MONITORING YEAR 1 ANNUAL REPORT
FINAL

February 18, 2022

WYANT LANDS MITIGATION SITE
Lincoln County, NC
Catawba River Basin
HUC 03050102
(03050103 Expanded Service Area)

DMS Project No. 100067
DMS Contract No. 7244
DMS RFP No. 16-007133
USACE Action ID No. SAW-2017-02609
DWR Project No. 2018-0177
Data Collection Dates: October 2021 - January 2022

PREPARED FOR:

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Environmental Quality

February 9, 2022

Mr. Eric Neuhaus, PE
Wildlands Engineering, Inc.
167-B Haywood Road
Asheville, NC 28806

Subject: Draft Monitoring Year 1 report for the
Wyant Lands Mitigation Site
Catawba River Basin – CU# 03050102 – Lincoln County
DMS Project ID No. 100067
Contract # 7244

Mr. Neuhaus:

On February 4, 2022, the NCDEQ – Division of Mitigation Services (DMS) received the Draft Monitoring Year 1 (MY1) report for the Wyant Lands Mitigation site from Wildlands Engineering, Inc.

Anticipated mitigation on the site includes 6,238 linear feet of stream restoration; 376 linear feet of stream enhancement (Level 1); 515 linear feet of stream enhancement (Level 2); 10.992 acres of wetland re-establishment; and 3.155 acres of wetland rehabilitation for a total of 6,694.667 Stream Mitigation Units (SMUs) & 13.095 Wetland Mitigation Units (WMUs). The following are our comments on the DRAFT report and digital support files:

Table 1: Project Quantities and Credits: Please remove the 164.400 SMUs associated with UT2 R1 from the table and calculated project credits. The UT2 R1 reach line should be left but the credits should be 0. Consider updating the reach footages and approach to restoration per the IRT approved mitigation plan addendum. The project credit total will be 6,694.667 SMUs & 13.095 WMUs which is consistent with the current project credit ledger. The table can be fully updated in MY2 (2022) once the additional stream and wetland work on the site is complete and approved by the IRT.

Table 6 – Vegetation Plot Data & Table 7 - Vegetation Performance Standards Summary Table: As noted in the digital support file comments below, the vegetation tables should be consistent with the NCDMS Vegetation Data Entry Tool provided on the NCDMS website.

Appendix F - Correspondence: Please include the IRT MY0 & Mitigation Plan Addendum comments and WEI responses in Appendix F for documentation purposes.

Digital Support File Comments:

- Please include spatial features characterizing the locations of the beaver dams that were removed.

- Please retain the formatting of the output from the Veg Tool. The color coding is based on the 2016 guidance and was approved by the IRT. Also note that the output generated duplicate rows for green ash, eastern cottonwood, and American black elderberry because the data validation drop-down list wasn't used and there were spaces after the scientific name (e.g., "Quercus michauxii " vs. "Quercus michauxii") in the input file.

- Please consistently use either < 1.0 or report the value for BHR's (e.g., XS 11 & 12).

Please provide an electronic comment response letter addressing the DMS comments received. This comment response letter should also be included in the FINAL MY1 report after the report cover.

Please submit two (2) final hard copies and an electronic copy on a USB drive to my attention at the address below (DMS western field office). Please include all updated MY1 digital support files on the USB drive. The final electronic monitoring report with all attachments should be named: ***Wyant Lands_100067_MY1_2021.pdf***

If you have any questions, please contact me at any time at (828) 273-1673 or email me at paul.wiesner@ncdenr.gov .

Sincerely,

Paul Wiesner

Paul Wiesner
Western Regional Supervisor
NCDEQ – Division of Mitigation Services
5 Ravenscroft Dr., Suite 102
Asheville, NC 28801
(828)273-1673 Mobile

cc: file

February 18, 2022

ATTN: Paul Wiesner
Western Regional Supervisor
NCDEQ – Division of Mitigation Services
5 Ravenscroft Dr., Suite 102
Asheville, NC 28801

RE: Draft Monitoring Year 1 report for the
Wyant Lands Mitigation Site
Catawba River Basin – CU#03050102 – Lincoln County
DMS Project ID No. 100067
Contract # 7244

Dear Mr. Paul Wiesner:

Wildlands Engineering, Inc. (Wildlands) has reviewed Division of Mitigation Services' (DMS) comments from the Draft Monitoring Year 1 (MY1) Report for the Wyant Lands Mitigation Site. The report has been updated to reflect those comments. The Final MY1 Report The following Wildlands responses to DMS's comments are noted below.

DMS Comments, Paul Wiesner:

1. *Table 1: Project Quantities and Credits: Please remove the 164.400 SMUs associated with UT2 R1 from the table and calculated project credits. The UT2 R1 reach line should be left but the credits should be 0. Consider updating the reach footages and approach to restoration per the IRT approved mitigation plan addendum. The project credit total will be 6,694.667 SMUs & 13.095 WMUs which is consistent with the current project credit ledger. The table can be fully updated in MY2 (2022) once the additional stream and wetland work on the site is complete and approved by the IRT.*

   Wildlands Response: Wildlands removed 164.00 of UT2 R1 credits from the report's credit table. UT2 R1 reach footages and restoration approach are now consistent with the IRT approved addendum mitigation plan for Wyant Lands Phase II Project Expansion. Project credits now total 6,694.667 SMUs and 13.095 WMUs.

2. Table 6 – Vegetation Plot Data & Table 7 - Vegetation Performance Standards Summary Table: As noted in the digital support file comments below, the vegetation tables should be consistent with the NCDMS Vegetation Data Entry Tool provided on the NCDMS website.

Wildlands Response: Wildlands updated Table 6 & 7 to be consistent with the NCDMS Vegetation Data Entry Tool.

3. Appendix F - Correspondence: Please include the IRT MY0 & Mitigation Plan Addendum comments and WEI responses in Appendix F for documentation purposes.

   Wildlands Response: IRT MY0 & Mitigation Plan Addendum comments and WEI responses are included in Appendix F as well as digital submittal files.

Digital Support File Comments:

1. Please include spatial features characterizing the locations of the beaver dams that were removed.

   Wildlands Response: Locations of removed beaver dams are now included in Current Condition Plan View (CCPV) maps as well as submitted MY1 geodatabase.

2. Please retain the formatting of the output from the Veg Tool. The color coding is based on the 2016 guidance and was approved by the IRT. Also note that the output generated duplicate rows for green ash, eastern cottonwood, and American black elderberry because the data validation drop-down list wasn't used and there were spaces after the scientific name (e.g., "Quercus michauxii " vs. "Quercus michauxii") in the input file.

   Wildlands Response: Vegetation input file format has been updated to be consistent with the NCDMS Vegetation Data Entry Tool schema. This eliminated duplicate rows of species. IRT approved color coding is now being used.

3. Please consistently use either < 1.0 or report the value for BHR's (e.g., XS 11 & 12).

   Wildlands Response: BHR values have been updated to be consistent across all Cross Sections.

As requested, Wildlands has included two (2) hard copies of the final report, a full final .pdf copy of the report with the DMS comment letter and our response letter inserted after the cover pages, and a full final electronic submittal of the support files. A copy of the DMS comment letter and our response letter have been included inside the front cover of each report's hard copy, as well. Please let me know if you have any questions.

Sincerely,

Kristi Suggs

Senior Environmental Scientist
ksuggs@wildlandseng.com

WYANT LANDS MITIGATION SITE

Monitoring Year 1 Annual Report

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Section 1: PROJECT OVERVIEW

The Wyant Lands Mitigation Site (Site) is located in Lincoln County, approximately five miles northwest of Lincolnton and seven miles southwest of Maiden. The Site is located in the Piedmont Physiographic Province. The Site drains directly into Pott Creek, which is part of the Catawba River Basin. Currently, the Site is adjacent to an active cattle and row crop operation. Table 3 presents information related to the project attributes.

1.1 Project Quantities and Credits

The Site is located on a 253-acre property under one landowner and a conservation easement was recorded on 41.3 acres. Mitigation work within the Site included restoration, enhancement I, and enhancement II of perennial stream channels. Along with stream mitigation, wetland restoration, including re-establishment and rehabilitation occurred at the Site. Table 1 below shows stream credits by reach and wetland credits along with total amount of credits. Credits were corrected based on as-built data within the MY0 report concurrent with the submittal of a mitigation plan addendum for the Phase II portion of the project.

Table 1: Project Quantities and Credits

PROJECT MITIGATION QUANTITIES							
Project Segment	**Mitigation Plan Footage (LF) or Acreage[1,2]**	**As-Built Footage (LF) or Acreage**	**Mitigation Category**	**Restoration Level**	**Mitigation Ratio (X:1)**	**Credits**	**Comments**
Stream							
UT1	604	604	Warm	R	1.0	604.00	Full Channel Restoration, Fencing Out Livestock
UT2 R1	396	N/A[3]	Warm	R	1.0	0[4]	Full Channel Restoration, Fencing Out Livestock
UT2 R2	515	515	Warm	EII	2.5	206.000	Fencing Out Livestock
UT2 R3	1,042	1,042	Warm	R	1.0	1,042.000	Full Channel Restoration, Fencing Out Livestock
UT3 R1	374	376	Warm	EI	1.5	250.667	Bank Stabilization, Fencing Out Livestock
UT3 R2	326	328	Warm	R	1.0	328.000	Full Channel Restoration, Fencing Out Livestock
Wyant Creek R1	1,482	1,475	Warm	R	1.0	1,475.000	Full Channel Restoration, Fencing Out Livestock
Wyant Creek R2	523	523	Warm	R	1.0	523.000	Full Channel Restoration, Fencing Out Livestock
Wyant Creek R3	295	295	Warm	R	1.0	295.000	Full Channel Restoration, Fencing Out Livestock
Wyant Creek R4	1,972	1,971	Warm	R	1.0	1,971.000	Full Channel Restoration, Fencing Out Livestock

Table 1: Project Quantities and Credits

PROJECT MITIGATION QUANTITIES							
Project Segment	**Mitigation Plan Footage (LF) or Acreage[1,2]**	**As-Built Footage (LF) or Acreage**	**Mitigation Category**	**Restoration Level**	**Mitigation Ratio (X:1)**	**Credits**	**Comments**
Wetland							
Wetland Re-Establishment[2]	11.000	10.992	Warm	R	1.0	10.992	Full Wetland Restoration, Fencing Out Livestock
Wetland Rehabilitation[2]	3.200	3.155	Warm	R	1.5	2.103	Full Wetland Restoration, Fencing Out Livestock
					Total Stream Credits:	**6,694.667**	
					Total Wetland Credits:	**13.095**	

1. Internal culvert crossing, and external break excluded from the credited stream footage.
2. No direct credit for BMPs on site.
3. As-built survey on addendum area not yet performed.
4. Credits from UT2 Reach 1 approved within the Mitigation Plan will not be released until approval of the Mitigation Plan Addendum Baseline Monitoring Report.

Stream Restoration Level	**Stream**			**Wetland Restoration Level**	**Wetland**
	Warm	**Cool**	**Cold**		**Warm**
Restoration	6,238.00			Wetland Re-Establishment	10.992
Enhancement I	250.667			Wetland Rehabilitation	2.103
Enhancement II	206.000				
Preservation	N/A				
Totals	**6,694.667**			**Totals**	**13.095**
Total Stream Credit	**6,694.667**			**Total Wetland Credit**	**13.095**

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
Exclude livestock from stream channels.	Exclude cattle from conservation easements adjacent to cattle pastures.	Reduce and control sediment inputs; Reduce and manage nutrient inputs; Improve agricultural management activities.	No performance criteria.	Semi-annual visual inspections.	No evidence of livestock within conservation easements.

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.	Construct stream channels that will maintain a stable pattern and profile. Stabilize stream bed and banks using bank vegetation, bank revetments, and in-stream structures to protect restored/enhanced channels.	Reduce and control sediment inputs; Contribute to protection, or improvement of a Water Supply and Nutrient-Sensitive Waters.	BHR ≤ 1.2 and ER ≥ 2.2. Visual assessments showing progression towards stability.	Cross-section monitoring in MY1, MY2, MY3, MY5, & MY7. Visual inspections will be assessed annually.	Cross sections and visual inspections show progression towards stability. All structures preforming as designed.
Improve instream habitat.	Install habitat features such as constructed riffles, cover logs, and brush toes into restored/enhanced streams. Add woody materials to channel beds. Construct pools of varying depths.	Increase and diversify available habitats for macroinvertebrates, fish, and amphibians leading to colonization and increase in biodiversity over time.	No performance criteria.	Semi-annual visual inspections.	All structures are preforming as designed.
Reconnect channels with floodplains and riparian wetlands.	Reconstruct stream channels with designed bankfull dimensions and depth relative to existing floodplain.	Reduce shear stress on channel; Hydrate adjacent wetland areas; Filter out pollutants from overbank flows.	Four bankfull events in separate years within the monitoring period.	Pressure transducers recording flow elevations and durations.	No bankfull events recorded. In-stream gage recorded consistent baseflow for more than 30 consecutive days.

Table 2: Goals, Performance Criteria, and Functional Improvements

Goal	Objective/ Treatment	Likely Functional Uplift	Performance Criteria	Measurement	Cumulative Monitoring Results
Restore wetland hydrology, soils, and plant communities.	Restore and enhance riparian wetlands by raising stream beds, filling existing ditch network, removing berm material over relic hydric soils, and planting native wetland species.	Improve terrestrial habitat; Contribute to protection and/ or improvement of a Water Supply and Nutrient-Sensitive Waters.	Free groundwater within 12 inches of ground surface for a minimum of 12% (27 consecutive days) of the growing season for Lincoln County.	Groundwater gages placed in restoration areas and monitored annually.	8 of 11 groundwater gages meet performance criteria.
Restore and enhance native floodplain vegetation.	Plant native tree and understory species in riparian zones where they were insufficient.	Reduce and control sediment inputs; Reduce and manage nutrient inputs; Provide a canopy to shade and reduce thermal loadings; Contribute to protection and/or improvement of a Water Supply and Nutrient-Sensitive Waters.	Survival rate of 320 planted stems per acre at MY3, 260 planted stems per acre at MY5 and a height of 8 ft. and 210 stems per acre at MY7 with a height of 10 ft.	One hundred square meter vegetation plots are placed on 2% of the planted area of the Site and monitored during MY1, MY2, MY3, MY5, and MY7.	28 of 31 vegetation plots met MY3 density requirements. No invasive species presence within monitoring plots. Privet cover is less than 1% of CE area and is scheduled to be removed during Addendum construction.
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 encroachments.	Semi-annual visual inspections.	No easement encroachments.

1.3 Project Attributes

The Site contains three unnamed tributaries (UTs) to Wyant Creek (UT1, UT2, UT3) and the mainstem of Wyant Creek, which has been broken into four reaches and flows in a south easterly direction through the Site. Multiple existing and relic riparian wetland areas exist on-site and have been re-established or rehabilitated to offset impairments within the Catawba River Basin HUC 03050103. Wyant Creek originates off-site, and its watershed consists predominantly of active row crops. UT1 originates from an on-site farm pond and flows east through an unconfined alluvial valley, adjacent to an active cattle pasture, before its confluence with Wyant Creek. UT2 and UT3 originate from on-site farm ponds and flow through moderately sloped and moderately confined alluvial valleys. All reaches are encompassed

by the Pott Creek watershed, which is defined by forested and agricultural land use with sporadic development of rural homes and extends south past June Bug Road. Across Pott Creek and adjacent to the project area, there is an existing conservation easement held by the NC Division of Mitigation Services (DMS), formerly NC Ecosystem Enhancement Program, known as the Pott Creek I Mitigation Bank. Table 3 below and Table 8 in Appendix C present additional information on pre-restoration conditions.

Table 3: Project Attributes

PROJECT INFORMATION			
Project Name	Wyant Lands Mitigation Site	County	Lincoln County
Project Area (acres)	41.3	Project Coordinates	35.531083, -81.318040
PROJECT WATERSHED SUMMARY INFORMATION			
Physiographic Province	Piedmont	River Basin	Catawba River
USGS HUC 8-digit	03050102	USGS HUC 14-digit	03050102040020
DWR Sub-basin	03-08-35	Land Use Classification	70% cultivated crop and hay; 16% forest; 7% grassland/herbaceous; 2% shrubland; 5% residential
Project Drainage Area (acres)	671	Percentage of Impervious Area	0.9%

RESTORATION TRIBUTARY SUMMARY INFORMATION				
Parameters	**UT1**	**UT2**	**UT3**	**Wyant Creek**
Pre-project length (feet)	458	2,137	647	4,286
Post-project (feet)	604	1,557[1]	704	4,264
Valley confinement (Confined, moderately confined, unconfined)	Unconfined	Moderately Confined/Confined	Moderately Confined/Confined	Unconfined
Drainage area (acres)	54	126	84	671
Perennial, Intermittent, Ephemeral	Perennial	Perennial	Perennial	Perennial
DWR Water Quality Classification	IV	IV	IV	IV
Dominant Stream Classification (existing)	C5/4	C4	G5	G5
Dominant Stream Classification (proposed)	C4b	B4	C4b	C4
Dominant Evolutionary class (Simon) if applicable	III Degradation; IV Degradation and Widening	I Stable/III Degradation	I Stable; II Incision; III Degradation	III Degradation

REGULATORY CONSIDERATIONS			
Parameters	**Applicable?**	**Resolved?**	**Supporting Documentation**
Water of the United States - Section 404	Yes	Yes	Approved 404/401 permit applicant
Water of the United States - Section 401	Yes	Yes	
Endangered Species Act	Yes	Yes	Categorical Exclusion in Mitigation Plan (Wildlands, 2019)
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
FEMA Floodplain Compliance	Yes	Yes	Lincoln County Floodplain Development Permit
NPDES	Yes	Yes	NCG010000 Construction Stormwater General Permit

1. The post-construction linear footage does not include UT2 R1. This will be revised in MY2 to include post-construction length of UT2 R1 at as-built for the Site's Mitigation Addendum.

Section 2: Monitoring Year 1 Data Assessment

Annual monitoring and site visits were conducted during monitoring year (MY)1 to assess the condition of the project. The vegetation and stream success criteria for the Site follow the approved success criteria presented in the Mitigation Plan (Wildlands, 2019). Performance criteria for vegetation, stream, and hydrologic assessments are located in Section 1.2 Table 3: Goals, Performance Criteria, and Functional Improvements. Methodology for annual monitoring is presented in the As-Built Baseline Monitoring Report (Wildlands, 2021).

2.1 Vegetative Assessment

The MY1 vegetative survey was completed in October 2021. Vegetation monitoring resulted in a density range of 202 to 607 planted stems per acre with an overall average stem density of 404. Of the total 31 vegetation plots, 28 are meeting or exceeding the interim MY3 success criteria. Two fixed vegetation plots (VP3, VP15), and one random plot (MP2) are not meeting the interim requirement. Both fixed plots have a density of 202 planted stems per acre while the random plot has a density of 283 planted stems per acre. VP3 and MP2 are both located on the north side of UT1 and are in areas subject to inundation. VP15 is located on the east facing slope of UT3 Reach 1 (R1) in an area of exposed mineral soils. Throughout the entirety of the Site, herbaceous cover is well established and is stabilizing stream banks. 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

The MY1 assessment only determined two areas of vegetation concern within the conservation easement. Chinese privet (*Lingustrum sinense*), totaling 0.61 acres, is located on UT2 R1. The privet will be physically removed during the implementation of Wyant Lands: Phase II – Project Expansion (SAW# 2021-02449), where priority 1 restoration will be constructed along UT2 Reach 1 in March of 2022. This area will continue to be monitored post-construction for resprouts or other invasive-exotic species presence. The majority of the riparian buffer is performing well and less than 1% (approximately 0.16-acres) of the area was identified with low vegetation cover. It is located on the south facing slope of UT2 R3. Despite this area's low cover, there is no evidence of soil erosion. These areas of concern are noted on the Current Condition Plan View (CCPV) Maps and will continue to be assessed in future monitoring years. Refer to Appendix A for the Vegetation Condition Assessment Table and Areas of Concern Photographs.

2.3 Stream Assessment

Morphological surveys for MY1 were conducted in November 2021 apart from cross-section 13 which was completed in January of 2022. All 18 cross-sections at the Site show little to no change in the bankfull area and width-to-depth ratio. Bank height ratios are less than 1.2 and entrenchment ratios are greater than 2.2.

Pebble counts were conducted during the MY0 data collection and were included in the as-built report (Wildlands, 2021). However, based on a DMS Technical Workgroup memo from 10/19/21 and concurrence received on 10/28/2021 from the DMS project manager for Wyant Lands, pebble count collection is no longer required for the project from MY1 – MY7. Therefore, pebble counts will not be conducted during the remaining monitoring years unless requested by the IRT or deemed necessary based on best professional judgement. A copy of the DMS Technical Workgroup Memo and the email confirmation from the DMS project manager (Personal communication, Wiesner 2021) Appendix C. Refer to Appendix A for the Visual Stream Morphological Stability Assessment Table and Stream Photographs and Appendix C for Stream Geomorphology Data.

2.4 Stream Areas of Concern

Overall, the streams are geomorphically stable. However, a few isolated areas of concern do exist on-site. At the top of the project, there is approximately 241 linear feet (LF) of aggradation on Wyant Creek Reach 1 between stations 100+80 and 103+21. The sediment moved into the project during a large storm event at the end of construction. The slug is expected to flush through the system over time. A small area of scour/erosion was noted on UT1. It will likely re-stabilize itself as woody vegetation becomes established. Wildlands has implemented additional vegetative methods (seed and straw) to the areas of concern. Wildlands will evaluate the condition of the crossings prior to the construction of Phase II and, if deemed necessary, will use more hardened methods (add rock or similar) to stabilize the crossing areas and reduce sediment inputs from the ford crossings into the project streams. Wildlands anticipates addendum construction to be performed prior to the April DMS credit release meeting. Lastly, piping around a log sill at station 322+00 is causing the structure to become separated from the streambank; however, the erosion is isolated to the structure's tie-in and not affecting the stability of the channel. The structure issue, aggradation, and scour are noted on the CCPV maps and will be monitored in future years for signs of instability. Refer to Appendix A for the Visual Stream Morphology Stability Assessment Table and Areas of Concern Photographs.

2.5 Hydrology Assessment

Continuous baseflow was recorded on UT1 for the entirety of the monitoring period. This exceeds the requirement criteria of 30 consecutive days. No bankfull events were recorded during the current monitoring year. Refer to Appendix D for hydrologic stream data.

2.6 Wetland Assessment

Of the 11 groundwater gages (GWG), 8 met performance criteria of free groundwater surface within 12 inches of ground surface for a minimum of 12% (27 consecutive days) of the growing season. The three that did not meet performance criteria were GWG 2 (3%), GWG 3 (8%), and GWG 8 (2%). Wildlands will continue to assess groundwater hydrology within the wetland re-establishment and rehabilitation areas throughout the monitoring period. Refer to Appendix D for the Wetland Gage Summary and Wetland Gage Plots.

2.7 Adaptive Management Plan

Wildlands noted that fescue from the adjacent farm pasture is growing in the floodplain of Wyant Creek Reach 1 and 2, UT1, and UT2 Reach 3. Ring sprays were conducted during construction and MY1 in these areas to help the planted bareroots establish in the dense vegetation. In-stream native vegetation was chemically treated throughout UT3 Reach 1 and 2 in July 2021. In-stream vegetation densities were not determined to negatively impact stream function, and treatment was considered successful thus not identified on CCPV maps. These areas will continue to be monitored and management actions will be conducted accordingly. Supplemental seeding and fertilizing are planned for a 0.16 acre bare area along UT2 Reach 3 during the dormant season of 2022. In addition, supplemental planting of bareroots is planned to occur at the Site during addendum planting. The extent of the supplemental plantings is still being assessed by Wildlands but will most likely occur on the left floodplain of UT1 and on the right floodplain of UT3 R1. These small areas are represented by vegetation plots that are currently not meeting MY3 stem density criteria. The extent of the supplemental bareroot plantings will be reported in MY2 report. Only approved mitigation plan or addendum bareroots species will be used for supplemental plantings. Two small beaver dams were removed on Wyant Reach 4 near station 136+00 and 141+00 in Fall of 2021. Wildlands will continue to monitor and address beaver activity throughout the monitoring period.

2.8 Monitoring Year 1 Summary

Of the 31 vegetation plots, 28 are exceeding the MY3 interim requirement of 320 planted stems per acre. Chinese privet was located on UT2 R1 but will be removed during the priority 1 restoration proposed during Wyant Lands: Phase II – Project Expansion (SAW# 2021-02449). This area, along with the entire Site, will be monitored for re-establishment and treated to reduce the presence and spread of invasive-exotic species. A small area with low woody and herbaceous density was identified on UT2 R3. Seeding and fertilizing along are expected to increase woody and herbaceous densities and cover along UT2 R3. Overall, the Site has high vegetation densities and cover.

Overall, stream areas of concern on Site were minimal. An area of aggradation on the upper section of Wyant Creek R1 was observed. The sediment is expected to move through the system. A 21-foot portion of scoured stream bank on UT1 was noted. This area is heavily vegetated and is considered stable and not expected to worsen. Minimal localized piping around a log sill was discovered. This structure will be monitored but failure is not expected. Wildlands will continue to monitor these areas and adaptive management maintenance measures will be implemented as necessary to benefit the ecological health of the Site.

Section 3: METHODOLOGY

Geomorphic data was collected following the standards outlined in The Stream Channel Reference Site: An Illustrated Guide to Field Techniques (Harrelson et al., 1994) and in Stream Restoration: A Natural Channel Design Handbook (Doll et al., 2003). All Integrated Current Condition Mapping was recorded using handheld GPS units with sub-meter accuracy and processed using ArcGIS. Pressure transducers recording bankfull events and stream flow were installed in riffle cross-sections and monitored throughout the year. Hydrologic monitoring instrument installation and monitoring methods are in accordance with the United States Army Corps of Engineers standards (USACE, 2003). Monitoring protocols follow the Wilmington District Stream and Wetland Compensatory Mitigation Update (NCIRT, 2016). Vegetation monitoring protocols followed the Carolina Vegetation Survey-EEP Level 2 Protocol (Lee et al., 2008); however, vegetation data processing follows the NCDMS Vegetation Data Entry Tool and Vegetation Plot Data Table (NCDMS, 2020).

Section 4: REFERENCES

Doll, B.A., Grabow, G.L., Hall, K.A., Halley, J., Harman, W.A., Jennings, G.D., and Wise, D.E. 2003. Stream Restoration A Natural Channel Design Handbook.

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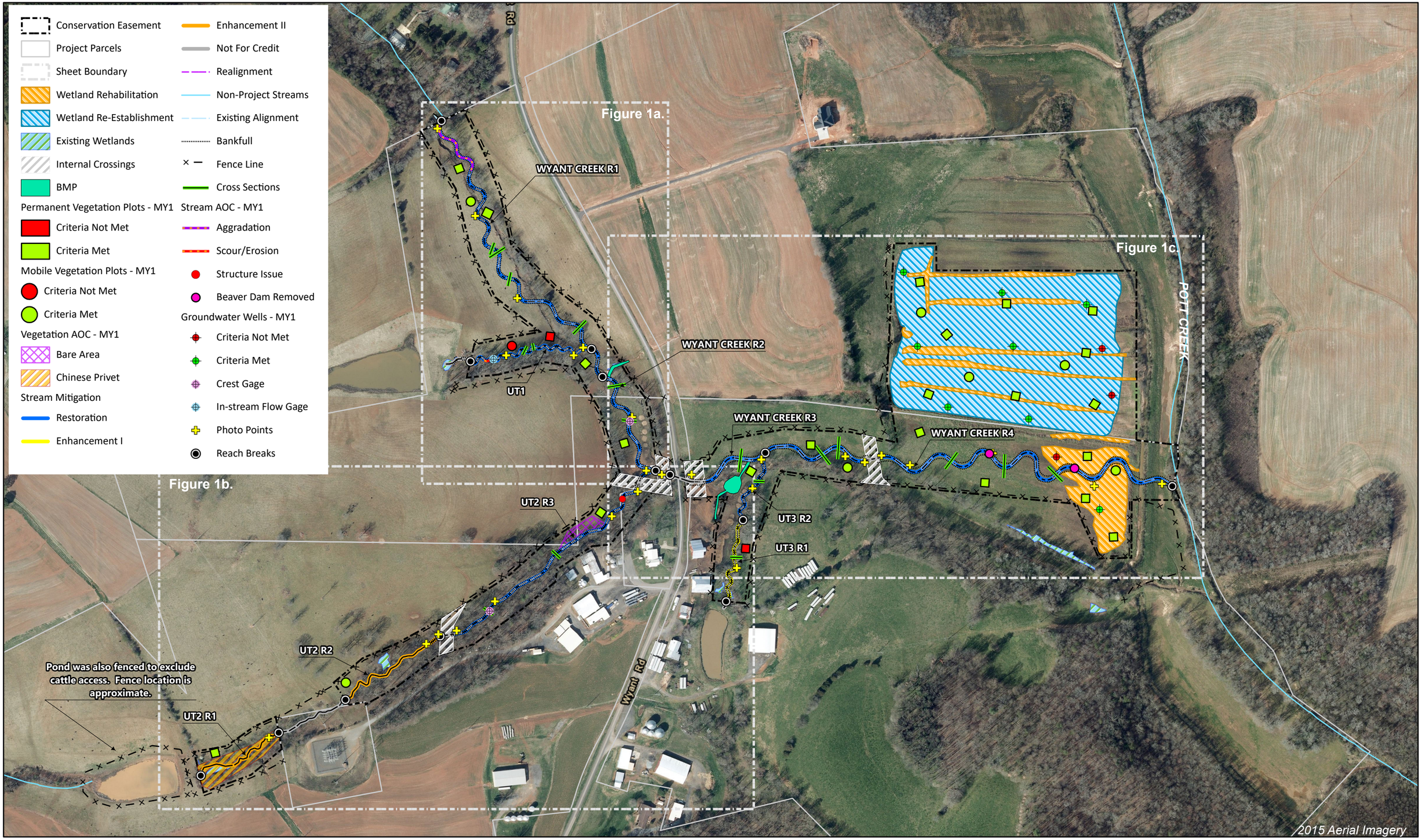
Figures 1a-c

Current Condition Plan View Maps

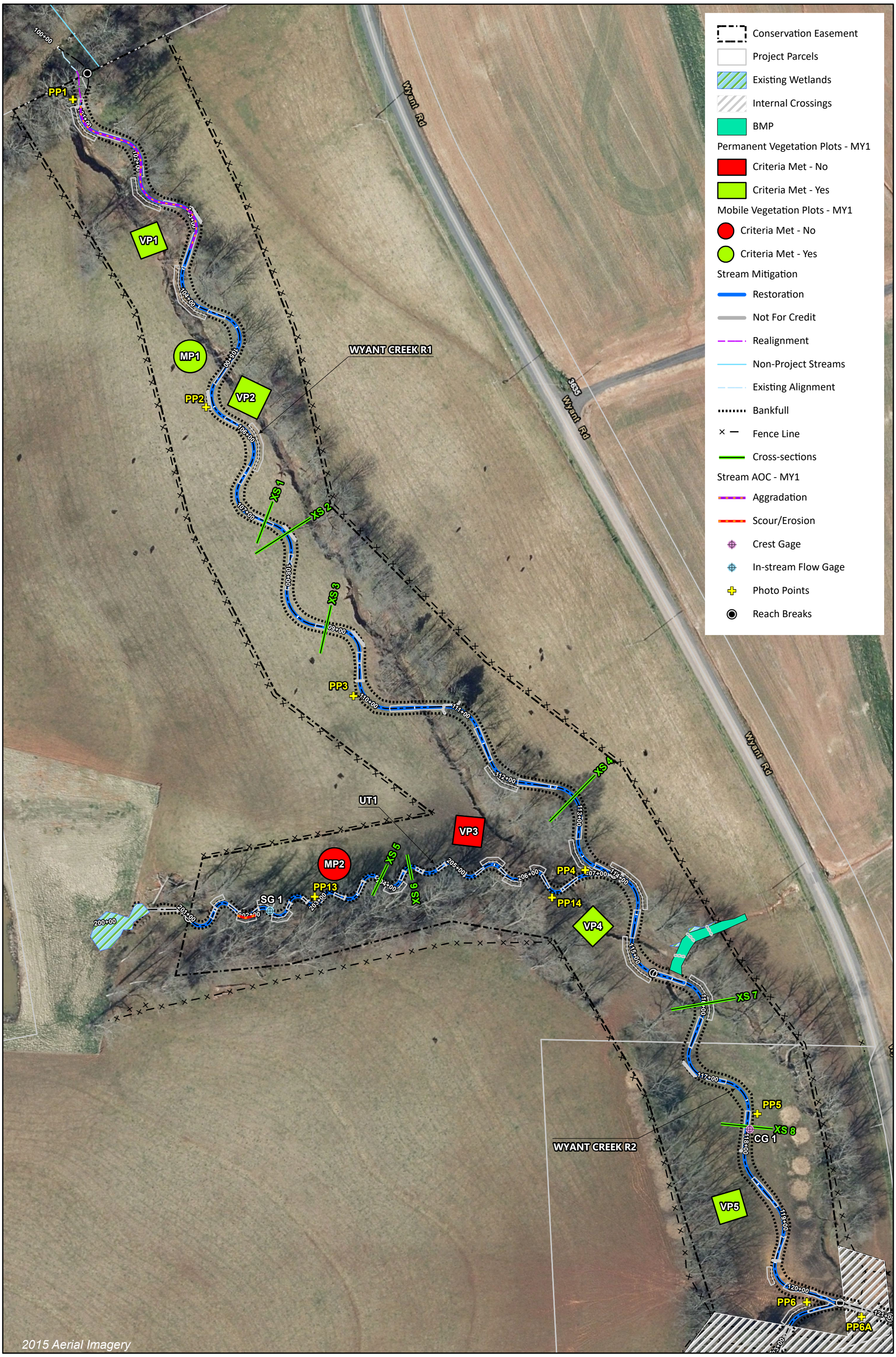


WILDLANDS ENGINEERING

0 162.5 325 650 975 Feet

N

Figure 1. Current Condition Plan View Key
Wyant Lands Mitigation Site
Catawba River Basin 03050102
(03050103 Expanded Service Area)
Monitoring Year 1 - 2021
Lincoln County, NC



WILDLANDS ENGINEERING

0 50 100 200 300 Feet

N

Figure 1a. Current Condition Plan View
Wyant Lands Mitigation Site
Catawba River Basin 03050102
(03050103 Expanded Service Area)
Monitoring Year 0 - 2021
Lincoln County, NC

Conservation Easement
Project Parcels
Existing Wetlands
Internal Crossings
BMP
Permanent Vegetation Plots- MY1
Criteria Met - No
Criteria Met - Yes
Mobile Vegetation Plots - MY1
Criteria Met - Yes
Vegetation AOC - MY1
Bare Area
Chinese Privet

Stream Mitigation
Restoration
Enhancement I
Enhancement II
Not For Credit
Bankfull
Fence Line
Cross-sections
Stream AOC - MY1
Structure Issue
Crest Gage
Photo Points
Reach Breaks

UT2 R3
UT2
UT2 R2
UT2 R1
Wyant Rd
Wyant Rd
PP6
PP6A
PP6B
PP18
PP18A
PP17
PP16
PP16A
PP16B
PP15
PP19
VP6
VP14
VP15
VP13
MP4
CG 2
XS 9
XS10
XS 12
UT3 R1
Pond was also fenced to exclude cattle access. Fence location is approximate.
2015 Aerial Imagery

WILDLANDS ENGINEERING

0 75 150 300 450 Feet

N

Figure 1b. Current Condition Plan View
Wyant Lands Mitigation Site
Catawba River Basin 03050102
(03050103 Expanded Service Area)
Monitoring Year 1 - 2021
Lincoln County, NC

Conservation Easement
Project Parcels
Wetland Re-Establishment
Wetland Rehabilitation
Internal Crossings
BMP
Permanent Vegetation Plots - MY1
Criteria Met - No
Criteria Met - Yes
Mobile Vegetation Plots - MY1
Criteria Met - Yes
Vegetation AOC - MY1
Bare Area
Stream Mitigation
Restoration
Enhancement I
Not For Credit
Non-Project Streams
Bankfull
Fence Line
Cross-sections
Groundwater Wells - MY1
Criteria Met - No
Criteria Met - Yes
Crest Gage
Structure Issue
Beaver Dam Removed
Photo Points
Reach Breaks

GWG 11
VP16
GWG 10
VP17
GWG 9
VP18
MP5
VP19
GWG 6
GWG 7
GWG 8
VP20
MP7
MP6
VP21
VP22
GWG 3
GWG 5
VP23
GWG 4
VP8
WYANT CREEK R4
GWG 2
VP10
MP8
PP11
PP12
VP11
GWG 1
VP12
POTT CREEK
WYANT CREEK
VP9
WYANT CREEK R2
WYANT CREEK R3
3635
CG 1
PP5
XS 8
VP5
XS 7
VP4
114+00
115+00
117+00
118+00
119+00
120+00
121+00
PP6
PP6A
PP6B
123+00
124+00
125+00
126+00
127+00
407+33
XS 11
PP7
VP6
XS 13
406+00
PP20
405+00
UT3 R2
UT3
404+00
UT3 R1
403+00
VP15
XS 12
PP19
VP7
XS 14
XS 15
PP8
MP3
PP8B
PP8A
129+00
130+00
131+00
PP9
132+00
133+00
135+00
PP 10
XS 16
XS 17
137+00
138+00
XS 18
139+00
140+00
141+00
142+00
143+00
144+00
145+00
145+65
PP18A
PP18
VP14
Wyant Rd
2015 Aerial Imagery

WILDLANDS ENGINEERING

0 75 150 300 450 Feet

N

Figure 1c. Current Condition Plan View
Wyant Lands Mitigation Site
Catawba River Basin 03050102
(03050103 Expanded Service Area)
Monitoring Year 1 - 2021
Lincoln County, NC

Appendix A

Visual Assessment Data

Table 4. Visual Stream Morphology Stability Assessment Table

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

Stream **Wyant 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	4,264
					Assessed Bank Length	8,528
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.	17	17		100%
	Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	29	29		100%

Assessment Date: 12/22/2021

Stream **UT1**

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	604
					Assessed Bank Length	1,208
Bank	**Surface Scour/ Bare Bank**	Bank lacking vegetative cover resulting simply from poor growth and/or surface scour.			21	98%
	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:	**21**	**98%**
Structure	**Grade Control**	Grade control structures exhibiting maintenance of grade across the sill.	15	15		100%
	Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	8	8		100%

Assessment Date: 12/22/2021

Table 4. Visual Stream Morphology Stability Assessment Table

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

Stream UT2

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	1,968
					Assessed Bank Length	3,936
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.	23	24		96%
	Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	10	10		100%

Assessment Date: 12/22/2021

Stream UT3

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	704
					Assessed Bank Length	1,408
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.	15	15		100%
	Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	9	9		100%

Assessment Date: 12/22/2021

Table 5. Vegetation Condition Assessment Table
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

Planted Acreage **37.80**

Vegetation Category	Definitions	Mapping Threshold (ac)	Combined Acreage	% of Planted Acreage
Bare Areas	Very limited cover of both woody and herbaceous material.	0.10	0.16	0.42%
Low Stem Density Areas*	Woody stem densities clearly below target levels based on current MY stem count criteria.	0.10	0.07	0.20%
		Total	**0.23**	**0.62%**
Areas of Poor Growth Rates	Planted areas where average height is not meeting current MY Performance Standard.	0.10	0	0%
		Cumulative Total	**0.23**	**0.62%**

Assessment Date: 12/22/2021

* Includes monitoring plots MP2, VP3, and VP15. Plot size equals 0.0247 acres.

Easement Acreage **41.30**

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.	0.10	0.61	1.48%
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	

Assessment Date: 12/22/2021

Stream Photographs

	
Wyant R1 – Photo Point 1 looking upstream *(11/11/2021)*	**Wyant R1** – Photo Point 1 looking downstream *(11/11/2021)*
	
Wyant R1 – Photo Point 2 looking upstream *(12/6/2021)*	**Wyant R1** – Photo Point 2 looking downstream *(12/6/2021)*
	
Wyant R1 – Photo Point 3 looking upstream *(12/6/2021)*	**Wyant R1** – Photo Point 3 looking downstream *(12/6/2021)*

	
Wyant R1 – Photo Point 4 looking upstream *(12/6/2021)*	**Wyant R1** – Photo Point 4 looking downstream *(12/6/2021)*
	
Wyant R2 – Photo Point 5 looking upstream *(12/6/2021)*	**Wyant R2** – Photo Point 5 looking downstream *(12/6/2021)*
	
Wyant R2 – Photo Point 6 looking upstream *(12/6/2021)*	**Wyant R2** – Photo Point 6 looking downstream *(12/6/2021)*

	
Wyant R3 – Photo Point 7 looking upstream *(11/11/2021)*	**Wyant R3** – Photo Point 7 looking downstream *(11/11/2021)*
	
Wyant R4 – Photo Point 8 looking upstream *(11/11/2021)*	**Wyant R4** – Photo Point 8 looking downstream *(11/11/2021)*
	
Wyant R4 – Photo Point 9 looking upstream *(11/11/2021)*	**Wyant R4** – Photo Point 9 looking downstream *(11/11/2021)*

	
Wyant R4 – Photo Point 10 looking upstream *(11/11/2021)*	**Wyant R4** – Photo Point 10 looking downstream *(11/11/2021)*
	
Wyant R4 – Photo Point 11 looking upstream *(11/11/2021)*	**Wyant R4** – Photo Point 11 looking downstream *(11/11/2021)*
	
Wyant R4 – Photo Point 12 looking upstream *(11/11/2021)*	**Wyant R4** – Photo Point 12 looking downstream *(11/11/2021)*

	
UT1 – Photo Point 13 looking upstream *(11/11/2021)*	**UT1** – Photo Point 13 looking downstream *(11/11/2021)*
	
UT1 – Photo Point 14 looking upstream *(12/6/2021)*	**UT1** – Photo Point 14 looking downstream *(12/6/2021)*
	
UT2 R1 – Photo Point 15 looking upstream *(12/6/2021)*	**UT2 R1** – Photo Point 15 looking downstream *(12/6/2021)*

	
UT2 R2 – Photo Point 16 looking upstream *(12/6/2021)*	**UT2 R2** – Photo Point 16 looking downstream *(12/6/2021)*
	
UT2 R3 – Photo Point 17 looking upstream *(11/11/2021)*	**UT2 R3** – Photo Point 17 looking downstream *(11/11/2021)*
	
UT2 R3 – Photo Point 18 looking upstream *(12/6/2021)*	**UT2 R3** – Photo Point 18 looking downstream *(12/6/2021)*

	
UT3 R1 – Photo Point 19 looking upstream *(11/11/2021)*	**UT3 R1** – Photo Point 19 looking downstream *(11/11/2021)*
	
UT3 R2 – Photo Point 20 looking upstream *(11/11/2021)*	**UT3 R2** – Photo Point 20 looking downstream *(11/11/2021)*

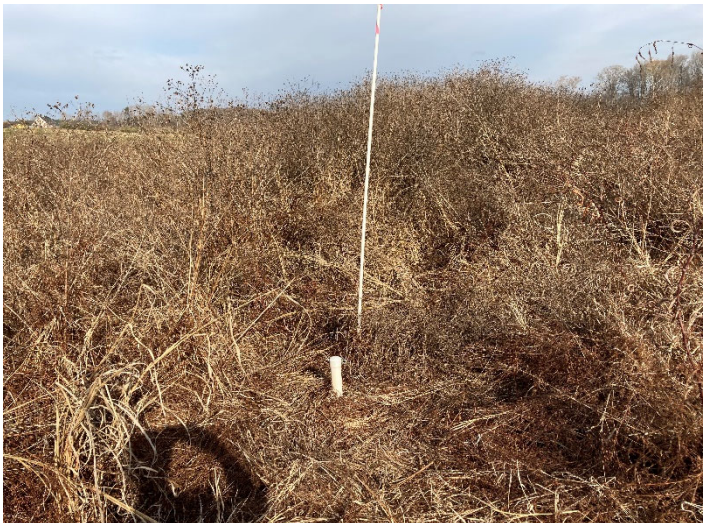
Culvert Photographs

	
Wyant R2 – Photo Point 6A downstream inlet *(10/21/2021)*	**Wyant R2** – Photo Point 6B upstream outlet *(10/21/2021)*
	
Wyant R3 – Photo Point 8A downstream inlet *(10/21/2021)*	**Wyant R3** – Photo Point 8B upstream outlet *(10/21/2021)*
	
UT2 R2 – Photo Point 16A downstream inlet *(10/21/2021)*	**UT2 R2**– Photo Point 16B upstream outlet *(10/21/2021)*

UT2 R3– Photo Point 18A crossing *(1/20/2022)*

Groundwater Gage Photographs

Groundwater Gage 1 - *(12/6/2021)*



Groundwater Gage 2 - *(12/6/2021)*

Groundwater Gage 3 - *(12/6/2021)*

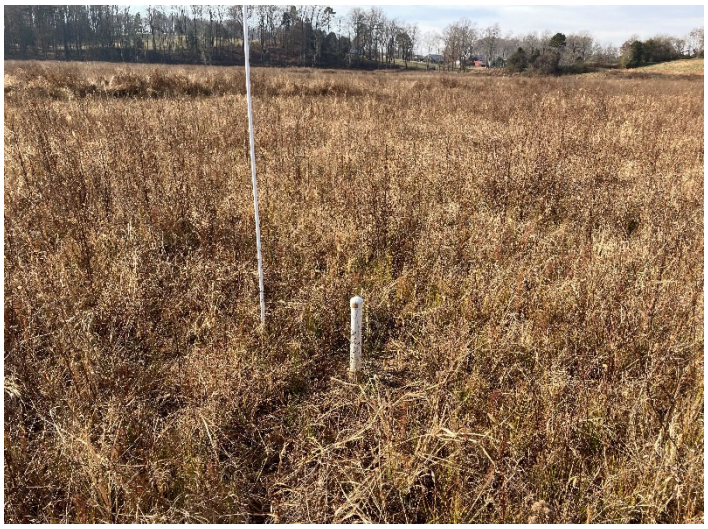
Groundwater Gage 4 - *(12/6/2021)*

Groundwater Gage 5 - *(12/6/2021)*

Groundwater Gage 6 - *(12/6/2021)*

Groundwater Gage 7 - *(12/6/2021)*

Groundwater Gage 8 - *(12/6/2021)*

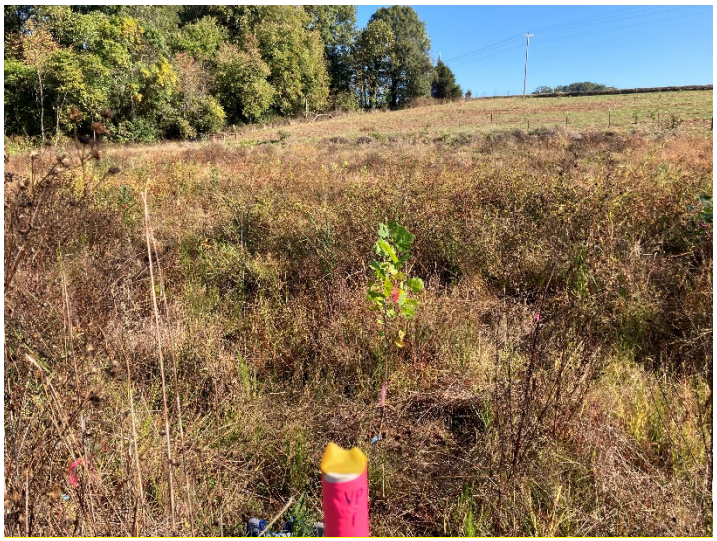


Groundwater Gage 9 - *(12/6/2021)*

Groundwater Gage 10 - *(12/6/2021)*

Groundwater Gage 11 - *(12/6/2021)*

Vegetation Plot Photographs



PERMANENT VEGETATION PLOT 1 *(10/21/2021)*

PERMANENT VEGETATION PLOT 2 *(10/21/2021)*

PERMANENT VEGETATION PLOT 3 *(10/21/2021)*

PERMANENT VEGETATION PLOT 4 *(10/21/2021)*

PERMANENT VEGETATION PLOT 5 *(10/21/2021)*

PERMANET VEGETATION PLOT 6 *(10/21/2021)*

PERMANENT VEGETATION PLOT 7 *(10/21/2021)*

PERMANENT VEGETATION PLOT 8 *(10/21/2021)*

PERMANENT VEGETATION PLOT 9 *(10/20/2021)*

PERMANENT VEGETATION PLOT 10 *(10/21/2021)*

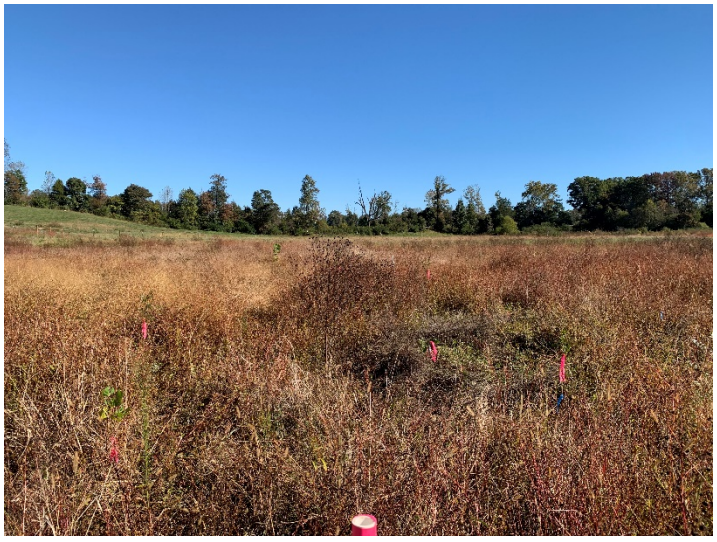
PERMANENT VEGETATION PLOT 11 *(10/20/2021)*

PERMANENT VEGETATION PLOT 12 *(10/20/2021)*

PERMANENT VEGETATION PLOT 13 *(10/21/2021)*

PERMANET VEGETATION PLOT 14 *(10/21/2021)*

PERMANENT VEGETATION PLOT 15 *(10/21/2021)*



PERMANENT VEGETATION PLOT 16 *(10/20/2021)*

PERMANENT VEGETATION PLOT 17 *(10/20/2021)*

PERMANENT VEGETATION PLOT 18 *(10/20/2021)*

PERMANENT VEGETATION PLOT 19 *(10/20/2021)*

PERMANENT VEGETATION PLOT 20 *(10/20/2021)*

PERMANENT VEGETATION PLOT 21 *(10/21/2021)*

PERMANET VEGETATION PLOT 22 *(10/21/2021)*

PERMANENT VEGETATION PLOT 23 *(10/21/2021)*

MOBILE VEGETATION PLOT 1 *(10/21/2021)*

MOBILE VEGETATION PLOT 2 *(10/21/2021)*

MOBILE VEGETATION PLOT 3 *(10/21/2021)*

MOBILE VEGETATION PLOT 4 *(10/21/2021)*

MOBILE VEGETATION PLOT 5 *(10/20/2021)*

MOBILE VEGETATION PLOT 6 *(10/21/2021)*

	
MOBILE VEGETATION PLOT 7 *(10/20/2021)*	**MOBILE VEGETATION PLOT 8** *(10/20/2021)*

Areas of Concern Photographs

	
Wyant UT2 R3 – Bare Area *(12/6/2021)*	**Wyant UT2 R3** – Structure Issue 322+00 *(1/5/2022)*
	
Wyant Creek R4 – Removed Beaver Dam 136+00 *(1/5/2022)*	**Wyant Creek R4** – Removed Beaver Dam 141+00 *(1/5/2022)*
	
UT2 R1 – Chinese Privet *(9/28/2021)*	**Wyant Creek R1**– Aggradation 102+25 *(12/22/2021)*

UT1 – Bank Erosion 202+00 (12/22/2021)

Wyant Road Culvert – Erosion mitigation through spreading of straw and seed (*1/25/2022*)

Appendix B

Vegetation Plot Data

Table 6. Vegetation Plot Data
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

Planted Acreage	37.8
Date of Initial Plant	2021-04-04
Date(s) of Supplemental Plant(s)	N/A
Date(s) Mowing	N/A
Date of Current Survey	2021-10-18
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	
					Planted	Total	Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	Betula nigra	river birch	Tree	FACW	1	1	1	1		
	Carpinus caroliniana	American hornbeam	Tree	FAC					1	1
	Cephalanthus occidentalis	common buttonbush	Shrub	OBL						
	Diospyros virginiana	common persimmon	Tree	FAC	2	2	1	1		
	Fraxinus pennsylvanica	green ash	Tree	FACW	1	1	1	1		
	Liriodendron tulipifera	tuliptree	Tree	FACU					1	1
	Platanus occidentalis	American sycamore	Tree	FACW	2	2	2	2	2	2
	Populus deltoides	eastern cottonwood	Tree	FAC	1	1	1	1		
	Quercus michauxii	swamp chestnut oak	Tree	FACW	2	2	1	1		
	Quercus nigra	water oak	Tree	FAC	1	1	1	1		
	Quercus phellos	willow oak	Tree	FAC	1	1			1	1
	Sambucus canadensis	American black elderberry	Tree							
Sum	Performance Standard				11	11	8	8	5	5
Mitigation Plan Performance Standard	Current Year Stem Count					11		8		5
	Stems/Acre					445		324		202
	Species Count					8		7		4
	Dominant Species Composition (%)					18		25		40
	Average Plot Height (ft.)					3		2		3
	% Invasives					0		0		0
Post Mitigation Plan Performance Standard	Current Year Stem Count					11		8		5
	Stems/Acre					445		324		202
	Species Count					8		7		4
	Dominant Species Composition (%)					18		25		40
	Average Plot Height (ft.)					3		2		3
	% Invasives					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 6. Vegetation Plot Data
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

Planted Acreage	37.8
Date of Initial Plant	2021-04-04
Date(s) of Supplemental Plant(s)	N/A
Date(s) Mowing	N/A
Date of Current Survey	2021-10-18
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Veg Plot 4 F		Veg Plot 5 F		Veg Plot 6 F		Veg Plot 7 F	
			Planted	Total	Planted	Total	Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	Betula nigra	river birch			1	1	2	2		
	Carpinus caroliniana	American hornbeam					1	1		
	Cephalanthus occidentalis	common buttonbush								
	Diospyros virginiana	common persimmon	2	2	1	1	1	1	2	2
	Fraxinus pennsylvanica	green ash					2	2		
	Liriodendron tulipifera	tuliptree					1	1	1	1
	Platanus occidentalis	American sycamore	2	2	3	3	2	2	3	3
	Populus deltoides	eastern cottonwood	2	2	2	2	1	1	1	1
	Quercus michauxii	swamp chestnut oak					1	1	2	2
	Quercus nigra	water oak	2	2	1	1	1	1		
	Quercus phellos	willow oak	1	1			1	1	3	3
	Sambucus canadensis	American black elderberry								
Sum	Performance Standard		9	9	8	8	13	13	12	12
Mitigation Plan Performance Standard	Current Year Stem Count			9		8		13		12
	Stems/Acre			364		324		526		486
	Species Count			5		5		10		6
	Dominant Species Composition (%)			22		38		15		25
	Average Plot Height (ft.)			3		4		3		2
	% Invasives			0		0		0		0
Post Mitigation Plan Performance Standard	Current Year Stem Count			9		8		13		12
	Stems/Acre			364		324		526		486
	Species Count			5		5		10		6
	Dominant Species Composition (%)			22		38		15		25
	Average Plot Height (ft.)			3		4		3		2
	% Invasives			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.
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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 6. Vegetation Plot Data
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

Planted Acreage	37.8
Date of Initial Plant	2021-04-04
Date(s) of Supplemental Plant(s)	N/A
Date(s) Mowing	N/A
Date of Current Survey	2021-10-18
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Veg Plot 8 F		Veg Plot 9 F		Veg Plot 10 F		Veg Plot 11 F	
			Planted	Total	Planted	Total	Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	Betula nigra	river birch	2	2	1	1	1	1	3	3
	Carpinus caroliniana	American hornbeam			1	1				
	Cephalanthus occidentalis	common buttonbush	3	3			1	1	2	2
	Diospyros virginiana	common persimmon			1	1				
	Fraxinus pennsylvanica	green ash								
	Liriodendron tulipifera	tuliptree			2	2				
	Platanus occidentalis	American sycamore	2	2	3	3	2	2	2	2
	Populus deltoides	eastern cottonwood			1	1				
	Quercus michauxii	swamp chestnut oak			1	1	6	6	4	4
	Quercus nigra	water oak			2	2				
	Quercus phellos	willow oak	1	1					2	2
	Sambucus canadensis	American black elderberry	2	2			1	1	2	2
Sum	Performance Standard		10	10	12	12	11	11	15	15
Mitigation Plan Performance Standard	Current Year Stem Count			10		12		11		15
	Stems/Acre			405		486		445		607
	Species Count			5		8		5		6
	Dominant Species Composition (%)			30		25		55		27
	Average Plot Height (ft.)			3		3		2		3
	% Invasives			0		0		0		0
Post Mitigation Plan Performance Standard	Current Year Stem Count			10		12		11		15
	Stems/Acre			405		486		445		607
	Species Count			5		8		5		6
	Dominant Species Composition (%)			30		25		55		27
	Average Plot Height (ft.)			3		3		2		3
	% Invasives			0		0		0		0

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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).
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Table 6. Vegetation Plot Data
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

Planted Acreage	37.8
Date of Initial Plant	2021-04-04
Date(s) of Supplemental Plant(s)	N/A
Date(s) Mowing	N/A
Date of Current Survey	2021-10-18
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Veg Plot 12 F		Veg Plot 13 F		Veg Plot 14 F		Veg Plot 15 F	
			Planted	Total	Planted	Total	Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	Betula nigra	river birch	2	2	1	1	2	2		
	Carpinus caroliniana	American hornbeam					1	1		
	Cephalanthus occidentalis	common buttonbush	2	2						
	Diospyros virginiana	common persimmon			4	4	1	1		
	Fraxinus pennsylvanica	green ash					2	2	2	2
	Liriodendron tulipifera	tuliptree					1	1		
	Platanus occidentalis	American sycamore	3	3	3	3	2	2	2	2
	Populus deltoides	eastern cottonwood			2	2	1	1	1	1
	Quercus michauxii	swamp chestnut oak	1	1	2	2	3	3		
	Quercus nigra	water oak					1	1		
	Quercus phellos	willow oak	1	1						
	Sambucus canadensis	American black elderberry	1	1						
Sum	Performance Standard		10	10	12	12	14	14	5	5
Mitigation Plan Performance Standard	Current Year Stem Count			10		12		14		5
	Stems/Acre			405		486		567		202
	Species Count			6		5		9		3
	Dominant Species Composition (%)			30		33		21		40
	Average Plot Height (ft.)			3		4		2		3
	% Invasives			0		0		0		0
Post Mitigation Plan Performance Standard	Current Year Stem Count			10		12		14		5
	Stems/Acre			405		486		567		202
	Species Count			6		5		9		3
	Dominant Species Composition (%)			30		33		21		40
	Average Plot Height (ft.)			3		4		2		3
	% Invasives			0		0		0		0

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Table 6. Vegetation Plot Data
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

Planted Acreage	37.8
Date of Initial Plant	2021-04-04
Date(s) of Supplemental Plant(s)	N/A
Date(s) Mowing	N/A
Date of Current Survey	2021-10-18
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Veg Plot 16 F		Veg Plot 17 F		Veg Plot 18 F		Veg Plot 19 F	
			Planted	Total	Planted	Total	Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	Betula nigra	river birch	2	2	2	2	1	1	3	3
	Carpinus caroliniana	American hornbeam								
	Cephalanthus occidentalis	common buttonbush	2	2	2	2	2	2	1	1
	Diospyros virginiana	common persimmon								
	Fraxinus pennsylvanica	green ash								
	Liriodendron tulipifera	tuliptree								
	Platanus occidentalis	American sycamore	2	2	1	1	1	1	1	1
	Populus deltoides	eastern cottonwood								
	Quercus michauxii	swamp chestnut oak	2	2	1	1	3	3	2	2
	Quercus nigra	water oak								
	Quercus phellos	willow oak	2	2	1	1	2	2	2	2
	Sambucus canadensis	American black elderberry			2	2	2	2	1	1
Sum	Performance Standard		10	10	9	9	11	11	10	10
Mitigation Plan Performance Standard	Current Year Stem Count			10		9		11		10
	Stems/Acre			405		364		445		405
	Species Count			5		6		6		6
	Dominant Species Composition (%)			20		22		27		30
	Average Plot Height (ft.)			3		2		2		2
	% Invasives			0		0		0		0
Post Mitigation Plan Performance Standard	Current Year Stem Count			10		9		11		10
	Stems/Acre			405		364		445		405
	Species Count			5		6		6		6
	Dominant Species Composition (%)			20		22		27		30
	Average Plot Height (ft.)			3		2		2		2
	% Invasives			0		0		0		0

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Table 6. Vegetation Plot Data
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

Planted Acreage	37.8
Date of Initial Plant	2021-04-04
Date(s) of Supplemental Plant(s)	N/A
Date(s) Mowing	N/A
Date of Current Survey	2021-10-18
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Veg Plot 20 F		Veg Plot 21 F		Veg Plot 22 F		Veg Plot 23 F	
			Planted	Total	Planted	Total	Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	Betula nigra	river birch	1	1	2	2	3	3	2	2
	Carpinus caroliniana	American hornbeam								
	Cephalanthus occidentalis	common buttonbush	1	1	2	2	1	1	3	3
	Diospyros virginiana	common persimmon								
	Fraxinus pennsylvanica	green ash								
	Liriodendron tulipifera	tuliptree								
	Platanus occidentalis	American sycamore	4	4	2	2	1	1	3	3
	Populus deltoides	eastern cottonwood								
	Quercus michauxii	swamp chestnut oak	2	2	1	1	1	1	1	1
	Quercus nigra	water oak								
	Quercus phellos	willow oak	1	1	2	2	4	4	3	3
	Sambucus canadensis	American black elderberry	2	2	1	1	1	1	1	1
Sum	Performance Standard		11	11	10	10	11	11	13	13
Mitigation Plan Performance Standard	Current Year Stem Count			11		10		11		13
	Stems/Acre			445		405		445		526
	Species Count			6		6		6		6
	Dominant Species Composition (%)			36		20		36		23
	Average Plot Height (ft.)			2		2		3		3
	% Invasives			0		0		0		0
Post Mitigation Plan Performance Standard	Current Year Stem Count			11		10		11		13
	Stems/Acre			445		405		445		526
	Species Count			6		6		6		6
	Dominant Species Composition (%)			36		20		36		23
	Average Plot Height (ft.)			2		2		3		3
	% Invasives			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.
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Table 6. Vegetation Plot Data
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

Planted Acreage	37.8
Date of Initial Plant	2021-04-04
Date(s) of Supplemental Plant(s)	N/A
Date(s) Mowing	N/A
Date of Current Survey	2021-10-18
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Veg Plot 1 R	Veg Plot 2 R	Veg Plot 3 R	Veg Plot 4 R	Veg Plot 5 R	Veg Plot 6 R	Veg Plot 7 R	Veg Plot 8 R
			Total	Total	Total	Total	Total	Total	Total	Total
Species Included in Approved Mitigation Plan	Betula nigra	river birch	1	2	2	4	2	2	2	2
	Carpinus caroliniana	American hornbeam								
	Cephalanthus occidentalis	common buttonbush								2
	Diospyros virginiana	common persimmon								
	Fraxinus pennsylvanica	green ash		1	2	1				
	Liriodendron tulipifera	tuliptree	1							
	Platanus occidentalis	American sycamore	1	2	2	2	2	3	4	2
	Populus deltoides	eastern cottonwood	3	1	2					
	Quercus michauxii	swamp chestnut oak	1	1	1	1	4	3	2	1
	Quercus nigra	water oak								
	Quercus phellos	willow oak	1					1	1	1
	Sambucus canadensis	American black elderberry						3		
Sum	Performance Standard		8	7	9	8	8	12	9	8
Mitigation Plan Performance Standard	Current Year Stem Count		8	7	9	8	8	12	9	8
	Stems/Acre		324	283	364	324	324	486	364	324
	Species Count		6	5	5	4	3	5	4	5
	Dominant Species Composition (%)		38	29	22	50	50	25	44	25
	Average Plot Height (ft.)		3	3	2	2	3	2	2	3
	% Invasives		0	0	0	0	0	0	0	0
Post Mitigation Plan Performance Standard	Current Year Stem Count		8	7	9	8	8	12	9	8
	Stems/Acre		324	283	364	324	324	486	364	324
	Species Count		6	5	5	4	3	5	4	5
	Dominant Species Composition (%)		38	29	22	50	50	25	44	25
	Average Plot Height (ft.)		3	3	2	2	3	2	2	3
	% 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).
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Table 7. Vegetation Plot Data
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

Vegetation Performance Standards Summary Table												
	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												
Monitoring Year 1	445	3	8	0	324	2	7	0	202	3	4	0
Monitoring Year 0	607	2	10	0	526	3	9	0	526	3	7	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												
Monitoring Year 1	364	3	5	0	324	4	5	0	526	3	10	0
Monitoring Year 0	486	2	7	0	526	2	8	0	567	3	10	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												
Monitoring Year 1	486	2	6	0	405	3	5	0	486	3	8	0
Monitoring Year 0	526	2	7	0	526	2	6	0	567	2	9	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												
Monitoring Year 1	445	2	5	0	607	3	6	0	405	3	6	0
Monitoring Year 0	526	2	5	0	607	2	6	0	607	2	6	0

*After MY1, each monitoring year represents a different plot for the random vegetation plot "groups". Random plots are denoted with an R, and fixed plots with an F.

Table 7. Vegetation Plot Data
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

	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												
Monitoring Year 1	486	4	5	0	567	2	9	0	202	3	3	0
Monitoring Year 0	688	2	6	0	607	3	10	0	486	2	8	0
	Veg Plot 16 F				Veg Plot 17 F				Veg Plot 18 F			
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2												
Monitoring Year 1	405	3	5	0	364	2	6	0	445	2	6	0
Monitoring Year 0	526	2	6	0	486	2	6	0	526	2	6	0
	Veg Plot 19 F				Veg Plot 20 F				Veg Plot 21 F			
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2												
Monitoring Year 1	405	2	6	0	445	2	6	0	405	2	6	0
Monitoring Year 0	486	2	6	0	445	2	6	0	526	2	6	0
	Veg Plot 22 F				Veg Plot 23 F				Veg Plot Group 1 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												
Monitoring Year 1	445	3	6	0	526	3	6	0	324	3	6	0
Monitoring Year 0	486	2	6	0	526	2	6	0	486	2	6	0

*After MY1, each monitoring year represents a different plot for the random vegetation plot "groups". Random plots are denoted with an R, and fixed plots with an F.

Table 7. Vegetation Plot Data
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

	Veg Plot Group 2 R				Veg Plot Group 3 R				Veg Plot Group 4 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												
Monitoring Year 1	283	3	5	0	364	2	5	0	324	2	4	0
Monitoring Year 0	526	2	8	0	607	2	9	0	567	2	6	0
	Veg Plot Group 5 R				Veg Plot Group 6 R				Veg Plot Group 7 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												
Monitoring Year 1	324	3	3	0	486	2	5	0	364	2	4	0
Monitoring Year 0	526	2	6	0	445	3	7	0	486	2	4	0
	Veg Plot Group 8 R											
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives								
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2												
Monitoring Year 1	324	3	5	0								
Monitoring Year 0	526	2	6	0								

*After MY1, each monitoring year represents a different plot for the random vegetation plot "groups". Random plots are denoted with an R, and fixed plots with an F.

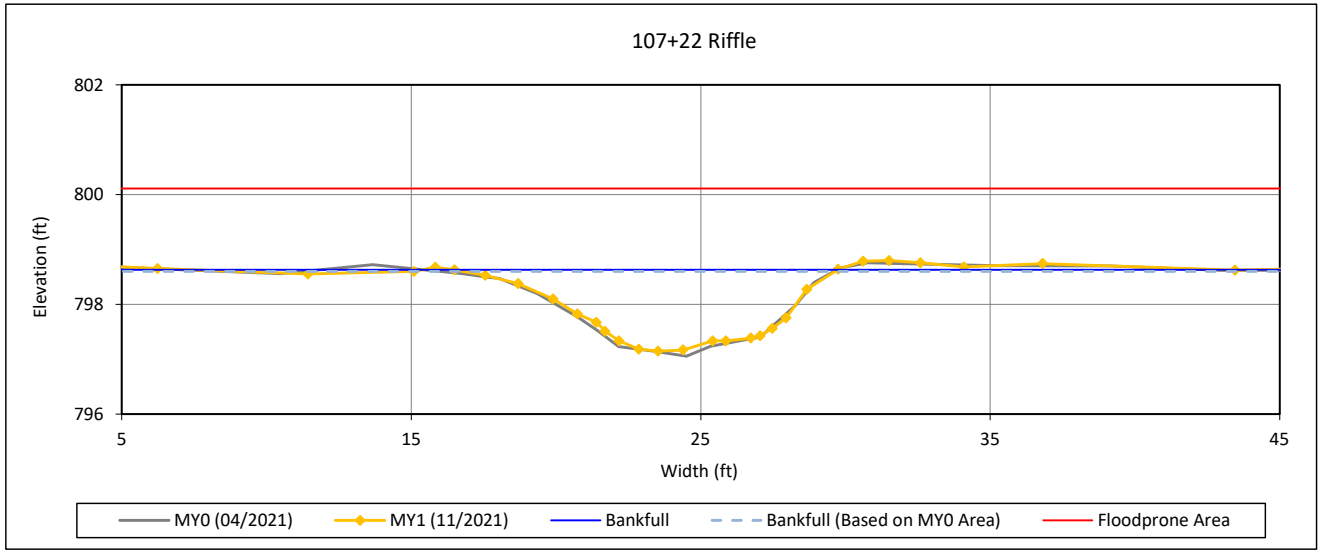
Appendix C

Stream Geomorphology Data

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

Cross-Section 1-Wyant Creek R1



Bankfull Dimensions	
11.0	x-section area (ft.sq.)
13.2	width (ft)
0.8	mean depth (ft)
1.5	max depth (ft)
13.7	wetted perimeter (ft)
0.8	hydraulic radius (ft)
15.9	width-depth ratio
50.6	W flood prone area (ft)
3.8	entrenchment ratio
1.0	low bank height ratio

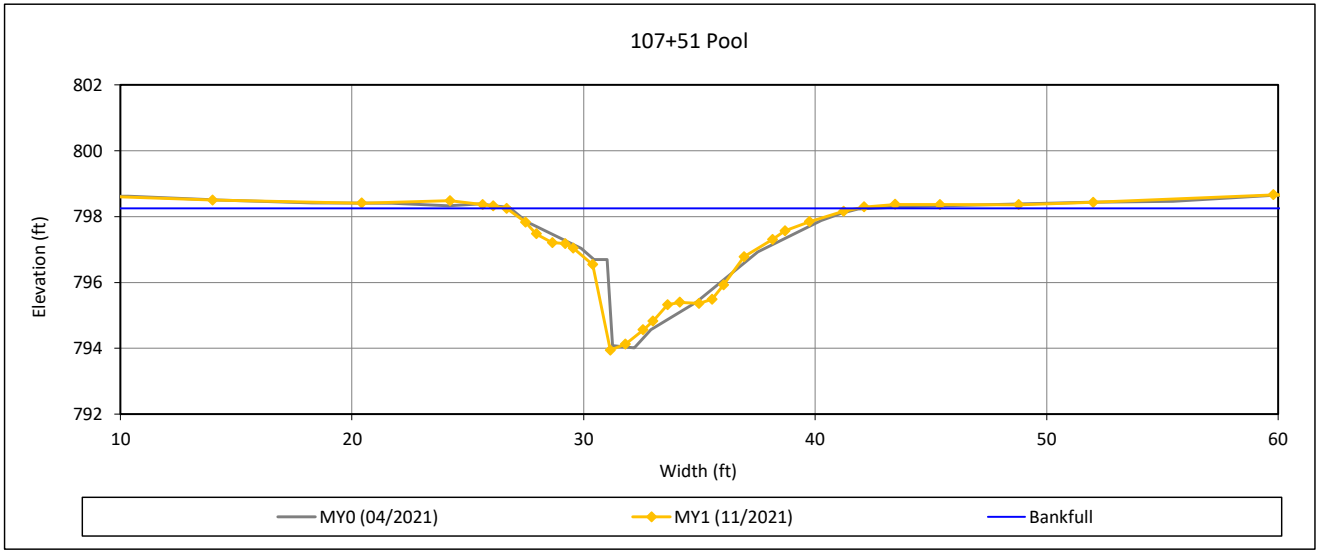
Survey Date: 11/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

Cross-Section 2-Wyant Creek R1



Bankfull Dimensions	
26.2	x-section area (ft.sq.)
15.1	width (ft)
1.7	mean depth (ft)
4.3	max depth (ft)
18.7	wetted perimeter (ft)
1.4	hydraulic radius (ft)
8.8	width-depth ratio

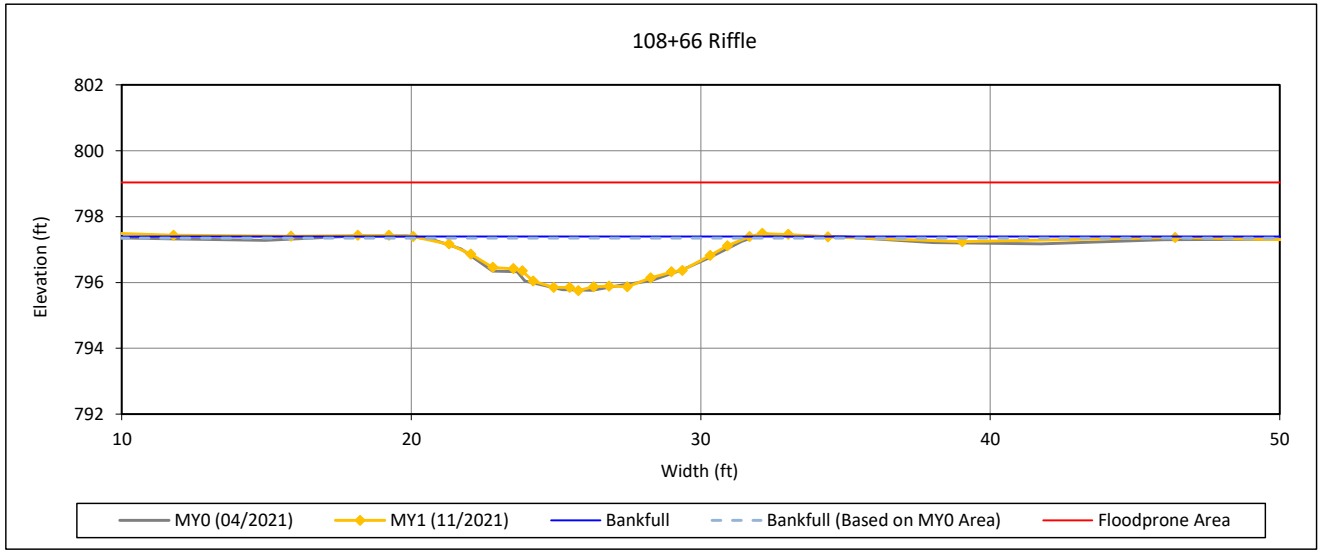
Survey Date: 11/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

Cross-Section 3-Wyant Creek R1



Bankfull Dimensions	
10.8	x-section area (ft.sq.)
11.6	width (ft)
0.9	mean depth (ft)
1.6	max depth (ft)
12.2	wetted perimeter (ft)
0.9	hydraulic radius (ft)
12.4	width-depth ratio
55.9	W flood prone area (ft)
4.8	entrenchment ratio
1.0	low bank height ratio

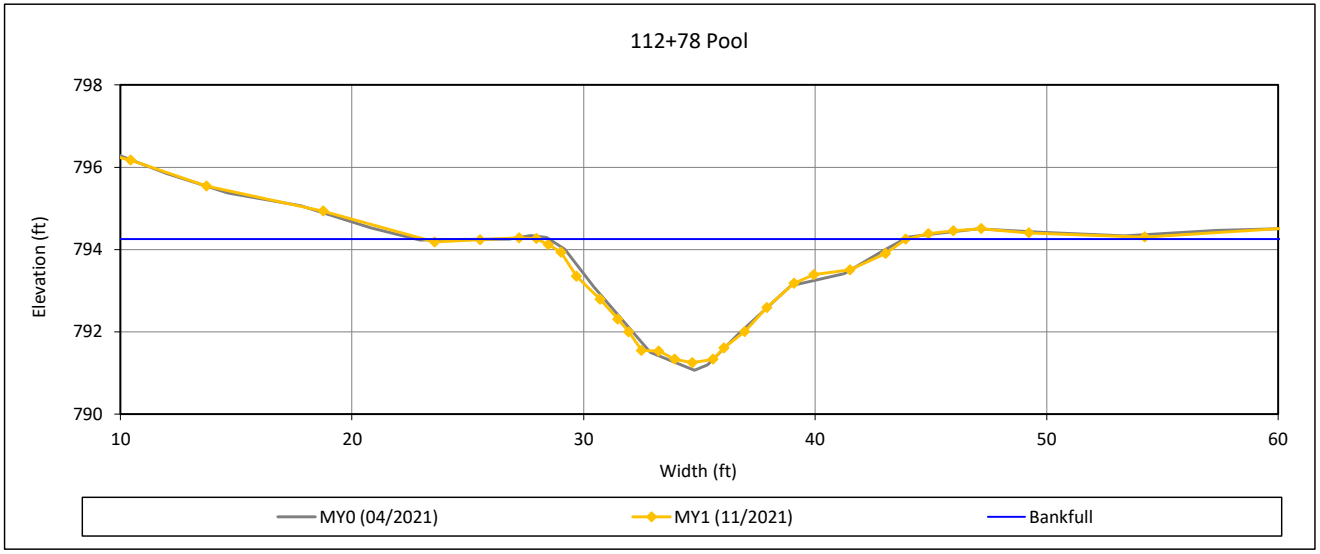
Survey Date: 11/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

Cross-Section 4-Wyant Creek R1



Bankfull Dimensions	
24.3	x-section area (ft.sq.)
15.9	width (ft)
1.5	mean depth (ft)
3.0	max depth (ft)
17.3	wetted perimeter (ft)
1.4	hydraulic radius (ft)
10.4	width-depth ratio

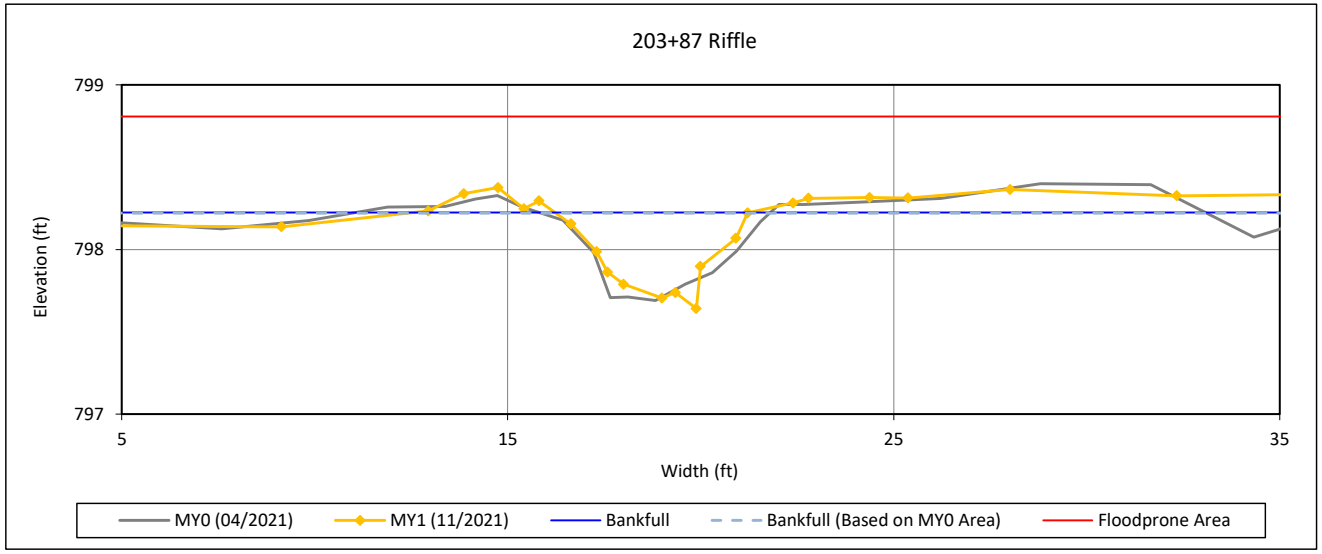
Survey Date: 11/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

Cross-Section 5 - UT1



Bankfull Dimensions	
1.6	x-section area (ft.sq.)
5.0	width (ft)
0.3	mean depth (ft)
0.6	max depth (ft)
5.3	wetted perimeter (ft)
0.3	hydraulic radius (ft)
15.5	width-depth ratio
39.1	W flood prone area (ft)
7.9	entrenchment ratio
1.0	low bank height ratio

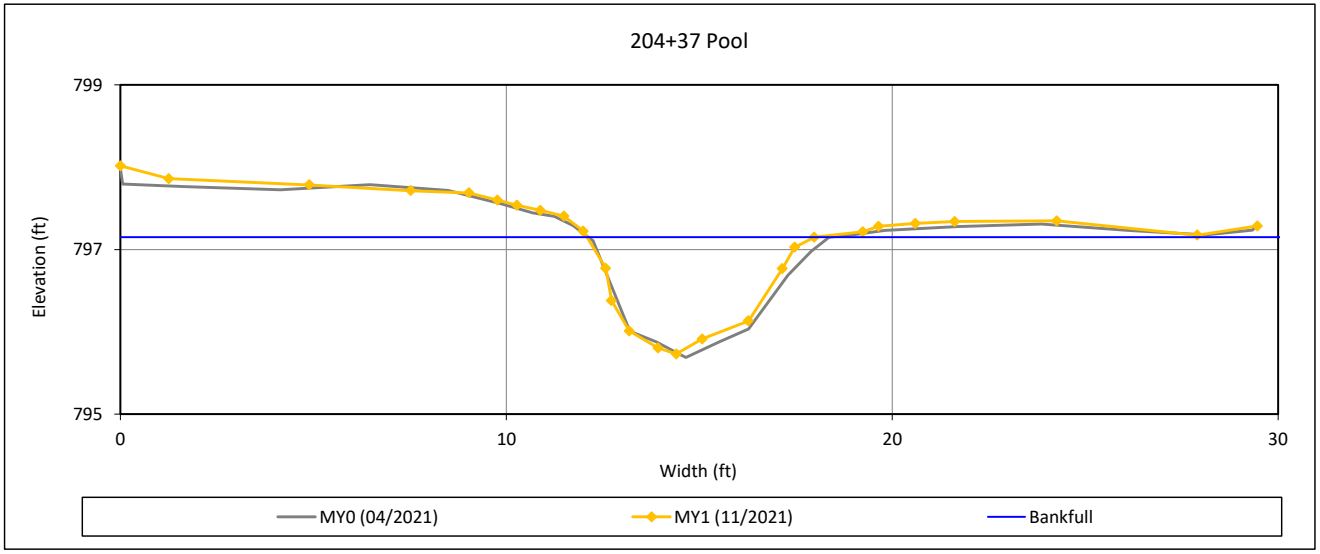
Survey Date: 11/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

Cross-Section 6 - UT1



Bankfull Dimensions	
5.2	x-section area (ft.sq.)
5.9	width (ft)
0.9	mean depth (ft)
1.4	max depth (ft)
6.8	wetted perimeter (ft)
0.8	hydraulic radius (ft)
6.7	width-depth ratio

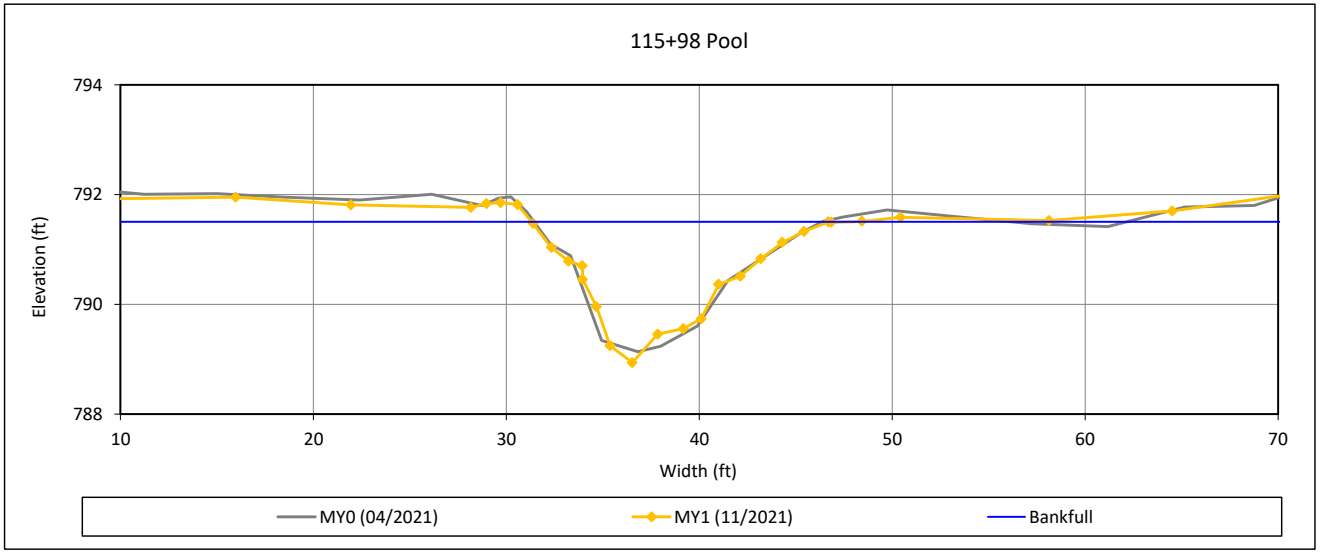
Survey Date: 11/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

Cross-Section 7 - Wyant Creek R2



Bankfull Dimensions	
18.1	x-section area (ft.sq.)
15.4	width (ft)
1.2	mean depth (ft)
2.6	max depth (ft)
16.7	wetted perimeter (ft)
1.1	hydraulic radius (ft)
13.0	width-depth ratio

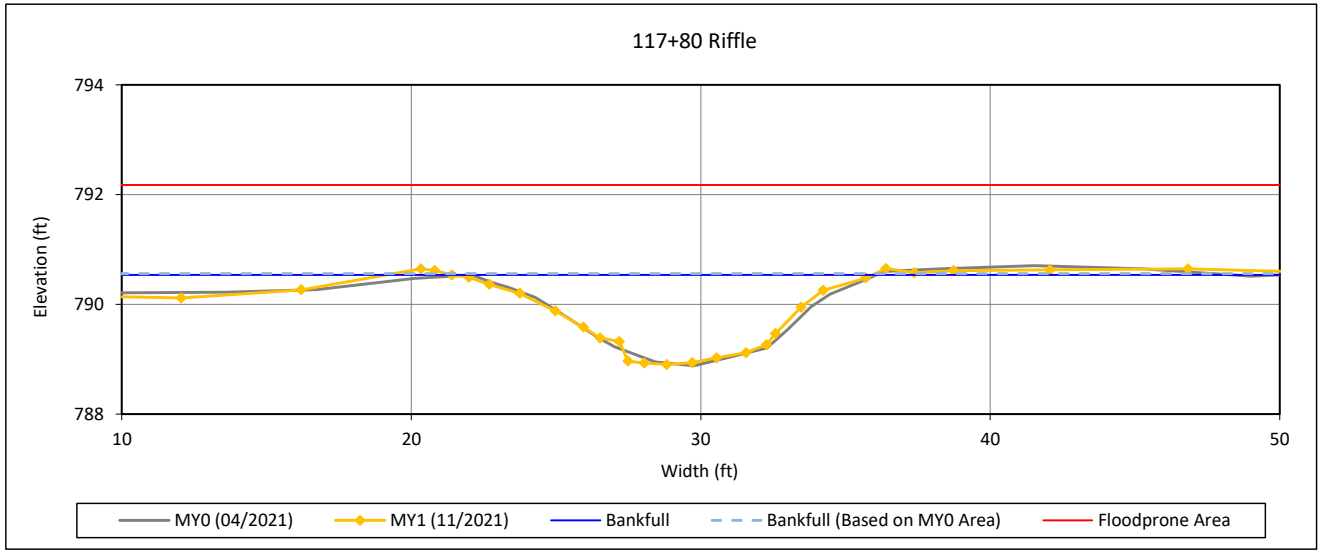
Survey Date: 11/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

Cross-Section 8 - Wyant Creek R2



Bankfull Dimensions	
12.6	x-section area (ft.sq.)
14.5	width (ft)
0.9	mean depth (ft)
1.6	max depth (ft)
15.1	wetted perimeter (ft)
0.8	hydraulic radius (ft)
16.8	width-depth ratio
59.1	W flood prone area (ft)
4.1	entrenchment ratio
1.0	low bank height ratio

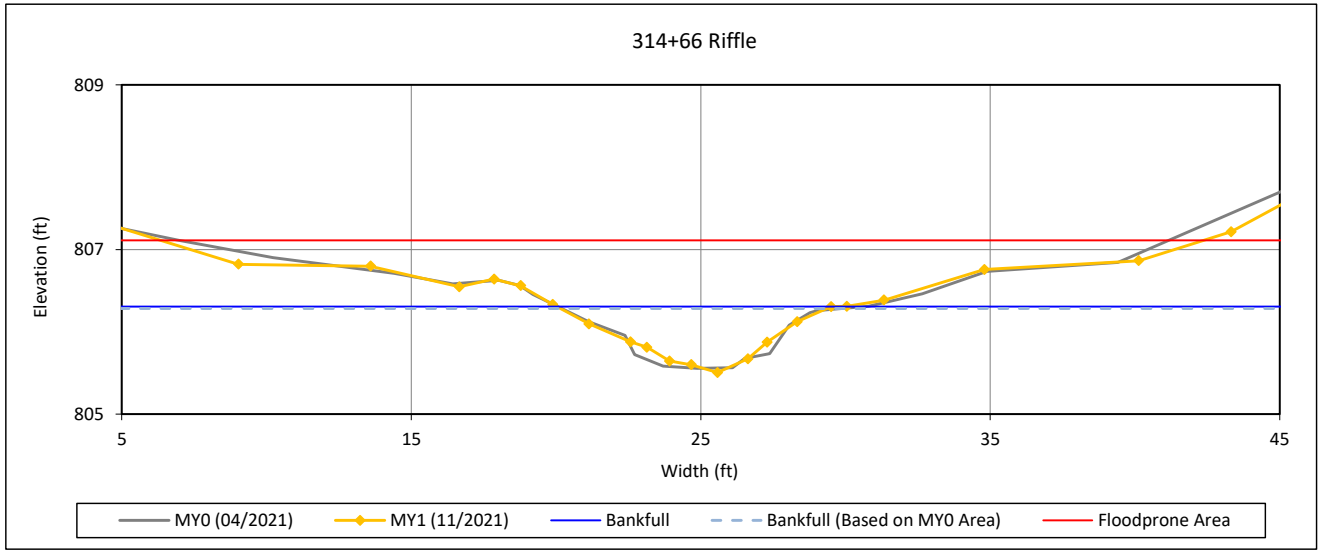
Survey Date: 11/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

Cross-Section 9 - UT2 R3



Bankfull Dimensions	
4.0	x-section area (ft.sq.)
9.5	width (ft)
0.4	mean depth (ft)
0.8	max depth (ft)
9.6	wetted perimeter (ft)
0.4	hydraulic radius (ft)
22.3	width-depth ratio
36.0	W flood prone area (ft)
3.8	entrenchment ratio
1.0	low bank height ratio

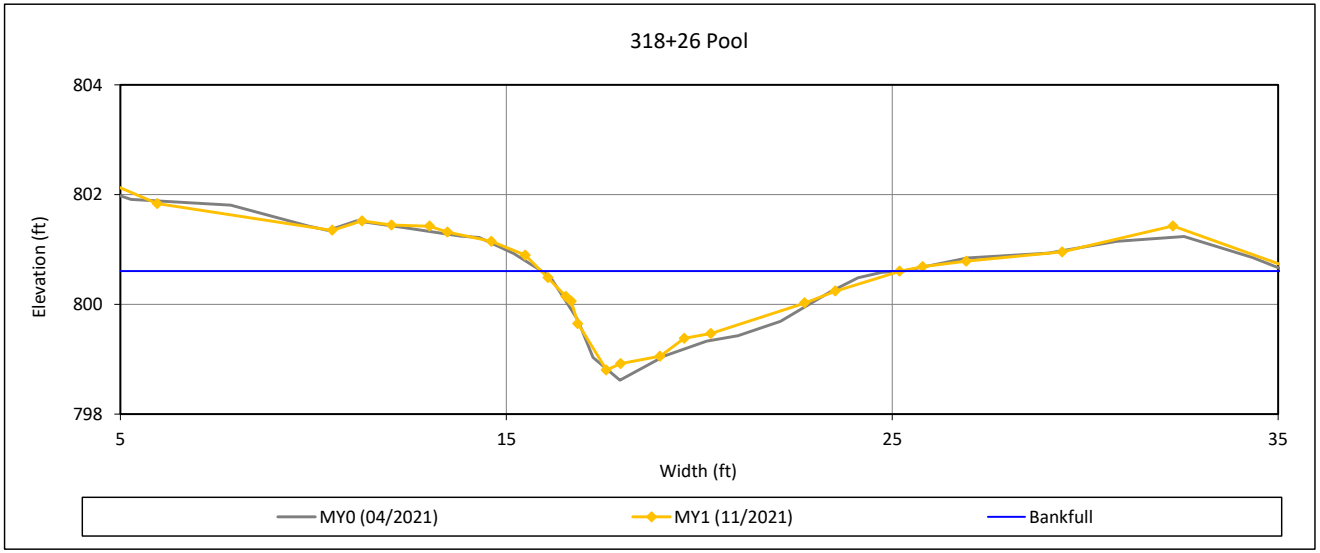
Survey Date: 11/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

Cross-Section 10-UT2 R2



Bankfull Dimensions	
8.1	x-section area (ft.sq.)
9.3	width (ft)
0.9	mean depth (ft)
1.8	max depth (ft)
10.4	wetted perimeter (ft)
0.8	hydraulic radius (ft)
10.6	width-depth ratio

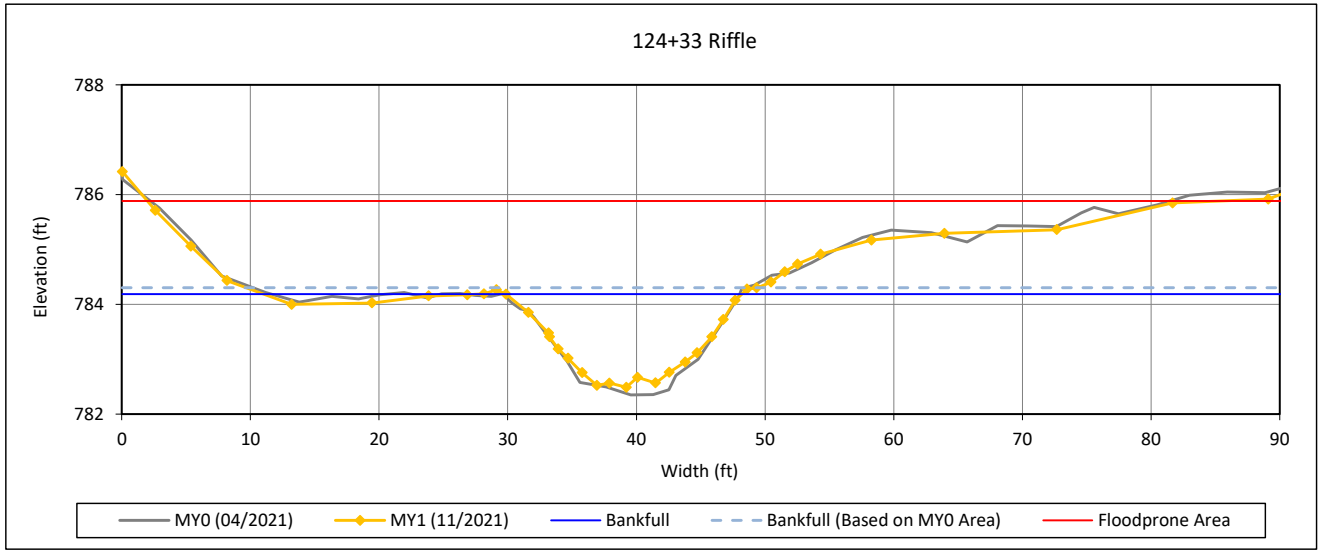
Survey Date: 11/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

Cross-Section 11-Wyant Creek R3



Bankfull Dimensions	
19.4	x-section area (ft.sq.)
18.3	width (ft)
1.1	mean depth (ft)
1.7	max depth (ft)
18.8	wetted perimeter (ft)
1.0	hydraulic radius (ft)
17.3	width-depth ratio
89.1	W flood prone area (ft)
4.9	entrenchment ratio
< 1.0	low bank height ratio

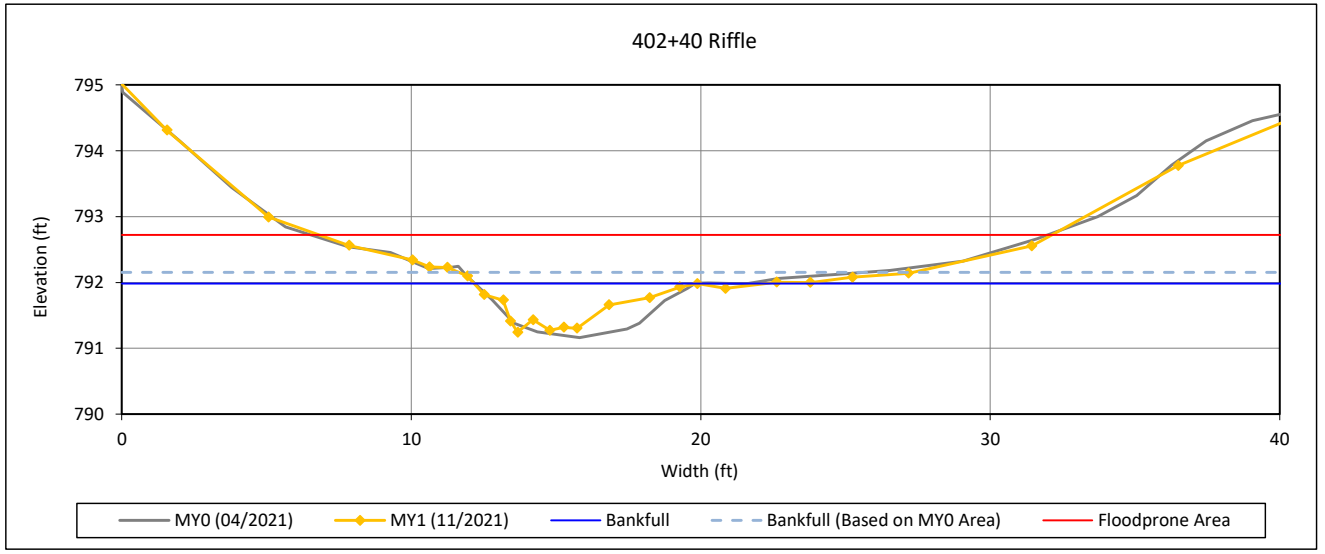
Survey Date: 11/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

Cross-Section 12-UT3 R1



Bankfull Dimensions	
2.9	x-section area (ft.sq.)
7.7	width (ft)
0.4	mean depth (ft)
0.7	max depth (ft)
8.1	wetted perimeter (ft)
0.4	hydraulic radius (ft)
20.7	width-depth ratio
25.3	W flood prone area (ft)
3.3	entrenchment ratio
<1.0	low bank height ratio

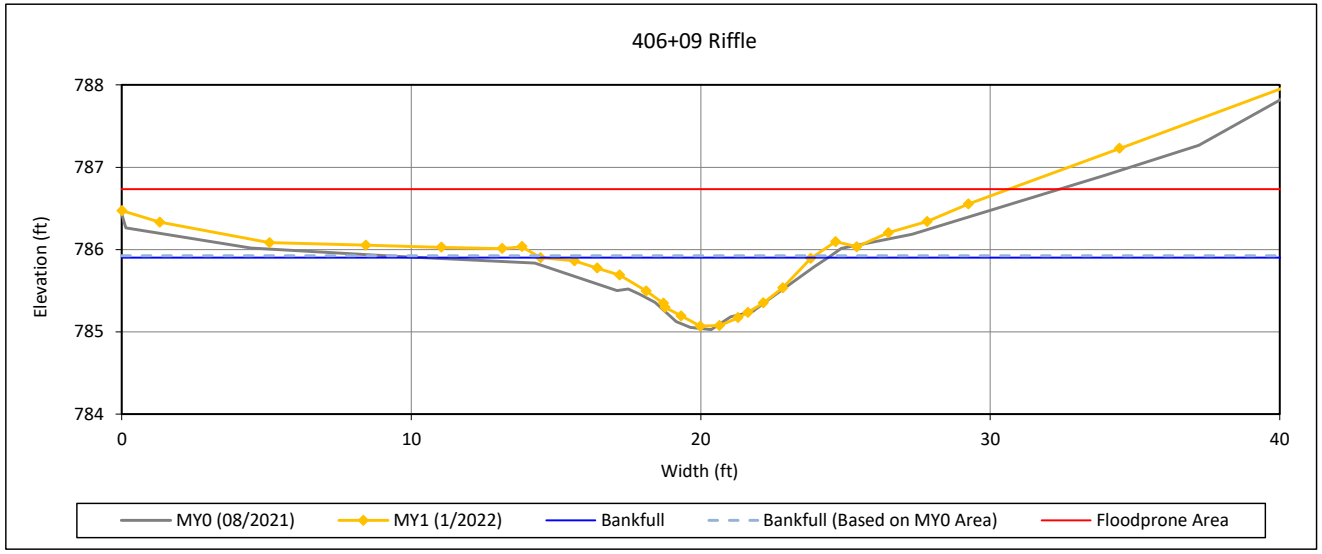
Survey Date: 11/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

Cross-Section 13-UT3 R2



Bankfull Dimensions	
3.8	x-section area (ft.sq.)
9.4	width (ft)
0.4	mean depth (ft)
0.8	max depth (ft)
9.6	wetted perimeter (ft)
0.4	hydraulic radius (ft)
23.2	width-depth ratio
30.6	W flood prone area (ft)
3.3	entrenchment ratio
1.0	low bank height ratio

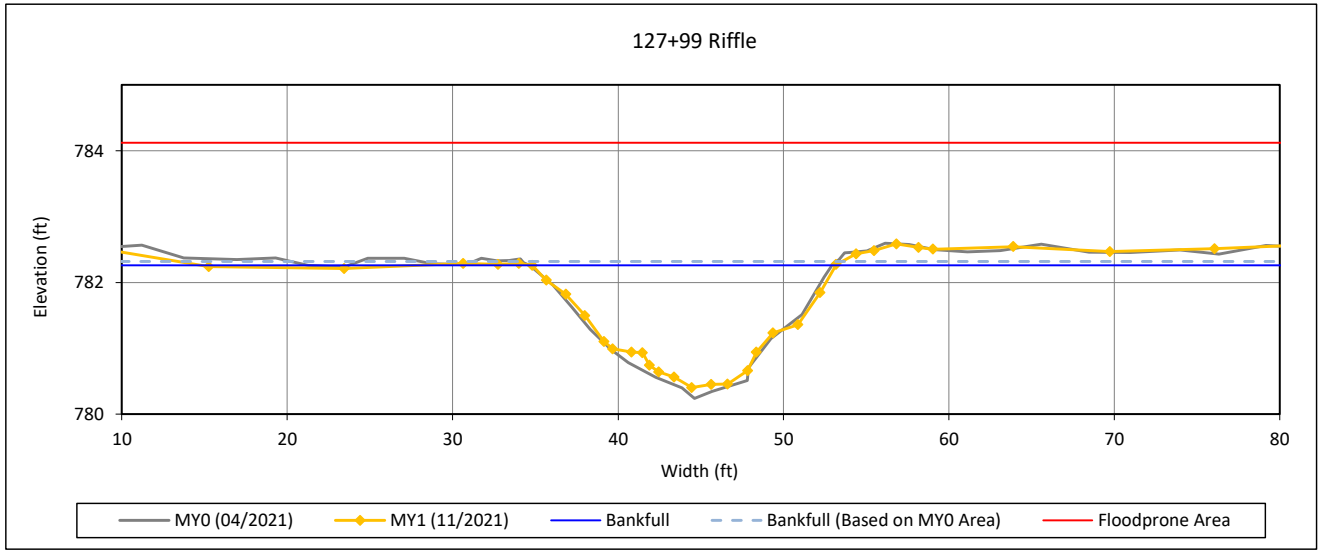
Survey Date: 1/2022
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

Cross-Section 14 - Wyant Creek R4



Bankfull Dimensions	
20.7	x-section area (ft.sq.)
18.3	width (ft)
1.1	mean depth (ft)
1.9	max depth (ft)
18.9	wetted perimeter (ft)
1.1	hydraulic radius (ft)
16.3	width-depth ratio
93.8	W flood prone area (ft)
5.1	entrenchment ratio
1.0	low bank height ratio

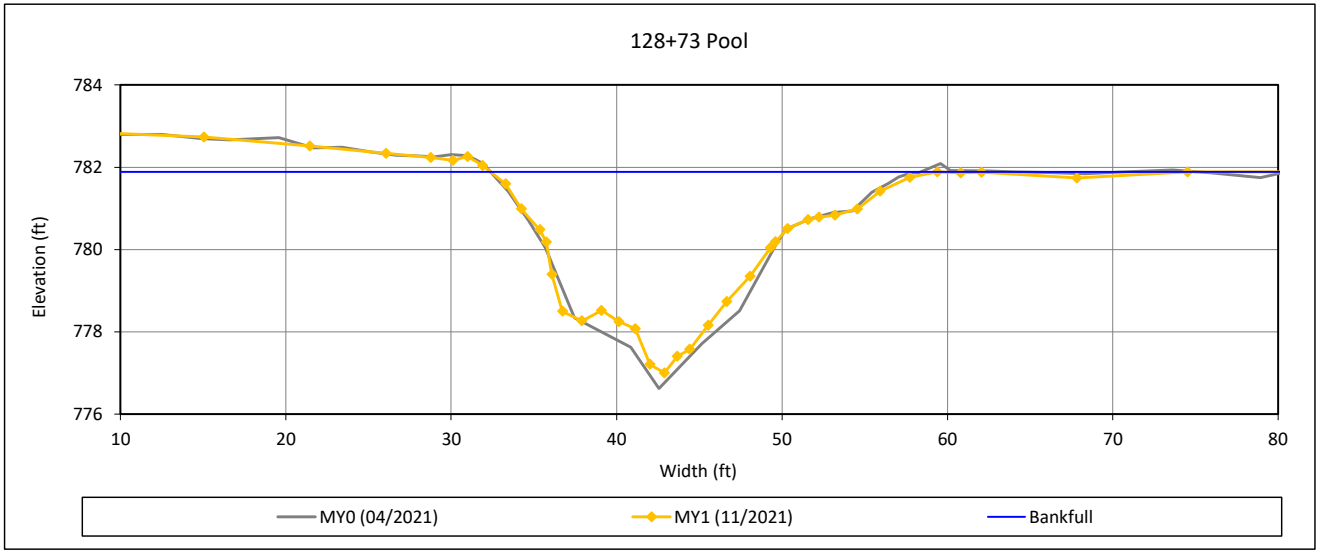
Survey Date: 11/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

Cross-Section 15-Wyant Creek R4



Bankfull Dimensions	
58.7	x-section area (ft.sq.)
27.0	width (ft)
2.2	mean depth (ft)
4.9	max depth (ft)
29.8	wetted perimeter (ft)
2.0	hydraulic radius (ft)
12.4	width-depth ratio

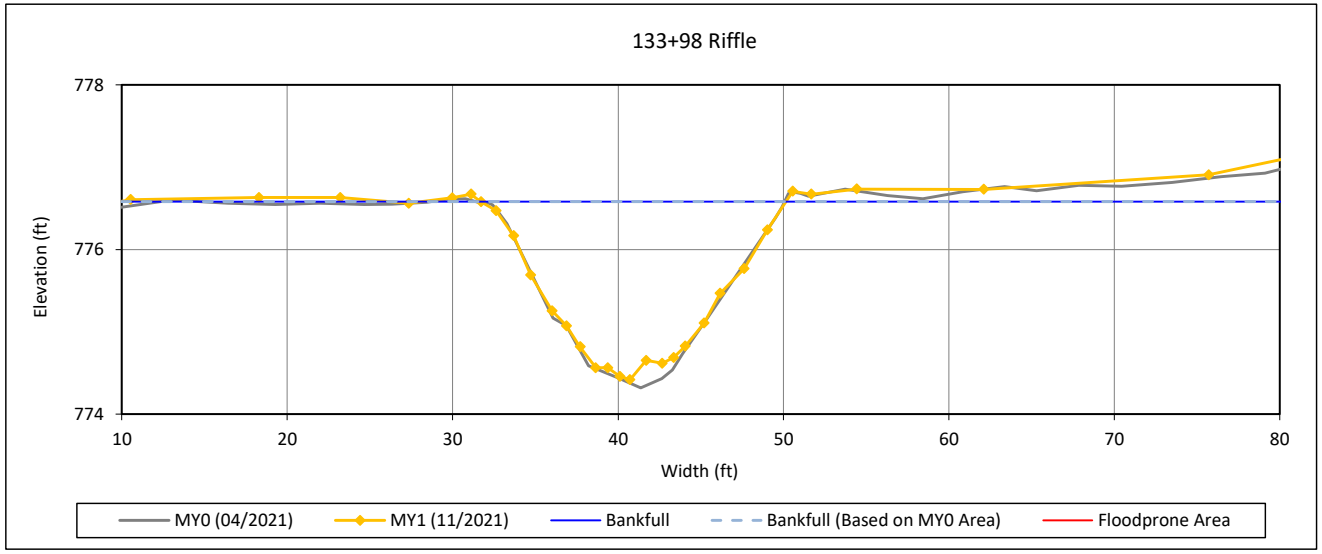
Survey Date: 11/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

Cross-Section 16 - Wyant Creek R4



Bankfull Dimensions	
23.1	x-section area (ft.sq.)
18.4	width (ft)
1.3	mean depth (ft)
2.2	max depth (ft)
19.1	wetted perimeter (ft)
1.2	hydraulic radius (ft)
14.7	width-depth ratio
81.6	W flood prone area (ft)
4.4	entrenchment ratio
1.0	low bank height ratio

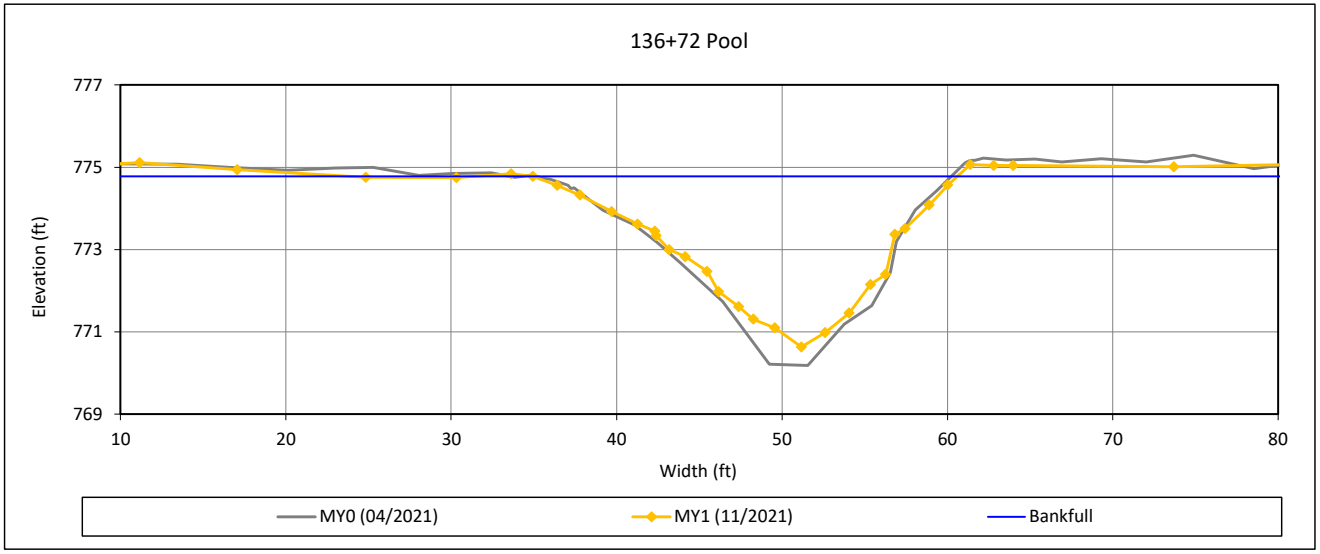
Survey Date: 11/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

Cross-Section 17 - Wyant Creek R4



Bankfull Dimensions	
51.0	x-section area (ft.sq.)
25.7	width (ft)
2.0	mean depth (ft)
4.2	max depth (ft)
27.5	wetted perimeter (ft)
1.9	hydraulic radius (ft)
12.9	width-depth ratio

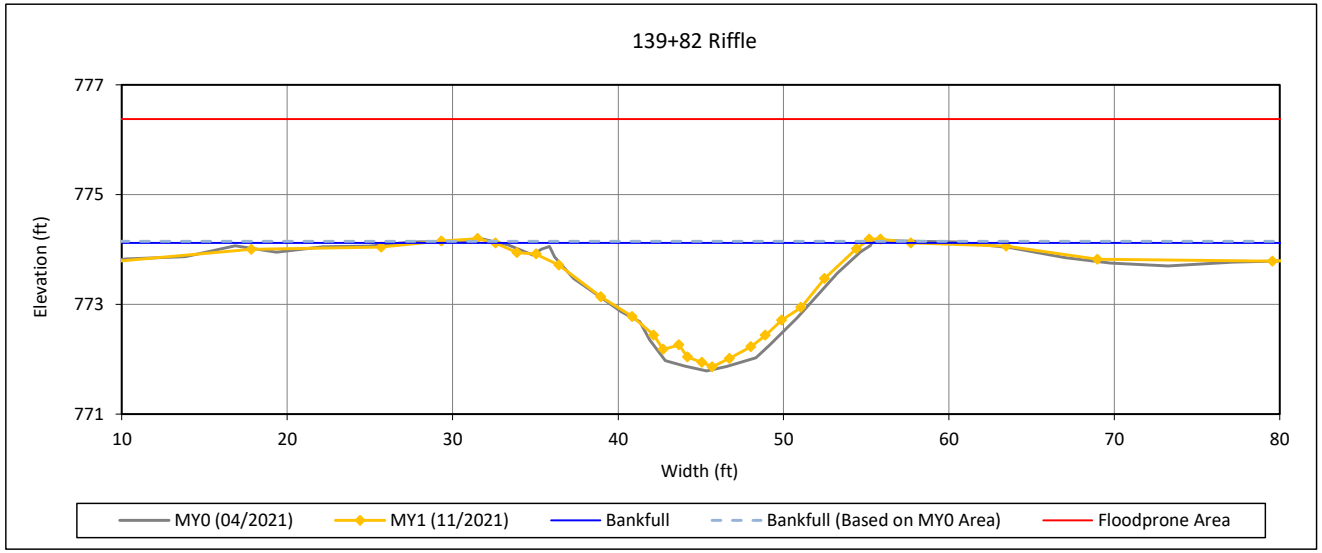
Survey Date: 11/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

Cross-Section 18 - Wyant Creek R4



Bankfull Dimensions	
25.3	x-section area (ft.sq.)
22.3	width (ft)
1.1	mean depth (ft)
2.3	max depth (ft)
22.9	wetted perimeter (ft)
1.1	hydraulic radius (ft)
19.7	width-depth ratio
82.8	W flood prone area (ft)
3.7	entrenchment ratio
1.0	low bank height ratio

Survey Date: 11/2021
Field Crew: Wildlands Engineering

View Downstream

Table 8. Baseline Stream Data Summary
Wyant Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

	Pre-Existing Condition																							
Parameter	**Wyant Creek R1**			**Wyant Creek R2**			**Wyant Creek R3**			**Wyant Creek R4**			**UT1**			**UT2 R3**			**UT3 R1**			**UT3 R2**		
	Min	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**
Dimension and Substrate - Riffle																								
Bankfull Width (ft)	11.1		1	10.8		1	17.9		1	17.1		1	1.5		1	5.9		1	-		N/A	6.1		1
Floodprone Width (ft)	18.9		1	15.4		1	15.6		1	-		1	8.1		1	11.0		1	-		N/A	18.8		1
Bankfull Mean Depth (ft)	1.1		1	0.9		1	1.5		1	1.2		1	0.4		1	0.7		1	-		N/A	0.7		1
Bankfull Max Depth (ft)	1.7		1	1.3		1	1.9		1	1.5		1	0.3		1	0.9		1	-		N/A	1.2		1
Bankfull Cross-sectional Area (ft^2)	11.1		1	10.8		1	17.9		1	17.1		1	1.5		1	5.9		1	-		N/A	6.1		1
Width/Depth Ratio	9.3		1	12.5		1	7.8		1	12.6		1	13.4		1	12.8		1	-		N/A	12.9		1
Entrenchment Ratio[1]	1.9		1	1.3		1	1.3		1	-		1	1.8		1	1.3		1	-		N/A	2.1		1
Bank Height Ratio	2.7		1	3.2		1	3.0		1	2.4		1	6.0		1	4.7		1	-		N/A	3.3		1
Max part size (mm) mobilized at bankfull	-		N/A	-		N/A	-		N/A	-		N/A	-		N/A	-		N/A	-		N/A	-		N/A
Rosgen Classification	G5		1	G5		1	G5		1	G5		1	C5/4		1	G4		1	-		N/A	G5		1
Bankfull Discharge (cfs)	3.8		1	3.0		1	3.3		1	4.1		1	2.6		1	3.7		1	-		N/A	4.0		1
Sinuosity	1.2		1	1.2		1	1.1		1	1.1		1	1.0		1	1.2		1	-		N/A	1.1		1
Bankfull/Channel Slope (ft/ft)[2]	0.0110		1	0.0075		1	0.0057		1	0.0048		1	0.0100		1	0.0190		1	-		N/A	0.0210		1
Design																								
Parameter	**Wyant Creek R1**			**Wyant Creek R2**			**Wyant Creek R3**			**Wyant Creek R4**			**UT1**			**UT2 R3**			**UT3 R1**			**UT3 R2**		
	Min	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**
Dimension and Substrate - Riffle																								
Bankfull Width (ft)	12.9		1	13.8		1	17.7		1	19.6		1	4.9		1	9.3		1	7.7		1	7.7		1
Floodprone Width (ft)	39.0	65.0	2	30.0	69.0	2	39.0	89.0	2	43.0	98.0	2	11.0	25.0	2	13.0	47.0	2	17.0	39.0	2	17.0	39.0	2
Bankfull Mean Depth (ft)	1.0		1	1.0		1	1.3		1	1.4		1	0.3		1	0.7		1	0.6		1	0.6		1
Bankfull Max Depth (ft)	1.2	1.6	2	1.3	1.7	2	1.5	2.0	2	1.7	2.2	2	0.4	0.6	2	0.8	1.1	2	0.7	1.0	2	0.7	1.0	2
Bankfull Cross-sectional Area (ft^2)	12.6		1	14.4		1	22.2		1	27.2		1	1.7		1	6.6		1	4.7		1	4.7		1
Width/Depth Ratio	13.0		1	13.0		1	14.0		1	14.0		1	14.0		1	13.0		1	12.0		1	12.0		1
Entrenchment Ratio[1]	3.0	5.0	2	2.2	5.0	2	2.2	5.0+	2	2.2	5.0+	2	2.2	5.0	2	1.4	5.0	2	2.2	5.0	2	2.2	5.0	2
Bank Height Ratio	1.0	1.1	2	1.0	1.1	2	1.0	1.1	2	1.0	1.1	2	1.0	1.1	2	1.0	1.1	2	1.0	1.1	2	1.0	1.1	2
Max part size (mm) mobilized at bankfull	36	88	2	27	72	2	25	69	2	17	52	2	27	73	2	25	69	2	-		N/A	48	108	2
Rosgen Classification	C4		1	C4		1	C4		1	C4		1	C4b		1	B4		1	C4b		1	C4b		1
Bankfull Discharge (cfs)	43.0		1	45.0		1	70.0		1	72.0		1	4.0		1	26.0		1	17.0		1	17.0		1
Sinuosity	1.2		1	1.2		1	1.2		1	1.3		1	1.2		1	1.1		N/A	1.2		N/A	1.2		N/A
Bankfull/Channel Slope (ft/ft)[2]	0.0088	0.0095	2	0.0059	0.0064	2	0.0050	0.0117	2	0.0029	0.0031	2	0.0188	0.0225	2	0.0182	0.0200	2	0.0206	0.0247	2	0.0207	0.0248	2
As-Built/ Baseline																								
Parameter	**Wyant Creek R1**			**Wyant Creek R2**			**Wyant Creek R3**			**Wyant Creek R4**			**UT1**			**UT2 R3**			**UT3 R1**			**UT3 R2**		
	Min	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**	**Min**	**Max**	**n**
Dimension and Substrate - Riffle																								
Bankfull Width (ft)	10.8	12.7	2	14.0		1	18.0		1	17.5	19.3	3	5.2		1	8.8		1	7.6		1	9.8		1
Floodprone Width (ft)	50.7	55.9	2	59.1		1	87.8		1	81.8	93.8	3	39.2		1	31.0		1	26.8		1	31.5		1
Bankfull Mean Depth (ft)	0.8	1.0	2	0.9		1	1.2		1	1.2	1.3	3	0.3		1	0.4		1	0.5		1	0.4		1
Bankfull Max Depth (ft)	1.5		2	1.7		1	1.9		1	2.0	2.3	3	0.5		1	0.7		1	0.8		1	0.8		1
Bankfull Cross-sectional Area (ft^2)[1]	10.3	10.6	2	12.9		1	21.5		1	21.7	25.9	3	1.6		1	3.8		1	4.2		1	4.0		1
Width/Depth Ratio	11.3	15.2	2	15.1		1	15.0		1	13.3	15.3	3	16.8		1	20.4		1	14.0		1	24.4		1
Entrenchment Ratio[1]	4.0	5.2	2	4.2		1	4.9		1	4.3	5.1	3	7.6		1	3.5		1	3.5		1	3.2		1
Bank Height Ratio	1.0		2	1.0		1	1.0		1	1.0		3	1.0		1	1.0		1	1.0		1	1.0		1
Max part size (mm) mobilized at bankfull	1.1		1	2.0		1	13.3		1	0.9		1	1.0		1	37.9		1	19.0		1	35.9		1
Rosgen Classification	C4			C4			C4			C4			C4b			B4			C4b			C4b		
Bankfull Discharge (cfs)	25.8	28.7	2	51.1		1	49.5		1	70.7	84.4	2	3.27		1	11.1		1	14.3		1	9.9		1
Sinuosity	1.24		1	1.19		1	1.12		1	1.25		1	1.21		1	1.09		1	1.20		1	1.20		1
Bankfull/Channel Slope (ft/ft)[2]	0.0061		1	0.013		1	0.003		1	0.006		1	0.015		1	0.021		1	0.021		1	0.015		1

1. ER for the baseline/monitoring parameters are based on the width of the cross-section, in lieu of assuming the width across the floodplain.
(---): Data was not provided, N/A: Not Applicable

Table 9. Cross-Section Morphology Monitoring Summary

Wyant Lands Mitigation Site

DMS Project No. 100067

Monitoring Year 1 - 2021

	Wyant Creek R1 Cross Section 1 Riffle								Wyant Creek R1 Cross Section 2 Pool								Wyant Creek R1 Cross Section 3 Riffle							
Dimension and Substrate	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	798.56	798.60							798.24	N/A							797.30	797.34						
Bank Height Ratio - Based on AB Bankfull[1] Area	1.0	1.0							N/A	N/A							1.0	1.0						
Thalweg Elevation (ft)	797.05	797.15							794.01	793.94							795.76	795.75						
LTOB[2] Elevation (ft)	798.56	798.63							798.24	798.25							797.30	797.39						
LTOB[2] Max Depth (ft)	1.5	1.5							4.2	4.3							1.5	1.6						
LTOB[2] Cross Sectional Area (ft^2)	10.6	11.0							25.5	26.2							10.3	10.8						
	Wyant Creek R1 Cross Section 4 Pool								**UT1 Cross Section 5 Riffle**								**UT1 Cross Section 6 Pool**							
Dimension and Substrate	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	794.30	N/A							798.18	798.22							797.15	N/A						
Bank Height Ratio - Based on AB Bankfull[1] Area	N/A	N/A							1.0	1.0							N/A	N/A						
Thalweg Elevation (ft)	791.06	791.25							797.69	797.64							795.69	797.73						
LTOB[2] Elevation (ft)	794.30	794.25							798.18	798.22							797.15	797.15						
LTOB[2] Max Depth (ft)	3.2	3.0							0.5	0.6							1.5	1.4						
LTOB[2] Cross Sectional Area (ft^2)	24.7	24.6							1.6	1.6							5.6	5.2						
	Wyant Creek R2 Cross Section 7 Pool								**Wyant Creek R2 Cross Section 8 Riffle**								**UT2 Cross Section 9 Riffle**							
Dimension and Substrate	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	791.51	N/A							790.54	790.56							806.26	806.28						
Bank Height Ratio - Based on AB Bankfull[1] Area	N/A	N/A							1.0	1.0							1.0	1.0						
Thalweg Elevation (ft)	789.13	788.94							788.88	788.90							805.55	805.50						
LTOB[2] Elevation (ft)	791.51	791.50							790.54	790.54							806.26	806.31						
LTOB[2] Max Depth (ft)	2.4	2.6							1.7	1.6							0.7	0.8						
LTOB[2] Cross Sectional Area (ft^2)	18.9	18.1							12.9	12.6							3.8	4.0						
	UT2 Cross Section 10 Pool								**Wyant Creek R3 Cross Section 11 Riffle**															
Dimension and Substrate	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**								
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	800.58	N/A							784.20	784.30														
Bank Height Ratio - Based on AB Bankfull[1] Area	N/A	N/A							1.0	< 1.0														
Thalweg Elevation (ft)	798.62	798.80							782.35	782.49														
LTOB[2] Elevation (ft)	800.58	800.60							784.20	784.19														
LTOB[2] Max Depth (ft)	2.0	1.8							1.9	1.7														
LTOB[2] Cross Sectional Area (ft^2)	8.6	8.1							21.5	19.4														

[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 recorded and tracked above as LTOB max depth.

Table 9. Cross-Section Morphology Monitoring Summary

Wyant Lands Mitigation Site

DMS Project No. 100067

Monitoring Year 1 - 2021

	UT3 Cross Section 12 Riffle								UT3 Cross Section 13 Riffle								Wyant Creek R4 Cross Section 14 Riffle							
Dimension and Substrate	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	791.99	792.15							785.83	785.92							782.26	782.32						
Bank Height Ratio - Based on AB Bankfull[1] Area	1.0	<1.0							1.0	1.0							1.0	1.0						
Thalweg Elevation (ft)	791.16	791.24							785.03	785.07							780.24	780.40						
LTOB[2] Elevation (ft)	791.99	791.98							785.83	785.90							782.26	782.26						
LTOB[2] Max Depth (ft)	0.8	0.7							0.8	0.8							2.0	1.9						
LTOB[2] Cross Sectional Area (ft^2)	4.2	2.9							4.0	3.8							21.7	20.7						
	Wyant Creek R4 Cross Section 15 Pool								**Wyant Creek R4 Cross Section 16 Riffle**								**Wyant Creek R4 Cross Section 17 Pool**							
Dimension and Substrate	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	782.09	N/A							776.54	776.58							774.81	N/A						
Bank Height Ratio - Based on AB Bankfull[1] Area	N/A	N/A							1.0	1.0							N/A	N/A						
Thalweg Elevation (ft)	776.62	777.00							774.30	774.42							770.18	770.63						
LTOB[2] Elevation (ft)	782.09	781.89							776.54	776.58							774.81	774.78						
LTOB[2] Max Depth (ft)	5.5	4.9							2.2	2.2							4.6	4.2						
LTOB[2] Cross Sectional Area (ft^2)	67.8	58.7							23.1	23.1							57.2	51.0						

	Wyant Creek R4 Cross Section 18 Riffle							
Dimension and Substrate	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY6**	**MY7**
Bankfull Elevation (ft) - Based on AB-Bankfull[1] Area	774.06	774.15						
Bank Height Ratio - Based on AB Bankfull[1] Area	1.0	1.0						
Thalweg Elevation (ft)	771.78	771.86						
LTOB[2] Elevation (ft)	774.06	774.12						
LTOB[2] Max Depth (ft)	2.3	2.3						
LTOB[2] Cross Sectional Area (ft^2)	25.9	25.3						

[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

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

Reach	MY1 (2021)	MY2 (2022)	MY3 (2023)	MY4 (2024)	MY5 (2025)	MY6 (2026)	MY7 (2027)
Wyant Creek R2	—						
UT1	—						
UT2 R2	—						

Table 11. Rainfall Summary

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

	MY1 (2021)	MY2 (2022)	MY3 (2023)	MY4 (2024)	MY5 (2025)	MY6 (2026)	MY7 (2027)
Annual Preciptation Total (in)	36.00						
WETS 30th Percentile (in)	44.35						
WETS 70th Percentile (in)	51.57						
Normal	Below Average						

30th and 70th percentile rainfall data collected from WETS Station NC4997: LINCOLNTON 4 W, NC for years 1971-2000

Table 12. Recorded In-Stream Flow Events Summary

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

Reach	Max Consecutive Days/Total Days Meeting Success Criteria*						
	MY1 (2021)**	MY2 (2022)	MY3 (2023)	MY5 (2024)	MY5 (2025)	MY6 (2026)	MY7 (2027)
UT1	**222 Days/ 222 Days**						

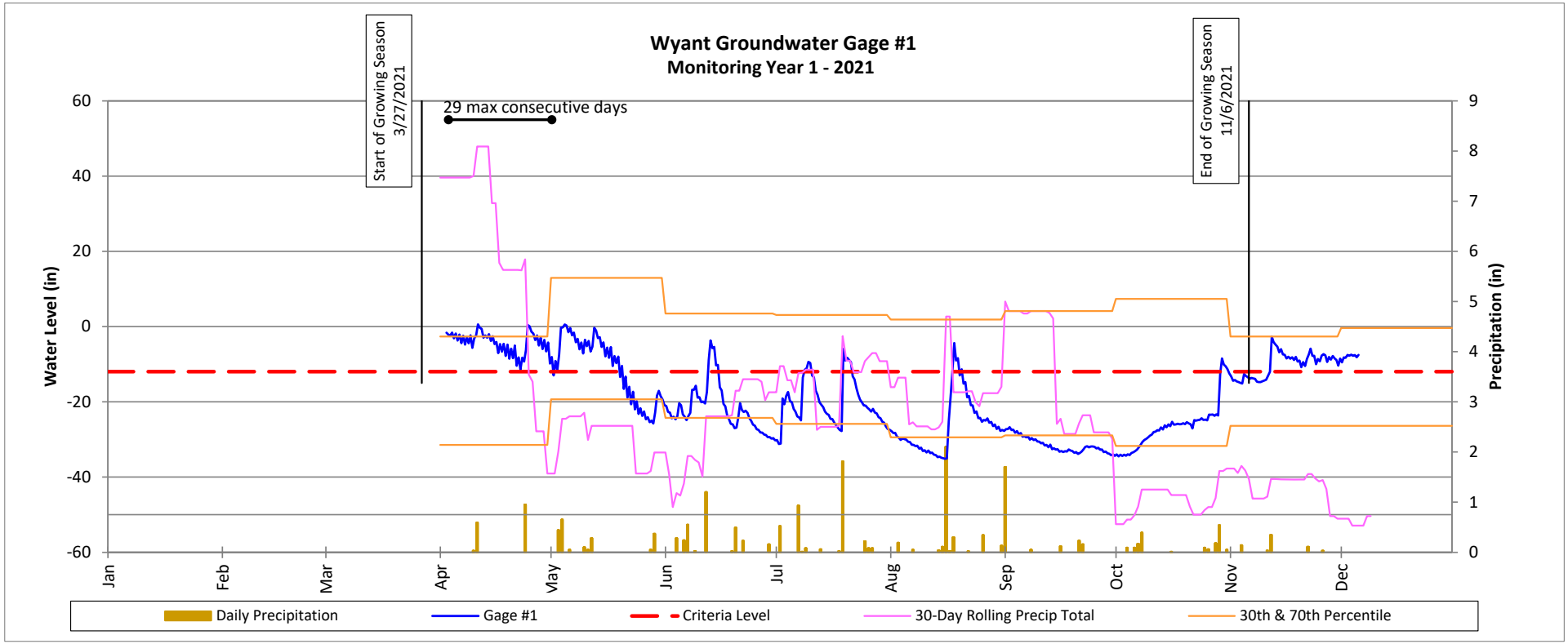
*Success criteria is 30 consecutive days of flow.
**Data collected from April 2,2021 through November 11, 2021.

Wetland Gage Plots

Wyant Lands Mitigation Site

DMS Project No. 100067

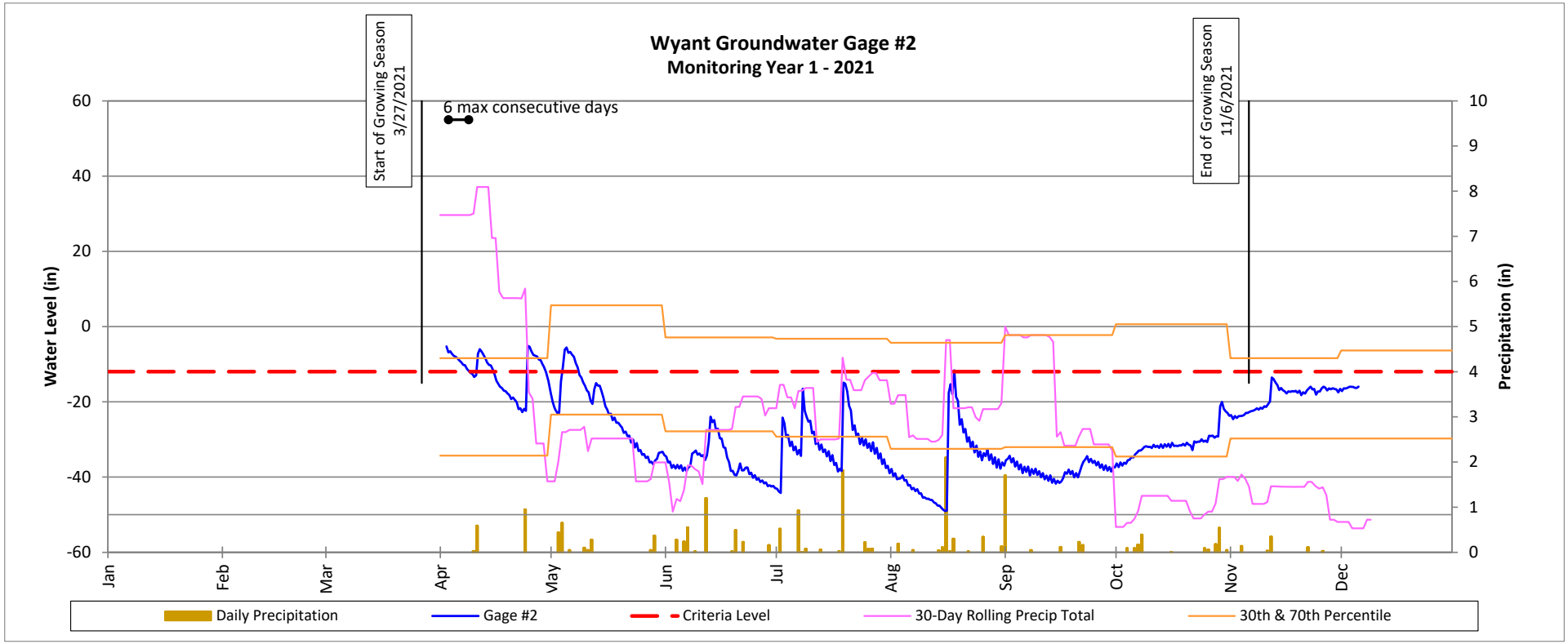
Monitoring Year 1 - 2021



Data collected from April 2, 2021 through December 5, 2021

Wetland Gage Plots

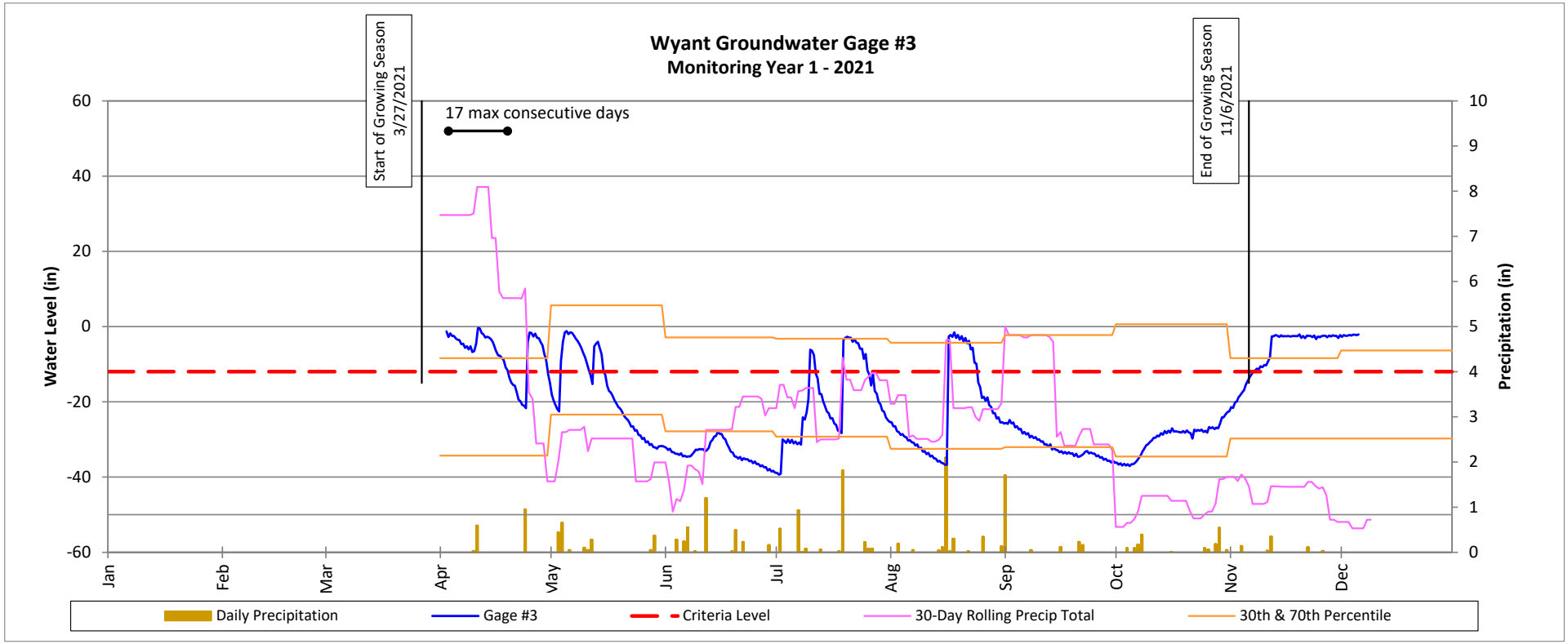
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021



Data collected from April 2, 2021 through December 5, 2021

Wetland Gage Plots

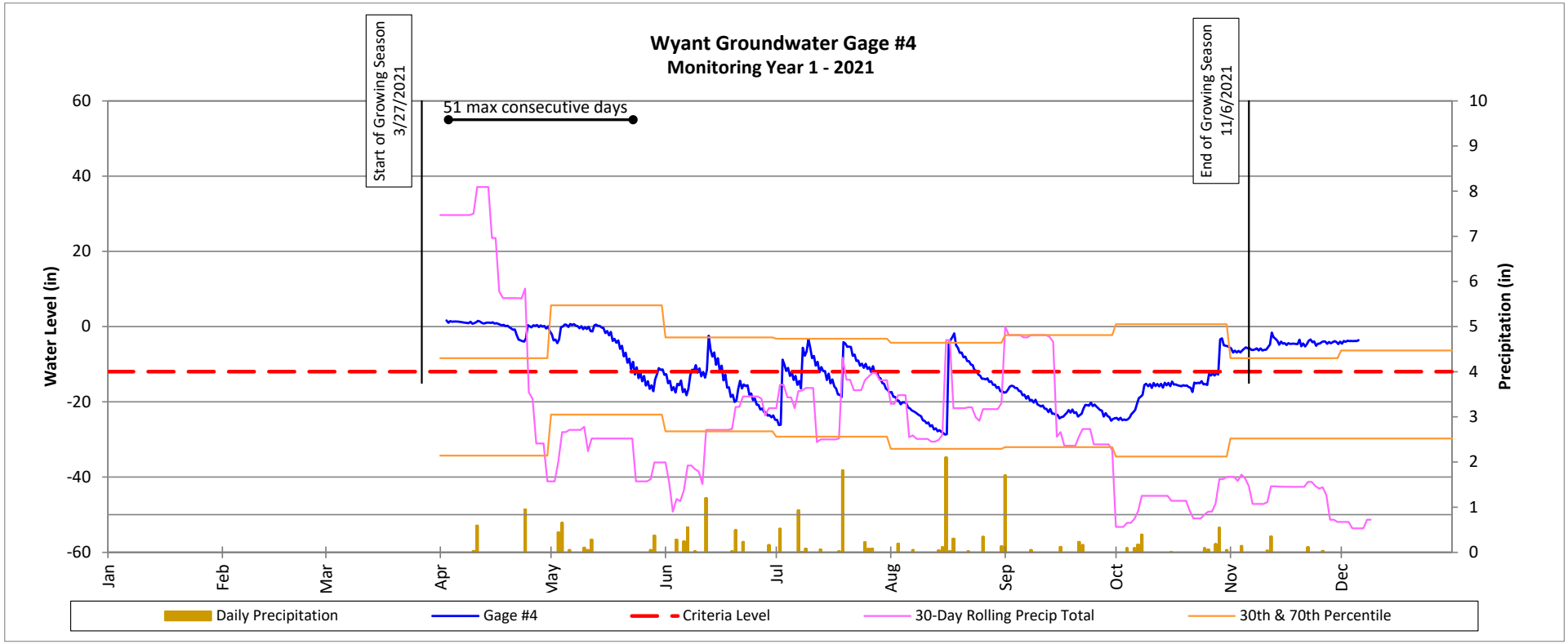
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021



Data collected from April 2, 2021 through December 5, 2021

Wetland Gage Plots

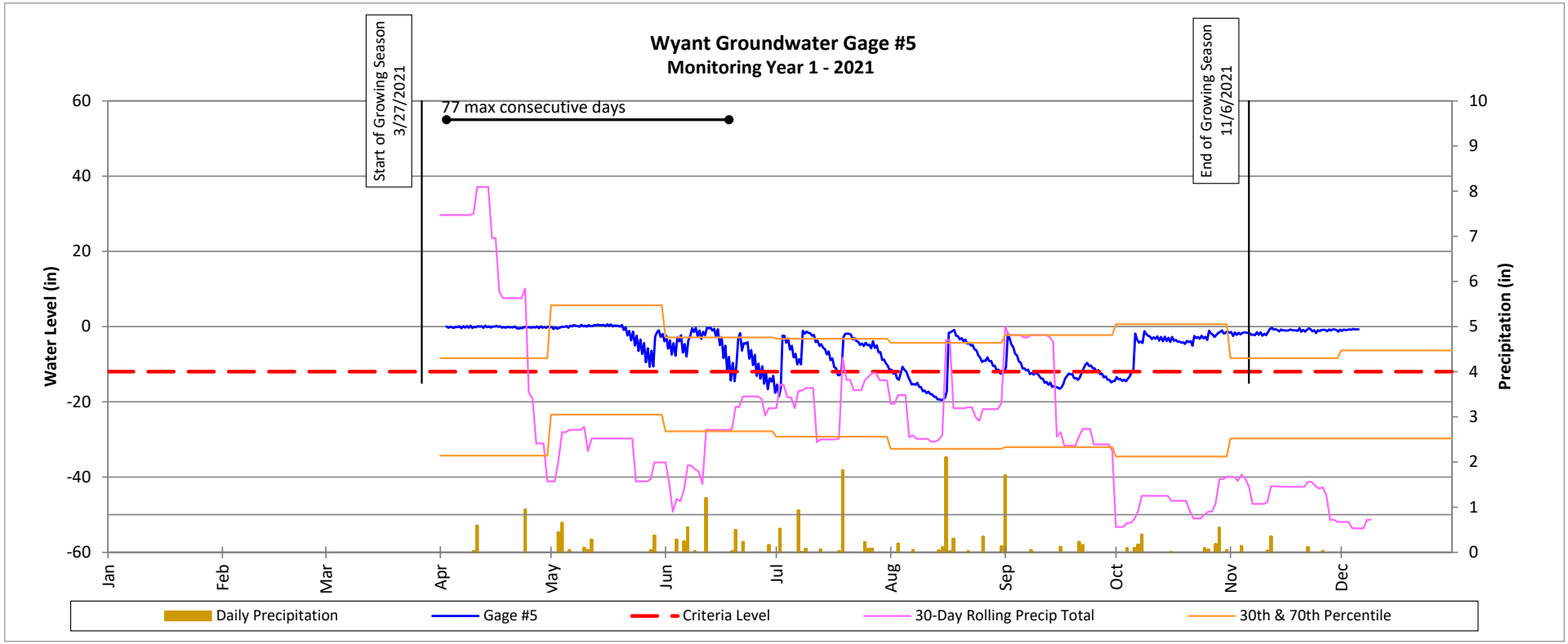
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021



Data collected from April 2, 2021 through December 5, 2021

Wetland Gage Plots

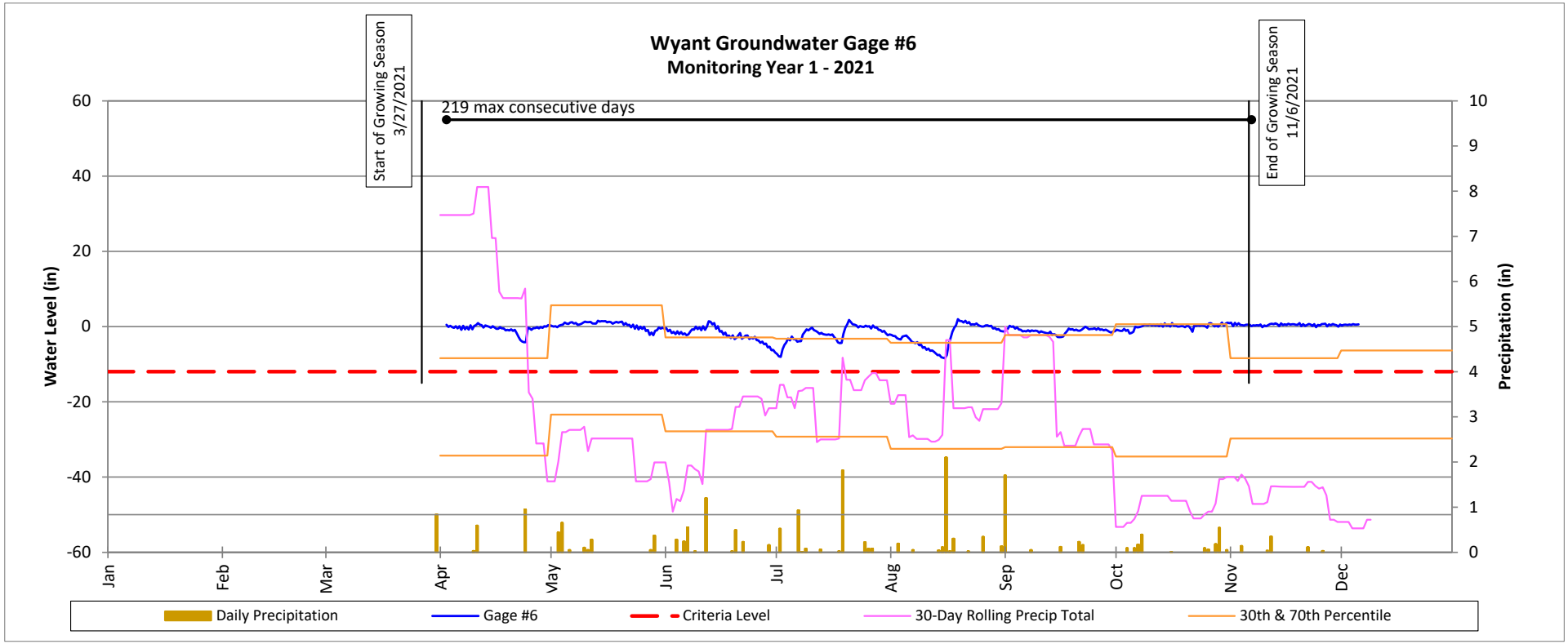
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021



Data collected from April 2, 2021 through December 5, 2021

Wetland Gage Plots

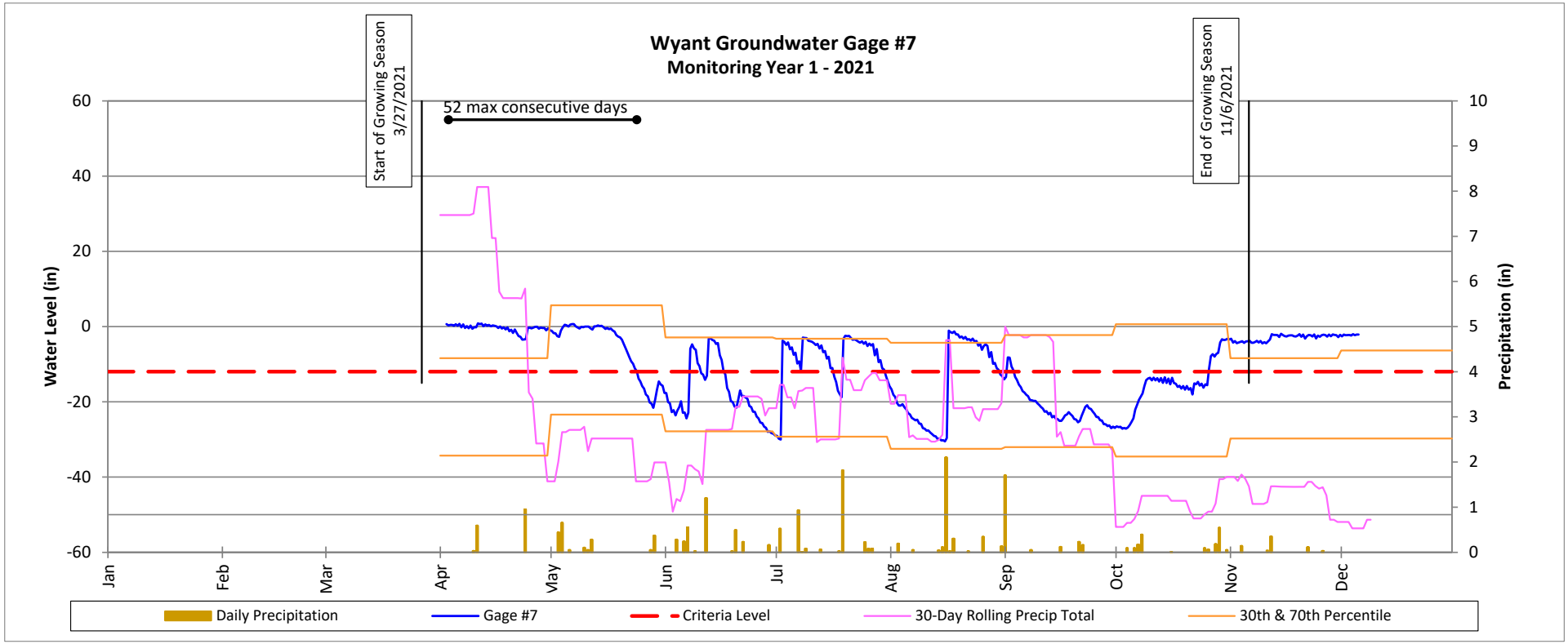
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021



Data collected from April 2, 2021 through December 5, 2021

Wetland Gage Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021



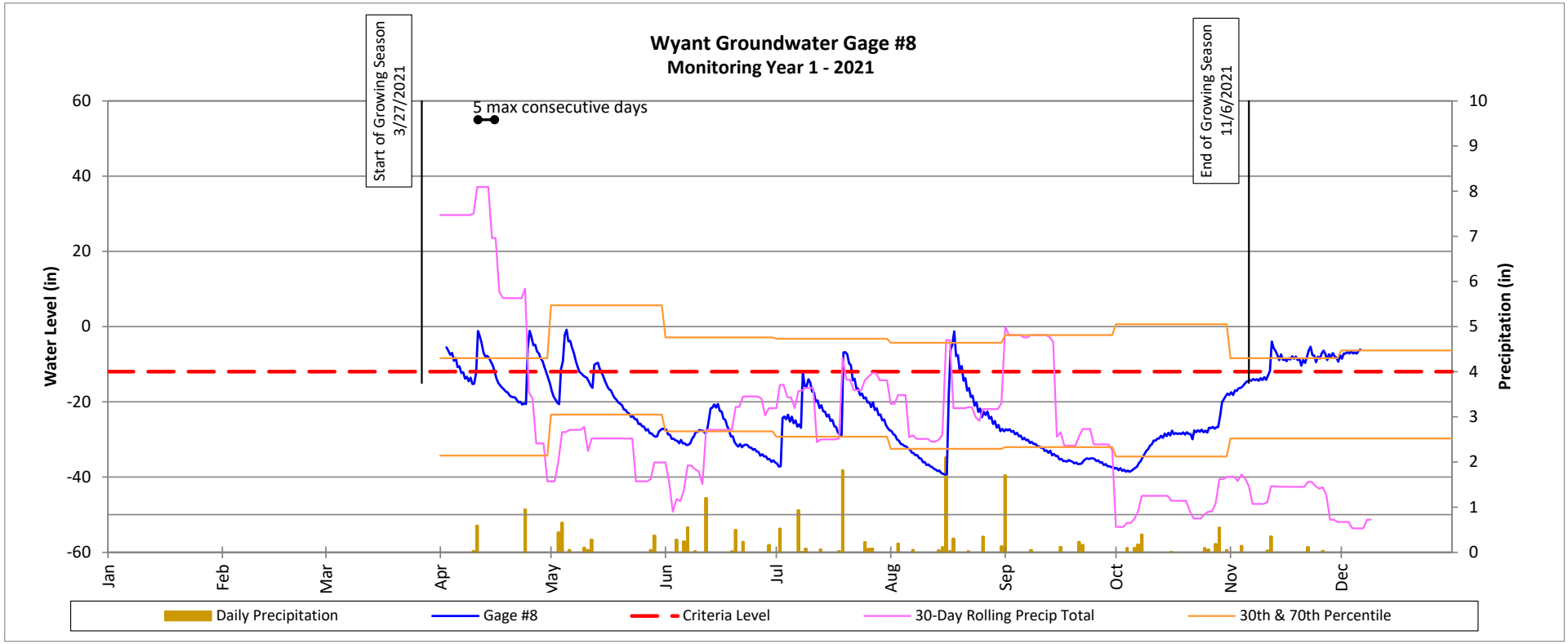
Data collected from April 2, 2021 through December 5, 2021

Wetland Gage Plots

Wyant Lands Mitigation Site

DMS Project No. 100067

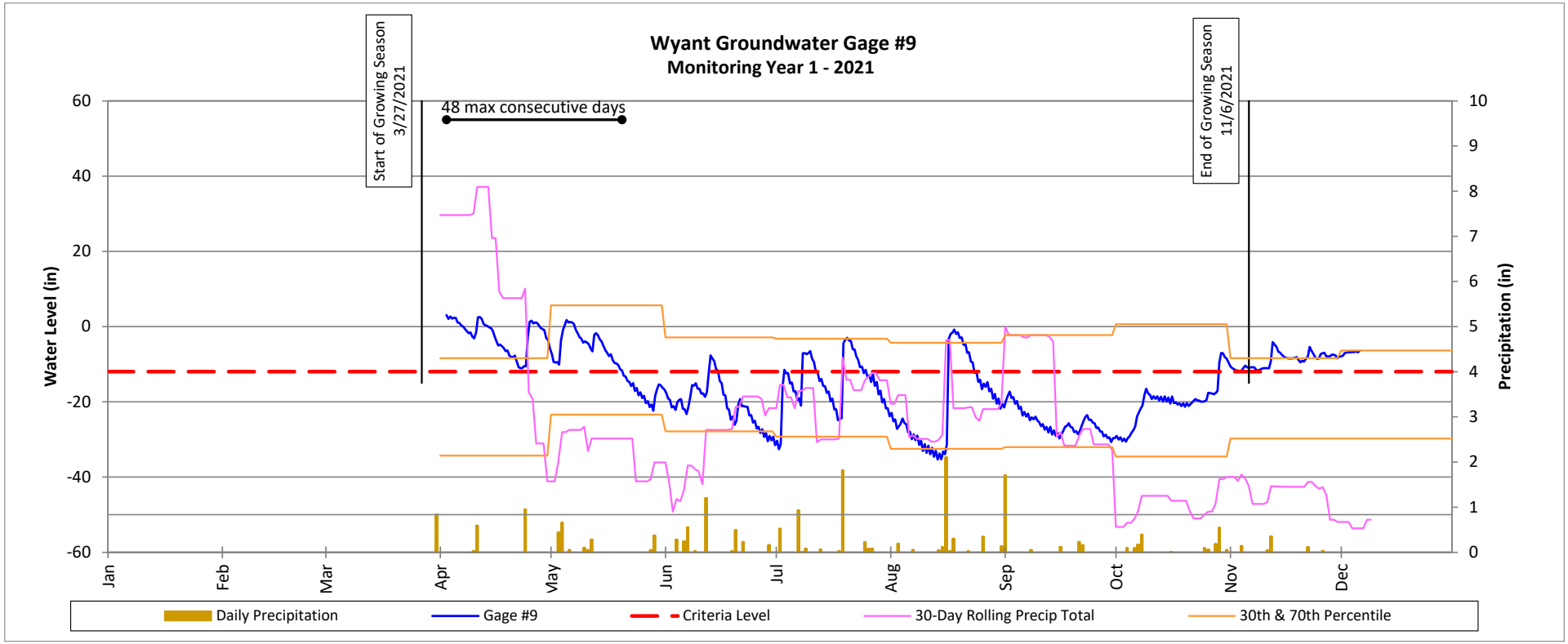
Monitoring Year 1 - 2021



Data collected from April 2, 2021 through December 5, 2021

Wetland Gage Plots

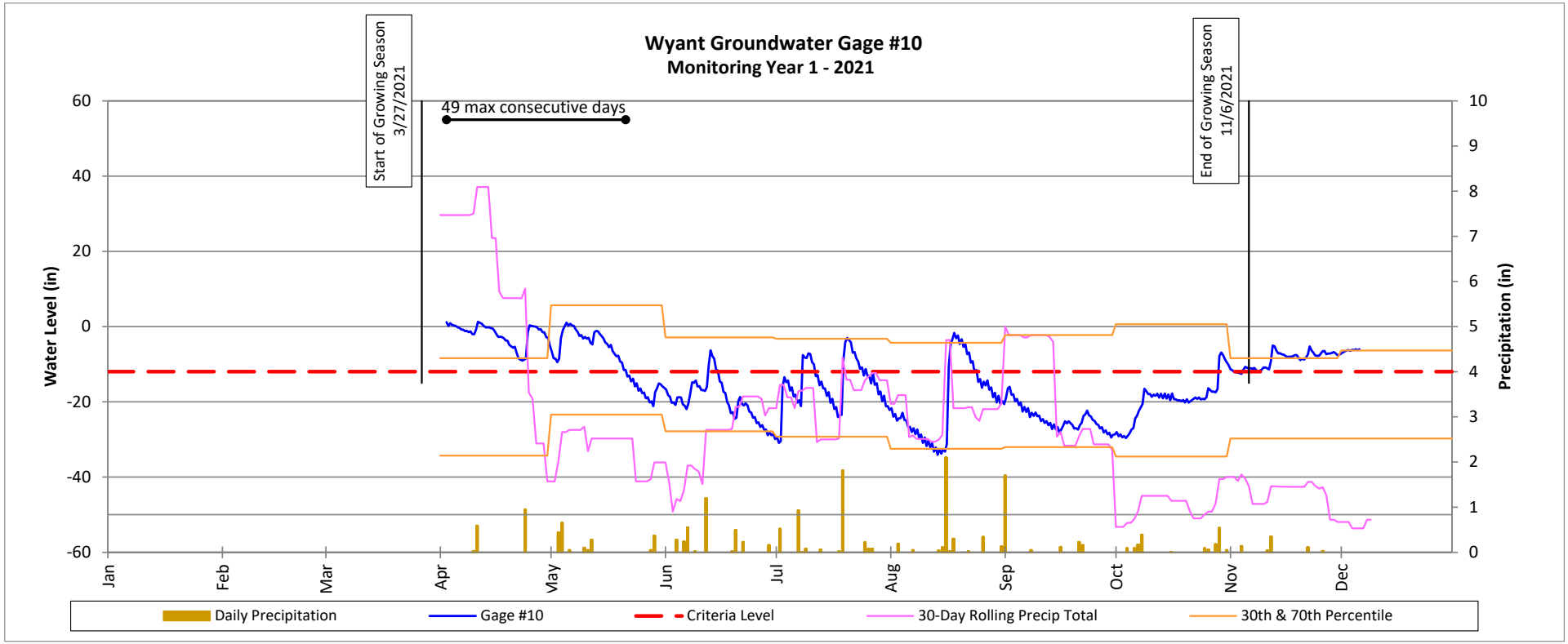
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021



Data collected from April 2, 2021 through December 5, 2021

Wetland Gage Plots

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021



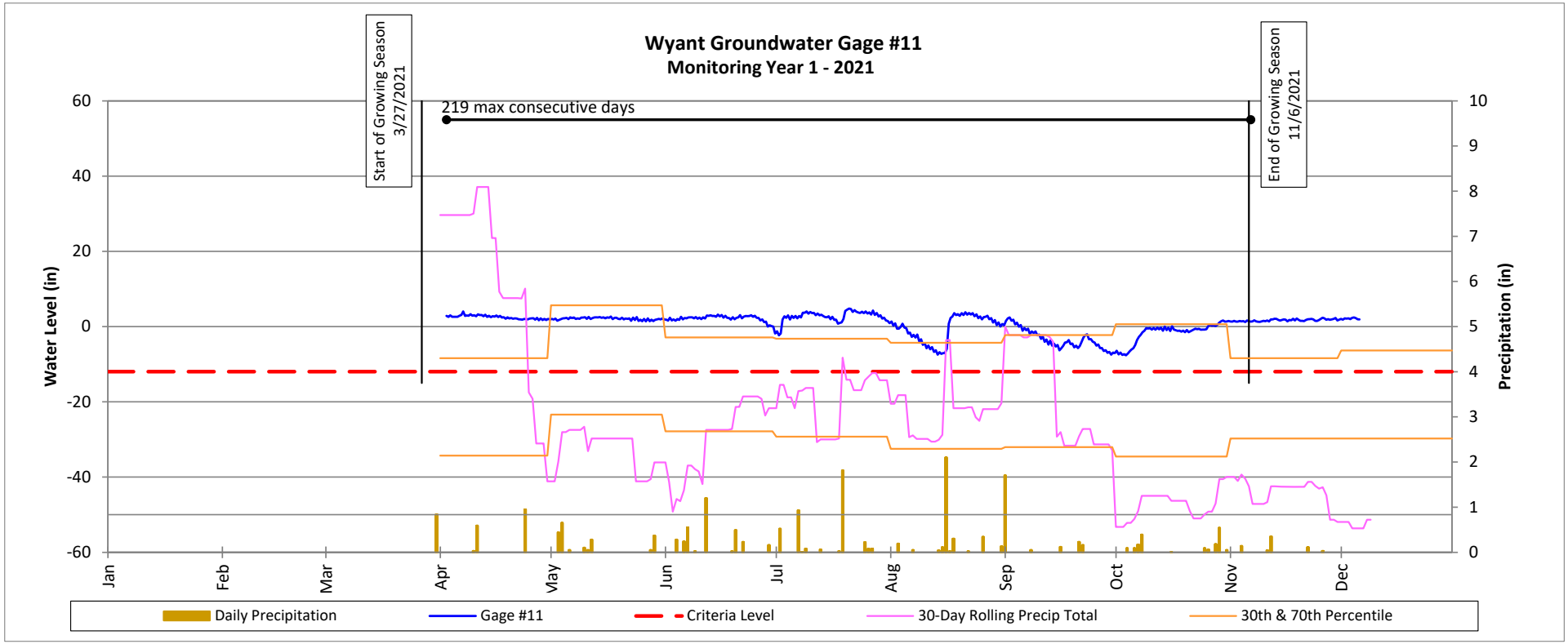
Data collected from April 2, 2021 through December 5, 2021

Wetland Gage Plots

Wyant Lands Mitigation Site

DMS Project No. 100067

Monitoring Year 1 - 2021



Data collected from April 2, 2021 through December 5, 2021

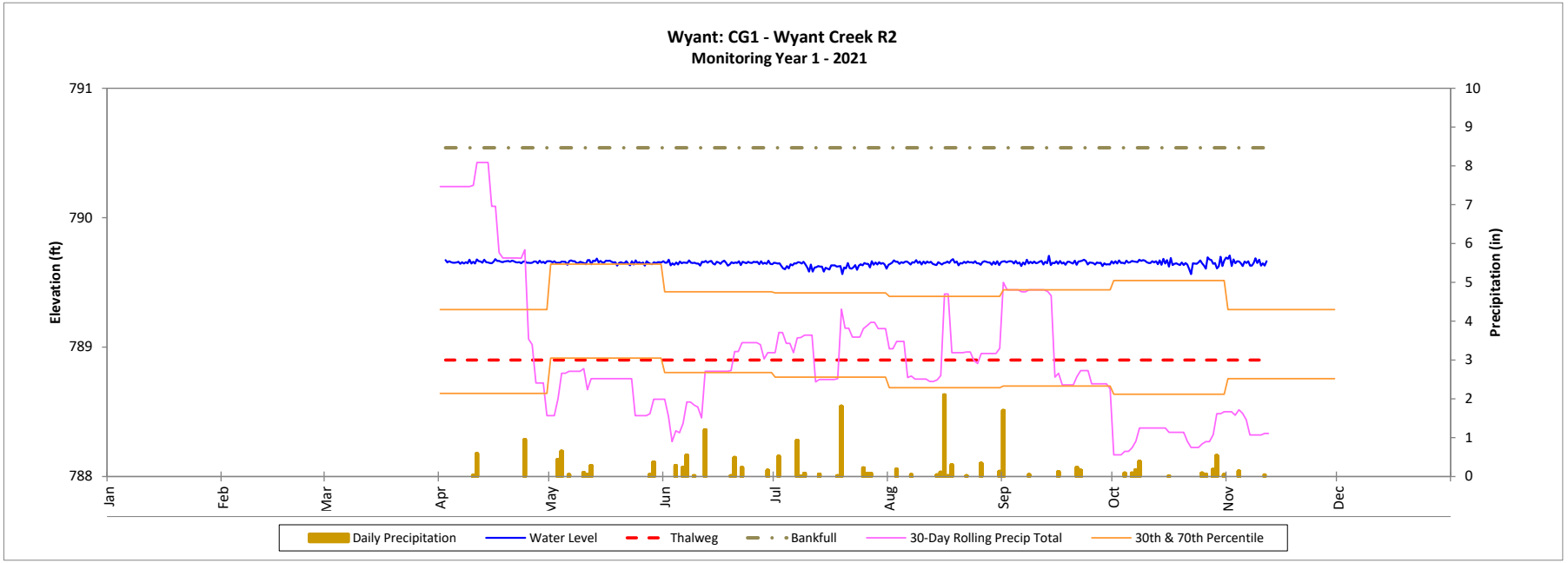
Table 13. Wetland Gage Summary

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

Gage	Max. Consecutive Hydroperiod (Percentage)						
	MY1 (2021)	MY2 (2022)	MY3 (2023)	MY4 (2024)	MY5 (2025)	MY6 (2026)	MY7 (2027)
1	13%						
2	3%						
3	8%						
4	23%						
5	34%						
6	97%						
7	23%						
8	2%						
9	21%						
10	22%						
11	97%						

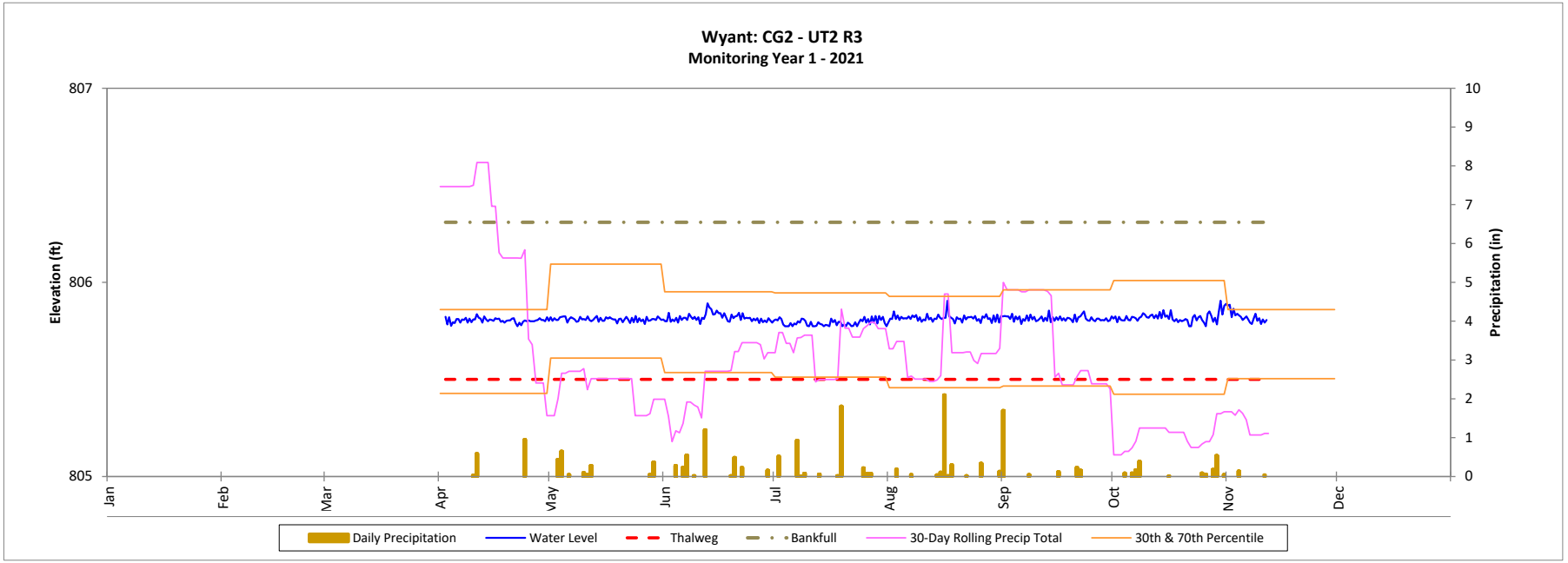
Performance Standard: 12.0% or 27 consecutive days.
WETS Station: NC 4997 Lincolnton 4W
Growing Season: 3/27/2021 to 11/6/2021 (225 Days)

Recorded Bankfull Events
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021



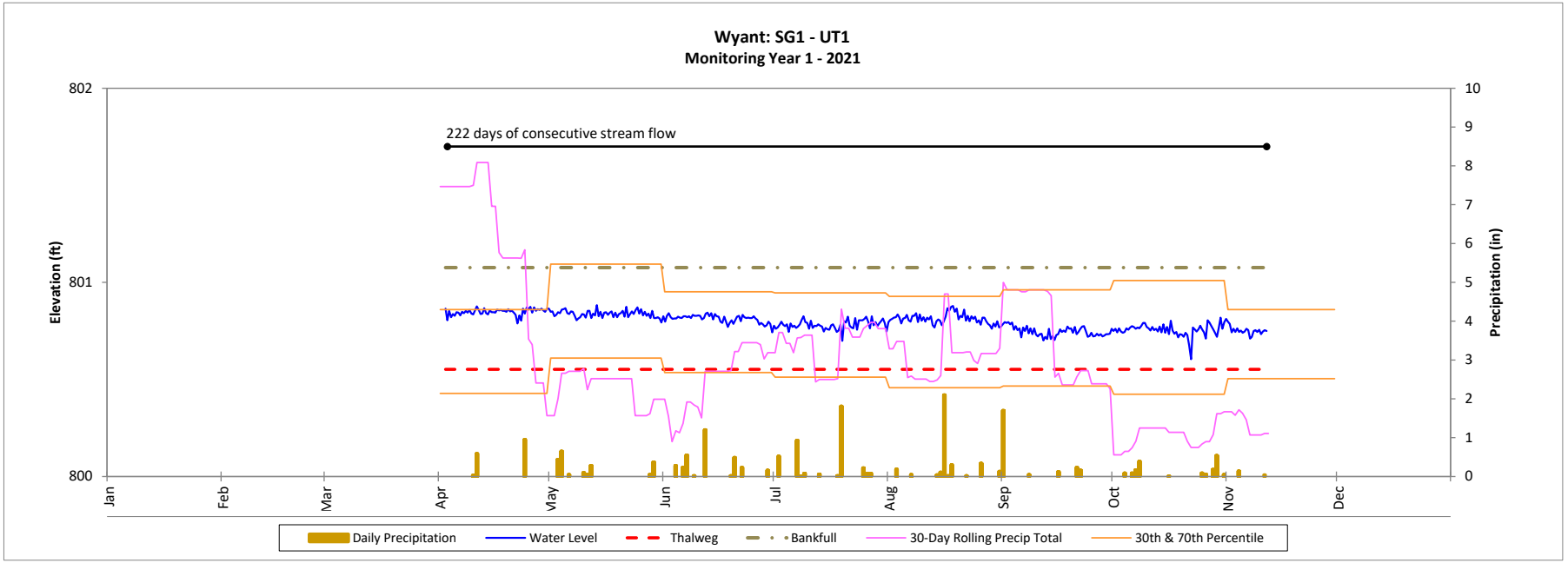
Data collected from April 2, 2021 through November 11, 2021

Recorded Bankfull Events
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021



Data collected from April 2, 2021 through November 11, 2021

Recorded In-Stream Flow Events
Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021



Data collected from April 2, 2021 through November 11, 2021

Appendix E

Project Timeline and Contact Information

Table 14. Project Activity and Reporting History

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

Activity or Report		Data Collection Complete	Completion or Delivery
404 Permit		April 2020	May 2020
Mitigation Plan		October 2018 - April 2020	April 2020
Final Design - Construction Plans		August 2020	August 2020
Construction		October 2020 - March 2021	March 2021
Temporary S&E mix applied to entire project area[1]		February 2021	March 2021
Permanent seed mix applied to reach/segments[1]		February 2021	March 2021
Bare root and live stake plantings for reach/segments		March 2021	April 2021
Baseline Monitoring (Year 0)	Stream Survey	April - June 2021	October 2021
	Vegetation Survey	April 2021	
	Remediation	N/A	N/A
	Encroachment		
Year 1 Monitoring	Stream Survey	November 2021 - January 2022	February 2022
	Vegetation Survey	October 2021	
	Vegetation Ring Sprays	July 2021	N/A
	In-stream treatments	October 2021	
	Encroachment	N/A	
Year 2 Monitoring	Stream Survey		
	Vegetation Survey		
	Remediation		
	Encroachment		
Year 3 Monitoring	Stream Survey		
	Vegetation Survey		
	Remediation		
	Encroachment		
Year 4 Monitoring	Stream Survey		
	Vegetation Survey		
	Remediation		
	Encroachment		
Year 5 Monitoring	Stream Survey		
	Vegetation Survey		
	Remediation		
	Encroachment		
Year 6 Monitoring	Stream Survey		
	Vegetation Survey		
	Remediation		
	Encroachment		
Year 7 Monitoring	Stream Survey		
	Vegetation Survey		
	Remediation		
	Encroachment		

[1]Seed and mulch is added as each section of construction is completed.

Table 15. Project Contact Table

Wyant Lands Mitigation Site
DMS Project No. 100067
Monitoring Year 1 - 2021

Designers Eric Nehaus, PE	**Wildlands Engineering, Inc.** 167-B Haywood Rd Asheville, NC 28806 828.207.8835
Construction Contractors	**Baker Grading & Landscaping, Inc.** 1000 Bat Cave Road Old Fort, NC 28762
Planting Contractor	**Bruton Natural Systems, Inc.** PO Box 1197 Fremont, NC 27830
Seeding Contractor	**Baker Grading & Landscaping, Inc.** 1000 Bat Cave Road Old Fort, NC 28762
Seed Mix Sources	**Green Resource LLC**
Nursery Stock Suppliers	
Bare Roots Live Stakes	**Bruton Natural Systems, Inc.**
Herbaceous Plugs	**Wetland Plants Inc.**
Monitoring Performers	**Wildlands Engineering, Inc.**
Monitoring, POC	Kristi Suggs 704. 332.7754 x.110

Appendix F

Correspondence

To: DMS Technical Workgroup, DMS operations staff

From: Periann Russell, Division of Mitigation Services (DMS)

RE: Pebble count data requirements

Date: October 19, 2021

The DMS Technical Work Group met September 29, 2021 to discuss Interagency Review Team (IRT) and DMS requirements for collecting pebble count data as part of monitoring (MY0-MYx). Agreement was reached between all attending parties that pebble count data will not be required during the monitoring period for all future projects.

Sediment data and particle distribution will still be required for the mitigation plan as part of the proposed design explanation and justification.

Pebble counts and/or particle distributions currently being conducted by providers for annual monitoring may be discontinued at the discretion of the DMS project manager. If particle distribution was listed as a performance standard in the project mitigation plan, the provider is required to communicate the intent to cease data collection with the DMS project manager. The absence of pebble count data in future monitoring reports where pebble count data was listed as part of monitoring in the mitigation plan must be documented in the monitoring report. The September 29, 2021 Technical Work Group meeting may be cited as the source of the new policy.

The IRT reserves the right to request pebble count data/particle distributions if deemed necessary during the monitoring period.

Kristi Suggs

From: Wiesner, Paul <paul.wiesner@ncdenr.gov>
Sent: Thursday, October 28, 2021 8:32 AM
To: Kristi Suggs
Cc: Mimi Caddell
Subject: RE: [External] FW: Pebble Count Data Requirements

Good morning Kristi,

Yes; that is fine. The pebble counts will still need to be collected in MY0 as specified in the IRT approved mitigation plan/s.

If a project is still in the design phase, please be sure to discuss your approach in the mitigation plan for IRT review and approval.

If there are projects in monitoring that WEI believes would benefit from continued pebble count data collection; then please continue, but I leave that up to your best professional judgment as the project's monitor.

Please make sure to document everything in the applicable monitoring reports to avoid any DMS or IRT confusion.

Thanks

Paul Wiesner
Western Regional Supervisor
North Carolina Department of Environmental Quality
Division of Mitigation Services

828-273-1673 Mobile
paul.wiesner@ncdenr.gov

Western DMS Field Office
5 Ravenscroft Drive
Suite 102
Asheville, N.C. 28801

From: Kristi Suggs <ksuggs@wildlandseng.com>
Sent: Wednesday, October 27, 2021 1:22 PM
To: Wiesner, Paul <paul.wiesner@ncdenr.gov>
Cc: Mimi Caddell <mcaddell@wildlandseng.com>
Subject: [External] FW: Pebble Count Data Requirements

Paul,

Jason Lorch in our Raleigh Office forwarded this meeting memo to me. It says that conducting pebble counts for DMS monitoring (MY0 – MY7) projects is no longer needed as long as it has been okayed by the DMS PM. Moving forward, are you going to allow us to stop doing them on your projects? Please let me know. Thank you!

Kristi

Kristi Suggs | *Senior Environmental Scientist*
O: 704.332.7754 x110 **M**: 704.579.4828

Wildlands Engineering, Inc.
1430 S. Mint St, Suite 104
Charlotte, NC 28203

From: Jason Lorch <jlorch@wildlandseng.com>
Sent: Monday, October 25, 2021 9:05 AM
To: Kristi Suggs <ksuggs@wildlandseng.com>
Subject: FW: Pebble Count Data Requirements

FYI!

Jason Lorch, GISP | *Senior Environmental Scientist*
O: 919.851.9986 x107 **M**: 919.413.1214

Wildlands Engineering, Inc.
312 West Millbrook Road, Suite 225
Raleigh, NC 27609

From: Russell, Periann <periann.russell@ncdenr.gov>
Sent: Thursday, October 21, 2021 10:05 AM
To: King, Scott <Scott.King@mbakerintl.com>; Catherine Manner <catherine@waterlandsolutions.com>; Tugwell, Todd J CIV USARMY CESAW (US) <Todd.J.Tugwell@usace.army.mil>; adam.spiller@kci.com; Brad Breslow <bbreslow@res.us>; Davis, Erin B <erin.davis@ncdenr.gov>; gginn@wolfcreekeng.com; grant lewis <glewis@axiomenvironmental.org>; Jeff Keaton <jkeaton@wildlandseng.com>; katie mckeithan <Katie.McKeithan@mbakerintl.com>; Kayne Van Stell <kayne@waterlandsolutions.com>; Kevin Tweedy <ktweedy@eprusa.net>; Reid, Matthew <matthew.reid@ncdenr.gov>; Ryan Smith <rsmith@lmgroup.net>; Melia, Gregory <gregory.melia@ncdenr.gov>; Allen, Melonie <melonie.allen@ncdenr.gov>; Famularo, Joseph T <Joseph.Famularo@ncdenr.gov>; Rich@mogmit.com; Bryan Dick <Bryan.Dick@freese.com>; Ryan Medric <rmedric@res.us>; Kim Browning <Kimberly.D.Browning@usace.army.mil>; Kayne Van Stell <kayne@waterlandsolutions.com>; Worth Creech <worth@restorationsystems.com>; Jason Lorch <jlorch@wildlandseng.com>
Cc: Crocker, Lindsay <Lindsay.Crocker@ncdenr.gov>; Wiesner, Paul <paul.wiesner@ncdenr.gov>; Tsomides, Harry <harry.tsomides@ncdenr.gov>; Reid, Matthew <matthew.reid@ncdenr.gov>; Dow, Jeremiah J <jeremiah.dow@ncdenr.gov>; Horton, Jeffrey <jeffrey.horton@ncdenr.gov>; Ullman, Kirsten J <Kirsten.Ullman@NCDENR.gov>; Ackerman, Anjie <anjie.ackerman@ncdenr.gov>; Blackwell, Jamie D <james.blackwell@ncdenr.gov>; Xu, Lin <lin.xu@ncdenr.gov>; Mir, Danielle <Danielle.Mir@ncdenr.gov>; Corson, Kristie <kristie.corson@ncdenr.gov>; Russell, Periann <periann.russell@ncdenr.gov>; Sparks, Kimberly L <Kim.sparks@ncdenr.gov>
Subject: Pebble Count Data Requirements

Please review the attached memo documenting the agreed upon policy for pebble count data requirements.

Please reply (me only) to this email if accept that this memo represents (or misrepresents) our discussion on Sept 29. Thank you.

Periann Russell
Geomorphologist
Division of Mitigation Services, Science and Analysis
NC Department of Environmental Quality

919 707 8306 office
919 208 1426 mobile
periann.russell@ncdenr.gov

Mailing: 1652 Mail Service Center Raleigh, NC 27699-1652
Physical: 217 West Jones Street Raleigh, NC 27603

WILDLANDS
ENGINEERING

MEETING MINUTES

MEETING: AB/Baseline IRT Site Walk
WYANT LANDS MITIGATION SITE
Catawba River Basin 03050102(03050103 Expanded Service Area)
Lincoln County, NC
NCDEQ Contract No. 7244
DMS Project No. 100067
USACE Action ID No. SAW-2017-02609
DWR No. 2018-0177

DATE: *Meeting:* Monday, October 18, 2021
Minutes Distributed: Tuesday, November 16, 2021

LOCATION: Wyant Road
Vale, NC

Attendees
Kim Browning, USACE
Casey Haywood, USACE
Erin Davis, Department of Environmental Quality (NC DEQ)
Olivia Munzer, NC Wildlife Resources Commission (NC WRC)
Paul Wiesner, NC Division of Mitigation Services (NCDMS)
Shawn Wilkerson, Wildlands Engineering
Eric Neuhaus, Wildlands Engineering
Kristi Suggs, Wildlands Engineering
Ed Blevins, Wildlands Engineering

Materials – DRAFTS for DMS Review
- As-Built and Baseline Monitoring Report dated 10/13/2021
- Proposed Mitigation Plan Addendum dated 10/13/2021
- Drafts of documents listed above were provided to the IRT on 10/15/2021 via the DMS/ IRT SharePoint site and were not fully reviewed by DMS or the IRT prior to the site visit.

Meeting Notes
1. Wildlands gave a general overview of the project construction and general project assets as well as the proposed mitigation plan addendum.
2. The IRT noted that As-Built Baseline Monitoring Reports need to be submitted to the IRT within 90 Days of construction completion. Construction completion was defined as all work completed including planting, fencing, and associated site appurtenances. Wildlands estimates construction completion including fencing for the Wyant Lands Mitigation Site was 7/1/2021 and understands the need to be more prompt with submittals in the future.

3. Wildlands outlined that they hope to have approvals of the addendum in time to build the additional work starting in **February 2022**, finishing earthwork with time to plant before **April 15, 2022**.
4. The Baseline Monitoring submittal for the proposed addendum work will be submitted within 90 days of construction completion of the proposed addendum work. Wildlands has proposed that the addendum work be monitored in concurrence with the original project. If after 6 years, it is determined that the additional areas of the Site are meeting expected performance criteria, then Wildlands will propose the Site for closeout. Wildlands understands the IRT may require an additional year of monitoring on the expanded portion of the project.
5. The IRT asked, when possible, to send any plant substitutions prior to the planting stage for NCIRT review.
6. The IRT requested LIDAR maps for project mitigation plans and proposals. Wildlands is including a LIDAR map with the project addendum submittal.
7. NC WRC requested photos of the UT2 crossing, which have been included with these minutes.
8. The IRT asked if upstream and downstream photos of each crossing were included in the Baseline Report's photo log. Wildlands responded that they were inadvertently left out but would be included in the Final Baseline As-built Monitoring Report.
9. UT1 Reach 1 was observed in the field. The project addendum and approach were introduced, and Wildlands noted that they will restore the reach within the conservation easement and install 1 proposed BMP (step pool conveyance). The approach was generally agreed upon by the group.
10. The NCIRT noted to save or transplant mockernut hickory *(Carya tomentosa)* along UT2 Reach 1 if feasible and that it would be a good species to use as a substitution planting.
11. The IRT requested the removal of black walnut (*Juglans nigra*) from the riparian buffer.
12. The proposed wetland addendum area was observed in the field. It was requested that all previous LSS information be included in the mitigation plan addendum, but generally the IRT agreed with the proposed approach.
13. The DRAFT monitoring year 1 report for Phase 1 of the project will need to be submitted to NCDMS by February 1, 2022. The final MY1 report will need to be reviewed by DMS and finalized by Wildlands before the March 1, 2022 IRT submittal deadline. Baseline monitoring for the addendum area will be delivered 90 days post construction.
14. Please note that NCDMS will need to utilize two (2) project credit ledgers for the different "Phases" of the project. Based on a brief discussion with USACE, a new 404 permit and Action ID # are required for Phase II of the project due to the additional ledger. Based on DMS discussions, neither the USACE nor DWR thought that additional time would be required for the 404/401 permitting effort due to the separate ledgers. It was noted that the 401/404 amendment for the mitigation plan addendum (Phase II) must be submitted through LaserFische digitally.
15. The IRT requested additional stabilization on the ford crossing just upstream of Wyant Road to minimize bank degradation from cattle during pasture rotation.
16. The IRT inquired if the strip of land between Potts Creek and the wetland mitigation area on the left bank of Wyant Creek was included in the conservation easement for the addendum. Wildlands responded that it was not included as part of the original project or the addendum per the request of the property owner.

UT2 Culvert Photos:

Kristi Suggs

From: Wiesner, Paul <paul.wiesner@ncdenr.gov>
Sent: Wednesday, January 5, 2022 8:06 AM
To: Eric Neuhaus <eneuhaus@wildlandseng.com>
Subject: FW: [External] Notice of Addendum Approval & MY0 Review / NCDMS Wyant Lands & Expansion Project/ SAW-2017-02609 & SAW-2021-02449/ Lincoln County

Good morning Eric,

Once you have had a chance to review the IRT's comments, please give me a call to discuss.

Thanks

Paul Wiesner
Western Regional Supervisor
North Carolina Department of Environmental Quality
Division of Mitigation Services

828-273-1673 Mobile
paul.wiesner@ncdenr.gov

Western DMS Field Office
5 Ravenscroft Drive
Suite 102
Asheville, N.C. 28801

From: Browning, Kimberly D CIV USARMY CESAW (USA) <Kimberly.D.Browning@usace.army.mil>
Sent: Tuesday, January 4, 2022 3:07 PM
To: Wiesner, Paul <paul.wiesner@ncdenr.gov>
Cc: Eric Neuhaus <eneuhaus@wildlandseng.com>; Shawn Wilkerson <swilkerson@wildlandseng.com>; Tugwell, Todd J CIV USARMY CESAW (US) <Todd.J.Tugwell@usace.army.mil>; Haywood, Casey M CIV USARMY CESAW (USA) <Casey.M.Haywood@usace.army.mil>; Davis, Erin B <erin.davis@ncdenr.gov>; Wilson, Travis W. <travis.wilson@ncwildlife.org>; Munzer, Olivia <olivia.munzer@ncwildlife.org>; Bowers, Todd <bowers.todd@epa.gov>; Youngman, Holland J <holland_youngman@fws.gov>; Jones, M Scott (Scott) CIV USARMY CESAW (USA) <Scott.Jones@usace.army.mil>; Brown, David W CIV USARMY CESAW (USA) <David.W.Brown@usace.army.mil>; Crumbley, Tyler A CIV USARMY CESAW (USA) <Tyler.A.Crumbley2@usace.army.mil>; Allen, Melonie <melonie.allen@ncdenr.gov>; Harmon, Beth <beth.harmon@ncdenr.gov>; Stanfill, Jim <jim.stanfill@ncdenr.gov>
Subject: [External] Notice of Addendum Approval & MY0 Review / NCDMS Wyant Lands & Expansion Project/ SAW-2017-02609 & SAW-2021-02449/ Lincoln County

Paul and Eric,

The As-Built/MY0 review for the Wyant Lands Mitigation Site (SAW-2017-02609) ended December 18, 2021. All comments received from the NCIRT are incorporated in the email below. Please address IRT concerns in the MY1 Report. Please send me the 30% release ledger for the project reaches and wetland areas that were constructed and planted in 2021. The IRT has concerns with the bank instability and cattle access to the crossing beneath Wyant Road, both upstream and downstream; please provide an update on efforts to stabilize the banks where the crossing is used to transport cattle under Wyant Road.

USACE MY0 Comments, Casey Haywood:

1. Concur with DWR's comments below, and would support withholding partial stream credit if the crossing on both sides of Wyant Road has not been repaired/stabilized by credit release.
2. An email received on November 18, 2021 from Paul Wiesner indicated Wildlands would be installing the livestock watering structures/ tanks the week of 11/29/2021. Please confirm these were installed.
3. OK with the red line planting changes, to include the addition of red mulberry.

DWR MY0 Comments, Erin Davis:

1. DWR requests that the methodology to determine the extent of the growing season be set and consistent throughout monitoring. If you're selecting to use the WETS table dates now, please do not ask to switch in MY5 to soil and bud burst for that year.

2. Please consider using approved planting plan species not installed due to availability issues in future supplemental planting efforts (if appropriate).

3. There were 14 grade control structures positioned at the end of riffles that were not installed as proposed. DWR requests that special attention be given to these areas during the annual visual assessment to confirm no evidence of developing headcuts.

4. It's DWR understanding that Wildlands to working to resolve the severe bank instability and sediment loading occurring within the stream crossings on either side of Wyant Road observed by the IRT during the October 2020 site visit. DWR is very concerned about associated water quality impacts. If a remediation effort has not been implemented by the April DMS credit release meeting, DWR will likely recommend at least partial withholding of MY1 stream credits.

The Mitigation Plan Addendum review to add Wyant Lands II Expansion Project (SAW-2021-02449) ended December 18, 2021. The Addendum proposes the addition of 231.600 SMUS and 4.513 WMUs. The expansion area assets will be tracked via a separate ledger. With this email the addendum is approved (see attached), provided you address IRT comments below.

USACE Addendum Comments, Kim Browning:

1. The categorical exclusion documents provided pertain to the 404 permit that was issued in July 2020. This will cover UT2 Reach 1, but was the new parcel where the wetlands will be added assessed for ESA and SHPO resources in 2018? I understand that the area is currently in agriculture and likely doesn't contain any resources; however, the entire area of disturbance should be evaluated and documented for the new 404 permit.
2. Section 5.5 should address whether the existing wooded buffer on UT2 R1 will be cleared and replanted, or selective clearing and supplemental planting will be done. At the site visit we discussed removal of black walnut and potentially transplanting mockernut hickory, which was not discussed in the existing conditions section.
3. Table 10 and 11: You may want to consider removing the Pebble Count performance standard.
4. Section 7.0: If you intend on proposing the addendum expansion project for close-out at MY6 to coincide with close-out of the initial Wyant Lands project, pending the project is on a trajectory for success, that should be discussed in this section.

5. Figure 2A: It appears that not all of the existing wetland T will be captured in the addendum area (to the north). Will this pose a problem for the landowner if the field adjacent to the conservation easement becomes too wet?
6. Figure 10.2A: Please show the location of the BMP.

DWR Addendum Comments, Erin Davis:

1. Page 7, Section 3.2 – What is the risk of hydrologic trespass along the Addendum wetland area? Is there any concern with current or future land use that may result in ditching near the easement (and wetland credit) boundary?

2. Page 13 – The Table 10 footnote #3 appears inconsistent with the Section 7 monitoring plan schedule/duration. Please clarify the proposed Addendum area's monitoring schedule, as well as, how (if at all) it will be associated with the original project mitigation plan's schedule.

3. Figures – Is it possible to show the existing CE red dashed line over the proposed CE purple line where they share a boundary? It was initially very confusing to see the constructed project area extend into the proposed CE area.

4. Figure 6.1A – Based on the aerial basemap there appear to be ditches onsite (Wetland Q to the area below Open Water 2). Please confirm and add callouts if present. It is also helpful to have any existing ditches located near the proposed project boundaries identified, particularly if they could influence site conditions.

5. Figure 11A – Please show proposed wetland credit types on this figure. It's difficult to tell if any of the veg plots and gauges are located within proposed wetland rehabilitation or creation areas. If not, please shift at least one gauge to a representative creation area and have at least one veg plot in each credit type area. Also, none of the gauges are located near the proposed easement boundary, which can be a zone we're concerned with the hydroperiod meeting the performance standard threshold. Please shift at least one gauge closer to the CE boundary. If it would be helpful, DWR can mark-up a figure with recommended gauge shifts once the credit types have been added.

6. Sheet 2.0 – With the grading proposed outside of the easement, is it expected to result in a loss of any open water and/or wetland areas? It appears the Open Water 2 area will be graded up to elev. 777. Also, what is the minimum ditch plug length being proposed?

7. Sheet 4.0 – DWR would encourage reducing sycamore and river birch percentages within the wetland planting zone in order to enhance habitat diversity.

USACE Addendum Comments, Casey Haywood:

1. Please include the October 18, 2021 site visit notes as an appendix.

Please reach out with any questions.
Thanks,
Kim

Kim Browning
Mitigation Project Manager, Regulatory Division I U.S. Army Corps of Engineers

Kristi Suggs | *Senior Environmental Scientist*
O: 704.332.7754 x110 **M**: 704.579.4828

Wildlands Engineering, Inc.
1430 S. Mint St, Suite 104
Charlotte, NC 28203

January 14, 2022

ATTN: CESAW-RG/Browning
Ms. Kim Browning
US Army Corps of Engineers – Wilmington District
69 Darlington Avenue
Wilmington, NC 28403-1343

RE: Wyant Lands Mitigation Site As-Built/MY0
Lincoln County, NC
Response to NCIRT Review Comments
USACE Action ID No: SAW-2017-02609
NCDMS Project No: 100067

Dear Ms. Browning:

Wildlands Engineering, Inc. (Wildlands) has reviewed USACE's and NCDWR's comments from the As-Built/MY0 review of the Wyant Lands Mitigation Site in Lincoln County, NC. The following Wildlands' responses to *USACE's and NCDWR's comments* are noted below.

USACE MY0 Comments, Casey Haywood

1. *Concur with DWR's comments below, and would support withholding partial stream credit if the crossing on both sides of Wyant Road has been repaired/stabilized by credit release.*

   Wildlands Response: See response to DWR comment #4 below.

2. *An email received on November 18, 2021 from Paul Wiesner indicated Wildlands would be installing the livestock watering structures/tanks the week of 11/29/2021. Please confirm these were installed.*

   Wildlands Response: Installation of cattle watering devices at the Wyant property has been completed by Wildlands Construction.

3. *Ok with the red line planting changes, to include the addition of red mulberry.*

   Wildlands Response: Wildlands acknowledges the approved addition of red mulberry.

DWR MY0 comments, Erin Davis:

1. *DWR requests that the methodology to determine the extent of the growing season be set and consistent throughout monitoring. If you're selecting to use the WETS table dates now, please do not ask to switch in MY5 to soil and bud burst for that year.*

   Wildlands Response: Wildlands plans to use the NRCS WETS table dates to determine the growing season.

2. *Please consider using approved planting plan species not installed due to availability issues in future supplemental planting efforts (if appropriate).*

Wildlands Response: The project addendum is using the same planting plan as the original project area. Some of the unavailable species may become available for the addendum planting but if listed species are unavailable, Wildlands will use the same approved planting list for supplemental plantings.

3. *There were 14 grade control structures positioned at the end of riffles that were not installed as proposed. DWR requests that special attention be given to these areas during the annual visual assessment to confirm no evidence of developing headcuts.*

   Wildlands Response: Wildlands will visually assess each of the 14 areas where grade control structures were removed once a monitoring season to ensure stability at the tail of riffle. If any instability is observed, it will be noted on the CCPV maps.

4. *It's DWR understanding that Wildlands to working to resolve the severe bank instability and sediment loading occurring within the stream crossings on either side of Wyant Road observed by the IRT during the October 2020 site visit. DWR is very concerned about associated water quality impacts. If a remediation effort has not been implemented by the April DMS credit release meeting, DWR will likely recommend at least partial withholding of MY1 stream credits.*

   Wildlands Response: Wildlands is implementing additional vegetative methods (seed and straw) to the areas of concern. Wildlands will evaluate the condition of the crossings prior to addendum construction and if deemed necessary will use more hardened methods (add rock or similar) to stabilize the crossing areas and reduce sediment inputs from the ford crossings into the project streams. Wildlands anticipates addendum construction to be performed prior to the April DMS credit release meeting.

One (1) hard copy of the Final As-Built and Baseline Monitoring report is included with this comment response letter. Please contact me at 865-207-8835 if you have any questions.

Sincerely,

Eric Neuhaus, PE
Project Manager
eneuhaus@wildlandseng.com

CC: Erin Davis
Stream/Wetland Mitigation Coordinator
NC Division of Water Resources
1617 Mail Service Center
Raleigh, NC 27699-1617

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
69 DARLINGTON AVENUE
WILMINGTON, NORTH CAROLINA 28403-1343

REPLY
ATTENTION OF:

January 4, 2022

Regulatory Division

Re: NCIRT Review and USACE Approval of the NCDMS Wyant Lands Phase II Project Expansion / Lincoln County/ SAW-2021-02449/ NCDMS Project # 100595

Paul Wiesner
North Carolina Division of Mitigation Services

Dear Mr. Wiesner:

The purpose of this letter is to provide the North Carolina Division of Mitigation Services (NCDMS) with all comments generated by the North Carolina Interagency Review Team (NCIRT) during the 30-day comment period for the Wyant Lands Phase II Expansion Project Addendum, which closed on December 18, 2021. These comments are in the attached email for your review.

Based on our review of these comments, we have determined that no major concerns have been identified with the proposed Addendum, which is considered approved with this correspondence; however, several minor issues were identified, as described in the attached email, which must be addressed in the Final Addendum.

The Final Addendum is to be submitted with the Preconstruction Notification (PCN) Application for Nationwide permit approval of the project along with a copy of this letter. Issues identified above must be addressed in the Final Addendum. All changes made to the Final Addendum should be summarized in an errata sheet included at the beginning of the document. Please note that this approval does not preclude the inclusion of permit conditions in the permit authorization for the project, particularly if issues mentioned above are not satisfactorily addressed. Additionally, this letter provides initial approval for the Addendum, but this does not guarantee that the project will generate the requested amount of mitigation credit. As you are aware, unforeseen issues may arise during construction or monitoring of the project that may require maintenance or reconstruction that may lead to reduced credit. If you have any questions regarding this letter or the requirements of the Mitigation Rule, please contact me at Kimberly.d.browning@usace.army.mil or (919) 946-5107.

Sincerely,

Kim Browning
Mitigation Project Manager
for Tyler Crumbley, Deputy Chief
USACE Regulatory Division

Electronic Copies Furnished:
NCIRT Distribution List, Eric Neuhaus—WEI

REPLY
ATTENTION OF:

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
69 DARLINGTON AVENUE
WILMINGTON, NORTH CAROLINA 28403-1343

January 4, 2022

Regulatory Division/Browning

Re: NCIRT Review of the NCDMS Wyant Lands Phase II Project Expansion / Lincoln County/ SAW-2021-02449/ NCDMS Project # 100595

The Addendum proposes the addition of 231.600 SMUS and 4.513 WMUs. The expansion area assets will be tracked via a separate ledger.

USACE Addendum Comments, Kim Browning:

1. The categorical exclusion documents provided pertain to the 404 permit that was issued in July 2020. This will cover UT2 Reach 1, but was the new parcel where the wetlands will be added assessed for ESA and SHPO resources in 2018? I understand that the area is currently in agriculture and likely doesn't contain any resources; however, the entire area of disturbance should be evaluated and documented for the new 404 permit.
2. Section 5.5 should address whether the existing wooded buffer on UT2 R1 will be cleared and replanted, or selective clearing and supplemental planting will be done. At the site visit we discussed removal of black walnut and potentially transplanting mockernut hickory, which was not discussed in the existing conditions section.
3. Table 10 and 11: You may want to consider removing the Pebble Count performance standard.
4. Section 7.0: If you intend on proposing the addendum expansion project for close-out at MY6 to coincide with close-out of the initial Wyant Lands project, pending the project is on a trajectory for success, that should be discussed in this section.
5. Figure 2A: It appears that not all of the existing wetland T will be captured in the addendum area (to the north). Will this pose a problem for the landowner if the field adjacent to the conservation easement becomes too wet?
6. Figure 10.2A: Please show the location of the BMP.

DWR Addendum Comments, Erin Davis:

1. Page 7, Section 3.2 – What is the risk of hydrologic trespass along the Addendum wetland area? Is there any concern with current or future land use that may result in ditching near the easement (and wetland credit) boundary?

2. Page 13 – The Table 10 footnote #3 appears inconsistent with the Section 7 monitoring plan schedule/duration. Please clarify the proposed Addendum area's monitoring schedule, as well as, how (if at all) it will be associated with the original project mitigation plan's schedule.

3. Figures – Is it possible to show the existing CE red dashed line over the proposed CE purple line where they share a boundary? It was initially very confusing to see the constructed project area extend into the proposed CE area.

4. Figure 6.1A – Based on the aerial basemap there appear to be ditches onsite (Wetland Q to the area below Open Water 2). Please confirm and add callouts if present. It is also helpful to have any existing ditches located near the proposed project boundaries identified, particularly if they could influence site conditions.

5. Figure 11A – Please show proposed wetland credit types on this figure. It's difficult to tell if any of the veg plots and gauges are located within proposed wetland rehabilitation or creation areas. If not, please shift at least one gauge to a representative creation area and have at least one veg plot in each credit type area. Also, none of the gauges are located near the proposed easement boundary, which can be a zone we're concerned with the hydroperiod meeting the performance standard threshold. Please shift at least one gauge closer to the CE boundary. If it would be helpful, DWR can mark-up a figure with recommended gauge shifts once the credit types have been added.

6. Sheet 2.0 – With the grading proposed outside of the easement, is it expected to result in a loss of any open water and/or wetland areas? It appears the Open Water 2 area will be graded up to elev. 777. Also, what is the minimum ditch plug length being proposed?

7. Sheet 4.0 – DWR would encourage reducing sycamore and river birch percentages within the wetland planting zone in order to enhance habitat diversity.

USACE Addendum Comments, Casey Haywood:

1. Please include the October 18, 2021 site visit notes as an appendix.

January 14, 2022

ATTN: CESAW-RG/Browning
Ms. Kim Browning
US Army Corps of Engineers – Wilmington District
69 Darlington Avenue
Wilmington, NC 28403-1343

RE: Wyant Lands Phase II Project Expansion
Lincoln County, NC
Response to NCIRT Review Comments
USACE Action ID No: SAW-2021-02449
NCDMS Project No: 100595

Dear Ms. Browning:

Wildlands Engineering, Inc. (Wildlands) has reviewed USACE's and NCDWR's comments from the Wyant Lands Phase II Project Expansion in Lincoln County, NC. The following Wildlands responses to *USACE's and NCDWR's comments* are noted below.

USACE Addendum Comments, Kim Browning:

1. *The categorical exclusion documents provided pertain to the 404 permit that was issued in July 2020. This will cover UT2 Reach 1, but was the new parcel where the wetlands be added assessed for ESA and SHPO resources in 2018? I understand that the area is currently in agriculture and likely doesn't contain any resources; however, the entire area of disturbance should be evaluated and documented for the new 404 permit.*

   Wildlands Response: Wildland's personnel assessed the addendum area for ESA and SHPO resources in the field. The proposed mitigation plan addendum area is within the parent tract of the original approved categorical exclusion document submitted in 2018. Based on site observations, aerials, and landowner correspondence, the area has been managed in agriculture since at least 1950 and no additional clearing area is proposed outside of the originally approved project disturbance area. No additional correspondence was provided as part of the project addendum.

2. *Section 5.5 should address whether the existing wooded buffer on UT2 R1 will be cleared and replanted, or selective clearing and supplemental planting will be done. At the site visit, we discussed removal of black walnut and potentially transplanting mockernut hickory, which was not discussed in the existing conditions section.*

   Wildlands Response: Wildlands plans to selectively clear where possible during construction of UT2 Reach 1. Wildlands will make every effort to transplant the existing mockernut hickory and will remove identified black walnut within the conservation easement. Existing privet and other identified invasive species will also be removed during construction.

3. *Table 10 and 11: You may want to consider removing the Pebble Count performance standard.*

Wildlands Response: Pebble counts are now removed from the performance standards and the monitoring components tables.

4. *Section 7.0: If you intend on proposing the addendum expansion project for close-out at MY6 to coincide with close-out of the initial Wyant Lands project, pending the project is on a trajectory for success, that should be discussed in this section.*

   Wildlands Response: The following text was added to Section 7.0 proposing phase II close-out at MY6. "To facilitate project organization, after the as-built and baseline monitoring report is submitted and approved for the addendum area, monitoring reports for phase II will be included with phase I monitoring reports. It is proposed that if the addendum area has met monitoring performance standards three of the prior four monitoring years at closeout of the phase I portion of the project (monitoring year 6 of phase II), the addendum area also be closed as well. If monitoring performance criteria within the phase II addendum area has not met monitoring standards three out of the prior four years, an additional seventh year of monitoring will be performed for the addendum area and the closeout monitoring period will be seven years beyond completion of construction and/or until performance standards have been met."

5. *Figure 2A: It appears that not all of the existing wetland T will be captured in the addendum area (to the north). Will this pose a problem for the landowner if the field adjacent to the conservation easement becomes too wet?*

   Wildlands Response: The area of existing Wetland T that is outside the proposed addendum area will be raised in elevation (1 foot max) but is anticipated to remain wet after the project. This area of property is currently wet and the landowner understands it will remain wet post construction. Grades increase quickly as you move north of wetland T towards the property line and spoil material removed from the proposed wetland area will be used to increase elevations in the 100-foot gap between the addendum easement and the property line to ensure an adequate travel path for the landowner. Impacts to Wetland T are listed as temporary within the 401/404 permit submittal for the project.

6. *Figure 10.2A: Please show the location of the BMP.*

   Wildlands Response: Figure 10.2A is updated to show the location of the proposed BMP.

DWR addendum comments, Erin Davis:

1. *Page 7, Section 3.2 – What is the risk of hydrologic trespass along the Addendum wetland area? Is there any concern with current or future land use that may result in ditching near the easement (and wetland credit) boundary?*

   Wildlands Response: Hydrologic trespass risk along the addendum wetland area is minimal. Grades increase quickly north and west of the proposed addendum conservation easement. To the east a natural levy and relic berm, along with the drainage of Pott Creek, decrease the risk for potential hydrologic trespass. Spoil material removed from the proposed wetland area will be used to increase elevations north of the proposed wetland in the 100-foot gap between the addendum easement and the property line to ensure an adequate travel path for the

landowner. The primary use for the land most near the addendum conservation easement, is farm traffic/travel and it is not anticipated that ditching near the easement would be required for current of future land use.

2. *Page 13 – The Table 10 footnote #3 appears inconsistent with the Section 7 monitoring plan schedule/duration. Please clarify the proposed Addendum area's monitoring schedule, as well as, how (if at all) it will be associated with the original project mitigation plan's schedule.*

   Wildlands Response: See Wildlands response to comment #4 from Kim Browning above. Text was added to Section 7.0 to clarify the proposed monitoring period for the addendum portion of the project.

3. *Figures: Is it possible to show the existing CE red dashed line over the proposed CE purple line where they share a boundary? It was initially very confusing to see the constructed project area extend into the proposed CE area.*

   Wildlands Response: All the maps are now updated with the red dashed line over the purple line to show where the phase I Conservation Easement ends and the phase II conservation easement starts.

4. *Figure 6.1A – Based on the aerial basemap there appears to be ditches onsite (Wetland Q to the area below Open Water 2). Please confirm and add callouts if present. It is also helpful to have any existing ditches located near the proposed project boundaries identified, particularly if they could influence site conditions.*

   Wildlands Response: Existing site ditches and ditches to be filled were added to Figures 2A and 6.1A, respectively. All ditches in or near the proposed project boundary are going to filled and plugged. No ditches that will influence site conditions exist adjacent to the addendum conservation easement.

5. *Figure 11A – Please show proposed wetland credit types on this figure. It's difficult to tell if any of the veg plots and gauges are located within proposed wetland rehabilitation or creation areas. If not, please shit at least one gauge to a representative creation area and have at least one veg plot in each credit type area. Also, none of the gauges are located near the proposed easement boundary, which can be a zone we're concerned with the hydroperiod meeting the performance standard threshold. Please shift at least one gauge closer to the CE boundary. If it would be helpful, DWR can mark-up a figure with recommended gauge shifts once the credit types have been added.*

   Wildlands Response: The proposed wetland credit types are now included on Figure 11A. Vegetation plots and wetland gages were shifted to have representation in each wetland crediting type. One wetland gage was shifted towards the boundary of the conservation easement, and another shifted towards the edge of the wetland boundary.

6. *Sheet 2.0 – With the grading proposed outside the easement, is it expected to result in a loss of any open water and/or wetland areas? It appears the Open Water 2 area will be graded up to elev. 777. Also, what is the minimum ditch plug length being proposed.*

Wildlands Response: Open Water 2 will be permanently impacted and filled. Within the conservation easement, this area will be restored to bottomland forested wetland. See response to comment #5 from Kim Browning above regarding Wetland T. The 401/404 permit submitted for project includes these areas of impact. Minimum ditch plug length is 8 feet, but it should be noted that all ditches are proposed to be filled for their entirety in addition to proposed ditch plugs.

7. *Sheet 4.0 – DWR would encourage reducing sycamore and river birch percentages within the wetland planting zone in order to enhance habitat diversity.*

Wildlands Response: Wildlands has reduced the sycamore and river birch percentages within the wetland planting zones. Willow oak, swamp chestnut oak, common button bush, and swamp rose percentages were all increased.

USACE addendum comments, Casey Haywood:

1. *Please include the October 18, 2021 site visit notes as an appendix.*

Wildlands Response: Meeting Minutes from the October 18, 2021 site visit with the IRT were included in Appendix 13A.

Please contact me at 865-207-8835 if you have any questions.

Sincerely,

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