groundwater Gage Plot

Cross Creek Ranch Site

DMS Project No. 100138

Monitoring Year 2 - 2023

Wetland Rehabilitation



[1]Annual precipitation Station: NCSU Cardinal Station UNFN7 Uwharrie (Troy)(State Climate Office of North Carolina, 2023).

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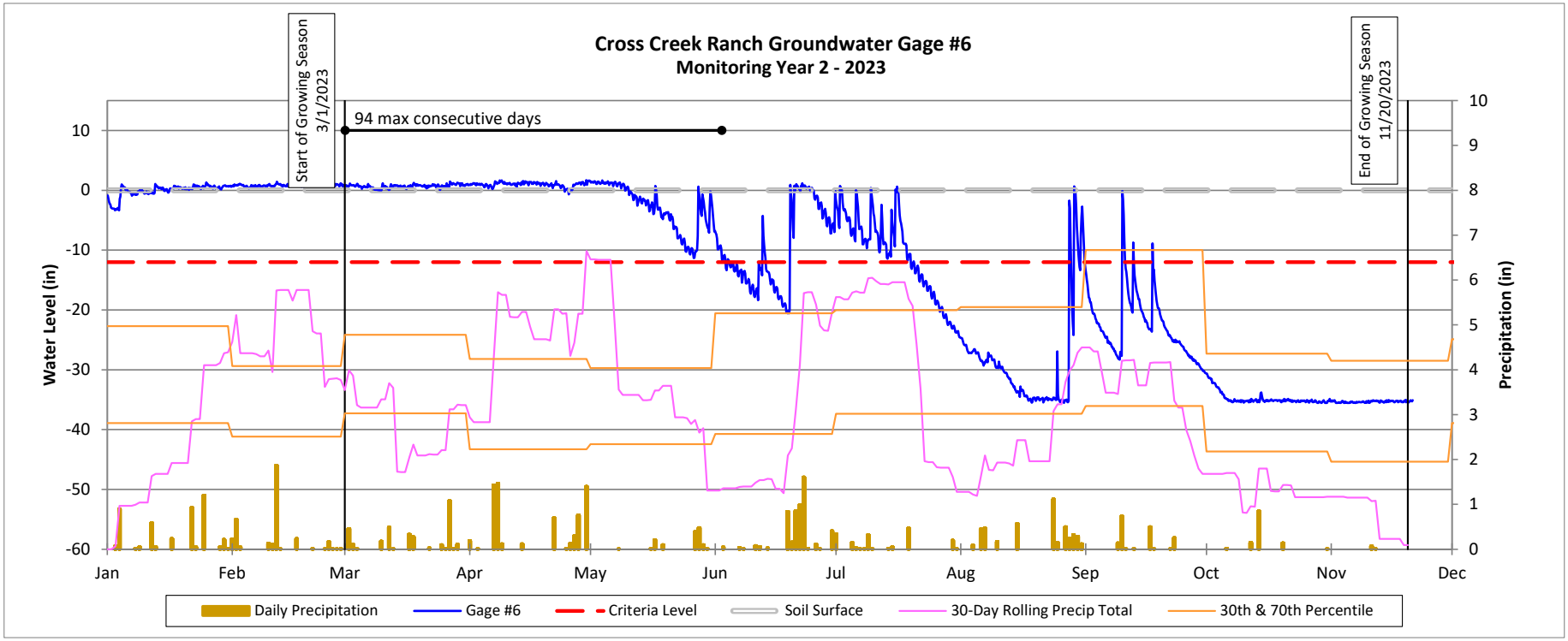
Groundwater Gage Plot

Cross Creek Ranch Site

DMS Project No. 100138

Monitoring Year 2 - 2023

Wetland Rehabilitation



[1]Annual precipitation Station: NCSU Cardinal Station UNFN7 Uwharrie (Troy)(State Climate Office of North Carolina, 2023).

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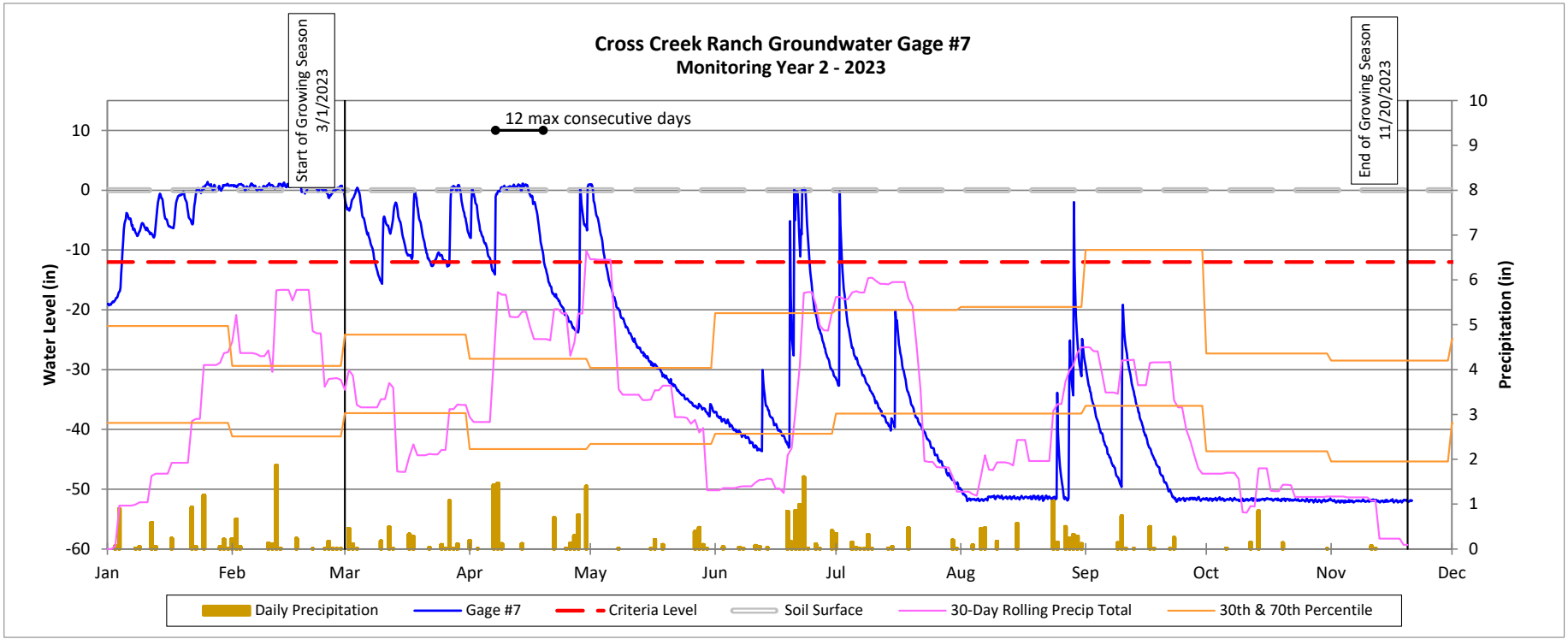
Groundwater Gage Plot

Cross Creek Ranch Site

DMS Project No. 100138

Monitoring Year 2 - 2023

Wetland Re-establishment



[1]Annual precipitation Station: NCSU Cardinal Station UNFN7 Uwharrie (Troy)(State Climate Office of North Carolina, 2023).

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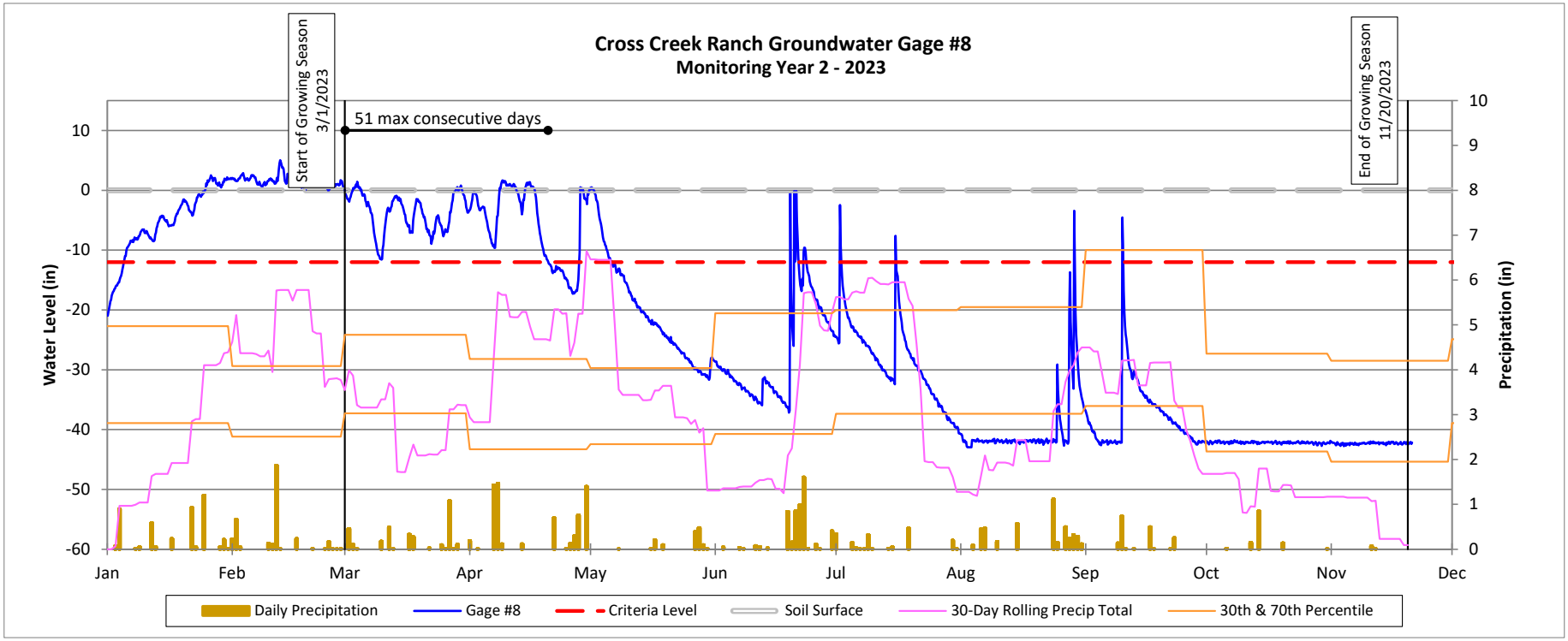
Groundwater Gage Plot

Cross Creek Ranch Site

DMS Project No. 100138

Monitoring Year 2 - 2023

Wetland Re-establishment



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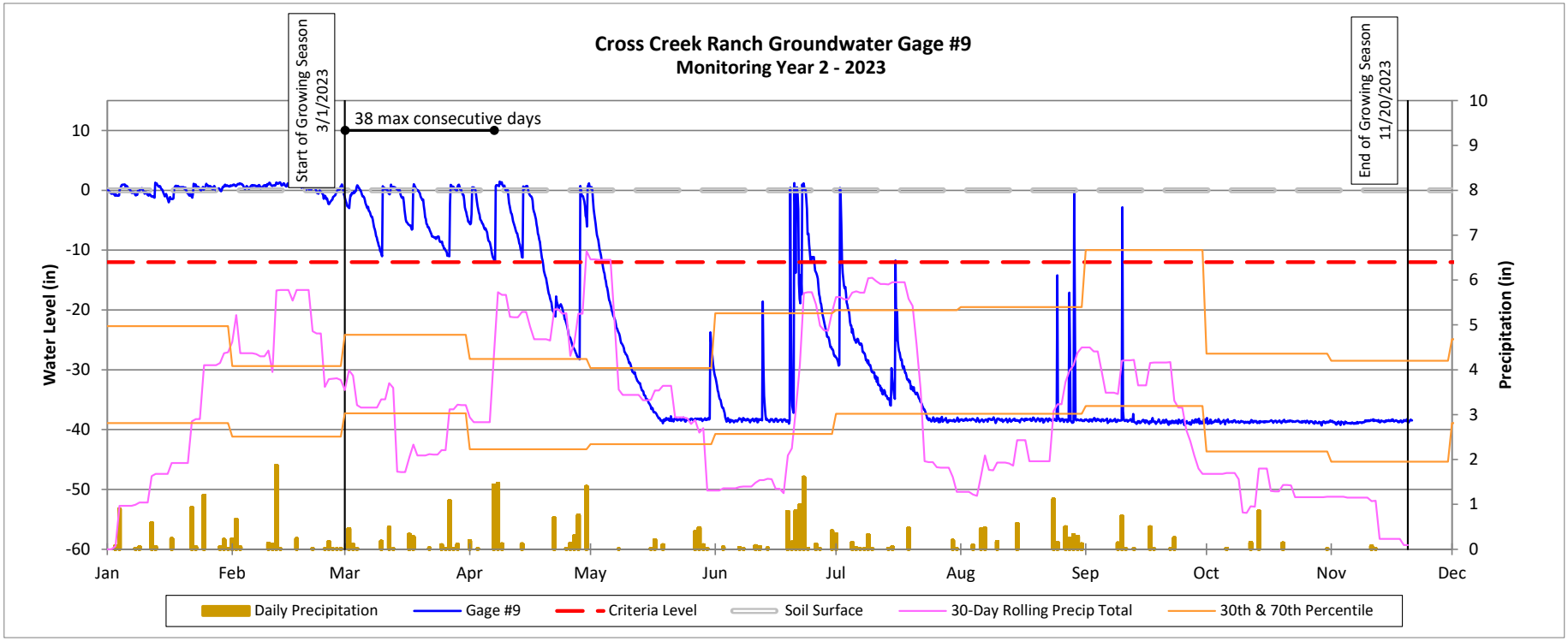
Groundwater Gage Plot

Cross Creek Ranch Site

DMS Project No. 100138

Monitoring Year 2 - 2023

Wetland Re-establishment



[1]Annual precipitation Station: NCSU Cardinal Station UNFN7 Uwharrie (Troy)(State Climate Office of North Carolina, 2023).

[2]30th and 70th percentile precipitation data derived from the WETS data for the Jackson Springs 5 WNW NC weather station (NOAA, 2023).

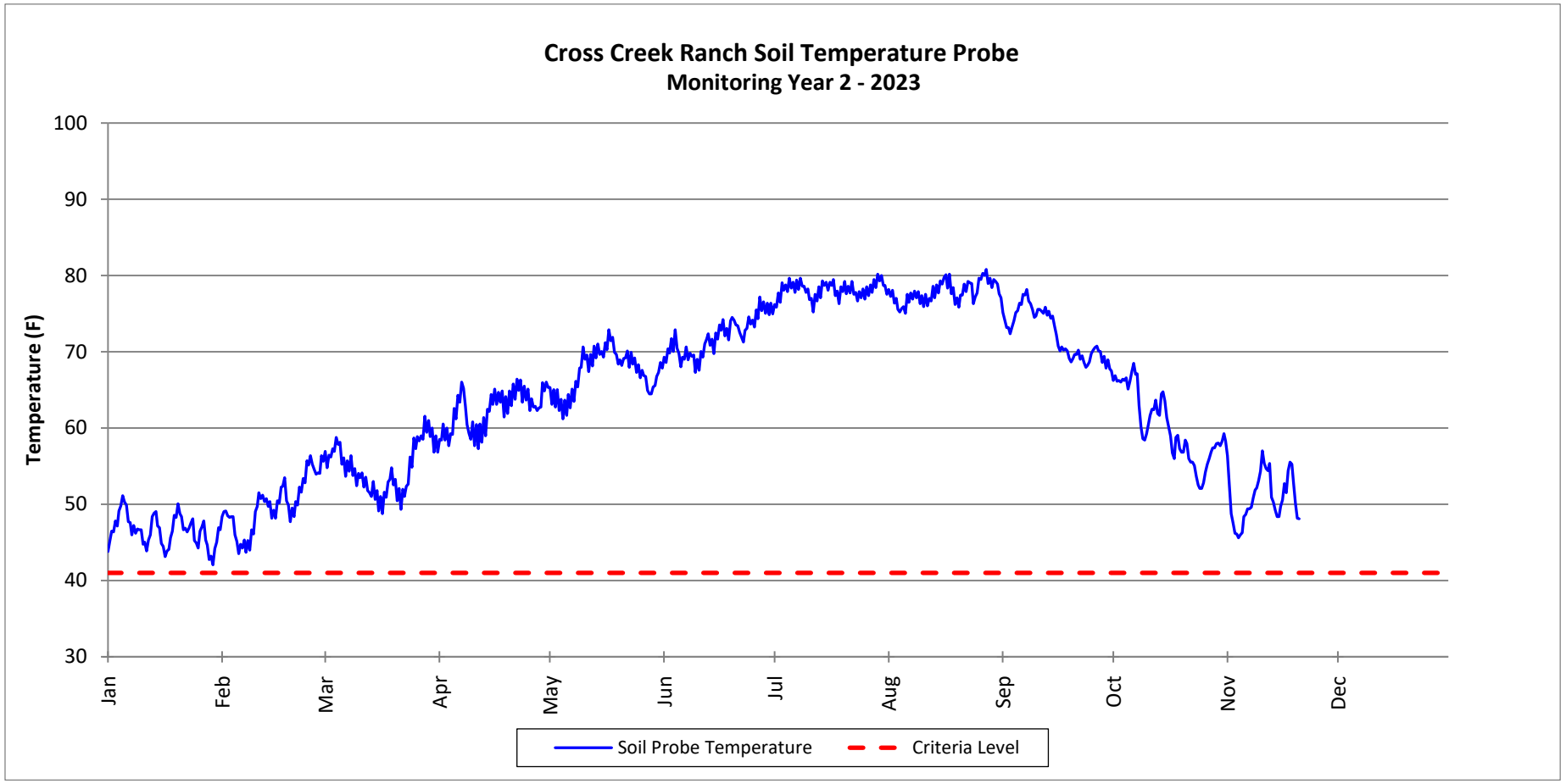
Soil Temperature Probe Plot

Cross Creek Ranch Site

DMS Project No. 100138

Soil Temperature Probe

Monitoring Year 2 - 2023



APPENDIX E. PROJECT TIMELINE AND CONTACT INFO

Table 14. Project Activity and Reporting History

Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

Activity or Deliverable		Data Collection Complete	Task Completion or Deliverable Submission
Project Instituted		NA	November 2019
Mitigation Plan Approved		NA	September 2021
Construction (Grading) Completed		NA	February 2022
Planting Completed		NA	March 10, 2022
As-Built Survey Completed		March 2022	March 2022
Baseline Monitoring Document (Year 0)	Stream Survey	March 2022	July 2022
	Vegetation Survey	March 2022	
Invasive Vegetation Treatment			March 2022
Year 1 Monitoring	Stream Survey	October 2022	December 2022
	Vegetation Survey	September 2022	
Year 2 Monitoring	Invasive Treatments	February - May 2023	December 2023
	Stream Survey	June 2023	
	Vegetation Survey	August 2023	
Year 3 Monitoring	Stream Survey	2024	November 2024
	Vegetation Survey	2024	
Year 4 Monitoring			November 2025
Year 5 Monitoring	Stream Survey	2026	November 2026
	Vegetation Survey	2026	
Year 6 Monitoring			November 2027
Year 7 Monitoring	Stream Survey	2028	November 2028
	Vegetation Survey	2028	

Table 15. Project Contact Table

Cross Creek Ranch Site
DMS Project No. 100138
Monitoring Year 2 - 2023

Designer Abigail Vieira, PE	**Wildlands Engineering, Inc.** 1430 South Mint Street, Suite 104 Charlotte, NC 28203 704.332.7754	
Construction Contractors	**Wildlands Construction** 1430 South Mint Street, Suite 104 Charlotte, NC 28203	**Main Stream Earthwork, Inc.** 631 Camp Dan Valley Rd. Reidsville, NC 27320
Monitoring Performers Monitoring, POC	**Wildlands Engineering, Inc.** Kristi Suggs 704.332.7754 ext. 110	